

HUSSMANN[®]/CHINO

R3H, R3HTO, R3HA,

R3 COMBO, R3H-HF

HOT TOP W/SELF

SERVICE HEAT OR

REFRIGERATOR

Installation
& Operation
Manual

REV. 1123

HUSSMANN[®]

R3H, R3HTO, R3HA, R3Combo, R3H-HF

**HOT SERVICE/SELF
SERVICE/CASE WITH
SELF SERVICE FRONT**



R3, R3H, R3P, R3HA, R3H-HF

INSTALLATION & OPERATION GUIDE

1. General Instructions

HUSSMANN®/CHINO

A publication of HUSSMANN® Chino
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This Booklet Contains Information on:

R3H: Hot Service/Refrigerated Self-Service Case

R3HA/R3HATO: Circulating Hot Air Case

R3 Combo: any combination of Hot and/or Cold Service with Self Service Refrigerated Front

Shipping Damage

All equipment should be thoroughly examined for shipping damage before and during unloading.

This equipment has been carefully inspected at our factory and the carrier has assumed responsibility for safe arrival. If damaged, either apparent or concealed, claim must be made to the carrier.

Apparent Loss or Damage

If there is an *obvious loss or damage*, it must be noted on the freight bill or express receipt and signed by the carrier's agent; otherwise, carrier may refuse claim. The carrier will supply necessary claim forms.

Concealed Loss or Damage

When loss or damage *is not apparent until after equipment is uncrated*, a claim for concealed damage is made. Make request in writing to carrier for inspection within 15 days, and retain all packaging. The carrier will supply inspection report and required claim forms.

Shortages

Check your shipment for any possible shortages of material. If a shortage should exist and is found to be the responsibility of Hussmann Chino, *notify Hussmann Chino*. If such a shortage involves the carrier, *notify the carrier immediately*, and request an inspection. Hussmann Chino will acknowledge shortages within ten days from receipt of equipment.

Hussmann Chino Product Control

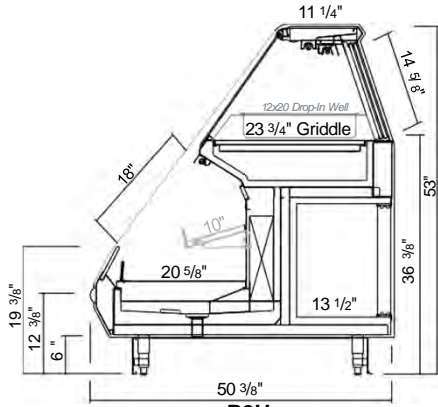
The serial number and shipping date of all equipment has been recorded in Hussmann's files for warranty and replacement part purposes. All correspondence pertaining to warranty or parts ordering must include the serial number of each piece of equipment involved, in order to provide the customer with the correct parts.

Keep this booklet with the case at all times for future reference.

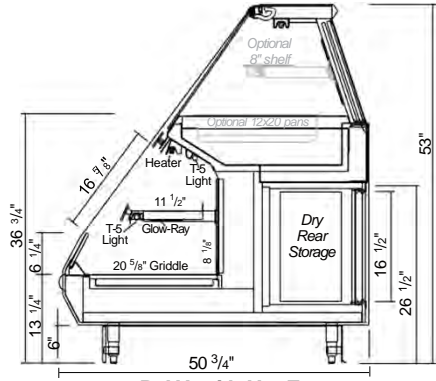
2. Table of Contents

- 1. General Instructions.....2**
- 2. Table of Contents3**
- 3. Cut and Plan Views4**
- 4. Installation.....5**
- 5. Plumbing10**
- 6. Refrigeration10**
- 7. Electrical.....12**
- 8. User Information.....14**
- 9. Specification Sheets.....22**
- 10. Wiring Diagram Index.....25**
- 11. Wiring Diagrams26**
- 12. Troubleshooting Guide78**
- 13. Appendices80**

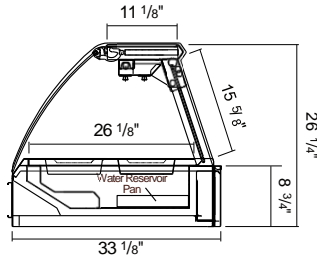
3. Cut and Plan Views



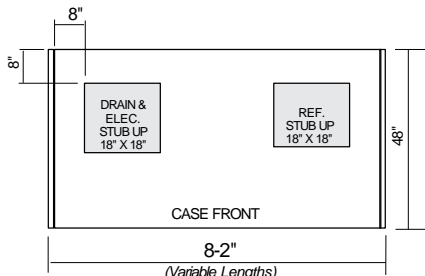
R3H
Service Hot / Self Service Case
Scale=1/2"



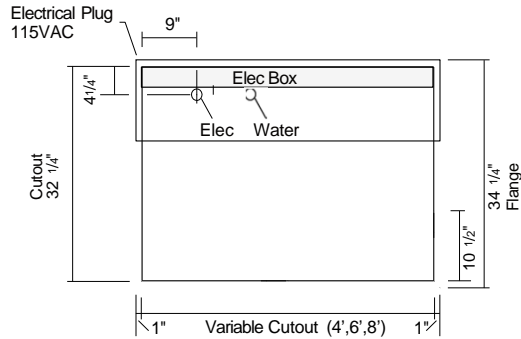
R3HA with Hot Front
Hot Air Top with Hot Front Option
and Dry Rear Storage
Scale = 1/2"



R3HA
Circulated Hot Air Merchandiser



R3
Plan View = 1/4"



R3TO
Plan view

4. Installation

Location

The refrigerated merchandisers have been designed for use only in air conditioned stores where temperature and humidity are maintained at or below 75°F and 55% relative humidity. **DO NOT** allow air conditioning, electric fans, open doors, ovens, open doors or windows (etc.) to create air currents around the merchandiser, as this will impair its correct operation.

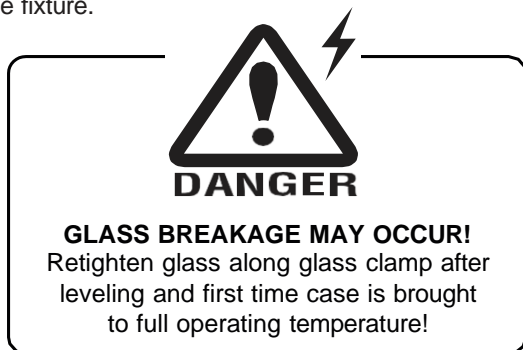
Product temperature should always be maintained at a constant and proper temperature. This means that from the time the product is received, through storage, preparation and display, the temperature of the product must be controlled to maximize life of the product.

Uncrating the Stand

Place the fixture as close to its permanent position as possible. Remove the top of the crate. Detach the walls from each other and remove from the skid. Unbolt the case from the skid. The fixture can now be lifted off the crate skid. **Lift only at base of stand!**

Exterior Loading

These models have **not** been structurally designed to support excessive external loading. **Do not walk on their tops;** This could cause serious personal injury and damage to the fixture.



Glass Adjustment

During shipment, the lubricant inside the cylinders may have settled. This settling may cause excessive or uneven tension on the glass - to the point of breakage. To avoid any damage, please follow these three easy steps:

1. Slowly raise and lower each glass section 6 times to a height of 6 inches.
2. Increase the height to 12 inches, and raise and lower the glass 6 more times.
3. Finally raise the glass to its full extension, and lower.

These steps should release any settled lubricant within the cylinders and prevent any stress on the front glass.

Setting and Joining

The sectional construction of these models enable them to be joined in line to give the effect of one continuous display. A joint trim kit is supplied with each joint.

Leveling

IMPORTANT! IT IS IMPERATIVE THAT CASES BE LEVELED FROM FRONT TO BACK AND SIDE TO SIDE PRIOR TO JOINING. A LEVEL CASE IS NECESSARY TO INSURE PROPER OPERATION, WATER DRAINAGE, PLEXIGLASS ALIGNMENT.

NOTE: A. To avoid removing concrete flooring, begin lineup leveling from the highest point of the store floor.

B. When wedges are involved in a lineup, set them first.

Joining R3H, R3HA, R3 Combo's

All cases were leveled and joined prior to shipment to insure the closest possible fit when cases are joined in the field. When joining, use a carpenters level and shim legs accordingly. Case must be raised correctly, under legs where support is best, to prevent damage to case.

1. Check level of floor where cases are to be set. Determine the highest point of the floor; cases will be set off this point.
2. Set first case, and adjust legs over the highest part of the floor so that case is level. Prevent damage - case must be raised under leg or by use of 2x6 or 2x4 leg brace. Remove side and back leg braces after case is set.
3. Set second case as close as possible to the first case and level case **to the first** using the instructions in step one.
4. Apply masking tape 1/8" in from end of case on inside and outside rear mullion on both cases to be joined.
5. Apply liberal bead of case joint sealant (butyl) to (dotted area shown in figure) of first case. Apply heavy amount to cover entire shaded area.

DO NOT USE PERMAGUM!



6. Slide second case up to first case snugly. Then level second case to the first case so glass front, bumper and top are flush.
7. To compress silicone at joint, use two Jurgenson wood clamps. Make sure case is level from front to back and side to side on inside bulkheads at joint.

Installation (Cont'd)

8. Attach sections together via a 2 bolts located in the base of the case. Secure the overhead structure by bolting the bracket, located inside behind lights.
9. Apply bead of silicone to top of bulkheads and slip on stainless steel bulkhead cap. Also apply silicone to seam between overhead light tubes.
10. Use finger to smooth silicone as thin as possible at masking tape on inside and outside of rear mullion (apply additional silicone if necessary). Remove tape applied on line #3.

Corner Wedges

Corner wedges are attached via front and rear camlocks. Use a 7mm allen wrench to turn the locks. Do not overtighten! Join the top by using a joint bracket (included in joint kit) with 3/8" bolts.

Scale Stand Installation Instructions



1.- Set Scale Stand to desire location



2.- Drill holes and screw in place
(with screws provided – Hex Tek S/S

10-16 X 1/2")



Note: Use hole pattern

Joint Trim

After cases have been leveled and joined, and refrigeration, electrical, and wasted piping work completed, install the splashguards. Fasten along the top edge, or center, with #10 X 3/3" sheet metal screws.

DO NOT SEAL JOINT TRIM TO FLOOR!

Installing R3HTO, R3HATO

All cases were tested at a level state before shipping. When joining, use a carpenters level and shim enclosing or supporting cabinet accordingly.

1. Make sure the cabinet you are installing the R3HATO on is level.
2. Wire unit according to local codes.

Installation (Cont'd)

Wrapping Boards Installation Instructions



Step 1: Measure 6 inches from wrapping board end.

Note: Line up 6 inch mark with 10 inch mark.

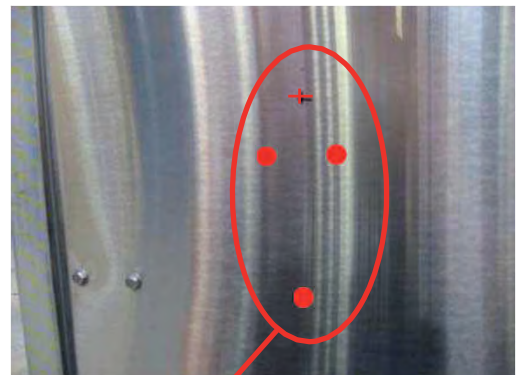


Step 2: Measure 10 inches from top of the case.



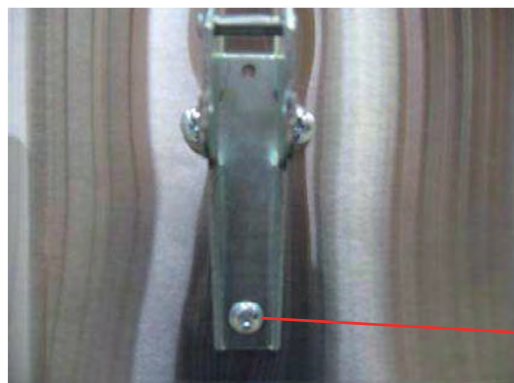
Step 3: Use bracket center hole to align with cross mark.

Note: Use pencil/marker to mark hole pattern.



HOLE PATTERN

Step 4: Drill holes (7/32")



Screws # 14 X 1"

Step 5: Install bracket with screws (provided)

Note: Repeat Steps 1 Thru 5 for Second Bracket Installation.

Installation (Cont'd)



Step 6: Install upper support bracket



Step 7: Mount wrap board on top of bracket using a 1/4" spacer to have a gap between rear wall and board.



Step 8: Screw bracket into wrap board (screws provided -#8 X 1 1/4")



Installation Complete

Installation (Cont'd)

Bumper Installation Instructions



Step 1: Make sure the aluminum channel and end caps are installed.



Step 2: Use silicone lubricant to help the bumper slide into the channel.



Step 3: Starting on one end: while inserting the bumper, push it up against the end cap to prevent the bumper from shrinking after installation (when it gets cold).



Step 4: As you insert the bumper into the channel with one hand, pull the bumper toward you with the other to open the inside lips. Slowly apply pressure by rolling the bumper into the track.

5. Plumbing

Waste Outlet and P-TRAP

The waste outlet is located off the center of the case on one side allowing drip piping to be run lengthwise under the fixture. There are 2 drains in each fixture that can be easily located.

P-traps must be installed at the base of all refrigerated cases. The 1 ½" P-TRAP and threaded adapter must be installed to prevent air leakage and insect entrance into the fixture.

Installing Condensate Drain

Poorly or improperly installed condensate drains can seriously interfere with the operation of this refrigerator, and result in costly maintenance and product losses. Please follow the recommendations listed below when installing condensate drains to insure a proper installation:

1. Never use pipe for condensate drains smaller than the nominal diameter of the pipe or P-TRAP supplied with the case.
2. When connecting condensate drains, the P-TRAP must be used as part of the condensate drain to prevent air leakage or insect entrance. Store plumbing system floor drains should be at least 14" off the center of the case to allow use of the P-TRAP pipe section. Never use two water seals in series in any one line. Double P-TRAPS in series will cause a lock and prevent draining.
3. Always provide as much down hill slope ("fall") as possible; 1/8" per foot is the preferred minimum. PVC pipe, when used, must be supported to

maintain the 1/8" pitch and to prevent warping.

4. Avoid long runs of condensate drains. Long runs make it impossible to provide the "fall" necessary for good drainage.
5. Provide a suitable air break between the flood rim of the floor drain and outlet of condensate drain. 1" is ideal.
6. Prevent condensate drains from freezing:
 - a. Do not install condensate drains in contact with non-insulated suction lines. Suction lines should be insulated with a non absorbent insulation material such as Armstrong's Armaflex.
 - b. Where condensate drains are located in dead air spaces (between refrigerators or between a refrigerator and a wall), provide means to prevent freezing. The water seal should be insulated to prevent condensation.

Water Supply

Tap water contains more minerals and will contribute to the mineral residue and buildup which may impair the case's performance and create undesirable cleaning issues. It is recommended that a 5 micro particle filter be used to filter the incoming water supply. Be sure to flush the water line before hooking it up to the filter to prevent blocking the filter.

6. Refrigeration

Refrigerant Type

Check the serial plate on the case for information.

Piping

The refrigerant line outlets are located under the case. Locate first the electrical box, the outlets are then on the same side of the case but at the opposite end. Insulate suction lines to prevent condensation drippage.

Refrigeration Lines

<u>Liquid</u>	<u>Suction</u>
3/8" O.D.	5/8" O.D.

NOTE: The standard coil is piped at 5/8" (suction); however, the store tie-in may vary depending on the number of coils and the draw the case has. Depending on the case setup, the connecting point in the store may be 5/8", 7/8", or 1 1/8". Refer to the particular case you are hooking up.

Refrigerant lines should be sized as shown on the refrigeration legend furnished by the store.

Oil traps must be installed at the base of all suction line vertical risers on refrigerated cases.

Pressure drop can rob the system of capacity. To keep the pressure drop to a minimum, keep refrigerant line run as short as possible, using the minimum number of elbows. Where elbows are required, use long radius elbows only.

Control Settings

See R3H, R3HA/R3HATO, R3 Combo technical data sheet for the appropriate settings for your merchandiser. Maintain these parameters to achieve near constant product temperatures. Product temperature should be measured first thing in the morning, after having been refrigerated overnight. Defrost times should be as follows: OFF CYCLE - Defrost times should be as directed in the R3H, R3HA/R3HATO, R3 Combo technical data sheet. The number of defrosts per day and the duration of the defrost cycle may be adjusted to meet conditions present at your location.

Refrigeration (Cont'd)

Access to TX Valves and Drain Lines

Mechanical - Remove product from end of case. Remove product racks. Remove refrigeration and drain access panels (labeled). TX valve (mechanical only) and drain are located under each access panel at end of the case.

Electronic - The Electronic Expansion valve master and slave cylinder(s) are located within the electrical access panel(s).

Electronic Expansion Valve (Optional)

A wide variety of electronic expansion valves and case controllers can be utilized. Please refer to EEV and controller manufacturers information sheet. Sensors for electronic expansion valves will be installed on the coil inlet, coil outlet, and in the discharge air. (Some supermarkets require a 4th sensor in the return air). Case controllers will be located in the electrical raceway or under the case. The front Self Service Evaporator has an EPR valve installed to maintain a constant discharge temperature. It is located in the front at the right side of the case under the fan plenum near the TX valve.

Thermostatic Expansion Valve Location

This device is located on the same side as the refrigeration stub. A Sporlan balanced port expansion valve model is furnished as standard equipment, unless otherwise specified by customer.

Expansion Valve Adjustment

Expansion valves must be adjusted to fully feed the evaporator. Before attempting any adjustments, make

sure the evaporator is either clear or very lightly covered with frost, and that the fixture is within 10°F of its expected operating temperature.

Measuring the Operating Superheat

1. Determine the suction pressure with an accurate pressure gauge at the evaporator outlet.
2. From a refrigerant pressure temperature chart, determine the saturation temperature at the observed suction pressure.
3. Measure the temperature of the suction gas at the thermostatic remote bulb location.
4. Subtract the saturation temperature obtained in step No. 2 from the temperature measured in step No. 3. The difference is superheat.
5. Set the superheat for 5°F - 7°F.

Evaporator Pressure Regulator

An Evaporator Pressure Regulator is installed in the front of the self service section to maintain a constant discharge temperature. It is located at the front right side of the case, under the fan plenum near the TX Valve.

Service Case Temperature Control

Temperature control in the upper section of the R3 with the Service Option is done by means of a thermostat and suction solenoid valve. This controls both temperature and humidity.

T-STAT Location

T-STATS are located within the electrical raceway. Refer to diagram below.

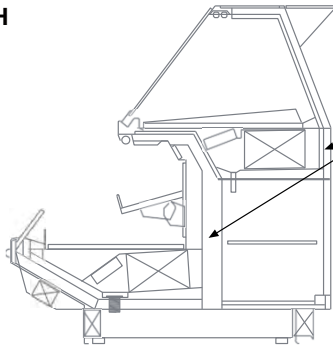
WARNING!

Do NOT apply thread sealer to ABS P-Trap.



7. Electrical

R3H



Rear Storage
T-Stat and
Solenoid inside
Storage Area

T-Stat &
Ballast
(Located in the
same place for
hot and cold)

Front Coils
controlled by
EPR Valve
under Deck Pan
(Right side)

Wiring Color Code

STANDARD CASE WIRE COLOR CODE CODIGO DE COLORES DE LOS ALAMBRES PARA LAS VITRINAS ESTANDAR CODE COULER POUR FILS DE BOITIER NORMALISE		
COLOR DESCRIPTION	DESCRIPCION	DESCRIPTION
■ GROUND	TIERRA MASA	MASSE
■ ANTI-SWEAT	ANTICONDENSACION	ANTI-SUINTEMENT
■ LIGHTS	LUCES	ECLAIRAGE
■ RECEPTACLES	ENCHUFES	PRISE DE COURANT
■ T-STAT/SOLENOID 230VAC	TERMOSTATO/SOLENOIDE (230VAC)	SOUPAPE A SOLENOID (230 VAC)
■ T-STAT/SOLENOID 115VAC	TERMOSTATO/SOLENOIDE (115VAC)	SOUPAPE A SOLENOID (115 VAC)
■ T-STAT/SOLENOID 24VAC	TERMOSTATO/SOLENOIDE (24VAC)	SOUPAPE A SOLENOID (24 VAC)
■ FAN MOTORS	VENTILADORES	VENTILATEUR
BLUE CONDENSING UNIT	UNIDAD DE CONDENSACION	UNITE DE CONDENSATION

USE COPPER CONDUCTORS ONLY
UTILISEZ LES CONDUCTEURS DE CUIVRE SEULEMENT
UTILICE LOS CONDUCTORES DE COBRE SOLAMENTE
 430-01-0338 R101003

Hot

L1	BLACK
L2	RED
L3	BLUE
NEUTRAL	WHITE

CASE MUST BE GROUNDED

NOTE: Refer to label affixed to case to determine the actual configuration as checked in the "TYPE INSTALLED" boxes.

Electrical Circuit Identification


Standard lighting for all models will be full length fluorescent lamps located within the case at the top.

The switch controlling the lights, the plug provided for digital scale, and the thermometer are located at the rear of the case mullion.

The receptacle that is provided on the exterior back of these models is intended for computerized scales with a five amp maximum load, not for large motors or other high wattage appliances. It should be wired to a dedicated circuit.

Electrical Service Receptacles (When Applicable)

The receptacles located on the exterior of the merchandiser are intended for scales and lighted displays. They are not intended nor suitable for large motors or other external appliances.



DANGER

**BEFORE SERVICING
ALWAYS DISCONNECT ELECTRICAL
POWER AT THE MAIN DISCONNECT
WHEN SERVICING OR REPLACING ANY
ELECTRICAL COMPONENT.**

**This includes (but not limited to) Fans, Heaters
Thermostats, and Lights.**

Field Wiring and Serial Plate Amperage

Field Wiring must be sized for component amperes printed on the serial plate. Actual ampere draw may be less than specified. Field wiring from the refrigeration control panel to the merchandisers is required for refrigeration thermostats. Case amperes are listed on the wiring diagram, but always check the serial plate.

Ballast Location

Ballasts are located within the access panel that runs the length of the rear of the case. Refer to diagram on page 14.

Electrical (Cont'd)

 **CAUTION**

Fluorescent Lamps contain mercury vapor. Mercury exposure at high levels can harm the brain, heart, kidneys, lungs and immune system of people of all ages. Do not break or puncture fluorescent lamps. Dispose of, or store, all fluorescent lamps in accordance with Federal (40 CFR 273), State and local hazardous waste requirements. Refer to <http://www.epa.gov/mercury/about.htm>

Fluorescent Lamp Disposal: The United States Environmental Protection Agency has information regarding environmentally-safe fluorescent lamp waste management programs.

On the Net: EPA Website:

<http://www.epa.gov/osw/hazard/wastetypes/universal/lamps/recycle.htm>

8. User Information

Stocking Refrigerated Sections

Improper temperature and lighting will cause serious product loss. Discoloration, dehydration and spoilage can be controlled with proper use of the equipment and handling of product. Product temperature should always be maintained at a constant and proper temperature. This means that from the time the product is received, through storage, preparation and display, the temperature of the product must be controlled to maximize life of the product. Hussmann cases were not designed to “heat up” or “cool down” product - but rather to maintain an item’s proper temperature for maximum shelf life. To achieve the protection required always:

1. Minimize processing time to avoid damaging temperature rise to the product. Product should be at proper temperature.
2. Keep the air in and around the case area free of foreign gasses and fumes or food will rapidly deteriorate.
3. Maintain the display merchandisers temperature controls as outlined in the refrigerator section of this manual.
4. Do not place any product into these refrigerators until all controls have been adjusted and they are operating at the proper temperature. Allow merchandiser to operate a minimum of 6 hours before stocking with any product.
5. When stocking, never allow the product to extend beyond the recommended load limit. **Air discharge and return air flow must be unobstructed at all times to provide proper refrigeration.**
6. Keep the service doors closed (when applicable). Refrigeration performance will be seriously affected if left open for a prolonged period of time.
7. Avoid the use of supplemental flood or spot lighting. Display light intensity has been designed for maximum visibility and product life at the factory. The use of higher output fluorescent lamps (H.O. and V.H.O.), will shorten the shelf life of the product.

Food Handling and Hot Food Equipment

These hot tables are for short-term holding and display of precooked hot foods. They are not intended to cool or reheat food. The temperature of the food should be approximately 155°F per NSF when first put into the hot table. Pans need to be Pre-heated before placed in. These hot tables are best suited when used in a cafeteria type application where the food is held and served rapidly, within a few hours. Any attempt to use the hot table to display large amounts of food for long periods of time will result in dehydrated, overcooked and unsafe food. The quality of food will progressively worsen as the length of

time increases.

The deterioration of product quality is a function of time and temperature. All products are affected even though in a gravy or other liquid. They may appear to withstand the temperature better than “dry” foods such as fried chicken but this is not necessarily true. ALL foods will continue to be affected by prolonged exposure to elevated temperatures.

The following guidelines are provided only as a general guide for the use of this equipment. The local health agency for your area can provide specific temperature requirements.

Critical attention must be given to the heat controls for these hot tables. Both the upper and lower heat controls must be adjusted to achieve proper food temperatures. Hot foods should be held at a minimum product temperature of at least 135° F (57° C) according to 2009 FDA Food Code. However, increasing the temperature too high will also cause the food to overcook, dry out, lose its flavor, texture and color. Food held for prolonged periods at high temperatures will also lose some of their nutritional value. Different foods will require different control settings. The type of food, the quantities of food and length of time that it is to remain in the hot table must be considered when establishing control settings. Therefore, it must be the user’s responsibility to establish the correct control settings to maintain the food at the safest, tastiest and most saleable condition.

Food temperatures can be accurately determined only through the use of food thermometers!

Important Operation Tips:

- Preheat case 30 minutes before loading product using higher settings.
- Never place food directly into warmer. Always use an inset pan.
- Never pour water into a dry preheated warmer. This may damage the unit. Always pour water into warmer BEFORE preheating. Always use water in case wells, as it provides even heat and humidity.
- Too much water or too much heat will cause excessive condensation on the front glass, decreasing visibility.
- Make sure all pans are in the well units no matter the configuration.
- **Using thermometer**, check product before loading in case (150°-160°F).
- Always use warmer in wet operation when warming thick food items.
- Stir thick foods such as chili, fudge and chowders often to keep foods uniformly heated and prevent

User Information (Cont'd)

- scorching.
- At start, set wells to "7". After loading, recheck temperature every 1/2 hour to see that unit is operating properly. Adjust the thermostat (a higher number for hotter and a lower number for cooler) to maintain product temperature of 135° F (57° C) minimum. The setting will depend on the type of product being displayed and how much there is in the well. Be sure to test product temperature with a thermometer frequently for good product maintenance.
- Food must always be placed into an inset pan over the well, never directly into the well. Using rock inserts may adversely impact product temperature.
- Food should not be stacked above the top of the pan. Food above the top of the pan will dry out rapidly.
- Food juice or gravy should be stirred frequently and any meats should be basted with the gravy. Stir and rotate foods as needed. Wipe up spills immediately for aesthetic appeal, and easier cleaning later.
- Food should be rotated periodically from the bottom to top.
- If practical, the food should be covered during slack sale periods to reduce dehydration.
- At end of the day, remove product and let case cool. Then clean with soap and water (use oven cleaner on the difficult spots). Polish and clean glass with a good glass cleaner.

Cleaning Glass and Mirrors

Only use a soft cloth and mild glass for cleaning any glass or mirrored components. Be sure to rinse and/or dry completely.

Never use hot water on cold glass surfaces! It may shatter and cause serious injury! Allow glass surfaces to warm first.

Replacing Fluorescent Lamps

Fluorescent lamps are furnished with a shatterproof protective coating. The same type of lamp with protective coating must be used if replaced.

HUSSMANN[®]

ENCAPSULITE
SHATTERPROOF COATING - SA 10645

- Complies with FDA USDA
& OSHA Regulations

for replacement call:
1-800-395-9229

→ Turn switch off then on after replacing bulb ←

Plexiglass and Acrylic Care

Improper cleaning not only accelerates the cleaning cycle but also degrades the quality of this surface. Normal daily buffing motions can generate static cling attracting dust to the surface. Incorrect cleaning agents or cleaning cloths can cause micro scratching of the surface, causing the plastic to haze over time.

Cleaning

Hussmann recommends using a clean damp chamois, or a paper towel marketed as dust and abrasive free with **210[®] Plastic Cleaner and Polish** available by calling Sumner Labs at **1-800-542-8656**. Hard, rough cloths or paper towels will scratch the acrylic and should not be used.

Antistatic Coatings

The **210[®]** has proven to be very effective in not only cleaning and polishing the Plexiglass surface, but also providing anti-static and anti-fog capabilities. This product also seals pores and provides a protective coating.

CAUTION

CLEANING PRECAUTIONS

When cleaning:

- Do not use high pressure water hoses
- Do not introduce water faster than waste outlet can drain
- NEVER INTRODUCE WATER ON SELF CONTAINED UNIT WITH AN EVAPORATOR PAN
- NEVER USE A CLEANING OR SANITIZING SOLUTION THAT HAS AN OIL BASE (these will dissolve the butyl sealants) or an AMMONIA BASE (this will corrode the copper components of the case)
- TO PRESERVE THE ATTRACTIVE FINISH:
- DO USE WATER AND A MILD DETERGENT FOR THE EXTERIOR ONLY
- DO NOT USE A CHLORANITED CLEANER ON ANY SURFACE
- DO NOT USE ABRASIVES OR STEEL WOOL SCOURING PADS (these will mar the finish)

Evaporator Fans

The evaporator fans are located at the center front of these *merchandisers directly beneath the display pans*. Should fans or blades need servicing, always replace fan blades with the raised embossed side of the blade TOWARD THE MOTOR.

Copper Coils

The copper coils used in Hussmann merchandisers may be repaired in the field. Materials are available from local refrigeration wholesalers.

Hussmann recommends using #15 Sil-Fos for repairs.

Tips and Troubleshooting

Before calling for service, check the following:

1. Check electrical power supply to the equipment for connection.
2. Check fixture loading. Overstocking case will affect

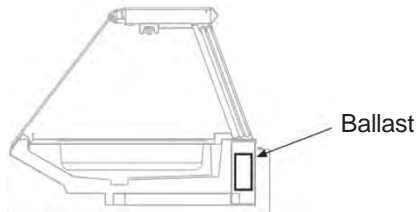
User Information (Cont'd)

its proper operation.

3. If frost is collecting on fixture and/or product, check that no outside doors or windows are open allowing moisture to enter store. These merchandisers were designed for use in stores where temperature & humidity does not exceed 75° F and 55% H.

Controls

The controls are located at the rear of the case.



R3HATO
Ballast Locations

Stainless Steel Cleaning and Care

There are three basic things, which can break down your stainless steel's passivity layer and allow corrosion.

1. Mechanical Abrasion

Mechanical Abrasion means those things that will scratch the steel's surface. Steel Pads, wire Brushes, and Scrapers are prime examples.

2. Water

Water comes out of our tap in varying degrees of hardness. Depending on what part of the country you live in, you may have hard or soft water. Hard water may leave spots. Also, when heated, hard water leaves deposits behind that if left to sit, will break down the passive layer and rust your stainless steel. Other deposits from food preparation and service must be properly removed.

3. Chlorides

Chlorides are found nearly everywhere. They are in water, food and table salt. One of the worst perpetrators of chlorides can come from household and industrial cleaners.

Don't Despair! Here are a few steps that can help prevent stainless steel rust.

1. Use the Proper Tools

When cleaning your stainless steel products, take care to use non-abrasive tools. Soft Clothes and plastic scouring pads will NOT harm the steel's passive layer. Stainless steel pads can also be used but the scrubbing motion must be in the same direction of the manufacturer's polishing marks.

2. Clean With the Polish Lines

Some stainless steels come with visible polishing lines or "grain". When visible lines are present, you should ALWAYS scrub in a motion that is parallel to them. When the grain cannot be seen, play it safe

and use a soft cloth or plastic scouring pad.

3. Use Alkaline or Non-chloride Containing Cleaners

While many traditional cleaners are loaded with chlorides, the industry is providing an ever increasing choice of non-chloride cleaners. If you are not sure of your cleaner's chloride content contact your cleaner supplier. If they tell you that your present cleaner contains chlorides, ask for an alternative. Also, avoid cleaners containing quaternary salts as they also can attack stainless steel & cause pitting and rusting.

4. Treat your Water

Though this is not always practical, softening hard water can do much to reduce deposits. There are certain filters that can be installed to remove distasteful and corrosive elements. If you are not sure of the proper water treatment, call a treatment specialist.

5. Keep your Food Equipment Clean

Use alkaline or non-chlorinated cleaners at recommended strength. Clean frequently to avoid build-up of hard, stubborn stains. If you boil water in your stainless steel equipment, remember the single most likely cause of damage is chlorides in the water. Heating cleaners that contain chlorides has a similar effect.

6. RINSE, RINSE, RINSE

If chlorinated cleaners are used you must rinse, rinse, rinse and wipe dry immediately. The sooner you wipe off standing water, especially when it contains cleaning agents, the better. After wiping the equipment down, allow it to air dry for the oxygen helps maintain the stainless steel's passivity film.

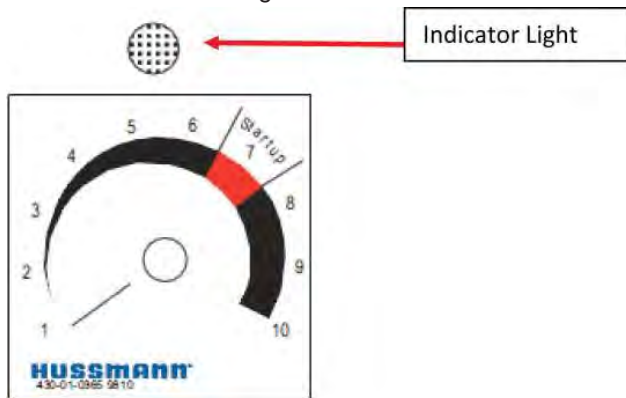
7. Never Use Hydrochloric Acid (Muriatic Acid) on Stainless Steel.

8. Regularly Restore/Passivate Stainless Steel.

User Information (Cont'd)

Hot Well/Soup Well Operating Instructions

Each hot unit has an individual heater with a separate control. These are thermostatically controlled with an indicator light showing when the heater has cycled on and is heating. The light above each control knob indicates when the well heater is heating.



These units are for short-term holding and display of precooked hot foods. They are not intended to cool or reheat food. The temperature of the food entering the display should be approximately $155^{\circ}\text{F} \pm 5^{\circ}$ when first inserted.

Any attempt to use the hot unit to display large amounts of food or soup for long periods of time will result in dehydrated, overcooked and unsafe food. The quality of the food will

progressively worsen as the length of time increases. The deterioration of product quality is a function of time and temperature. All products are affected even though in gravy or other liquid. They may appear to withstand the temperature better than "dry" foods such as fried chicken but this is not necessarily true. All foods will continue to be affected by prolonged exposure to elevated temperatures.

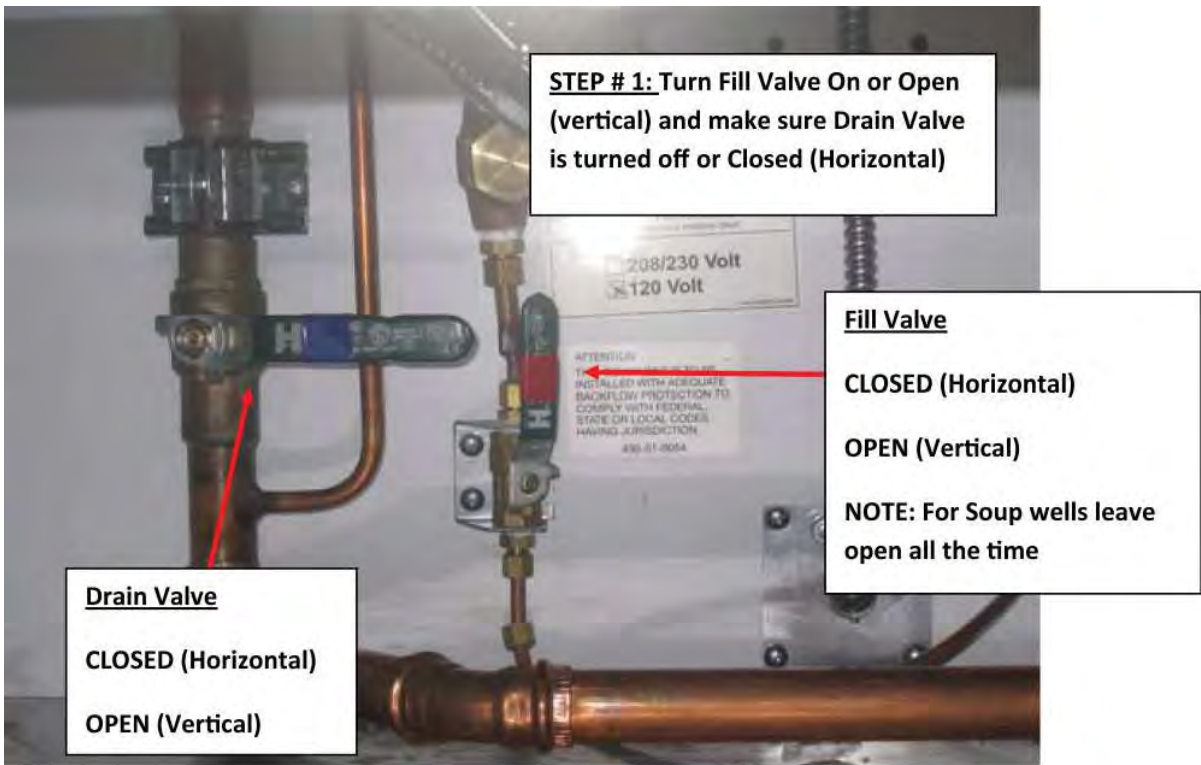
The following guidelines are provided only as a general guide for the use of this equipment. The local health agency for your area can provide specific temperature requirements.

Critical attention must be given to the heat controls for these hot tables/soup bars. Both the upper and lower heat controls (soup only require lower control) must be adjusted to achieve proper food temperatures. Hot foods should be held at a constant temperature of at least 140°F (60°C) (minimum FDA requirements to prevent spoiling). However, increasing the temperature too high will also cause the food to overcook, dry out, lose its flavor, texture and color. Food held for prolonged periods at high temperatures will also lose some of their nutritional value.

Different foods require different control settings. The type of food, the quantities of food and length of time that it is to remain in the hot table must be considered when establishing control settings. Therefore, it must be the user's responsibility to establish the correct control settings to maintain the food at the safest, tastiest and saleable condition.

User Information (Cont'd)

Startup:



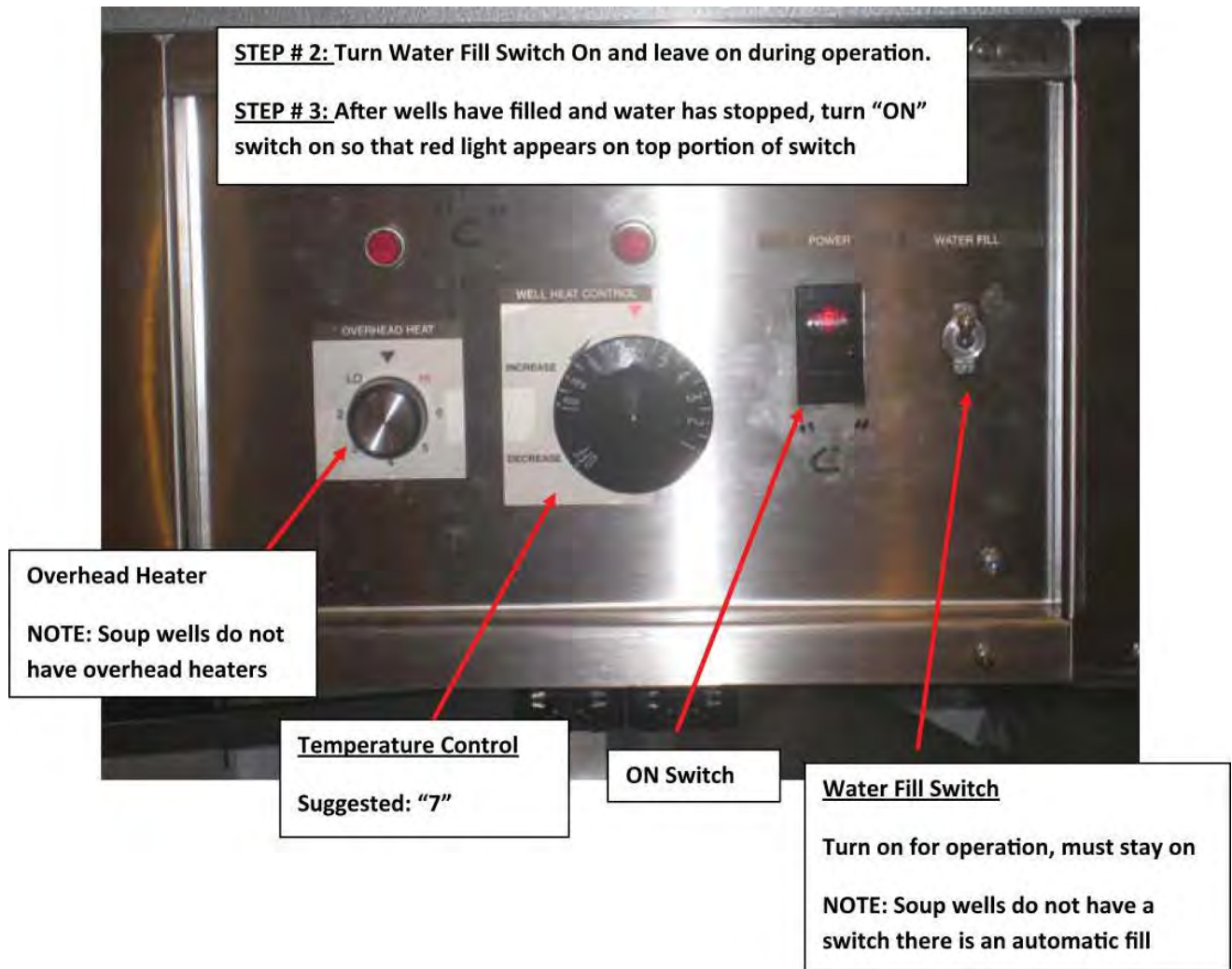
To fill the well:

- Turn the fill valve to open position.
- Close the drain valve.

To drain the well:

- Turn the fill valve to the closed position.
- Open the drain valve.

User Information (Cont'd)



Operation:

- Turn the water fill switch on.
- After wells have filled turn "ON" switch on.
- Set temperature control to '7" setting. Adjust as necessary.
- Adjust overhead heater as necessary.

Shutting down:

- Turn "ON" switch off.
- Turn water fill switch off.
- Close fill valve.
- Open drain valve.
- Once the water is drained, close the drain valve.

User Information (Cont'd)

Overhead Heating System

Overhead heaters and fluorescent lights are located above each well to provide both top heat and illumination.

To obtain the proper food temperatures, the well heater and overhead heater must be adjusted. Maximum limits should be avoided to prevent overcooking or drying out of food.

Note: Soup Wells do not have overhead heaters.

Food temperatures can be accurately determined only through the use of food thermometers!

Important Food Handling Tips:

1. Preheat case 30 minutes before loading product.
2. Never place food directly into the warmer. Always use an inset.
3. Food must be displayed in a single layer, in contact with the heat source at all times.
4. Using thermometer, check product before loading in case (150°-160°).
5. At start, set control to "7". After loading, recheck temperature every ½ hour to see that unit is operating properly. Adjust the temperature to maintain a product temperature of 140°F (60°C)

and above. The setting will depend on the type and quantity of product being displayed. Be sure to test product temperature with a thermometer frequently for good product maintenance.

6. Food should be rotated periodically.
7. At the end of the day, remove product and let case cool. Then clean with soap and water.

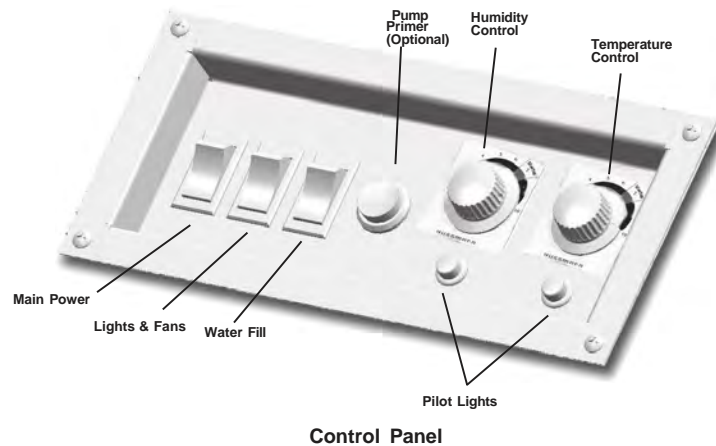


CAUTION

Do not run hot wells without any water!

User Information (Cont'd)

R3HA, R3HATO Hot Circulation Air Startup and Operation



Control Panel

Startup:

1. Turn the **Main Power Switch ON**. (This will enable all other switches in the case).
2. Turn **Lights & Fans Switch ON**.
3. Turn **Water Fill System ON**. (For 100% DRY Heat leave water system OFF).
4. Press "**PUMP PRIME**" for **approximately 10 seconds** (optional) to self-prime the humidity system. The water reservoir (pan) **INSIDE** the case should **ALWAYS** be half full.
5. Turn **Humidity Control knob to # 7, "STARTUP"**, for maximum humidity conditions - over 7 may cause condensation on the glass. This control will continually pump water into the water reservoir (pan) **INSIDE** the case
7. Turn **Temperature Control knob to # 7, "STARTUP"**, for initial temperature settings. (This will guarantee over 140°F safe FDA temperatures).

Temperature Adjustment:

Adjust temperature up or down as required to maintain safe FDA Hot Food Temperatures. After adjustment, allow adequate time for change to take place. Allow 30 minutes for product to respond. Although a discharge air temperature of approximately 170°F will guarantee safe food temperatures throughout the case, use a thermometer to check food temperature periodically according to FDA guidelines.

Humidity Adjustment:

Adjust humidity up or down as desired for the appropriate food texture desired. More humidity for moist foods, less humidity or none for crispy foods.

Be patient, humidity adjustments to higher or lower levels are not immediate, as existing moisture (or water content) within the hot environment of the case rises or lowers at a slow pace.

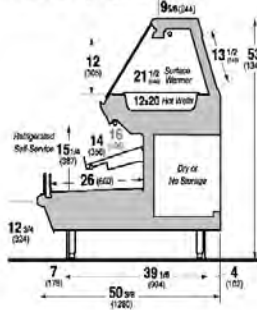
9. Specification Sheets



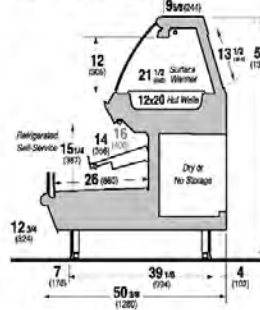
SERVICE / SELF-SERVICE
HUSSMANN - R3H / CR3H (CHINA)
 DOE 2017 Energy Efficiency Compliant
 Hussmann refrigerated merchandisers certified for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

REVISION DATE 06/27/18

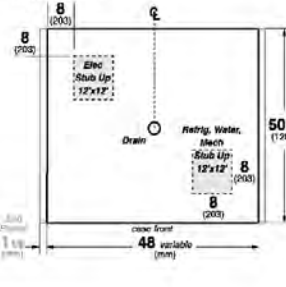
R3H Hot Service, Refrigerated Self-Service



CR3H Hot Service, Refrigerated Self-Service



R3H / CR3H



REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CAPACITY FRONT (BTU/HR/FT)		TEMPERATURE (°F)			VELOCITY FRONT (FT/MIN)
		RATING CONDITION		EVAPORATOR		DISCHARGE AIR FRONT ** (°F)	
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	
4' 5' 6' 8' 10' 12'	DELI	590	530	20	24	29-31	175-200
REAR STORAGE	DELI	110	90	20	26	28-32	600-700

CASE LENGTH S	EST. REFG. CHRG. (R404A) (LBS)	20°F GLYCOL 6" RISE			
		FRONT		REAR STORAGE	
		GPM	PSI	GPM	PSI
4'	0.5	0.9	2.1	0.2	0.0
5'	0.7	1.0	3.4	0.2	0.1
6'	0.7	1.2	4.8	0.2	0.2
8'	1.0	1.6	2.2	0.3	0.6
10'	1.4	2.0	3.9	0.4	0.7
12'	1.3	2.4	4.6	0.4	0.8

**FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

**REFRIGERATION NOTES:

- 1) BTU'S INCLUDE CANOPY LIGHTS. ADD 10 BTU'S/SHELF/FT FOR EACH SHELF (LIGHT)
- 2) AHRI 1200 RATING POINT FOR ENERGY CONSUMPTION COMPARISON ONLY
- 3) USE DEW POINT FOR HIGH GLIDE REFRIGERANTS. CARE SHOULD BE TAKEN TO USE THE DEW POINT IN P/T TABLES FOR MEASURING AND ADJUSTING SUPERHEAT. ADJUST EVAPORATOR PRESSURE AS NEEDED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SHOWN
- 4) RATING CONDITION IS NSF TYPE I, 75°F/55% RH

REFRIGERATION DATA CONTINUED:

LOCATION	ELEC. THERMOSTAT		DEFROST TYPE	DEFROST TIME (MIN)	DEFROST FREQUENCY (#/DAY)	TERM. TEMP (°F) COIL ONLY	DRIP TIME	DEFROST WATER (LBS/DAY/FT)
	AIR SENSOR SETTINGS	AIR SENSOR SETTINGS						
	USAG	CUT IN (°F)	CUT OUT (°F)					
FRONT	DELI	31	28	OFF-TIME	40	3	48	2.8
REAR STORAGE	DELI	37	36	OFF-TIME	40	3	36	0.2

END PANEL WIDTH KEY		
# OF END PANELS	END PANEL WIDTH (IN.)	TOTAL ADDED LENGTH (IN.)
1	1.125	1.125
2	1.125	2.25

ELECTRICAL DATA:

STANDARD FANS, HEATERS, LED LIGHTS (115 VOLT)

CASE LENGTH	SELF-SERVICE SECTION EVAPORATOR FANS				REFRIGERATED REAR STORAGE EVAPORATOR FANS (OPTIONAL)				CANOPY LIGHTS LED		OPTIONAL LED SHELF LIGHTS		MAX. LED LOAD (W/ ALL OPTIONS)		ANTI-SWEAT HEATERS		CONVENIENCE OUTLETS (OPTIONAL)		
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (")	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLET S	VOLTS	AMPS	
4'	2	6.75	15	0.2	16	0.3	8.8	0.1	10	0.1	10	0.2	21	0.84	97	1	115	15	
5'	2	6.75	20	0.2	16	0.3	8.8	0.1	13	0.1	13	0.2	26	1.06	122	1	115	15	
6'	3	6.75	15	0.4	24	0.3	8.8	0.1	15	0.1	15	0.3	31	1.28	147	1	115	15	
8'	4	6.75	15	0.5	32	0.3	8.8	0.2	21	0.2	21	0.4	41	1.71	187	1	115	15	
10'	4	6.75	20	0.5	32	0.3	8.8	0.2	26	0.2	26	0.5	52	2.16	247	1	115	15	
12'	6	6.75	15	0.7	48	0.3	8.8	0.3	31	0.3	31	0.6	62	2.68	297	2	115	30	

HOT TOP SECTION, 60HZ 1 PHASE OR 3 PHASE AS NOTED INCLUDES LIGHTS AND FANS

CASE LENGTH	SURFACE WARMER / HOT WELLS 208V				SURFACE WARMER / HOT WELLS 240V			
	L1	L2	L3	WATTS	L1	L2	L3	WATTS
4'	13.0	11.6	N/A	2711	15.1	13.4	N/A	3624
5'	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
6'	14.1	12.9	N/A	2933	16.3	14.9	N/A	3912
8'	23.8	20.9	9.4	6497	27.0	24.2	10.8	6591
10'	29.9	31.6	17.9	9535	34.5	36.5	20.7	12706
12'	25.8	27.8	25.7	8522	29.8	32.1	29.6	12678

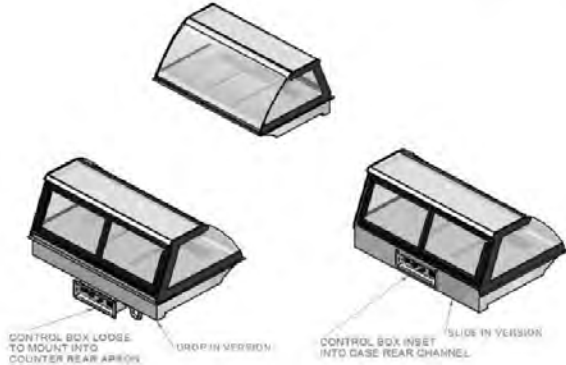
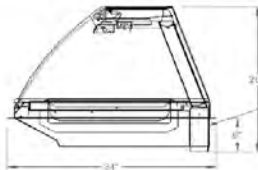
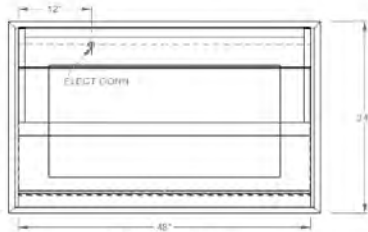
OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

CASE LENGTH	CANOPY LIGHTS H.O. LED		OPTIONAL SHELF		MAX. H.O. LED LOAD	
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
4'	0.1	10	0.1	10	0.2	21
5'	N/A	N/A	N/A	N/A	N/A	N/A
6'	0.1	15	0.1	15	0.3	31
8'	0.2	21	0.2	21	0.4	41
10'	N/A	N/A	N/A	N/A	N/A	N/A
12'	0.3	31	0.3	31	0.5	62

Specification Sheets (cont'd)



SERVICE/ SELF-SERVICE
HUSSMANN - R3HTO HOT TOP (CHINO)



HOT CASE DATA: 60HZ, 1-PHASE AND 3-PHASE

CASE LENGTH	CIRCUIT#1				CIRCUIT#1				CIRCUIT#2				CIRCUIT#2				
	208V				240V				208V				240V				
	L1	L2	L3	WATTS	L1	L2	L3	WATTS	L1	L2	L3	WATTS	L1	L2	L3	WATTS	
4'	12.5	11.6	N/A	2579	14.4	13.4	N/A	3432	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6'	19.6	19.1	N/A	4077	22.5	22.1	N/A	5400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8'	21.4	20.9	9.4	6206	24.7	24.2	10.8	8272	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12'	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

END PANEL WIDTH KEY

# OF END PANELS	END PANEL WIDTH (IN)	TOTAL ADDED LENGTH (IN)
1	1.125	1.125
2	1.125	2.25

LEGEND

N/A - NOT AVAILABLE
 TBD - TO BE DETERMINED

TOTAL WATTS

CASE LENGTH	208/3 WATTS	240/3 WATTS
4'	2579	3432
6'	4077	5400
8'	6206	8272
12'	TBD	TBD

*** LOADS INCLUDE SINGLE ROW CANOPY LIGHTS FOR 10P

LIGHTING DATA:

T-8 LIGHTING (126 VOLT)

CASE LENGTH	# EVAP. FANS ¹⁾		TOTAL FANS		DRAIN PAN HEATERS		CANOPY LIGHTS T-8 FRONT		SHELF LIGHTS (OPTIONAL) T-8		CANOPY LIGHTS T-8 TOP (HOT SECTION)		LEDGE LIGHTS		TOTAL LIGHTS	
	1/2 AMP/50 EA.	3/4 AMP/50 EA.	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	#GHS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS
4'	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.26	28	N/A	N/A	0.26	28
6'	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.39	42	N/A	N/A	0.39	42
8'	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.52	56	N/A	N/A	0.52	56
12'	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.78	84	N/A	N/A	0.78	84

ELECTRICAL DATA CONTINUED:

CASE LENGTH	CONDENSING UNIT VOLTAGE / PHASE			DRAIN EVAP PAN 120V		CONVENIENCE OUTLETS		
	208/1		240/1	AMPS	WATTS	#OUTLETS	VOLTS	AMPS
	AMPS	AMPS	H.P.					
4'	N/A	N/A	N/A	N/A	N/A	1	115	15
6'	N/A	N/A	N/A	N/A	N/A	1	115	15
8'	N/A	N/A	N/A	N/A	N/A	1	115	15
12'	N/A	N/A	N/A	N/A	N/A	1	115	15

OPTIONS/NOTES:

- 1) GFCI receptacles are optional and furnished with case when ordered
- 2) Metallic in-use cover shipped loose - installed in field

10. Electrical Wiring Diagrams

CR3H-HF-4	Top 4" dry well and 14" self front lower section	4'	W8700029
CR3H-HF-4	Top 4" dry well and 10" self front lower section	4'	W6600078
CR3H-HF-4	Top 4" dry well and 12" self front lower section	4'	W6600476
R3H-HF-5		5'	W6600024
CR3H-HF-6	4" dry upper well and 12" lower shelves	6'	W6600026
CR3H-HF-6	4" dry upper well and 10" lower shelves	6'	W8700016
CR3H-HF-8	W/14" SHELF	8'	W8700021
CR3H-HF-8	W/10" SHELF	8'	W8700022
CR3H-HF-8	W/12" SHELF	8'	W8700030
CR3H-HF-8	W/OUT SHELF	8'	W6600227
CR3-HF-12	W/10" SHELF	12'	W6600066

R3H-4-REM	HATCO SURFACE WARMER	4'	W6600152
CR3H-4-REM		4'	W8700011
R3H-6-REM		6'	W1800191
R3H-6-REM	With 4100K L.E.D. Lights	6'	W1800195
CR3H-6-REM	Upper Hot Well	6'	W8700015
R3H-8-REM	With Dry Wells	8'	W1800189
R3H-8-REM	2' Griddle 6' Hot Well Alternate	8'	W1800192
R3H-8-REM	Upper 6' Hot Well	8'	W1800196
R3-HD-8-SH-4SW-4HW-R	UPPER HOT PANS AND SOUP WELLS	8'	W6600117
CR3H-8-REM	4" WELL With 4100K L.E.D. Lights	8'	W8700020
R3H-10-REM	With L.E.D. Lights, 4" WELL	10'	W6600050
R3H-12-REM	WITH 4" DRY WELL T-5	12'	W1800199
R3H-12-REM	WITH GRIDDLE TOP LED'S	12'	W6600113
R3H-12-REM	WITH 4" DRY WELL LED'S	12'	W6600020

CIRCUIT #1

LOADING	208 V	240 V
L1	16.5	18.9
L2	15.2	17.5
L3	14.3	16.5

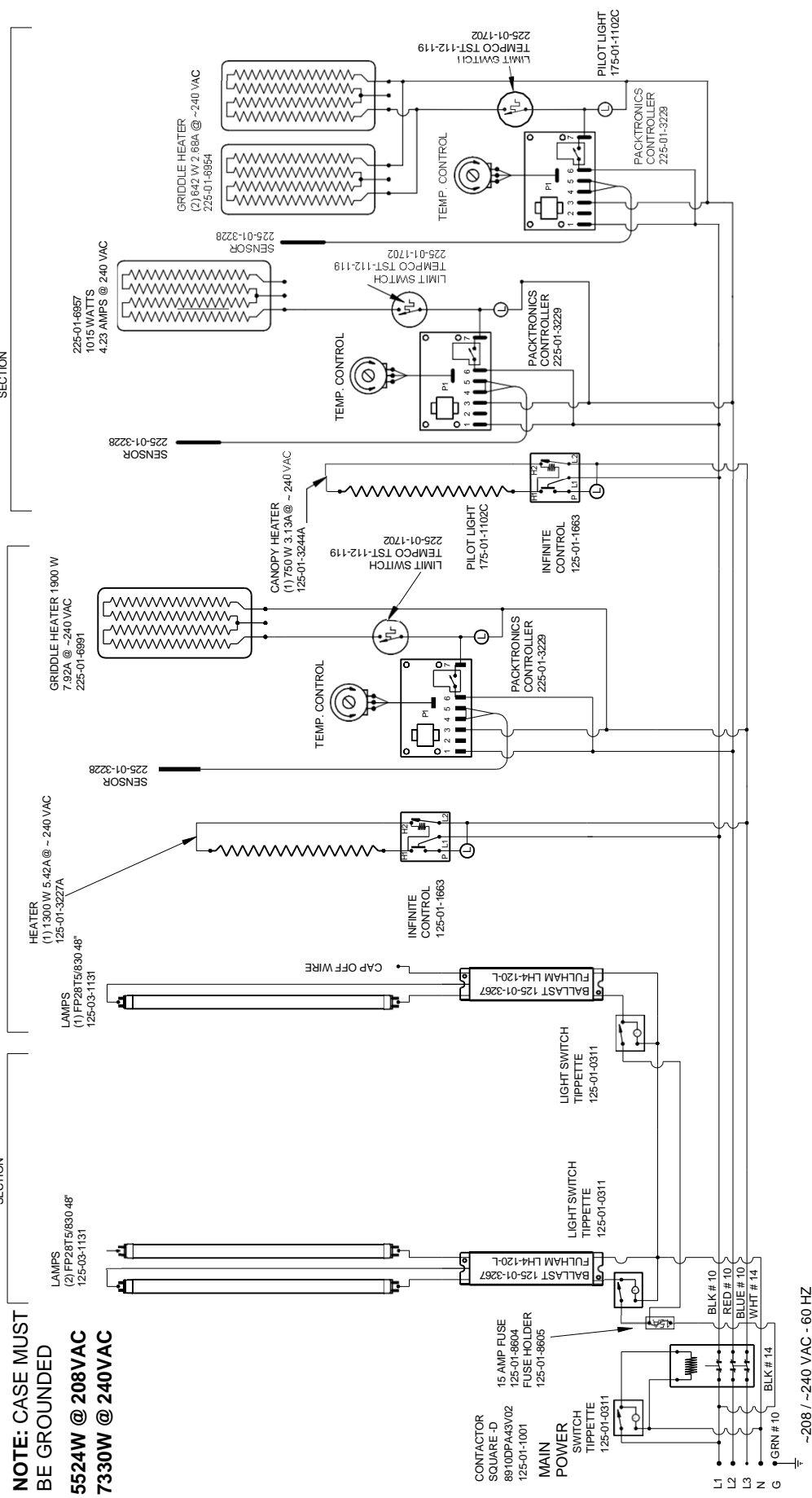
NOTE: CASE MUST BE GROUNDED
5524W @ 208VAC
7330W @ 240VAC

LIGHT CIRCUIT= 78A 84W

BOTTOM SECTION

TOP SECTION

BOTTOM SECTION



HUSSMANN
 Hussmann Corporation, Inc.
 13770 Ramona Avenue
 Chino, CA 91710 Lic.#: 644406
 (909) 590-4910

REVISIONS:

#	DESCRIPTION:	DATE:	BY:
A	Changed shelf control from 225-01-1700 to Packtronics	11/29/11	MG
B	ECN-CAP-0011184 Added To Team Center	1/19/18	CB

DRAWN BY: MATT GRAMATA PROJECT TITLE: R3H DRAWING #: W8700029
 DATE: 4/4/11
 BY: MG PRODUCTION ORDER #: 564446
 1/19/18 CB
 FILE LOCATION: CR3H-HF-4 with 4" dry well and lower 14" shelf
 PAGE 1 OF 2

CIRCUIT #2

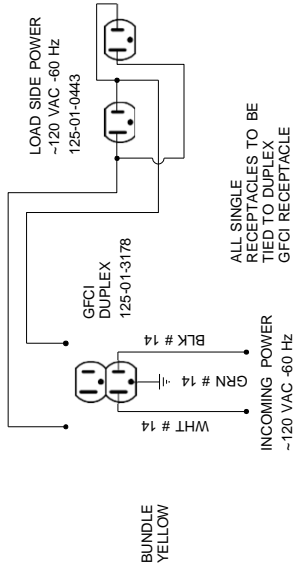
LOADING	
120 V	
L1	15.0

NOTE: CASE MUST BE GROUNDED

RJ-45 NETWORK JACK
125-01-0202



NOTE FOR GFCI PROTECTION: IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE, THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



HUSSMANN
Hussmann Corporation, Inc.
13770 Ramona Avenue
Chino, CA 91710
(909) 590-4910 Lic.#: 644406

REVISIONS:
DESCRIPTION

B Changed shelf control from 225-01-1700 to Packtronics

DATE: 11/29/11

BY: MG
CHECKED BY: MG
PRODUCTION ORDER #: 564446

DRAWN BY: MATT GRAMATA
DATE: 4/4/11

PROJECT TITLE: R3H

DRAWING #: W8700029

DRAWING TITLE:

CR3H-HF-4 with 4" dry well and lower 14" shelf

PAGE 2 OF 2

CIRCUIT #1

LOADING	208 V	240 V
L1	10.2	11.8
L2	18.3	21.1
L3	14.2	16.4

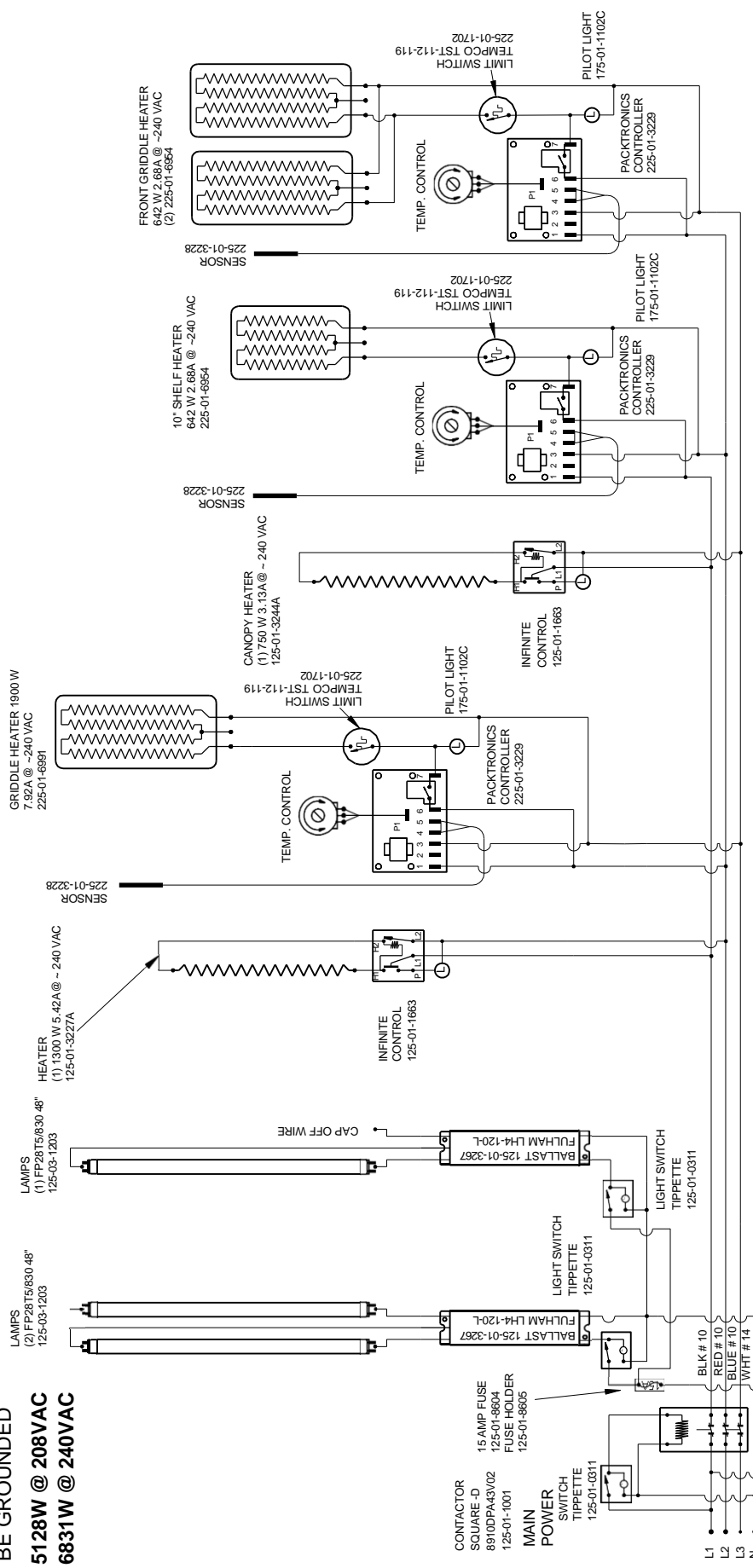
NOTE: CASE MUST BE GROUNDED
5128W @ 208VAC
6831W @ 240VAC

LIGHT CIRCUIT= 78A 84W

BOTTOM SECTION

TOP SECTION

BOTTOM SECTION



-208 / ~240 VAC - 60 HZ

HUSSMANN
 Hussmann Corporation, Intl.
 13770 Ramona Avenue
 Chino, CA 91710 Lic.#: 644406
 (909) 590-4910

REVISIONS:

#	DESCRIPTION:	DATE:	BY:
A	CN#696786	4/24/13	CB
B	CN#919095 REVISED BOTTOM SECTION HTR	8/19/14	CB
C	CN#1009293 REVISED FRONT HEATERS	10/23/15	CB

DRAWN BY: CRAIG BOOREY
 CHECKED BY: DATE: 4/24/13
 PRODUCTION ORDER #: 895502
 FILE LOCATION: R3H-HF-4 W/10" SHELF

PROJECT TITLE: R3H

DRAWING #: W6600078

CIRCUIT #2

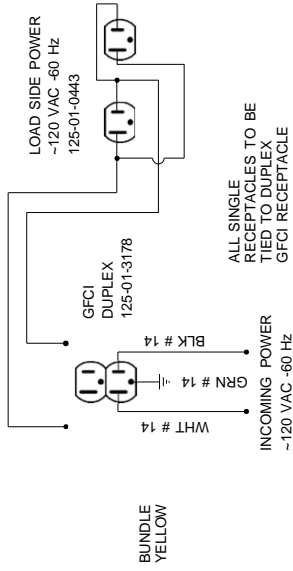
LOADING	
120 V	
L1	15.0

NOTE: CASE MUST BE GROUNDED

RJ-45 NETWORK JACK
125-01-0202



NOTE FOR GFCI PROTECTION: IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE, THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



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13770 Ramona Avenue
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(909) 590-4910

REVISIONS:

#	DESCRIPTION:
A	CN#656786
B	CN#919095 REVISED BOTTOM SECTION HTR
C	CN#1009295 REVISED FRONT HEATERS

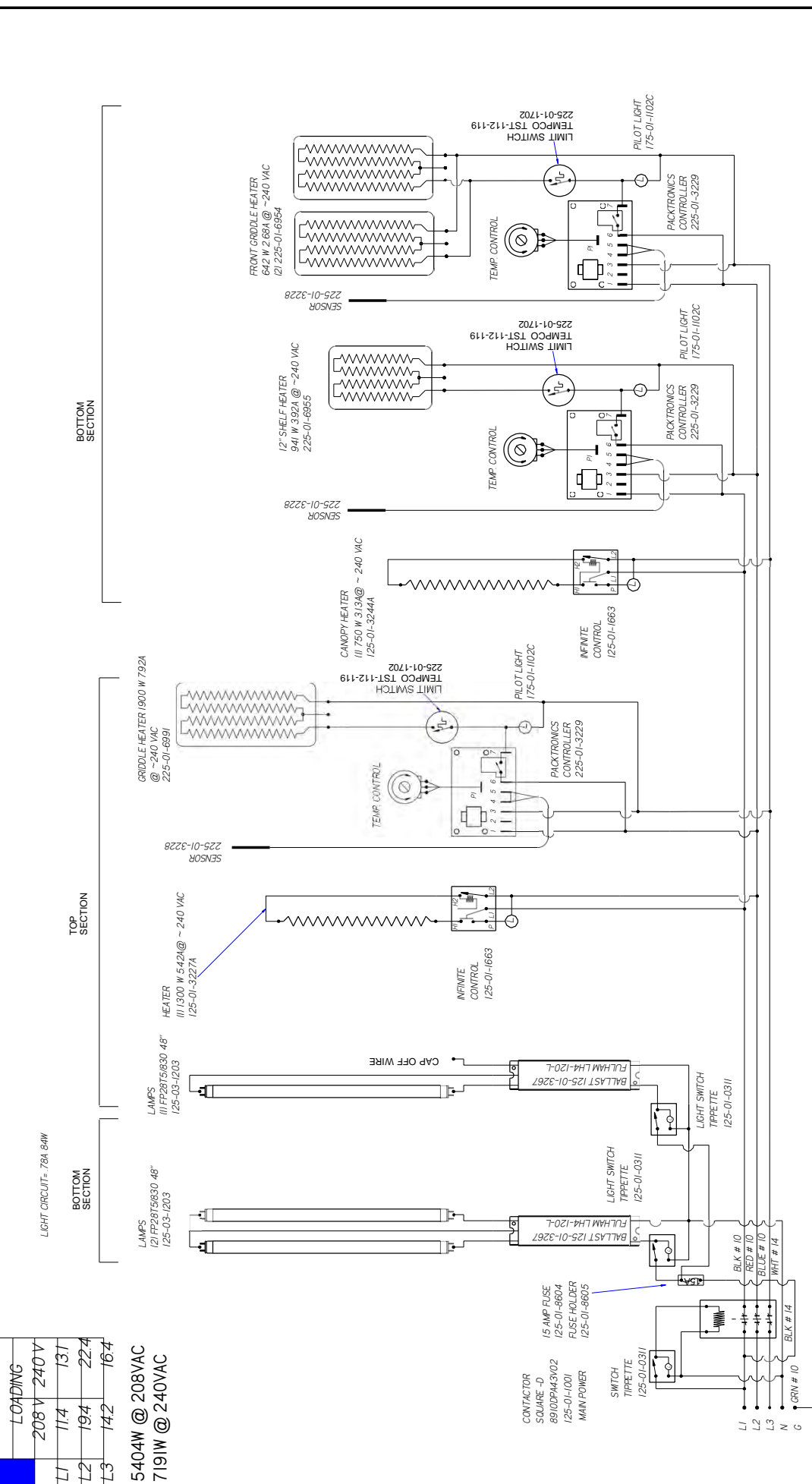
DATE:	BY:
4/24/13	CB
8/19/14	CB
10/23/15	CB

DRAWN BY: CRAIG BOOREY
CHECKED BY: _____
DATE: 4/24/13
PROJECT TITLE: R3H
PRODUCTION ORDER #: 895502
DRAWING TITLE:
FILE LOCATION:
R3H-HF-4 W/10" SHELF

DRAWING #: W6600078

REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
1	A	2018/10/08	RELEASED TO PRODUCTION	CB	CB	CB

CIRCUIT #1	
LOADING	208 V 240 V
L1	11.4 13.1
L2	19.4 22.4
L3	14.2 16.4



HUSSMANN
DIAGRAM-R3H-HF-
4 W/12" SHELF

MATERIAL - NA
 DATE DRAWN - 11-6-18
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY

CON-CAP-0014945
 REF -
 SHEET 1 OF 2
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 THIRD ANGLE PROJECTION

DECIMALS XX +0.3, XXX ±0.0
 ANGLES ± 2'

W6600476 | **A**

NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

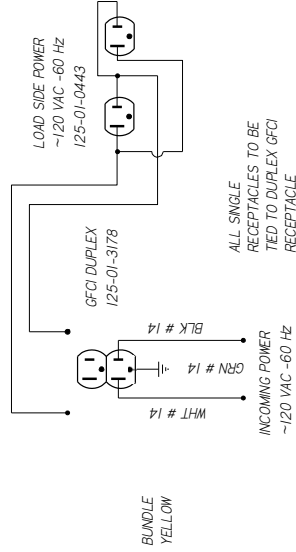
CIRCUIT #2

LOADING	
120V	
L1	150

RJ-45 NETWORK JACK
125-01-0202



NOTE FOR GFCI PROTECTION IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE, THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY			
REV	EN	DATE	APP BY
1	ECN-CAP-006945	2018/10/08	CB
RELEASED TO PRODUCTION			
			CB
			CB

MATERIAL - NA
DATE DRAWN - 11-6-18
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX +0.3 .XXX
±0.0

ECN-CAP-0074945
REF -
SHEET 2 OF 2
THIRD ANGL
E
PROJECTION

HUSSMANN
DIAGRAM-R3H-HF--
4 W/12" SHELF

W6600476 | A

CIRCUIT #1

LOADING	208 V	240 V
L1	13.7	15.8
L2	19.8	22.9
L3	19.9	23.0

NOTE: CASE MUST BE GROUNDED

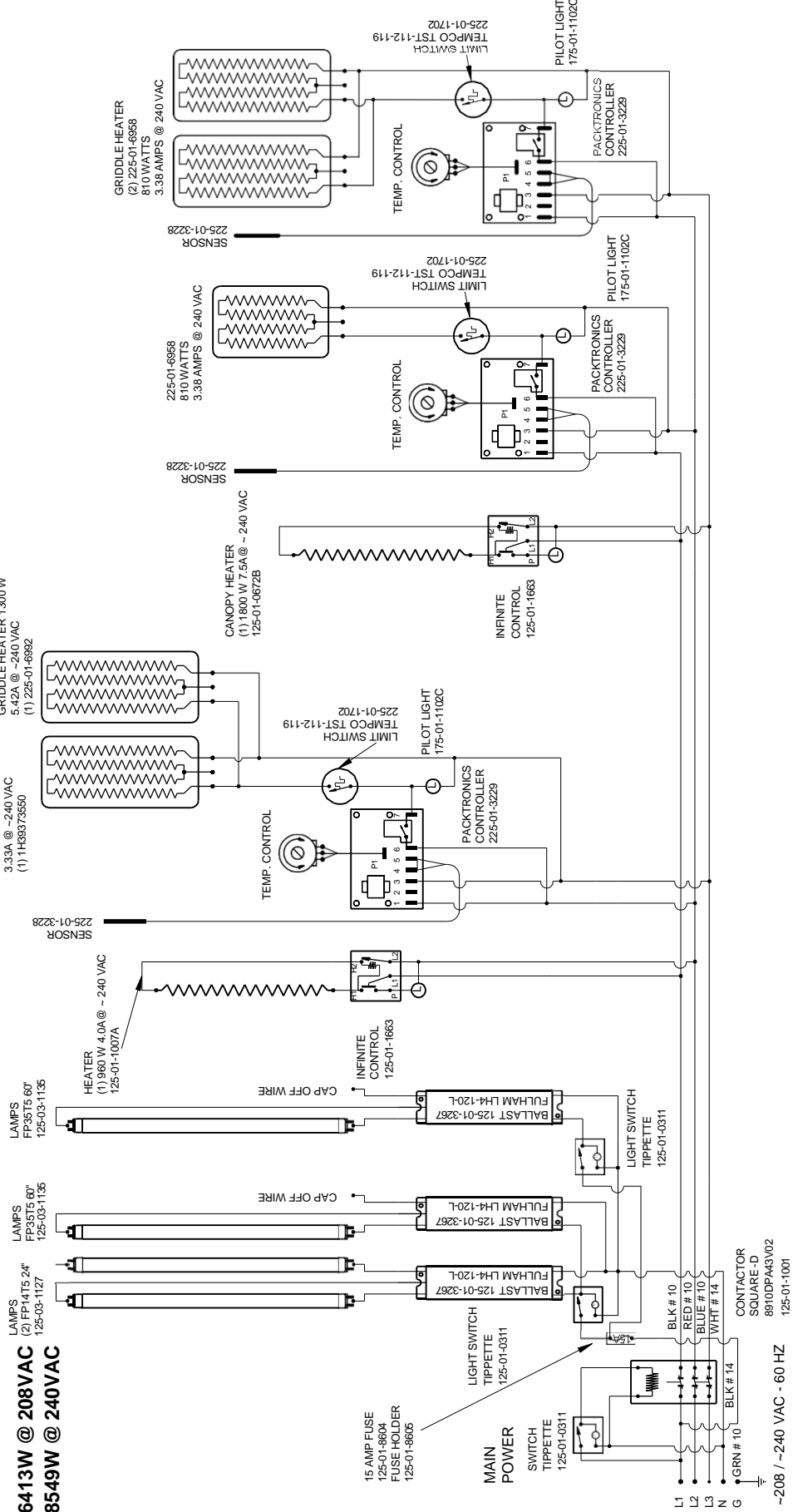
6413W @ 208VAC
8549W @ 240VAC

LIGHT CIRCUIT= .91A 98W

BOTTOM SECTION

TOP SECTION

BOTTOM SECTION



REVISIONS:		DATE:	BY:	DRAWN BY:	PROJECT TITLE:	DRAWING #:
#	DESCRIPTION:	03/23/12	CB	CRAIG BOOREY	R3H	W6600024
A	CN#608549, NEW RELEASE	04/24/12	CB			
C	CN#634531, CHGD UPPER, LOWER GRIDDLE PADS		CB			

FILE LOCATION: R3H-HF-5

PRODUCTION ORDER #: 565094

DATE: 3/23/12

BY: CB

DRAWN BY: CRAIG BOOREY

PROJECT TITLE: R3H

DRAWING #: W6600024

CIRCUIT #2

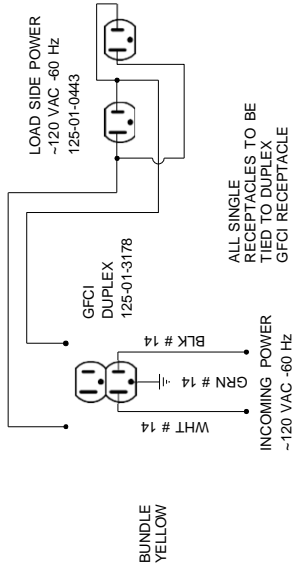
LOADING
120 V
L1 15.0

NOTE: CASE MUST BE GROUNDED

RJ-45 NETWORK JACK
125-01-0202



NOTE FOR GFCI PROTECTION: IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE, THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



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REVISIONS:

#	DESCRIPTION
A	CN#608549, NEW RELEASE
C	CN#634531, CHGD UPPER, LOWER GRIDDLE PADS

DRAWN BY: CRAIG BOOREY
CHECKED BY: CB
DATE: 03/23/12
PRODUCTION ORDER #: 565094
FILE LOCATION: CB

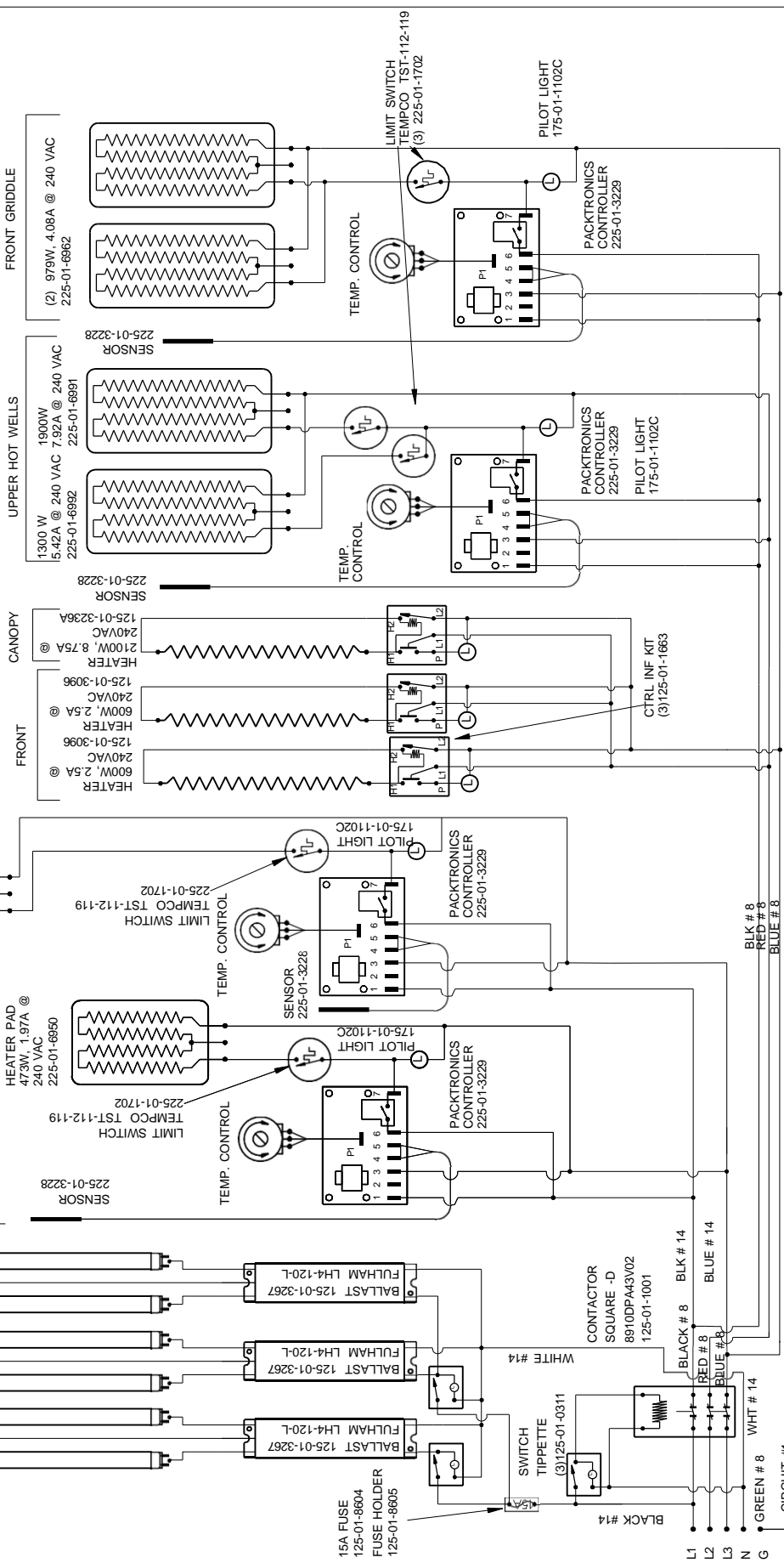
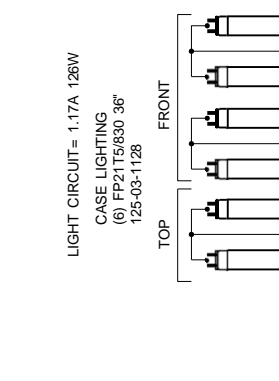
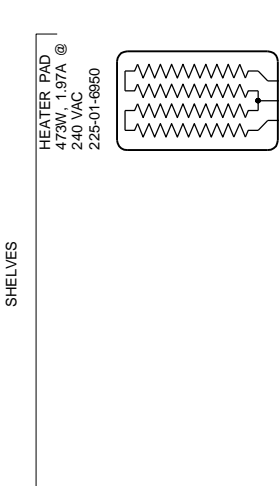
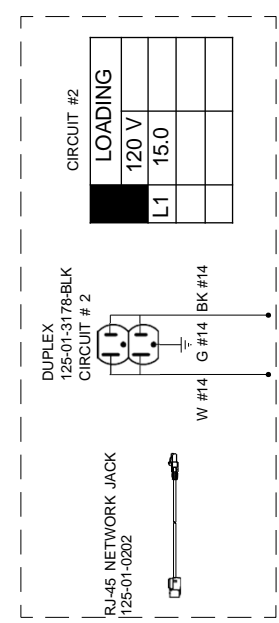
PROJECT TITLE: R3H
DRAWING TITLE: R3H-HF-5

DRAWING #: W6600024

PAGE 2 OF 2

CIRCUIT #1	
LOADING	
208 V	240 V
L1	23.2
L2	23.5
L3	22.4

NOTE: CASE MUST BE GROUNDED
8298W @ 208VAC
11029W @ 240VAC



LIGHT CIRCUIT= 1,17A 126W
CASE LIGHTING
(6) FP21T5/830 36"
125-03-1128

REVISIONS:		DRAWING #:	
#	DESCRIPTION:	DATE:	BY:
F	Changes made to upper hot wells per lab	4/13/10	JR
G	ADDED SENSOR, T-STAT & PILOT LIGHT TO SHELF	7/18/11	CB
H	SEPERATED REV-G INTO (2) SETS OF CONTROLS	7/20/11	CB

PROJECT TITLE: **CR3H-HF-6 WITH 10" FRONT SHELF**
DRAWING #: **W8700016**
DRAWN BY: **JESSE RIOS**
CHECKED BY: **...** DATE: **8/29/07**
PRODUCTION ORDER #: **964699**
FILE LOCATION: **...**

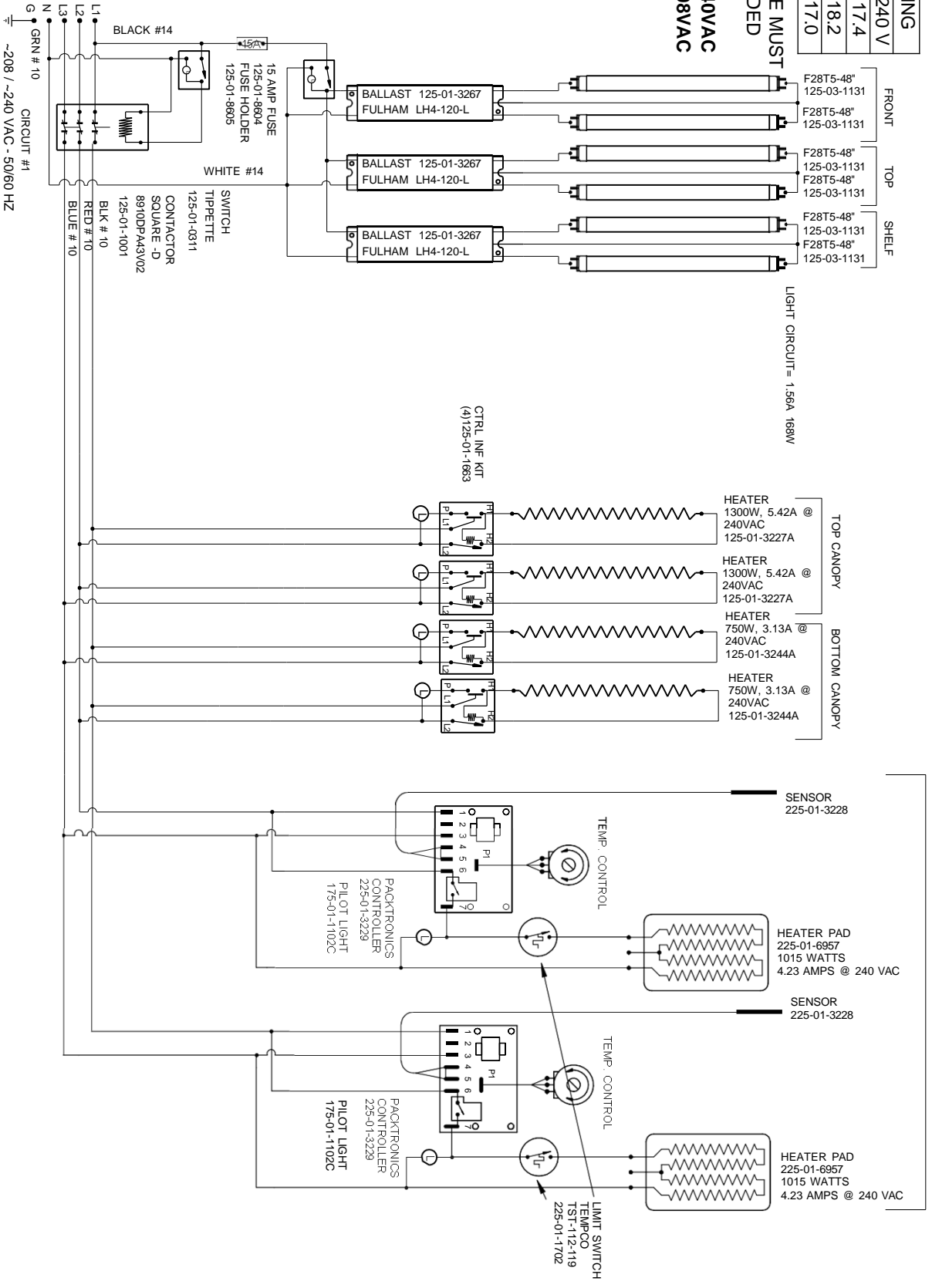
HUSSMANN
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Chico, CA 95710
(909)590-4910 Lic.#: 644406

CIRCUIT #1

LOADING	208 V / 240 V
L1	15.1 / 17.4
L2	15.8 / 18.2
L3	14.8 / 17.0

NOTE: CASE MUST BE GROUNDED

7288W @ 240VAC
5487W @ 208VAC



REVISIONS:		DRAWN BY: JESSE RIOS		PROJECT TITLE: CR3		DRAWING #: W8700021	
#:	DESCRIPTION:	DATE:	BY:	CHECKED BY:	DATE:		
E	Added Sensor, I-stat & Pilot Light to each shelf	8/11/11	CB	PRODUCTION ORDER #:	621533		
F	Changed the Heater Pads, Balanced Loads	1/26/12	CB	FILE LOCATION:			
G	ECN-CA#-0003963 Changed Relay	10/17/16	CB				

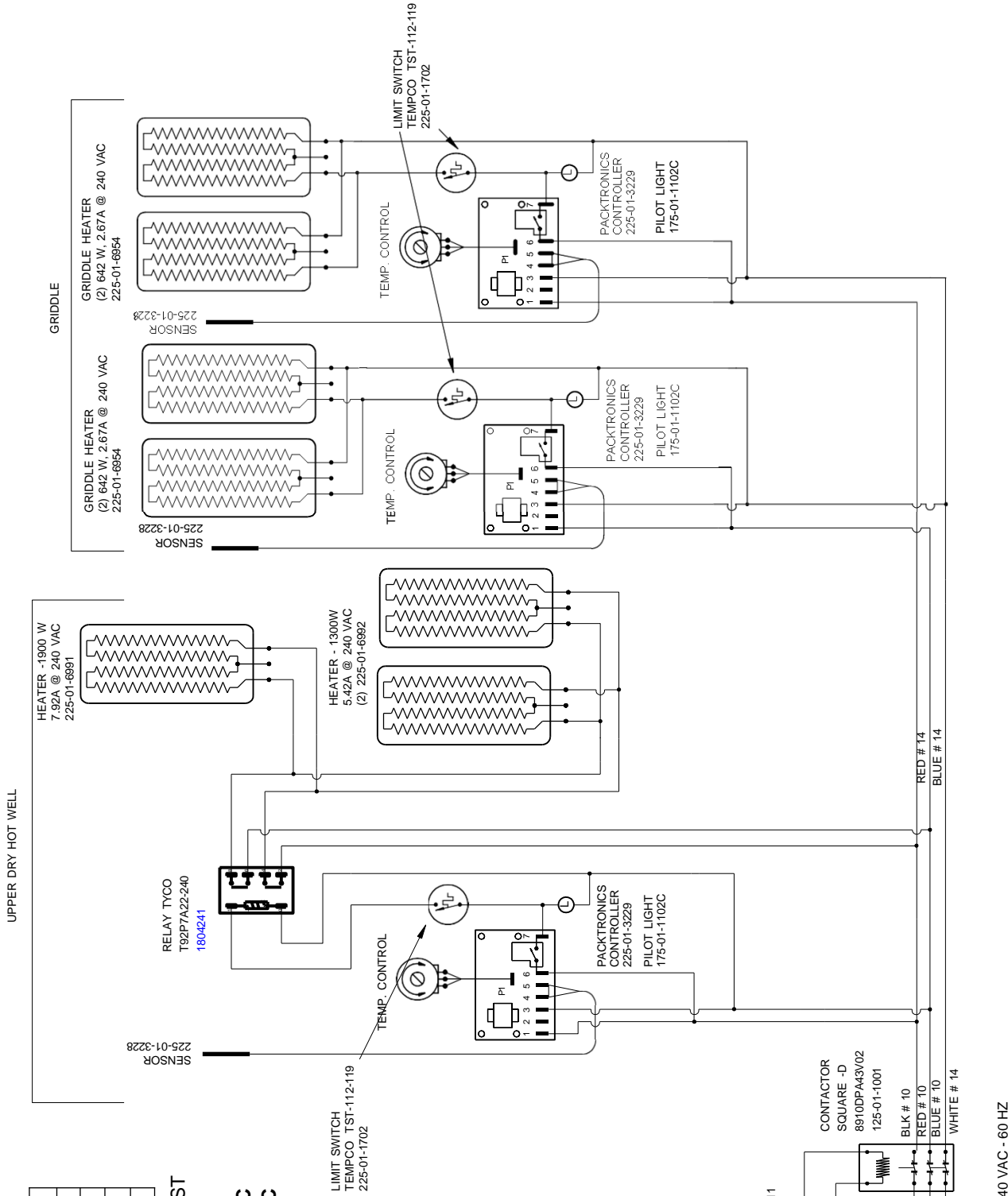
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Chino, CA 91710
(909) 590-4910 Lic.#: 644406

CIRCUIT #2

LOADING	208 V	240 V
L1	20.8	24.1
L2	20.8	24.1
L3	9.3	10.7

NOTE: CASE MUST BE GROUNDED

8161W @ 240VAC
6112W @ 208VAC



HUSMANN Husmann Corporation, Inc. 13770 Ramona Avenue Chino, CA 91710 (909) 590-4910 Lic.#: 644406		REVISIONS:		DATE:		BY:		DRAWN BY:		PROJECT TITLE:		DRAWING #:	
G		ECN-CAP-0003963 Changed Relay		10/17/16		CB		JESSE RIOS		CR3		W8700021	
F		Changed the Heater Pads, Balanced Loads		1/26/12		CB		DATE: 6/17/08		CR3H-HF-8		W/14" SHELF	
E		Added Sensor, T-stat & Pilot Light to each shelf		8/11/11		CB		PRODUCTION ORDER #: 621533		CR3		PAGE 2 OF 3	

CIRCUIT #3

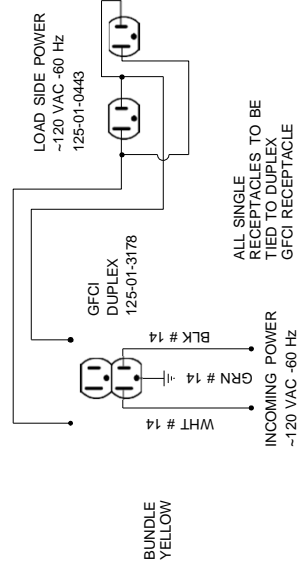
LOADING
120 V
L1 15.0

NOTE: CASE MUST BE GROUNDED

RJ-45 NETWORK JACK
125-01-0202



NOTE FOR GFCI PROTECTION: IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE, THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



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REVISIONS:

#	DESCRIPTION	DATE	BY
E	Added Sensor, T-stat & Pilot Light to each shelf	8/11/11	CB
F	Changed the Heater Pads, Balanced Loads	1/26/12	CB
G	ECN-CAP-0003963 - Changed Relay	10/11/16	CB

DRAWN BY: JESSE RIOS
CHECKED BY: CB
DATE: 6/17/08
PRODUCTION ORDER #: 621533
FILE LOCATION:

PROJECT TITLE: CR3
DRAWING TITLE: CR3H-HF-8 W/14" SHELF

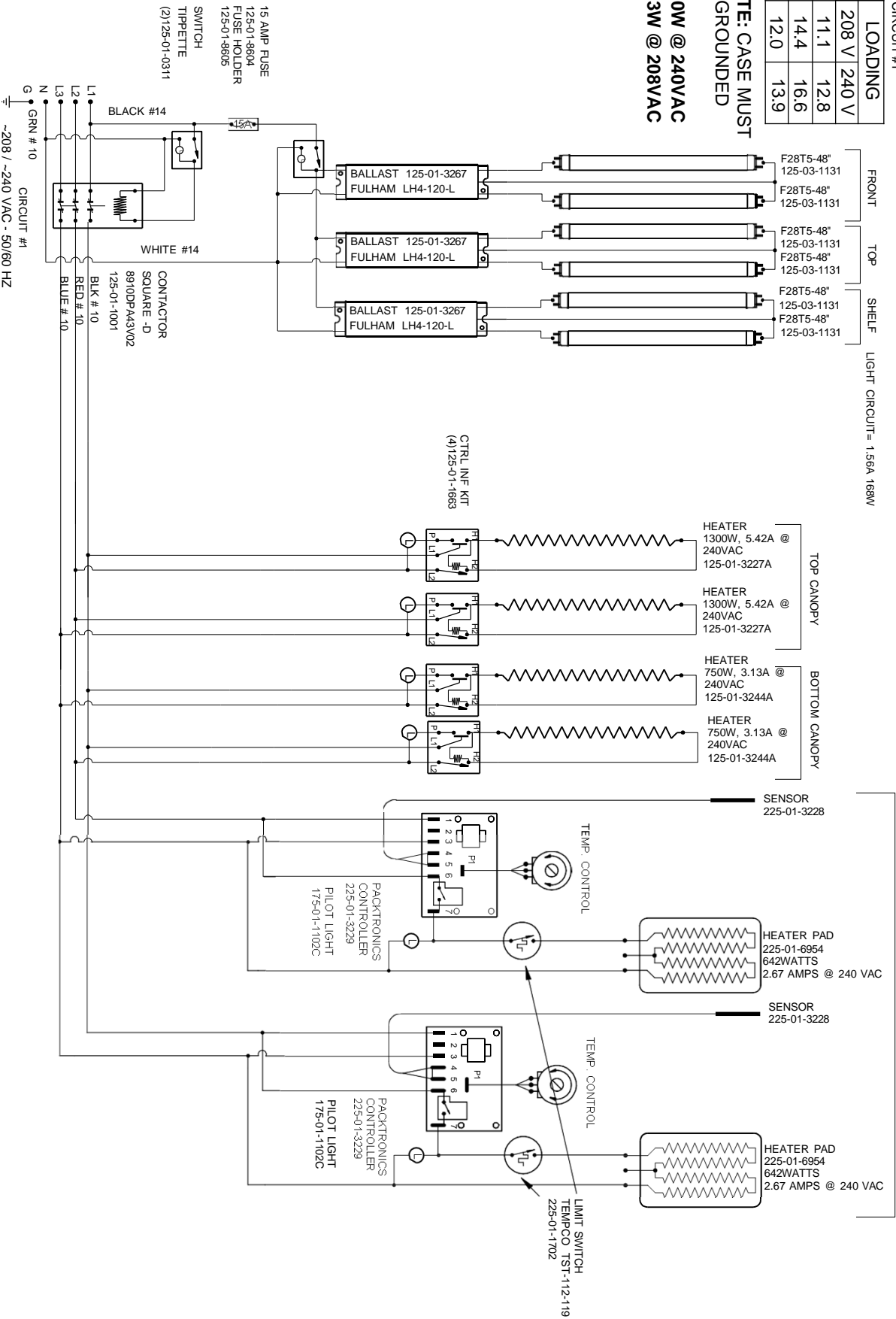
DRAWING #: W8700021
PAGE 3 OF 3

CIRCUIT #1

LOADING	208 V	240 V
L1	11.1	12.8
L2	14.4	16.6
L3	12.0	13.9

NOTE: CASE MUST BE GROUNDED

**6000W @ 240VAC
4503W @ 208VAC**



REVISIONS:		DRAWN BY: JESSE RIOS		PROJECT TITLE: CR3		DRAWING #: W8700022	
#:	DESCRIPTION:	DATE:	BY:	CHECKED BY:	DATE:	DATE:	
D	Changed Gridle Heater Pads , Balanced Load	1/26/12	CB	PRODUCTION ORDER #:	621866		
E	Revised Relay and Controller Wiring on Sheet-2	6/6/12	CB	FILE LOCATION:			
F	CN#951945 Added Neutral To Relay	10/29/14	CB				

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CR3H-HF-8 W/10" SHELF

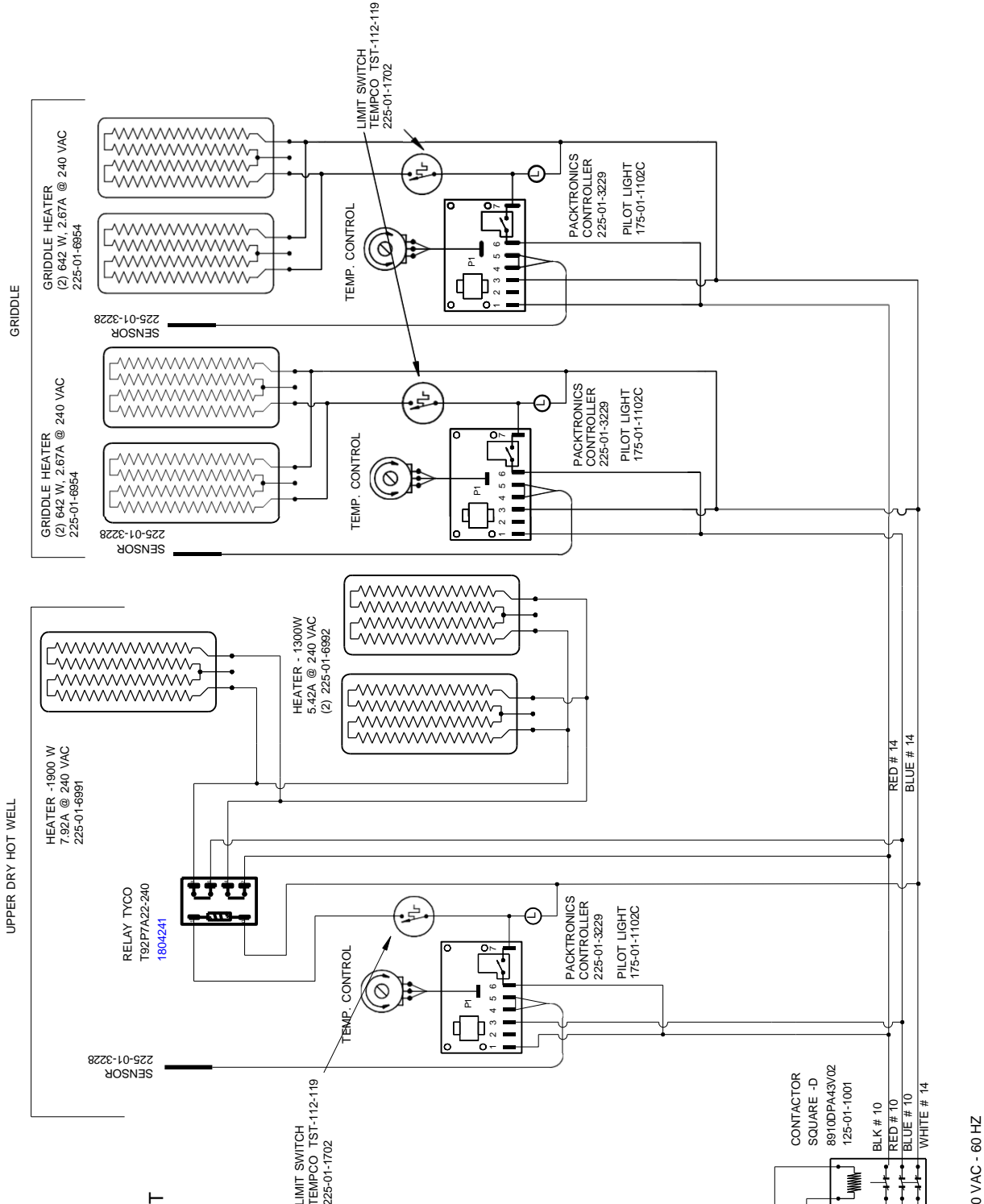
PAGE 1 OF 3

CIRCUIT #2

LOADING	208 V	240 V
L1	20.8	24.1
L2	20.8	24.1
L3	9.3	10.7

NOTE: CASE MUST BE GROUNDED

8161W @ 240VAC
6112W @ 208VAC



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REVISIONS:

#	DESCRIPTION	DATE	BY
D	Changed Griddle Heater Pads - Balanced Load	1/26/12	CB
E	Revised Relay and Controller Wiring on Sheet-2	6/6/12	CB
F	CN#F951945 Added Neutral To Relay	10/29/14	CB

DRAWN BY: JESSE RIOS
 CHECKED BY: DATE: 7/31/09
 PRODUCTION ORDER #: 621866
 FILE LOCATION:

PROJECT TITLE: CR3

DRAWING #: W8700022
 CR3H-HF-8 W/10" SHELF
 PAGE 2 OF 3

CIRCUIT #3

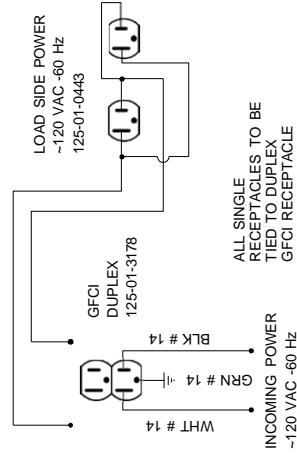
LOADING	
	120 V
L1	15.0

NOTE: CASE MUST BE GROUNDED

RJ-45 NETWORK JACK
125-01-0202



NOTE FOR GFCI PROTECTION: IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE, THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



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REVISIONS:

#	DESCRIPTION	DATE	BY
D	Changed Griddle Heater Pads , Balanced Load	1/26/12	CB
E	Revised Relay and Controller Wiring on Sheet-2	6/6/12	CB
F	CN#951945 Added Neutral To Relay	10/29/14	CB

DRAWN BY: JESSE RIOS
CHECKED BY: CB
DATE: 7/31/09
PRODUCTION ORDER #: 621866
FILE LOCATION:

PROJECT TITLE: CR3
DRAWING TITLE: CR3H-HF-8 W/10" SHELF

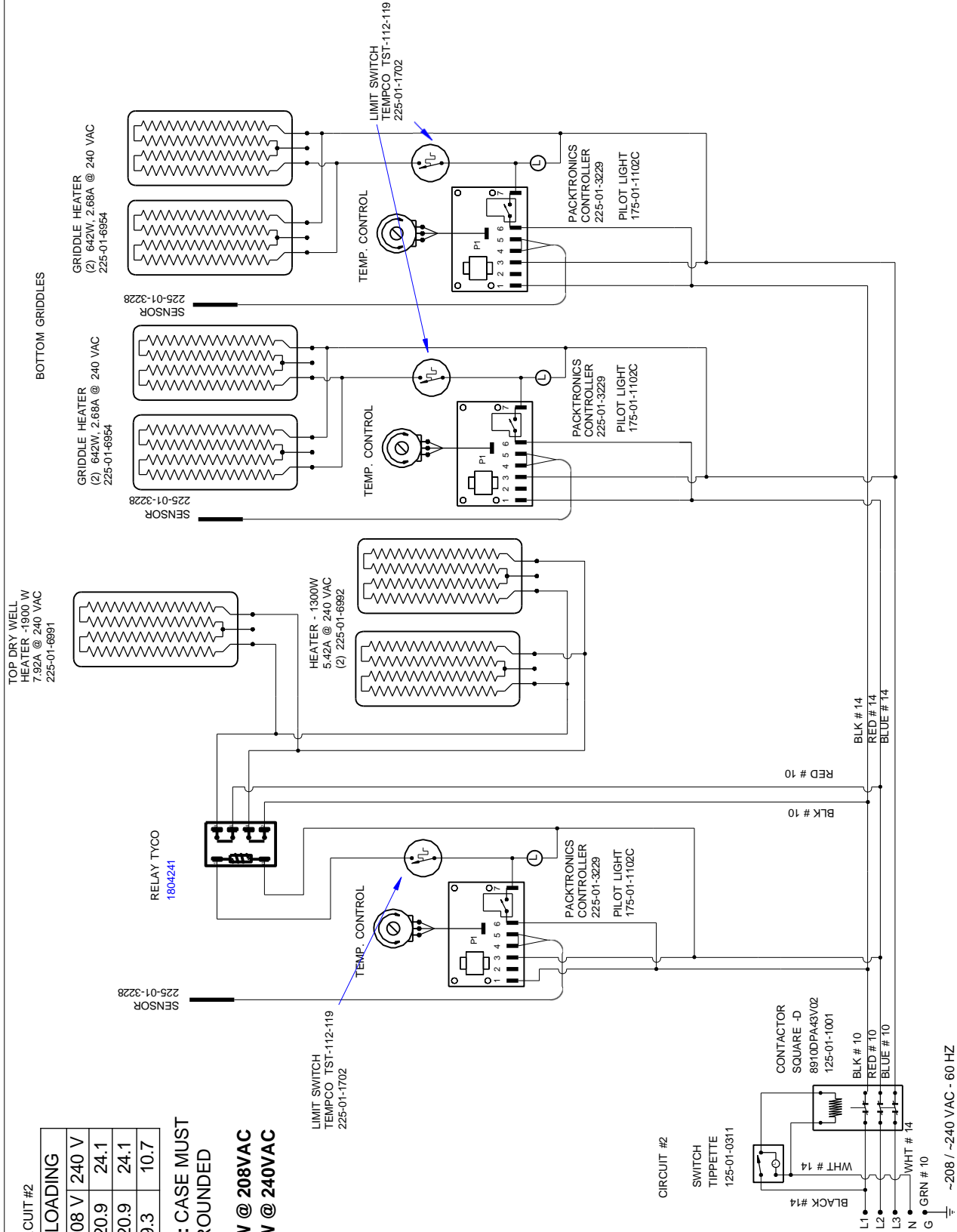
DRAWING #: W8700022
PAGE 3 OF 3

CIRCUIT #2

LOADING	208 V	240 V
L1	20.9	24.1
L2	20.9	24.1
L3	9.3	10.7

NOTE: CASE MUST BE GROUNDED

6136W @ 208VAC
8161W @ 240VAC



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REVISIONS:

#	DESCRIPTION	DATE	BY
B	ECN-CAP-0019900 CHANGED SHELF LAYOUT	12-5-19	CB
C	ECN-CAP-0020433 REWIRED CTRL AT RELAY	1-21-20	CB

DRAWN BY: MATT GRAMATA PROJECT TITLE: CR3
 CHECKED BY: DATE: 4/14/11
 PRODUCTION ORDER #: 622648 DRAWING TITLE: CR3H-HF-8 with 12" lower shelves & 4" dry well
 FILE LOCATION: DRAWING #: W8700030

PAGE 2 OF 3

CIRCUIT #3

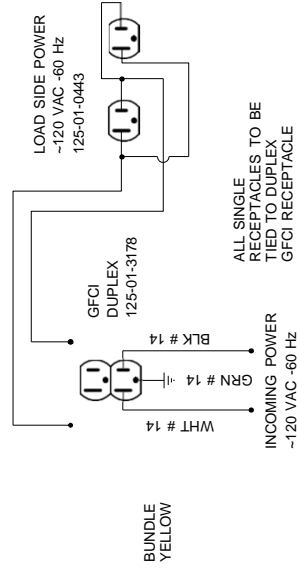
LOADING	
120 V	
L1	15.0

NOTE: CASE MUST BE GROUNDED

RJ-45 NETWORK JACK
125-01-0202



NOTE FOR GFCI PROTECTION: IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE, THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



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(909) 590-4910

REVISIONS:

#	DESCRIPTION:	DATE:	BY:
B	ECN-CAP-0019900 CHANGED SHELF LAYOUT	12-5-19	CB
C	ECN-CAP-0020433 REWIRED CTRLR AT RELAY	1-21-20	CB

DRAWN BY: MATT GRAMATA PROJECT TITLE: CR3
 CHECKED BY: DATE: 4/14/11
 PRODUCTION ORDER #: 622648 DRAWING TITLE:
 FILE LOCATION: CR3H-HF-8 with 12" lower shelves & 4" dry well

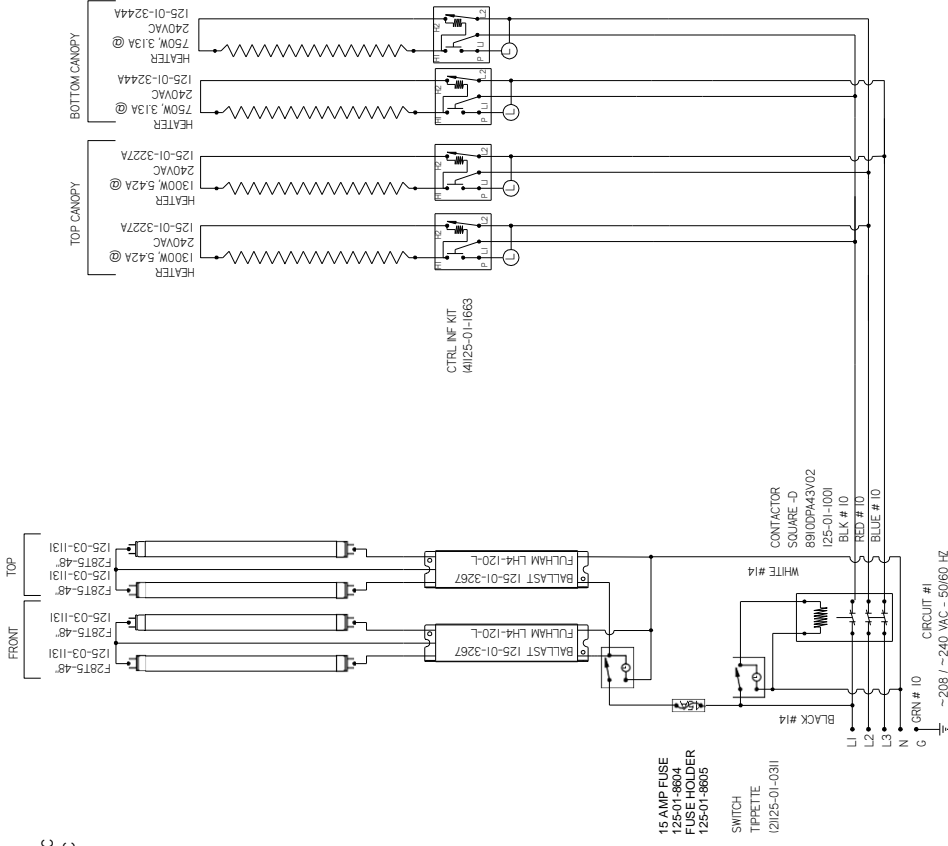
DRAWING #: W8700030
 PAGE 3 OF 3

CIRCUIT #1
LOADING

208V	240V
110	127
121	140
137.5	166

3675W @ 208VAC
4891W @ 240VAC

LIGHT CIRCUIT - 104A 112W



15 AMP FUSE
125-01-18805

SWITCH
TIPETTE
12125-01-0311

CONTACTOR
SQUARE-D
8910DP43V02
125-01-1001
BLK # 10
RED # 10
BLUE # 10

G GRN # 10
N
L1
L2
L3
L4
CIRCUIT #1
~208 / ~240 VAC - 50/60 HZ

REV	EN	DATE	REVISION HISTORY	REV BY	CHKD BY	APPR BY
1	ENL-CAP-0005867	2/10/2006	RELEASED TO PRODUCTION	GB	GB	GB

MATERIAL - N/A
DATE DRAWN - 10-5-16
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX ±0.3 .XXX
±0.0
ANGLES ± Z
PROJECTION

HUSSMANN
DIAGRAM-CP3H-#-8
W/OUT SHELF

ECN-CAP-0003967
SHEET 1 OF 3
THIRD ANGLE
PROJECTION

W6600227 | A

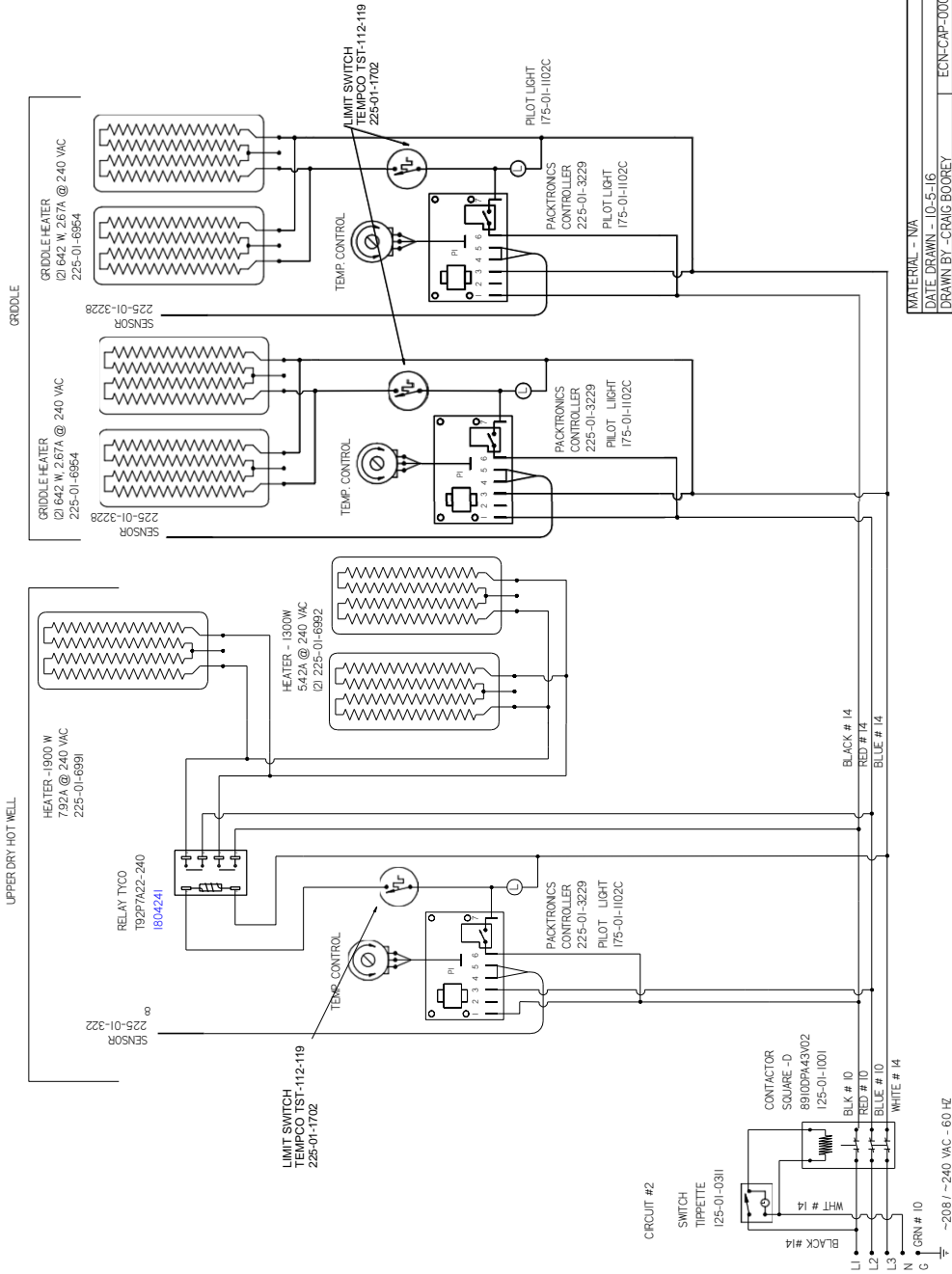
NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REV	EN	DATE	REVISION HISTORY	REV BY	CHKD BY	APPROV BY
1	ECN-CAP-0003967	2018/03/09	RELEASED TO PRODUCTION	GB	GB	GB

CIRCUIT #2
LOADING

1	208V	240V
L1	208	241
L2	208	241
L3	93	107

6112W @ 208VAC
8161W @ 240VAC



NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

MATERIAL - N/A
DATE DRAWN - 10-5-16
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ARE:
DECIMALS .XX ±0.3 .XXX
±0.0

ECN-CAP-0003967
REF -
SHEET 20F-3
THIRD ANCL
E
PROJECTION

HUSSMANN
DIAGRAM-CR3H-F-8
W/OUT SHELF

W6600227 | A

ANGLES ± Z

CIRCUIT #3
LOADING

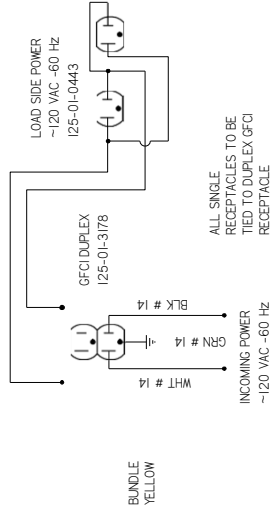
20V			
150			

REVISION HISTORY		REV BY	CHKD BY	APPR BY
REV	EN	DATE		
X	EN-CAP-0003967	2/10/2016		
			RELEASE TO PRODUCTION	

RJ45 NETWORK JACK
125-01-0202



NOTE FOR GFCI PROTECTION IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

MATERIAL - N/A		DATE DRAWN - 10-5-16		ECN-CAP-0003967	
DRAWN BY - CRAIG BOOREY		REVIEWED BY - CRAIG BOOREY		APPROVED BY - CRAIG BOOREY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		TOLERANCES ARE		DECIMALS .XX ±0.3 .XXX ±0.10	
THIRD ANGLE PROJECTION		ANGLES ± 2°		PROJECTION	
HUSSMANN DIAGRAM-CR3H-F-8 W/OUT SHELF			W6600227 A		

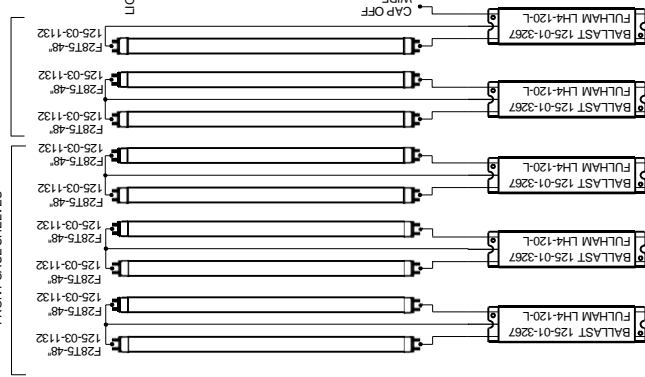
CIRCUIT #1

LOADING	208 V	240 V
L1	27.6	31.9
L2	25.6	29.6
L3	23.1	26.7

NOTE: CASE MUST BE GROUNDED

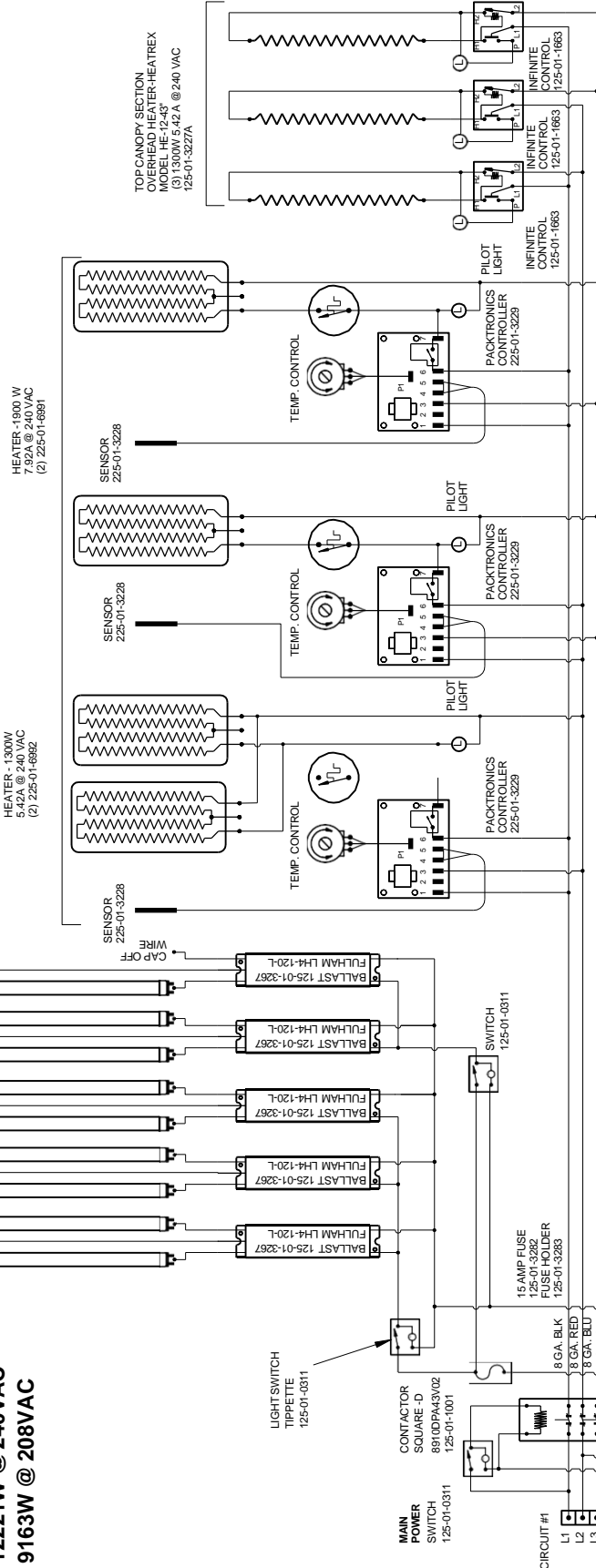
12221W @ 240VAC
9163W @ 208VAC

CANOPY LIGHTING FRONT CASE SHELVES



TOP CASE

LIGHT CIRCUIT 252W 2.33 AMPS



CIRCUIT #2
SEE PAGE 2 OF 3

L1
L2
L3

-208 / 240 VAC - 3Ø - 50/60 Hz - 4W

CONTACTOR SQUARE-D 8910DP43V02 125-01-1001

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REVISIONS:

#	DESCRIPTION	DATE	BY
E	ECN-0009100 ADDED LIMIT SWITCHED	8/22/17	CB
F	ECN-0013669 REVISED TOP HEATERS/LOADS	6/21/21	CB
G	ECN-COD-0014517 REVISED WIRE GAUGES	7/29/31	CB

DRAWN BY: CRAIG BOOREY
CHECKED BY: CB
DATE: 12/14/12
PROJECT TITLE: CR3
PRODUCTION ORDER #:
DRAWING TITLE: CR3H-HF-12 W/10" SHELF
FILE LOCATION:

DRAWING #: W6600066

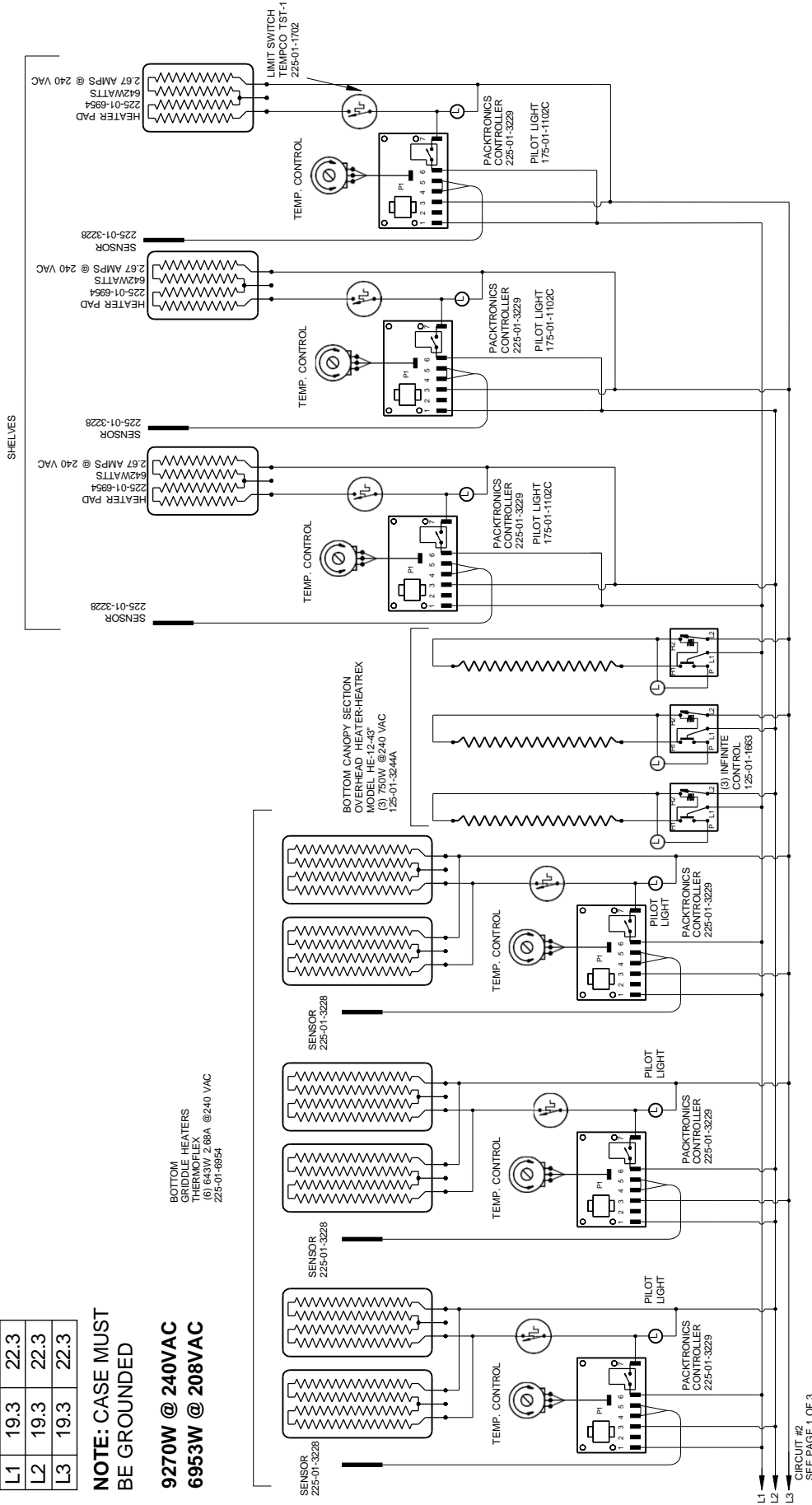
CIRCUIT #2

LOADING	208 V	240 V
L1	19.3	22.3
L2	19.3	22.3
L3	19.3	22.3

NOTE: CASE MUST BE GROUNDED

9270W @ 240VAC
6953W @ 208VAC

BOTTOM
GRIDDED HEATERS
TYPE: HE-12-43*
(6) 750W @240 VAC
225-01-6954



CIRCUIT #2
SEE PAGE 1 OF 3

HUSSMANN
Hussmann Corporation, Inc.
13770 Ramona Avenue
Chino, CA 91710
(909) 590-4910 Lic.#: 644406

REVISIONS:

#	DESCRIPTION	DATE	BY
E	ECN-0009100 ADDED LIMIT SWITCHED	8/22/17	CB
F	ECN-0013669 REVISED TOP HEATERS/LOADS	6/21/21	CB
G	ECN-COD-0014517 REVISED WIRE GAUGES	7/29/31	CB

DRAWN BY: CRAIG BOOREY
CHECKED BY: CB
DATE: 12/14/12
PRODUCTION ORDER #:
FILE LOCATION:

PROJECT TITLE: CR3
DRAWING TITLE: CR3H-HF-12 W/10" SHELF

DRAWING #: W6600066

PAGE 2 OF 3

CIRCUIT #3

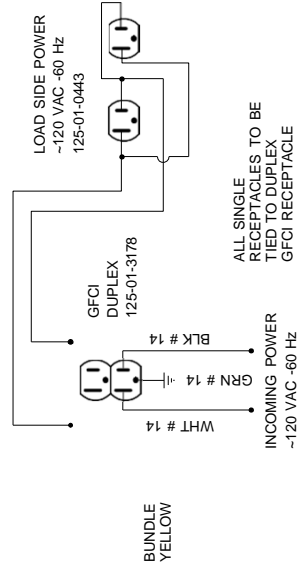
LOADING	
120 V	
L1	15.0

NOTE: CASE MUST BE GROUNDED

RJ-45 NETWORK JACK
125-01-0202



NOTE FOR GFCI PROTECTION: IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE, THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



HUSSMANN
Hussmann Corporation, Inc.
13770 Ramona Avenue
Chino, CA 91710 Lic.#: 644406
(909) 590-4910

REVISIONS:

#	DESCRIPTION	DATE	BY
E	ECN-0009100 ADDED LIMIT SWITCHED	8/22/17	CB
F	ECN-0013669 REVISED TOP HEATERS/LOADS	6/21/21	CB
G	ECN-COD-0014517 REVISED WIRE GAUGES	7/29/31	CB

DRAWN BY: CRAIG BOOREY
CHECKED BY: CB
DATE: 12/14/12
PROJECT TITLE: CR3
PRODUCTION ORDER #:
DRAWING TITLE:
FILE LOCATION: CR3H-HF-12 W/10" SHELF

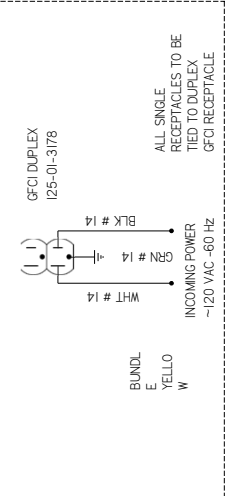
DRAWING #: W6600066
PAGE 3 OF 3

CIRCUIT #1
LOADING

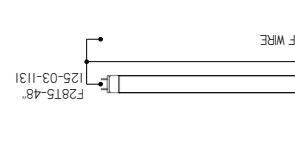
206V	Z40
124	143
L	147
	142

2579W @ 208VAC
3504W @ 240VAC

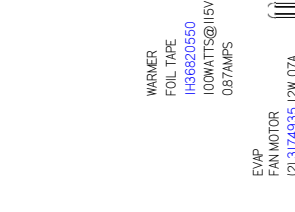
BL46 NETWORK
JACK 125-01-0202



LOWER FRONT SECTION
LIGHT CIRCUIT = 16A 17.6W

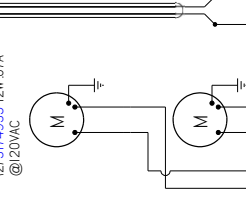


LIGHT CIRCUIT = 28W .26A

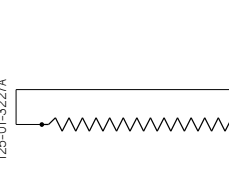


WARNER
FOIL TAPE
IH86820550
100WATTS@115V
0.87AMPS

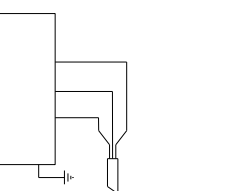
FAN MOTOR
I213174935 12W 07A
@120VAC



HEATING ELEMENT
1300W 5.42A @ 240VAC
125-01-3227A

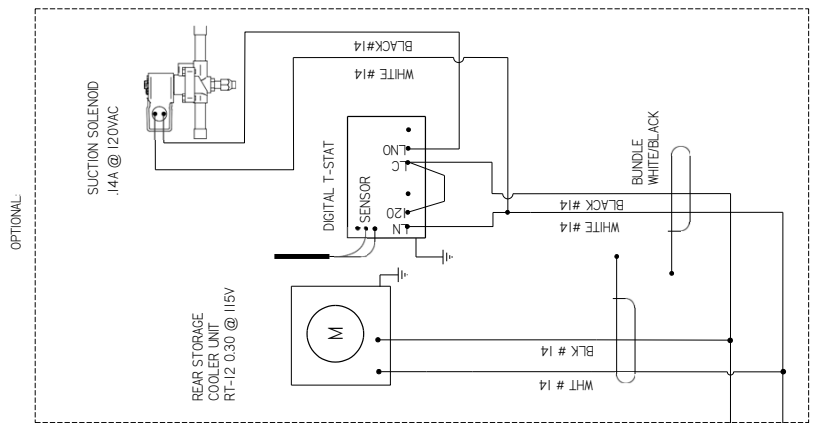


HATCO GRSBF-421
885W 7.4A @ 120 VAC
IH79081500



CIRCUIT #1
L1
L2
N
G
GRN # 12

~208 / 240 VAC - 1Ø - 60 HZ



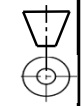
REVISION HISTORY

REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	987576	2015/09/15	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-CAP-0012699	2018/09/07	CHANGED ANTI-SWEAT HEATER	CB	CB	CB
C	ECN-CAP-0014507	2018/09/06	ADDED OPTIONAL REAR STORAGE	CB	CB	CB
D	ECN-COD-0018141	2023/07/05	CHANGED FAN MOTOR	CB	CB	CB

MATERIAL - N/A
DATE DRAWN - 6-15-15
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DIMENSIONS .XX ±.03 .XXX
±.010
ANGLES ± 2°
PROJECTION
E
D

HUSSMANN
DIAGRAM-R3-P-4-SH
-4CR-1-DS-R

W6600152 | D



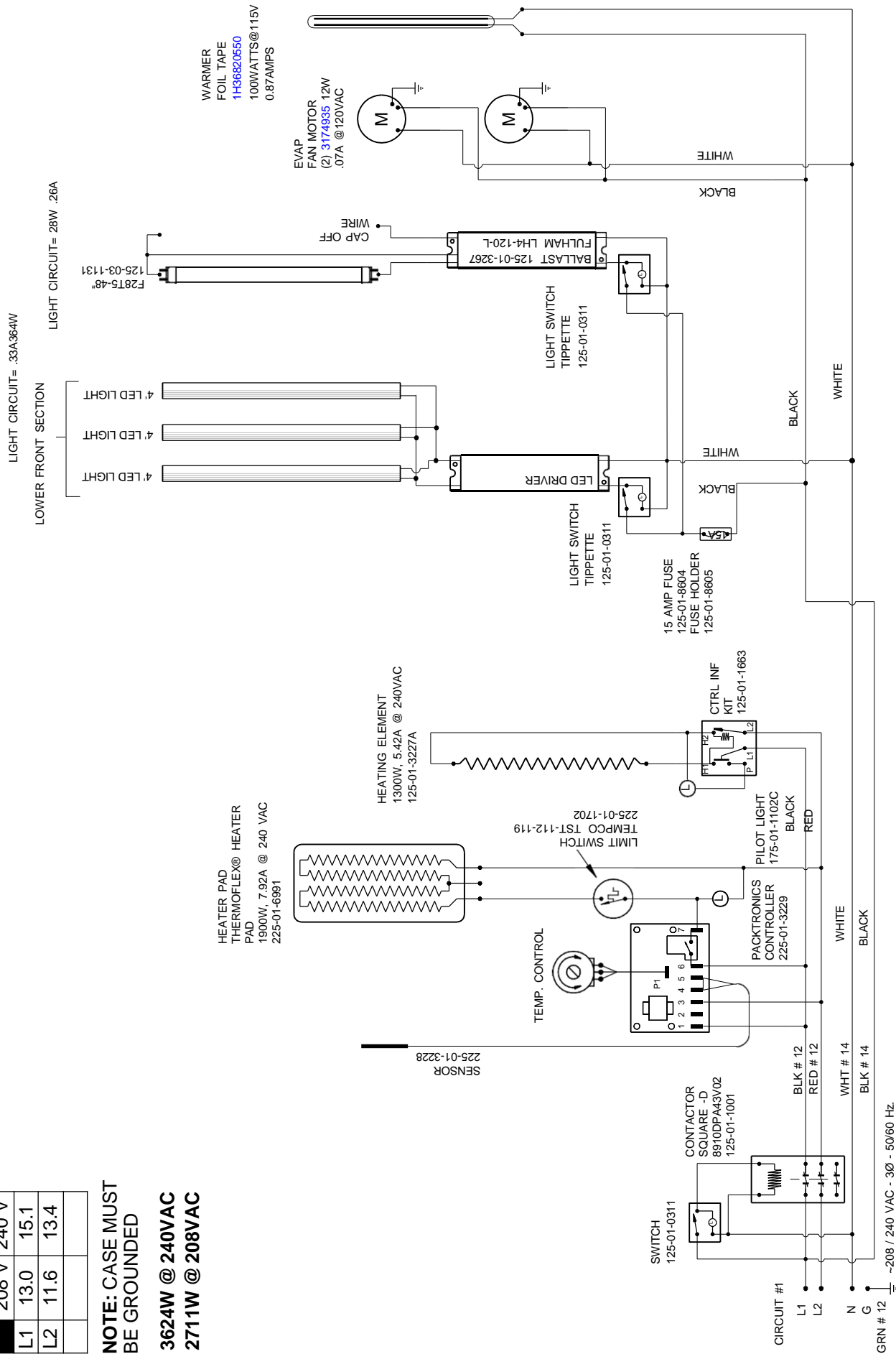
NOTES:
CASE MUST BE GROUNDED

CIRCUIT #1

LOADING	
208 V	240 V
L1	13.0
L2	11.6
	13.4

NOTE: CASE MUST BE GROUNDED

3624W @ 240VAC
2711W @ 208VAC



LIGHT CIRCUIT= .33A364W

LIGHT CIRCUIT= 28W .26A

LOWER FRONT SECTION

REVISIONS:

#	DESCRIPTION:	DATE:	BY:
G.	ECN-CAP-0012699 Changed Anti-Sweat Heater	06/07/18	CB
H.	ECN-COD-0011847 Added Fuse and Holder	10/26/20	CB
I.	ECN-COD-0018141 Changed Fan Motor	7/5/23	CB

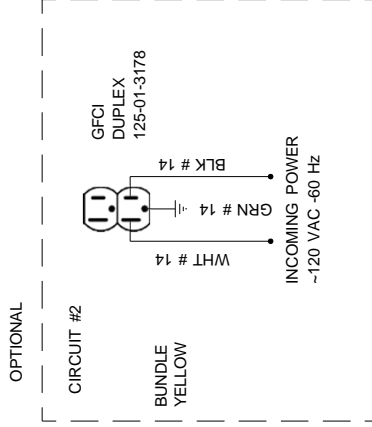
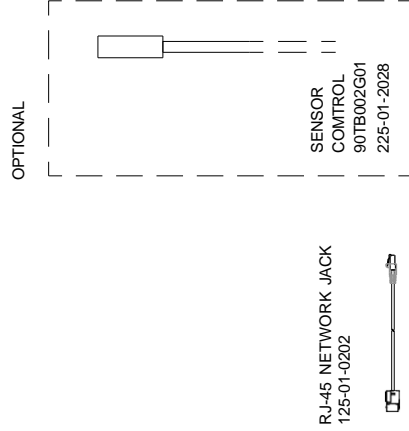
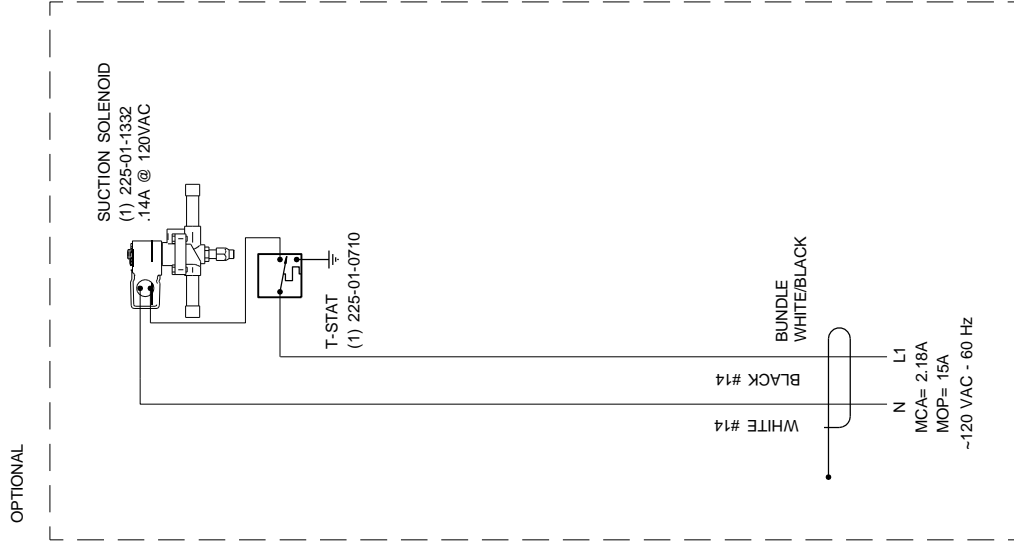
DRAWN BY: JESSE RIOS
 CHECKED BY: DATE: 4/11/07
 PRODUCTION ORDER #: CB
 FILE LOCATION: CB

PROJECT TITLE:
 DRAWING TITLE:
CR3H-4-REM

CIRCUIT #2

LOADING
120 V
L1 15.0

NOTE: CASE MUST BE GROUNDED



REVISIONS:

#	DESCRIPTION:	DATE:	BY:
G.	ECN-CAP-0012699 Changed Anti-Sweat Heater	06/07/18	CB
H.	ECN-COD-0011847 Added Fuse and Holder	10/26/20	CB
I.	ECN-COD-0018141 Changed Fan Motor	7/5/23	CB

DRAWN BY: JESSE RIOS
CHECKED BY: DATE: 4/11/07
PRODUCTION ORDER #:
FILE LOCATION:

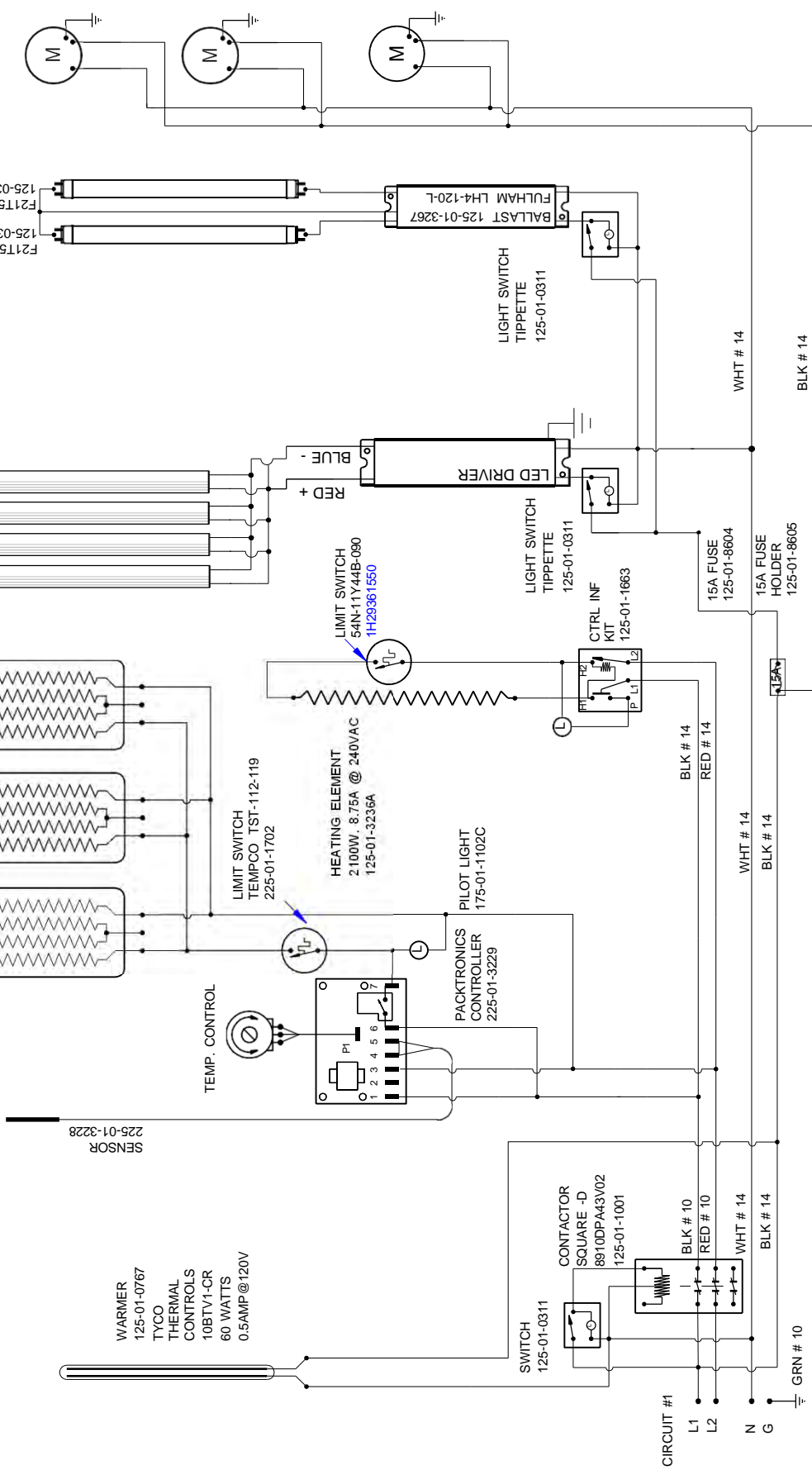
PROJECT TITLE:
DRAWING TITLE:
DRAWING #: W8700011
CR3H-4-REM
PAGE 2 OF 2

CIRCUIT #1

LOADING	208 V	240 V
L1	14.1	16.3
L2	12.9	14.9

NOTE: CASE MUST BE GROUNDED

2933W @ 208VAC
3912W @ 240VAC



-208 / 240 VAC - 60 Hz.

REVISIONS:

#	DESCRIPTION:	DATE:	BY:
C	Placed fans/heater tape before light circuit fuse	3/19/10	JR
D	ECN-CAP-0006456 Changed Lights & Fans	2/13/17	CB
E	ECN-COD-0018141 Changed Fan Motors	7/5/23	CB

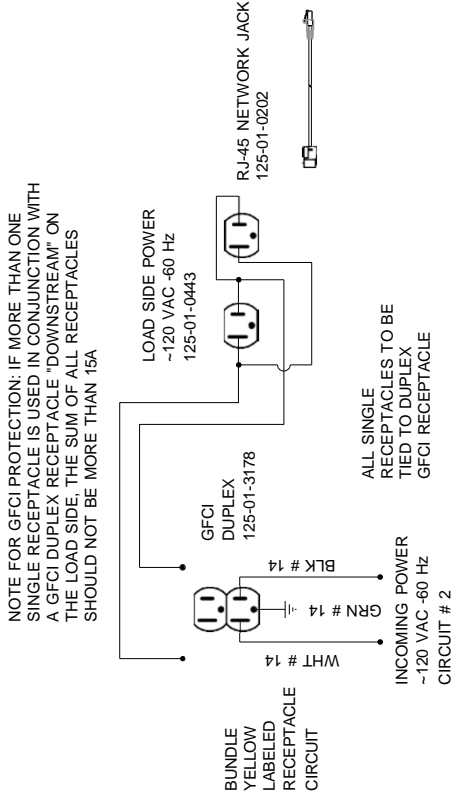
DRAWN BY: JESSE RIOS
 CHECKED BY: DATE: 12/1/08
 PRODUCTION ORDER #: 603701
 FILE LOCATION:

PROJECT TITLE: **R3**
 DRAWING TITLE: **CR3H-6-REM**

CIRCUIT #2

LOADING	
120 V	
L1 15.0	

NOTE: CASE MUST BE GROUNDED



REVISIONS:

#	DESCRIPTION:	DATE:	BY:
C	Placed fans/heater tape before light circuit fuse	3/19/10	JR
D	ECN-CAP-0006456 Changed Lights & Fans	2/13/17	CB
E	ECN-COD-0018141 Changed Fan Motors	7/5/23	CB

DRAWN BY: JESSE RIOS	DATE: 12/1/08
CHECKED BY:	PRODUCTION ORDER #: 603701
FILE LOCATION:	

PROJECT TITLE: R3
DRAWING TITLE: CR3H-6-REM

CIRCUIT #1

LOADING	208 V	240 V
L1	21.2	24.5
L2	19.2	22.1

NOTE: CASE MUST BE GROUNDED

4411W @ 208VAC
5880W @ 240VAC

WARMER
FOIL TAPE
1H36821550
150 WATTS @ 115V
1.30 AMPS

SENSOR
225-01-3228

TOP

HEATER PAD
1300W, 5.42A @ 240 VAC
225-01-6992

HEATER PAD
1900W, 7.92A @ 240 VAC
225-01-6991

LIMIT SWITCH
TEMPCO TST-112-119
(2) 225-01-1702

TEMP. CONTROL

HEATING ELEMENT
2100W, 8.75A @ 240VAC
125-01-3236A

PACKTROLICS
CONTROLLER
225-01-3229

PILOT LIGHT
175-01-1102C

CTRL INF
KIT
125-01-1663

TOP LIGHT CIRCUIT= .39A 42W

TOP

F21T5-36
125-03-1128

BALLAST
FULHAM LH4-120-L
125-01-3267

LIGHT SWITCH
TIPPETTE
125-01-0311

WHT # 14

BLK # 14

15A FUSE
HOLDER
125-01-8605

15A FUSE
125-01-8604

WHT # 14

BLK # 14

RED # 14

BLK # 14

-208 / 240 VAC - 60 HZ.

CIRCUIT #1

L1

L2

N

G

BLK # 8

RED # 8

WHT # 14

BLK # 14

GRN # 8

CONTACTOR
SQUARE - D
8910DPA43V02
125-01-1001

SWITCH
125-01-0311

FRONT SHELF

3 L.E.D. LIGHT
3 L.E.D. LIGHT
3 L.E.D. LIGHT
3 L.E.D. LIGHT

LIGHT CIRCUIT .39A 36W

EVAP
FAN MOTOR 12W
(3) 3174935 .07A EA

M

M

M

ADV DRIVER
LEDINTA-0024-41FO
0499399

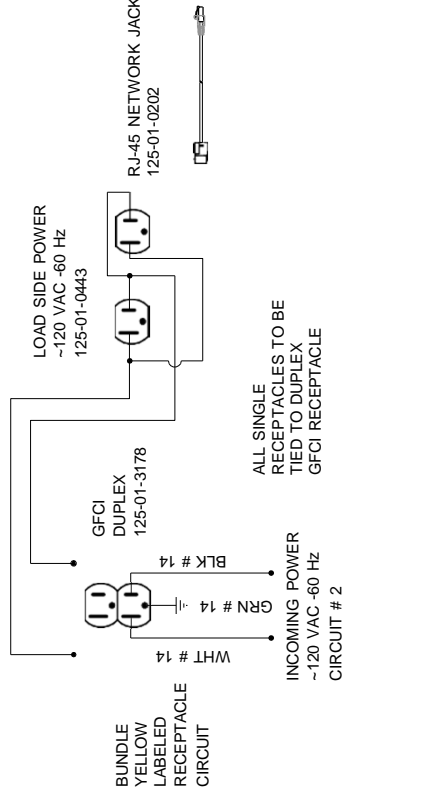
LIGHT SWITCH
TIPPETTE
125-01-0311

CIRCUIT #2

LOADING	
120 V	
L1 15.0	

NOTE: CASE MUST BE GROUNDED

NOTE FOR GFCI PROTECTION: IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE, THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



REVISIONS:

#	DESCRIPTION:	DATE:	BY:
D	Added Fan Motor to DWG	4/21/12	CB
E	ECN-CAP-0012699 Changed Anti-Sweat Heater	6/8/18	CB
F	ECN-COD-0018141 Changed Fan Motor	7/5/23	CB

DRAWN BY: JESSE RIOS	PROJECT TITLE: R3
CHECKED BY:	DATE: 11/9/09
PRODUCTION ORDER #: 622060	DRAWING TITLE: CR3H-6-REM
FILE LOCATION:	

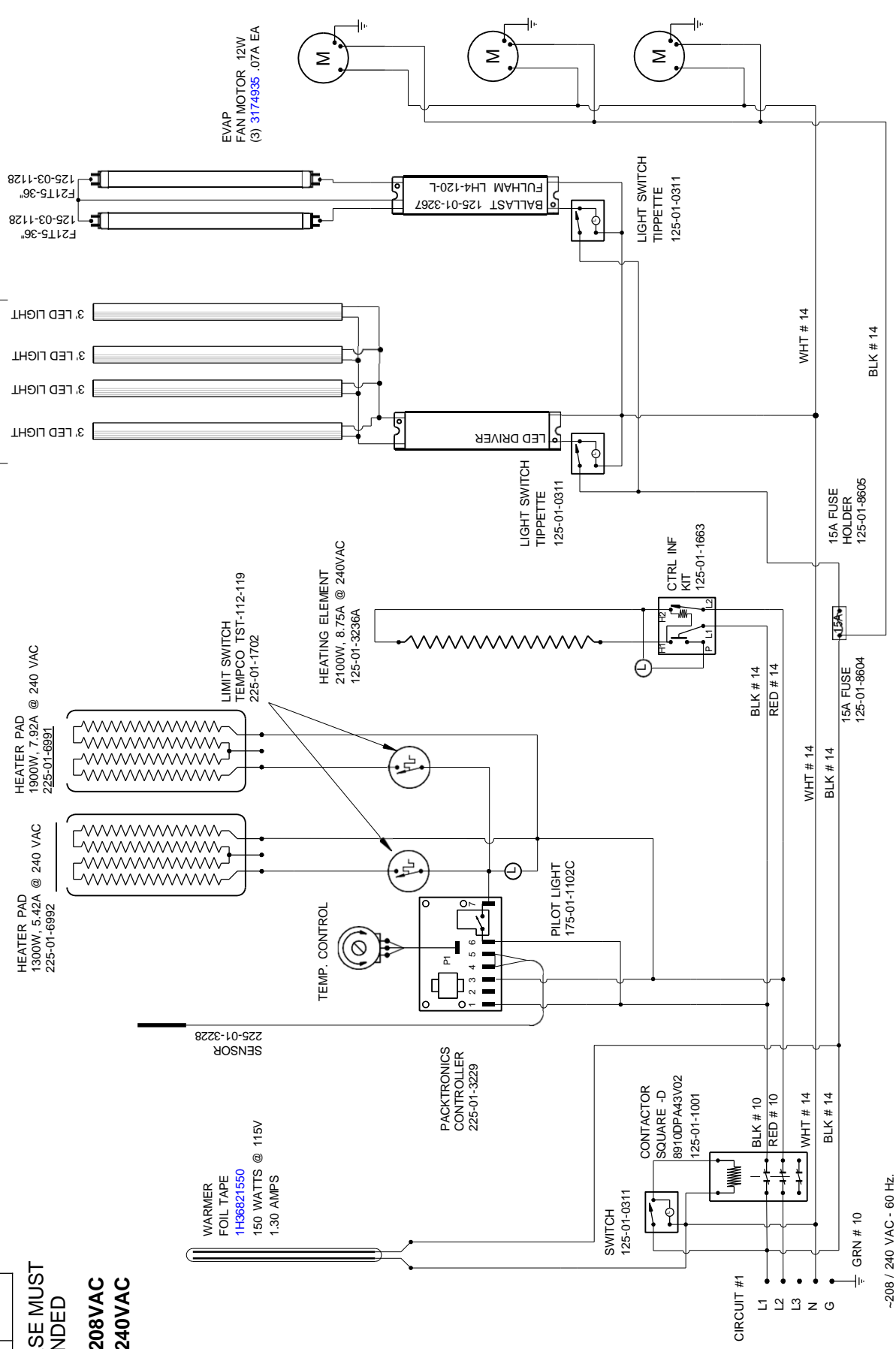
CIRCUIT #1

LOADING	
208 V	240 V
L1	21.2
L2	19.2
L3	22.1

NOTE: CASE MUST BE GROUNDED

4411W @ 208VAC
5880W @ 240VAC

LOWER FRONT SECTION LIGHT CIRCUIT= .33A 36W
 TOP LIGHT CIRCUIT= .39A 42W



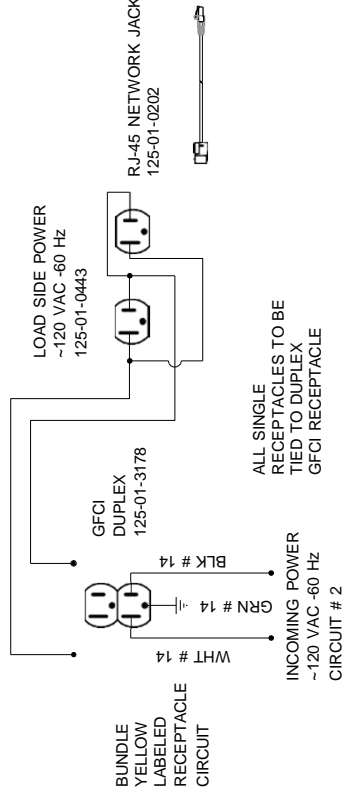
-208 / 240 VAC - 60 Hz.

CIRCUIT #2

LOADING	
120 V	
L1 15.0	

NOTE: CASE MUST BE GROUNDED

NOTE FOR GFCI PROTECTION: IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE, THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



REVISIONS:

#	DESCRIPTION:	DATE:	BY:
L	CN#634531 Added a 2nd limit Switch Back	7/13/12	CB
M	ECN-AP-0012699 Changed Anti-Sweat Heater	6/8/18	CB
N	ECN-COD-0018141 Changed Fan Motor	7/5/23	CB

DRAWN BY: JESSE RIOS

CHECKED BY: DATE: 8/3/07

PRODUCTION ORDER #: 621106

FILE LOCATION:

PROJECT TITLE: R3

DRAWING TITLE:

CR3H-6-REM

DRAWING #: W8700015

CIRCUIT #1

LOADING	208 V	240 V
L1	23.8	27.0
L2	20.9	24.2
L3	9.4	10.8

NOTE: CASE MUST BE GROUNDED

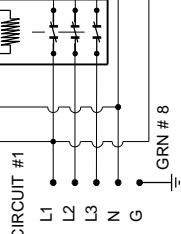
6497W @ 208VAC
8591W @ 240VAC

LIMIT SWITCH
TEMPCO TST-112-119
225-01-1702

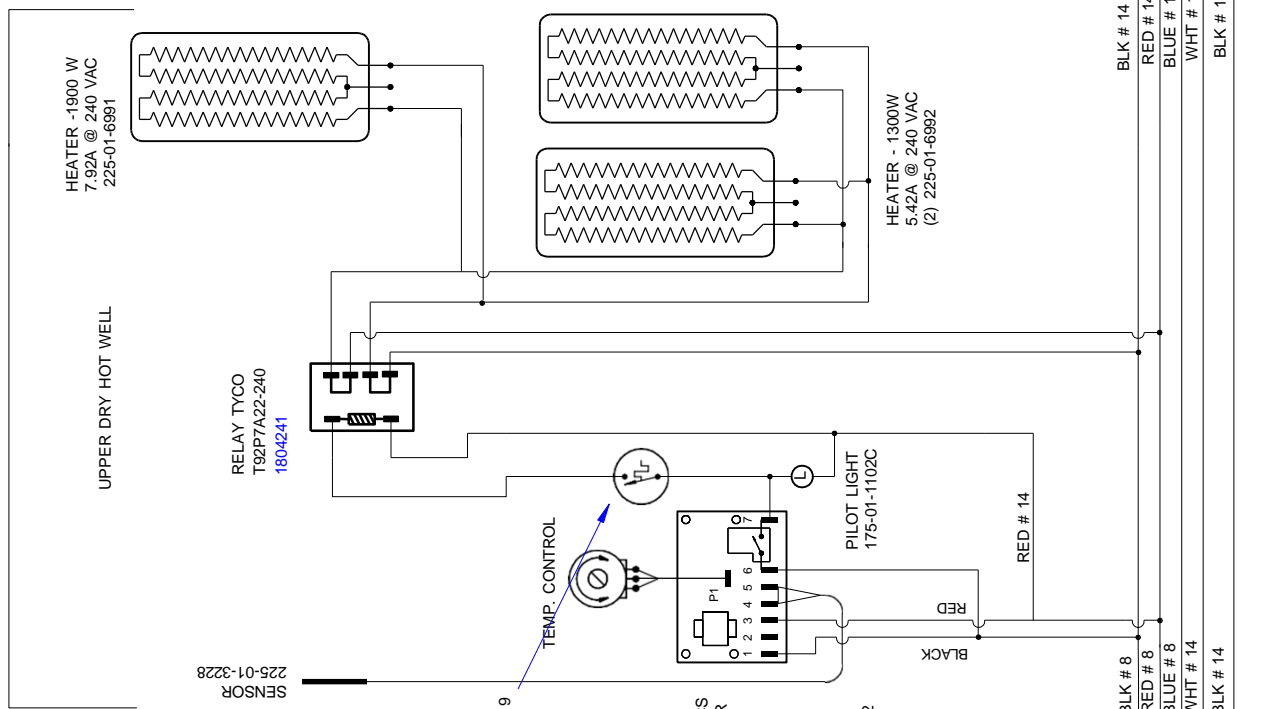
PACKTRONICS
CONTROLLER
225-01-3229

CONTACTOR
SQUARE -D
8910DPA43V02
125-01-1001

SWITCH
125-01-0311



-208 / 240 VAC - 60 HZ.

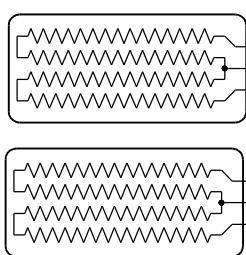


UPPER DRY HOT WELL

HEATER -1900 W
7.92A @ 240 VAC
225-01-6991

RELAY TYCO
T92P7A22-240
1804241

SENSOR
225-01-3228



HEATER -1300W
5.42A @ 240 VAC
(2) 225-01-6992

LIGHT CIRCUIT= .51A 56W

TOP SECTION

(2)FP28/835T5-48
125-03-1132

HEATING ELEMENT
1300W, 5.42A @ 240VAC
(2)125-01-3227A

CTRL INF KIT
(2)125-01-1663

LIGHT SWITCH
TIPPETTE
125-01-0311

LED DRIVER

BALLAST 125-01-3267
FULHAM LH4-120-L

15A FUSE
125-01-8604
FUSEBLOCK
125-01-8605

LIGHT CIRCUIT .44A 48W
FRONT SHELF

4 L.E.D. LIGHT
4 L.E.D. LIGHT
4 L.E.D. LIGHT
4 L.E.D. LIGHT

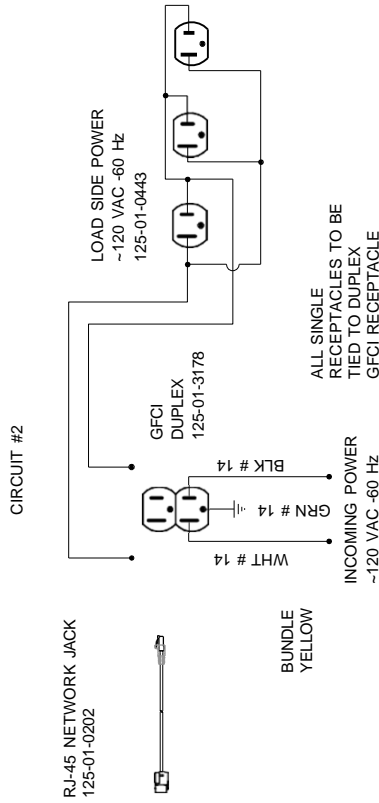
WARMER
FOIL TAPE
1H36622550
200 WATTS @ 115V
1.74 AMPS

BUNDLE
PURPLE

EVAP
FAN MOTOR
(4) 3174935
12W .07A @ 120VAC

CIRCUIT #2

LOADING	
120 V	
L1 15.0	



REVISIONS:

#	DESCRIPTION:	DATE:	BY:
F	ECN-CAP-0002614 Revised Trakstat Wiring	8/19/16	CB
G	ECN-CAP-0012699 Changed Anti-Sweat Heater	6/8/18	CB
H	ECN-COD-0018141 Changed Fan Motor	7/5/23	CB

DRAWN BY:	JESSE RIOS
CHECKED BY:	
DATE:	11/6/08
PRODUCTION ORDER #:	
FILE LOCATION:	

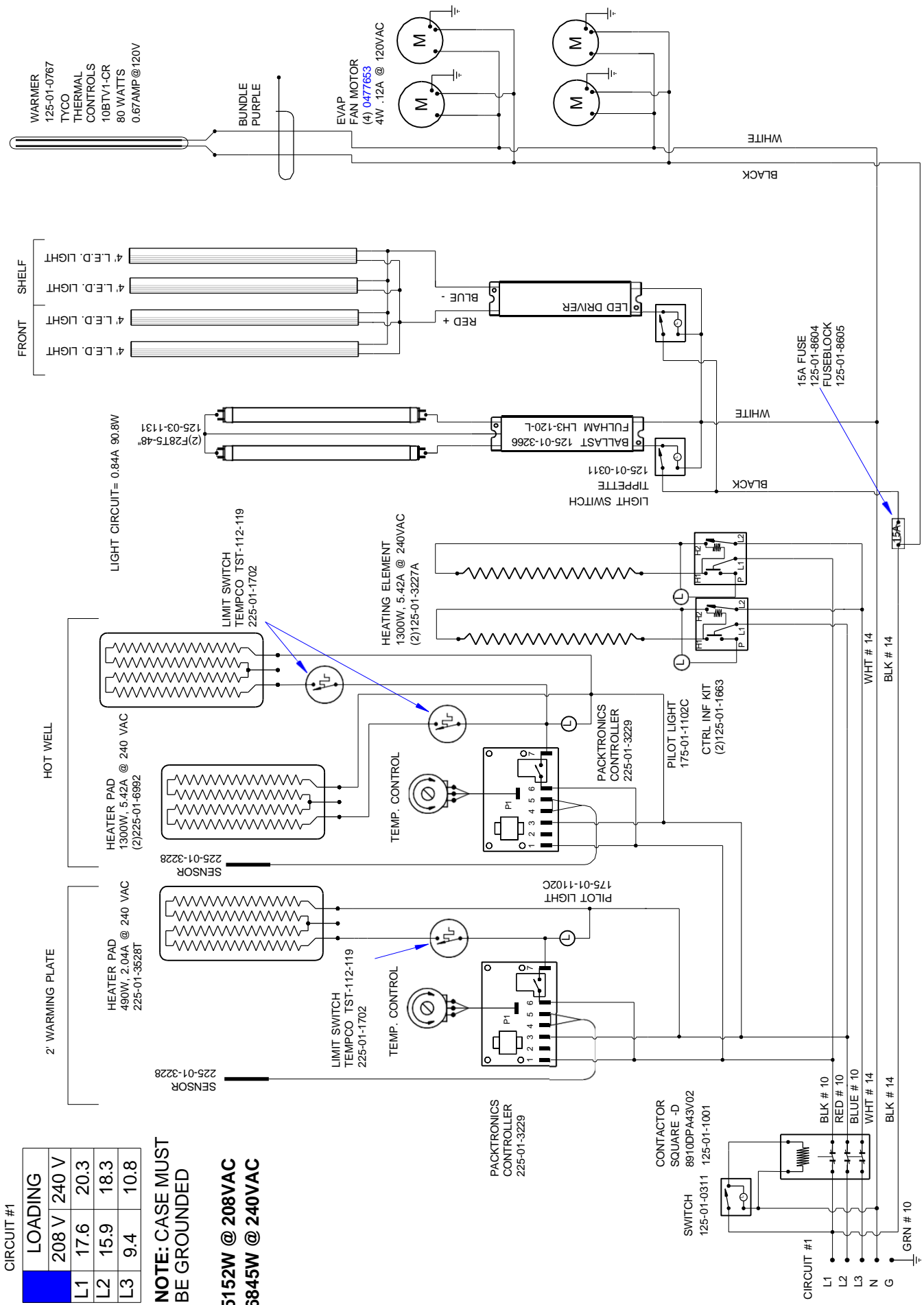
PROJECT TITLE:	R3
DRAWING TITLE:	R3H-8-REM With top dry well

CIRCUIT #1

CIRCUIT #1	LOADING
208 V / 240 V	
L1	17.6 20.3
L2	15.9 18.3
L3	9.4 10.8

NOTE: CASE MUST BE GROUNDED

5152W @ 208VAC
6845W @ 240VAC



-208 / 240 VAC - 60 Hz.

REVISIONS:

#	DESCRIPTION:	DATE:	BY:
B	Placed fans and heater tape before light circuit fuse	3/22/10	JR
C	ECN-CAP-0006456 Changed Front to LED Lights	2/13/17	CB

FILE LOCATION:

PRODUCTION ORDER #:	521734
---------------------	--------

PROJECT TITLE: **R3**

DRAWN BY: **JESSE RIOS**

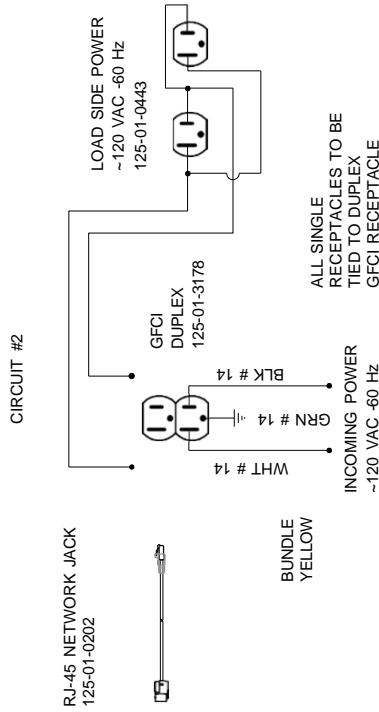
CHECKED BY: **JR**

DATE: **12/22/08**

DRAWING TITLE: **R3H-8-REM**

CIRCUIT #2

LOADING	
120 V	
L1 15.0	



REVISIONS:

#	DESCRIPTION:
B	Placed fans and heater taps before light circuit fuse

DRAWN BY: JESSE RIOS	CHECKED BY:	DATE: 12/22/08
BY: JR	PRODUCTION ORDER #:	521734
DATE: 3/22/10	FILE LOCATION:	

PROJECT TITLE: R3	DRAWING #: W1800192
DRAWING TITLE: R3H-8-REM	
PAGE 2 OF 2	

CIRCUIT #1

LOADING	208 V	240 V
L1	21.6	25.0
L2	19.2	22.1

NOTE: CASE MUST BE GROUNDED

4493W @ 208VAC
6000W @ 240VAC

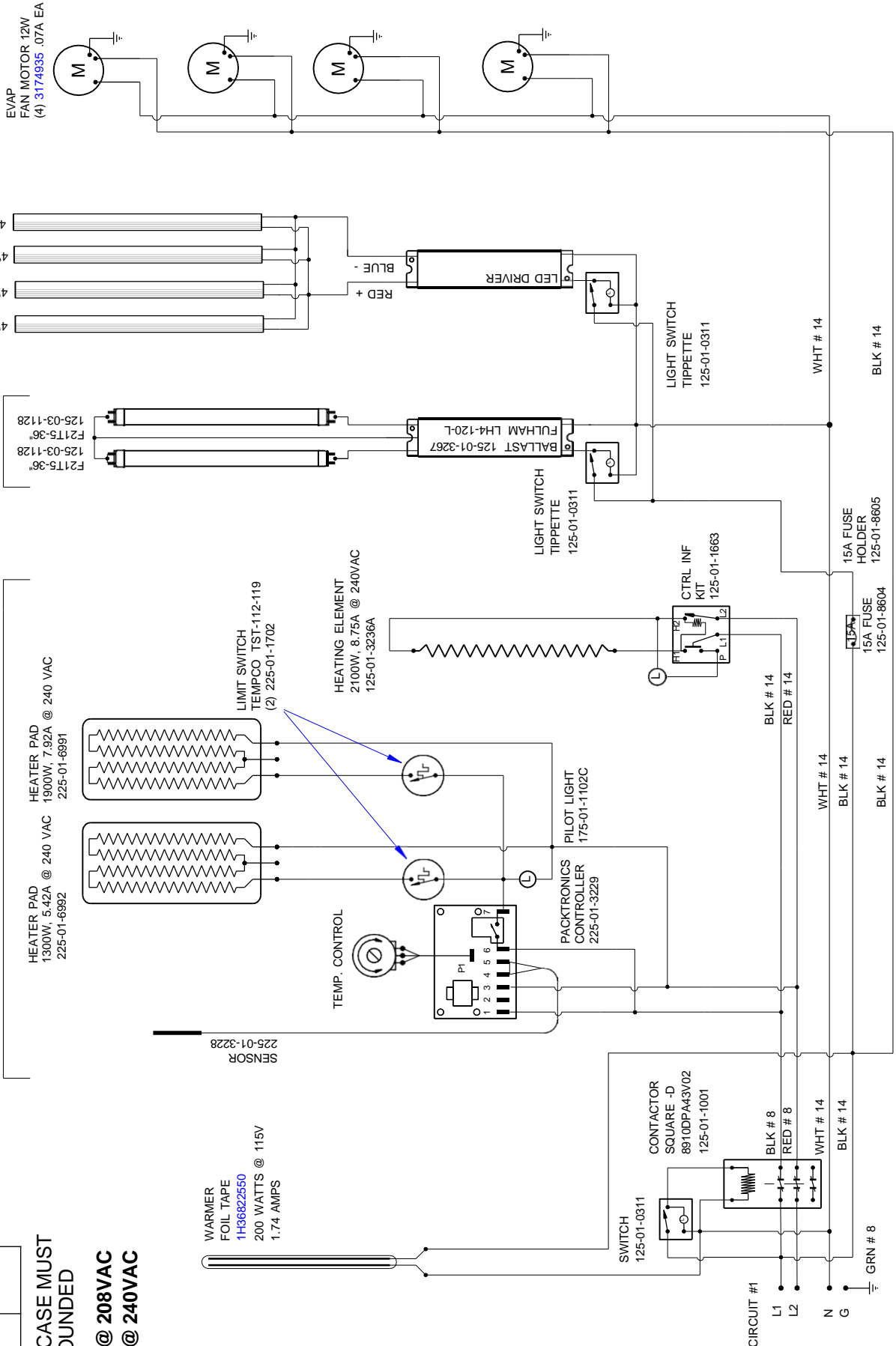
WARMER
FOIL TAPE
1H36822550
200 WATTS @ 115V
1.74 AMPS

TOP LIGHT CIRCUIT= 0.74A 80.4W

TOP

TOP

TOP



-208 / 240 VAC - 60 HZ.

REVISIONS:

#	DESCRIPTION:	DATE:	BY:
B	ECN-CAP-0006456 Changed Front To LED Lights	2/13/17	CB
C	ECN-CAP-0012699 Changed Anit-Sweat Heaters	6/8/18	CB
D	ECN-COD-0018141 Changed Fan Motor	7/5/23	CB

DRAWN BY: JESSE RIOS
CHECKED BY:
DATE: 2/5/10
PRODUCTION ORDER #: 622194
FILE LOCATION:

PROJECT TITLE: **R3**
DRAWING TITLE:
CR3H-8-REM, 6' UPPER HOT WELL

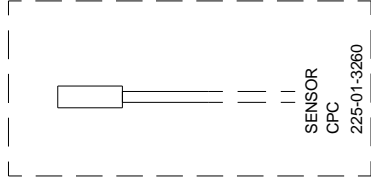
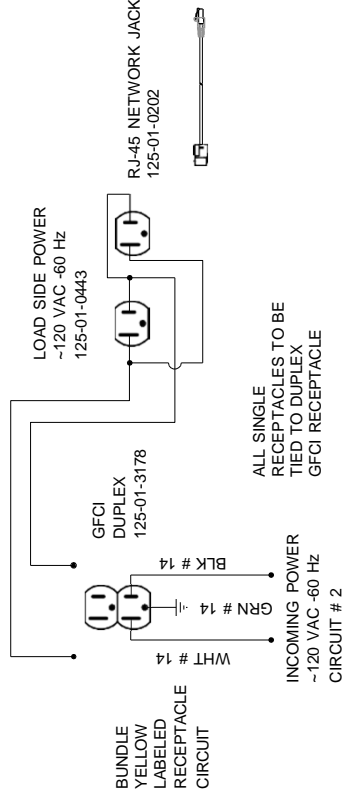
DRAWING #: **W1800196**
PAGE 1 OF 2

CIRCUIT #2

LOADING	
120 V	
L1 15.0	

NOTE: CASE MUST BE GROUNDED

NOTE FOR GFCI PROTECTION: IF MORE THAN ONE SINGLE RECEPTACLE IS USED IN CONJUNCTION WITH A GFCI DUPLEX RECEPTACLE "DOWNSTREAM" ON THE LOAD SIDE, THE SUM OF ALL RECEPTACLES SHOULD NOT BE MORE THAN 15A



REVISIONS:

#	DESCRIPTION:	DATE:	BY:
B	ECN-CAP-0006456 Changed Front To LED Lights	2/13/17	CB
C	ECN-CAP-0012699 Changed Anti-Sweat Heaters	6/8/18	CB
D	ECN-COD-0018141 Changed Fan Motor	7/5/23	CB

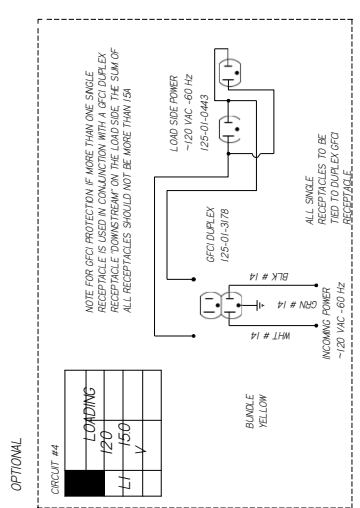
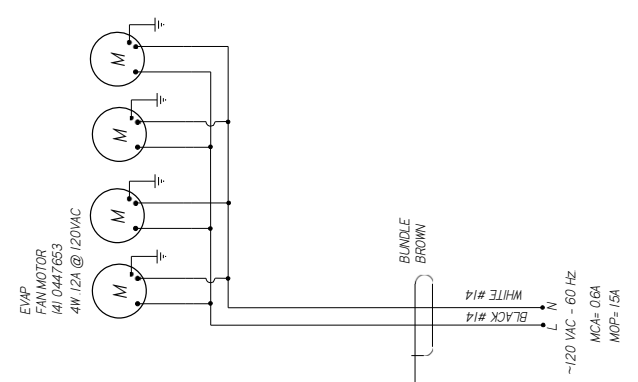
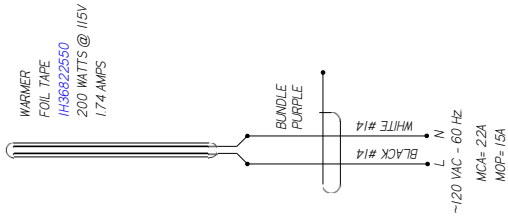
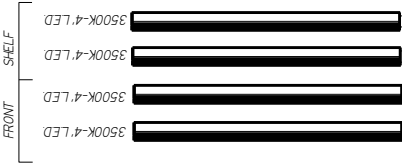
DRAWN BY: JESSE RIOS	PROJECT TITLE: R3	DRAWING #: W1800196
CHECKED BY:	DATE: 2/5/10	
PRODUCTION ORDER #: 622194		
FILE LOCATION:		

CR3H-8-REM, 6' UPPER HOT WELL

CIRCUIT #1

LOADING	
120V	
±0	

LIGHT CIRCUIT 33A 352W



REVISION HISTORY

REV	ECN	DATE	DESCRIPTION	REV BY	CHKD BY	APPR BY
A	803263	2014/03/24	NEW ORDER	CB	CB	CB
B	930249	2015/07/15	CHANGED TERMINAL BLOCK ON CIRCUIT 2	CB	CB	CB
C	EDU-CAP-002699	2018/06/11	CHANGED AUTO-SWEAT HEATER	CB	CB	CB

HUSSMANN
DIAGRAM=R3-HD-
8- SH-4SW-4HW-R

MATERIAL - N/A
 DATE DRAWN - 3/24/14
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 DECIMALS XX ±0.3, XXX ±0.10
 ANGLES ±2°

ECN# - 803263 REF - NEW
 DIAGRAM SHEET 1 OF 3
 THIRD

PROJECTION

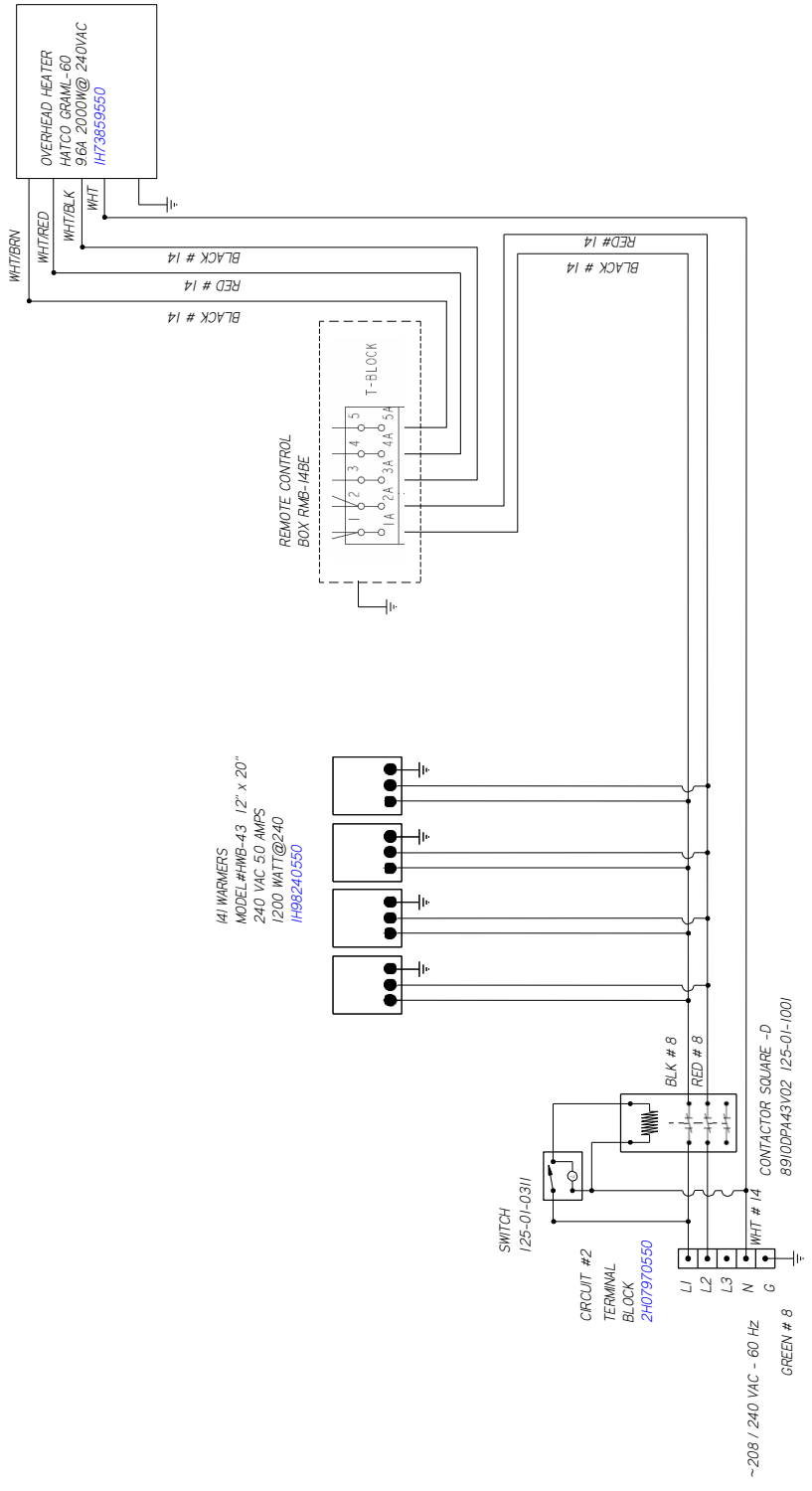
NOTES:
 CASE MUST BE GROUNDED

CIRCUIT #2

LDING	240V	240
L1	208V	208
L2	208V	208
L3	208V	208
L	208V	208

5346W @ 208VAC
7104W @ 240VAC

REVISION HISTORY			
REV	ECN	DATE	DESCRIPTION
A	803263	2014/03/24	NEW DRAWING
B	930249	2015/07/15	CHANGED TERMINAL BLOCK ON CIRCUIT 2
C	EDN-CAP-0002699	2018/08/01	CHANGED AUTO-SWEAT HEATER



HUSSMANN
DIAGRAM=R3-HD-
8- SH-4SW-4HW-R

MATERIAL - N/A
DATE DRAWN - 3/24/14
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX ±0.03 .XXX
±0.0

ECN# - 803263 REF - NEW
DIAGRAM SHEET 2 OF 3
THIRD ANGL
E PROJECTION

W6600117 | C

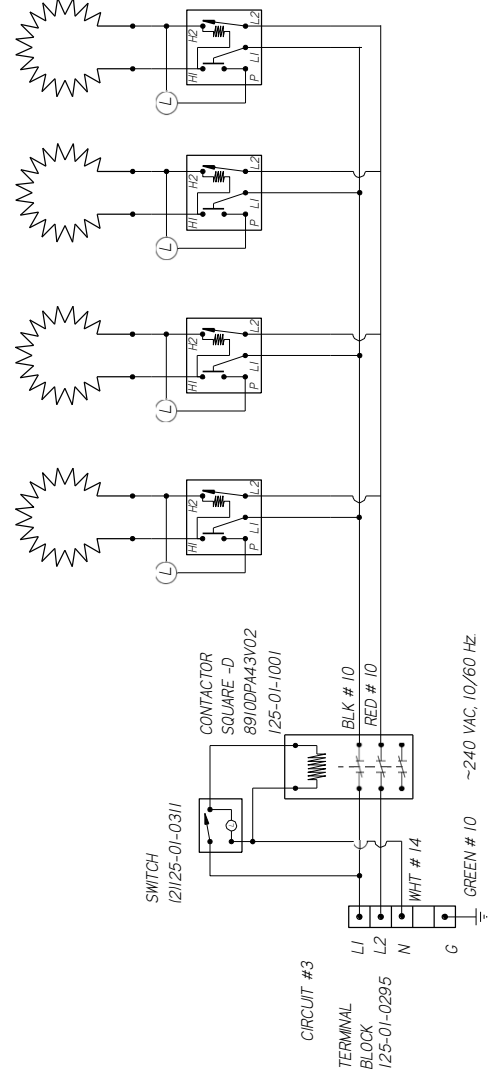
NOTES:
CASE MUST BE GROUNDED

REVISION HISTORY			
REV	ECN	DATE	DESCRIPTION
A	803263	2014/03/24	NEW DRAWING
B	930249	2015/07/15	CHANGED TERMINAL BLOCK ON CIRCUIT 2
C	EDM-CAP-002699	2018/08/01	CHANGED AUTO-SWEAT HEATER

CIRCUIT #3	INDG
	208V
	240
	100
	100
	100

180W @ 208VAC
2400W @ 240VAC

141 SOLIP WARMERS
MODEL#HMB-110T
2.5 AMPS @240V
600WATTS
IH33446550



SWITCH 121125-01-0311
CONTACTOR SQUARE-D 8910DP443V02 125-01-1001
TERMINAL BLOCK 125-01-0295
L1 L2 N G
BLK # 10 RED # 10
WHT # 14
GREEN # 10 -240 VAC, 10/60 Hz

HUSSMANN
DIAGRAM-R3-HD-
8- SH-4SW-4HW-R

MATERIAL - N/A
DATE DRAWN - 3/24/14
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ARE:
DECIMALS .XX ±0.3, .XXX ±0.10
ANGLES ± 2°

ECN# - 803263 REF - NEW
DIAGRAM SHEET 3 OF 3
THIRD ANGL PROJECTION

W6600117 | C

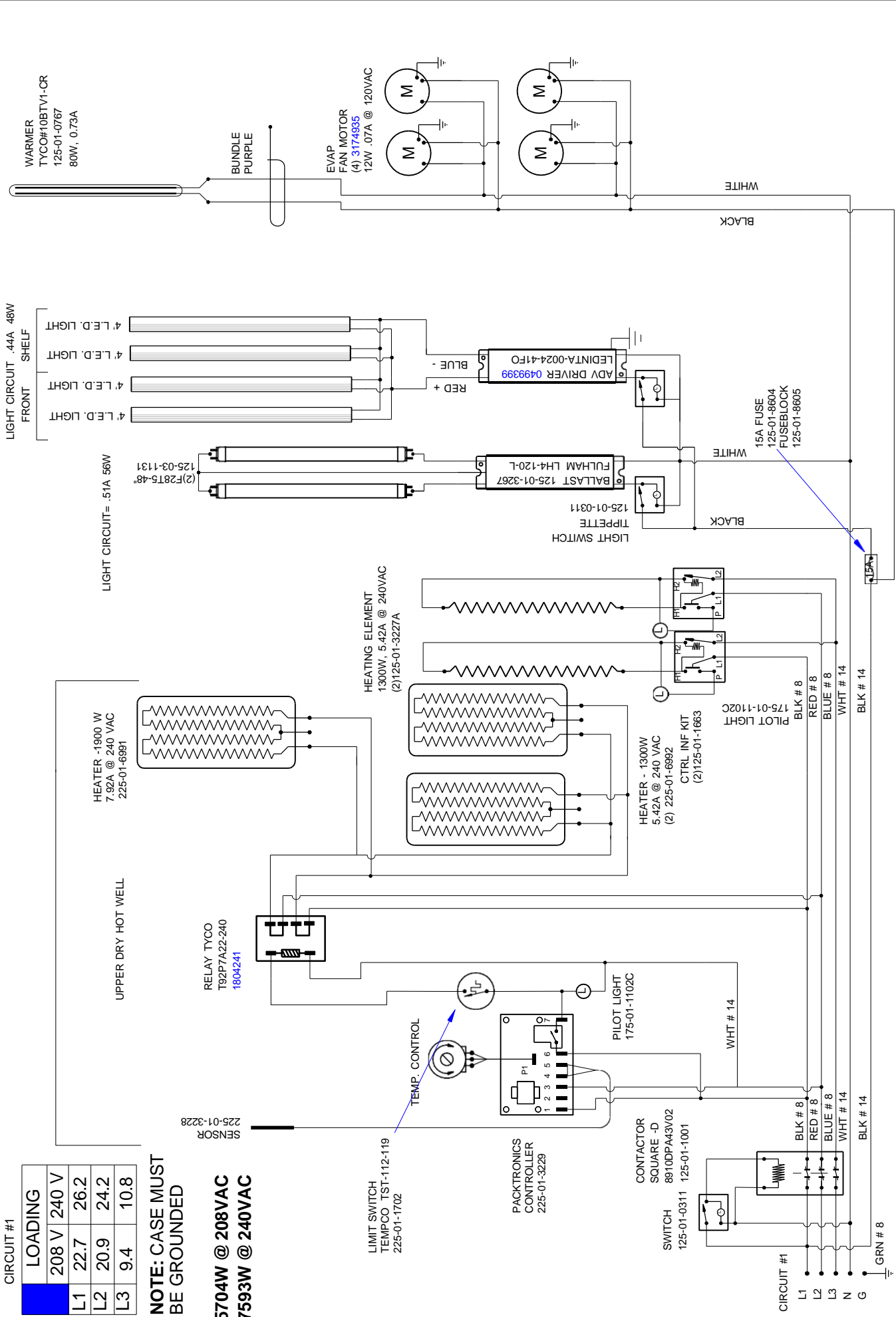
NOTES:
CASE MUST BE GROUNDED

CIRCUIT #1

LOADING	208 V	240 V
L1	22.7	26.2
L2	20.9	24.2
L3	9.4	10.8

NOTE: CASE MUST BE GROUNDED

5704W @ 208VAC
7593W @ 240VAC



REVISIONS:

#:	DESCRIPTION:	DATE:	BY:
H	ECN-CAP-0012699 Changed Anti-Sweat Heater	6/11/18	CB
I	ECN-COD-13665 Changed A.S.Hr	5/20/21	CB
J	ECN-COD-0018141 Changed Fan Motor	7/5/23	CB

DRAWN BY: JESSE RIOS
CHECKED BY: []
DATE: 6/5/08

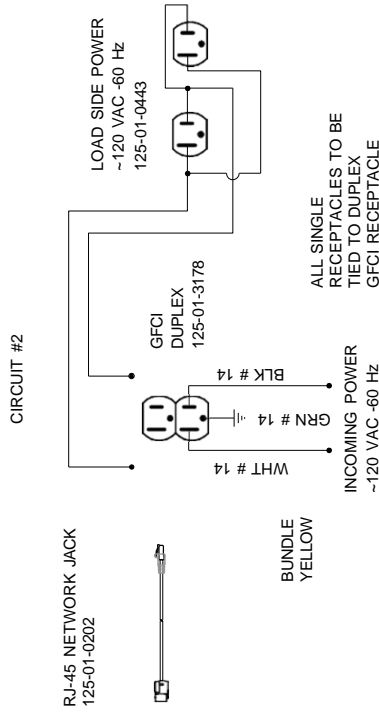
PRODUCTION ORDER #: 621533
FILE LOCATION:

PROJECT TITLE: **CR3**
DRAWING TITLE: **CR3H-8-REM**

-208 / 240 VAC - 60 Hz.

CIRCUIT #2

LOADING	
120 V	
L1 15.0	



REVISIONS:

#:	DESCRIPTION:	DATE:	BY:
H	ECN-CAP-0012699 Changed Anti-Sweat Heater	6/11/18	CB
I	ECN-COD-13665 Changed A.S.Hr.	5/20/21	CB
J	ECN-COD-0018141 Changed Fan Motor	7/5/23	CB

DRAWN BY: JESSE RIOS	CHECKED BY:	DATE: 6/5/08
PRODUCTION ORDER #: 621533	FILE LOCATION:	

PROJECT TITLE: CR3	DRAWING #: W8700020
DRAWING TITLE: CR3H-8-REM	

CIRCUIT #1

LOADING	208 V	240 V
L1	29.9	34.5
L2	31.6	36.5
L3	17.9	20.7

NOTE: CASE MUST BE GROUNDED

9535W @ 208VAC
12706W @ 240VAC

LIMIT SWITCH
TEMPCO TST-112-119
225-01-1702

PACKTRONICS
CONTROLLER
225-01-3229

CONTACTOR
SQUARE - D
8910DPA43V02
125-01-1001

SWITCH
125-01-0311

SENSOR
225-01-3228

TEMP. CONTROL

PILOT LIGHT
175-01-1102C

UPPER DRY HOT WELL

HEATER - 1900 W
7.92A @ 240 VAC
(2) 225-01-6991

CONTACTOR
SQUARE - D
8910DPA43V02
125-01-1001

HEATER - 1300W
5.42A @ 240 VAC
(1) 225-01-6992

CTRL INF KIT
(3) 125-01-1663

HEATING ELEMENT
1760W, 7.33A @ 240VAC
(2) 125-01-1002A

BOTTOM SECTION

LED LIGHT CIRCUIT= .46A 50W

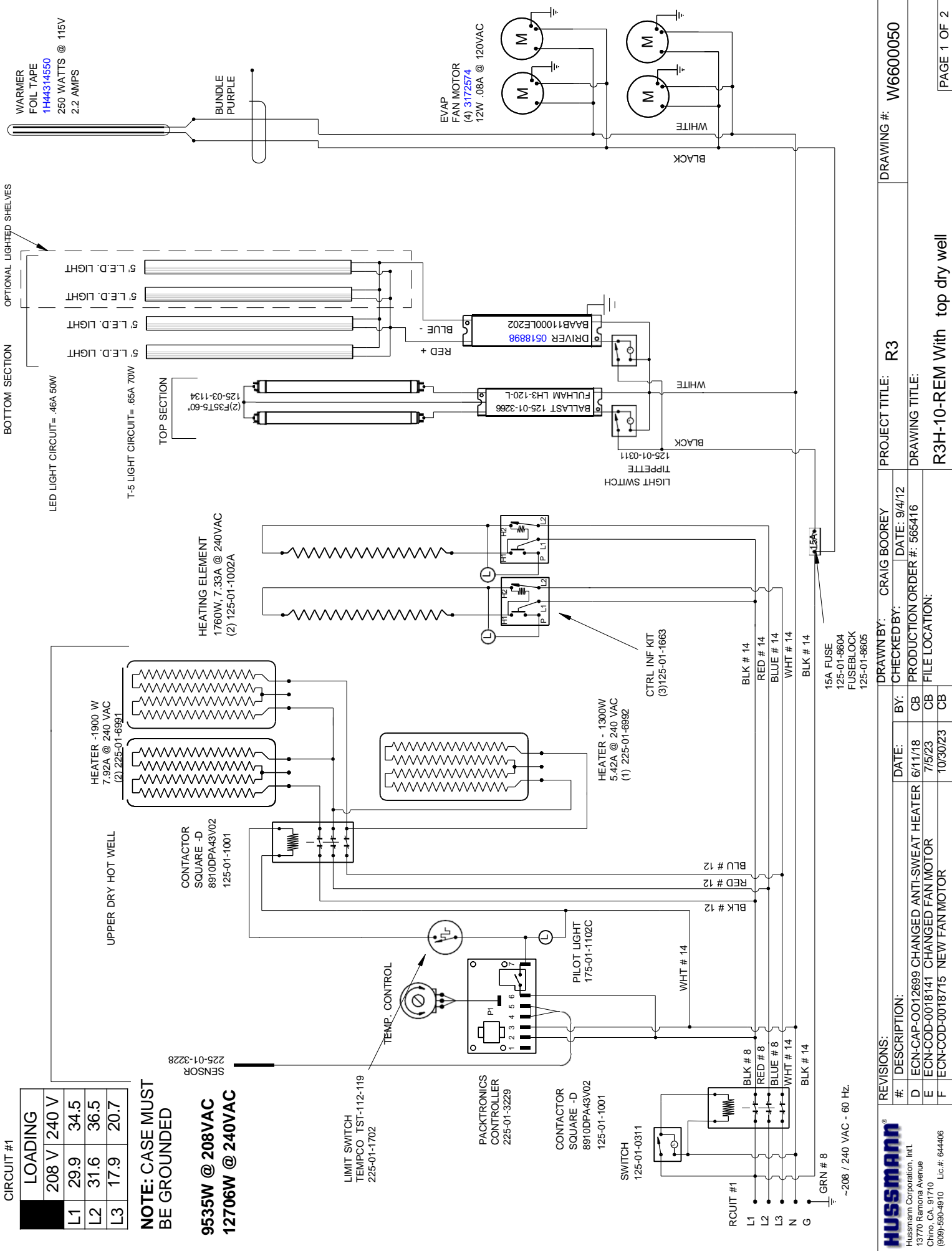
T-5 LIGHT CIRCUIT= .66A 70W

OPTIONAL LIGHTED SHELVES

WARMER
FOIL TAPE
1H44314550
250 WATTS @ 115V
2.2 AMPS

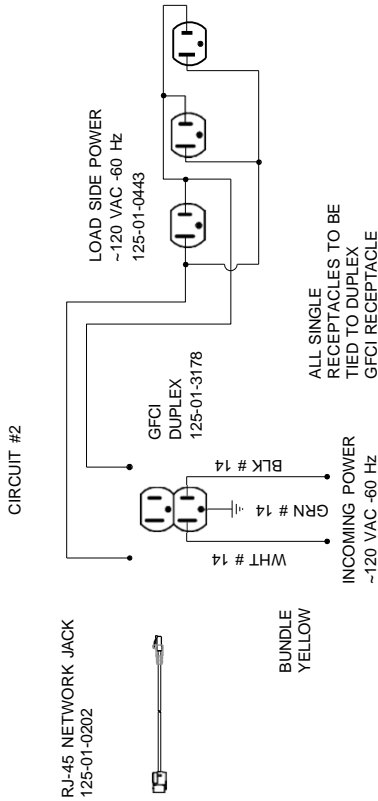
BUNDLE
PURPLE

EVAP
FAN MOTOR
(4) 3172574
12W .08A @ 120VAC



CIRCUIT #2

LOADING	
120 V	
L1 15.0	



REVISIONS:

#	DESCRIPTION:	DATE:	BY:
D	ECN-CAP-0012699 CHANGED ANTI-SWEAT HEATER	6/11/18	CB
E	ECN-COD-0018141 CHANGED FAN MOTOR	7/5/23	CB
F	ECN-COD-0018715 NEW FAN MOTOR	10/30/23	CB

DRAWN BY: CRAIG BOOREY
CHECKED BY: []
DATE: 9/4/12
PRODUCTION ORDER #: 565416
FILE LOCATION:

PROJECT TITLE: R3
DRAWING TITLE:
R3H-10-REM With top dry well

CIRCUIT #1

LOADING	208 V	240 V
L1	25.1	28.9
L2	27.8	32.1
L3	25.7	29.6

NOTE: CASE MUST BE GROUNDED

9439W @ 208VAC
12553W @ 240VAC

LIMIT SWITCH
TEMPCO TST-112-119
225-01-1702

PACKTROL
CONTROLLER
225-01-3229

CONTACTOR
SQUARE - D
8910DPA43V02
125-01-1001

SWITCH
125-01-0311

CIRCUIT #1
L1
L2
L3
N
G

GRN # 8
-208 / 240 VAC - 60 Hz.

HEATER - 1900 W
7.92A @ 240 VAC
(2) 225-01-6991

UPPER DRY HOT WELL

CONTACTOR
SQUARE - D
8910DPA43V02
125-01-1001

LIGHT CIRCUIT= 1.0A 108.2W

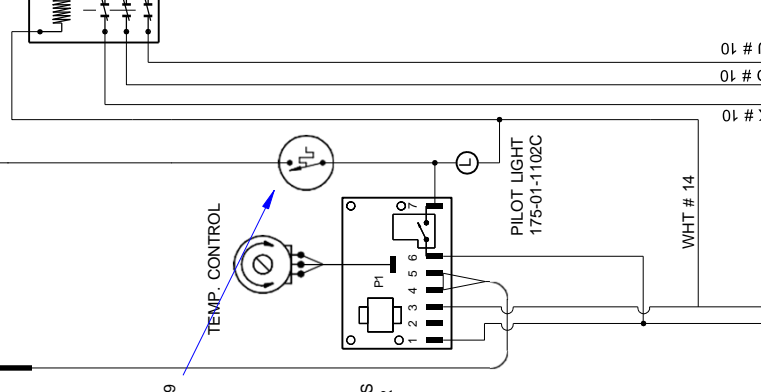
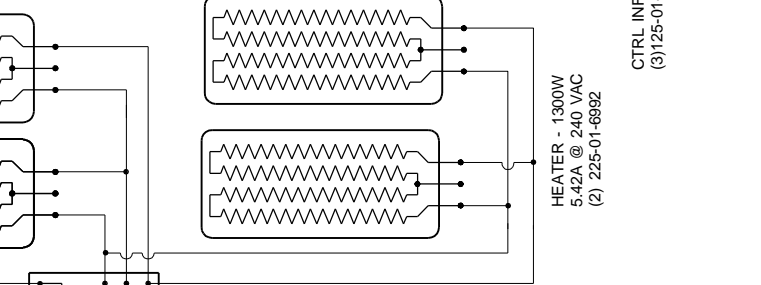
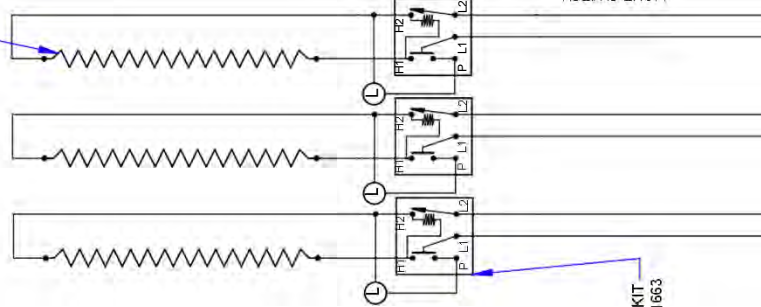
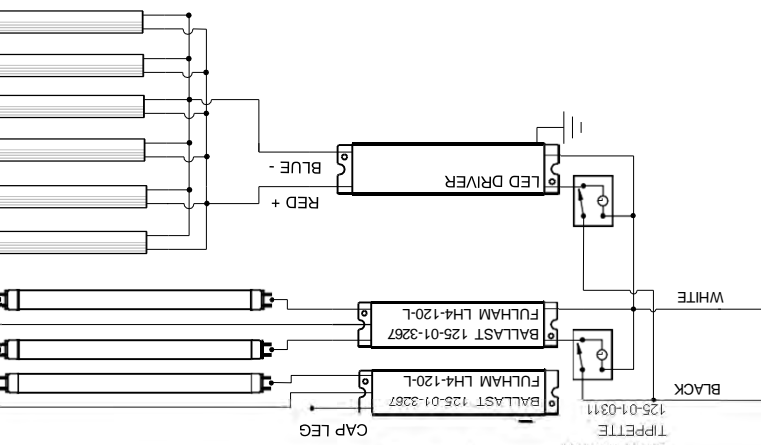
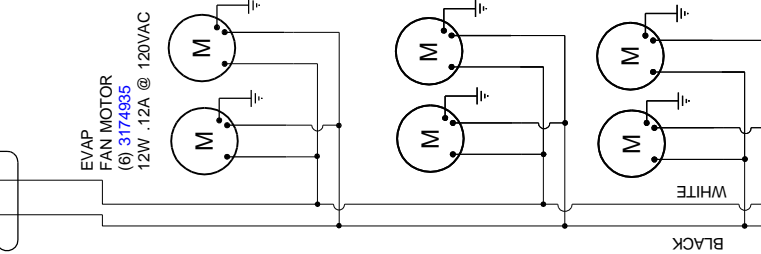
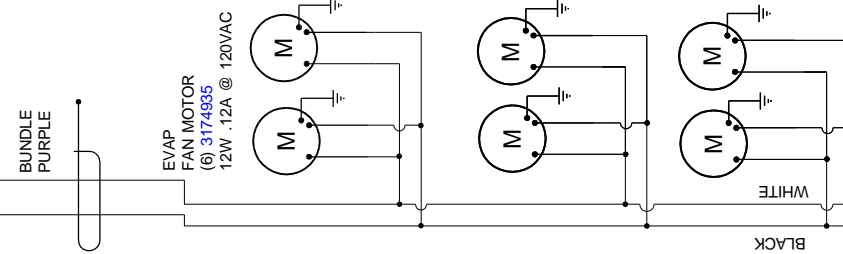
HEATING ELEMENT
1300W, 5.42A @ 240VAC
(3) 125-01-3227A

TOP SECTION
(1) F2815-48
(2) F2815-48
125-03-1131

BALLAST 125-01-3287
FULLHAM LH4-120-L

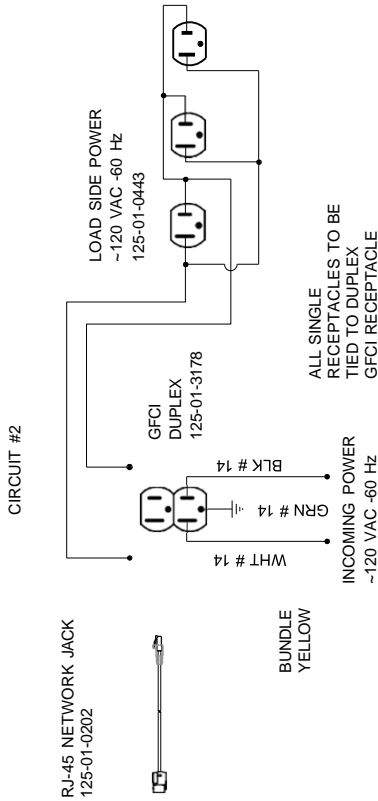
FRONT SECTION
4' L.E.D. LIGHT
4' L.E.D. LIGHT
4' L.E.D. LIGHT
4' L.E.D. LIGHT
4' L.E.D. LIGHT
4' L.E.D. LIGHT

WARMER
FOIL TAPE
1H36823550
300
WATTS@115V
2.61AMPS



CIRCUIT #2

LOADING	
120 V	
L1 15.0	



REVISIONS:

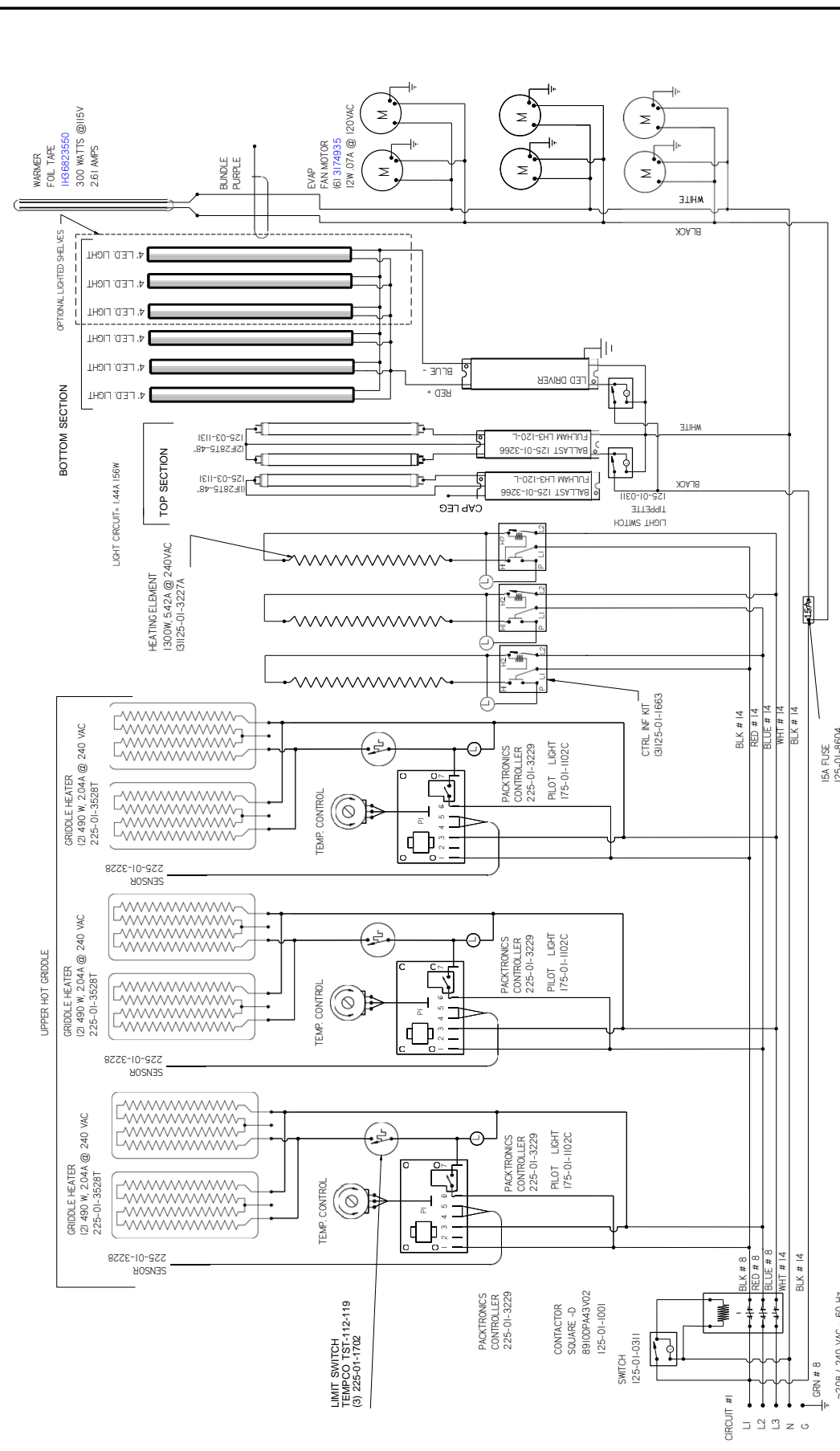
#	DESCRIPTION:	DATE:	BY:
C	ECN-CAP-0006456 Changed Front to LED Lights	2/13/17	CB
D	ECN-CAP-0012699 Changed Anti-Sweat Heater	6/11/18	CB
E	ECN-COD-0018141 Changed Fan Motor	7/5/23	CB

DRAWN BY: MATT GRAMATA	PROJECT TITLE: R3	DRAWING #: W1800199
CHECKED BY:	DATE: 2/17/11	
PRODUCTION ORDER #: 522862	DRAWING TITLE:	
FILE LOCATION:	R3H-12-REM With top dry well	

REV	ECN	DATE	REVISION HISTORY	REV BY	CHKD BY	APPR BY
1	781433	2014/01/14	NEW DIAGRAM	CB	CB	CB
2	ECN-CAP-0012699	2018/06/11	CHANGED ANTI-SWEAT HEATER	CB	CB	CB
3	ECN-COD-0018141	2023/07/05	CHANGED FAN MOTOR	CB	CB	CB

CIRCUIT #1 LOADING	208V	240V
L1	20A	20A
L2	10A	10A
L3	10A	10A
N	10A	10A
G	10A	10A

6413W @ 208VAC
85-21W @ 240VAC

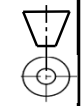


MATERIAL - N/A
 DATE DRAWN - 1/14/14
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TO LEANING ARTS
 THIRD
 DECIMALS .XX +03 .XXX
 ±0.0
 ANGLES ± 2°

HUSSMANN
DIAGRAM-R3-H-12-R
 ECN# - 781433 REF - NEW
 DIAGRAHSHEET LOE I
 PROJECTION

W6600113 | C

NOTES:
 CASE MUST BE GROUNDED



CIRCUIT #1

LOADING	208 V 240 V
L1	27.1 31.3
L2	27.8 32.1
L3	25.7 29.6

NOTE: CASE MUST BE GROUNDED

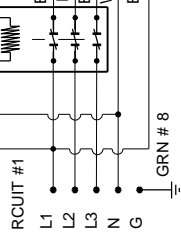
9679W @ 208VAC
12886W @ 240VAC

LIMIT SWITCH
TEMPCO TST-112-119
225-01-1702

PACKTRONICS
CONTROLLER
225-01-3229

CONTACTOR
SQUARE - D
8910DPA43V02
125-01-1001

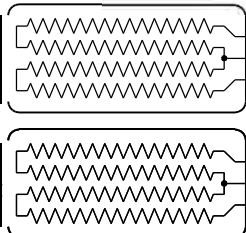
SWITCH
125-01-0311



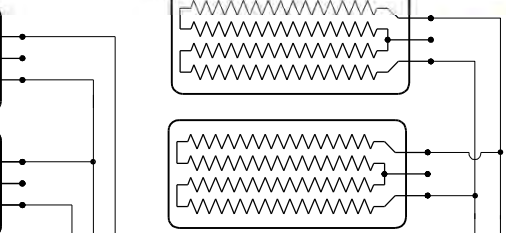
-208 / 240 VAC - 60 Hz.

UPPER DRY HOT WELL

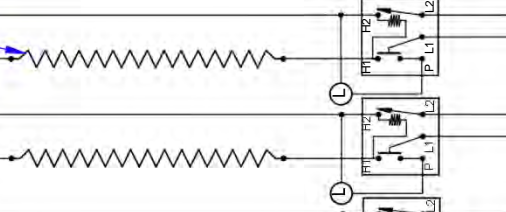
HEATER - 1900 W
7.92A @ 240 VAC
(2) 225-01-6991



CONTACTOR
SQUARE - D
8910DPA43V02
125-01-1001



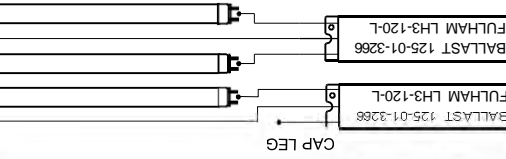
HEATING ELEMENT
1300W, 5.42A @ 240VAC
(3) 125-01-3227A



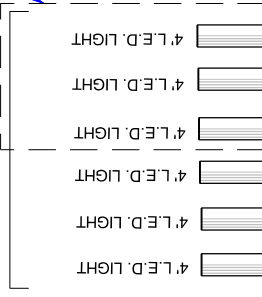
LIGHT CIRCUIT= 1.44A 156W

TOP SECTION

BALLAST 125-01-3266
FULHAM LH3-120-L
(1) F28T5-48
125-03-1131



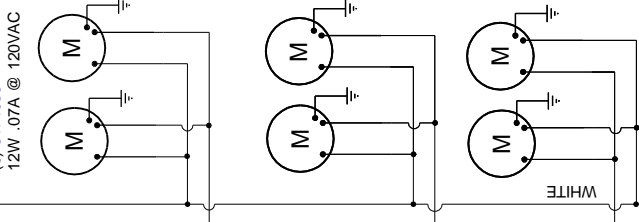
BOTTOM SECTION



WARMER
1H36823550
FOIL HTR TAPE
2.5A 300WATTS

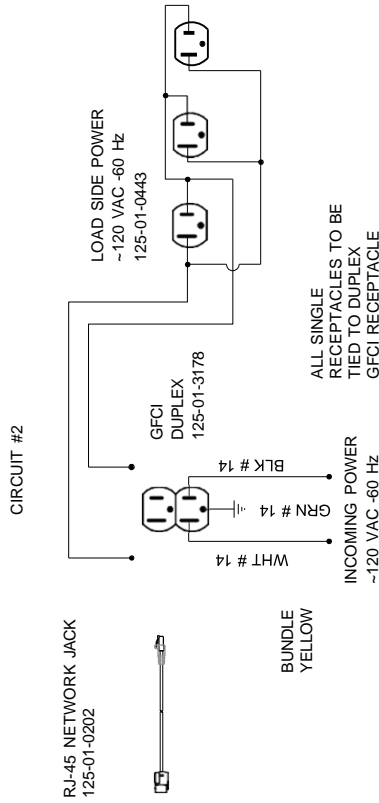
BUNDLE
PURPLE

EVAP
FAN MOTOR
(6) 3174935
12W .07A @ 120VAC



CIRCUIT #2

LOADING	
120 V	
L1 15.0	



REVISIONS:

#	DESCRIPTION:	DATE:	BY:
B	ECN-CAP-0012698 CHANGED ANTI-SWEAT HEATER	6/1/18	CB
C	ECN-COD-0018141 CHANGED FAN MOTOR	7/5/23	CB

DRAWN BY: CRAIG BOOREY	PROJECT TITLE: R3
CHECKED BY:	DATE: 1/11/12
PRODUCTION ORDER #: 523364	DRAWING TITLE:
FILE LOCATION:	R3H-12-REM With top dry well

12. Troubleshooting

Problem	Possible Cause	Possible Solution
Product not holding temperature.	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door, window, electric fan or air conditioning vent that may cause air currents? Case must be located minimum 15 Ft away from doors or windows. Cases are designed to operate at 55% Relative humidity and a temperature of 75°F.
	Unit not preheated.	Preheat case before loading product.
	Heat settings too low	Adjust shelf/griddle control setting.
	Low voltage.	Using volt meter make sure line voltage matches serial plate voltage.
	Product held too long	Hold product for recommended time.
	Product not placed correctly in case.	Place product in case per recommendations.
	Product not hot when placed in case.	Place prepackaged hot food in case.
No shelf heat.	Faulty shelf heater.	Check and replace if necessary.
	Faulty control.	Check and replace if necessary.
	Loose wiring on heater.	Check wiring/electrical connections.
	Temperature setting "Off".	Increase shelf heat setting.
No griddle heat.	Faulty griddle heater.	Check and replace if necessary.
	Faulty control.	Check and replace if necessary.
	Loose wiring on heater.	Check wiring/electrical connections.
	Temperature setting "Off".	Increase griddle heat setting.
No hot/soup well heat.	Faulty hot/soup well.	Check and replace if necessary.
	Loose wiring on hot/soup well.	Check wiring/electrical connections.
Main Power switch on but case is inoperative.	Open Circuit.	Check to see that cord is plugged in if plug is provided. Check wiring/electrical connections for hard wired cases. Check line voltage. Check power switch and replace if defective.
Condensation on glass.	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door, window, electric fan or air conditioning vent that may cause air currents? Case must be located minimum 15 Ft away from doors or windows. Cases are designed to operate at 55% Relative humidity and a temperature of 75°F.
	Inadequate air circulation.	Check if air sweep fans are functioning, check electrical connections.
	There is not enough heat provided in the airflow.	Check if air sweep heater is functioning, check electrical connections.
	There are glass gaps on the side of the case.	See glass adjustment section.
	Glass is not completely shut.	Close glass correctly.
	Calrods may not be working.	Check calrod operation.
	Well control setting is too high.	Check that well setting is not above "7" on control knob.

Troubleshooting (Cont'd)

Problem	Possible Cause	Possible Solution
Large gap is visible on bottom of front glass or glass can't be opened because it is too low.	Glass Height adjusters need to be adjusted.	See Glass Adjustment section.
Large gaps are visible in between glass panels or glass rubs against end panel.	Glass/glass clamp assembly needs to be adjusted.	See Glass Adjustment section.
Front glass does not stay open and falls closed.	Glass shock/piston may need to be replaced.	Case should be serviced by a qualified service technician.
Lights do not come on.	Ballast/light socket wiring.	Check electrical connections. See Electrical Section and check wiring diagram.
	Ballast needs to be replaced.	Case should be serviced by a qualified service technician. See Electrical Section.
	Lamp socket needs to be replaced.	Case should be serviced by a qualified service technician.
	Lamp needs to be replaced.	See Maintenance Section.
	Light Switch needs to be replaced.	Case should be serviced by a qualified service technician.
PR1 Error Code	Faulty controller or sensor	Unplug sensor from plug connection: If PR1 code remains, then the controller is faulty; if the PR1 code disappears, then the sensor is faulty. Case should be serviced by a qualified Hatco service technician. Call the 24 Hour Tech Hotline (800) 558-0607

Appendices (Cont'd)

2. Indicator lamps on control panel(s) are working
3. Auto-fill is functioning properly (Service cases)
4. Hot Griddles are functioning.

Appendix C. - Field Recommendations - Refrigerated

Recommendations for field evaluating the performance of retail food refrigerators and hot cases

1. The most consistent indicator of display refrigerator performance is temperature of the air entering the product zone (see Appendix A). In practical use, the precise determination of return air temperature is extremely difficult. Readings of return air temperatures will be variable and results will be inconsistent. The product temperature alone is not an indicator of refrigerator performance.

NOTE: Public Health will use the temperature of the product in determining if the refrigerator will be allowed to display potentially hazardous food. For the purpose of this evaluation, product temperature above the FDA Food Code 1993 temperature for potentially hazardous food will be the first indication that an evaluation should be performed. It is expected that all refrigerators will keep food at the FDA Food Code 1993 temperature for potentially hazardous food.

1. The following recommendations are made for the purpose of arriving at easily taken and understood data which, coupled with other observations, may be used to determine whether a display refrigerator is working as intended:
 - a) **INSTRUMENT** - A stainless steel stem-type thermometer is recommended and it should have a dial a minimum of 1 inch internal diameter. A test thermometer scaled only in Celsius or dually scaled in Celsius and Fahrenheit shall be accurate to 1°C (1.8°F). Temperature measuring devices that are scaled only in Fahrenheit shall be accurate to 2°F. The thermometer should be checked for proper calibration. (It should read 32°F when the stem is immersed in an ice water bath).
 - b) **LOCATION** - The probe or sensing element of the thermometer should be located in the airstream where the air first enters the display or storage area, and not more than 1 inch away from the surface and in the center of the discharge opening.
 - c) **READING** - It should first be determined that the refrigerator is refrigerating and has operated at least one hour since the end of the last defrost period. The thermometer

reading should be made only after it has been allowed to stabilize, i.e., maintain a constant reading.

- d) **OTHER OBSERVATIONS** - Other observations should be made which may indicate operating problems, such as unsatisfactory product, feel/appearance.
- e) **CONCLUSIONS** - In the absence of any apparent undesirable conditions, the refrigerator should be judged to be operating properly. If it is determined that such condition is undesirable, i.e., the product is above proper temperature, checks should be made for the following:
 1. Has the refrigerator been loaded with warm product?
 2. Is the product loaded beyond the "Safe Load Line" markers?
 3. Are the return air ducts blocked?
 4. Are the entering air ducts blocked?
 5. Is a dumped display causing turbulent air flow and mixing with room air?
 6. Are spotlights or other high intensity lighting directed onto the product?
 7. Are there unusual draft conditions (from heating/air-conditioning ducts, open doors, etc.)?
 8. Is there exposure to direct sunlight?
 9. Are display signs blocking or diverting airflow?
 10. Are the coils of the refrigerator iced up?
 11. Is the store ambient over 75°F, 55% RH as set forth in ASHRAE Standard 72 and ASHRAE Standard 117?
 12. Are the shelf positions, number, and size other than recommended by Hussmann?
 13. Is there an improper application or control system?
 14. Is the evaporator fan motor/blade inoperative?
 15. Is the defrost time excessive?
 16. Is the defrost termination, thermostat (if used) set too high?
 17. Are the refrigerant controls incorrectly adjusted?
 18. Is the air entering the condenser above design conditions? Are the condenser fins clear of dirt, dust, etc.?
 19. Is there a shortage of refrigerant?
 20. Has the equipment been modified to use replacements for CFC-12, CFC-502 or other refrigerant? If so,

Appendices (Cont'd)

have the modifications been made in accordance with the recommendations of the equipment manufacturer? Is the refrigerator charged with the proper refrigerant and lubricant? Does the system use the recommended compressor?

Hot

1. The most consistent indicator of display hot case performance is temperature of the product itself.

NOTE: Public Health will use the temperature of the product in determining if the hot case will be allowed to display potentially hazardous food. For the purpose of this evaluation, product temperature above the FDA Food Code 1993 temperature for potentially hazardous food will be the first indication that an evaluation should be performed. It is expected that all hot cases will keep food at the FDA Food Code 1993 temperature to prevent the sale of potentially hazardous food.

1. The following recommendations are made for the purpose of arriving at easily taken and understood data which, coupled with other observations, may be used to determine whether a display refrigerator is working as intended:
 - a) **INSTRUMENT** - A stainless steel stem-type thermometer is recommended and it should have a dial a minimum of 1 inch internal diameter. A test thermometer scaled only in Celsius or dually scaled in Celsius and Fahrenheit shall be accurate to 1°C (1.8°F). Temperature measuring devices that are scaled only in Fahrenheit shall be accurate to 2°F. The thermometer should be checked for proper calibration. (It should read 32°F when the stem is immersed in an ice water bath).
 - b) **LOCATION** - The thermometer must be inserted into the food itself to acquire proper food pulp temperature.
 - c) **READING** - The thermometer reading should be made only after it has been allowed to stabilize, i.e., maintain a constant reading. Loading Product: Cases should be allowed to heat up for one hour before product is loaded. Temperature adjustments: Allow 4 hours after adjustment has been made before testing pulp temperature of product
 - d) **OTHER OBSERVATIONS** - Other observations should be made which may indicate operating problems, such as unsatisfactory product, feel/appearance.

Appendix D. - Recommendations to User - Refrigerated

1. Hussmann Corporation provides instructions and recommendations for proper periodic cleaning. The user will be responsible for such cleaning, including the cleaning of low temperature equipment within the compartment and the cooling coil area(s). Cleaning practices, particularly with respect to proper refrigerator unloading and warm-up, must be in accordance with applicable recommendations.
1. Cleaning of non frozen food equipment should include a weekly cleaning of the food compartment as a minimum to prevent bacteria growth from accumulating. Actual use and products may dictate more frequent cleaning. Circumstances of use and equipment design must also dictate the frequency of cleaning the display areas. Weekly washing down of the storage compartment is also recommended, especially for equipment subject to drippage of milk or other liquids, or the collection of vegetable, meat, crumbs, etc. or other debris or litter. Daily cleaning of the external areas surrounding the storage or display compartments with detergent and water will keep the equipment presentable and prevent grime buildup.
2. Load levels as defined by the manufacturer must be observed.
3. The best preservation is achieved by following these rules:
 - a) Buy quality products.
 - b) Receive perishables from transit equipment at the ideal temperature for the particular product.
 - c) Expedite perishables to the store's storage equipment to avoid unnecessary warm-up and prolonged temperature recovery. Food store refrigerators are not food chillers nor can they reclaim quality lost through previous mishandling.
 - d) Care must be taken when cross merchandising products to ensure that potentially hazardous vegetable products are not placed in non refrigerated areas.
 - e) Display and storage equipment doors should be kept closed during periods of inactivity.
 - f) Minimize the transfer time of perishables from storage to display.
 - g) Keep meat under refrigeration in meat cutting and processing area except for the few

Appendices (Cont'd)

moments it is being handled in processing. When a cut or tray of meat is not to be worked on immediately, the procedure should call for returning it to refrigeration.

- h) Keep tools clean and sanitized. Since mechanical equipment is used for fresh meat processing, all such equipment should be cleaned at least daily and each time a different kind of meat product comes in contact with the tool or equipment.
- i) Make sure that all refrigeration equipment is installed and adjusted in strict accordance with the manufacturer's recommendations.
- j) See that all storage and refrigeration equipment is kept in proper working order by routine maintenance.

Hot

- 1.0 Hussmann should provide instructions and recommendations for proper periodic cleaning. The user will be responsible for such cleaning, including the cleaning of equipment within the compartment and the hot area(s). Cleaning practices, particularly with respect to proper refrigerator unloading and warm-up, must be in accordance with applicable recommendations.
1. Allow the case to preheat for one hour prior to loading.
 2. Hot foods should enter the case directly after cooking or no lower than 150° - 160°F. The Hot Cases are not designed to heat up or cook food.
 3. Self Service - be sure to display product in single layer in direct contact with heating surface and/or wire rack.
 4. All griddle type units are designed to maintain temperatures above the FDA guideline of 140°F. This is product temperature, not air or griddle temperature. Due to the open design of these units, they must be loaded with product for proper operation. When units are empty, they experience rapid rise of heated air from air outside the case. This action gives empty units a false, lower than desired, temperature reading. Loading the case traps the air at the griddle, raising temperatures to the 165°F to 185°F range, keeping product well above the FDA guidelines. Remember, these units must be loaded with product to maintain safe product temperature.

5. Check the food pulp temperature frequently with a thermometer to make sure it is at the proper holding temperature. Hot foods should be at 140°F. The thermometer must be inserted into the food itself for the proper temperature.
6. Do not display more food than will be sold within a 4 hour period.
7. When restocking, bring older food to the front, and stock fresher food on top.
8. Clean spills as soon as they happen.
9. Fingerprints and food splatter will drastically shorten bulb life. Clean splatter oil the bulbs immediately with a soft cloth. When handling bulbs, wear cotton gloves or use a cotton rag/towel.
10. When "freshening" foods such as macaroni and cheese with added water, heat the water in a clean container until it is 10° to 20°F above the desired holding temperature of the food. This will keep the food at a safe serving temperature. Depending on the amount of water, the temperature can drop 10° to 20°F in as little as five minutes.
11. When transferring hot foods in the heated merchandiser to clean pans, preheat the clean pan. Transferring hot foods to room temperature pans can cause the temperature of the food to drop 20°F or more thus causing food to be at an unsafe serving temperature.
12. Clean spills as they happen simply by wiping with a cloth. Be sure to use a dry cloth on very hot surfaces to prevent steam burns.
13. Turn the equipment off and allow to cool before cleaning.
14. To remove "baked-on" splatter from Stainless Steel, the following may be used

Grade F Italian Pumice	Scour or rub with a damp cloth
Liquid NuSteel	Scour with a small amount of a dry cloth
Paste NuSteel	
Household Cleaners	Rub with a damp cloth
Coopers Stainless Steel Cleaner	
Allen Stainless Steel Polish	

For further technical information, please log on to <http://www.hussmann.com/products/R3HTO.htm> or <http://www.hussmann.com/products/R3H.htm>



This warning does not mean that Hussmann products will cause cancer or reproductive harm, or is in violation of any product-safety standards or requirements. As clarified by the California State government, Proposition 65 can be considered more of a ‘right to know’ law than a pure product safety law. When used as designed, Hussmann believes that our products are not harmful. We provide the Proposition 65 warning to stay in compliance with California State law. It is your responsibility to provide accurate Proposition 65 warning labels to your customers when necessary. For more information on Proposition 65, please visit the California State government website.

Service Record

Last service date: By:

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The <i>MODEL NAME</i> and <i>SERIAL NUMBER</i> is required in order to provide you with the correct parts and information for your particular unit. They can be found on a small metal plate on the unit. Please note them below for future reference.
MODEL:
SERIAL NUMBER: