REACH-IN SELF-CONTAINED MERCHANDISER

INSTALLATION & OPERATIONS MANUAL

JNRBHSA
JNRZHSA

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To ensure proper functionality and optimum performance, it is STRONGLY recommended that Hillphoenix specialty cases be installed/serviced by qualified technicians who have experience working with commercial refrigerated display merchandisers and storage cabinets. For a list of Hillphoenix-authorized installation/service contractors, please visit our website at www.hillphoenix.com.

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LIABILITY NOTICE

For Cases with Shelf Lighting Systems

Hillphoenix does NOT design any of its shelf lighting systems or any of its display cases with shelf lighting systems for direct or indirect exposure to water or other liquids. The use of a misting system or water hose on a display case with a shelf lighting system, resulting in the direct or indirect exposure of the lighting system to water, can lead to a number of serious issues (including, without limitation, electrical failures, fire, electric shock, and mold) in turn resulting in personal injury, death, sickness, and/or serious property damage (including, without limitation, to the display itself, to the location where the display is situated [e.g., store] and to any surrounding property). DO NOT use misting systems, water hoses or other devices that spray liquids in Hillphoenix display cases with lighted shelves.

If a misting system or water hose is installed or used on a display case with a shelf lighting system, then Hillphoenix shall not be subject to any obligations or liabilities (whether arising out of breach of contract, warranty, tort [including negligence], strict liability or other theories of law) directly or indirectly resulting from, arising out of or related to such installation or use, including, without limitation, any personal injury, death or property damage resulting from an electrical failure, fire, electric shock, or mold.

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Important

At Hillphoenix®, the safety of our customers and employees, as well as the ongoing performance of our products, are top priorities. To that end, we include important warning messages in all Hillphoenix installation and operations handbooks, accompanied by an alert symbol paired with the word "DANGER", "WARNING", or "CAUTION".

All warning messages will inform you of the potential hazard; how to reduce the risk of case damage, personal injury or death; and what may happen if the instructions are not properly followed.

⚠ DANGER

Indicates an immediate threat of death or serious injury if all instructions are not followed carefully.

⚠ WARNING

Indicates a potential threat of death or serious injury if all instructions are not followed carefully.

⚠ CAUTION

Indicates that failure to properly follow instructions may result in case damage.

Revision History

- New Manual Format_08/14
- Manual Update_05/18
- Manual Update_01/19
- Manual Update_04/19
- Appendix F Update_05/19
- Appendix A Update_10/19
- Appendix E Update_11/19
- Appendix E Update_01/20
- Case Installation Update_05/20

GENERAL INFORMATION

Thank you for choosing Hillphoenix for your food merchandising needs. This handbook contains important technical information and will assist you with the installation and operation of your new Hillphoenix specialty cases. By closely following the instructions, you can expect peak performance; attractive fit and finish; and long case life.

We are always interested in your suggestions for improvements (e.g. case design, technical documents, etc.). Please feel free to contact our Marketing Services group at the number listed below. Thank you for choosing Hillphoenix, and we wish you the very best in outstanding food merchandising.

CASE DESCRIPTION

This manual specifically covers the JNRBHSA and JNRZHSA reach-in self-contained merchandiser.

STORE CONDITIONS

Hillphoenix cases are designed to operate in an air-conditioned store that maintains a 75°F (24°C) store temperature and 55% (max) relative humidity (ASHRAE conditions). Case operation will be adversely affected by exposure to excessively high ambient temperatures and/or humidity.

REFRIGERATION SYSTEM OPERATION

Air-cooled condensing units require adequate ventilation for efficient performance. Machine-room temperatures must be maintained at a minimum of 65°F in winter and a maximum of 95°F in summer. Minimum condensing tem-peratures should be no less than 70°F.

SHIPPING CASES

Transportation companies assume all liability from the time a shipment is received by them until the time it is delivered to the consumer. Our liability ceases at the time of shipment.

RECEIVING CASES

Examine fixtures carefully and in the event of shipping damage and/or shortages, please contact the Service Parts Department at the number listed below.

CASE DAMAGE

Claims for obvious damage must be 1) noted on either the freight bill or the express receipt and 2) signed by the carrier's agent; otherwise, the carrier may refuse the claim. If damage becomes apparent after the equipment is unpacked, retain all packing materials and submit a written request to the carrier for inspection within 14 days of receipt of the equipment. **Failure to follow this procedure will result in refusal by the carrier to honor any claims with a consequent loss to the consumer.**

If a UPS shipment has been damaged, retain the damaged material, the carton and notify us at once. We will file a claim.

LOST/MISSING ITEMS

Equipment has been carefully inspected to insure the highest level of quality. Any claim for lost/missing items must be made to Hillphoenix within 48 hours of receipt of the equipment. When making a claim please use the number listed below.

SERVICE & TECHNICAL SUPPORT

For service or technical questions regarding display cases, please contact our Case Division Customer Service Department at the toll free number listed below. For questions regarding our refrigeration systems or electrical distribution centers, please contact our Systems Division Customer Service Department at 1-833-280-5714.

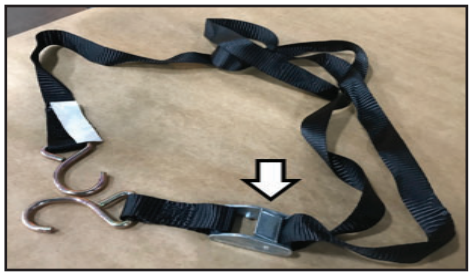
CONTACTING THE FACTORY

If you need to contact Hillphoenix regarding a specific fixture, be certain that you have both the case model number and serial number (this information can be found on the data tag, located on the top-left interior of the case). When you have this information, call the toll-free number below and ask for a Service Parts Representative.

Hillphoenix
1925 Ruffin Mill Rd
Colonial Heights, VA 23834
Mon.-Fri. (8 a.m. to 5 p.m.)
Tel: 1-800-283-1109/Fax: 804-526-7450
Website: www.hillphoenix.com

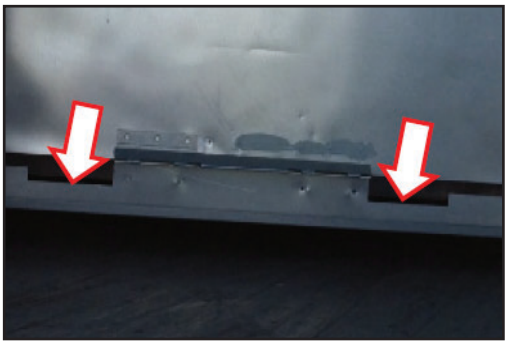
DELIVERY

1. At delivery, depress ratchet to loosen strap from case top to trailer wall. Unhook strap from wall – save strap for later step.



2. For maximum flexibility at delivery, each case is provide with a special base frame. The case has 2" tall perment feet and a quick-drop undercarriage with casters. If loading dock is present at store, simply wheel the case off the trailer on its casters.

3. If store doorway prohibits case entry when on its delivery casters, the undercarriage may be removed to reduce overall case height under 80". To remove undercarriage, lift case 1" to 2" (maximum) from ground so that case weight is removed from the casters. Cut-outs provided in the rear and front skid-rails are a designated lift point for fork truck blades.

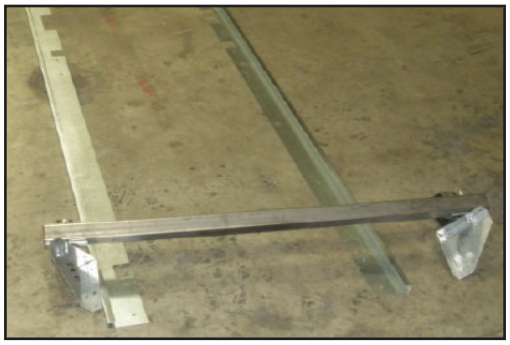


CAUTION!

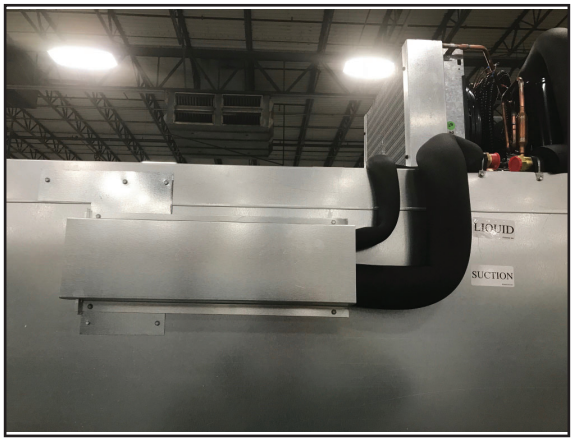
Use adequate equipment, follow all safety requirements and ensure blades are fully under case prior. See Appendix I for Lifting Locations

4. The case may also be lifted manually using a J-bar. *Important: Place lift blade within the 6" space behind the front foot. Metal reinforcement is provided in this designated lift area.* Place wood blocking entirely beneath base feet to hold case while undercarriage is removed.

5. Once all screws are removed, (two 3/8 Hex screws located next to the large arrows in the photo above) the skid rails and caster assemblies will drop away from the case.

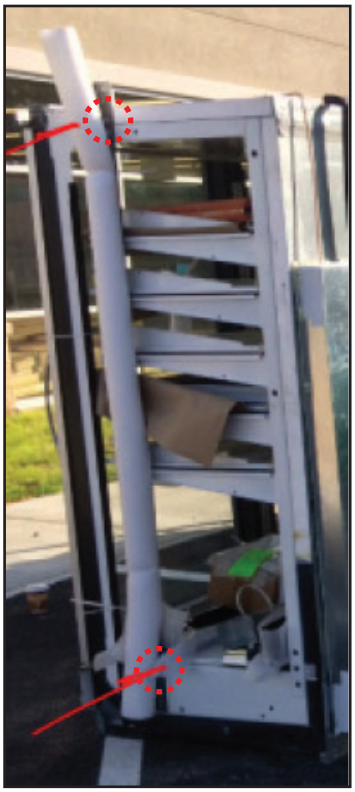


6. Copper lines at top rear are held to case by clamps – remove clamps and flex copper lines down and to rear of case if required to pass through the store doorway. The screws have ¼" hex head.

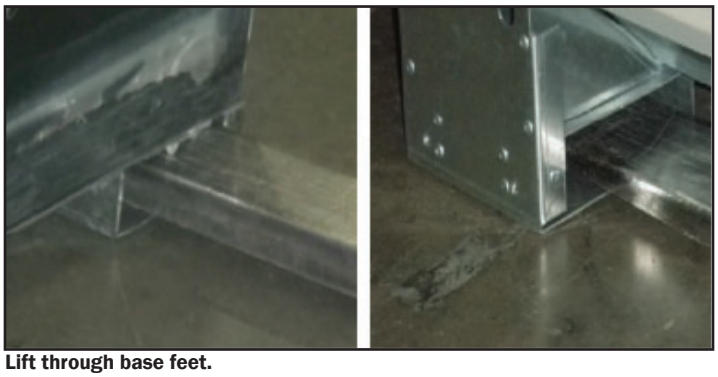


7. The case wiring exits into a permanent enclosure at top left rear of case. Flexible conduit is provided from this enclosure to the case controller box. Remove screws (1/4" hex head) and reposition controller box if required to pass underneath the store doorway.

8. Shipping braces are attached to the open end of cases with 2 bolts. Remove the braces (9/16" hex head) if required to pass underneath the store door way.



9. Once case is prepared per prior step, it can be moved thru 80" door way by lifting through the base feet. *WARINING: If lifted through base feet, blades must be fully past the second set of base feet. Attach ratchet strap from case top anchor point to lifting equipment. Case to be hovered within ¼" from ground level . Installer responsible to comply with all OSHA, local, and customer safety requirements. Installer responsible to provide equipment ad-equately sized for the task.*



Lift through base feet.

Clear second set of base feet.

Connect rachet strap from the top to the bottom.

10. Hydraulic pallet-rack jacks, or other manual methods may be used, provided care is taken to protect the case, and designated lift points are used.

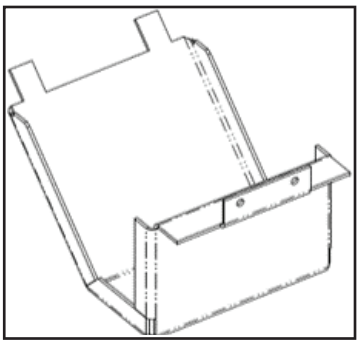
Hydraulic Jack

Protect case and use designated lift points.

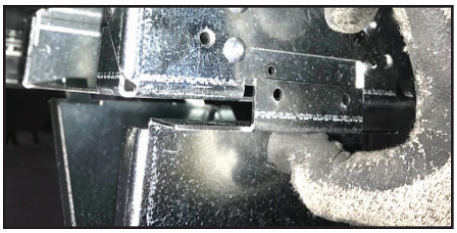
11. Remove 3.25” riser feet from inside of the case (the risers are shipped loose so the case can deliver through short doorways). Lift the case at designated areas. If using pallet jack, avoid damaging the drain hub (centered left-right on case). Slide 1 riser under each 1 permanent base foot. Tabs at rear will nest into foot – align pre-punched holes on front vertical flange and secure with provided #8 TEK screws (two places per riser). Once risers are secured, the case can be shimmed beneath the risers.

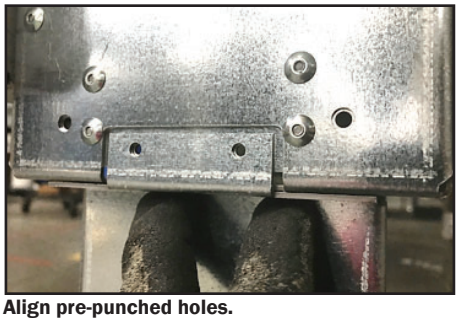
Lift case in designated areas.

Avoid the drain hub when using pallet jack.

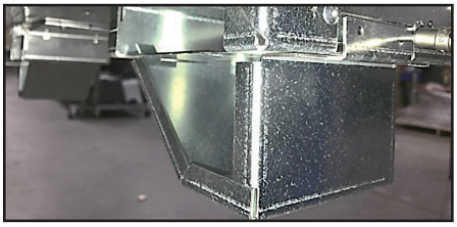


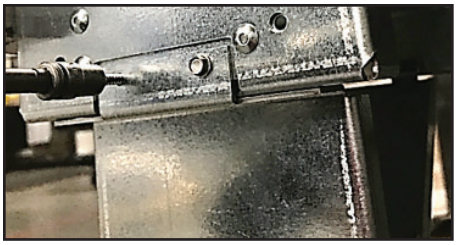
3.25” Riser



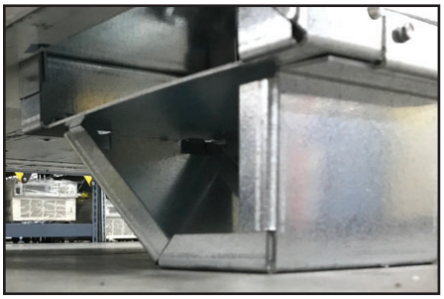


Align pre-punched holes.





#8 TEK screws (2 per riser).



Risers secured.

Case shimmed beneath risers.

FLOOR PREP

1. Confirm with the general contractor that you have the most current building dimensions, then ask for the points of reference from which you should take dimensions to locate the cases.

2. Using chalk lines or a laser transit, mark the floor where the cases are to be located for the entire lineup. The lines should coincide with the outside edges of the case feet.

3. Leveling is necessary to ensure proper case alignment and to avoid potential case damage. Locate the highest point on the positioning lines as a reference for determining the proper height of the shim-pack levelers. A laser transit is recommended for precision and requires just one person.

4. Locate the basehorse positions along the chalk lines, then spot properly leveled shim packs at each location.

LINE-UP & INSTALLATION

Single Case

1. Roll the case into position, leaving a minimum of 2" between the wall and back of case. This space must be unobstructed and is required in order to leave sufficient room for airflow behind the case.

2. Using a "J" bar, raise the end of the case (under cross support), remove the caster assembly (Fig. 1) and lower the basehorse on to the shim packs. Repeat on the other end of the case.

3. Once the basehorse is properly placed on the shim packs, check the vertical plumb of the case by placing a bubble level on the shelf standard. Add/remove shim packs as needed. For the horizontal level, repeat this process after placing the bubble level on the front sill.

Multi-Case

1. Remove any shelves, shipping braces, mirror assemblies, etc. Shelf clips and shipping braces can be discarded. Keep all other loose items such as kick plates, end kick plates, nose bumper, fascia, etc. for later in the installation process.

2. Remove the return air grill at the case joint. The grill lifts out without fasteners and may be easily removed to gain clear access to the case-to-case joining bolts.

3. Follow the single-case installation instructions for the first case, then position the next case in the line-up approximately 3' away. Remove the casters on the end that is closest to the first case.

4. Apply the foam tape gasket (supplied) and two beads of butyl or silicone sealant to the end of the first case (Fig. 1). From the opposite end, push the second case to a position that is approximately 6" from the first case, then remove the remaining casters and position case on the shim packs.

5. Push the cases tightly together, then lightly bolt them together through the holes that are provided (Fig. 1). Tighten all the joining bolts until all margins are equal. Be careful not to over tighten.

6. Repeat steps 3–6 of this sequence for all remaining cases. Be certain to properly level all cases.

7. See Appendix B for seismic bracket installation instructions.

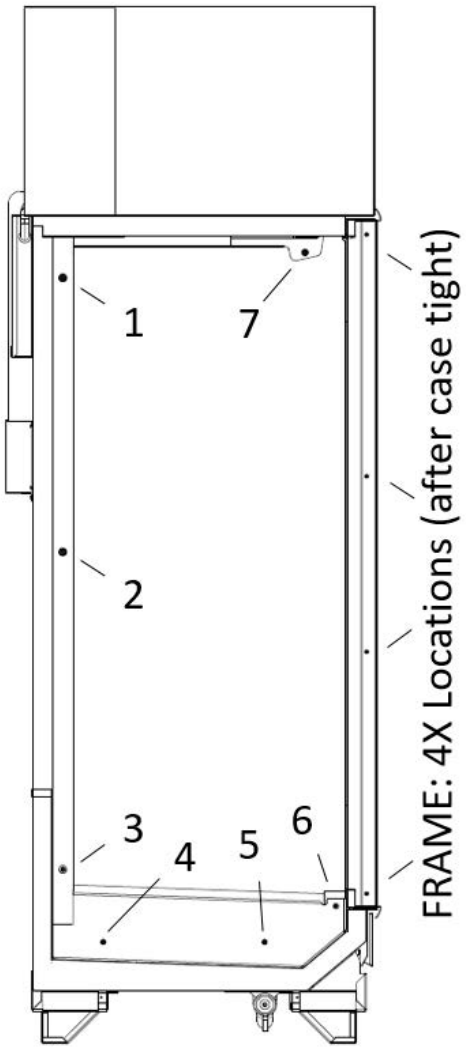


Fig. 1 Bolt holes, foam tape gasket and sealant

TRIM OUT

Drain and Pump Notes:

For the best energy conservation, Hillphoenix recommends the use of floor drains at the store.

Configurations exist (having 'FD" at end of the case model name) which restrict certain selections and tailor the case for use with store floor drains. For "FD" configured cases, simply glue up the ship loose P-trap , cleanout, and Tee to route condensate to the floor drain.

Other case configurations (non-"FD") allow ordering of options (pumps and burn-off pans) that manage the condensate for stores without floor drains. The following section discusses the install of these condensate pumps and burn-off pans.

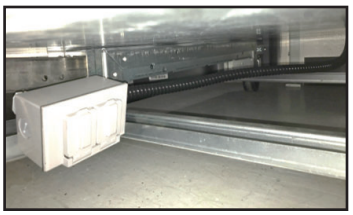
Unpack pump, PVC drain trap, and 20 feet of plastic tubing. Glue supplied PVC drain parts to the drain hub. Orient PVC drain as needed to allow easy clean-out access for future: typically clean-out to right side, with tube nipple facing left.

Place pump receptacle under case and ensure conduit / wires are terminated to main junction box on case top.

Cut short section (18" typical) of tube. Connect from PVC drain outlet nipple to pump inlet (choice of 4 removable caps) Push tube toward short edge of pump **IMPORTANT**: If tube pushed towards long end of pump it may interfere with float that is located beneath motor. The RED 'ALARM" light will turn on if tube is holding float up. If the tube holds float down, the motor will not engage to pump water. To correct, pull out excess tube, and re-orient away from motor / float.

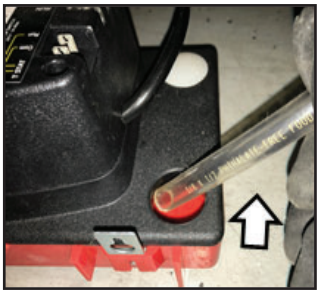
Install long section of tube from pump outlet (nipple) and route to top of case and into evaporative condensate pan.

PVC Drain Trap

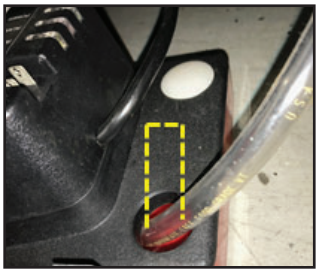


Pump receptacle

Pump

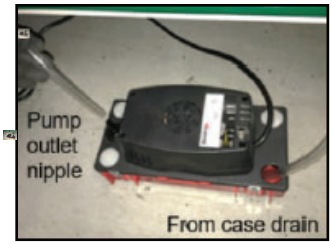


Short tube section to pump inlet



Push towards short edge of pump.

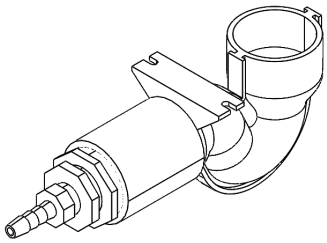
Red "Alarm" light



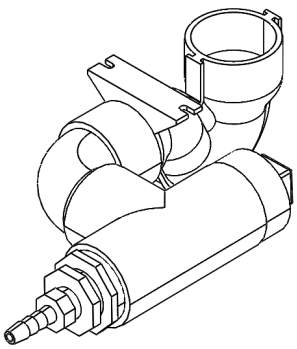
Long tube section from pump outlet nipple.

Pump Outlet Nipple

Primary



With Clean-Out



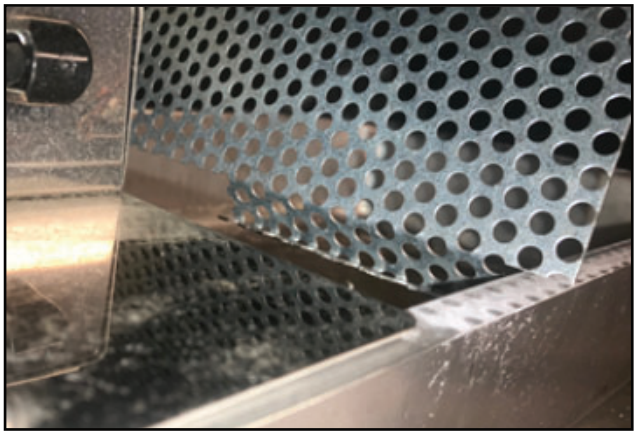
Possible Drain Trap configurations

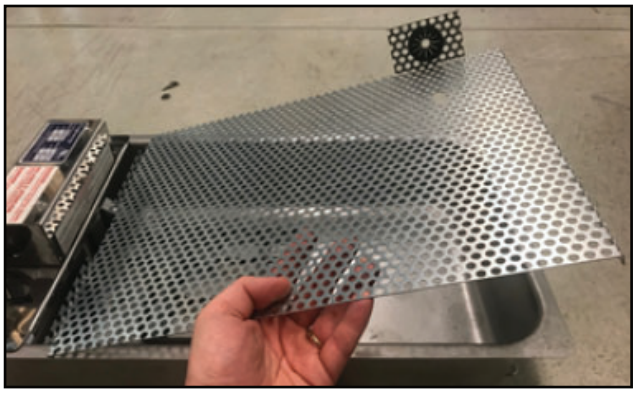
Assembled.

DRAIN and PUMP SET-UP

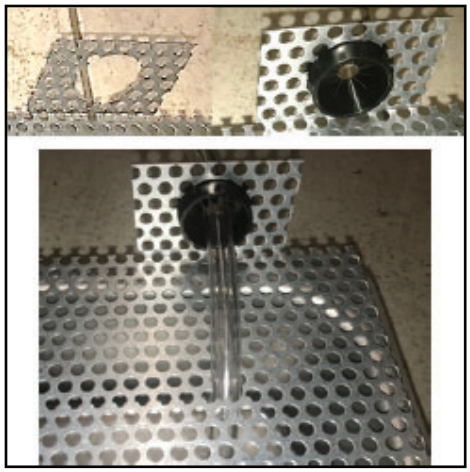
1. 1. The shipped-loose evaporation pan gets installed at the rear left top of case. Cut away an excess section (18" to 24" typical) of the plastic tubing for use in laterstep.

2. Hook "V" of metal cover under flange and rotate cover onto pan.

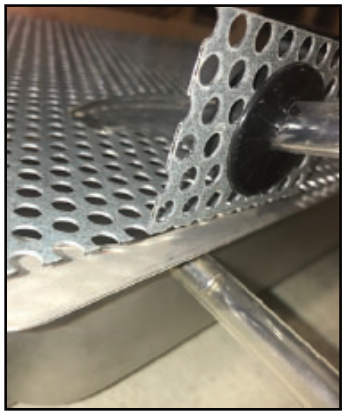




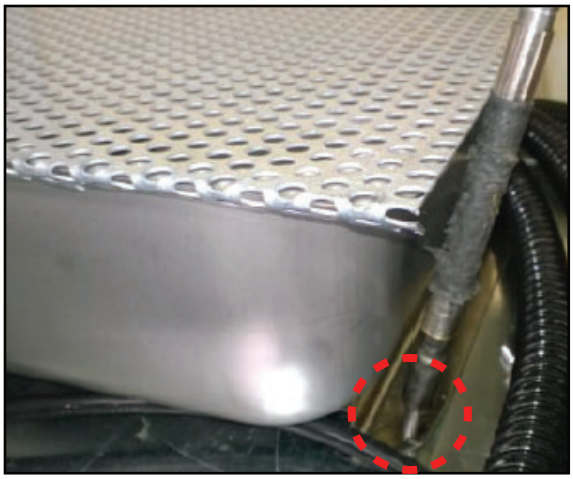
3. Install platic bushing in cover. Place tube (from pump) through bushing to grip and into pan.



4. Place end of tube into cut-out section of cover, so that pumped condensate water is directed into the pan.



5. Place the short (18") section of tubing onto the over-flow tube of the pan, and direct the tube to the rear back of the case. (In event of components wearing out in future, water will be directed to the floor rather than collecting on the case top).



6. Fasten pan to the case with #8 screws provided.

TRIM OUT

1. Seal the interior case-to-case joints with caulk (supplied), then apply acrylic tape (supplied) over the pipechase seam (Fig. 2). The tape acts as a watershed preventing water from settling in the case joint.

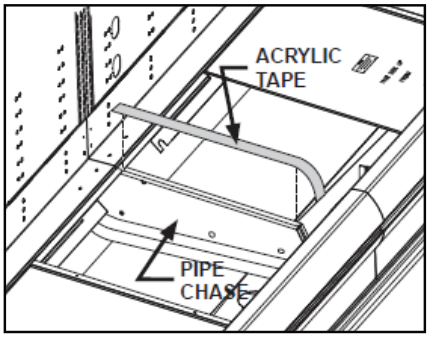


Fig. 2 Sealing the pipe chase

2. Re-install shelves (or peg hook assemblies if applicable). Be aware that differing shelf configurations will affect energy consumption and case performance.

3. Properly align the front panels as needed, then install the front panel joint trim (Fig. 3). If bumper track is installed, loosen the screws in the track—work outward from the gap between front panels—to provide the space needed for installing the front panel trim. Retighten the screws when finished.

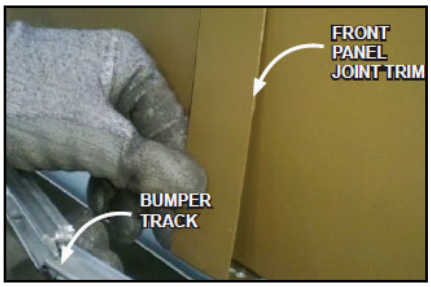


Fig. 3 Front panel trim is install behind bumper tracks. (Example shown with a bumper track. Location and style of track plus bumper [if ordered] may vary.)

4. When sealing frame to frame, or frame to foamed-partition, the Anthony door may need be removed. Release tension from closing mechanism. Depress spring clip at top of door. Pull top door hinge from receptacle and set door aside.

5. Use a clamp to close gap between frame and foam partition, which compresses sealant (applied prior on page 11). Tightly secure the frame to the partition using flat-head self-tapping (#6) screws provided. There should be no gap between the frame and foamed-partition when doneFor case-to-case joints, carefully push the T-bar case frame joint trim into the space between the frames

6. Install supplied sex bolts bolts through each frame, capturing trim, and tighten to compress sealant that was applied per page 11 (Fig. 4).

Fig. 4 Trim shown after install [bolt located above index finger].

7. Install end kick-plates before front kick-plate. End kick-plate is same whether left or right.

8. Slide end kick-plate front to rear, under end. When front flange is about 9/16" from base foot, slide under case – then slide final 9/16" rearward so that metal tabs nest behind case base feet. Front flange of end kick-plate is captured when the front kick-plate is installed (See Fig. 5).

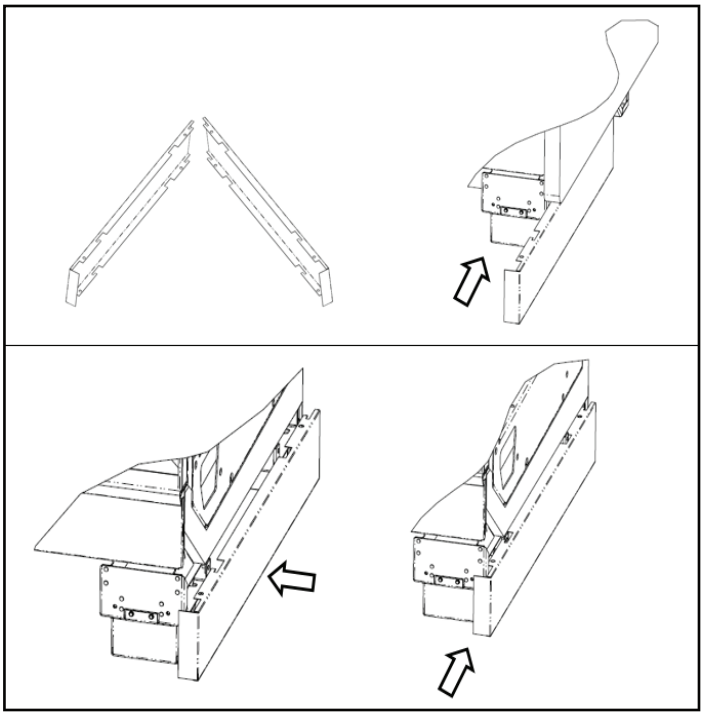
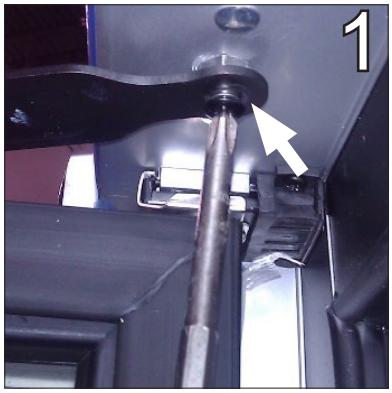


Fig. 5 Front flange of end kick-plate when front kick-plate is installed.

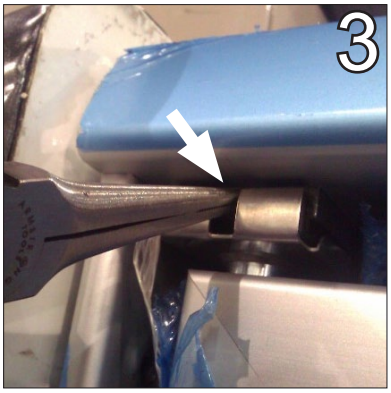
DOOR TRIM OUT

1. Disconnect hold-open assembly from door frame.

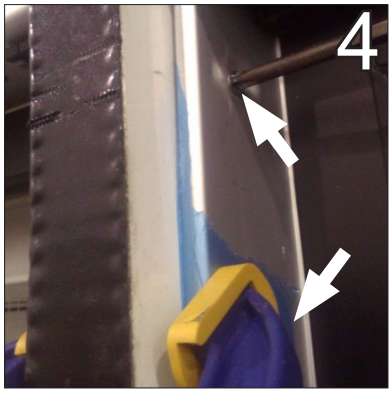


2. Release the tension from the closing mechanism at the bottom of the door using a flat-head screwdriver, turning until the screw is free of tension.

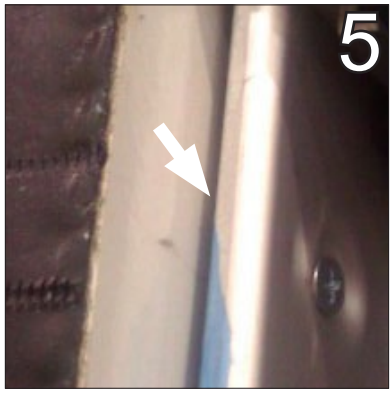
3. Depress the spring clip at the top of the door. Pull the top of the door free from the receptacle, then lift door free from the lower hinge plate. Set door aside.



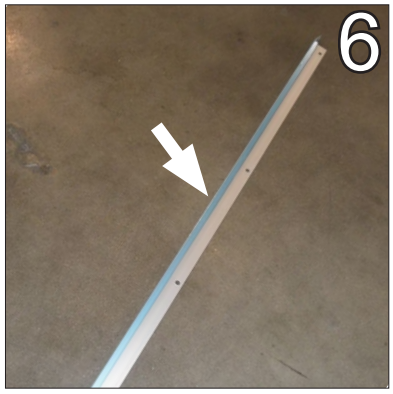
4. Use a clamp to close the gap between the partition and the frame end.



5. Tightly secure the frame to the partition using flat-head self-tapping screws (#6). There should now be no gap between the cases.



6. For case-to-case trim-out (no foam partition), insert the provided frame trim between the frames, then secure with the provided T-bolts.+



7. Re-install the door by reversing steps 1-3.

CASE INSTALLATION

CONDENSING UNIT

The boxes of each shipped-loose, charged, condensing units are marked to identify the case to which they belong. *Important! Match the condensing unit to its corresponding case.

Case and condensing unit have Parket 5000-series quick-connect refrigeration fittings. When field mating the fittings, Parker recommends to *"Lubricate the black poppet faces with system-compatible lubrication as well as threads on male fitting. Then torque (18-20 ft-lb.) the fittings".*

Match the refrigeration quick-connects of the condensing unit to those on the mating case.

Tighten the thread quick-connects fully. *IMPORTANT: Note that the case and condensing unit are shipped charged with refrigerant. The units are not pumped down, but are shipped in "ready to install and run" configuration. Take care to connect lines completely and confirm that leak paths are avoided.*

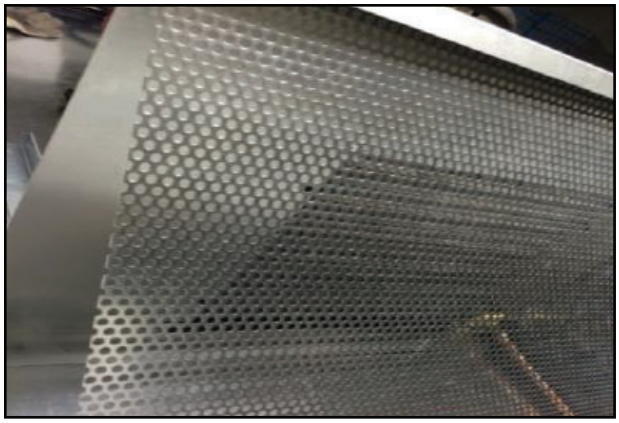
⚠ ATTENTION

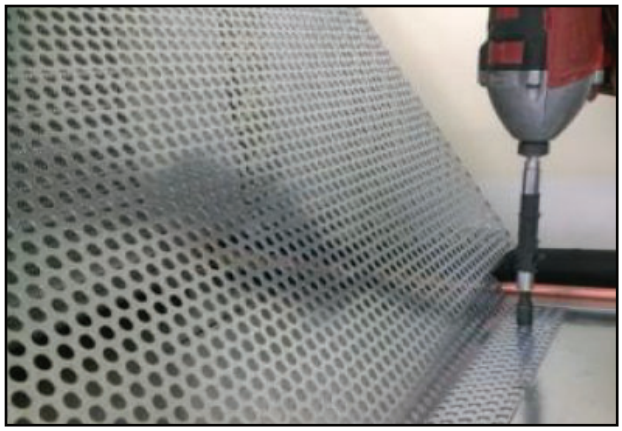
Note that the case and condensing unit are shipped charged with refrigerant.

Secure condensing unit to case top after refrigeration connection are made.

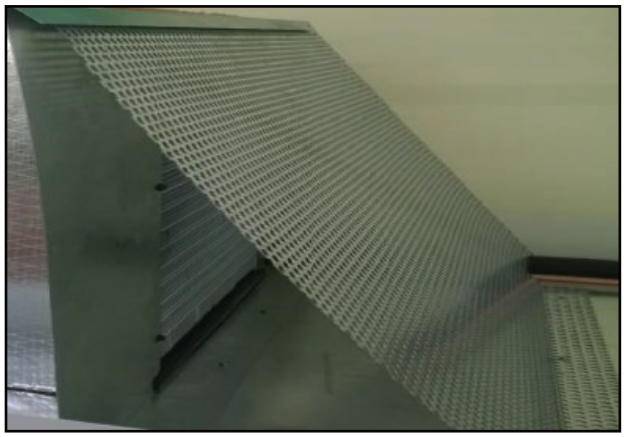
Retrieve shipped-loose condensing unit air-block from inside case. Match cut outs to condensing unit and fasten by backing out and re-installing screws from the condenser coil.

Retrieve shipped-loose intake guard from inside case. Nest top edge into “V” retainer flange at top of air-block. Fasten bottom to case.





Intake guard assembled to air block.



NOISE DAMPENER [OPTIONAL]

The noise damper helps to reduce the noise level of the condensing unit.

Slide the right-hand panel into place using the provided slot on the back of the fascia shroud. Repeat on the left side of the condenser. If you need to, cut out enough of the foam to fit over any piping that may be obsturcting the panel.

Install the top panel by sliding under the protruding metal edge of the fascia shroud, then fitting the top panel's "teeth" into the cut-outs of the side panels to complete the installation.

Top panel installs under metal edge, filling in the pre-cut slots.

Attach right-hand panel to front fascia.

Complete assembly.

Attach left-hand panel to front fascia.

⚠ ATTENTION

Connections are illustrated in dimensional drawing found in Appendix A.

REFRIGERATION

The condensing unit (Fig. 6) is located on top of the case for easy access. Refrigerant piping runs down the rear of the case to and from the coil. The expansion valve and other controls, which are located on the left-hand side of the case, are accessed by lifting the left-hand deck pans—lifting the fan plenum is not required.

Before operating the case, be certain to remove any shipping blocks that protect the refrigeration lines during shipping. If it becomes necessary to penetrate the case tank in any area, be certain to seal any open gaps afterwards with canned-foam sealant and white RTV.

PLUMBING

The drain outlet is specially molded out of PVC material and is located at the front-center of the case for convenient access. The “P” trap that is furnished with the case is constructed of schedule 40 PVC pipe (Fig. 7). Case run-off should be channeled to a floor drain located underneath the case.

NOTE: floor-drain cases are intended for use with floor drains only—evaporative heater pans are neither permitted nor offered with floor-drain case configurations per DOE requirements.

Since the kickplate is shipped loose with the case, you should have open access to the drain line area during installation. If the kickplate has been installed, you will find it easy to remove. Simply remove the kickplate joint trim, then unscrew the upper and lower kickplates from the kickplate supports and remove (see Trim Out instructions on pages 12-15).

Care should be given to ensure that all connections are water-tight and sealed with the appropriate PVC or ABS cement.

ELECTRICAL

Electrical connections are made in the electrical junction box located at the top rear-left of the case (Fig. 8). The cases use a Carel IR33+ case controller. Lighting for reach-in door cases is pre-installed during manufacturing. Lighting controlled through motion sensors is stan-dard on the case. If using Anthony door/frame, the anti-sweat control through embedded controller is standard offering on the case. For any questions or service needs, please contact our Case Division Customer Service Department.

For more detailed electrical wiring information, see **Appendix E**. For more detailed information on the Carel IR33+ controller and setpoints, see **Appendix F.**

Fig. 6 Condensing unit on top of case

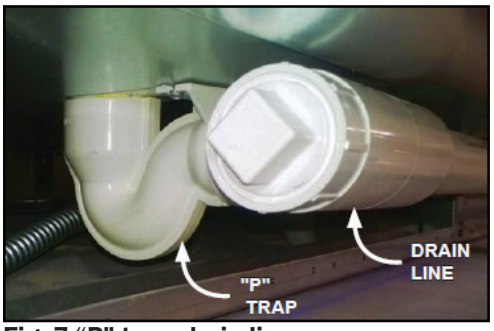


Fig. 7 “P” trap; drain line

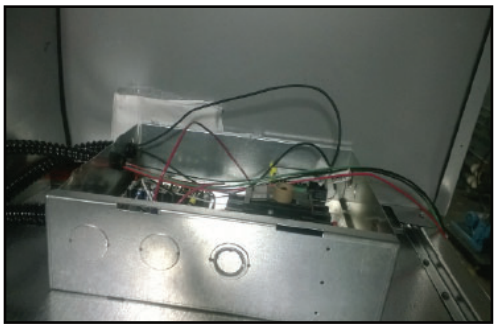


Fig. 8 Electrical junction box on top of case

ATTENTION!

If brazing is necessary, place wet rags around the area to avoid tank damage.

ATTENTION!

Be certain that all piping and electrical connections comply with local codes.

ATTENTION!

Case requires 4-Wire Power From Store. Neutral Wire Must be connected prior to starting case or else damage may occur.

PRE-POWER CHECKLIST

Before powering-up the case, be certain that all of the steps listed below have been completed to ensure proper case functionality, safety and compliance with warranty terms.

- ☐ **Have you thoroughly examined the case for shipping damage? (see pg. 8)**
- ☐ **Have you removed and discarded casters? (see pg. 8)**
- ☐ **Have you checked the vertical plumb of the case? The horizontal level? (see pg. 8)**
- ☐ **Have you applied the foam tape gasket and sealant to the end breakers of adjoining case? (see pg. 11)**
- ☐ **Have you sealed the case-to-case joints by applying caulk and acrylic tape to the pipe-chase seam? (see pg. 15)**
- ☐ **Have you removed the shipping blocks from the refrigeration lines? (see pg. 8)**

AIR FLOW & PRODUCT LOAD

Do not overload the food product display so that it impinges on the air flow pattern—doing so will result in diminished performance and loss of proper temperature levels, particularly when the discharge honeycomb and return air grille are covered. Please keep products within the load limit line shown on the diagram below (Fig. 9).

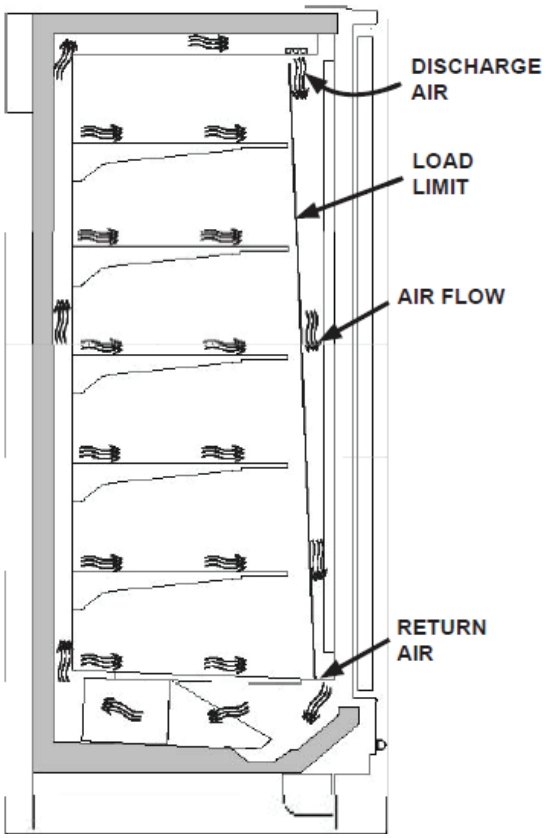


Fig. 9 Airflow; probe, sensor locations

DEFROST & TEMPERATURE CONTROLS

Hillphoenix cases utilize electric, hot gas, or timed-off defrost. The primary components used for the defrost cycle are the various defrost termination sensors, which work to terminate the defrost cycle in the case.

JNRBHSA cases utilize Off-Time defrost. The defrost termination probe is housed at rear wall, behind the lower rear baffle (Fig 10). The discharge air probe monitors the temperature of the discharge air and may be used as the defrost
termination sensor. The probe can generally be found behind the rear baffle, in the upper baffle, or in front of the honeycomb.
NOTE: If the discharge air probe is used for defrost termination, none of the termination sensors listed earlier will be installed in the case.

Fig. 10 Airflow; probe, sensor locations

JNRZHSA cases utilize electric defrost. The defrost termination probe is mountes into the coil package from the left end of the coil. The discharge air probe monitors the termperature of the discharge air and is found behind the plug button in the upper flue panel.

For more detailed information on suggested defrost times and settings, see page 2. Further adjustment may be required depending on store conditions.

DETERMINING SUPERHEAT

To identify proper superheat settings, complete the following:

1. Obtain suction pressure from the access port. Obtain the suction line temperature from the area near the TXV bulb at the outlet of the evaporator coil (Fig. 11).

2. Using the suction pressure reading and the Sporlan® temperature-pressure chart (Appendix C), convert pressure-to-temperature.

3. Finally, subtract the converted temperature reading from the actual temperature reading. The resulting number is the superheat setting—once this has been determined, adjust the TXV as needed to obtain the proper setting.

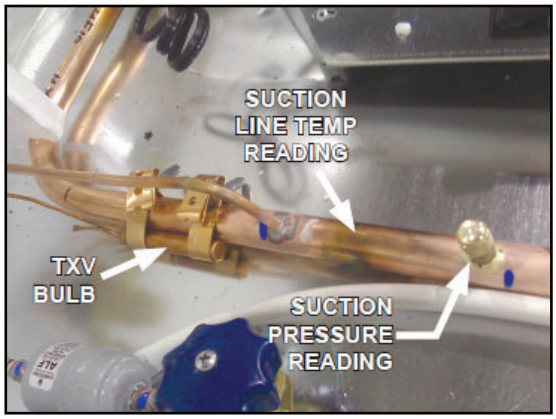


Fig. 11 Obtain pressure and temperature readings

⚠ DANGER

SHOCK HAZARD

Always disconnect power to case when servicing or cleaning. Failure to do so may result in injury or death

⚠ CAUTION

Exercise extreme caution when working in a case with the coil cover removed. The coil contains many sharp edges that can result in severe cuts to the hands and arms.

FANS

Hillphoenix door cases feature electronic commutated fan motor assemblies. The fans have a factory-set blade pitch and a pre-configured RPM specific to each model.

Fan assemblies may be changed with an easy two-step process without lifting up the plenum, thereby avoiding the necessity to unload the entire product display to change the fan assembly:

1. Unplug the fan motor (Fig. 12) from the receptacle on the exterior of the fan plenum. Push the power cord back through the plenum opening.

2. Remove fasteners, then lift out the entire fan basket.

(Reverse procedure when re-installing fan assembly.)

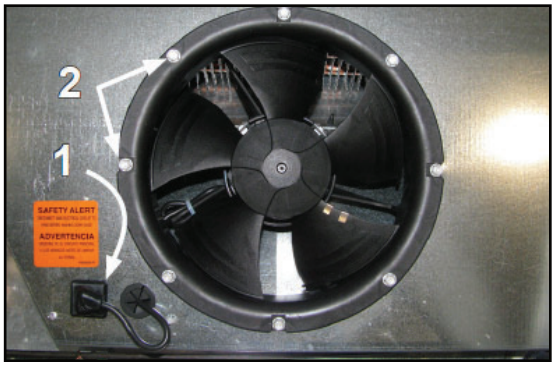


Fig. 12 Fan Basket

⚠ CAUTION

Power cord must be pushed back through the plenum opening before removing the fan basket. Failure to do so may result in damage to the power cord.

CLEANING PROCEDURES

A periodic cleaning schedule should be established to maintain proper sanitation, insure maximum operating efficiency, and avoid the corrosive action of food fluids on metal parts that are left on for long periods of time. We recommend cleaning once a week.

- Be certain that all electricity to the case is turned off before servicing or cleaning to avoid electrical shock. In some cases, more than one switch may need to be turned off to completely de-energize the case.

- All surfaces pitch downward to a deep-drawn drain trough, funneling liquids and other debris to the waste outlet. Check waste outlet before starting the cleaning process to insure it is unclogged. Avoid introducing water faster than the case drain can carry it away.

- To gain access to the coil for cleaning and maintenance, remove 2 screws at plenum ends and gently slide forward the plenum assembly without damaging any of the refrigeration piping or electrical components (Fig. 13).

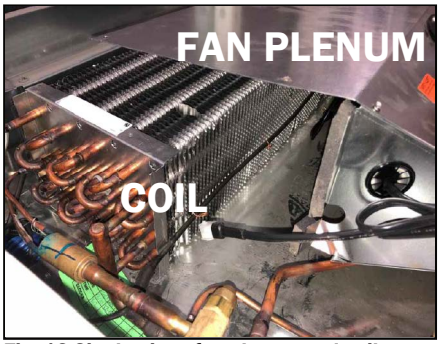


Fig. 13 Single-piece fan plenum and coil cover

- To clean the lights, shut off the lights in the case, then wipe them down with a soft, damp cloth. Avoid using harsh or abrasive cleaners as they may damage the lights. Be certain that the lights are completely dry before re-energizing.

- If any potentially harmful cleaners are used, be certain to provide a temporary separator (e.g., cardboard, plastic wrap, etc.) between those cases that are being cleaned and those that may still contain product.

- Avoid spraying cleaning solutions directly on electrical connections.

- Allow cases to be turned off long enough to clean any frost or ice from coil and pans.

- Remove kickplate and clean underneath the case with a broom and a long-handled mop. Use warm water and a disinfecting cleaning solution when cleaning underneath the cases.

Contact the Service Parts Department at:

1-800-283-1109

Provide the following information about the part you are ordering:

- **Model number and serial number* of the case for which the part is intended.**
- **Length of the part (if applicable).**
- **Color of part (if painted) or color of polymer part.**
- **Whether part is for left- or right-hand application.**
- **Quantity**

***Serial plate is located inside the case on the top-left side.**

If the parts are to be returned for credit, contact the Parts Department. Do not send parts without authorization.

APPENDIX

A1: TECHNICAL REFERENCE SHEET

JNRBHSA

High Narrow Reach-In Self Contained Merchandiser
1, 2, 3, 4, 5 Door & 4' (Dairy/Deli/Beverage)

GENERAL NOTES:

• Lighting Controls and Anti Sweat Heat Controls are Required

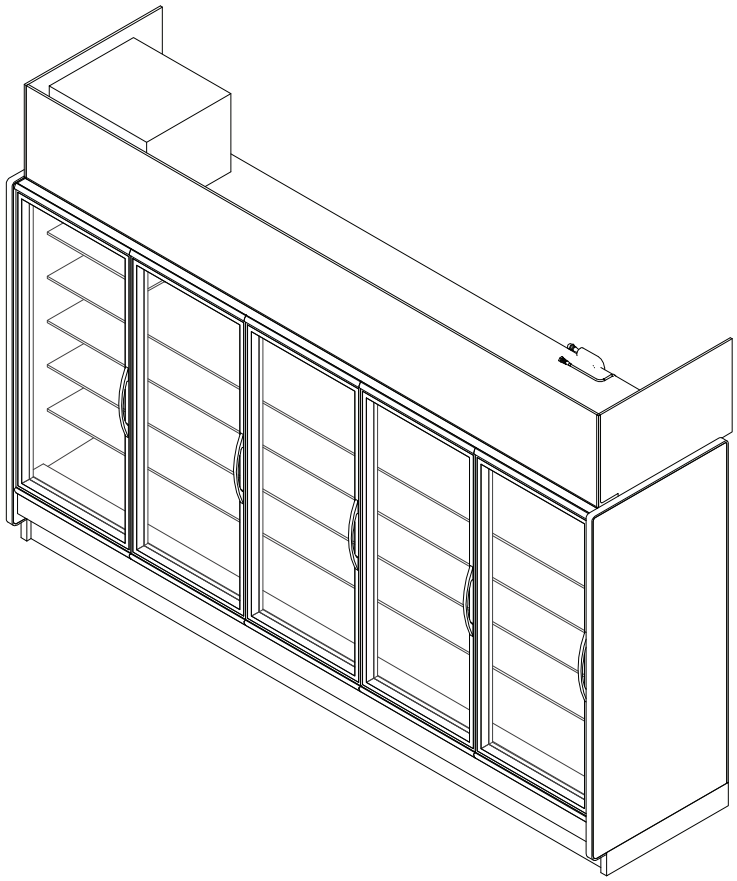
- Option 1: OEM Provided:

Occupancy Sensor Based Lighting Controls (On/Off) & Hillphoenix provided embedded Anti Sweat Controls are standard, unless otherwise specified

- Option 2: End User Provided:

Lighting Controls should be Occupancy Sensor Based or on a minimum 8 Hour Off Schedule. Customer provided A/S Heat Controls should be set to 30% minimum off time at 75°F/55%RH

- 1 Door & 4' case lengths available in 120V R448A condensing unit configuration.
- 2,3,4 & 5 door lengths available in 208V R404A/R448A condensing unit configuration.



SHIPPING WEIGHT	
Case	Weight
JNRBHSA	---

2017 DOE COMPLIANT NSF c UL us COMPONENT

ALL MEASUREMENTS ARE TAKEN PER ASHRAE-72-2005 SPECIFICATIONS. HILLPHOENIX REFRIGERATED DISPLAY CASES FOR SALE IN THE UNITED STATES MEET OR EXCEED DEPARTMENT OF ENERGY 2017 REQUIREMENTS.

JNRBHSA

Rev. Date	Rev. #	Rev. Title
12-18-19	13	DATA UPDATE
11-25-19	12	DATA UPDATE

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A2: TECHNICAL REFERENCE SHEET

JNRBHSA (R404A)

High Narrow Reach-In Self Contained Merchandiser
1, 2, 3, 4, 5 Door & 4' (Dairy/Deli/Beverage)

SYSTEM REQUIREMENT (R-404A REFRIGERANT)						
Case Length	Volts	Phase	Frequency	Minimum Circuit Ampacity (MCA)	Maximum Overcurrent Protection (MOP)	24hr Energy Usage (kWh)
2 Door	208	1	60	16.3	20	6.4
3 Door	208	1	60	16.5	20	9.0
4 Door	208	1	60	16.6	20	11.7
5 Door	208	1	60	18.4	20	15.3

GUIDELINES AND CONTROL SETTINGS (R-404A REFRIGERANT)					
Case Length	Application	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Set Point Differential (°F)	Discharge Air Velocity (FPM)
2 - 5 Door	Beverage	6 - 8	35	6	230
2 - 5 Door	Dairy	6 - 8	30	6	230
2 - 5 Door	Deli	6 - 8	29	6	230

CONDENSING UNIT DATA (R-404A REFRIGERANT)								
Case Length	Volts	Phase	Frequency	Horsepower	Running Load Amps (RLA) (Amps)	Locked Rotor Amps (LRA) (Amps)	Refrigerant	Lbs. of Refrigerant
2 Door	208	1	60	1/3	4.2	16.8	R404A	2.2
3 Door	208	1	60	1/3	4.2	16.8	R404A	2.6
4 Door	208	1	60	1/3	4.2	16.8	R404A	3.0
5 Door	208	1	60	1/2	5.3	26.5	R404A	3.5

DEFROST CONTROLS (R-404A REFRIGERANT)				
Case Length	Defrosts Per Day	Run-Off Time (Min)	Fail-Safe (Min)	Termination Temp (F)
2 - 5 Door	2	0	46	44

DEFROST SCHEDULE (R-404A REFRIGERANT)	
Defrosts Per Day	Time
2	12 a.m. - 12 p.m.

NOTES:

- "---" indicates that this feature is not an option on this case model.
- Listed discharge air velocity represents the average velocity at the peak of defrost.
- Temperature and defrost settings listed below are recommended start-up settings. Final operational settings may need to be adjusted for the store conditions in which the case operates.
- The recommended evaporator temperatures may need to be adjusted based on system setup, store conditions, etc. The minimum recommended evaporator temperature is 4°F below the listed evaporator temperature.
- The 24 Hour Energy Value is based upon AHRI 1200 test conditions with Hillphoenix provided evaporator fans, condensing unit, LED lights, occupancy sensor based (on/off) lighting control, dew point based anti-sweat heat controller, condensate pump, evaporator pan, heated door frame,and un heated glass doors/off cycle defrost on medium temp cases.

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JNRBHSA (R404A)

Rev. Date	Rev. #	Rev. Title
12-18-19	13	DATA UPDATE
11-25-19	12	DATA UPDATE

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A3: TECHNICAL REFERENCE SHEET

JNRBHSA (R448A)

High Narrow Reach-In Self Contained Merchandiser
1, 2, 3, 4, 5 Door & 4' (Dairy/Deli/Beverage)

SYSTEM REQUIREMENT (R-448A REFRIGERANT)

Case Length	Volts	Phase	Frequency	Minimum Circuit Ampacity (MCA)	Maximum Overcurrent Protection (MOP)	24hr Energy Usage (kWh)
1 Door	120	1	60	7.8	15.0	2.9
4'	120	1	60	11.8	15.0	5.4
2 Door	208	1	60	15.8	20.0	6.4
3 Door	208	1	60	16.0	20.0	7.2
4 Door	208	1	60	16.1	20.0	11.6
5 Door	208	1	60	17.6	20.0	13.7

GUIDELINES AND CONTROL SETTINGS (R-448A REFRIGERANT)

Case Length	Application	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Set Point Differential (°F)	Discharge Air Velocity (FPM)
1 Door	Beverage	6 - 8	40	6	100
1 Door	Dairy	6 - 8	36	6	100
2 - 5 Door	Beverage	6 - 8	35	6	230
2 - 5 Door	Dairy	6 - 8	30	6	230
2 - 5 Door	Deli	6 - 8	29	6	230
4'	Beverage	6 - 8	32	4	183
4'	Dairy	6 - 8	31	4	183
4'	Deli	6 - 8	30	4	183

CONDENSING UNIT DATA (R-448A REFRIGERANT)

Case Length	Volts	Phase	Frequency	Horsepower	Running Load Amps (RLA) (Amps)	Locked Rotor Amps (LRA) (Amps)	Refrigerant	Lbs. of Refrigerant
1 Door	120	1	60	1/4	4	26	R448A	2.0
4'	120	1	60	1/4	4.0	26.0	R448A	2.5
2 Door	208	1	60	1/3	3.6	17.5	R448A	2.25
3 Door	208	1	60	1/3	3.6	17.5	R448A	2.25
4 Door	208	1	60	1/3	3.6	17.5	R448A	2.25
5 Door	208	1	60	1/2	4.6	22.0	R448A	4.0

DEFROST CONTROLS (R-448A REFRIGERANT)

Case Length	Defrosts Per Day	Run-Off Time (Min)	Fail-Safe (Min)	Termination Temp (F)
1 Door	2	0	60	40
4'	2	0	60	40
2 - 5 Door	2	0	46	44

DEFROST SCHEDULE (R-448A REFRIGERANT)

Defrosts Per Day	Time
2	12 a.m. - 12 p.m.

NOTES:

- "---" indicates that this feature is not an option on this case model.
- Listed discharge air velocity represents the average velocity at the peak of defrost.
- Temperature and defrost settings listed below are recommended start-up settings. Final operational settings may need to be adjusted for the store conditions in which the case operates.
- The recommended evaporator temperatures may need to be adjusted based on system setup, store conditions, etc. The minimum recommended evaporator temperature is 4°F below the listed evaporator temperature.
- The 24 Hour Energy Value is based upon AHRI 1200 test conditions with Hillphoenix provided evaporator fans, condensing unit, LED lights, occupancy sensor based (on/off) lighting control, dew point based anti-sweat heat controller, condensate pump, evaporator pan, heated door frame,and un heated glass doors/off cycle defrost on medium temp cases.

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Rev. Date	Rev. #	Rev. Title
12-18-19	13	DATA UPDATE
11-25-19	12	DATA UPDATE

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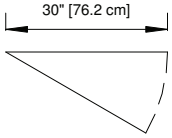
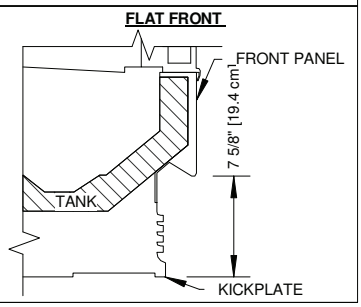
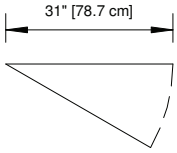
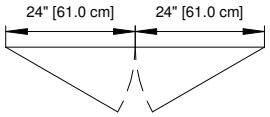
A4: TECHNICAL REFERENCE SHEET

JNRBHSA

High Narrow Reach-In Self Contained Merchandiser
1, 2, 3, 4, 5 Door & 4' (Dairy/Deli/Beverage)

DOOR OPTIONS	FRONT OPTIONS
STANDARD SWING DOOR 2, 3, 4 & 5 - DOOR CASES 	
STANDARD SWING DOOR 1 - DOOR CASES 	
BI- SWING DOOR 4' CASES 	

2017 DOE COMPLIANT NSF c UL us COMPONENT

ALL MEASUREMENTS ARE TAKEN PER ASHRAE-72-2005 SPECIFICATIONS. HILLPHOENIX REFRIGERATED DISPLAY CASES FOR SALE IN THE UNITED STATES MEET OR EXCEED DEPARTMENT OF ENERGY 2017 REQUIREMENTS.

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Rev. Date	Rev. #	Rev. Title
12-18-19	13	DATA UPDATE
11-25-19	12	DATA UPDATE

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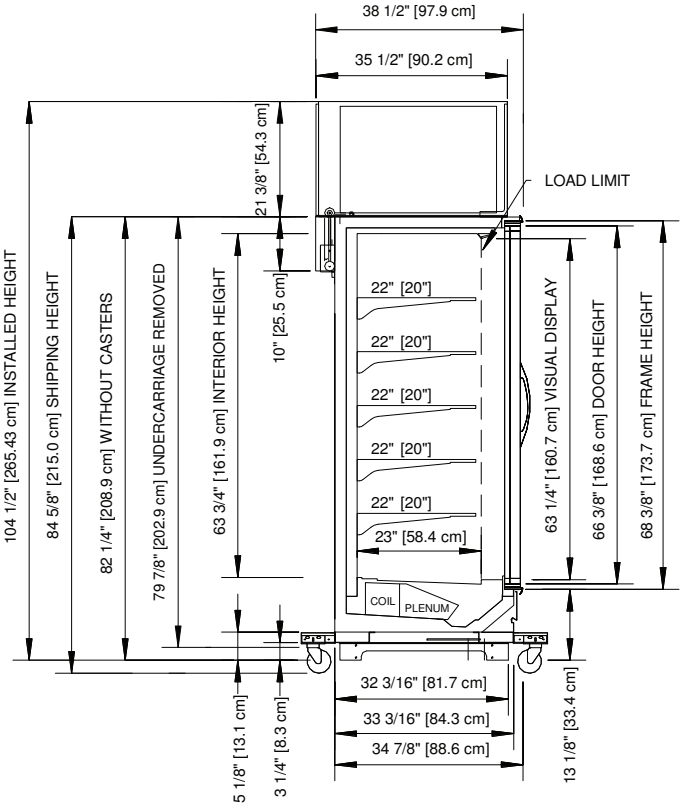
A5: TECHNICAL REFERENCE SHEET

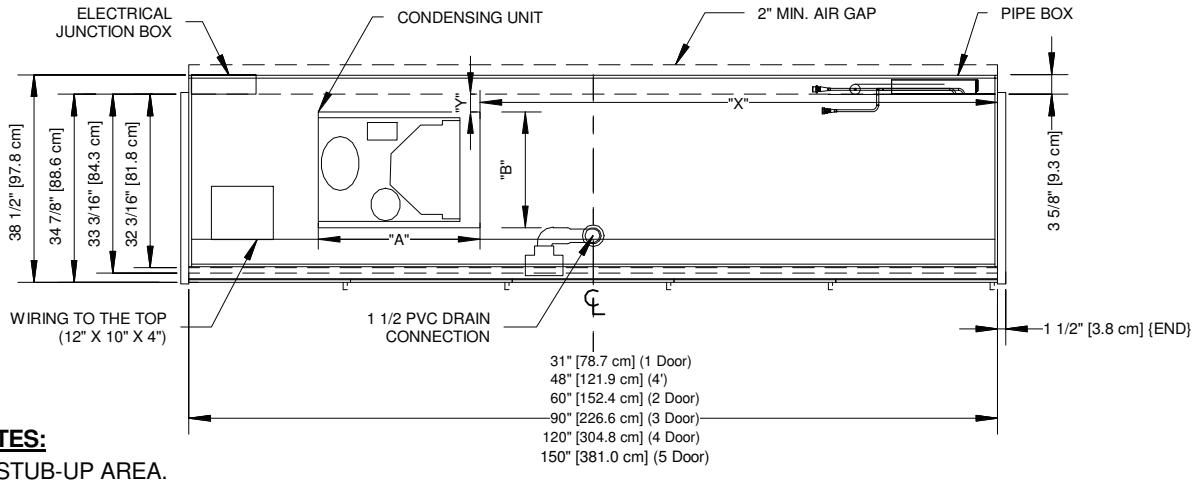
JNRBHSA

High Narrow Reach-In Self Contained Merchandiser
1, 2, 3, 4, 5 Door & 4' (Dairy/Deli/Beverage)



CONDENSING UNIT SIZE AND POSITION R404A				
REFRIGERANT	R404 A			
CASE LENGTH	2DR	3DR	4DR	5DR
"X"	19.5"	33.4"	48.3"	33"
"Y"	4.5"	4.5"	4.5"	4.5"
"A"	16.6"	16.6"	16.6"	16.1"
"B"	13.1"	13.1"	13.1"	13.7"

CONDENSING UNIT SIZE AND POSITION R448A						
REFRIGERANT	R448 A					
CASE LENGTH	1DR	2DR	3DR	4DR	5DR	4'
"X"	5"	14"	37"	37"	41"	5"
"Y"	2.5"	2"	2"	2"	2"	2.5"
"A"	14.1"	18.3"	18.3"	18.3"	18.3"	14.1"
"B"	12.1"	13.4"	13.4"	13.4"	13.4"	12.1"



NOTES:

* : STUB-UP AREA.

** : RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS.

- Specialized Base Frame:
- Case fits through 80" doorway with shipping undercarriage removed.
- 2" lifting brackets (installed) & 3.25" ship loose risers combine for 5" baseframe once installled.
- Drain traps ship loose.
- Ends add approximately 1" to case height, 1/2" to the back & 1" to the front.

2017 DOE COMPLIANT NSF c UL us COMPONENT

ALL MEASUREMENTS ARE TAKEN PER ASHRAE-72-2005 SPECIFICATIONS. HILLPHOENIX REFRIGERATED DISPLAY CASES FOR SALE IN THE UNITED STATES MEET OR EXCEED DEPARTMENT OF ENERGY 2017 REQUIREMENTS.

JNRBHSA

Rev. Date	Rev. #	Rev. Title
12-18-19	13	DATA UPDATE
11-25-19	12	DATA UPDATE

Hillphoenix
A DOVER COMPANY

A6: TECHNICAL REFERENCE SHEET

JNRZHSA

High Narrow Reach-In Self Contained Merchandiser
2, 3, 4 & 5 Door (Frozen Food)

GENERAL NOTES:

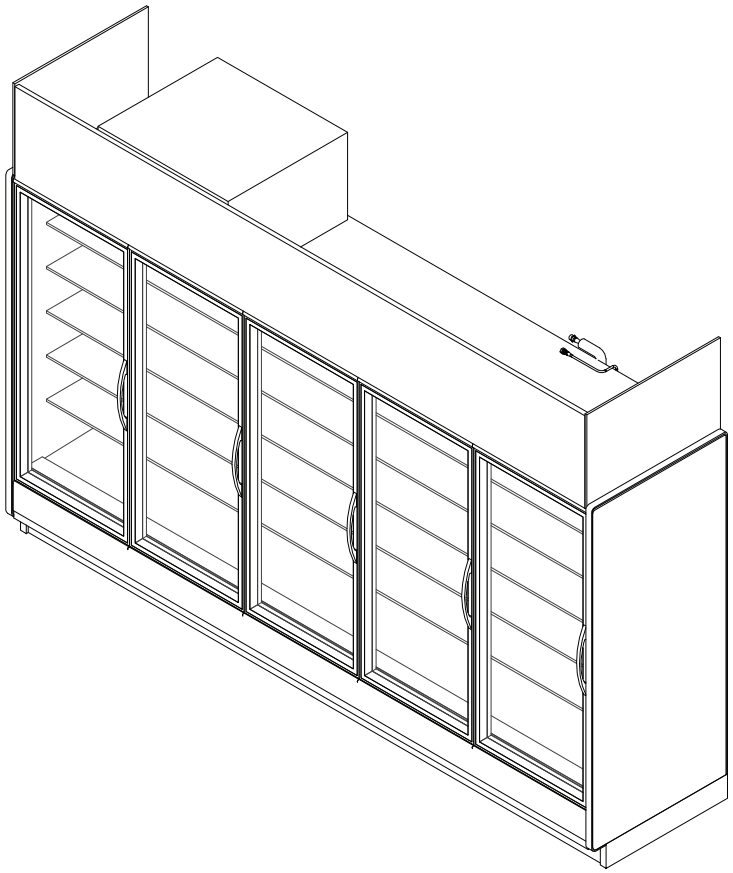
- Lighting Controls and Anti Sweat Heat Controls are Required
- Option 1: OEM Provided:

Occupancy Sensor Based Lighting Controls (On/Off) & Hillphoenix provided embedded Anti Sweat Controls are standard, unless otherwise specified

- Option 2: End User Provided:

Lighting Controls should be Occupancy Sensor Based or on a minimum 8 Hour Off Schedule. Customer provided A/S Heat Controls should be set to 30% minimum off time at 75°F/55%RH

- 2,3,4, & 5 door case lengths are available in 208V R404A / R448A Condensing Unit Configuration



SHIPPING WEIGHT	
Case	Weight
JNRZHSA	---

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ALL MEASUREMENTS ARE TAKEN PER ASHRAE-72-2005 SPECIFICATIONS. HILLPHOENIX REFRIGERATED DISPLAY CASES FOR SALE IN THE UNITED STATES MEET OR EXCEED DEPARTMENT OF ENERGY 2017 REQUIREMENTS.

JNRZHSA

Rev. Date	Rev. #	Rev. Title
12-18-19	8	DATA UPDATE
10-17-19	7	ENDVIEW UPDATE

Hillphoenix
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A7: TECHNICAL REFERENCE SHEET

JNRZHSA (R404A)

High Narrow Reach-In Self Contained Merchandiser
2, 3, 4 & 5 Door (Frozen Food)

SYSTEM REQUIREMENT (R404A)						
Case Length	Volts	Phase	Frequency	Minimum Circuit Ampacity (MCA)	Maximum Overcurrent Protection (MOP)	24hr Energy Usage (kWh)
2 Door	208	1	60	24.1	30.0	20.1
3 Door	208	1	60	24.9	30.0	30.0
4 Door	208	1	60	29.8	30.0.	34.1
5 Door	208	1	60	30.0	30.0	44.0

GUIDELINES AND CONTROL SETTINGS (R404A)				
Case Length	Superheat Set Point @ Bulb (°F)	Set Point Differential (F)	Discharge Air (°F)	Discharge Air Velocity (FPM)
2 Door	3 - 5	6	- 9	300
3 Door	3 - 5	6	- 9	300
4 Door	3 - 5	6	- 9	300
5 Door	3 - 5	6	- 9	300

CONDENSING UNIT DATA (R404A)								
Case Length	Volts	Phase	Frequency	Horsepower	Running Load Amps (RLA) (Amps)	Locked Rotor Amps (LRA) (Amps)	Refrigerant	Lbs. of Refrigerant
2 Door	208	1	60	3/4	9.0	43.0	R404A	2.8
3 Door	208	1	60	1	9.3	46.0	R404A	3.4
4 Door	208	1	60	1 1/4	12.6	55.0	R404A	3.7
5 Door	208	1	60	2	12.0	56.0	R404A	6.2

DEFROST CONTROLS (R404A)			
Defrosts Per Day	Electric Defrost		
	Run Off Time (Min) Electric	Fail-Safe (Min)	Termination Temp (°F)
1	0	46	48

DEFROST SCHEDULE (R404A)	
Defrosts Per Day	Time
1	12 midnight

NOTES:

- "---" indicates that this feature is not an option on this case model.
- Listed discharge air velocity represents the average velocity at the peak of defrost.
- Temperature and defrost settings listed below are recommended start-up settings. Final operational settings may need to be adjusted for the store conditions in which the case operates.
- The recommended evaporator temperatures may need to be adjusted based on system setup, store conditions, etc. The minimum recommended evaporator temperature is 4°F below the listed evaporator temperature.
- The 24 Hour Energy Value is based upon AHRI 1200 test conditions with Hillphoenix provided evaporator fans, condensing unit, LED lights, occupancy sensor based (on/off) lighting control, dew point based anti-sweat heat controller, condensate pump, evaporator pan, heated door frame, and heated glass doors/electric defrost on low temp cases.

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ALL MEASUREMENTS ARE TAKEN PER ASHRAE-72-2005 SPECIFICATIONS. HILLPHOENIX REFRIGERATED DISPLAY CASES FOR SALE IN THE UNITED STATES MEET OR EXCEED DEPARTMENT OF ENERGY 2017 REQUIREMENTS.

Rev. Date	Rev. #	Rev. Title
12-18-19	8	DATA UPDATE
10-17-19	7	ENDVIEW UPDATE

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A8: TECHNICAL REFERENCE SHEET

JNRZHSA (R448A)

High Narrow Reach-In Self Contained Merchandiser
2, 3, 4 & 5 Door (Frozen Food)

SYSTEM REQUIREMENT (R448A)						
Case Length	Volts	Phase	Frequency	Minimum Circuit Ampacity (MCA)	Maximum Overcurrent Protection (MOP)	24hr Energy Usage (kWh)
2 Door	208	1	60	20.9	25.0	20.1
3 Door	208	1	60	21.3	25.0	25.3
4 Door	208	1	60	25.4	30.0	34.4
5 Door	208	1	60	28.8	30.0	40.0

GUIDELINES AND CONTROL SETTINGS (R448A)				
Case Length	Superheat Set Point @ Bulb (°F)	Set Point Differential (°F)	Discharge Air (°F)	Discharge Air Velocity (FPM)
2 Door	3 - 5	4	-9	300
3 Door	3 - 5	4	-9	300
4 Door	3 - 5	4	-9	300
5 Door	3 - 5	4	-9	300

CONDENSING UNIT DATA (R448A)								
Case Length	Volts	Phase	Frequency	Horsepower	Running Load Amps (RLA) (Amps)	Locked Rotor Amps (LRA) (Amps)	Refrigerant	Lbs. of Refrigerant
2 Door	208	1	60	1	6.5	40.0	R448A	4.0
3 Door	208	1	60	1	6.5	40.0	R448A	4.0
4 Door	208	1	60	2 1/4	9.1	74.0	R448A	4.0
5 Door	208	1	60	2 1/4	9.1	74.0	R448A	4.0

DEFROST CONTROLS (R448A)			
Defrosts Per Day	Electric Defrost		
	Run Off Time (Min) Electric	Fail-Safe (Min)	Termination Temp (°F)
1	0	46	48

DEFROST SCHEDULE (R448A)	
Defrosts Per Day	Time
1	12 midnight

NOTES:

- "---" indicates that this feature is not an option on this case model.
- Listed discharge air velocity represents the average velocity at the peak of defrost.
- Temperature and defrost settings listed below are recommended start-up settings. Final operational settings may need to be adjusted for the store conditions in which the case operates.
- The recommended evaporator temperatures may need to be adjusted based on system setup, store conditions, etc. The minimum recommended evaporator temperature is 4°F below the listed evaporator temperature.
- The 24 Hour Energy Value is based upon AHRI 1200 test conditions with Hillphoenix provided evaporator fans, condensing unit, LED lights, occupancy sensor based (on/off) lighting control, dew point based anti-sweat heat controller, condensate pump, evaporator pan, heated door frame, and heated glass doors/electric defrost on low temp cases.

2017 DOE COMPLIANT NSF c UL us COMPONENT

ALL MEASUREMENTS ARE TAKEN PER ASHRAE-72-2005 SPECIFICATIONS. HILLPHOENIX REFRIGERATED DISPLAY CASES FOR SALE IN THE UNITED STATES MEET OR EXCEED DEPARTMENT OF ENERGY 2017 REQUIREMENTS.

Rev. Date	Rev. #	Rev. Title
12-18-19	8	DATA UPDATE
10-17-19	7	ENDVIEW UPDATE

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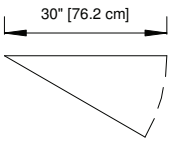
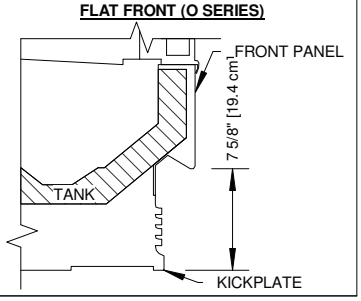
A9: TECHNICAL REFERENCE SHEET

JNRZHSA

High Narrow Reach-In Self Contained Merchandiser
2, 3, 4 & 5 Door (Frozen Food)

DOOR OPTIONS	FRONT OPTIONS
STANDARD SWING DOOR 2, 3, 4 & 5 - DOOR CASES 	FLAT FRONT (O SERIES) 

2017 DOE COMPLIANT NSF c UL us COMPONENT

ALL MEASUREMENTS ARE TAKEN PER ASHRAE-72-2005 SPECIFICATIONS. HILLPHOENIX REFRIGERATED DISPLAY CASES FOR SALE IN THE UNITED STATES MEET OR EXCEED DEPARTMENT OF ENERGY 2017 REQUIREMENTS.

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Rev. Date	Rev. #	Rev. Title
12-18-19	8	DATA UPDATE
10-17-19	7	ENDVIEW UPDATE

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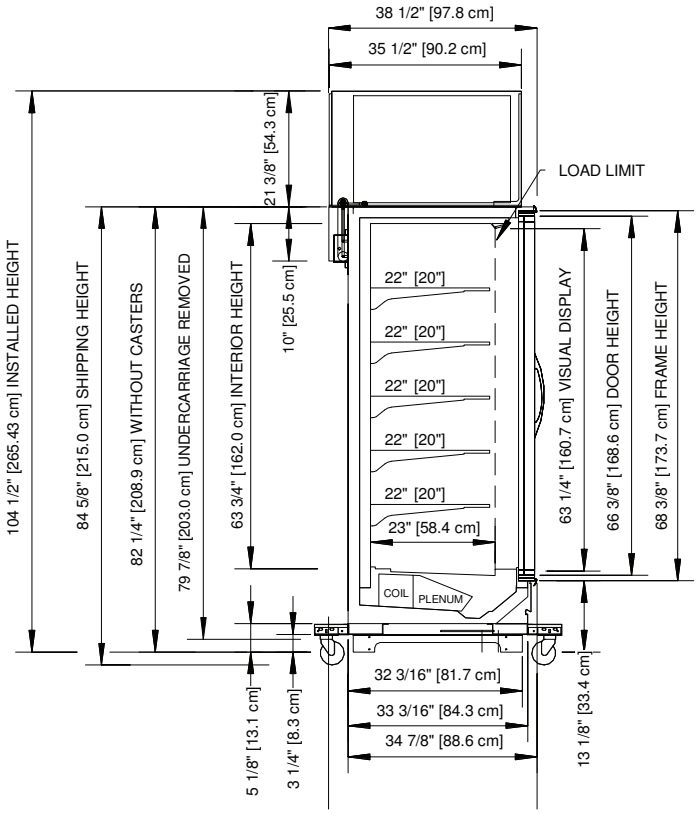
A DOVER COMPANY

A10: TECHNICAL REFERENCE SHEET

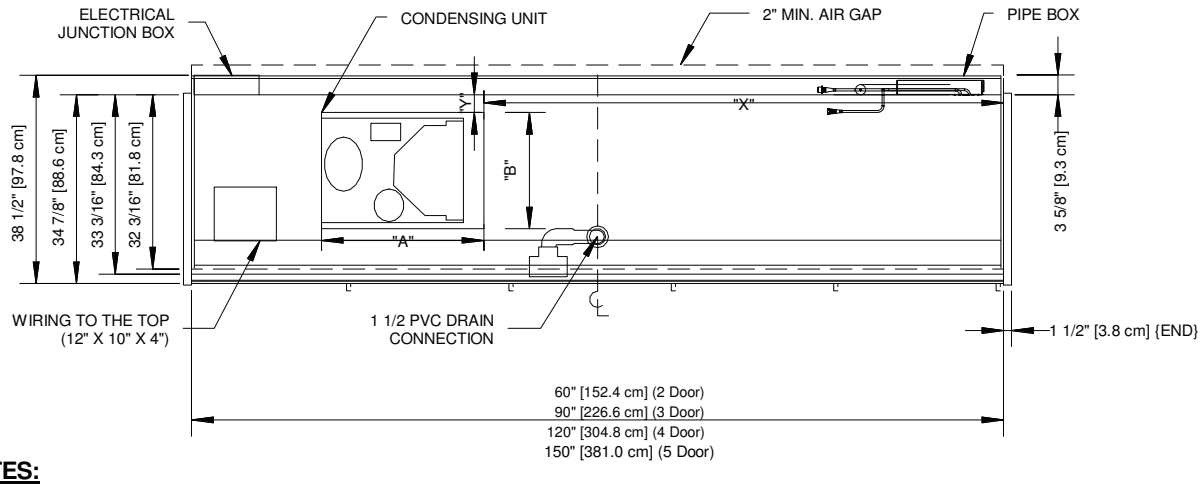
JNRZHSA

High Narrow Reach-In Self Contained Merchandiser
2, 3, 4 & 5 Door (Frozen Food)



CONDENSING UNIT SIZE AND POSITION R404A				
REFRIGERANT	R404 A			
CASE LENGTH	2DR	3DR	4DR	5DR
"X"	19.5"	33.4"	48.3"	33.0"
"Y"	5.5"	4.5"	4.5"	2.0"
"A"	17.5"	24.0"	24.0"	34.1"
"B"	14.4"	17.5"	17.1"	25.2"

CONDENSING UNIT SIZE AND POSITION R448A				
REFRIGERANT	R448 A			
CASE LENGTH	2DR	3DR	4DR	5DR
"X"	14.0"	39.0"	41.0"	41.0"
"Y"	2.0"	2.0"	2.0"	2.0"
"A"	18.0"	18.0"	24.0"	24.0"
"B"	16.0"	16.0"	24.0"	24.0"



NOTES:

* : STUB-UP AREA

** : RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

- Specialized Base Frame.
- Case fits through 80" doorway with shipping undercarriage removed.
- 2" lifting brackets (installed) & 3.25" ship loose risers combine for 5" baseframe once installled.
- Drain traps ship loose.
- Ends add approximately 1" to case height, 1/2" to the back & 1" to the front.

2017 DOE COMPLIANT NSF c UL us COMPONENT

ALL MEASUREMENTS ARE TAKEN PER ASHRAE-72-2005 SPECIFICATIONS. HILLPHOENIX REFRIGERATED DISPLAY CASES FOR SALE IN THE UNITED STATES MEET OR EXCEED DEPARTMENT OF ENERGY 2017 REQUIREMENTS.

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12-18-19	8	DATA UPDATE
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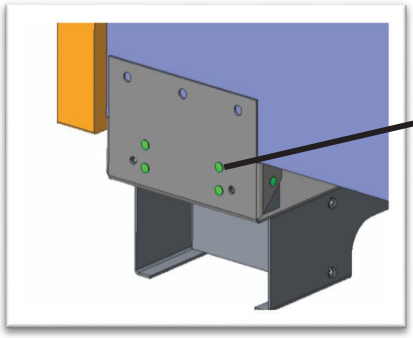
B1: SEISMIC BRACKETS

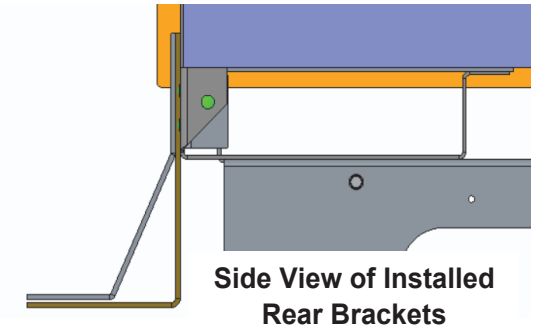
The case constraint brackets are installed on the rear and front base of the case. Brackets are designed for use with the split base frame configuration.

Rear Brackets Installation:

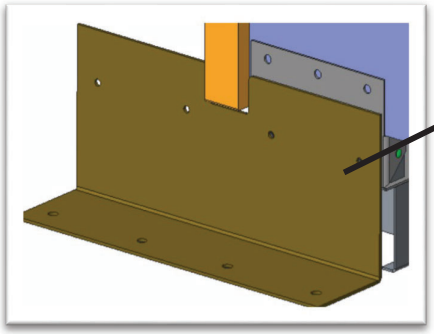
- Two 12G brackets are placed on the rear of the case and captured together by same HILTI thread for improved section modulus of anchor
- Screws pass thru both parts and into the factory installed case rear-feet
- Wide part included anchor along case-to-case interface
- Single-width parts for anchor at ends of a single case or ends of line-up



Rear Feet of the Case

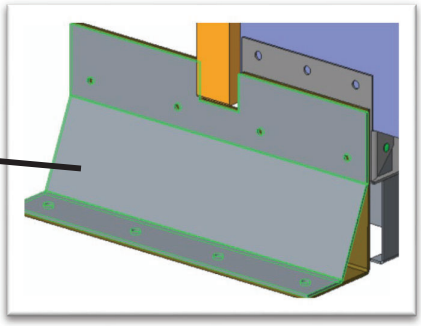


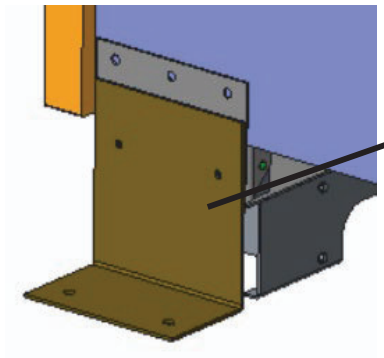
Side View of Installed Rear Brackets



P/No: F885142AGL

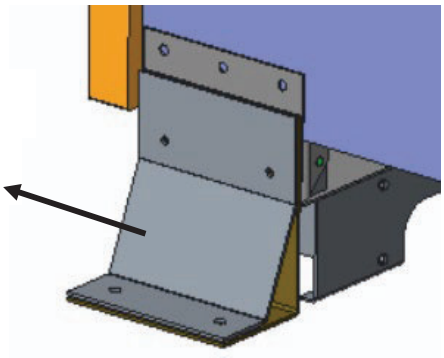
P/No: F885144GGL





P/No: F884947FGL

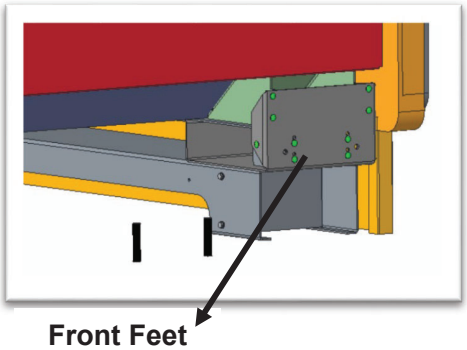
P/No: F885143KGL



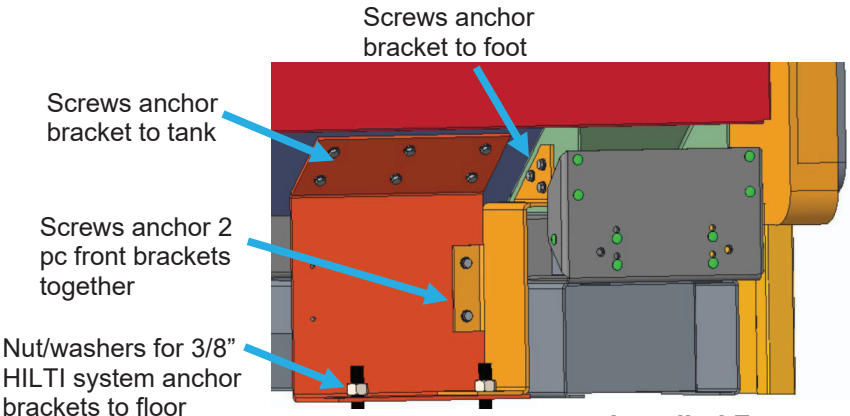
B2: SEISMIC BRACKETS

Front Brackets Installation:

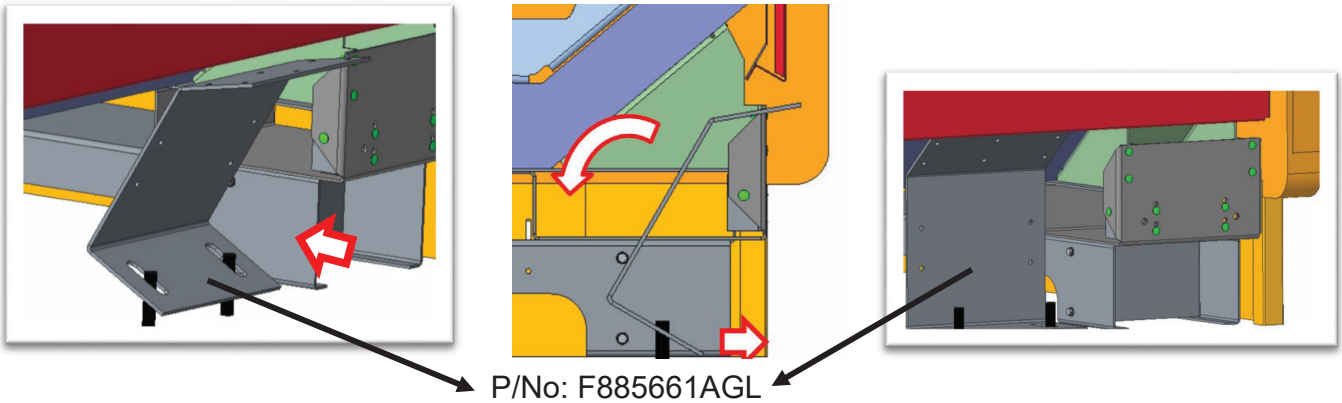
- Two piece bracket system is used on the front of the case.
- The front field-install brackets remain hidden from shoppers (behind aesthetic kick-plate panels)
- First piece is slotted front to rear so it can rotate onto the 1” tall HILTI threads from front of case



Front Feet of the Case

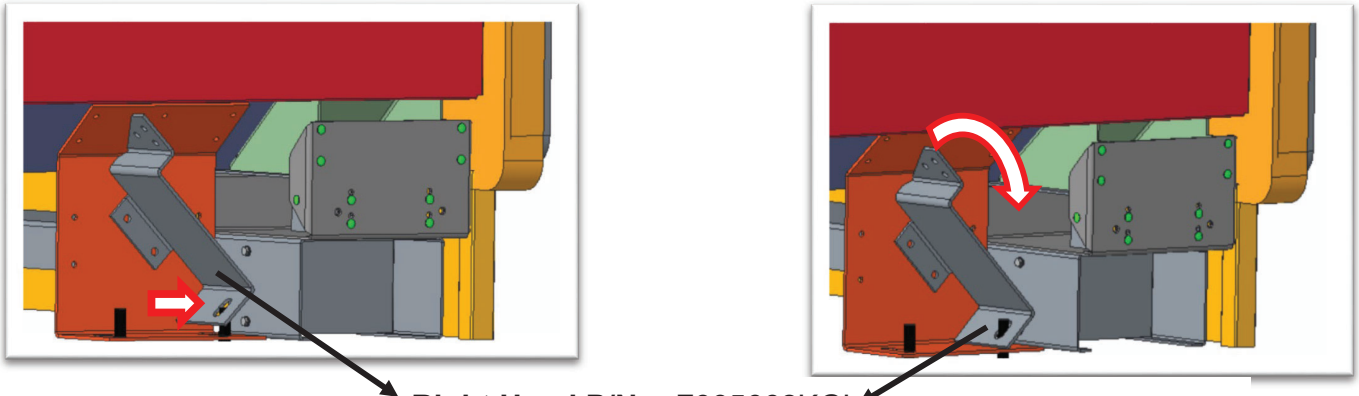


Installed Front Brackets



P/No: F885661AGL

- Second piece rotates from the side
- Left and right hand version of part – for attachment to front base foot
- This part is slotted side-to-side so it can rotate onto the 1” tall HILTI threads from side



Right Hand P/No: F885662KGL

Left Hand P/No: (Not Shown in Picture) F885663GGL

C1: SPORLAN PRESSURE-TEMPERATURE CHART

Vacuum-Inches of Mercury
Bold Italic Figures

TEMPERATURE PRESSURE CHART - at sea level

Pressure-Pounds Per
Square Inch Gauge

TEMPERATURE		REFRIGERANT (SPORLAN CODE)				
(°F)	(°C)	134a (J)	404A (S)	507 (P)	717 (A)	744 - CO_2
-60	-51.1	21.8	7.3	5.8	18.6	79.9
-55	-48.3	20.3	3.9	2.2	16.6	91.1
-50	-45.6	18.7	0.1	0.9	14.3	103.4
-45	-42.8	16.9	2.0	3.0	11.7	116.6
-40	-40.0	14.8	4.3	5.4	8.8	131.0
-35	-37.2	12.5	6.8	8.1	5.4	146.5
-30	-34.4	9.8	9.6	11.0	1.6	163.1
-25	-31.7	6.9	12.7	14.1	1.3	181.0
-20	-28.9	3.7	16.0	17.6	3.6	200.2
-18	-27.8	2.3	17.4	19.1	4.6	208.3
-16	-26.7	0.8	18.9	20.6	5.6	216.5
-14	-25.6	0.4	20.4	22.2	6.7	225.0
-12	-24.4	1.1	22.0	23.8	7.8	233.8
-10	-23.3	1.9	23.6	25.5	9.0	242.7
-8	-22.2	2.8	25.3	27.3	10.3	251.9
-6	-21.1	3.6	27.0	29.1	11.5	261.3
-4	-20.0	4.6	28.8	30.9	12.9	271.0
-2	-18.9	5.5	30.7	32.8	14.3	280.9
0	-17.8	6.5	32.6	34.8	15.7	291.0
1	-17.2	7.0	33.6	35.8	16.4	296.2
2	-16.7	7.5	34.6	36.9	17.2	301.5
3	-16.1	8.0	35.6	37.9	18.0	306.8
4	-15.6	8.5	36.6	39.0	18.8	312.1
5	-15.0	9.1	37.7	40.1	19.6	317.6
6	-14.4	9.6	38.7	41.1	20.4	323.1
7	-13.9	10.2	39.8	42.3	21.2	328.6
8	-13.3	10.8	40.9	43.4	22.1	334.2
9	-12.8	11.3	42.0	44.5	22.9	339.9
10	-12.2	11.9	43.1	45.7	23.8	345.7
11	-11.7	12.5	44.3	46.9	24.7	351.5
12	-11.1	13.1	45.4	48.1	25.6	357.4
13	-10.6	13.8	46.6	49.3	26.5	363.4
14	-10.0	14.4	47.8	50.5	27.5	369.5
15	-9.4	15.0	49.0	51.8	28.4	375.6
16	-8.9	15.7	50.2	53.0	29.4	381.8
17	-8.3	16.4	51.5	54.3	30.4	388.0
18	-7.8	17.0	52.7	55.6	31.4	394.3
19	-7.2	17.7	54.0	56.9	32.4	400.7
20	-6.7	18.4	55.3	58.3	33.5	407.2
21	-6.1	19.1	56.6	59.6	34.6	413.8
22	-5.6	19.9	58.0	61.0	35.7	420.4
23	-5.0	20.6	59.3	62.4	36.8	427.1
24	-4.4	21.3	60.7	63.8	37.9	433.8
25	-3.9	22.1	62.1	65.3	39.0	440.7
26	-3.3	22.9	63.5	66.7	40.2	447.6
27	-2.8	23.7	64.9	68.2	41.4	454.6
28	-2.2	24.5	66.4	69.7	42.6	461.7
29	-1.7	25.3	67.8	71.2	43.8	468.8
30	-1.1	26.1	69.3	72.7	45.0	476.1
31	-0.6	26.9	70.8	74.3	46.3	483.4
32	0.0	27.8	72.4	75.9	47.6	490.8
33	0.6	28.6	73.9	77.5	48.9	498.3
34	1.1	29.5	75.5	79.1	50.2	505.8
35	1.7	30.4	77.1	80.7	51.6	513.4
36	2.2	31.3	78.7	82.4	52.9	521.2
37	2.8	32.2	80.3	84.1	54.3	529.0
38	3.3	33.1	82.0	85.8	55.7	536.9
39	3.9	34.1	83.7	87.5	57.2	544.8
40	4.4	35.0	85.4	89.2	58.6	552.9
41	5.0	36.0	87.1	91.0	60.1	561.0
42	5.6	37.0	88.8	92.8	61.6	569.3
43	6.1	38.0	90.6	94.6	63.1	577.6
44	6.7	39.0	92.4	96.5	64.7	586.0
45	7.2	40.1	94.2	98.3	66.3	594.5
46	7.8	41.1	96.0	100.2	67.9	603.1
47	8.3	42.2	97.9	102.1	69.5	611.7
48	8.9	43.2	99.8	104.1	71.1	620.5
49	9.4	44.3	101.7	106.0	72.8	629.3
50	10.0	45.4	103.6	108.0	74.5	638.3
55	12.8	51.2	115.3	118.3	83.4	684.4
60	15.6	57.4	126.0	129.2	92.9	733.1
65	18.3	64.0	137.3	140.7	103.2	784.2
70	21.1	71.1	149.3	153.0	114.2	838.1
75	23.9	78.7	162.0	165.9	125.9	894.9
80	26.7	86.7	175.4	179.6	138.4	954.9
85	29.4	95.2	189.5	194.1	151.8	1018
90	32.2	104.3	204.5	209.3	166.1	**
95	35.0	113.9	220.2	225.4	181.2	**
100	37.8	124.2	236.8	242.3	197.3	**
105	40.6	135.0	254.2	260.1	214.4	**
110	43.3	146.4	272.5	278.8	232.5	**
115	46.1	158.4	291.8	298.5	251.6	**
120	48.9	171.2	312.1	319.2	271.9	**
125	51.7	184.6	333.3	340.9	293.3	**
130	54.4	198.7	355.6	363.8	315.8	**
135	57.2	213.6	379.1	387.8	339.6	**
140	60.0	229.2	403.7	413.0	364.7	**
145	62.8	245.7	429.6	439.5	391.0	**
150	65.6	262.9	456.8	467.4	418.7	**
155	68.3	281.0	485.5	497.0	447.8	**

To determine subcooling for R-404A use BUBBLE POINT values (Temperatures above 50°F — Gray Background); to determine superheat for R-404A, use DEW POINT values (Temperatures 50°F and below).
** = exceeds critical temperature

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D1: CASE TOP FASCIA

ATTN: FOR CASE TOP FASCIA WITH CUSTOMER SPECIFIC SIGNAGE SEE APPENDIX F
Install the recessed coil shroud (Fig. 1), leaving about an inch of clearance on both sides of the coil.

Align the ends of the front fascia to the fascia stops at each end of the case (Fig. 2). Attach the front fascia to the recessed coil shroud baffle (Fig. 3) using the pre-punched screw holes. Then secure the bottom edge the front fascia to the case body using the pre-punched screw holes (Fig. 4).

Move the electrical junction box forward so that the Carel controller display and GFI are aligned with the pre-punched cutouts (Fig. 5). Pull the heater wire through the cutout in the fascia and connect to the cornice mounted harness. Then secure the electrical box to the case body using #8 tek screws (Fig. 6). Cover the heater wiring with the metal cover (Fig. 7) and secure using the pre-punched screw holes.

If present, attach the two-part, adjustable end panels (Fig. 8) to the front fascia using pre-punched screw holes. Then secure end panels to the case body (Fig. 9). Install any fascia joint trim that ships with multi-case line-ups.

Fig. 1 Install recessed coil shroud.

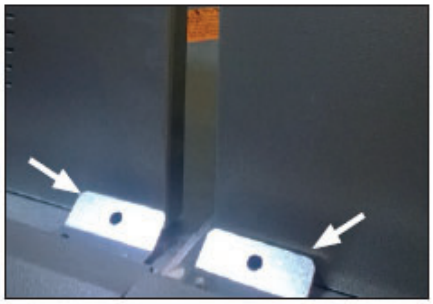


Fig. 2 Align to fascia stops at case ends.

Fig. 3 Attach the front fascia to the recessed coil shroud.

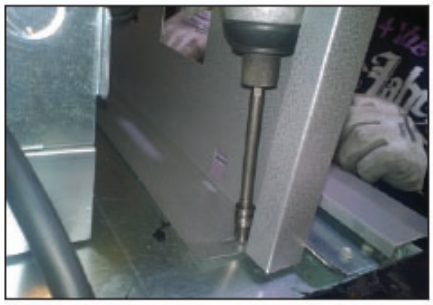


Fig. 4 Secure the front fascia to the case body.

Fig. 5 Move electrical box forward and connect heater wire.

Fig. 6 Secure electrical box to case body.

Fig. 7 Install heater wire cover.

Fig. 8 Attach end panel to front fascia.

Fig. 9 Attach end panel to case body.

E1: ELECTRICAL WIRING DIAGRAM

WIRE IDENTIFICATION

WIRE IDENTIFICATION	BLACK	WHITE	BLUE	RED	YELLOW	PURPLE	ORANGE	GREEN
DEFROST HEATERS (1-PHASE)	1,2							
DEFROST HEATERS (3-PHASE)	L1		L3	L2				
ANTI-CONDENSATE HEATERS	14	13						
	16	15						
	18	17						
AISLE WARMER	10	9						
DRAIN HEATER	36	37						
PRIMARY FANS	4	3	40					
SECONDARY FANS	6	5						
AMBIENT FANS	8	7						
LIGHTS	12	11						
BELL	60,62							
TEMPERATURE CONTROL					19,20			
DEFROST TERMINATION CONTROL	22					21	23	
DEFROST SAFETY CUT-OUT CONTROL	28					27	29	
LIQUID LINE SOLENOID					30	31		
SUCTION LINE SOLENOID					38	39		
CASE/CONTROLLER POWER	42	41						
TRANSFORMER	24	25						
CAPACITOR	34		35					
RECEPTACLE	32	33						75
SYSTEM NEUTRAL (3-PHASE)		N						
POWER CORD (SELF-CONTAINED)	58	57						
SERVICE LIGHT (HI-PRESSURE)	53,54							
HIGH PRESSURE SWITCH			49,50					
DUAL PRESSURE SWITCH	51,52							
CONDENSING UNIT POWER	48	47		44 220V				
CONDENSING UNIT FAN		45	46					
IG RECEPTACLE	26	43						77
GFI RECEPTACLE	56	55						79
HUMIDIFIER	70	71						
REFRIGERATED PAN SOLENOID	65 220V	65				64		
REFRIGERATED PAN BYPASS SOLENOID	67 220V	67	66					
AIR HEATER DEFROST SOLENOID	69 220V	69					68	
MAIN SECONDARY FLUID SOLENOID	73 220V	73		72				
AIR DEFROST FAN	74	59						
SECONDARY COOLANT PUMP	76	61						
TANK FLUSH SOLENOID	87 220V	87						86
MISTING SOLENOID	89 220V	89			88			
DRIP DOWN TIMER					90			
REAR STORAGE BOX FANS	94	95						
GROUND TO EXTERIOR/FRAME								81
GROUND TO INTERIOR LINER								83
GROUND TO JUNCTION BOX								85
GROUND TO LIGHTS								97

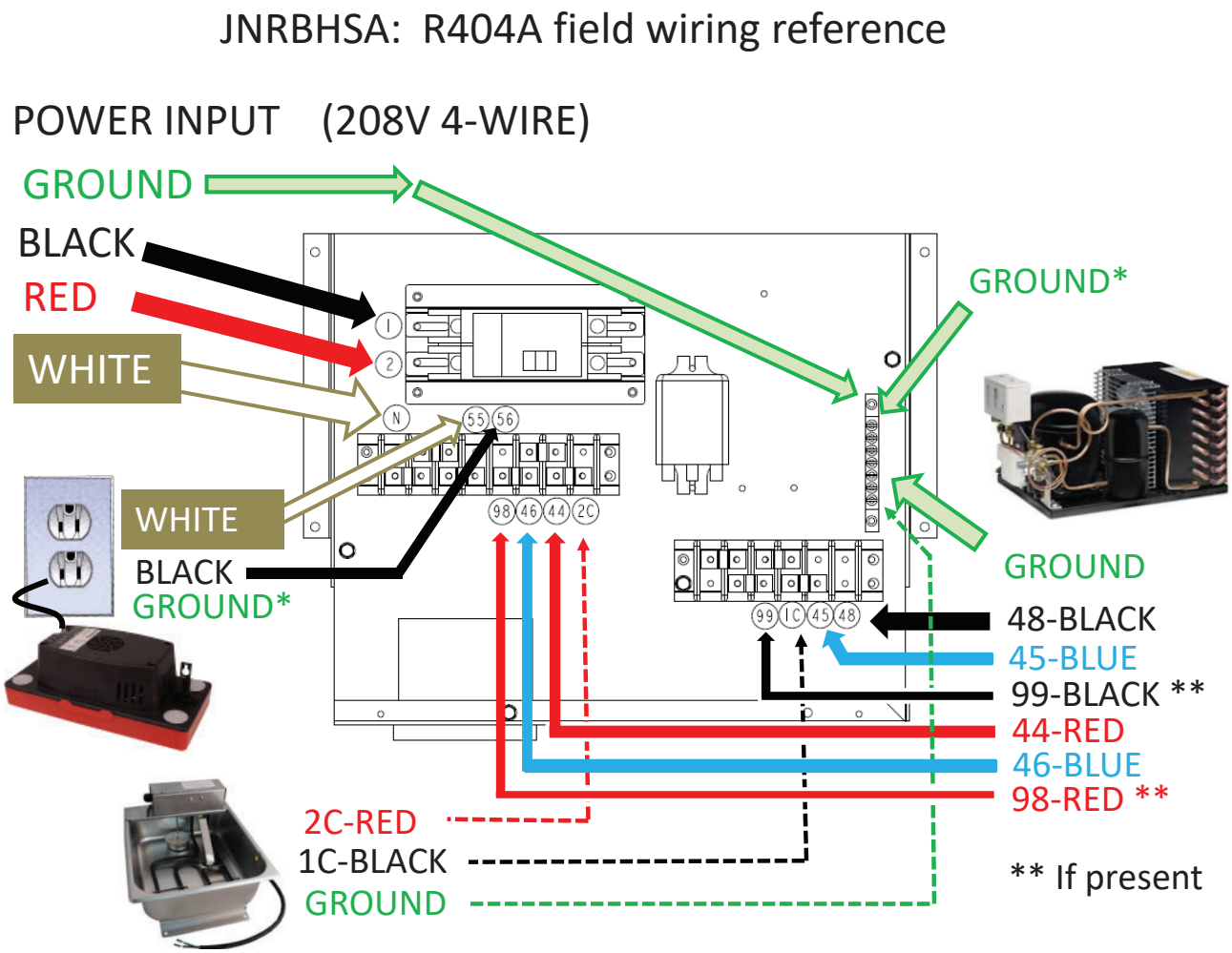
ATTENTION: ELECTRICIAN

For safety and code compliance, ground fixture at the time of installation.

CAUTION

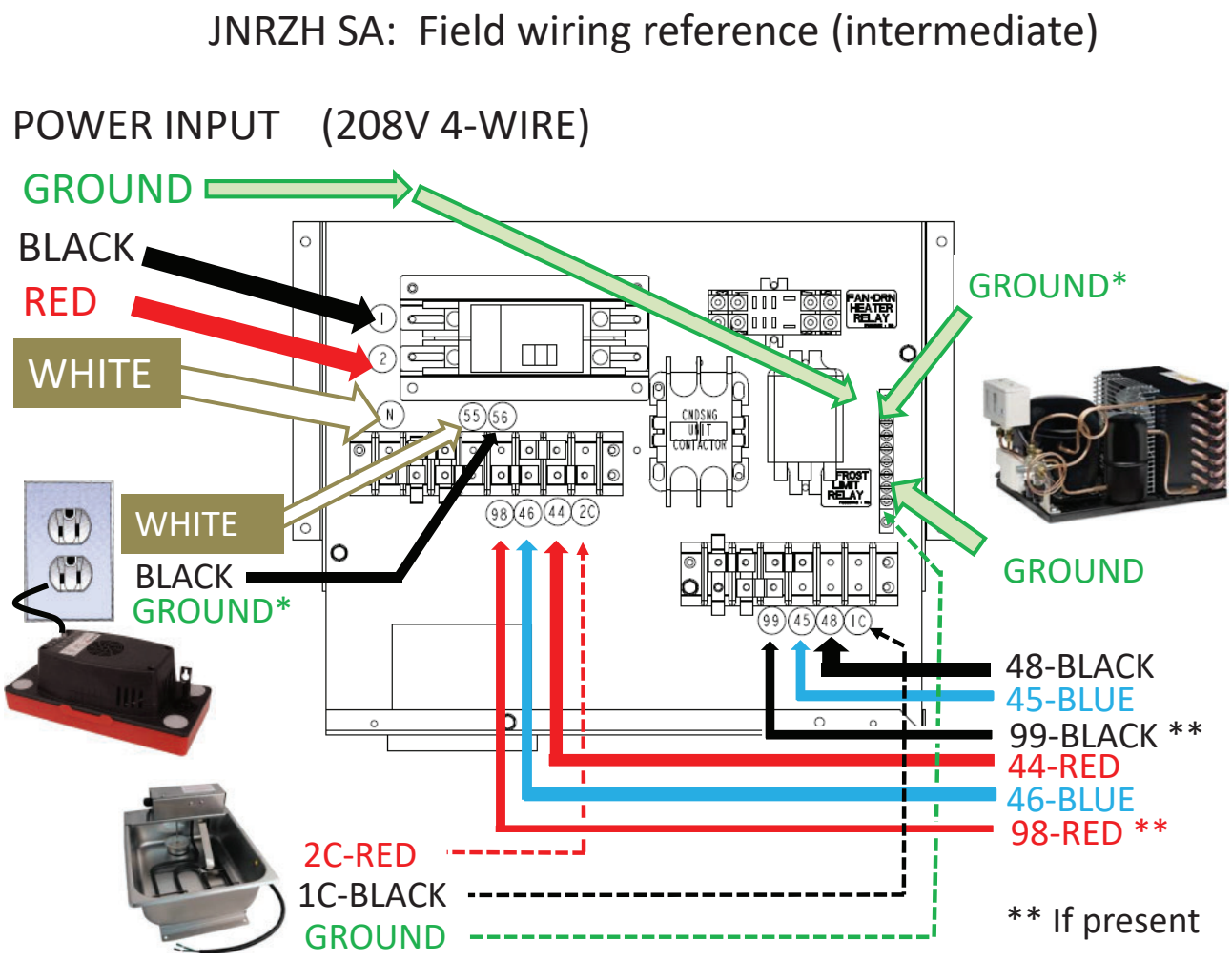
Risk of electric shock. More than one power supply. Disconnect all power supplies before servicing.

E2: ELECTRICAL WIRING DIAGRAM



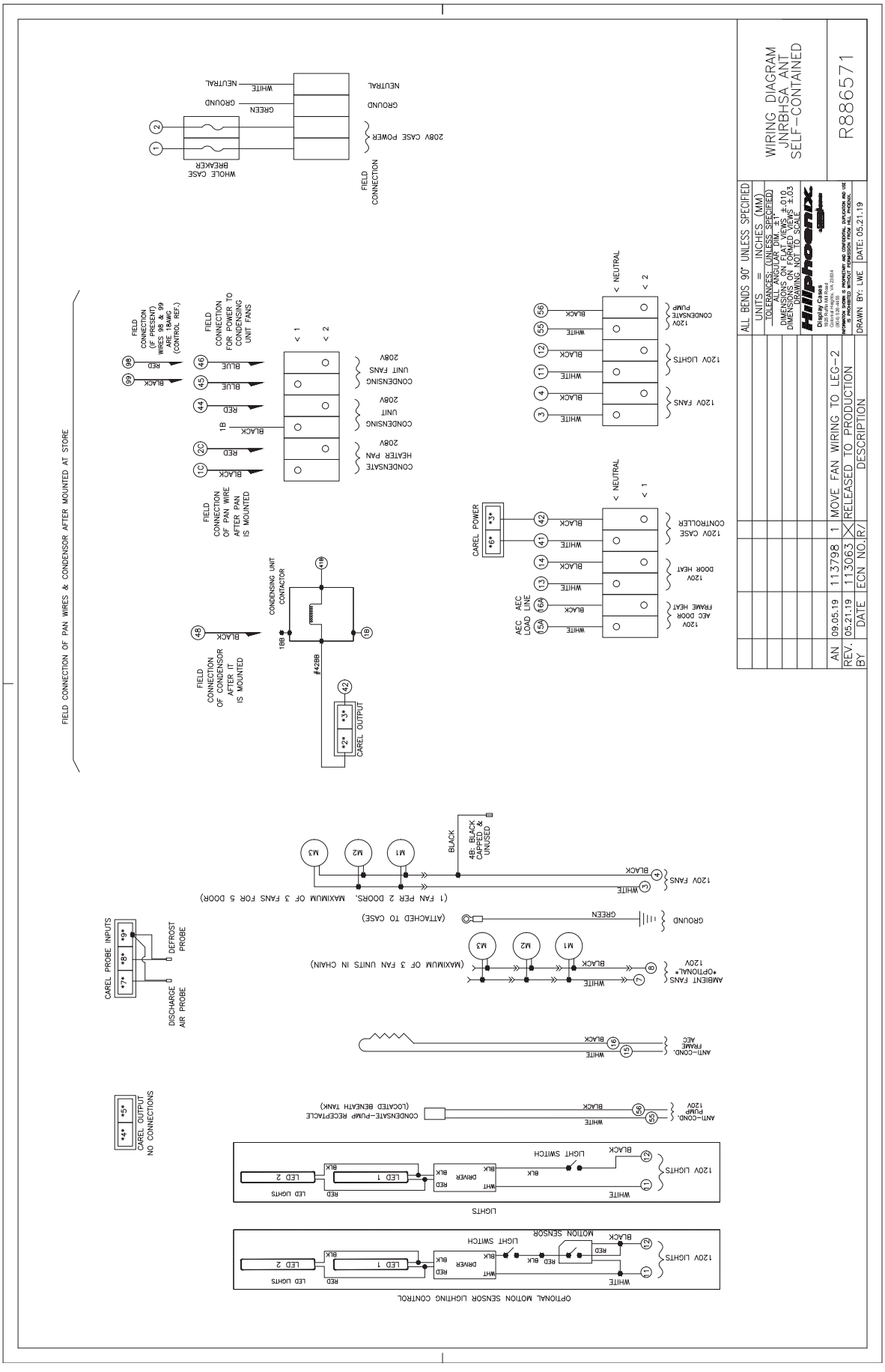
Note: After case is fully wired and energized the factory-programmed CAREL will take control of the case. On case models using Real Time Clock functionality (e.g. Low Temperature JNRZHSA cases) it is recommended to update the *hour* and *minute* parameters of the CAREL Real Time Clock to the local time at the store. Real Time Clock entries use 24-hour system (i.e. Hour 22 = 10 PM. Hour 10 = 10 AM). Setting the Real Time Clock optimizes the defrost time - see parameter section “tc” of the applicable set-points lists of appendix F.

E3: ELECTRICAL WIRING DIAGRAM

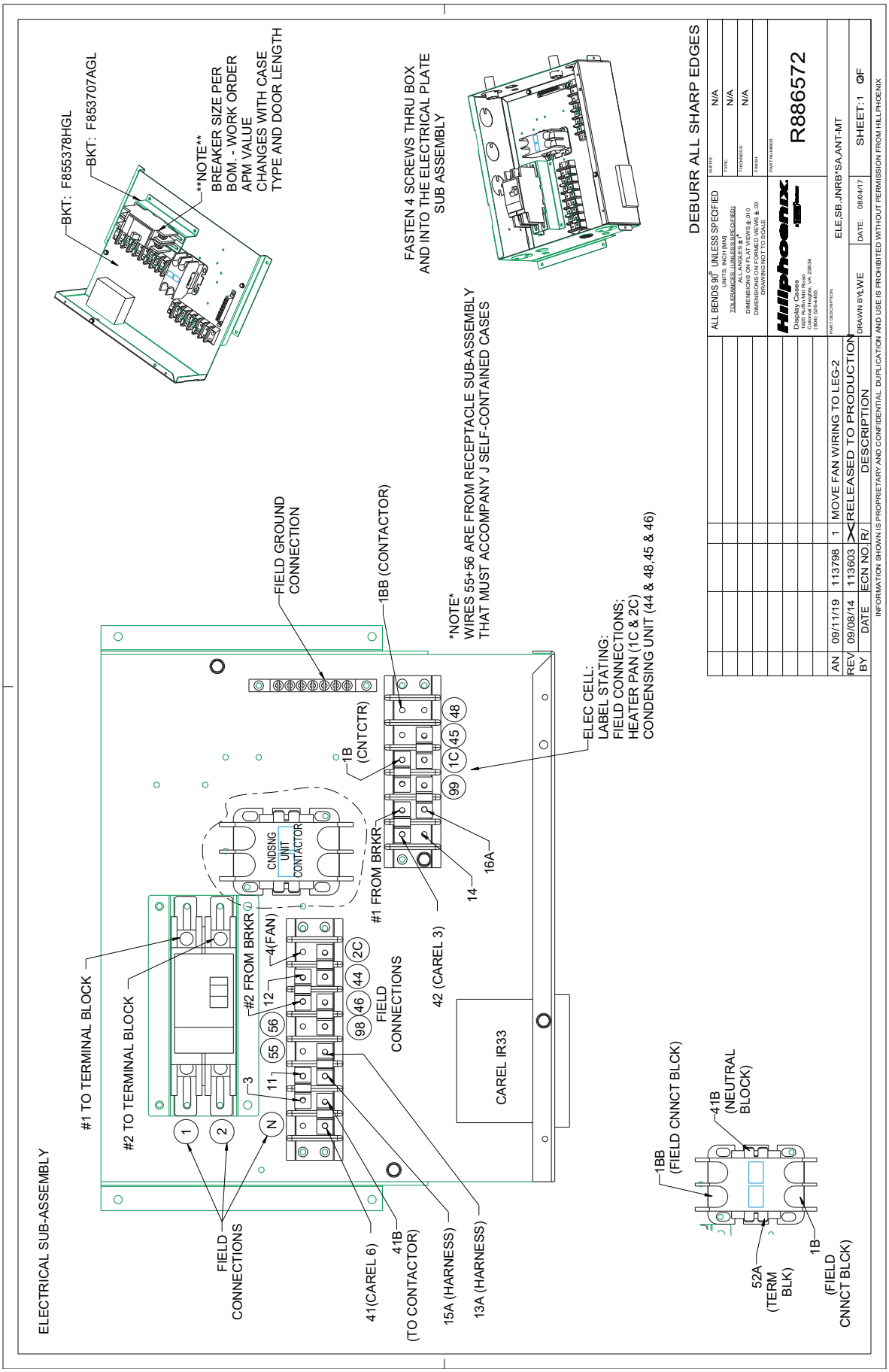


Note: After case is fully wired and energized the factory-programmed CAREL will take control of the case. On case models using Real Time Clock functionality (e.g. Low Temperature JNRZHSA cases) it is recommended to update the *hour* and *minute* parameters of the CAREL Real Time Clock to the local time at the store. Real Time Clock entries use 24-hour system (i.e. Hour 22 = 10 PM. Hour 10 = 10 AM). Setting the Real Time Clock optimizes the defrost time - see parameter section “tc” of the applicable set-points lists of appendix F.

E4: ELECTRICAL WIRING DIAGRAM (R404A)



E5: ELECTRICAL WIRING DIAGRAM (R404A)



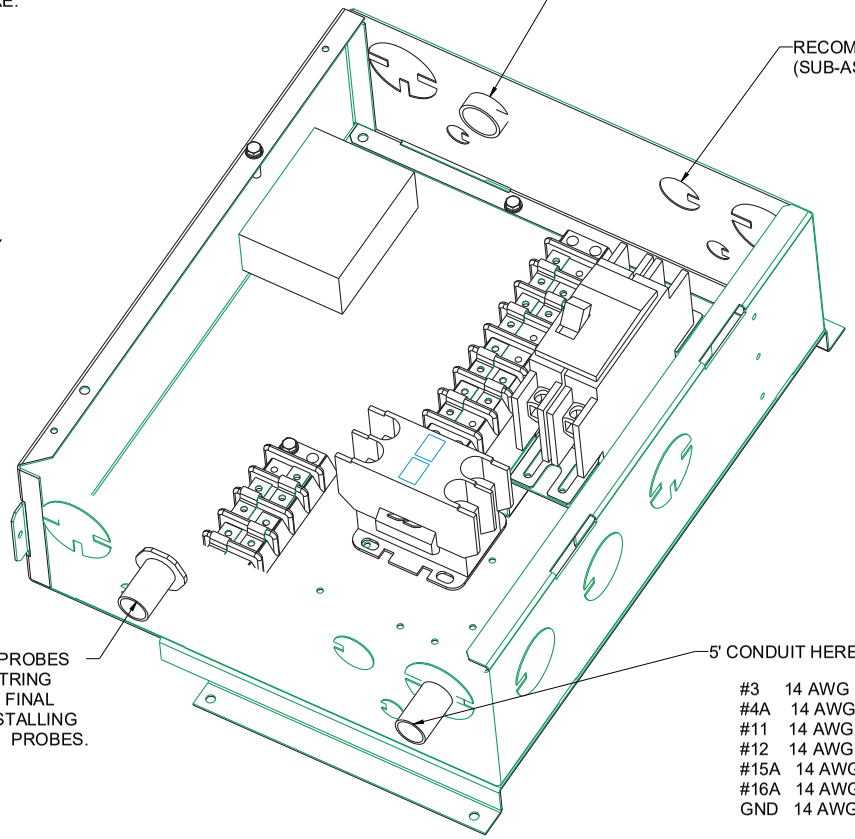
ELECTRICAL CELL:
COMPLETED ASSEMBLY FOR LINE INCLUDES 2X CONDUIT PATHS AND WIRING EXTENSIONS TO THE REAR OF CASE J-BOX. CONTROLLER BOX IS FIELD RELOCATABLE, TO ALLOW INGRESS THROUGH 80" DOORS AT STORE.

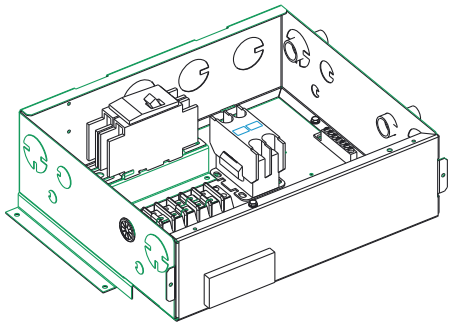
OPTIONAL MOTION SENSOR MOUNT HERE

RECOMMENDED LOCATION FOR RECEPTACLE CONDUIT (SUB-ASSEMBLY F877948C00)

FINAL ASSEMBLY LINE:
FASTEN COVER (F849409KGL) TO BOX AFTER THE BOX IS SCREWED ONTO CASE USING (2) SCREWS P058780H.

ISOMETRIC VIEW
FOR REFERENCE ONLY





5' CONDUIT, USED FOR CAREL PROBES
SEQ 225: PROVIDE 7-FT PULL STRING (P079749A) FOR USE BY FINAL ASSEMBLY LINE WHEN INSTALLING PROBES.

5' CONDUIT HERE, USE FOR CASE WIRING HARNESS:

#3	14 AWG	WHITE	P001547K
#4A	14 AWG	BLACK	P001548G
#11	14 AWG	WHITE	P001547K
#12	14 AWG	BLACK	P001548G
#15A	14 AWG	WHITE	P001547K
#16A	14 AWG	BLACK	P001548G
GND	14 AWG	GREEN	P002454G

SEQ 225: USE 6.5-FT LENGTH EACH WIRE TYPE IDENTIFIED

Hillphoenix
Display Cases
1925 Ruffin Mill Road
Colonial Heights, VA 23834
(804) 526-4455

R886572

ELE,SB,JNRB*SA,ANT-MT

DRAWN BY: WE | DATE: 08/04/17 | SHEET: 2 OF

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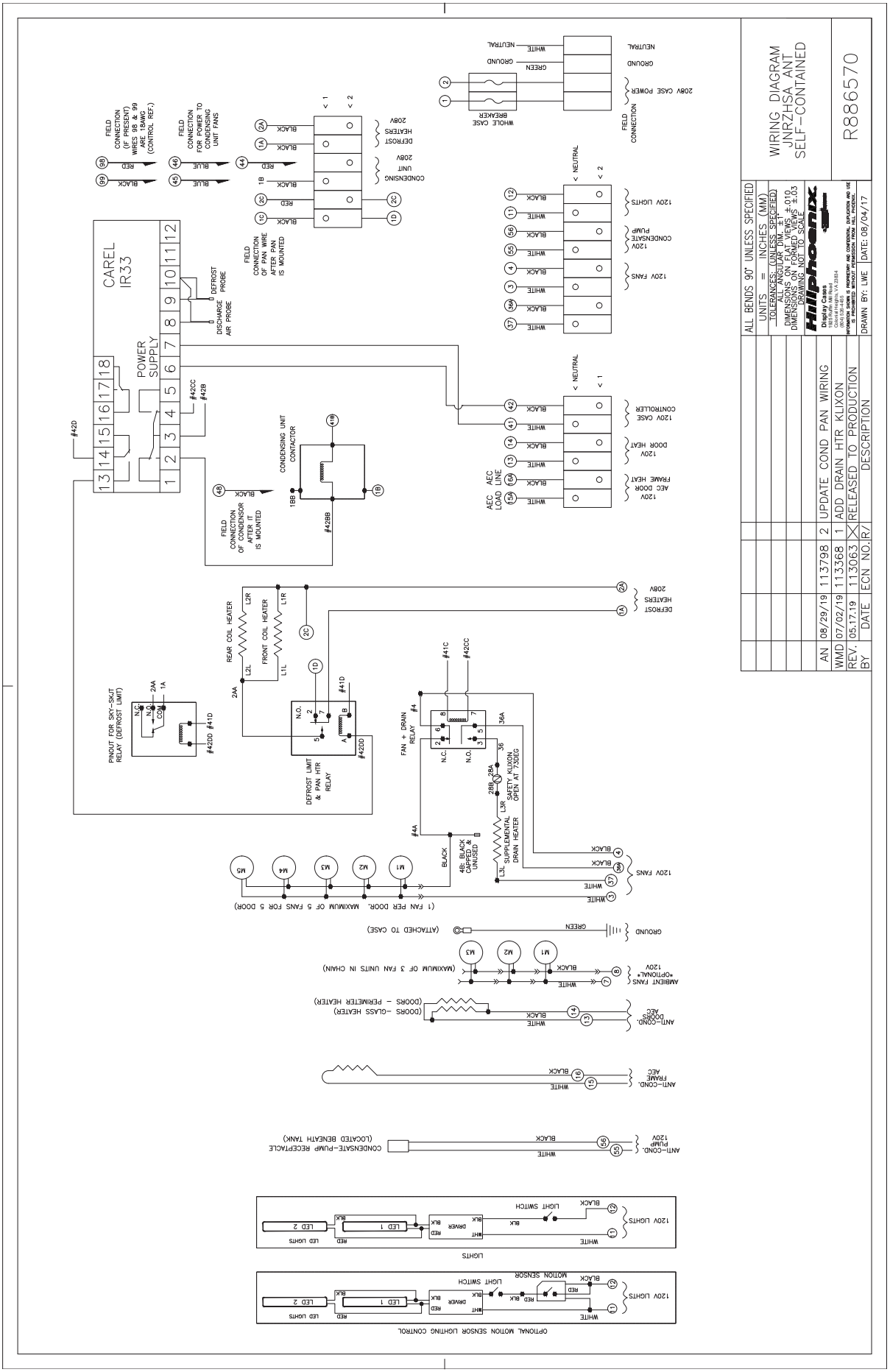
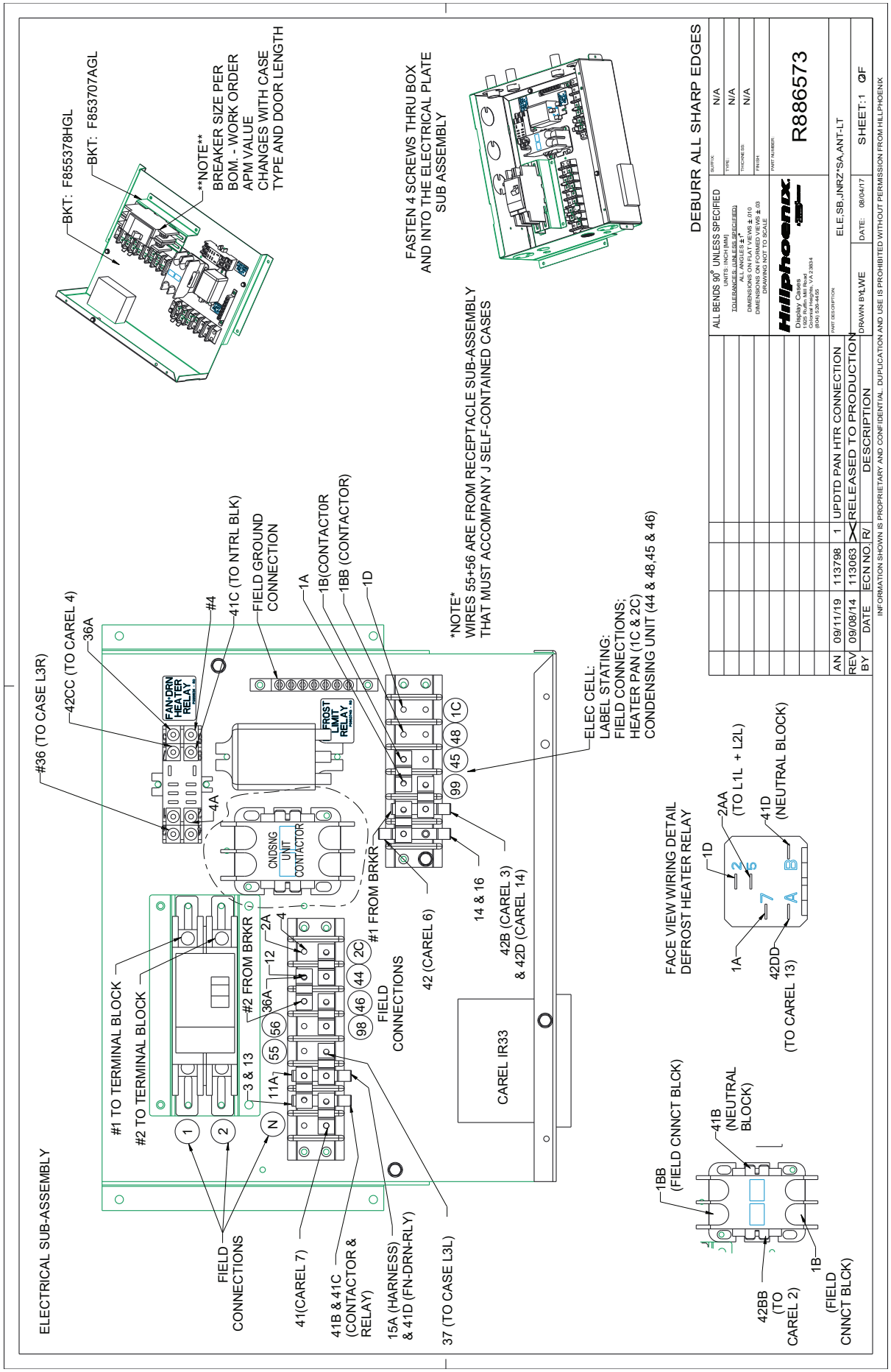
E7: ELECTRICAL WIRING DIAGRAM (R404A)



E8: ELECTRICAL WIRING DIAGRAM (R404A)



E9: ELECTRICAL WIRING DIAGRAM (R404A)

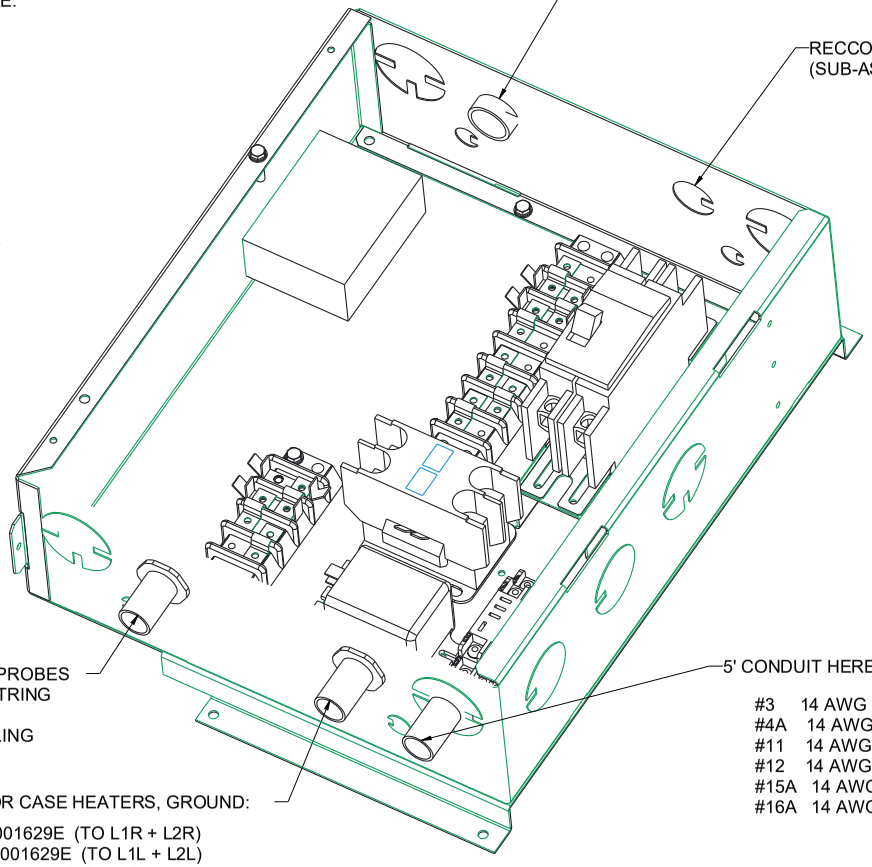
ELECTRICAL CELL:
COMPLETED ASSEMBLY FOR LINE INCLUDES 3X CONDUIT PATHS AND WIRING EXTENSIONS TO THE REAR OF CASE J-BOX. CONTROLLER BOX IS FIELD RELOCATABLE, TO ALLOW INGRESS THROUGH 80" DOORS AT STORE.

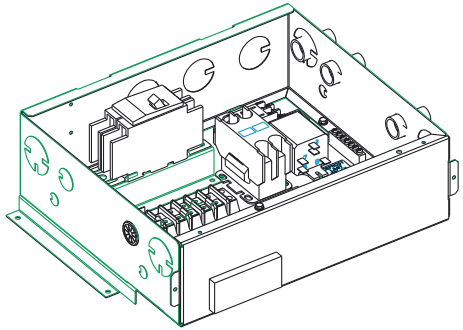
OPTIONAL MOTION SENSOR MOUNT HERE

RECCOMENDED LOCATION FOR RECEPTACLE CONDUIT (SUB-ASSEMBLY F877948C00)

FINAL ASSEMBLY LINE:
FASTEN COVER (F849409KGL) TO BOX AFTER THE BOX IS SCREWED ONTO CASE USING (2) SCREWS P058780H.

ISOMETRIC VIEW
FOR REFERENCE ONLY





5' CONDUIT, USED FOR CAREL PROBES
SEQ 225: PROVIDE 7-FT PULL STRING (P079749A) FOR USE BY FINAL ASSEMBLY LINE WHEN INSTALLING PROBES.

5' CONDUIT HERE, USE FOR CASE HEATERS, GROUND:

#2A 12 AWG BLACK P001629E (TO L1R + L2R)
#2AA 12 AWG BLACK P001629E (TO L1L + L2L)
37 14 AWG WHITE P001547K (TO L3L)
36 14 AWG BLACK P001548G (TO L3R)
GND 14 AWG GREEN P002454G

SEQ 225: USE 7-FT LENGTH EACH WIRE TYPE IDENTIFIED

5' CONDUIT HERE, USE FOR CASE WIRING HARNESS:

#3 14 AWG WHITE P001547K
#4A 14 AWG BLACK P001548G
#11 14 AWG WHITE P001547K
#12 14 AWG BLACK P001548G
#15A 14 AWG WHITE P001547K
#16A 14 AWG BLACK P001548G

SEQ 225: USE 6.5-FT LENGTH EACH WIRE TYPE IDENTIFIED

Hillphoenix Display Cases 1925 Ruffin Mill Road Colonial Heights, VA 23834 (804) 526-4455		R886573
ELE,SB,JNRZ*SA,ANT-LT		
DRAWN BY: WE	DATE: 08/04/17	SHEET: 2 OF

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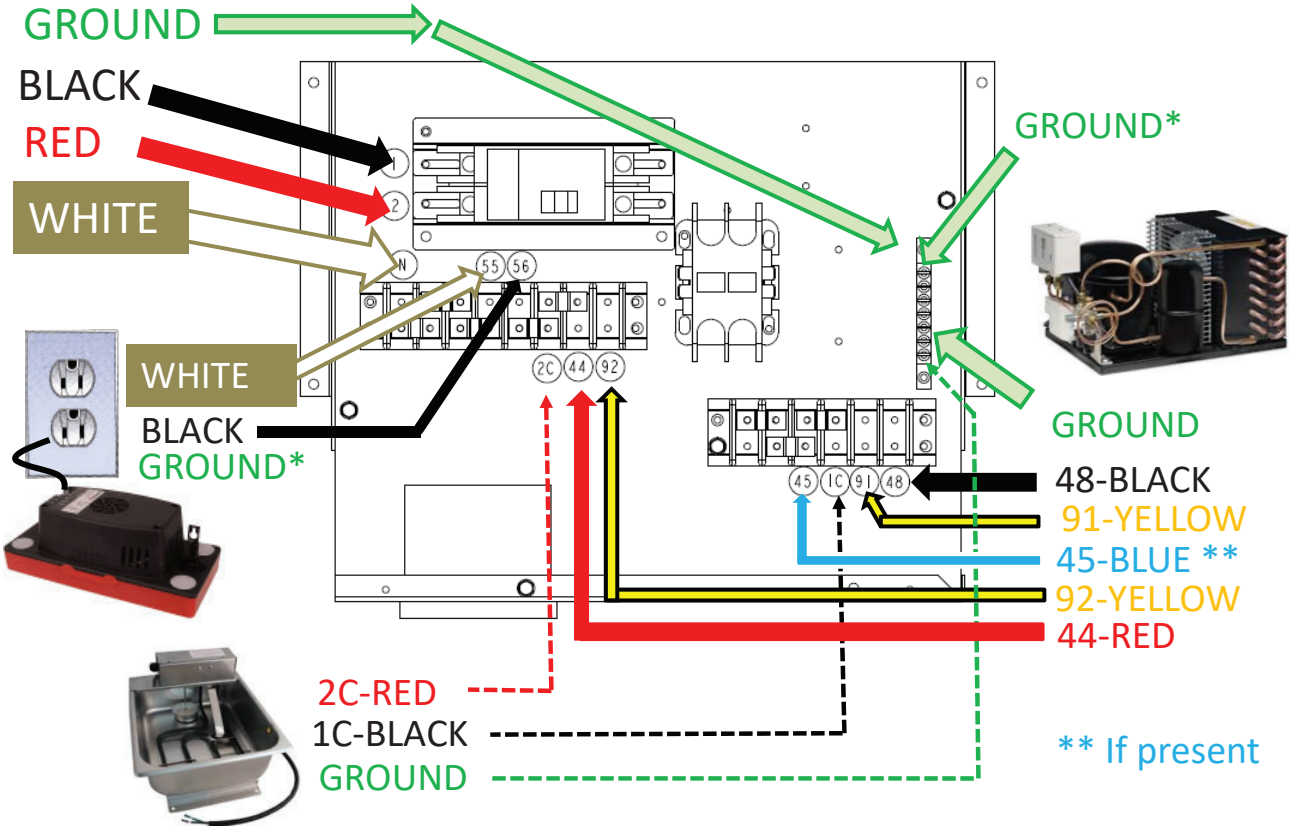
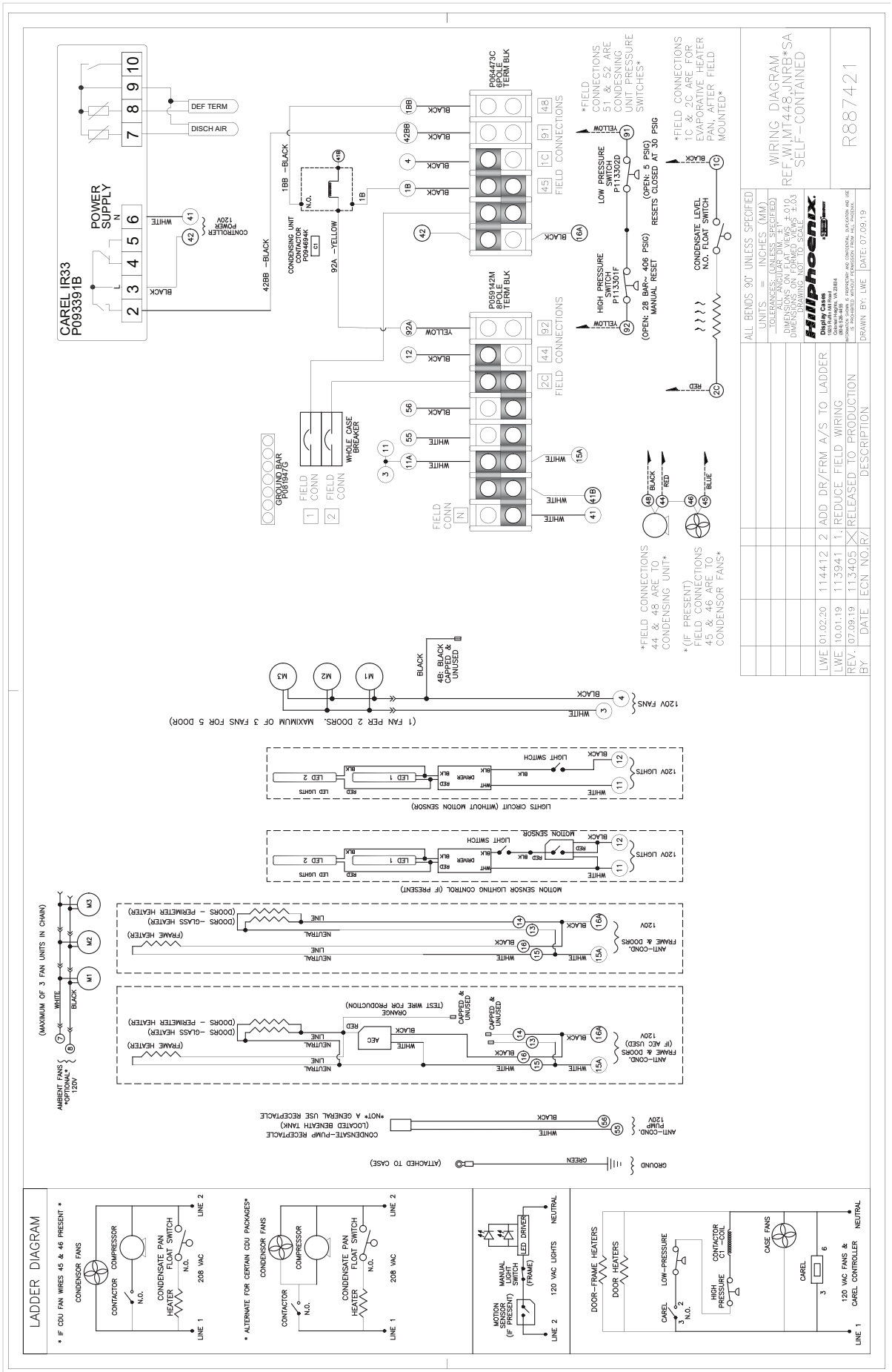
E10: ELECTRICAL WIRING DIAGRAM (R448A)

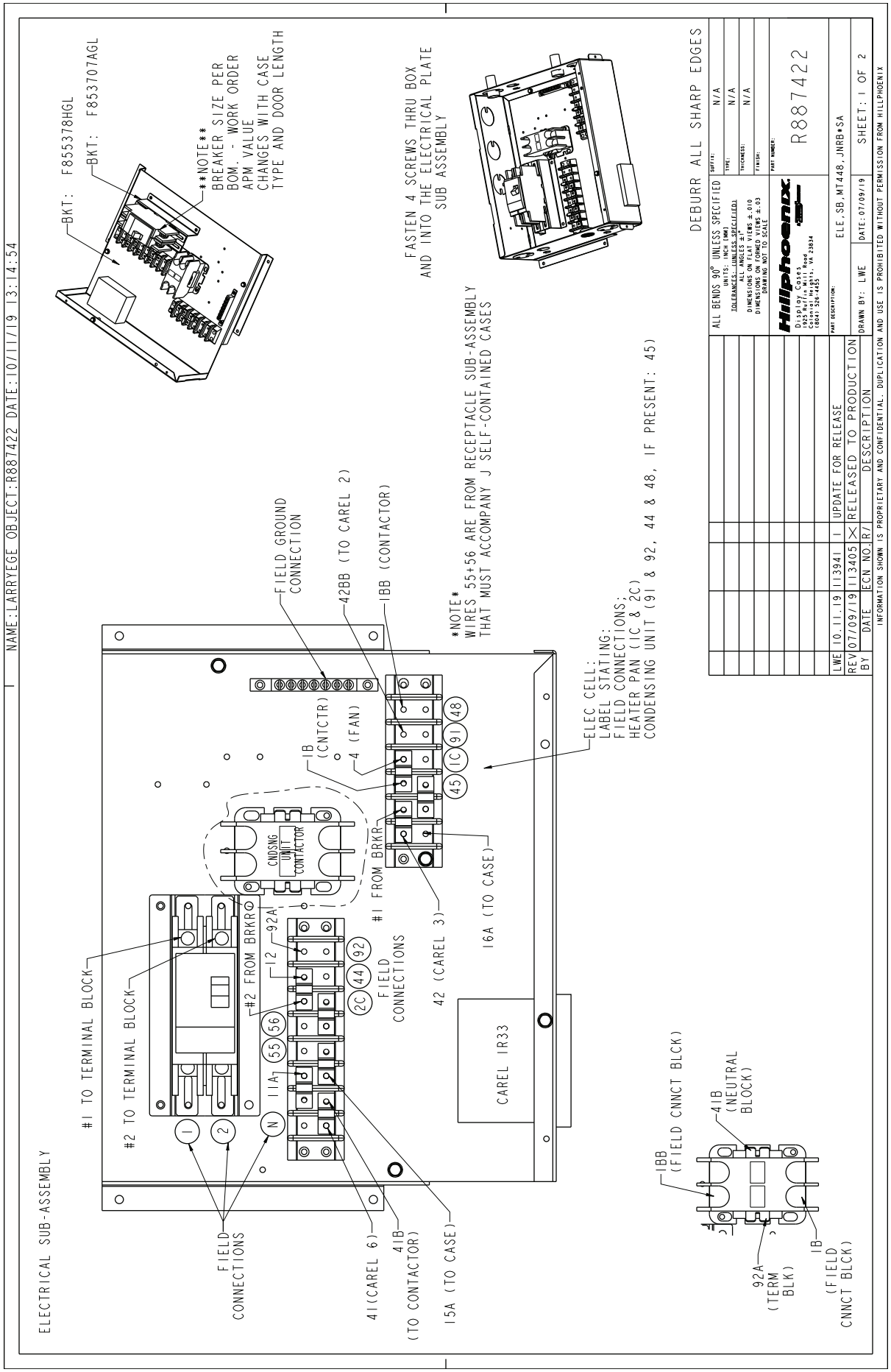
JNR*H SA: Universal field wiring reference (R448A future state)



E11: ELECTRICAL WIRING DIAGRAM (R448A)



E12: ELECTRICAL WIRING DIAGRAM (R448A)



E13: ELECTRICAL WIRING DIAGRAM (R448A)

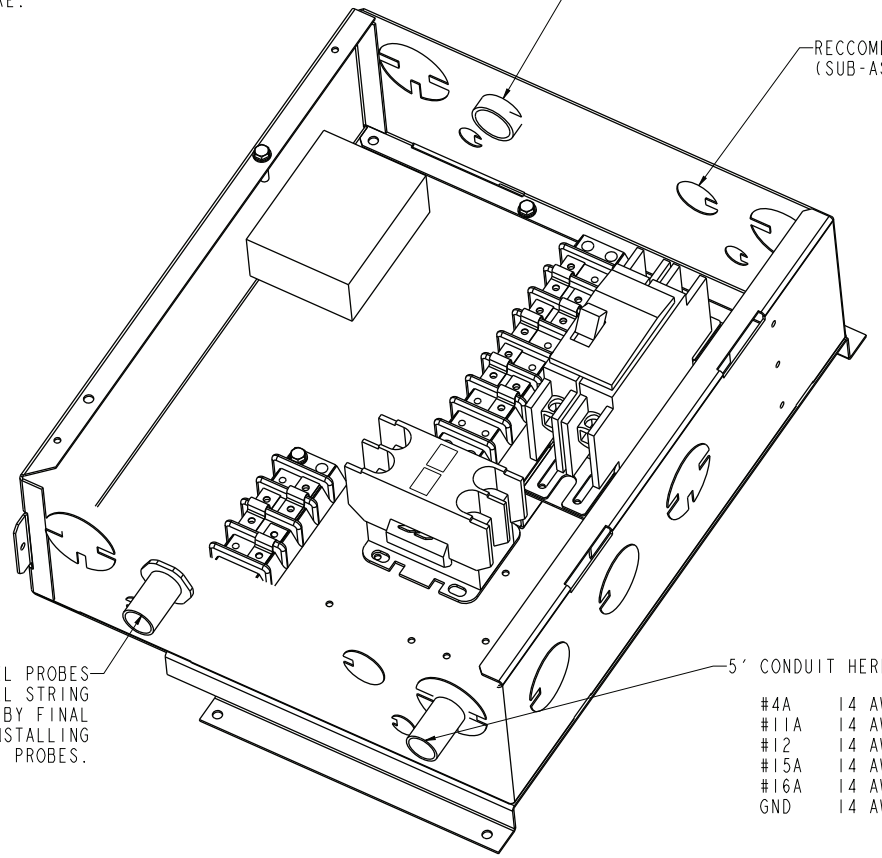
ELECTRICAL CELL:
COMPLETED ASSEMBLY FOR LINE INCLUDES 2X CONDUIT PATHS AND WIRING EXTENSIONS TO THE REAR OF CASE J-BOX. CONTROLLER BOX IS FIELD RELOCATABLE, TO ALLOW INGRESS THROUGH 80" DOORS AT STORE.

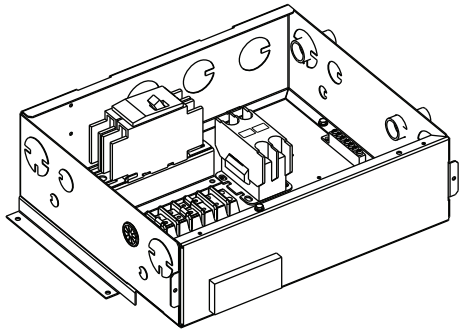
OPTIONAL MOTION SENSOR MOUNT HERE

RECCOMENDED LOCATION FOR RECEPTACLE CONDUIT (SUB-ASSEMBLY F877948C00)

FINAL ASSEMBLY LINE:
FASTEN COVER (F849409KGL) TO BOX AFTER THE BOX IS SCREWED ONTO CASE USING (2) SCREWS P058780H.

ISOMETRIC VIEW
FOR REFERENCE ONLY





5' CONDUIT, USED FOR CAREL PROBES SEQ 225: PROVIDE 7-FT PULL STRING (P079749A) FOR USE BY FINAL ASSEMBLY LINE WHEN INSTALLING PROBES.

5' CONDUIT HERE, USE FOR CASE WIRING HARNESS:

#4A	14 AWG	BLACK	P001548G	(TO CASE #4)
#11A	14 AWG	WHITE	P001547K	(TO CASE #3 + 11)
#12	14 AWG	BLACK	P001548G	(TO CASE #12)
#15A	14 AWG	WHITE	P001547K	(TO CASE #13 + 15)
#16A	14 AWG	BLACK	P001548G	(TO CASE #14 + 16)
GND	14 AWG	GREEN	P002454G	

SEQ 225: USE 7.5-FT LENGTH EACH WIRE TYPE IDENTIFIED

Hillphoenix
Display Cases
1925 Ruffin Mill Road
Colonial Heights, VA 23834
(804) 526-4455

R887422

ELE,SB,MT448,JNRB*SA

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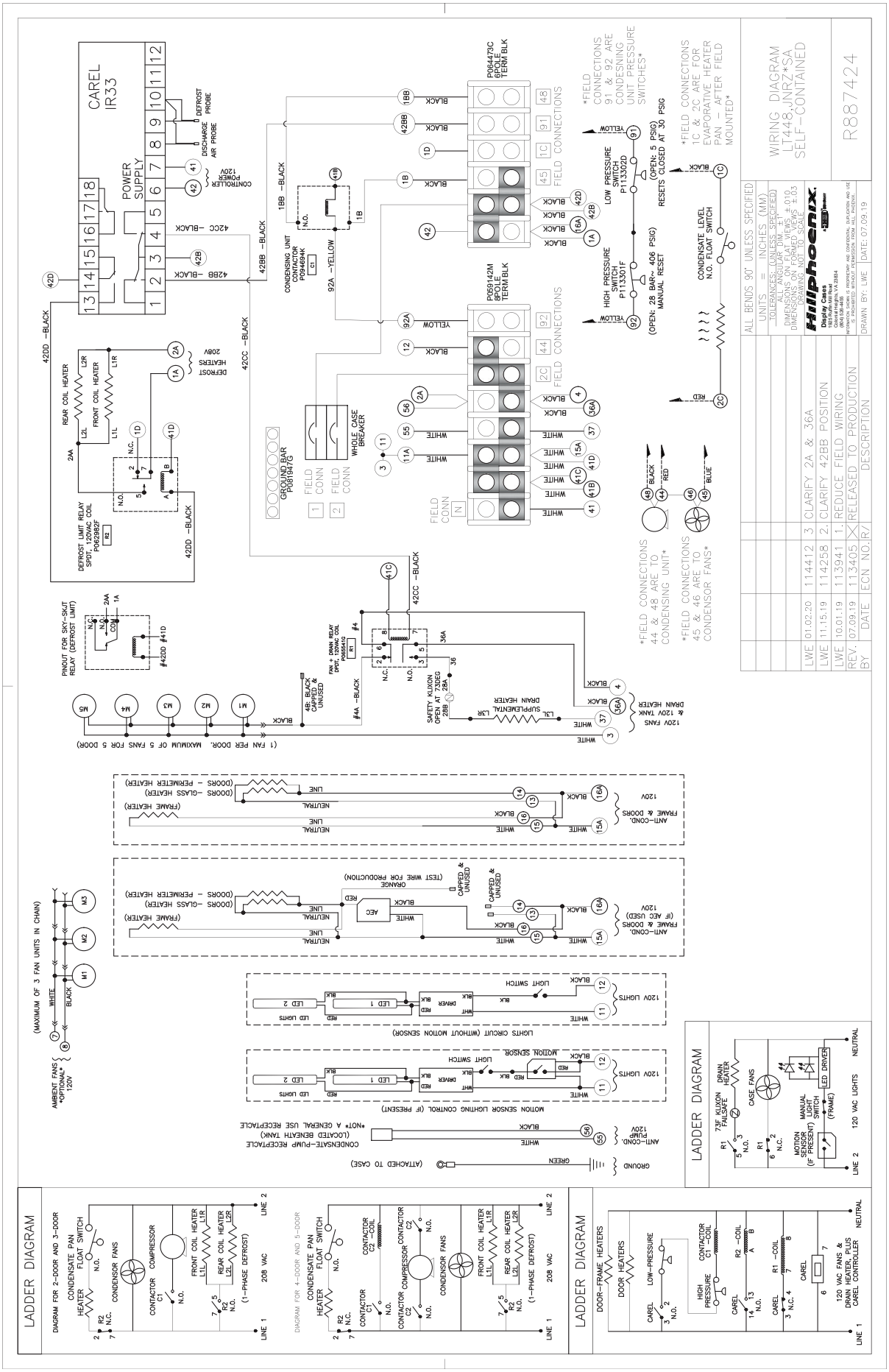
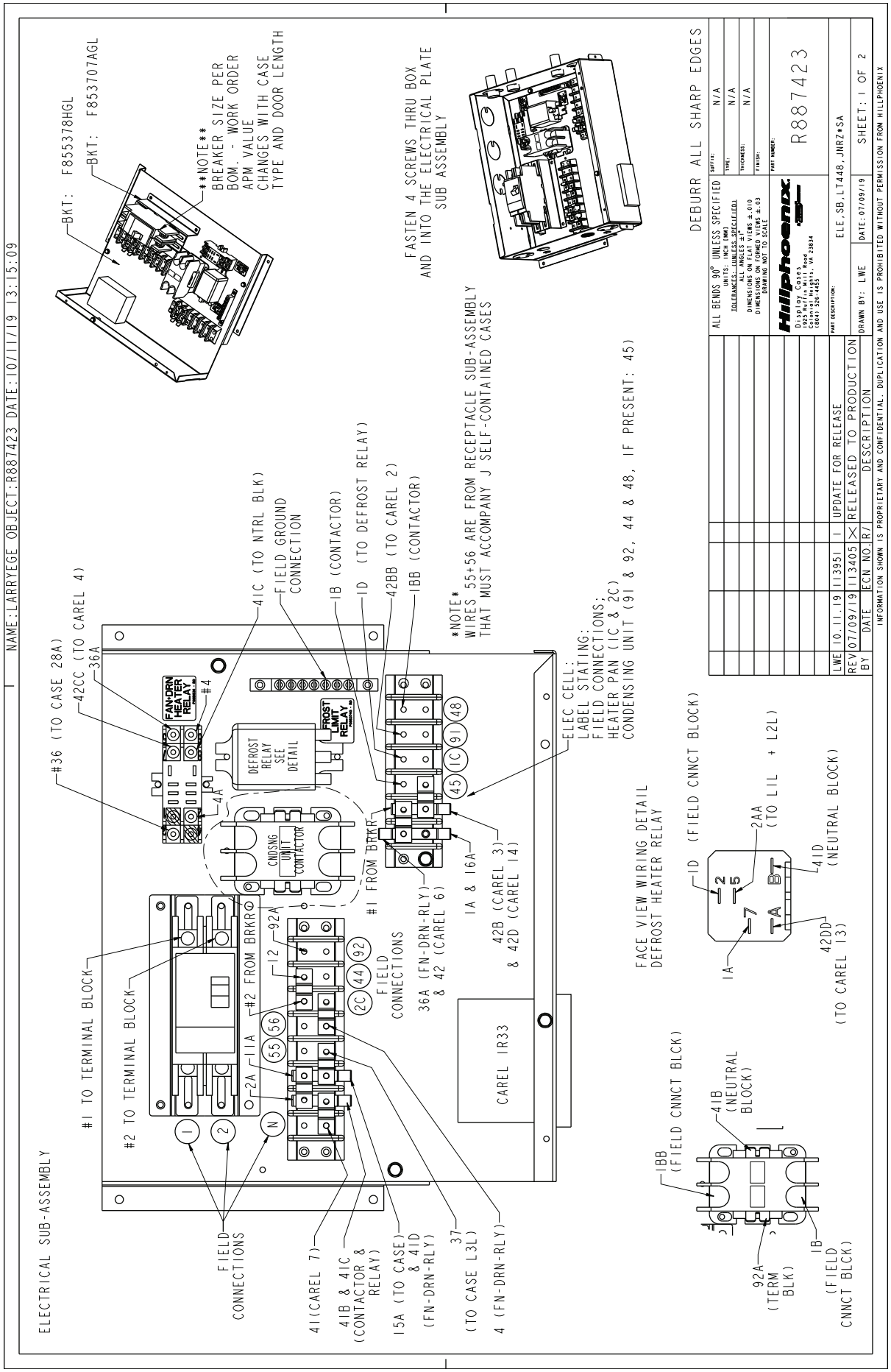
E14: ELECTRICAL WIRING DIAGRAM (R448A)



E15: ELECTRICAL WIRING DIAGRAM (R448A)



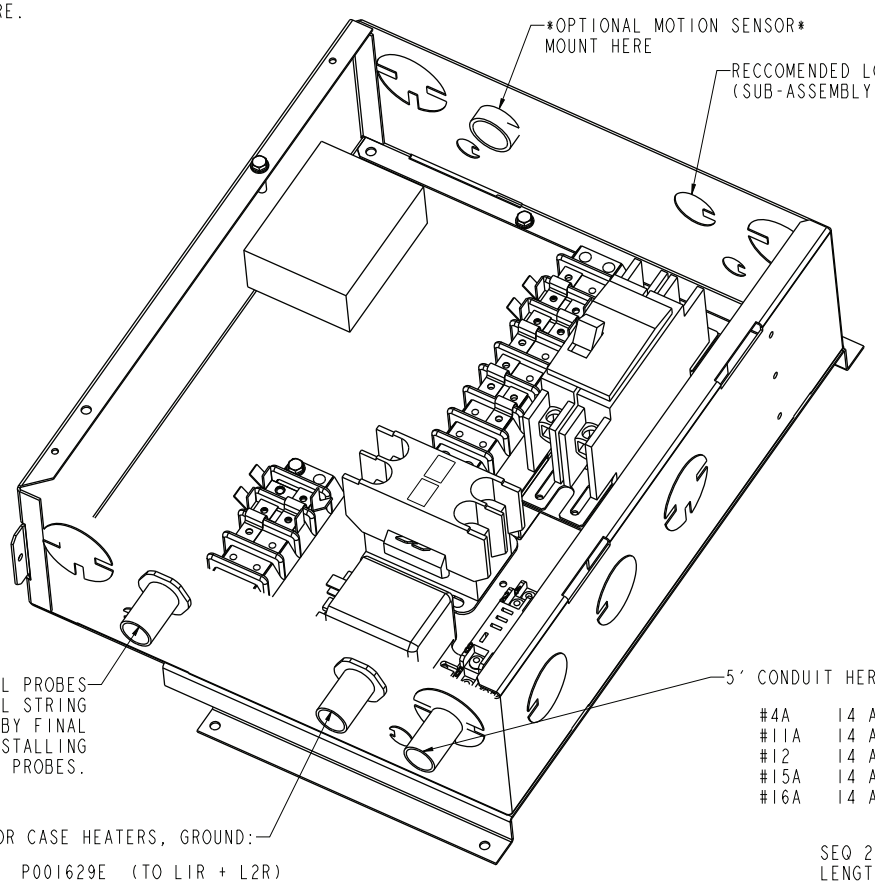
E16: ELECTRICAL WIRING DIAGRAM (R448A)

ELECTRICAL CELL:
COMPLETED ASSEMBLY FOR LINE INCLUDES 3X CONDUIT PATHS AND WIRING EXTENSIONS TO THE REAR OF CASE J-BOX. CONTROLLER BOX IS FIELD RELOCATABLE, TO ALLOW INGRESS THROUGH 80" DOORS AT STORE.

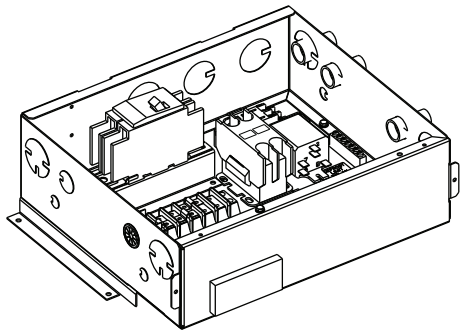
OPTIONAL MOTION SENSOR MOUNT HERE

RECCOMENDED LOCATION FOR RECEPTACLE CONDUIT (SUB-ASSEMBLY F877948C00)

ISOMETRIC VIEW
FOR REFERENCE ONLY



FINAL ASSEMBLY LINE:
FASTEN COVER (F849409KGL) TO BOX AFTER THE BOX IS SCREWED ONTO CASE USING (2) SCREWS P058780H.



5' CONDUIT, USED FOR CAREL PROBES
SEQ 225: PROVIDE 7-FT PULL STRING (P079749A) FOR USE BY FINAL ASSEMBLY LINE WHEN INSTALLING PROBES.

5' CONDUIT HERE, USE FOR CASE HEATERS, GROUND:

#2A	12 AWG	BLACK	P001629E	(TO L1R + L2R)
#2AA	12 AWG	BLACK	P001629E	(TO L1L + L2L)
37	14 AWG	WHITE	P001547K	(TO L3L)
36	14 AWG	BLACK	P001548G	(TO L3R)
GND	14 AWG	GREEN	P002454G	

SEQ 225: USE 7.5-FT LENGTH EACH WIRE TYPE IDENTIFIED

5' CONDUIT HERE, USE FOR CASE WIRING HARNESS:

#4A	14 AWG	BLACK	P001548G	(TO CASE #4)
#11A	14 AWG	WHITE	P001547K	(TO CASE #3 + 11)
#12	14 AWG	BLACK	P001548G	(TO CASE #12)
#15A	14 AWG	WHITE	P001547K	(TO CASE# 13 + 15)
#16A	14 AWG	BLACK	P001548G	(TO CASE# 14 + 16)

SEQ 225: USE 7.5-FT LENGTH EACH WIRE TYPE IDENTIFIED

Hillphoenix
Display Cases
1925 Ruffin Mill Road
Colonial Heights, VA 23834
(804) 526-4455

R887423

ELE,SB,LT448,JNRZ*SA

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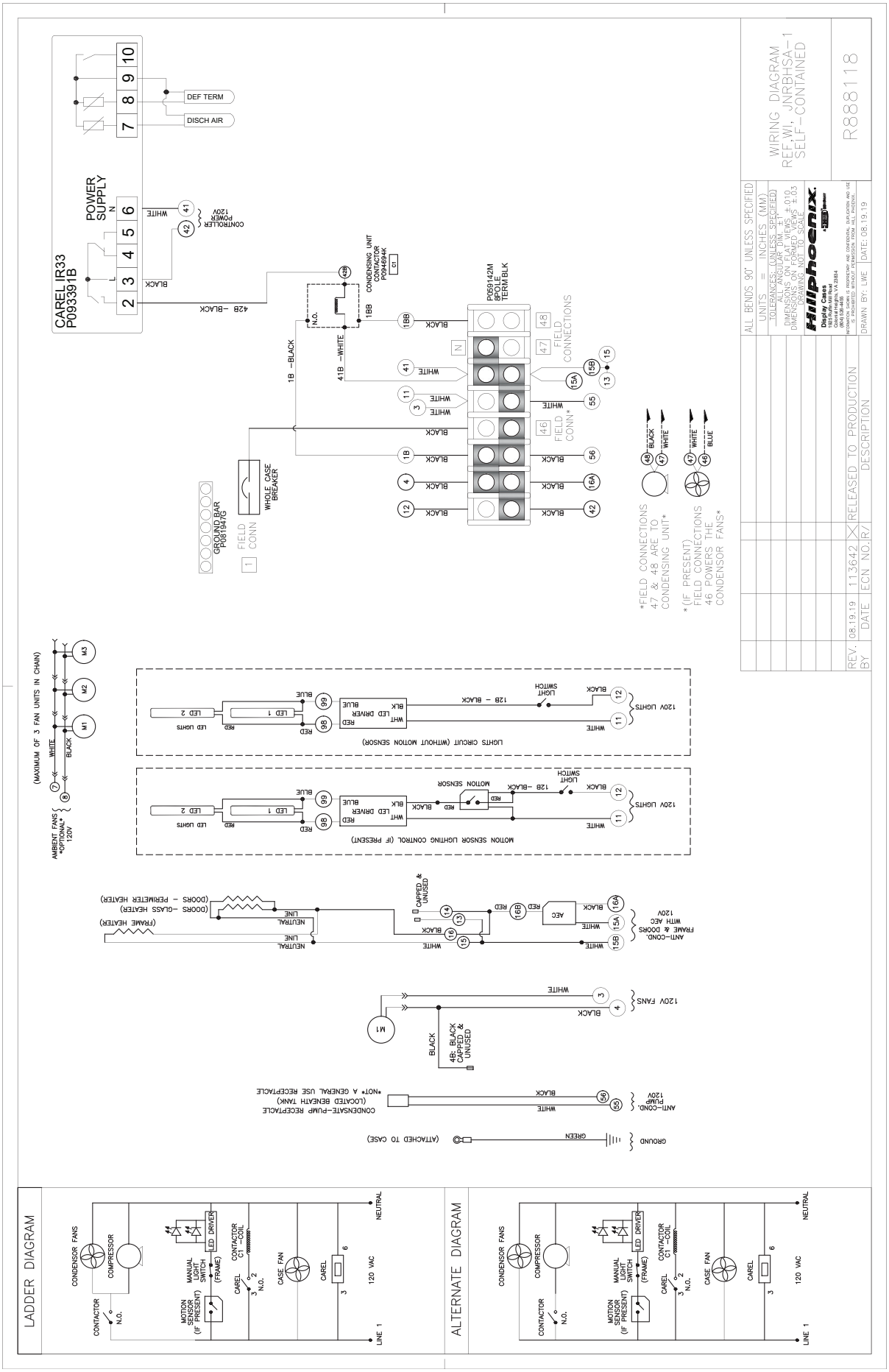
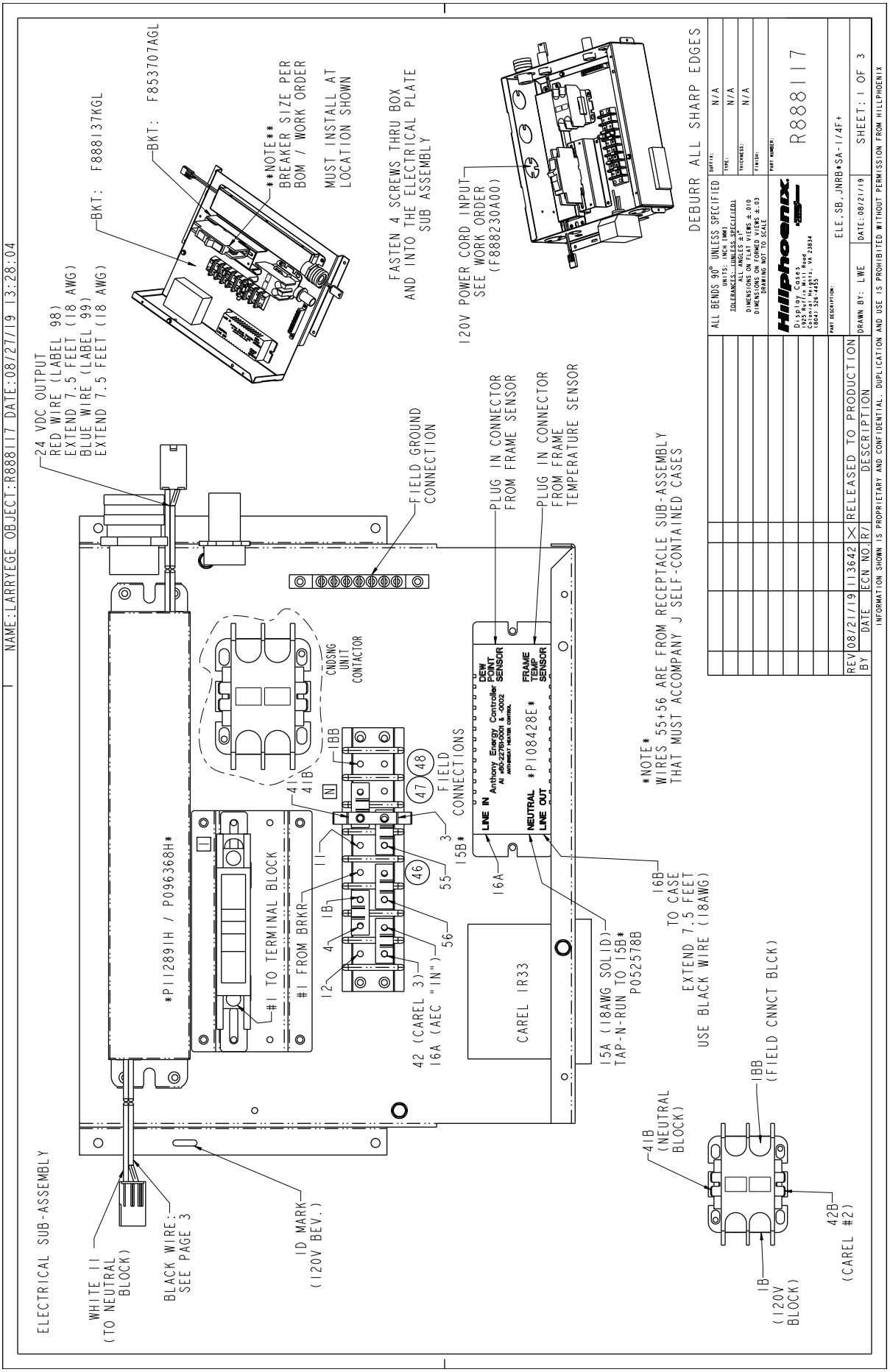
E17: ELECTRICAL WIRING DIAGRAM (R448A)



E18: ELECTRICAL WIRING DIAGRAM (R448A)



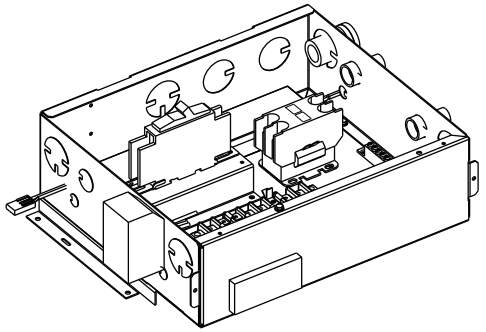
E19: ELECTRICAL WIRING DIAGRAM (R448A)

ELECTRICAL CELL:
COMPLETED ASSEMBLY FOR LINE INCLUDES 2X CONDUIT PATHS AND WIRING EXTENSIONS TO THE REAR OF CASE J-BOX. CONTROLLER BOX IS FIELD RELOCATABLE, TO ALLOW INGRESS THROUGH 80" DOORS AT STORE.

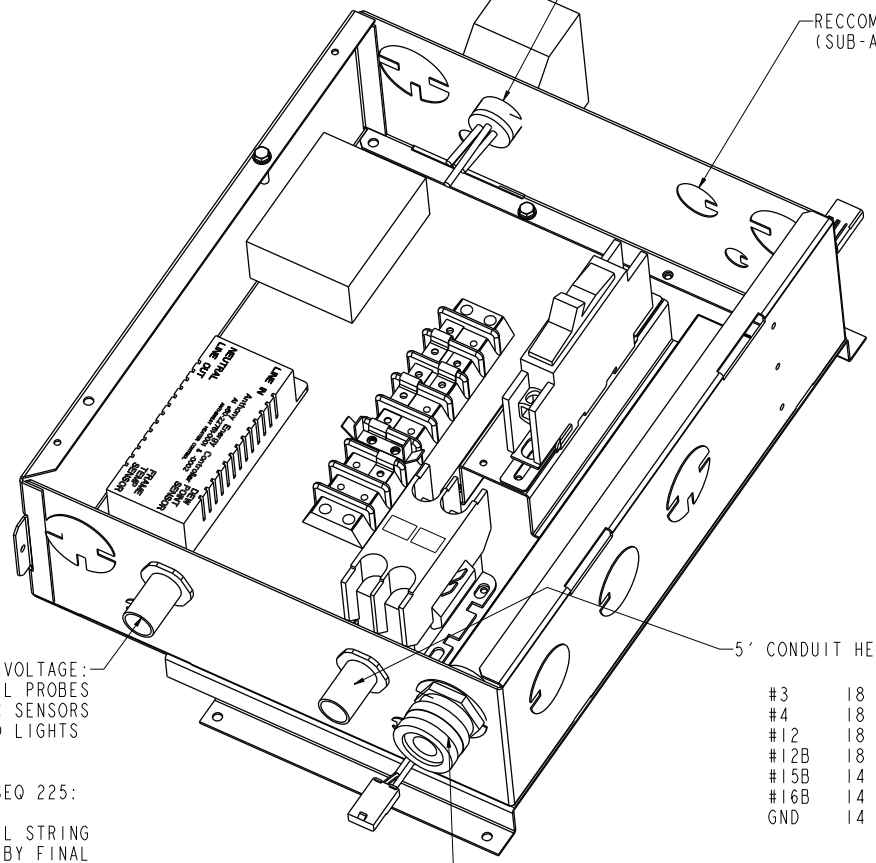
MOTION SENSOR OPTION
MOUNTS HERE
SEE PAGE 3 FOR WIRING

RECCOMENDED LOCATION FOR RECEPTACLE CONDUIT
(SUB-ASSEMBLY F877948C00)

FINAL ASSEMBLY LINE:
FASTEN COVER (F849409KGL) TO BOX AFTER THE BOX IS SCREWED ONTO CASE USING (2) SCREWS P058780H.



ISOMETRIC VIEW
FOR REFERENCE ONLY



5' CONDUIT, USED FOR LOW VOLTAGE:
CAREL PROBES
AEC SENSORS
24VDC TO LED LIGHTS

SEQ 225:

PROVIDE 7-FT PULL STRING (P079749A) FOR USE BY FINAL ASSEMBLY LINE WHEN INSTALLING PROBES.

ALSO SUPPLY WIRES FROM LED DRIVER

#98	18 AWG	RED	P001415K
#99	18 AWG	BLUE	P001416G

5' CONDUIT HERE, USE FOR CASE WIRING HARNESS:

#3	18 AWG	WHITE	P001277C
#4	18 AWG	BLACK	P001278A
#12	18 AWG	BLACK	P001278A
#12B	18 AWG	BLACK	P001278A
#15B	14 AWG	WHITE	P001277C
#16B	14 AWG	BLACK	P001278A
GND	14 AWG	GREEN	P002454G

SEQ 225: USE 7.5-FT LENGTH EACH WIRE TYPE IDENTIFIED

120V POWER CORD INPUT
SEE WORK ORDER (F888230A00)

Hillphoenix
Display Cases
1925 Ruffin Mill Road
Colonial Heights, VA 23834
(804) 526-4455

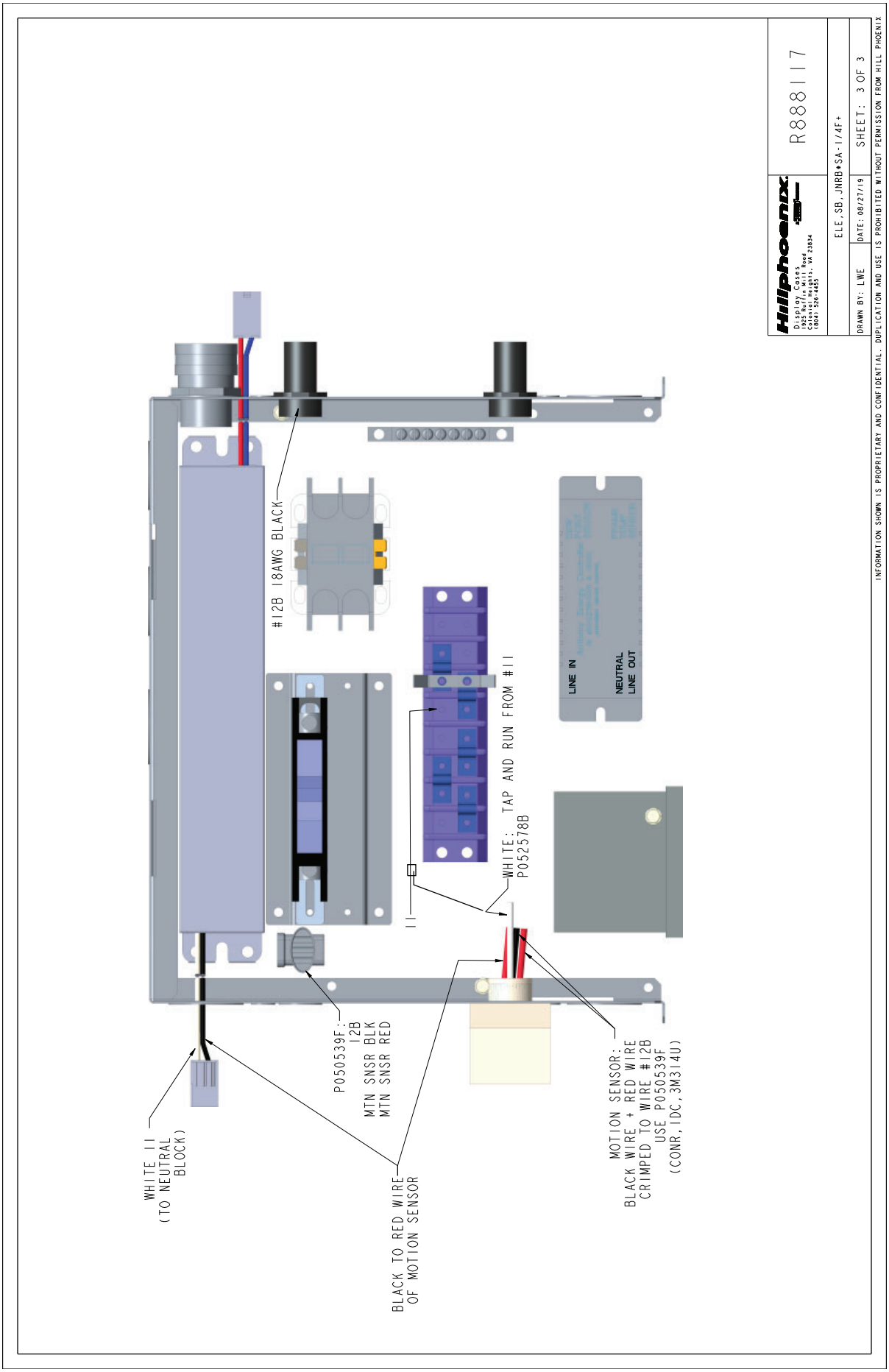
R888117

ELE,SB,JNRB*SA-1/4F+

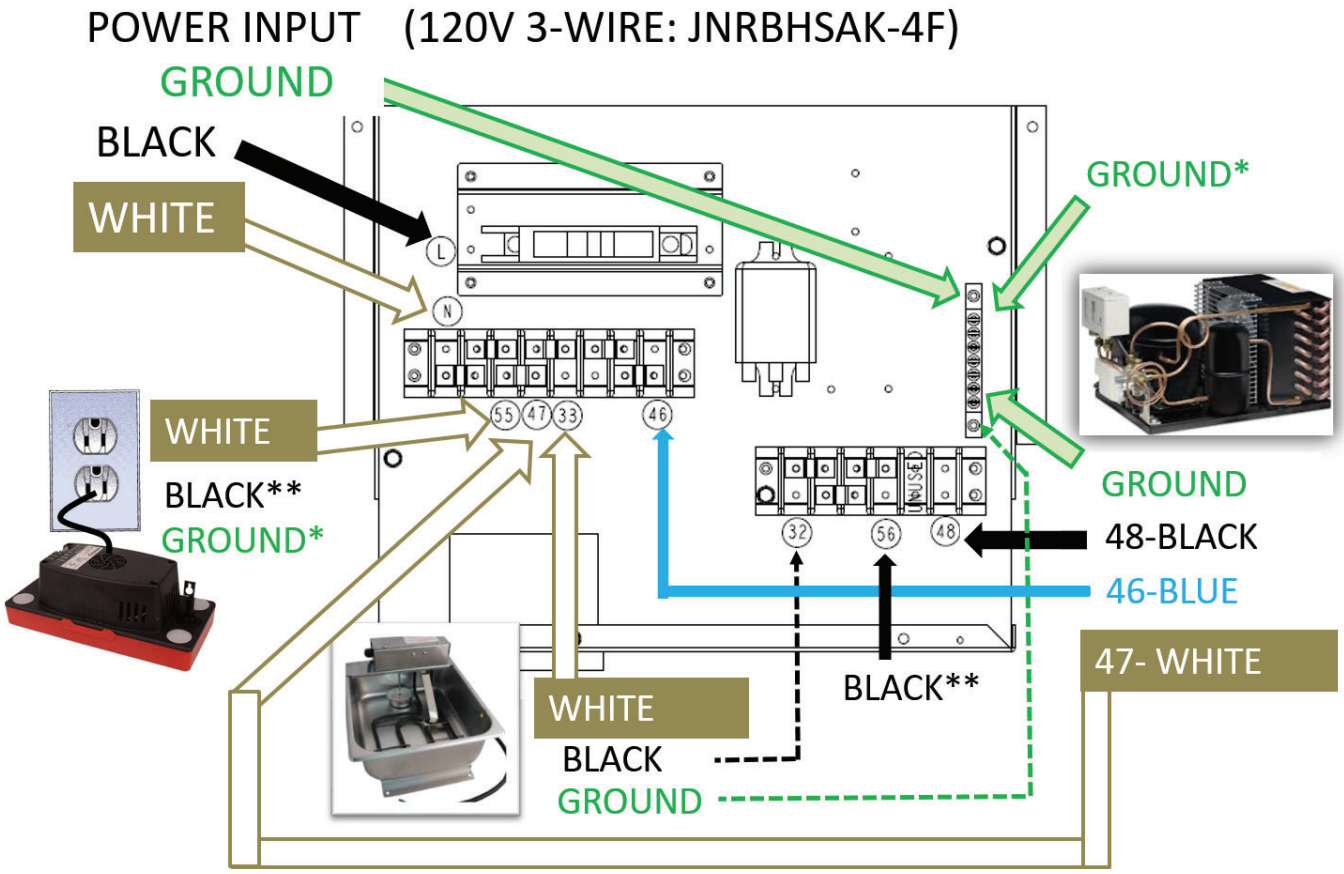
DRAWN BY: LWE | DATE: 08/21/19 | SHEET: 2 OF 3

INFORMATION SHOWN IS PROPRIETARY AND CONFIDENTIAL. DUPLICATION AND USE IS PROHIBITED WITHOUT PERMISSION FROM HILL PHOENIX

E20: ELECTRICAL WIRING DIAGRAM (R448A)

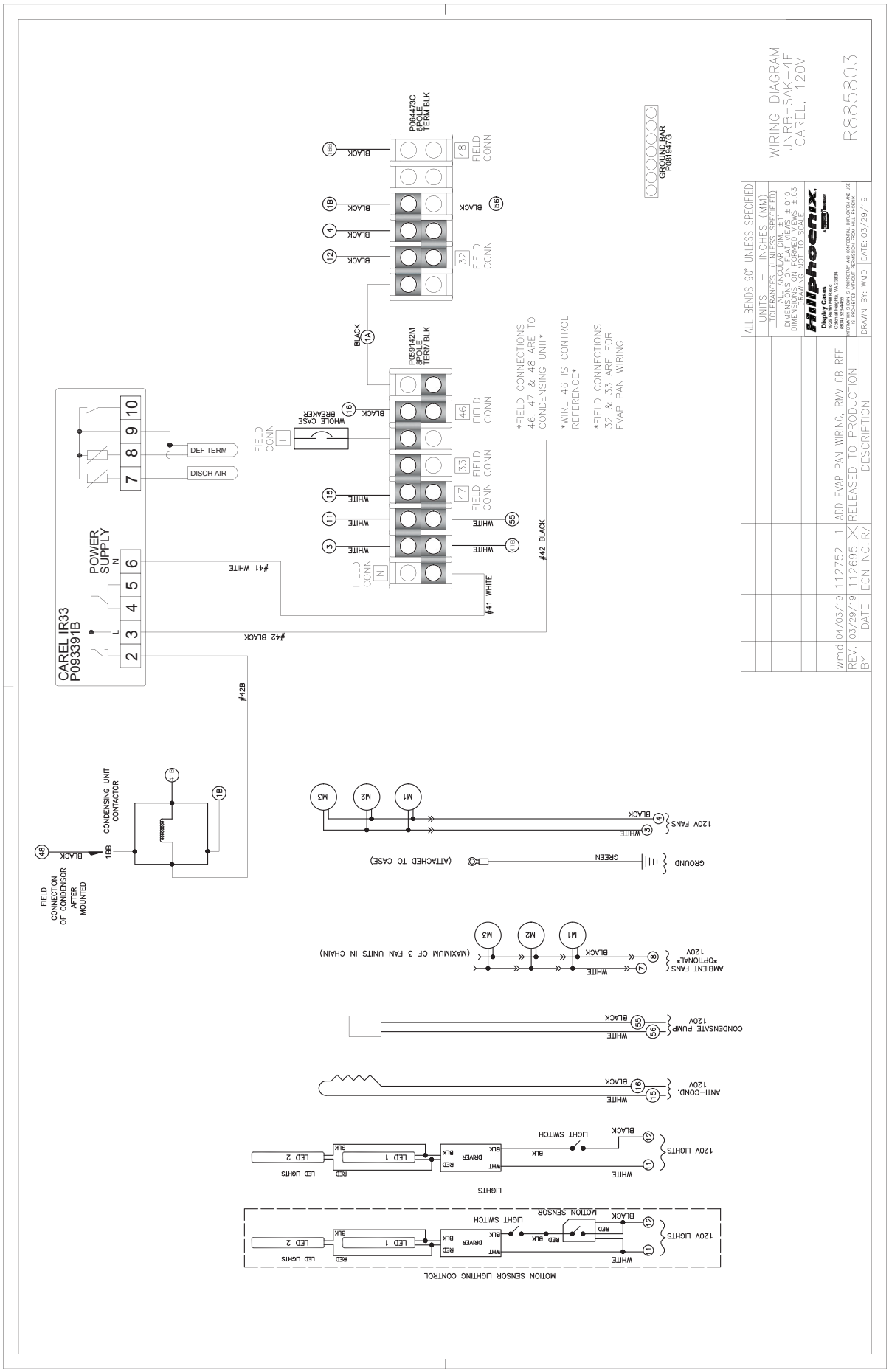


E21: ELECTRICAL WIRING DIAGRAM (R448A)

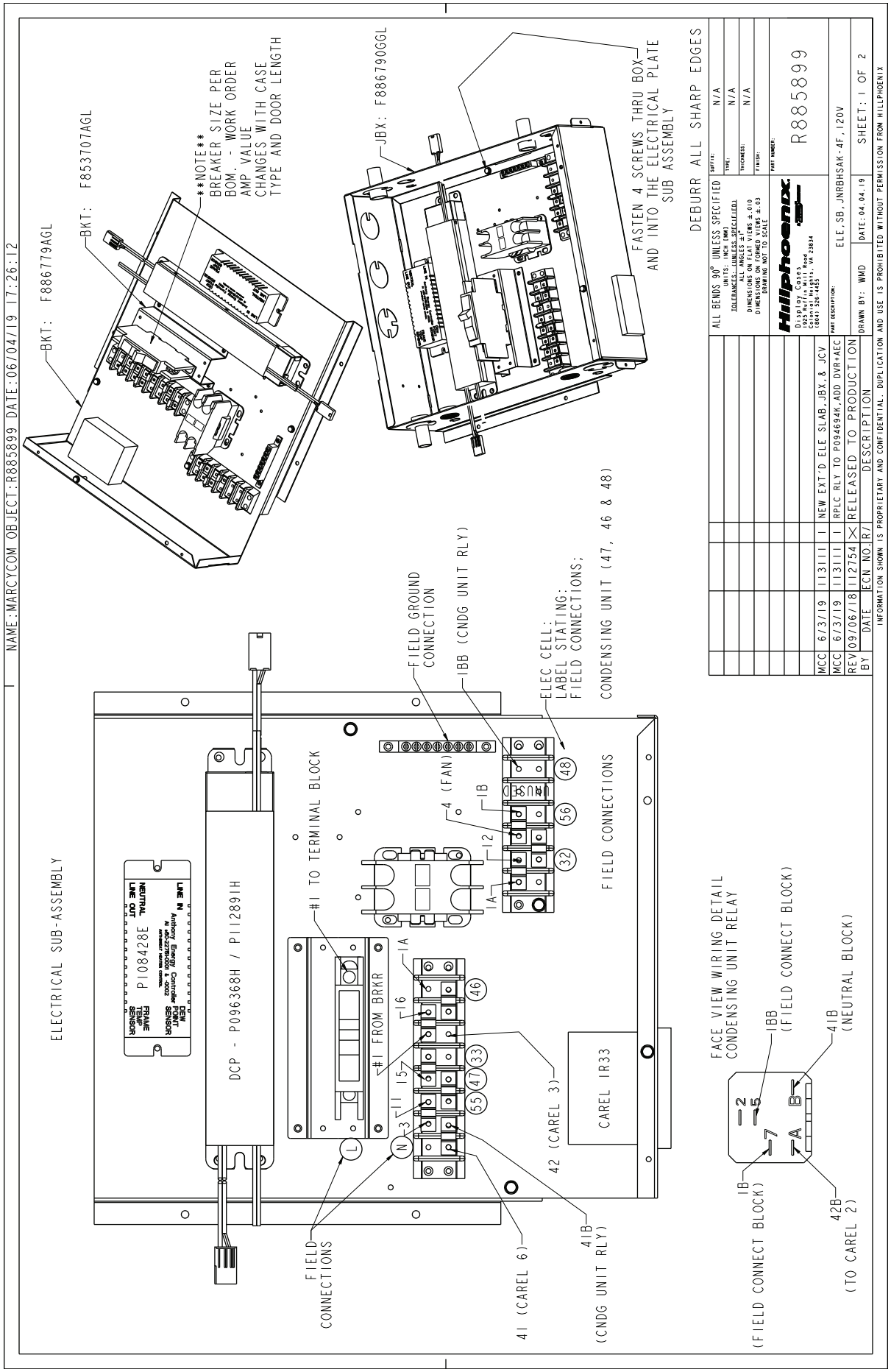


Note: After case is fully wired and energized the factory-programmed CAREL will take control of the case. On case models using Real Time Clock functionality (e.g. Low Temperature JNRZHSA cases) it is recommended to update the *hour* and *minute* parameters of the CAREL Real Time Clock to the local time at the store. Real Time Clock entries use 24-hour system (i.e. Hour 22 = 10 PM. Hour 10 = 10 AM). Setting the Real Time Clock optimizes the defrost time - see parameter section “tc” of the applicable set-points lists of appendix F.

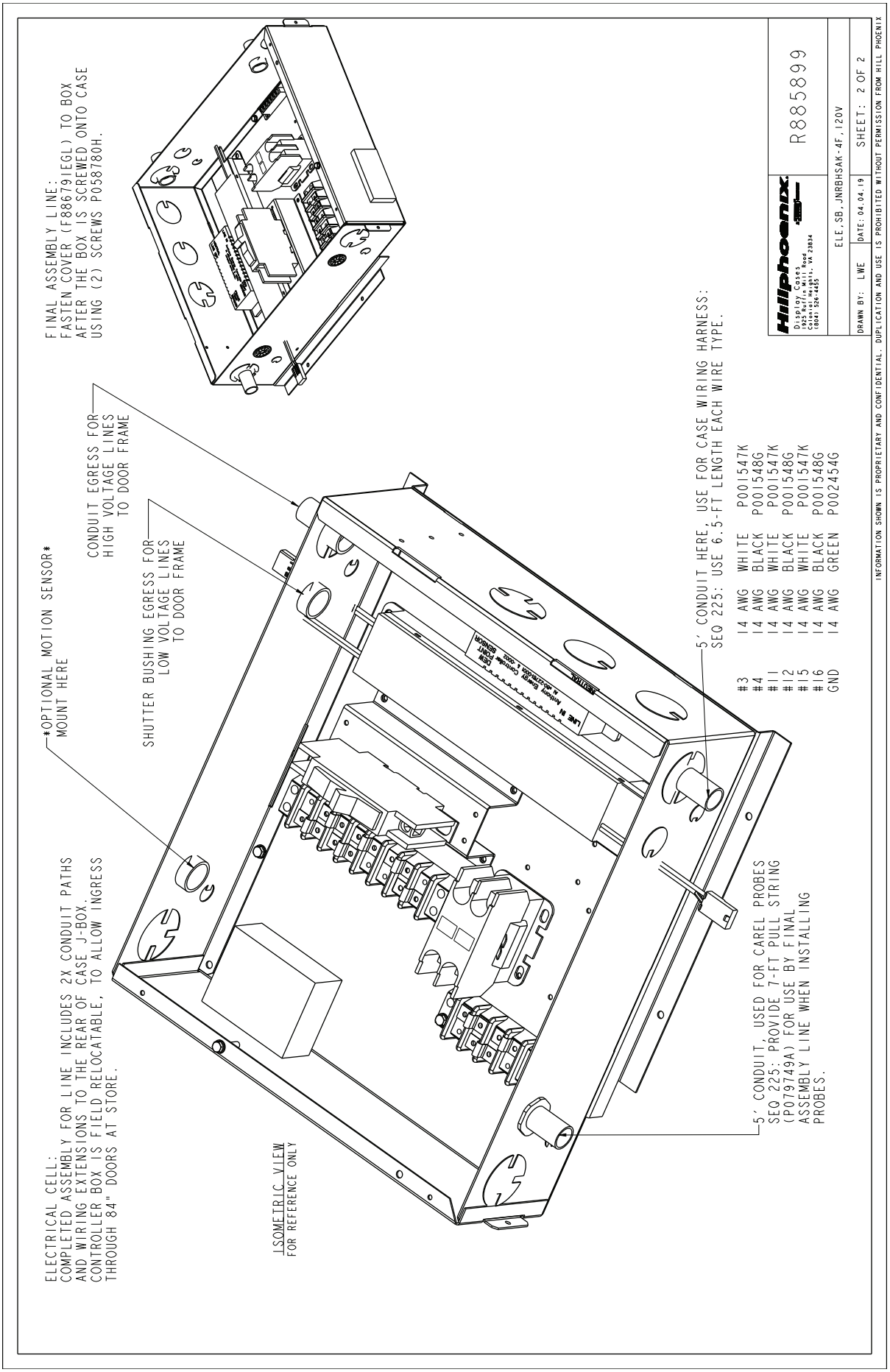
E22: ELECTRICAL WIRING DIAGRAM (R448A)



E23: ELECTRICAL WIRING DIAGRAM (R448A)



E24: ELECTRICAL WIRING DIAGRAM (R448A)



R853340
REV: 3

Setpoints, Medium Temp, Carel IR33+ controller
JNRBHSA-Cust

By: LWE 02.11.19
ECN 112324

History

Rev	By:	ECN	Date:
2	LWE	112245	01.30.19
1	EJG	97594	10.07.14
0	EJG	96948	08.11.14

Anthony Hillphoenix

Code	Block	Parameter	Mode	Unit	Type	Min.	Max.	Def.	New
/2	Pro	Measurement Stability	MSC	-	C	1	15	4	
/3	Pro	Probe display speed	MSC	-	C	0	15	0	
/4	Pro	Virtual probe	MSC	-	C	0	100	0	
/5	Pro	Select C or F (0=C)	MSC	flag	C	0	1	0	1
/6	Pro	Decimal point (0=decimal point)	MSC	flag	C	0	1	0	1
/tl	Pro	Sensor shown on controller display	MSC	-	C	1	7	1	
/tE	Pro	Sensor shown on remote display	MSC	-	C	0	6	0	
/P	Pro	Type of probes (0=standard Carel NTC)	MSC	-	C	0	2	0	
/A2	Pro	Probe 2 configuration (eg 2=evap, 3=cond)	MSC	-	C	0	4	2	
			-S--	-	C	0	4	0	
/A3	Pro	Probe 3 configuration (eg 2=evap, 3-cond)	MSC	-	C	0	4	0	
/A4	Pro	Probe 4 configuration (eg 0=absent, 2=evap, 3-cond)	MSC	-	C	0	4	0	
/c1	Pro	Calibration of probe 1	MSC	C/F	C	-20	20	0.0	
/c2-4	Pro	Calibration of probe 2-4 (c2=probe 2, c3=probe 3...)	MSC	C/F	C	-20	20	0.0	
St	Ctl	temperature set point	MSC	C/F	F	r1	r2	0.0	30.0
rd	Ctl	Controller differential	-SC	C/F	F	0.1	20	2	6
m	Ctl	Dead Zone (when used 1 Heat 1 Cool)	-SC	C/F	C	0	60	4	
rr	Ctl	Reverse (heat) diff in dead zone control	-SC	C/F	C	0.1	20	2	
r1	Ctl	Minimum Set Point allowed	MSC	C/F	C	-50	r2	-50	25.0
r2	Ctl	Maximum Set Point allowed	MSC	C/F	C	r1	200	60	80.0
r3	Ctl	Mode 0=cool with defrost, 1=cool only, 2=heating	-SC	flag	C	0	2	0	
r4	Ctl	Value to alter Set Point from Digital Input	MSC	C/F	C	-20	20	3.0	
r5	Ctl	Enable temperature monitoring	MSC	flag	C	0	1	0	
rt	Ctl	Temperature monitoring interval	MSC	hours	F	0	999	-	
rH	Ctl	Max temperature recorded during period rt	MSC	C/F	F	-	-	-	
rL	Ctl	Min temperature recorded during period rt	MSC	C/F	F	-	-	-	
c0	CnP	Comp and fan start delay at power up	-SC	min	C	0	15	0	
c1	CnP	Minimum time between 2 comp starts	-SC	min	C	0	15	0	2
c2	CnP	Minimum compressor OFF time	-SC	min	C	0	15	0	
c3	CnP	Minimum compressor ON time	-SC	min	C	0	15	0	
c4	CnP	Duty setting	-SC	min	C	0	100	0	
c5	CnP	Duration of continuous cycle	-SC	hours	C	0	15	0	
c6	CnP	Alarm bypass after continuous cycle	-SC	hours	C	0	15	2	
c7	CnP	Maximum Pump-Down (PD) time	-SC	sec	C	0	900	0	
c8	CnP	Comp start delay after opening Pump Down valve	-SC	sec	C	0	60	5	
c9	CnP	Enable auto-start with Pump Down operation	-SC	flag	C	0	1	0	
c10	CnP	Select Pump-Down by time or pressure switch	-SC	flag	C	0	1	0	
c11	CnP	Second compressor start delay	-SC	s	C	0	250	4	
d0	dEF	Defrost type (0=elec / temp, 1=H.Gas/temp	-SC	flag	C	0	4	0	
		2=elec / time, 3=hot gas / time…)							
dI	dEF	Interval between defrosts (if not using real time)	-SC	hours	F	0	250	8	12
dt1	dEF	End defrost termperature (if d0= 0 or 1)	-SC	C/F	F	-50	200	4.0	40.0
dt2	dEF	End defrost termperature, aux evap (if selected)	-SC	C/F	F	-50	200	4.0	
dP1	dEF	Maximum defrost duration	-SC	min	F	1	250	30	46
dP2	dEF	Maximum defrost duration, aux evap	-SC	min	F	1	250	30	
d3	dEF	Defrost- delay starting defrost after stopping comp	-SC	min	C	0	250	0	
d4	dEF	Defrost at power up (0 = no, 1 = yes)	-SC	flag	C	0	1	0	

CAREL IR33+

How to set the set point (desired temperature value)

Step	Action	Effect	Meaning
1	Press SET DEF for 1 second	After 1 second the display will show the current set point	This the currently active control set point
2	Press ▲ or AUX ▼	The value on the display will increase or decrease	Set the desired value
3	Press SET DEF	The controller will show the temp.read by the probes again	The set point is modified and saved

Another way of changing the set point is to set parameter "St" (see the tables below)

How to access and set parameters
type "F" (FREQUENT, not protected by password)
type "C" (CONFIGURATION, password protected)

Step	Action	Effect	Meaning
1	Press PRG for 3 seconds	After 3 seconds the display will show the 1st parameter, "0" (Password)	Access to type "F" parameters is direct without password
2	Press ▲ or AUX ▼	The value on the display will increase or decrease.	Enter the password "22" to access the type "C" parameters or whatever different value for the type "F" parameters.
3	Press SET DEF	The display will show "St" (Setpoint)	This is the current value of the Setpoint
4	Press ▲ or AUX ▼	If the password set is 22 the display will scroll the list of type "C" parameters (CONFIGURATION) otherwise the list of type "F" parameters (FREQUENT)	Set the desired value
5	Press SET DEF	The display will show the parameter name	This is the current value of the parameter
6	Press ▲ or AUX ▼	The value on the display will increase or decrease	Set the desired value
7	Press SET DEF	The display will show the parameter name again	IMPORTANT: parameters not yet saved
8	Repeat steps 2, 3, 4 & 5 for all parameters required		
9	Press PRG for 5 seconds	The controller will display the temperature read by the probes again	IMPORTANT: only now have all the parameters been updated

For both types of access (type "F" and type "C") there is a timeout (no button on the keypad pressed for 1 min), the procedure is ended without saving the parameter.

Accessing the parameters divided by functional blocks (allows the user to scroll the list of parameters in blocks)
Once having accessed the type "F" or "C" parameters (see tables above)

Step	Action	Effect	Meaning
1	Press PRG	The display will show the name of the functional block that the parameter belongs to	Example 'CMP' for the compressor parameters, 'dEF' for the defrost parameters
2	Press ▲ or AUX ▼	The display will show the name of the other functional blocks	Example 'Fan' for the fan parameters
3	Press SET DEF	The display will show the name of the first parameter in the functional block selected	Example "F0" for 'Fan'

User terminal
ir33+

R853340
REV: 3

Setpoints, Medium Temp, Carel IR33+ controller
JNRBHSA-Cust

Code	Block	Parameter	Mode	Unit	Type	Min.	Max.	Def	New
d5	dEF	Defrost delay on power up (id d4=1)	-SC	min	C	0	250	0	
d6	dEF	Display during def (0=dF (flash),	-SC	-	C	0	2	1	**0**
		1=locked, 2=dEF)							
dd	dEF	Dripping time after defrost	-SC	min	F	0	15	2	**0**
d8	dEF	Bypass alarms after defrost	-SC	hours	F	0	15	1	
d9	dEF	Defrost priority over compressor protectors	-SC	flag	C	0	1	0	
d/1/	dEF	Display defrost probe temp d/1=def P1,	MSC	C/F	F	-	-	-	
/d/2		d/2=def P2							
dC	dEF	Time base for defrost (0=hr/min, 1=min/sec)	-SC	flag	C	0	1	0	
d10	dEF	Compressor run time for demand defrost	-SC	min	C	0	250	0	
d11	dEF	Comp. run time temp set for demand defrost	-SC	C/F	C	-20	20	1.0	
d12	dEF	Advance deforst enable	-SC	-	C	0	3	0	
dn	dEF	Nominal defrost duration (smart defrost)	-SC	-	C	1	100	65	
dH	dEF	Proportional factor for variation in'dI'	-SC	-	C	0	100	50	
		(smart DF)							
A0	ALn	Alarm and fan differential	MSC	C/F	C	0.1	20	2.0	
A1	ALn	Type of alarm for AL and AH (0=relative	MSC	flag	C	0	1	0	
		1=absolute)							
AL	ALn	Low alarm temp (see A1 for abs.or relative)	MSC	C/F	F	-50	200	0.0	**6.0**
AH	ALn	High alarm temp (see A1 for abs.or relative)	MSC	C/F	F	-50	200	0.0	**30.0**
Ad	ALn	Low and High temperature alarm delay	MSC	min	F	0	250	120	
A4	ALn	Configuration of digital input 1	-SC	-	C	0	15	0	
		(Set to 8 if using pressure SW)							
A5	ALn	Configuration of digital input 2	MSC	-	C	0	15	0	
A6	ALn	Duty setting from comp for digital in alarm	-SC	min	C	0	100	0	
A7	ALn	External alarm delay if using digital input	-SC	min	C	0	250	0	
A8	ALn	Enable alarms Ed1 and Ed2	-SC	flag	C	0	1	0	
		(defrost end on time)							
Ado	ALn	door switch light management mode	MSC	flag	C	0	1	0	
Ac	ALn	High condenser temperature alarm set point	-SC	C/F	C	0.0	200	70.0	
AE	ALn	High condenser temp. alarm differential	-SC	C/F	C	0.1	20	10.0	
Acd	ALn	High condenser temperature alarm delay	-SC	min	C	0	250	0	
AF	ALn	Light sensor off time	-SC	s	C	0	250	0	
ALF	ALn	Antifreeze alarm set point	MSC	C/F	C	-50	200	-5	
AdF	ALn	Antifreeze alarm delay	MSC	min	C	0	15	1	
F0	Fan	Fan Management (0= using F2,F3,Fd	---C	flag	C	0	2	0	**0**
		1= amb - evap, 2 = evap temp (St + F1)							
F1	Fan	Fan start temperature	---C	C/F	F	-50	200	5.0	**5.0**
F2	Fan	Fans cycle with compressor (0=no, 1=yes)	---C	flag	C	0	1	1	**0**
F3	Fan	Fans in defrost (0 = on, 1 = off)	---C	flag	C	0	1	1	**0**
F4	Fan	Condensor fan off temperature	MSC	C/F	C	-50	200	40.0	
F5	Fan	Condensor fan differential	MSC	C/F	C	0.1	20	5.0	
Fd	Fan	Fans delay after dripping	---C	min	F	0	15	1	
H0	CnF	Serial address	MSC	-	C	0	207	1	
H1	CnF	Function of relay 4 (0,1=alarm,2=aux,3=light.)	MSC	flag	C	0	11	1	
H2	CnF	Keypad and IR locking	MSC	flag	C	1	6	1	
H3	CnF	Remote control enabling code	MSC	-	C	0	225	0	
H4	CnF	Buzzer (0=enabled, 1=disabled)	MSC	flag	C	0	1	0	
H5	CnF	Function of relay 5 (IR33DIN &	MSC	flag	C	0	11	1	
		PowerCompact)							
H6	CnF	Buttons to lock when keypad locked	MSC	-	C	0	255	0	
H8	CnF	Select output to activate with time band	MSC	flag	C	0	1	0	
HPr	CnF	Print profile	MSC	-	C	0	15	0	
H9	CnF	Enable set point change with time	MSC	flag	C	0	1	0	
Hdn	CnF	number of default parameter sets	MSC	flag	C	0	6	0	

Code	Block	Parameter	Mode	Unit	Type	Min.	Max.	Def	New
Hdh	CnF	Anti-sweat heater control offset	MSC	C/F	C	-50	200	0	
HrL	CnF	Enable remote ind. Of light status	MSC	flag	C	0	1	0	
HrA	CnF	Enable remote ind. Of aux status	MSC	flag	C	0	1	0	
HsA	CnF	Enable alarms on network devices	MSC	flag	C	0	1	0	
In	CnF	Standard control of master or slave	MSC	flag	C	0	6	0	
HAn/HFn	HcP	Number of events HA/HF occurred	MSC	-	C	0	15	-	
HA/HF	HcP	Date/time of most recent HA/HF	MSC	-	C	-	-	-	

Code on display	Cause of the alarm	Icon flashing on display	Alarm relay	Buzzer
E0	Probe S1 fault	PRG	OFF	OFF
E1	Probe S2 fault	PRG	OFF	OFF
E2	Probe S3 fault	PRG	OFF	OFF
E3	Probe S4 fault	PRG	OFF	OFF
LO	Low temperature alarm	PRG	ON	ON
HI	High temperature alarm	PRG	ON	ON

R851948
REV: 2

Setpoints, Low Temp, Carel IR33+ controller
JNRZHSA-Cust

By: LWE 02.11.19
ECN 112324

History

Rev	By:	ECN	Date:
1	LWE	112245	01.30.19
0	EJG	96316	06.17.14

Anthony Hillphoenix

Code	Block	Parameter	Mode	Unit	Type	Min.	Max.	Def.	New
/2	Pro	Measurement Stability	MSC	-	C	1	15	4	
/3	Pro	Probe display speed	MSC	-	C	0	15	0	
/4	Pro	Virtual probe	MSC	-	C	0	100	0	
/5	Pro	Select C or F (0=C)	MSC	flag	C	0	1	0	1
/6	Pro	Decimal point (0=decimal point)	MSC	flag	C	0	1	0	1
/tl	Pro	Sensor shown on controller display	MSC	-	C	1	7	1	
/tE	Pro	Sensor shown on remote display	MSC	-	C	0	6	0	
/P	Pro	Type of probes (0=standard Carel NTC)	MSC	-	C	0	2	0	
/A2	Pro	Probe 2 configuration (eg 2=evap, 3=cond)	MSC	-	C	0	4	2	
			-S--	-	C	0	4	0	
/A3	Pro	Probe 3 configuration (eg 2=evap, 3-cond)	MSC	-	C	0	4	0	
/A4	Pro	Probe 4 configuration (eg 0=absent, 2=evap, 3-cond)	MSC	-	C	0	4	0	
/c1	Pro	Calibration of probe 1	MSC	C/F	C	-20	20	0.0	
/c2-4	Pro	Calibration of probe 2-4 (c2=probe 2, c3=probe 3...)	MSC	C/F	C	-20	20	0.0	
St	Ctl	temperature set point	MSC	C/F	F	r1	r2	0.0	-9.0
rd	Ctl	Controller differential	-SC	C/F	F	0.1	20	2	4
m	Ctl	Dead Zone (when used 1 Heat 1 Cool)	-SC	C/F	C	0	60	4	
rr	Ctl	Reverse (heat) diff in dead zone control	-SC	C/F	C	0.1	20	2	
r1	Ctl	Minimum Set Point allowed	MSC	C/F	C	-50	r2	-50	-25.0
r2	Ctl	Maximum Set Point allowed	MSC	C/F	C	r1	200	60	80.0
r3	Ctl	Mode 0=cool with defrost, 1=cool only, 2=heating	-SC	flag	C	0	2	0	
r4	Ctl	Value to alter Set Point from Digital Input	MSC	C/F	C	-20	20	3.0	
r5	Ctl	Enable temperature monitoring	MSC	flag	C	0	1	0	
rt	Ctl	Temperature monitoring interval	MSC	hours	F	0	999	-	
rH	Ctl	Max temperature recorded during period rt	MSC	C/F	F	-	-	-	
rL	Ctl	Min temperature recorded during period rt	MSC	C/F	F	-	-	-	
c0	CnP	Comp and fan start delay at power up	-SC	min	C	0	15	0	
c1	CnP	Minimum time between 2 comp starts	-SC	min	C	0	15	0	2
c2	CnP	Minimum compressor OFF time	-SC	min	C	0	15	0	
c3	CnP	Minimum compressor ON time	-SC	min	C	0	15	0	
c4	CnP	Duty setting	-SC	min	C	0	100	0	
c5	CnP	Duration of continuous cycle	-SC	hours	C	0	15	0	
c6	CnP	Alarm bypass after continuous cycle	-SC	hours	C	0	15	2	
c7	CnP	Maximum Pump-Down (PD) time	-SC	sec	C	0	900	0	
c8	CnP	Comp start delay after opening Pump Down valve	-SC	sec	C	0	60	5	
c9	CnP	Enable auto-start with Pump Down operation	-SC	flag	C	0	1	0	
c10	CnP	Select Pump-Down by time or pressure switch	-SC	flag	C	0	1	0	
c11	CnP	Second compressor start delay	-SC	s	C	0	250	4	
d0	dEF	Defrost type (0=elec / temp, 1=H.Gas/temp	-SC	flag	C	0	4	0	
		2=elec / time, 3=hot gas / time...)							
dI	dEF	Interval between defrosts (if not using real time)	-SC	hours	F	0	250	8	24
dt1	dEF	End defrost termperature (if d0= 0 or 1)	-SC	C/F	F	-50	200	4.0	48.0
dt2	dEF	End defrost termperature, aux evap (if selected)	-SC	C/F	F	-50	200	4.0	
dP1	dEF	Maximum defrost duration	-SC	min	F	1	250	30	46
dP2	dEF	Maximum defrost duration, aux evap	-SC	min	F	1	250	30	
d3	dEF	Defrost- delay starting defrost after stopping comp	-SC	min	C	0	250	0	
d4	dEF	Defrost at power up (0 = no, 1 = yes)	-SC	flag	C	0	1	0	

CAREL IR33+

How to set the set point (desired temperature value)

Step	Action	Effect	Meaning
1	Press SET DEF for 1 second	After 1 second the display will show the current set point	This the currently active control set point
2	Press ▲ or AUX ▼	The value on the display will increase or decrease	Set the desired value
3	Press SET DEF	The controller will show the temp.read by the probes again	The set point is modified and saved

Another way of changing the set point is to set parameter "St" (see the tables below)

How to access and set parameters
type "F" (FREQUENT, not protected by password)
type "C" (CONFIGURATION, password protected)

Step	Action	Effect	Meaning
1	Press PRG for 3 seconds	After 3 seconds the display will show the 1st parameter, "0" (Password)	Access to type "F" parameters is direct without password
2	Press ▲ or AUX ▼	The value on the display will increase or decrease.	Enter the password "22" to access the type "C" parameters or whatever different value for the type "F" parameters.
3	Press SET DEF	The display will show "St" (Setpoint)	This is the current value of the Setpoint
4	Press ▲ or AUX ▼	If the password set is 22 the display will scroll the list of type "C" parameters (CONFIGURATION) otherwise the list of type "F" parameters (FREQUENT)	Set the desired value
5	Press SET DEF	The display will show the parameter name	This is the current value of the parameter
6	Press ▲ or AUX ▼	The value on the display will increase or decrease	Set the desired value
7	Press SET DEF	The display will show the parameter name again	IMPORTANT: parameters not yet saved
8	Repeat steps 2, 3, 4 & 5 for all parameters required		
9	Press PRG for 5 seconds	The controller will display the temperature read by the probes again	IMPORTANT: only now have all the parameters been updated

For both types of access (type "F" and type "C") there is a timeout (no button on the keypad pressed for 1 min), the procedure is ended without saving the parameter.

Accessing the parameters divided by functional blocks (allows the user to scroll the list of parameters in blocks)
Once having accessed the type "F" or "C" parameters (see tables above)

Step	Action	Effect	Meaning
1	Press PRG	The display will show the name of the functional block that the parameter belongs to	Example 'CMP' for the compressor parameters, 'dEF' for the defrost parameters
2	Press ▲ or AUX ▼	The display will show the name of the other functional blocks	Example 'Fan' for the fan parameters
3	Press SET DEF	The display will show the name of the first parameter in the functional block selected	Example "F0" for 'Fan'

User terminal
ir33+

R851948
REV: 2

Setpoints, Low Temp, Carel IR33+ controller
JNRZHSA-Cust

Code	Block	Parameter	Mode	Unit	Type	Min.	Max.	Def	New
d5	dEF	Defrost delay on power up (id d4=1)	-SC	min	C	0	250	0	
d6	dEF	Display during def (0=dF (flash),	-SC	-	C	0	2	1	**0**
		1=locked, 2=dEF)							
dd	dEF	Dripping time after defrost	-SC	min	F	0	15	2	**0**
d8	dEF	Bypass alarms after defrost	-SC	hours	F	0	15	1	
d9	dEF	Defrost priority over compressor protectors	-SC	flag	C	0	1	0	
d/1/	dEF	Display defrost probe temp d/1=def P1,	MSC	C/F	F	-	-	-	
/d/2		d/2=def P2							
dC	dEF	Time base for defrost (0=hr/min, 1=min/sec)	-SC	flag	C	0	1	0	
d10	dEF	Compressor run time for demand defrost	-SC	min	C	0	250	0	
d11	dEF	Comp. run time temp set for demand defrost	-SC	C/F	C	-20	20	1.0	
d12	dEF	Advance deforst enable	-SC	-	C	0	3	0	
dn	dEF	Nominal defrost duration (smart defrost)	-SC	-	C	1	100	65	
dH	dEF	Proportional factor for variation in'dl'	-SC	-	C	0	100	50	
		(smart DF)							
A0	ALn	Alarm and fan differential	MSC	C/F	C	0.1	20	2.0	
A1	ALn	Type of alarm for AL and AH (0=relative	MSC	flag	C	0	1	0	
		1=absolute)							
AL	ALn	Low alarm temp (see A1 for abs.or relative)	MSC	C/F	F	-50	200	0.0	**6.0**
AH	ALn	High alarm temp (see A1 for abs.or relative)	MSC	C/F	F	-50	200	0.0	**69.0**
Ad	ALn	Low and High temperature alarm delay	MSC	min	F	0	250	120	
A4	ALn	Configuration of digital input 1	-SC	-	C	0	15	0	
		(Set to 8 if using pressure SW)							
A5	ALn	Configuration of digital input 2	MSC	-	C	0	15	0	
A6	ALn	Duty setting from comp for digital in alarm	-SC	min	C	0	100	0	
A7	ALn	External alarm delay if using digital input	-SC	min	C	0	250	0	
A8	ALn	Enable alarms Ed1 and Ed2	-SC	flag	C	0	1	0	
		(defrost end on time)							
Ado	ALn	door switch light management mode	MSC	flag	C	0	1	0	
Ac	ALn	High condenser temperature alarm set point	-SC	C/F	C	0.0	200	70.0	
AE	ALn	High condenser temp. alarm differential	-SC	C/F	C	0.1	20	10.0	
Acd	ALn	High condenser temperature alarm delay	-SC	min	C	0	250	0	
AF	ALn	Light sensor off time	-SC	s	C	0	250	0	
ALF	ALn	Antifreeze alarm set point	MSC	C/F	C	-50	200	-5	
AdF	ALn	Antifreeze alarm delay	MSC	min	C	0	15	1	
F0	Fan	Fan Management (0= using F2,F3,Fd	---C	flag	C	0	2	0	**2**
		1= amb - evap, 2 = evap temp (St + F1)							
F1	Fan	Fan start temperature	---C	C/F	F	-50	200	5.0	**10.0**
F2	Fan	Fans cycle with compressor (0=no, 1=yes)	---C	flag	C	0	1	1	**0**
F3	Fan	Fans in defrost (0 = on, 1 = off)	---C	flag	C	0	1	1	
F4	Fan	Condensor fan off temperature	MSC	C/F	C	-50	200	40.0	
F5	Fan	Condensor fan differential	MSC	C/F	C	0.1	20	5.0	
Fd	Fan	Fans delay after dripping	---C	min	F	0	15	1	
H0	CnF	Serial address	MSC	-	C	0	207	1	
H1	CnF	Function of relay 4 (0,1=alarm,2=aux,3=light.)	MSC	flag	C	0	11	1	
H2	CnF	Keypad and IR locking	MSC	flag	C	1	6	1	
H3	CnF	Remote control enabling code	MSC	-	C	0	225	0	
H4	CnF	Buzzer (0=enabled, 1=disabled)	MSC	flag	C	0	1	0	
H5	CnF	Function of relay 5 (IR33DIN &	MSC	flag	C	0	11	1	
		PowerCompact)							
H6	CnF	Buttons to lock when keypad locked	MSC	-	C	0	255	0	
H8	CnF	Select output to activate with time band	MSC	flag	C	0	1	0	
HPr	CnF	Print profile	MSC	-	C	0	15	0	
H9	CnF	Enable set point change with time	MSC	flag	C	0	1	0	
Hdn	CnF	number of default parameter sets	MSC	flag	C	0	6	0	

Code	Block	Parameter	Mode	Unit	Type	Min.	Max.	Def	New
Hdh	CnF	Anti-sweat heater control offset	MSC	C/F	C	-50	200	0	
HrL	CnF	Enable remote ind. Of light status	MSC	flag	C	0	1	0	
HrA	CnF	Enable remote ind. Of aux status	MSC	flag	C	0	1	0	
HsA	CnF	Enable alarms on network devices	MSC	flag	C	0	1	0	
In	CnF	Standard control of master or slave	MSC	flag	C	0	6	0	
HAn/HFn	HcP	Number of events HA/HF occurred	MSC	-	C	0	15	-	
HA/HF	HcP	Date/time of most recent HA/HF	MSC	-	C	-	-	-	
y--	HcP	Year	****	years	*	0	99	-	
M--	HcP	Month	****	months	*	1	12	-	
d--	HcP	Day	****	days	*	1	7	-	
h--	HcP	Hour	****	hours	*	0	23	-	
n--	HcP	Minute	****	min	*	0	59	-	
t--	HcP	Duration	****	hours	*	0	99	-	
Htd	HcP	HACCP alarm delay	MSC	min	C	0	250	0	
td1	rtc	defrost time band 1	-SC	-	C	-	-	-	
d--	rtc	Day	****	days	*	0	11	0	**11**
h--	rtc	Hour	****	hours	*	0	23	0	**2**
n--	rtc	Minute	****	min	*	0	59	0	
td2 - td8	rtc	defrost time band 2 / 8	-SC	-	C	-	-	-	
d--	rtc	Day	****	days	*	0	11	0	
h--	rtc	Hour	****	hours	*	0	23	0	
n--	rtc	Minute	****	min	*	0	59	0	
ton	rtc	Light/aux ON time setting	-SC	-	C	-	-	-	
d--	rtc	Day	****	days	*	0	11	0	
h--	rtc	Hour	****	hours	*	0	23	0	
n--	rtc	Minute	****	min	*	0	59	0	
tof	rtc	Light/aux OFF time setting	-SC	-	C	-	-	-	
d--	rtc	Day	****	days	*	0	11	0	
h--	rtc	Hour	****	hours	*	0	23	0	
n--	rtc	Minute	****	min	*	0	59	0	
tc	rtc	RTC date/time setting	MSC	-	C	-	-	-	
y--	rtc	Year	****	years	0	0	99	00	
M--	rtc	Month	****	months	1	1	12	1	
d--	rtc	Day of the month	****	days	1	1	31	1	
u--	rtc	Day of the week	****	days	6	1	7	6	
h--	rtc	Hour	****	hours	0	0.0	23	0	
n--	rtc	Minute	****	min	0	0	59	0	

Code on display	Cause of the alarm	Icon flashing on display	Alarm relay	Buzzer
E0	Probe S1 fault		OFF	OFF
E1	Probe S2 fault		OFF	OFF
E2	Probe S3 fault		OFF	OFF
E3	Probe S4 fault		OFF	OFF
LO	Low temperature alarm		ON	ON
HI	High temperature alarm		ON	ON

R852723
REV: 3

Setpoints, Beverage/Floral, Carel IR33+ controller
JNRBHSA-Cust

By: LWE 02.11.19
ECN 112324

History

Rev	By:	ECN	Date:
2	LWE	112245	01.30.19
1	EJG	97594	10.07.14
0	EJG	96706	01.18.14

Anthony Hillphoenix

Code	Block	Parameter	Mode	Unit	Type	Min.	Max.	Def.	New
/2	Pro	Measurement Stability	MSC	-	C	1	15	4	
/3	Pro	Probe display speed	MSC	-	C	0	15	0	
/4	Pro	Virtual probe	MSC	-	C	0	100	0	
/5	Pro	Select C or F (0=C)	MSC	flag	C	0	1	0	1
/6	Pro	Decimal point (0=decimal point)	MSC	flag	C	0	1	0	1
/tI	Pro	Sensor shown on controller display	MSC	-	C	1	7	1	
/tE	Pro	Sensor shown on remote display	MSC	-	C	0	6	0	
/P	Pro	Type of probes (0=standard Carel NTC)	MSC	-	C	0	2	0	
/A2	Pro	Probe 2 configuration (eg 2=evap, 3=cond)	MSC	-	C	0	4	2	
			-S--	-	C	0	4	0	
/A3	Pro	Probe 3 configuration (eg 2=evap, 3-cond)	MSC	-	C	0	4	0	
/A4	Pro	Probe 4 configuration (eg 0=absent, 2=evap, 3-cond)	MSC	-	C	0	4	0	
/c1	Pro	Calibration of probe 1	MSC	C/F	C	-20	20	0.0	
/c2-4	Pro	Calibration of probe 2-4 (c2=probe 2, c3=probe 3...)	MSC	C/F	C	-20	20	0.0	
St	Ctl	temperature set point	MSC	C/F	F	r1	r2	0.0	35.0
rd	Ctl	Controller differential	-SC	C/F	F	0.1	20	2	6
m	Ctl	Dead Zone (when used 1 Heat 1 Cool)	-SC	C/F	C	0	60	4	
rr	Ctl	Reverse (heat) diff in dead zone control	-SC	C/F	C	0.1	20	2	
r1	Ctl	Minimum Set Point allowed	MSC	C/F	C	-50	r2	-50	25.0
r2	Ctl	Maximum Set Point allowed	MSC	C/F	C	r1	200	60	80.0
r3	Ctl	Mode 0=cool with defrost, 1=cool only, 2=heating	-SC	flag	C	0	2	0	
r4	Ctl	Value to alter Set Point from Digital Input	MSC	C/F	C	-20	20	3.0	
r5	Ctl	Enable temperature monitoring	MSC	flag	C	0	1	0	
rt	Ctl	Temperature monitoring interval	MSC	hours	F	0	999	-	
rH	Ctl	Max temperature recorded during period rt	MSC	C/F	F	-	-	-	
rL	Ctl	Min temperature recorded during period rt	MSC	C/F	F	-	-	-	
c0	CnP	Comp and fan start delay at power up	-SC	min	C	0	15	0	
c1	CnP	Minimum time between 2 comp starts	-SC	min	C	0	15	0	2
c2	CnP	Minimum compressor OFF time	-SC	min	C	0	15	0	
c3	CnP	Minimum compressor ON time	-SC	min	C	0	15	0	
c4	CnP	Duty setting	-SC	min	C	0	100	0	
c5	CnP	Duration of continuous cycle	-SC	hours	C	0	15	0	
c6	CnP	Alarm bypass after continuous cycle	-SC	hours	C	0	15	2	
c7	CnP	Maximum Pump-Down (PD) time	-SC	sec	C	0	900	0	
c8	CnP	Comp start delay after opening Pump Down valve	-SC	sec	C	0	60	5	
c9	CnP	Enable auto-start with Pump Down operation	-SC	flag	C	0	1	0	
c10	CnP	Select Pump-Down by time or pressure switch	-SC	flag	C	0	1	0	
c11	CnP	Second compressor start delay	-SC	s	C	0	250	4	
d0	dEF	Defrost type (0=elec / temp, 1=H.Gas/temp	-SC	flag	C	0	4	0	
		2=elec / time, 3=hot gas / time…)							
dI	dEF	Interval between defrosts (if not using real time)	-SC	hours	F	0	250	8	12
dt1	dEF	End defrost termperature (if d0= 0 or 1)	-SC	C/F	F	-50	200	4.0	44.0
dt2	dEF	End defrost termperature, aux evap (if selected)	-SC	C/F	F	-50	200	4.0	
dP1	dEF	Maximum defrost duration	-SC	min	F	1	250	30	46
dP2	dEF	Maximum defrost duration, aux evap	-SC	min	F	1	250	30	
d3	dEF	Defrost- delay starting defrost after stopping comp	-SC	min	C	0	250	0	
d4	dEF	Defrost at power up (0 = no, 1 = yes)	-SC	flag	C	0	1	0	

CAREL IR33+

How to set the set point (desired temperature value)

Step	Action	Effect	Meaning
1	Press SET DEF for 1 second	After 1 second the display will show the current set point	This the currently active control set point
2	Press ▲ or AUX ▼	The value on the display will increase or decrease	Set the desired value
3	Press SET DEF	The controller will show the temp.read by the probes again	The set point is modified and saved

Another way of changing the set point is to set parameter "St" (see the tables below)

How to access and set parameters
type "F" (FREQUENT, not protected by password)
type "C" (CONFIGURATION, password protected)

Step	Action	Effect	Meaning
1	Press PRG for 3 seconds	After 3 seconds the display will show the 1st parameter, "0" (Password)	Access to type "F" parameters is direct without password
2	Press ▲ or AUX ▼	The value on the display will increase or decrease.	Enter the password "22" to access the type "C" parameters or whatever different value for the type "F" parameters.
3	Press SET DEF	The display will show "St" (Setpoint)	This is the current value of the Setpoint
4	Press ▲ or AUX ▼	If the password set is 22 the display will scroll the list of type "C" parameters (CONFIGURATION) otherwise the list of type "F" parameters (FREQUENT)	Set the desired value
5	Press SET DEF	The display will show the parameter name	This is the current value of the parameter
6	Press ▲ or AUX ▼	The value on the display will increase or decrease	Set the desired value
7	Press SET DEF	The display will show the parameter name again	IMPORTANT: parameters not yet saved
8	Repeat steps 2, 3, 4 & 5 for all parameters required		
9	Press PRG for 5 seconds	The controller will display the temperature read by the probes again	IMPORTANT: only now have all the parameters been updated

For both types of access (type "F" and type "C") there is a timeout (no button on the keypad pressed for 1 min), the procedure is ended without saving the parameter.

Accessing the parameters divided by functional blocks (allows the user to scroll the list of parameters in blocks)
Once having accessed the type "F" or "C" parameters (see tables above)

Step	Action	Effect	Meaning
1	Press PRG	The display will show the name of the functional block that the parameter belongs to	Example 'CMP' for the compressor parameters, 'dEF' for the defrost parameters
2	Press ▲ or AUX ▼	The display will show the name of the other functional blocks	Example 'Fan' for the fan parameters
3	Press SET DEF	The display will show the name of the first parameter in the functional block selected	Example "F0" for 'Fan'

User terminal
ir33+

R852723
REV: 3

Setpoints, Beverage/Floral, Carel IR33+ controller
JNRBHSA-Cust

Code	Block	Parameter	Mode	Unit	Type	Min.	Max.	Def	New
d5	dEF	Defrost delay on power up (id d4=1)	-SC	min	C	0	250	0	
d6	dEF	Display during def (0=dF (flash),	-SC	-	C	0	2	1	**0**
		1=locked, 2=dEF)							
dd	dEF	Dripping time after defrost	-SC	min	F	0	15	2	**0**
d8	dEF	Bypass alarms after defrost	-SC	hours	F	0	15	1	
d9	dEF	Defrost priority over compressor protectors	-SC	flag	C	0	1	0	
d/1/	dEF	Display defrost probe temp d/1=def P1,	MSC	C/F	F	-	-	-	
/d/2		d/2=def P2							
dC	dEF	Time base for defrost (0=hr/min, 1=min/sec)	-SC	flag	C	0	1	0	
d10	dEF	Compressor run time for demand defrost	-SC	min	C	0	250	0	
d11	dEF	Comp. run time temp set for demand defrost	-SC	C/F	C	-20	20	1.0	
d12	dEF	Advance deforst enable	-SC	-	C	0	3	0	
dn	dEF	Nominal defrost duration (smart defrost)	-SC	-	C	1	100	65	
dH	dEF	Proportional factor for variation in'dI'	-SC	-	C	0	100	50	
		(smart DF)							
A0	ALn	Alarm and fan differential	MSC	C/F	C	0.1	20	2.0	
A1	ALn	Type of alarm for AL and AH (0=relative	MSC	flag	C	0	1	0	
		1=absolute)							
AL	ALn	Low alarm temp (see A1 for abs.or relative)	MSC	C/F	F	-50	200	0.0	**6.0**
AH	ALn	High alarm temp (see A1 for abs.or relative)	MSC	C/F	F	-50	200	0.0	**25.0**
Ad	ALn	Low and High temperature alarm delay	MSC	min	F	0	250	120	
A4	ALn	Configuration of digital input 1	-SC	-	C	0	15	0	
		(Set to 8 if using pressure SW)							
A5	ALn	Configuration of digital input 2	MSC	-	C	0	15	0	
A6	ALn	Duty setting from comp for digital in alarm	-SC	min	C	0	100	0	
A7	ALn	External alarm delay if using digital input	-SC	min	C	0	250	0	
A8	ALn	Enable alarms Ed1 and Ed2	-SC	flag	C	0	1	0	
		(defrost end on time)							
Ado	ALn	door switch light management mode	MSC	flag	C	0	1	0	
Ac	ALn	High condenser temperature alarm set point	-SC	C/F	C	0.0	200	70.0	
AE	ALn	High condenser temp. alarm differential	-SC	C/F	C	0.1	20	10.0	
Acd	ALn	High condenser temperature alarm delay	-SC	min	C	0	250	0	
AF	ALn	Light sensor off time	-SC	s	C	0	250	0	
ALF	ALn	Antifreeze alarm set point	MSC	C/F	C	-50	200	-5	
AdF	ALn	Antifreeze alarm delay	MSC	min	C	0	15	1	
F0	Fan	Fan Management (0= using F2,F3,Fd	---C	flag	C	0	2	0	**0**
		1= amb - evap, 2 = evap temp (St + F1)							
F1	Fan	Fan start temperature	---C	C/F	F	-50	200	5.0	**5.0**
F2	Fan	Fans cycle with compressor (0=no, 1=yes)	---C	flag	C	0	1	1	**0**
F3	Fan	Fans in defrost (0 = on, 1 = off)	---C	flag	C	0	1	1	**0**
F4	Fan	Condensor fan off temperature	MSC	C/F	C	-50	200	40.0	
F5	Fan	Condensor fan differential	MSC	C/F	C	0.1	20	5.0	
Fd	Fan	Fans delay after dripping	---C	min	F	0	15	1	
H0	CnF	Serial address	MSC	-	C	0	207	1	
H1	CnF	Function of relay 4 (0,1=alarm,2=aux,3=light.)	MSC	flag	C	0	11	1	
H2	CnF	Keypad and IR locking	MSC	flag	C	1	6	1	
H3	CnF	Remote control enabling code	MSC	-	C	0	225	0	
H4	CnF	Buzzer (0=enabled, 1=disabled)	MSC	flag	C	0	1	0	
H5	CnF	Function of relay 5 (IR33DIN &	MSC	flag	C	0	11	1	
		PowerCompact)							
H6	CnF	Buttons to lock when keypad locked	MSC	-	C	0	255	0	
H8	CnF	Select output to activate with time band	MSC	flag	C	0	1	0	
HPr	CnF	Print profile	MSC	-	C	0	15	0	
H9	CnF	Enable set point change with time	MSC	flag	C	0	1	0	
Hdn	CnF	number of default parameter sets	MSC	flag	C	0	6	0	

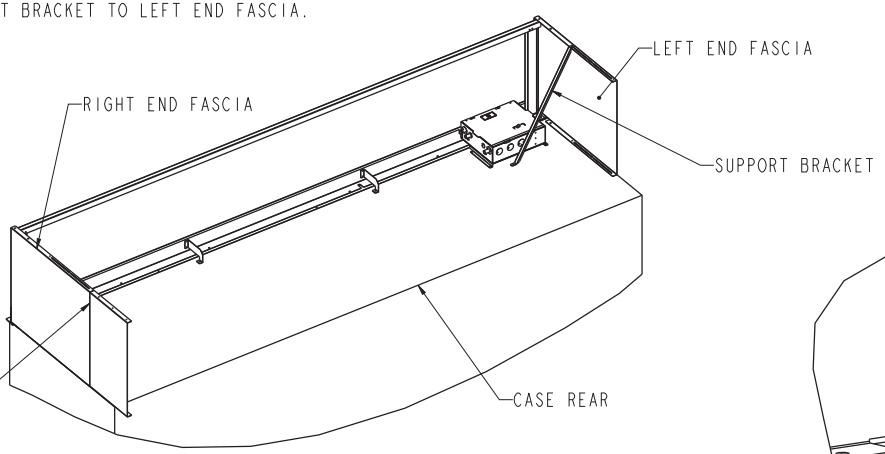
Code	Block	Parameter	Mode	Unit	Type	Min.	Max.	Def	New
Hdh	CnF	Anti-sweat heater control offset	MSC	C/F	C	-50	200	0	
HrL	CnF	Enable remote ind. Of light status	MSC	flag	C	0	1	0	
HrA	CnF	Enable remote ind. Of aux status	MSC	flag	C	0	1	0	
HsA	CnF	Enable alarms on network devices	MSC	flag	C	0	1	0	
In	CnF	Standard control of master or slave	MSC	flag	C	0	6	0	
HAn/HFn	HcP	Number of events HA/HF occurred	MSC	-	C	0	15	-	
HA/HF	HcP	Date/time of most recent HA/HF	MSC	-	C	-	-	-	

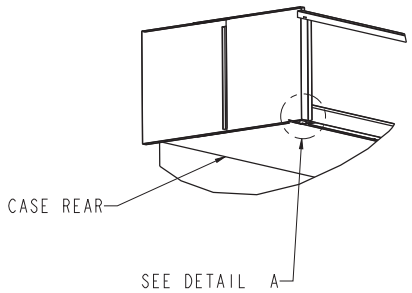
Code on display	Cause of the alarm	Icon flashing on display	Alarm relay	Buzzer
E0	Probe S1 fault	PRG	OFF	OFF
E1	Probe S2 fault	PRG	OFF	OFF
E2	Probe S3 fault	PRG	OFF	OFF
E3	Probe S4 fault	PRG	OFF	OFF
LO	Low temperature alarm	PRG	ON	ON
HI	High temperature alarm	PRG	ON	ON

NAME:GOKULKRI OBJECT:R884182 DATE:01/11/19 11:38:10

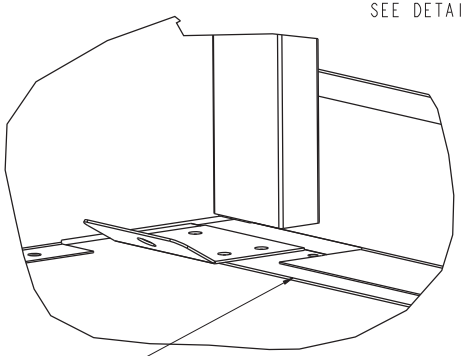
NOTE: THIS SHIPPED-LOOSE FASCIA FRAMEWORK INSTALL DIRECTION APPLICABLE TO CERTAIN BUILDS ONLY. REQUIRES CUSTOMER SUPPLIED SIGNAGE TO COMPLETE THE FASCIA.

1. ALIGN END FASCIA PANELS WITH CASE ENDS AND FORWARD AGAINST DOOR FRAME SUPPORT FLANGE PER "DETAL A" AND ATTACH TO TOP OF CASE WITH SCREWS.
ADD SUPPORT BRACKET TO LEFT END FASCIA.





ADJUSTABLE END FASCIA PANELS:
REAR PANEL FITS INSIDE FRONT.
SLIDE INNER PANEL FORWARD OR BACKWARD TO FIT NEED.
LEFT AND RIGHT REAR PANELS ARE THE SAME PART#.



DETAIL A
SCALE 1.000

DEBURR ALL SHARP EDGES

REV	DATE	ECN NO.	R/	DESCRIPTION
BY	01/10/19	112025	X	RELEASED TO PRODUCTION

ALL BENDS 90° UNLESS SPECIFIED
UNITS: INCH [MM]
TOLERANCES: (UNLESS SPECIFIED)
ALL ANGLES ±1°
DIMENSIONS ON FLAT VIEWS ±.010
DIMENSIONS ON FORMED VIEWS ±.03
DRAWING NOT TO SCALE

SUFFIX: N/A
TYPE: N/A
THICKNESS: N/A
FINISH: N/A

Hillphoenix
Display Cases
1925 Ruffin Mill Road
Colonial Heights, VA 23834
(804) 526-4455

PART NUMBER: R884182

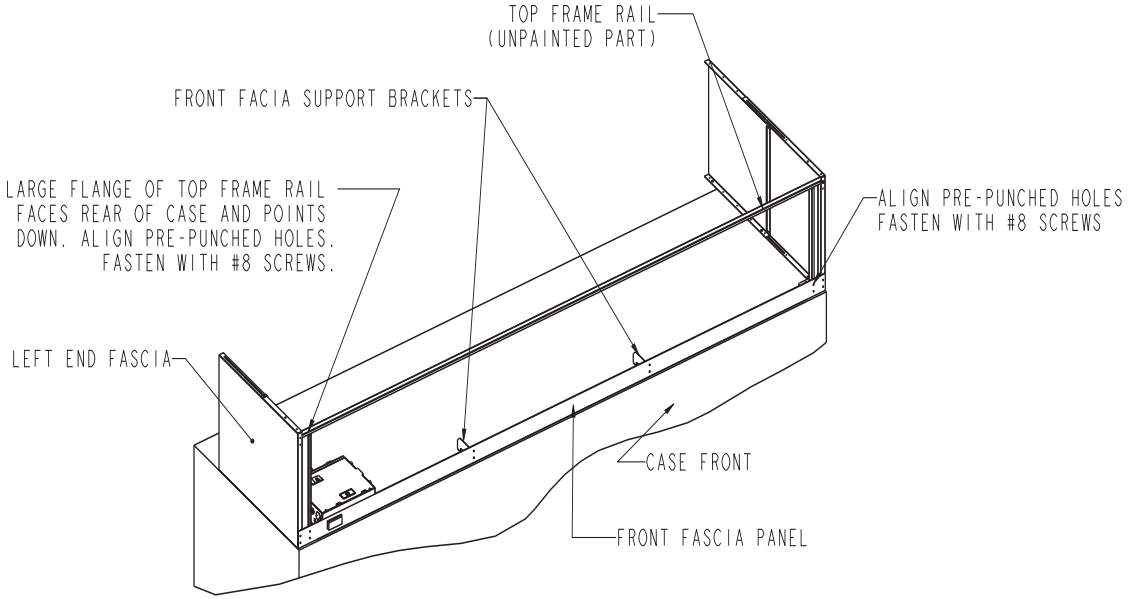
PART DESCRIPTION: REF,AS,FAC,FRMWRK

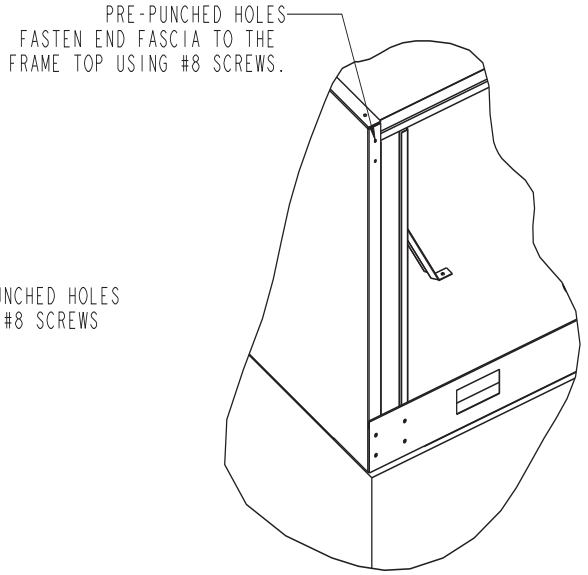
DRAWN BY: HT DATE: 01/10/19

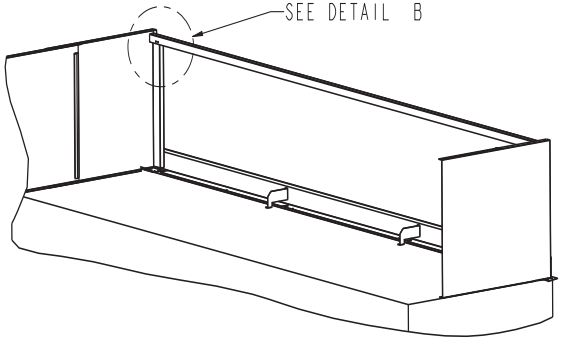
SHEET: 1 OF 4

INFORMATION SHOWN IS PROPRIETARY AND CONFIDENTIAL. DUPLICATION AND USE IS PROHIBITED WITHOUT PERMISSION FROM HILLPHOENIX

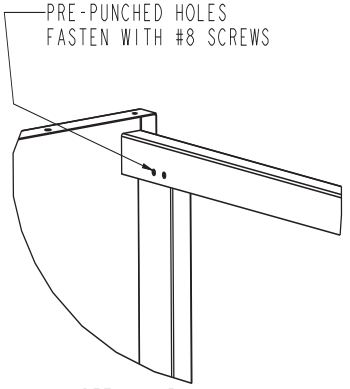
(2) ATTACH FRONT FASCIA PANEL AND TOP FRAME RAIL TO LEFT AND RIGHT END FASCIAS PER ISO, "DETAIL B", AND "DETAIL C". INSTALL FRONT FASCIA SUPPORT BRACKETS AS REQUIRED.







SCALE 0.100



DETAIL B
SCALE 0.500

Hillphoenix Display Cases 1925 Ruffin Mill Road Colonial Heights, VA 23834 (804) 526-4455		R884182
REF,AS,FAC,FRMWRK		
DRAWN BY: HT	DATE: 01/10/19	SHEET: 2 OF 4

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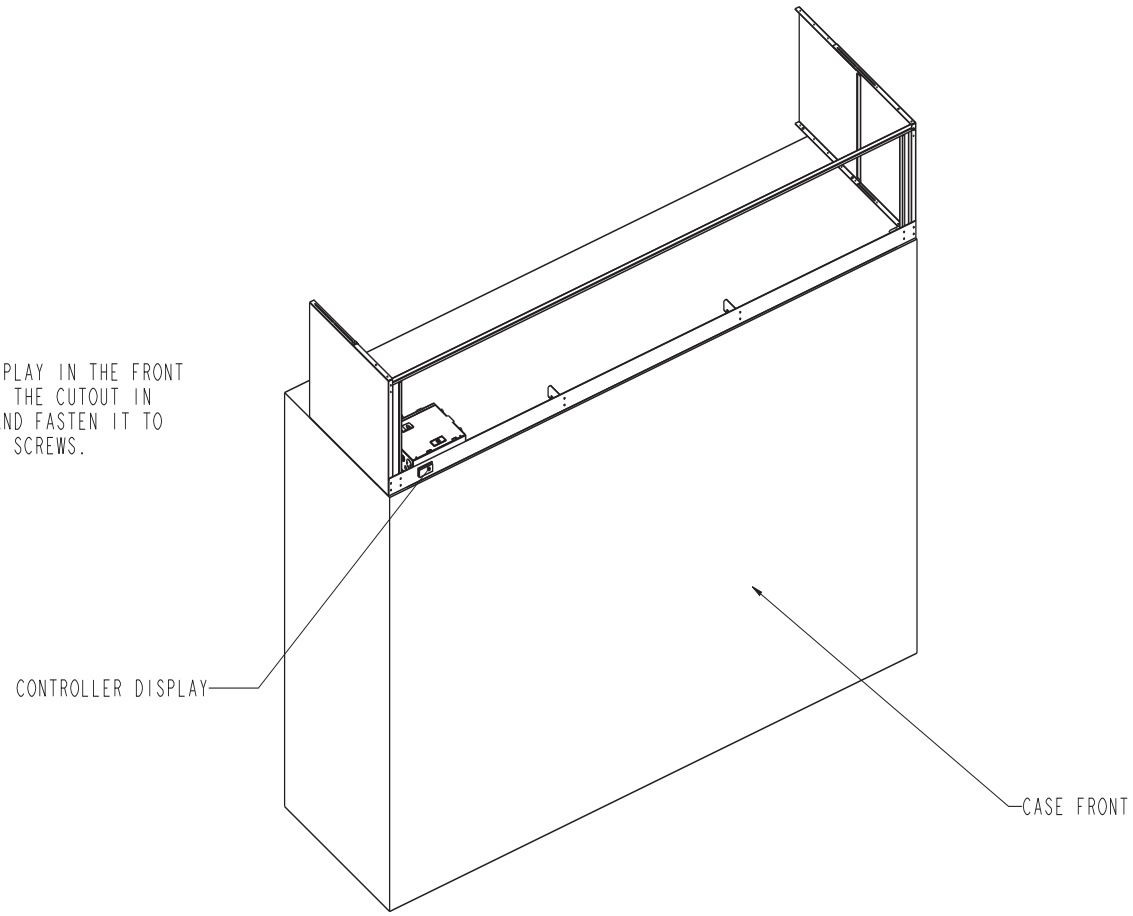
(3) RELOCATE JUNCTION BOX, INSTALL CORD, RACEWAY COVER, AND CONNECT DOOR FRAME ELECTRICAL AS SHOWN IN "DETAIL C".
(LEFT END FASCIA PANEL AND SUPPORT BRACKET REMOVED FOR CLARITY)

ALIGN THE CONTROLLER DISPLAY IN THE FRONT OF THE JUNCTION BOX WITH THE CUTOUT IN THE FRONT FASCIA PANEL AND FASTEN IT TO THE TOP OF THE CASE WITH SCREWS.



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REF,AS,FAC,FRMWRK

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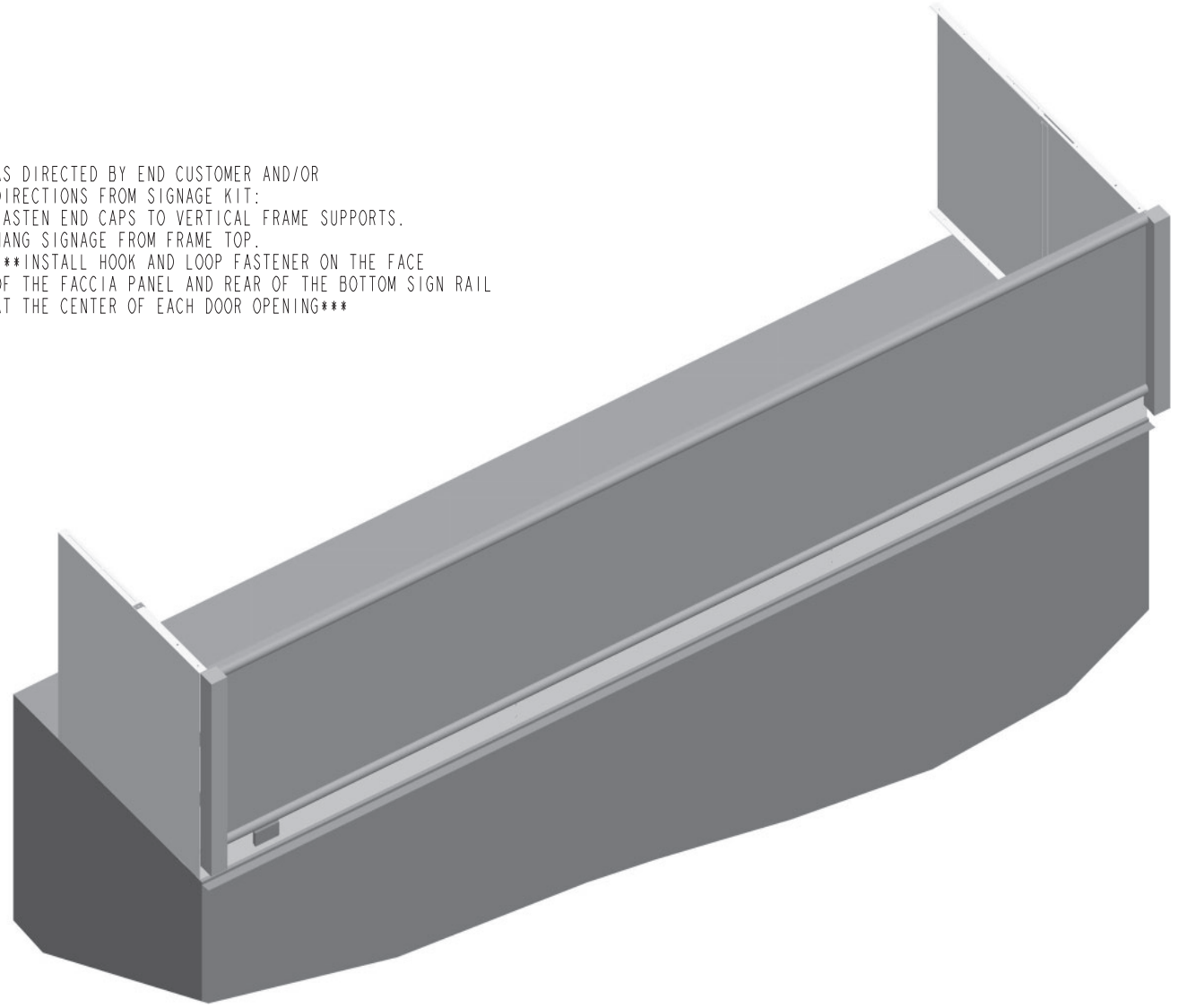
(4) AS DIRECTED BY END CUSTOMER AND/OR
DIRECTIONS FROM SIGNAGE KIT:
FASTEN END CAPS TO VERTICAL FRAME SUPPORTS.
HANG SIGNAGE FROM FRAME TOP.
***INSTALL HOOK AND LOOP FASTENER ON THE FACE
OF THE FACCIA PANEL AND REAR OF THE BOTTOM SIGN RAIL
AT THE CENTER OF EACH DOOR OPENING***



SCALE 0.200

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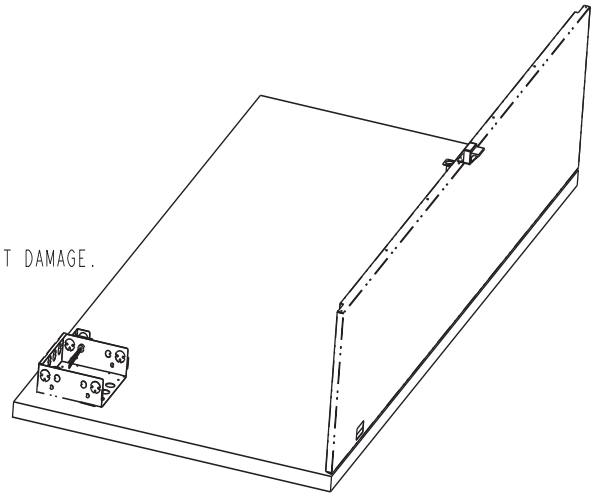
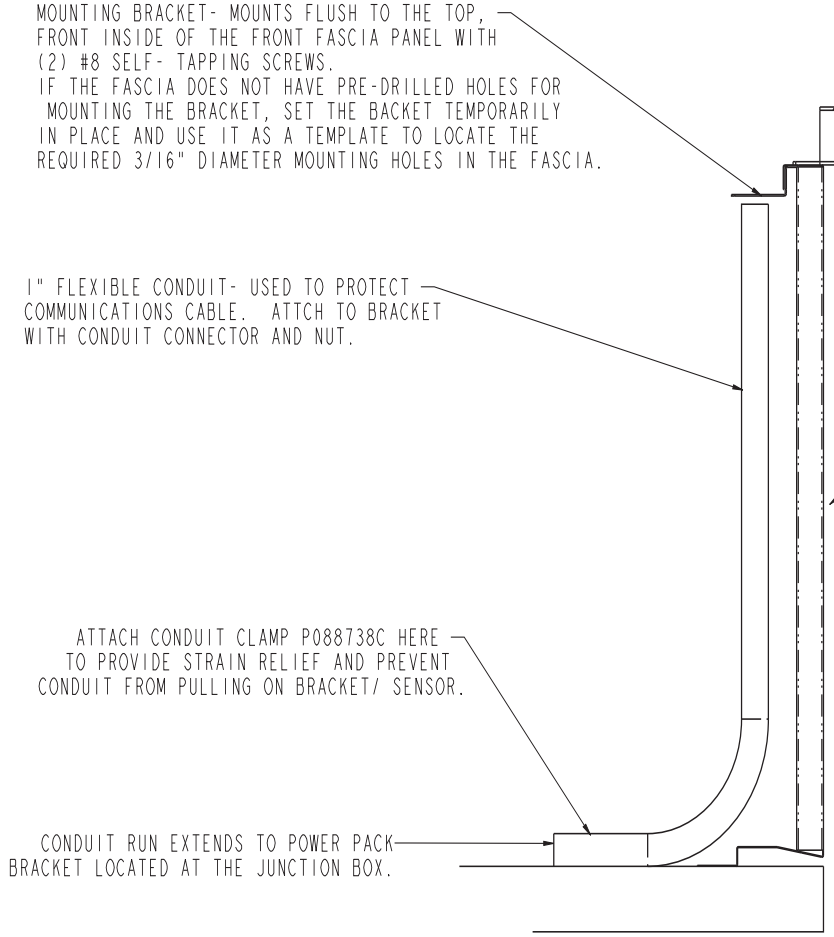
G5: FASCIA FRAME (OPTIONAL MOTION SENSOR INSTALLATION)

NAME:DERWOODDEL OBJECT:R876632 DATE:06/20/17 15:27:01



ISOMETRIC VIEW
FOR REFERENCE ONLY



LEFT VIEW

DEBURR ALL SHARP EDGES

REV	BY	DATE	ECN NO.	R/	DESCRIPTION
DSD		06/20/17	108302	2	ADDED MOUNTING INFO TO NOTES.
DSD		05/02/17	107846	1	UPDATED NOTES.
REV	BY	03/21/17	107418	X	RELEASED TO PRODUCTION

ALL BENDS 90° UNLESS SPECIFIED
UNITS: INCH [MM]
TOLERANCES: (UNLESS SPECIFIED)
ALL ANGLES ±1°
DIMENSIONS ON FLAT VIEWS ±.010
DIMENSIONS ON FORMED VIEWS ±.03
DRAWING NOT TO SCALE

SUFFIX: N/A
TYPE: N/A
THICKNESS: N/A
FINISH:

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PART NUMBER: R876632

PART DESCRIPTION: REF,AS,TP MTD OCCUPANCY SENSOR,JNR

DRAWN BY: DSD DATE: 03/21/17

SHEET: 1 OF 2

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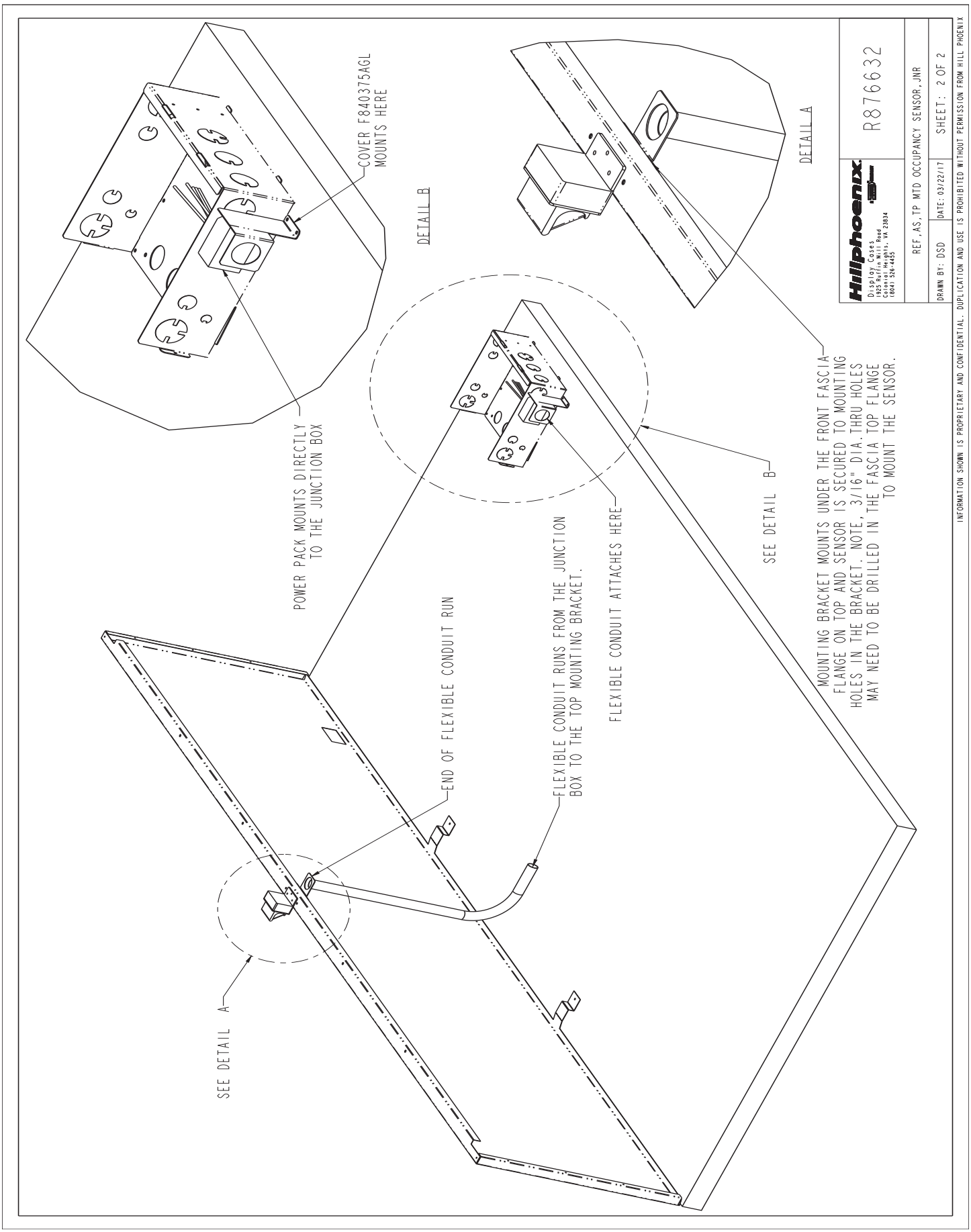
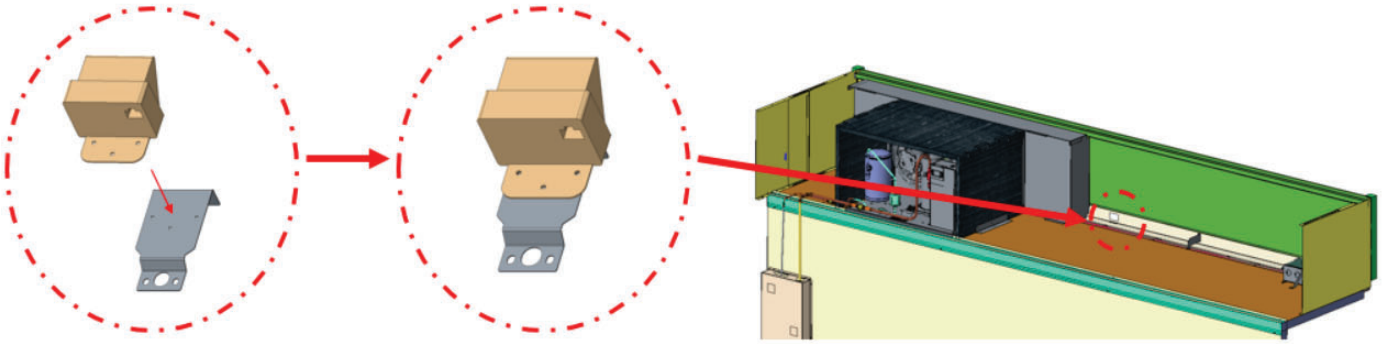
G6: FASCIA FRAME (OPTIONAL MOTION SENSOR INSTALLATION)

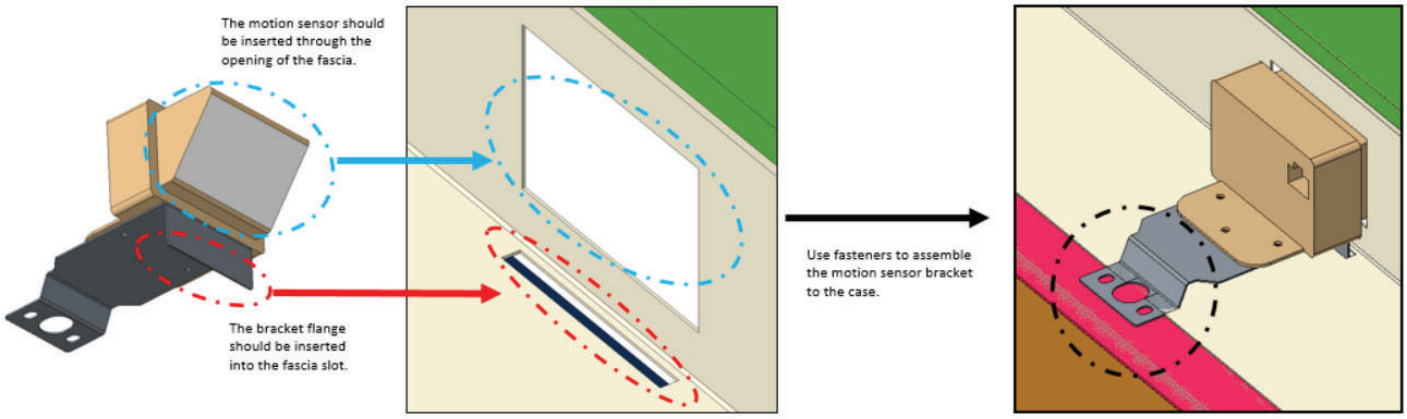


G7: FASCIA FRAME (OPTIONAL MOTION SENSOR INSTALLATION)

1. Use fasteners to assemble the motion sensor to the bracket, and then install the subassembly into the case fascia.

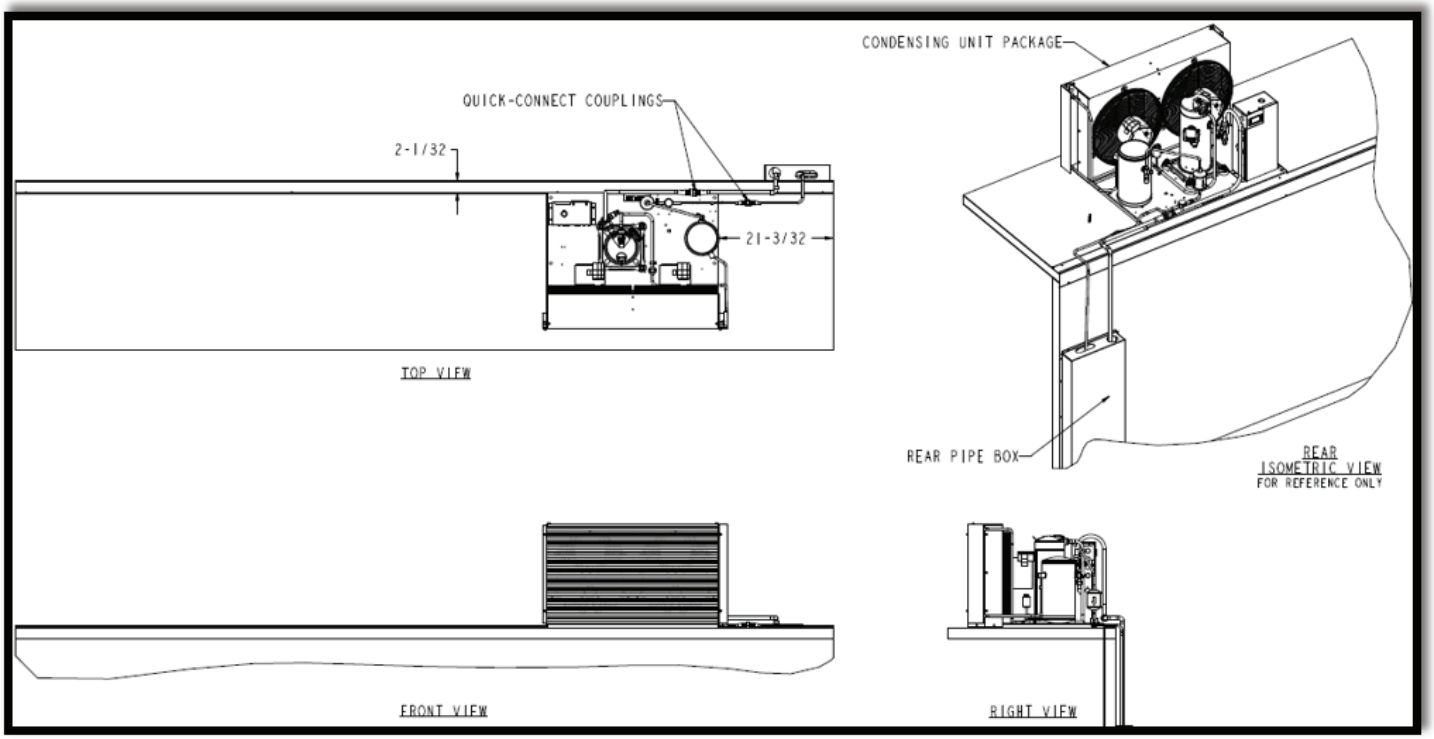


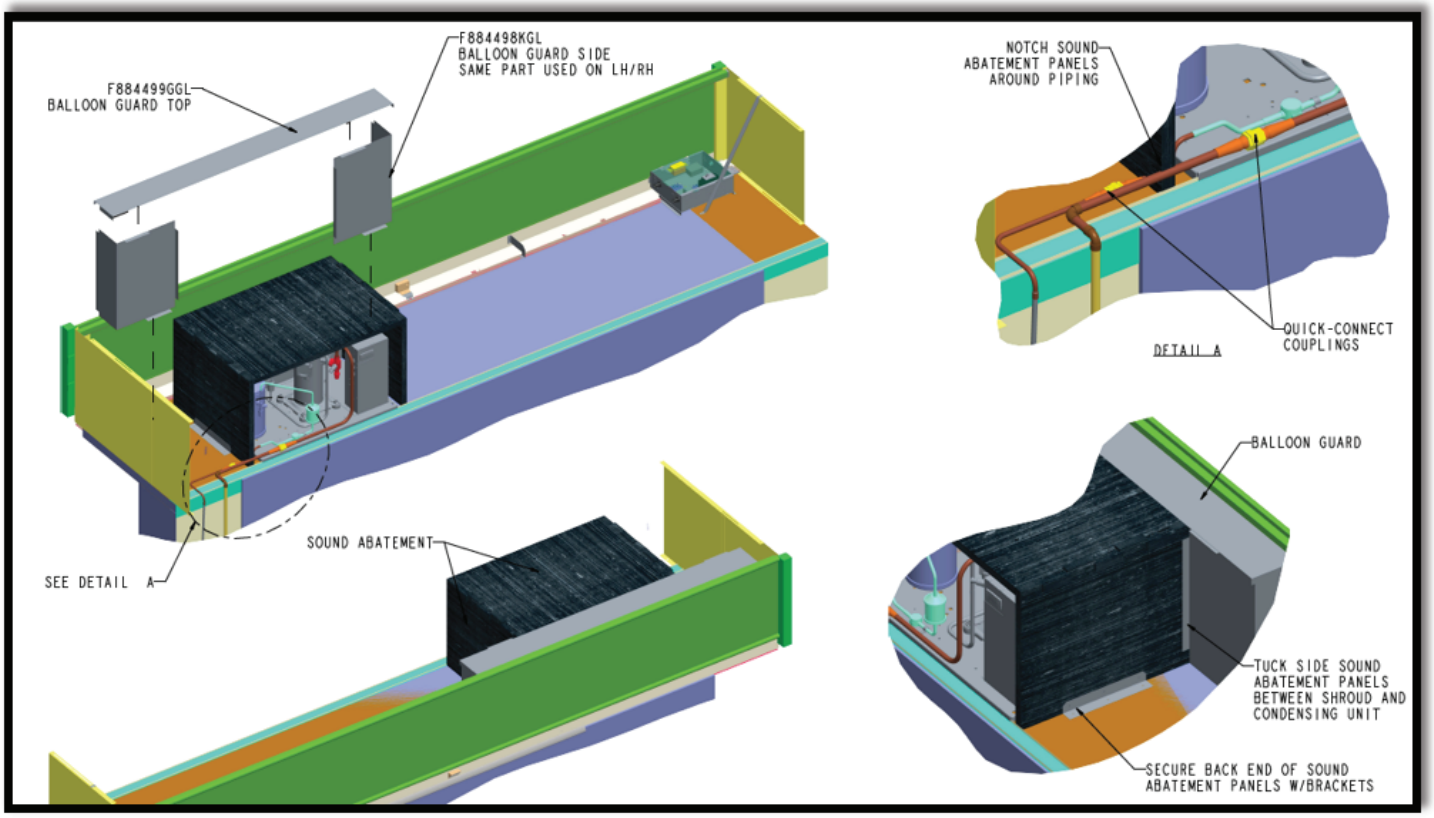
2. Install the motion sensor/bracket subassembly into the fascia.



3. Connect cable to motion sensor and to controller.

G8: FASCIA FRAME (JNRZHSA-5 BALLOON GUARD INSTALLATION)

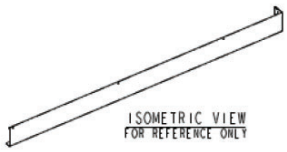




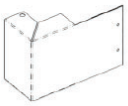
H1: END TO WALL CLOSE-OFF PANELS

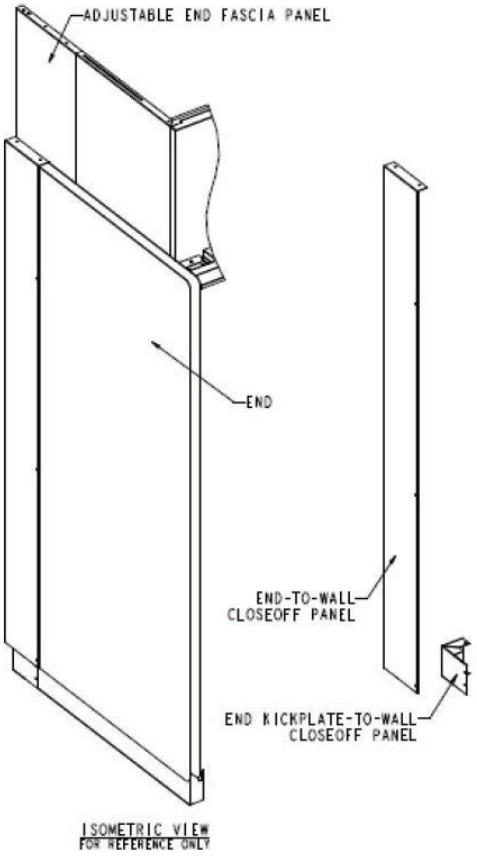
If ordered, the 4 shipped-loose items, trims from the ends of the case to the wall behind.

Close-off panel: Insulated End to Wall Right Hand shown. Nominal 77” Height. Hemmed top rests on top of insulated end panel. Slide back to close any gaps to the wall behind. Fasten with #8 screws at holes provided.



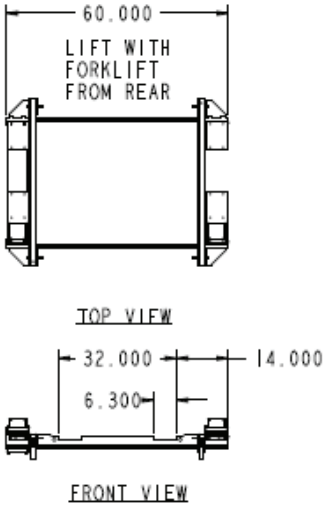
Close-off panel: End kick-plate to Wall. Nominal 7” x 5” x 3” (same part right / left).



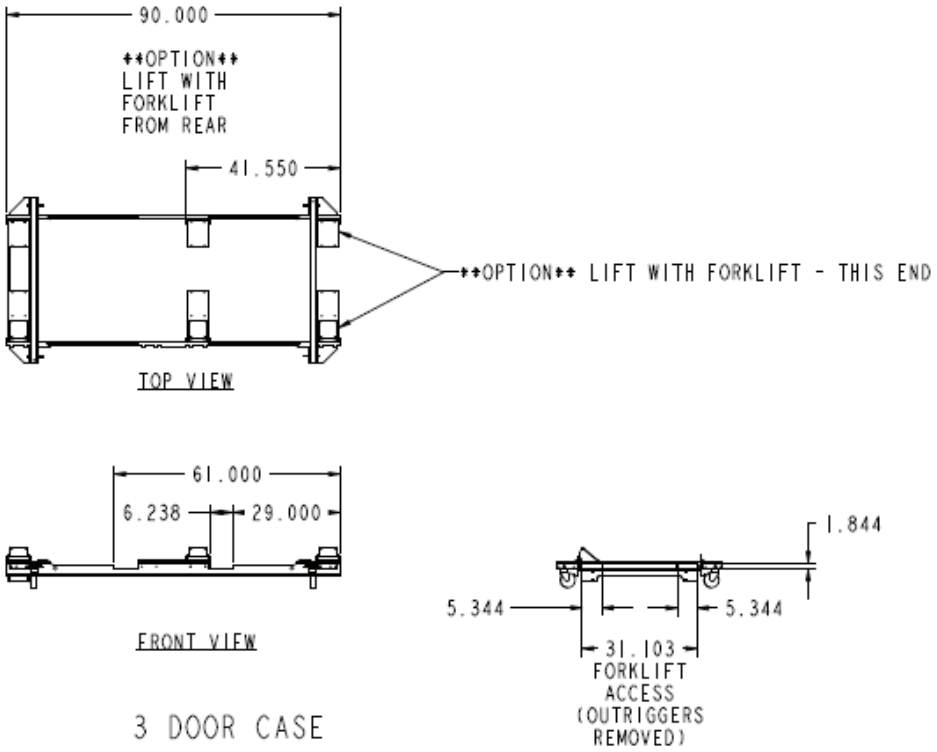


I1: CASE LIFTING LOCATIONS

Base Frame Lifting Locations for Forklift – JNRBHSA/JNRZHSA



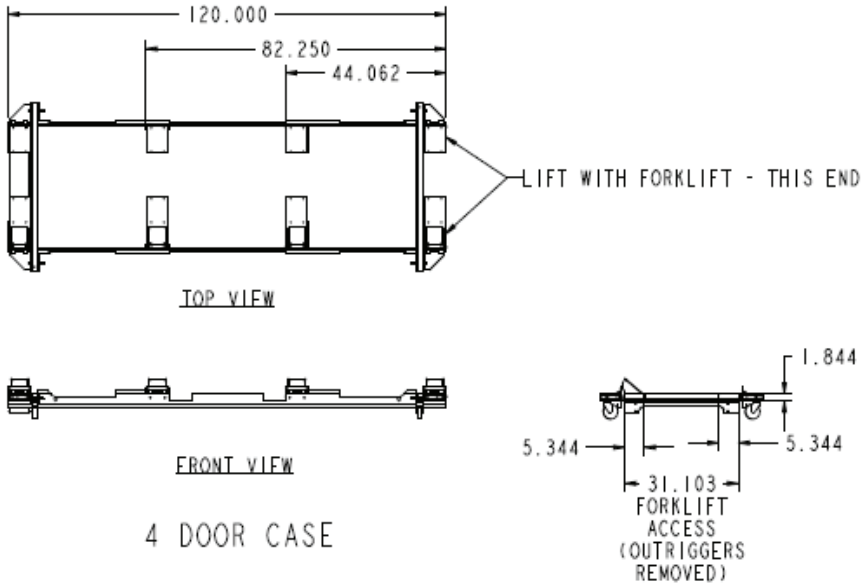
2 DOOR CASE



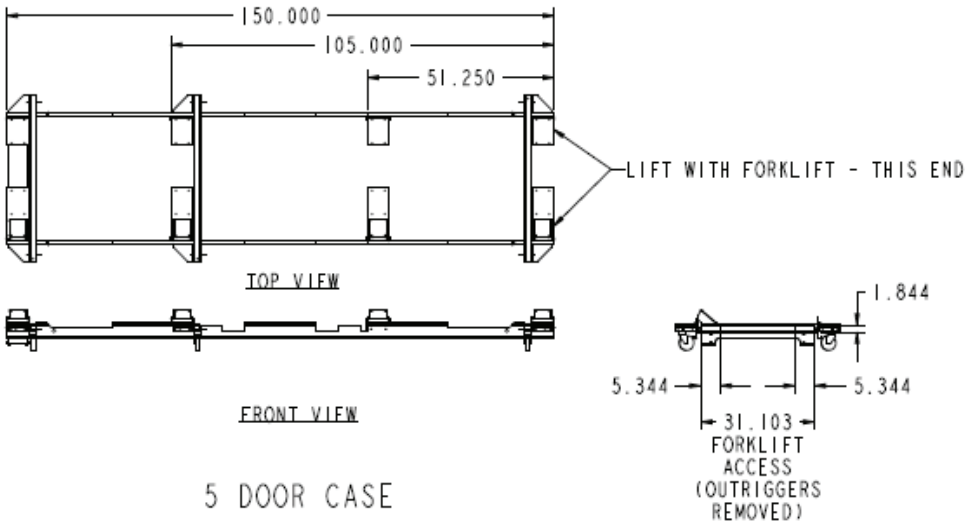
3 DOOR CASE

I2: CASE LIFTING LOCATIONS

Base Frame Lifting Locations for Forklift – JNRBHSA/JNRZHSA



4 DOOR CASE



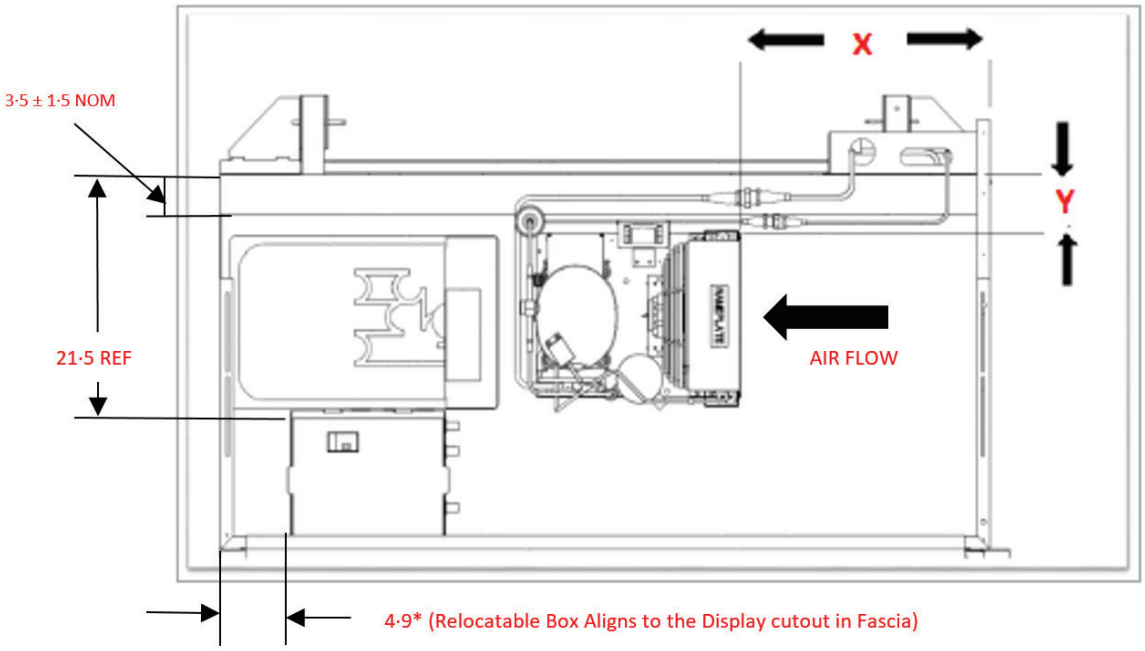
5 DOOR CASE

J1: CONDENSING UNIT LOCATIONS

- 2DR - 5DR JNRBHSA
- 2DR - 4DR JNRZHSA

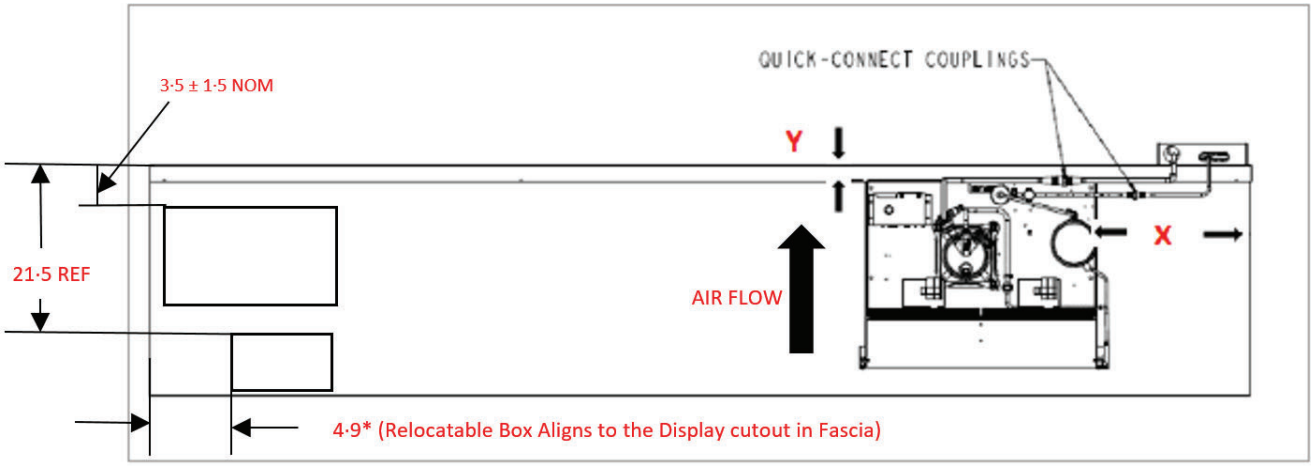
		X dimension	Y dimension
JNRBHSA	2	19.5	4.5
	3	33.4	4.5
	4	48.3	4.5
	5	21	4.5

JNRZHSA	2	19.5	5.5
	3	33.4	4.5
	4	48.3	4.5



- 5 JNRZHSA

JNRZHSA	5	21.1	2



Warning
Maintenance & Case Care

When cleaning cases the following must be performed PRIOR to cleaning:

To avoid electrical shock, be sure all electric power is turned off before cleaning. In some installations, more than one switch may have to be turned off to completely de-energize the case.

Do not spray cleaning solution or water directly on fan motors or any electrical connections.

All lighting receptacles must be dried off prior to insertion and re-energizing the lighting circuit.

Please refer to the Use and Maintenance section of this installation manual.

Hillphoenix®
A DOVER™ COMPANY

Tel: 1-800-283-1109

1925 Ruffin Mill Rd, Colonial Heights, VA 23834
Due to our commitment to continuous improvement, all specifications are subject to change without notice.
Hillphoenix is a Sustaining Member of the American Society of Quality.
Visit our website at www.hillphoenix.com

Hillphoenix

A DOVER COMPANY

Hill PHOENIX, Inc.
Hereinafter Referred To As Manufacturer

LIMITED WARRANTY

GENERAL WARRANTY

Manufacturer's products are warranted to be free from defects in materials and workmanship under normal use and maintenance for fourteen months from date of shipment from manufacturer (the "Base Warranty Period"). In the event of a qualifying warranty claim, a new or rebuilt part to replace any defective part will be provided without charge. The replacement part is covered under this warranty for the remainder of the applicable Base Warranty Period. In order to be eligible for warranty coverage, customer must: (i) notify Manufacturer promptly upon discovery of a warrant defect, and (ii) comply with the warranty claim procedures provided by Manufacturer from time to time.

This equipment warranty does not include labor or other costs incurred for diagnosing, repairing, removing, installing, shipping, servicing, or handling of either defective parts or replacement parts.

The warranty shall not apply:

1. To any unit or any part thereof which has been subject to accident, alteration, negligence, misuse or abuse, or which has not been operated in accordance with the manufacturer's recommendations, or in conditions outside of Manufacturer's specifications, or if the serial number of the unit has been altered, defaced, or removed.
2. When the unit, or any part thereof, is damaged by fire, flood, or other act of God.
3. To products that are impaired or damaged due to improper installation.
4. When installation and startup forms are not properly completed or returned within two weeks after startup.
5. If the defective part is not returned to the Manufacturer.
6. To service, maintenance or wear and tear parts (such as lights, starters and ballasts)

MODIFICATIONS TO GENERAL WARRANTY

The following sets forth certain modifications to the General Warranty for specific products of Manufacturer:

DISPLAY CASE AND SPECIALTY PRODUCTS CLEARVOYANT® LED LIGHTING

The warranty period for Clearvoyant LED lighting components within the Clearvoyant lighting system is five years from date of shipment.

REMEDY LIMITATION/DAMAGES EXCLUSION

THE REMEDY OF REPAIR OR PROVISION OF A REPLACEMENT PART WITHOUT CHARGE SHALL BE THE EXCLUSIVE REMEDY FOR ANY WARRANTY CLAIM HEREUNDER. WITHOUT LIMITING THE FOREGOING, MANUFACTURER SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING LOSS OF PROFIT, LABOR COST, LOSS OF REFRIGERANT OR FOOD PRODUCTS.

EXCLUSIVE WARRANTY

THE FOREGOING WARRANTY IS THE EXCLUSIVE WARRANTY WITH RESPECT TO THE PRODUCTS. ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED AND EXCLUDED. NO IMPLIED WARRANTY SHALL BE DEEMED CREATED BY COURSE OF DEALING OR USAGE OF TRADE. NO OTHER PERSON IS AUTHORIZED TO EXPAND OR CREATE ANY OBLIGATION GREATER THAN OR MORE EXPANSIVE THAN THE WARRANTY PROVIDED HEREIN.

Submit warranty claims to:

Hillphoenix Refrigeration & Power Systems Division
2016 Gees Mill Road
Conyers, GA 30013
Att'n: Tom Bradshaw
Phone: 770-285-3267
tom.bradshaw@hillphoenix.com

Hillphoenix Display Case Division
1925 Ruffin Mill Road
Colonial Heights, VA 23834
Att'n: Harry Moy
Phone: 804-614-1457
harrymoy@hillphoenix.com

Hillphoenix Specialty Products Division
703 Franklin Street
Keosauqua, IA 52565
Attn Jake Bair
Phone: 319-293-8551
jake.bair@hillphoenix.com