Hussmann

OPERATING AND INSTALLATION INSTRUCTIONS

MODEL: GEL LOW TEMPERATURE REMOTE ENDLESS

Hussmann – Gloversville
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Introduction, Inspection, Location & Clearance, Initial Set-up Exterior Loading and Door Adjustment

MODEL DESCRIPTION -

The GEL model is a remote, closed type; glass door refrigerated merchandiser for low 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 75ºF 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 either frozen food (0ºF) temperature or ice cream (-15º F) temperatures.

SHIPPING DAMAGE –

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 no later that three days following delivery. **A CLAIM FOR DAMAGES MUST BE FILED WITH THE CARRIER BY THE CONSIGNEE.**

LOCATION –

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.

INITIAL SET-UP 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, the following Hussmann-Gloversville Kits with instructions included are required:

- **Joint Kit –** Use when joining on merchandiser to another
- **Plexiglass Partition Kit** – Use when joining merchandisers that operate at approximately the same temperatures, but at different defrost cycles.

- **Insulated Partition Kit** – Use when joining ice cream merchandisers to frozen food merchandisers.

- **End Assembly Kit** – Use to close off the open end of a line-up.

Caution: All joints must be airtight 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 –

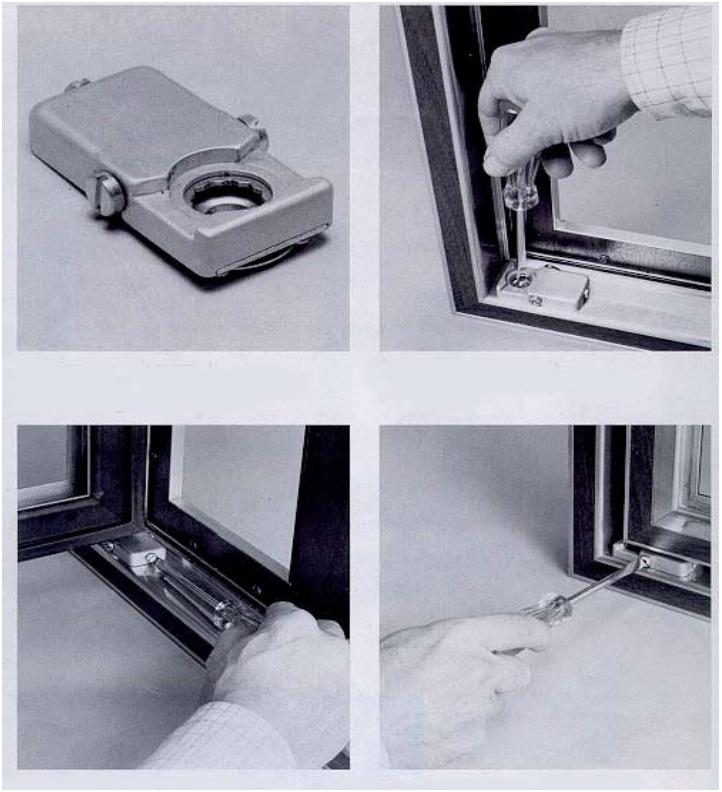
Caution the **tops of these merchandisers are not designed to support excessive external loading such as the weight of a person. Do not walk on these merchandisers as damage and serious personal injury could occur.**

ARDCO DOOR ADJUSTMENT

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

ANTHONY DOOR ADJUSTMENT

1. The torquemaster's compact, unobtrusive form is perfect for new units or retrofit. One-device controls any size door and hinge swing.
2. A single screw on top of the torquemaster attaches the device to the door frame.
3. Tightening a screw on the side of the Torquemaster corrects door fit when necessary, squaring the door in its frame.
4. To adjust the torque, turn the screw on the front counter-clockwise. Do not over adjust torque to the point of slamming.



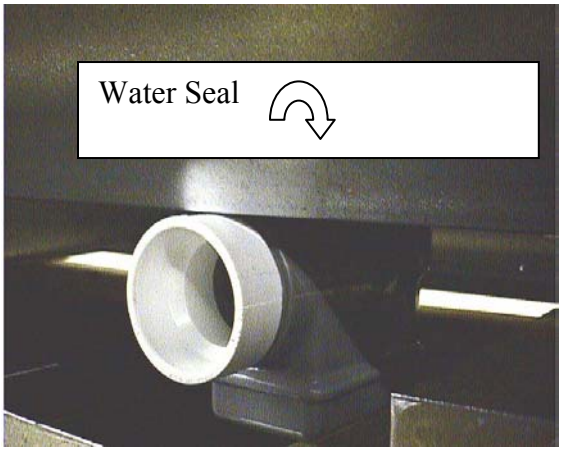
DRAIN PIPING –

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 field piping 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 area.

<u>TO INSTALL FIELD DRAIN PIPING</u> –

Connect field drain piping to 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. We recommend the following should be followed when installing drain piping.**

1. Never use pipe smaller than the nominal diameter of the pipe or water seal supplied with the merchandiser.
2. Always provide as much downhill slop (fall) as possible: 1/8 inch per foot is the preferred minimum.
3. Avoid long runs of drainpipes, which make it impossible to provide the "fall" necessary for good drainage.
4. Never use two water seals in series in any one drainpipe. Double water seals will cause an air lock and prevent draining.
5. Prevent drain pipes from freezing. Where pipes are located in a cold air space, provide means to prevent freezing.
6. Provide a suitable air break between rim of floor drain and outlet of drain pipe.

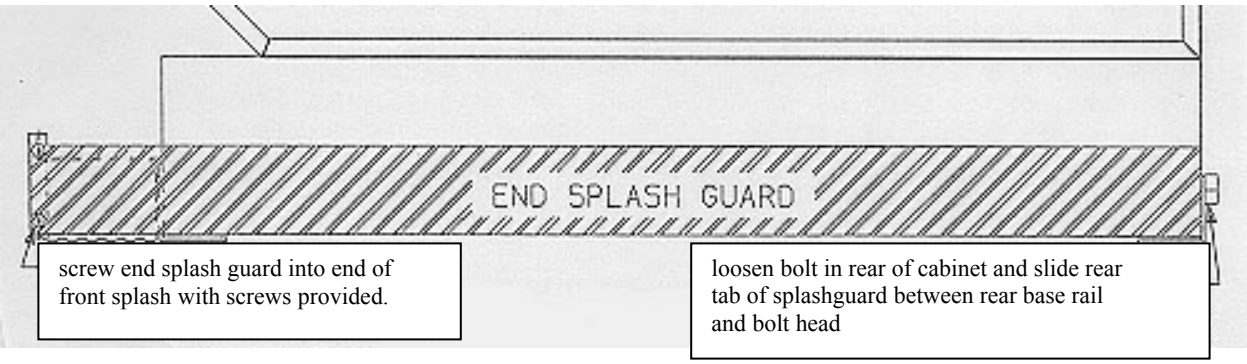
NEVER install drain pipe in contact with uninsulated suction lines. Suction lines should be insulated with a non-absorbent insulation such as Armstrong's Armaflex.

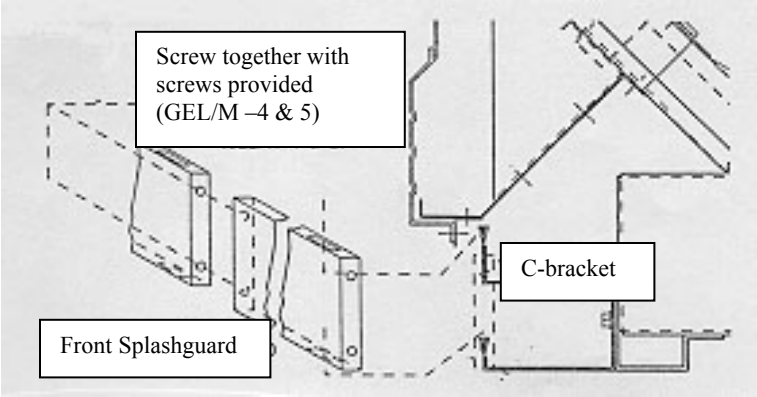
<u>INSTALLING SPLASHGUARD</u> –

The splashguard and all the material for its installation is shipped inside the case.

- ❖ 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 bottom upturned tab of 'C' type bracket.

❖ At end of case, attach end piece of splash guard with screws provided with optional end kit.





INSTALLATION OF SPLASH GUARD

REFRIGERANT TYPES –

These merchandisers will be supplied for operation on R-404A refrigerant unless otherwise specified on the Purchase Order. See Serial Plate, located above the left-hand door, for proper type refrigeration

REFRIGERANT PIPING –

Refrigerant Line connections sizes –

Model	GEL-2,3,4, & 5
Liquid Line	3/8” OD
Suction Line	7/8” 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 splashguard to run refrigerant lines or run the

lines out the backside 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 FOR BTU RATING

Cabinet	BTU/HR	EVAP	CAB.TEMP	AMBIENT
GEL-2	3620	-14ºF	0ºF	75ºF
GEL-2	3100	-22ºF	-15ºF	75ºF
GEL-3	4635	-14ºF	0ºF	75ºF
GEL-3	5430	-22ºF	-15ºF	75ºF
GEL-4	6180	-14ºF	0ºF	75ºF
GEL-4	7240	-22ºF	-15ºF	75ºF
GEL-5	7725	-14ºF	0ºF	75ºF
GEL-5	9050	-22ºF	-15ºF	75ºF

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 10º 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 through the evaporator circuit. 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 3º to 5ºF. 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 3ºF, or at times as low as 0ºF. Make adjustments of no more than one half turn of the valve stem at a time and wait for at least fifteen minutes before rechecking 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
Refrigeration control	Low Pressure Control Refrigeration Therm. (1)	On Condensing Unit On cabinet as an option
Defrost Control	Temperature (2) Terminated Type	On Condensing Unit
	Defrost Thermostat (3)	On Cabinet as Standard
	Fan and Condensate (3)	On Cabinet as Standard
	Alarm Heater (Defrost Limit) Thermostat (4)	On Cabinet as Standard
	Case Lighting Thermostat (4)	On Cabinet as an option

If not using a low pressure control, an optional refrigeration thermostat may be employed. This would be factory installed behind the cover on the left hand flue panel on the back of the case. Cover can be removed by removing two sheet metal screws.

Wires to the temperature control are routed into the wire raceway at the lower left hand front, through on of the PVC wire tubes. Then run wires past L.H. end of evaporator coil, through the air baffle and up the back of the case to the temperature control.

Supplied with condensing unit.

This thermostat is a single pole double throw bimetal switch factory installed on the evaporator outlet tube. No field adjustment is possible. Defrost is terminated at 59ºF. The fans are delayed until the thermostat reaches 32ºF. For wiring more than one thermostat in series or more than one merchandiser see wiring diagram in Section IV.

This thermostat is a single pole double throw bimetal switch factory installed on left hand end of the inner liner top behind the evaporator coil. No field adjustment is possible. If defrosts starts and the timer

fails, this stat prevents overheating of the case (and product) by shutting off the defrost heaters when it senses 100ºF.

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. Knockouts 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.

Defrost – Sequence of the Electric Defrost

1. When the timer initiates the defrost period, the following occurs:

2. Compressor will stop and the defrost heaters will energize.

3. When defrost thermostat senses 58ºF the defrost will terminate and the compressor will start.

4. For a short time after defrost termination, the fans and anti-condensate heaters will remain off. They will come on when their thermostat senses 32ºF.

5. Normally, one defrost every 24 hours, with the defrost failsafe set for 40 minutes should b sufficient for proper defrost. Ambient conditions, amount of store traffic, and case loading can influence the quantity of defrost required. Extra defrost may be added, but adding more than 1 or 2 per day is not advisable.

Wiring Defrost Thermostats for Multiplex Systems

The following is a suggested method of wiring defrost thermostats in series to maintain temperature termination and fan delay.

When wiring the defrost system of more than one cabinet to one defrost clock, this clock should be set for at least a 45 minute failsafe. The defrost thermostats should be wired in series but each separate defrost thermostat will terminate the defrost in that case. Defrost in all the cases will not terminate until the last thermostat in series senses the proper temperature and then defrost will end and refrigeration will begin again.

The fans in each case will come on when the proper temperature is sensed.

KOOLGAS DEFROST –

Koolgas defrost is time initiated and time terminated. Normally 20 minutes is sufficient time but heavy humidity/usage may require longer defrost times. The fans and anti-condensate heaters are controlled by a thermostat similar to the electric defrost described above.

LIGHT SWITCH –

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

HUMIDSTAT CONTROL –

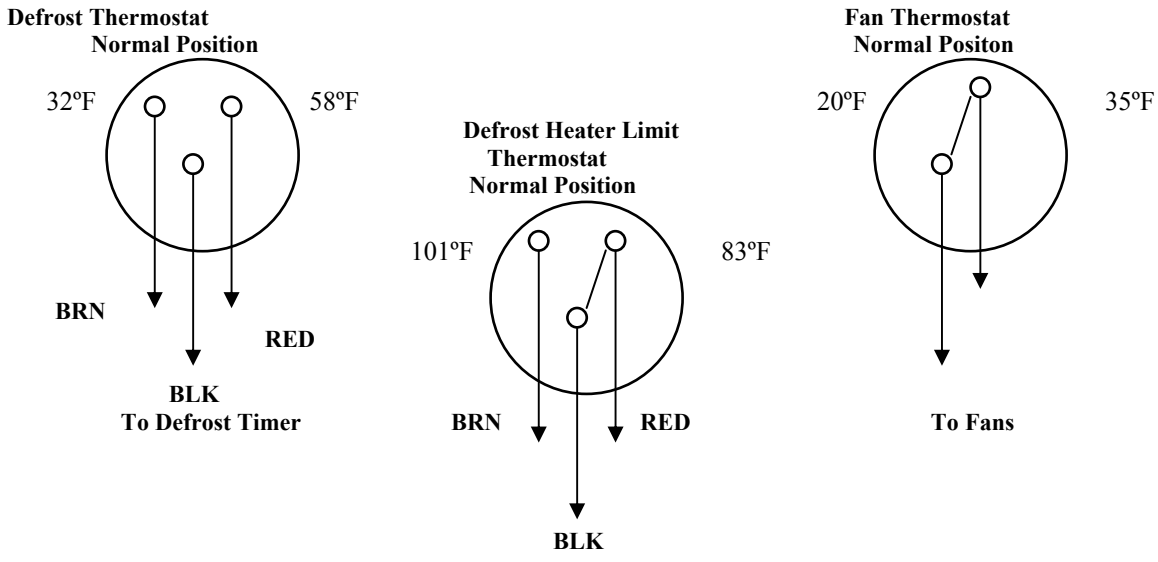
When optionally ordered, a humidstat control is factory installed in the electrical raceway behind the front bumper panel. This system is wired into the frame and door-anti-condensate heaters, as shown in the wiring diagram supplied with the case. For further information and servicing, refer to the instruction manual furnished with the control.

ELECTRICAL SPECIFICATIONS –

CASE	ANTHONY DR AMP. (115 volt)		ARDCO DR AMP. (115 volt)		ANTH FRAME AMP. (115 volt)	ARDCO FRAME AMP. (115 volt)
	ea.	total	ea.	total		
GEL-2	1.02	2.04	1.04	2.08	1.35	2.3
GEL-3	1.02	3.06	1.04	3.12	1.93	3.07
GEL-4	1.02	4.08	1.04	4.16	2.56	3.92
GEL-5	1.02	5.1	1.04	5.2	3.09	4.6

	LIGHT AMP (115 volt)	DEFROST AMP (208 volt)	OPTIONAL GLASS/END AMP/END (115 volt)	EVAP. FAN AMP (115 volt)	
				ea.	total
GEL-2	2.0	6.32	1.43	0.6	1.2
GEL-3	2.9	9.76	1.43	0.6	1.8
GEL-4	3.7	12.60	1.43	0.6	2.4
GEL-5	4.3	16.50	1.43	0.6	3.0

THERMOSTATS –



INITIAL START-UP and LOADING
GENERAL UP-KEEP, CARE and CLEANING
OPERATION and MAINTENANCE

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 hours after being put on operation.

Since frozen food and ice cream 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, frost formation, and high energy consumption can occur.

UP-KEEP, CARE and CLEANING –

To insure good sanitation, appearance, and minimum maintenance, these models should be thoroughly cleaned and washed on a regular 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 clod the drain pipe. **Do not use abrasive cleaner or steel wool as these will mar the finish. Never introduce water faster than the drain pipe can carry it away.**

OPERATION AND MAINTENANCE

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.

DEFROST HEATERS –

- Disconnect power – disconnect connections at the terminal board at lower left end of case behind bumper panel.
- Remove defrost heater clips and remove defrost heater.
- Reassemble in reverse order.

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 optical lenses to insure maximum lamp brightness and protection against lamp breakage.

To Service Lamps:

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

DOOR & FRAME HEATERS –

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

TROUBLE SHOOTING CHART

SYMPTOM	PROBABLE CAUSE (S)	POSSIBLE SOLUTION (S)
Warm storage temperature	1. Temperature control not set properly 2. Short of refrigerant 3. Cabinet location too warm 4. Refrigerant over charge 5. Low voltage, fans operating at too low a speed	1. Reset control 2. Leak check, evacuate and recharge to condensing unit instructions. 3. Correct excessive hat source or relocate cabinet to cooler location 4. Same steps as for short refrigerant #2. Check voltage at fans, should not be more than 5% below rating.
Icing condition Drain area	1. Low voltage 2. Cabinet not level 3. Defrost heater (s) not working	1. Check voltage at terminal board 2. Check leveling and correct 3. Check connections and/or replace heater

TROUBLE SHOOTING LIGHTING SYSTEM

PROBLEM	SOLUTION
Lights won't start	1. Check light switch 2. Check continuity to ballast 3. Check to see if bulbs inserted properly into sockets 4. Check voltage
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

Please read carefully to assure prompt and accurate service

ORDERING REPLACEMENT PARTS –

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

WARRANTY PARTS PROCEDURE

- ✓ Same as the 3 items above
- ✓ 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 Motors

Morrill	SP-B9HUBV16
Emerson	FA33HXDL-164
G.E.	5KSM51ECG3799A

Fan Blades

Thorgren 8CW34

Relays

Aromat JAIB-TM-AC220-P
Aromat JAIC-TM-AC115-P

Defrost Thermostat

Thermo-Dis 14T 33 Style 27442

Fan Heater Thermostat

T.I. #20425D

Ballast

1 lamp Anthony AE-15614
2 lamp Anthony AE-15624

Lamps

Sylvania FO40/841

Optical Lens

AE-72419 (2) on mullions, (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:

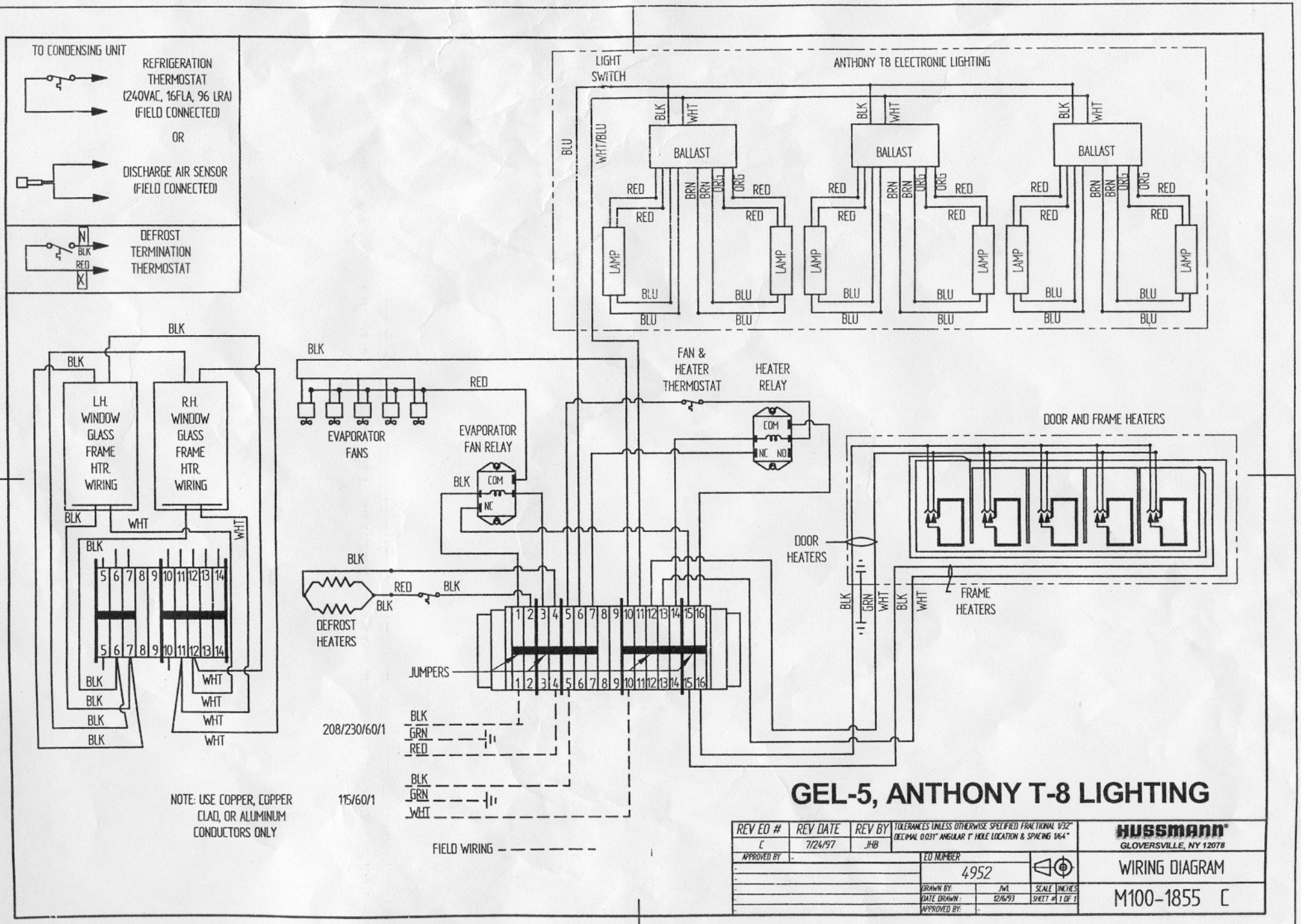
CAUTION: Power should always be disconnected from the case prior to any regular cleaning.

- ✓ 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.



GEL-5, ANTHONY T-8 LIGHTING

REV EO #	REV DATE	REV BY	TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONAL 1/32" DECIMAL 0.031" ANGULAR 1° HOLE LOCATION & SPACING 1/64"
C	7/24/97	JHB	

APPROVED BY: -

HUSSMANN®
GLOVERSVILLE, NY 12078

EO NUMBER: 4952

WIRING DIAGRAM

DRAWN BY:	JWL	SCALE: INCHES
DATE DRAWN:	12/16/93	SHEET #: 1 OF 1
APPROVED BY:	-	

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