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MODEL DESCRIPTION and APPLICATION

The GEM model is a remote, closed type, glass door refrigerated merchandiser for medium temperature application. They are available in 2, 3, 4, and 5 door versions.

APPLICATION

This refrigerated merchandiser has been designed for use in air conditioned stores with temperatures of 75 °F and a relative humidity of less than 55%. Conditions other than these will reduce cabinet efficiency and it is undesirable to run the cabinets continuously under these adverse conditions.

This refrigerated merchandiser has been designed for the display of medium temperature (34 °- 40°F) products such as dairy products and beverages.

INSPECTION

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

If there is any damage, the carrier should be notified immediately and an inspection requested. The delivery receipt must be noted that the equipment was received damaged. If damage is of a concealed nature, the carrier should be notified immediately or not later than three days following delivery.

A claim for damages must be filed with the carrier by the consignee.

LOCATION and CLEARANCE

It is good practice to avoid locating the case where direct sunlight would shine into the fixture for extended periods of time or where drafts from air conditioning grilles, fans, and open doors would blow into the case when being used.

CLEARANCE

A minimum four inch clearance from the back and ends of these models to walls, shelving, and other refrigerators, etc., is required to prevent sweating.

SKID and CRATING

The wood runners or skid and crating should be left on the case until it is near its final location. These give protection for both case and floor.

JOINING

These merchandisers are of sectional construction. Two or more may be joined in line to give the affect of one continuous display. To join two or more together, the following Hussmann-Gloversville Kits with instructions included are required:

- * **JOINT KIT** – Use when joining one merchandiser to another.
- * **PLEXIGLASS PARTITION KIT** – Use when joining merchandisers that operate at approximately the same temperatures, but at different defrost cycles.
- * **END ASSEMBLY KIT** – Use to close off the open end of a line-up.

Caution – All joints must be air-tight to prevent formation of ice or condensation between the merchandisers joined. The merchandisers must be level and aligned to insure proper match of joint trim.

LEVELING

These merchandisers must be installed level (front to back, end to end) to allow proper draining of the defrost water and operation of the doors.

EXTERIOR LOADING

CAUTION – The tops of these merchandisers are not designed to support excessive external loadings such as the weight of a person. Do not walk on these merchandisers as damage and serious personal injury could occur.

DOOR ADJUSTMENT

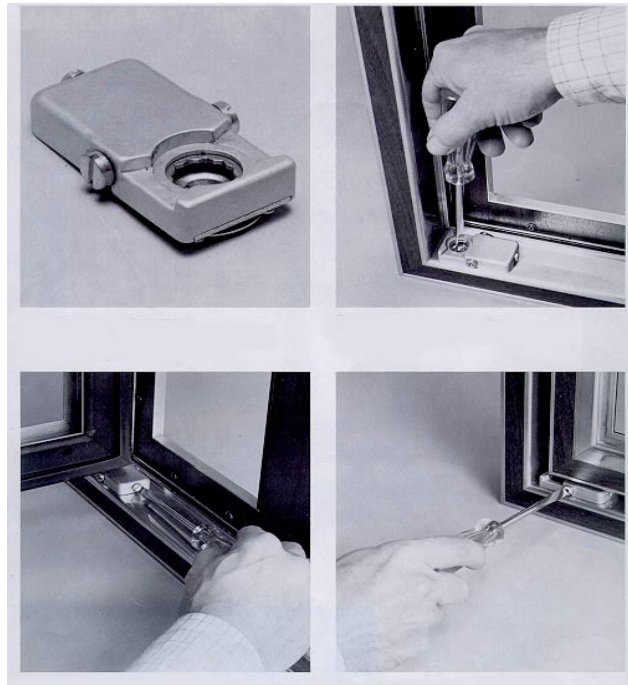
Either Anthony or Ardco door and frame systems are used in the endless. Determine the door manufacturer for proper servicing.

ARDCO DOOR ADJUSTMENT

Insert the tool into adjusting nut at the center of door in the recessed location opposite the electrical plug. Rotate tool in direction door opens. Use sufficient force to overcome prevailing torque lock-nut tension. Use alternating end of tool (both are same) for faster stroke adjustment.

ANTHONY DOOR ADJUSTMENT

- ◆ The Torquemaster's compact, unob-



trusive form is perfect for new units or retrofit.

- ◆ A single screw on top of the Torquemaster attaches the device to the door frame.

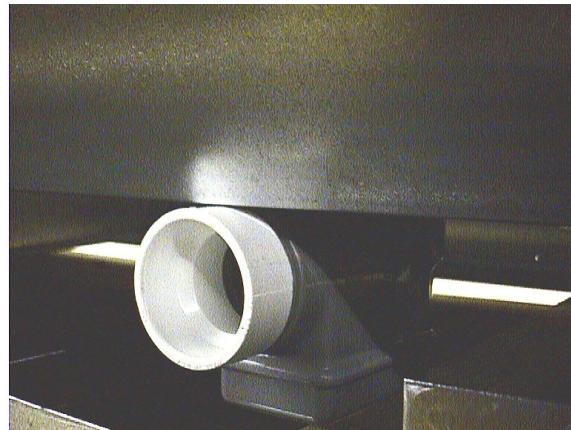
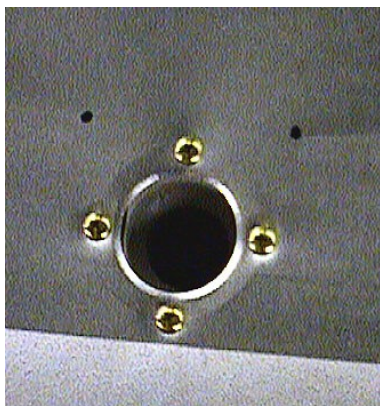
- ◆ Tightening a screw on the side of the Torquemaster corrects door fit when necessary, squaring the door in its frame.
- ◆ To adjust the torque, turn the screw on the front counter-clockwise. Do not over adjust torque to the point of slamming.

DRAIN PIPING

The cabinet is equipped with a 1.5” IPS drain located under the center of the cabinet approx. 10” in from the front edge. Connections are made so Fieldpiping comes straight towards the front and then piping can go left or right towards either end of the case. Access to clear the drain screen inside the case is gained by opening a door towards the center of the case, removing a bottom pan and clearing the drain. This should be done with power off since rotating fans are in the same are.

TO INSTALL FIELD DRAIN PIPING

Connect field drain piping to the water seal.



NOTE: Improperly installed drain piping can seriously interfere with the operation of the refrigerated equipment and result in costly maintenance and product loss. Below are recommendations which should be followed when installing drain piping.

- ◆ Never use pipe smaller than the nominal diameter of the pipe or water seal supplied with the merchandiser.
- ◆ Always provide as much downhill slope (fall) as possible: 1/8 inch per foot is the preferred minimum.
- ◆ Avoid long runs of drain pipes which make it impossible to provide the “fall” necessary for good drainage.
- ◆ Never use two water seals in series in any one drain pipe. Double water seals will cause an air lock and prevent draining.
- ◆ Prevent drain pipes from freezing. Where pipes are located in a cold air space, provide means to prevent freezing.

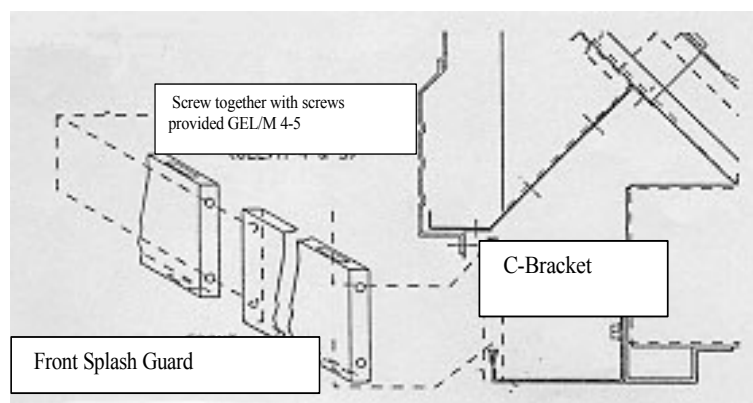
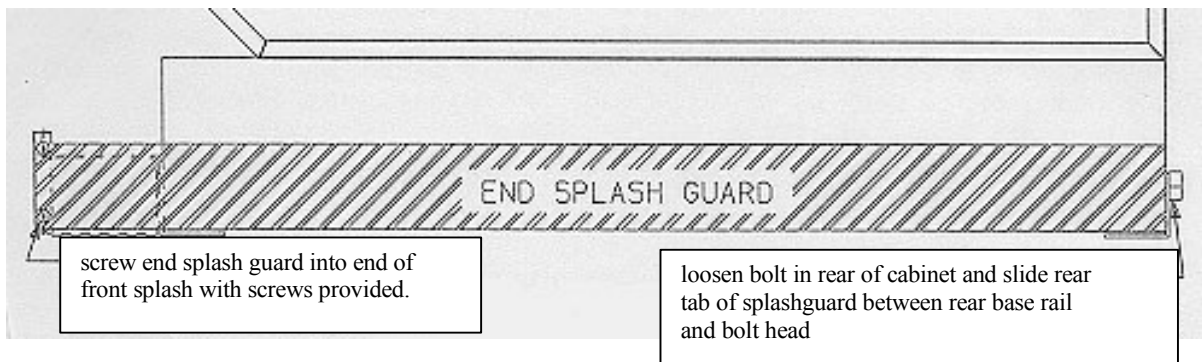
NEVER install drain pipe in contact with uninsulated suction lines. Suction lines should be insulated with a non-absorbent insulation such as Armstrong's Armaflex.

- ◆ Provide a suitable air break between rim of floor drain and outlet of drain pipe.

INSTALLING SPLASHGUARD

The splashguard and all the material for its installation is shipped inside the case. To install (see illustration):

- ◆ Assemble multiple piece splash guards together with two screws at center joint. Note orientation of parts so slots are located at same side.
- ◆ Slip top edge over top edge of 'C' - type bracket.
- ◆ Push up bottom of splash guard so slots drop onto the bottom of the up-turned tab of 'C' - type bracket.
- ◆ At end of case, attach end pieces of splash guard with screws provided with optional end kit.



REFRIGERANT TYPES

These merchandisers will be supplied for operation on refrigerant specified on the Purchase Order. See Serial Plate, located above the left-hand door, for proper type refrigeration.

REFRIGERANT PIPING

Refrigerant line connection sizes.

Model	GEM-2, 3,, 4 and 5
Liquid Line	3/8" OD
Suction Line	1/2" OD

These connections are to be made at the lower right hand front end (facing front) of the case. Internal access is gained by removing bottom pans behind the right hand door. An access hole is provided for the lines to exit through the bottom of the case.

DO NOT RUN REFRIGERANT LINES OF MERCHANDISERS CONNECTED TO ONE CONDENSING UNIT OR REFRIGERATION SYSTEM THROUGH THOSE CONNECTED TO ANOTHER CONDENSING UNIT OR REFRIGERATION SYSTEM.

There is room either behind the splash-guard to run refrigerant lines or on the back side of the cabinet because of the recessed base.

Refrigerant lines should be sized as shown on the refrigeration legend furnished by the owner ; if a legend has not been furnished, refer to Section 4 of the Hussmann Application Engineering Manual.

PIPING INSULATION

For models with "electric defrost", the suction and liquid lines should be clamped or taped together and insulated for a minimum of 30 feet. Additional insulation for the balance of the liquid and suction lines is required wherever condensation and drippage would be objectionable.

PRESSURE DROP

Pressure drop can rob the refrigeration system of capacity. To keep pressure drop to a minimum use proper tubing and keep the refrigeration line run as short as possible using the minimum number of elbows. Where elbows are needed, use long radius elbows.

TABLE RATINGS

<u>Cabinet</u>	<u>BTU/HR</u>	<u>EVAP</u>
GEM-2	2250	+23°F
GEM-3	3375	+23°F
GEM-4	4500	+23°F
GEM-5	5625	+23°F

	<u>CAB.TEMP.</u>	<u>AMBI'T</u>
GEM-2	35°F	75°F
GEM-3	35°F	75°F
GEM-4	35°F	75°F
GEM-5	35°F	75°F

EXPANSION VALVE ADJUSTMENT

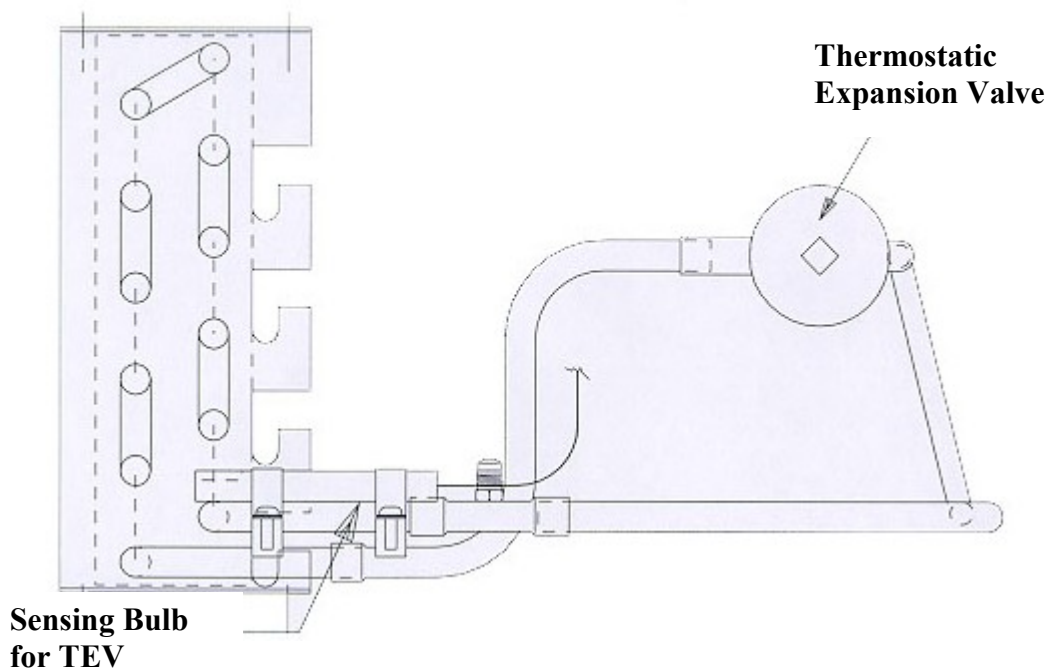
The expansion valve must be adjusted to fully feed the evaporator.

Before attempting to adjust the valve make sure the evaporator is either clean or only lightly covered with frost, and that the cabinet is within 10° of its expected operation temperature. Adjust the expansion valve as follows:

Attach two sensing probes to the evaporator, one under the clamp holding the expansion valve sensing bulb and the other securely taped to one of the return bends two thirds of the way through the evaporator circuit (See Illustration). Some “hunting” of the expansion valve is normal. The valve should be adjusted so that during the hunting the greatest difference between the two probes is 5°F to 8°F.

Remove valve stem cover and turn valve stem counter-clockwise to decrease temperature difference between the probes. To increase temperature difference of probes, turn the valve stem clockwise.

With this adjustment, during a portion of the hunting the temperature differences between the two probes may be less than 8°F, or at times as low as 5°F. Make adjustments of no more than one half turn of the valve stem at a time and wait for at least fifteen minutes before re-checking probe temperature and making further adjustments. Replace and tighten cover of the valve stem.



**REFRIGERATION AND DEFROST
CONTROLS FOR
CONVENTIONAL MULTIPLEXING**

	TYPE OF CONTROL	LOCATION
Refrig.	Low Pressure Ctrl	On Condensing Unit
	Refrigeration Therm (1)	On Case as an option
Defrost	Time initiated & Time terminated	On Condensing Unit

1. If not using a low pressure control, an optional refrigeration thermostat may be employed. This would be factory installed at the left hand end of the evaporator coil cover with the sensing bulb located at the front of the evaporator sensing return air.
2. When using time initiated, and time terminated defrost, normally one defrost every 24 hours for 25 minutes should be sufficient. However, higher store ambient conditions may require additional defrosts.

ELECTRICAL CONNECTIONS

All electrical connections are made at the electrical terminal board located at the lower front of the cabinets. Access is gained by removing the lower bumper panel (with sheet metal insert) by removing the thumbscrews at the bottom of the panel. Knock outs are provided for permanent field wiring connections.

IDENTIFICATION WIRING

All wiring is number coded and labeled for proper voltage. Any green or green with yellow stripe wire is for grounding purposes. Consult the wiring diagram for detailed wire connections.

LIGHT SWITCH

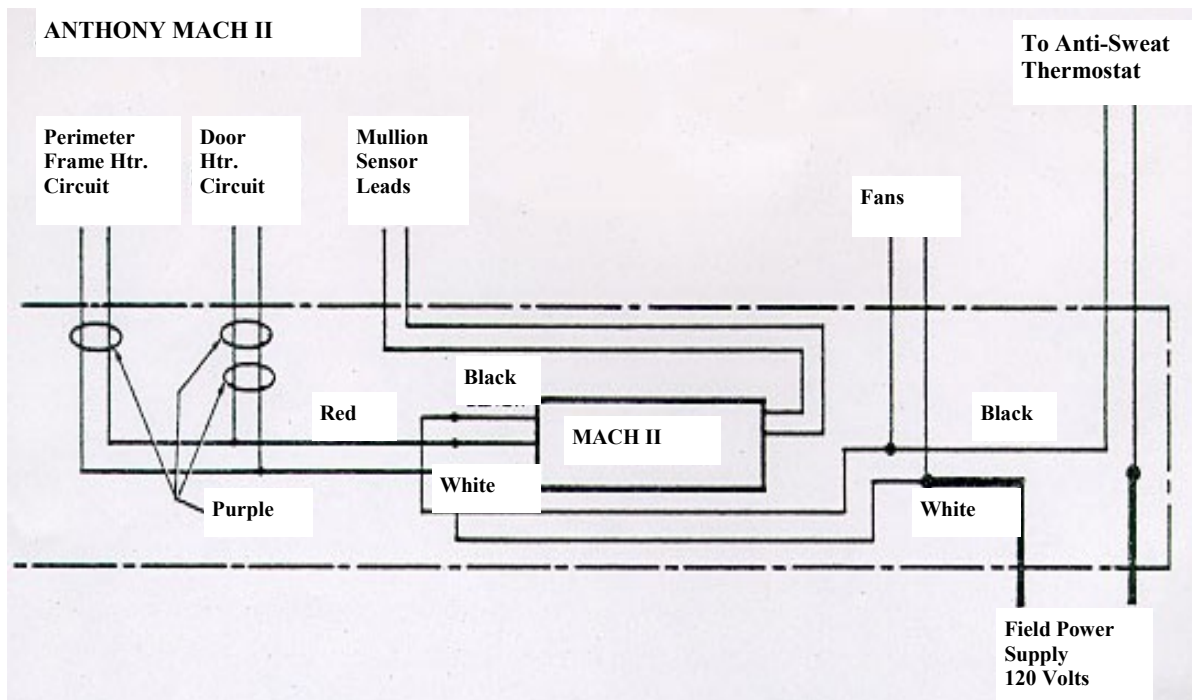
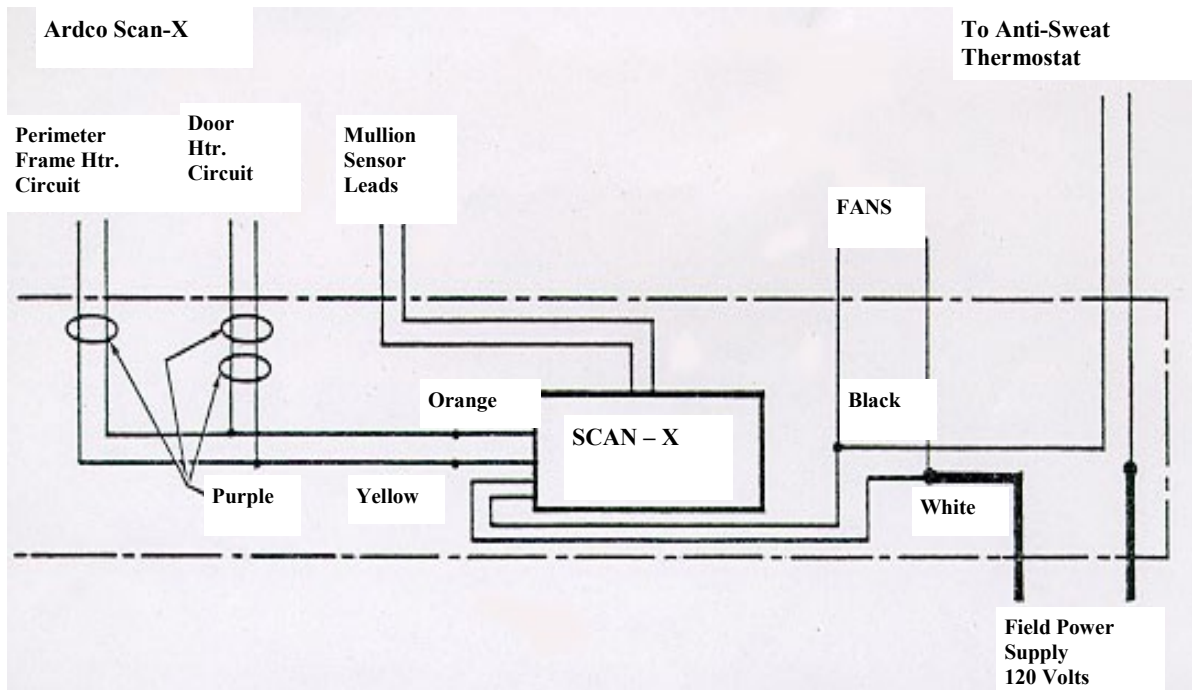
The light switch is located inside and above the door opening at the left hand end of the case.

HUMIDSTAT CONTROL

When optionally ordered, a humidstat control is factory installed on the exterior top of the cabinet. The Arcco Scan-X Energy Control System or Anthony Mach II is provided.

This system is wired into the frame and door-anti-condensate heaters as shown in the following wiring diagram. For further information and servicing, refer to the instruction manual furnished with the control

Dwgs. on next page



ELECTRICAL SPECIFICATIONS

CASE	ANTHONY DR AMP (115 v.)		ARDCO DR AMP (115 V)		ANTHONY FRAME AMP (115 v)	ARDCO FRAME AMP (115 v)
	EA.	TOTAL	EA.	TOTAL		
GEM-2	0.32	.64	0.13	.26	1.23	.91
GEM-3	0.32	.96	0.13	.39	1.77	1.20
GEM-4	0.32	1.28	0.13	.52	2.33	1.54
GEM-5	0.32	1.6	0.13	.65	2.90	1.85

CASE	LIGHT AMP (115v)		EVAP FAN AMP (115 v)	
	EA.	TOTAL	EACH	TOTAL
GEM-2	2.0		0.4	0.8
GEM-3	2.9		0.4	1.2
GEM-4	3.7		0.4	1.6
GEM-5	4.3		0.4	2.0

ELECTRICAL CONNECTIONS -

Prior to performing an service or Maintenance on this cabinet, be sure to disconnect the power supply to the cabinet. Failure to do so may result in electrical shock and/or serious injury.

STOCKING and STOCK ROTATION

- ◆ All shelves of these models are intended for displaying the product.
- ◆ Shelves are designed for a maximum load of 200 lbs. per shelf
- ◆ The shelves are adjustable on 1 inch increments.
- ◆ Spacing of 12” is recommended for most applications.
- ◆ The bottom shelf is built with a protective lip.

- ◆ Merchandise should not be placed in the case for at least 24 hrs after being put in operation.
- ◆ Since dairy products are perishable, the display should be rotated. Each time an item is restocked, the last few packages at the rear should be moved to the very front. This will prevent pockets of unrotated food.
- ◆ When restocking, doors should not be kept open longer than necessary or high temperature, and high energy consumption can occur.
- ◆ When loading product, do not allow the product to extend past the front of the shelf. Product extending past the front of the shelf will effect air flow through out the cabinet interior. Care should also be taken when loading product that it is not placed tight against the perforated back panel. Refrigerated air filters into the product area through these perforations.

GENERAL UP-KEEP, CARE and CLEANING

To insure good sanitation, appearance, and minimum maintenance, these models should be thoroughly cleaned and washed on a routine schedule.

ALL POWER SUPPLY TO THE CASE SHOULD BE SHUT OFF.

Remove debris caused by broken packages, torn wrappers, etc., before washing since such foreign matter can clog the drain pipe.

Do not use an abrasive cleaner or steel wool as these will mar the finish. Never introduce water faster than the drain pipe can carry it away.

THERMOSTATIC EXPANSION VALVE

Remove the left hand bottom pan to make any adjustments to the valve.

EVAPORATOR FAN MOTORS

Each fan motor is fastened to a section of the evaporator housing. The fan can be disconnected electrically by disconnecting the quick connects.

LAMP BALLAST (s)

Disconnect Power - Ballasts are located in the mullions between doors. Refer to Anthony's instructions supplied with case for removal and wiring.

FLUORESCENT LAMPS

Note: Lamps are enclosed in protective shields to insure maximum lamp brightness and protection against lamp breakage.

To Service Lamps:

1. Remove lenses by removing metal clamps, following Anthony's Instructions provided with the case.
2. Push up on lamp and rotate bottom out towards door opening and remove.
3. Reverse procedure to reinstall

DOOR and FRAME HEATERS

For information concerning door heaters, etc., see the door instructions supplied.

THERMOMETER –

Replacing or cleaning of the thermometer is accomplished by removing the two screws securing the thermometer and bracket assembly to the cabinet. Once removed the thermometer can be removed from the bracket and cleaned and/or replaced.

Reassemble in reverse order. If the cabinet is equipped with a solar digital type thermometer, be sure to thread the sensing element of the thermometer through the hole in the cabinet interior top.

TROUBLE SHOOTING CHART

<u>SYMPTOM</u>	<u>PROBABLE CAUSE (S)</u>	<u>POSSIBLE SOLUTION (S)</u>
Warm storage temperature	<ol style="list-style-type: none">1. Temperature control not set properly2. Short of refrigerant3. Cabinet location too warm4. Refrigerant over charge5. Low voltage, fans operating at too low a speed	<ol style="list-style-type: none">1. Reset control2. Leak check, evacuate and recharge to condensing unit instructions3. Correct excessive heat source or relocate cabinet to cooler location4. Same steps as for short refrigerant #25. Check voltage at fans, should not be more than 5% below rating
Icing condition drain area	<ol style="list-style-type: none">1. Low voltage2. Cabinet not level	<ol style="list-style-type: none">1. Check voltage at terminal board2. Check leveling and correct it if necessary

TROUBLE SHOOTING LIGHTING SYSTEMS

<u>PROBLEM</u>	<u>SOLUTION</u>
Lights won't start	<ol style="list-style-type: none">1. Check light switch2. Check continuity to ballast3. Check to see if bulbs inserted properly into sockets4. Check voltage

TROUBLE SHOOTING LIGHTING SYSTEM

PROBLEM

SOLUTION

Lights flicker

- 1. Allow lamps to warm up**
- 2. Check lamp sleeve for cracks**
- 3. Check sockets for moisture and proper contact**
- 4. Bulb replacement may be necessary**
- 5. Check voltage**
- 6. New bulbs tend to flicker until used**

Ballast Hums

- 1. Check voltage**
- 2. Replace ballast**

WARRANTY AND PARTS INFORMATION

IMPORTANT – Please read carefully to assure prompt and accurate service.

ORDERING PARTS REPLACEMENT –

- ✓ Contact your nearest Hussmann Distributor.**
- ✓ Always specify model and serial number of cabinet.**
- ✓ If correct part number is not know, give a clear description of part itself and its function in the cabinet or remote unit.**

WARRANTY PARTS PROCEDURE

- ✓ Same as first three items in Ordering Replacement Parts Procedure.
- ✓ Give original installation date of cabinet and, if possible, forward a copy of the original invoice or delivery receipt.
- ✓ All shipments of in-warranty replacement parts will be invoiced from the factory until such time as the defective part is returned and proved to be defective by our Quality Control Department.
- ✓ Contact your Hussmann Distributor for instructions on returning in-warranty parts.
- ✓ Warranty parts must be returned to the factory within 30 days of date of failure to assure proper disposition.
- ✓ Lack of any of the above information may result in the shipment of the wrong part, or a delay in shipment.

ELECTRICAL COMPONENTS REPLACEMENT LIST

FAN MOTOR

Morrill SP-B6HUBV16
Emerson FA33AMDM165
G.E. 5KSM51ECG5089

FAN BLADE

Morrill FV800CW305

BALLAST

Anthony AE-15614 (1) lamp
 AE-15624 (2) lamps

LAMPS

Sylvania F040/84-1

OPTICAL LENSES

AE-72419 (2) on Mullions and (1) on end

UP KEEP – SERVICE – MAINTENANCE SEALING AND CLEANING

To insure good sanitation, appearance, and minimum maintenance, these models should be thoroughly cleaned and washed on a regular schedule.

Various components of the case interior can be cleaned by the following instructions, which normally should be done on a monthly basis:

CAUTION: Power should always be disconnected from the case prior to any regular cleaning.

- ✓ **Bottom Decking Shelving** – May be removed from the upright posts and washed down with water and a mild soap.
- ✓ **Back panels and side walls** – May be wiped down with a damp sponge, using water and mild soap.
- ✓ **Case bottom below decking** – Normally, a damp sponge or cloth should be sufficient to wipe down any small residues. Large spillage may require the bottom of the case to be “hosed down”. On self contained cases, make sure the amount of water introduced does not overflow the condensate pan. On remoted cases (no condensate pans), make sure water is not introduced any faster than the drainage system can remove.
- ✓ **Thermometers** – Access for the sensing bulbs of the thermometers can be obtained by removing the screws holding the thermometer in place and pulling sensing bulb out of its holding bracket. Make sure sensing bulb is reinstalled in the reverse fashion to insure proper monitoring of the case temperature.