

**HUSSmann®/CHINO**

**CR3HV-SWD**

COMBINATION SERVICE AND SELF-SERVICE DELI/BAKERY CASE

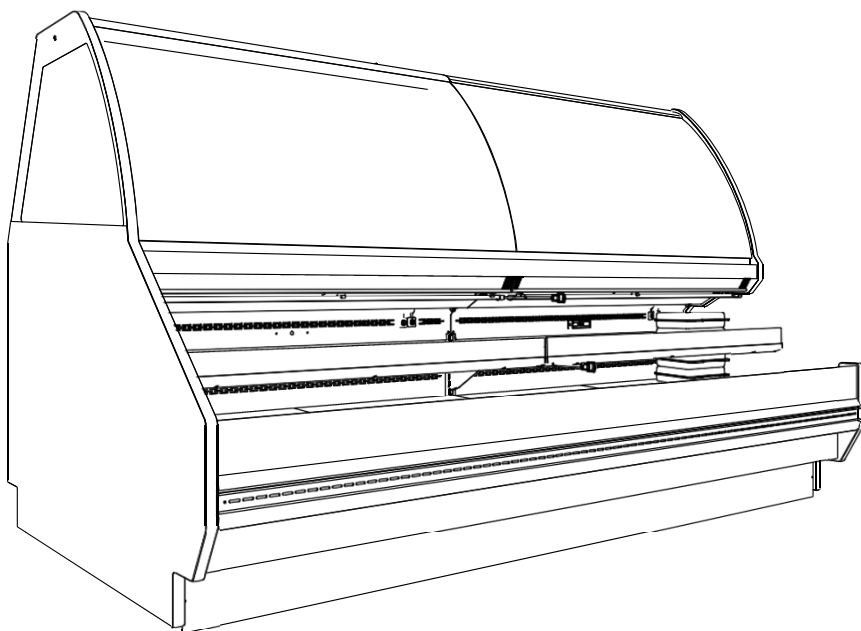
Installation  
& Operation  
Manual

**REV. 0823**

**HUSSmann®**

**CR3HV-SWD**

**COMBINATION SERVICE AND SELF-SERVICE DELI/BAKERY CASE**



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## GENERAL INFORMATION

**Description:** *Refrigerated High Volume Spherical Wide Curved Glass, Service-Self-Service Deli/Bakery Merchandiser*

**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 immediately.

**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 all 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.

**Location/Store Conditions:** The CR3 refrigerated merchandiser has been designed for use only in air conditioned stores where temperature and humidity are maintained at 80°F and 55% relative humidity or 75°F and 55% relative humidity. DO NOT allow air conditioning, electric fans, ovens, open doors or windows (etc.) to create air currents around the merchandiser, as this will impair its correct operation.

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

**HUSSMANN®**

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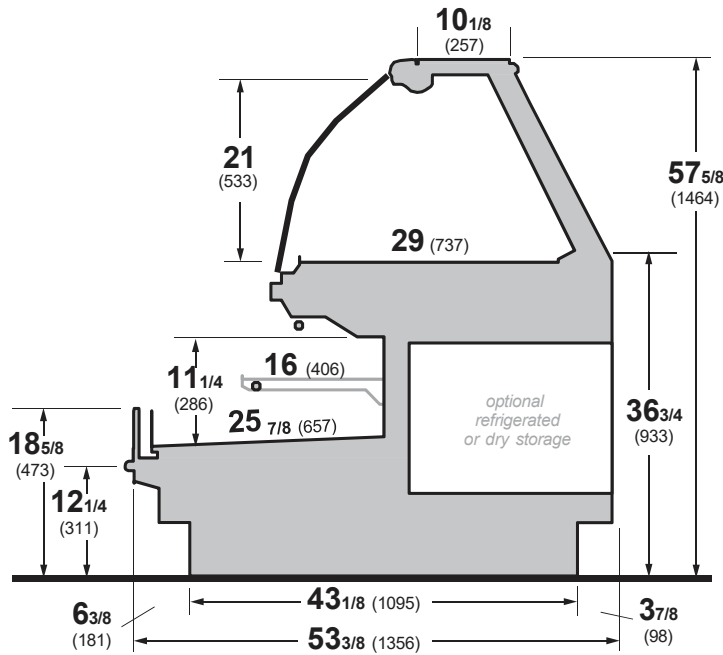


This equipment is to be installed to comply with the applicable NEC, Federal, State, and Local Plumbing and Construction Code having jurisdiction.

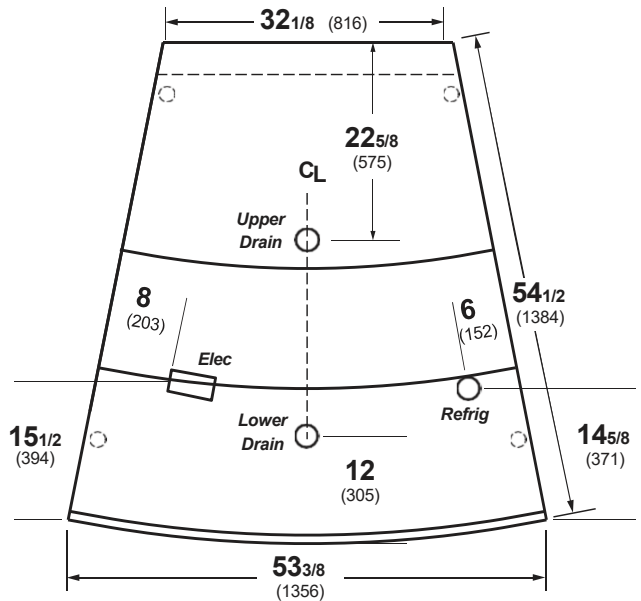
# CASE SECTIONS

## CR3HV-SWD Curved Glass

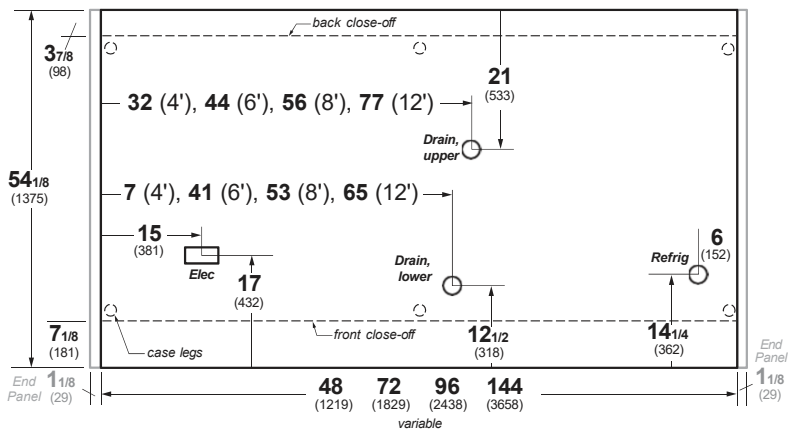
High Volume Service Dome, Wide Multi-Deck Self Service



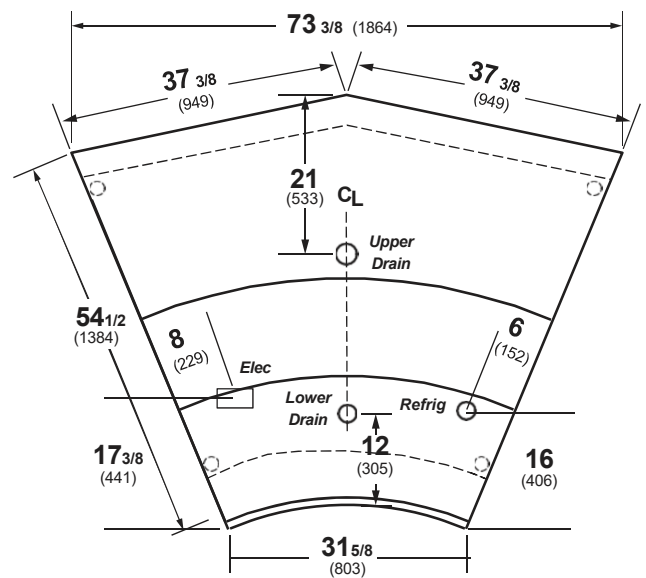
## CR3HV-SWD 22.5° O/S



## R3HV-WD / CR3HV-WD



## CR3HV-SW 45° I/S



# INSTALLATION

## Receiving Case

Upon receiving your new Hussmann Case all equipment should be thoroughly examined for shipping damage before and during unloading. This equipment has been carefully inspected at our factory. Any claim for loss or damage must be made to the carrier. The carrier will provide any necessary inspection reports/ or claim form.

If there is 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.

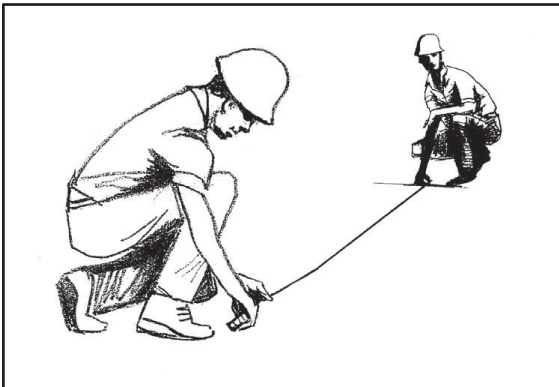
## Location

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, 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.

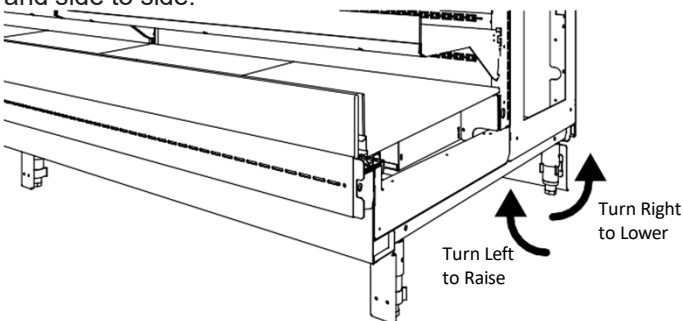
## Snapping Chalk Lines

Prepare permanent positioning by marking floors with Chalk snap lines where cases are to be located. Chalk lines are to run along the base or legs of cases.



## Adjust Base Legs

Using an adjustable wrench, raise and lower each leg as necessary at base of leg to level case from front to back and side to side.

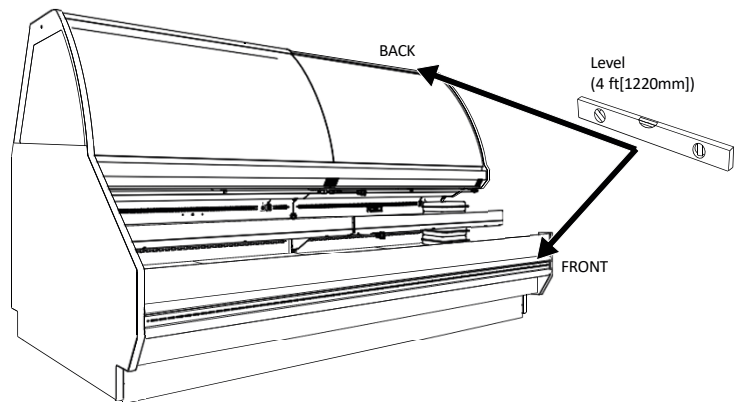


## Leveling



### IMPORTANT INFORMATION

**IMPORTANT!:** TO AVOID REMOVING CONCRETE FLOORING, WHEN INSTALLING A LINEUP OF CASES, IT IS IMPERATIVE THAT THE HIGHEST SPOT OF THE STORE FLOOR IN THE AREA WHERE THE CASES ARE TO BE SET IS DETERMINED. BEGIN SETTING THE LINEUP WITH THE CASE THAT IS NEAREST TO THE HIGHEST PART OF THE FLOOR. IF A WEDGE IS A PART OF THE LINEUP NEAR THE HIGH SPOT, SET IT FIRST.



1. It is imperative that the cases be leveled from front to back and side to side as they are being joined beginning with the first case that is set in place.
  - The first case in a line-up to be set should be the one closest to the highest spot of the store floor.
  - A level case is necessary to ensure proper operation, water drainage, and glass alignment.
2. Set the first case, and adjust the legs over the highest part of the floor so that case is level as described above. Prevent case damage: if lifting the case, it must be raised under the legs, the leg tubes or by the use of the wood 2" x 6" or 2" x 4" leg braces if applicable.
3. Set the second case as close as possible to the first case, and level the second case to the first using the instructions in step 1. This will be a mock-up only. The final levelling of the case will be rechecked once they are bolted together in steps 7 and 8.

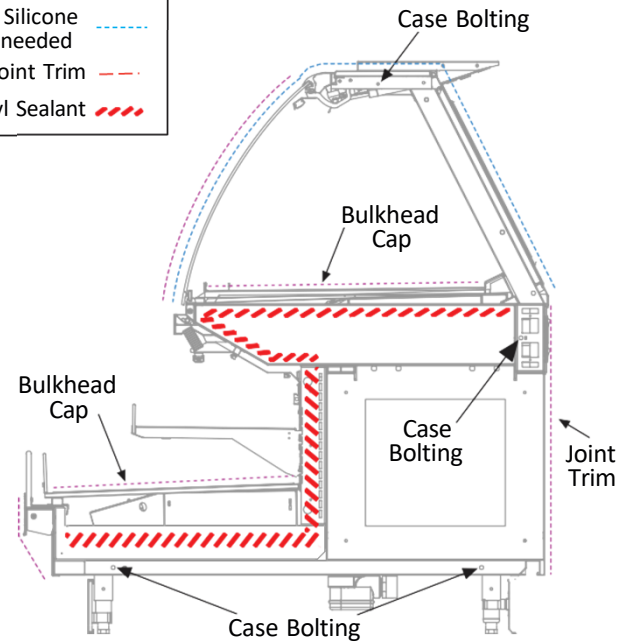
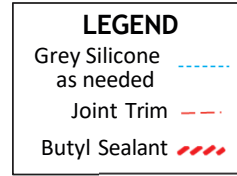
## INSTALLATION (Cont'd)

4. Apply masking tape 1/8" in from end of case on the inside and outside rear mullion and to the side bulkheads on both cases to be joined. The tape will minimize cleanup from sealant overflow when the cases are drawn together. (It can also be left in place on the upper case mullions and exterior bodywork for finish caulking with silicone in step 9.)
5. Apply liberal beads of case joint sealant (butyl) to the areas (solid dark lines) shown in the diagram below (Fig.2, #1) of the first case.



### ATTENTION INSTALLER

**It is the contractor's responsibility to install case(s) according to local construction and health codes**



### DO NOT USE PLUMBERS PUTTY

Plumber's putty will not allow the cases to be fully drawn together which will cause gaps between the cases resulting in poor bodywork fit, finish and case sealing. Only use Plumber's putty where necessary after the cases have been bolted and drawn tightly together.

## INSTALLATION (Cont'd)

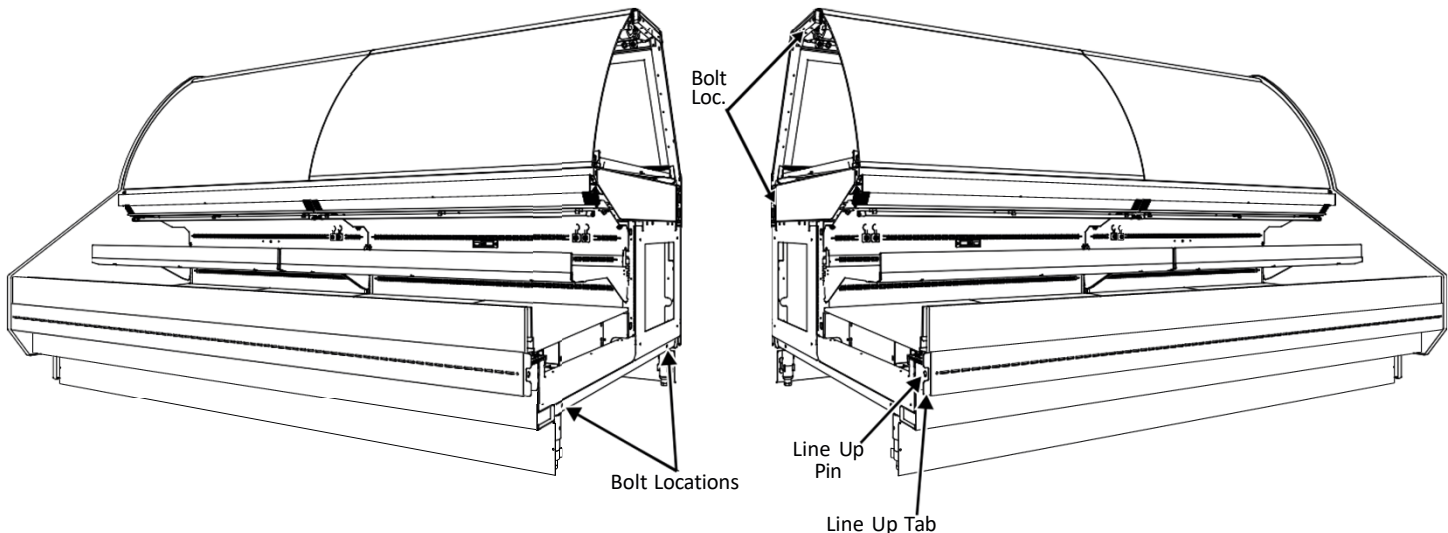
6. Slide the second case up to the first case snugly. Then align the second case to the first case so that the glass, front bumper, bodywork, and top are flush.
7. To compress the sealant at the joints, use two Jurgenson® or similar hand screw type wood clamps. Make sure the case is level from front to back and side to side per the instructions in step 1. If using clamps on the plastic sprayed interior liner use scrap wood (as wide as possible) under the clamps so that the liner is not damaged. Be careful to observe the area where the clamp is being tightened so that the case is not damaged as pressure is applied.
8. Attach cases together via 2 bolts located in the end leg tubes at the base of the cases and 1 bolt in the rear raceway end brackets. On fixed glass Meat and Fish cases, there are 2 additional bolts in the top of the case that are accessible by removing the top insert. The top insert is removed by pushing up on the bottom side of the insert from inside of the case.
9. Remove the masking tape from the bulkheads only and trial fit the stainless steel bulkhead caps. Once proper fit is confirmed, apply a bead of silicone to the tops of the bulkheads and install the stainless steel bulkhead cap. Also, sparingly apply silicone to seal case interior and exterior bodywork as needed to ensure a water-tight seal, and a cleanable and professional appearance. Use a finger in a clean rag, as you go, to smooth the silicone as thin as possible on the inside and outside of the case, while it is still fluid. (Apply additional silicone if necessary). Immediately remove the masking tape applied in step 3.



**DANGER**

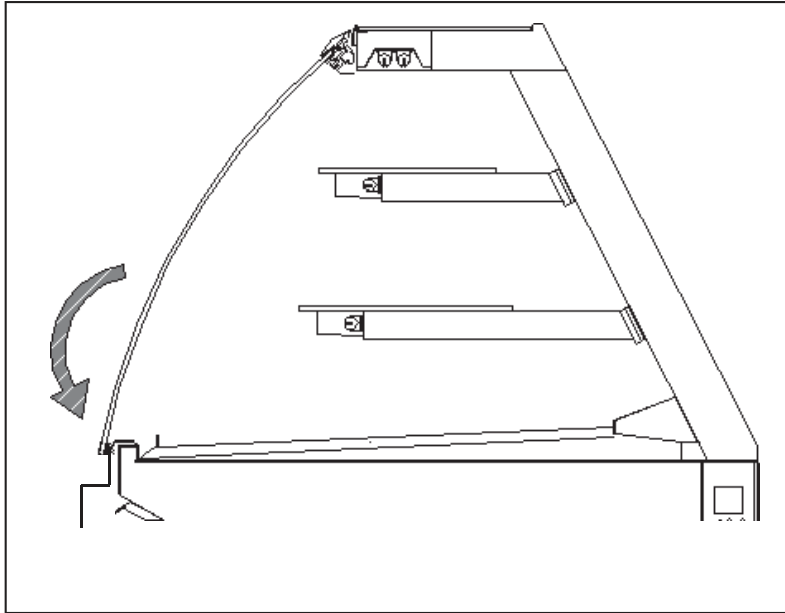
**GLASS BREAKAGE MAY OCCUR!**

**Retighten glass along glass clamp after leveling and FIRST time case is brought to FULL operating temperature!**



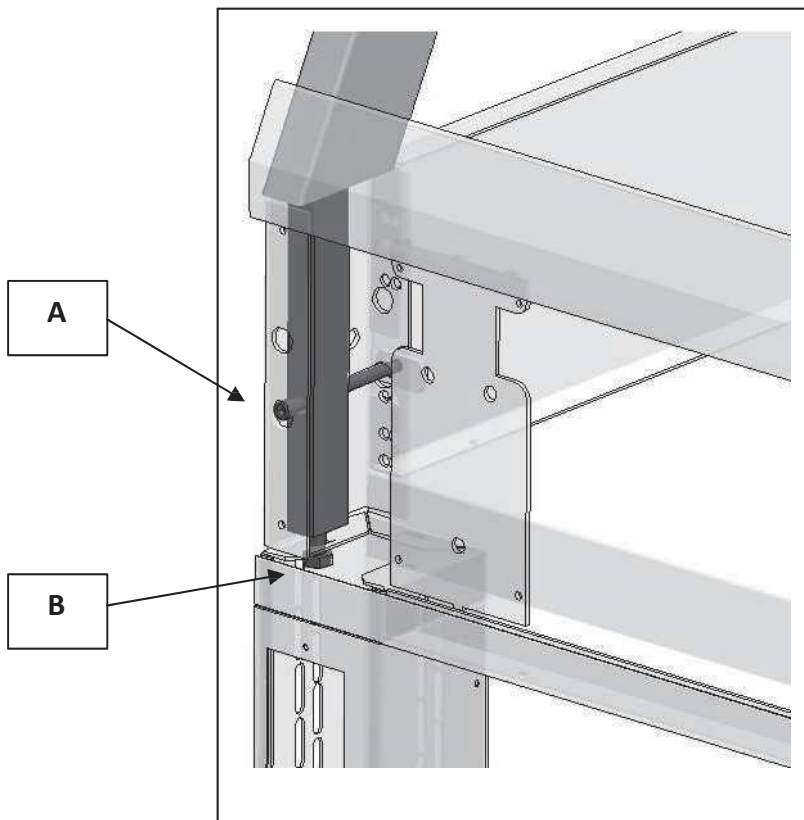
# INSTALLATION (Cont'd)

## CR3 Glass adjustment



### Please Note:

- The weight of upper service shelves can cause the front-lift glass to sag.
- The Case will be shipped adjusted from factory, but due to settling of the case and added weight of product at store, the glass may require re-adjustment.
- This document will show how to properly make adjustments.

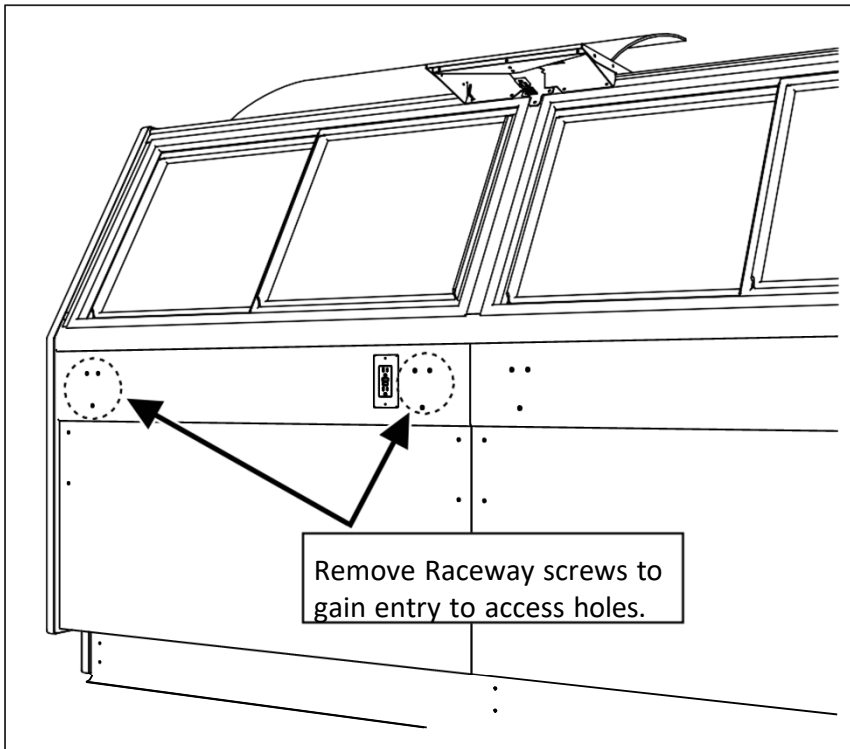


### Hardware and Tools

- (A): ¼" x 20 Allen head adjustment screw (3/16" Allen Tool required)
- (B): 5/16 x 1" locking screw (1/2" 12-point deep socket required)
- Phillips screwdriver or electric driver (Removing panel screws)

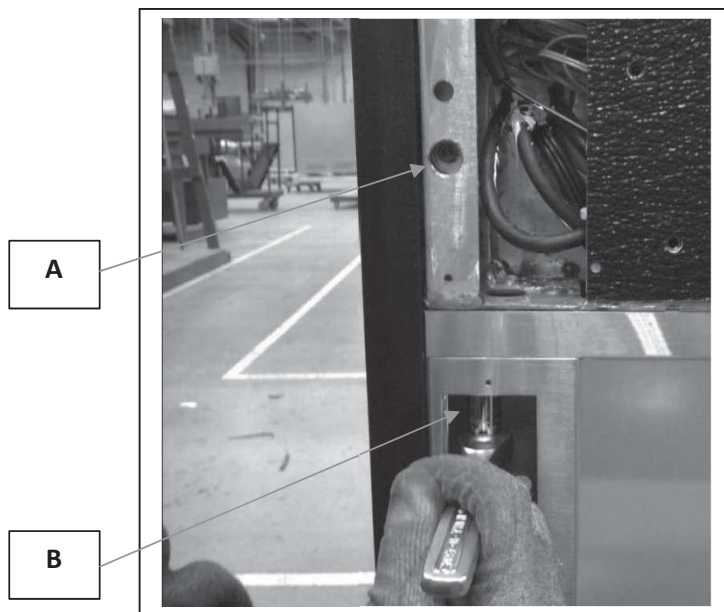


## INSTALLATION (Cont'd)



### Accessing Adjustment Screws

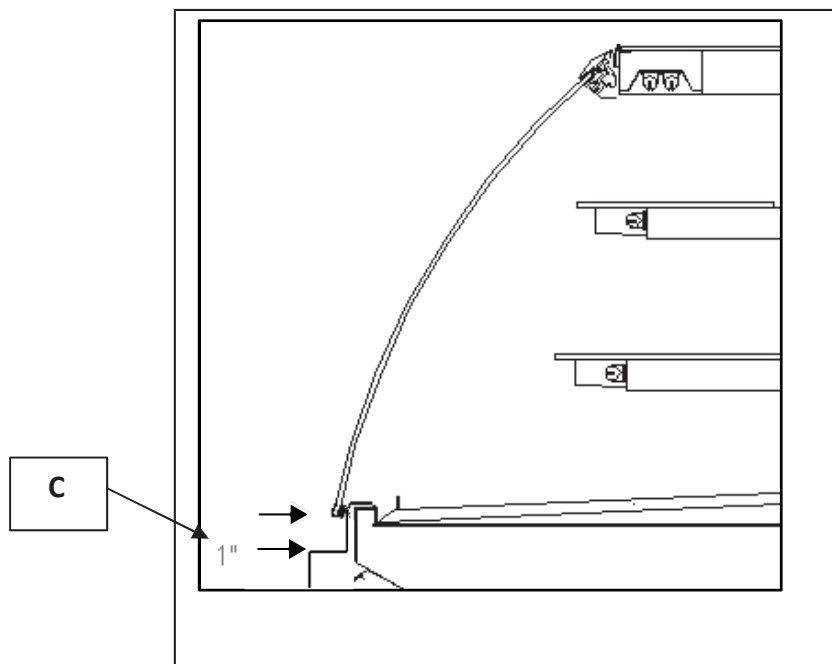
- To access adjustment screws unfasten the following screws to completely remove raceway and set aside.



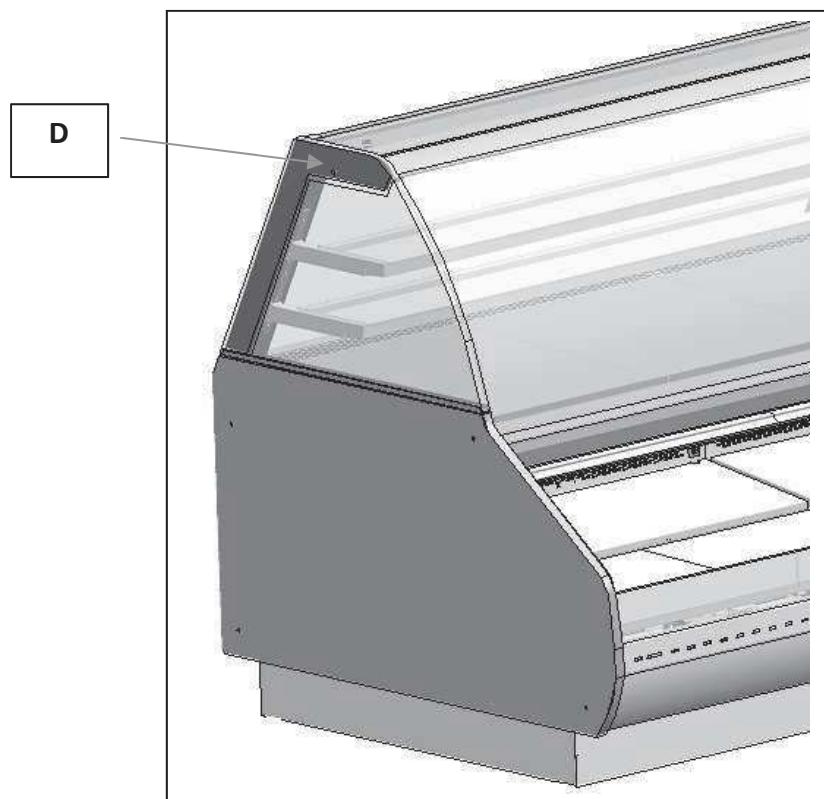
### Adjusting Hardware

- Loosen the locking screw (B) with a 12-point  $\frac{1}{2}$ " deep socket and ratchet.
- Turn the adjustment screw (A) *clockwise to raise* the front lift glass, or *counterclockwise to lower*.

## INSTALLATION (Cont'd)



- The 1" dimension shown to the left is correct. (C)
- Adjust the screw (A) to achieve a 1" clearance below the glass
- Tighten the locking screw (B) once the proper height is achieved.



- Start-row and end-row cases will have an end panel. The lift-glass will be adjusted at the factory and secured with an end panel screw (D). Therefore, the hardware adjacent to the end panels should not need adjustment.
- If the arm is adjusted, loosen this screw before adjusting glass hardware.
- Re-tighten the screw (D) after arm/glass adjustment is complete.

## INSTALLATION (Cont'd)

### Door Self Closing Adjustment: Setting Door Tension

1. Using a 5/16" wrench turn and hold the top pin one full arc toward the handle of the door (**Figure 1**)
2. While holding the 5/16" wrench and hinge pin in place, tighten the jam nut with a 11/16" wrench. (**Figure 2**)
3. For more tension, hold the hinge pin with the 5/16" wrench in a starting position to sustain tension when loosening the jam nut with the 11/16" wrench. Repeat steps 1 and 2.
4. Repeat step 3 until the desired tension is obtained.
5. The desired tension is a self-close when the door is released from a point approximately 6" to 7" open.
6. Repeat the above steps to set the tension on the remaining doors.



Figure 1. Turn and hold the top hinge pin

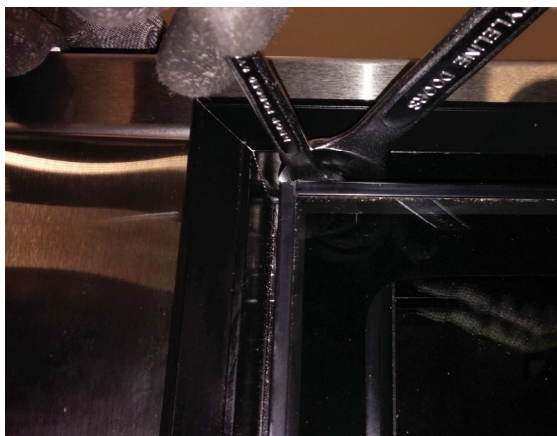


Figure 2. Adjust tension using wrenches.

### Adjust Sawtooth

Door alignment can be completed by loosening the bottom hinge pin and slide pin with 3/4" wrench supplied and sliding the bottom of the door left to right. Retighten the hinge pin and slide pin (**Figure 3**).

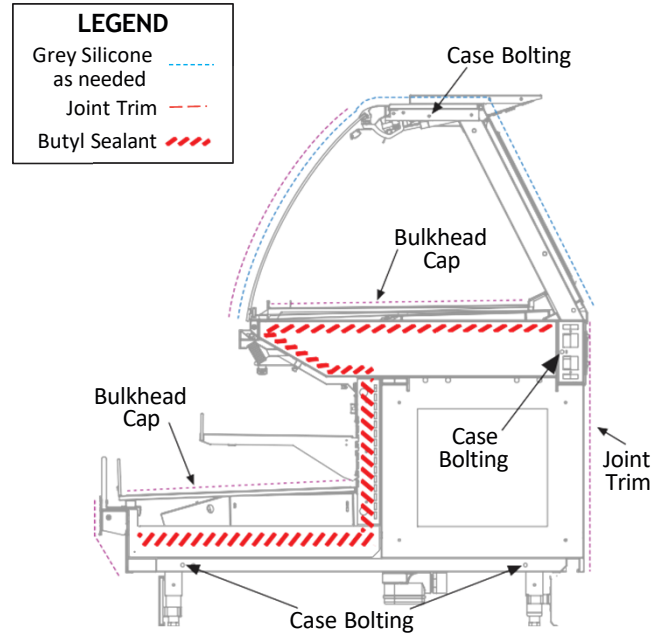


Figure 3. Adjust Saw tooth.

## INSTALLATION (Cont'd)

### Joint Trim

After cases have been levelled and joined, and refrigeration, electrical, and waste piping work completed, install the splash guards and joint trim where necessary. Fasten the splash guards along the top edge, or center, with 3/8" long sheet metal screws. If needed, use silicone sparingly to caulk the joint trim and exterior body panels with an appropriate colored silicone to ensure that a cleanable and professional appearance is achieved. Use a finger in a clean rag, as you go, to create smooth and neat joints, while the silicone is still fluid.



### Bumper Installation Instructions



Step 1: Make sure the aluminium 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.



# 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 3 drains in each fixture that can be easily located. The water seal is factory installed. Do not tighten the water seal where it connects to the drain fitting. Twisting the water seal "trap" can cause a water leak in the case's bottom liner. Do not use thread sealant between ABS drain fitting and water seal.

P-traps must be installed at the base of all refrigerated cases. The 1 1/2" 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 wrapping.
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.

# WARNING!

**Do NOT apply thread sealer to ABS P-Trap.**



## PRECAUTION

THE DRAIN AND WATER SEAL ARE FACTORY INSTALLED. DO NOT USE THREAD SEALANT OR OVERTIGHTEN THESE PARTS. DO NOT TWIST WATER SEAL. DAMAGE TO THE DRAIN FITTING OR WATER SEAL MAY OCCUR

# REFRIGERATION

## 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  $\frac{5}{8}$ " (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  $\frac{5}{8}$ ",  $\frac{7}{8}$ ", or  $1\frac{1}{8}$ ". 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 CR3 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 CR3 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.

## Access to Thermostatic Expansion Valve (TEX) and Drain Lines

**Mechanical** - Remove product from end of case. Remove product racks. Remove refrigeration and drain access panels (labeled). TEX 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 EEV (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.

## Thermostatic Expansion Valve Location

This device is located on the same side as the refrigeration stub. A 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

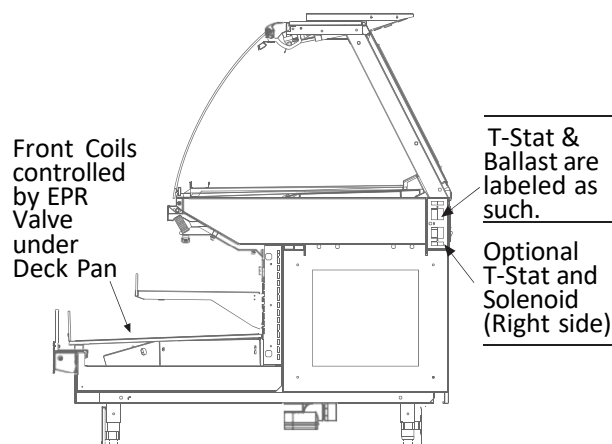
An Evaporator Pressure Regulator is installed in the front of the self service section to maintain a constant discharge temperature. It is located at the front right side of the case, under the fan plenum near the TEX Valve.

## Service Case Temperature Control

Temperature control in the upper section of the CR3 with the Service Option is done by means of a thermostat and suction solenoid valve. This controls both temperature and humidity.

## Thermostat (T-STAT) Location

Thermostats are located within the electrical raceway. Refer to diagram below. There are also labels on the back of the case indicating T-STAT location(s).



**Figure #3**

# SPEC SHEET



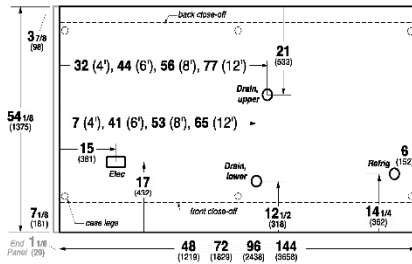
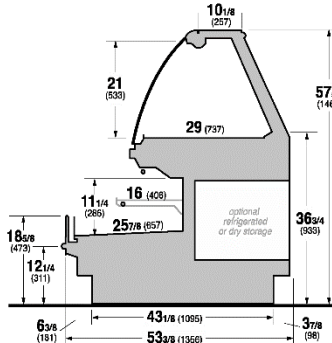
## HIGH VOLUME DELI SERVICE - SELF SERVICE HUSSMANN - CR3HV-SWD (CHINO)



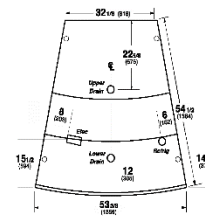
Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

REVISION DATE 08/10/17

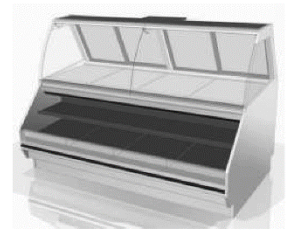
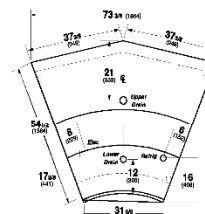
### CR3HV-SWD Curved Glass High Volume Service Dome, Wide Multi-Deck Self Service



CR3HV-SWD 22.5° OS



CR3HV-SW 45° IS



### REFRIGERATION DATA:

CASE LENGTHS/ WEDGES	CASE USAGE	CAPACITY (TOP/FRONT) *** (BTU/HR/FT) (TOTAL FOR WEDGES)		TEMPERATURE (*F) TOP/FRONT			VELOCITY TOP/FRONT (FT/MIN)
		RATING CONDITION		EVAPORATOR		DISCHARGE AIR **	
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	
4' 5' 6' 8' 10' 12'	DELI / BAKERY	170 / 730	170 / 500	20 / 20	20 / 24	23-25 / 31-33	150-200
22.5° OS	DELI / BAKERY	3115	3115	20	20	23-25 / 31-33	150-200
45° IS	DELI / BAKERY	3790	3790	20	20	25-27 / 31-33	150-200
REAR STORAGE	DELI / BAKERY	110	90	20	26	31-34	600-725

\*\*FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

\*\*\*REFRIGERATION NOTES:

- 1) BTU'S DO NOT INCLUDE LIGHTS
- 2) ADD 10 BTU'S PER FOOT/PER SHELF ROW FOR OPTIONAL LED SHELF LIGHTS
- 3) AHRI 1200 RATING POINT FOR ENERGY CONSUMPTION COMPARISON ONLY
- 4) 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.
- 5) RATING CONDITION IS NSF TYPE I, 75°F/55% RH

CASE LENGTHS	EST. REFG. CHRG. (LBS) R404a	20°F GLYCOL 6° RISE					
		FRONT		TOP		REFRIGERATED STORAGE	
		GPM	PSI	GPM	PSI	GPM	PSI
4'	1.1	1.1	2.7	0.3	0.4	0.2	0.0
5'	1.6	1.3	4.4	0.3	0.8	0.2	0.1
6'	1.6	1.5	6.2	0.4	1.2	0.2	0.2
8'	2.2	2.0	2.9	0.5	0.5	0.3	0.5
10'	2.8	2.5	5.0	0.6	1.0	0.4	0.7
12'	3.2	3.0	5.8	0.8	1.2	0.4	0.9
22.5° OS	0.8	0.6	0.9	0.4	0.5	N/A	N/A
45° IS	1.4	0.8	1.6	0.4	0.5	N/A	N/A

### REFRIGERATION DATA CONTINUED:

ELEC. THERMOSTAT / AIR SENSOR SETTINGS			DEFROST TYPE	TIME (MIN)	DEFROST FREQUENCY (#/DAY)	TERM. TEMP (*F) COIL ONLY	DRIP TIME	DEFROST WATER (LBS/DAY/FT)
LOCATION	CUT IN (*F)	CUT OUT (*F)						
TOP	35	22	OFF TIME	30	4	45	N/A	3.3
FRONT	34	30				48		4.2
STORAGE	37	36				45		0.2

END PANEL WIDTH KEY		
# OF END PNLS	END PNL 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	EVAPORATOR FANS: TOP / FRONT					EVAPORATOR FAN: REFRIGERATED REAR STORAGE			CANOPY LIGHTS LED TOP / FRONT		OPTIONAL LED SHELF LIGHTS TOP / FRONT		MAX. LED LOAD (W/ ALL OPTIONS) TOP / FRONT		ANTI-SWEAT HEATERS		CONVENIENCE OUTLETS (OPTIONAL)		
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	# OF EVAP FANS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS
4'	1 / 2	6.75	10 / 15	0.1 / 0.2	8 / 16	1	0.3	9	0.2 / 0.1	18 / 10	0 / 0.1	0 / 10	0.2 / 0.2	18 / 20	0.8	97	1	115	15
5'	2 / 2	6.75	15 / 20	0.2 / 0.2	16 / 16	1	0.3	9	0.2 / 0.1	23 / 13	0 / 0.1	0 / 13	0.2 / 0.2	23 / 26	1.1	122	1	115	15
6'	2 / 3	6.75	10 / 15	0.2 / 0.4	16 / 24	1	0.3	9	0.3 / 0.1	36 / 15	0 / 0.1	0 / 15	0.3 / 0.2	36 / 30	1.3	147	1	115	15
8'	2 / 4	6.75	10 / 15	0.2 / 0.5	16 / 32	1	0.3	9	0.3 / 0.2	36 / 21	0 / 0.2	0 / 21	0.3 / 0.4	36 / 42	1.7	197	1	115	15
10'	3 / 5	6.75	15 / 20	0.4 / 0.6	24 / 40	1	0.3	9	0.4 / 0.2	47 / 26	0 / 0.2	0 / 26	0.4 / 0.4	47 / 52	2.1	247	1	115	15
12'	3 / 6	6.75	10 / 15	0.4 / 0.7	24 / 48	1	0.3	9	0.5 / 0.3	54 / 31	0 / 0.3	0 / 31	0.5 / 0.6	54 / 62	2.6	297	2	115	30
22.5° OS	1 / 1	6.75	15 / 20	0.1 / 0.1	8 / 8	N/A	N/A	N/A	0.1 / 0.1	15 / 10	0 / 0.1	0 / 10	0.1 / 0.2	15 / 20	0.8	97	N/A	N/A	N/A
45° IS	2 / 1	6.75	10 / 15	0.2 / 0.1	16 / 8	N/A	N/A	N/A	0.2 / 0.1	19 / 10	0 / 0.1	0 / 7	0.2 / 0.2	19 / 17	0.8	97	N/A	N/A	N/A

#### OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

CASE LENGTH	CANOPY LIGHTS H.O. LED TOP / FRONT		OPTIONAL SHELF LIGHTS H.O. LED TOP / FRONT		MAX. H.O. LED LOAD TOP / FRONT	
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
4'	0.2 / 0.1	28 / 15	0 / 0.1	0 / 15	0.2 / 0.2	28 / 30
5'	N/A	N/A	N/A	N/A	N/A	N/A
6'	0.3 / 0.2	36 / 28	0 / 0.2	0 / 26	0.3 / 0.4	36 / 52
8'	0.5 / 0.3	56 / 30	0 / 0.3	0 / 30	0.5 / 0.6	56 / 60
10'	N/A	N/A	N/A	N/A	N/A	N/A
12'	0.7 / 0.3	85 / 31	0 / 0.3	0 / 31	0.7 / 0.6	85 / 62
22.5° OS	N/A	N/A	N/A	N/A	N/A	N/A
45° OS	N/A	N/A	N/A	N/A	N/A	N/A

# ELECTRICAL

## 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-SUITEMENT
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

### 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 LED lights 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.

### LED Driver Location

LED Drivers are located within the access panel (Electrical raceway) that runs the length of the rear of the case. Refer to Figure 3 on page 15.



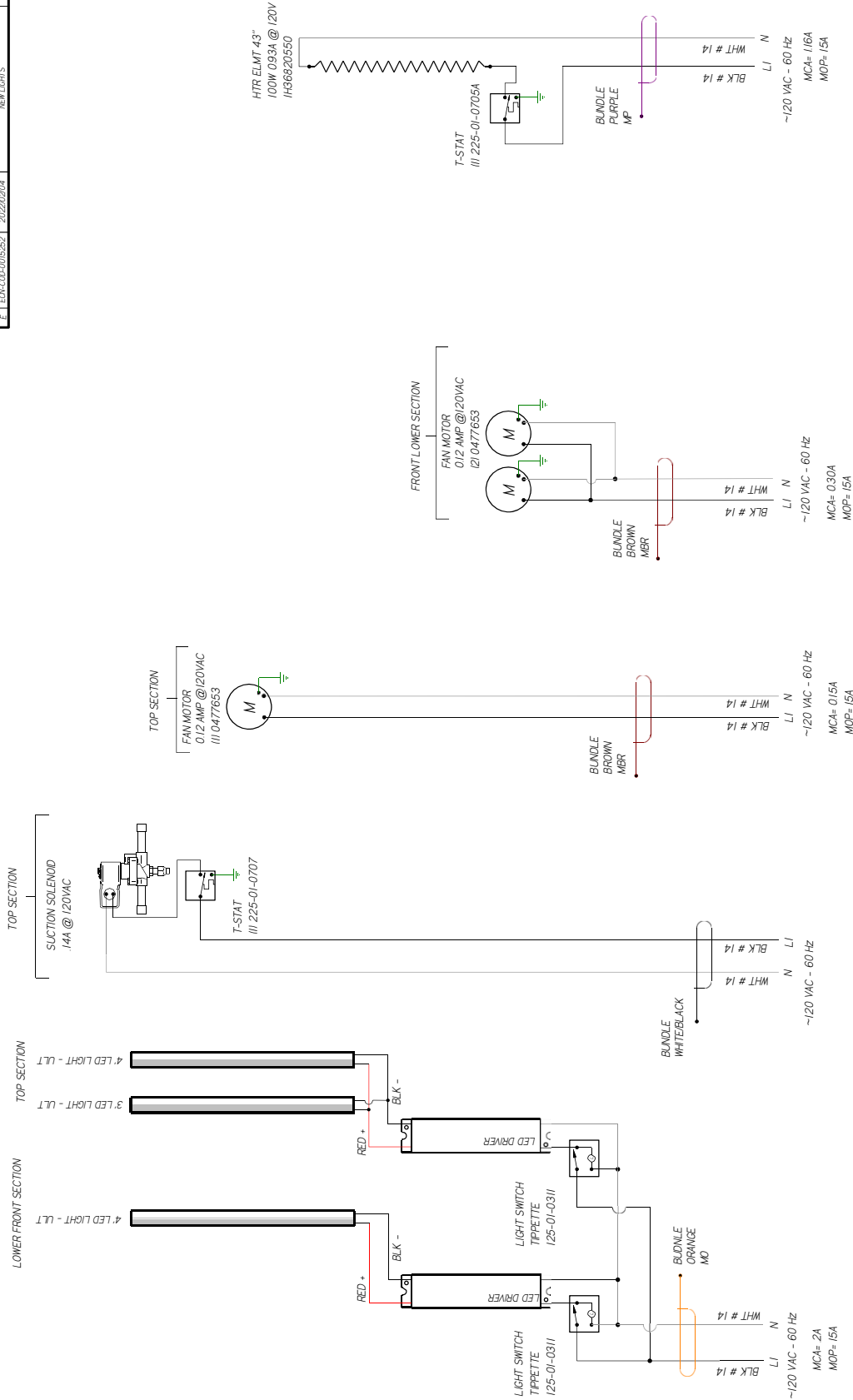
## WIRING DIAGRAM INDEX

	<b>R3/CR3HV-SWD</b>	<b>R3/CR3-HV-SWD-4-R</b>	4'	3016933
<b>R3/CR3HV-SWD</b>		<b>R3/CR3-HV-SWD-5-R</b>	5'	3016934
		<b>R3/CR3-HV-SWD-6-R</b>	6'	3016935
		<b>R3/CR3-HV-SWD-8-R</b>	8'	3016936
		<b>R3/CR3-HV-SWD-10-R</b>	10'	3016937
		<b>R3/CR3-HV-SWD-12-R</b>	12'	3016938
		<b>R3/CR3-HV-SWD-22.5 OS</b>		3016939
		<b>R3/CR3-HV-SWD-45 IS</b>		3016940

CIRCUIT  
#1

WIRING					
120V					
1/4" x 1/4"					

LIGHT CIRCUIT= 16A 169W



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

MATERIAL - IN A		DATE DRAWN - 10-12-16	
DRAWN BY - CRAIG BOOREY		ECON-CAP-0004590	
REVIEWED BY - CRAIG BOOREY		REF -	
APPROVED BY - CRAIG BOOREY		SHEET 1 OF 2	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		TOLERANCES ARE:	
DECIMALS XX ± 0.3, XXX		THIRD	
± 0.0		ANG	
E		PROJECTION	

**HUSSMANN**  
R3/CR3-HV-SWD-  
4-R

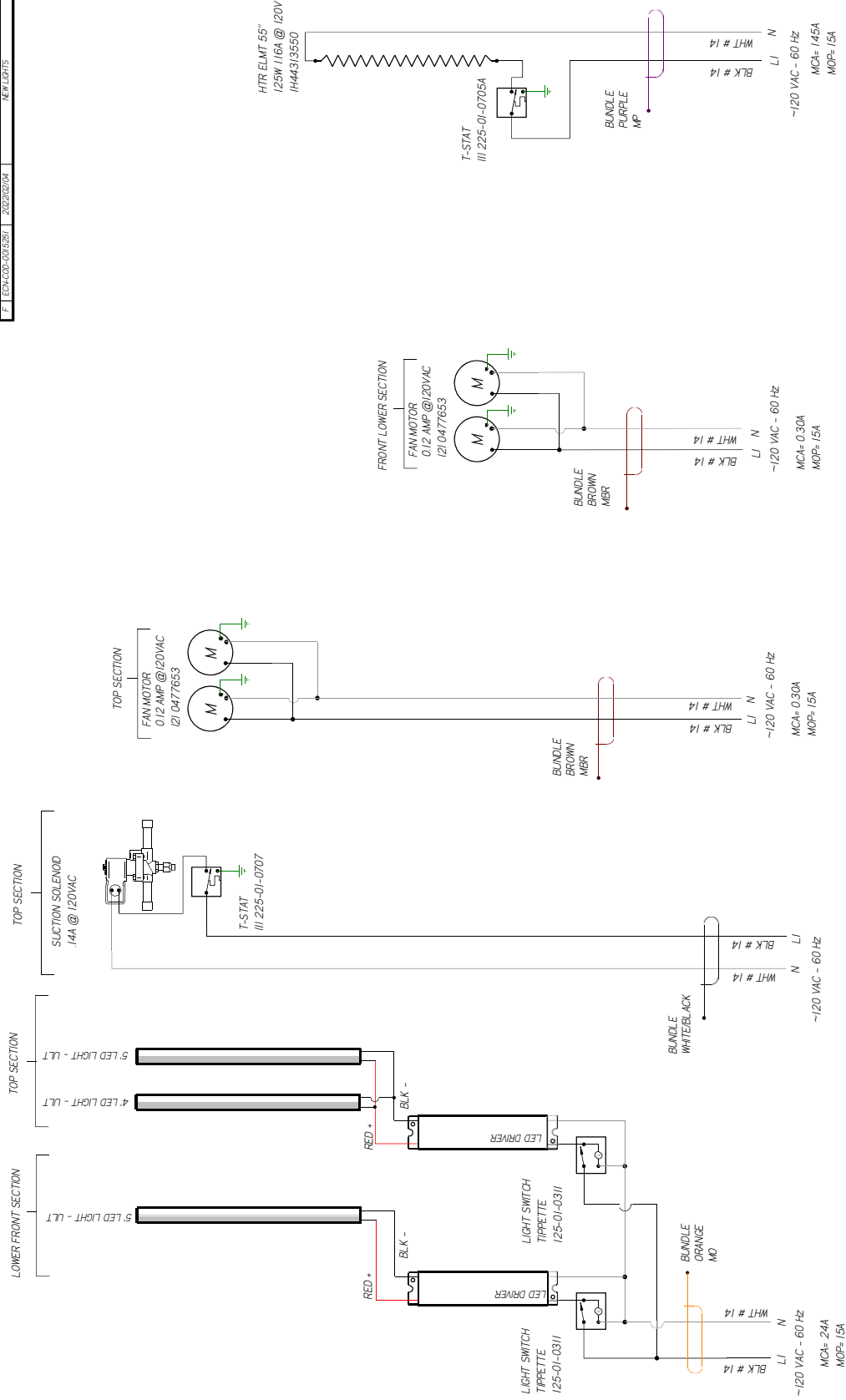
3016933 | E



CIRCUIT  
#1

120V				
120V				
120V				
120V				

LIGHT CIRCUIT= 19A 21W

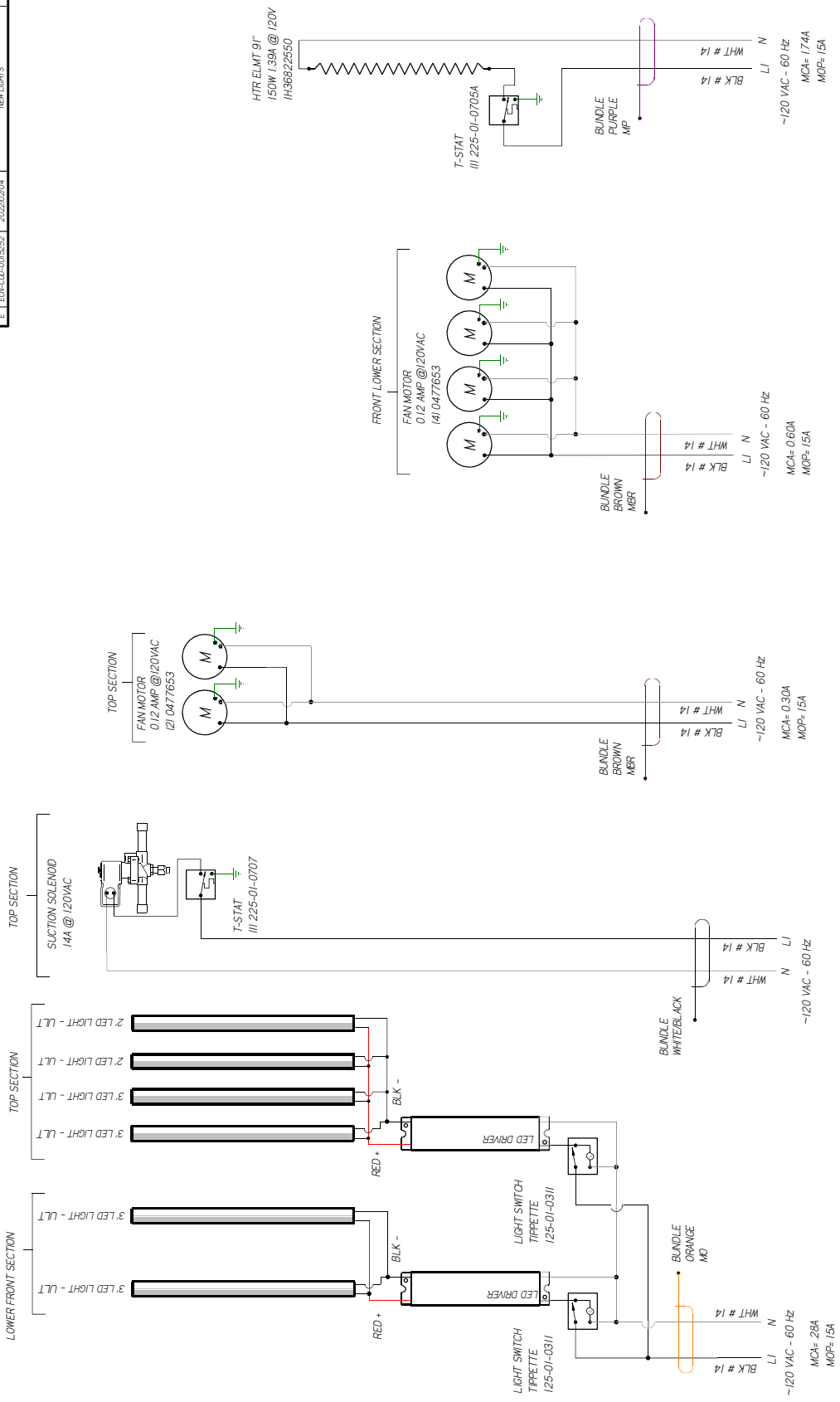
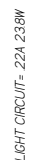
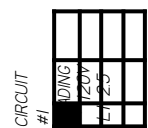


MATERIAL - IN A		DATE DRAWN - 10-12-16	
DRAWN BY - CRAIG BOOREY		ECON-CAP-0004590	
REVIEWED BY - CRAIG BOOREY		REF -	
APPROVED BY - CRAIG BOOREY		SHEET 1 OF 2	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		TOLERANCES ARE:	
DECIMALS XX ± 0.3, XXX		THIRD	
± 0.0		ANG	
PROJECTION		E	
HUSSEMAN		R3ICR3-HV-SWD-	
5-R		F	
3016934		F	

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



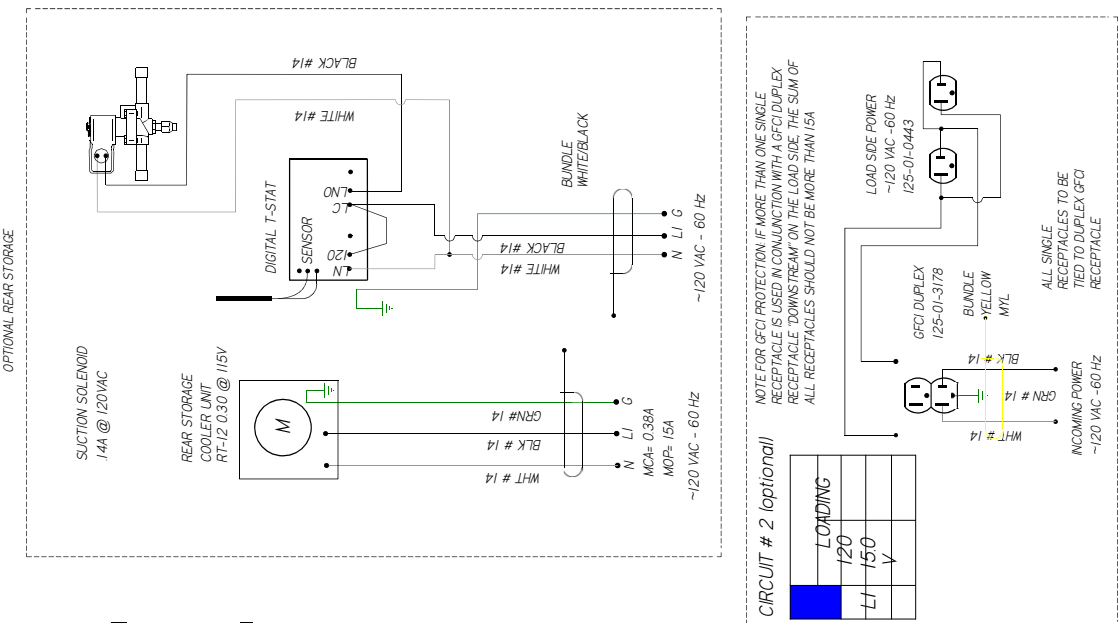
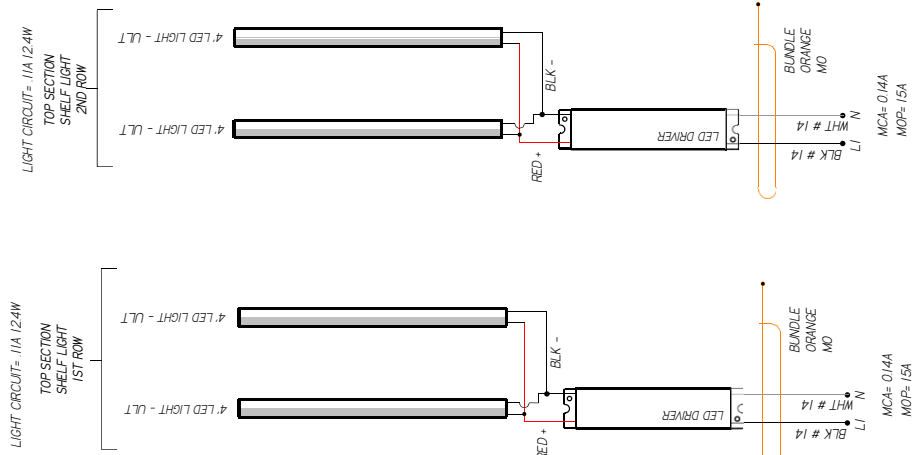
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	REV	EON	DATE	REVISION DESCRIPTION	REV BY	CHK BY
	B	EON-04P-0003979	2017/01/03	REVISED REAR STORAGE COIL	CB	CB
	C	EON-04P-0008207	2017/01/25	REVISED REAR STORAGE T-SLAT	CB	CB
	D	EON-04P-0000986	2017/06/02	REVISED TOP SECTION LIGHTS	CB	CB
	E	EON-000-0015252	2012/02/04	NEW LIGHTS	AL	CB



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

MATERIAL - NA		DATE DRAWN - 10-12-16		ECON-CAP-00042590		HUSSEMAN®	
DRAWN BY - CRAIG BOOREY		REVIEWED BY - CRAIG BOOREY		REF -		R3/CR3-HV-SWD-	
APPROVED BY - CRAIG BOOREY		SHEET 1 OF 2		THIRD		6-R	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES							
TOLERANCES ARE:							
DECIMALS ± .03		XXX		ANG.		3016935	
±.010		E		PROJECTION		E	

REVISION HISTORY			
REV	EON	DATE	DESCRIPTION
B	EON-CAP-0004590	20170103	REVISED REAR STORAGE COIL
C	EON-CAP-0006207	20170125	REVISED REAR STORAGE T-STAT
D	EON-CAP-0008946	20170602	REVISED TOP SECTION LIGHTS
E	EON-CAP-0016252	20220204	NEW LIGHTS



REVISION HISTORY			
REV	EON	DATE	DESCRIPTION
B	EON-CAP-0004590	20170103	REVISED REAR STORAGE COIL
C	EON-CAP-0006207	20170125	REVISED REAR STORAGE T-STAT
D	EON-CAP-0008946	20170602	REVISED TOP SECTION LIGHTS
E	EON-CAP-0016252	20220204	NEW LIGHTS

MATERIAL - IVA			
DATE DRAWN - 10-12-16			
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 ± 2°			

HUSSEMAN®			
R3ICR3-HV-SWD-			
6- R			

3016935			
E			

PROJECTION			
ANG			
E			

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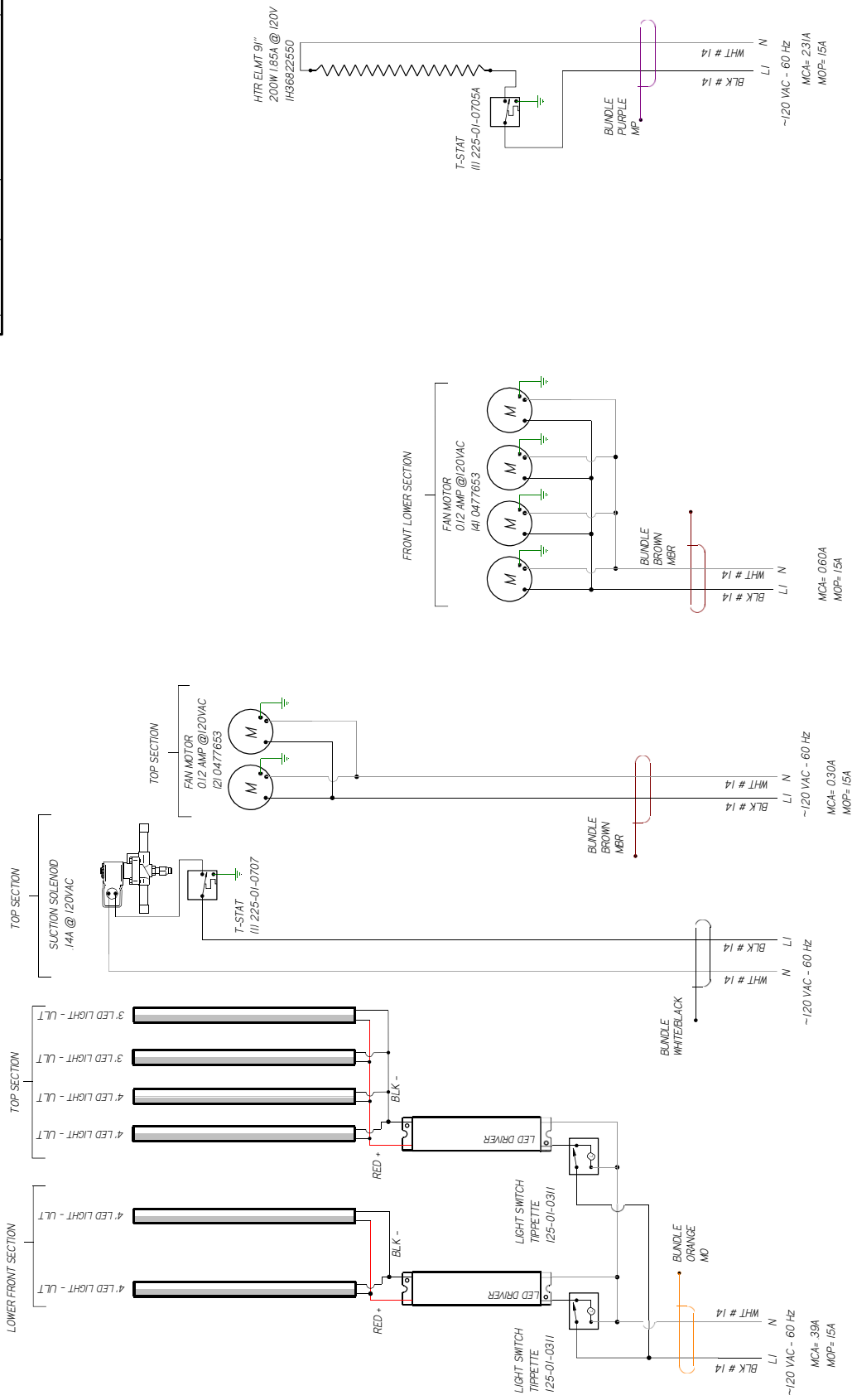
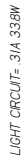
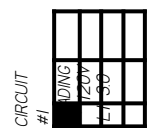
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NOTES:  
CASE MUST BE GROUNDED  
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY			REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
	B	EON-CAP-0000979	2017/01/13		REVISE REAR STORAGE	COL	CB	CB	CB
	C	EON-CAP-0006207	2017/01/25		REVISE REAR STORAGE T-SIT		CB	CB	CB
	D	EON-CAP-0000986	2017/06/02		REVISED TOP SECTION LIGHTS		CB	CB	CB
	E	EON-CAP-0015252	2022/02/20		NEW LIGHTS		AL	CB	CB



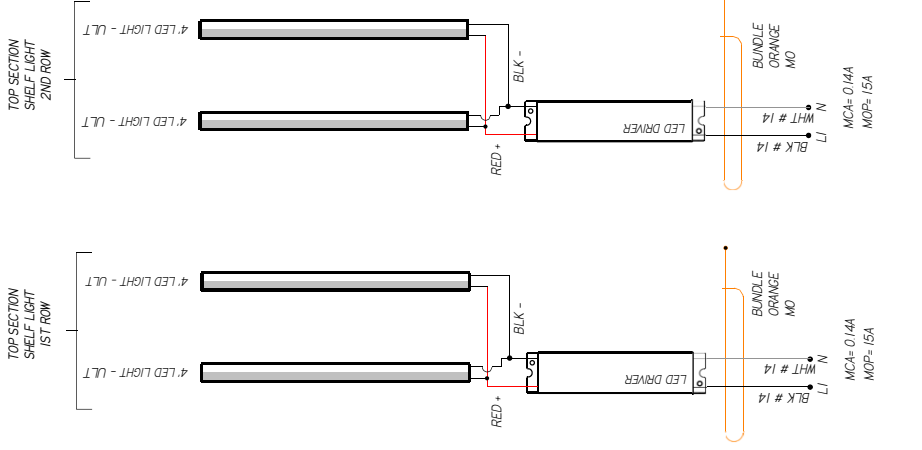
NOTES:  
CASE MUST BE GROUNDED  
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

MATERIAL - NA DATE DRAWN - 10-12-16 DRAWN BY - CRAIG BOOREY REVIEWED BY - CRAIG BOOREY APPROVED BY - CRAIG BOOREY SHEET 1 OF 2 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: DECIMALS ± .03 .XXX ANGLES ± .2°		HUSSMANN® R3/CR3-HV-SWD-8-R ECON-CAP-0004350 REF - THIRD  ANGLE PROJECTION E	
3016936		E	

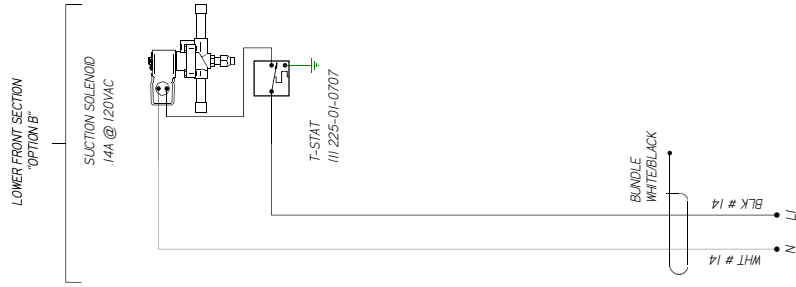
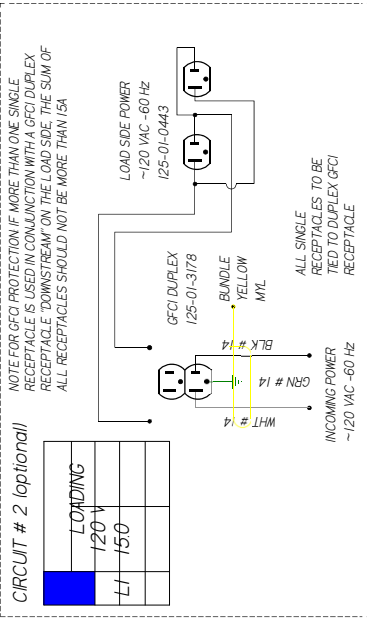
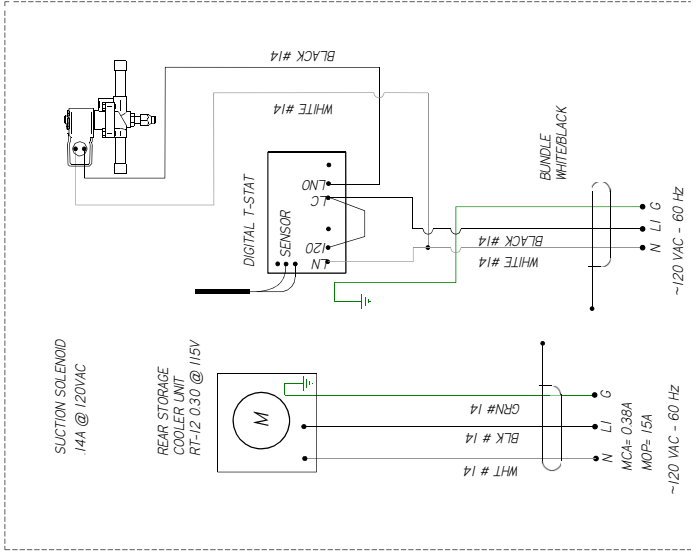


REVISION HISTORY			
REV	ECN	DATE	REVISION DESCRIPTION
B	ECN-CAP-000599	2017/01/13	REVISE REAR'S STORAGE COIL
C	ECN-CAP-0006207	2017/01/25	REVISE REAR STORAGE T-STAT
D	ECN-CAP-0008196	2017/06/02	REVISED TOP SECTION LIGHTS
E	ECN-COD-0016252	2022/02/04	NEW LIGHTS

LIGHT CIRCUIT= 14A 12-4W



OPTIONAL REAR STORAGE



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

**HUSSMANN**  
**R3TOR3-HV-SWD-8-R**

MATERIAL - IVA

DATE DRAWN - 10-12-16

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 ± 2°

PROJECTION

REF - SHEET 2 OF 2

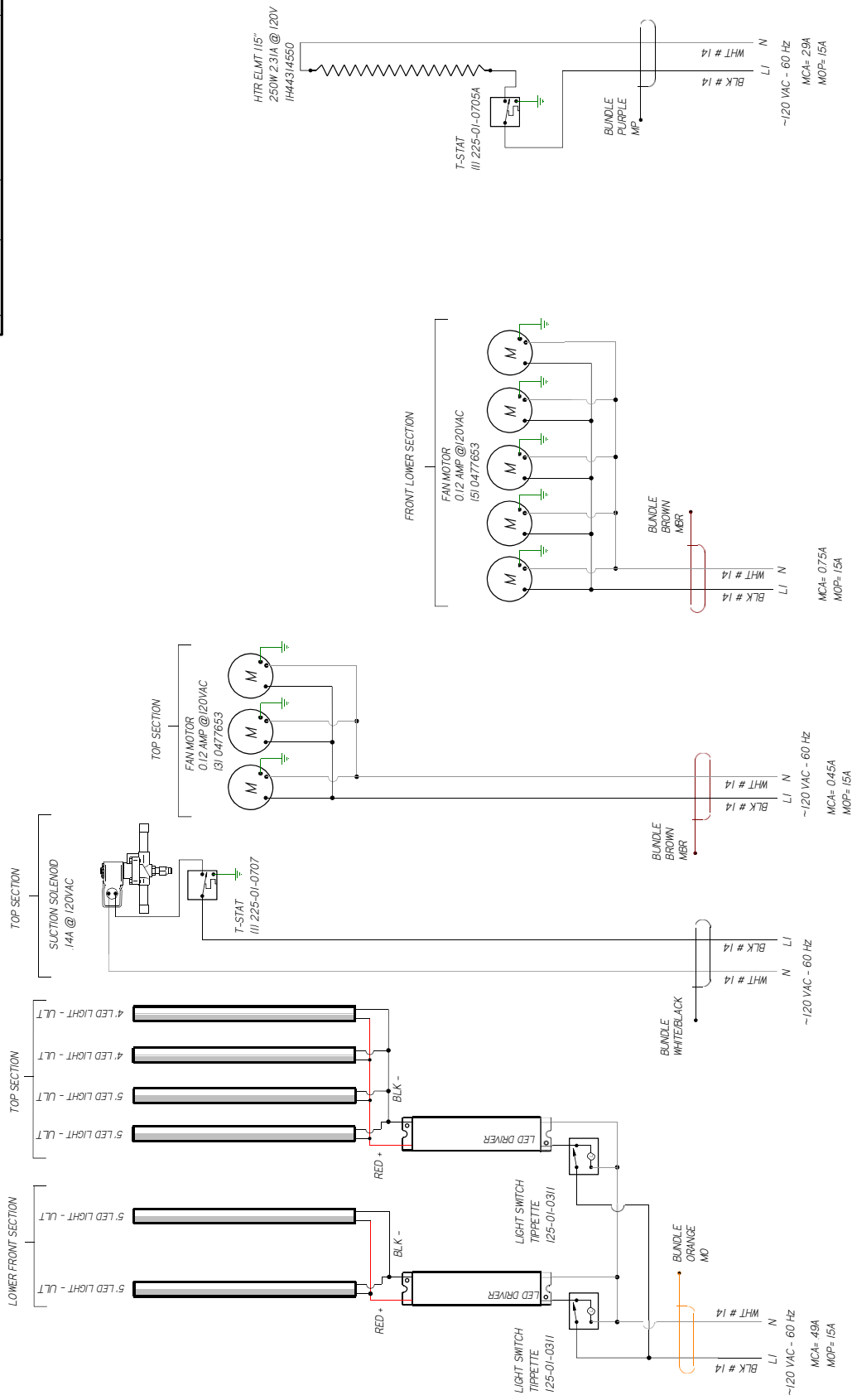
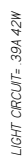
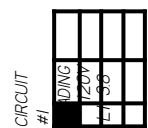
ECN-CAP-0004590

REV -


3016936

E

REVISION HISTORY				REV BY	CHKD BY	APPR BY
	REV	EON	DATE	REVISION DESCRIPTION	CB	CB
	D	EON-CP-0008196	2017/06/02	REVISED TOP SECTION LIGHTS	CB	CB
	E	EON-CP-0008197	2017/06/02	REVISED E/W/FAN LAYOUT	CB	CB
	F	EON-CP-00016799	2019/03/28	CHANGED HTR WIRE PART NUMBER	CB	CB
		EON-003-0015252	2020/02/04	NEW LIGHTS	AL	CB

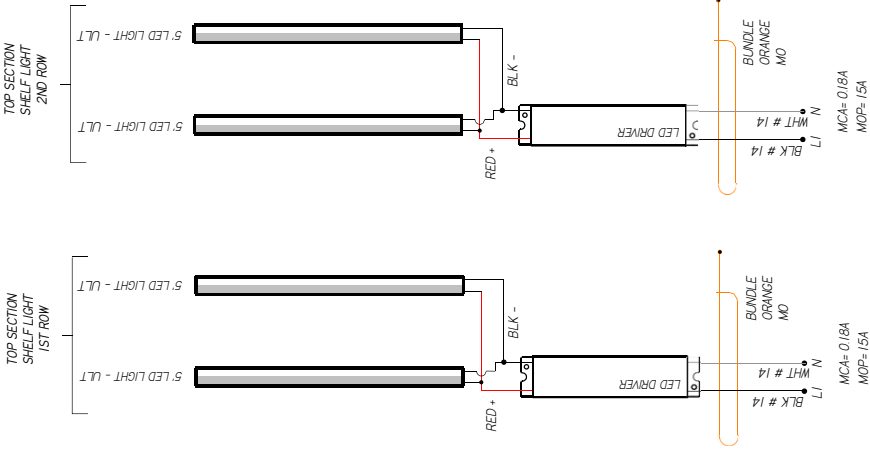


NOTES:  
CASE MUST BE GROUNDED  
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

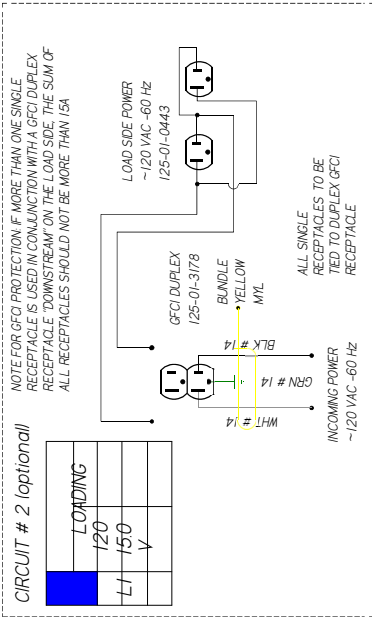
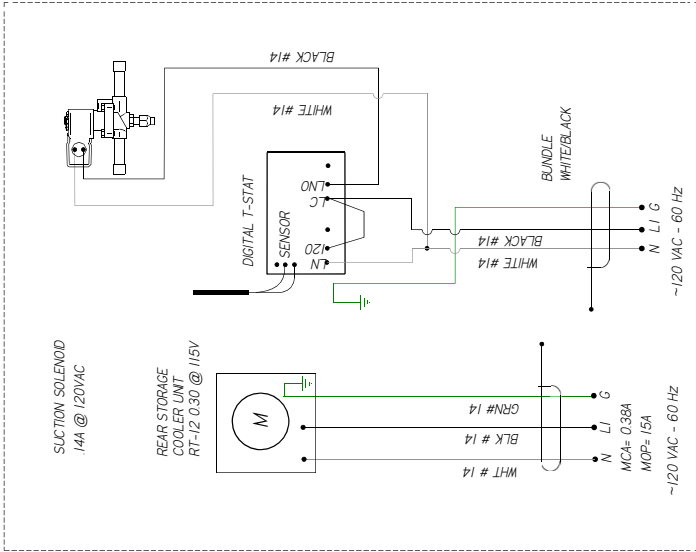
MATERIAL - NA				ANGLES ± 2° ± 0.10	
DATE DRAWN - 10-12-16		DECIMAL S XX ± 0.3 XXX TOLERANCES ARE:		3016937	
DRAWN BY - CRAIG BOOREY		SHEET 1 OF 2 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		3016937	
REVIEWED BY - CRAIG BOOREY		REF - EON-CAP-0004590		3016937	
APPROVED BY - CRAIG BOOREY		HUSSMANN® R3/CR3-HV-SWD- 10- R		G	

REV	EON	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
D	EON-CAP-0008986	20170602	REVISED TOP SECTION LIGHTS	CB	CB	CB
E	EON-CAP-0008987	20170612	REVISED FAN PAN LAYOUT	CB	CB	CB
F	EON-CAP-0008989	20190328	CHANGED WIRE PART NUMBER	CB	CB	CB
G	EON-CAP-0015552	20220204	NEW LIGHTS	AL	CB	CB

LIGHT CIRCUIT= 14A 148W



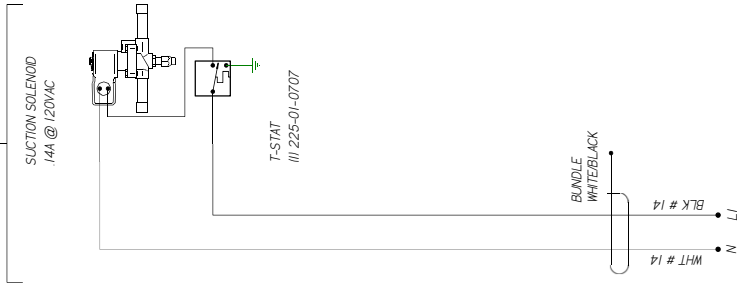
OPTIONAL REAR STORAGE



CIRCUIT # 2 (optional)

LOADING		
120		
150		
V		

LOWER FRONT SECTION "OPTION B"



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

MATERIAL - IVA

DATE DRAWN - 10-12-16

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 ± 2°

HUSSMANN®

R3JCR3-HV-SWD-

10- R

REF -

SHEET 2 OF 2

THRU

ANG

E

PROJECTION

3016937

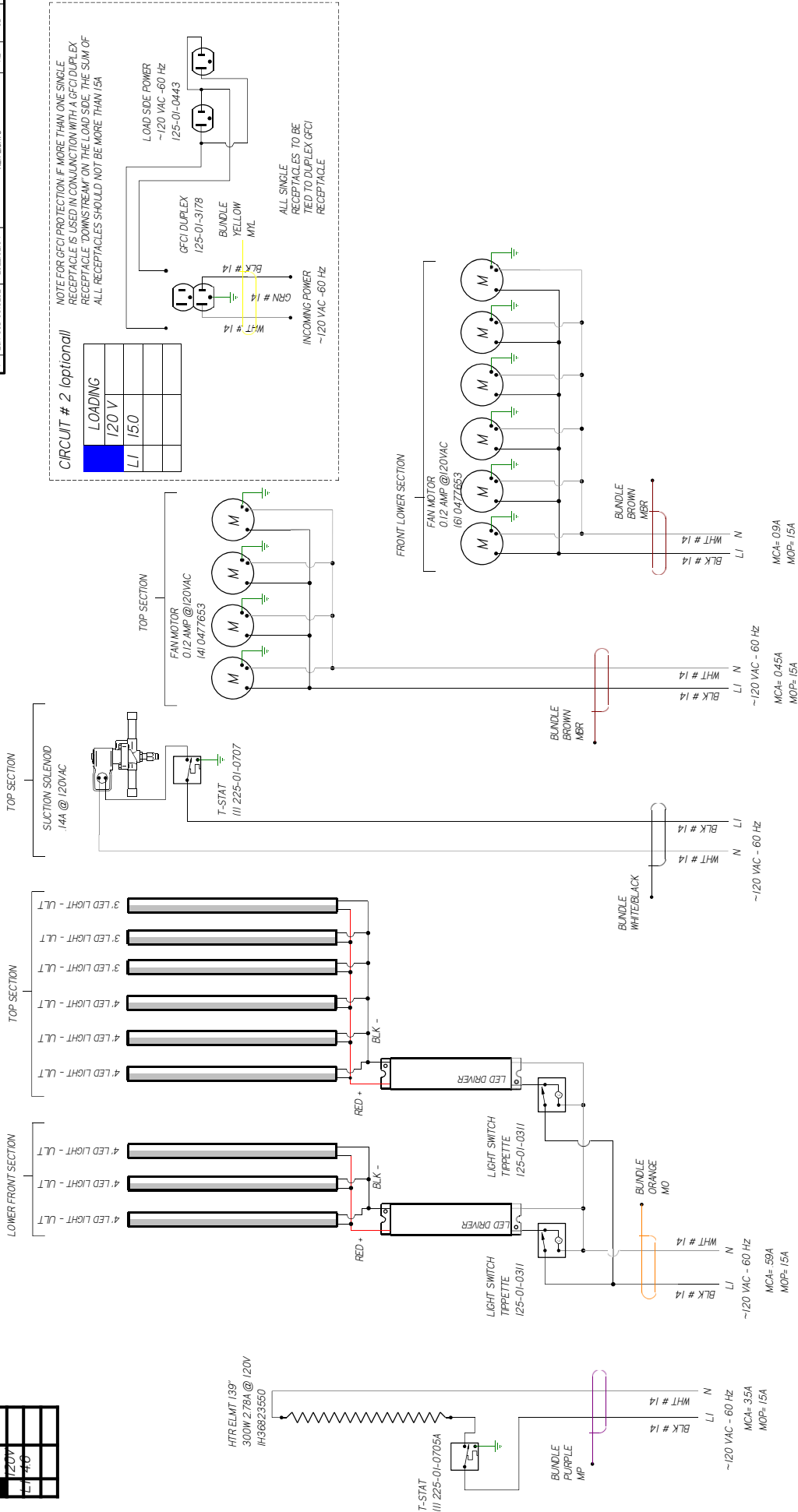
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REVISION HISTORY				REVISION DESCRIPTION				REV BY / CHD BY / APPR BY			
REV	EON	DATE									
C	EON-CAP-0006207	2017/01/25		REVISED REAR STORAGE T-SHIRT				CB	CB	CB	CB
D	EON-CAP-0008496	2017/06/02		REVISED TOP SECTION LIGHTS				CB	CB	CB	CB
E	EON-COQ-0014515	2021/12/22		ADDED TOP FAN MOTOR				CB	CB	CB	CB
F	EON-COQ-0016582	2022/02/04		NEW LIGHTS				AL	CB	CB	CB

CIRCUIT #1

LOADING	120 V	150
LI		

LIGHT CIRCUIT= 47A 50.7W



REVISION HISTORY				REVISION DESCRIPTION				REV BY / CHD BY / APPR BY			
REV	EON	DATE									
C	EON-CAP-0006207	2017/01/25		REVISED REAR STORAGE T-SHIRT				CB	CB	CB	CB
D	EON-CAP-0008496	2017/06/02		REVISED TOP SECTION LIGHTS				CB	CB	CB	CB
E	EON-COQ-0014515	2021/12/22		ADDED TOP FAN MOTOR				CB	CB	CB	CB
F	EON-COQ-0016582	2022/02/04		NEW LIGHTS				AL	CB	CB	CB

REVISION HISTORY				REVISION DESCRIPTION				REV BY / CHD BY / APPR BY			
REV	EON	DATE									
C	EON-CAP-0006207	2017/01/25		REVISED REAR STORAGE T-SHIRT				CB	CB	CB	CB
D	EON-CAP-0008496	2017/06/02		REVISED TOP SECTION LIGHTS				CB	CB	CB	CB
E	EON-COQ-0014515	2021/12/22		ADDED TOP FAN MOTOR				CB	CB	CB	CB
F	EON-COQ-0016582	2022/02/04		NEW LIGHTS				AL	CB	CB	CB

REVISION HISTORY				REVISION DESCRIPTION				REV BY / CHD BY / APPR BY			
REV	EON	DATE									
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D	EON-CAP-0008496	2017/06/02		REVISED TOP SECTION LIGHTS				CB	CB	CB	CB
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F	EON-COQ-0016582	2022/02/04		NEW LIGHTS				AL	CB	CB	CB

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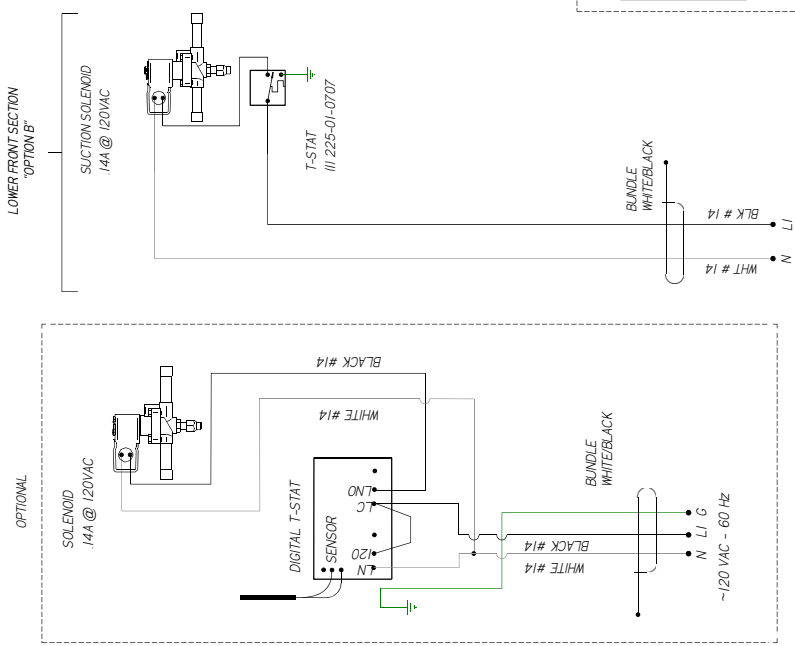
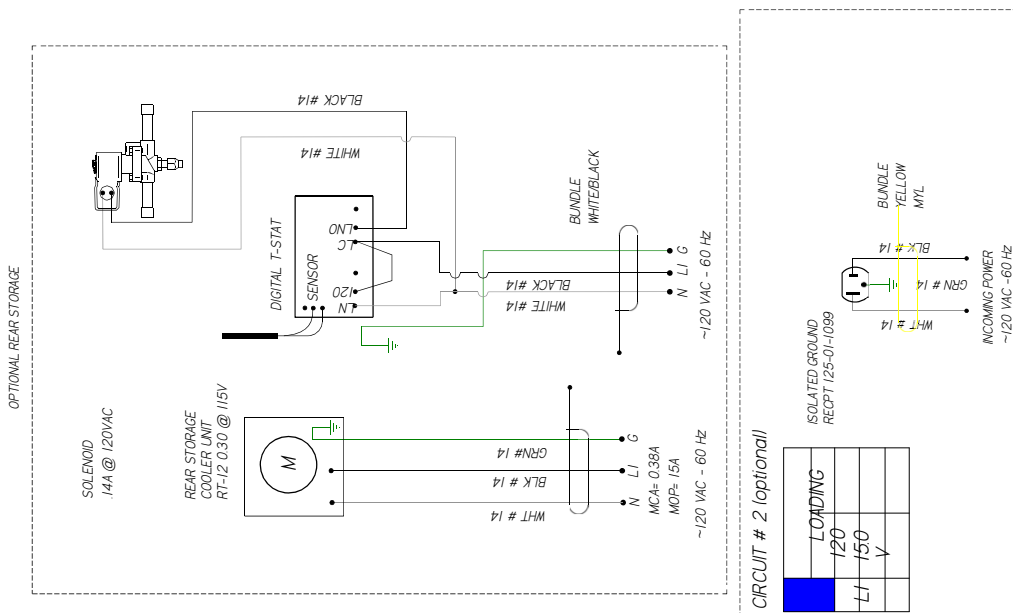
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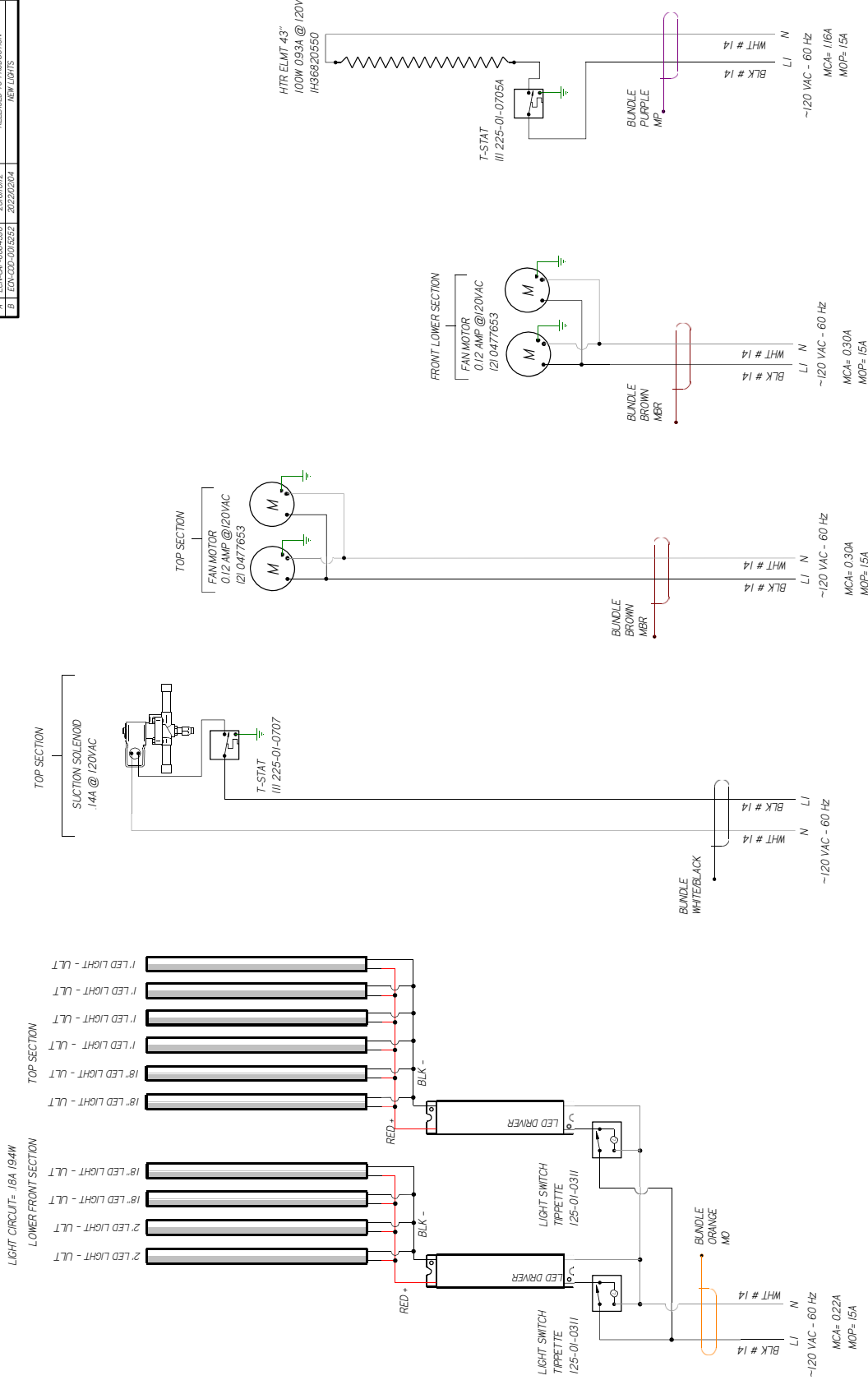
NOTES:  
CASE MUST BE GROUNDED  
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

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B	ECN-CDD-0015252	2022/02/04	NEW LIGHTS	AL	CB	CB

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

DATE DRAWN - 10-12-16		ECON-CAP-0004590		<b>HUSSMANN®</b>	
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APPROVED BY - CRAIG BOOREY		SHEET 1 OF 1		45 IS	
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# User Information

## Stocking

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 LED lamps (H.O. and V.H.O.), will shorten the shelf life of the product.

## 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.

## Aluminum Coils

The aluminium coils should be replaced if damaged.

## Non-Glare Glass (Optional)

The high optical clarity of this glass is possible due to special

coatings on the glass surface itself. To preserve this coating and the optical clarity, keep the glass clean.

Water is the only solution recommended to be used to clean the non-glare glass. The damage to the glass from improper, caustic solutions is irreparable.

In addition to cleaning the glass with the recommended product, there are precautions that should be taken when working and cleaning the inside of the case.

- When cleaning the inside of the cases, we recommend that the glass be fully opened and covered to prevent solutions from splashing onto the glass and ruining the coating on the inside.
- Only use a soft cloth and water (in a spray bottle) 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 to room temperature.

## 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 product **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.

## 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 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.
4. If front self-service case is not performing check proper installation of lower deck pan refer to case cleaning section.

## Case Cleaning

Long life and satisfactory performance of any equipment are dependent upon the care given to it. To insure long life, proper sanitation and minimum maintenance costs, the refrigerator



## User Information (Cont'd)

should be thoroughly cleaned frequently.

**SHUT OFF FAN DURING CLEANING PROCESS.** It can be unplugged within the case, or shut off case at the source. The interior bottom may be cleaned with any domestic soap or detergent based cleaners. Sanitizing solutions will not harm the interior bottom, however, these solutions should always be used according to the manufacturer's directions.

It is essential to establish and regulate cleaning procedures. This will minimize bacteria causing discoloration which leads to degraded product appearance and significantly shortening product shelf life.

*Soap and hot water are NOT enough to kill this bacteria. A sanitizing solution MUST be included with each cleaning process to eliminate this bacteria.*

*Remove all food stuffs, ice, debris, etc., and either access the case from the rear or the front of the case. Allow the case to come to room temperature.*

### 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)



#### CAUTION

**WHEN CLEANING, DO NOT SPRAY GLASS! FRONT AND BACK GLASS IS NOT SEALED AND WILL LEAK!!!**

**Front glass is "Lift Up Glass" that is NOT SEALED and back access doors ARE NOT SEALED and WILL LEAK if sprayed with any liquid!**



#### CAUTION

**If you access the case from the front, be certain the glass is FULLY upright before beginning the cleaning process.**

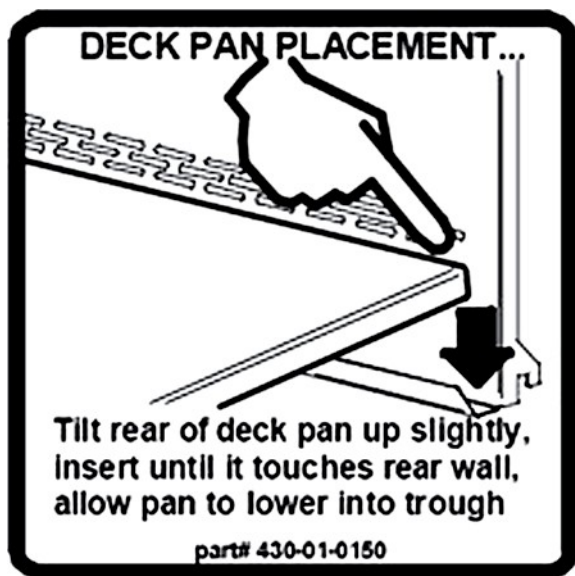
1. Scrub thoroughly, cleaning all surfaces, with soap and hot water.
2. Rinse with hot water, but DO NOT flood or spray glass. (If you are working from the rear of the case, the front glass is "lift up glass" and is NOT sealed. IT WILL LEAK.) Keep all water within the base of the case.
3. Apply the sanitizing solution according to the manufacturer's directions.
4. Rinse thoroughly.
5. Dry completely before resuming operation.

## User Information (Cont'd)

### Front Deck Pan Placement

#### ATTENTION!

When reassembling the front self-service portion of the case, assure proper installation of bottom deck pan. If the deck pan is NOT installed properly, the front self service section will NOT maintain safe product temperature.



### 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



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.

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## Service Record

Last service date: By:


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## HUSSmann®/Chino

Additional copies of this publication may be obtained by contacting:  
Hussmann® Chino  
13770 Ramona Avenue • Chino, California 91710  
(909) 628-8942 FAX  
(909) 590-4910  
(800) 395-9229

The *MODEL NAME* and *SERIAL NUMBER* 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:**