

Installation
& Operation
Manual

REV. 11/2018

HUSSMANN®/CHINO

RDI Slimline

REFRIGERATED DROP IN DISPLAY



HUSSMANN®

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REFRIGERATED DROP IN DISPLAY

General Instructions

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THIS BOOKLET CONTAINS INFORMATION ON:

RFI: Refrigerated “Drop-In” display designed for installation into the top of dry service counters. Featuring upper and lower air discharges allowing display of unwrapped food whether in platters, bowls or pans.

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.

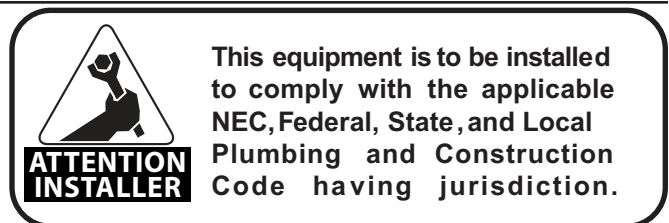
HUSSMANN CHINO PRODUCT CONTROL

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.

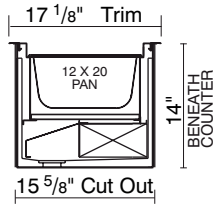
Keep this booklet with the case at all times for future reference.

HUSSMANN®/CHINO

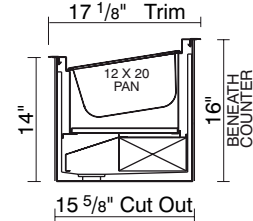
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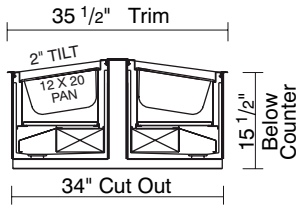
Cut & Plan Views



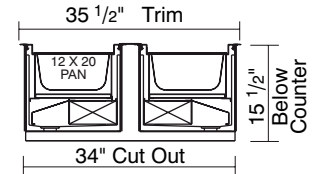
RDI SLIM LINE
Refrigerated Self Service Case
Scale = 1/2"



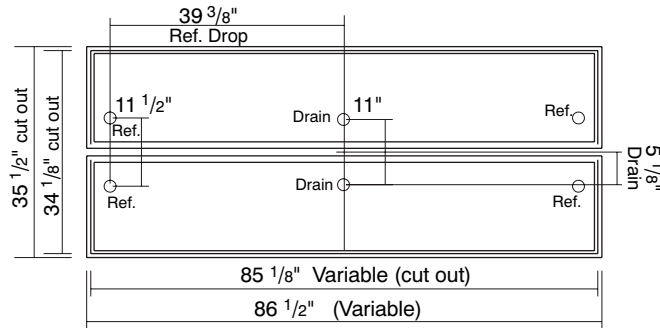
RDI SLIM LINE
Refrigerated Self Service Case
Shown with Optional 2" Tilted Pans
Scale = 1/2"



**RDI
BACK TO BACK SLIM LINE 20"**
Refrigerated Self Service Case
Lighting and 2" Tilt Pans
(Available in 12"x20" pans only)
Scale = 3/8"



**RDI
BACK TO BACK SLIM LINE 20"**
Refrigerated Self Service Case
(Available with 12"x20" pans only)
Scale = 3/8"



**RDI
BACK TO BACK SLIM LINE 20"**
Refrigerated Self Service Case
(Shown with 4 - 20" wells on each side)
Scale = 3/8"

SLIMLINE WELL DIMENSIONS

Front to Back	<u>flange</u>	17 1/8"					
	<u>cutout</u>	15 3/4"					
Side to Side	<u>length</u>	<u>1 well</u>	<u>2 wells</u>	<u>3 wells</u>	<u>4 wells</u>	<u>5 wells</u>	<u>6 wells</u>
	<u>flange</u>	23 7/8"	45"	65 3/4"	86 1/2"	107 3/8"	128 1/8"
	<u>cutout</u>	22 1/2"	43 1/2"	64 3/8"	85 1/8"	106"	126 3/4"

SLIMLINE BACKTO BACK

Front to Back		<u>2 well</u>	<u>4 or more wells</u>								
	<u>flange</u>	49"	51 1/2"								
	<u>cutout</u>	47 5/8"	50"								
	<u>length</u>	<u>2 wells</u>	<u>4 wells</u>	<u>6 wells</u>	<u>8 wells</u>	<u>10 wells</u>	<u>12 wells</u>	<u>14 wells</u>	<u>16 wells</u>	<u>18 wells</u>	<u>20 wells</u>
	<u>flange</u>	17 1/8"	28 3/4"	41 1/2"	54 3/8"	67 1/8"	80"	92 3/4"	105 1/2"	118 3/8"	131 1/8"
	<u>cutout</u>	15 3/4"	27 3/8"	40 1/8"	53"	65 3/4"	78 5/8"	91 3/8"	104 1/8"	117"	129 3/4"

Installation

The RDI comes in various lengths and should be installed in a proper and uniform manner. The following guidelines will help ensure proper installation.

1. Case location should be near a floor sink or waste outlet - with electrical and refrigeration access usually under the case.
2. All plumbing should conform to local codes.
3. When the RDI is to be installed in an existing fixture or in a supplied fixture, the RDI and the new or existing fixture should be leveled front to back and side to side.
4. The electrical junction box is located under the RDI which is where the electrical is terminated by the manufacturer. The junction box is a standard 2x4 box with knock-outs and cover.
5. The refrigeration is also stubbed down under the case for connection to liquid and suction lines from the remote RDI case.
6. In cases where more than one RDI are installed, run drains separately to the sink or drain outlet.
7. For RDI units installed in an existing table, the lip on the unit should be sealed with a NSF approved sealant and all phillips screws slots should be sealed with same.
8. The RDI should be dropped in the existing table oriented with the discharge air blowing from the front to the back of the fixture, the front is identifiable by the adjustable top air discharge control pins.
9. The adjustable top air discharge (Zone Air Control) is used when merchandising product sensitive to dehydration. Moving the control pins to the center slot closes off air flow; this can be set by store personnel.
10. A thermostat and solenoid mounted in the suction line is recommended for temperature control and defrost.
11. Defrost should be set for 2 times daily with a duration of 60 minutes. Time of day is factory set for 6am/6pm. This can be changed to fit the customer's schedule to defrost when the facility is closed or not being used for best performance.

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.

Leveling

IMPORTANT! IT IS IMPERATIVE THAT THE RDI AND THE FIXTURE THAT THE RDI IS INSTALLED IN, BE LEVELED FROM FRONT TO BACK AND SIDE TO SIDE PRIOR TO JOINING. A LEVEL CASE IS NECESSARY TO INSURE PROPER OPERATION, WATER DRAINAGE.

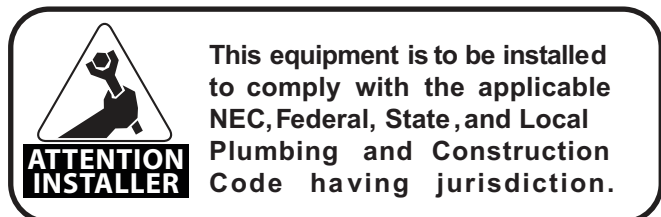
NOTE: A. To avoid removing concrete flooring, begin lineup leveling from the highest point of the store floor.

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. Level and set the first case, carefully guiding the electrical, refrigeration and drain lines through the parent case. Case must be raised under legs where support is best to prevent damage to case. Internal bracing may be removed at this time.
3. Apply liberal bead of case joint sealant (NSF Approved) to cover dotted area shown below.

DO NOT USE PERMAGUM!



Plumbing

Waste Outlet and P-TRAP

The waste outlet is located at the left hand end of these fixtures allowing drip piping to be run under the fixture lengthwise.

A 1" 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.

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.

Refrigeration

Refrigerant Type

The standard refrigerant will be R-22 unless otherwise specified on the customer order. Check the serial plate on the case for information.

Piping

The refrigerant line outlets are piped through the rear of the fixture at the left hand end when viewed from the back. Insulate suction lines to prevent condensation from dripping.

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.

Control Settings

See RDI technical data sheet for the appropriate settings for your merchandiser. Maintain these parameters to achieve near constant product temperatures. Product temperature should first be measured in the morning, after having been refrigerated overnight. For all multiplexing, defrost should be time terminated. Defrost length and frequency should be as directed in the RDI technical data sheet. 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

Evaporator Fans

The evaporator fans are located at the center front of these merchandisers directly beneath the display pans.

FOR ACCESS TO THE FANS: Remove the right hand deck pan as viewed from the front of the case.

Access to TX Valves and 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. A Sporlan balanced port expansion valve model is furnished as standard equipment, unless otherwise specified by customer.

Expansion Valve Adjustment

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

Measuring the Operating Superheat

1. Determine the suction pressure with an accurate pressure gauge at the evaporator outlet.
2. From a refrigerant pressure temperature chart, determine the saturation temperature at the observed suction pressure.
3. Measure the temperature of the suction gas at the thermostatic remote bulb location.
4. Subtract the saturation temperature obtained in step No. 2 from the temperature measured in step No. 3.
5. The difference is superheat.
6. Set the superheat for 5°F - 7°F.

T-STAT Location

T-STATS are located within the electrical raceway.

Refrigeration (Cont'd)

Refrigeration Data

Note: This data is based on store temperature and humidity that does not exceed 75F and 55% R.H.

Discharge Air (F) 30
Evaporator (F) 20

Note: Not recommended to control temp by regulating coil temp allow T-STAT to cycle and control temp.

*Btu/hr/ft**

Parallel 750
Conventional 863

*For all refrigeration equipment other than Hussmann, use conventional Btu values.

Defrost Data

Frequency Hrs 4

OFFTIME

Temp Term °F 54

Failsafe Minutes 20

ELECTRIC or GAS Not Recommended

Physical Data

Merchandiser Drip Pipe (in.) 1½*

Merchandiser Liquid Line (in.) 3/8*

Merchandiser Suction Line (in.) 5/8*

Estimated Charge (lb)***

4ft 1.2

5ft 1.5

6ft 1.8

*Dependent on case length and refrigerant type.

*** This is an average for all refrigerants types. Actual refrigerant charge may vary by approximately half a pound.

Glycol Requirements

	GPM	PSI
1 Well	0.3	2.0
2 Well	0.5	0.5
3 Well	0.8	1.2
4 Well	1.1	2.3
5 Well	1.3	3.7
6 Well	1.6	5.4
7 Well	1.9	7.4
8 Well	2.1	7.0
9 Well	2.4	9.1
10 Well	2.7	10.6

Electrical

Wiring Color Code

STANDARD CASE WIRE COLOR CODE CODIGO DE COLORES DE LOS ALAMBRES PARA LAS VITRINAS ESTANDAR CODE COULEUR POUR FILS DE BOITIER NORMALISE		
COLOR DESCRIPTION	DESCRIPCION	DESCRIPTION
■ GROUND	TIERRA MASA	MASSE
■ ANTI-SWEAT	ANTICONDENSACION	ANTI-SUINTEMENT
■ LIGHTS	LUCES	ECLAIRAGE
■ RECEPTACLES	ENCHUFES	PRISE DE COURANT
■ T-STAT/SOLENOID 230VAC	TERMOSTATO/SOLENOIDE (230VAC)	SOUPAPE A SOLENOID (230 VAC)
■ T-STAT/SOLENOID 115VAC	TERMOSTATO/SOLENOIDE (115VAC)	SOUPAPE A SOLENOID (115 VAC)
■ T-STAT/SOLENOID 24VAC	TERMOSTATO/SOLENOIDE (24VAC)	SOUPAPE A SOLENOID (24 VAC)
■ FAN MOTORS	VENTILADORES	VENTILATEUR
■ BLUE CONDENSING UNIT	UNIDAD DE CONDENSACION	UNITE DE CONDENSATION

USE COPPER CONDUCTORS ONLY
UTILISEZ LES CONDUCTEURS DE CUIVRE SEULEMENT
UTILICE LOS CONDUCTORES DE COBRE SOLAMENTE
430-01-0338 R101003

CASE MUST BE GROUNDED

NOTE: Refer to label affixed to case to determine the actual configuration as checked in the "TYPE INSTALLED" boxes.

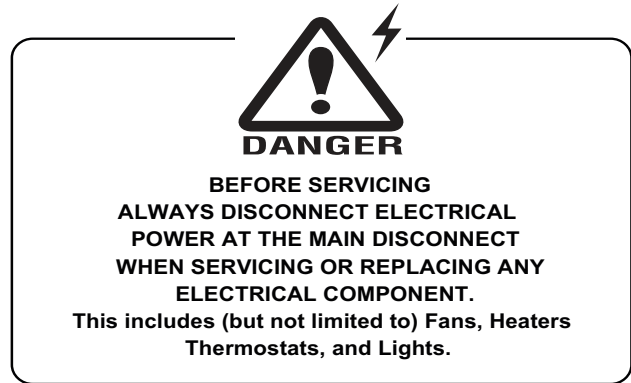
Electrical Circuit Identification

Standard lighting for all models will be full length fluorescent lamps located on the front of the parent case.

The switch controlling the lights is located on the parent case.

Field Wiring and Serial Plate Amperage

Field Wiring must be sized for component amperes printed on the serial plate. Actual ampere draw may be less than specified. Field wiring from the refrigeration control panel to the merchandisers is required for refrigeration thermostats. Case amperes are listed on the wiring diagram, but always check the serial plate.



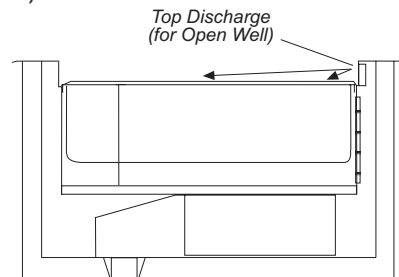
User Information

Stocking

Improper temperature and lighting will cause serious product loss. Discoloration, dehydration and spoilage can be controlled with proper use of the equipment and handling of product. Product temperature should always be maintained at a constant and proper temperature. This means that from the time the product is received, through storage, preparation and display, the temperature of the product must be controlled to maximize life of the product. Hussmann cases were not designed to "heat up" or "cool down" product-but rather to maintain an item's proper temperature for maximum shelf life. To achieve the protection required always:

1. Minimize processing time to avoid damaging temperature rise to the product. Product should be at proper temperature.
2. Keep the air in and around the case area free of foreign gasses and fumes or food will rapidly deteriorate.
3. Maintain the display merchandisers temperature controls as outlined in the refrigerator section of this manual.
4. Do not place any product into these refrigerators until all controls have been adjusted and they are operating at the proper temperature. Allow merchandiser to operate a minimum of 6 hours before stocking with any product.

5. When stocking, never allow the product to extend beyond the recommended load limit. **Air discharge and return air flow must be unobstructed at all times to provide proper refrigeration.** Do not stock product within the top air discharge zone (See diagram).



6. This case was designed and tested using stainless steel hotel pans. The use of any other material (such as crocks) may insulate the product and thus, not be kept cold. Containers made of materials other than stainless steel is discouraged and may void warranty.

Important Steps

1. Do not set temperature too cold, as this causes product dehydration. **Product Temperature: 33°F-35°F!**
Set thermostat to cut in at 28°F discharge air. Meat holding box: 32°F. Meat prep room: 55°F. Meat bloom box: 36°F.

User information (Cont'd)

2. Temperature control should be by means of a T-STAT and Suction Stop Solenoid at each case. Do not use EPR valves, Liquid Line Solenoids or electronic control devices of any kind, as these allow temperature swings causing dehydration and excessive energy consumption.

Case Cleaning

Long life and satisfactory performance of any equipment are dependent upon the care given to it. To insure long life, proper sanitation and minimum maintenance costs, the refrigerator should be thoroughly cleaned frequently. SHUT OFF FAN DURING CLEANING PROCESS. It can be unplugged within the case, or shut off case at the source. The interior bottom may be cleaned with any domestic soap or detergent based cleaners. Sanitizing solutions will not harm the interior bottom, however, these solutions should always be used according to the manufacturer's directions. It is essential to establish and regulate cleaning procedures. This will minimize bacteria causing discoloration which leads to degraded product appearance and significantly shortening product shelf life.

Soap and hot water are not enough to kill this bacteria. A sanitizing solution must be included with each cleaning process to eliminate this bacteria.

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

Cleaning Glass and 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.



PRECAUTION

CLEANING PRECAUTIONS

When cleaning:

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

To preserve the attractive finish:

- DO USE WATER AND A MILD DETERGENT FOR THE EXTERIOR ONLY
- DO NOT USE ABRASIVES OR STEEL WOOL SCOURING PADS (these will mar the finish)

Maintenance



DANGER

**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.**

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 and Troubleshooting

Before calling for service, check the following:

1. Check electrical power supply to the equipment for connection.
2. Check fixture loading. Overstocking case will affect its proper operation.
3. If frost is collecting on fixture and/or product, check that Humidity Control is working properly, and that no outside doors or windows are open - allowing moisture to enter store.

Evaporator Fans

The evaporator fans are located at the center front of these merchandisers directly beneath the display pans. *Should fans or blades need servicing, always replace fan blades with the raised embossed side of the blade TOWARD THE MOTOR.*



IMPORTANT INFORMATION

Please read these instructions completely before beginning case installation

Stainless Steel Cleaning and Care

There are three basic things, which can break down your stainless steel's passivity layer and allow corrosion.

1. Mechanical Abrasion

Mechanical Abrasion means those things that will scratch the steels surface. Steel Pads, wire Brushes, and Scrapers are prime examples.

2. Water

Water comes out of our tap in varying degrees of hardness. Depending on what part of the country you live in, you may have hard or soft water. Hard water may leave spots. Also, when heated, hard water leaves deposits behind that if left to sit, will break down the passive layer and rust your stainless steel. Other deposits from food preparation and service must be properly removed.

3. Chlorides

Chlorides are found nearly everywhere. They are in water, food and table salt. One of the worst perpetrators of chlorides can come from household and industrial cleaners.

Don't Despair! Here are a few steps that can help prevent stainless steel rust.

1. Use the Proper Tools

When cleaning your stainless steel products, take care to use non-abrasive tools. Soft Clothes and plastic scouring pads will NOT harm the steel's passive layer. Stainless steel pads can also be used but the scrubbing motion must be in the same direction of the manufacturer's polishing marks.

2. Clean With the Polish Lines

Some stainless steels come with visible polishing lines or "grain". When visible lines are present, you should ALWAYS scrub in a motion that is parallel to them. When the grain cannot be seen, play it safe and use a soft cloth or plastic scouring pad.

3. Use Alkaline, Alkaline Chlorinated or Non-chloride Containing Cleaners

While many traditional cleaners are loaded with chlorides, the industry is providing an ever increasing choice of non-chloride cleaners. If you are not sure of your cleaner's chloride content contact your cleaner supplier. If they tell you that your present cleaner contains chlorides, ask for an alternative. Also, avoid cleaners containing quaternary salts as they also can attack stainless steel & cause pitting and rusting.

4. Treat your Water

Though this is not always practical, softening hard water can do much to reduce deposits. There are certain filters that can be installed to remove distasteful and corrosive elements. Salts in a properly maintained water softener are your friends. If you are not sure of the proper water treatment, call a treatment specialist.

5. Keep your Food Equipment Clean

Use alkaline, alkaline chlorinated or non-chlorinated cleaners at recommended strength. Clean frequently to avoid build-up of hard, stubborn stains. If you boil water in your stainless steel equipment, remember the single most likely cause of damage is chlorides in the water. Heating cleaners that contain chlorides has a similar effect.

6. RINSE, RINSE, RINSE

If chlorinated cleaners are used you must rinse, rinse, rinse and wipe dry immediately. The sooner you wipe off standing water, especially when sit contains cleaning agents, the better. After wiping the equipment down, allow it to air dry for the oxygen helps maintain the stainless steel's passivity film.

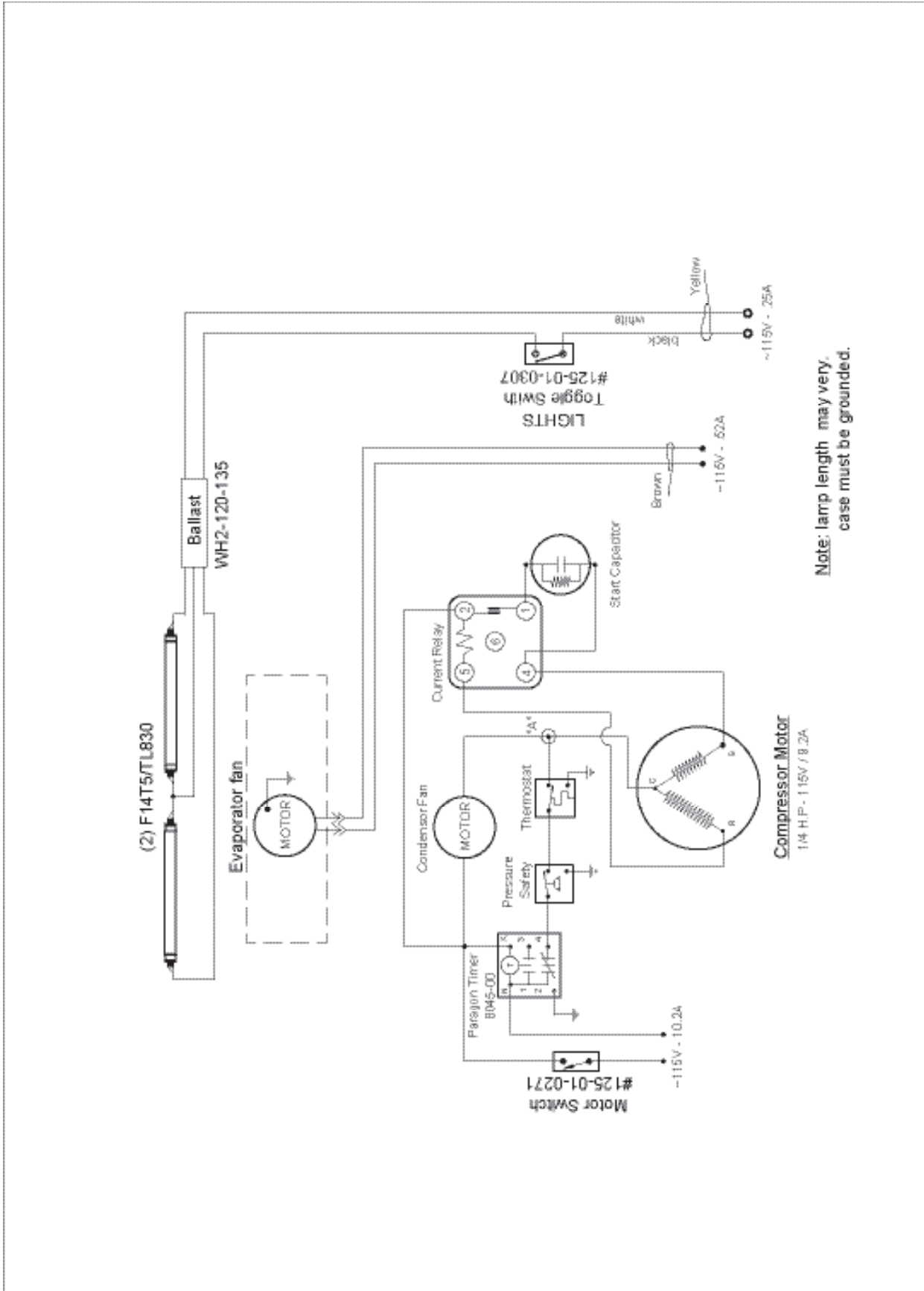
7. Never Use Hydrochloric Acid (Muriatic Acid) on Stainless Steel

8. Regularly Restore/Passivate Stainless Steel

Electrical Wiring Diagrams

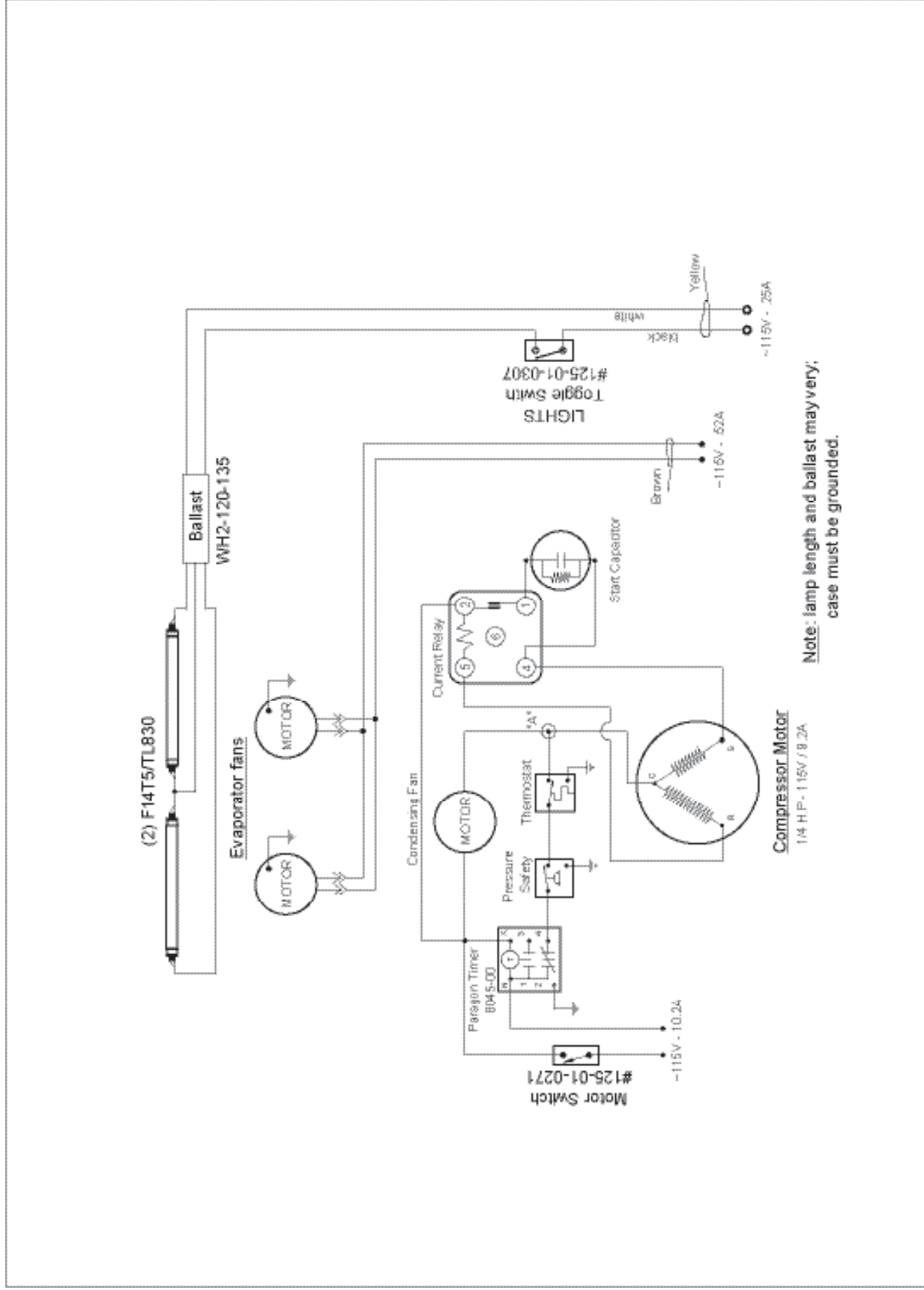
RDI	1 or 2 Pans, 1/4 HP-115V		W2100001
Remote or S/Contained	3 or 4 Pans, 1/4 HP-115V		W2100002
	5 or 6 Pans, 1/4 HP-115V		W2100003
	7 or 8 Pans, 1/3 HP-115V	8'	W2100004
	11 Pans, 3/4 HP-230V		W2100006
	RDI-20-6WELL-SC	6	W2100005
	RDI-20-7WELL-SC		W2100007
	RDI-20-9WELL-SC		1H07238
	RDI-27 5 Well-SC		1H07235

Wiring Diagrams



		Revision: _____ No. Description: _____		Project Title: 1 or 2 Pan Self-Contained Cold Food/Deli Display		Drawing No.: W2100001.dft	
		Manufacturer: 3370 Ramona Avenue Chino, CA 91710 (909) 866-8000 Local Offices		Date: _____ By: _____ Checked By: _____ Date: 03/29/2009 Held Responsible: [initials]		Drawing Title: R0112-27-SC Wiring Sheet 1 of 1	

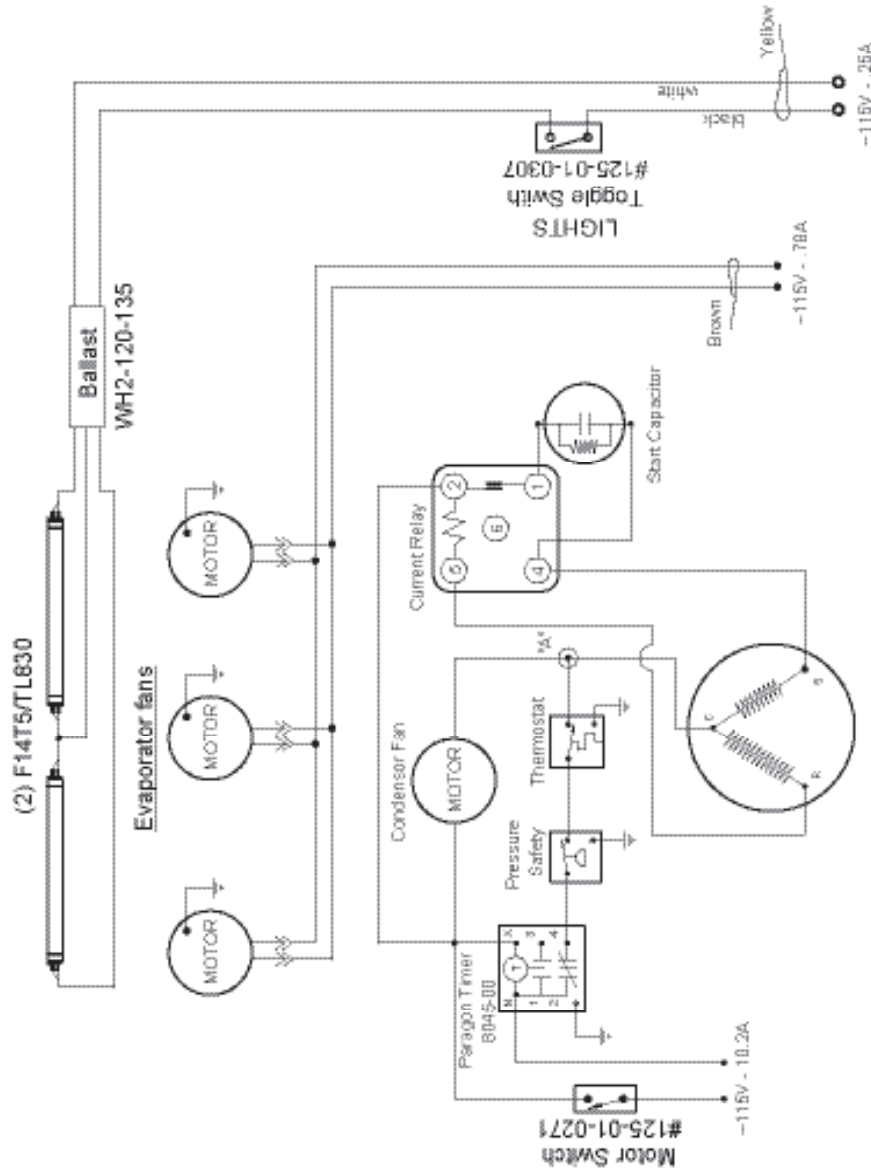
Wiring Diagram (Cont'd)



**Note: lamp length and ballast may vary;
case must be grounded.**

<p>MUSSELMANN[®]</p> <p>Musmann Corporation 13770 Vanowen Street Chico, CA 95926 (916) 850-8710 Unit 03000</p>	<p>REVISIONS:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Description</th> <th>Date</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No.	Description	Date	By													<p>Drawn By: Bob Lualaba Checked By: BK Date: 03.20.2000 Field Assembly: Real</p>	<p>Project Title: 3 for 4 Pan Self-Contained Cold Food/Def Display</p> <p>Drawing Title: RFD13/4-27-SC-WHFFG</p>
No.	Description	Date	By																
<p>Ordering Ref.: W2100002.dft</p>		<p>Sheet 1 of 1</p>																	

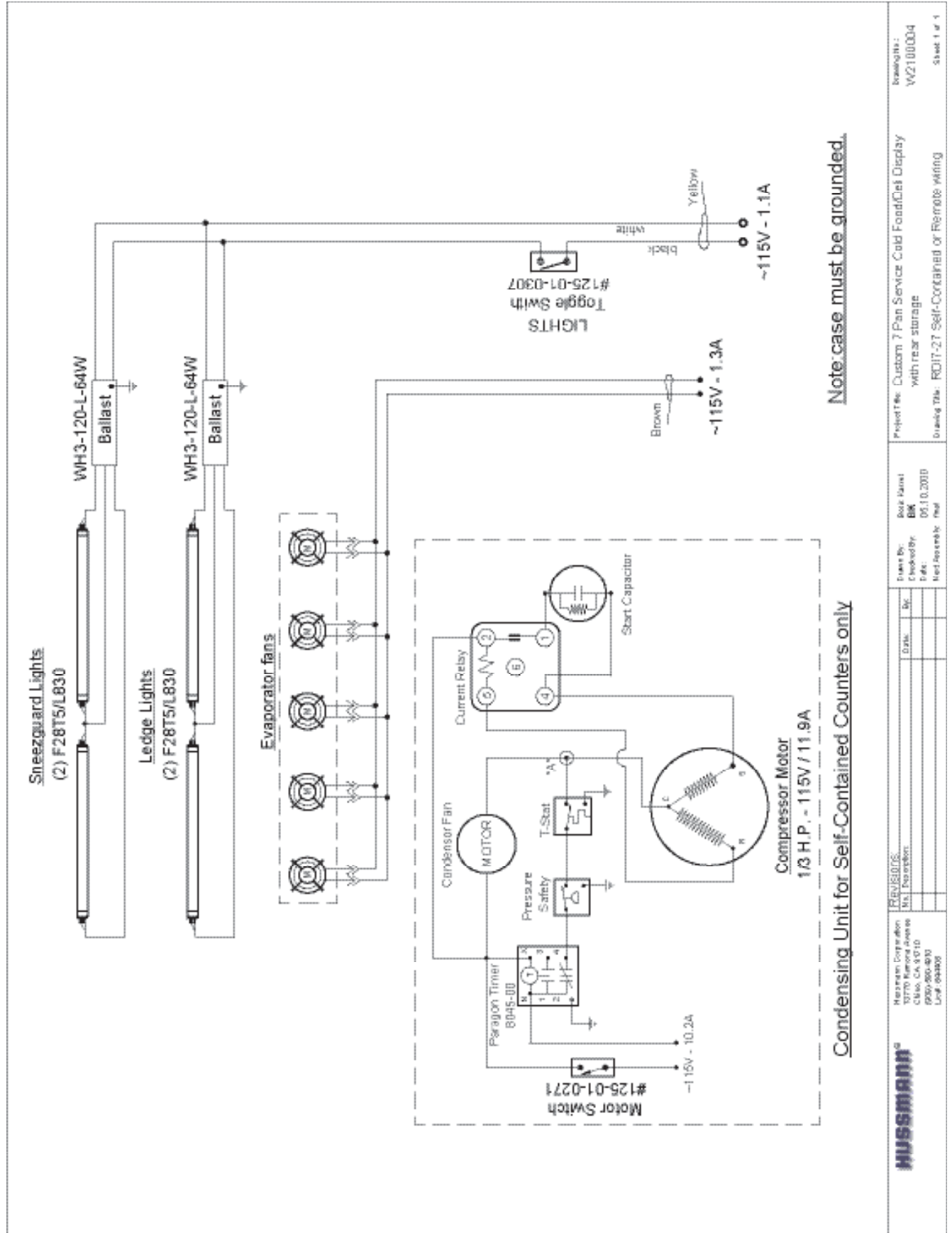
Wiring Diagram (Cont'd)



Note: lamp length and ballast may vary; case must be grounded.

HUSSEMAN		Heppner Corporation 10770 Kermel Avenue Chino, CA 91710 (909) 250-4933 Fax: (909) 250-4933		Project Title: 5 Pan Self-Service Cold Food/Deli Display Drawing Title: R015-275c wiring		Drawings: W2100003 Sheet 1 of 1	
REVISIONS: No. Description		Drawn By: Bob Hant Checked By: BK Date: 02/04/2008 Next Assembly: final		Date: _____ By: _____			

Wiring Diagram (Cont'd)



Note: case must be grounded.

Condensing Unit for Self-Contained Counters only

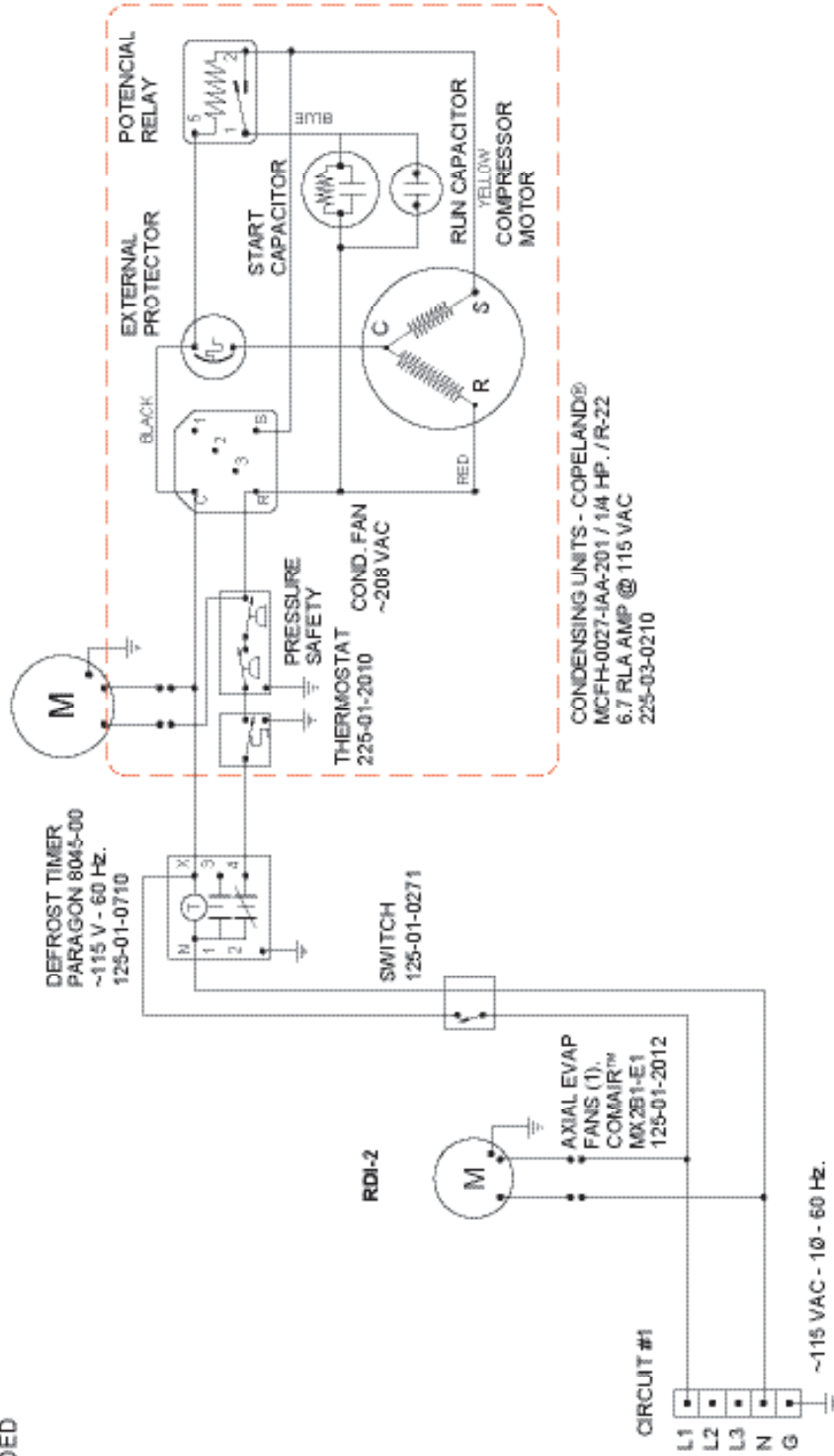
HUSSMANN Hussmann Corporation 13170 Aurora Avenue Chino, CA 91710 (951) 960-4910 Fax: (951) 960-4908		REVISED: M.J. Inspratt	Drawn By: Bob Isant BK	Checked By: M.J. Inspratt	Date: 05.10.2010	Project File: Custom 7 Pan Service Cold Food/Hot Display with rear storage	Drawing Title: RDU7-27 Self-Contained or Remote wiring	Drawings: W2100004
								Sheet 1 of 1

Wiring Diagram (Cont'd)

CIRCUIT #1

LOADING	
115 V	
L1	6.8
L2	
L3	

NOTE: CASE MUST BE GROUNDED

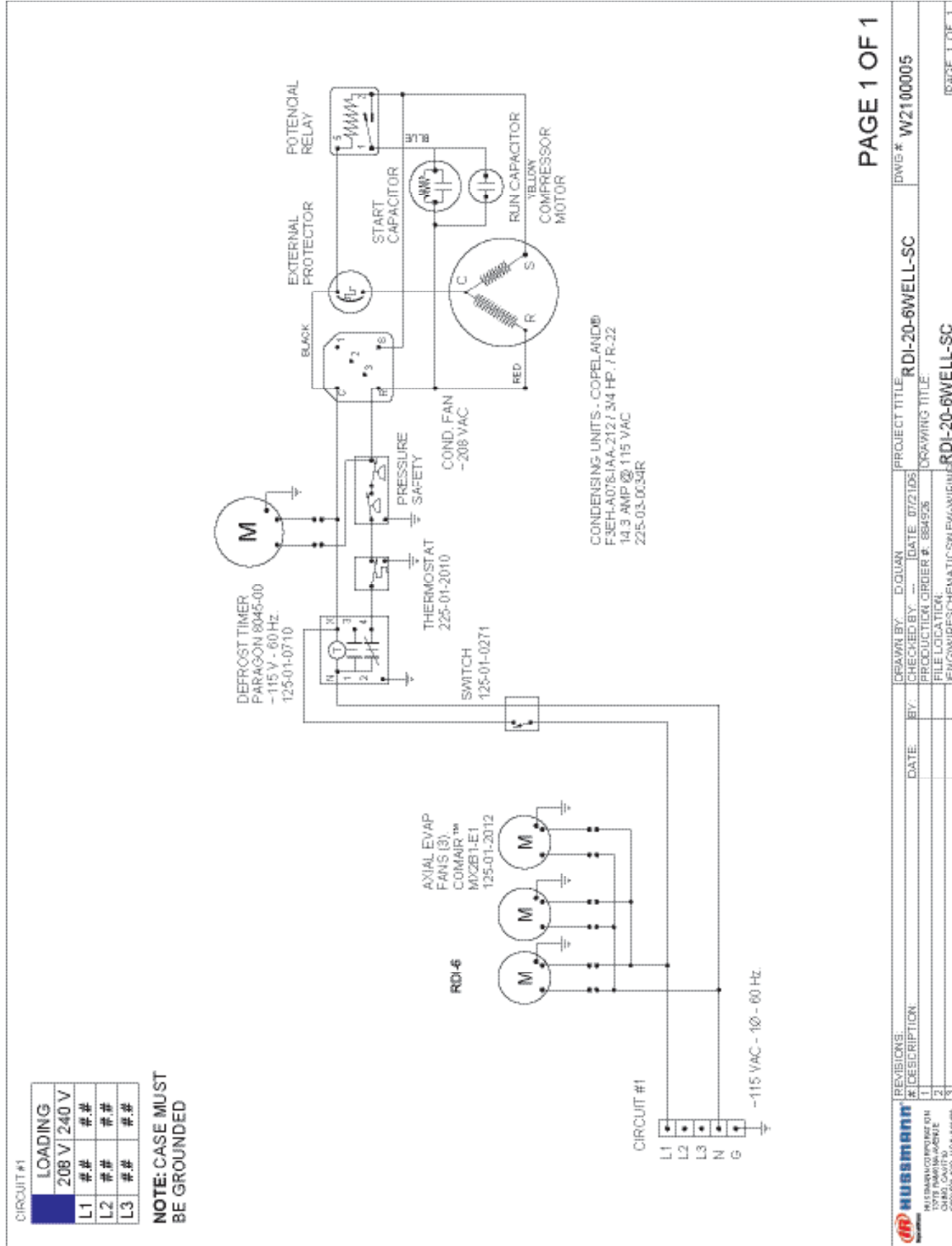


CONDENSING UNITS - COPELAND®
 MCFH-0027-JAA-201 / 1/4 HP / R-22
 6.7 RLA AMP @ 115 VAC
 225-03-0210

PAGE 1 OF 1

REVISIONS:		DRAWN BY: D.OLAN		PROJECT TITLE: RDI-20-2WELL-SC		DWG.#: W2100006	
#	DESCRIPTION	DATE	CHECKED BY	DATE	07/20/05	PRODUCTION ORDER #	884561
1	ISSUED FOR PARTS ON					FILE LOCATION:	
2	TOTAL PARTS/ASSEMBLY					ENGINEERING/SCHEMATIC/EW-WIRING	RDI-20-2WELL-SC
3	CHANG. CAUSING						
							PAGE 1 OF 1

Wiring Diagram (Cont'd)

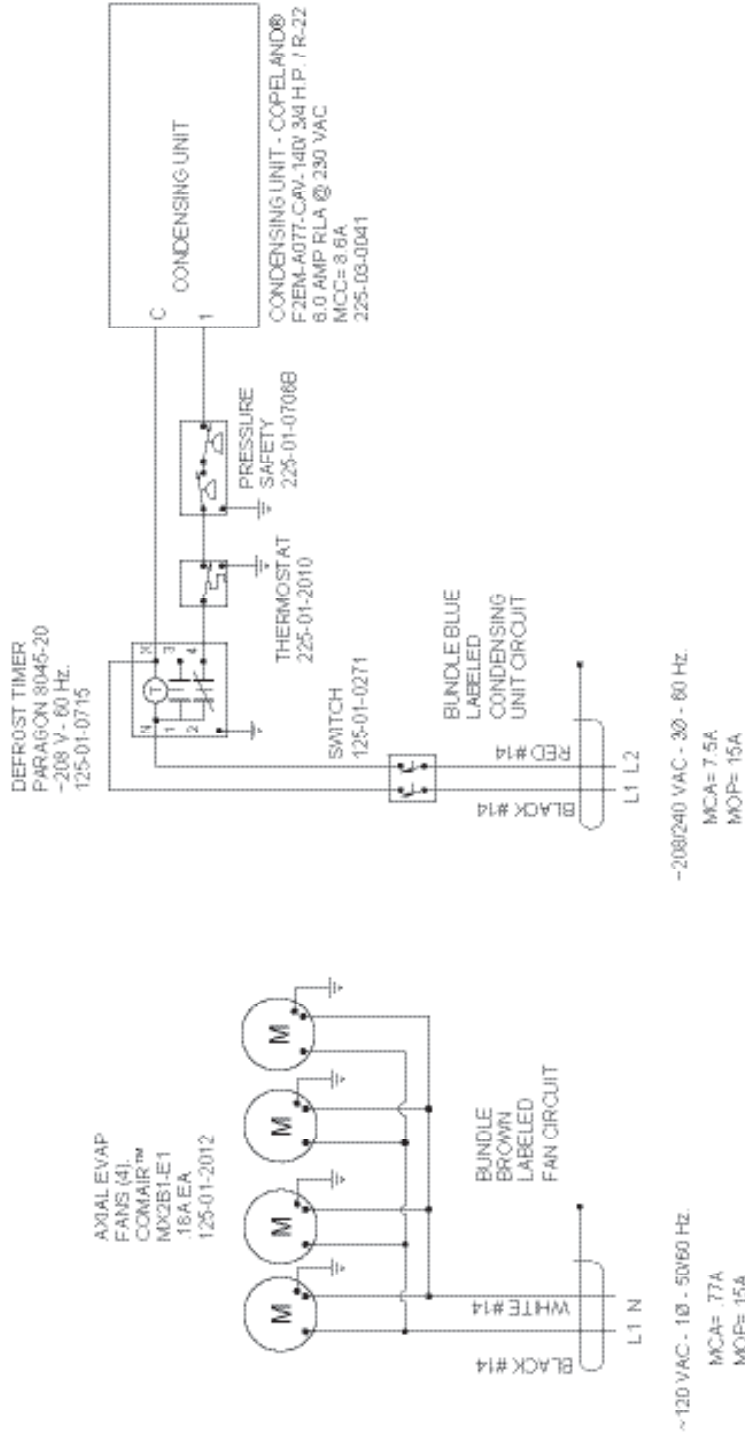


Wiring Diagram (Cont'd)

CIRCUIT #1

LOADING	
208 V	
L1	6.7
L2	6.0
L3	

NOTE: CASE MUST BE GROUNDED



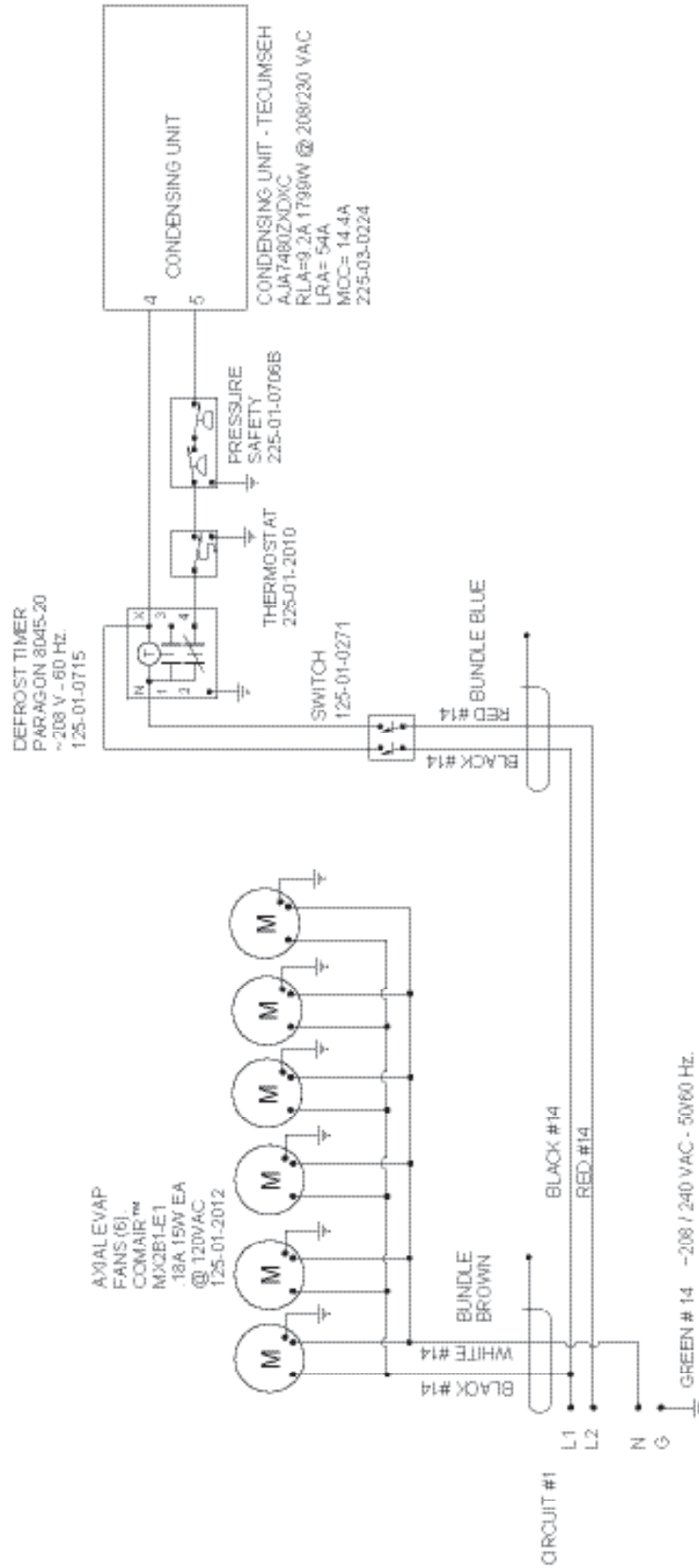
HUSSMANN® Hussmann Corporation, Inc. 6270 Research Avenue Columbus, GA 31906 (706) 925-4070 Fax (706) 925-4070	REVISIONS: # 1 DES: RIFTRIC	DRAWN BY: JESSE RIOS BY: [] CHECKED BY: [] PRODUCT ORDER # 964177	PROJECT TITLE: RDI-20-7WELL-SC DRAWING TITLE: RDI-20-7WELL-SC	DRAWING # W2100007 PAGE 1 OF 1
	DATE: []	FILE LOCATION: []		

Wiring Diagram (Cont'd)

CIRCUIT #1

LOADING	
208 V / 240 V	
L1	10.3
L2	9.2

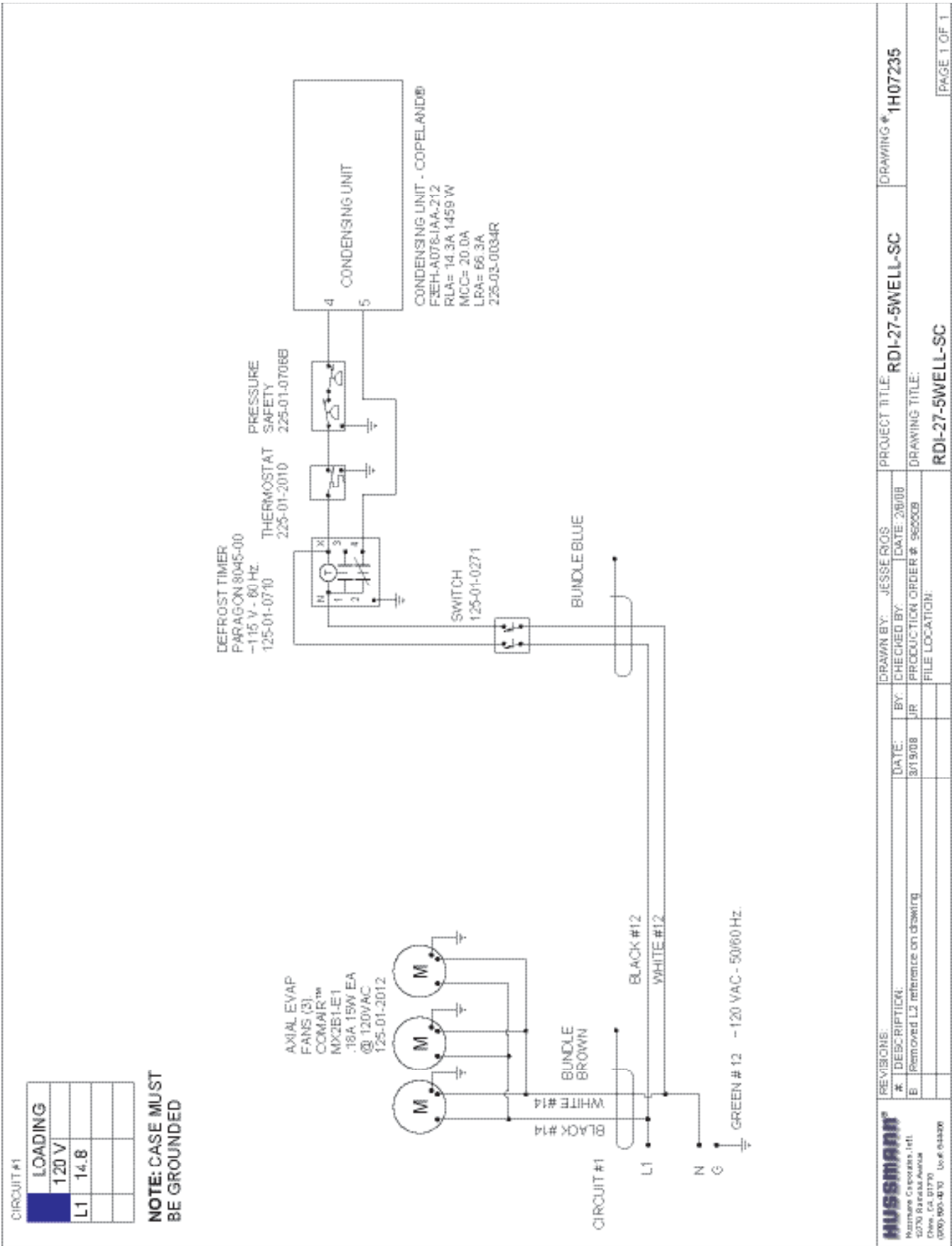
NOTE: CASE MUST BE GROUNDED



REVISIONS:		DRAWN BY: JESSE RIOS	PROJECT TITLE: RDI-20-9WELL-SC	DRAWING #: 1H07238
		CHECKED BY:	DATE: 12/17/07	DRAWING TITLE: RDI-20-9WELL-SC
		BY:	PRODUCTION ORDER #: 960209	
		DATE:	FILE LOCATION:	
				PAGE 1 OF 1

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Wiring Diagram (Cont'd)

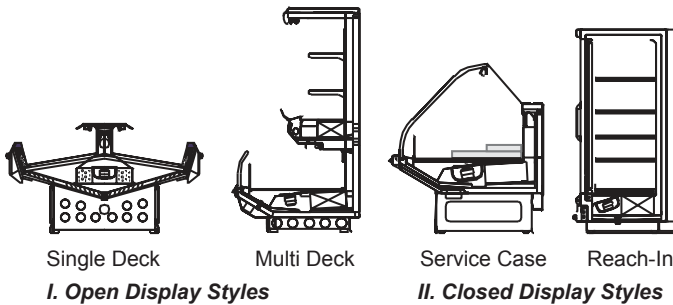


Appendices

Appendix A. - Temperature Guidelines

The refrigerators should be operated according to the manufacturer's published engineering specifications for entering air temperatures for specific equipment applications. Table 1 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.

Type of Refrigerator	Typical Entering Air Temperature
TABLE	
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



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 the manufacturer for the installation of each individual type refrigerator.
- 1.2 Refrigeration piping should be sized according to the equipment manufacturer's recommendations and installed in accordance with normal refrigeration practices. Refrigeration piping should be insulated according to the manufacturer'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 manufacturer'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 the manufacturer.
 - 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

- 1.0 The most consistent indicator of display refrigerator performance is temperature of the air entering the product zone (see 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.

Appendices (Cont'd)

- 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 determine 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?
 8. Are display signs blocking or diverting airflow?
 9. 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 the equipment manufacturer? 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 Corporation provides 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.

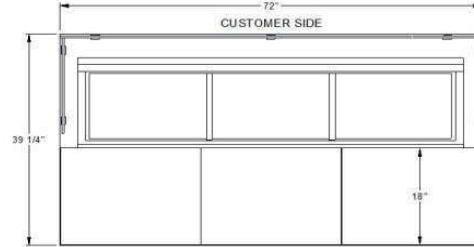
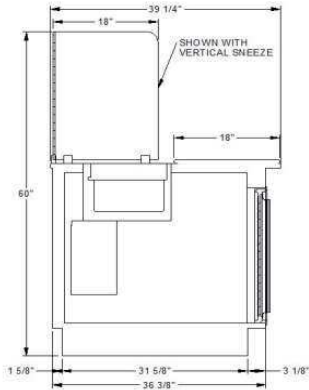
Appendices (Cont'd)

- 1.1 Cleaning of non frozen food 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 the manufacturer 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 the manufacturer's recommendations.
 - j) See that all storage and refrigeration equipment is kept in proper working order by routine maintenance.



HUSSMANN - RDI-LS-SL COUNTERS (CHINO)

REVISION DATE 02/24/17



3 WELL SHOWN

REFRIGERATION DATA:

# OF WELLS	CASE USAGE	CAPACITY *** (BTU/HR/WELL)		TEMPERATURE (°F)			VELOCITY (FT/MIN)
		RATING CONDITION		EVAPORATOR		DISCHARGE AIR ** (°F)	
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	NSF 7
2, 3, 4	COUNTER	500	500	22	22	29-31	100-150

# OF WELLS	EST. REFRG. CHR. 404A (LBS)	20°F GLYCOL 6° RISE		CASE LENGTH DIMENSION
		GPM	PSI	
2	0.2	0.9	3.2	4'
3	0.3	1.1	5.7	6'
4	0.4	1.4	2.5	8'

**FRONT DISCHARGE AIR MEASURED INSIDE AIR GRILL

***REFRIGERATION NOTES:

- 1) USE DEW POINT FOR HIGH GLIDE REFRIGERANTS. CARE SHOULD BE TAKEN TO USE THE DEW POINT IN P/T TABLES FOR MEASURING AND ADJUSTING SUPERHEAT. ADJUST EVAPORATOR PRESSURE AS NEEDED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SHOWN.
- 2) RATING CONDITION IS NSF TYPE I, 75°F/55% RH

REFRIGERATION DATA CONTINUED:

ELEC. THERMOSTAT / AIR SENSOR SETTINGS		DEFROST TYPE	TIME (MIN)	DEFROST FREQUENCY (#/DAY)	TERM. TEMP (°F) COIL ONLY	DRIP TIME	DEFROST WATER (LBS/DAY/FT)	
USAGE	CUT IN (°F)							CUT OUT (°F)
COUNTER	30	27	OFF TIME	60	4	45	N/A	1.0

END PANEL WIDTH KEY		
# OF END PNLS	END PNL WIDTH (IN.)	TOTAL ADDED LENGTH (IN.)
1	1.125	1.125
2	1.125	2.25

ELECTRICAL DATA:

STANDARD FANS, HEATERS, LED LIGHTS (115 VOLT)

# OF WELLS	CASE LENGTH	EVAPORATOR FANS					CANOPY LIGHTS LED		OPTIONAL LED SHELF LIGHTS		MAX. LED LOAD (W/ ALL OPTIONS)		ANTI-SWEAT HEATERS (ON FAN CIRCUIT)		CONVENIENCE OUTLETS (OPTIONAL)		
		# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS
2	4	2	N/A	N/A	1.56	40	0.00	0	N/A	N/A	0.00	0	N/A	N/A	N/A	N/A	N/A
3	6	3	N/A	N/A	2.34	60	0.00	0	N/A	N/A	0.00	0	N/A	N/A	N/A	N/A	N/A
4	8	3	N/A	N/A	2.34	60	0.00	0	N/A	N/A	0.00	0	N/A	N/A	N/A	N/A	N/A

OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

CASE LENGTH	CANOPY LIGHTS H.O. LED		OPTIONAL SHELF		MAX. H.O. LED LOAD	
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
2	0.13	15	N/A	N/A	0.13	15
3	0.23	26	N/A	N/A	0.23	26
4	0.26	30	N/A	N/A	0.26	30



This warning does not mean that Hussmann products will cause cancer or reproductive harm, or is in violation of any product-safety standards or requirements. As clarified by the California State government, Proposition 65 can be considered more of a ‘right to know’ law than a pure product safety law. When used as designed, Hussmann believes that our products are not harmful. We provide the Proposition 65 warning to stay in compliance with California State law. It is your responsibility to provide accurate Proposition 65 warning labels to your customers when necessary. For more information on Proposition 65, please visit the California State government website.

Service Record

Last service date: By:

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

MODEL:

SERIAL NUMBER: