

Installation  
& Operation  
Manual

REV. 0114

**HUSSMANN®/CHINO**

**CR3-HV-SWD**

COMBINATION SERVICE AND SELF-SERVICE DELI/BAKERY CASE

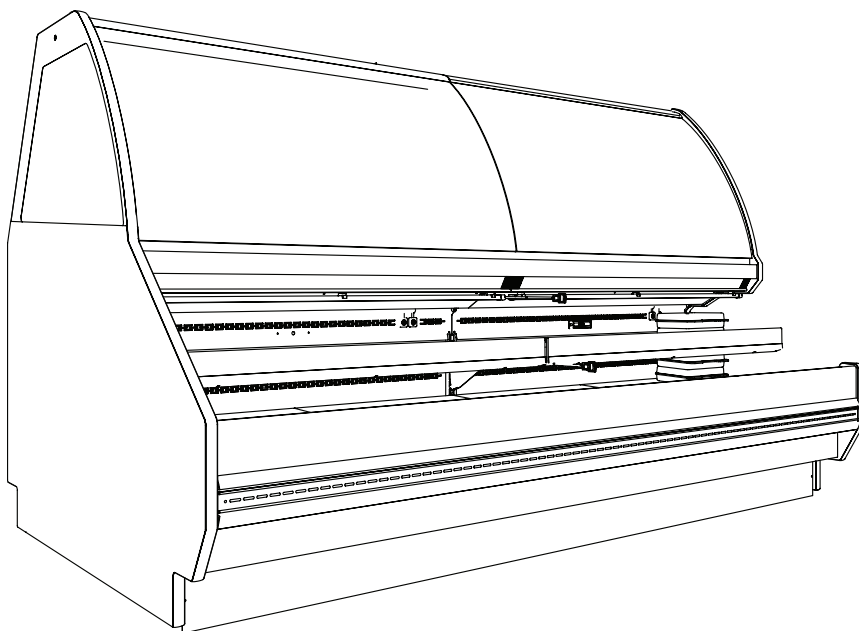
**DOE 2012**  
Energy Efficiency  
Compliant

Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2012 energy efficiency standards.

**HUSSMANN®**

**CR3-HV-SWD**

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



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# GENERAL INFORMATION

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**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.

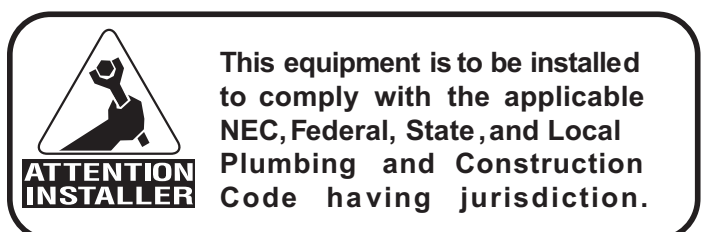
**Hussmann Chino Product Control:** The serial number and shipping date of all equipment has been recorded in Hussmann's files for warranty and replacement part purposes. All correspondence pertaining to warranty or parts ordering must include the serial number of each piece of equipment involved, in 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®**

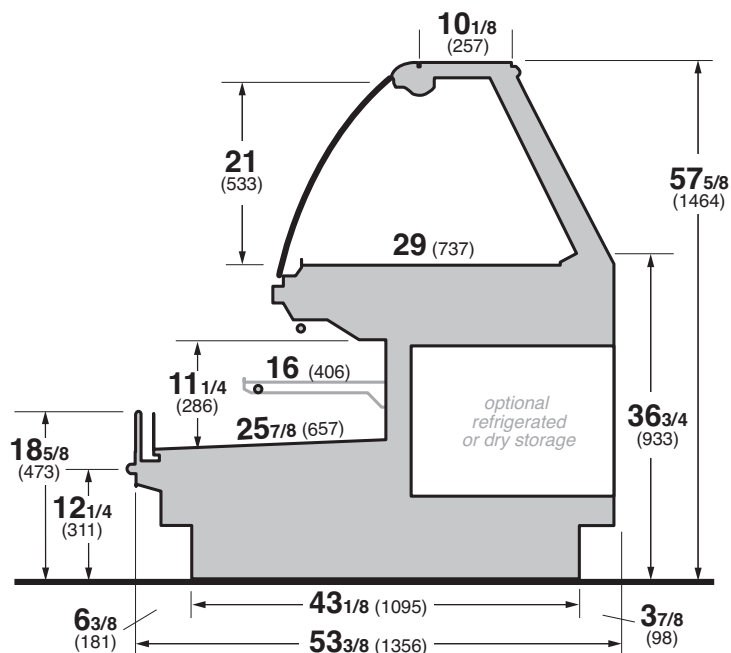
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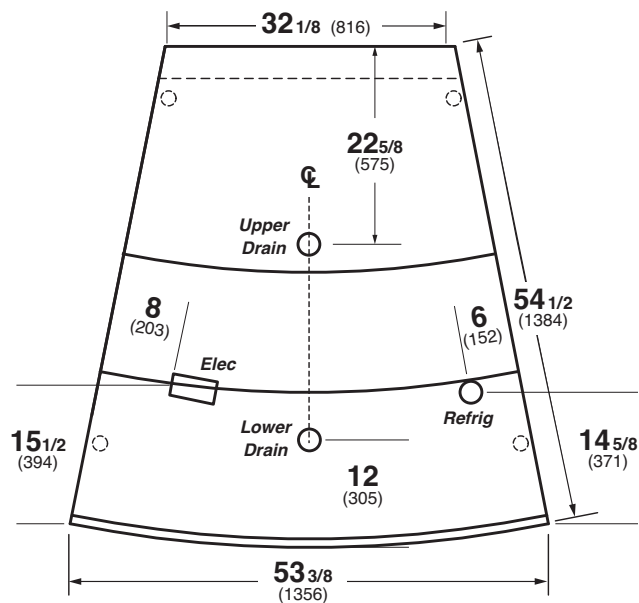
# CASE SECTIONS

## CR3HV-SWD Curved Glass

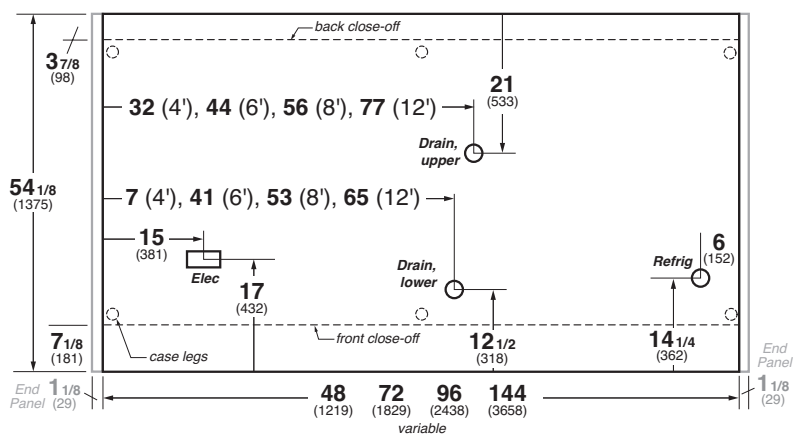
High Volume Service Dome, Wide Multi-Deck Self Service



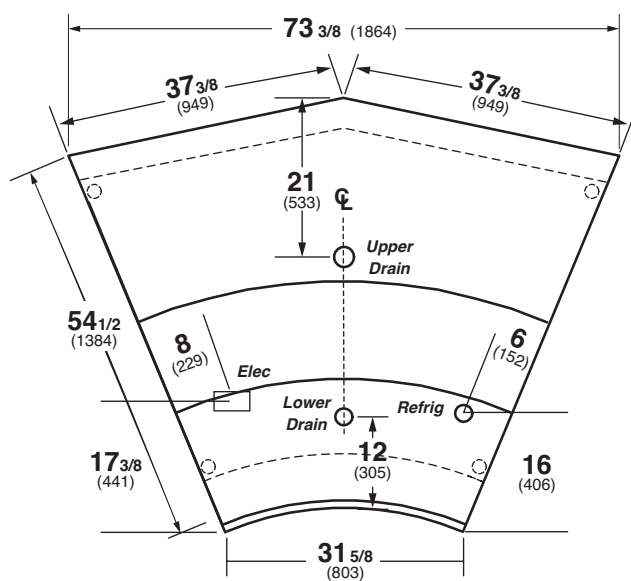
## CR3HV-SWD 22.5° O/S



## 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.

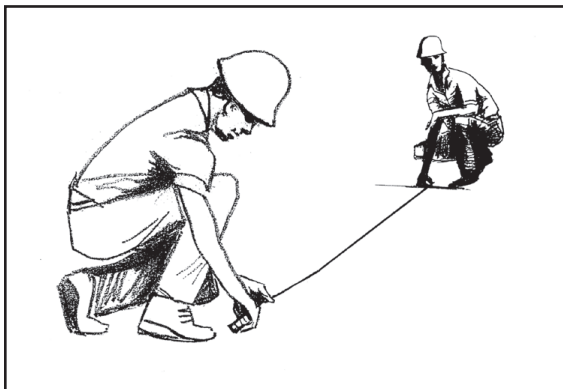
## Location

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.

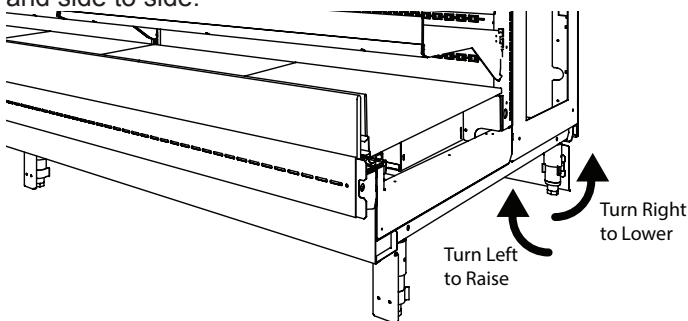
## Snapping Chalk Lines

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.

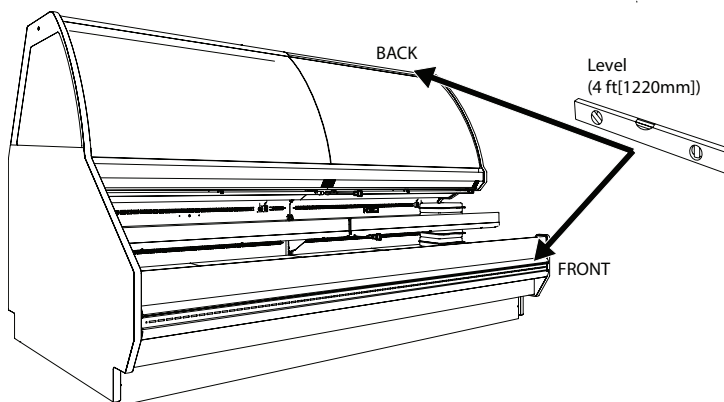


## Leveling



### 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.

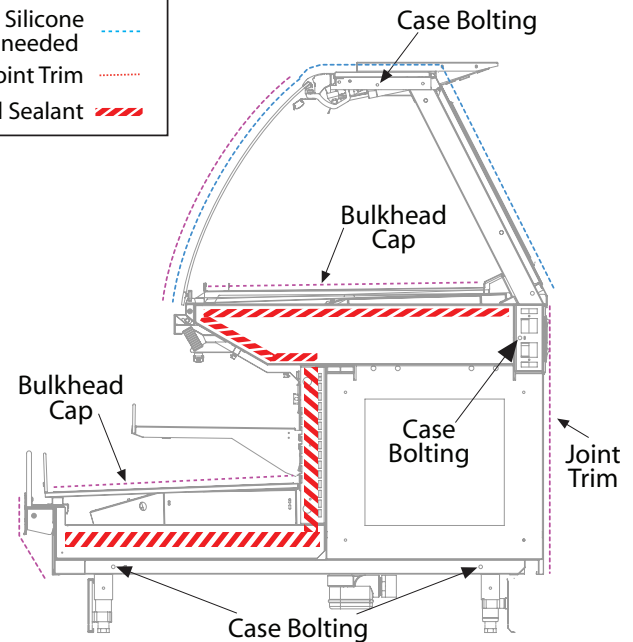
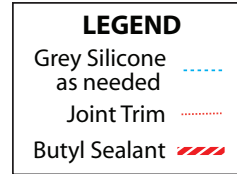
## INSTALLATION (Cont'd)

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**

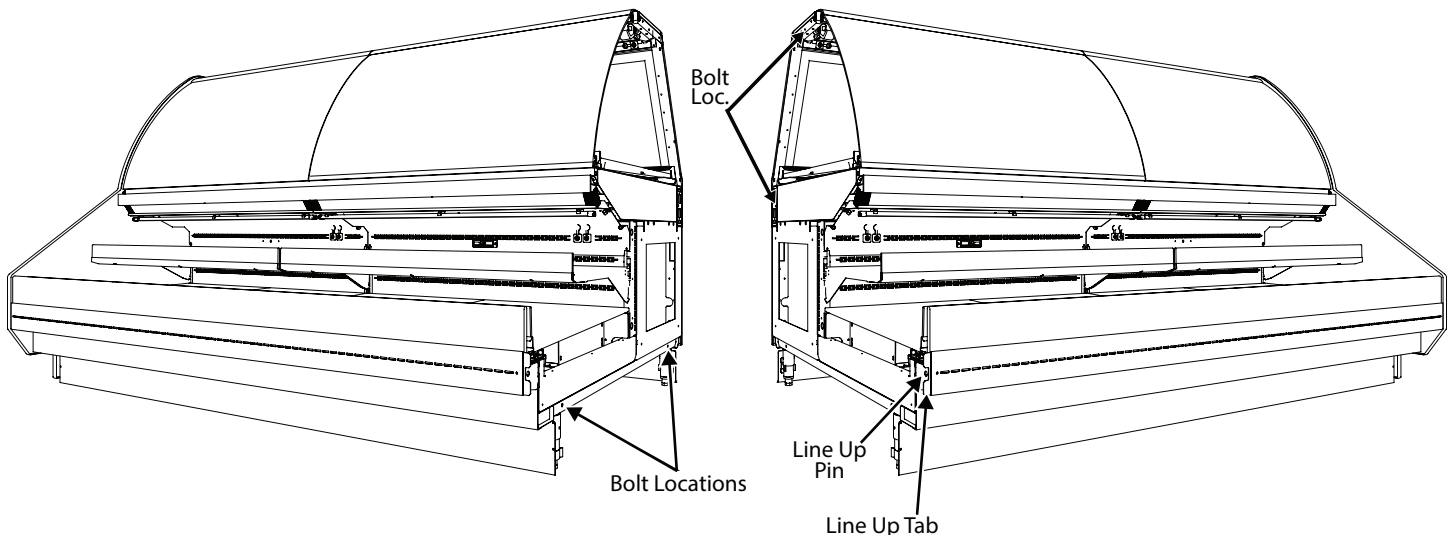
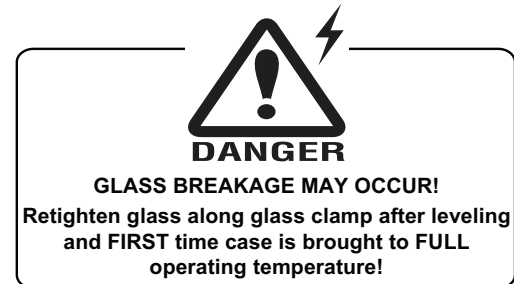


### DO NOT USE PLUMBERS PUTTY

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.

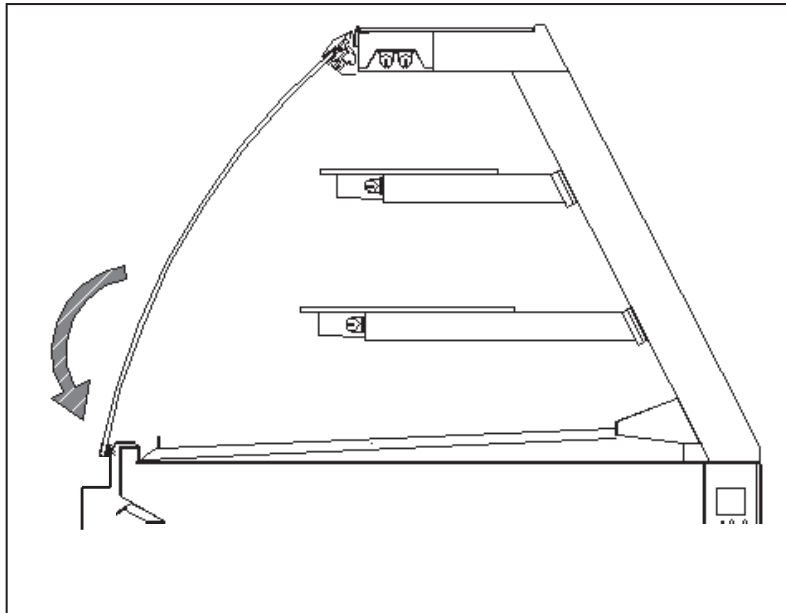
## INSTALLATION (Cont'd)

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.



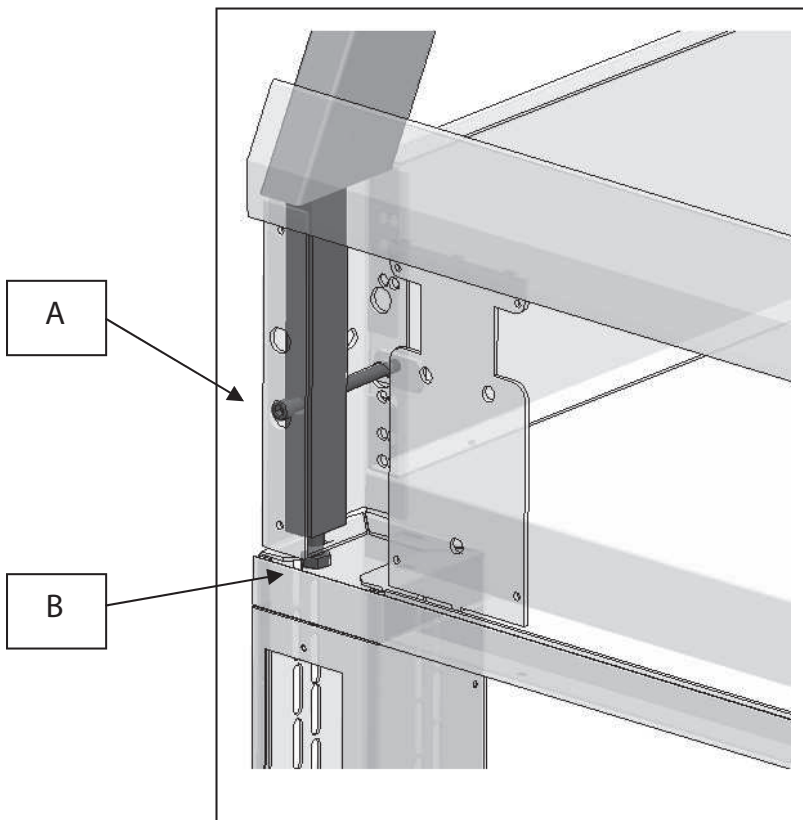
# INSTALLATION (Cont'd)

## 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.

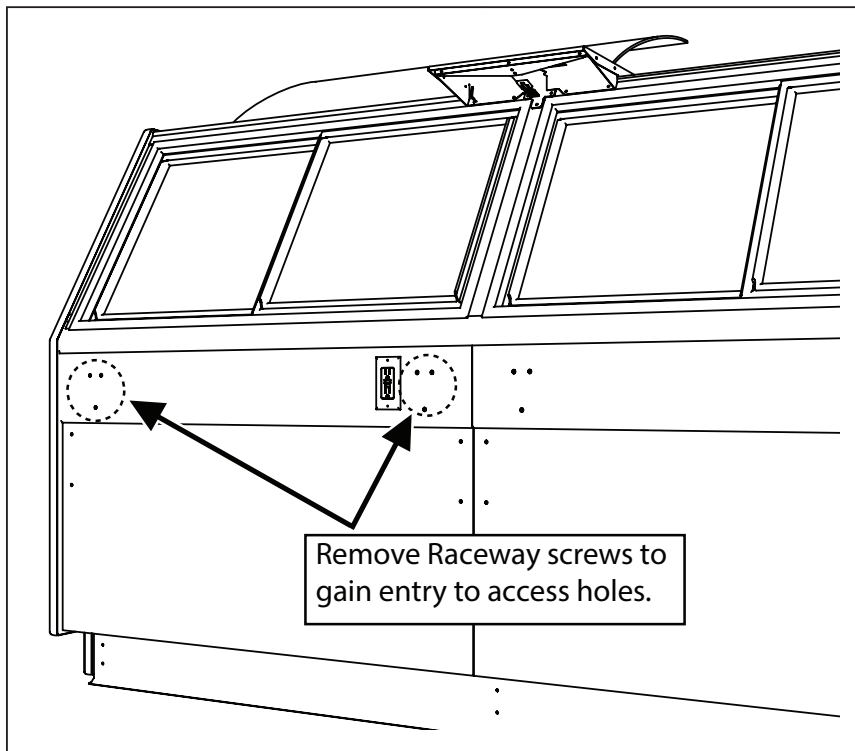


### Hardware and Tools

- (A): 1/4" 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)

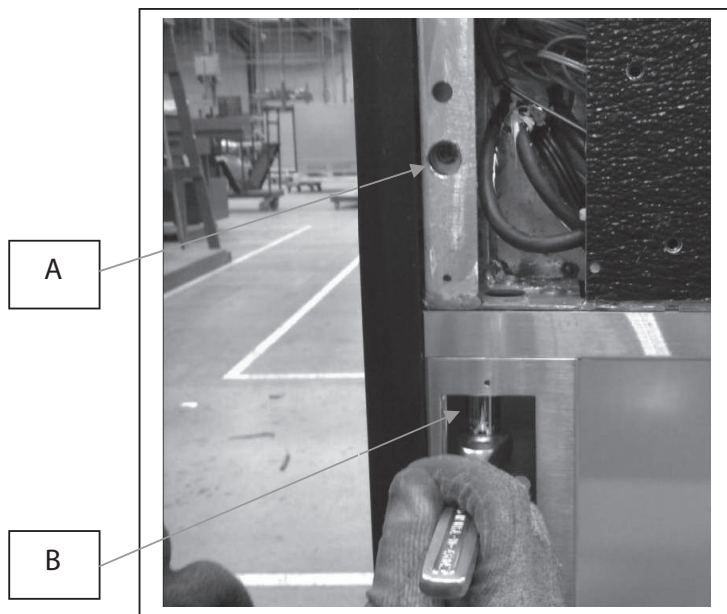


## INSTALLATION (Cont'd)



### Accessing Adjustment Screws

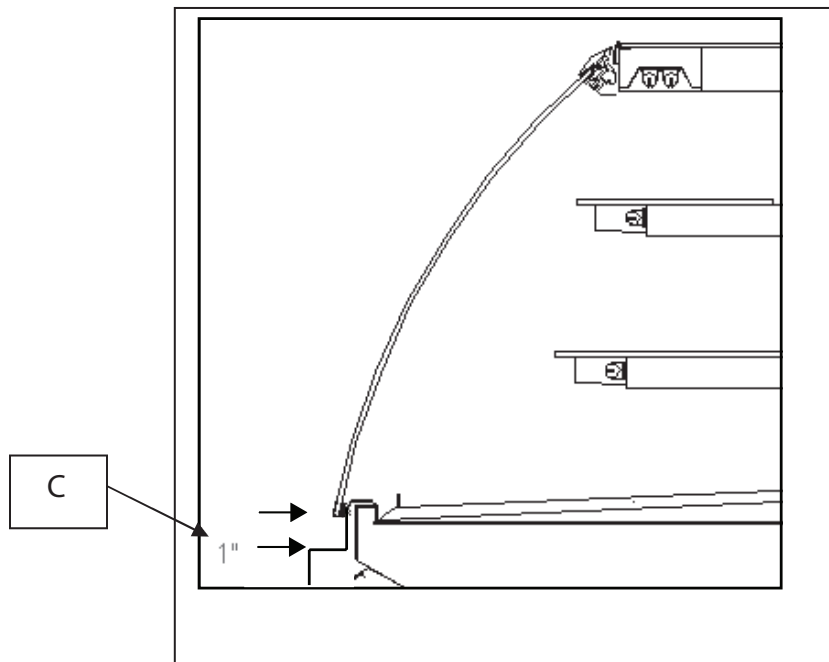
- To access adjustment screws unfasten the following screws to completely remove raceway and set aside.



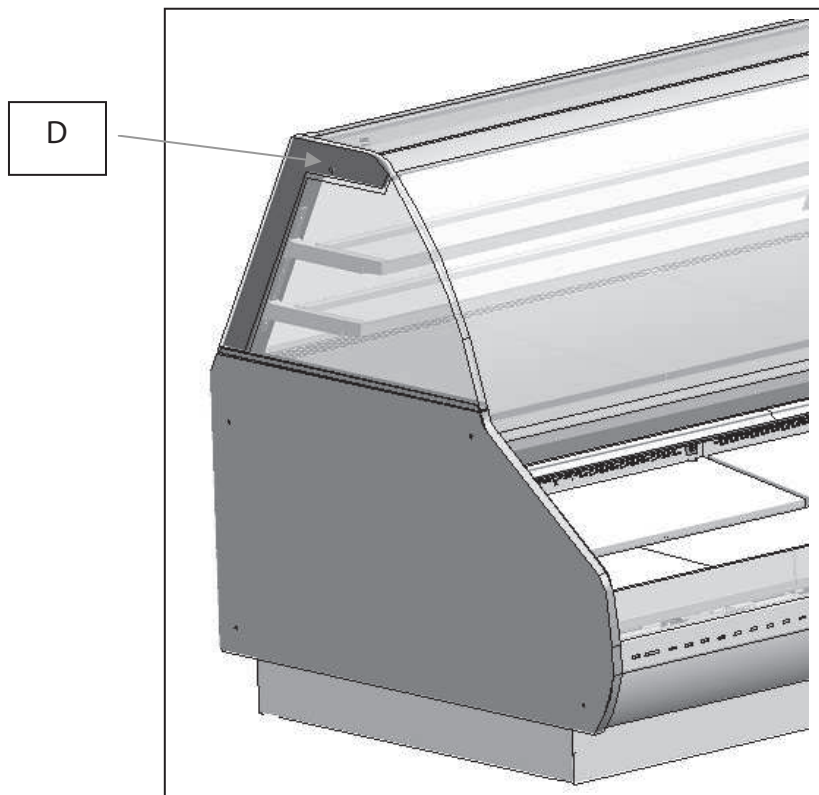
### Adjusting Hardware

- 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.

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# INSTALLATION (Cont'd)

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## 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

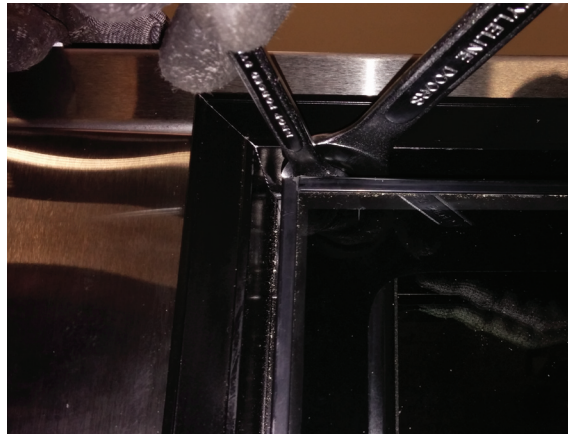


Figure 2. Adjust tension using wrenches.

## 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)**.

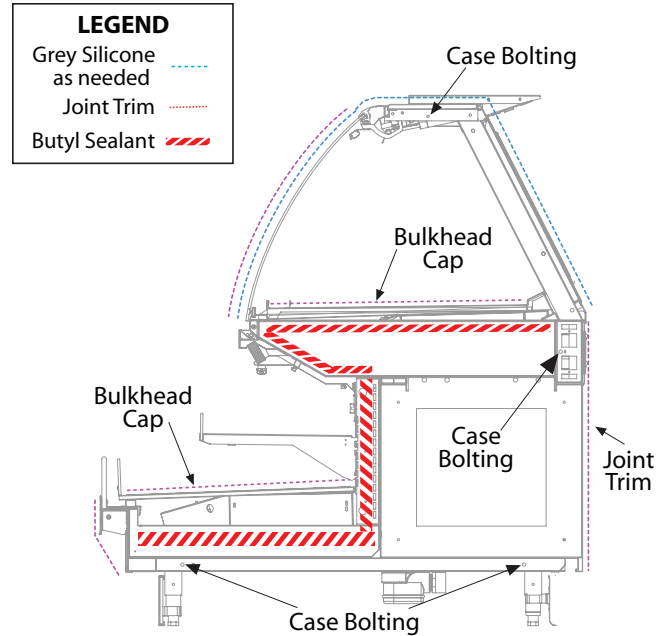


Figure 3. Adjust Saw tooth.

# 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.



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# PLUMBING

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## 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.

1-1/2", 1" and 3/4" P-TRAPS and threaded adapters are supplied with each fixture. The 3 P-TRAPS must be installed to prevent air leakage and insect entrance into the fixture.

**NOTE: PVC-DWV solvent cement is recommended.**

**Follow the manufacturer's instructions.**

## 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.

# 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.

Install **P-TRAPS** (oil traps) at the base of all suction line vertical risers.

**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

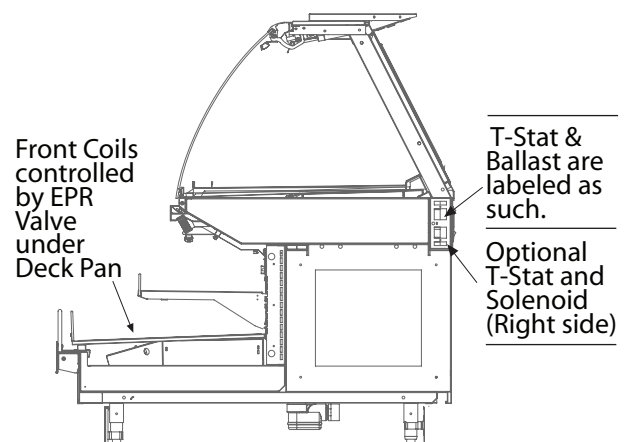
An Evaporator Pressure Regulator is installed in the front of the self service section to maintain a constant discharge temperature. It is located at the front right side of the case, under the fan plenum near the TEX Valve.

## 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



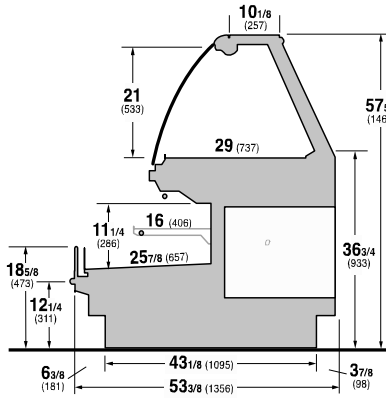
## HIGH VOLUME DELI SERVICE - SELF SERVICE (PRELIMINARY) HUSSMANN - R3HV-SWD / CR3HV-SWD (CHINO)



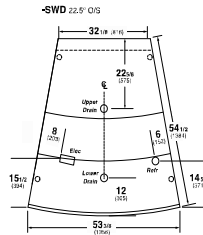
Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2012 energy efficiency standards.

### -SWD Curved Glass

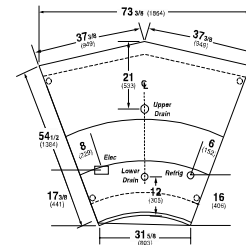
High Volume Service Dome, Wide Multi-Deck Self Service



Note: Only (1) 10" shelf is available with flat front glass.



CR3HV-SW 45 IS



### REFRIGERATION DATA:

| CASE LENGTH | CASE USAGE | *** CAPACITY (BTU/HR TOTAL) |       | TEMPERATURE (°F) |                  |              |      |                         |       | VELOCITY  | EST. REFG. CHR.G. (LBS) | GLYCOL TOP REQUIREMENTS |     | GLYCOL FRONT REQUIREMENT |     |
|-------------|------------|-----------------------------|-------|------------------|------------------|--------------|------|-------------------------|-------|-----------|-------------------------|-------------------------|-----|--------------------------|-----|
|             |            |                             |       | EVAPORATOR       |                  | UNIT SIZING* |      | DISCHARGE AIR TOP/FRONT |       | TOP/FRONT |                         |                         |     |                          |     |
|             |            | PAR                         | CONV  | PAR              | CONV             | PAR          | CONV | PAR                     | CONV  | (FT/MIN)  |                         |                         | GPM | PSI                      | GPM |
| 4'          | DELI       | 3860                        | 4439  | 20 TOP/ 20 FRONT | 20 TOP/ 20 FRONT | 18           | 18   | 24/32                   | 24/32 | 150/200   | TBD                     | 0.4                     | 0.4 | 1.1                      | 5.7 |
| 5'          | DELI       | 4825                        | 5549  | 20 TOP/ 20 FRONT | 20 TOP/ 20 FRONT | 18           | 18   | 24/32                   | 24/32 | 150/200   | TBD                     | TBD                     | TBD | TBD                      | TBD |
| 6'          | DELI       | 5790                        | 6659  | 20 TOP/ 20 FRONT | 20 TOP/ 20 FRONT | 18           | 18   | 24/32                   | 24/32 | 150/200   | TBD                     | 0.5                     | 1.3 | 1.6                      | 3.6 |
| 8'          | DELI       | 7720                        | 8878  | 20 TOP/ 20 FRONT | 20 TOP/ 20 FRONT | 18           | 18   | 24/32                   | 24/32 | 150/200   | TBD                     | 0.7                     | 2.4 | 2.1                      | 6.4 |
| 10'         | DELI       | 9650                        | 11098 | 20 TOP/ 20 FRONT | 20 TOP/ 20 FRONT | 18           | 18   | 24/32                   | 24/32 | 150/200   | TBD                     | TBD                     | TBD | TBD                      | TBD |
| 12'         | DELI       | 11580                       | 13317 | 20 TOP/ 20 FRONT | 20 TOP/ 20 FRONT | 18           | 18   | 24/32                   | 24/32 | 150/200   | TBD                     | 1.1                     | 5.7 | 3.2                      | 7   |
| 22.5 OS     | DELI       | 2000                        | 2300  | 20 TOP/ 20 FRONT | 20 TOP/ 20 FRONT | 18           | 18   | 24/32                   | 24/32 | 175/200   | TBD                     | 0.2                     | 0.9 | 0.5                      | 2.2 |
| 45IS        | DELI       | 3895                        | 4479  | 20 TOP/ 20 FRONT | 20 TOP/ 20 FRONT | 18           | 18   | 26/32                   | 26/32 | 150/200   | TBD                     | 0.4                     | 0.7 | 1                        | 5.8 |

\*2° F less than evaporator for pressure loss in refrigerant lines

### REFRIGERATION DATA CONTINUED:

| ELEC. THERMOSTAT / AIR SENSOR SETTINGS |                       |                        | EPR SETTINGS |              |              |
|--|-----------------------|------------------------|--------------|--------------|--------------|
| USAGE                                  | CUT IN (°F) TOP/FRONT | CUT OUT (°F) TOP/FRONT | R22 (PSIG)   | R404A (PSIG) | R134A (PSIG) |
| ST/22.5 OS                             | 26/34                 | 22/30                  | 43.1         | 56.6         | 18.4         |
| 45 IS                                  | 28/34                 | 24/30                  | 43.1         | 56.6         | 18.4         |

### \*\*\* REFRIGERATION NOTES:

- LISTED BTUS ARE FOR CASE WITH NO LIGHTS
- ADD 10 BTU'S PER FOOT/PER SHELF FOR LED SHELF LIGHTS

### 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                     |

### LEGEND

PAR- PARALLEL  
CONV- CONVENTIONAL  
N/A - NOT AVAILABLE

TBD - TO BE DETERMINED  
A/S- AIRSWEEP

### ELECTRICAL DATA:

#### STANDARD FANS AND HEATERS (120 VOLT)

| STANDARD FANS AND HEATERS (12V 100V) |                    |                          |       |                   |       |                               |       |                                      |      |       |             |       |                         |       |  |       |   |       |               |       |
|--------------------------------------|--------------------|--------------------------|-------|-------------------|-------|-------------------------------|-------|--------------------------------------|------|-------|-------------|-------|-------------------------|-------|--|-------|---|-------|---------------|-------|
| CASE LENGTH                          | # OF FANS PER CASE | TOTAL EVAPORATOR FANS EE |       | DRAIN PAN HEATERS |       | CANOPY LIGHTS LED TOP & FRONT |       | SHELF LIGHTS LED (OPTIONAL) EACH ROW |      |       | NOSE LIGHTS |       | LEDGE LIGHTS (OPTIONAL) |       | TOTAL LIGHTS LED INCLUDES 1 ROW OF SHELVES |       | ANTI-SWEAT HEATERS (On Evap. Fan Circuit) |       |               |       |
|                                      |                    |                          |       |                   |       |                               |       |                                      |      |       |             |       |                         |       |  |       | TOP ARM HTR'S                             |       | AIR SWEEP HTR |       |
|                                      |                    | AMPS                     | WATTS | AMPS              | WATTS | AMPS                          | WATTS | # SHLVS                              | AMPS | WATTS | AMPS        | WATTS | AMPS                    | WATTS | AMPS                                       | WATTS | AMPS                                      | WATTS | AMPS          | WATTS |
| 4'                                   | 3                  | 0.36                     | 21    | N/A               | N/A   | 0.28                          | 30    | 1                                    | 0.11 | 12    | N/A         | N/A   | N/A                     | N/A   | 0.39                                       | 42    | 0.26                                      | 30    | 1.25          | 150   |
| 5'                                   | TBD                | TBD                      | TBD   | N/A               | N/A   | 0.42                          | 45    | 1                                    | 0.14 | 15    | N/A         | N/A   | N/A                     | N/A   | 0.56                                       | 60    | 0.26                                      | 30    | 1.58          | 190   |
| 6'                                   | 6                  | 0.72                     | 42    | N/A               | N/A   | 0.5                           | 54    | 2                                    | 0.17 | 18    | N/A         | N/A   | N/A                     | N/A   | 0.67                                       | 72    | 0.52                                      | 60    | 1.88          | 225   |
| 8'                                   | 6                  | 0.72                     | 42    | N/A               | N/A   | 0.66                          | 72    | 2                                    | 0.22 | 24    | N/A         | N/A   | N/A                     | N/A   | 0.89                                       | 96    | 0.52                                      | 60    | 2.5           | 300   |
| 10'                                  | 6                  | 0.72                     | 42    | N/A               | N/A   | 0.84                          | 90    | 3                                    | 0.28 | 30    | N/A         | N/A   | N/A                     | N/A   | 1.11                                       | 120   | 0.52                                      | 60    | 3.13          | 375   |
| 12'                                  | 9                  | 1.08                     | 63    | N/A               | N/A   | 0.99                          | 108   | 3                                    | 0.33 | 36    | N/A         | N/A   | N/A                     | N/A   | 1.32                                       | 144   | 0.78                                      | 90    | 3.75          | 450   |
| 22.5OS                               | 2                  | 0.24                     | 14    | N/A               | N/A   | 0.19                          | 21    | 1                                    | 0.08 | 8.8   | N/A         | N/A   | N/A                     | N/A   | 0.27                                       | 29.8  | 0.26                                      | 30    | 1.3           | 150   |
| 45IS                                 | 4                  | 0.48                     | 28    | N/A               | N/A   | 0.2                           | 22    | 1                                    | 0.05 | 6     | N/A         | N/A   | N/A                     | N/A   | 0.26                                       | 28    | 0.52                                      | 60    | 1.9           | 220   |

### ELECTRICAL DATA CONTINUED:

| CASE LENGTH | CONDENSING UNIT 208V 1 PHASE |       | CONVENIENCE OUTLETS (Optional) |       |      |
|-------------|------------------------------|-------|--------------------------------|-------|------|
|             | AMPS                         | WATTS | # OUTLETS                      | VOLTS | AMPS |
| 4'          | N/A                          | N/A   | 1                              | 115   | 15   |
| 5'          | N/A                          | N/A   | 1                              | 115   | 15   |
| 6'          | N/A                          | N/A   | 1                              | 115   | 15   |
| 8'          | N/A                          | N/A   | 1                              | 115   | 15   |
| 10'         | N/A                          | N/A   | 1                              | 115   | 15   |
| 12'         | N/A                          | N/A   | 2                              | 115   | 30   |
| 22.5 OS     | N/A                          | N/A   | N/A                            | N/A   | N/A  |
| 45 IS       | N/A                          | N/A   | N/A                            | N/A   | N/A  |

### DEFROST DATA:

| CASE LENGTH | DEFROST TYPE | TIME (MIN.) | TERM. TEMP (°F) TOP/FRONT | DRIP TIME (MIN.) | DEFROST PER DAY | ELECTRICAL DEFROST 208V 1 PHASE | DEFROST WATER (LB/DAY) |
|-------------|--------------|-------------|---------------------------|------------------|-----------------|---------------------------------|------------------------|
|             |              |             |                           |                  |                 | AMPS                            | WATTS                  |
| 4'          | OFF TIME     | 30          | 38/50                     | TBD              | 4               | N/A                             | N/A                    |
| 5'          | OFF TIME     | 30          | 38/50                     | TBD              | 4               | N/A                             | N/A                    |
| 6'          | OFF TIME     | 30          | 38/50                     | TBD              | 4               | N/A                             | N/A                    |
| 8'          | OFF TIME     | 30          | 38/50                     | TBD              | 4               | N/A                             | N/A                    |
| 10'         | OFF TIME     | 30          | 38/50                     | TBD              | 4               | N/A                             | N/A                    |
| 12'         | OFF TIME     | 30          | 38/50                     | TBD              | 4               | N/A                             | N/A                    |
| 22.5 OS     | OFF TIME     | 30          | 38/50                     | TBD              | 4               | N/A                             | N/A                    |
| 45 IS       | OFF TIME     | 30          | 38/50                     | TBD              | 4               | N/A                             | N/A                    |

### OPTIONS/NOTES:

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

# ELECTRICAL

## Wiring Color Code

| STANDARD CASE WIRE COLOR CODE<br>CODIGO DE COLORES DE LOS ALAMBRES PARA LAS VITRINAS ESTANDAR<br>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 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.



**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 (Electrical raceway) that runs the length of the rear of the case. Refer to Figure 3 on page 15.



## 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 Web site:

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



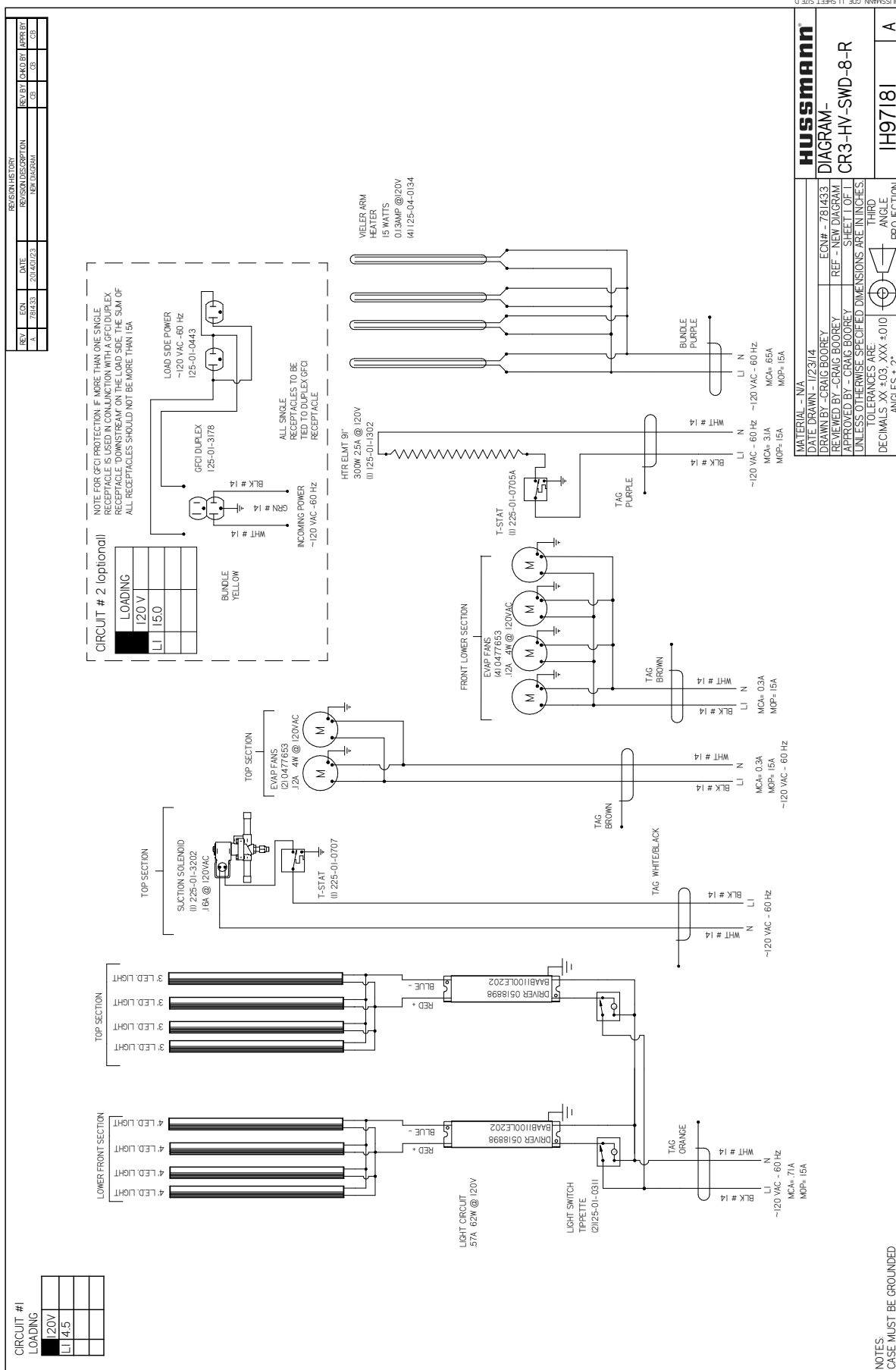
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# WIRING DIAGRAM INDEX

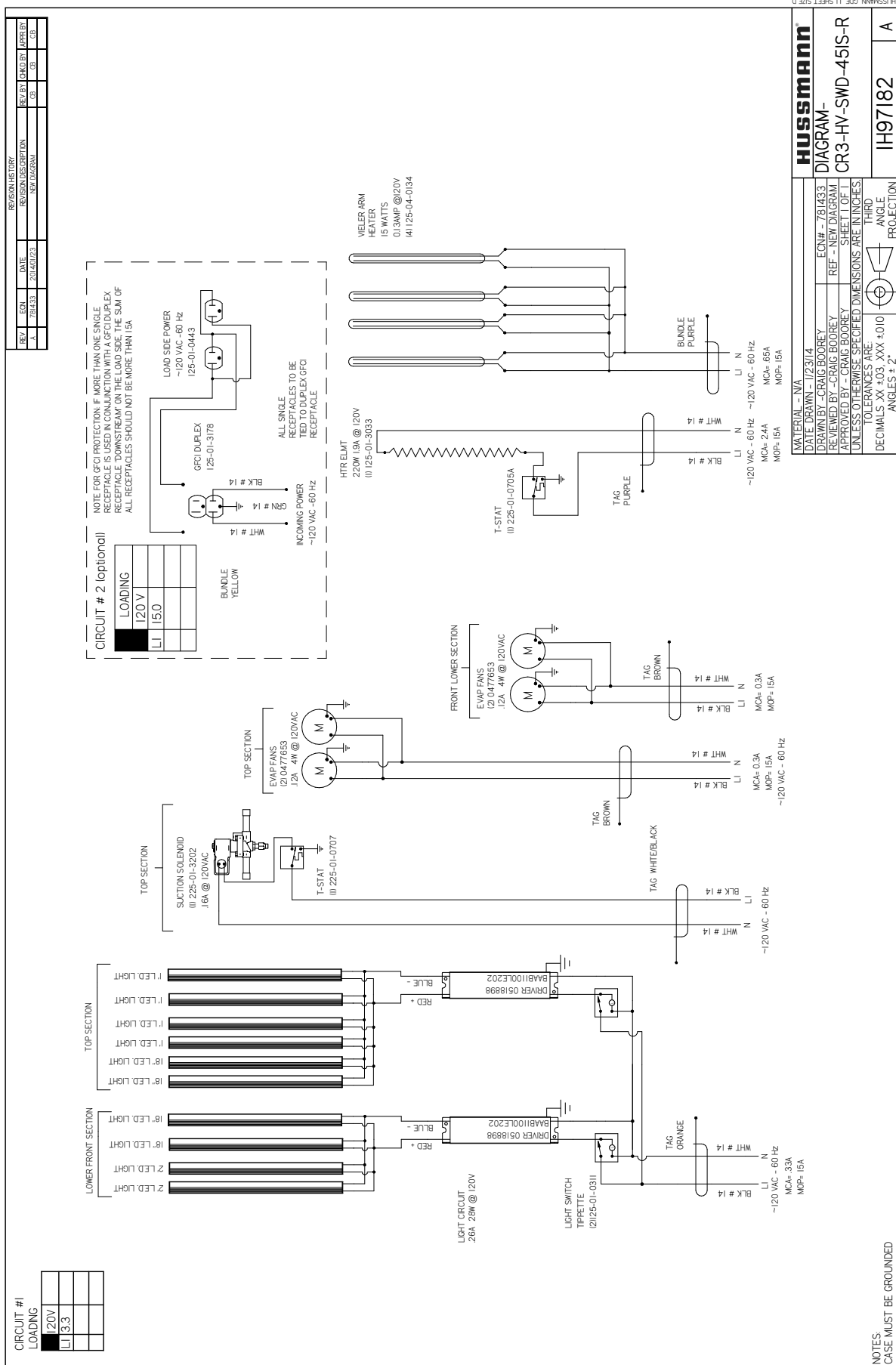
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|             |               |     |         |
|-------------|---------------|-----|---------|
| CR3- HV-SWD | CR3-HV-SWD-8' | 8'  | 1H91781 |
|             | CR3-HV-SWD-22 | 45° | 1H91782 |
|             | CR3-HV-SWD-45 | 22° | 1H91783 |
|             |               |     |         |

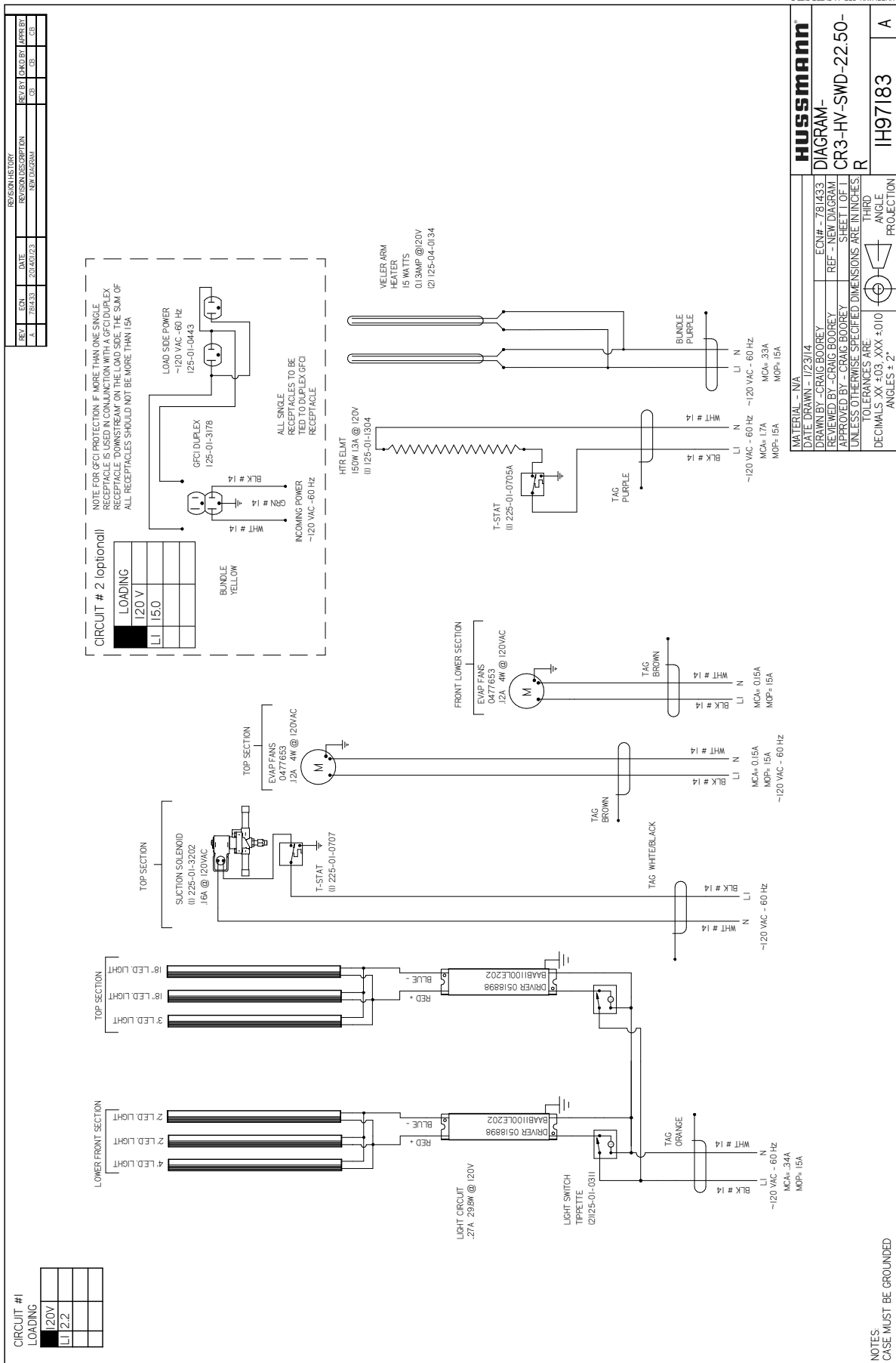
## WIRING DIAGRAM



## WIRING DIAGRAM (Cont'd)



## WIRING DIAGRAM (Cont'd)



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

## 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 ←

## 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 warmed 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 generated 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

## User Information (Cont'd)

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 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

**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.

#### CAUTION

##### CLEANING PRECAUTIONS

When cleaning:

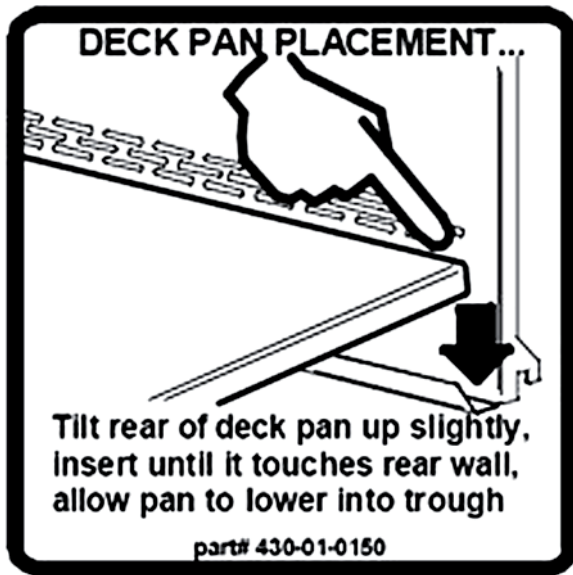
- Do not use high pressure water hoses
- Do not introduce water faster than waste outlet can drain
- NEVER INTRODUCE WATER ON SELF CONTAINED UNIT WITH AN EVAPORATOR PAN
- NEVER USE A CLEANING OR SANITIZING SOLUTION THAT HAS AN OIL BASE (these will dissolve the butyl sealants) or an AMMONIA BASE (this 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)

## 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 steels 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, Alkaline Chlorinated 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. Salts in a properly maintained water softener are your friends. If you are not sure of the proper water treatment, call a treatment specialist.

#### 5. Keep your Food Equipment Clean

Use alkaline, alkaline chlorinated 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 sit 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