HUSSMANN[®]/SPECIALTY 012019



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Case Description:

Description: Refrigerated Service Meat 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 (See Parts List page 11). 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 have 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 Q3-M/F C-EP/ Q3-M/F S-EP refrigerated merchandiser has been designed for use only in air conditioned stores where temperature and humidity are maintained at or below 75°F Dry bulb 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.

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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



Q3-M/F-EP



Installation

NOTICE

Do NOT remove Foam Blocks from shelves and glass until the merchandisers are positioned for installation. Shelves or merchandising glass may be damaged.



Case is to arrive at store as was shipped form factory. See reference above for proper shipment referencing. (Not actual case)

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.

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.



Placement

Important: See lifting instructions to properly lift case when being placed on dollies or permanent location. (See page 7 for Lifting Instructions.)

Leave all hardware and fittings in place until case is located at or near its preferred location. Using a J-Bar lift the case from the 2x4 boards and placing dollies underneath each Base Leg, proceed to moving the case to its designated location if not done so already.



The Illustration Below demonstrates perfect placement of a dollie per 1 side for both Base Legs of the merchandiser.



Move the fixture as close as possible to its permanent location and then remove all packaging and prepare to remove off Skid. Remove all separately packed accessories such as kits, and panels. Check for damage before discarding packaging.

Remove screws as well as fastened plates bolted to each 2x4 board at each base leg.



Remove fastened plates only upper Brace Legs are to remain fastened onto case.



Once the fastened plates are removed a J-Bar can be used to lift at each end of the Leg Braces to remove the below 2x4 boards.



Q3-M/F Lifting and Transport Instructions

1. The Q3-M/F can be lifted by a forklift at typical lifting points.





drainage piping. Use a spotter when placing forks. Make sure that piping will not be damaged. Use J-Bars or Jacks if forks cannot be used safely

- 2. Ensure lower body panels are removed before lifting with a forklift. Serious damage will occur if the body panels are not removed.
- Make sure that fork spacing and width will not damage drain or come in contact with piping, or electrical lines
- Be sure that the forks are long enough to support beyond the center of the case but not damage near components. Check for proper balance before moving. A minimum fork length of 36" is recommended for 68" wide cases

- 5. The Q3-M/F merchandiser can be raised at one end underneath the deck with a forklift to allow the placement of rollers or dollies.
- Evenly support the entire base structure on rollers or dollies before attempting to move. Each Base Leg must have its own dollie to properly support the case.

Lifting Points are typical and dependent upon size of case and refrigeration application, drainage configurations will call for altercations in Lifting Zones.

Below are the following drainage configurations and lifting should be altered to the expected model.

Q3 M/F Drain Location



Front Body Panel Install

No tools will be needed to install body panels.

To begin Bottom panel assembly place the front panel along in front of the case and align the marked slot with tabs located just underneath the wrapper of the case. Insert tabs into slots of the front panel and snap in the bottom clips to the base legs of the case.



Fasten Rear Body Panel Install

(1) Align clips of rear panel to Base Legs of case(2) Secure top and bottom clips of rear panel to Base Les as shown below.





Leveler Adjustment

Position the case at the highest point. Set a long magnetized level (4ft [1220 mm] or more) on either underneath the deck or on top of the case. Ensure to level case from front to back and side to side.



Leg Adjustment

Adjust the legs at each corner of the case to level out any discrepancies in order to optimize case performance and proper drainage.



Note: To avoid removing concrete flooring, begin line up levelling from the Highest point of the store floor.

A wrench or pliers may be used to adjust each base leg.

- Turning the base of each leg clockwise will raise the height of the case.
- Turning the base of each leg counterclockwise will lower the height of the case.

Parts List



Q3-M/F Arm/Glass Adjustment

If your case is equipped with wrapping board(s) unhook at K-99 bracket(s) to gain access. Remove the small rear covers under each rear arm to access the glass height adjusters.



Loosen the two lock screws on the side (**Do not** remove).

To properly adjust the height of the glass requires that all hinge arms of each section be loosened before attempting to change the arm position.

- Turning the bolt clock-wise, the front arm and glass will lower.
- Turning the bolt counter clock-wise, the arm and glass will raise.



After all the glass height has been adjusted, tighten all the lock screws previously loosened.

Glass must be parallel to ledge when viewed from front. Glass height should be centered on "V" glass seal as demonstrated below

IMPORTANT: Attempting to compensate for poor installation practices by manipulating the canopy hardware will result in unsatisfactory workmanship and possibly cause hardware failure and/or injury.



Glass Side to Side Adjustment

The glass gaps can be slightly optimized by moving the glass and glass clamp assembly side to side. This should be done as the final adjustment only after the glass/canopy height of the cases are set and levelled to each other. The canopy hardware on adjoining Q Series cases should be screwed together with the $\frac{1}{4}$ "-20 THD screws included with the cases. There are threaded holes provided in the stationary portion of the top hardware for this purpose.





To properly adjust the glass gaps requires that both hinge arms of each section of glass be loosened before attempting to change the glass position.

To shift the glass side to side or front to back at the glass clamp open the glass and loosen the TORX T-15 screw.

To shift the glass side to side or front to back at the glass clamp #1 Open the glass and loosen the Torx T-15 screw

2 Loosen the #10 MM bolt on both sides of the glass as needed



To adjust glass to glass gaps see the following.

Torque Specs:



IMPORTANT: Attempting to change the glass position by loosening only one side or by forcing the clamp sideways will result in damaging the hardware and its eventual failure. Loosening the hinge arms requires loosening the attachment screws and setscrews on both hinge arms on the section of glass.

IMPORTANT: It is critical to use the proper size Torx or Hex wrench for the fasteners to avoid stripping the fasteners.

Loosen the fasteners only as needed to allow the glass clamp to slip to the desired position. Reposition the glass and glass clamp assembly as needed and verify its position by carefully closing the glass to check clearances.

Once the glass is in the desired position, retighten the fasteners at the hinge arms with the proper wrench. Recheck the glass position and double check that the fasteners are properly torqued.

IMPORTANT: It is critical that the hinge arm washers or bushings that fasten the hinge arms to the stationary portion of the upper glass hardware do not have any side pressure on them. Even the slightest side pressure will result in the failure of the hardware. If the retaining clips or hinge arm washers or bushings at each hinge arm have any side pressure it is necessary to repeat the adjustment procedure.

When properly adjusted, the hinge arm washers or bushings will have a slight side-to-side free play.



Setting and Joining

The sectional construction of these models enable them to be joined in line to give the effect of one continuous display.

Leveling

IMPORTANT! IT IS IMPERATIVE THAT CASES BE LEVELED FROM FRONT TO BACK AND SIDE TO SIDE PRIOR TO JOINING. A LEVEL CASE IS NECESSARY TO INSURE PROPER OPERATION, WATER DRAINAGE, GLASS ALIGNMENT AND OPERATION OF THE HING-ES SUPPORTING THE GLASS. LEVELING THE CASE CORRECTLY WILL SOLVE MOST HINGE OPERATION PROBLEMS. 1. Using case blueprints, measure off and mark on the floor the exact dimensions of where the cases will sit. Snap chalk line for front and back positions of base rail or pedestal. Mark the location of each joint front and back. Find the highest point throughout the lineup. FLOORS ARE NORMALLY NOT LEVEL! Determine the highest point of the floor; cases will be set off this point. All cases in the entire lineup must be brought up to the highest level of the case sitting at the highest point in the lineup.

2. Set first case over the highest part of the floor and adjust legs so that case is level.



3. Set second case within one foot (1') of the first case. Keep the supports along the length of the case and far end of case. Level case to the first using the instructions in step one.

4. Apply liberal bead of case joint sealant (butyl) to first case. Sealant area is shown using a dotted line in illustration. Apply heavy amount to cover entire shaded area.



5. Apply liberal bead of case joint sealant (butyl) to first case. Sealant area is shown using a striped line in illustration in page 16. Apply heavy amount to cover entire shaded area.

6. Slide second case up to first case snugly. Then level second case to the first case so glass front, bumper and top are flush.



Do not use bolts to pull cases together.



7. To compress butyl at joint, use two Jurgenson wood clamps. Make sure case is level from front to back and side to side on inside bulkheads at joint.

8. Attach sections together via the bolts pictured in the illustration below.

9. Apply bead of butyl to top of bulk heads and slip on stainless steel bulkhead cap under the refrigeration piping as pictured below . Also apply silicone to seam between joints.



BULK HEAD JOINT CAP

Refrigeration

Refrigerant

The correct type of refrigerant will be stamped on each merchandiser's serial plate. **The case refrigeration piping is pressurized with a nitrogen holding charge, leak tested and factory sealed.** Before making refrigeration hookups, depress universal line valve (Shraeder Valve) to ensure that coils have maintained pressure during shipment. In the case pressure was not maintained contact your Hussmann Service Tech for further assistance.

Refrigerant piping

The refrigerant line connections are at the right hand end of the case (as viewed from the front) beneath the display pans. The merchandiser will beforehand ensure an earlier cut hole through the pod to exit the merchandiser for the refrigeration lines. After connections have been made, make certain to seal this outlet thoroughly if not sealed at factory already. Seal both the inside and outside. We recommend using an expanding polyurethane foam insulation.

Line Sizing

Refrigerant should be sized as shown on the refrigeration legend that is furnished for the store or according to the ASHRAE guidelines

Oil Traps

P-traps (oil traps) must be installed at the base of all suction line vertical risers.



Refrigeration lines are under pressure. Refrigerant must be recovered before attempting to make any connections.











See demonstrations below for detailed overview of the Q3-M/F C/S-EP Piping schematic.

Note: Refrigeration components have been fitted with a component tray for ease in use of cleaning and maintenance under the deck pans.



Piping schematic for Serpentine Coil and Gravity Coil.



Refrigeration Spec Sheets



REFRIGERATION DATA:									
		CAPA (BTU	CITY *** /HR/FT)	т	EMPERAT	URE (°F)	VELOCITY		
CASE LENGTHS	ENGTHS CASE USAGE		RATING CONDITION		RATOR	DISCHARGE AIR ** (°F)	(F1/WIIN)		
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	NSF 7		
4',6',8',12'	MEAT / FISH (NO SHELF)	250	250	28	28	33	50~75		
4',6',8',12'	MEAT / FISH (WITH SHELF)	340	340	20	20	28	50~75		

CASE LENGTHS	EST.		20°F GL 6° R	YCOL ISE	
	CHRG. (LBS)	GRA	/ITY	DECK	
		GPM	PSI	GPM	PSI
4'	0.7	0.3	0.3	0.1	0.0
6'	1.0	0.4	0.9	0.1	0.2
8'	1.3	0.5	1.9	0.2	0.4
12'	1.9	0.7	4.3	0.2	1.2

I			CAPA (BTU	CITY *** /HR/FT)	т	EMPERAT	URE (°F)	VELOCITY	
	CASE LENGTHS CASE USAGE		RATING CONDITION		EVAPORATOR		DISCHARGE AIR ** (°F)	(F 1/MIN)	
			NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	NSF 7	
	4',6',8',12'	MEAT / FISH (NO SHELF)	250	250	28	28	33	50~75	
	4',6',8',12'	MEAT 7 FISH (WITH SHELF)	340	340	20	20	28	50~75	

**FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

***REFRIGERATION NOTES:

1) BTU'S INCLUDE LIGHTS

2) AHRI 1200 RATING POINT FOR ENERGY CONSUMPTION COMPARISON ONLY

3) USE DEW POINT FOR HIGH GLIDE REFRIGERANTS. CARE SHOULD BE TAKEN TO USE THE DEW POINT IN P/T TABLES FOR MEASURING AND ADJUSTING SUPERHEAT. ADJUST EVAPORATOR PRESSURE AS NEEDED TO MAINTAIN THE

DISCHARGE AIR TEMPERATURE SHOWN.

4) RATING CONDITION IS NSF TYPE I, 75°F/55% RH

5) ADJUSTMENTS TO CONTROL SETTING SHOULD BE MADE IN 1°F INCREMENTS DEPENDING UPON MEAT DEPT AMBIENT CONDITIONS 6) FOR SHELF APPLICATIONS IT MAY BE NECESSARY TO INCREASE DEFROST TIME APPROXIMATELY 1 MIN PER 1°F BELOW 75°F AMBIENT

PEEDIGEDATION DATA CONTINUED

	ELEC. THERMOS		SENSOR			DEFROST		TERM. DEF		END	PANEL	WIDTH KEY
CASE USAGE	LOCATION	CUT IN (°F)	CUT OUT (°F)	DEFROST TYPE	TIME (MIN)	FREQUENCY (#/DAY)	TEMP (°F) COIL ONLY	DRIP TIME	WATER (LBS/DAY/FT)	# OF END PNLS	END PNL WIDTH (IN.)	TOTAL ADDED LENGTH (IN.)
MEAT / FISH	GRAVITY	34	33		50	1	50	N/A	0.8	1	1.125	1.125
(NO SHELF)	DECK	32	31	OFF	50	1	50	19/7	0.0	2	1.125	2.25
MEAT / FISH	GRAVITY	22	20	TIME	65	3	42	NI/A	12			
(WITH SHELF)	DECK	32	31		05	5	72	11/7	1.2			

ELECTRICAL DATA:

STANDARD FANS, HEATERS, LED LIGHTS (115 VOLT)

	AIRS	WEEP F	ANS	CANOPY LIGHTS LED		CANOPY LIGHTS OPTIONAL LED SHELF LIGHTS (MAX. LED LOAD (W/ ALL OPTIONS) ANTI-SWEAT HEATERS (ON FAN CIRCUIT)			CONVENIENCE OUTLETS (OPTIONAL)			
CASE LENGTH	# OF AIRSWEEP FANS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS
4'	1	0.04	4.7	0.18	21	0.09	10	0.27	31	N/A	N/A	1	115	15
6'	1	0.04	4.7	0.26	30	0.13	15	0.40	46	N/A	N/A	1	115	15
8'	1	0.04	4.7	0.36	41	0.18	21	0.54	62	N/A	N/A	1	115	15
12'	1	0.04	4.7	0.54	62	0.27	31	0.81	93	N/A	N/A	1	115	15

OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

CASE LENGTH	CANOPY H.O.	LIGHTS LED	OPTION H.O	AL SHELF . LED	MAX. H.O. LED LOAD		
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	
4'	0.26	30	0.13	15	0.40	46	
6'	N/A	N/A	N/A	N/A	N/A	N/A	
8'	0.53	61	0.26	30	0.79	91	
12'	0.79	91	0.40	46	1.19	137	

Merchandiser Electrical Data

Technical data sheets are shipped with this manual. The data sheets provide merchandiser electrical data. Refer to the technical data sheets and merchandiser serial plate for electrical information.

Electrical Connections

All wiring must be in compliance with NEC and local codes. All electrical connections including both supply circuits are to be made in the electrical J-Box.

ALWAYS CHECK THE SERIAL PLATE FOR COMPONENT AMPERES

Field Wiring

Field wiring must be sized for component amperes stamped on the serial plate (refer to pg 16 for location). Actual ampere draw may be less than specified.

Identification of Wiring

Leads for all electrical circuits are identified by colored plastic bands. These bands correspond to the color code sticker (shown below) located inside the merchandiser's wireway cover.

--LOCK OUT/ TAG OUT--

To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.

WIRING COLOR CODE

Leads for all electrical circuits are identified by a colored plastic band: neutral wire for each circuit has either white insulation or a white plastic sleeve in addition to the color band.

Pink......Refrig, Thermostat Low Temp Light Blue..Refrig, Thermostat Norm Temp Dark Blue..Defrost Term, Thermostat Purple......Condensate Heaters Brown......Fan Motors Green*.....Ground *Eithe

Orange OR Tan.....Lights Maroon..... Receptacles Yellow..... Defrost Heaters 120V Red......Defrost Heaters 208V

*Either Colored Sleeve or Colored Insulation

ELECTRICIAN NOTE: Use proper conductor wire only. MERCHANDISER MUST BE GROUNDED

These are marker colors, wire may vary.

Electrical Cont'd

Remove Rear Raceway

The Merchandisers Electrical access is located at the rear of the case. Fasteners must be removed in order to gain access. See illustration below.

Remove Rear Raceway from rear of case.



Electrical Conduit (Electrical Box)

The Merchandisers Electrical conduit can be found inside the compartment at the rear. Removing the raceway will gain access to the electrical components inside the J-Box allowing any maintenance necessary.

Electrical Conduit



Electrical Wiring Diagram









User Information

Start Up

See the merchandisers Data Sheet Set for refrigerant settings and defrost requirements. Bring merchandisers down to the operating temperatures listed on the Data Sheet.



---LOCK OUT/ TAG OUT--

To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.

Q3-M/F C/S-EP Service Meat or Fish



Load Limit

Each Merchandiser has a Load Limit. Shelf life of perishables will shorten if Load Limit is violated.

AT NO TIME SHOULD THE MERCHANDISER BE STOCKED BEYOND THE LOAD LIMITS INDICATED.

LOAD LIMIT

Basic Operation

The Q3-M/F-EP series case cools meat/fish in two ways:

- 1. The Spiral Deck Coil under the display deck cools the meat/fish product by means of contact conduction.
- 2. The Gravity Coil cools the case and product via natural air convection.

Spiral Deck Coil is the **primary source** of refrigeration while the Gravity Coil acts as a secondary source. Slow moving air circulation from the Gravity Coil (GC) and cold contact with the Spiral Coil (SC) on the deck combine to cool the product and keep product dehydration low. This balance is critical to achieve the expected display life and product temperature. If the product is lifted off of the deck surface by an aftermarket display shelf, reduced contact surface trays, or other means, the benefit of conduction cooling from the deck Spiral Coil is reduced dramatically.

User Information (cont'd)

OPERATION SPECIFICATIONS

This case is designed to operate in store conditions of 75F and 55%RH* or lower. The case is equipped with easy adjustment features for varying store conditions.

Baseline Settings

75°F and 55%RH* ambient store conditions

- Evaporator temperature: 28° F specific refrigerant equivalent (with coils under load)
- Superheat (SH): 3-6°F (as low as 1-2°F SH is acceptable on Deck)
- Discharge air (DA) from gravity coil: 33-36°F typical range
- Discharge air Velocity: 50-75 FPM
- Digital T-Stat (A419) Set Point (SP) Cut in Temperature / Differential (dIF Cutout from SP): Gravity Coil 34°F/1°F and Deck Coil 32°F/1°F
- Defrost: 1/day, 50 minutes
- Air Sweep Fans: On/Off switch (only use if needed)

Store conditions, if different from design conditions, may require adjustments to settings as listed in the SETUP TROUBLE SHOOTING section.

Please refer published case specifications on Hussmann website

Refer to A419 Display Symbols, Control Function, Ranges, Units, Values, and Factory Settings Display Symbol for further information

Case Switches

The Q3-M/F C/S-EP is equipped with 2 functioning switches at the rear right of the case.

- Left Switch: Will turn on and off the case lights
- Right Switch: The Air Sweep Fan switch will turn on the air sweep fans located near the front of the case, use of this switch will be necessary when condensation begins to build on the front glass. Turn off once condensation has resolved.



User Information (cont'd)

Merchandising Requirements

Use a consistent display strategy in each case . Hussmann recommends the use of flat bottomed aluminum or high density plastic trays as the ideal merchandising display method.

When displaying product on flat trays directly on the deck surface (ideal display method), layer product single or double high keeping product within the load limits (page 27). This promotes even cooling from both the spiral deck coil below and gravity coil above, and allows for less refrigeration power, lower dehydration and increased product life.



Rotate product every several hours. Bottom layer should be rotated to the top and flipped. This ensures even cooling, dehydration and color maintenance.



As demonstrated below, each layer of product has a slight increase in internal product temperature the higher it is stacked. It is very important that each layer make direct contact with the layer below it. With conductive cooling, heat will flow from the warmer surface to the cooler surface until both are nearly at the same temperature.



case set points.

User Information (cont'd)

Merchandising DON'TS

Products can be stacked too high on trays or display ware, the Spiral serpentine coil underneathe the deck pans are the main source for cooling for the case. If you are not achieving the internal product temperature your store desires, remove one layer. Monitor product interval temperatures for several hours.

By no means use Foam, polycarbonate, wood, synthetic solid surface materials or any other product partition which acts as an insulator to display product. When separating product from direct contact preferably refer to Butcher Paper if desired.



Display ware used inside a Q3-M/F-EP **MUST BE FLAT BOTTOMED** to make direct contact with the cooled deck pans, keep in mind that most display ware is designed with ridge along the bottom end or ridges across the surface bottom for structural support. Often times display ware has feet on the bottom of it to prevent direct contact with the display pan. Refrain from using any display ware which prevents direct contact between the display ware bottom and the cooled display pans. Any air space between the Hussmann opticold deck pans, the display ware or the product will adversely affect case performance and cause elevated product temperature and early product loss. The following Display Wares or display configurations are **NOT RECOMMENDED** and working outside of the Hussmann requirements will adversely affect product and/or case performance.



Maintenance

Case Cleaning

Long life and satisfactory performance of any equipment are dependent upon the care it receives. To insure long life, proper sanitation and minimum maintenance costs, the merchandiser should be thoroughly cleaned, all debris removed and interiors washed down, weekly.

TO PREVENT INJURY ALWAYS SHUT OFF POWER DURING CLEANING PROCESS.

Exterior Surfaces

The exterior surfaces must be cleaned with a mild detergent without chloride and warm water to protect and maintain their attractive finish. NEVER USE ABRASIVE CLEANSERS OR SCOURING PADS.

Cleaning Bumpers

Clean Bumpers with household spray cleaners.

Cleaning Under Merchandiser

Remove lower body panels. Use a vacuum with a long wand attachment to remove accumulated dust and debris from under the merchandiser.

Cleaning Stainless Steel Surfaces

Use non abrasive cleaning materials, and always polish with the grain of the steel. Use warm water or add a mild detergent to the water and apply with a cloth. Always wipe dry after wetting.

Use non-chlorine containing cleaners such as window cleaners and mild detergents. Do not use cleaners containing salts as this may cause pitting and rusting of the stainless steel finish. Do not use bleach. Clean frequently to avoid build-up of hard, stubborn stains. A stainless steel cleaning solution may be used periodically to minimize scratching and remove stains.

Rinse and wipe dry immediately after cleaning. Never use hydrochloric acid (muriatic acid) on stainless steel.

Interior Surfaces

The interior surfaces may be cleaned with most domestic detergents, ammonia based cleaners and sanitizing solutions that do not contain chloride with no harm to the surface.

Cleaning Coils NEVER USE SHARP OBJECTS AROUND

COILS. Use a soft brush or vacuum brush to clean debris from coils. Do not puncture Coils! Do not bend fins. Contact an authorized service technician if a coil is punctured, cracked, or otherwise damaged.

Recommended Cleaning Schedule

Follow the schedule listed below for optimal sanitation and case performance. Exterior and Interior cleaning will be cleaned varying on upkeep of the merchandiser through daily use.

- Merchandiser Deck & Drain Area: Once a week minimum.
- Gravity Coil & Drip Tray: Once a month minimum.

ICE in or on the coil indicates the refrigeration and defrost cycle is not operating properly. Contact an authorized Service Technician to determine the cause of icing and to make proper adjustments as necessary. To maintain product integrity, if not done so already, move all product to a cooler until the merchandiser has returned to normal operating temperatures.

Maintenance Cont'd

Do Not Use:

- Abrasive cleaners and scouring pads, as these will damage the finish.
- A hose on lighted shelves or submerge lighted shelves in water.
- Solvent, oil or acidic based cleaners on any interior surfaces.
- A hose on LED Lights or any other electrical component.
- IT IS NOT REQUIRED TO RAISE THE DECK SPI-RAL COIL ASSEMBLY DURING CLEANING.
- The case can be cleaned after removing the deck pan and alum tray. Nothing else needs to be moved or lifted.

Do:

- Remove the product and all loose debris to avoid clogging the waste outlet.
- Store product in a refrigerated area such as a cooler during the cleaning process. Remove only as much product as can be taken to the cooler in a timely manner.
- First Turn off Refrigeration, then disconnect electrical power to merchandiser.
- Thoroughly clean all surfaces with soap and hot water. Do not use steam or high pressure water hoses to wash the interior. These will destroy the merchandisers' sealing causing leaks and poor performance.
- Avoid direct contact between fan motors and cleaning or rinse water.
- Rinse with hot water, but DO NOT flood. Never introduce water faster than the waste outlet can drain.
- Allow merchandiser to completely dry before resuming operation.
- LED lights are magnetized to each shelf and can be removed easily for any shelf cleaning.
- After cleaning has been completed, remember to restore power back to merchandiser.

Product will be degrade and may spoil if allowed to sit in non-refrigerated area.

Rear Sliding Doors Cleaning:

To ensure proper sliding and eliminate potential damage, the doors must be removed and the tracks cleaned with soap and water daily. If, after cleaning, the rear sliding doors become too heavy or diffi cult to open/close, NSF/USDA H1 lubricant & FDA 21 CFR compliant Silicone Spray may be used as a lubricant on the guide tracks.

- 1. Follow the manufacturers directions when using the spray. Hold the spray can about 6 inches from the guide tracks. Starting from one end of the track and working your way to the other end, hold down the spray nozzle as you apply a light coating over the track.
- 2. Using a dry paper towel or rag, rub the lubricant into the tracks. If necessary, use additional paper towels or rags to wipe off any excess lubricant.

Additional Notes:

- Recommended product: Mr. Clearco Food Grade Silicone Spray -- manufactured by Clearco Products Co.
- DANGER: DO NOT spray directly on food products. Move food away to a safe location before using the spray.
- Apply lubricant weekly, or as needed, especially after cleaning debris from the door tracks.
- Should the lubricant ever need to be removed from the tracks, use only soap and water.
- DO NOT use acetone or any hydrocarbonbased solutions even if the manufacterer of the spray product may suggest them.
- Using such products may damage the guide track

Rear Sliding Doors Check:

Normal use of the sliding doors may cause the door stop screws to come loose. To ensure continuous operation and reduce any potential damage to the door stop, weekly checks should be performed on the screws to ensure they are tight. If found loose, use a screwdriver to retighten being careful not to overtighten.

Problem	Possible Cause	Possible Solution
Product too cold and/ or freezing	Spiral Deck Coil (SDC) is too cold.	Probe the deck with the product in place. If the deck is less than 29°F increase the SDC thermostatic SP incrementally. Allow approximately 60 minutes or stable temperatures for system to react then recheck temperatures. Verify when SDC T-Stat is active that SDC is operating at desired Temperature/ Pressure (Evap Pressure).
	Gravity Coil (GC) set too	Increase thermostatic set point *(SP) of GC.
	cold	Your setting will depend on store conditions and desired product temperature. The thermostatic SP is properly set when the product is ideally 33-38°F. Should ice be forming on the GC, verify Evaporator Pressure, GC Discharge Air (DA) is ranging between 33-36°F
	Excessive Icing	Ensure excessive icing condition's don't exist on SDC or that any exist on the GC
	Evaporator Suction Temperature	Ensure case evaporator / suction temperature is above 28°F.
	Superheat Set Too Low	Check superheat and adjust as necessary. See Case Specification
	T-Stat Sensor And TXV Bulbs Not Firmly Secured	Ensure that all T-Stat sensor and TXV bulbs are firmly secured to the pipes in the locations shown in figure (C). The bulbs should be at the 3 or 9 o'clock position on the pipe. Take care to insure SDC T-Stat sensor is below the surface of the Spiral Deck Tube (at mid tube from outer/inner of spiral) to insure no interference with Deck Plate. Band strap should be thin gauge copper. GC T-Stat sensor tip should be located approximately 1" below the bottom fin surface, at approximately coil center (front-back) and between 18"-24" from the end of the case wall.
		Ensure that the case is piped per the piping diagram (C) [Note: some components may be optional].
Product dehydrating prematurely	GC set too cold	Increase thermostatic SP of GC. Your setting will depend on store conditions and desired product temperature. The thermostatic SP is properly set when the DA from the GC is ranging between 33-37°F, depending upon Meat Department ambient conditions. Product should be turned and rotated about every 4 hours. Product should be covered at night with a clean, damp cloth such as cheese cloth if left in the display case overnight
Product too warm	Improper Case Piping	Verify case is properly piped per the Piping Diagram. Refer to Pipe Diagram
	Improper Suction Pressure Setting	Verify case suction pressure is set to a 28°F temperature equivalent when all Solenoid VLV are active/open
	Improper Superheat Setting	Verify superheat. Adjust TX valves accordingly. Deck/Spiral coil may be set as low as 1-2° SH. Gravity coil may be set as low as 3° SH. (NOTE, when adjusting TXV superheat, first adjust the corresponding T-Stat below equivalent suction temperature. This will ensure that the T-Stat does not close during the adjustment period. Be sure to return T-Stat to SP.

Troubleshooting Cont'd

Problem	Possible Cause	Possible Solution
Product too warm	Improper EPR Set Point	If SDC inlet temperature is above 28°F reduce the EPR set point
	Improper Thermostat Bulb Location	Ensure that the thermostat bulb for the gravity coil (A) is not contacting any coil parts and is located in the discharge air stream
	Improper TXV Bulb Location	Ensure that the TX valve bulbs are located as per the piping diagram. Refer to Pipe Diagram
	Improper Deck Plates (and Pans) Sitting	Ensure that the deck plates (and pans) are seated and making good contact with the SDC and each other
	Gravity Coil Air Flow Obstruction	Ensure that gravity coil is fully cleared all the time
	Defrost Failure To Clear All SDC Ice Buildup	The SDC will eventually pack with ice and refrigeration performance will be severely degraded. Confirm Evaporator Temperature is 28°F, SDC T-Stat SP to specification, and SDC termination temperature reaching at least 42°F. Increase the defrost time in 5 minute increments if this condition is observed, and termination temperature not achieved.
	Improperly sized refrigerant lines	Ensure that refrigerant lines are properly sized per the installation manual. Inspect liquid line for kinks, pinched or excessive u-bends
	Solid Column Of Liquid Refrigerant NOT reaching the TXV	Inspect liquid line for kinks, pinched or excessive u- bends.
	Liquid Refrigerant case inlet Temperature is excessive	Ensure that the liquid refrigerant entering temperature is not excessive. Liquid greater than 110°F at 6" ahead of the TXV may be an indication of equipment problems
	Product Introduction Temperature Too High	Correct product introduction temperature should be 34°F36°F.
	Product Is Stacked Too High	Reduce display height of product. Less than 6" is recommended
	Product is displayed in containers that impede the conduction cooling from the SDC	Use containers with full length, flat bottoms. Refer to MERCHANDIZING RECOMMENDATIONS (page 29) section for further information.
	Incorrect replacement lighting is adding too much heat	Use only Hussmann genuine replacement parts or equivalent.
Case temperature is too warm.	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door, window, electric fan or air conditioning vent that may cause air currents? Case must be located minimum 15 Ft away from doors or windows. Cases are designed to operate at or below 75°F Dry bulb and 55% relative humidity.
	Discharge air temp is out of spec.	Check suction pressure and insure that it meets factory specifications.
	Case is in defrost.	Check defrost settings. See Technical Specifications section.
	Product load may be over its limits blocking airflow.	Redistribute product so it does not exceed load level.

Troubleshooting Cont'd

Problem	Possible Cause	Possible Solution			
Case temperature is too cold.	The t-stat temp is set too low.	Check settings. See Technical Specifications section.			
	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door, window, electric fan or air conditioning vent that may cause air currents? Case must be located minimum 15 Ft away from doors or windows. Cases are designed to operate at or below 75°F Dry bulb and 55% relative humidity.			
Condensation on glass.	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door, window, electric fan or air conditioning vent that may cause air currents? Case must be located minimum 15 Ft away from doors or windows. Cases are designed to operate at or below 75°F Dry bulb and 55% relative humidity.			
	There are glass gaps on the side of the case.	See glass adjustment section.			
	Glass is not completely shut.	Close glass correctly.			
	Ambient Conditions	Turn on Air Sweep Fans located at the right rear of merchandiser.			
Water has pooled	Case drain is clogged.	Clear drain.			
under case.	PVC drains under case may have a leak.	Repair as needed.			
	Case tub has unsealed opening.	Seal as needed.			
	If the case is in a line- up, case to case joint is missing or unsealed.	Install case to case joint and seal as needed.			
	Evaporator pan is overflowing (if applicable).	Check electrical connection to evaporator pan. Check float assembly, it should move freely up and down the support stem. Clear any debris.			
Case is not draining	Case is not level.	Level the case.			
properly.	Drain screen is plugged.	Clean drain screen and remove any debris.			
	Drain or P-trap is clogged.	Clear any debris.			
Frost or ice on evaporator coil.	Defrost clock is not functioning.	Case should be serviced by a qualified service technician.			
Lights do not come on.	LED Driver /light wiring.	Check electrical connections. See Electrical Section and check wiring diagram.			
	LED Driver needs to be replaced.	Case should be serviced by a qualified service technician. See Electrical Section.			
	LED Light needs to be replaced.	Case should be serviced by a qualified service technician.			
	Light Switch needs to replaced.	Case should be serviced by a qualified service technician.			



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.

HUSSMANN

To obtain warranty information or other support, contact your Hussmann representative. Please include the model and serial number of the product.

Hussmann Warranty / Technical Assistance (800) 592-2060

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