Important!

If You Are Adjoining Cases, See Synchronous Defrost Connection Instructions on Page 8 AND Adjoinment Instructions on Page 9 Of This Operating Manual.

Model B32

Model B32.7413
(End Panel Removed As Part Of Lineup)

Model B4732
(With Optional Roll-Down Security Cover)

Model B5932TM.6785 (Similar To B4732TM.6785) / (Top-Mounted Condenser Pkg. / Underside: Pump) / Optional Rear Doors

Model B8832 (With Optional Roll-Down Security Cover)

Model B6632SC.6241

Model B22.6817
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OVERVIEW

- These Structural Concepts merchandisers are designed to merchandise packaged products at 41 °F (5 °C) or less product temperatures.
- Product must be pre-chilled to 41 °F (5 °C) or less product temperatures prior to placing in merchandiser.
- Cases should be installed and operated according to this operating manual's instructions to ensure proper performance.
- Improper use will void warranty.

TYPE I vs. TYPE II ENVIRONMENTAL CONDITIONS

This unit is designed for the display of products in ambient store conditions where temperature and humidity are maintained within a specific range.

- Type I display refrigerators are intended for use in an area where environmental conditions are controlled and maintained so that the ambient temperature does not exceed 75 °F (24 °C) and 55% maximum humidity.
- Type II display refrigerators are intended for use in an area where environmental conditions are controlled and maintained so that the ambient temperature does not exceed 80 °F (27 °C) and 55% maximum humidity.

If unsure if your unit is Type I or II, see tag next to serial label. See SERIAL LABEL LOCATION & INFORMATION LISTED / TECH INFO & SERVICE section in this manual for sample serial labels.

COMPLIANCE

- Performance issues when in violation of applicable NEC, federal, state and local electrical and plumbing codes are not covered by warranty. See below.

WARNINGS

- This sheet contains important warnings to prevent injury or death. Please read carefully!

REFRIGERANT DISCLOSURE STATEMENT

- This equipment is prohibited from use in California with any refrigerants on the “List of Prohibited Substances” for that specific end-use, in accordance with California Code of Regulations, title 17, section 95374.
- This disclosure statement has been reviewed and approved by Structural Concepts and Structural Concepts attests, under penalty of perjury, that these statements are true and accurate.

ATTENTION CONTRACTORS

WARNING

ELECTRICAL HAZARD

KEEP HANDS CLEAR

HOT SURFACE

COMPLIANCE

This equipment MUST be installed in compliance with all applicable NEC, federal, state and local electrical and plumbing codes.

WARNING

Risk of electric shock. Disconnect power before servicing unit.

CAUTION! More than one source of electrical supply is employed with units that have separate circuits.

Disconnect ALL ELECTRICAL SOURCES before servicing.

WARNING

Hazardous moving parts. Do not operate unit with covers removed.

Fan blades may be exposed when deck panel is removed.

Disconnect power before removing deck panel.

WARNING

Condensate Pan is Hot!

Disconnect and allow to cool before cleaning or removing from case.

WARNING: This product can expose you to chemicals, including Urethane (Ethyl Carbamate), which are known to the state of California to cause cancer and birth defects or other reproductive harm. For more information go to P65Warnings.ca.gov.

WARNING: This product can expose you to chemicals, including Urethane (Ethyl Carbamate), which are known to the state of California to cause cancer and birth defects or other reproductive harm. For more information go to P65Warnings.ca.gov.
**PRECAUTIONS**
- This sheet contains important precautions to prevent damage to unit or merchandise. Please read carefully!
- See previous page for specifics on OVERVIEW, TYPE, COMPLIANCE and WARNINGS.

**CAUTION! CAUTION**

**CAUTION! LAMP REPLACEMENT GUIDELINES**
LED and fluorescent lamps reflect specific size, shape and design. Any replacements must meet factory specifications, resist breakage and reflect similar appearance as lamps from factory.

**CAUTION! GFCI BREAKER USE REQUIREMENT**
If N.E.C. (National Electric Code) or local code requires GFCI (Ground Fault Circuit Interrupter), use a GFCI breaker in lieu of a GFCI receptacle.

**CAUTION! POWER CORD AND PLUG MAINTENANCE**
Risk of electric shock. If cord or plug becomes damaged, replace only with cord and plug of same type.

**CAUTION! ADVERSE CONDITIONS / SPACING ISSUES**
- Performance issues caused by adverse conditions are NOT warranted.
- Keep end panels tightly joined or at least 6” away from structures to prevent condensation. Keep rear panel at least 6” from wall/structure.
- Unit must be kept at least 15-feet from exterior doors, overhead HVAC vents or any air curtain disruption to maintain proper temperatures.
- Unit must not be exposed to direct sunlight or any heat source.
- Self-contained unit clearance: 6” min. air intake / 6” min. air discharge.

**CAUTION! CHECK CONDENSATE PAN POSITION & PLUG**
Water on flooring can cause extensive damage! Before powering up unit, check and confirm that:
- Condensate pan is DIRECTLY UNDER condensate drain.
- Condensate pan plug is securely plugged into receptacle.
- Overflow pan has plug connected to its box. Units with optional Clean Sweep™ MUST HAVE two plugs connected.

**CAUTION! DO NOT RELY ON THERMOMETERS OR THERMOSTATS FOR ACTUAL PRODUCT TEMPERATURES.**
- Thermometers/thermostats reflect air temperatures ONLY.
- For ACTUAL food temperatures, use a calibrated food thermometer.
1. **Remove Case From Skid (Levelers)**

- Remove shipping brace that may be securing case to skid.
- Support case to prevent tipping.
- **Caution! Levelers can be damaged if case hits floor with heavy force!**
- Carefully slide unit to rear of skid and tip backward off skid.
- Illustration may not reflect every feature or option of your particular case.
- Case can be repositioned with pallet truck when front lower panel is removed. Blocking may be necessary to obtain adequate height.

![Slide Skid Out](image)

2. **Remove Case From Skid (Casters)**

Remove shipping brackets that secure casters to skid

- **Important! Case is shipped with levelers in the DOWN position (for stability). To prevent damage to the case, all levelers must be raised ALL THE WAY UP before moving unit off skid and into position.**
- After levelers are raised all the way up, place ramp up against skid (to allow case to smoothly roll off from skid).
- Maintain support of case at all times or center of gravity may cause case to fall.
- Roll unit to rear of skid. Roll down ramp and off skid.

![Support case while rolling down ramp.](image)
3. Position & Align Alongside Other Cases
- Before adjusting levelers, make certain that the case is in proper position and, if required, aligned with adjoining case(s).
- This may require the repositioning of the case you are installing or the already positioned cases.

4. Adjusting Levelers
- Important! After case is in proper position, levelers must then be LOWERED to floor.
- Adjust levelers so the case is level and plumb.
- You may need to remove front and/or rear toe-kick to access levelers.
- Use adjustable wrench to adjust leveler.
- Depending upon case weight it may be necessary to use a pry bar to accomplish this task.
- Do not use pry bar on toe-kick as it may buckle.
- Do not use pry bar on end panel as it may chip.
- Use pry bar ONLY on base frame to avoid damaging case.
- See illustrations below.
5. Optional Security Cover Instructions


> Steps A, B and C correspond to this sheet’s illustrations A, B and C. Follow these step-by-step instructions for proper security cover placement.

A. Firmly hold security cover handles, and place the bottom of the security cover on the OUTSIDE of the acrylic air deflector and INSIDE of lower security bracket.

B. Lean upper edge of security cover against upper bracket retainer (shown with hidden lines in illustration "B" on this sheet).

C. Check that the lock properly rotates its locking mechanism into support angle slot (at upper area).

> When removing security cover from case, store in safe location away from foot traffic.

> Manufacturing note: if your case DOES NOT HAVE the hardware shown on this sheet for proper placement of security cover, contact Structural Concepts Corporation Technical Service. Toll-free number is listed on the last page of this document.

Note: Illustrations Shown May Not Exactly Reflect Every Feature or Option of Your Particular Case.
6. Synchronous Defrost Connection (Optional)
- Adjoined cases MUST HAVE its synchronous defrost plugs connected.
- See wiring diagram accompanying case.

Attention!
- Adjoined cases have synchronous defrosts.
- Synchronous Defrost Plugs Must Be Connected At Rear of Electrical Box During Case Adjoinment.
- See Your Case’s Wiring Diagram For Instructions.

SCC Internal Note: Any Changes To This Sheet Must Also Be Made To SCC P/N 20-61248.

Note: “Daisy-Chain” Synchronous Wiring Must Route To Primary Case (At Left)
7. Overview / Silicone and Butyl Application

Sealant Overview:
- Warranty is void if improper sealant is used.
- Sealing tub prevents air from escaping through seams between cases (causing condensation problems and reducing refrigeration efficiency).
- Sealing also prevents water from seeping between cases to the floor.

Silicone and Urethane Application:
- Form (1) INNER sanitation bead AND (1) refrigeration bead BEFORE case is adjoined (as shown).
- Then, AFTER case is adjoined (and bolted), form (1) OUTER sanitation bead (as shown) into any cavities or gaps that may remain along outer adjoinment areas where urethane has ALREADY been applied.
- Also place a thick bead of urethane around drain.

8. Bolting Adjoined Units

- Bolt holes are at various locations (depending upon model). Model illustrated MAY NOT exactly reflect your particular unit but will likely be similar in layout.
- Use appropriately sized nuts and bolts for each hole.
- #1 hole is accessible at honeycomb (slight adjustment or removal of honeycomb air diffuser may be necessary for attachment of bolt).
- #2 hole is accessible near rear plenum.
- #3 holes are accessible after removing decking.
- #4-6 holes are accessible after removing front panel.
- #7-9 holes are accessible after removing rear panel.
- >> Be sure to reattach components to case after the adjoinment process is complete.

Note: Any changes to this document must also be made to P/N 20-76683
1. **Removable Front Grille**
   - Front grille can be removed/replaced via thumbscrew and magnet removal method (shown top-right) OR slot and hook method (shown lower-right).
   - Also, hook/magnet method (shown lower-left).

2. **Check That Overflow Condensate Pan is Properly Connected To Outlet**
   - **Caution!** Condensate pan can come unplugged from its electrical outlet during shipment!
   - If case runs without proper connection, water will overflow pan and drain onto floor causing damage!
   - Before turning case on, check that power cord from condensate pan is properly plugged in.
   - See TROUBLESHOOTING section in operating manual for additional information.

3. **Turning On Power To Case**
   - Plug in power cord.
   - Main power switch may be turned on by reaching through front grille; however, removal of front grille will allow unhindered access.
   - Main power switch is located on main ballast box, below controller. See illustration at right.
1. **Evaporator Coil Fan Discharge**
   - When Main Power Switch is turned on, refrigeration assembly will energize (see **CASE START-UP & REFRIGERATION ASSEMBLY ACCESS** section).
   - Evaporator coil fans should turn on. From inside of the case, check for discharge air from front baffle to confirm that the fans are functioning properly.
   - When the case is in a start up mode or has been idle for a long period of time, the unit will require 75 minutes of run time to pull-down temperature.
   - See below illustration.

2. **TXV (Thermostatic Expansion Valve)**
   - TXV is under TXV access panel.
   - Decking must be removed for access.
   - TXV cover must also be removed for access (remove two thumb screws).
   - See illustration below.
   - Note: Standard cases have TXV at customer-left. For cases with EnergyWise, TXV is at customer-right.

3. **Sliding Condenser Package Out From Underside Of Case**
   - At shipment, removal of compressor pan shipment screws may be necessary to access condenser package. See illustration below-left.
   - Refrigeration assembly base rests on plastic glides.
   - Slide condenser package out from under case.
   - Above View Shows Condenser Package Slid Out From Under Case. Note: Illustration Shown May Not Reflect Every Feature Or Option of Your Particular Case.
Honeycomb Air Diffuser

- Honeycomb is located in discharge air duct.
- See illustration below.
- Note: Illustration shown below is partially disassembled for illustrative purposes only.
**LED Style Light Fixtures**

**Removal of Faulty LED Lights:**
- Contact Structural Concepts’ Technical Service Department for replacement LED lights.
- Turn off LED light switch.
- To remove faulty LED light, follow these steps:
  A. Disconnect plug from LED light.
  B. Using both hands, grasp LED light assembly (with its magnetic mounting clips). Pull downward and off its shelf (or header).
  C. Remove magnetic mounting clips from LED light by pressing against flange part of clip with thumb.

>> Note: Mounting clips MAY be riveted to shelf or header. In such instances, simply remove LED light from mounting clips by pressing against flange part of clips with thumb.

**Replacement of LED lights:**
- Attach magnetic mounting clips onto LED light.
- Adjust magnetic mounting clips so they are equally spaced on LED light.
- Reattach LED light assembly to its shelf/header.
- Position properly in shelf/header.

>> Note: If mounting clips are riveted to shelf (or header), attach by placing LED in base of clip and then snapping into clip at FLANGE SIDE.
- Press plug’s barrel-shaped insert deep into LED light.
- Important: If plug is not inserted ALL THE WAY IN the LED light’s orifice, the light may not energize. See “BAD” vs. “GOOD” insertion illustrations below.
- Turn LED light switch back on.

--- Case Front of Model B43C ---
Roll Down Security Cover (Optional): Shown Extended

- Optional roll down security cover has two handles for grasping, lowering and raising.
- After roll-down cover is lowered, key may be turned clockwise to lock latch into strike bracket.
- Turn counter-clockwise to unlock.
- Keep keys in safe and secure place.

Views Below Shown Partially Disassembled With Transparent Components For Illustrative Purposes Only
**Dual Rear Doors (Optional):**
- Illustration below has had optional roll-down security cover removed for illustrative purposes.
- Transparent rear doors have perforated plenum as part of each hinged door.
- Note: Transparent doors are not available on non-standard models.
- See illustrations below.

Model B5932TM.6785 is shown. It may not reflect every feature or option of your particular case.
**Single Rear Door (Optional):**
- Illustrations below show optional roll-down security cover intact AND removed for illustrative purposes.
- Rear door has stainless steel skin with stainless steel perforated plenum as part of door assembly.
- See illustrations below.

*Model B3632TM Is Shown. It May Not Reflect Every Feature or Option of Your Particular Case*
Wall Spacing / Rear Venting (May Not Be Applicable To Your Model)

Venting Panel: Caution! Venting is an integral part of case temperature management. Case MUST NOT be pushed up against wall if rear venting panel is not attached!

Rear Grille: Rear grille may be removed (by removing 4 screws) for service or maintenance of condenser unit. Return rear grille to case rear when completed.
Condensate Pan Access

Warning! Disconnect power before providing maintenance and service to unit.

First, remove the front grille and slide out the condenser package. See FRONT GRILLE ACCESS / CHECK CONDENSER PAN / REFRIGERATION ASS’Y / TURN ON POWER section in this operating manual for instructions.

- Unplug the condensate pan from its outlet.
- Remove the two (2) screws holding the condensate pan foot to the condensate pan support (see illustration below).
- Carefully slide the condensate pan off from the condensate pan support.
- When done servicing or cleaning, return and reconnect in reverse order it was removed.

Note: Depending upon your particular refrigeration package, removable, electric-coil condensate pan may not be part of case. Cases with EnergyWise refrigeration packages DO NOT have a removable electric-coil condensate pan.
Condensate Pan Access and/or Removal

- **Caution**: Only trained service providers are to provide maintenance and service to unit.
- **Warning!** Disconnect power before providing maintenance and service to unit.
- To access, remove the front panel. Simply lift panel up and off (no screw removal is required).

- To service or clean, unplug the condensate pan from its outlet.
- Remove the screws holding the condensate pan foot to the condensate pan support (see illustration below).
- Carefully slide the condensate pan off from its support.
- When done servicing or cleaning, return and reconnect in reverse order it was removed.
Self-Contained Hot Gas Loop Condensate Packages

- **Caution:** Only trained service providers are to provide maintenance and service to unit.
- **Warning!** Disconnect power before providing maintenance and service to unit.
Self-Contained Hot Gas Loop Condensate Package

- **Caution**: Only trained service providers are to provide maintenance and service to unit.
- **Warning!** Disconnect power before providing maintenance and service to unit.

---

--- Model B6632SC.6241 Condenser Package Component Layout ---
Self-Contained Hot Gas Loop Condensate Package - Top Mounted

- **Caution**: Only trained service providers are to provide maintenance and service to unit.
- **Warning!** Disconnect power before providing maintenance and service to unit.
- **Important!** See next page for underside pump/drain pan for top mounted units.

---

--- Model B5932TM.6785 Condenser Package Component Layout ---
**Underside Pump/Drain Unit (For Top-Mounted Self-Contained Condenser Packages)**

- **Caution:** Only trained service providers are to provide maintenance and service to unit.
- **Warning!** Disconnect power before providing maintenance and service to unit.

---

--- Model B5932TM.6785 Condenser Package Component Layout ---
CAUTION 1: TO PREVENT PRODUCT FROM FREEZING OR BECOMING OVERLY WARM, ALLOW AT LEAST 1" SPACE BETWEEN PRODUCT AND UPPER SHELF LIGHTS.

CAUTION 2: TO PREVENT PRODUCT FROM FREEZING OR BECOMING OVERLY WARM, DO NOT BLOCK AIR RETURN GRILLE WITH PRODUCT.

NOTE: SEE VIEW AT RIGHT FOR PRODUCT TEMPERATURE RANGE AT FRONT vs. REAR OF CASE

- IMPROPER PRODUCT PLACEMENT PREVENTS PROPER AIRFLOW CAUSING PRODUCT TO FREEZE OR BECOME OVERLY WARM.
- FOLLOW THESE PRODUCT PLACEMENT GUIDELINES TO MAINTAIN DESIRED PRODUCT TEMPERATURES.
# CLEANING SCHEDULE - PERFORMED BY STORE PERSONNEL

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<tr>
<td>Daily</td>
<td><strong>Acrylic Air Deflectors:</strong> Clean with a warm water and mild soap solution and soft cloth. Never use ammonia-based cleaners (nor household or commercial window cleaner) on acrylic.</td>
</tr>
<tr>
<td>Daily</td>
<td><strong>Shelves &amp; Decks:</strong> Wipe off with moist cloth.</td>
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</table>
| Daily | **Glass Surfaces (Optional Rear Transparent Doors, Mirrors, etc.):**  
- Clean with household or commercial glass cleaner. Dry with soft cloth or paper towel. |
| Weekly | **Tub & Drain:** Vacuum tub under decks. Clean with soap and water solution. Wipe dry with clean cloth. Keep drain free of debris to prevent clogging. |
| Weekly | **Magnetic Condenser Coil Filter Option (Self-Contained Units Only):**  
- This optional filter helps prevent dust particles from entering condenser coil.  
- It is accessible by removing front panel from case.  
- Clean magnetic condenser coil filter by following either of these steps:  
  1. To clean by hand, (without using dishwasher), remove magnetic condenser coil filter from case. Use a rag or soft-bristled brush to wipe off excess dust particles from filter. Submerse in warm, soapy water. Use soft-bristled brush to remove dust, dirt, grease and grime that may collect on filter. Rinse thoroughly. Skip to step #3.  
  2. As magnetic condenser coil filter is dishwasher safe, remove from case (no screw removal required) and use a rag or soft-bristled brush to wipe off excess dust particles from filter. Run in normal dishwasher cycle. Remove from dishwasher. Go to next step.  
  3. Dry with soft cloth or paper towel (as shown below) or allow to air dry. Replace. |
| Weekly | **Rear Perforated Plenum (Either Stainless Steel or Acrylic):**  
- Clean with a warm water and mild soap solution and soft cloth. |
| Monthly | **Air Return Grille and Fan Shroud Area:** See Illustration below.  
1) Turn off power.  
2) Remove decks from case.  
3) Clean with moist cloth. |

---

**Above Illustration (With TXV at Customer-Left) is ONLY on Cases With Standard Refrigeration Package (With Standard Condensate Pan, etc.)**
WARNING! TURN OFF CASE BEFORE PERFORMING PREVENTIVE MAINTENANCE!

QUARTERLY PREVENTIVE MAINTENANCE INSTRUCTIONS

**Tub, Coil, Drain, Fan Blades, Motors, Brackets:**

*Caution! Do Not Clean or Perform Service On Unit While It Is Energized!*

1. Remove front panel (to access controls). No screw removal is required. Place in safe place away from foot traffic.
2. Turn off main power switch (located near Carel® Temperature Controller).
3. Remove both deck pans/sub-deck. Place in safe place away from foot traffic.
4. Remove electrical tape (if any) and disconnect power cord that energized fan panel.
5. Grasp underside of fan shroud assembly (above trough). Lift upward and away from case. Place in safe place away from foot traffic.

**Cleaning Process:**

- Use vacuum to remove excessive residue AND to remove dust in coil.
- Use clean cloth and/or nylon brush with warm water and mild soap solution to clean tub, drain, trough, TXV, lines, solenoid, coil & coil tubes. See enlarged view of components to be cleaned (lower-right).
- Remove debris that may clog drain.
- Wipe down fan blades, motors and brackets with moist cloth.

**Returning Components / Restoring Power To Case:**

- Replace/reconnect components in reverse order they were removed or disconnected.
- Turn main power switch back on. Check that fans are operational.

Note: Model B4732 (Unit Shown) May Not Exactly Reflect Every Feature or Option of Your Particular Case.
QUARTERLY PREVENTIVE MAINTENANCE INSTRUCTIONS

**Under Case Cleaning:**
Whenever refrigeration assembly is removed from underside of case, vacuum (or broom) under case to remove all dust, debris and dirt that may collect.

**Condenser Coil Fins / Refrigeration Assembly Without Evaporator Pan:**
*Warning! Disconnect power from case before beginning process!*
A. Remove front grille (by removing thumbscrews).
B. Slide out refrigeration assembly.
C. Use vacuum (in suction mode) and brush to dislodge and remove dust both in and on coil fins.
D. Place damp rags around condensing fan motor brackets to collect airborne dust.
E. Switch vacuum to blow mode to blow air through condenser coils and into damp rags on fans. Blow entire surface of condensing coil to assure that all entrenched dust is removed. Caution! Coil fins are sharp!
F. While refrigeration assembly is out from under case, use a moist cloth to wipe off dust & debris that collects on various parts (fans, sight glass, overflow pan, etc.).
G. Slide refrigeration assembly back under case.
H. Replace front grille to case (reattach with thumbscrews).

*See illustrations below.*
## WARNING! TURN OFF CASE BEFORE PERFORMING PREVENTIVE MAINTENANCE!

### QUARTERLY PREVENTIVE MAINTENANCE INSTRUCTIONS

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<tr>
<td>Case Interior</td>
<td><strong>Refrigeration Assembly With Condensate Pan:</strong></td>
</tr>
<tr>
<td></td>
<td><em>Caution! You must turn main power switch off before cleaning!</em></td>
</tr>
<tr>
<td></td>
<td>- Remove front grille. Turn main power switch off.</td>
</tr>
<tr>
<td></td>
<td>- Slide refrigeration package out from under case.</td>
</tr>
<tr>
<td></td>
<td>- Remove wicking material (if any).</td>
</tr>
<tr>
<td></td>
<td>- Use a scrub-brush and a non-corrosive de-scaling solution (to remove calcium, lime and rust) from condensate pan. Clean hot gas loop (for EnergyWise units) or electric coil (for standard units). Follow instructions as to proper dilution, safety precautions and scrubbing method.</td>
</tr>
<tr>
<td></td>
<td>- After thoroughly cleaning pan with scrub-brush and solution, rinse thoroughly with clean water (in spray bottle) and wipe dry with sponge or paper towel.</td>
</tr>
<tr>
<td></td>
<td>- Use moist cloth to wipe off dust &amp; debris that collects on various parts (fans, sight glass, overflow pan, etc.).</td>
</tr>
<tr>
<td></td>
<td>- Return wicking material to mounting brackets. If wicking material is tattered, torn or disintegrating, replace with new. If wicking material is not available, contact Structural Concepts. See toll-free number at last page of operating manual.</td>
</tr>
<tr>
<td></td>
<td>- Slide condenser package back under case.</td>
</tr>
<tr>
<td></td>
<td>- Return front grille to case.</td>
</tr>
</tbody>
</table>

**Note:** Hot Gas Loop Condensate System Shown. Standard Electric Coil Condensate Pans Have Slightly Different Layout.

Optional Wicking Material (Shown For Illustrative Purposes Only)
## Preventive Maintenance

### Quarterly Preventive Maintenance Instructions

**Case Interior: Honeycomb Air Diffuser:**

A. Wedge a non-metallic device of suitable strength (such as a ballpoint pen) between honeycomb and its housing. **Caution!** Use care not to dislodge the heating wire (that prevents condensation on the honeycomb retainer).

B. Apply pressure to collapse honeycomb to pull it out of honeycomb retainer.

C. Carefully pry downward and away from the honeycomb retainer.

D. Use brush to reach in and, with outward sweeping motion, pull any crumbs or residue out of honeycomb area.

> Clean honeycomb with warm water and soap solution. Submerse if necessary. Use brush to dislodge stubborn or sticky residue. Dry by using vacuum’s blow mode.

E. After honeycomb has been thoroughly cleaned and dried, squeeze honeycomb to allow it to fit into the honeycomb retainer.

F. Carefully slide honeycomb into place.

G. Adjust honeycomb so it fits flat against retainer (not be wavy or out of position).
ANNUAL PREVENTIVE MAINTENANCE INSTRUCTIONS

Optional Clean Sweep® Condensing Coil Cleaner:

*Important! Disconnect power from case before cleaning the Clean Sweep® Condenser Coil Cleaner!*

- Remove front grille (by removing 4 screws).
- Slide/roll out condensing unit assembly.
- Remove the four (4) screws holding Clean Sweep® rails intact.
- Remove the Clean Sweep® rail.
- Wash rail and brushes in hot water and mild soap solution.
- If brushes are worn, they must be replaced. Call Technical Service Department to replace. Toll-Free number is listed at end of manual.
- **Caution! Coil fins are sharp. Handle with care!**
- Reattach Clean Sweep® rail to condensing unit (4 screws).
- Slide/roll condensing unit assembly back under case.
- Replace front grille to case in same manner it was removed.
- See photos below.

--- Above photos are taken after front grille has been removed from case ---
## CONDITION | TROUBLESHOOTING
---|---
**Case Not Lining Up** | See *Installation* section in this manual for instructions on properly aligning case (alongside other cases) and adjusting levelers.

**Water Is On The Floor** | **Caution!** Water on flooring can cause much damage! Until cause is determined (and repaired), follow these procedures:
- Use wet-dry vacuum (or mop & bucket) to remove standing water.
- Use ‘catch pans’ for water to drain into. Swap out regularly until case has completely drained.
- **Note:** See *Drain, Hose and Bracket Placement Illustrations* sheet in this manual for views of different condensate systems used in display cases.

  - Check that the drain trap is free of debris.
  - Check that the drain hose is correctly positioned over condensate pan (or floor drain, for remote units).
  - Check store conditions. To prevent condensation in Type I environments, maximum conditions are to be 55% humidity / 75 °Fahrenheit. For Type II environments, maximum conditions are to be 55% humidity / 80 °Fahrenheit. See serial label (at case rear near main power switch) for NSF® Type of your case.
  - Check condensate pan float for proper operation (electric condensate trays).
  - Check that condensate pan is properly plugged in or connected.

  **Caution!** Condensate pan may be malfunctioning. If so, water will overflow pan and seep onto flooring causing damage! Until condensate pan is functioning (or is replaced), follow these procedures:
- Use wet vacuum (or mop & bucket) to remove standing water.
- Use ‘catch pans’ for water to drain into. Swap out regularly until case has completely drained.

  **Caution!** Disruption of power can cause water to overflow pan and seep onto flooring causing damage! Check that power to case is constant. Until power is restored, follow these procedures:
- Use wet-dry vacuum (or mop & bucket) to remove standing water.
- Use ‘catch pans’ for water to drainage. Swap out regularly until drainage of case is complete (or until power is restored).
- When power to case is restored, condensate pan should function properly and water will no longer overflow onto flooring.

**Caution!** Wicking material (if any) on your particular hot gas loop condensate tray may be dirty or worn and need replacement.
- Slide condensate package out from under unit.
- After refrigeration system has been carefully slid out, replace wicking material with new. If wicking material is not available, contact Structural Concepts. See toll-free number at last page of this operating manual.
- **Note:** See *PREVENTIVE MAINTENANCE (QUARTERLY) - PERFORMED BY TRAINED SERVICE PROVIDER* section in manual for wicking material illustration.
<table>
<thead>
<tr>
<th>CONDITION</th>
<th>TROUBLESHOOTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan Emits Excessive Noise</td>
<td>Check that the case is aligned, level and plumb.</td>
</tr>
<tr>
<td></td>
<td>Check evaporator fan for cleanliness.</td>
</tr>
<tr>
<td></td>
<td>Unplug/power off fan motors. Check motor shaft for bearing wear.</td>
</tr>
<tr>
<td></td>
<td>Check that fan motors are securely mounted in brackets.</td>
</tr>
<tr>
<td></td>
<td>Verify that fan blades are securely mounted to fan motor.</td>
</tr>
<tr>
<td></td>
<td>Check that nothing is preventing blade rotation.</td>
</tr>
<tr>
<td></td>
<td>Check that the fan shroud is properly secured.</td>
</tr>
<tr>
<td>Fans Are Not Working</td>
<td>Check that the MAIN power switch is on.</td>
</tr>
<tr>
<td></td>
<td>Check that fans are plugged in at the fan shroud.</td>
</tr>
<tr>
<td></td>
<td>Check for foreign material obstructing fan performance.</td>
</tr>
<tr>
<td></td>
<td>Check that fan blades freely rotate within fan shrouds</td>
</tr>
<tr>
<td></td>
<td>Check that power is going to fans</td>
</tr>
<tr>
<td></td>
<td>Check that fan wiring is connected on terminal blocks.</td>
</tr>
<tr>
<td>Digital Control Display</td>
<td>Check that the MAIN power switch is on.</td>
</tr>
<tr>
<td>Is Blank</td>
<td>Check the circuit breaker box for tripped circuits.</td>
</tr>
<tr>
<td>System Not Operating</td>
<td>Check that the utility power is on.</td>
</tr>
<tr>
<td></td>
<td>Check that the MAIN power switch is on.</td>
</tr>
<tr>
<td></td>
<td>Check the circuit breaker box for tripped circuits.</td>
</tr>
<tr>
<td>CONDITION</td>
<td>TROUBLESHOOTING</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Case Lights Are Not Working</td>
<td>Check that light switch is in the on position. Check that ALL of the light cords and plugs are properly connected. See FLUORESCENT LIGHT FIXTURES and LED LIGHT FIXTURES section in this manual for specifics.</td>
</tr>
<tr>
<td></td>
<td>Service Technicians Only: Check voltage at LED drivers. If voltage is entering but not exiting, LED driver may be faulty.</td>
</tr>
<tr>
<td>Control Display Is Flashing</td>
<td>See your case’s serial label for your model’s specified settings. See SERIAL LABEL LOCATION &amp; INFORMATION LISTED / TECH INFO &amp; SERVICE for label location, etc.</td>
</tr>
<tr>
<td>Case Is Not Holding Temperature</td>
<td>If a large amount of warm product was added to the case, it will take time for the temperature to adjust. Unit needs product to be pre-chilled.</td>
</tr>
<tr>
<td></td>
<td>Temperature changes during defrost mode but will return to normal. Fourth LED will indicate defrost cycle in progress.</td>
</tr>
<tr>
<td></td>
<td>Check that case is not in sun or near a heat or air-conditioning vent. See OVERVIEW / TYPE / COMPLIANCE / WARNINGS / PRECAUTIONS / WIRING / PLUGS section in manual for adverse conditions/spacing issue parameters.</td>
</tr>
<tr>
<td></td>
<td>If case is located near front doors, temperature fluctuation can hinder unit’s ability to maintain temperature. See OVERVIEW / TYPE / COMPLIANCE / WARNINGS / PRECAUTIONS / WIRING / PLUGS section in manual for adverse conditions/spacing issue parameters.</td>
</tr>
<tr>
<td></td>
<td>Check that condenser coil air filter (attached to rear grille) has been cleaned. See GENERAL CLEANING (TO BE PERformed BY STORE PERSONNEL) section in operating manual for instructions.</td>
</tr>
<tr>
<td></td>
<td>Check that condenser coil has been cleaned.</td>
</tr>
<tr>
<td></td>
<td>Check air return grilles for obstructions.</td>
</tr>
<tr>
<td></td>
<td>Check sight glass for flashing and/or low charge.</td>
</tr>
<tr>
<td></td>
<td>Check Set Point Temperature; it may be adjusted too high.</td>
</tr>
<tr>
<td>Condensing Unit Is Not Operating</td>
<td>Check that the power is turned on.</td>
</tr>
<tr>
<td></td>
<td>Determine if temperature controller settings are properly set. See your case’s serial label for your model’s specified settings. See SERIAL LABEL LOCATION &amp; INFORMATION LISTED / TECH INFO &amp; SERVICE section in manual for label location, etc.</td>
</tr>
<tr>
<td>CONDITION</td>
<td>TROUBLESHOOTING</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Head Pressure Too High</td>
<td>Check that the condensing coil is not dirty or covered.</td>
</tr>
<tr>
<td></td>
<td>Check that condensing fans are working.</td>
</tr>
<tr>
<td></td>
<td>Check that refrigerant is not overcharged.</td>
</tr>
<tr>
<td></td>
<td>Perform sub-cooling check and verify that no contaminates are in system.</td>
</tr>
<tr>
<td></td>
<td>Check that liquid line filter dryer is not plugged.</td>
</tr>
<tr>
<td></td>
<td>Check that close-offs are intact (around condensing coil) and that air is not</td>
</tr>
<tr>
<td></td>
<td>recirculating.</td>
</tr>
<tr>
<td></td>
<td>Check that store ambient temperature isn’t above maximum allowed.</td>
</tr>
<tr>
<td></td>
<td>See OVERVIEW / TYPE / COMPLIANCE / WARNINGS / PRECAUTIONS / WIRING / PLUGS</td>
</tr>
<tr>
<td></td>
<td>section in this manual.</td>
</tr>
<tr>
<td>Head Pressure Too Low</td>
<td>Check if sight glass is flashing or showing low charge.</td>
</tr>
<tr>
<td></td>
<td>Check that suction pressure isn’t too low.</td>
</tr>
<tr>
<td></td>
<td>Check that compressor reed valves aren’t bad. Look for high suction/low</td>
</tr>
<tr>
<td></td>
<td>head pressure. Perform pump-down.</td>
</tr>
<tr>
<td>CONDITION</td>
<td>TROUBLESHOOTING</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Low Suction Pressure</td>
<td>Check if sight glass is flashing or showing low charge.</td>
</tr>
<tr>
<td></td>
<td>Check that expansion valve (TXV) isn’t restricted. Check element charge.</td>
</tr>
<tr>
<td></td>
<td>Check that liquid line or filter isn’t restricted. Check that refrigeration lines and/or hoses are not kinked on either high or low sides.</td>
</tr>
<tr>
<td></td>
<td>Check that evaporator fan motors are working.</td>
</tr>
<tr>
<td></td>
<td>Check that superheat is between 6 °F to 8 °F.</td>
</tr>
<tr>
<td></td>
<td>Check that there is no air recirculation around evaporator coil.</td>
</tr>
<tr>
<td></td>
<td>Check that evaporator coil is not iced up.</td>
</tr>
<tr>
<td>High Suction Pressure</td>
<td>Check for refrigerant overcharge.</td>
</tr>
<tr>
<td></td>
<td>Check that compressor reed valves aren’t bad. Look for high suction/low head pressure. Perform pump down.</td>
</tr>
<tr>
<td></td>
<td>Check that the “cooling load” isn’t high. Product must be pre-chilled before placing in refrigerated section of case.</td>
</tr>
<tr>
<td></td>
<td>Check that case is at least 15-feet from exterior doors, overhead HVAC vents or any air curtain disruption.</td>
</tr>
<tr>
<td></td>
<td>Check that unit is not exposed to direct sunlight via windows or any other heat source (ovens, fryers, etc.).</td>
</tr>
<tr>
<td></td>
<td>Check that superheat adjustment isn’t low.</td>
</tr>
</tbody>
</table>
|                        | Check TXV bulb installation  
  a. Poor thermal contact.  
  b. Warm location.                                                                                                                                |
Serial Label Location & Information Listed / Technical Information & Service

- Serial labels are located near the electrical access on your case.
- Serial labels contain electrical, temperature & refrigeration information, as well as regulatory standards to which the case conforms.
- For additional technical information and service, see the TECHNICAL SERVICE page in this manual for instructions on contacting Structural Concepts’ Technical Service Department.
- See images below for samples of both refrigerated and non-refrigerated serial labels.

--- Sample Serial Label For Refrigerated Case ---

--- Sample Serial Label For Non-Refrigerated Case ---
Programming The Instrument

To Modify Defrost, Differential and Other Parameters

1. Press & hold “Prg” & “SET” keys together for at least five (5) seconds; display will flash “0,” representing password prompt.

2. Press ▲ until password “22” is reached.

3. Press “SET” key to confirm password.

4. Press ▲ or ▼ to reach a category to be modified.

5. Press “SET” to modify selected parameter.

6. Increase or decrease the value using the ▲ or ▼ button respectively.

7. Press the “SET” key to temporarily save the new value and return to the parameter display.

8. Press & hold the “Prg” key for 5 full seconds to save changes. This will also mute the audible alarm (buzzer) and deactivate the alarm relay.

How To Change Reading
From Fahrenheit (°F) To Celsius (°C)

1. Press and hold “Prg” and “SET” keys together for at least 5 seconds; display will show “0” (password prompt).

2. Press ▲ until password “22” is reached.

3. Confirm by pressing “SET” key.

4. Press ▲ or ▼ until reaching the parameter “/ 5.”

5. Press “SET” to modify this selected parameter.

6. Press ▲ or ▼ to change value to desired setting: “0” for Celsius (°C) or “1” for Fahrenheit (°F).

7. Press “SET” key to temporarily save the new value and return to the display of the parameter.

8. Press & hold “Prg” key for 5 full seconds to save changes. Note! All values will automatically convert to new scale. No conversion is required.

Warning! Save Your Parameter Settings!

1. To store the new parameter values, PRESS and HOLD the “Prg” key for at least 5 seconds. All modifications made to parameters will be lost if you do NOT press a button within 60 seconds. Should this “timeout” occur, normal operational settings (prior to modifications being made) will resume.

2. If the instrument is switched off before pressing the “Prg” key, all modifications to parameters will be lost.

To Activate Manual Defrost

Press and hold “def” key for at least 5 seconds.

To Activate / Deactivate Auxiliary Output

Press and hold the “aux” key for 1 second.

This data derived from Carel® Controller Material: ir33 +030220441 - rel. 2.0 - 01.05.2006. Structural Concepts Document - Revision B Date: 4/25/2019
User Interface - Display

<table>
<thead>
<tr>
<th>ICON</th>
<th>FUNCTION</th>
<th>DESCRIPTION</th>
<th>ON</th>
<th>Normal operation</th>
<th>BLINK</th>
<th>Start up</th>
</tr>
</thead>
<tbody>
<tr>
<td>🥫</td>
<td>COMPRESSOR</td>
<td>ON when the compressor starts. Flashes when the activation of the compressor is delayed by safety times.</td>
<td>Compressor on</td>
<td>Compressor off</td>
<td>waiting activation</td>
<td></td>
</tr>
<tr>
<td>⚛️</td>
<td>FAN</td>
<td>ON when the fan starts. Flashes when the activation of the fan is prevented due to external disabling or procedures in progress.</td>
<td>Fan on</td>
<td>Fan off</td>
<td>waiting activation</td>
<td></td>
</tr>
<tr>
<td>🍃</td>
<td>DEFROST</td>
<td>ON when the defrost is activated. Flashes when the activation of the defrost is prevented due to external disabling or procedures in progress.</td>
<td>Defrost in progress</td>
<td>Defrost not in progress</td>
<td>waiting activation</td>
<td></td>
</tr>
<tr>
<td>🔥</td>
<td>AUX</td>
<td>Flashes if the anti-sweat heater function is active. ON when the auxiliary output (1 and/ or 2) selected as AUX (or LIGHT in firmware version 3.6) is activated.</td>
<td>AUX auxiliary output active (version 3.6, light auxiliary output active)</td>
<td>AUX auxiliary output not active</td>
<td>Anti-sweat heater function active</td>
<td></td>
</tr>
<tr>
<td>⚠️</td>
<td>ALARM</td>
<td>ON following pre-activation of the delayed external digital input alarm. Flashes in the event of alarms during normal operation (e.g. high/low temperatures) or in the event of alarms from an immediate or delayed external digital input.</td>
<td>Delayed external alarm (before the time A7 expires)</td>
<td>No alarm present</td>
<td>Alarms in normal operation (e.g. high/low temperature) or immediate or delayed alarm from external digital input</td>
<td></td>
</tr>
<tr>
<td>🕒</td>
<td>CLOCK</td>
<td>ON if at least one timed defrost has been set. At startup, comes ON for 10 seconds to indicate that the Real Time Clock is fitted.</td>
<td>If at least 1 timed defrost event has been set</td>
<td>No timed defrost event set</td>
<td>Alarm clock</td>
<td>ON if real-time clock present</td>
</tr>
<tr>
<td>🌃</td>
<td>LIGHT</td>
<td>Flashes if the anti-sweat heater function is active. ON when the auxiliary output (1 and/ or 2) selected as LIGHT is activated (in firmware version 3.6, it does not flash in anti-sweat heater mode) and comes on when the dead band output (5.0) is activated.</td>
<td>Light auxiliary output on (version 3.6, dead band auxiliary output active)</td>
<td>Light auxiliary output off</td>
<td>Anti-sweat heater function active (version 3.6, does not flash in anti-sweat heater mode)</td>
<td></td>
</tr>
<tr>
<td>🕗</td>
<td>SERVICE</td>
<td>Flashes in the event of malfunctions, for example EEPROM errors or probe faults.</td>
<td>No malfunction</td>
<td>Malfunction (e.g. EEPROM error or probe fault, contact service)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>📦</td>
<td>CONTINUOUS CYCLE</td>
<td>ON when the CONTINUOUS CYCLE function is activated. Flashes if the activation of the function is prevented due to external disabling or procedures in progress (e.g. minimum compressor OFF time).</td>
<td>CONTINUOUS CYCLE operation activated</td>
<td>CONTINUOUS CYCLE function not activated</td>
<td>CONTINUOUS CYCLE operation requested</td>
<td></td>
</tr>
</tbody>
</table>

Summary Table of Alarm and Signals: Display, Buzzer and Relay

<table>
<thead>
<tr>
<th>Code</th>
<th>Icon on the display</th>
<th>Alarm relay</th>
<th>Buzzer</th>
<th>Reset</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RE</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic</td>
<td>Violent control probe fault</td>
</tr>
<tr>
<td>YE</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic</td>
<td>Normal probe S1 fault</td>
</tr>
<tr>
<td>EE</td>
<td>flashing</td>
<td>off</td>
<td>off</td>
<td>automatic</td>
<td>Defrost probe S2 fault</td>
</tr>
<tr>
<td>DE</td>
<td>flashing</td>
<td>off</td>
<td>off</td>
<td>automatic</td>
<td>Probe S3 fault</td>
</tr>
<tr>
<td>EE</td>
<td>flashing</td>
<td>off</td>
<td>off</td>
<td>automatic</td>
<td>Probe S4 fault</td>
</tr>
<tr>
<td>DE</td>
<td>flashing</td>
<td>off</td>
<td>off</td>
<td>automatic</td>
<td>Probe S5 fault</td>
</tr>
<tr>
<td>LA</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic</td>
<td>No alarm not enabled</td>
</tr>
<tr>
<td>NL</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic</td>
<td>Low temperature alarm</td>
</tr>
<tr>
<td>LI</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic</td>
<td>High temperature alarm</td>
</tr>
<tr>
<td>AF</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic</td>
<td>Antifreeze alarm</td>
</tr>
<tr>
<td>IA</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic</td>
<td>Delayed alarm from external contact</td>
</tr>
<tr>
<td>GA</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic</td>
<td>Immediate alarm from external contact</td>
</tr>
<tr>
<td>DF</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic</td>
<td>Defrost running</td>
</tr>
<tr>
<td>ES</td>
<td>flashing</td>
<td>off</td>
<td>off</td>
<td>automatic/manual</td>
<td>Defrost on evaporator 1 ended by timeout</td>
</tr>
<tr>
<td>NS</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic/manual</td>
<td>Maximum pump down time alarm</td>
</tr>
<tr>
<td>LP</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic/manual</td>
<td>Low pressure alarm</td>
</tr>
<tr>
<td>AS</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic/manual</td>
<td>Auto start in pump down</td>
</tr>
<tr>
<td>HT</td>
<td>flashing</td>
<td>off</td>
<td>off</td>
<td>automatic/manual</td>
<td>High temperature pre-alarm</td>
</tr>
<tr>
<td>CHF</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>manual</td>
<td>High condenser temperature alarm</td>
</tr>
<tr>
<td>der</td>
<td>flashing</td>
<td>on</td>
<td>on</td>
<td>automatic</td>
<td>Door open too long alarm</td>
</tr>
<tr>
<td>EE</td>
<td>flashing</td>
<td>off</td>
<td>off</td>
<td>automatic</td>
<td>Eeprom error, unit parameters</td>
</tr>
<tr>
<td>EF</td>
<td>flashing</td>
<td>off</td>
<td>off</td>
<td>automatic</td>
<td>Eeprom error, operating parameters</td>
</tr>
<tr>
<td>rL</td>
<td>Signal</td>
<td>on</td>
<td>on</td>
<td>Safe Mode</td>
<td>start continuous cycle request</td>
</tr>
<tr>
<td>of</td>
<td>Signal</td>
<td>off</td>
<td>off</td>
<td>Signal</td>
<td>end continuous cycle request</td>
</tr>
<tr>
<td>On</td>
<td>Signal</td>
<td>on</td>
<td>on</td>
<td>Signal</td>
<td>start defrost call</td>
</tr>
<tr>
<td>off</td>
<td>Signal</td>
<td>off</td>
<td>off</td>
<td>Signal</td>
<td>end defrost call</td>
</tr>
<tr>
<td>rS</td>
<td>Signal</td>
<td>on</td>
<td>on</td>
<td>Signal</td>
<td>switch ON</td>
</tr>
<tr>
<td>off</td>
<td>Signal</td>
<td>off</td>
<td>off</td>
<td>Signal</td>
<td>switch OFF</td>
</tr>
</tbody>
</table>

This data derived from Carel® Controller Material: ir33 +030220441 - rel. 2.0 - 01.05.2006.
Structural Concepts Document - Revision B Date: 4/25/2019
### Summary Table of Operating Parameters

<table>
<thead>
<tr>
<th>CODE</th>
<th>PARAMETER</th>
<th>UOM*</th>
<th>TYPE</th>
<th>MINIMUM</th>
<th>MAXIMUM</th>
<th>DEFAULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>/5</td>
<td>Select Celsius (°C) or Fahrenheit (°F)</td>
<td>flag</td>
<td>C</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>/c1</td>
<td>Calibration of probe 1</td>
<td>°C/°F</td>
<td>C</td>
<td>-20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>/c2</td>
<td>Calibration of probe 2</td>
<td>°C/°F</td>
<td>C</td>
<td>-20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>St</td>
<td>Temperature set point</td>
<td>°C/°F</td>
<td>F</td>
<td>r2</td>
<td>r1</td>
<td></td>
</tr>
<tr>
<td>rd</td>
<td>Control delta</td>
<td>°C/°F</td>
<td>F</td>
<td>20</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>dl</td>
<td>Interval between defrosts</td>
<td>hours</td>
<td>F</td>
<td>0</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>dt1</td>
<td>End defrost temperature, evaporator</td>
<td>°C/°F</td>
<td>F</td>
<td>-50</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>dP1</td>
<td>Maximum defrost duration, evaporator</td>
<td>min</td>
<td>F</td>
<td>1</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>d6</td>
<td>Display on hold during defrost</td>
<td>-</td>
<td>C</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>dd</td>
<td>Dripping time after defrost</td>
<td>min</td>
<td>F</td>
<td>0</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>d/1</td>
<td>Display of defrost probe 1</td>
<td>°C/°F</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

* Unit Of Measure

For Case Specific Defaults See Serial Label Located Near Electrical Access On Your Case.

For Additional Technical Information Call Structural Concepts Technical Service Dept. at 1(800) 433.9490 Ext. 1

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Read And Save These Instructions - Page 3 of 3

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ir33 +030220441 - rel. 2.0 - 01.05.2006.
Structural Concepts Document - Revision B Date: 4/25/2019
3.1 KEYS & FUNCTIONS ON CONTROLLER FRONT PANEL

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET</td>
<td>Press to display the target setpoint, to select a parameter in programming mode, or to confirm an operation. Pressing this key for 3 seconds while the minimum or maximum temperature is displayed will erase the temperature currently displayed.</td>
</tr>
<tr>
<td></td>
<td>Press this key to browse the parameter codes in programming mode or increases the displayed value. Pressing this key for 3 seconds will give you access to the Section menu.</td>
</tr>
<tr>
<td></td>
<td>Press this key to access the fast access menu, browse the parameter codes in programming mode, decrease the displayed value, or activate or deactivate an auxiliary output.</td>
</tr>
<tr>
<td></td>
<td>Starts a defrost when pressed for 3 seconds.</td>
</tr>
<tr>
<td></td>
<td>Switches the room light ON and OFF.</td>
</tr>
<tr>
<td></td>
<td>Press for 3 seconds to switch the device ON and OFF.</td>
</tr>
<tr>
<td></td>
<td>Measurement unit</td>
</tr>
<tr>
<td>°F</td>
<td>Measurement unit</td>
</tr>
<tr>
<td>BAR</td>
<td>Measurement unit</td>
</tr>
<tr>
<td>PSI</td>
<td>Measurement unit</td>
</tr>
</tbody>
</table>

Note: Units With These Temperature Controllers Have Been Hot-Keyed At Factory For General Operation.

3.2 USE OF LEDs

<table>
<thead>
<tr>
<th>LED</th>
<th>Mode</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ON</td>
<td>Compressor and valve regulation enabled. To see the valve opening percentage, enter the fast access menu.</td>
</tr>
<tr>
<td></td>
<td>Flashing</td>
<td>Anti-short cycle delay enabled</td>
</tr>
<tr>
<td></td>
<td>ON</td>
<td>Defrost enabled</td>
</tr>
<tr>
<td></td>
<td>Flashing</td>
<td>Drip time in progress</td>
</tr>
<tr>
<td></td>
<td>ON</td>
<td>An alarm is occurring</td>
</tr>
<tr>
<td></td>
<td>ON</td>
<td>Energy saving enabled</td>
</tr>
<tr>
<td></td>
<td>ON</td>
<td>Fans enabled (fans are running)</td>
</tr>
<tr>
<td></td>
<td>Flashing</td>
<td>Door opened or delay after defrost</td>
</tr>
<tr>
<td>AUX</td>
<td>ON</td>
<td>Auxiliary relay ON</td>
</tr>
<tr>
<td></td>
<td>ON</td>
<td>Measurement unit</td>
</tr>
<tr>
<td></td>
<td>Flashing</td>
<td>Programming phase</td>
</tr>
<tr>
<td></td>
<td>ON</td>
<td>The controller is working in ALL mode</td>
</tr>
<tr>
<td></td>
<td>Flashing</td>
<td>The controller is working in remote virtual display mode</td>
</tr>
<tr>
<td></td>
<td>Flashing</td>
<td>During the CLOCK modification (if clock is present)</td>
</tr>
</tbody>
</table>

3.3 HOW TO ENTER THE FAST ACCESS MENU

1. Press and release the UP button.
2. The First Label will be displayed. Press the UP or DOWN button to navigate the menu.

3.4 HOW TO SEE MAX AND MIN TEMPERATURE RECORDED

1. Press and release the UP button.
2. The First Label will be displayed. Press the UP or DOWN button to navigate the menu. Search the L°t label and press SET to see minimum temperature; search the H°t label and press SET to see maximum temperature.

3.5 HOW TO SEE AND MODIFY THE SETPOINT

1. Press the SET button for 3 seconds to show the setpoint value.
2. The measurement unit starts blinking.
3. To change the setpoint value, press the UP or DOWN button for 10 seconds.
4. To store the new setpoint value, press the SET key again or wait 10 seconds.

3.6 HOW TO START A MANUAL DEFROST

Press the DEF key for more than 3 seconds to start a manual defrost.

3.7 HOW TO ENTER THE PARAMETERS LIST PR1

To enter the parameter list in Pr1 (user accessible parameters):

1. Enter the programming mode by pressing the SET and DOWN buttons for a few seconds (wait for the measurement unit to start blinking).
2. The controller will show the first parameter present in Pr1.

3.8 HOW TO ENTER THE PARAMETERS LIST PR2

To access the parameter list in Pr2:

1. Enter the Pr1 level. Follow the steps in Section 3.7., How to Enter the Parameters List Pr1.
2. Select Pr2 parameter and press the SET key.
3. The PAS flashing message will display, followed shortly by “0 ~” with a flashing zero.
4. Use the UP or DOWN button to input the security code in the flashing digit. Confirm the security code by pressing SET. The security code is 321.
5. If the security code is correct, the access to Pr2 is enabled by pressing SET on the last digit.

Another way to enter the programming mode is by pressing the SET and DOWN buttons for 30 seconds immediately after switching the controller ON.

NOTE: Each parameter in Pr2 can be removed or put into Pr1 (user level) by pressing SET + DOWN buttons. When a parameter is present in Pr1, the Alarm LED will be display.
3.9 HOW TO ASSIGN A MODBUS ADDRESS

1. To enter the programming mode, press and hold the SET and DOWN buttons together until the temperature measurements start blinking.
2. Scroll through the parameters using the UP or DOWN button until Adr is displayed.
3. Press and hold SET to select Adr.
4. Use the arrow keys to choose the address number of the device.
5. Press and hold SET again to select the desired number and save.
6. To exit, press the SET and UP arrow keys together.

3.10 HOW TO CHANGE THE PARAMETER VALUE

1. Enter the programming mode.
2. Select the required parameter using the UP or DOWN button.
3. Press the SET key to display the parameter value (measurement unit starts blinking).
4. Use the UP or DOWN button to change the value.
5. Press SET to store the new value and move to the next parameter.
6. To exit, press SET + UP keys or wait 15 seconds without pressing a key.

3.11 ON/OFF FUNCTION

By pressing the ON/OFF key, the controller shows OFF. During the OFF status, all the relays are switched OFF and the regulations are stopped; if a monitoring system is connected, it does not record the controller data and alarms.

4. FAST ACCESS MENU

<table>
<thead>
<tr>
<th>HM</th>
<th>Fast Access Menu to Clock Settings</th>
<th>(If present)</th>
</tr>
</thead>
<tbody>
<tr>
<td>An</td>
<td>Fast Access to Analog Output Reading</td>
<td>(If present)</td>
</tr>
<tr>
<td>SH</td>
<td>Superheat</td>
<td>Shows the actual superheat value (Only XM679)</td>
</tr>
<tr>
<td>oPP</td>
<td>Valve opening percentage</td>
<td>Shows the actual opening percentage of the valve (Only XM679)</td>
</tr>
<tr>
<td>dP1</td>
<td>Probe 1 value displaying</td>
<td>Shows the temperature measured by probe 1</td>
</tr>
<tr>
<td>dP2</td>
<td>Probe 2 value displaying</td>
<td>Shows the temperature measured by probe 2</td>
</tr>
<tr>
<td>dP3</td>
<td>Probe 3 value displaying</td>
<td>Shows the temperature measured by probe 3</td>
</tr>
<tr>
<td>dP4</td>
<td>Probe 4 value displaying</td>
<td>Shows the temperature measured by probe 4</td>
</tr>
<tr>
<td>dP5</td>
<td>Probe 5 value displaying</td>
<td>Shows the temperature measured by probe 5</td>
</tr>
<tr>
<td>dP6</td>
<td>Probe 6 value displaying</td>
<td>Shows the temperature measured by probe 6</td>
</tr>
<tr>
<td>dPP</td>
<td>Pressure probe value</td>
<td>Shows the value of pressure measured by pressure transducer (Only XM679)</td>
</tr>
<tr>
<td>rPP</td>
<td>Remote pressure probe value</td>
<td>Shows the value of pressure received by remote pressure probe connected to other XM600 device (Only XM679)</td>
</tr>
<tr>
<td>L°t</td>
<td>Minimum measured temperature</td>
<td>Shows the minimum temperature read by the regulation probe</td>
</tr>
<tr>
<td>H°t</td>
<td>Maximum measured temperature</td>
<td>Shows the maximum temperature read by the regulation probe</td>
</tr>
<tr>
<td>dPPr</td>
<td>Virtual regulation probe value</td>
<td>Shows the value measured by the virtual regulation probe</td>
</tr>
<tr>
<td>dPd</td>
<td>Virtual defrost probe value</td>
<td>Shows the value measured by the virtual defrost probe</td>
</tr>
<tr>
<td>dPF</td>
<td>Virtual fans probe value</td>
<td>Shows the value measured by virtual fan probe</td>
</tr>
<tr>
<td>rSE</td>
<td>Real setpoint</td>
<td>Shows the setpoint used during the energy saving cycle or during the continuous cycle</td>
</tr>
</tbody>
</table>

Note: Units With These Temperature Controllers Have Been Hot-Keyed At Factory For General Operation.
5.0 SECTIONS MENU

This menu allows the user to access to a particular feature of the XM series related to the LAN (Local Area Network) of controllers. Depending on the programming of this menu, a single keyboard can control either the module of the local section of the LAN or ALL. The possibilities are: LOC: the keyboard controls and display the value, the status, and the alarms of the local section of the LAN; and ALL: the command given by the keyboard are effective on all the sections of the LAN.

1. Press the UP key for more than 3 seconds.
2. The label corresponding to the section controlled by the keyboard will be displayed.
3. Using the UP or DOWN key, select the section you want to control.
4. Press the SET key to confirm and exit.

5.1 TO SET ENERGY SAVING TIMES

<table>
<thead>
<tr>
<th>ILE</th>
<th>Energy Saving cycle start during workdays</th>
<th>(0 to 23 h 50 min) During the Energy Saving cycle, the setpoint is increased by the value in HES so that the operation setpoint is SET + HES.</th>
</tr>
</thead>
<tbody>
<tr>
<td>dILE</td>
<td>Energy Saving cycle length during workdays</td>
<td>(0 to 24 h 00 min) Sets the duration of the Energy Saving cycle on workdays.</td>
</tr>
<tr>
<td>ISE</td>
<td>Energy Saving cycle start on holidays</td>
<td>(0 to 23h 50 min)</td>
</tr>
<tr>
<td>dSE</td>
<td>Energy Saving cycle length on holidays</td>
<td>(0 to 24h 00 min)</td>
</tr>
<tr>
<td>HES</td>
<td>Temperature increase during the Energy Saving cycle</td>
<td>(-30 to 30°C/ -54 to 54°F) Sets the increasing value of the setpoint during the Energy Saving cycle.</td>
</tr>
</tbody>
</table>

5.2 TO SET TIMED DEFROST PARAMETERS

| Ld1 to Ld6 | Workday defrost start | (0 to 23h 50 min) These parameters set the beginning of the eight programmable defrost cycles during workdays. For example, when Ld2=12.4, the second defrost starts at 12.40 during workdays. |
| Sd1 to Sd6 | Holiday defrost start  | (0 to 23h 50 min) These parameters set the beginning of the eight programmable defrost cycles during holidays. For example, when Sd2=3.4, the second defrost starts at 3.40 on holidays. |

6.0 ELECTRONIC EXPANSION VALVE MENU (MODEL XM679 ONLY)

1. Enter the programming mode by pressing the SET and DOWN buttons for a few seconds (measurement unit starts blinking).
2. Press the UP or DOWN key until the controller displays the EEU label.
3. Press SET. You are now in EE function menu.

7.0 CONTROLLING LOADS / 7.1 SOLENOID VALVE

The regulation is performed based on the temperature measured by the thermostat probe (either physical or virtual) obtained by a weighted average between the two probes with a positive differential from the setpoint. If the temperature increases and reaches setpoint plus the differential, the solenoid valve is opened and then it is closed when the temperature reaches the setpoint value again.

In case of fault in the thermostat probe, the opening and closing time of the solenoid valve is configured by Con and CoF parameters.

19. USE OF THE PROGRAMMING "HOT KEY"

The XM units can UPLOAD or DOWNLOAD the parameter list from its own E2 internal memory to the “Hot Key” and vice-versa through a TTL connector.

19.1 DOWNLOAD (FROM THE “HOT KEY” TO THE INSTRUMENT)

1. Turn OFF the instrument by means of the ON/OFF key, insert the “Hot Key” and then turn the unit ON.
2. Automatically the parameter list of the “Hot Key” is downloaded into the controller memory, the “dLD” message is blinking. After 10 seconds the instrument will restart working with the new parameters. At the end of the data transfer phase the instrument displays the following messages: “end” for right programming. The instrument restarts regularly with the new programming “er” for failed programming. In this case turn the unit OFF and then ON if you want to restart the download again or remove the “Hot key” to abort the operation.

19.2 UPLOAD (FROM THE INSTRUMENT TO THE “HOT KEY”)

1. When the XM unit is ON, insert the “Hot key” and push the “uPL” key, the “uPL” message appears.
2. The UPLOAD begins; the “uPL” message is blinking.
3. Remove the “Hot Key”. At the end of the data transfer phase the instrument displays the following messages: “end” for right programming, “er” for failed programming. In this case push the SET key to activate the programming again or remove the programmed “Hot Key”.

Information Derived From Emerson-Dixell Installation & Operating Instructions 15920223080 XM670K_XM679K GB v3.4 03.04.2015 and Installation & Operating Manual 026-1218 Rev 3 05-FEB-2015
STRUCTURAL CONCEPTS TECHNICAL SERVICE CONTACT INFORMATION & LIMITED WARRANTY

TECH SERVICE/WARRANTY CONTACT INFO:
1 (800) 433-9490 / EXTENSION 1

DAYS/HOURS AVAILABLE:
MONDAY - FRIDAY (CLOSED HOLIDAYS)
8:00 a.m. TO 5:00 p.m. EST

LIMITED WARRANTY

Overview: All sales by Structural Concepts Corporation (hereafter referred to as "SCC") are subject to the following limited warranty. "Goods" refers to the product or products being sold by SCC.

Warranty Scope: Warranty is for equipment sold in the United States, Canada, Mexico and Puerto Rico. Equipment sold elsewhere may carry modified warranties.

Warranty; Remedies; Limitations: The limit of liability of SCC toward the exchange cost of the original compressor motor (and/or any other components) is one year parts and labor. If any Goods are found to be faulty of material or workmanship within one year of the original F.O.B. (free on board) unit shipment, SCC will, at its option (after inspection by an authorized representative), replace or pay the reasonable cost of replacement of the faulty Goods. If warranty claim is not made within this one year time period, SCC is not bound to warrant Goods. A motor, compressor, and/or any other components) replaced during the warranty shall be the excess manufacturer's current established wholesaler's exchange price. If replacement motor-compressor (and/or other components) is available via storage facility, parts truck, etc., SCC mandates that readily accessible replacement components be used toward repair of Goods; in such instances, SCC will replace such equipment (at its own expense) after confirmation of its use/placement on defective unit. SCC shall not be charged an additional fee, up-charge or expense for such replacement Goods. If SCC is unable to repair or replace the defective Goods, SCC shall issue a credit to the Purchaser for full or partial purchase price, as SCC shall determine. The replacement or payment in the manner described above shall be the sole and exclusive remedy for Purchaser for breach of this warranty. If any Goods are defective or fail to conform to this warranty, SCC will furnish instructions for their disposition. No Goods shall be returned to SCC without its prior consent.

SCC's liability for any defect in the Goods shall not exceed the purchase price of the Goods. SCC SHALL HAVE NO LIABILITY TO PURCHASER FOR CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, PERSONAL INJURY, PROPERTY DAMAGE, LOST PROFITS, OR OTHER ECONOMIC INJURY DUE TO THE DEFECT IN THE GOODS OF SCC. SCC SHALL NOT BE LIABLE TO THE PURCHASER IN TORT FOR ANY NEGLECT DESIGN OR MANUFACTURE OF THE GOODS, OR FOR THE OMISSION OF ANY WARNING THEREOF.

All claims must contain the following information: (1) model & serial code number of equipment; (2) the date and place of installation, service, or repair (if any); (3) the name and address of the agency which performed the installation; (4) the date of the equipment failure; and (5) a complete description of the equipment failure and all circumstances relating to that failure.

If the Goods have been altered, defaced, or removed.

If problems occur with any compressor, notify SCC's Customer Service Department immediately. Any attempt to repair or alter the unit without prior consent from the Customer Service Department will render any warranty claim null and void. This warranty and protection plan does not apply to any condensing unit or any part thereof which has been subject to accident, negligence, misuse, or abuse, or which has not been operated in accordance with the manufacturer's recommendations or if the serial number of the unit has been altered, defaced, or removed.

One Year Limit of Liability: After SCC's one-year parts and labor warranty on the original F.O.B. (free on board) unit has expired, SCC is not liable for either the equipment or labor costs of repairing or replacing the motor compressor, nor any other components that were included in the original F.O.B. (free on board) unit.