



ZERO ZONE

HYBRID™ DISPLAY CASES

Reach-In Coolers & Freezers and Multi-Deck Coolers

INSTALLATION, OPERATION, & MAINTENANCE MANUAL



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Intertek

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When installing a Hybrid Merchandiser™, refer to both this manual and the associated remote installation & operation manual.

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ZERO ZONE WARRANTY

Limited Warranty

Zero Zone, Inc. (Seller) hereby warrants that any products manufactured by it and sold are warranted to be free from defects in material and workmanship, under normal use and service for its intended purpose, for a period of one (1) year from the date of original installation (not to exceed 15 months from the date of factory shipment). Zero Zone ChillBrite® LED Lighting carries a 5-year parts warranty. Zero Zone CoolView® Doors carry a 10-year glass pack parts warranty. The obligation under this warranty shall be limited to repairing or exchanging any part, or parts, FOB Factory, which is proven to the satisfaction of the Zero Zone Service Department to be defective. Zero Zone reserves the right to inspect the job site, installation, and reason for failure. This limited warranty does not cover labor, freight, or loss of food or product, including refrigerant loss. This warranty does not apply to motors, switches, controls, lamps, driers, fuses, or other parts manufactured by others and purchased by the Seller unless the manufacturer of these items warrants the same to the Seller, and then only to the extent of those manufacturer's warranty to the Seller. Any products sold on an "AS IS" basis shall not be covered by this warranty.

Extended Warranties

In addition to the standard limited warranty, for further consideration, the Seller will extend to the original purchaser prior to shipment, a limited extended warranty on the compressor only, following expiration of the standard warranty. The Seller agrees to repair or exchange, at its option, or provide reimbursement for such exchange as directed, less any credit allowed for return of the original compressor, of a compressor of like or similar design and capacity, if it is shown to the satisfaction of Zero Zone that the compressor is inoperative due to defects in factory workmanship or material under normal use and services as outlined by Zero Zone in its Installation & Operation Manuals and other instructions.

Length of Extended Warranty

Any compressor warranty may be extended for an additional four (4) years, but such extension must be purchased prior to shipment to be effective. This warranty is only for the compressor and not for any other associated parts of the refrigeration system.

Product Not Manufactured by the Seller

The written warranty, if any, provided by the manufacturer of any part of the refrigeration unit sold by Seller to Buyer, but not manufactured by Seller, is hereby assigned to the Buyer. However, Seller makes no representation or warranty regarding the existence, validity, or enforceability of any such written warranty.

Limitation and Exclusion of Warranties

THE WARRANTIES SET FORTH HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES AND REMEDIES WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE.

INTRODUCTION

Important User Information

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The information in this manual is subject to change without notice and does not represent a commitment on the part of Zero Zone. Zero Zone does not assume any responsibility for any errors that may appear in this manual. In no event will Zero Zone be liable for technical or editorial omissions made herein, nor for direct, indirect, special, incidental, or consequential damages resulting from the use or defect of this manual.

The information in this document is not intended to cover all possible conditions and situations that might occur. The end user must exercise caution and common sense when installing, using, or maintaining Zero Zone products. Zero Zone products should only be installed by qualified, professional refrigeration technicians. If any questions or problems arise, call Zero Zone at 800-247-4496.

Any change to a Zero Zone product made during the installation, start-up, or at any other time must be submitted in writing to Zero Zone for approval and be approved by Zero Zone in writing prior to commission. The product warranty is voided when any unapproved change is made to a Zero Zone product.

Manufacturer

Zero Zone, Inc.
Display Case Division

110 N Oakridge Dr • North Prairie, WI 53153 • 800-247-4496 • www.zero-zone.com

Intended Use

Zero Zone products are intended to be installed and used as described in this manual and other related Zero Zone literature, specifications, drawings, and data. All Zero Zone products must be leveled after being installed.

Display Case Models

The information contained in this manual pertains to the following Zero Zone display cases:

CASE MODEL	DESCRIPTION	DOOR SIZE & TYPE
RHLC30	Low Temp Highlight Merchandiser®	30" x 68" CoolView® Envision® Doors
RHLC30T	Low Temp Tall Highlight Merchandiser®	30" x 73" CoolView® Envision® Doors
RVLC30	Low Temp Crystal Merchandiser®	30" x 74" CoolView® Ultra™ Doors
RHCC24	Medium Temp Highlight Merchandiser®	24" x 68" CoolView® Ultra™ French Doors
RHMC30	Medium Temp Highlight Merchandiser®	30" x 68" CoolView® Envision® Doors
RHMC30T	Medium Temp Tall Highlight Merchandiser®	30" x 73" CoolView® Envision® Doors
RVMC24	Medium Temp Crystal Merchandiser®	24" x 74" CoolView® Ultra™ French Doors
RVMC30	Medium Temp Crystal Merchandiser®	30" x 74" CoolView® Ultra™ Doors
ORMC82	Medium Temp Reveal Merchandiser® Open Case	N/A
ORMC83D	Medium Temp Reveal Merchandiser® with Doors	24" x 74" CoolView® Ultra™ Doors

Reveal Merchandiser® is a registered trademark of Zero Zone, Inc. in the United States.

INTRODUCTION

Case Features

Zero Zone produces high quality refrigerated display cases using state-of-the-art components. The cases are built with the thickest insulation in the industry and a high efficiency evaporator coil. Case features include:

- Brushless DC electronic motors
- Zero Zone ChillBrite® LED Lighting
- Zero Zone CoolView® standard-energy or no-energy doors

Testing Standards

These display cases were designed and tested using the following industry standards:

- NSF 7 – Commercial Refrigerators and Freezers (ANSI Approved) (equipment certified by NSF)
- NSF 51 – Food Equipment Materials (ANSI Approved) (equipment certified by NSF)
- UL 471 – Commercial Refrigerators and Freezers (ANSI Approved) (equipment certified by ETL)
- ASHRAE Standard 72 – Method of Testing Commercial Refrigerators and Freezers (ANSI Approved)
- AHRI 1200 – Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets (ANSI Approved)
- DOE Compliant (All U.S. Sales and U.S. Territories)

ASHRAE Standard 72 specifies the test conditions for the equipment. It includes the ambient conditions of 75°F dry bulb and 55% RH. It also specifies the door opening requirements for the performance test. Doors are opened six times in one hour for six seconds. The door opening test period is for eight hours during one 24-hour performance test. As an example, a 5-door case will have 240 door openings during one 24-hour test. Consult the factory if your store exceeds these test conditions.

Hybrid™ cases are tested and listed as remote commercial refrigerators. The scope of this manual covers Hybrid™ configurations of the Zero Zone cases for Crystal Merchandiser®, Highlight Merchandiser®, and Reveal Merchandiser®.

PERMITTING

- Required case permits for Hybrid™ installation should be classified as “remote equipment.”
- Always check with the local inspector to make sure your installation complies with local code requirements.
- Does your permitting require there to be seismic restraints?

REMOTE MONITORING

- Remote monitoring is an option that is available for the case(s).

ENTRANCE & UNLOADING

- What is the height of the entryway that the case(s) will need to go through? This should be addressed in the order stage.
- Where will the case(s) be unloaded from the truck? Is there room for the case(s) to be unloaded from the truck?

CASE INSTALLATION & MOBILIZATION

- Are you able to maneuver the case(s) throughout the store to final location?
- The condensing unit will produce some noise. Has this been taken into account when identifying the final location for these case(s)?
- Have you considered the door opening/swing and aisle width? (Not applicable to open cases.)

HEAT REJECTION

- Has the rejected heat from condensing unit(s) into store been considered?
- Do you have adequate room around the case(s) for the condensing unit to be able to reject heat? There should be a 30" minimum clearance between the top of shroud and the store ceiling.
 - Options/considerations if the clearance is less than the 30" minimum:
 - Add “egg crate” ceiling panels to the store ceiling.
 - Add auxiliary fans to dissipate heat.
 - Use louvered case shrouds.
 - Use an alternate shroud height (contact your Zero Zone Sales Representative).

ELECTRICAL

- Is there suitable power supply for necessary voltage and amperage?
- Is the appropriate circuit breaker installed and available in the store power panel?
- Do you want/need an electrical disconnect at the case(s)?
- Is there a separate electrical connection available for condensate evaporation pans (for Reveal Merchandiser®)?

PLUMBING

- Will you be using a floor drain? Can the proper slope to the drain be provided?
- Will you be using a pump with the condensate evaporation pan system? This setup will add humidity to the store.

HIGH HUMIDITY

- Do you need an auxiliary fan system to provide air movement along the back and underneath the case(s)?
- Do you need louvered kickplates for air to be able to move underneath the case(s)?

DELIVERY

Moving Display Case

TO GET THROUGH A DOORWAY, IT MAY BE NECESSARY TO TEMPORARILY DISMOUNT THE REFRIGERATION LINES AND THE TOP ELECTRICAL BOX.

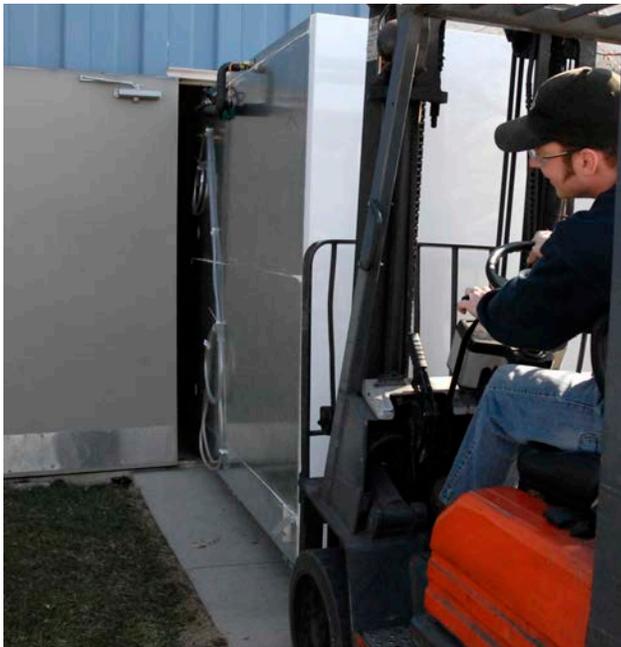


1. Remove the upper electrical box by disconnecting the 3 wiring connectors, then remove the 4 screws that attach the electrical box to the top of the case.
2. Remove the piping bracket from the back of the case.



3. Pull quick-connect lines away and down from the case.
4. Once inside, reposition quick-connect lines, reinstall bracket, and set electrical box on top.

Note: Set the case at least 3" away from the wall to allow for air circulation and piping. A 3" standard (or 6" optional) standoff spacer is required between the rear wall and the case.



ATTENTION FORKLIFT OPERATOR!

Forks must be 48" long, 1 1/2" to 1 3/4" thick, and no more than 4" wide to fit the bases. 2 to 5-door cases and 4' to 12' open multi-decks are fork-liftable from either end of the case. 1-door cases are not fork-liftable through a standard doorway.

24" 2-Door Cases or 4' Multi-Decks:

- Forks must extend 20" to 24" under the case.

30" 2-Door or 24" 3-Door Cases or 6' Multi-Decks:

- Forks must extend 26" to 30" under the case.

30" 3-Door or 24" 4-Door Cases or 8' Multi-Decks:

- Forks must extend 39" to 43" under the case.

30" 4- & 5-Door or 24" 6-Door Cases or 12' Multi-Decks:

- Forks must extend 44" to 47" under the case.

Do not leave, store, or hold case outdoors in direct sunlight or high ambient temperature. With the end panels on, a display case with doors will be airtight; the inside temperature of the case will increase, and the heat will be unable to escape. This could potentially cause any plastic (such as PTM) inside the case to melt.

SETTING THE CASE

Contents Shipped Inside of Case



Condensate Evaporation Pan

Highlight Merchandiser® Shown

Hat Channel Rails & Pump Assembly



Condensate Evaporation Pan

Reveal Merchandiser® Shown

Hat Channel Rails & Pump Assembly

SETTING THE CASE

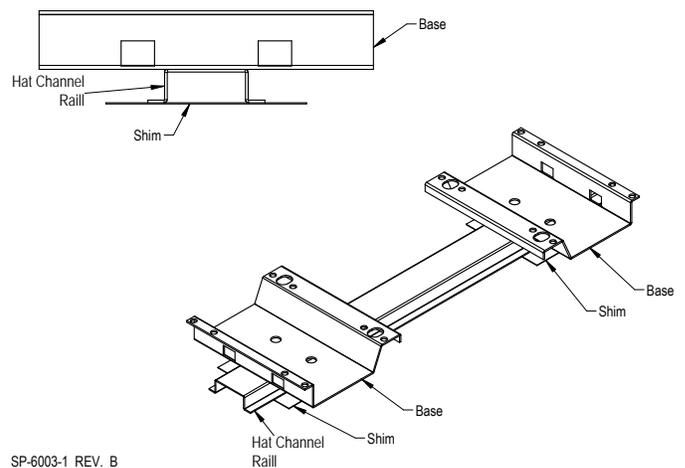
Positioning Hat Channel Rails

Refer to the associated remote installation & operation manual for more information about setting and leveling a display case, including base locations, optional bases, proper shimming, case squareness, case joining, and lineup assembly.



Highlight Merchandiser® Shown

- Position hat channel rails with tape up.
- 1-door cases do not need hat channel rails.
- 2-door cases and 4' multi-decks get 2 hat channel rails.
- 3 and 4-door cases and 6' and 8' multi-decks get 3 hat channel rails. The center rail must be angled to rest on the front and back bases. Do not position under drain hub!
- 5 and 6-door cases and 12' multi-decks get 4 hat channel rails. Position as shown.
- In most instances, shims must be added to make cases level. The shims are placed perpendicularly under the hat channel rails (as illustrated bottom right). Refer to the appropriate remote display case installation and operation manual (leveling section) for details.



SETTING THE CASE

Dividers Between Cases



Clear plexi dividers separate refrigeration circuits between same temperature cases.

Insulated dividers separate different temperature cases in lineups.



Both types of dividers are factory-installed prior to shipping.

SETTING THE CASE

Reveal Merchandiser® Support Brace - Removal & Installation

Support brace is only used on a Reveal Merchandiser® open case, not on a Reveal Merchandiser® with Doors.

An 8' or 12' Reveal Merchandiser® in a Hybrid™ configuration will be shipped with a support brace that strengthens its canopy. This support brace can be removed in order to move the case through a low doorway; this reduces the height by ~3". The support brace must be reinstalled before the condensing unit is placed on top of the display case and before the display case is set against a wall.

DESCRIPTION	8' CASE QUANTITY	12' CASE QUANTITY
Ceiling Support Braces	2	3
Rear Wall Support Braces	2	3
Piping Cutout Support Brackets	4	6
1" Hex Screws	32	48
5" Hex Bolts	8	12
Washers	16	24
1/2" Round Spacers	8	12
Lock Nuts	8	12

An 8' Reveal Merchandiser® (8ORMC) uses 2 support braces. A 12' Reveal Merchandiser® (12ORMC) uses 3 support braces.



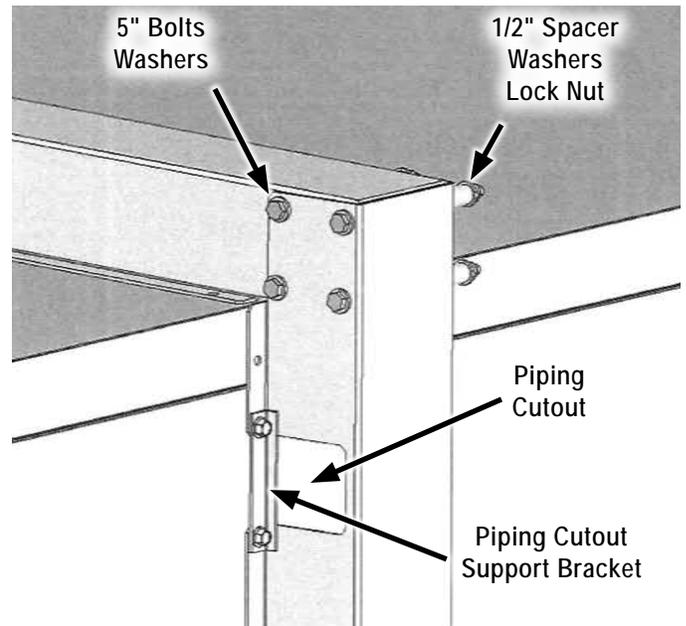
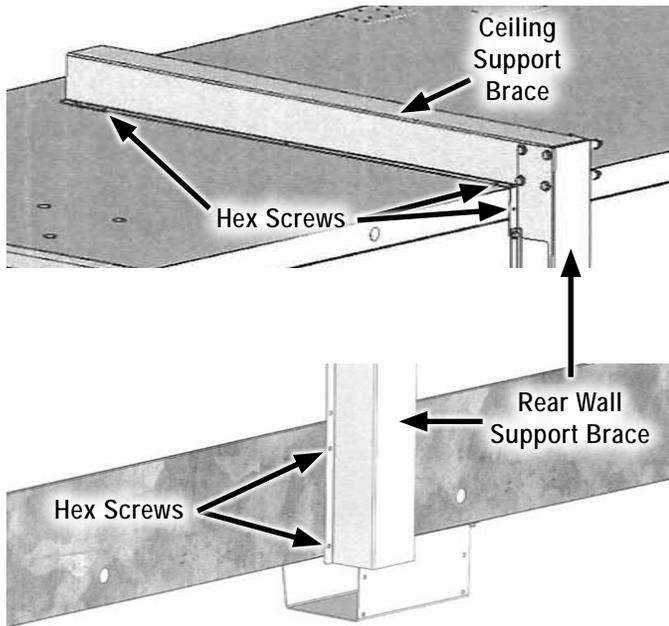
Support Brace Assembled & Shipped. 8' Reveal Merchandiser® Shown.

SETTING THE CASE

Reveal Merchandiser® Support Brace - Removal & Installation

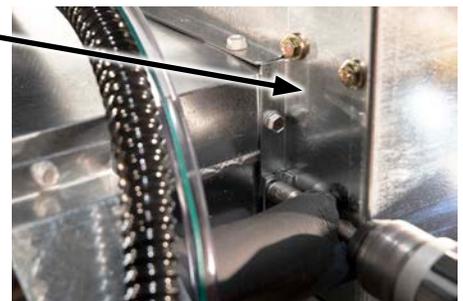
REMOVING THE SUPPORT BRACE

Save all bolts and fasteners for reassembling the support brace after moving the display case through the doorway.

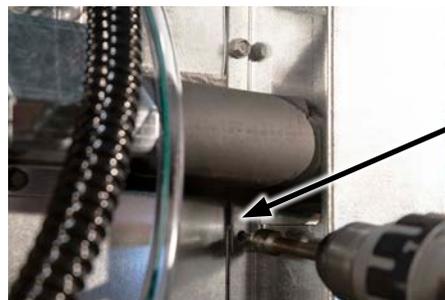


Support Brace Components

1. Detach the rear wall support brace from the back of the case, starting from the bottom and working up to the top.
2. Unbolt the piping cutout brackets from the rear wall support brace and the case.
3. While supporting the rear wall support brace, remove the joint through-bolts that connect the ceiling support brace to the rear wall support brace. This consists of 5" bolts, washers, 1/2" spacers, and lock nuts.
4. Remove the rear wall support brace.
5. Detach and remove the ceiling support brace from the top of the case.



Detach/Reattach Rear Wall Brace



Unbolt/Bolt Piping Cutout Brackets

SETTING THE CASE

Reveal Merchandiser® Support Brace - Removal & Installation

REINSTALLING THE SUPPORT BRACE

Reassemble the support brace after moving the display case through the doorway. Reuse the bolts and fasteners that were removed. The support brace must be installed before the condensing unit is placed on top of the display case and before the display case is set against a wall.

1. Install the ceiling support brace on top of the case. Align the ceiling support brace with the holes in the backer plates and use the hex screws to fasten it.
2. Join the ceiling support brace to the rear wall support brace using through-bolts. Add the 5" bolt and a washer on one side through the support braces, and add a 1/2" spacer, washer, and lock nut on the other side. **Note: Position the case piping to pass through the piping cutout in the rear wall support brace.**
3. Align the rear wall support brace with the holes in the backer plates.
4. Install the piping cutout support brackets to each mounting flange of the rear wall support brace, spanning the piping cutout. The provided screws will bite into the rear wall of the display case.
5. Install the rear wall support brace to the back of the case. Push it flush against the back of the case and then use the hex screws to fasten it the display case, starting from the bottom.



Separate/Join Ceiling & Rear Support Braces



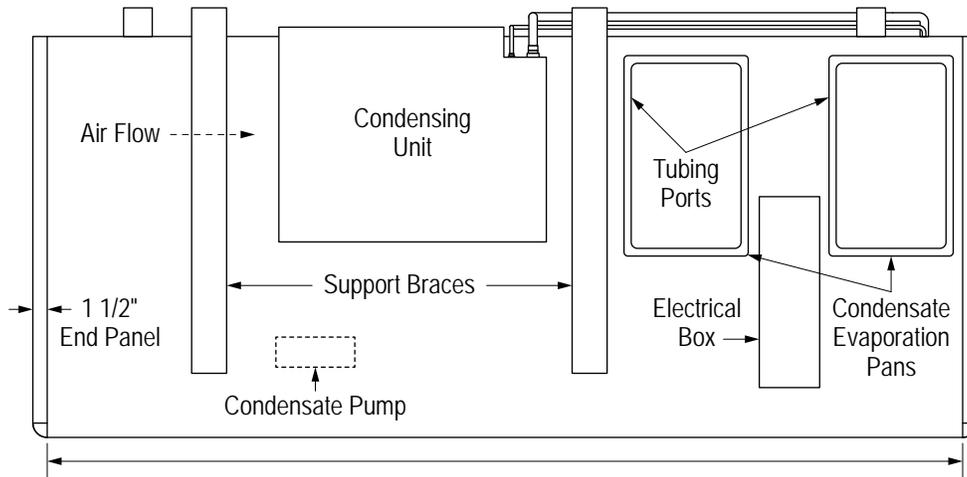
Remove/Reinstall Ceiling Support Brace

SETTING THE CASE

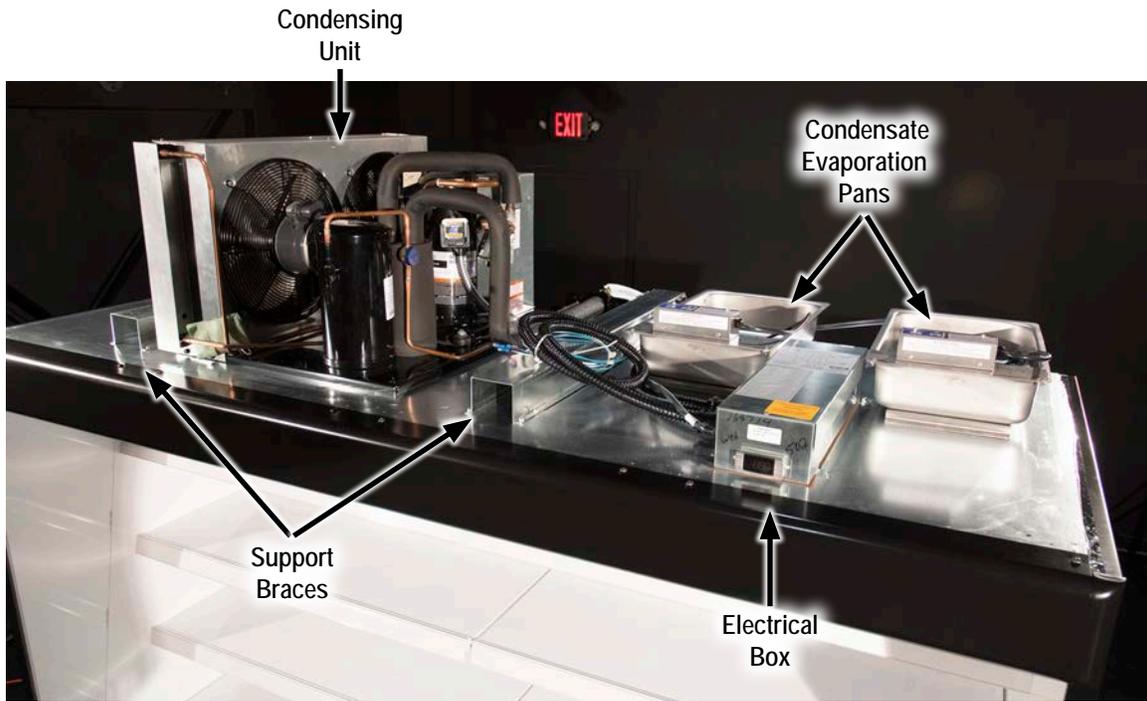
Reveal Merchandiser® Support Brace - Position Components

An 8' or 12' Reveal Merchandiser® in a Hybrid™ configuration will be shipped with a support brace that strengthens its canopy. Position the condensing unit, electrical box, evaporation pans, and other features around the support braces.

- An 8' Reveal Merchandiser® uses 2 support braces.
- A 12' Reveal Merchandiser® uses 3 support braces.



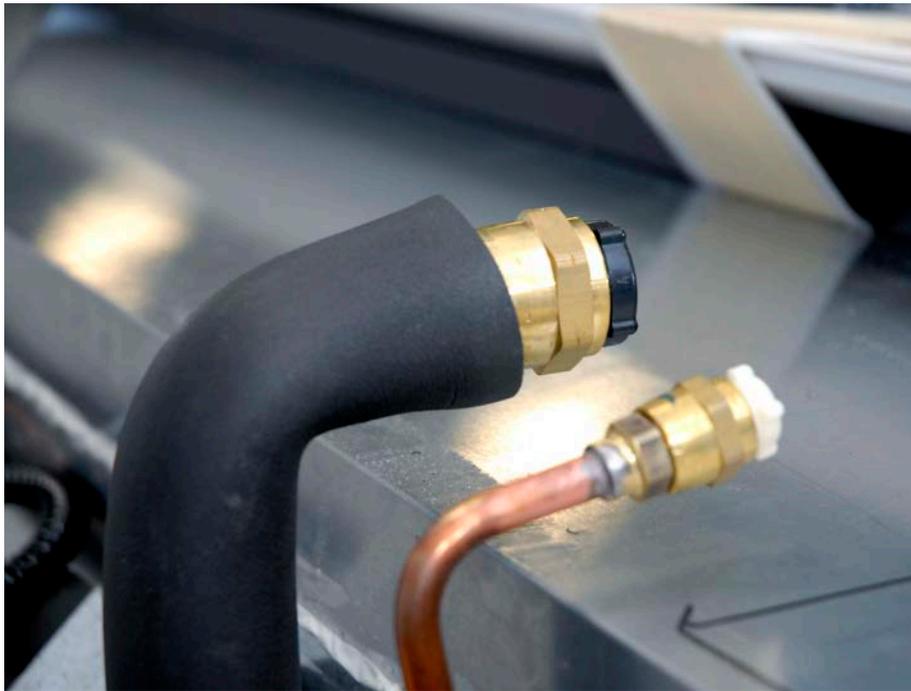
8' Reveal Merchandiser® Shown



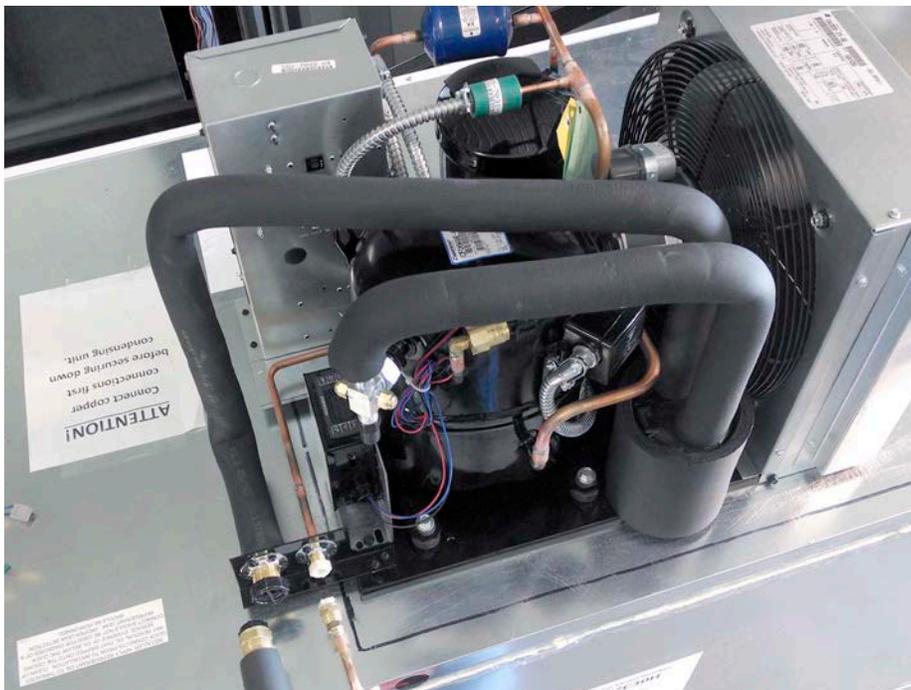
8' Reveal Merchandiser® Shown

CONDENSING UNIT CONNECTION

Setting the Condensing Unit



1. Locate quick-connect couplings on the back of the case.



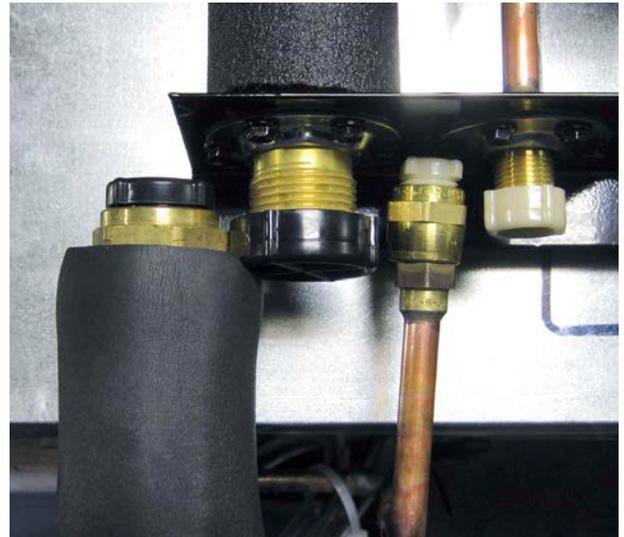
2. Place condensing unit with quick-connect couplings facing the back of the case.
3. Avoid scratching the front of the case.

CONDENSING UNIT CONNECTION

Quick-Connect Couplings

THIS IS THE MOST IMPORTANT PART OF A HYBRID™ CASE INSTALLATION

1. Align the couplings and pre-lubricate the mating surfaces (threads and o-rings) with POE oil (supplied) before connecting them. Not lubricating the mating surfaces may increase the potential for leaks.
2. Start with hand tightening to ensure a good seal.
3. Tighten couplings with a wrench until couplings are fully threaded. Use the wrench size and torque values provided in the table below.
4. After all connections are made, check the couplings for leaks.



WRENCH SIZE	QUICK-CONNECT SIZE	TORQUE VALUES
13/16"	3/8"	10-12 ft./lbs.
1 5/16"	1/2"	35-45 ft./lbs.
1 5/16"	5/8"	35-45 ft./lbs.
1 5/16"	7/8"	35-45 ft./lbs.

We recommend using a torque wrench and crowsfoot wrench.

CONDENSING UNIT CONNECTION

Insulation on Suction Line Quick-Connect



A pre-cut piece of split piping insulation (supplied) will be required on each freezer suction line quick-connect coupling. Cable ties will also be provided.

1. Wrap piping insulation around the suction line quick-connect coupling. Position the insulation so that it completely covers the quick-connect. (Insulation should not be added to the liquid line.)
2. Remove film from adhesive strip on the insulation and adhere to other end.
3. Use cable ties to secure the insulation in place.

ELECTRICAL/CONTROL

Case Electrical Connections - Highlight Merchandiser®

Connecting power to a Highlight™ Hybrid™ does not require opening the electrical box at any time.

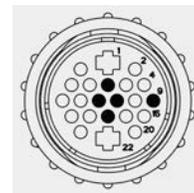
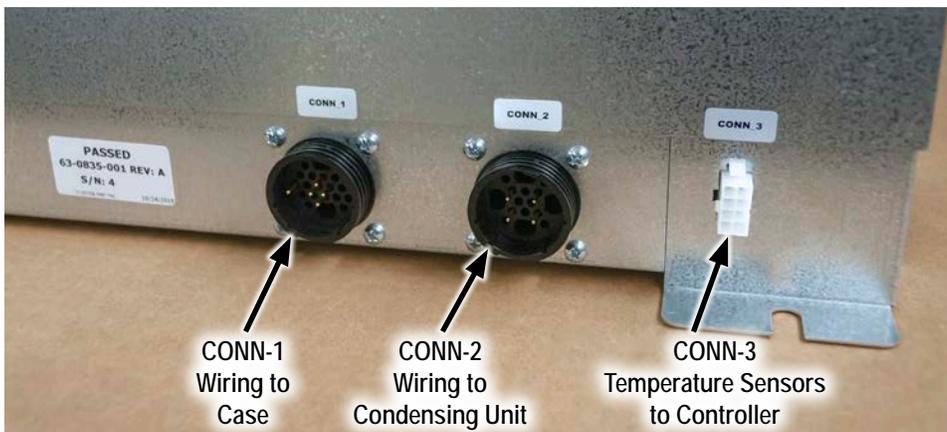
- "CONN-1" carries power from the case electrical box to the case.
- "CONN-2" carries power from the case electrical box to the condensing unit electrical box.
- "CONN-3" connects to the temperature sensors. (See "Controller Sensor Wires" on page 20 for more information.)

Each connector is keyed for the correct attachment. Orient the "CONN-X" label on the plug at the 12 o'clock position to align the connector keying. Push the wire harness plug into the bulkhead, then turn the threaded nut clockwise. The parts will lock together when a detent is felt.

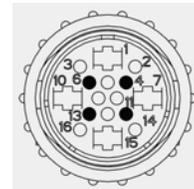
See "Case Electrical Connections - Pinout Locations" on page 18 for information about the connectors.



HIGHLIGHT™ COOLER

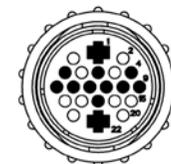
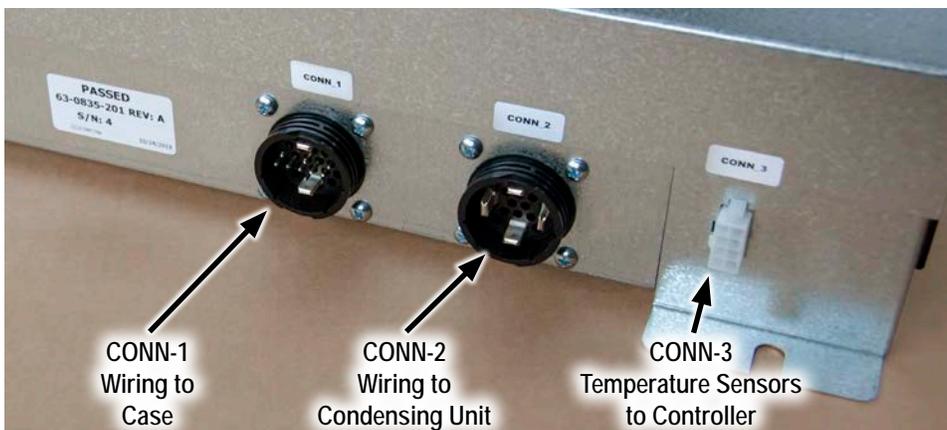


Connects to
CONN-1 on
Electrical Box

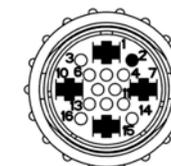


Connects to
CONN-2 on
Electrical Box

HIGHLIGHT™ FREEZER



Connects to
CONN-1 on
Electrical Box



Connects to
CONN-2 on
Electrical Box

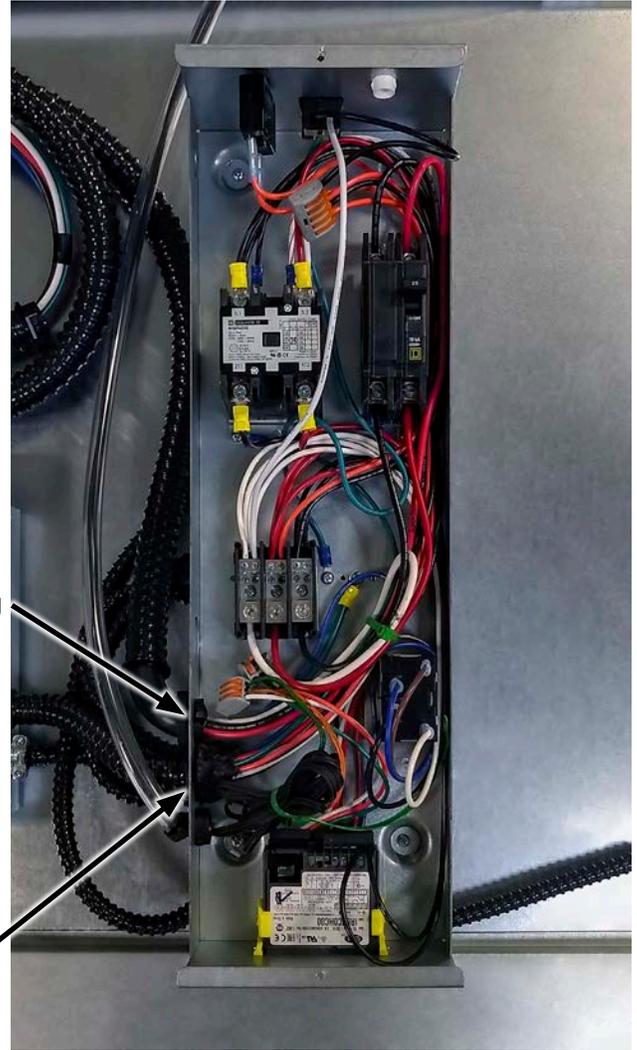
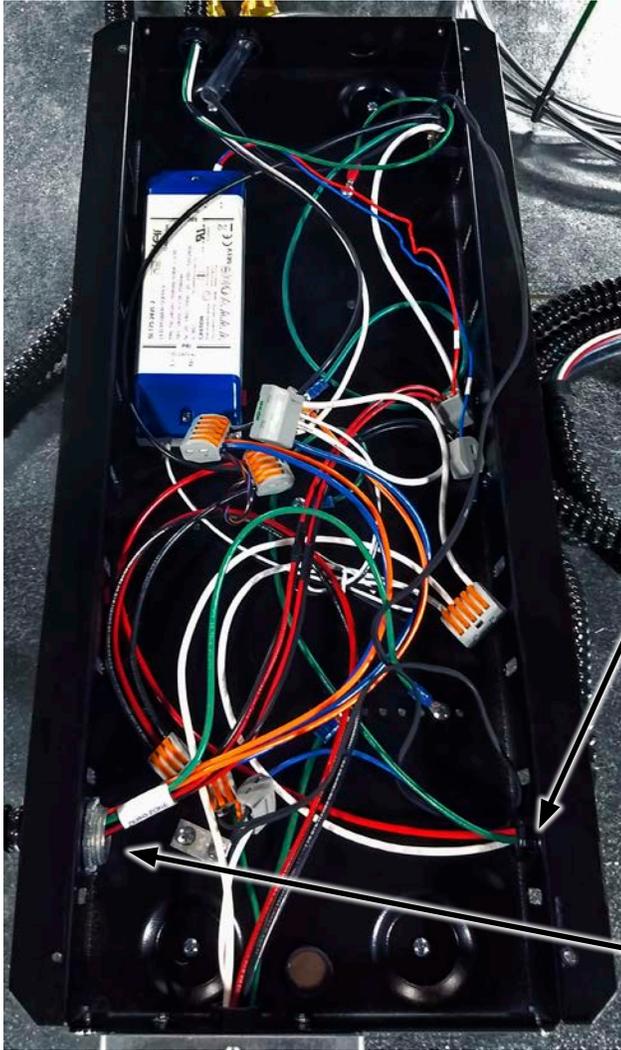
Always refer to the wiring diagrams shipped with your case.

ELECTRICAL/CONTROL

Case Electrical Connections - Crystal Merchandiser®

CRYSTAL™ COOLER

CRYSTAL™ FREEZER



Wiring to
Condensing
Unit

Wiring to
Case

- Power runs from the store panel disconnect switch to the condensing unit electrical box and then to the case electrical box.
- Cases receive 208V 4-wire service; 115/208V/1/60Hz; red and black power, white neutral, green ground (field connection).
- DO NOT ENERGIZE POWER UNTIL ALL COVERS ARE ON ALL ELECTRICAL BOXES.

Always refer to the wiring diagrams shipped with your case.

ELECTRICAL/CONTROL

Case Electrical Connections - Reveal Merchandiser®

Connecting power to a Reveal™ Hybrid™ does not require opening the electrical box at any time.

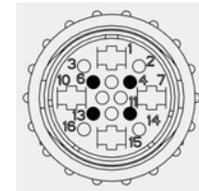
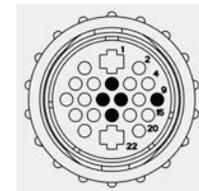
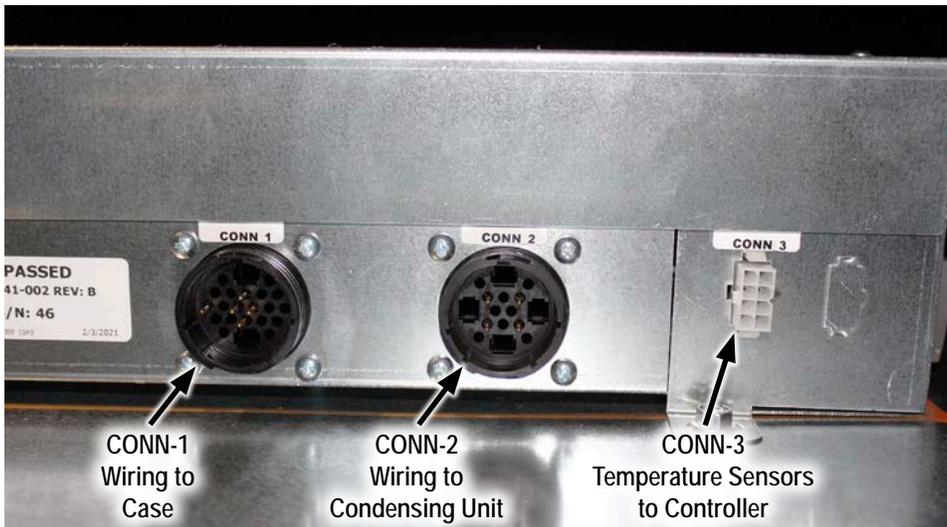
- "CONN-1" carries power from the case electrical box to the case.
- "CONN-2" carries power from the case electrical box to the condensing unit electrical box.
- "CONN-3" connects to the temperature sensors. (See "Controller Sensor Wires" on page 20 for more information.)

Each connector is keyed for the correct attachment. Orient the "CONN-X" label on the plug at the 12 o'clock position to align the connector keying. Push the wire harness plug into the bulkhead, then turn the threaded nut clockwise. The parts will lock together when a detent is felt.

See "Case Electrical Connections - Pinout Locations" on page 18 for information about the connectors.



REVEAL MERCHANDISER®



Always refer to the wiring diagrams shipped with your case.

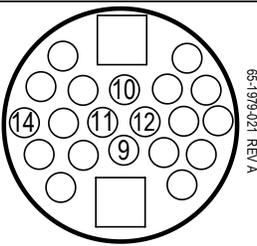
ELECTRICAL/CONTROL

Case Electrical Connections - Pinout Locations

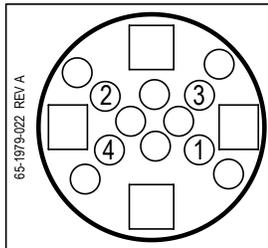
Refer to these figures to identify the function of each pin in the connectors. Only applies to Highlight™ and Reveal™.

COOLER: CONN-1 FROM ELECTRICAL BOX TO CASE

WIRE NO.	COLOR	PURPOSE
9	ORG	LIGHTS LINE
10	BLK/YEL	FANS LINE
11	WHT/ORG	LIGHTS NEUTRAL
12	WHT/YEL	FANS NEUTRAL
14	GRN	CHASSIS GND



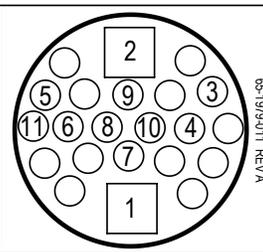
COOLER: CONN-2 FROM ELECTRICAL BOX TO CONDENSING UNIT



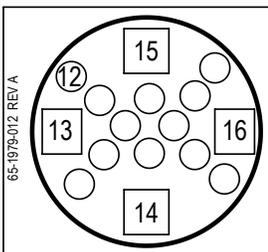
WIRE NO.	COLOR	PURPOSE
1	BLK	AC LINE
2	WHT	AC NEUTRAL
3	GRN	CHASSIS GND
4	BLU	CNDU COMMAND

FREEZER: CONN-1 FROM ELECTRICAL BOX TO CASE

WIRE NO.	COLOR	PURPOSE	WIRE NO.	COLOR	PURPOSE
1	RED/GRY	DEFROST HEATER	7	ORG	LIGHTS LINE
2	BLK/GRY	DEFROST HEATER	8	WHT/ORG	LIGHTS NEUTRAL
3	BLK/R-P-O	A/S LINE	9	BLK/YEL	FANS LINE
4	WHT/R-P-O	A/S NEUTRAL	10	WHT/YEL	FANS NEUTRAL
5	RED/PUR	RCPT LINE	11	GRN	CHASSIS GND
6	WHT/PUR	RCPT NEUTRAL			



FREEZER: CONN-2 FROM ELECTRICAL BOX TO CONDENSING UNIT



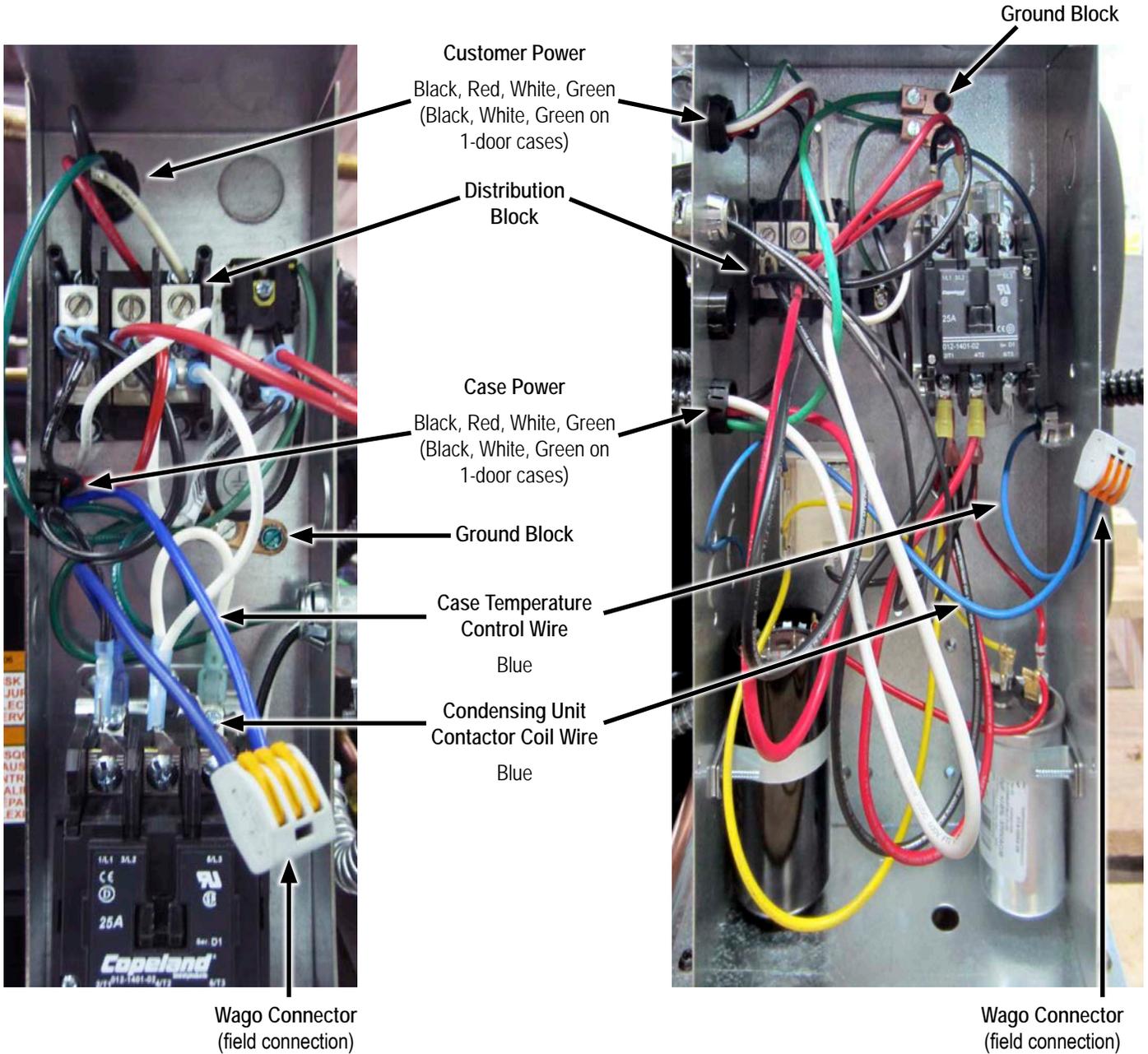
WIRE NO.	COLOR	PURPOSE
12	BLU	CNDU COMMAND
13	GRN	CHASSIS GND
14	BLK	AC LINE 2
15	RED	AC LINE 1
16	WHT	AC NEUTRAL

ELECTRICAL/CONTROL

Condensing Unit Electrical Connections

SMALL CONDENSING UNIT

LARGE CONDENSING UNIT



Always refer to the wiring diagrams shipped with your case.

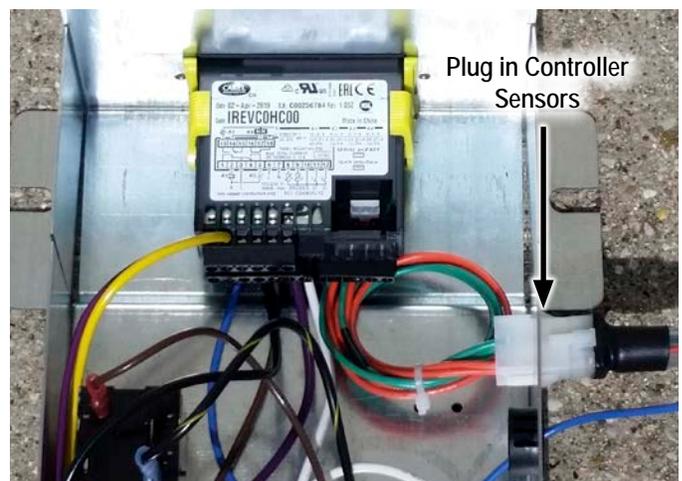
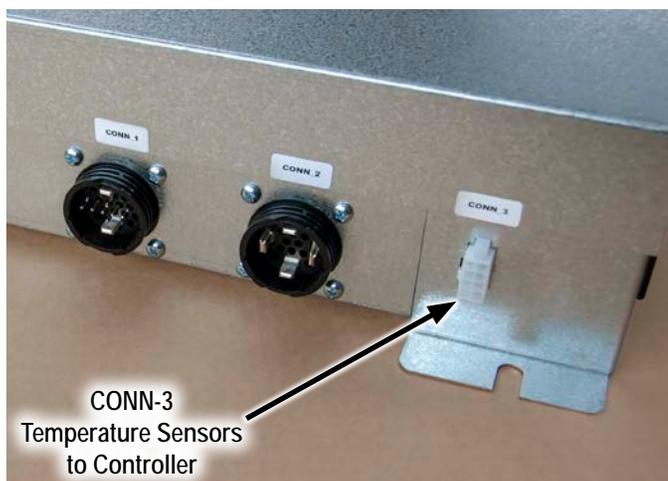
ELECTRICAL/CONTROL

Controller Sensor Wires

- The temperature probe (discharge air) is located in the false ceiling.
- The evaporator probe (defrost termination) is located in the evaporator coil.
- In coolers, 1 sensor bulb is factory installed. Temperature probe wires are white (common) and green (supply).
- In freezers, 2 sensor bulbs are factory installed. Temperature probe wires are white (common) and green (supply). Evaporator probe wires are white (common) and orange (supply).

HIGHLIGHT MERCHANDISER® AND REVEAL MERCHANDISER®

Connect the controller sensors (CONN-3) at the electrical box wall. The electrical box does not need to be opened.



Highlight™ Freezer Shown

CRYSTAL™ COOLER



Connect sensor wires
to wago connectors
(match label color
to wire color)

CRYSTAL™ FREEZER



PLUMBING

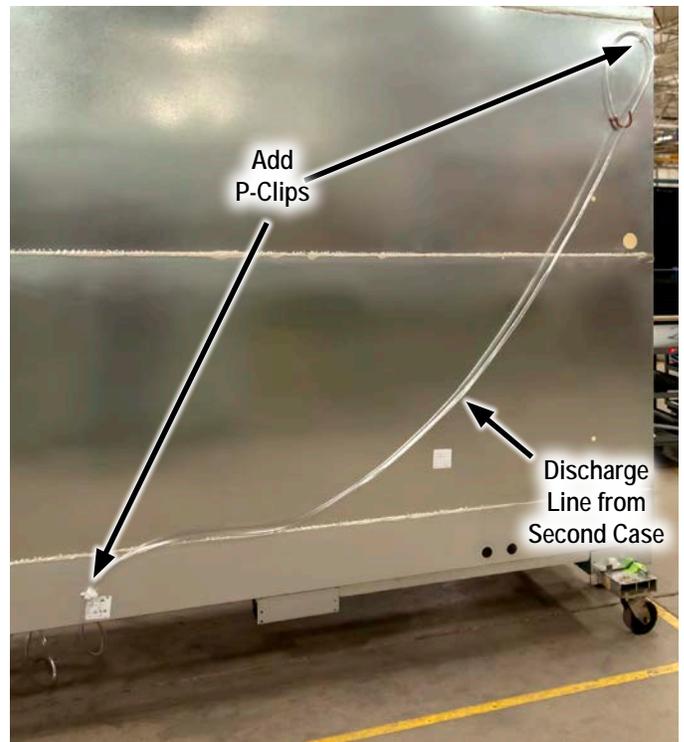
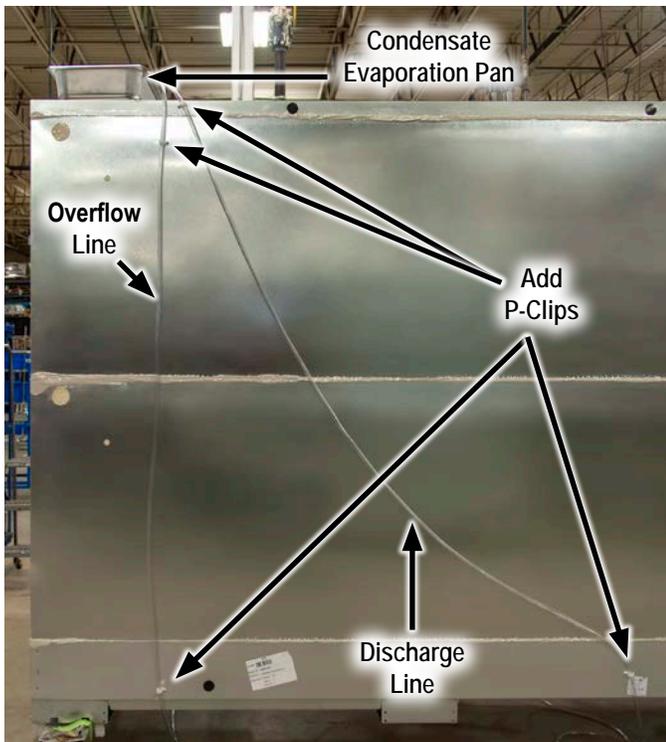
Pump with Bracket Installation Instructions

Parts Required:

- Cable ties
- Case drain lateral
- Condensate pump
- Copper pipe
- Evaporation pan
- Evap pan bracket (1-door only)
- Hose clamp
- P-clip clamp
- Piping support bracket
- Pump support bracket
- Screws
- Vinyl tubing
- Vinyl tubing with PVC elbow
- Wire clamp

EVAPORATION PAN: BEFORE SETTING AND SHIMMING THE CASE

1. Locate the vinyl tubing shipped inside the display case. There will be a primary tube (16' long), which is used for the discharge line between the condensate pump outlet and the evaporation pan, and a secondary tube (8' long) for the overflow line. For cases that share a single evaporation pan ("pan sharing"), the primary case will require both a discharge line and an overflow line. The secondary case will require only a discharge line.
2. Attach the vinyl tubing to the back of the case using the supplied P-clips and screws. Route enough tubing under the case to connect to the pump outlet, which will be mounted to the front of the case, and leave enough tubing to reach the evaporation pan on top of the case. For pan sharing, the tubing must reach from the pump of one case to the evaporation pan on the other.
3. Place the evaporation pan on top of the case. Refer to spec sheet drawings for the layout of components, especially for 1-door cases where there is limited space.

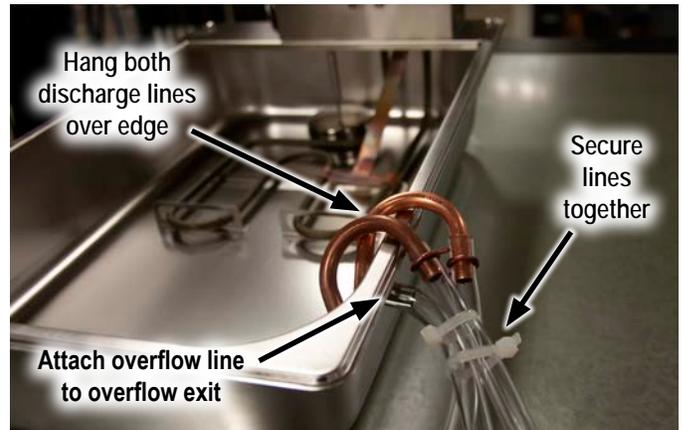
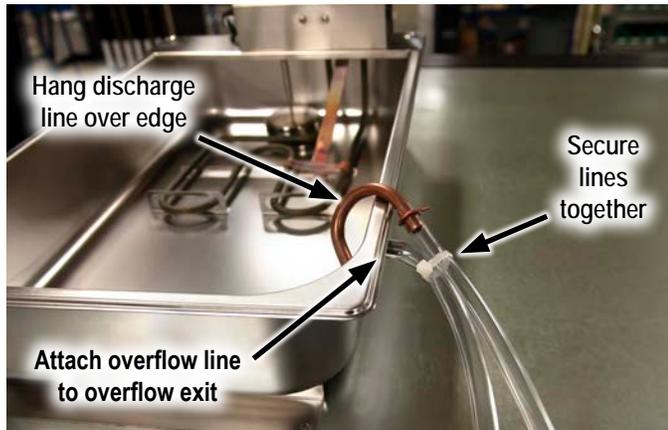


Pan Sharing Shown

PLUMBING

Pump with Bracket Installation Instructions

4. Insert the U-shaped copper pipe into the top of the discharge line and fasten into place with the supplied wire clamp. Hang the U-shaped copper over the edge of the evaporation pan. For pan sharing, set up the second discharge line the same way.
5. Attach the overflow line to the overflow exit on the evaporation pan. Use cable ties to secure the lines together.

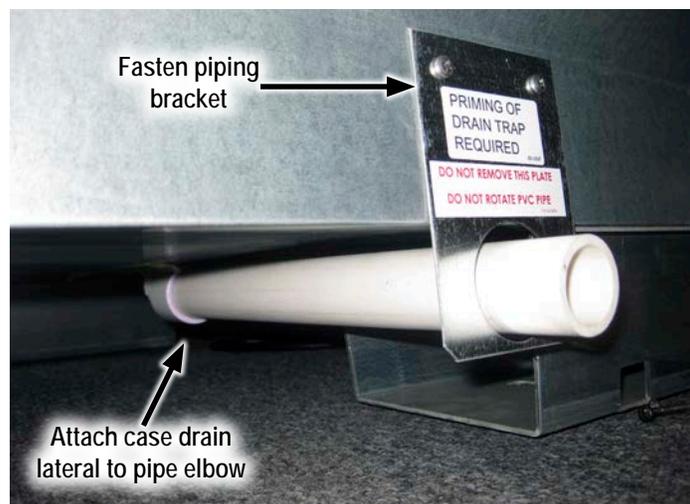


Pan Sharing Shown

6. For Hybrid™ display cases, plug the evaporation pan into the outlet receptacle on the back of the upper electrical box. The store must supply power for the evaporation pan if it is on a remote display case or a Reveal Merchandiser® Hybrid™ case. Refer to the spec sheets to determine circuit breaker sizes.

CONDENSATE PUMP: AFTER SETTING AND SHIMMING THE CASE

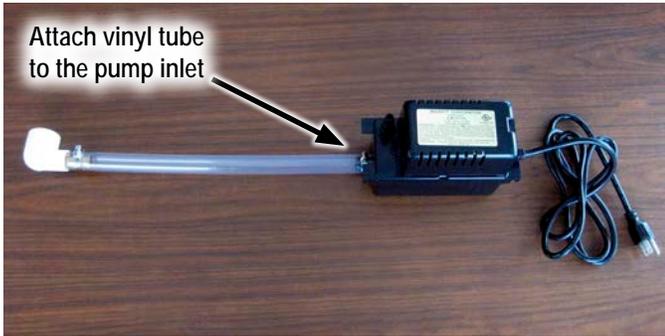
7. Apply PVC primer and PVC adhesive to the case drain lateral and attach it to the pipe elbow under the case.
8. Fasten the piping bracket to the front of the foamed floor and run the case drain lateral through it.



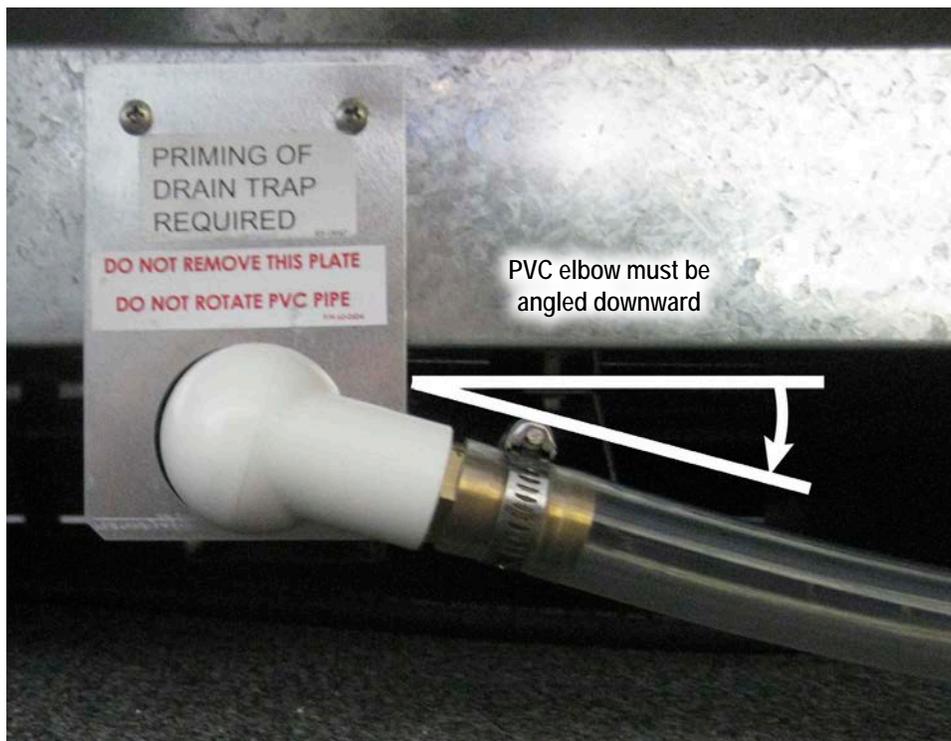
PLUMBING

Pump with Bracket Installation Instructions

- Place the vinyl tube with PVC elbow over the inlet to the condensate pump. Fasten into place using the supplied hose clamp.



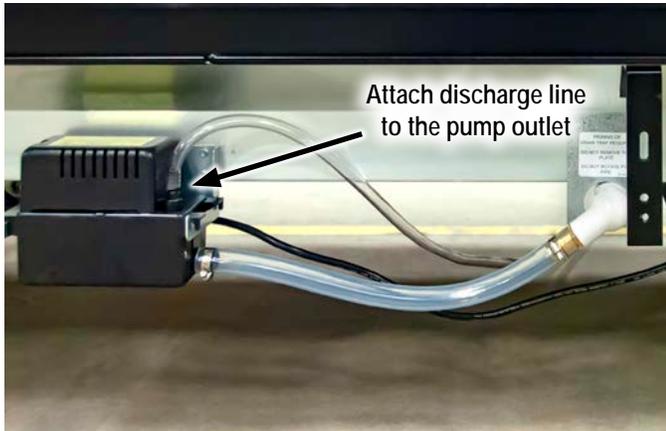
- Use PVC primer and PVC adhesive to glue the PVC elbow to the case drain lateral. Route the vinyl tube in the correct direction and make sure it is angled downward for proper flow.
 - 1 to 3-door cases: Route the vinyl tube to the **left** from the case drain lateral. For 1-door cases, the clear vinyl tubing will need to be cut to fit.
 - 4 to 6-door cases: Route the vinyl tube to the **right** from the case drain lateral.



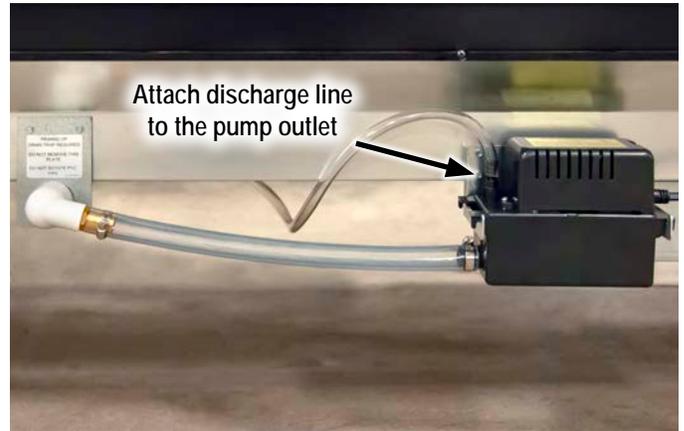
PLUMBING

Pump with Bracket Installation Instructions

11. On a Highlight Merchandiser®, install the pump bracket into the holes in the foamed floor. The condensate pump will hang on the pump bracket with hooks that are molded into the pump. Crystal Merchandiser® and Reveal Merchandiser® do not use a pump bracket. Set the pump on the floor instead.
12. Take the discharge line from under the case and attach it to the pump outlet.



Set the Condensate Pump into the Pump Bracket
(to the left on 1 to 3-door cases)

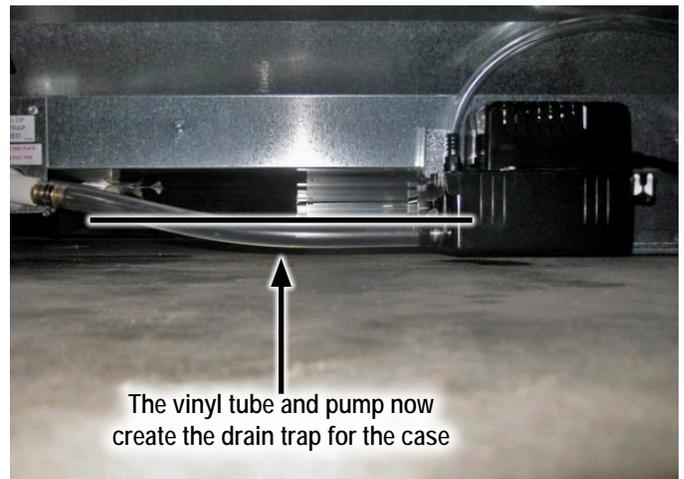


Set the Condensate Pump into the Pump Bracket
(to the right on 4 to 6-door cases)

13. Plug the condensate pump into the provided outlet receptacle.
14. After the case is powered, dump water down the case drain to prime the pump. You will see the water level in the clear vinyl tube. This creates the drain trap for the case.



Highlight Merchandiser® Shown



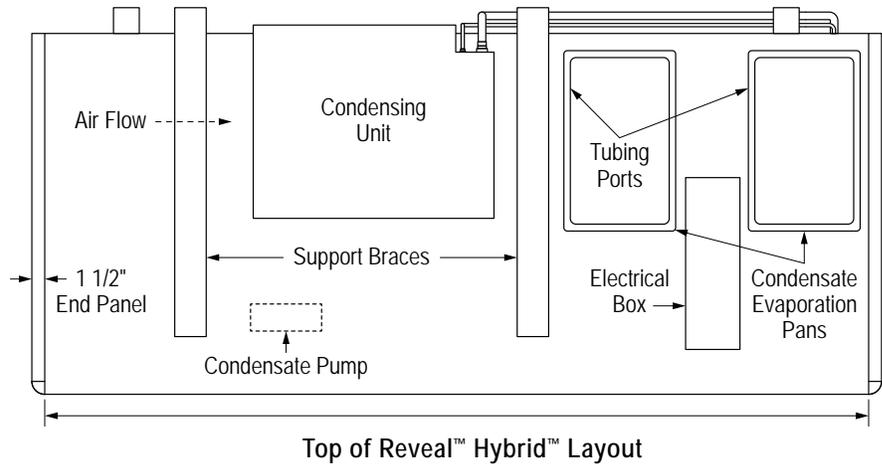
PLUMBING

Dual Evaporation Pan Set Up

2 condensate evaporation pans will be installed in series on top of a Hybrid™ configuration of an 8' or 12' Reveal Merchandiser®. The evaporation pans and tubing should be installed before setting and shimming the case in order to access the back of the case.

Parts Required:

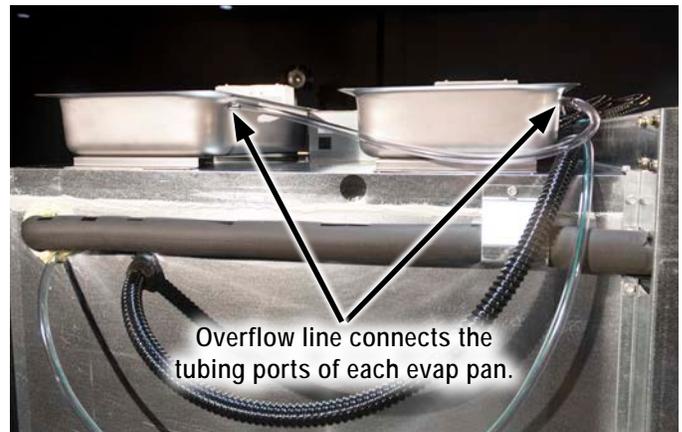
- Condensate evaporation pans
- Screws & P-Clips
- U-Shaped Copper Pipe
- Vinyl Tubing
- Wire Clamp



1. Set the condensate evaporation pans on top of the case in the orientation shown.
2. Locate the vinyl tubing shipped inside the display case. There will be a primary tube (16' long) and an overflow line (6' long). The primary tube is connected between the condensate pump and the primary evaporation pan. The overflow line is connected between the evaporation pans.
3. Attach the primary tube to the back of the case using the supplied P-clips and screws. Route enough tubing under the case to connect to the condensate pump, which will be mounted to the front of the case.
4. Insert the U-shaped copper pipe into the top of the discharge line and fasten together with the wire clamp. Hang the U-shaped copper pipe over the edge of one of the evaporation pans. This will be the "primary" evaporation pan. Either evaporation pan can act as the primary evaporation pan.
5. Attach the overflow line from the tubing port (also called an "overflow exit") of the primary pan to the tubing port of the secondary pan.
Note: The entire length of the overflow line must stay below the top of the evaporation pans, and the tubing must not be kinked or pinched as this will prevent water flow.
6. Plug the evaporation pans into a power source provided by the store.



Dual Evaporation Pan Orientation
(From Front of Case)



Overflow Line
(From Back of Case)

PLUMBING

Power the Condensate Evaporation Pan



Highlight Merchandiser® Electrical Box Shown

For Highlight Merchandiser® and Crystal Merchandiser®, plug the condensate evaporation pan into the case electrical box.

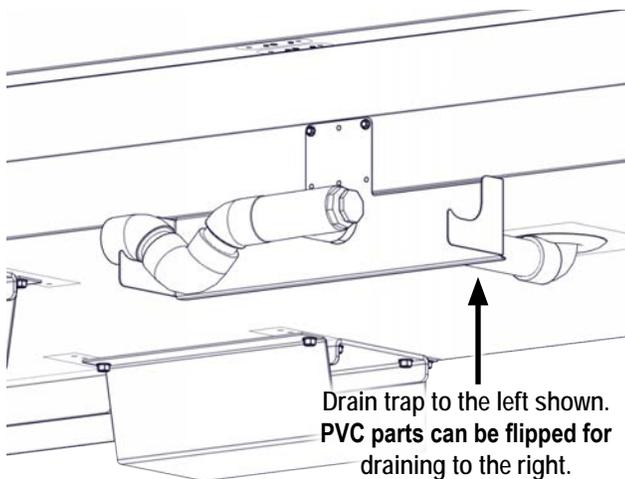
For Reveal Merchandiser®, condensate evaporation pans must be powered separately by the store.

- 4' and 6' cases use 1 evaporation pan (12.5 Amps, 1,500 Watts, 115V/1/60Hz electrical supply).
- 8' and 12' cases use 2 evaporation pans (25.0 Amps, 3,000 Watts, 115V/1/60Hz electrical supply).

PLUMBING

Case Drain Line to Floor Drain

(If Applicable)



Highlight Merchandiser® Shown



Reveal Merchandiser® Shown

DRAIN LINE

The case drain is located at the center of the case in the floor pan. The PVC drain outlet is located at the center front of the case behind the kickplate. To clean the drain, the kickplate must be removed for access. Crystal Merchandiser® and Highlight Merchandiser® use a 1" drain, and Reveal Merchandiser® uses a 1 1/2" drain.

1. Install the drain lateral to the drain outlet.
2. Install the drain tee to the lateral.
3. Install the drain trap to the tee. Plug the open end of the tee using the clean-out plug supplied with the drain trap kit.
 - Highlight Merchandiser® uses a one-piece support bracket that holds the drain lateral and drain trap. It comes factory installed.
 - Crystal Merchandiser® and Reveal Merchandiser® come with a factory-installed drain lateral support. The trap support bracket is shipped loose and must be field-mounted to the case.
 - On cases with short bases (less than 2" tall), all drain support brackets must be field installed.
4. Prime the drain trap with water after installation.
5. Make sure the drain line is pitched away from the case to the store floor drain. Consult local codes for minimum requirements.

Note: Typically, Hybrid™ cases are equipped with a condensate removal system which includes a condensate pump, condensate evaporation pan with heater element, and connecting tubing (See "Pump with Bracket Installation Instructions" on page 21).

PLUMBING

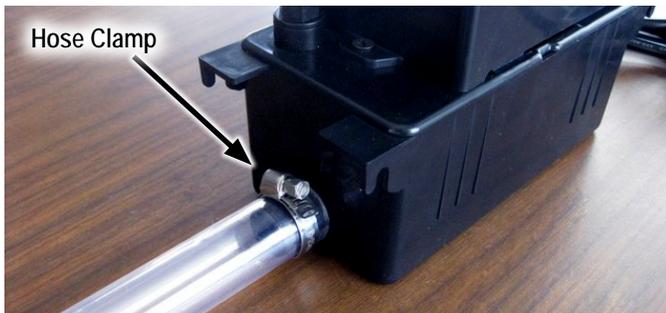
Booster Pump Installation

Instructions for installing a booster condensate pump system for a Reveal Merchandiser® display case as a Hybrid Merchandiser™. **This system moves condensate from the display case to an overhead drain instead of a floor drain or evaporation pan.**

Parts Required:

- Booster Condensate Pump
- Hose clamp
- Main condensate pump
- PVC drain lateral
- PVC elbow
- Screws & P-Clips
- U-shaped copper pipe
- Vinyl Tubing

1. Apply PVC primer and PVC adhesive to the drain lateral and elbow and attach them to the drain elbow under the case.
2. Place the 1' length of vinyl tube over the inlet to the main condensate pump. Fasten into place using the hose clamp.
3. Connect the vinyl tube to the PVC pipe and set the main condensate pump on the floor. The tubing must form a drain trap.

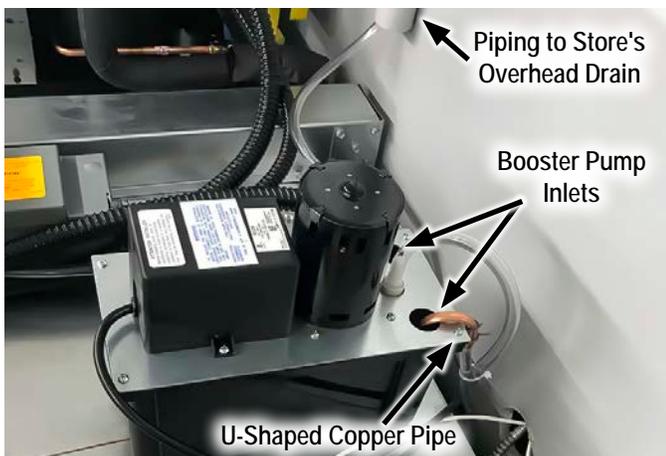


Add Vinyl Tubing to Pump Inlet

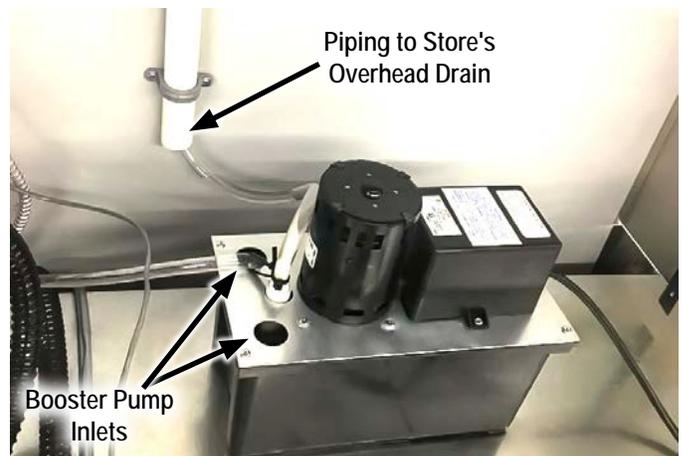


Main Condensate Pump Assembly

4. Find the 16' length of vinyl tubing shipped separately with the main condensate pump kit. Route the vinyl tubing from the top of the case, down the back, under the case, and attach it to the main pump outlet.
5. Attach the U-shaped copper pipe to the top end of the 16' length of vinyl tubing, and hang this tubing into one of the inlets of the booster condensate pump. Alternatively, the vinyl tube can be inserted without the U-shaped copper pipe, but make sure that the tubing dips far enough in to be submerged when condensate collects inside the booster pump's internal tank.
6. Attach the 45' length of vinyl tubing to the outlet of the booster pump. Route the tubing to the overhead drain in the store.



Booster Condensate Pump (U-Shaped Copper Pipe)



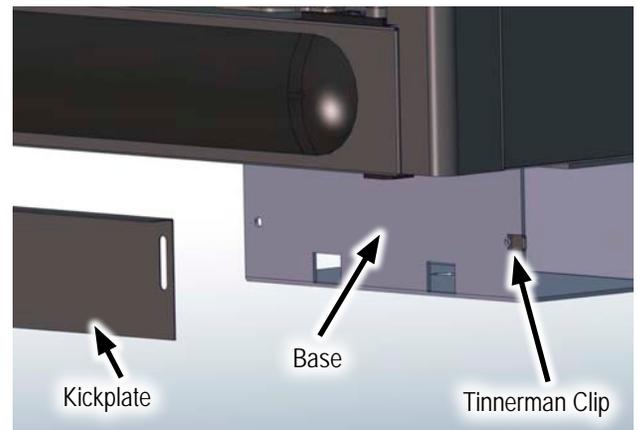
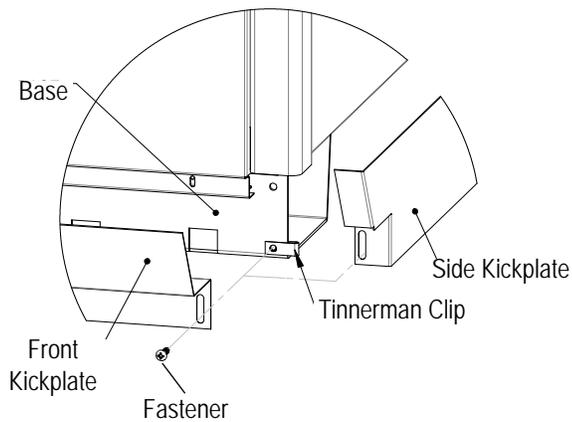
Booster Condensate Pump (Alternative)

CASE TRIM

Bumper & Kickplate



For Highlight Merchandiser® (pictured above), install Tinnerman clip (shipped loose) to each bumper support over the round hole.



For Reveal Merchandiser® (illustrated above left) and Crystal Merchandiser® (illustrated above right), install Tinnerman clip (shipped loose) onto the base.

For case-to-case connection, align both bumpers and splice plate before fastening.

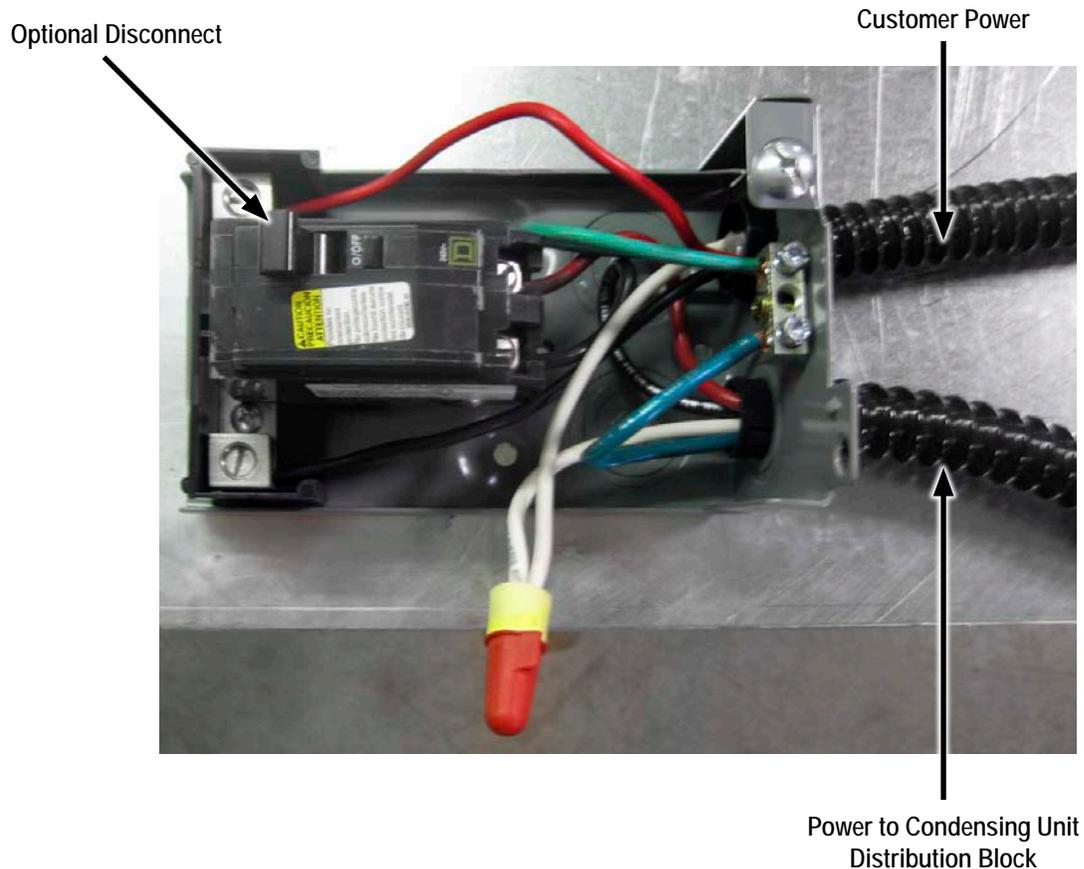
OPERATION

Case Power & Start-Up

- Power on the case by turning on the store circuit breaker
 - Alternate: Power on case by turning on the optional case disconnect (see below).
- There will be a slight delay before the compressor starts.
- Set the time clock on the controller to the current time of day.
 - See "Carel IR33+ Real Time Clock Instructions" on page 38.
 - See "Carel iJF Real Time Clock Instructions" on page 48.
- The case fans may cycle for as long as 30 minutes (unless the case goes into defrost).
- The condensing unit will run continuously for as long as 12 hours or until the case reaches temperature or goes into defrost.

Optional Disconnect Installation

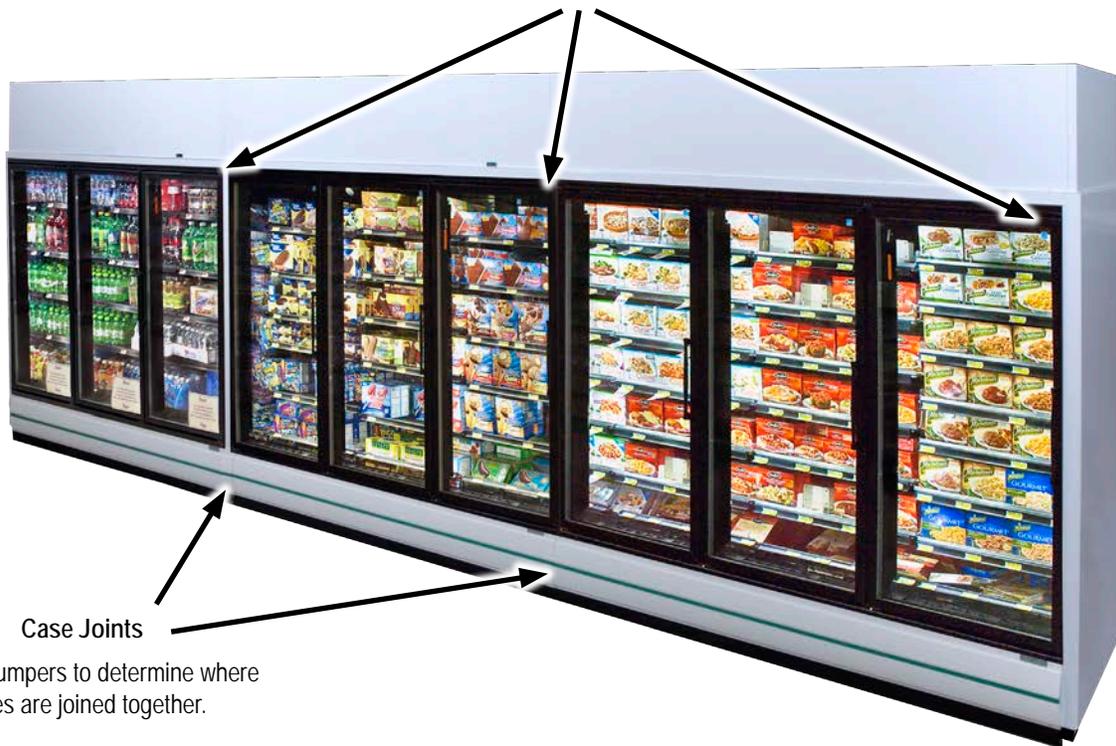
Optional disconnect is shipped loose (inside case) and wired to condensing unit distribution block on site by installer.



OPERATION

Turning the Lights On & Off

The on/off switch for the LED lights are located in the right-hand door of each case.

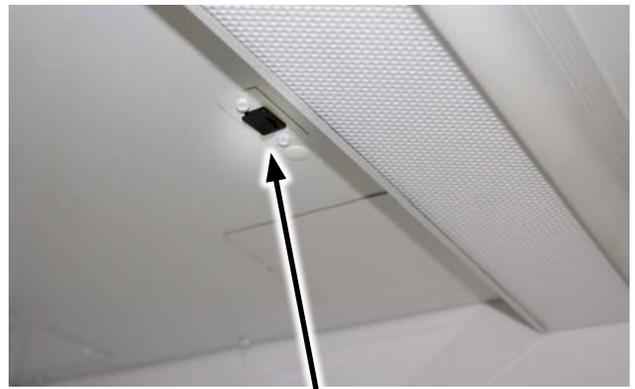


Case Joints

Look at bumpers to determine where cases are joined together.



The light switch is located on the front right of the false ceiling in the right-hand door on Highlight™ cases and Crystal™ freezers.



The light switch is located on the ceiling in the right center on Reveal Merchandiser®.

MODEL NUMBER	LOCATION OF SWITCH
RHMC	On ceiling of right-hand door in case
RHLC	On ceiling of right-hand door in case
RVLC	On ceiling of right-hand door in case
RVMC	On right side of coil cover on ceiling of case
ORMC	On ceiling at right center in case

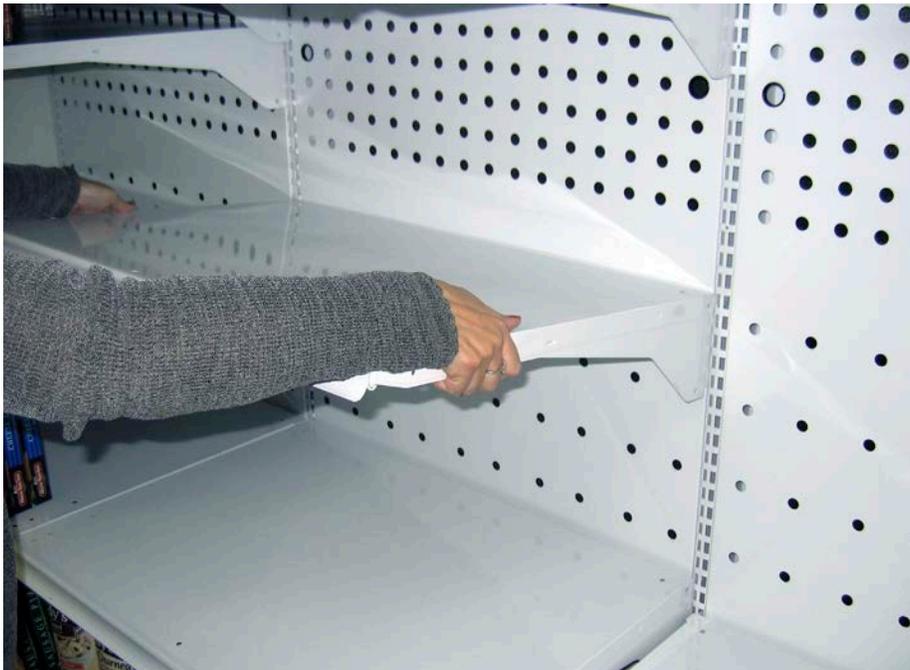
Note: To control lighting in a solid door case, use the toggle switch located in the right-hand door under the light bulb.

OPERATION

Solid Shelf Installation & Removal



INSTALLATION: Determine desired shelving location. Lift the front of the shelf at a slight angle, keeping the shelf level left to right. Insert the shelf tabs into the slots in the shelf standards. Lower the front of the shelf while moving the shelf tabs into the standards and until the shelf is held securely by the standards.



REMOVAL: Tilt the front of the shelf up while lifting the entire shelf and pulling out until the shelf tabs clear the shelf standards.

OPERATION

Wire Shelf Installation & Removal



INSTALLATION: Determine desired bracket and shelving location. With the first bracket, lift the front of it up at a slight angle. Insert the shelf bracket tabs into the slots in the shelf standard. Lower the front of the shelf bracket while moving the tabs into the standards and until the shelf bracket is held securely by the standard.

Repeat the process for the opposite shelf bracket. Make sure the shelf brackets are level left to right.

Place the back of the shelf onto the back of the shelf brackets. Swing the front of the shelf down until securely held by both shelf brackets.



REMOVAL: Lift the front of the shelf, then lift the back of the shelf. Tilt the front of the shelf bracket up and pull the shelf bracket tabs clear of the shelf standard. Repeat the process for the opposite shelf bracket.

OPERATION

Door Hold-Open Bracket



Highlight™ Freezer Shown

1. To lock a door in the open position for stocking, open the door until you feel the hold-open bracket fully engage.
2. When you let go of the door, it will remain open.
3. To disengage the hold-open bracket, simply close the door.

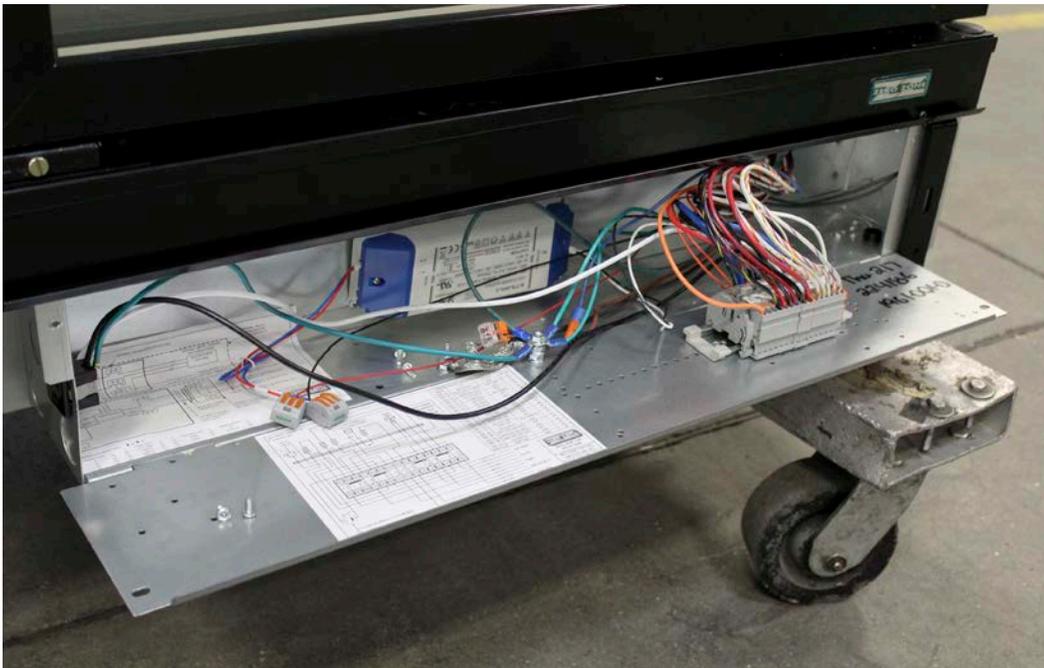
MODEL NUMBER	LOCATION OF HOLD-OPEN BRACKET
RHMC	At the top of the door
RHLC	At the top of the door
RVMC	At the bottom of the door
RVLC	At the bottom of the door
ORMCD	At the bottom of the door

OPERATION

Electrical Enclosure Wire Colors

Note: Reveal Merchandiser® and Highlight Merchandiser® use a bottom electrical enclosure. Crystal Merchandiser® uses a top electrical enclosure.

- Anti-Sweat Heat (Highlight Merchandisers® and Crystal Merchandisers® only):
 - Black Wires: Sill
 - Red with White Wires: Mullion
 - Red Wires: Doors
- Lighting:
 - Orange Wires
- Defrost Heaters - Freezers Only (2):
 - Brown Wire: In Series with 80°F High Limit
 - Black Wire: Defrost Heater
- Fans:
 - Blue Wire



Highlight Merchandiser® Shown.
No connections required. No access to electrical box needed at installation.

MAINTENANCE

Cleaning

Although each Zero Zone display case is thoroughly cleaned before shipping, the cases should be thoroughly cleaned again before start-up and routinely thereafter to maintain a clean appearance. With just a few minutes of cleaning each week, the case will remain in top condition.

1. Do not use high-pressure water or steam to clean the interior or any components.
2. Do not wash fan motors. A damp cloth can be used to wipe the fan motors. Cover the fan motors with a plastic bag when washing the case.
3. Wipe out the case interior using a mild detergent and warm water (never an abrasive cleaner).
4. Clean all glass doors, windowed ends, and mirrors using glass cleaner. Cleaning interior glass reduces fogging and increases visibility. Do not use any cleaning products containing silicon or anti-fog.
5. For Crystal™ freezers, Highlight™ cases, or Reveal™ cases: Internal components can be cleaned after removing coil covers, access panels, and sheet metal components. Use a mild detergent and warm water or a mild sanitizer.
6. For Crystal™ coolers only: The drain pan can be flushed after removing bottom wire racks. The coil can be cleaned after removing the false ceilings, fans, and fan plenums.
7. If the case is equipped with a condensate pan and pump, the drain should be blocked before washing coils. Water can be removed with a shop vacuum.
8. Coils may be cleaned with a garden hose or pails of water. If the case is equipped with a condensate pan and pump, cases should be cleaned with a minimal amount of water so the evaporator, pump, and drain pans do not get overfilled.
9. The case drain should frequently be cleaned of debris to prevent clogging. If water is rising, check if the drain is clogged.

Under Case Floor Cleaning (NSF)

The floor under your Zero Zone display case can be cleaned by following these steps:

1. Remove the fasteners attaching the kickplate to the case. The fasteners are accessed from the front of the unit.
2. With the kickplates removed, remove debris from the floor.
3. Vacuum under the case to remove any dirt, debris, and dust build-up.
4. Mop under the unit using non-abrasive floor cleaner and warm water.
5. When finished mopping, squeegee any remaining water under the unit to the floor drains to speed up the drying process. Replace the kickplates after the floor has dried.

MAINTENANCE

Using the Condensate Removal System

Stores without floor drains use the condensate removal system with a condensate evaporation pan. This is a tray located under the kickplate with a pump that will pump the water to the top of the case and into a condensate evaporation pan. The condensate evaporation pan has a float switch that will power its heater when the water rises. These need regular **monthly** cleaning.

If there is water on the floor at the front of the case, the condensate system will need to be checked.

Cleaning the Condensate Removal System

Both the condensate pump pan and the condensate evaporation pan should be cleaned regularly with soap and water. ***A dirty pump pan and evaporation pan are not covered by warranty service.***

- Avoid flooding inside the case when cleaning. The condensate removal system holds 2 gallons of liquid (except for 1-door cases, which only hold 1 gallon of liquid). Do not use more than this amount of liquid.
- Water dumped down the case drain will flow into the pump pan, which will slowly move the water to the evaporation pan. Block the case drain when you wash out the case (unless you plan to clean the pump pan at the same time).
- The pump or plastic tubing leading to the evaporation pan may become clogged with debris and must be cleaned.

Note: Anything spilled inside the case will end up in the pump pan and go into the evaporation pan where it will be heated and may cause an odor. When liquids are spilled into the pump, the pump pan and evaporation pan should be cleaned immediately.

Preventative Maintenance for Condensing Units & Evaporator Coils

Condensing units and evaporator coils should be maintained by licensed, trained, and authorized personnel only.

Vacuum the condenser coil surface every 3 months.

ANNUAL MAINTENANCE

1. Check and tighten **all** electrical connections.
2. Check all wiring and insulators.
3. Check contactors for proper operation and for worn contact points.
4. Check all fan motors. Tighten motor mount bolts/nuts and tighten fan set screws.
5. Check the refrigerant and oil level in the system.
6. Check the operation of the control system. Ensure all safety controls are operating properly.
7. Check that all defrost controls are functioning properly.
8. Clean the evaporator coil surface.
9. Clean the evaporator drain pan and check the drain pan and the drain line for proper drainage.
10. Check and tighten all flare connections.



CONTROLLER OPERATION

Case Controllers

The case controller is located inside the case electrical box with the controller display visible through a cutout in the box. After the shroud is installed, reposition the electrical box so the controller display is visible through the cutout in the shroud. See "Shroud Installation Instructions" on page 63.



Reposition the electrical box so the controller display is visible through the shroud cutout (right side of shroud). Dixell controller shown.

Carel IR33+ Real Time Clock Instructions

CONTROLLER TIME OF DAY MUST BE SET AT INSTALL

The time of day must be set in the controller during installation. Only the real time clock should be set. All other settings should only be changed by a trained refrigeration contractor after talking to Zero Zone technical support.



1. Press and hold the [PRG] button down for 5 seconds. The display will show a flashing "0". Once "0" is flashing, press [UP] arrow until you see "22". Press [SET] button to enter this access number to get to these parameters.
2. Press the [DOWN] arrow once. Time Clock "tc" will be shown on the display.
3. Press the [SET] button once. The year "yxx" will be shown on the display where "xx" is the last 2 digits of the year.
4. Press the [DOWN] arrow once. This will cycle the control to the minutes setting. "nxx" will be shown on the display where "xx" is a number between 00 and 59.
5. Press the [SET] button. The display will show a number between 00 and 59. Use the [UP] and [DOWN] arrows to change the number to the correct minutes setting. (Example: If it is 7:42 AM, change the number to 42.)
6. Press the [SET] button again to back out of the menu.
7. Press the [DOWN] arrow once. This will cycle the control to the hours setting. "hxx" will be shown on the display where "xx" is a number between 00 and 23.
8. Press the [SET] button. The display will show a number between 00 and 23. Use the [UP] and [DOWN] arrows to change the number to the correct hour setting. **The clock reads in a variation of military time.** (Example: If it is 7:42 AM, change the number to 7 and if it is 7:42 PM, change the number to 19.)
9. Press the [SET] button again to back out of the menu.
10. When finished, you **MUST** press and hold the [PRG] button for 10 seconds for the changes to take effect. The screen will switch to [RTC]; keep holding the [PRG] button until the screen goes back to the case temperature.

CONTROLLER OPERATION

Carel IR33+ Programming



The Carel IR33+ controller has a two-level menu system for programming the operation of the case; Level 1 and Level 2 program settings.

HOW TO CHANGE LEVEL 1 AND 2 CONTROL SETTINGS

1. Press and hold the [PRG] button down until the display shows a flashing "0".
2. Use the [UP] arrow until the display reads "22" (this is the password), then press the [SET] button. The display will read "IA2".
3. Use the [UP] and [DOWN] arrows to move up or down the menu until you reach the parameter you intend to view or change. When the proper code is displayed, press the [SET] button to view the current setting for that parameter. (You will notice the Level 1 program codes are also found in this menu.)
4. Use the [UP] and [DOWN] arrows to change the value. Then press the [SET] button again to return to the menu.
5. The exceptions to Step #4 are the program codes "tc", "td1", and "td2". In these cases, you must press the [SET] button in order to access the submenu of available settings for these parameters. Once changes are made in this submenu, press the [PRG] button to get back to the main menu.
6. When finished making all necessary changes, you MUST press and hold the [PRG] button for 10 seconds to save them. Alternatively, if you decide you do NOT want to save changes you've just made, simply stop pressing buttons for 30 seconds and the control will return to normal operation, discarding any changes made.

Note: Zero Zone should be contacted before attempting to change settings. To be completed by trained personnel only.

CONTROLLER OPERATION

Carel IR33+ Controller Codes - Low Temp

Carel controller codes/factory set points listed in this manual are samples. Always refer to the code label shipped with the case. The code label is attached to the cover of the electrical box on top of the case.

1 AND 2-DOOR LOW TEMP SAMPLE		
Code	Name	Factory Set
/A2	Probe 2 Configuration	2
St	Set Point	-10
rd	Differential	6
c1	Min Comp Time Starts	5
c2	Min Comp OFF	1
c3	Min Comp ON	1
d0	Defrost Type	4
dl	Defrost Interval	24
dt1	Defrost End Temp	40
dP1	Defrost Duration	30
dd	Drip Time	3
dn	Defrost Duration %	100
d/1	Defrost Probe Temp	(actual)
AL	Low Temp Alarm	-20
AH	High Temp Alarm	10
F0	Fan Management	2
F1	Fan Start Temp	30
H0	Serial Address	1
H1	Function of Relay 4	10
td1.d	Defrost Time Day 1	11
td1.h	Defrost Time Hour 1	8
td1.m	Defrost Time Minute 1	0
td2.d	Defrost Time Day 2	0
td2.h	Defrost Time Hour 2	0
td2.m	Defrost Time Minute 2	0
tc.y	RTC Year	-
tc.m	RTC Month	-
tc.d	RTC Day of Month	-
tc.u	RTC Day of Week	-
tc.h	RTC Hour	-
tc.m	RTC Minute	-
Based on 65-1616 Rev B		

3 TO 5-DOOR LOW TEMP SAMPLE		
Code	Name	Factory Set
/A2	Probe 2 Configuration	2
St	Set Point	-10
rd	Differential	6
c1	Min Comp Time Starts	5
c2	Min Comp OFF	1
c3	Min Comp ON	1
d0	Defrost Type	4
dl	Defrost Interval	24
dt1	Defrost End Temp	70
dP1	Defrost Duration	40
dd	Drip Time	1
dn	Defrost Duration %	100
d/1	Defrost Probe Temp	(actual)
AL	Low Temp Alarm	-20
AH	High Temp Alarm	10
F0	Fan Management	2
F1	Fan Start Temp	30
H0	Serial Address	1
H1	Function of Relay 4	10
td1.d	Defrost Time Day 1	11
td1.h	Defrost Time Hour 1	8
td1.m	Defrost Time Minute 1	0
td2.d	Defrost Time Day 2	0
td2.h	Defrost Time Hour 2	0
td2.m	Defrost Time Minute 2	0
tc.y	RTC Year	-
tc.m	RTC Month	-
tc.d	RTC Day of Month	-
tc.u	RTC Day of Week	-
tc.h	RTC Hour	-
tc.m	RTC Minute	-
Based on 65-1615 Rev C		

ICE MERCHANDISER SAMPLE		
Code	Name	Factory Set
/A2	Probe 2 Configuration	2
St	Set Point	7
rd	Differential	4
c1	Min Time Between Starts	5
c2	Min Comp OFF	1
c3	Min Comp ON	1
d0	Defrost Type	4
dl	Defrost Interval	12
dt1	Defrost End Temp	70
dP1	Defrost Duration	40
dd	Drip Time	1
dn	Defrost Duration %	100
d/1	Defrost Probe Temp	(actual)
AL	Low Temp Alarm	-20
AH	High Temp Alarm	25
F0	Fan Management	2
F1	Fan Start Temp	30
H0	Serial Address	1
H1	Function of Relay 4	10
td1.d	Defrost Time Day 1	11
td1.h	Defrost Time Hour 1	8
td1.m	Defrost Time Minute 1	0
td2.d	Defrost Time Day 2	11
td2.h	Defrost Time Hour 2	20
td2.m	Defrost Time Minute 2	0
tc.y	RTC Year	-
tc.m	RTC Month	-
tc.d	RTC Day of Month	-
tc.u	RTC Day of Week	-
tc.h	RTC Hour	-
tc.m	RTC Minute	-
Based on 65-1460 Rev B		

CONTROLLER OPERATION

Carel IR33+ Controller Codes - Medium Temp

Carel controller codes/factory set points listed in this manual are samples. Always refer to the code label shipped with the case. The code label is attached to the cover of the electrical box on top of the case.

MEDIUM TEMP REACH-IN SAMPLE		
Code	Name	Factory Set
/A2	Probe 2 Configuration	0
St	Set Point	34
rd	Differential	4
c1	Min Time Between Starts	5
c2	Min Comp OFF	1
c3	Min Comp ON	1
d0	Defrost Type	2
dl	Defrost Interval	12
dP1	Defrost Duration	30
dd	Drip Time	1
dn	Defrost Duration %	100
AL	Low Temp Alarm	30
AH	High Temp Alarm	50
F0	Fan Management	0
F1	Fan Start Temp	5
H0	Serial Address	1
H1	Function of Relay 4	10
td1.d	Defrost Time Day 1	11
td1.h	Defrost Time Hour 1	8
td1.m	Defrost Time Minute 1	0
td2.d	Defrost Time Day 2	11
td2.h	Defrost Time Hour 2	20
td2.m	Defrost Time Minute 2	0
tc.y	RTC Year	-
tc.m	RTC Month	-
tc.d	RTC Day of Month	-
tc.u	RTC Day of Week	-
tc.h	RTC Hour	-
tc.m	RTC Minute	-

Based on 65-1444 Rev B

MED TEMP OPEN CASE R-404A SAMPLE		
Code	Name	Factory Set
/A2	Probe 2 Configuration	0
St	Set Point	34
rd	Differential	4
c1	Min Time Between Starts	5
c2	Min Comp OFF	1
c3	Min Comp ON	1
d0	Defrost Type	2
dl	Defrost Interval	6
dP1	Defrost Duration	30
dd	Drip Time	1
dn	Defrost Duration %	100
AL	Low Temp Alarm	30
AH	High Temp Alarm	50
F0	Fan Management	0
F1	Fan Start Temp	5
H0	Serial Address	1
H1	Function of Relay 4	10
td1.d	Defrost Time Day 1	11
td1.h	Defrost Time Hour 1	4
td1.m	Defrost Time Minute 1	0
td2.d	Defrost Time Day 2	11
td2.h	Defrost Time Hour 2	10
td2.m	Defrost Time Minute 2	0
td3.d	Defrost Time Day 3	11
td3.h	Defrost Time Hour 3	16
td3.m	Defrost Time Minute 3	0
td4.d	Defrost Time Day 4	11
td4.h	Defrost Time Hour 4	22
td4.m	Defrost Time Minute 4	0
tc.y	RTC Year	-
tc.m	RTC Month	-
tc.d	RTC Day of Month	-
tc.u	RTC Day of Week	-
tc.h	RTC Hour	-
tc.m	RTC Minute	-

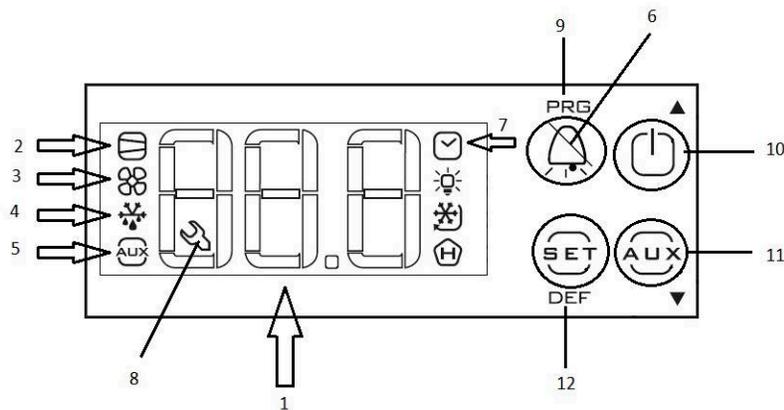
Based on 65-1802 Rev A

MED TEMP OPEN CASE R-448A SAMPLE		
Code	Name	Factory Set
/A2	Probe 2 Configuration	0
St	Set Point	34
rd	Differential	4
c1	Min Time Between Starts	5
c2	Min Comp OFF	1
c3	Min Comp ON	1
d0	Defrost Type	2
dl	Defrost Interval	4
dP1	Defrost Duration	30
dd	Drip Time	1
dn	Defrost Duration %	100
AL	Low Temp Alarm	30
AH	High Temp Alarm	50
F0	Fan Management	0
F1	Fan Start Temp	5
H0	Serial Address	1
H1	Function of Relay 4	10
td1.d	Defrost Time Day 1	11
td1.h	Defrost Time Hour 1	0
td1.m	Defrost Time Minute 1	0
td2.d	Defrost Time Day 2	11
td2.h	Defrost Time Hour 2	4
td2.m	Defrost Time Minute 2	0
td3.d	Defrost Time Day 3	11
td3.h	Defrost Time Hour 3	8
td3.m	Defrost Time Minute 3	0
td4.d	Defrost Time Day 4	11
td4.h	Defrost Time Hour 4	12
td4.m	Defrost Time Minute 4	0
td5.d	Defrost Time Day 5	11
td5.h	Defrost Time Hour 5	16
td5.m	Defrost Time Minute 5	0
td6.d	Defrost Time Day 6	11
td6.h	Defrost Time Hour 6	20
td6.m	Defrost Time Minute 6	0
tc.y	RTC Year	-
tc.m	RTC Month	-
tc.d	RTC Day of Month	-
tc.u	RTC Day of Week	-
tc.h	RTC Hour	-
tc.m	RTC Minute	-

Based on 65-1969 Rev A

CONTROLLER OPERATION

Basic Carel IR33+ Operations



Carel IR33+ Display Legend

KEYPAD LOCATIONS

1. **Temperature Display:** The temperature of the case is displayed here. When the case is in defrost mode, this display will read "DEF".
2. **Compressor:** When lit, this icon indicates the compressor is running. It flashes when activation is delayed or inhibited by protection times.
3. **Fan:** When lit, this icon indicates the fans are running. It flashes when activation is delayed by protection times or other procedures in progress.
4. **Defrost:** When lit, this icon indicates the defrost heater is activated. It flashes when activation is delayed by protection times or other procedures in progress.
5. **AUX output:** When lit, this icon indicates AUX output 1 or 2 is active. It flashes when anti-sweat heater function is active.
6. **Alarm:** When flashing, there is an alarm during normal operation (e.g. high/low temperature alarm) and/or a malfunction.
7. **Clock:** When lit, this icon indicates Real Time Clock ("RTC") has been set and is available. When flashing, there is a clock alarm and Error Time Clock ("Etc") will be displayed. This means that the "RTC" has failed.
8. **Service:** When flashing, a malfunction has occurred (e.g. Electrically Erasable Programmable Read-Only Memory (EEPROM) errors or faulty probes).

BUTTONS:

9. **PRG/MUTE:** Accesses the type "F" parameters (frequent) or the menu for setting the password to access the type "C" parameters (configuration) if pressed for more than three seconds. If there is an active alarm, it mutes the audible alarm. If this button is pressed and held for more than five seconds at start-up, it will activate the procedure for setting the default factory parameters. **Contact Zero Zone before performing this procedure; it can erase your IR33+ program settings.**
Note: **PRG+ON-OFF/UP** resets any alarm with manual reset if pressed together for more than three seconds.
10. **ON-OFF/UP:** Switches the controller ON if pressed for more than one second. If pressed for more than three seconds, it switches the controller OFF. When setting the parameters, it increases the value displayed or scrolls to the next parameter.
11. **AUX/DOWN:** Activates/deactivates the auxiliary output if pressed for more than one second. When setting the parameters, it decreases the value displayed or scrolls to the previous parameter.
12. **SET/DEF:** Displays and/or lets the user set the set point if pressed for more than one second. Also used to enter settings of parameters.
CAUTION: If pressed for more than five seconds, it starts a manual defrost.

CONTROLLER OPERATION

Carel IR33+ Verify and/or Change Parameters

SET PASSWORD IN ORDER TO CHANGE PARAMETERS



1. Press and hold [PRG] button until you see "0" flashing.
2. Once "0" is flashing, press [UP] arrow key until you see "22".
3. Press [SET] key to enter the password access parameters.

BELOW ARE EXAMPLES OF PARAMETERS TO CHECK ON THE CAREL IR33+

- Any parameter can be changed in a similar manner as long as it is listed on your program set points list attached to your case or in the Low and Medium Temp Codes section of this manual.
1. **A1 - Verify A1 Parameter is set to "1". If not, [SET] A1 to "1".**
 - a. Press [UP] arrow key to move to A1 parameter.
 - b. Press [SET].
 - c. Press [UP] arrow key to set parameter to "1" if not already "1".
 - d. Press [SET].
 2. **AL - Verify Low Temp Alarm. Set AL according to your case programming.**
 - a. Press [UP] arrow key to move to AL parameter.
 - b. Press [SET].
 - c. Press [DOWN] arrow key to set parameter to your case setting according to program installed. See decal on case and the Low and Medium Temp Codes section of this manual.
 - d. Press [SET].
 3. **AH - Verify High Temp Alarm according to your case setting.**
 - a. Press [UP] arrow key to move to AH parameter.
 - b. Press [SET].
 - c. Press [DOWN] arrow key to set parameter to your case setting according to program installed. See decal on case and the Low and Medium Temp Codes section of this manual.
 - d. Press [SET].

CONTROLLER OPERATION

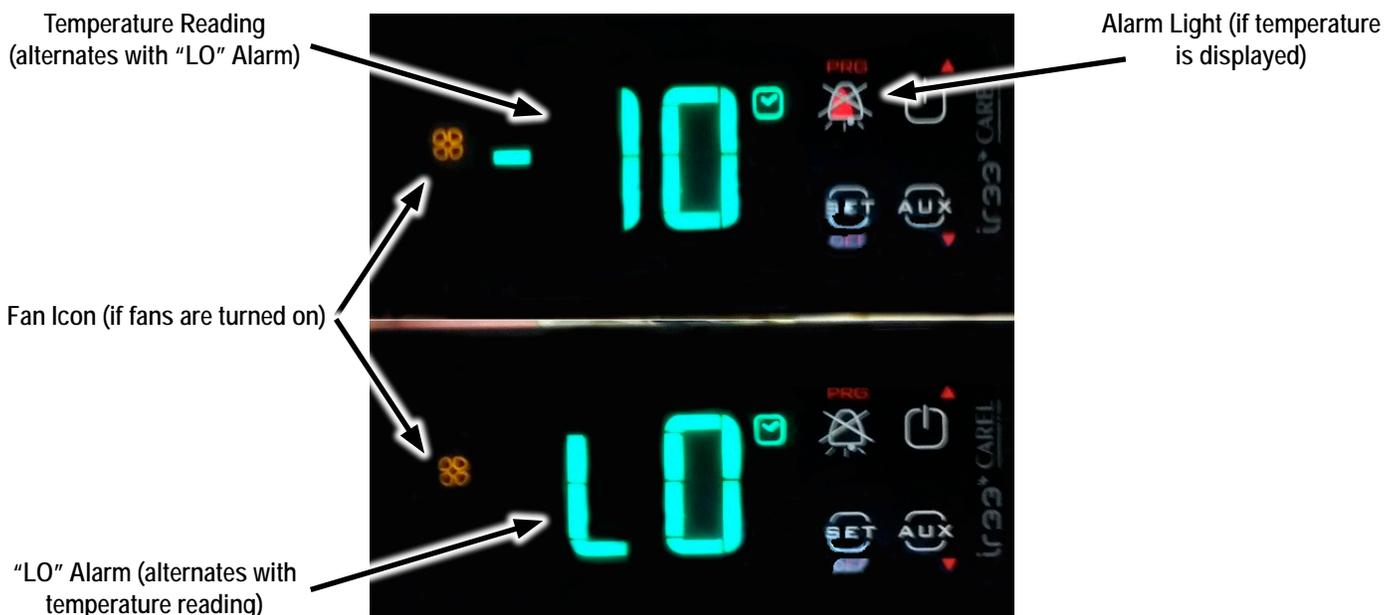
Carel IR33+ Verify and/or Change Parameters

4. **H1 - Verify parameter H1 set to "10".**
 - a. Press [UP] arrow key to move to "H1" parameter.
 - b. Press [SET].
 - c. Press [UP] arrow key to set parameter to "10" if not already "10".
 - d. Press [SET].
5. **St - Verify Set Point according to your case set point.**
 - a. Press [UP] arrow key to move to "St" parameter.
 - b. Press [SET].
 - c. Press [UP] arrow key to set parameter to your case setting according to program installed. See decal on case and the Low and Medium Temp Codes section of this manual.
 - d. Press [SET].
6. Verify parameters according to list attached to your case or per the Low and Medium Temp Codes section of this manual.
7. **CONFIRM PARAMETER SETTINGS - IMPORTANT! YOU MUST PERFORM THIS STEP LAST!**
 - a. After you have set all parameters, confirm by pressing and holding [PRG] key until the Carel returns to temperature reading. Your settings are saved once this is done.

IMPORTANT NOTE: If you stop operating the Carel and do not perform step 7, the Carel will return to normal operations and will NOT save your settings. Make sure you keep the Carel programming state active if you have changed settings. If you do not, you will lose all of your settings and must start over.

LOW ALARM ON THE CAREL IR33+

The Carel screen will alternate between temperature reading and "LO" alarm. The following will be displayed on the Carel screen:

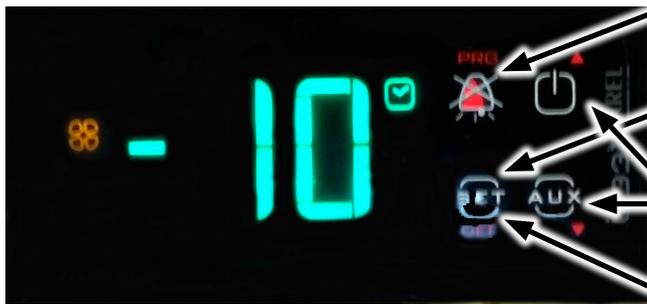


CONTROLLER OPERATION

Carel IR33+ Verify and/or Change Parameters

SETTING PARAMETERS ON THE CAREL IR33+

To set parameters, enter the password and then perform the following steps. Repeat these steps until all parameters have been changed.



1. Press [UP] arrow key until parameter you want to see is displayed.

2. Press [SET] to enter parameter setting

3. Press [UP] or [DOWN] arrows to set parameter to desired setting.

4. Press [SET] again to exit parameter setting.

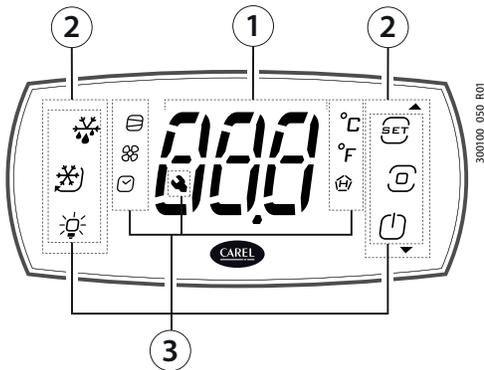
Do not forget to confirm parameters after setting them. See step 7 from the previous page on how to confirm settings.

CONTROLLER OPERATION

Carel iJF Instructions

BUTTON LEGEND

The Carel iJF controller uses a touch screen for navigation and configuration. For additional information about using this controller, refer to the Carel iJF User Manual.



Key:

1	Display
2	Icons/buttons
3	Icons

Keypad

Icon/button	Description	On	Flashing
	Set point/Up arrow	<ul style="list-style-type: none"> Increase value Scroll menu Direct access to change set point 	-
	Program	Pressed briefly: <ul style="list-style-type: none"> enter menu branch save value and return to the parameter Pressed and held (3 s): <ul style="list-style-type: none"> enter programming mode return to the previous level code 	-
	On-Off/ Down arrow	<ul style="list-style-type: none"> Unit ON Decrease value Scroll menu Switch unit on/off 	-
	Defrost	Active/stop	Awaiting/start
	Continuous cycle	Active/stop	Awaiting/start
	Lights	Active/stop	Activation
	HACCP	<ul style="list-style-type: none"> HACCP alarms present Direct access to HACCP menu 	-
	Alarm log	<ul style="list-style-type: none"> Logged alarms present Direct access to the alarm log menu 	-
	Auxiliary output	Active	-
	Compressor	Active	Awaiting
	Evaporator fan	Active	-
	Clock	Scheduler active	-
	°C	Unit of measure °C	-
	°F	Unit of measure °F	-
	Service Maintenance	Active alarms	-

CONTROLLER OPERATION

Carel iJF Instructions

NEAR FIELD COMMUNICATION (NFC)

As an alternative, the controller can be navigated and configured using near field communication (NFC) via the “Applica” app from Carel. Download the Carel Applica app from your preferred app store, and then activate the NFC access. Press/set your mobile device against the controller to connect to it. Slide your phone around to find your phone’s NFC reader.



APPLICA

Local and remote
technical app
for **Service**



Carel iJF Menus

The top row (in gray) represents the **menus**. The rest of the rows (in white) represent the **parameters**. A column under a gray menu are the corresponding parameters.

The user can cycle between the menus by using the [UP] and [DOWN] arrows. After selecting a menu using the [PRG] button, the user can cycle between the parameters. Only the real time clock (“Rtc”) needs to be set at installation; all other parameters are preset by the manufacturer. To learn about other parameters, contact Zero Zone technical support.

<i>dir</i>	<i>CtL</i>	<i>Pro</i>	<i>dEF</i>	<i>HcP</i>	<i>CnF</i>	<i>ALM</i>	<i>IO*</i>	<i>CMP*</i>	<i>Fan*</i>	<i>Rtc*</i>	<i>Lht*</i>	<i>dSh*</i>	<i>PSD</i>	<i>ESC</i>
<i>Fr</i>	<i>St</i>	<i>/5</i>	<i>dI</i>	<i>HAn</i>	<i>Hb</i>	<i>AH/AHA</i>	<i>/Fa</i>	<i>C1</i>	<i>F0</i>	<i>Day</i>	<i>H8</i>	<i>Td1</i>		
<i>Eco</i>	<i>rd</i>	<i>/6</i>	<i>dP1</i>	<i>HFn</i>	<i>H0</i>	<i>AL/ALA</i>	<i>/Fb</i>	<i>C2</i>	<i>F1</i>	<i>Mon</i>	<i>S1d</i>	<i>Th1</i>		
<i>SrG</i>	<i>Sth</i>	<i>/t1</i>	<i>dt1</i>	<i>rHP</i>	<i>H10</i>	<i>Ad</i>	<i>/FF</i>	<i>C3</i>	<i>F2</i>	<i>Yr</i>	<i>S1h</i>	<i>Td2</i>		
<i>Sm</i>	<i>rdh</i>	<i>ESC</i>	<i>dP2</i>	<i>ESC</i>	<i>H11</i>	<i>Add</i>	<i>DOH</i>	<i>ESC</i>	<i>F3</i>	<i>Hr</i>	<i>E1d</i>	<i>Th2</i>		
<i>Sd2</i>	<i>HU</i>		<i>dt2</i>		<i>ESC</i>	<i>rSA</i>	<i>DOE</i>		<i>ESC</i>	<i>Min</i>	<i>E1h</i>	<i>Td3</i>		
<i>Sd</i>	<i>rM</i>		<i>d6</i>			<i>rAL</i>	<i>DId</i>			<i>DOU</i>	<i>S2d</i>	<i>Th3</i>		
<i>rH</i>	<i>rt</i>		<i>d8</i>			<i>ESC</i>	<i>ESC</i>			<i>ESC</i>	<i>S2h</i>	<i>Td4</i>		
<i>rL</i>	<i>IS</i>		<i>d0</i>								<i>E2d</i>	<i>Th4</i>		
<i>rtL</i>	<i>rSc</i>		<i>dd</i>								<i>E2h</i>	<i>Td5</i>		
<i>Sah</i>	<i>ESC</i>		<i>ESC</i>								<i>S3d</i>	<i>Th5</i>		
<i>ESC</i>											<i>S3h</i>	<i>Td6</i>		
											<i>E3d</i>	<i>Th6</i>		
											<i>E3h</i>	<i>ESC</i>		
											<i>ESC</i>			

CONTROLLER OPERATION

Carel iJF Real Time Clock Instructions

The time of day must be set in the controller during installation. Only the real time clock ("Rtc") should be set. All other settings should only be changed by a trained refrigeration contractor after talking to Zero Zone technical support.

SETTING THE REAL TIME CLOCK VIA TOUCH SCREEN/MANUAL INPUT

1. By default, the touch screen will display the temperature of the display case. The screenshot below reflects room temperature, not operational case temperature (See #1). **Note:** The touch screen will return to the default temperature display if it is not touched for 20 seconds. You will need to restart navigation if that happens.



2. Touch and hold the [PRG] button down until the display shows three dashes " - - - " that stay steady (See #2).
3. When the three dashes are displayed, release [PRG] and immediately re-touch [PRG] so "dir" shows (See #3).
4. Navigate using the [UP] and [DOWN] arrows to "PSd" and then touch the [PRG] button (See #4).
5. Enter the controller's password "22" using the [UP] and [DOWN] arrows (See #5). Touch [PRG] button, and the display will return so "dir" shows (See #3).



CONTROLLER OPERATION

Carel iJF Real Time Clock Instructions



6. Navigate using the [UP] and [DOWN] arrows to select "Rtc" for the real time clock (See #6). Touch the [PRG] button.
7. Set the date in each parameter under "Rtc".
 - a. Read the example for "Day" and then repeat that process for each parameter.
 - b. **Example:** Touch the [PRG] button so "Day" will be displayed. Touch the [PRG] button, and a number between "1" and "31" will be displayed. Use the [UP] and [DOWN] arrows to navigate to today's date. Touch the [PRG] button when the correct value is displayed, then the display will return so "Day" shows. Use the [UP] and [DOWN] arrows to navigate to the next parameter.
 - c. "Day" for day (See #7)
 - d. "Non" for month (See #8)
 - e. "Yr" for year (See #9) (Two digits indicate the year, so "23" would indicate "2023")
 - f. "Hr" for hour (See #10) (Set on a 24-hour clock, so "13" would indicate "1:00 PM")
 - g. "Nin" for minute (See #11)
 - h. "DOU" for day of the week (See #12) (Starts at Sunday = "0" through Saturday = "6". "DOU" should set automatically; double check the setting and proceed to next step.)



8. Leave the menu by navigating to "ESC" (See #13) . Touch [PRG] so "Rtc" will display.
9. Do not touch the screen for 20 seconds. The touch screen will automatically return to the temperature display (See #1).
10. The real time clock is now set.



CONTROLLER OPERATION

Carel iJF Real Time Clock Instructions

NEAR FIELD COMMUNICATION (NFC)

As an alternative, the controller can be navigated and configured using near field communication (NFC) via the "Applica" app from Carel. Download the Carel Applica app from your preferred app store, and then activate the NFC access. Press/set your mobile device against the controller to connect to it. Slide your phone around to find your phone's NFC reader.



APPLICA

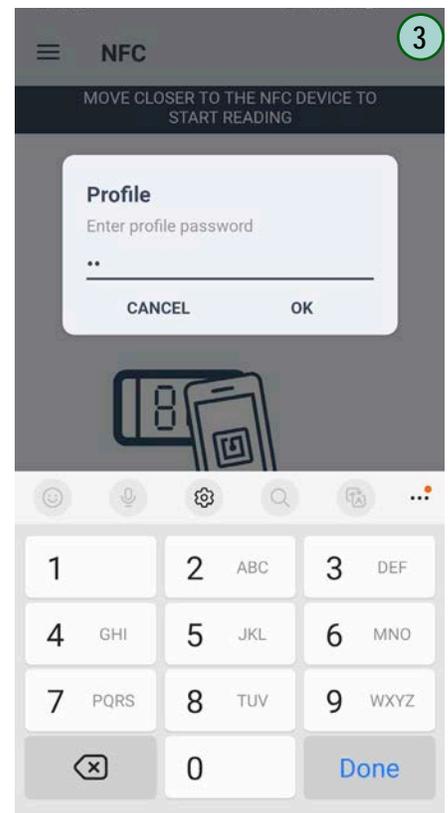
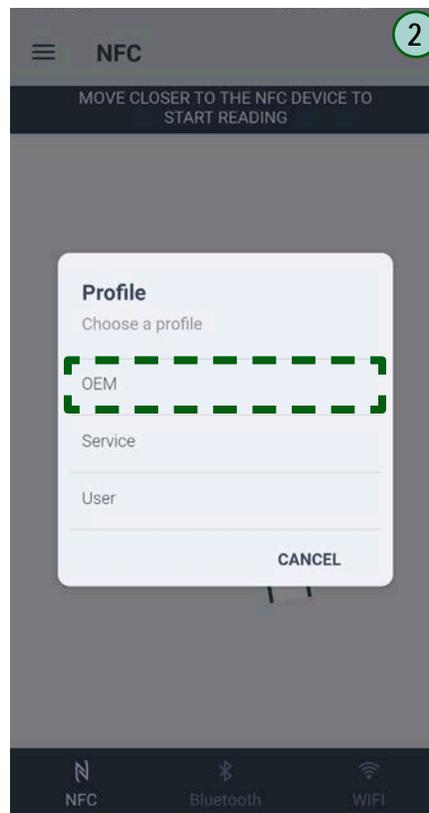
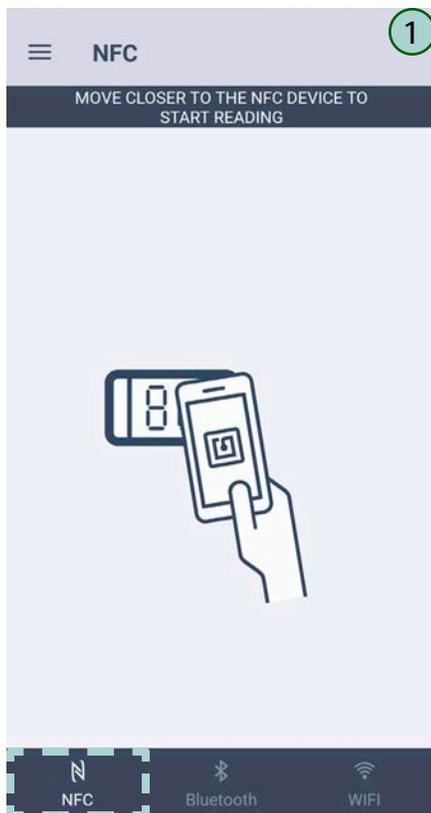
Local and remote
technical app
for **Service**



SETTING THE REAL TIME CLOCK VIA NEAR FIELD COMMUNICATION (NFC)

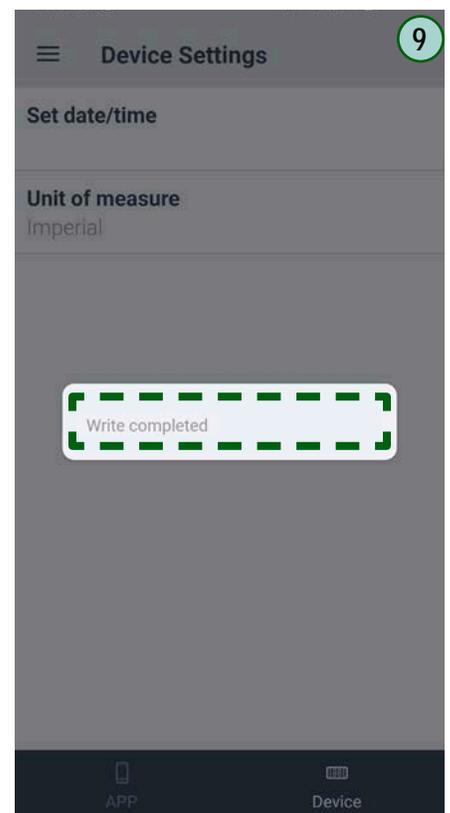
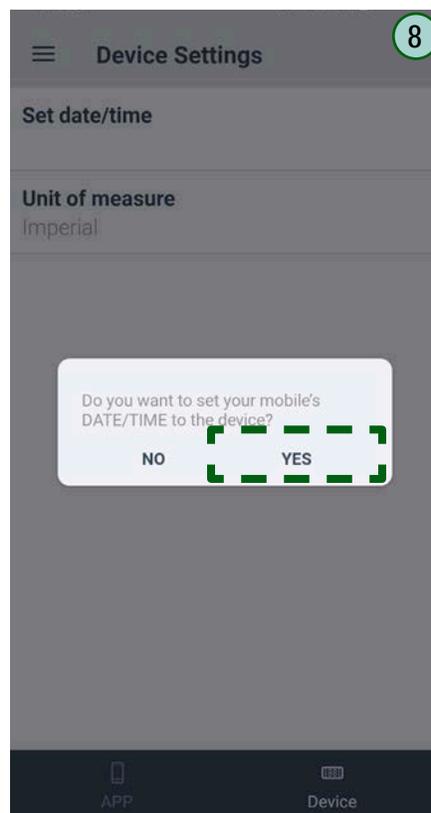
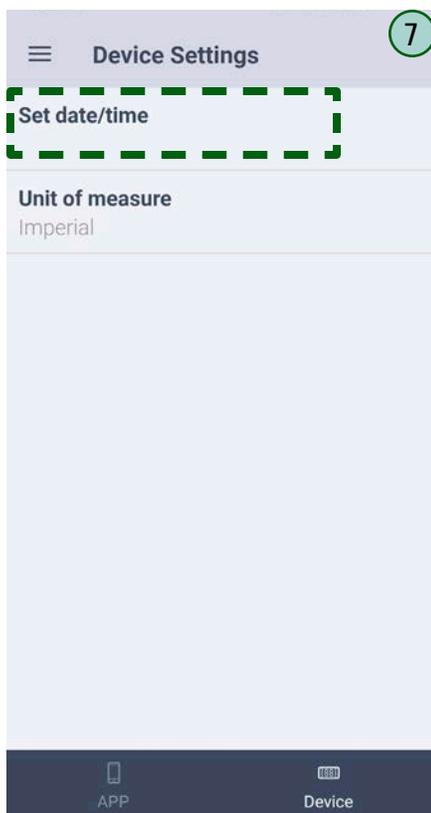
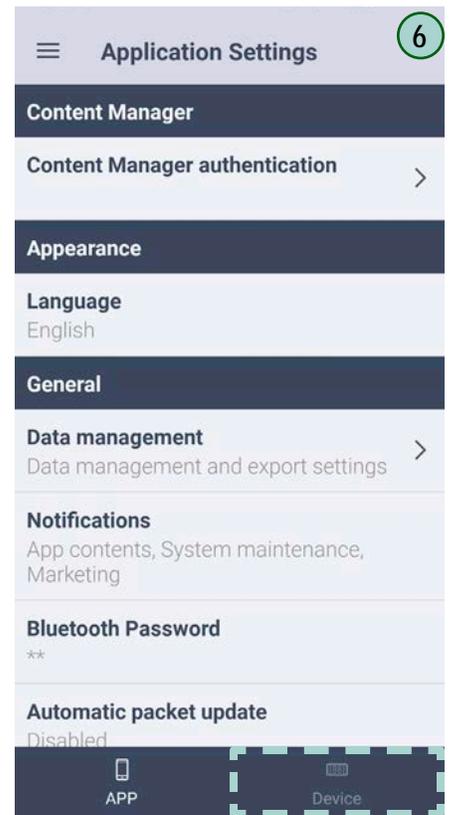
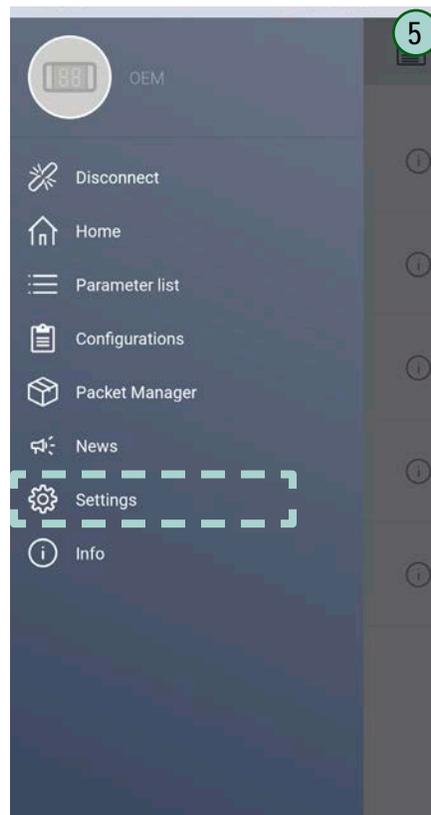
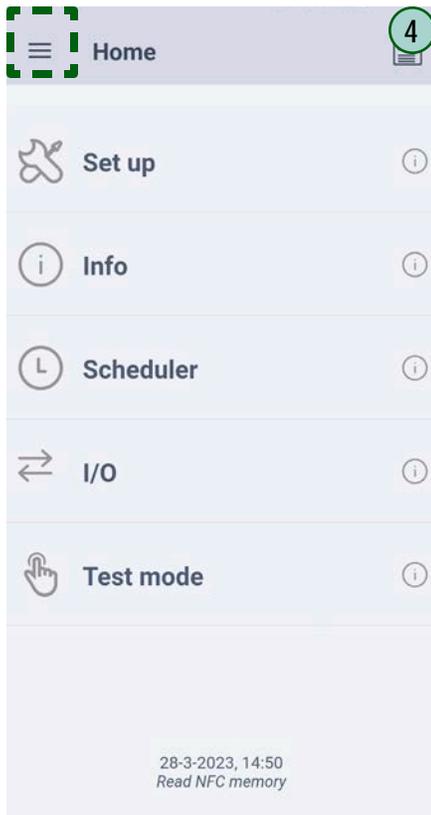
Refer to the following screenshots along with the written instructions.

1. Download the Carel Applica app from your preferred app store. Open the Applica app and select [NFC] in the bottom left corner (See #1).
2. Press/set your mobile device against the controller to connect to it. Move your phone around to find your phone's NFC reader (See #1).
3. Select OEM (See #2) and enter password "44" and press "OK" (See #3).
4. Select the home menu ("hamburger menu") in upper left corner (See #4) and then select "Settings" (See #5).
5. Select "device" in the bottom right corner (See #6).
6. Select "set date/time" (See #7) and use the mobile device's date/time (See #8).
7. "Write complete" means that the time clock is set correctly (See #9). If it does not set correctly, select "disconnect" from the home menu, and then start from the beginning.



CONTROLLER OPERATION

Setting the Real Time Clock - Carel iJF



CONTROLLER OPERATION

Carel iJF Controller Parameters

Zero Zone parameters listed in this manual are samples. **Always refer to the parameter label shipped with the case.** The parameter label is attached to the cover of the electrical box on top of the case. These parameters come preset from the factory and should not need to be changed; this is for reference only. If parameters need to be changed in the field, please contact Zero Zone technical support.

LOW TEMP 1-2 DOOR REACH-IN SAMPLE					
Code	Description	Setting	Code	Description	Setting
dir	Direct Functions - User (Level 1)		CMP*	Compressor - Service, Manufacturer (OEM) (Level 2)	
Sm	Outlet Probe - (Sm appears as a Sn)	/Fa > 0	C1	Min time between consecutive compressor starts	5
Sd2	Display Defrost Probe 2 Value	/FF > 0	C2	Min compressor OFF time	1
sd	Display Defrost Probe Value	/Fb > 0	C3	Min compressor ON time	1
ESC	Select ESC to return to the previous branch		ESC	Select ESC to return to the previous branch	
CtL	Control - User (Level 1)		Fan*	Fan -Service, Manufacturer (OEM) (Level 2)	
St	Temperature control set point	-10	F0	Evaporator fan management: 0 = always on; 1 = activation based on Sd - Sv; 2 = activation based on Sd; 3 = activation based on Sv.	2
rd	Temperature control differential	6	F1	Evaporator fan activation threshold (only if F0 = 1, 2, 3)	30
ESC	Select ESC to return to the previous branch		F2	Evaporator Fans with Compressor off: 0 = F0; 1 = Always Off	0
Pro	Display probes - User (Level 1)		F3	Evaporator Fans during defrost: 0 = on; 1 = off	1
/5	Unit of measure: 0 = °C; 1 = °F.	1	ESC	Select ESC to return to the previous branch	
ESC	Select ESC to return to the previous branch		Rtc*	Real Time Clock - Service, Manufacturer (OEM) (Level 2)	
Def*	Defrost - (OEM) (Level 2)		Day	Input for Day Value	-
dl	Maximum interval between consecutive defrosts	24	Mon	Input for Month Value	-
dP1	Maximum defrost duration	30	Yr	Input for Year Value	-
dt1	End defrost temperature (read by Sd)	40	Hr	Input for Hour Value	-
dP2	Max auxiliary evaporator defrost duration	45	Min	Input for Minute Value	-
dt2	Auxiliary evaporator end defrost temperature (read by Sd2)	39.2	DOU	Input for Day of the Week Value	-
d0	Type of defrost: 0 = heater by temperature; 1 = hot gas by temperature; 2 = heater by time; 3 = hot gas by time; 4 = heater by time with temperature control.	4	ESC	Select ESC to return to the previous branch	
dd	Dripping time after defrosting (0 = no dripping)	1	dSh*	Defrost Scheduler - Service, Manufacturer (OEM) (Level 2)	
ESC	Select ESC to return to the previous branch		Td1	Defrost 1 to 8 - day: 0 = event disabled; 1-7 = Monday to Sunday; 8 = Monday to Friday; 9 = Monday to Saturday; 10 = Saturday & Sunday; 11 = every day.	11
Hcp	HACCP (Hazard Analysis and Critical Control Point) - User (Level 1)		Th1	Defrost 0 to 23 hours	4
ESC	Select ESC to return to the previous branch		ESC	Select ESC to return to the previous branch	
CnF	Configuration - User (Level 1)		PSD	Password - User (Level 1)	
ESC	Select ESC to return to the previous branch		ESC	Select ESC to return to the previous branch	
ALM	Alarms - User (Level 1)		Based on 65-2029-004 Rev B		
AHA	Absolute high temperature alarm threshold	10			
ALA	Absolute low temperature alarm threshold	-20			
ESC	Select ESC to return to the previous branch				
IO*	Input / Output - Service, Manufacturer (OEM) (Level 2)				
ESC	Select ESC to return to the previous branch				

CONTROLLER OPERATION

Carel iJF Controller Parameters

Zero Zone parameters listed in this manual are samples. **Always refer to the parameter label shipped with the case.** The parameter label is attached to the cover of the electrical box on top of the case. These parameters come preset from the factory and should not need to be changed; this is for reference only. If parameters need to be changed in the field, please contact Zero Zone technical support.

LOW TEMP 3-5 DOOR REACH-IN SAMPLE					
Code	Description	Setting	Code	Description	Setting
dir	Direct Functions - User (Level 1)		CMP*	Compressor - Service, Manufacturer (OEM) (Level 2)	
Sm	Outlet Probe - (Sm appears as a Sn)	/Fa > 0	C1	Min time between consecutive compressor starts	5
Sd2	Display Defrost Probe 2 Value	/FF > 0	C2	Min compressor OFF time	1
sd	Display Defrost Probe Value	/Fb > 0	C3	Min compressor ON time	1
ESC	Select ESC to return to the previous branch		ESC	Select ESC to return to the previous branch	
CtL	Control - User (Level 1)		Fan*	Fan -Service, Manufacturer (OEM) (Level 2)	
St	Temperature control set point	-10	F0	Evaporator fan management: 0 = always on; 1 = activation based on Sd – Sv; 2 = activation based on Sd; 3 = activation based on Sv.	2
rd	Temperature control differential	6	F1	Evaporator fan activation threshold (only if F0 = 1, 2, 3)	30
ESC	Select ESC to return to the previous branch		F2	Evaporator Fans with Compressor off: 0 = F0; 1 = Always Off	0
Pro	Display probes - User (Level 1)		F3	Evaporator Fans during defrost: 0 = on; 1 = off	1
/5	Unit of measure: 0 = °C; 1 = °F.	1	ESC	Select ESC to return to the previous branch	
ESC	Select ESC to return to the previous branch		Rtc*	Real Time Clock - Service, Manufacturer (OEM) (Level 2)	
Def*	Defrost - (OEM) (Level 2)		Day	Input for Day Value	-
dl	Maximum interval between consecutive defrosts	24	Mon	Input for Month Value	-
dP1	Maximum defrost duration	40	Yr	Input for Year Value	-
dt1	End defrost temperature (read by Sd)	70	Hr	Input for Hour Value	-
dP2	Max auxiliary evaporator defrost duration	45	Min	Input for Minute Value	-
dt2	Auxiliary evaporator end defrost temperature (read by Sd2)	39.2	DOU	Input for Day of the Week Value	-
d0	Type of defrost: 0 = heater by temperature; 1 = hot gas by temperature; 2 = heater by time; 3 = hot gas by time; 4 = heater by time with temperature control.	4	ESC	Select ESC to return to the previous branch	
dd	Dripping time after defrosting (0 = no dripping)	1	dSh*	Defrost Scheduler - Service, Manufacturer (OEM) (Level 2)	
ESC	Select ESC to return to the previous branch		Td1	Defrost 1 to 8 - day: 0 = event disabled; 1-7 = Monday to Sunday; 8 = Monday to Friday; 9 = Monday to Saturday; 10 = Saturday & Sunday; 11 = every day.	11
Hcp	HACCP (Hazard Analysis and Critical Control Point) - User (Level 1)		Th1	Defrost 0 to 23 hours	4
ESC	Select ESC to return to the previous branch		ESC	Select ESC to return to the previous branch	
CnF	Configuration - User (Level 1)		PSD	Password - User (Level 1)	
ESC	Select ESC to return to the previous branch		ESC	Select ESC to return to the previous branch	
ALM	Alarms - User (Level 1)		Based on 65-2029-003 Rev B		
AHA	Absolute high temperature alarm threshold	10			
ALA	Absolute low temperature alarm threshold	-20			
ESC	Select ESC to return to the previous branch				
IO*	Input / Output - Service, Manufacturer (OEM) (Level 2)				
ESC	Select ESC to return to the previous branch				

CONTROLLER OPERATION

Carel iJF Controller Parameters

Zero Zone parameters listed in this manual are samples. **Always refer to the parameter label shipped with the case.** The parameter label is attached to the cover of the electrical box on top of the case. These parameters come preset from the factory and should not need to be changed; this is for reference only. If parameters need to be changed in the field, please contact Zero Zone technical support.

ICE MERCHANDISER REACH-IN SAMPLE					
Code	Description	Setting	Code	Description	Setting
dir	Direct Functions - User (Level 1)		CMP*	Compressor - Service, Manufacturer (OEM) (Level 2)	
Sm	Outlet Probe - (Sm appears as a Sn)	/Fa > 0	C1	Min time between consecutive compressor starts	5
Sd2	Display Defrost Probe 2 Value	/FF > 0	C2	Min compressor OFF time	1
sd	Display Defrost Probe Value	/Fb > 0	C3	Min compressor ON time	1
ESC	Select ESC to return to the previous branch		ESC	Select ESC to return to the previous branch	
CtL	Control - User (Level 1)		Fan*	Fan -Service, Manufacturer (OEM) (Level 2)	
St	Temperature control set point	7	F0	Evaporator fan management: 0 = always on; 1 = activation based on Sd – Sv; 2 = activation based on Sd; 3 = activation based on Sv.	2
rd	Temperature control differential	4	F1	Evaporator fan activation threshold (only if F0 = 1, 2, 3)	30
ESC	Select ESC to return to the previous branch		F2	Evaporator Fans with Compressor off: 0 = F0; 1 = Always Off	0
Pro	Display probes - User (Level 1)		F3	Evaporator Fans during defrost: 0 = on; 1 = off	1
/5	Unit of measure: 0 = °C; 1 = °F.	1	ESC	Select ESC to return to the previous branch	
ESC	Select ESC to return to the previous branch		Rtc*	Real Time Clock - Service, Manufacturer (OEM) (Level 2)	
Def*	Defrost - (OEM) (Level 2)		Day	Input for Day Value	-
dl	Maximum interval between consecutive defrosts	24	Mon	Input for Month Value	-
dP1	Maximum defrost duration	40	Yr	Input for Year Value	-
dt1	End defrost temperature (read by Sd)	55	Hr	Input for Hour Value	-
dP2	Max auxiliary evaporator defrost duration	45	Min	Input for Minute Value	-
dt2	Auxiliary evaporator end defrost temperature (read by Sd2)	39.2	DOU	Input for Day of the Week Value	-
d0	Type of defrost: 0 = heater by temperature; 1 = hot gas by temperature; 2 = heater by time; 3 = hot gas by time; 4 = heater by time with temperature control.	4	ESC	Select ESC to return to the previous branch	
dd	Dripping time after defrosting (0 = no dripping)	1	dSh*	Defrost Scheduler - Service, Manufacturer (OEM) (Level 2)	
ESC	Select ESC to return to the previous branch		Td1	Defrost 1 to 8 - day: 0 = event disabled; 1-7 = Monday to Sunday; 8 = Monday to Friday; 9 = Monday to Saturday; 10 = Saturday & Sunday; 11 = every day.	11
Hcp	HACCP (Hazard Analysis and Critical Control Point) - User (Level 1)		Th1	Defrost 0 to 23 hours	4
ESC	Select ESC to return to the previous branch		ESC	Select ESC to return to the previous branch	
CnF	Configuration - User (Level 1)		PSD	Password - User (Level 1)	
ESC	Select ESC to return to the previous branch		ESC	Select ESC to return to the previous branch	
ALM	Alarms - User (Level 1)		Based on 65-2029-005 Rev B		
AHA	Absolute high temperature alarm threshold	25			
ALA	Absolute low temperature alarm threshold	-20			
ESC	Select ESC to return to the previous branch				
IO*	Input / Output - Service, Manufacturer (OEM) (Level 2)				
ESC	Select ESC to return to the previous branch				

CONTROLLER OPERATION

Carel iJF Controller Parameters

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MEDIUM TEMP REACH-IN SAMPLE					
Code	Description	Setting	Code	Description	Setting
dir	Direct Functions - User (Level 1)		CMP*	Compressor - Service, Manufacturer (OEM) (Level 2)	
Sm	Outlet Probe - (Sm appears as a Sn)	/Fa > 0	C1	Min time between consecutive compressor starts	5
Sd2	Display Defrost Probe 2 Value	/FF > 0	C2	Min compressor OFF time	1
sd	Display Defrost Probe Value	/Fb > 0	C3	Min compressor ON time	1
ESC	Select ESC to return to the previous branch		ESC	Select ESC to return to the previous branch	
CtL	Control - User (Level 1)		Fan*	Fan -Service, Manufacturer (OEM) (Level 2)	
St	Temperature control set point	34	F0	Evaporator fan management: 0 = always on; 1 = activation based on Sd – Sv; 2 = activation based on Sd; 3 = activation based on Sv.	0
rd	Temperature control differential	4	F1	Evaporator fan activation threshold (only if F0 = 1, 2, 3)	41
ESC	Select ESC to return to the previous branch		F2	Evaporator Fans with Compressor off: 0 = F0; 1 = Always Off	0
Pro	Display probes - User (Level 1)		F3	Evaporator Fans during defrost: 0 = on; 1 = off	0
/5	Unit of measure: 0 = °C; 1 = °F.	1	ESC	Select ESC to return to the previous branch	
ESC	Select ESC to return to the previous branch		Rtc*	Real Time Clock - Service, Manufacturer (OEM) (Level 2)	
Def*	Defrost - (OEM) (Level 2)		Day	Input for Day Value	-
dl	Maximum interval between consecutive defrosts	12	Mon	Input for Month Value	-
dP1	Maximum defrost duration	30	Yr	Input for Year Value	-
dt1	End defrost temperature (read by Sd)	39.2	Hr	Input for Hour Value	-
dP2	Max auxiliary evaporator defrost duration	45	Min	Input for Minute Value	-
dt2	Auxiliary evaporator end defrost temperature (read by Sd2)	39.2	DOU	Input for Day of the Week Value	-
d0	Type of defrost: 0 = heater by temperature; 1 = hot gas by temperature; 2 = heater by time; 3 = hot gas by time; 4 = heater by time with temperature control.	2	ESC	Select ESC to return to the previous branch	
dd	Dripping time after defrosting (0 = no dripping)	1	dSh*	Defrost Scheduler - Service, Manufacturer (OEM) (Level 2)	
ESC	Select ESC to return to the previous branch		Td1	Defrost 1 to 8 - day: 0 = event disabled; 1-7 = Monday to Sunday; 8 = Monday to Friday; 9 = Monday to Saturday; 10 = Saturday & Sunday; 11 = every day.	11
Hcp	HACCP (Hazard Analysis and Critical Control Point) - User (Level 1)		Th1	Defrost 0 to 23 hours	8
ESC	Select ESC to return to the previous branch		Td2	See Td1	11
CnF	Configuration - User (Level 1)		Th2	See Th1	20
ESC	Select ESC to return to the previous branch		ESC	Select ESC to return to the previous branch	
ALM	Alarms - User (Level 1)		PSD	Password - User (Level 1)	
AHA	Absolute high temperature alarm threshold	50	ESC	Select ESC to return to the previous branch	
ALA	Absolute low temperature alarm threshold	30			
ESC	Select ESC to return to the previous branch				
IO*	Input / Output - Service, Manufacturer (OEM) (Level 2)				
ESC	Select ESC to return to the previous branch				

Based on 65-2029-001 Rev B

CONTROLLER OPERATION

Carel iJF Controller Parameters

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MEDIUM TEMP OPEN CASE R-404A SAMPLE

Code	Description	Setting	Code	Description	Setting
dir	Direct Functions - User (Level 1)		Fan*	Fan -Service, Manufacturer (OEM) (Level 2)	
Sm	Outlet Probe - (Sm appears as a Sn)	/Fa > 0	F0	Evaporator fan management: 0 = always on; 1 = activation based on Sd – Sv; 2 = activation based on Sd; 3 = activation based on Sv.	0
Sd2	Display Defrost Probe 2 Value	/FF > 0	F1	Evaporator fan activation threshold (only if F0 = 1, 2, 3)	41
sd	Display Defrost Probe Value	/Fb > 0	F2	Evaporator Fans with Compressor off: 0 = F0; 1 = Always Off	0
ESC	Select ESC to return to the previous branch		F3	Evaporator Fans during defrost: 0 = on; 1 = off	0
CtL	Control - User (Level 1)		ESC	Select ESC to return to the previous branch	
St	Temperature control set point	34	Rtc*	Real Time Clock - Service, Manufacturer (OEM) (Level 2)	
rd	Temperature control differential	4	Day	Input for Day Value	-
ESC	Select ESC to return to the previous branch		Mon	Input for Month Value	-
Pro	Display probes - User (Level 1)		Yr	Input for Year Value	-
/5	Unit of measure: 0 = °C; 1 = °F.	1	Hr	Input for Hour Value	-
ESC	Select ESC to return to the previous branch		Min	Input for Minute Value	-
Def*	Defrost - (OEM) (Level 2)		DOU	Input for Day of the Week Value	-
dl	Maximum interval between consecutive defrosts	6	ESC	Select ESC to return to the previous branch	
dP1	Maximum defrost duration	30	dSh*	Defrost Scheduler - Service, Manufacturer (OEM) (Level 2)	
dt1	End defrost temperature (read by Sd)	39.2	Td1	Defrost 1 to 8 - day: 0 = event disabled; 1-7 = Monday to Sunday; 8 = Monday to Friday; 9 = Monday to Saturday; 10 = Saturday & Sunday; 11 = every day.	11
dP2	Max auxiliary evaporator defrost duration	45	Th1	Defrost 0 to 23 hours	4
dt2	Auxiliary evaporator end defrost temperature (read by Sd2)	39.2	Td2	See Td1	11
d0	Type of defrost: 0 = heater by temperature; 1 = hot gas by temperature; 2 = heater by time; 3 = hot gas by time; 4 = heater by time with temperature control.	2	Th2	See Th1	10
dd	Dripping time after defrosting (0 = no dripping)	1	Td3	See Td1	11
ESC	Select ESC to return to the previous branch		Th3	See Th1	16
Hcp	HACCP (Hazard Analysis and Critical Control Point) - User (Level 1)		Td4	See Td1	11
ESC	Select ESC to return to the previous branch		Th4	See Th1	22
CnF	Configuration - User (Level 1)		ESC	Select ESC to return to the previous branch	
ESC	Select ESC to return to the previous branch		PSD	Password - User (Level 1)	
ALM	Alarms - User (Level 1)		ESC	Select ESC to return to the previous branch	
AHA	Absolute high temperature alarm threshold	50			
ALA	Absolute low temperature alarm threshold	30			
ESC	Select ESC to return to the previous branch				
IO*	Input / Output - Service, Manufacturer (OEM) (Lvl 2)				
ESC	Select ESC to return to the previous branch				
CMP*	Compressor - Service, Manufacturer (OEM) (Lvl 2)				
C1	Min time between consecutive compressor starts	5			
C2	Min compressor OFF time	1			
C3	Min compressor ON time	1			
ESC	Select ESC to return to the previous branch				

Based on 65-2029-007 Rev B

CONTROLLER OPERATION

Carel iJF Controller Parameters

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MEDIUM TEMP OPEN CASE R-448A SAMPLE					
Code	Description	Setting	Code	Description	Setting
dir	Direct Functions - User (Level 1)		Fan*	Fan -Service, Manufacturer (OEM) (Level 2)	
Sm	Outlet Probe - (Sm appears as a Sn)	/Fa > 0	F0	Evaporator fan management: 0 = always on; 1 = activation based on Sd – Sv; 2 = activation based on Sd; 3 = activation based on Sv.	0
Sd2	Display Defrost Probe 2 Value	/FF > 0	F1	Evaporator fan activation threshold (only if F0 = 1, 2, 3)	41
sd	Display Defrost Probe Value	/Fb > 0	F2	Evaporator Fans with Compressor off: 0 = F0; 1 = Always Off	0
ESC	Select ESC to return to the previous branch		F3	Evaporator Fans during defrost: 0 = on; 1 = off	0
CtL	Control - User (Level 1)		ESC	Select ESC to return to the previous branch	
St	Temperature control set point	34	Rtc*	Real Time Clock - Service, Manufacturer (OEM) (Level 2)	
rd	Temperature control differential	4	Day	Input for Day Value	-
ESC	Select ESC to return to the previous branch		Mon	Input for Month Value	-
Pro	Display probes - User (Level 1)		Yr	Input for Year Value	-
/5	Unit of measure: 0 = °C; 1 = °F.	1	Hr	Input for Hour Value	-
ESC	Select ESC to return to the previous branch		Min	Input for Minute Value	-
Def*	Defrost - (OEM) (Level 2)		DOU	Input for Day of the Week Value	-
dl	Maximum interval between consecutive defrosts	4	ESC	Select ESC to return to the previous branch	
dP1	Maximum defrost duration	30	dSh*	Defrost Scheduler - Service, Manufacturer (OEM) (Level 2)	
dt1	End defrost temperature (read by Sd)	39.2	Td1	Defrost 1 to 8 - day: 0 = event disabled; 1-7 = Monday to Sunday; 8 = Monday to Friday; 9 = Monday to Saturday; 10 = Saturday & Sunday; 11 = every day.	11
dP2	Max auxiliary evaporator defrost duration	45	Th1	Defrost 0 to 23 hours	0
dt2	Auxiliary evaporator end defrost temperature (read by Sd2)	39.2	Td2	See Td1	11
d0	Type of defrost: 0 = heater by temperature; 1 = hot gas by temperature; 2 = heater by time; 3 = hot gas by time; 4 = heater by time with temperature control.	2	Th2	See Th1	4
dd	Dripping time after defrosting (0 = no dripping)	1	Td3	See Td1	11
ESC	Select ESC to return to the previous branch		Th3	See Th1	8
Hcp	HACCP (Hazard Analysis and Critical Control Point) - User (Level 1)		Td4	See Td1	11
ESC	Select ESC to return to the previous branch		Th4	See Th1	12
CnF	Configuration - User (Level 1)		Td5	See Td1	11
ESC	Select ESC to return to the previous branch		Th5	See Th1	16
ALM	Alarms - User (Level 1)		Td6	See Td1	11
AHA	Absolute high temperature alarm threshold	50	Th6	See Th1	20
ALA	Absolute low temperature alarm threshold	30	ESC	Select ESC to return to the previous branch	
ESC	Select ESC to return to the previous branch		PSD	Password - User (Level 1)	
IO*	Input / Output - Service, Manufacturer (OEM) (Lvl 2)		ESC	Select ESC to return to the previous branch	
ESC	Select ESC to return to the previous branch				
CMP*	Compressor - Service, Manufacturer (OEM) (Lvl 2)				
C1	Min time between consecutive compressor starts	5			
C2	Min compressor OFF time	1			
C3	Min compressor ON time	1			
ESC	Select ESC to return to the previous branch				

Based on 65-2029-008 Rev B

CONTROLLER OPERATION

Silencing the Temperature Alarm - Carel

If the alarm sounds, it can be silenced for 1 hour. The controller is visible through the cutout in the shroud. *For more information, see the "Alarm Guide" at the end of this manual.*

Carel IR33+: Press the PRG/MUTE button to silence the alarm for 1 hour



Carel iJF: Touch any button on the screen to silence the alarm 1 hour



Conditions that Trigger the Temperature Alarm

If the controller alarm sounds during the scheduled defrost times, please allow an additional one-hour recovery time before calling for service. If the alarm sounds outside of the scheduled defrost times, please review the following checklist. If all items have been checked and the case still does not work properly, submit a service request.

Cases with electronic controls (a digital display shows through a cutout in the shroud above the doors) have a 1-hour alarm delay after defrost. The controller has a high ("HI") and low ("LO") temperature alarm setting. The alarm will sound if the case temperature is above or below these set points for more than 1 hour. If the temperature comes back within the normal operating range during this 1 hour, the alarm timer will reset. If the case is in defrost, the electronic display will read "DEF".

CHECKLIST: COMMON TRIGGERS FOR THE TEMPERATURE ALARM

1. Check the circuit breakers for the cases. Tripped circuit breakers will cut off the power to the cases and to the alarms. **DO NOT TURN OFF CASE REFRIGERATION OVERNIGHT WHEN CLOSING THE STORE.**
2. For reach-in cases, check the following before entering a service request:
 - a. Defrost lasts 30-40 minutes for freezers and 45 minutes for coolers. Determine when the defrost cycle started (see the Defrost Schedule shipped with the case). If alarm sounds during scheduled defrost, wait 1 hour and re-check status before calling service.
 - b. On freezers, the fans turn off during defrost and shortly after defrost. On coolers, the fans and lights continue to run during defrost.
 - c. Has the case just been stocked? (Warm product will take 24 hours to cool down.)
 - d. Is the case heavily shopped? (Frequent door opening will warm the case.)
 - e. Are the return air grills blocked by product or other objects?
3. For open multi-decks, check the following before entering a service request:
 - a. Defrost lasts 30 minutes for open multi-decks. Determine when the defrost cycle started (see the Defrost Schedule shipped with the case). If alarm sounds during scheduled defrost, wait 1 hour and re-check status before calling service.
 - b. Is the case located near vents, drafty areas, or other cases that would disrupt the air curtain?
 - c. Is the case located near sources of heat or humidity?
 - d. Has the case just been stocked? (Warm product will take 24 hours to cool down.)
 - e. Are the store ambient conditions too warm or humid for proper case operation?
 - f. Is the case packout adequate to sustain optimal operating conditions?
 - g. Are the return air grills blocked by product or other objects?

CONTROLLER OPERATION

Dixell XR75CX Front Panel Commands



Contact Zero Zone for full Dixell / Emerson manual.

KEYS AND FUNCTIONS

Key	Function
SET	Press to display target setpoint, to select a parameter in programming mode, or to confirm an operation
	Starts a manual defrost
	Press the UP arrow to see the MAX temperature, to browse the parameter codes in programming mode, or to increase the currently displayed temperature value.
	Press the DOWN arrow to see the MIN temperature, to browse the parameter codes in programming mode, or to decrease the currently displayed temperature value.
	Switches the device ON and OFF, if onF = oFF
	Switches the light ON and OFF, if oA1 = Lig
	Locks/Unlocks the keyboard
SET +	To enter programming mode
SET +	Returns to room temperature display

Shows the keys that are found on the front panel of the Dixell controller and their corresponding functions.

USE OF LEDS

LED	Mode	Function
	ON	Compressor enabled
	Flashing	Anti-short cycle delay enabled
	ON	Defrost enabled
	Flashing	Drip time in progress
	ON	Fans enabled
	Flashing	Fans delay after defrost in progress.
	ON	An alarm is occurring
	ON	Continuous cycle is running
	ON	Energy saving enabled
	ON	Light ON
AUX	ON30	Auxiliary relay ON
°C/°F	ON	Measurement unit
°C/°F	Flashing	Programming phase

Shows each LED function.

CONTROLLER OPERATION

Dixell XR75CX Alarm Signals

ALARM SIGNALS

Message	Cause	Outputs
P1	Room probe failure	Compressor output acc. to par. Con and CoF
P2	Evaporator probe failure	Defrost end is timed
P3	Third probe failure	Outputs unchanged
P4	Fourth probe failure	Outputs unchanged
HA	Maximum temperature alarm	Outputs unchanged
LA	Minimum temperature alarm	Outputs unchanged
HA2	Condenser high temperature	It depends on the Ac2 parameter
LA2	Condenser low temperature	It depends on the bLL parameter
dA	Door open	Compressor and fans restart
EA	External alarm	Output unchanged
CA	Serious external alarm (i1F=bAL)	All outputs OFF
CA	Pressure switch alarm (i1F=PAL)	All outputs OFF
rtc	Real time clock alarm	Alarm output ON; Other outputs unchanged; Defrosts according to par. IdF Set real time clock has to be set
rtF	Real time clock board failure	Alarm output ON; Other outputs unchanged; Defrosts according to par. IdF Contact the service

SILENCING BUZZER / ALARM RELAY OUTPUT

1. If **tbA = y**, the buzzer and the relay are silenced by pressing any key.
2. If **tbA = n**, only the buzzer is silenced while the alarm relay is ON until the alarm condition recovers.

ALARM RECOVERY

1. Probe alarms **P1**, **P2**, **P3**, and **P4** start some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check connections before replacing the probe.
2. Temperature alarms **HA**, **LA**, **HA2**, and **LA2** automatically stop as soon as the temperature returns to normal values.
3. Alarms **EA** and **CA** (with i1F = bAL) recover as soon as the digital input is disabled.
4. Alarm **CA** (with i1F = PAL) recovers only by switching OFF and ON the device.

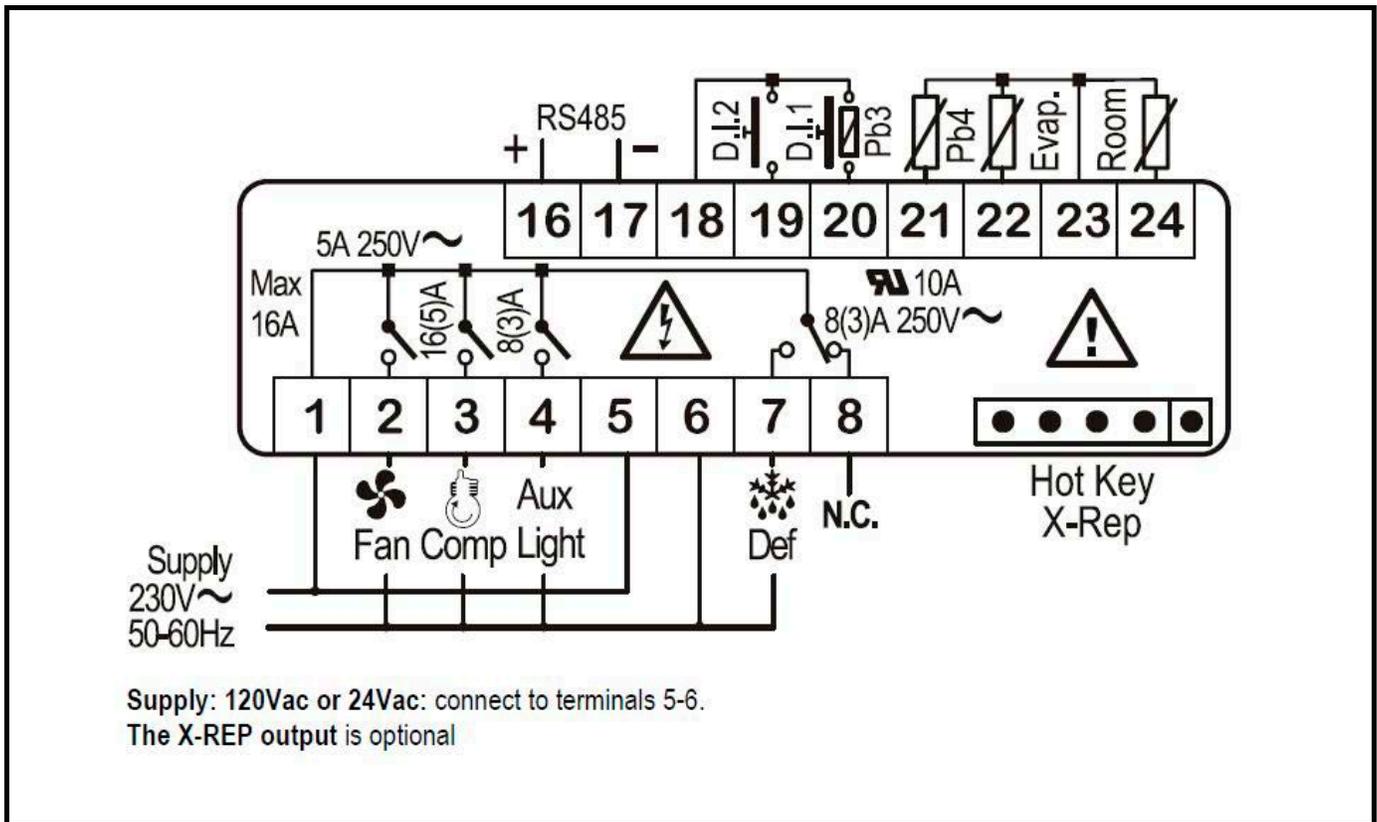
OTHER MESSAGES

Additional Display Messages

Message	Output
Pon	Keyboard unlocked
PoF	Keyboard locked
noP	In programming mode: No parameter is present
	In Pr1 on the display or in dP2, dP3, dP4: The selected probe is not enabled

CONTROLLER OPERATION

Dixell XR75CX Connections



CONTROLLER OPERATION

Condensing Unit Pressure Switch Settings

FIXED PRESSURE CONTROLS

Note: Used for Crystal™ Cooler and Highlight™ Cooler

- Low pressure cut-in/out: 35/15 psig
- High pressure cut-out: 440 psig

ELECTRONIC UNIT CONTROL (EUC)

Note: Used for Crystal™ Freezer, Highlight™ Freezer, and Reveal™ Cooler

- **Low pressure control:** Suction pressure transducer (on process port of compressor; has a Schrader valve)
- **Low pressure cut-in:** 30 psig (R-404A) or 22 psig (R-448A)
- **Low pressure cut-out:** 10 psig (R-404A) or 5 psig (R-448A)
- **High pressure UL safety control:** Encapsulated (fixed mechanical switch; no manual reset)
- **High pressure cut-out:** 440 psig
- **Time delay:** Built-in (2 second delay on startup; 6 second anti-short cycling delay)
- **Manual restart or dead band reset:** Built-in (hold restart button for 3 seconds when suction pressure is between cut-in and cut-out valves)
- **Electronic service menu:** Compressor starts and runtime for compressor
- **Alarms:**
 - dLL - High discharge temp alarm
 - HP - High pressure trip alarm (automatic reset)
 - HPL - High pressure trip lock-out trip alarm (locks after "HP" alarm happens 4 times in 1 hour; manual reset)
 - P1 - Suction probe failure (goes into failsafe mode - 5 minutes on, then 5 minutes off)
 - Pon - Keypad unlocked
 - PoF - Keypad locked
 - EE - Module failure
- **Additional information about EUC:**
 - When the EUC is powered, the compressor light will be on (pressure above 10 psig), unless you are in a dead band. Look at the Carel case controller to identify if the case is calling to have the compressor running.
 - The EUC is a compressor low pressure safety. The compressor will stop when the pressure is below 10 psig, regardless of what the case control signal is. After a safety trip, the compressor will restart when the pressure rises above 30 psig and the case control is calling for cooling.

Accessing Alarm Code Information

Press and release ALARM	
Cycle through menu options – UP/DOWN	 
Press SET to see number of alarms	
Press SET again to return to menu options	
Exit menu - UP and SET	 + 

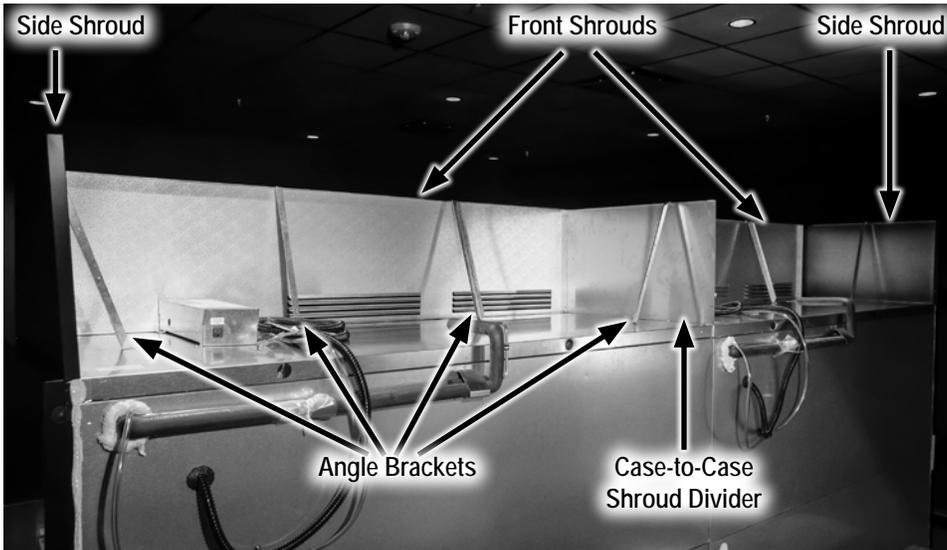
SHROUD INSTALLATION INSTRUCTIONS

Highlight Merchandiser® - 20 1/4" Tall Standard Shroud



CAUTION!

20 1/4" TALL SHROUDS ATTACH TO THE UPPER RACEWAY COVER. DO NOT SCREW THE FRONT SHROUDS DIRECTLY INTO THE UPPER RACEWAY AS THIS WILL CAUSE AN ELECTRICAL HAZARD.



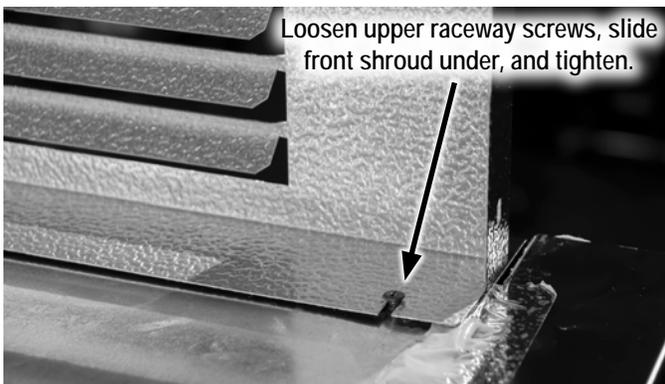
Number of Angle Brackets for Front Shrouds

CASE SIZE	ANGLE BRACKETS
1-Door	None
2-Door	None
3-Door	2 Brackets
4-Door	2 Brackets
5-Door	3 Brackets
6-Door	3 Brackets

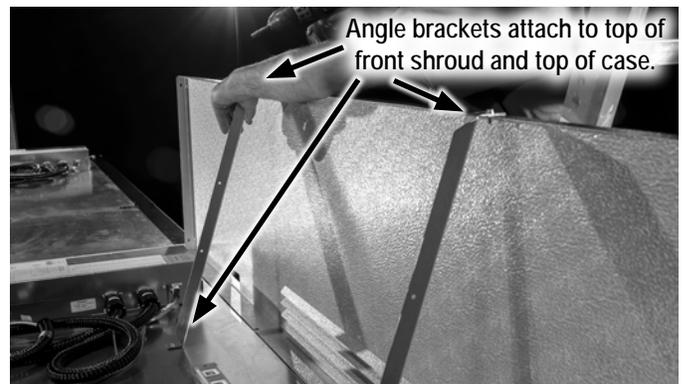
Shroud Assembled, From Behind Case (3-Door Hybrid™ Lineup Shown)

SINGLE CASE

1. The screws that hold the upper raceway cover will be used to hold the front shroud. Loosen the screws without removing them.
2. Slide the front shroud under those screws and tighten.
3. See the table for angle bracket quantities. Install the angle brackets to support the front shroud. Mount the angle brackets to the holes on the top flange of the shroud.
4. Screw the angle brackets to the top of the case. Use a level at each angle bracket location to ensure that the shroud is upright, and not tilting forward or backward.



Attach Front Shroud Using Raceway Screws

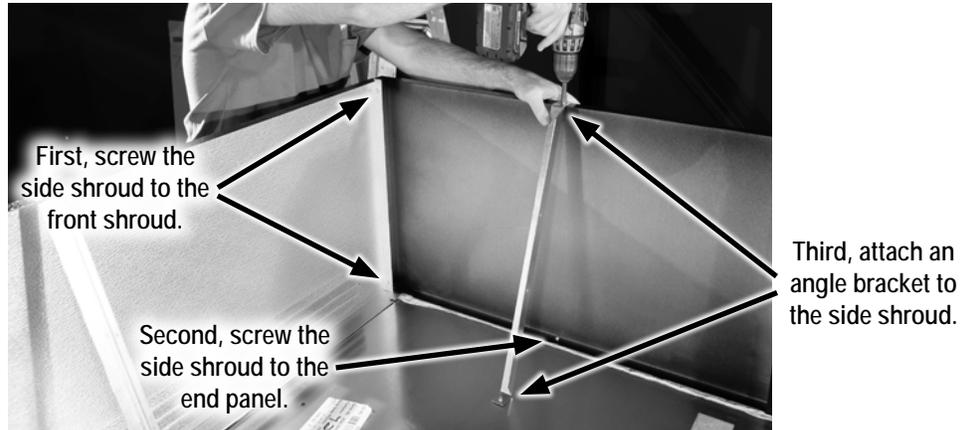


Attach Angle Brackets to Front Shroud

SHROUD INSTALLATION INSTRUCTIONS

Highlight Merchandiser® - 20 1/4" Tall Standard Shroud

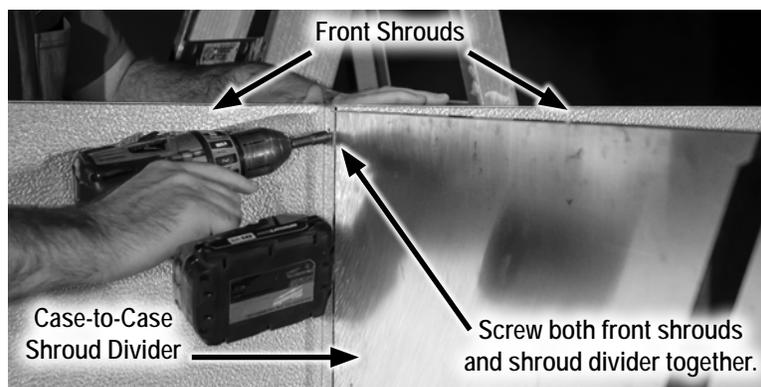
5. Position the side shrouds perpendicular to the front shroud, on top of each end panel.
6. Screw the side shrouds to the front shroud to ensure a tight fit.
7. Screw the side shrouds into the end panel using self-tapping screws.
8. Install 1 angle bracket to support each side shroud. Mount the angle bracket to the holes on the top flange of the shroud, and screw the angle bracket to the top of the case. Use a level to ensure that the shroud is upright.



Install Side Shroud

HYBRID™ LINEUPS

9. For a lineup of Hybrid™ cases, a case-to-case shroud divider is necessary to block warm air discharged from one condensing unit from entering the next condensing unit.
 - a. Start the lineup at the leftmost case by installing the front shroud (steps 1-4) and the leftmost side shroud (steps 5-8).
 - b. Install the next front shroud (steps 1-4).
 - c. Insert the shroud divider between the 2 front shrouds at the case joint. The flange on the shroud divider can turn toward either the first or second display case.
 - d. Screw the shroud divider and both front shrouds together using the same screws.



Install Shroud Divider Between Front Shrouds

SHROUD INSTALLATION INSTRUCTIONS

Highlight Merchandiser® - 20 1/4" Tall Standard Shroud

- e. Screw the shroud divider to the top of the case using self-tapping screws.
- f. Install 1 angle bracket to support the shroud divider. Mount the angle bracket to the holes on the top flange of the shroud divider, and screw the shroud divider to the top of the case.
- g. Repeat the installation for the duration of the lineup, finishing with a side shroud at the end (steps 5-8).

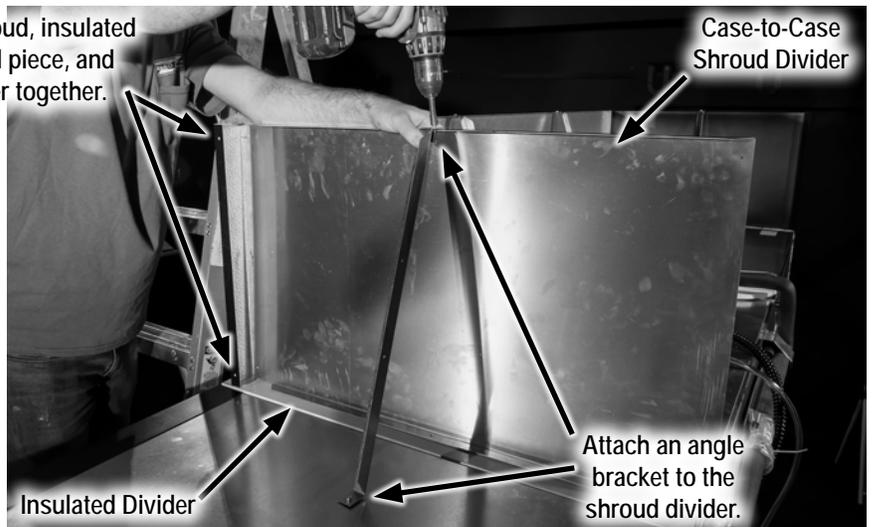
LINEUPS WITH INSULATED DIVIDERS

- 10. When a medium temperature cooler is set next to a low temperature freezer, an insulated divider will be installed between the cases. An insulated divider shroud piece must be installed above the insulated dividers to ensure proper spacing of the front shrouds.
 - a. Start the lineup at the leftmost case by installing the front shroud (steps 1-4) and the leftmost side shroud (steps 5-8).
 - b. Install the front shrouds and shroud dividers (steps 9a-9f) until reaching the case with the insulated divider.
 - c. The front shroud, the insulated divider shroud piece, and the case-to-case shroud divider will be fastened together. Position them and then screw them together.
 - d. Screw the case-to-case shroud divider to the top of the case, and install 1 angle bracket to support the shroud divider.
 - e. Screw the next front shroud to the insulated divider shroud piece. Continue installing the rest of the lineup (steps 9a-9g).



Screw front shroud, insulated divider shroud piece, and shroud divider together.

The insulated divider shroud piece has a longer and shorter flange. It can face either case. There is no right or wrong side up.



Install Insulated Divider Shroud Piece

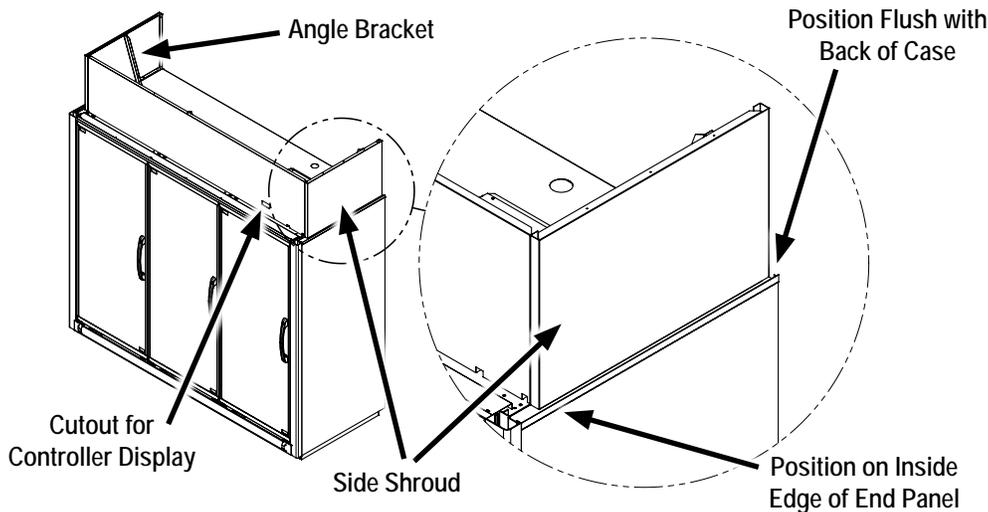
SHROUD INSTALLATION INSTRUCTIONS

Standard Shroud Assembly for Crystal Merchandiser® or Reveal Merchandiser®

For proper shroud installation on Crystal Merchandiser® or Reveal Merchandiser®, start with the side shrouds. This will help determine the correct position of the front shroud.

SIDE SHROUD ASSEMBLY

1. Position side shroud on top of the end panel, flush with the back of the case and on the inside edge of the end panel (see illustration).
2. Fasten the side shroud to the end panel using self-tapping screws.
3. Install 1 angle bracket to support the side shroud. The bracket will match up with a hole on top of the shroud.
4. Repeat steps 1-3 on top of the opposite end panel.

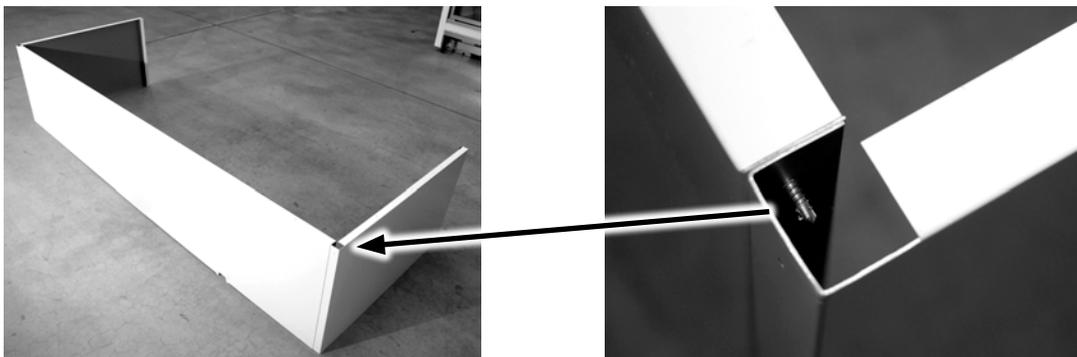


Case Size	Angle Brackets
1-Door	None
2-Door	None
3-Door	1 Bracket
4-Door	2 Brackets
5-Door	3 Brackets
6-Door	3 Brackets
4' Open	None
6' Open	1 Bracket
8' Open	2 Brackets
12' Open	3 Brackets

FRONT SHROUD ASSEMBLY

1. Position front shroud perpendicular to the side shrouds (parallel to the front of the case). Front shroud must be straight and even between the side shrouds. Note: Front shroud should be set 2" behind top trim piece.
2. First, fasten the front shroud to the side shroud to ensure tight fit. Then, fasten front shroud to case roof using self-tapping screws.
3. Install angle brackets* to support the front shroud. The brackets will match up with holes on top of the shroud.
4. If applicable, position the electrical box so the controller display is clearly visible through the cutout in the front shroud. Secure the electrical box with the fasteners that mounted it to the case for shipping.

*No angle brackets on 5" tall shrouds; all taller shrouds receive angle brackets. See table for quantity.

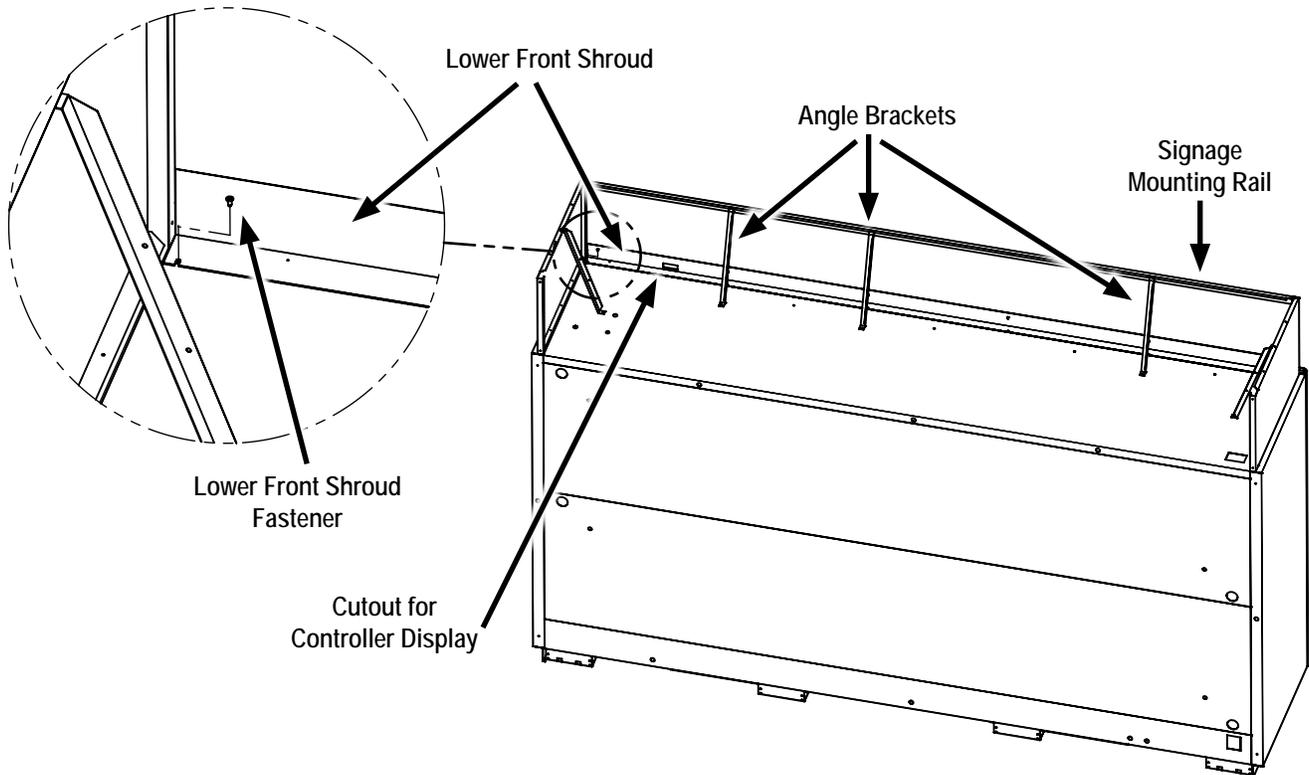


SHROUD INSTALLATION INSTRUCTIONS

Signage Shroud Assembly for Highlight Merchandiser®

Signage shrouds are only available for Highlight Merchandiser®. For assembling signage shrouds, follow similar steps as for standard shrouds.

1. Install the lower front shroud using the same steps as the standard front shroud. *Do not add angle brackets to lower front shroud.*
2. Install the side shroud using the same steps as the standard side shroud. Add 1 angle bracket to each side shroud.



SIGNAGE MOUNTING RAIL

1. Position the signage mounting rail above the lower front shroud and between the side shrouds.
2. Fasten the signage mounting rail to the top of the side shrouds.
3. Install angle brackets* to support the signage mounting rail. The brackets will match up with holes on top of the signage mounting rail.

*See table for quantity.

Case Size	Angle Brackets
1-Door	None
2-Door	None
3-Door	1 Bracket
4-Door	2 Brackets
5-Door	3 Brackets
6-Door	3 Brackets

SHROUD INSTALLATION INSTRUCTIONS

Standard Shroud Assembly for Case Lineup

For a lineup of Hybrid™ cases, side shrouds will be included between each cases to block warm air discharged from one condensing unit from entering the next condensing unit. For a lineup of remote cases, side shrouds may or may not be included.

LINEUPS WITH SIDE SHROUDS BETWEEN EACH CASE

Repeat case-specific instructions for front and side shroud installation. Fasten front shrouds to side shrouds.

LINEUPS WITHOUT SIDE SHROUDS BETWEEN CASES

Repeat case-specific instructions for only front shroud installation. Fasten adjacent front shrouds together.

Note: Make sure the front shrouds continue in a straight line. Do not position them forward or backward on the case.

Signage Shroud Assembly for Case Lineup

For a case lineup, a side shroud must be included between each case for installing the signage mounting rail. Install all lower front shrouds and side shrouds in the lineup before installing the signage mounting rails.

We recommend setting signage mounting rails on top of each case before continuing. Start at one end of the lineup and fasten the signage mounting rail to the first side shroud. Two signage mounting rails will be fastened to all other side shrouds until the end of the lineup.



Insulated Divider Shroud Piece

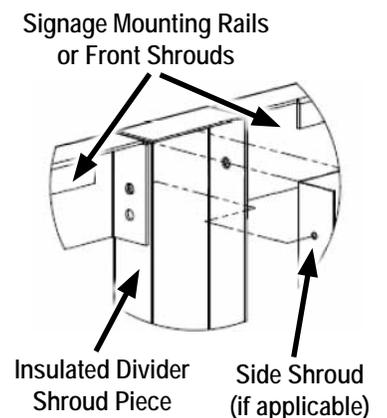
Insulated divider shroud pieces are installed above insulated dividers (between cases). Insulated divider shroud pieces are necessary to ensure proper spacing of front shrouds above cases.

LINEUPS WITH SIDE SHROUDS BETWEEN EACH CASE

Insert insulated divider shroud piece into the side shroud piece. Then, install the parts together between the front shrouds or signage mounting rails. Fasten to the adjacent front shrouds.

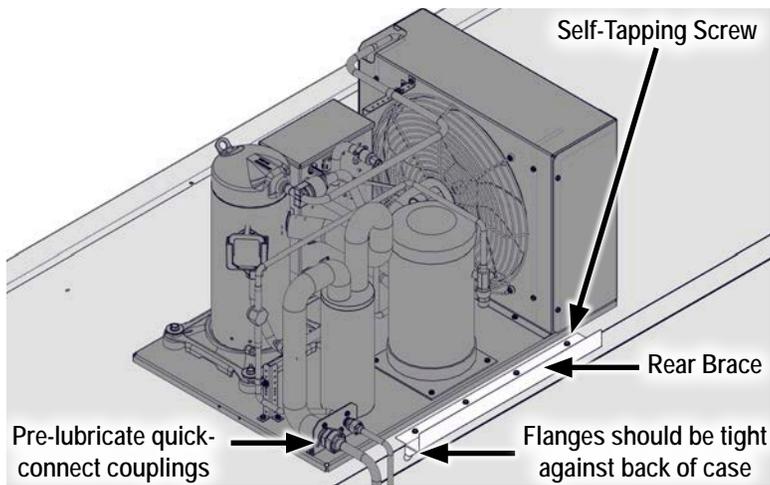
LINEUPS WITHOUT SIDE SHROUDS BETWEEN CASES

Install insulated divider shroud piece between the front shrouds. Fasten to the adjacent front shrouds.



OPTIONS

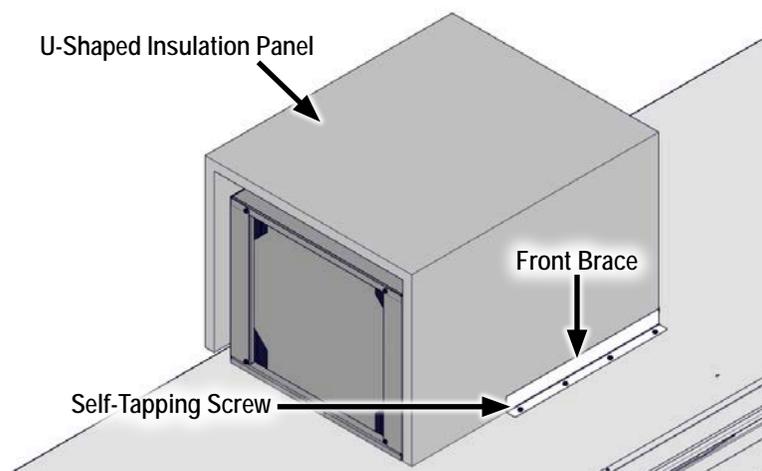
Noise Reduction Kit



Install Rear Brace and Condensing Unit

DESCRIPTION	QUANTITY
Washer	10
Screw	2
Self-Tapping Screw	20
Spring Clip	2
U-Clip	5
Angle Bracket	1
Rear Angle Brace	1
Front Angle Brace	1
Balloon Guard	1
U-Shaped Insulation Panel	1
Flat Insulation Panel	1

1. Place the rear brace on the case top with bent flanges tight to the back of the case top. Position the brace about 3" away from the liquid line riser assembly. Use 4 self-tapping screws to fasten it to the case top.
2. Place condensing unit with the quick-connect couplings facing the back of the case. Align the quick-connect couplings on the condensing unit and display case. **Pre-lubricate the quick-connect couplings with POE oil. Start by hand tightening the couplings and then use a torque wrench. Refer to the Hybrid™ Installation & Operation Manual for more information.**
3. The U-shaped insulation panel will be shipped flat. Take the panel and bend it into a U-shape using the relief cuts in the insulation as a guide. Place the panel over the condensing unit, aligning the back with the rear brace and the front with the front of the condensing unit.
4. Place the front brace on the case top and against the U-shaped insulation panel so the panel maintains 90° corners. Use 4 self-tapping screws to fasten it to the case top.

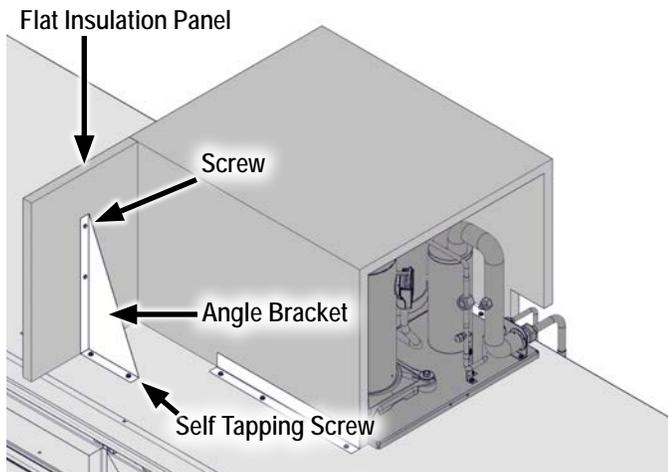


Place U-Shaped Insulation Panel and Front Brace

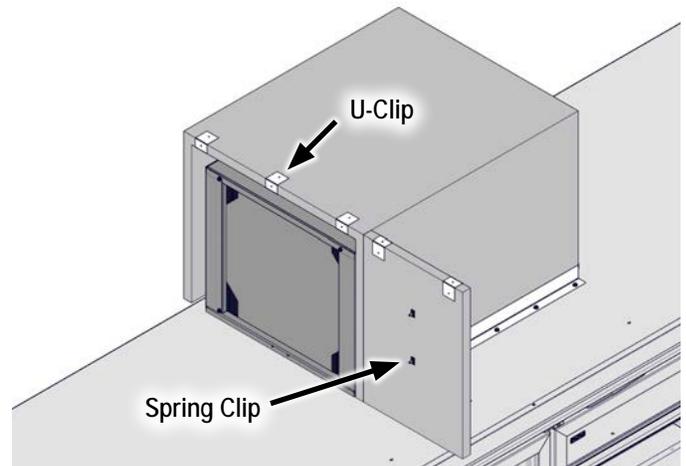
OPTIONS

Noise Reduction Kit

- Align the flat insulation panel with the edge of the U-shaped insulation panel as shown. Place the angle bracket against the middle of the flat insulation panel as shown. Fasten the angle bracket to the flat insulation panel using 2 screws and 2 spring clips. Use 2 self-tapping screws to fasten the angle bracket to the case top.
- Slide 2 U-clips over the top of the flat insulation panel. Slide 3 more U-clips onto the edge of the U-shaped insulation panel.

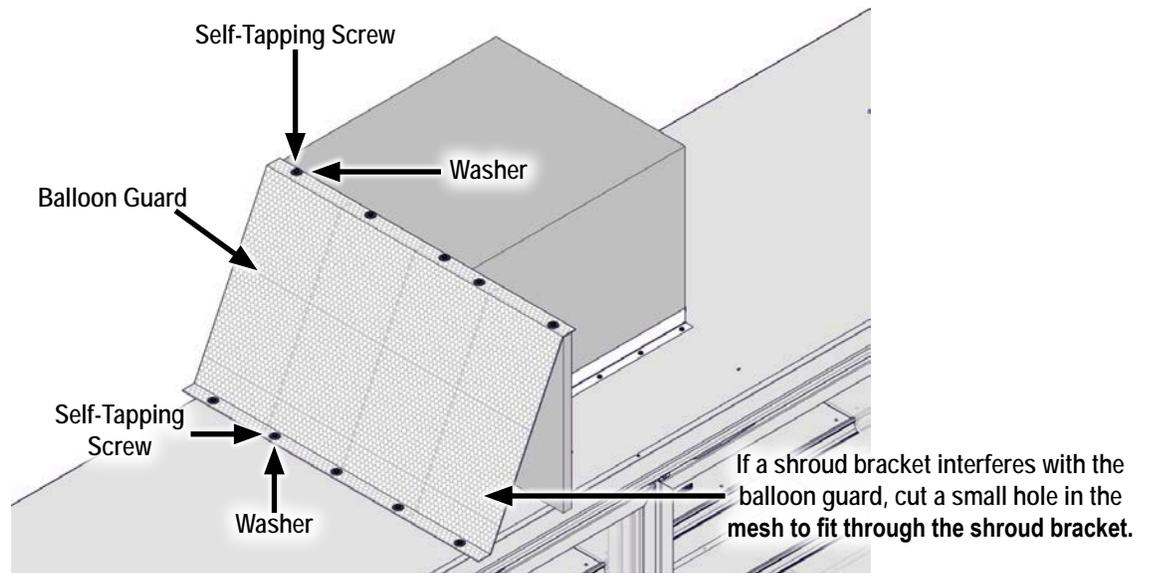


Fasten Flat Insulation Panel and Angle Bracket



Insert Screws into Spring Clips; Add U-Clips

- Position the balloon guard so that the longer edge rests on top of the U-clips. Use 1 washer and 1 self-tapping screw to fasten the balloon guard to each U-clip.
- Bend the balloon guard down to the case top, keeping the balloon guard straight. Fasten the balloon guard to the case top using 5 washers and 5 screws evenly spaced along the balloon guard.



Attach Balloon Guard to U-Clips and Case Top

OPTIONS

Balloon Guard Kit

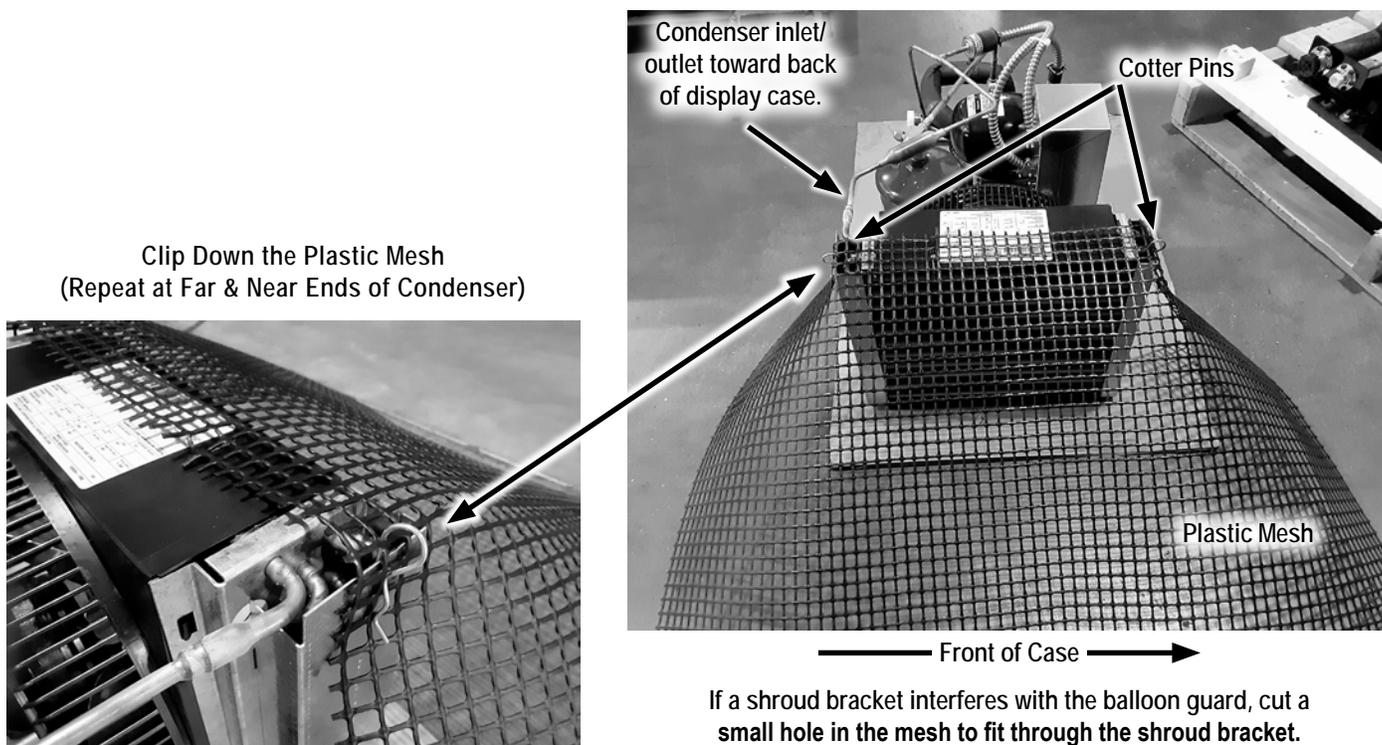
DESCRIPTION	QUANTITY
23 1/2" x 36" Plastic Mesh	1
3/32" x 2 5/16" Cotter Pin	3

Use the cotter pins to attach the plastic mesh to the condenser to prevent balloons or debris from blocking airflow to the condenser. This process varies depending on whether the condenser inlet/outlet piping is toward the back or the front of the display case.

SCENARIO 1: CONDENSER INLET/OUTLET TOWARD THE BACK OF CASE (2 COTTER PINS)

1. Orient the plastic mesh with the longer side against the condenser, and lay the edge of the mesh over the top of the condenser.
2. Press the mesh against the far end of the condenser and clip it down. The cotter pin should hold down a couple squares of the mesh in order to shape the mesh.
3. Repeat the previous step at the near end of the condenser.
4. Bend the mesh into a domed shape. This will prevent balloons and other debris from slipping under the mesh.

Final Balloon Guard for Inlet/Outlet Toward the Back

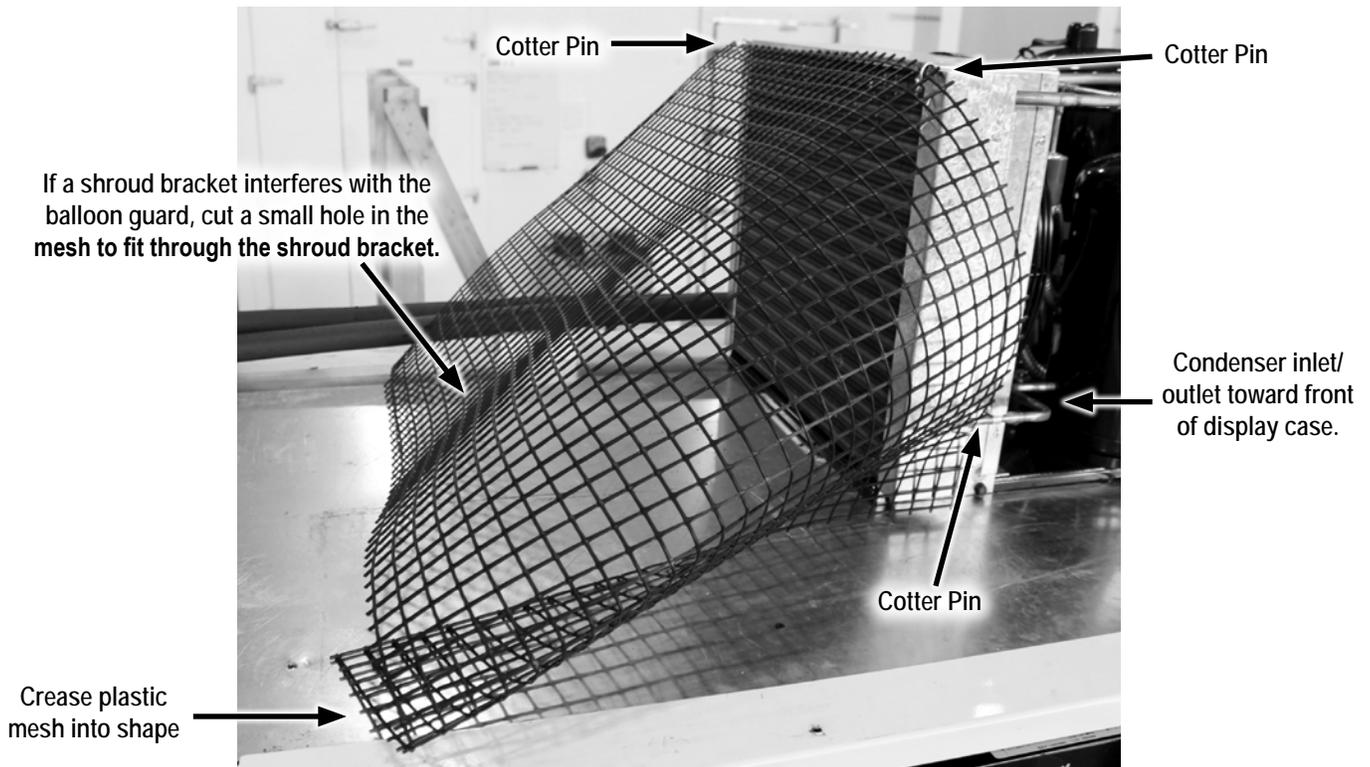


OPTIONS

Balloon Guard Kit

SCENARIO 2: CONDENSER INLET/OUTLET TOWARD THE FRONT OF CASE (3 COTTER PINS)

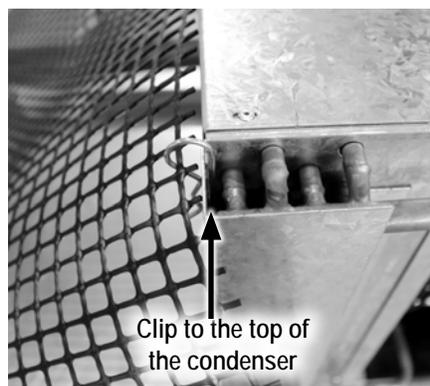
1. Orient the plastic mesh with the longer side against the condenser.
2. Clip the mesh to the far end of the condenser at the top.
3. Repeat the previous step on the near end of the condenser.
4. Fold the mesh down and then clip the mesh to the lower cutout on the condenser.
5. Crease the bend in the mesh to shape the mesh. This will prevent balloons and other debris from slipping under the mesh.



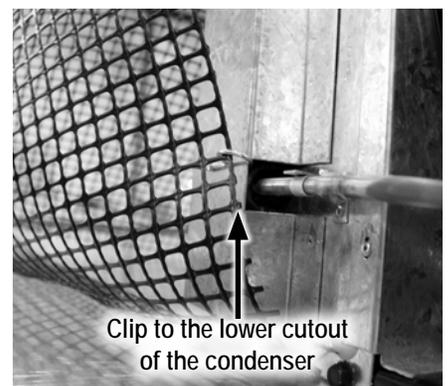
Final Balloon Guard for Inlet/Outlet Toward the Front



Far End of Condenser



Near End of Condenser



Lower Cutout on Near End

ALARM GUIDE

A Guide for Store Managers

Zero Zone medium and low temp Hybrid™ display cases have a built-in alarm system to alert you of problems with the operation of the case. In the event of a problem, an alarm will sound (a constant beeping noise), and the case controller's display will flash an error code. Follow this process if an alarm sounds:

1. The alarm can be silenced for 1 hour. The case controller's display is visible through the cutout in the shroud on top of the case. Check which type of controller comes with your display case.
 - **Carel IR33+:** Press the [PRG] button on the controller to silence the alarm (see image below).
 - **Carel iJF:** Touch any button on the screen to silence the alarm (see image below).
2. Identify the alarm code displayed on the screen. The 4 most common alarm codes are listed below:
 - **"E0", "E1", or "E2"** = A sensor/probe error.
 - **"HI"** = High temperature inside the display case. Display will alternate between **"HI"** and the temperature reading when alarm is active.
 - **"LO"** = Low temperature inside the display case. Display will alternate between **"LO"** and the temperature reading when alarm is active.
 - **Note: "DEF" = Case is in defrost. This is not an error code.**
3. If the error code is **"E0"**, **"E1"**, or **"E2"**, then proceed to step 4; a qualified refrigeration technician is required to correct the situation. In the event of a high temperature alarm (**"HI"**), there is a chance that there is a simple fix that can be completed by store personnel:
 - a. Verify that a door is not accidentally held open. Sometimes product will fall off the shelves and prevent a door from fully closing.
 - b. Confirm that the case was not recently stocked with product. Holding one of the doors open for an extended period of time (as is the case when stocking) will raise the internal temperature and possibly set off the alarm.
 - c. Determine whether a defrost cycle has recently occurred. Following the defrost period, the case temperature may be warmer than usual.
 - d. Make sure proper airflow is not compromised by debris covering the balloon guard located at the front of each condensing unit on the top of each case behind the shroud. You will need to use a step ladder to check this. If possible, remove the item or debris blocking the balloon guard. If you are unable to easily remove the item or debris, call your service provider.

Identifying and correcting any of these problems will return the case temperature to normal conditions.

4. If the source of the problem was not identified in step 3, a service request should be directed to your service provider immediately.

Carel IR33+: Press the PRG/MUTE button to silence the alarm for 1 hour



Carel iJF: Touch any button on the screen to silence the alarm 1 hour





For other technical support, please refer to
the Technical Resources page at:

WWW.ZERO-ZONE.COM

or contact the Zero Zone Service Department at:

800-247-4496

All specifications subject to change without notice.

