

GUARDIAN

merchandiser®

ZERO ZONE

GUARDIAN® MERCHANDISER CGLC & CGMC

With CoolView® Doors

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.

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.

This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Do not store explosive substances such as aerosol cans with a flammable propellant in this appliance.

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 60335-2-89 – Commercial Refrigerating Appliances and Ice-Makers with an Incorporated or Remote Refrigerant Unit or Motor-Compressor (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)
- Energy Star Certified

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 6 times in 1 hour for 6 seconds. The door opening test period is for 8 hours during a single 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.

INTRODUCTION

Display Case Models

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

CASE MODEL	DESCRIPTION	DOOR SIZE & TYPE
CGMC30	Standard Cooler	30" x 68" CoolView® Envision® Doors
CGLC30	Standard Freezer	30" x 68" CoolView® Envision® Doors

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® Envision® Doors

Competence of Service Personnel

Service must only be performed by a qualified professional and as recommended by the manufacturer. Work shall be undertaken under a controlled procedure to minimize the risk of a flammable gas or vapor being present while the work is being performed.

Service technicians should be trained by a national training organization or by manufacturers that are accredited to teach the relevant national competency standards. The achieved competence should be documented by a certificate.

Training should include the following:

- Information about the explosion potential of flammable refrigerants to show that flammables can be dangerous when handled without care.
- Information about potential ignition sources, especially those that are not obvious, such as lighters, light switches, vacuum cleaners, and electric heaters.
- Information about the different safety concepts:
 - **Unventilated** - Safety of the appliance does not depend on ventilation of the housing. Switching off the appliance or opening of the housing has no significant effect on the safety. Nevertheless, it is possible that Leaking refrigerant may accumulate inside the enclosure and flammable atmosphere will be released when the enclosure is opened.
 - **Ventilated Enclosure** - Safety of the appliance depends on ventilation of the housing. Switching off the appliance or opening of the enclosure has a significant effect on the safety. Care should be taken to ensure sufficient ventilation before opening.
 - **Ventilated Room** - Safety of the appliance depends on the ventilation of the room. Switching off the appliance or opening of the housing has no significant effect on the safety. The ventilation of the room should not be switched off during repair procedures.
- Information about refrigerant detectors:
 - Principle of function, including influences on the operation.
 - Procedures, how to repair, check, or replace a refrigerant detector or parts of it in a safe way.
 - Procedures, how to disable a refrigerant detector in case of repair work on the refrigerant carrying parts.
- Information about the concept of sealed components and sealed enclosures according to IEC 60079-15.

INTRODUCTION

Training should include the following work procedures:

- Commissioning
 - Ensure that the floor area is sufficient for the refrigerant charge or that the ventilation duct is assembled in a correct manner.
 - Check safety equipment before putting into service.
- Maintenance / Repair
 - Portable equipment is to be repaired outside or in a workshop specially equipped for servicing units with flammable refrigerants.
 - Ensure sufficient ventilation at the repair place.
 - Be aware that malfunction of the equipment can be caused by refrigerant loss and a refrigerant leak is possible.
 - Discharge capacitors in a way that will not cause any sparks. The standard procedure to short circuit the capacitor terminals usually creates sparks.
 - When brazing is required, the following procedures shall be carried out in the following order:
 1. Safely remove the refrigerant following local and national regulations (See EPA Regulations 608). If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. If in doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
 2. Purge the refrigerant circuit with oxygen free nitrogen.
 3. Evacuate the refrigerant circuit.
 4. Purge the refrigerant circuit with nitrogen for 5 min.
 5. Evacuate again.
 6. Remove parts to be replaced by cutting or brazing.
 7. Purge the braze point with nitrogen during the brazing procedure required for repair.
 8. Carry out a leak test before charging with refrigerant.
 - Reassemble sealed enclosures accurately. If seals are worn, replace them.
 - Check safety equipment before putting into service.
- Decommissioning
 - If the safety is affected when the equipment is put out of service, the refrigerant charge must be removed before decommissioning.
 - Ensure sufficient ventilation at the equipment location.
 - Be aware that malfunction of the equipment can be caused by refrigerant loss and a refrigerant leak is possible.
 - Discharge capacitors in a way that will not cause any sparks. The standard procedure to short circuit the capacitor terminals usually creates sparks.
 - Safely remove the refrigerant following local and national regulations (See EPA Regulations 608). If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. If in doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
 - When flammable refrigerants are used:
 1. Evacuate the refrigerant circuit.
 2. Purge the refrigerant circuit with nitrogen for 5 min.
 3. Evacuate again.
 4. Fill with nitrogen up to atmospheric pressure.
 5. Put a label on the equipment that the refrigerant is removed.

INTRODUCTION

■ Disposal

- Ensure sufficient ventilation at the working place.
- Safely remove the refrigerant following local and national regulations (See EPA Regulations 608). If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. If in doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
- When flammable refrigerants are used,
 1. Evacuate the refrigerant circuit.
 2. Purge the refrigerant circuit with oxygen free nitrogen.
 3. Evacuate again.
 4. Cut out the compressor and drain the oil.
- Cut out the compressor and drain the oil.

Safety

See the Packaged Refrigeration Unit (PRU) manufacturer's documentation for flammable refrigerant safety information.



WARNING!

KEEP CLEAR OF OBSTRUCTION ALL VENTILATION OPENINGS IN THE APPLIANCE ENCLOSURE OR IN THE STRUCTURE FOR BUILDING-IN.



WARNING!

DO NOT USE ELECTRICAL APPLIANCES INSIDE THE FOOD/ICE STORAGE COMPARTMENTS UNLESS THEY TYPE RECOMMENDED BY THE MANUFACTURER

SYMBOLS AND DEFINITIONS



Symbol ISO 70000-1701 (2004-01)

Pressure

PERMITTING

- Required case permits for Guardian® installation should be classified as “self-contained.”
- 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?

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 non-arcing 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?

INSTALLATION & OPERATION

⚠ CAUTION! DO NOT STAND ON TOP OF A GUARDIAN® MERCHANDISER. THE TOP OF THE CASE IS NOT DESIGNED TO SUPPORT THE WEIGHT OF A PERSON.

Delivery Inspection

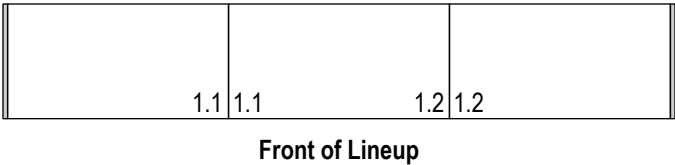
Zero Zone display cases are carefully factory-tested, inspected, and packed to ensure delivery in the best possible condition. The equipment should be unwrapped and checked for damage **immediately** upon delivery. **DAMAGE MUST BE NOTED AT TIME OF DELIVERY, AND ALL CLAIMS FOR DAMAGES MUST BE FILED WITH THE TRANSPORTATION COMPANY, NOT WITH ZERO ZONE.** The carrier will supply necessary report and claim forms. Contact your Zero Zone sales representative or the service department to arrange for replacement parts.

Do not leave, store, or hold case outdoors in direct sunlight or high ambient temperature. With the end panels on, the case is airtight; the inside temperature of the case will increase, and the heat will be unable to escape. This could potentially cause any plastic inside the case to deform or warp.

Packaging

Each **case** in a lineup is labeled to identify the **lineup** and **joint**. The label uses a 2-digit number designation, separated by a decimal. The first number indicates the case lineup. The second number indicates the case joint. Case joints begin with the number “1” at the left-most joint in the lineup when looking at the front of the lineup. The first case in the lineup will be labeled on the right end and the second case in the lineup will be labeled on the left end. The numbers on each end to be joined will match, as indicated (See Figure 1).

FIGURE 1: Case Label Information



The *first* case in a lineup (with the right side labeled “x.1”) has a packet attached to the shelving that contains touch-up paint. Every case in a lineup has a packet attached to the shelving that contains important information about the case and/or lineup and, if applicable, special instructions for installing ordered options.

Roll guards and vertical joining strip (V-strip) are shipped on top of the case. Shelves for the case are tie-wrapped and blocked into the individual cases. Other accessories like expansion bases are shipped in the case that require the parts.

Materials for joining cases—including caulk, joining bolts, splices, and end filler posts—are shipped in each case to be joined.

Location

These cases must not be installed in the direct rays of the sun or near a source of radiant heat. Be certain that the floor under the installation is of sufficient strength to prevent sagging. Uneven surfaces will result in reduced performance.

Cases must be set to allow a minimum 3" of space behind the back of the units. This will allow necessary air to circulate behind the display cases and prevent condensation. Higher humidity stores with minimal air circulation require at least a 4" gap. A minimum 2" gap is recommended between cases on end-to-end installations. All minimum spacing requirements may increase if seismic restraints are used.

Building soffits must be set back at least 6" from the front of the case to allow access to electrical wiring on the top of the case.

INSTALLATION & OPERATION

Moving Cases

Various tools and equipment may be used to move cases, including, but not limited to, a forklift, a Johnson bar, a pallet jack, furniture rollers, casters, or a Rol-A-Lift. Be careful to avoid damaging the store flooring. Only certified forklift drivers should use forklifts to move the cases. The case should only be lifted off the floor as high as necessary for transport. The forklift should be driven slowly; avoid abrupt motions or bumps.

- Use the end frame to push/pull the case. For best results, push/pull lower on the end frame. **Do not push/pull on the mullions as this can cause the mullions to bend.**
- When using a Johnson bar, only contact the sheet metal of the bottom foamed panel. **Be careful not to pierce the sheet metal with the corner of the Johnson bar.**
- When using a pallet jack or furniture rollers, only place them under the floor panels.
- Cases have steel protective support plates under the end panels (not under insulated dividers) to protect them from Johnson bar damage.

Make sure that a forklift with the proper fork dimensions is available. **Forks must be 48" long, 1 1/2" to 1 3/4" thick, and no more than 4" wide to fit the bases.** Refer to the table below for instructions.

CASE MODELS	INSTRUCTIONS
2CGMC30 & 2CGLC30	Forks must extend 26" to 30" under the case from either end
3CGMC30 & 3CGLC30	Forks must extend 39" to 43" under the case from either end
4CGMC30 & 4CGLC30	Forks must extend 44" to 47" under the case from either end

Leveling

Cases should be set level from right to left to allow complete drainage of defrost and condensate water. Since a level floor area is seldom available, the following steps will ensure a level installation. If your case uses seismic restraints, specific instructions for attaching seismic restraints are included in your document package. **Read and understand these instructions before assembling the lineup.**

1. Measure off and mark on the floor the exact dimensions of the case lineup (**See Figure 2**). Refer to the fixture plan or floor plan.
2. Snap a chalk line at the locations for the front and back positions of the bases.
3. Mark locations of all joints, both front and back.
4. Using a laser level or transit, find the highest point along both base position lines. Using the high point as a reference, mark the difference directly on the floor to each base, both front and back (**See Figure 3**).

FIGURE 2: Measure and Mark Exact Case Outline

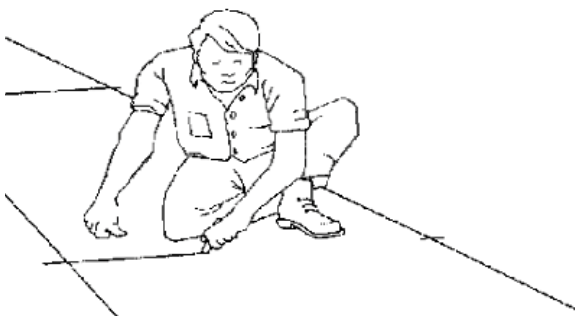
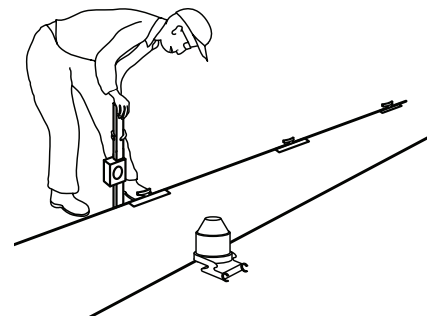


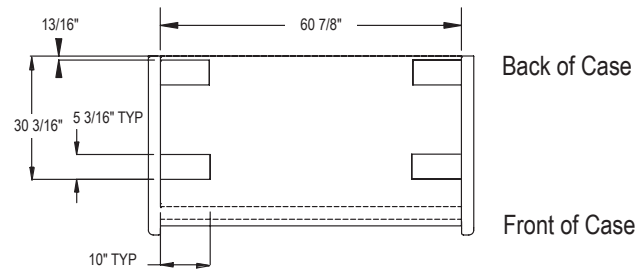
FIGURE 3: Mark Floor Level Difference



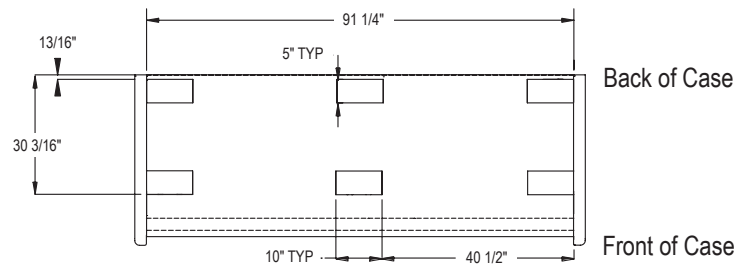
INSTALLATION & OPERATION

FIGURE 4: CGMC30 & CGLC30 Base Locations

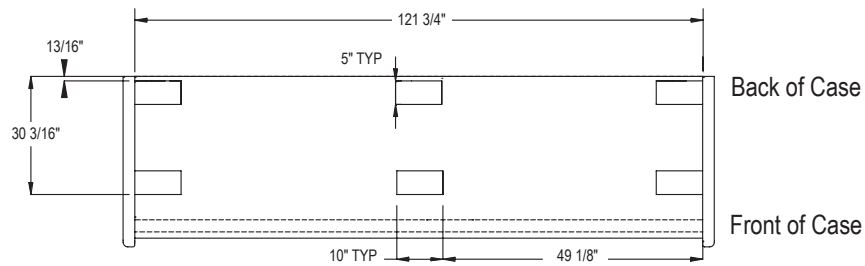
Drawings are top views with bases shown under the case. The front of the case is toward the bottom of the page.
Case length does not include end panels (2 1/2" wide each).



2CGMC30 & 2CGLC30



3CGMC30 & 3CGLC30



4CGMC30 & 4CGLC30

INSTALLATION & OPERATION

- Place enough shims under each base to equal the highest point. Shims should not extend beyond the front case bases or they will interfere with installing trim. The shims should be oriented to sit under the front and rear bends of each base. Tape all shims in place (See Figure 5 and Figure 6).

FIGURE 5: Tape Shims on the Floor Under Each Base

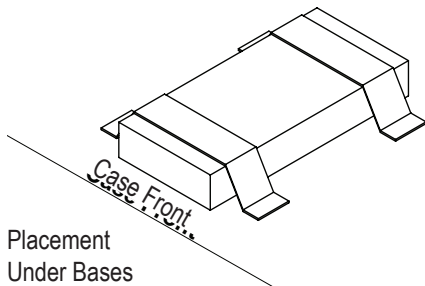
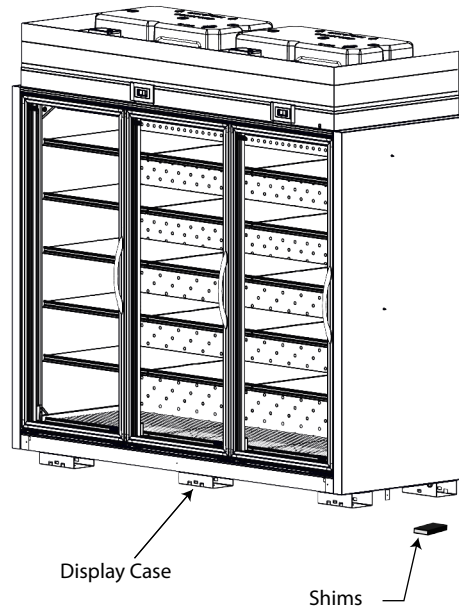
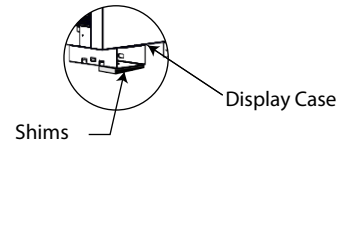


FIGURE 6: Shims Under Bases



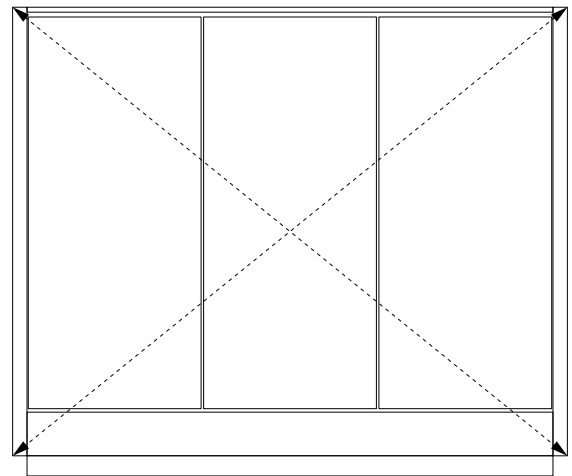
CAUTION!

SHIMS MUST BE PLACED UNDER THE FRONT AND REAR BENDS OF EACH BASE TO PREVENT THE BASE FROM WARPING/BUCKING



- To maintain even, consistent gaps and proper door operation, the case must be leveled front-to-back and side-to-side. Ensure that the case is set square to within 1/8" (See Figure 7). After the case is set, use at least a 48" level to ensure the case is level. Add additional shims as needed under specific bases.
- Place additional support shims under any bases with gaps taller than one shim. **Note: Total height of shims should be less than 3/4".**
- Remove the protective steel plates from under the end panels.

FIGURE 7: Case Squareness



- Measure squareness from top right corner of the case to the bottom left corner of the case.
- Measure again from the top left corner of the case to the bottom right corner of the case.
- Measurements should be equal. Difference should be no more than 1/8".

Lineup Assembly

Zero Zone display cases have been designed for continuous display so that multiple cases may be joined together to create a lineup of any desired length. The lineup will be ready for assembly after removing the packaging material.

A case lineup must be properly aligned, which starts with properly leveling the case (See "Leveling" on page 8). It is crucial to use a laser level to measure the high points in the floor and properly shim each base location.

The bottom of the end panels are protected by steel support plates, which must be unbolted and removed before the lineup is set. There are bolts that go up through the support plates into the underside of the foamed floor.

A case must be prepared with Butyl caulk before setting the next case in the lineup. Case caulking instructions and caulk are shipped with every case (See Figure 11 on page 12).

INSTALLATION & OPERATION

Move the next case into position and bolt it to the first case using the joining bolts that are provided (**See Figure 8**). Begin tightening the bolts at the top rear, working down the back of the case and up the front, making sure that the seams are flush. **Do not pull cases together using joining bolts.** Alignment holes are located in the rear end frames near the joining holes; use a drift pin or screwdriver to ensure those holes are aligned. Please note that Guardian® cases have a weldnut in the rear center of the left end frame; this weldnut makes it possible to join the cases without removing the shelves and rear duct from the right case at the joint.

The vertical joining splice (V-strip) will be shipped with the roll guard. Install the V-splice at the joint between cases by snapping it onto the end mullions of the adjacent cases (**See Figure 9 and Figure 10**). The V-strip should be installed low enough to clear the door's top electrical connector and high enough to clear the door's torque adjuster.

An insulated divider is used to join 2 different case models or 2 different temperature cases. The divider is typically factory installed to one of the cases.

Between Guardian® cases: The insulated divider uses a thru-bolt design. The divider is attached to one of the cases using short bolts for shipping. When the cases are installed, remove the short bolts one at a time and install the longer joining bolts to bolt the cases together. **Do not pull cases together using joining bolts.**

The interior case seams must be sealed using silicone sealant for NSF compliance (**See Figure 12 on page 13**). Do not allow Butyl caulk and silicone sealant to contact one another as this may affect adhesion or color of each.

FIGURE 8: Case Joining Hardware
Only showing end frames of cases

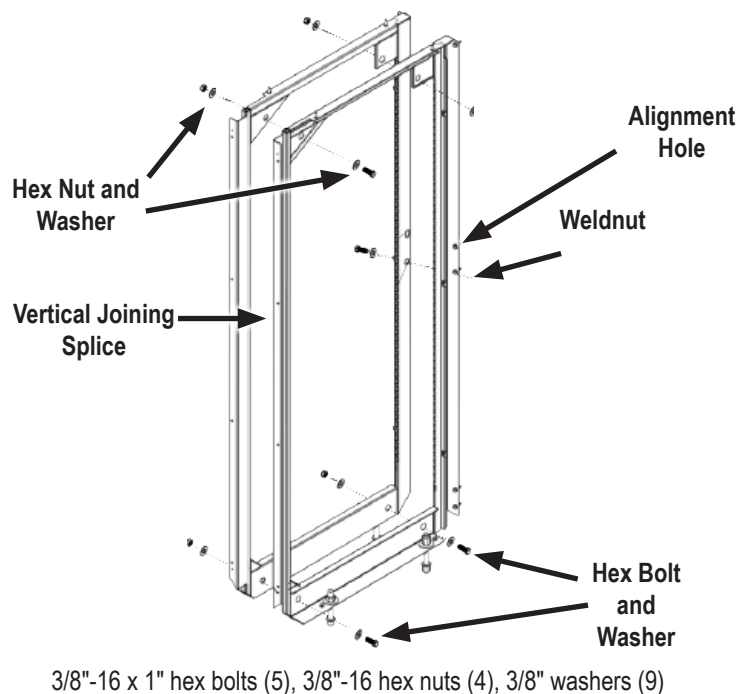


FIGURE 9: Vertical Joining Splice (V-Strip, Top View)

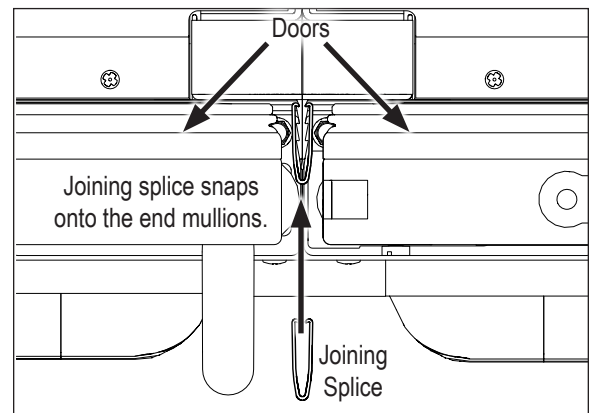
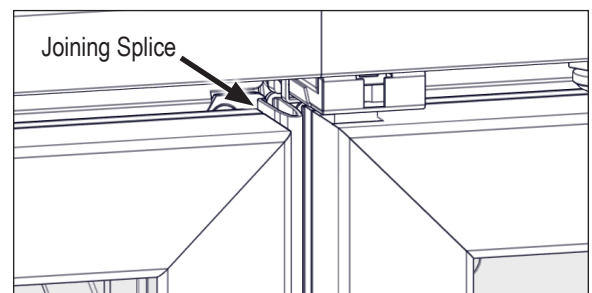


FIGURE 10: Vertical Joining Splice (V-Strip, Front View)

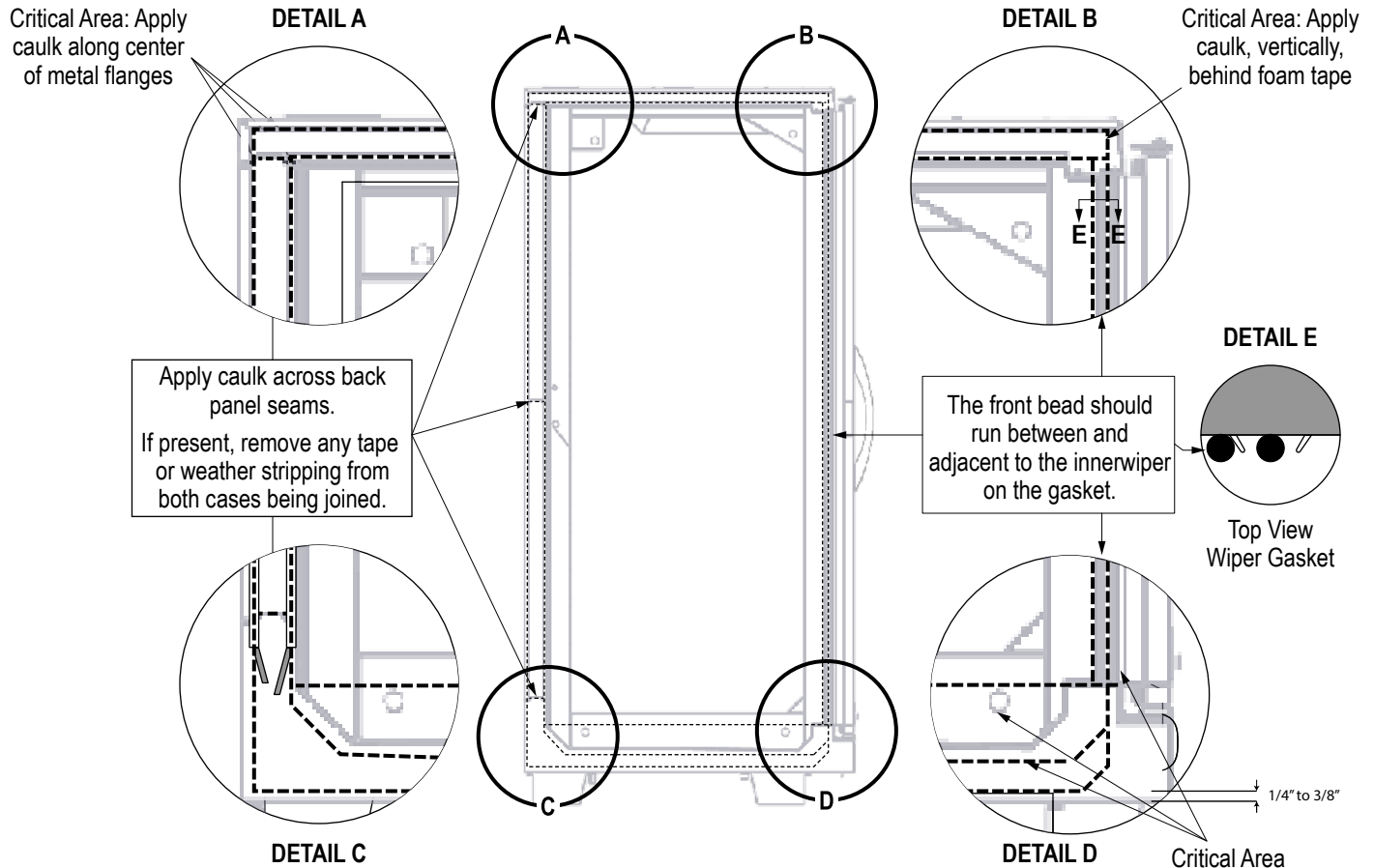


Note: Plexi divider is not shown in the above image.

INSTALLATION & OPERATION

Before joining the cases, remove all packaging material on the display case, including any spacer blocks inside the bases. Repeat caulking between each case in the lineup.

FIGURE 11: Case Joint Caulking (Butyl*)



IT IS CRITICAL TO FOLLOW THIS PROCEDURE TO ENSURE CASES ARE PROPERLY SEALED.

SURFACES TO BE CAULKED MUST BE CLEAN, DRY, FREE OF TAPE/ADHESIVE, AND FREE OF FROST (ABOVE 40°F).

Note: Apply Butyl caulk to only one case—not both cases. The caulk will spread out when the cases are pushed together, and excessive caulk may squeeze out of the joint. Wipe away any caulk that squeezes out. Butyl caulk will not mix with silicone sealant (used for NSF sealing), which will affect adhesion of both.

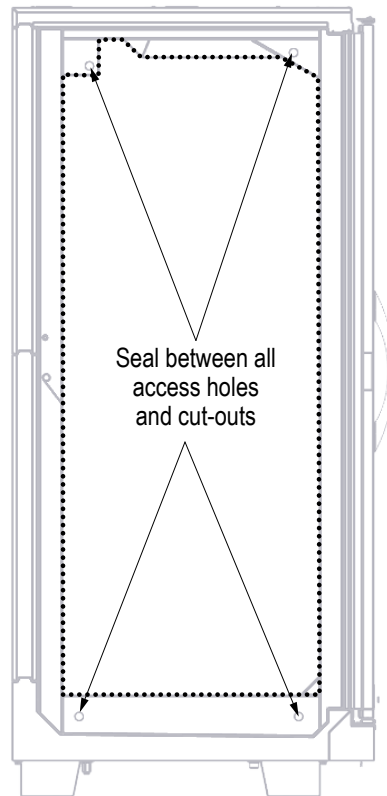
Note: Increase bead size for irregular surfaces.

1. Apply 3/8" thick beads of Butyl caulk* along the ceiling, rear wall, bottom of the case, and the mullion where indicated by the dashed lines
2. in the drawing. Caulk must be continuous with no gaps. Always apply 2 beads where specified. Caulk must be applied around a plexiglass
3. divider and not onto the divider itself, if applicable.
4. After cases are joined and tightened, caulk the top and back exterior seams, if accessible, to ensure a tight seal.

*DO NOT APPLY BUTYL CAULK ON SEAFOOD OR BAKERY CASES. Butyl caulk never cures and emits vapors that affect seafood and bakery products. Recommended alternative caulk: Polyurethane-based (full curing, durable, moisture-activated) or silicone-based (full curing).

INSTALLATION & OPERATION

FIGURE 12: NSF Compliance Sealing (Silicone)



THIS PROCEDURE MUST BE FOLLOWED FOR NSF COMPLIANCE.

SURFACES TO BE SEALED MUST BE CLEAN, DRY, FREE OF BUTYL CAULK, AND FREE OF FROST (ABOVE 40°F).

Note: Cases must be properly caulked and joined before NSF sealing. Wipe away any Butyl caulk that squeezes out of the case joint. Butyl caulk and silicone sealant will not mix, which affects the adhesion of both. See Figure 11 on page 12.

1. Apply silicone-based sealant in small, continuous beads where indicated by the dotted lines in the drawing. Do not thin or feather, as that will affect adhesion.
2. Sealant must be added between cases at case joints, between a case and an end panel, and between all access holes and cut-outs in the case end frame.

INSTALLATION & OPERATION

Packaged Refrigeration Unit (PRU) Installation

⚠ WARNING! A MINIMUM OF TWO PEOPLE ARE REQUIRED FOR PRU INSTALLATION OR REMOVAL.

⚠ CAUTION! DO NOT STAND ON TOP OF A GUARDIAN® MERCHANDISER. THE TOP OF THE CASE IS NOT DESIGNED TO SUPPORT THE WEIGHT OF A PERSON.

Note: The following procedure will name specific tasks for technician one and technician two. Technician one will be positioned on the left side of the PRU when facing the front of the PRU. Technician two will be positioned to the right side of the PRU when facing the front of the PRU.

Note: Ensure the PRU being placed matches the cooler or freezer.

1. Remove the packaging from the openings on top of the display case.
2. Place the PRU in front of the Display case. The insulated enclosure shall be oriented toward the rear of the display case.
3. Technician one and technician two will lift their respective side of the PRU. Place the rear of the PRU on top of the display case (See Figure 13).

⚠ CAUTION! DO NOT PUSH THE PRU COMPLETELY ONTO THE DISPLAY CASE. PUSHING THE PRU COMPLETELY ON TOP OF THE DISPLAY CASE CAN RISK IN THE PRU FALLING BEHIND THE DISPLAY CASE AND WILL MAKE ALIGNMENT MORE DIFFICULT.

4. Both technician one and technician two will slide the PRU towards the rear of the display case until a maximum of 6 inches of the PRU overhangs the front of the display case.
5. Technician one will maneuver toward the front of the PRU while keeping at least one hand on the unit at all times.
6. Technician two will move to the top of a step ladder placed in front of the display case.
7. Technician two will orient the PRU to align the mounting holes as technician one pushes the PRU toward the rear of the display case (See Figure 14).
8. Attach the PRU to the display case using the 6 mounting bolts provided. Torque the bolts using a cross pattern (See Figure 13).
9. Remove the evaporator cover.
10. Prime the trap on the PRU with 2 fluid ounces of water.
11. Reinstall the evaporator cover.
12. Connect and apply power to the display case.

FIGURE 13: PRU Torque Order

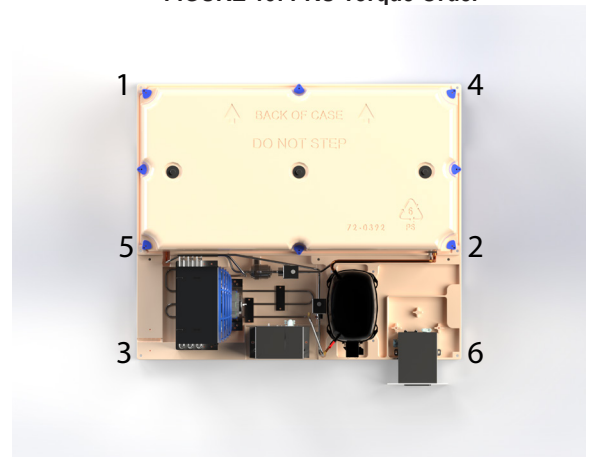


FIGURE 14: Lifting the PRU



FIGURE 15: Aligning the PRU



INSTALLATION & OPERATION

Packaged Refrigeration Unit (PRU) Removal

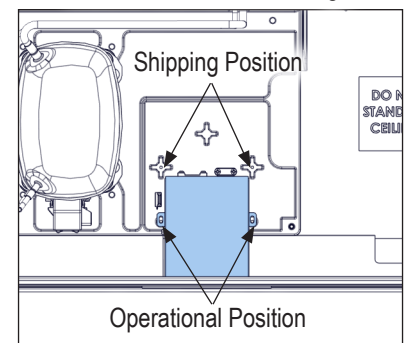
⚠ WARNING! A MINIMUM OF TWO PEOPLE ARE REQUIRED FOR PRU INSTALLATION OR REMOVAL.

⚠ CAUTION! DO NOT STAND ON TOP OF A GUARDIAN® MERCHANDISER. THE TOP OF THE CASE IS NOT DESIGNED TO SUPPORT THE WEIGHT OF A PERSON.

Note: The following procedure will name specific tasks for technician one and technician two. Technician one will be positioned on the left side of the PRU when facing the front of the PRU. Technician two will be positioned to the right side of the PRU when facing the front of the PRU.

1. Disconnect the power connector from the receptical.
1. Technician one will remain on the ground while technician two removes the 6 mounting bolts from the PRU while standing on a step ladder placed in front of the display case (See Figure 15).
2. Technician two will lift the PRU to break any seal with the top of the display case.
3. Technician two will slide the PRU towards the front of the display case until the PRU overhangs the front of the display case by a maximum of 6 inches. Technician one will stabilize the PRU from the ground.
4. Technician two will descend the step ladder, then remove the step ladder from in front of the display case.
5. Technician one will move toward the left side of the display case while keeping at least one hand on the PRU at all times. Technician two will take their position to the right of the PRU.
6. Both technician one and technician two will slide the PRU completely off the display case. Place the PRU on a mobile cart or someplace debris will not enter the fan outlet of the PRU.
7. Cover the fan openings on the display case with cardboard to prevent debris from entering the display case.

FIGURE 16: Controller Mounting
Viewed from Top of Case
Front of case Lower in Image



Controller and Bezel Installation

Note: The controller and bezel are mounted in shipping position on the PRU.

1. Remove the two screws attaching the controller to the PRU.
2. Move the controller forward to be flush with the front of the display case and aligned with the forward mounting holes. Mount the controller in its operational position using the two mounting screws removed in step 1 (See Figure 16).
3. Install the bezels by attaching them to the controller.

INSTALLATION & OPERATION

Shroud Installation

Note: The controller and bezel must be installed before the shrouds.

Note: The shrouds must be installed on the display case before operation.

1. Place the shroud base on top of the display case and slide it toward the rear. The base will fit into grooves. Magnets will hold the base in place (See Figure 17).

Note: No fasteners are needed for the shroud base. Do not fasten shroud base to the display case.

Note: The display case joints and caulk prevent the U-channels from properly adhering to the top of the display case. Do not place shroud dividers on joints or caulk lines.

2. Place the shroud dividers into the U-channels between PRUs. Secure the shroud dividers with two of the screws provided.
3. Place the shroud into the shroud base from above the display case. Mount the shroud using the provided screws and support brackets (See Figure 18).
4. Repeat step 3 until all shrouds have been installed.

Note: The light switch is attached to the end of the wiring harness.

5. Detach the lightswitch from the end of the harness, then feed the wires through the cutout in the shrouds.
6. Reattach the harness to the switch. **Note:** The orientation of the switch will not affect light function.
7. Installing multiple shrouds necessitates the use of a shroud alignment strip. Place a section of the shroud alignment strip across the center section of the adjacent shrouds (See Figure 19)

FIGURE 17: Shroud Base
View from Right Side of Case

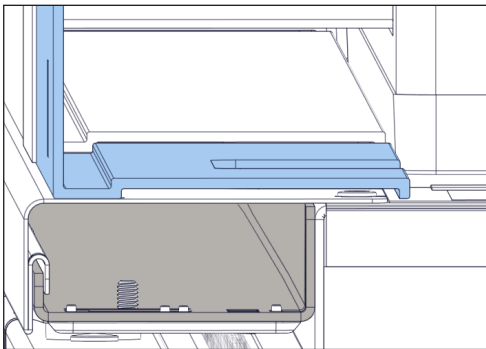


FIGURE 18: Shroud Installation
View from Right Side of Case

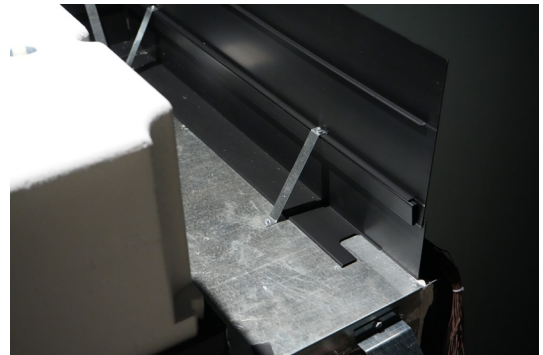
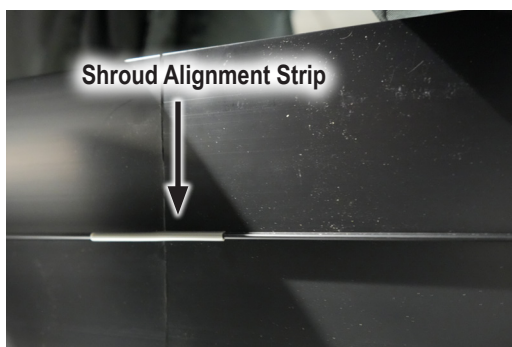


FIGURE 19: Shroud Alignment
View facing the rear of the shroud



INSTALLATION & OPERATION

Roll Guard

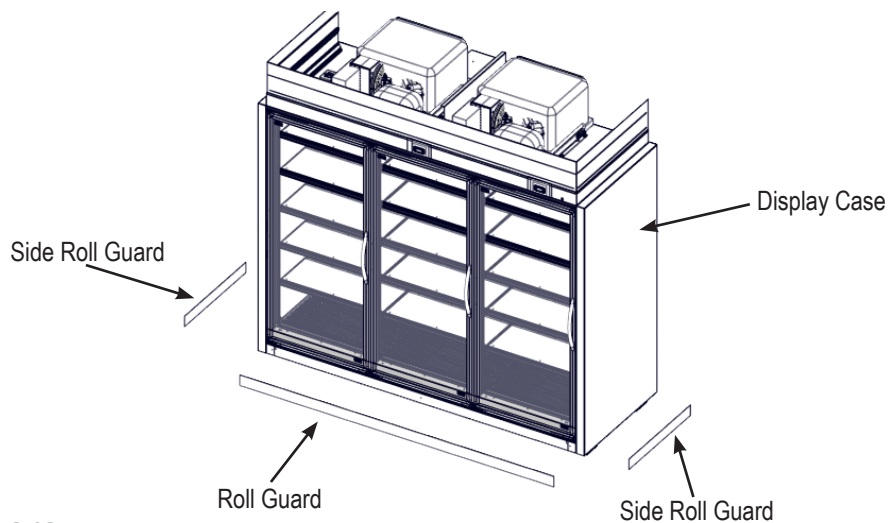
Each case is shipped with a front roll guard. Cases with end panels are shipped with 1 side roll guard per end panel.

Note: Front and side roll guard are attached to the case bases using Magnets. (See Figure 20).

Note: Roll guards will ship with the display case.

1. Position side roll guard.
2. Position front roll guard

FIGURE 20: Roll Guards



CoolView® Doors

DOOR HANDLES

CoolView® Envision® doors use a Classic™ door handle. These are attached to the door frame by screws.

HOLD-OPEN BRACKET

CoolView® doors are self closing, and closing tension increases as the door opens wider. The hold-open bracket keeps the door open when engaged, which is useful for stocking shelves or case maintenance. To engage the hold-open bracket, open the door to at least 90° until it clicks. Closing the door to about 80° will release tension on the door, and it will self close again.

DOOR GASKET

Each single-swing door has a full perimeter gasket mounted to the edge of the door.

INSTALLATION & OPERATION

ADJUSTING DOOR SAG/SAWTOOTH

Door sag/sawtooth is when the handle side of the door is either higher or lower than the adjacent door. To fix door sag on Guardian® cases, the torque adjuster must be moved by turning the sag adjustment screw.

1. Open the door to gain access to the sag adjustment screw (**See Figure 21**) on the bottom of the hinge side of the door.
2. Use a flathead screwdriver to turn the sag adjustment screw. Do not use power tools; a screwdriver allows for more control.
3. To lower the handle side of the door, turn screw clockwise. The torque adjuster should move away from you as you turn the screw.
4. To raise the handle side of the door, turn screw counter-clockwise. The torque adjuster should move toward you as you turn the screw.
5. Turn the sag adjustment screw until the door is level with the adjacent door.

FIGURE 21: Sag Adjustment Screw



TORQUE ADJUSTER / ADJUSTING DOOR TENSION

The torque adjuster automatically closes the door. It is located on the bottom of the hinge side of the door. The torque rod inside the door sets into the torque adjuster, which transfers the closing tension to the torque rod. This means that the torque rod must be aligned with the torque adjuster when installing a door. An adjustment screw on the front can be used to increase or decrease tension.

1. Open the door to observe current door tension. A properly tensioned door will close itself gently and not swing open.
2. Use a flathead screwdriver to turn the door tension screw (**See Figure 22**). **Do not use power tools; a screwdriver allows for more control.**
3. To increase tension, hold the door open 2" and turn the screw counter-clockwise until the door begins to close. Once it closes, increase tension by 2 more full turns.
4. To decrease tension, turn the screw clockwise.

FIGURE 22: Door Tension Screw



The torque adjuster is secured to a bracket that is attached to the display case.

REMOVING A DOOR

1. Turn the door tension screw clockwise until the door does not close on its own (**See Figure 22**). This removes tension between the door and torque adjuster so the door can be removed.
2. Disconnect the hold-open bracket from the top of the door (**See Figure 23**).
3. Use a needle-nose pliers to pinch the hinge pin while closing the door. This will disconnect the door from the case (**See Figure 24 on page 19**). **Note: The door is heavy. Be prepared to catch the weight of the door.**
4. Lift the door clear of the torque adjuster and set it down carefully. **Note: For safety, lift the door by the rails; do not lift by the handle.**

FIGURE 23: Locate the Hold-Open Bracket



INSTALLATION & OPERATION

FIGURE 24: Use a Wedge & Pinch Hinge Pin



FIGURE 28: Push Door & Hinge Pin into Place



INSTALLING A DOOR

1. Lift the door and set it into the torque adjuster. Swivel the door back and forth until you can feel that the door has dropped into the torque adjuster. **Note: The door is heavy. For safety, lift the door by the rails; do not lift by the handle.**
2. Carefully open the door until it is perpendicular to the case, align the hinge pin, and then push the top of the door so the hinge pin clicks into place (See Figure 28). **Note: Test whether the door is held securely by the hinge pin by pulling down on the door.**
3. Attach the hold-open bracket between the top of the door and the top of the case (See Figure 23 on page 18).
4. Turn the door tension screw counter-clockwise until the door gently closes itself (See Figure 22 on page 18). Check for sag/sawtoothing.

REVERSING DOOR SWING

1. Remove the door from the display case. See "Removing a Door" on page 18 for a detailed description. **Note: The door is heavy. For safety, lift the door by the rails; do not lift by the handle.**
2. Lift the door clear of the torque adjuster and lean it on its side, handle side down. This makes it easier to access the wiring cover on the hinge side of the door.
3. The wires to the hinge pin must be disconnected. Remove the wiring cover, disconnect the ground screw, and then pull the wires out of the door (See Figure 25). Pry the hinge pin out from the top of the door and tug on it to identify which wires need to be disconnected (See Figure 26). Disconnect the bullet connectors and pull the hinge pin out.
4. Pry the torque rod from the bottom of the door using a screwdriver (See Figure 27).
5. Remove the hold-open bracket from the door.

FIGURE 25: Hinge Pin Wiring

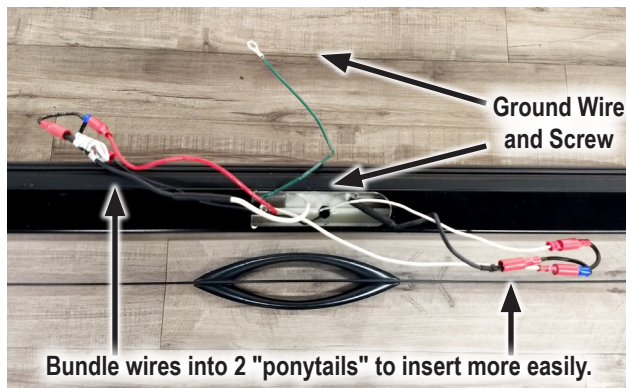
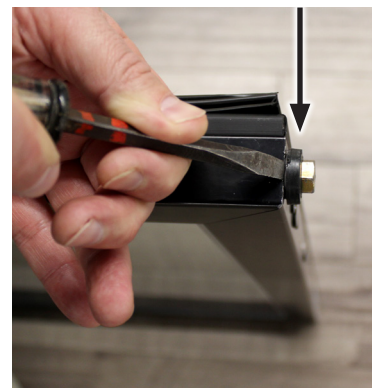


FIGURE 26: Remove Hinge Pin



FIGURE 27: Remove Torque Rod



INSTALLATION & OPERATION

6. Reinstall the hinge pin, torque rod, and hold-open bracket on the opposite ends of the door. For the hinge pin, after feeding the wires through the door and reconnecting them, it may be easiest to bundle the wires into 2 "ponytails" to fit them inside the door (**See Figure 25 on page 19**).
7. There are two hinge locations per door opening (**See Figure 29 and Figure 30**). Remove the raceway cover to access the parts that must be switched to the opposite side of the door opening.
8. Disconnect the terminal from the wire harness and remove the terminal from the raceway. Unscrew the gib and slide it to the side to remove. Swap the terminal and the gib to the opposite sides and reconnect the terminal to the wire harness. Swap the hole cover.

FIGURE 29: Left Hinge Location

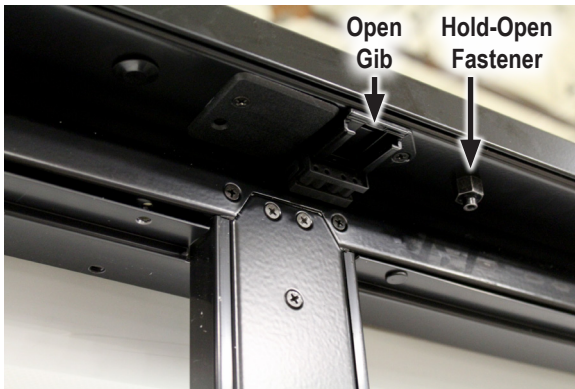
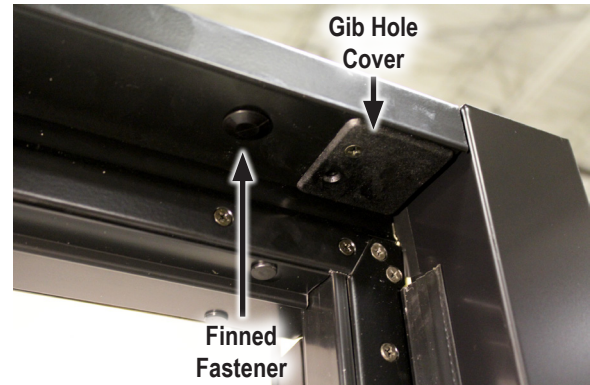


FIGURE 30: Right Hinge Location



9. Remove the hold-open fastener using a hex wrench to hold the bottom stationary and remove the nut on top. Remove the finned fastener (tree-shaped plug) on the opposite side. Swap the hold-open fastener and the finned fastener.
10. To unlock the torque adjuster from the case, turn the locking screw that was under the torque rod by 1/16 turn (**See Figure 31**). Remove the torque adjuster. Pry up the torque adjuster plug on the opposite side (**See Figure 32**). Swap the plug and torque adjuster.

FIGURE 31: Torque Adjuster Locking Screw

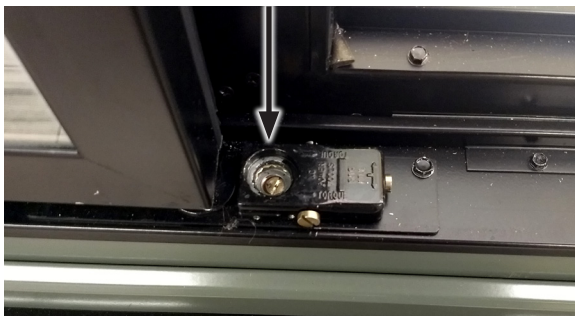


FIGURE 32: Torque Adjuster Plug



11. Install the reversed door. **See "Installing a Door" on page 19** for a detailed description. **Note: The door is heavy. For safety, lift the door by the rails; do not lift by the handle.**

INSTALLATION & OPERATION

Shelves & Stocking Product

On 2 to 4-door cases, tilt the shelf sideways and bring it through the door. Level the shelf inside the case and tilt the back of the shelf down so the shelf tabs fit into the slots in the shelf standards. Lower the front of the shelf until the shelf is held securely by the standards. To unassemble a shelf, insert a putty knife between the side of the shelf and the shelf bracket. Pry the pieces apart to disengage the bracket.

Shelf location may be adjusted in 1" vertical increments in any position for best display advantage. Make sure the shelf brackets are securely seated before placing any product on the shelf. The standard shelves may be tilted down at a 10° angle. The case may be stocked with product after it has operated at least 24 hours with correct case temperature and proper control operation. Product should not extend beyond the front of the shelves or bottom wire rack. **Do not exceed shelf load capacity (See Figure 33). Do not stand on the case when stocking or adjusting shelves.**

Shelves may accommodate price tag molding and product stops. Slide the product stop into the price tag molding and push it down to the bottom of the channel. The channel of the price tag molding may need to be pried open with a screwdriver, but the product stop should slide in easily once started.

FIGURE 33: Shelf Load Capacities

SHELF TYPE	WIDTH	DEPTH	BRACKET TYPE	LOAD CAPACITY (LBS.)
Solid Shelf	30"	24"	2-Position (0°/10°)	175/75
Bottom Wire Rack	30"	23.55"	0°	175

REFRIGERATION

Operation Set Points

Refer to the case spec sheet for btu/h requirements and electrical requirements. See Figure 34 for control setpoints.

FIGURE 34: Control Setpoints

SETTING	MEDIUM-TEMPERATURE	LOW-TEMPERATURE
Control Setpoint	36°F	-10°F

Defrost

Periodic defrosting to keep the evaporator coil free of frost is accomplished by a time clock used in conjunction with an hot gas defrost. Defrosts occur at regular intervals throughout the day based on the defrost schedule. Defrosts will terminate either by reaching the termination temperature or maximum defrost time (See Figure 35). If one of the evaporator enclosures of the PRUs is open for extended service, the other PRUs may need a manual defrost.

FIGURE 35: Defrost Settings

SETTING	MEDIUM-TEMPERATURE	LOW-TEMPERATURE
Defrost Type	Hot Gas	Hot Gas
Frequency	2 Per Day	6 Per Day
Duration	15 Minutes	15 Minutes
Temperature Termination Set Point	55°F	55°F

HOT GAS DEFROST

The timer starts the hot gas defrost cycle by energizing a solenoid, opening the hot gas bypass valve. The hot gas leaves the compressor discharge to pass through the serpentine loop before entering the evaporator coil through the liquid line. It flows through the coil in the same direction as the refrigerant during a refrigeration cycle.

Hot gas defrost termination temperature is set at 55°F. Hot gas defrost termination sensors are located on the evaporator coil inside of the PRU.

Air Sensors & Case Thermometers

- Return air sensor is located in the PRU return air stream.
- Hot gas defrost termination sensors are located in the evaporator coil inside of the PRU.
- An NSF thermometer is shipped loose and should be installed in the warmest product location as required by NSF. Specific field installation instructions are packaged with the NSF thermometer.

Anti-Sweat Heaters

All mullions are equipped with anti-sweat heaters. They are located behind the front metal strike plate. Remove the front fasteners on the mullion, and then remove the front strike plate to access the heater.

The low-temperature case sill has an anti-sweat heater. It is located under the front metal strike plate below the door opening.

Contact the Zero Zone Service Department for questions about servicing anti-sweat heaters.

REFRIGERATION

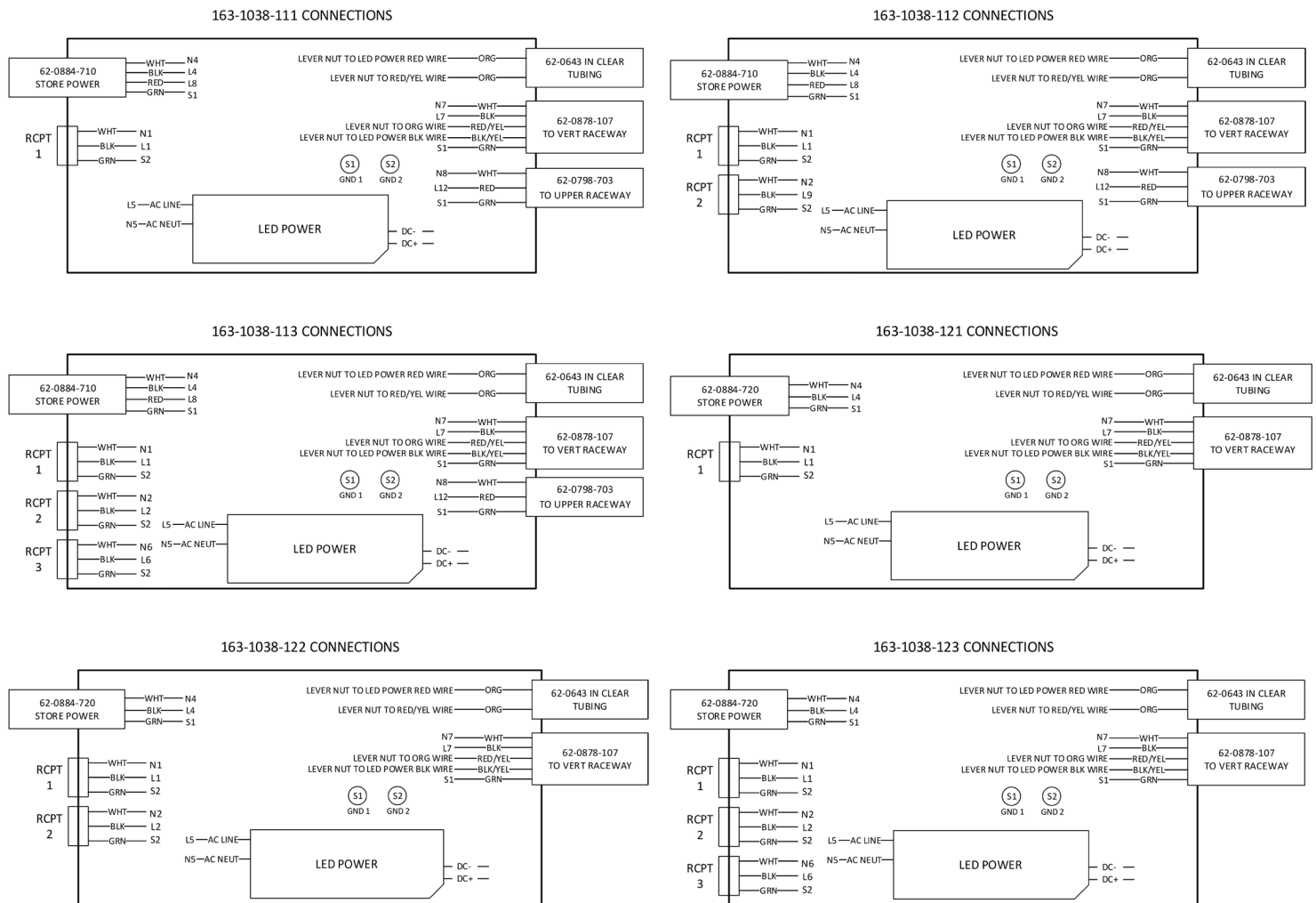
Wiring Information

The Electrical Contractor is to provide a wiring disconnect, unless present on upper electrical box, between the panel breaker and case for each AC line (per National Electric Code).

ELECTRICAL POWER DISTRIBUTION ASSEMBLY WIRING

The electrical power distribution assembly wiring diagram (See Figure 36) is shown with three receptacles. The number of receptacles in this box will match the number of PRUs on the case.

FIGURE 36: Electrical Power Distribution Assembly Wiring



REFRIGERATION

TERMINAL BLOCK CONNECTIONS

FIGURE 37: Terminal Block Connections Single AC Line

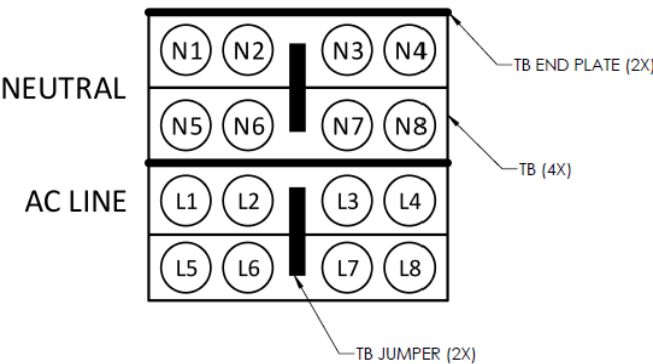
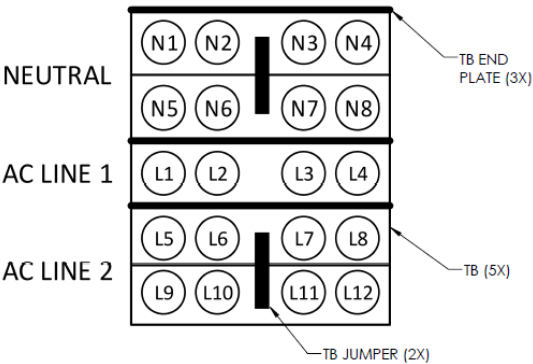


FIGURE 38: Terminal Block Connections Multiple AC Line



Other Information

See the Packaged Refrigeration Unit (PRU) manufacturer's documentation for all other refrigeration information.

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.

Note: Reference the PRU manufacturer's manual for cleaning the PRU.

1. Do not use high-pressure water or steam to clean the interior or any components.
2. Wipe out the case interior using a mild detergent and warm water (never an abrasive cleaner).
3. Clean all glass doors using glass cleaner. Cleaning interior glass reduces fogging and increases visibility.



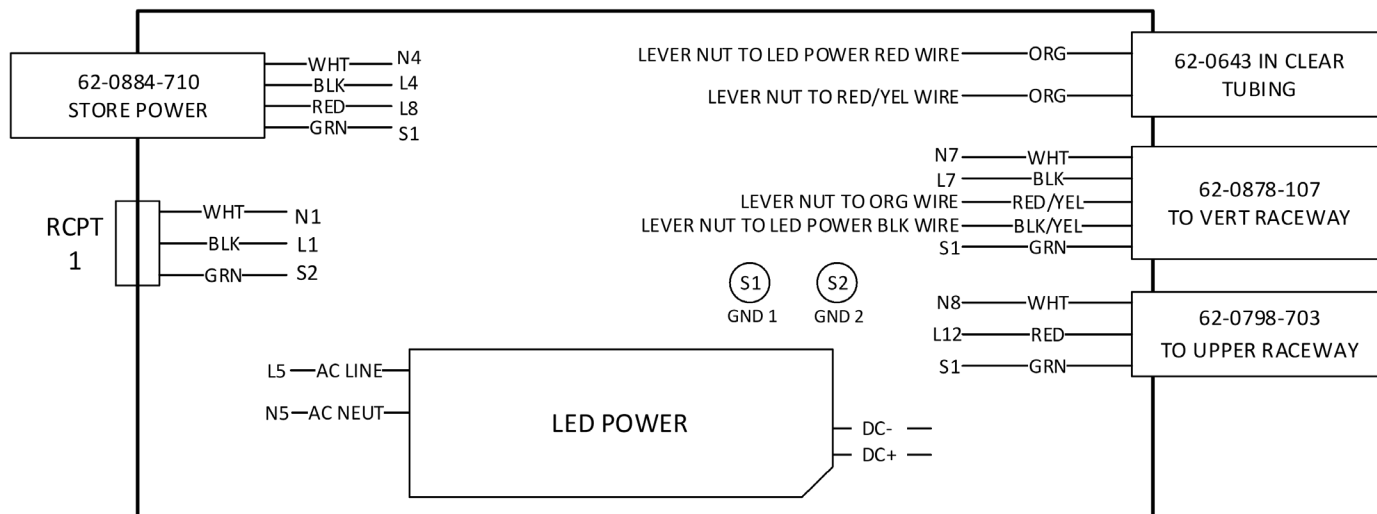
CAUTION! ONLY USE AMMONIA FREE GLASS CLEANER.

UNDER CASE FLOOR CLEANING (NSF)

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

1. Remove the magnetic roll guard from the case.
2. With the roll guard 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 speed up the drying process. Replace the roll guard when the floor has dried.

163-1038-111 CONNECTIONS





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.

