HUSSMANN®

ASC-LG / ASCS-LG

Installation & Operation Manual

Rev. 0506

HUSSMANN®

ASC-LG / ASCS-LG

Lift-up Curved Glass, Refrigerated Service Gelato and Ice Cream Case

ASC-LG / ASCS-LG-0506

INSTALLATION & OPERATION GUIDE

General Instructions

Table of Contents

THIS BOOKLET CONTAINS INFORMATION ON:
ASC-LG / ASCS-LG Lift-up curved and straight glass refrigerated service Gelato and Ice Cream 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.

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 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.

For Hussmann Limited Warranty information visit on-line:

http://hussmann.com/products/products.htm
and click on the Hussmann Limited Warranty link.

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

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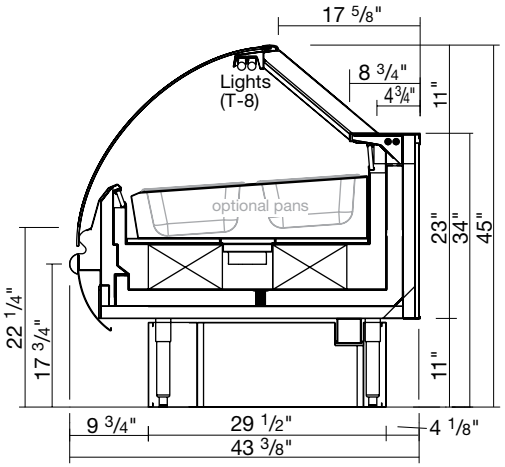
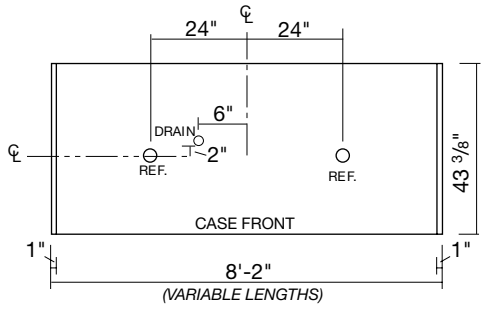
This equipment is to be installed to comply with the applicable NEC, Federal, State, and Local Plumbing and Construction Code having jurisdiction.

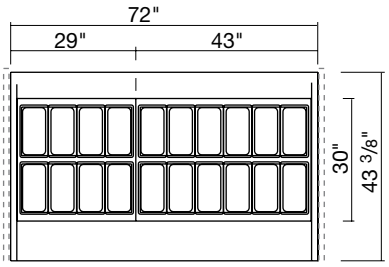
Cut & Plan Views



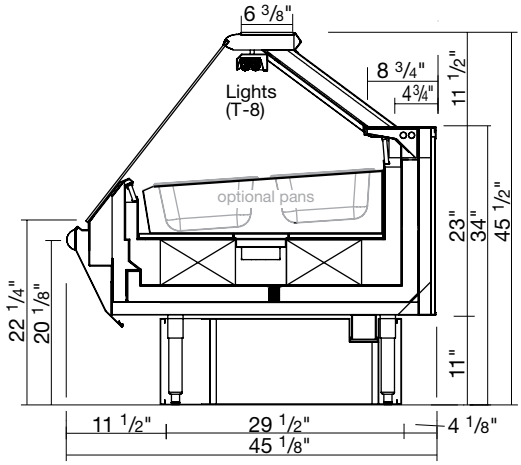
ASC-LG
Gelato Service Case
Scale = 1/2"



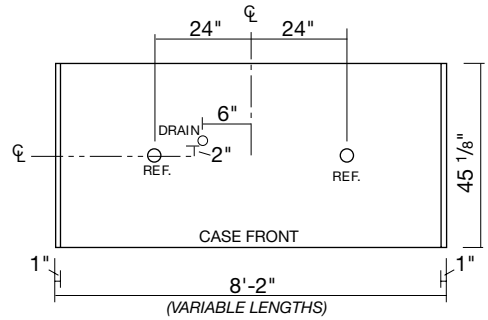
ASC-LG
PlanView
Scale = 1/4"



ASC-LG
Plan View
Pan option with 1/3 pans



ASCS-LG
Gelato Service Case With Straight Glass Option
Scale = 1/2"



ASCS-LG
PlanView
Scale = 1/4"

Installation

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.

UNCRATING THE STAND

Place the fixture as close to its permanent position as possible. Remove the top of the crate. Detach the walls from each other and remove from the skid. Unbolt the case from the skid. The fixture can now be lifted off the crate skid. **Lift only at base of stand!**

EXTERIOR LOADING

These models have **not** been structurally designed to support excessive external loading. **Do not walk on their tops**; This could cause serious personal injury and damage to the fixture.

SETTING AND JOINING

The sectional construction of these models enable them to be joined in line to give the effect of one continuous display. A joint trim kit is supplied with each joint.

Installation (cont'd.)

LIFT-UP / TILT-OUT GLASS -Where applicable

In addition to verifying that the Allen screws on the lift-up glass are tightened when the case is delivered, **RECHECK THE ALLEN SCREWS ON THE GLASS ONCE THE CASE IS IN FULL OPERATION AND BROUGHT TO TEMPERATURE.**
Temperature changes can affect the size and shape of the materials involved, and can cause changes in the secure fit of the glass and the clamp(s).

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 hinges supporting the glass. Leveling the case correctly will solve most hinge operation problems.

NOTE: A. To avoid removing concrete flooring, begin lineup leveling from the highest point of the store floor.
B. When wedges are involved in a lineup, set them first.

All cases were leveled and joined prior to shipment to insure the closest possible fit when cases are joined in the field. When joining, use a carpenters level and shim legs accordingly. Case must be raised correctly, under legs where support is best, to prevent damage to case.

1. Check level of floor where cases are to be set. Determine the highest point of the floor; cases will be set off this point.
2. Set first case, and adjust legs over the highest part of the floor so that case is level. Prevent damage – case must be raised under leg or by use of 2x6 or 2x4 leg brace. Remove side and back leg braces after case is set.
3. Set second case as close as possible to the first case, and level case to the first using the instructions in step one.
4. Apply masking tape 1/8" in from end of case on inside and outside rear mullion on both cases to be joined.
5. Apply liberal bead of case joint sealant (butyl) to dotted area shown in (Fig.2, #1) of first case. Apply heavy amount to cover entire shaded area.
   DO NOT USE PERMAGUM!

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

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.
7. To compress silicone 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 a 2 bolts located in the base of the case. Secure the overhead structure by bolting the bracket, located inside behind lights.

Do not use cam locks to pull cases together!

9. Apply bead of silicone to top of bulkheads and slip on stainless steel bulkhead cap. Also apply silicone to seam between overhead light tubes.

JOINT TRIM

After cases have been leveled and joined, and refrigeration, electrical, and wasted piping work completed, install the splashguards. Fasten along the top edge, or center, with #10 X 3/3" sheet metal screws.

DO NOT SEAL JOINT TRIM TO FLOOR!

GLASS BREAKAGE MAY OCCUR!

Retighten glass along clamshell after leveling and first time case is brought to full operating temperature!

Plumbing

WASTE OUTLET AND P-TRAP

The waste outlet is located off the center of the case on one side allowing drip piping to be run lengthwise under the fixture.
A 1-1/2" P-trap and threaded adapter are supplied with each fixture. The P-trap 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 warping.
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 nonabsorbent 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.

DIPPER WELL

An optional NSF approved dipper well may be installed on the back of case. The exact location of the dipper well will be determined by the customer.

1. Ensure dipper well is properly sealed by applying NSF certified silicone to seam between dipper well and back cover of case.
2. The plumbing required must be done by a certified plumber.

Refrigeration

GELATO/SOFT ICE CREAM

These display cases are designed to hold product at temperatures that will allow operators to scoop or dip gelato and soft ice cream into cones, containers or dishes. The temperatures will fall in the range of plus 4F to plus 12F depending on amount of sugar and butterfat in product. The temperature and condition of product must be checked after being in case the first four hours of operation. Because of the sensitive condition of these products, defrost is very critical. The fans do NOT run during defrost periods. The maximum time is 20 minutes for electric and 10 minutes for hot gas and Kool Gas. The fans are on a 2 minute delay after defrost to avoid adding heat to case.
If, because of ambient conditions, the defrost must be changed, amount of defrosts not time is necessary. i.e., 3 by 20 minutes instead of 2 x 40 minutes.

REFRIGERANT TYPE

The standard refrigerant will be R-404 unless otherwise specified on the customer order. Check the serial plate on the case for information.
Piping for more than one case on a condensing unit is run underground with either common suction and liquid lines from the machine room or individual suction and liquid lines joined together in the machine room.

REFRIGERATION LINES

LIQUID	SUCTION
3/8" O.D.	5/8" O.D.

NOTE: The standard coil is piped at 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 $^{5}/_{8}$", $^{7}/_{8}$", or $1^{1}/_{8}$". 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.

For refrigerators with KOOLGAS defrost, suction, and liquid lines should not contact each other and should be insulated for a minimum of 30' from the refrigerator. Additional insulation for the balance of liquid and suction lines is recommended and required wherever condensation and dripping would be objectionable.

CONTROL SETTINGS-Remote

See the "Case Specs" section of this guidebook 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 as directed in the Case Specifications section of this guide. The number of defrosts per day should never change. The duration of the defrost cycle may be adjusted to meet conditions present at your location.

CONTROL SETTINGS-Self Contained

On Self Contained cases all functions, defrost, fans, temperature are controlled by Pagon ERC-2 controller. See case specs for proper temperature and defrost settings.

ACCESS TO TX VALVES & DRAIN LINES

MECHANICAL - Remove product from end of case. Remove product racks. Remove refrigeration and drain access panels (labeled). TX 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 (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. An Alco balanced port expansion valve model is furnished as standard equipment, unless otherwise specified by customer.

EXPANSION VALVE ADJUSTMENT

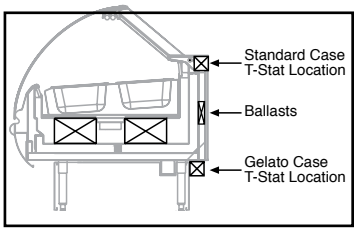
Expansion valves must be adjusted to fully feed the evaporator. Before attempting any adjustments, make sure the evaporator is either clear or very lightly covered with frost, and that the fixture is within 10°F of its expected operating temperature.

MEASURING THE OPERATING SUPERHEAT

1. Determine the suction pressure 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.
5. The difference is superheat.
6. Set the superheat for 5°F - 7°F.

T-STAT LOCATION

Thermostats are located within the electrical raceway. The raceway location is dependent on the style of the front panel and whether the case is going to be pushed up against a wall. (See illustration) In all cases, the thermostat is located on the same side of the case. If you are looking at the case from the front, it is the right-hand side. If you are looking at the case from the back, it is the left-hand side.



Attention Installer!

It is contractor's responsibility to install case(s) according to

local construction and health codes!!

PIPING

The refrigerant line outlets are located under the fixture at the left end when viewed from the back. Insulate suction lines to prevent condensation dripping on the floor.

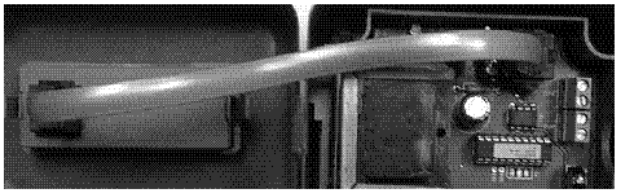


Fig. 11 – Display Module Cable

Programming

The ERC 2 control initially powers up displaying 12:00 AM otherwise it will show the last configured selection (time or temperature). If a power outage occurs during normal operation, the control will maintain the correct time-of-day using a capacitor (batteries are not required). The time will be maintained for up to 100 hours when the capacitor is fully charged.

To initiate a **Manual Defrost,** press and hold the MAN DEF key for 3 seconds.

There are two levels of programming in the ERC 2. The first level of security will enable the user to set two parameters: Time-of-day (**CLoC**) and Setpoint temperature (**SEt**). The other level allows access to the other parameters.

Three buttons are used for the programming: SET, UP and DOWN

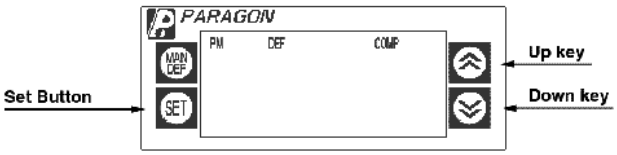


Fig. 12

To change <u>time-of-day</u> and <u>setpoint</u> temperature (First Level) follow these steps:

Step 1	SET	Press and hold set for 5 seconds. The display will show **CLoC**
Step 2	SET	Press SET again to change the time-of-day
Step 3	⌃ or ⌄	Press UP or DOWN until the correct time-of-day is displayed
Step 4	SET	Press SET to accept the new time
Step 5	⌄	Press DOWN to go to the next parameter – Setpoint Temperature - **SEt** (cut out) **– 5**
Step 6	SET	Press SET to change the setpoint temperature
Step 7	⌃ or ⌄	Press UP or DOWN to go to the desired setpoint. The range is – 40 to 60°F or –40 to 16°C
Step 8	SET	Press SET to accept the change
Step 9	⌄	Press DOWN to exit the first level of programming

Paragon ERC 2 Programming / Settings Instructions Cont'd

Note 1: **During programming, if no button is pushed during 30 seconds, the control will go back to the normal operating mode. This is valid for both programming levels.**

Note 2: **When changing the time, press and hold the MAN DEF button for 3 seconds to change the AM/PM mode.**

To change the other parameters (Second Level) follow these steps:

Step 1	SET and ⌄⌄	Press and hold SET and DOWN for 10 seconds. The display will show **dSPL**
Step 2	SET	Press SET to change the parameter
Step 3	⌃⌃ or ⌄⌄	Press UP or DOWN to change the options, time or temperature for the current parameter
Step 4	SET	Press SET to accept the new value
Step 5	⌄⌄	Press DOWN to go to the next parameter, then go back to Step 2. After the last parameter is displayed (**ALHi**), the display will go back to the normal operating condition

Note: **to scroll down the parameters without changing them, press the DOWN button.**

List of Parameters
Here is a list of the parameters that can be changed in the Second Level of programming, as well as their options and ranges.

Parameter	Display Symbol	Description	Range / Options
Display Status	**dSPL**	Information shown on the display during operation conditions	~~**tdAy** – time-of-day~~ **rSP°** – zone temperature (refrigerated space) ~~**CyCL** – cycle between time and zone temperature~~ ~~**Epr°** – evaporator coil temperature~~
Clock Format	**CLHr**	Format of the time (12 or 24 hours mode)	~~**12Hr** – AM/PM format~~ **24Hr** – 24 hour format
Temperature Format	**°dSP**	Temperature degrees	**°F** – degrees Fahrenheit ~~**°C** – degrees Celsius~~
Defrost Type	**dFtP**	Type of defrost used in the application	~~**ELEC** – electric heater defrost / off cycle~~ **HgAS** – hot gas
Fan Status During Defrost	**EFAN**	Enable or not the fan during defrost	**no** – fan is turned off during defrost ~~**yES** – fan remains on during defrost~~
Fan Status During Normal Mode	**CFAN**	**Enable or not the fan during normal compressor on/off mode**	**on – fan is always on during normal mode**
Defrost Interval	**dFin**	Type of defrost interval	**TdAy** – time-of-day setpoint ~~**CPrn** – compressor run time~~ ~~**tdEF** – temperature initiated defrost~~

Paragon ERC 2 Programming / Settings Instructions Cont'd

Minimum Compressor Off Time	**CoFF**	Minimum time that the compressor will remain turned off	Range: from 0 to 15 min **0 min**
Minimum Compressor On Time	**Con**	Minimum time that the compressor will remain turned on	Range: from 0 to 15 min **1 min**
Alarm Delay	**ALrd**	Time delay before the alarm goes off after the temperature fall off the two alarm setpoints	Range: from 0 to 59 min **59 min**
Compressor Run Time	**CPrn**	Time the compressor will run between defrosts	
Number of Defrosts	**nodF**	Number of defrosts per day	from 0 to 8 (0 means 1 defrost every 48 hours) **2**
Defrost Start Time	**dEF1-8**	Start time of each defrost	**2:00 AM & 2:00 PM**
Defrost Duration	**dEFd**	Defrost duration time (back-up for defrost termination temperature)	Range: from 0 min to 4 hours **30 min**
Fan Delay	**FAnd**	Delay time for the fan after defrost (back-up for fan cut-in temperature)	Range: from 0 to 15 min **2 min**
Pump Down	**Pudn**	Pump down duration	Range: from 0 to 59 min **0 min**
Drip Time	**driP**	Drip time duration	Range: from 0 to 59 min **8 min**
Setpoint Differential	**diF°**	Cut-in temperature differential Note: cut-in is cut-out plus differential	Range: from 1 to 25° **1 min**
Temperature Initiated Defrost	**tdEF**	Temperature that will initiate a defrost cycle	Range: from – 40 to 40°F or – 40 to 4°C
Defrost Termination Temperature	**dEF°**	Temperature in the evaporator that will terminate the defrost cycle	Range: from 0 to 75°F or –18 to 25°C **54°F**
Fan Cut-In Temperature	**FAn°**	Temperature in the evaporator that will turn the fan on after defrost	Range: from – 40 to 60°F or – 40 to 23°C **20°F**
Low Temperature Alarm	**ALLo**	Low temperature setpoint that will make the alarm go off and the error message appear on the display	Range: from – 40 to 83°F or – 40 to 23°C **-40°F**
High Temperature Alarm	**ALHi**	High temperature setpoint that will make the alarm go off and the error message appear on the display	Range: from – 40 to 83°F or –40 to 23°C **83°F**

Important Note: To change from degrees **C** to **F** or vice-versa, the user must reprogram all the parameters that are related to the temperature. The unit does not convert the parameters automatically from degrees **F** to **C** or vice-versa.

Example 1 - To adjust the time-of-day

- Press and hold SET for 5 seconds
- Press SET again
- Press UP or DOWN until the correct time appears on the display
- Press SET to accept the new time
- Press DOWN twice to exit the programming mode

Paragon ERC 2 Programming / Settings Instructions Cont'd

Example 2 - To set one defrost a day, at 11:59 PM

- Press and hold SET and DOWN for 10 seconds
- Press DOWN five times to get to go to the Defrost Interval (**dFIn**)
- Press SET to change the parameter
- Press DOWN until **tdAy** appears on the display
- Press SET to accept the option
- Press DOWN seven times to go to the Number of Defrosts (**noDF**)
- Press SET to change it
- Press UP or DOWN until **1** appears on the display
- Press SET to accept the change
- Press DOWN to go to Defrost Start Time (**dEF1**)
- Press SET to change the time
- Press UP or DOWN until the **11:59** PM appears on the display
- Press SET
- Press DOWN ten times to exit the programming level

WIRING COLOR CODE

GREEN	GROUND
PURPLE	ANTI-SWEAT
ORANGE	LIGHTS
YELLOW	RECEPTACLE
RED / BLACK	T-STAT /SOLENOID230V
BLACK / WHITE	T-STAT / SOLENOID 115V
BROWN	FAN MOTORS

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

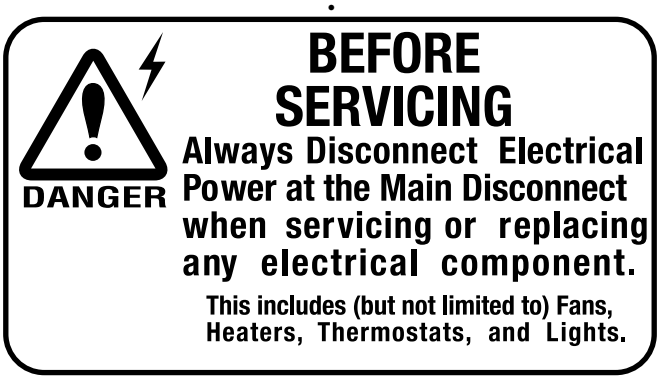
Standard lighting for all models will be full length fluorescent lamps located within the case at the top.

The switch controlling the lights, the plug provided for digital scale, and the thermometer are located at the rear of the case mullion.

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



FIELD WIRING & 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. Most component amperes are listed in the "Case Specs" section, but always check the serial plate.

BALLAST LOCATION

Ballasts are located on the right rear panel.

WIRING & SERIAL PLATE AMPERAGE

Field Wiring must be sized for component amperes stamped 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. Most component amperes are listed in the "Case Specs" section, but always check the serial plate.

ASHRAE COLOR CODE

NOTE: All other manufacturers; no known sensor codes

Case Control Systems	SENSOR	COLORS	
Manufacturer ® >		EIL	CPC
Location			
Coil Inlet	Color	Blue	Blue
	Part#	225-01-1755	225-01-3255
Coil Outlet	Color	Red	Red
	Part#	225-01-1757	225-01-3123
Discharge Air	Color	Green	Green
	Part#	225-01-1756	225-01-3260
Return Air	Color	Purple	Green
	Part#	225-01-1758	225-01-3260
Defrost Term.	Color	White	Orange
	Part#	225-01-0650	225-01-3254
Liquid Line	Color	White	Blue
	Part#	225-01-0650	225-01-3255

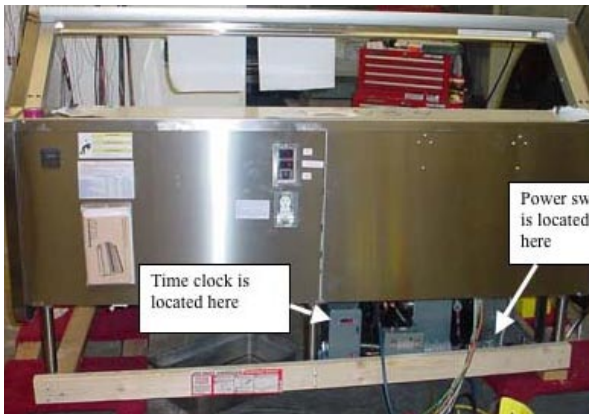
STOCKING

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 (see 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 flue must be unobstructed at all times to provide proper refrigeration.**
6. There are vents located at the base of the front of the glass, just above the front rail. These vents supply a continuous, gentle flow of air across the front glass which inhibits condensation. **Do not place any signs or other restrictive objects on the front of the refrigerator that will block these vents.**
7. Keep the service doors closed (when applicable). Refrigeration performance will be seriously affected if left open for a prolonged period of time.
8. 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.
9. In the **Gelato Pan configuration**, all holes must be filled (if only an empty pan) to prevent air flow disruption.

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. 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.

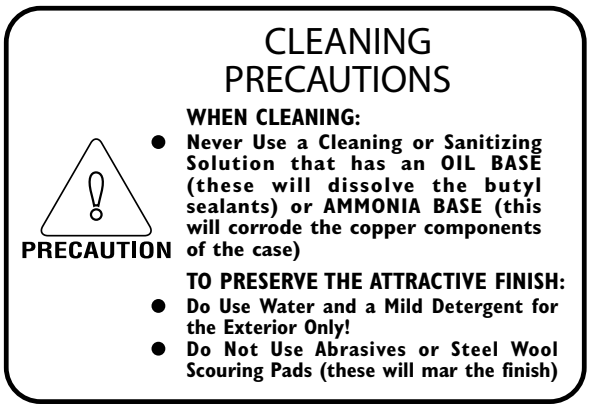


WEEKLY CASE CLEANING

1. Shut down case by turning off power switch. Located in the compressor section at the lower rear of case.
2. Allow case to come to room temperature.
3. Check to make sure that case drain is in floor sink.
4. Scrub thoroughly, cleaning all surfaces, with soap and warm water.
5. Rinse with warm water, making sure all ice has been thoroughly cleared from all corners of case and coils, but do not flood.
6. Dry before resuming operation. (Make sure that there is no pooling of water in case.

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.
The use of hoses and sage machines to clean the inside of the cases is recommended and is an excellent way to clean the coil fins and hard to reach corners of the interior of the cases. Be sure to observe the warnings below when cleaning the case.
Sanitizing solutions will not harm the interior bottom, however, these solutions should always be used according to the manufacturer's directions and should not contain Ammonia.
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.

1. Allow cases to come to room temperature
2. Scrub thoroughly, cleaning all surfaces, with soap and hot water.
3. Rinse with hot water, but do not flood.
4. Apply the sanitizing solution according to the manufacturer's directions.
5. Rinse thoroughly.
6. Dry completely before resuming operation



CLEANING GLASS & MIRRORS

Only use a soft cloth and mild glass cleaner for cleaning any glass or mirrored components. Be sure to rinse and/or dry completely. **Never use hot water on cold glass surfaces! It may shatter and cause serious injury!** Allow glass surfaces to warm first.

NON-GLARE GLASS CLEANING

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.

PLEXIGLASS & 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 marked 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 **210®** has proven to be very effective in not only cleaning and polishing the Plexiglass surface, but also providing antistatic and anti-fog capabilities. This product also seals pores and provides a protective coating.

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.

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

T-5 BULBS

Please note: T-5 lights must be turned off and on *after* bulb replacement.

EVAPORATOR FANS

The evaporator fans are located between both refrigeration coils, under the display pans. . *Should fans need servicing, always replace fan with a fan of the same specifications.*

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.

TIPS & TROUBLESHOOTING

Before calling for service, check the following:
Tips and troubleshooting
Before calling for service, check the following.

1. Check electrical power supply to the equipment for connection.
2. Check the power switch and make sure it is in the on position. Switch is located in the compressor section at the lower rear of case.
3. Check the time clock display to see if it is on and displaying the temperature. If it is on allow for a defrost time of 30 mins.
4. Check to see if the compressor is running. (Note that the compressor will be off when temp is reached and 8 mins after defrost.)
5. Check fixture loading. Overstocking case will affect its proper operation. Make sure that the product is not higher then the discharge air of the case and does not block the center return air grill.
6. Make sure all front glass is properly closed to make a good seal to stop warm air from entering the case. Make sure rear doors are closed when product is not being served.
7. Make sure all vents are diverted away from case.
8. If the case is being unloaded at night shut off case by power switch located under lower rear of case.
9. Make sure all pans are in place for proper airflow across product. This case is designed to provide one consistent temperature. Diversity of product will effect product consistency at a given temperature.
10. Check to see if the condenser is dirty and if so remove dirt. (Note that when the condenser is dirty the case will run warm.)
11. Check to see if coils are iced up. If so the case needs to be shut off for proper cleaning and de-icing.
12. Standard operating temperature of Gelato is –5 degree Fahrenheit discharge temp. and Ice Cream runs at –20 degrees. Different types of Gelato may have different temperature requirements consult with your Gelato vendor for their appropriate set point temperature. (If the set point temperature needs changing refer to the INSTALLATION manual to adjust temp up or down as needed to maintain product.

FOR PROMPT SERVICE

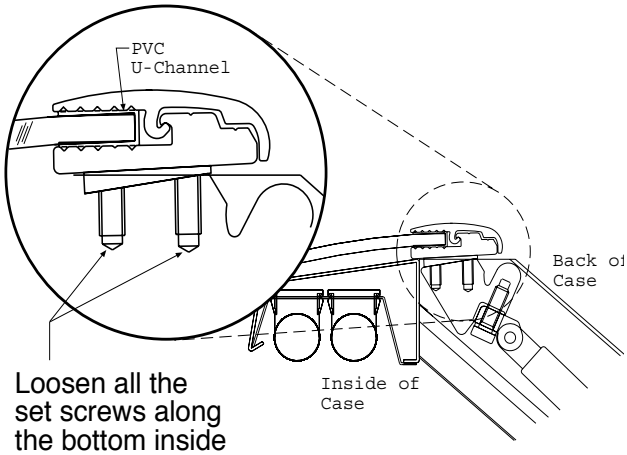
When Contacting the Factory regarding problems, Be sure to have the Case MODEL and SERIAL NUMBER Handy.

This Information is on a plate located on the case itself.

GLASS REPLACEMENT AND ADJUSTMENT INSTRUCTIONS

In order to replace or adjust the glass, the glass must be placed in the raised position. The underside of the clamp is exposed, revealing the tightening screws. By turning these screws counterclockwise 1/4 turn each, the glass will be loosened for either removal or adjustment. Note: Do not overtighten the screws since damage may occur.

1. Open glass panel. Relieve the tension on the hinge.



2. Loosen all the set screws along the bottom inside edge of the glass panel.

3. Remove or re-adjust the glass panel.

Close-up of the clam-shell located on top of the ASC case.

Close-up of the glass in the upright position located on top of the ASC case.

DANGER

GLASS BREAKAGE MAY OCCUR!

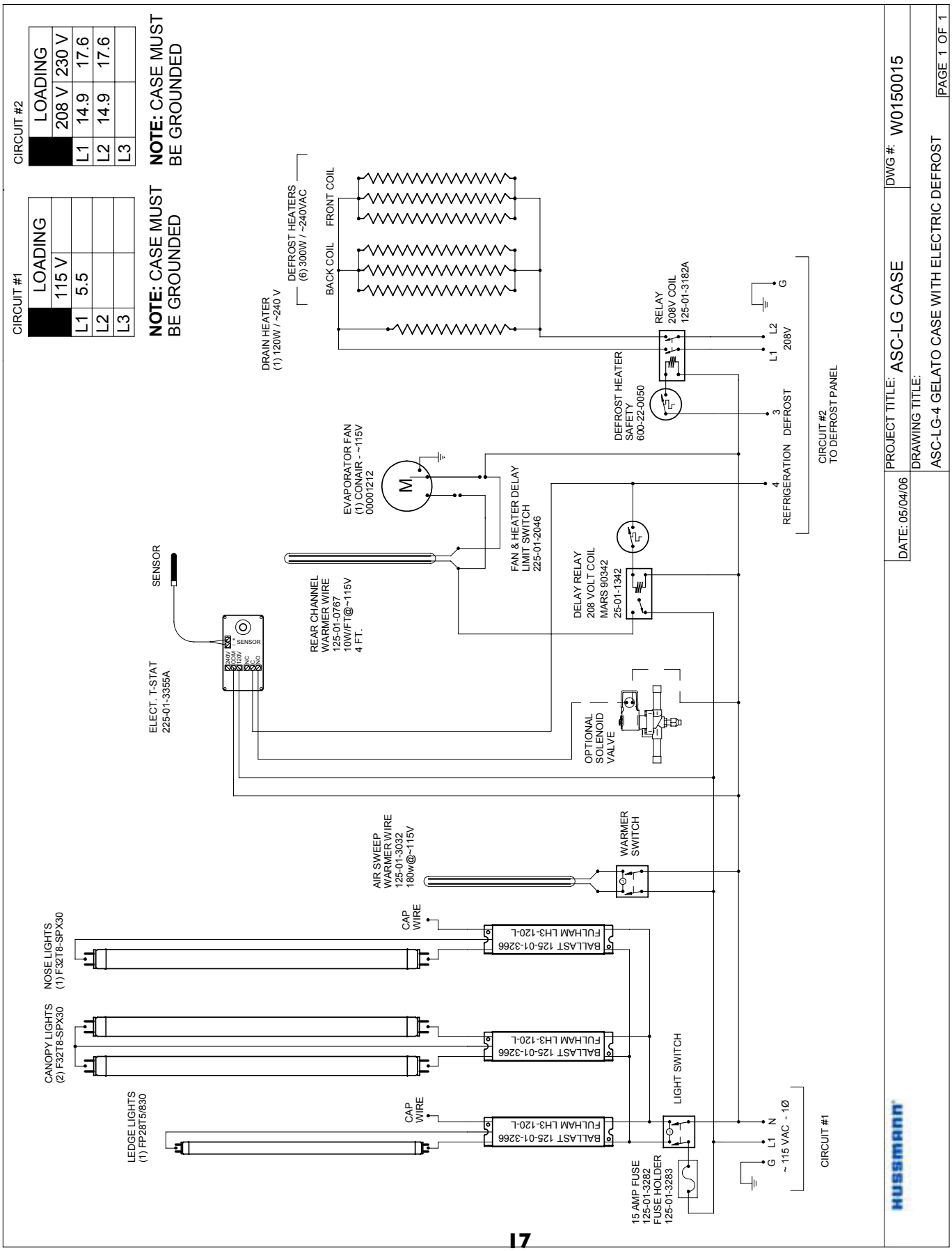
Retighten glass along clamshell after leveling and first time case is brought to full operating temperature!

Electrical and Refrigeration Specifications

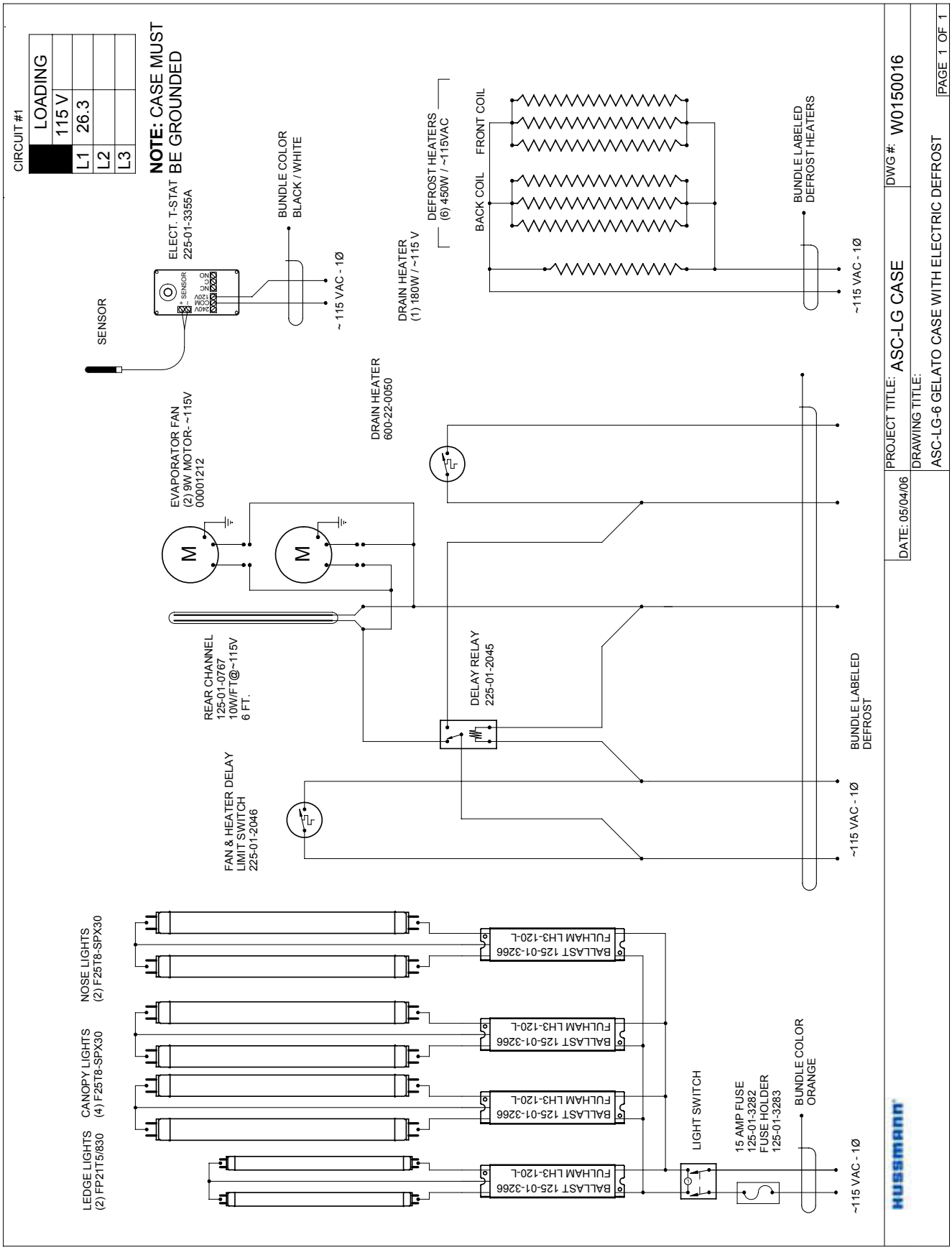
Model & Length	Refrigeration Btu / Hr. (Ft.)	(Total)	Average Temperatures (°F) Evap.	Prod.	Disch.	Disch. Air Speed (FPM)	T~Stat Settings (°F)	Coil Type	Fan Blade Size(in) & Pitch (°)	Qty. Evap. Fans	Defrosts per day Min.	Qty.	Elec. Load (Amps) @ ~115 VAC Fans Std.	Case Warmer	Case Lights	Defrost	Std. Outlet	Drain
ASC-LG / ASCS-LG (Gelato) - Electric Defrost Option																		
4'	650	2,600	-5°	10°	5°	120	5°	Forced Air	4 1/2" Axial	1	30	2	0.18	0.35	1.83	15.65 (115V)	15.0	1.04 (115V)
6'	650	3,900	-5°	10°	5°	120	5°	Forced Air	4 1/2" Axial	2	30	2	0.36	0.52	1.83	23.48 (115V)	15.0	1.57 (115V)
8'	650	5,200	-5°	10°	5°	120	5°	Forced Air	4 1/2" Axial	2	30	2	0.36	0.70	1.83	17.31 (208V)	15.0	1.15 (208V)
10'	650	6,500	-5°	10°	5°	120	5°	Forced Air	4 1/2" Axial	3	30	2	0.54	0.87	3.05	21.63 (208V)	15.0	1.44 (208V)
12'	650	7,800	-5°	10°	5°	120	5°	Forced Air	4 1/2" Axial	4	30	2	0.72	1.04	3.05	25.96 (208V)	15.0	1.73 (208V)
ASC-LG / ASCS-LG (Gelato) - KOOL-GAS™ Defrost Option																		
4'	650	2,600	-5°	10°	5°	120	5°	Forced Air	4 1/2" Axial	1	16	1	0.18	0.35	1.83		15.0	1.04 (115V)
6'	650	3,900	-5°	10°	5°	120	5°	Forced Air	4 1/2" Axial	2	16	1	0.36	0.52	1.83		15.0	1.57 (115V)
8'	650	5,200	-5°	10°	5°	120	5°	Forced Air	4 1/2" Axial	2	16	1	0.36	0.70	1.83		15.0	2.09 (208V)
10'	650	6,500	-5°	10°	5°	120	5°	Forced Air	4 1/2" Axial	3	16	1	0.54	0.87	3.05		15.0	3.48 (208V)
12'	650	7,800	-5°	10°	5°	120	5°	Forced Air	4 1/2" Axial	4	16	1	0.72	1.04	3.05		15.0	3.13 (208V)
ASC-LG / ASCS-LG (Ice Cream) - Electric Defrost Option																		
4'	450	1,800	-30°	-10°	-20°	150	-20°	Forced Air	4 1/2" Axial	1	30	2	0.18	0.35	1.83	15.65 (115V)	15.0	1.04 (115V)
6'	450	2,700	-30°	-10°	-20°	150	-20°	Forced Air	4 1/2" Axial	2	30	2	0.36	0.52	1.83	23.48 (115V)	15.0	1.57 (115V)
8'	450	3,600	-30°	-10°	-20°	150	-20°	Forced Air	4 1/2" Axial	2	30	2	0.36	0.70	1.83	17.31 (208V)	15.0	1.15 (208V)
10'	450	4,500	-30°	-10°	-20°	150	-20°	Forced Air	4 1/2" Axial	3	30	2	0.54	0.87	3.05	21.63 (208V)	15.0	1.44 (208V)
12'	450	5,400	-30°	-10°	-20°	150	-20°	Forced Air	4 1/2" Axial	4	30	2	0.72	1.04	3.05	25.96 (208V)	15.0	1.73 (208V)
ASC-LG / ASCS-LG (Ice Cream) - KOOL-GAS™ Defrost Option																		
4'	450	1,800	-30°	-10°	-20°	150	-20°	Forced Air	4 1/2" Axial	1	16	1	0.18	0.35	1.83		15.0	1.04 (115V)
6'	450	2,700	-30°	-10°	-20°	150	-20°	Forced Air	4 1/2" Axial	2	16	1	0.36	0.52	1.83		15.0	1.57 (115V)
8'	450	3,600	-30°	-10°	-20°	150	-20°	Forced Air	4 1/2" Axial	2	16	1	0.36	0.70	1.83		15.0	2.09 (208V)
10'	450	4,500	-30°	-10°	-20°	150	-20°	Forced Air	4 1/2" Axial	3	16	1	0.54	0.87	3.05		15.0	3.48 (208V)
12'	450	5,400	-30°	-10°	-20°	150	-20°	Forced Air	4 1/2" Axial	4	16	1	0.72	1.04	3.05		15.0	3.13 (208V)

	Set (PSI) Out	In	Size (HP)	Voltage (VAC)	Ampacity
ASC-LG / ASCS-LG (GELATO) -Electric Defrost Option					
4'	30	50	1/2	115	11.1
6'	30	50	3/4	115	15.6
8'	30	50	3/4	208/230	8.5
10'	30	50	1	208/230	10.6
12'	30	50	1 1/4	208/230	11.0
ASC-LG / ASCS-LG (GELATO) -KOOL-GAS™ Defrost Option					
4'	30	50	1/2	115	11.1
6'	30	50	3/4	115	15.6
8'	30	50	3/4	208/230	8.5
10'	30	50	1	208/230	10.6
12'	30	50	1 1/4	208/230	11.0

Electrical Schematics



Electrical Schematics (Cont.)



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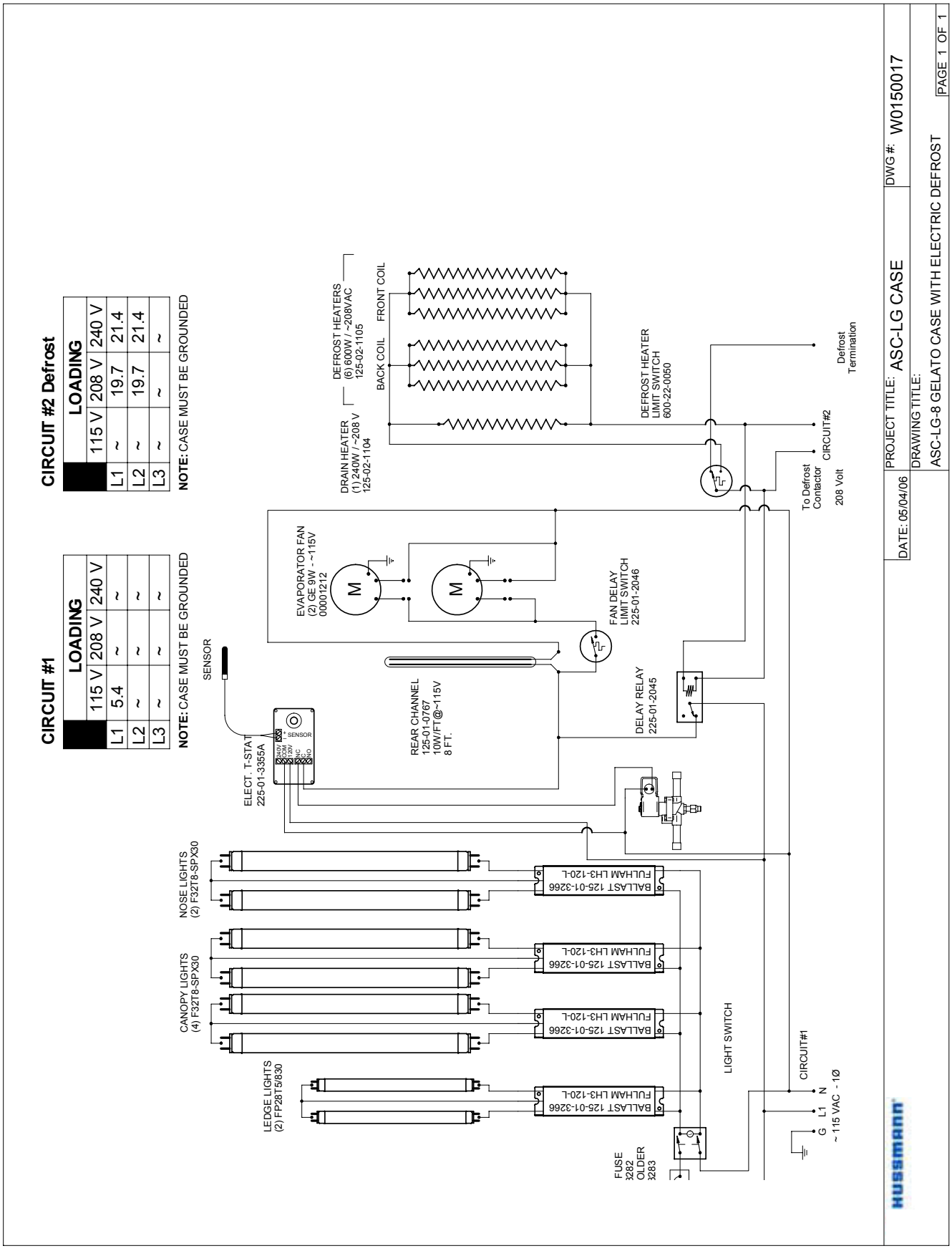

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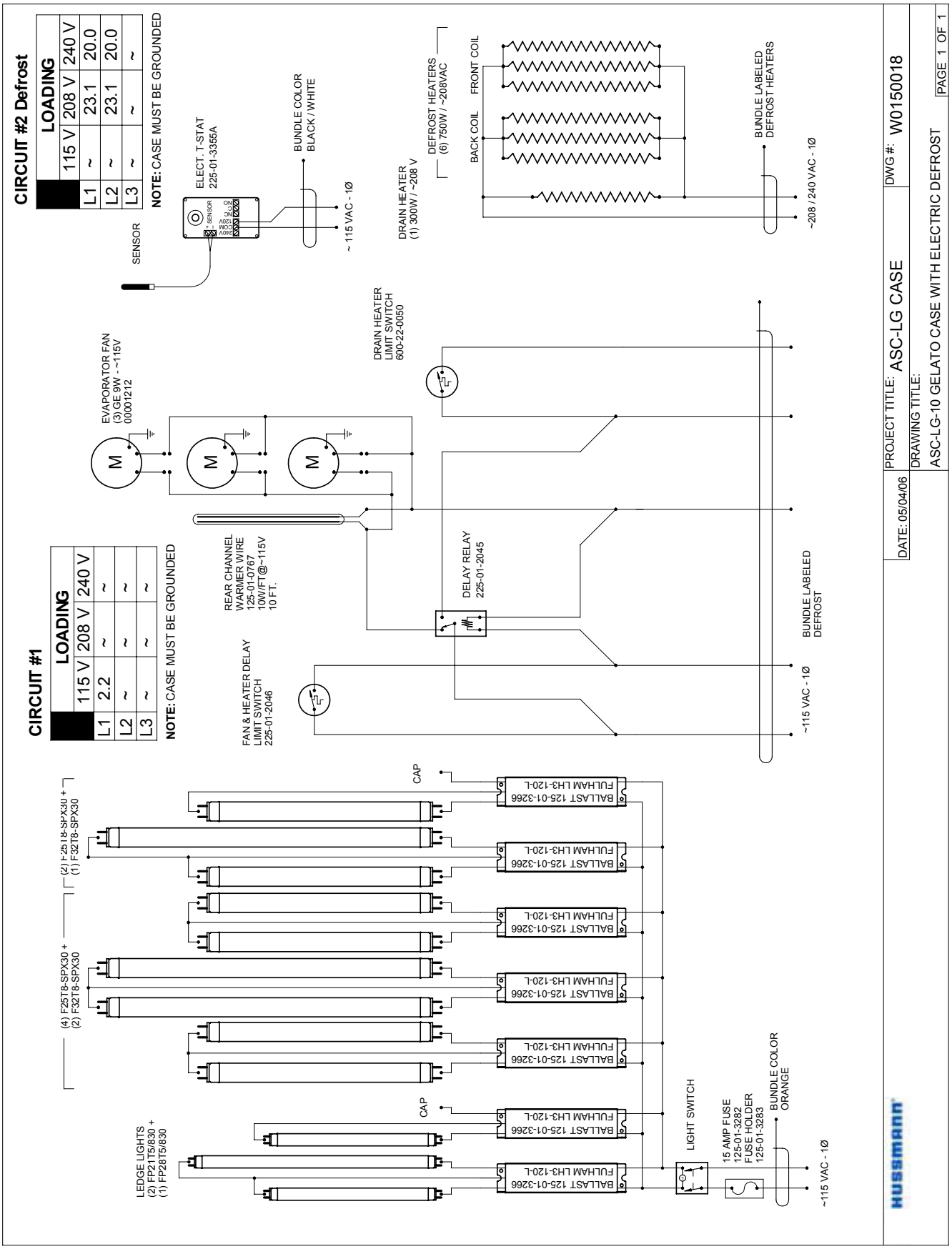

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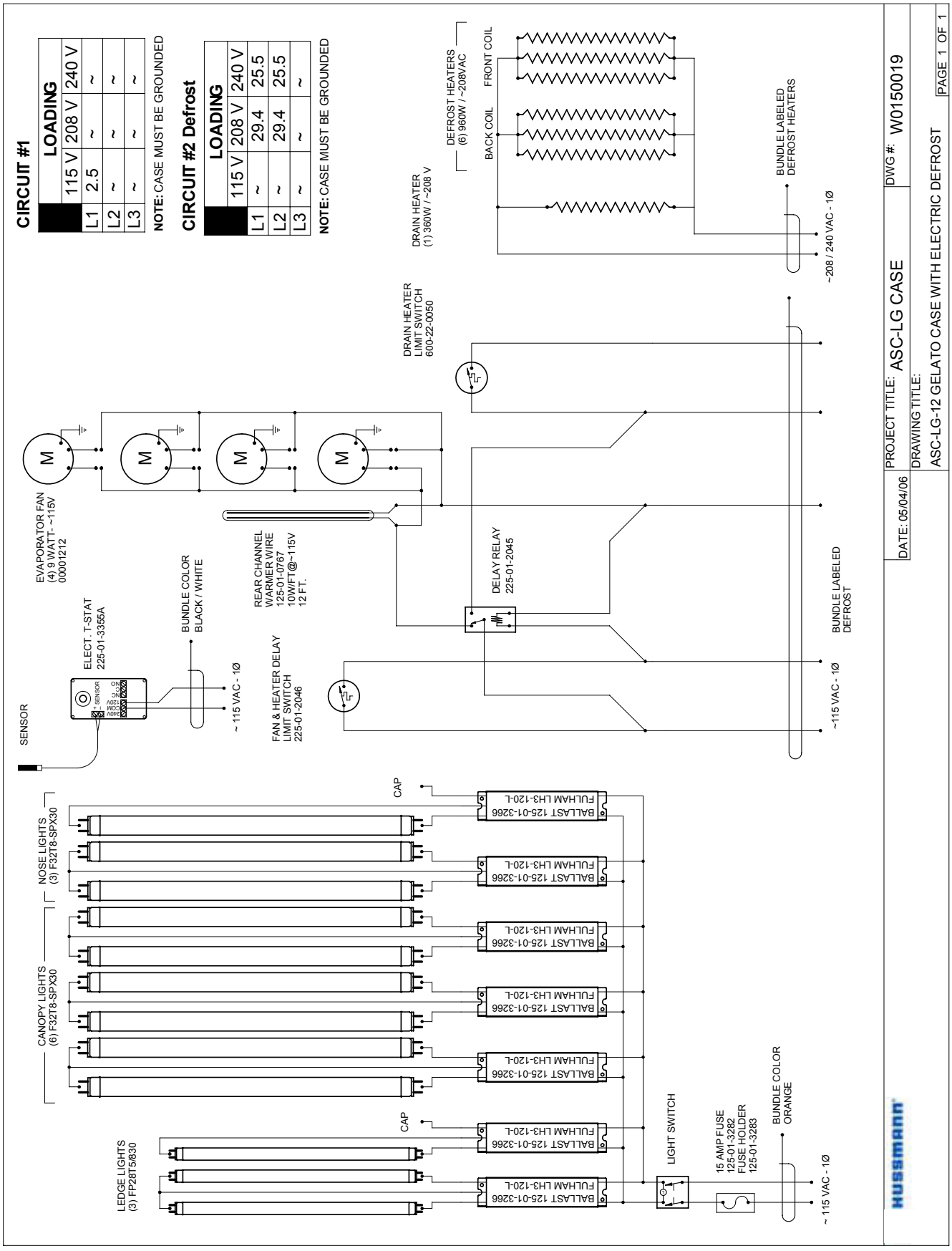

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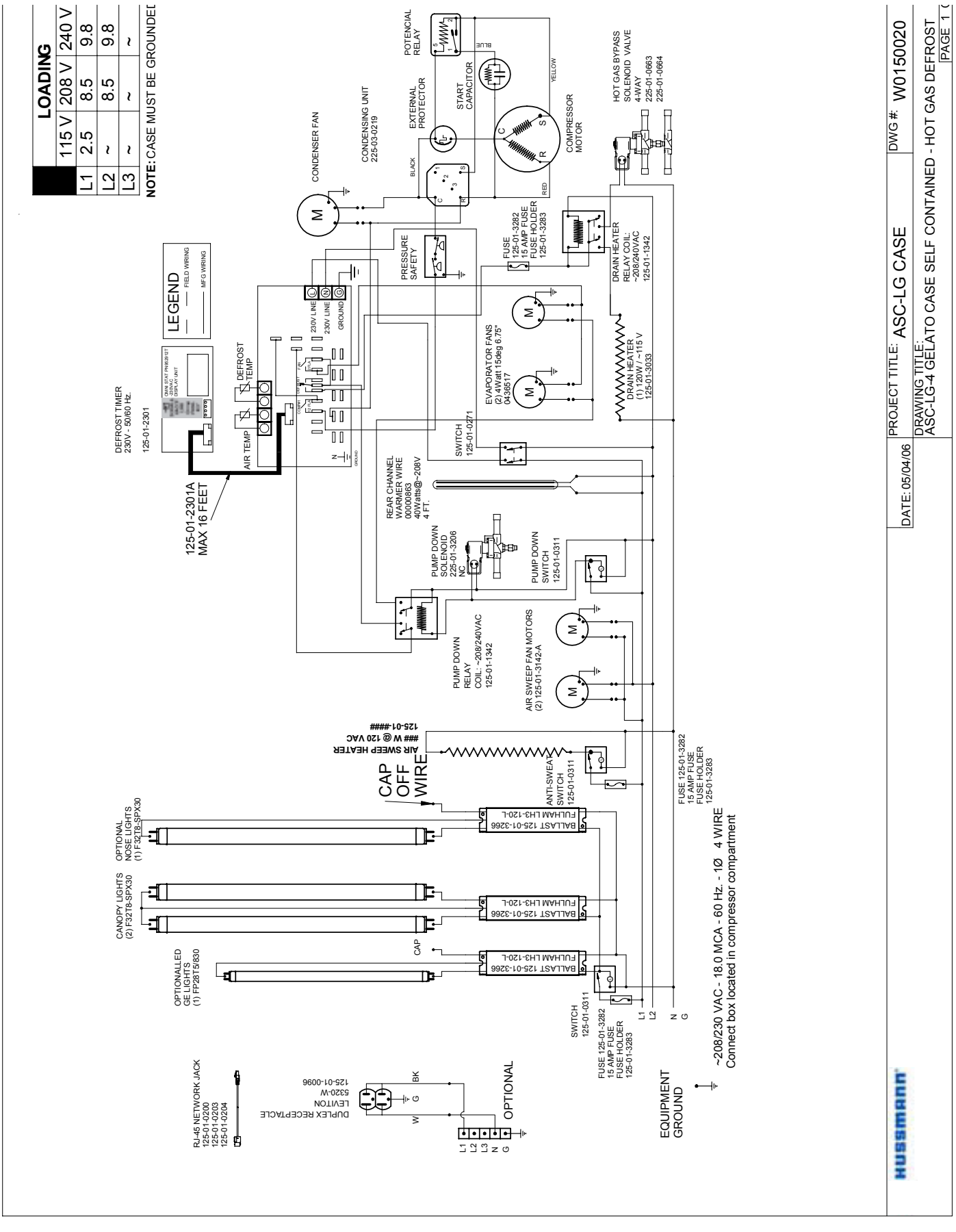

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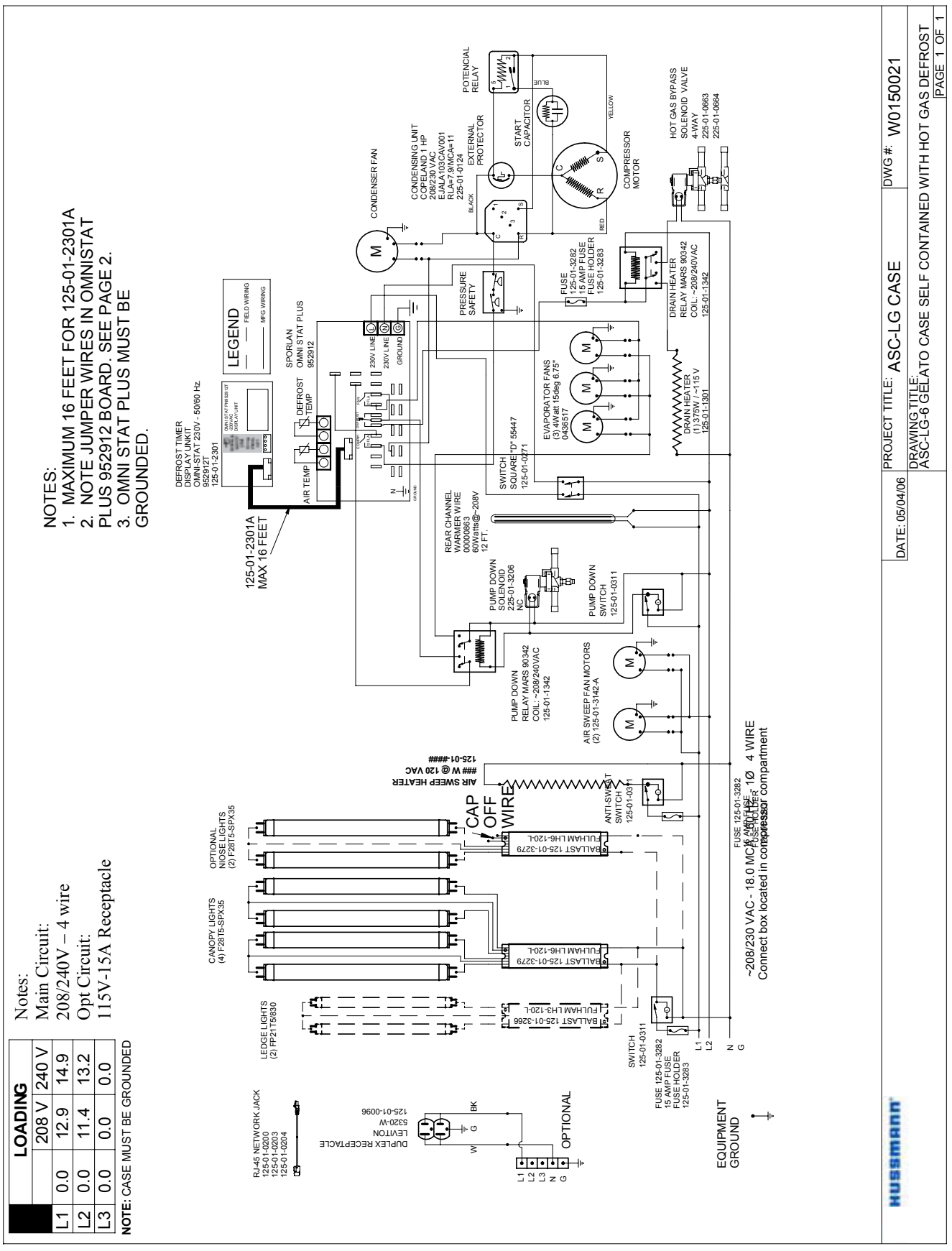
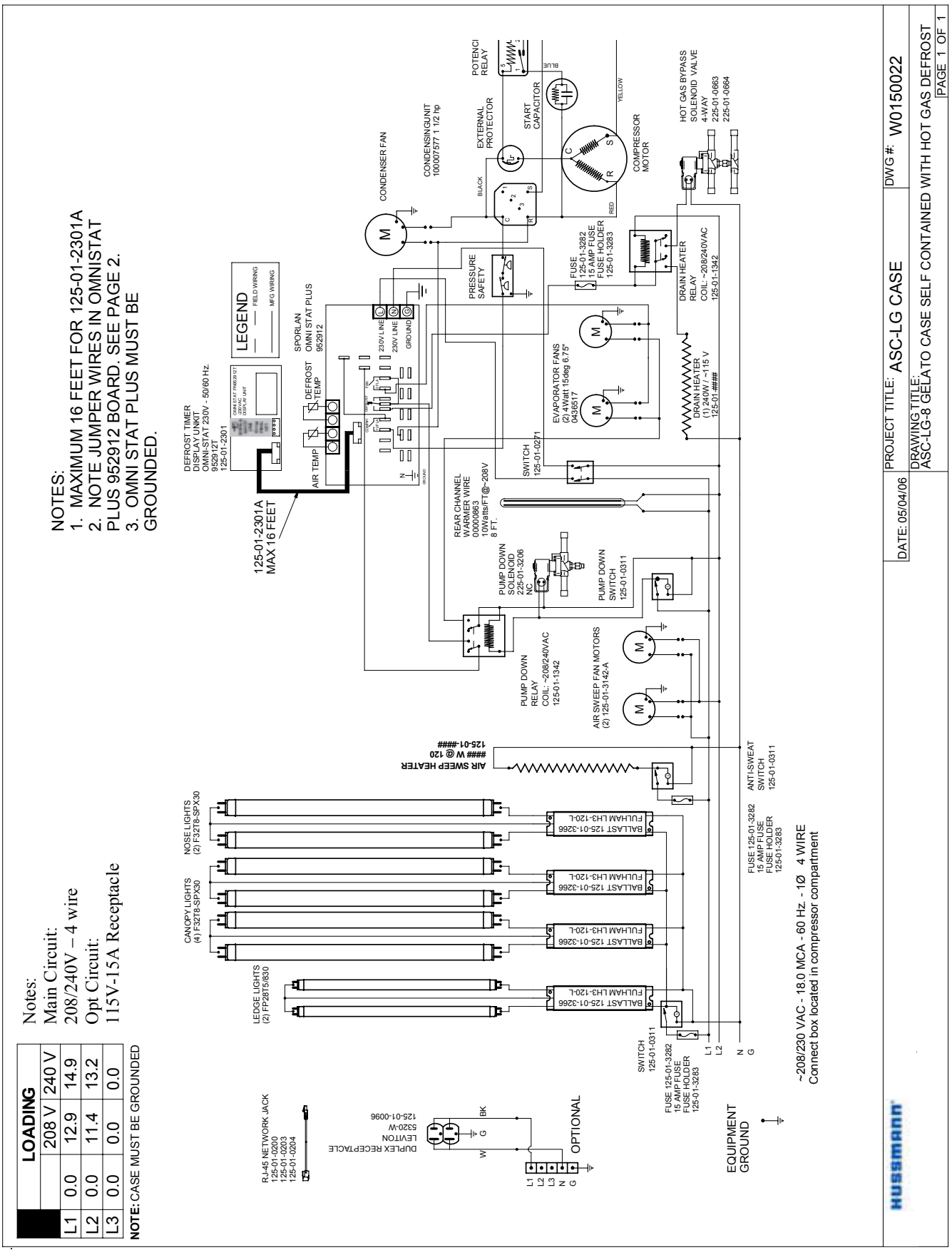


LOADING			
	208 V	240 V
L1	0.0	12.9	14.9
L2	0.0	11.4	13.2
L3	0.0	0.0	0.0

NOTE: CASE MUST BE GROUNDED

Notes:
Main Circuit: 208/240V – 4 wire
Opt Circuit: 115V-15A Receptacle

Electrical Schematics (Cont.)

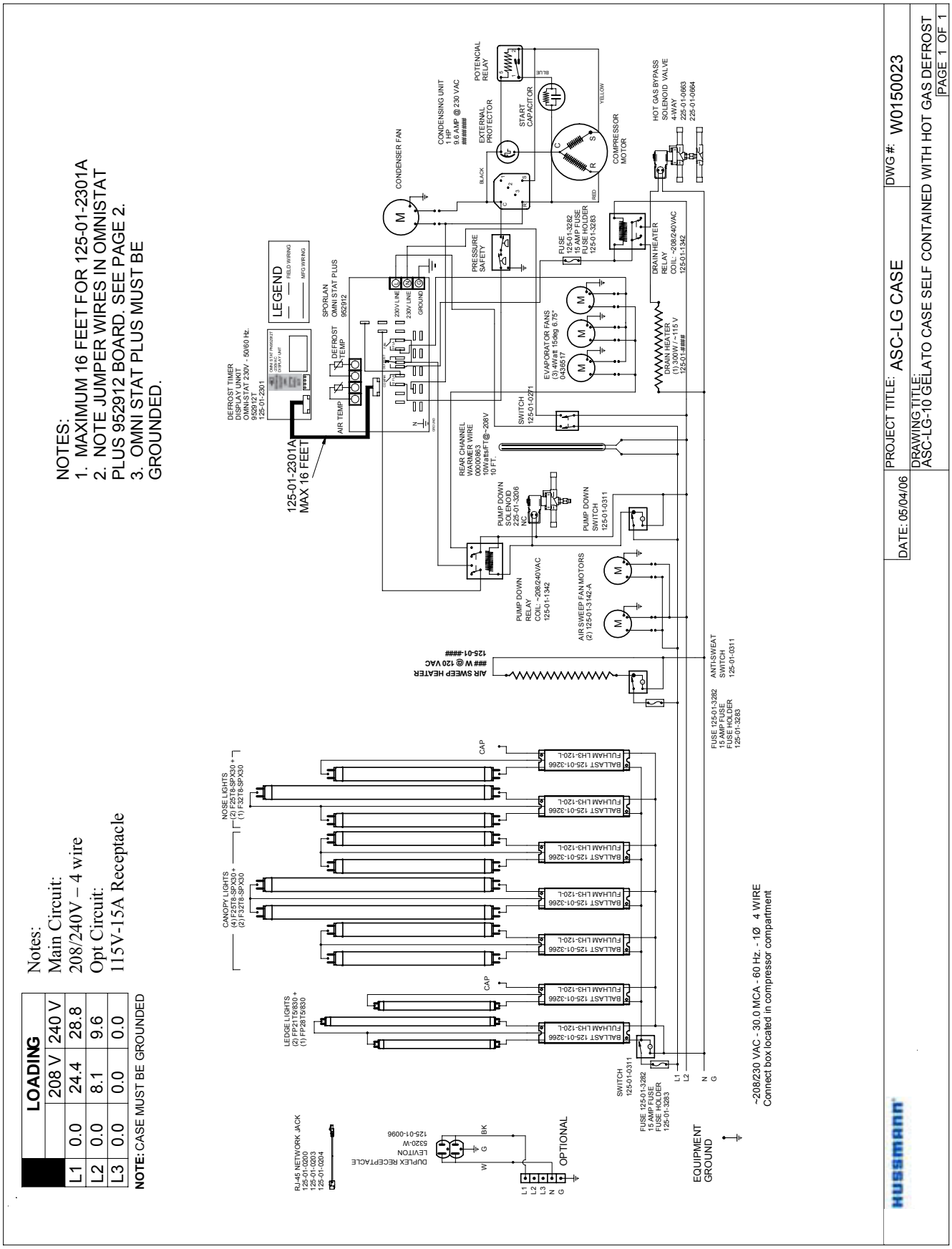


LOADING			
	208 V	240 V	
L1	12.9	14.9	0.0
L2	11.4	13.2	0.0
L3	0.0	0.0	0.0

Notes:
Main Circuit:
208/240V – 4 wire
Opt Circuit:
115V-15A Receptacle

NOTE: CASE MUST BE GROUNDED

Electrical Schematics (Cont.)



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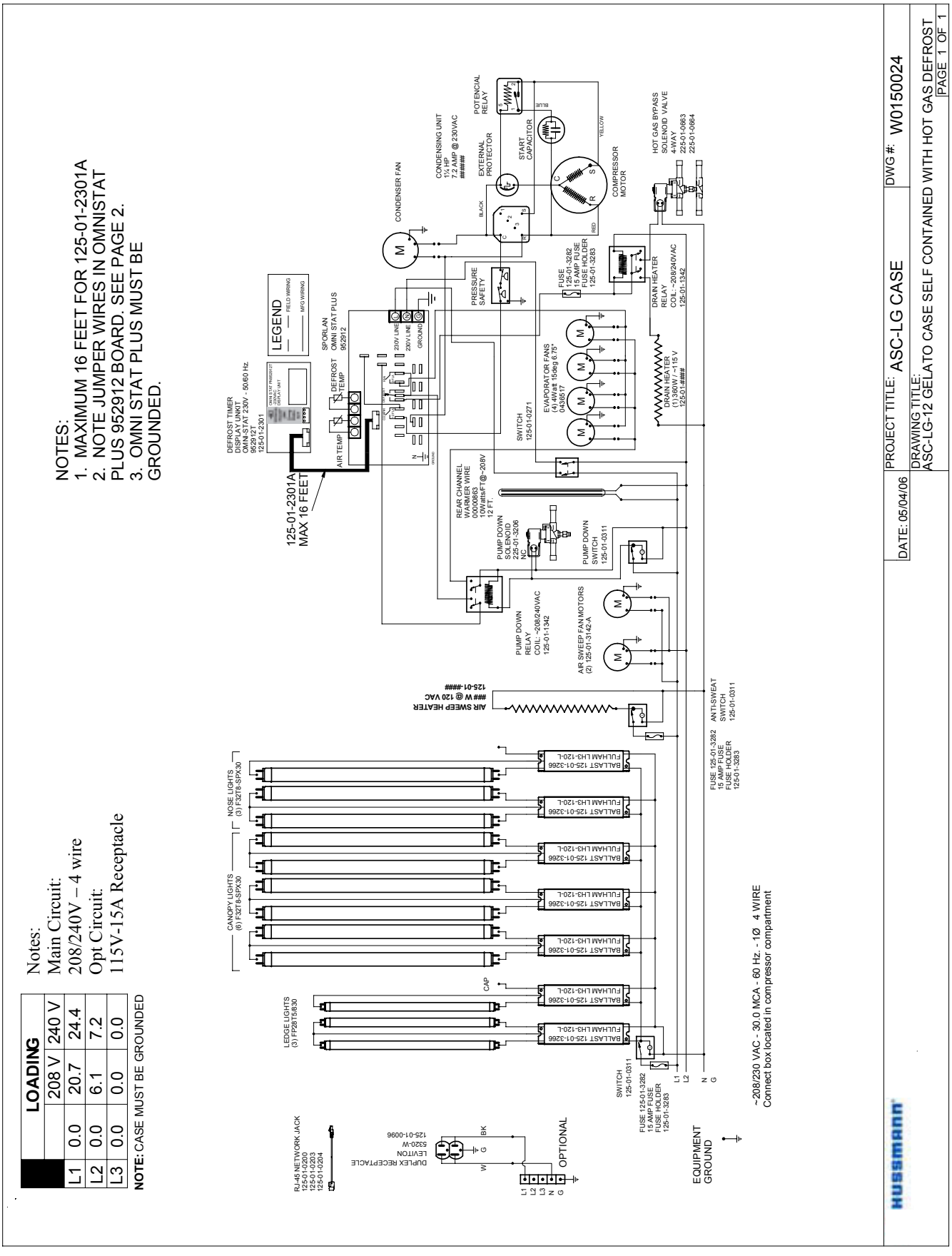

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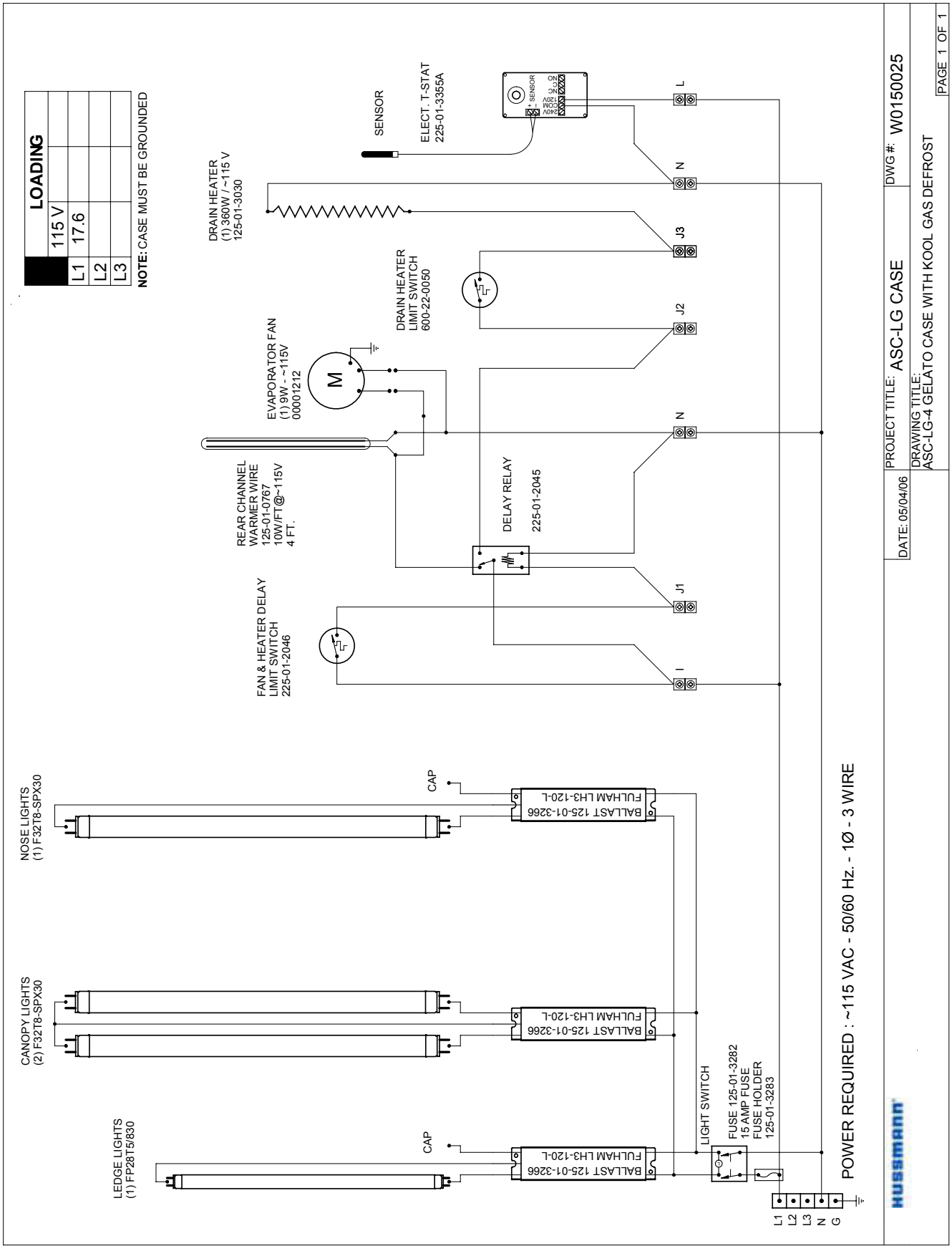

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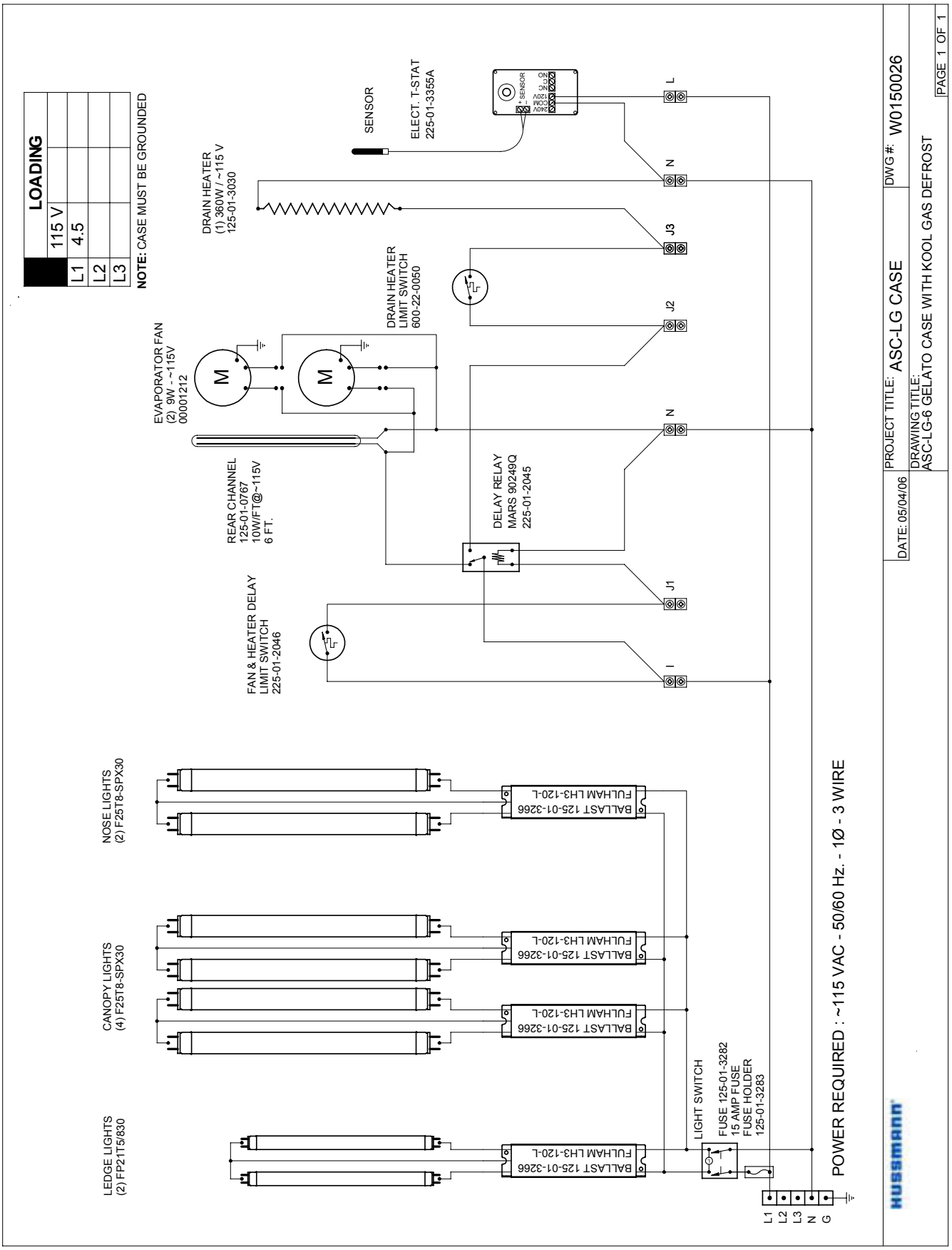

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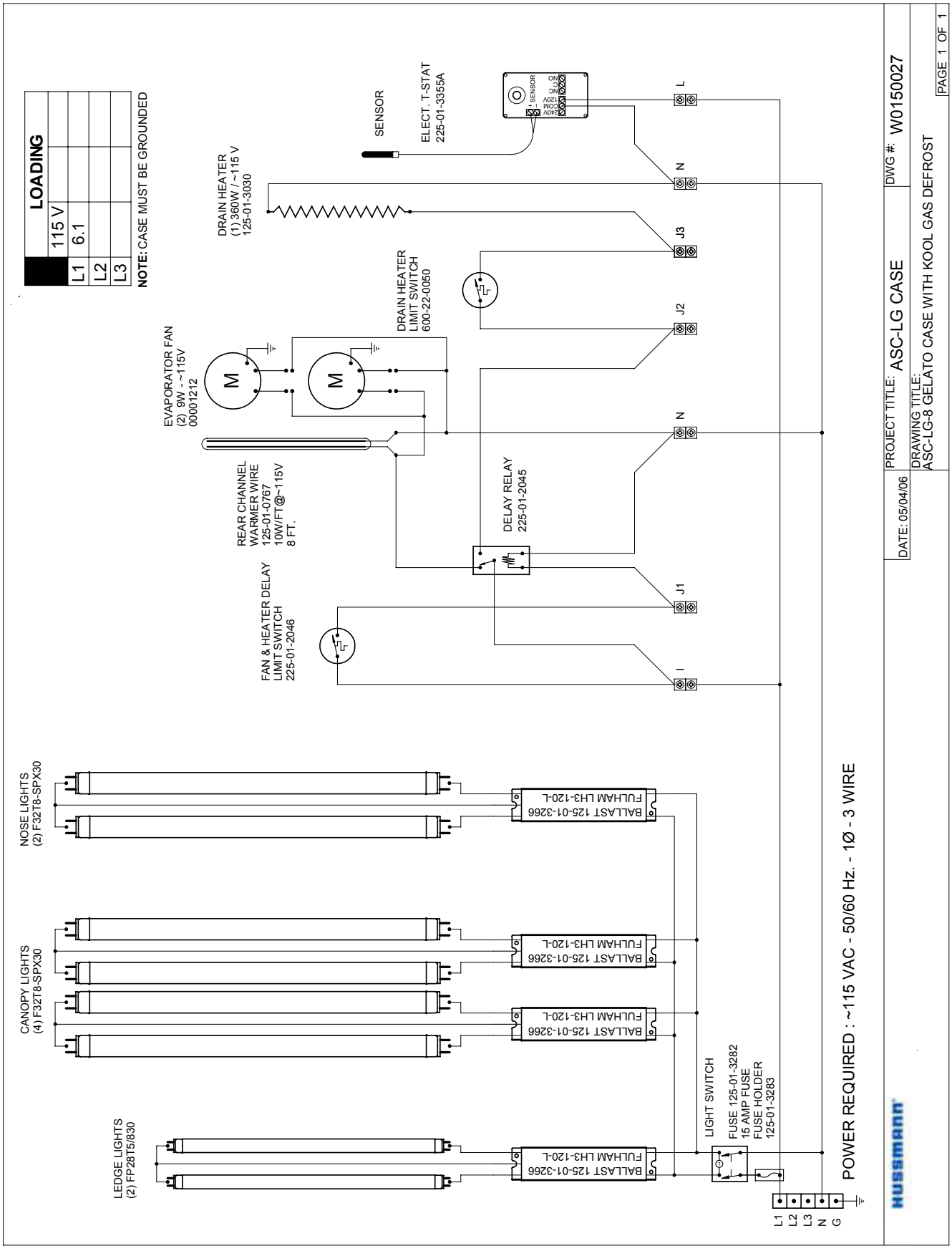

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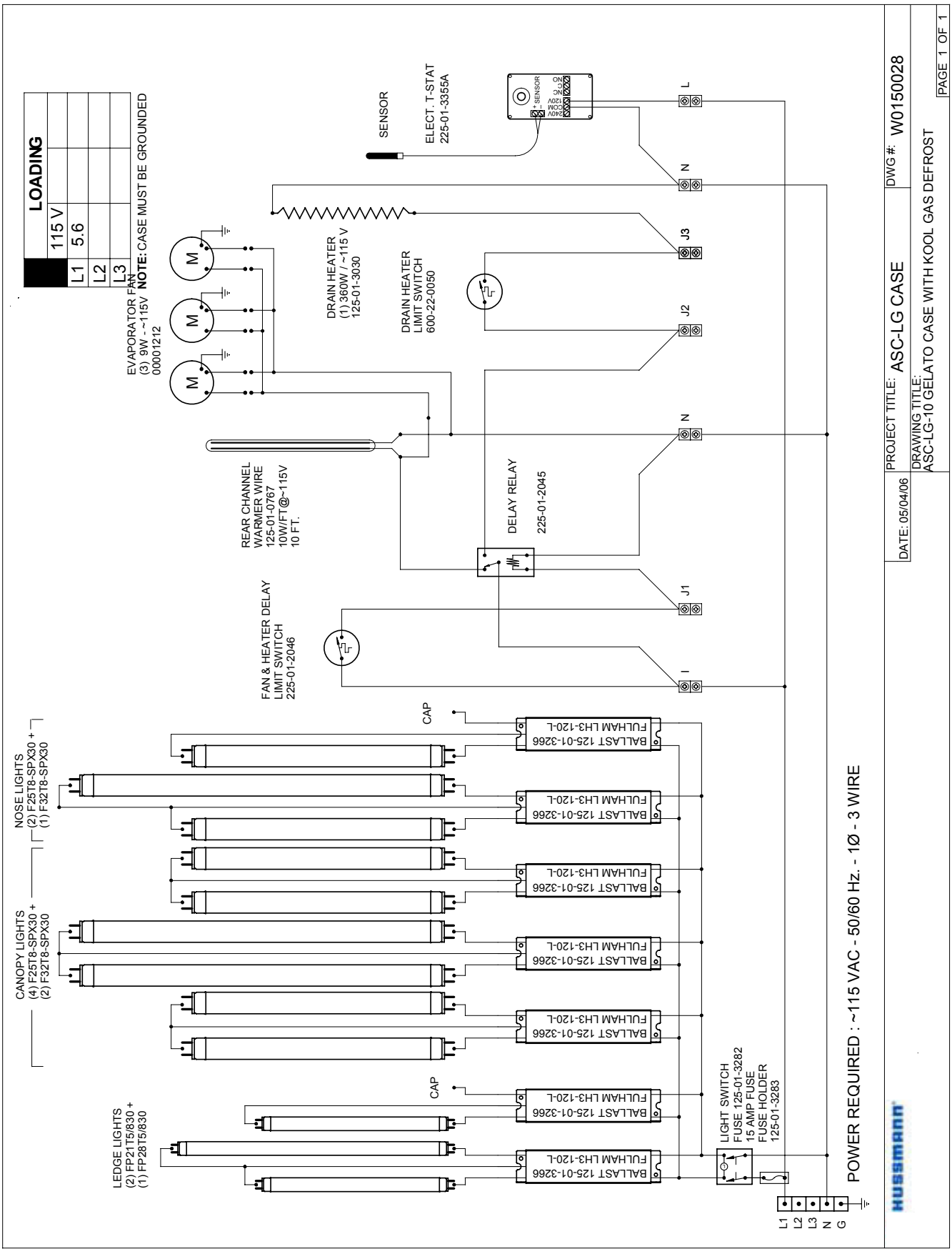

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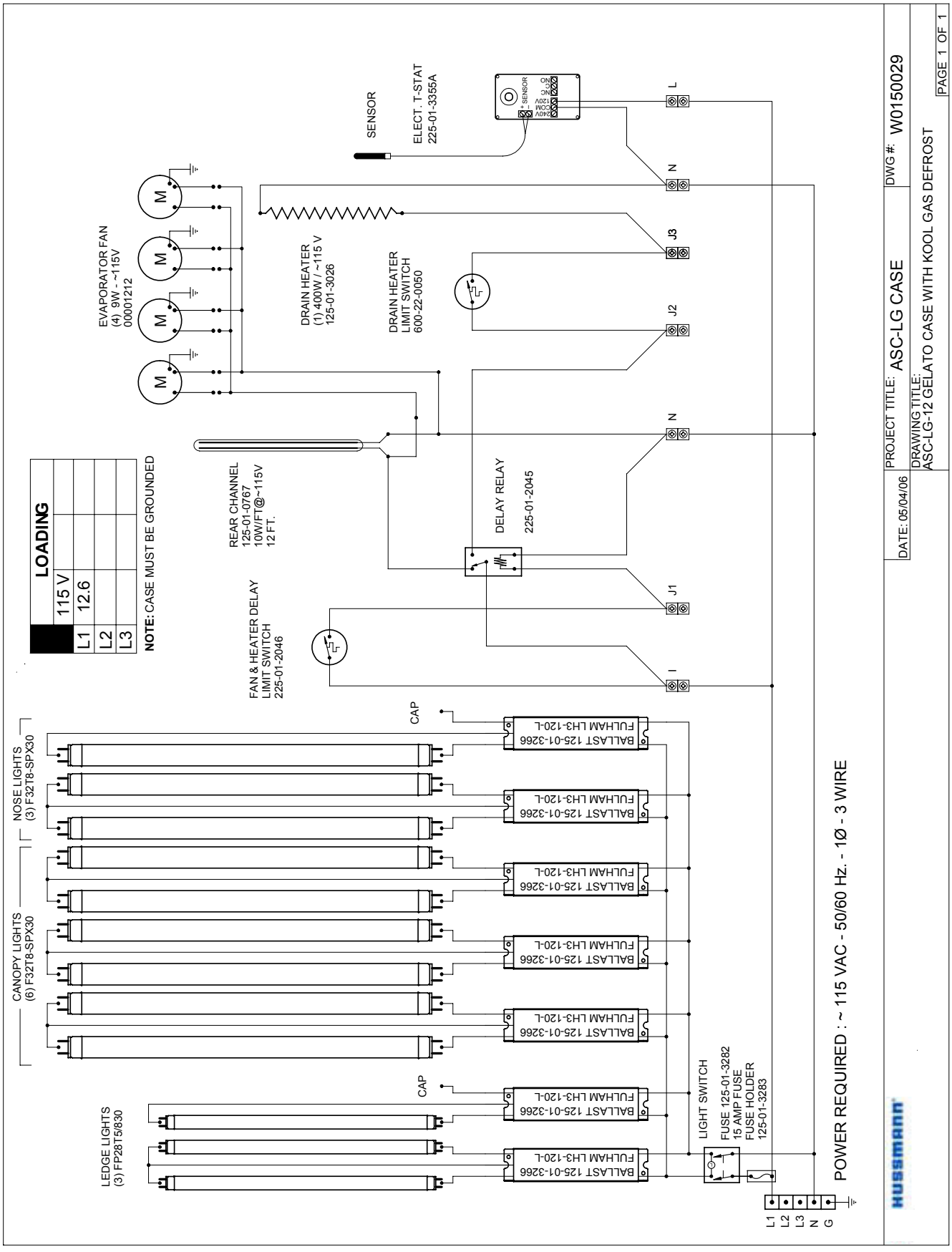

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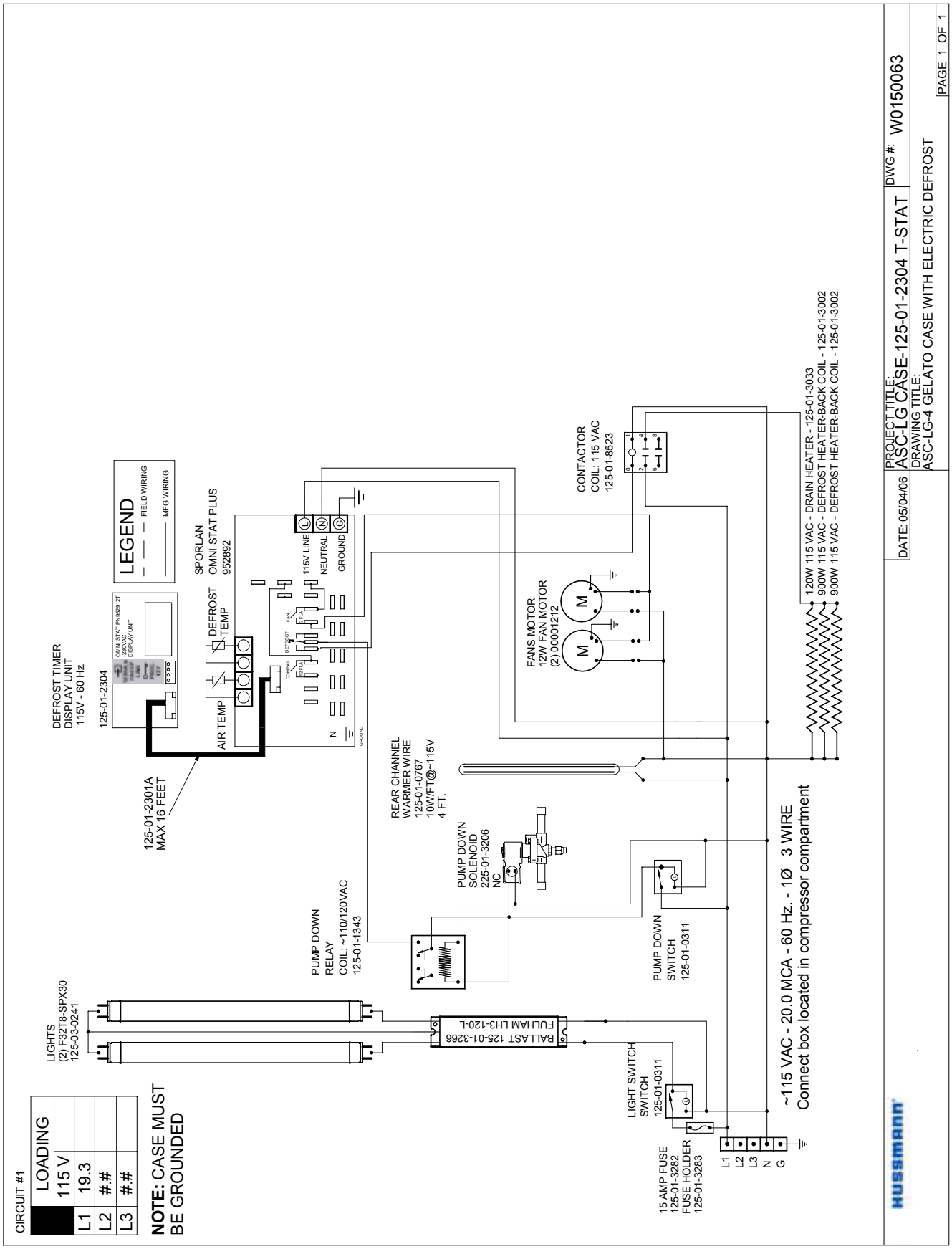
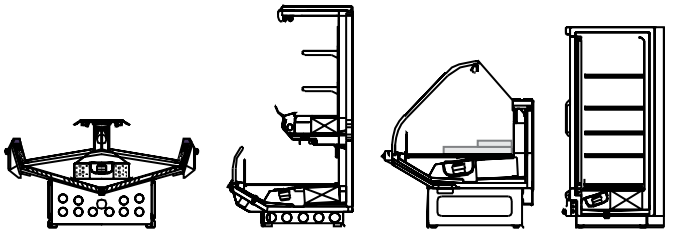


APPENDIX A. – Temperature Guidelines

The refrigerators should be operated according to Hussmann's published engineering specifications for entering air temperatures for specific equipment applications. Table I shows the typical temperature of the air entering the food zone one hour before the start of defrost and one hour after defrost for various categories of refrigerators. Refer to Appendix C for Field Evaluation Guidelines.

TABLE I

TYPE OF REFRIGERATOR	TYPICAL ENTERING AIR TEMPERATURE
I. OPEN DISPLAY	
A. Non frozen:	
1) Meat	28°F
2) Dairy/Deli	32°F
3) Produce	
a. Processed	36°F
b. Unprocessed	45°F
B. Frozen	0°F
C. Ice Cream	-5°F
II. CLOSED DISPLAY	
A. Non frozen:	
1) Meat	34°F
2) Dairy/Deli	34°F
3) Produce	
a. Processed	36°F
b. Unprocessed	45°F
B. Frozen	0°F
C. Ice Cream	-5°F



Single Deck *Multi Deck* *Service Case* *Reach-In*

I. Open Display Styles ***II. Closed Display Styles***

APPENDIX B. – Application Recommendations

1.0 Temperature performance is critical for controlling bacteria growth. Therefore, the following recommendations are included in the standard. They are based on confirmed field experience over many years.

1.1 The installer is responsible for following the installation instructions and recommendations provided by Hussmann for the installation of each individual type refrigerator.

1.2 Refrigeration piping should be sized according to Hussmann's equipment recommendations and installed in accordance with normal refrigeration practices. Refrigeration piping should be insulated according to Hussmann's recommendations.

1.3 A clogged waste outlet blocks refrigeration. The installer is responsible for the proper installation of the system which dispenses condensate waste through an air gap into the building indirect waste system.

1.4 The installer should perform a complete start-up evaluation prior to the loading of food into the refrigerator, which includes such items as:

a) Initial temperature performance, Coils should be properly fed with a refrigerant according to Hussmann's recommendations.

b) Observation of outside influences such as drafts, radiant heating from the ceiling and from lamps. Such influence should be properly corrected or compensated for.

c) At the same time, checks should be made of the store dry-bulb and wet-bulb temperatures to ascertain that they are within the limits prescribed by Hussmann.

d) Complete start-up procedures should include checking through a defrost to make certain of its adequate frequency and length without substantially exceeding the actual needs. This should include checking the electrical or refrigerant circuits to make sure that defrosts are correctly programmed for all the refrigerators connected to each refrigeration system.

e) Recording instruments should be used to check performance.

APPENDIX C. – Field Recommendations -

Recommendations for field evaluating the performance of retail food refrigerators and hot cases

1.0 The most consistent indicator of display refrigerator performance is temperature of the air entering the product zone (Refrigerated see Diagram 1, Appendix A). In practical use, the precise determination of return air temperature is extremely difficult. Readings of return air temperatures will be variable and results will be inconsistent. The product temperature alone is not an indicator of refrigerator performance.

NOTE: Public Health will use the temperature of the

product in determining if the refrigerator will be allowed to display potentially hazardous food. For the purpose of this evaluation, product temperature above the FDA Food Code 1993 temperature for potentially hazardous food will be the first indication that an evaluation should be performed. It is expected that all refrigerators will keep food at the FDA Food Code 1993 temperature for potentially hazardous food.

1.1 The following recommendations are made for the purpose of arriving at easily taken and understood data which, coupled with other observations, may be used to determined whether a display refrigerator is working as intended:

a) INSTRUMENT – A stainless steel stem-type thermometer is recommended and it should have a dial a minimum of 1 inch internal diameter. A test thermometer scaled only in Celsius or dually scaled in Celsius and Fahrenheit shall be accurate to 1°C (1.8°F). Temperature measuring devices that are scaled only in Fahrenheit shall be accurate to 2°F. The thermometer should be checked for proper calibration. (It should read 32°F when the stem is immersed in an ice water bath).

b) LOCATION – The probe or sensing element of the thermometer should be located in the airstream where the air first enters the display or storage area, and not more than 1 inch away from the surface and in the center of the discharge opening.

c) READING – It should first be determined that the refrigerator is refrigerating and has operated at least one hour since the end of the last defrost period. The thermometer reading should be made only after it has been allowed to stabilize, i.e., maintain a constant reading.

d) OTHER OBSERVATIONS – Other observations should be made which may indicate operating problems, such as unsatisfactory product, feel/appearance.

e) CONCLUSIONS – In the absence of any apparent undesirable conditions, the refrigerator should be judged to be operating properly. If it is determined that such condition is undesirable, i.e., the product is above proper temperature, checks should be made for the following:

1. Has the refrigerator been loaded with warm product?
2. Is the product loaded beyond the "Safe Load Line" markers?
3. Are the return air ducts blocked?
4. Are the entering air ducts blocked?
5. Is a dumped display causing turbulent air flow and mixing with room air?
6. Are spotlights or other high intensity lighting directed onto the product?
7. Are there unusual draft conditions (from heating /air-conditioning ducts, open doors, etc.)?
8. Is there exposure to direct sunlight?
9. Are display signs blocking or diverting airflow?
10. Are the coils of the refrigerator iced up?
11. Is the store ambient over 75°F, 55% RH as set forth in ASHRAE Standard 72 and ASHRAE Standard 117?
12. Are the shelf positions, number, and size other than recommended by the manufacturer?
13. Is there an improper application or control system?
14. Is the evaporator fan motor/blade inoperative?
15. Is the defrost time excessive?
16. Is the defrost termination, thermostat (if used) set too high?
17. Are the refrigerant controls incorrectly adjusted?
18. Is the air entering the condenser above design conditions? Are the condenser fins clear of dirt, dust, etc.?
19. Is there a shortage of refrigerant?
20. Has the equipment been modified to use replacements for CFC-12, CFC-502 or other refrigerant? If so, have the modifications been made in accordance with the recommendations of Hussmann's equipment ? Is the refrigerator charged with the proper refrigerant and lubricant? Does the system use the recommended compressor?

APPENDIX D. – Recommendations to user -

1.0 Hussmann should provide instructions and recommendations for proper periodic cleaning. The user will be responsible for such cleaning, including the cleaning of low temperature equipment within the compartment and the cooling coil area(s). Cleaning practices, particularly with respect to proper refrigerator unloading and warm-up, must be in accordance with applicable recommendations.

1.1 Cleaning of non Gelato equipment should include a weekly cleaning of the food compartment as a minimum to prevent bacteria growth from accumulating. Actual use and products may dictate more frequent cleaning. Circumstances of use and equipment design must also dictate the frequency of cleaning

the display areas. Weekly washing down of the storage compartment is also recommended, especially for equipment subject to drippage of milk or other liquids, or the collection of vegetable, meat, crumbs, etc. or other debris or litter. Daily cleaning of the external areas surrounding the storage or display compartments with detergent and water will keep the equipment presentable and prevent grime buildup.

1.2 Load levels as defined by Hussmann must be observed.

1.3 The best preservation is achieved by following these rules:

a) Buy quality products.
b) Receive perishables from transit equipment at the ideal temperature for the particular product.
c) Expedite perishables to the store's storage equipment to avoid unnecessary warm-up and prolonged temperature recovery. Food store refrigerators are not food chillers nor can they reclaim quality lost through previous mishandling.
d) Care must be taken when cross merchandising products to ensure that potentially hazardous vegetable products are not placed in non refrigerated areas.
e) Display and storage equipment doors should be kept closed during periods of inactivity.
f) Minimize the transfer time of perishables from storage to display.
g) Keep meat under refrigeration in meat cutting and processing area except for the few moments it is being handled in processing. When a cut or tray of meat is not to be worked on immediately, the procedure should call for returning it to refrigeration.
h) Keep tools clean and sanitized. Since mechanical equipment is used for fresh meat processing, all such equipment should be cleaned at least daily and each time a different kind of meat product comes in contact with the tool or equipment.
i) Make sure that all refrigeration equipment is installed and adjusted in strict accordance with Hussmann's recommendations.
j) See that all storage and refrigeration equipment is kept in proper working order by routine maintenance.

Warranty

For Hussmann Limited Warranty information visit on-line:

http://hussmann.com/products/products.htm and click on the Hussmann Limited Warranty link.

Parts Replacement Contact

For Hussmann Parts Replacement and Information:

1-866-513-1069
Please have your serial number available.

FOR PROMPT SERVICE

When Contacting the Factory regarding problems, Be sure to have the Case MODEL and SERIAL NUMBER Handy.

This Information is on a plate located on the case itself.

Service Record

Last service date: **By:**

HUSSMANN®
Additional copies of this publication may be obtained by contacting:

Hussmann
13770 Ramona Avenue • Chino, California 91710
(909) 628-8942 FAX
(909) 590-4910

The *MODEL NAME* and *SERIAL NUMBER* is required in order to provide you with the correct parts and information for your particular unit.

They can be found on a small metal plate on the unit.
Please note them below for future reference.

MODEL:

SERIAL NUMBER: