

TY3/4 ISLAND MERCHANDISER

USER MANUAL

- TY3 - TY3-3X4.5E-R
- TY3-3X5.5E-R
- TY3-3X4.5E-S
- TY3-3X4.5E-S
- TY4 - TY4-3X4.5E-R
- TY4-3X5.5E-R

1. General Instructions

A publication of HUSSMANN® Chino
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(909) 628-8942 FAX
(909) 590-4910
(800) 395-9229

www.husmann.com

This Booklet Contains Information on:

TY3W COLD ISLAND SELF SERVICE CASE

A Multi-deck, spot merchandisers designed for medium temperature applications such as: Deli/Dairy/Beverage. They are available as either remote type models, which require separate condensing unit connections, or self-contained models. Each self-contained model will have it's own condensing unit, factory installed beneath the display area of the case ready for operation on when electrical service is connected.

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.

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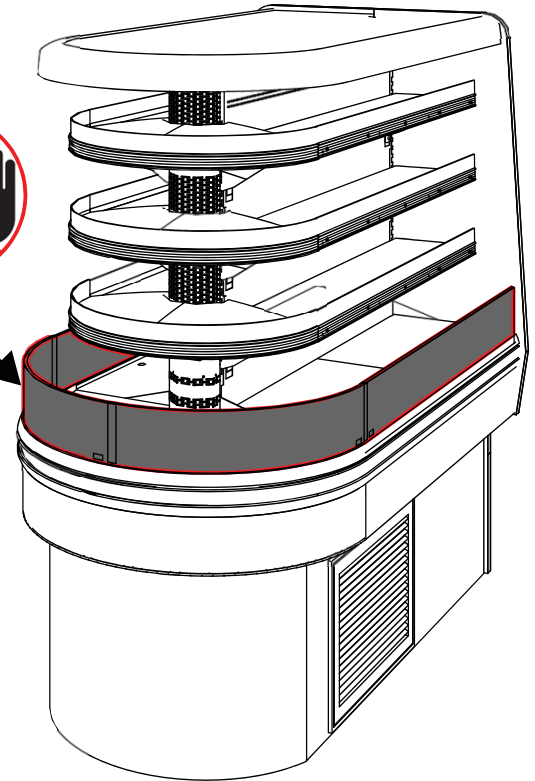
3. Warning



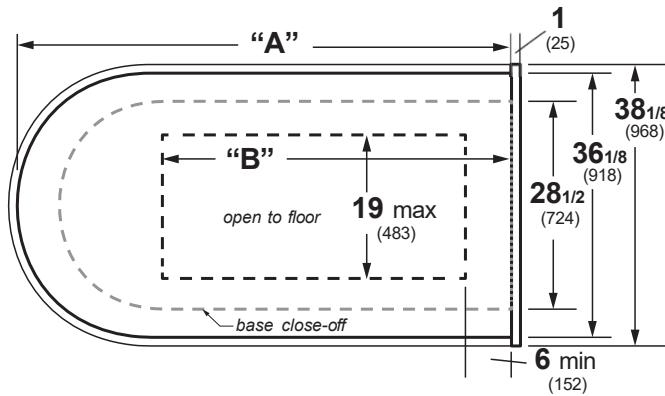
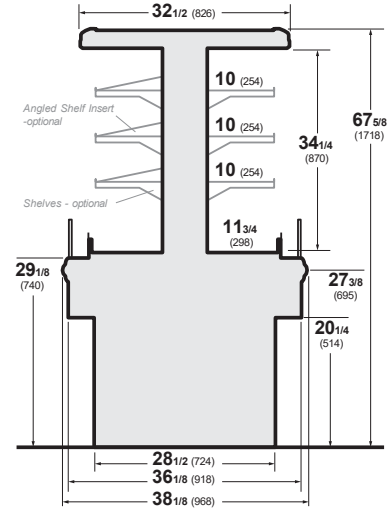
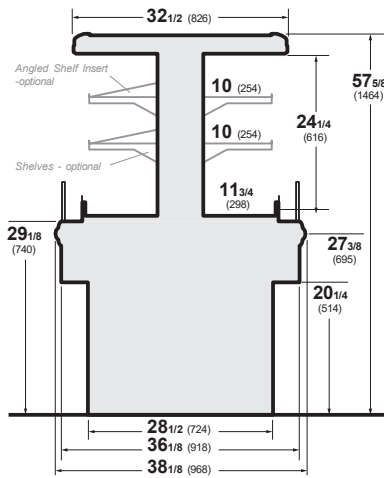
IMPORTANT INFORMATION

Please read these instructions completely before beginning case installation

1. Do not push, pull, adjust or manipulate the merchandiser by any glass component.
 - Doing so will result in severe damage to such components.
 - Glass or acrylic breakage may result in serious injury.
 - See lifting and transport instructions for proper moving technique ref. pg 10.
2. Never stand on the merchandiser top, deck, or any shelves for any reason. These surfaces are not steps and are not designed to support such loads.
 - Misusing these surfaces as steps will result in damage to the case and or serious injury to the user
 - These surfaces are intended for the storage and merchandising of food products
 - Use a ladder or designed structure to work above the case (Do not lean on case)



4. Cut and Plan Views



	4.5'	5.5'
"A"	54 1/2 (1384)	66 1/2 (1689)
"B"	34 (864) max	46 (1168) max

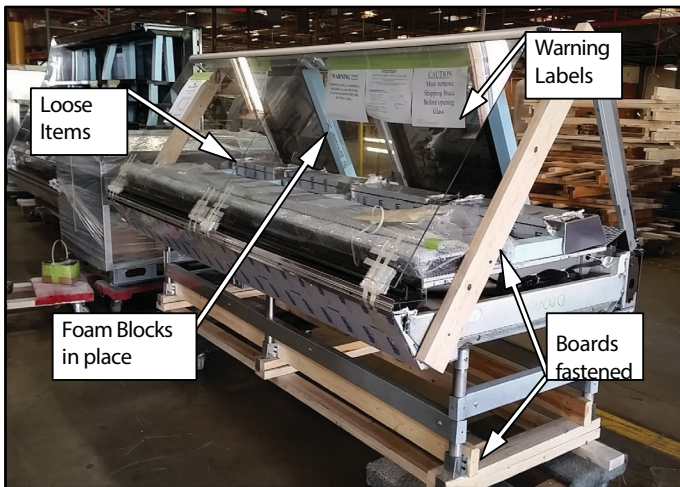
5. Notice

NOTICE

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

Receiving Case

Upon receiving your new Hussmann Case all equipment should be thoroughly examined for shipping damage before and during unloading. This equipment has been carefully inspected at our factory. Any claim for loss or damage must be made to the carrier. The carrier will provide any necessary inspection reports or claim form. If there is obvious loss or damage, it must be noted on the freight bill or express receipt and signed by the carrier's agent; otherwise carrier may refuse claim.



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

6. Installation

Store Conditions

- Case is designed to operate at temperatures at either 75°F at 55% relative humidity or 80°F at 55% relative humidity. Case must be kept in that environment to ensure case performance and product safety.
- Do not position the case near an HVAC vent.
- Do not position the case near an entrance door. Outside ambient conditions may have an adverse affect on the refrigeration performance, a minimum of 15' clearance is required from doors.
- Do not position the case tight against a ceiling or soffit. A minimum clearance 10" above the unit is required for proper compressor discharge air flow.
- Do not block case front panel vent (supplies critical intake air flow to the compressor)



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.**

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!**

WARNING!

**Do NOT apply thread
sealer to ABS P-Trap.**



Do Not Install the Vented Panels of the self-contained model against a wall or other storage fixture.

Located in the lower front and rear of the self-contained models are vented panels. These panels allow air circulation to the condensing unit. Blocking or restricting air circulation through these panels can cause poor performance and damage the refrigeration system.

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.



**ATTENTION
INSTALLER**

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

Levelling

**A LEVEL CASE IS NECESSARY TO INSURE
PROPER OPERATION AND WATER DRAINAGE.**

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

Installation (Cont'd)

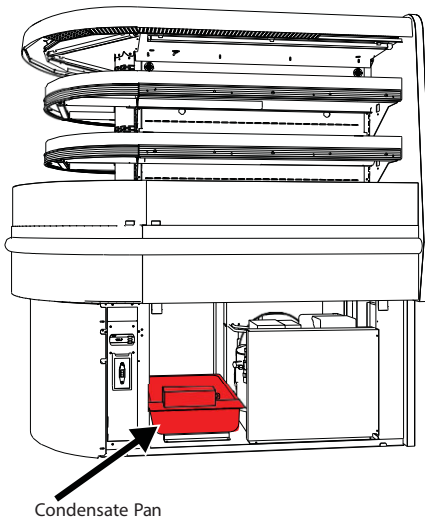
Condensate Pan Setup and Maintenance

Setup:

There are two condensate evaporator pans on this unit. The drain pipes from the case feed into the Condensate Pan. This condensate pan will turn on when the float switch level is triggered. If the volume of water is above the capacity of this pan, excess water will flow into the "Secondary Condensate Pan". Both the Primary and Secondary condensate pans are placed into a metal receiver. The metal receiver is there to collect excess water that may overflow in case of (a) failure of the condensate pans or (b) store conditions being above design specification causing more condensate water to be formed than expected.

Maintenance:

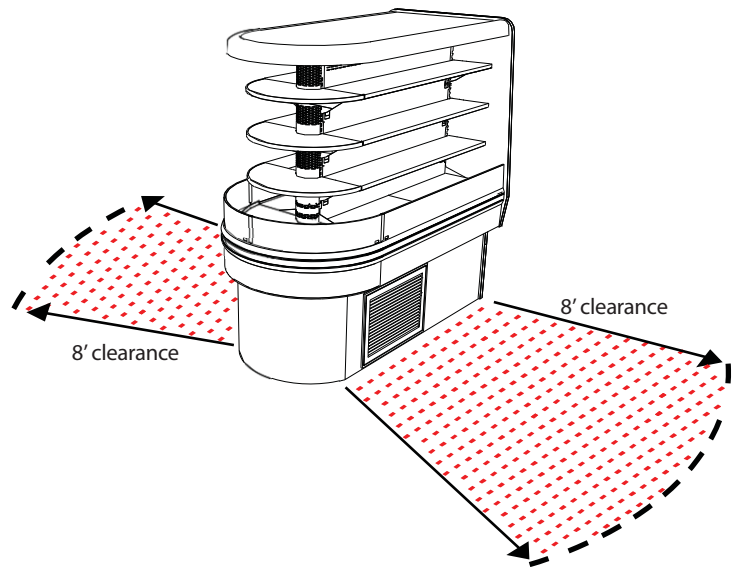
Care must be taken to ensure that the condensate pans operate properly at the store. These units are designed to operate at either 75°F ambient and 55% RH or 80°F ambient and 55% RH. If stores are operating above this condition, case performance will be severely affected. If such a condition is noted, the metal receiver under the condensate pans must be checked periodically to see if excess water is being collected. If water has accumulated, water must be siphoned out of the receiver. Care must be taken while performing this step. Unit power should be shut off for electrical safety. Once water has been removed and metal receiver is dried out, unit power can be turned back on.



Clearances

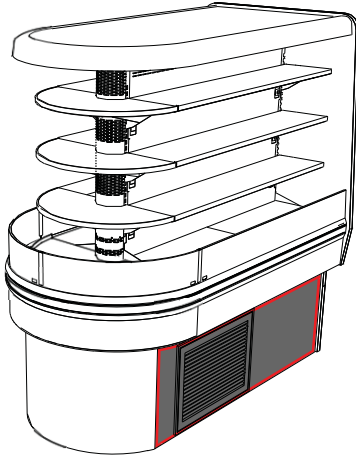
Minimum Clearances for Self-Contained cases are to be followed as instructed for proper placement inside store locations.

- Intake and exhaust clearances are to be a minimum of 8' when placed next to a solid wall.
- Height clearance measured from floor follows as a minimum of 10' vertically.
- Minimum of 36" clearance if near an open aisle is required for proper cycle ventilation. (Assumed 8' clearance from solid wall)

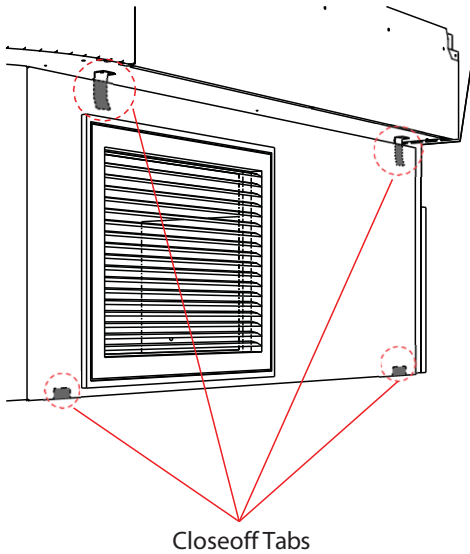


Installation (Cont'd)

Close-off Removal



The side close-off panels are held in place by upper and lower tabs located on the underside of the tub and bottom base channel near the bottom of the case. See image below for exact close-off tab locations.

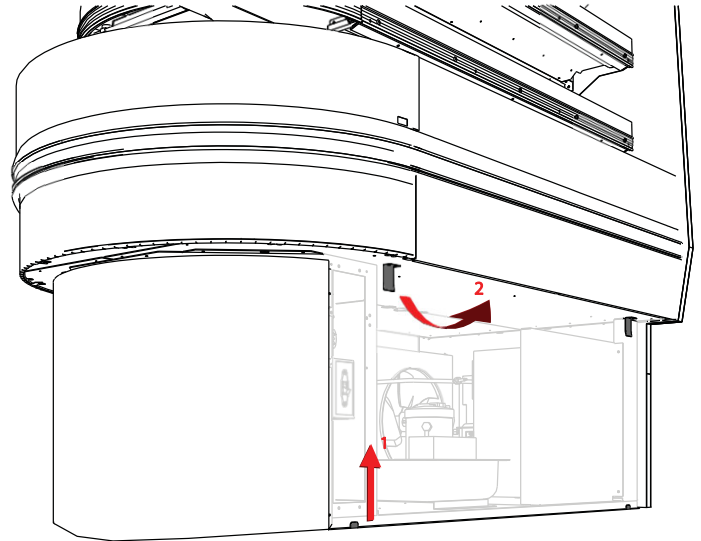


Step 1

Slide bottom of close-off in upward motion to remove close-off panel slots from lower close-off tabs.

Step 2

Pull Close-off in outward then downward motion to completely remove side panel close-off



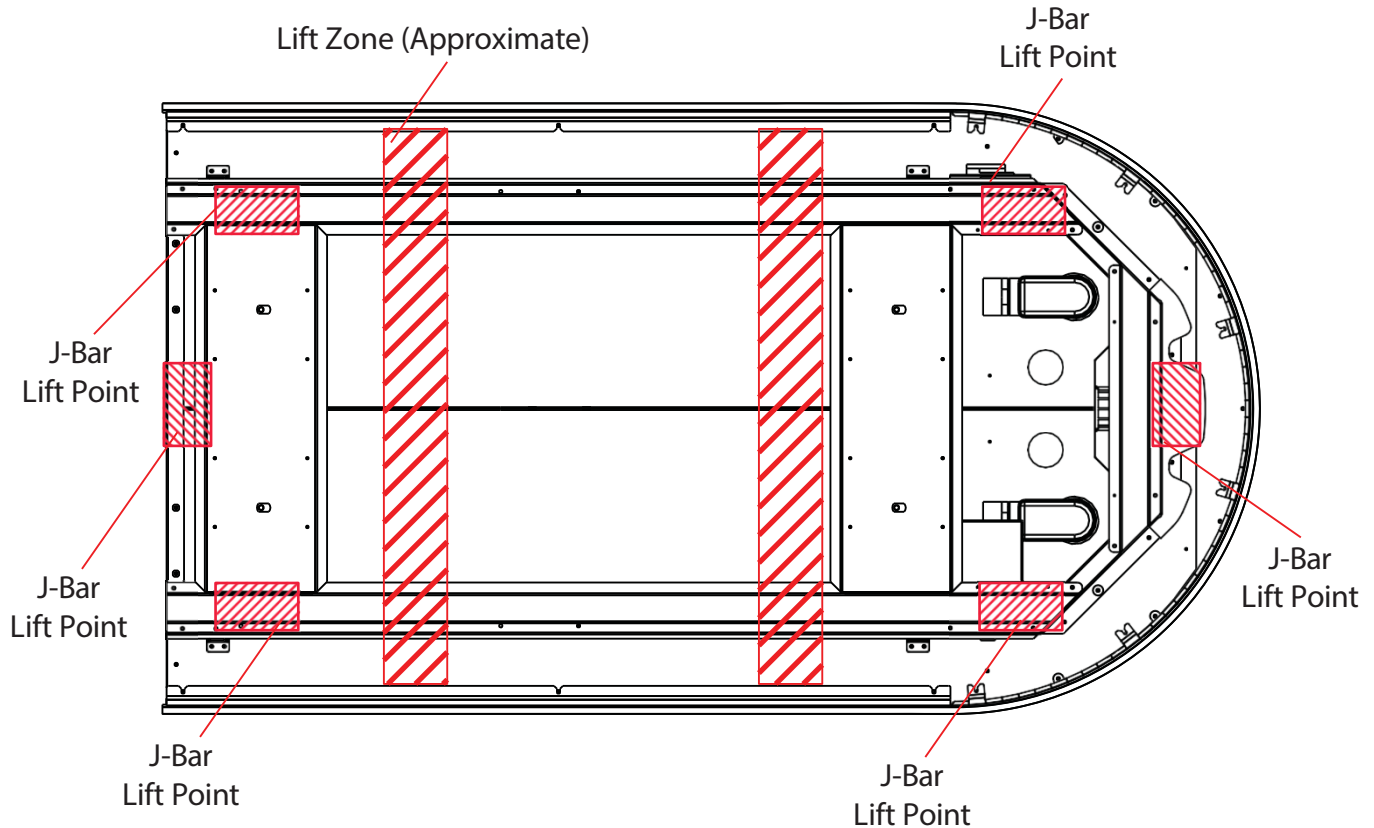
**BEFORE SERVICING
ALWAYS DISCONNECT ELECTRICAL
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This includes (but not limited to) Fans, Heaters
Thermostats, and Lights.**

Once Close-off panel is removed, this now provides access to internals such as condensing unit, evap pan and electrical junctions.

To replace close-off panels, simply reverse the listed steps.

Installation (Cont'd)

Entyce Lifting and Transporting Instructions



1. The Entyce can be lifted by a forklift only at the specified location in the diagram

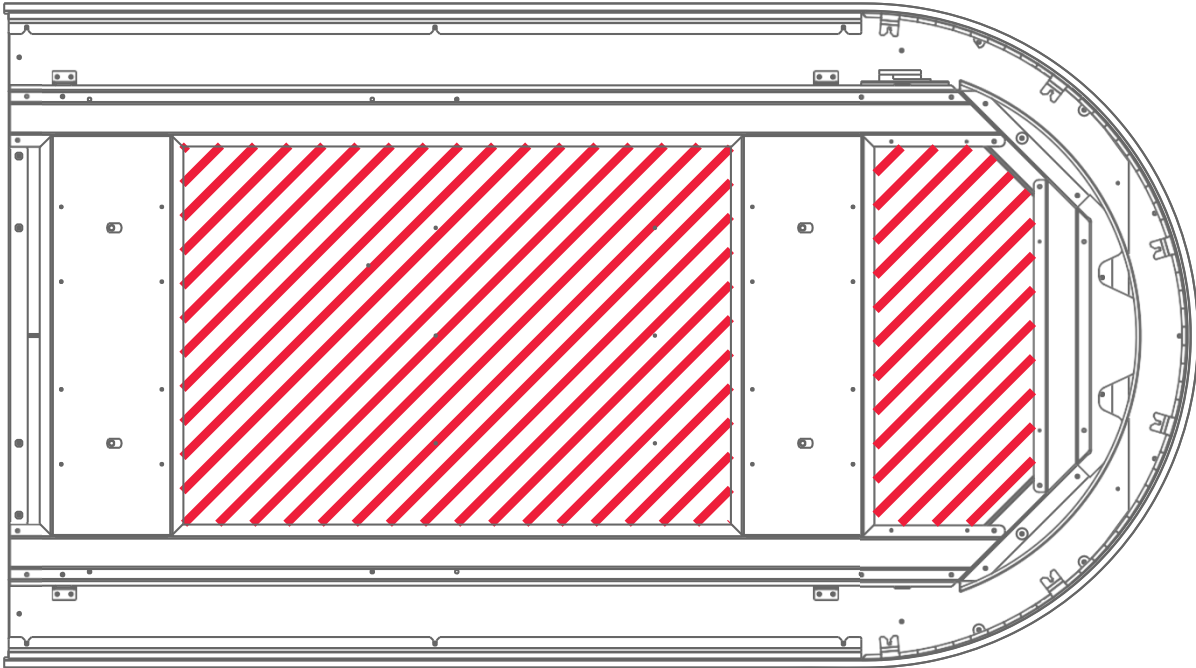


Improper placement of forks may damage drainage piping. Use a spotter when placing forks. Make sure that piping will not be damaged. Use J-Bars or Jacks if Forks cannot be used safely

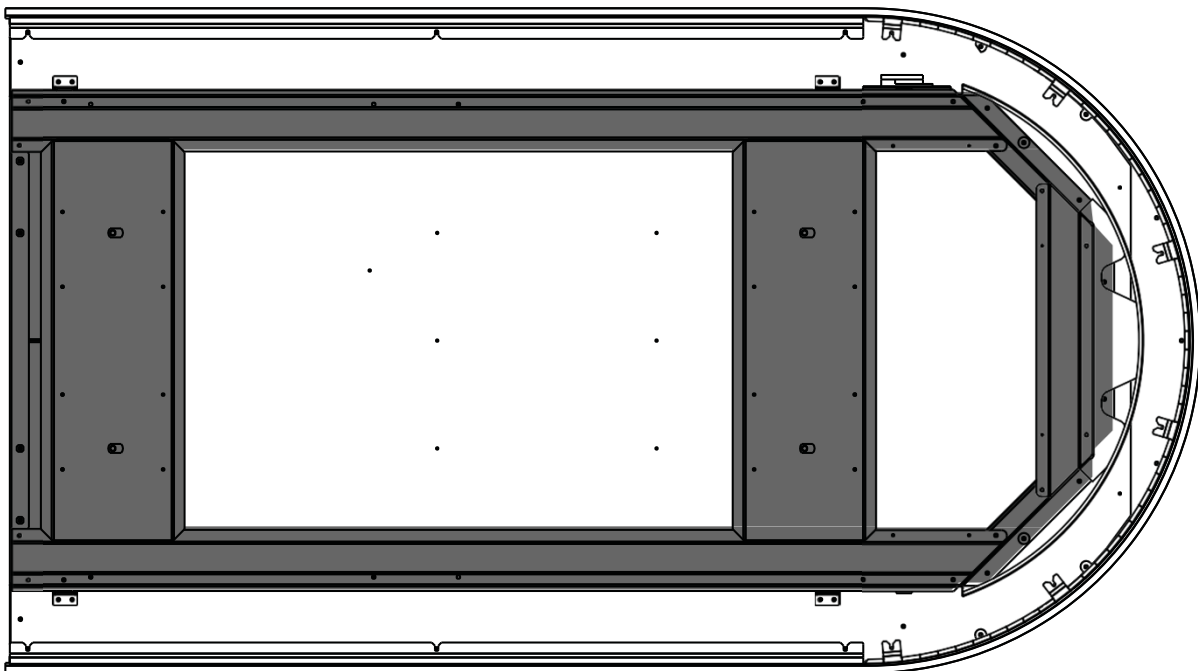
2. Remove close-offs and lower body panels before lifting with a fork. Serious damage will occur if the body panels are not removed.
 - Remove the end case lower and bottom panels first
 - Then remove the side case lower and bottom panels
3. Make sure that fork spacing and width will not damage drain, piping, or electrical lines.
4. Be sure that the forks are long enough to support beyond the center of the case. Check for proper balance before moving. A minimum fork length of 36" is recommended for 68" wide cases.
5. The Entyce can be raised at one end with a forklift to allow the placement of rollers or dollies.
6. Never drag or push the Entyce by ANY COMPONENT including ANY GLASS COMPONENT. This will result in damage to the base, and possibly damage to other components.
7. Evenly support the entire base structure on rollers or dollies before attempting to move. Each Base Leg must have its own dolly to properly support the case.

Installation (Cont'd)

8. Do not lift in marked areas
- Lifting in the prohibited areas can cause serious damage to merchandiser and critical components such as refrigeration and electrical components.
 - Damage to critical components will affect case performance.



9. For optimal lifting of merchandiser support case along highlighted channels shown above.
- Lifting the merchandiser in the area highlighted will ensure most support to the structure of the merchandiser without abruting any case components.



7. Electrical

STANDARD CASE WIRE COLOR CODE CODIGO DE COLORES DE LOS ALAMBRES PARA LAS VITRINAS ESTANDAR CODE COULER 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.

Standard lighting for all refrigerated models will be full length LED Lights located within the case at the top.

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.



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8. Wiring Diagram Index

TY3	3X4.5E-R	4.5'	3047019
	3X5.5E-R	5.5'	3067255
	4X4E-R	4'	1H96214
	4X6E-R	6'	1H85148
	5X9.5E-R	9.5'	3025698
	6X8E-R	8'	1H87790
	6X10E-R	10'	3047529
	5X11.5E-R	11.5'	3025699
	6X12E-R	12'	1H93263

TY4	3X4.5E-R	4.5"	3147394
	3X5.5E-R	5.5"	3105086
	4X4E-R	4'	3047020
	4X6E-R	6'	1H93523
	4X8E-R	8'	3047526
	4X10E-R	10'	3047527
	5X7.5E-R 8", 12", 14" SHELVES	7.5'	3068286
	5X13E-R	13'	3145421
	6X8E-R	8'	3013477
	6X10E-R	10'	1H85192
	TY4ECRC-6X10E-R W/10",12",14" & LEDGE LT	10'	3067655
	6X12E-R	12'	3016190
	TY4ECRC-6X12E-R 10", 12", 14" SHELVES	12'	3058530

TY3-SELF CONTAINED	TY3-3X4.5E-S	4.5'	3043372
DAN FOSS	TY3EC-3X4.5E-S	4.5'	3047158
	TY3EC-3X5.5E-S	5.5'	3058910
	TY3-3X4.5E-S	4.5'	3062195
	TY3-4X4E-S HARRIS TEETER ONLY	4'	3043374
	TY3-4X4E-S W/PARKING LOT	4'	3070437
	TY3-4X6E-S	6'	3043375
	TY3-4 X 8E-S	8'	3102623

Wiring Diagram Index (cont'd)

TY4- PRESSURE CONTROL	TY4-4X4E-S R-404A/448A	4'	3129624
	TY4-4X6E-S R-404A/448A	6'	3129626
	TY4-4X8E-S R-448A	8'	3129628
TY4-SELF CONTAINED	TY4-4X4E-S	4'	3042639
DAN FOSS	TY4-3X5.5E-S	5.5'	3042640
	TY4-4X6E-S	6'	3042642
	TY4-4X8E-S	8'	3071170

DIXELL CTRL	TY3EC-3X4.5E-S W/XR75 CTRL	4.5'	3168381
	TY3ECRC-4X6E-S W/XR75 CTRL	6'	3157152
	TY3-4X4E-S W/XR75 CTRL	4'	3160998
	TY4-4X6E-S W/XR75 CTRL	6'	3157267
	TY4-4X8E-S W/XR75 CTRL	8'	3160098

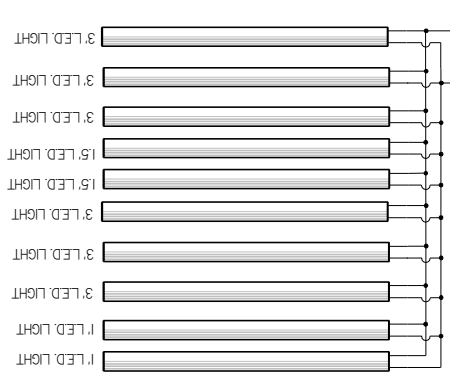
CIRCUIT #1
LOADING

120V	
L1	
L2	
L3	

REVISION HISTORY

REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
1	EN-CAP-000957	2007/01/13	RELEASED TO PRODUCTION	CB	CB	CB

LIGHT CIRCUIT
43A 466W @ 120V



CIRCUIT #2

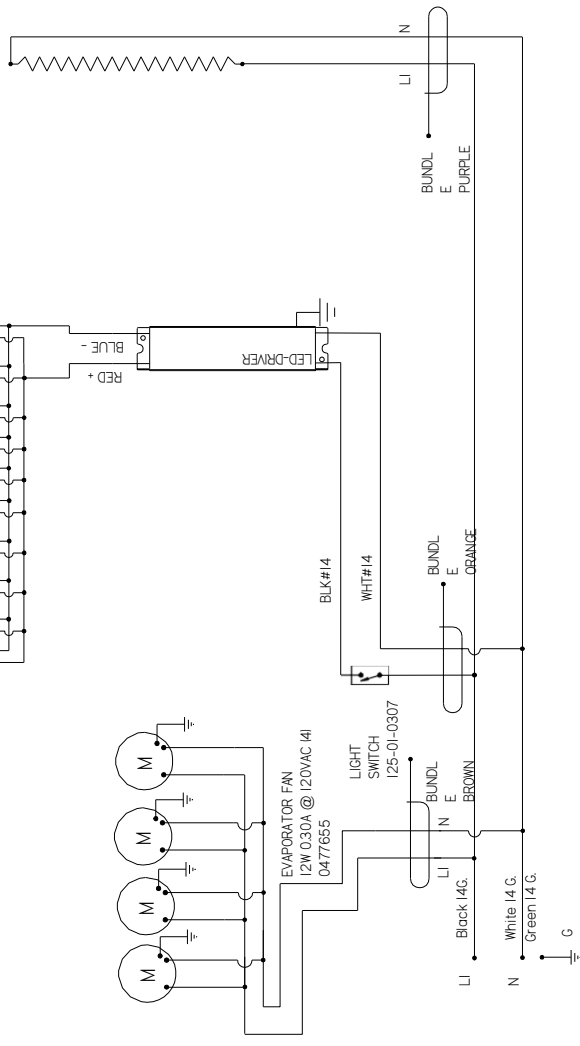
LOADING	120 V
L1	15.0
L2	
L3	

NOTE: CASE MUST BE GROUND

GFCI DUPLEX
125-01-3178

CIRCUIT #2
~120 VAC - 1Ø - 60 Hz

ANTI-SWEAT HEATER
50W 46A@ 120 VAC
0-497590



MATERIAL - NA

DATE DRAWN - 10-13-17
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX ±0.3 .XXX ±0.10
ANGLES ± 2°

ECN:CAP-000957
REF -
SHEET 1 OF 1
THIRD

HUSSMANN
DIAGRAM-1Y3-3X4.5
E-R

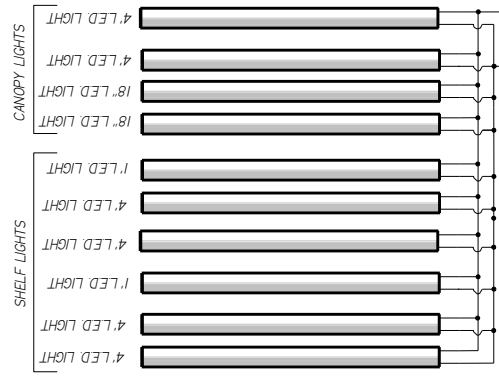
3047019 A

PROJECTION

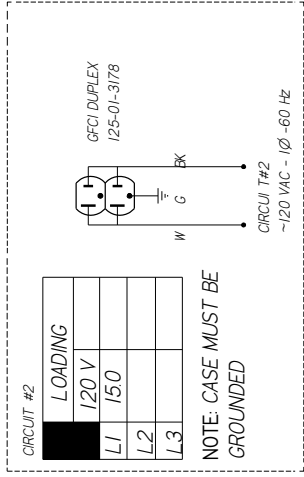
NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0012688	2018/08/27	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-CAP-006794	2018/03/06	REVISED ANTI-SWEAT HEATER TO 60 WATTS	CB	CB	CB

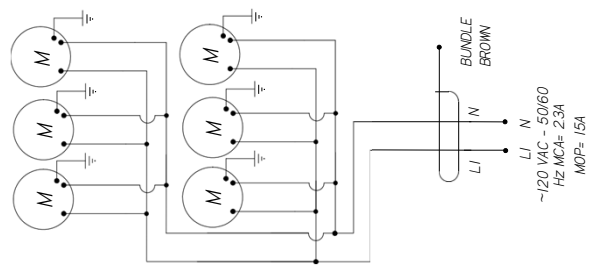
CIRCUIT #1	LOADING	120V	150	1.3



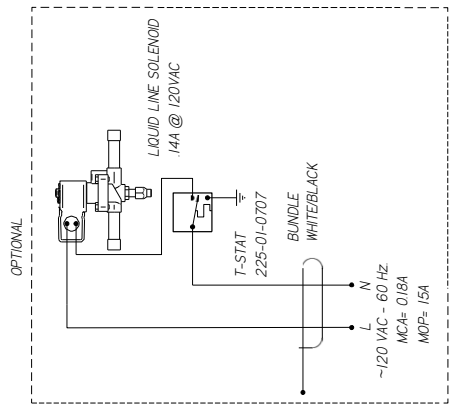
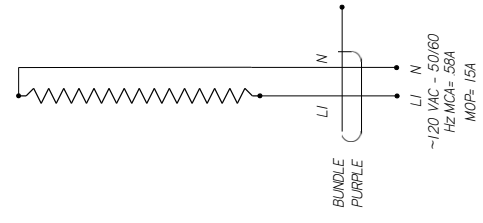
LIGHT CIRCUIT
0574 616W @ 120V



EVAPORATOR FAN
12W 0.30A @ 120V/AC
161 0477655



ANTI-SWEAT HEATER
60W 55A @ 120 VAC
0495008



HUSSMANN
DIAGRAM-1Y3EC-
3X 5.5E-R

MATERIAL - NA
DATE DRAWN - 6-27-18
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
THIRD ANGLE PROJECTION
DECIMALS .XX ±0.3 .XXX ±0.10 ANGLES ± 2°

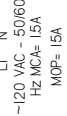
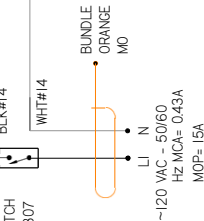
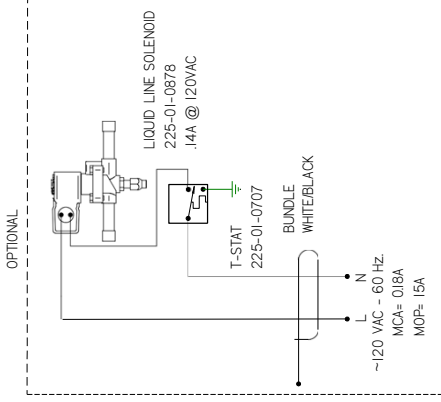
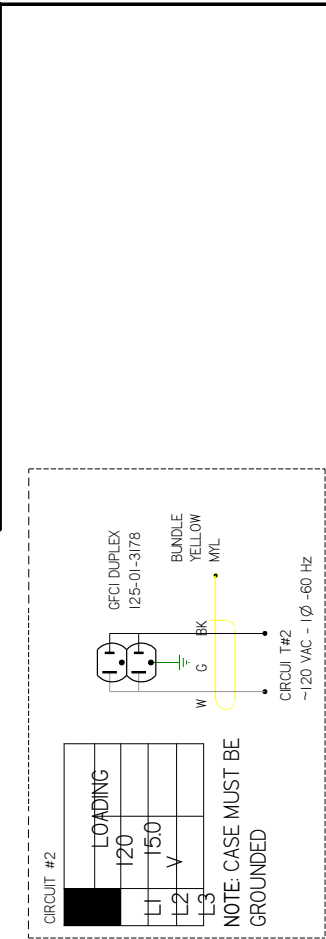
NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED



3067255 | B

CIRCUIT #1				
LOADING	120V			
	15.0			

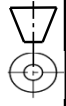
REVISION HISTORY				
REV	ECN	DATE	DESCRIPTION	APPROBY
A	768637	20.01.26	NEW DIAGRAM	CE
B	ECN-20016295	2022.02.28	NEW LIGHTS	AL



HUSSMANN	
DATE DRAWN - 12/26/13	ECN# -
DRAWN BY - CRAIG BOOREY	768637 REF - NEW
REVIEWED BY - CRAIG BOOREY	DIAGRAM SHEET LOE I
APPROVED BY - CRAIG BOOREY	DIAGRAM SHEET LOE I
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ARE:	
FINISH	THRU
DECIMALS .XX +03 .XXX	ANGL
+0.0	E
	PROJECTION

NOTES:
CASE MUST BE GROUNDED

IH96214 | B

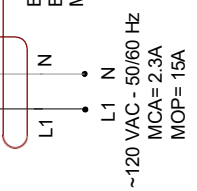
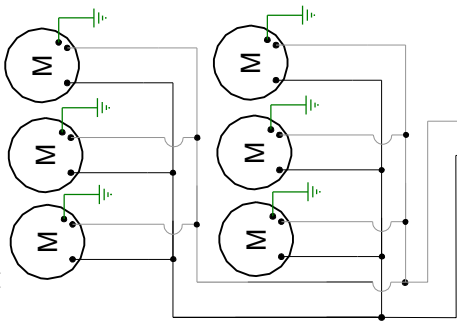


CIRCUIT #1

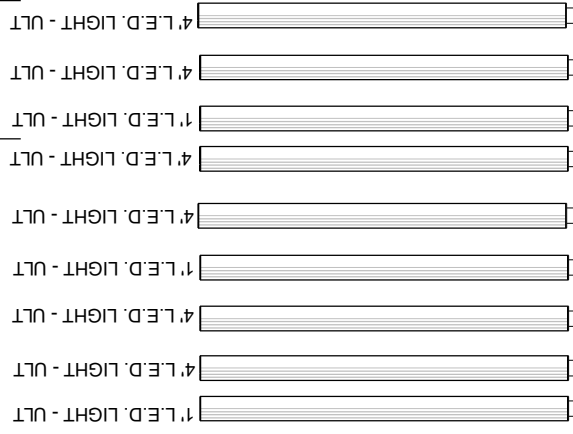
LOADING	
120V	
L1	3.0
L2	
L3	

NOTE: CASE MUST BE GROUNDED

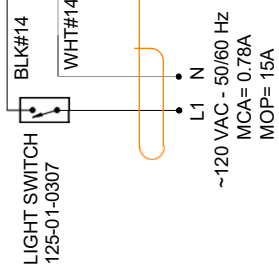
EVAPORATOR FAN
12W 0.30A @ 120VAC
(6) 0477655



CANOPY LIGHTS

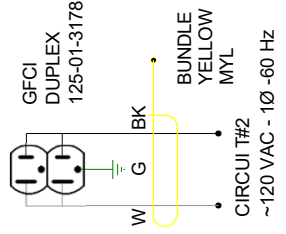


LIGHT CIRCUIT
0.62A 67.4W @
120V

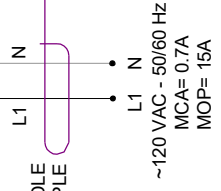
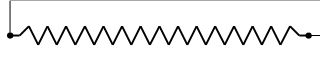


CIRCUIT #2	LOADING
	120 V
L1	15.0
L2	
L3	

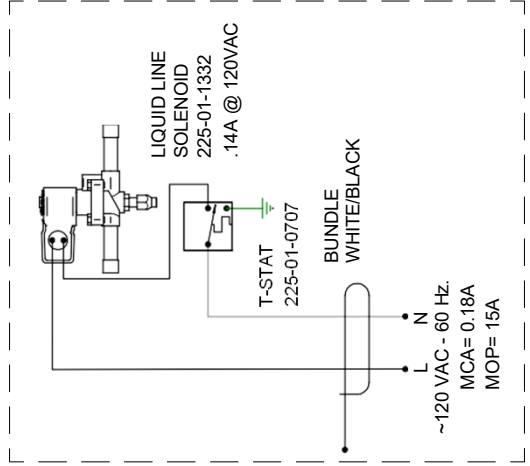
NOTE: CASE MUST BE GROUNDED



ANTI-SWEAT HEATER
60W .56A @ 120 VAC
0495008



OPTIONAL



REVISIONS:

#	DESCRIPTION:	DATE:	BY:	CHECKED BY:	DATE:
A	CN#696786	3/12/13	CB		3/21/13
B	ECN-COD-0015255 NEW LIGHTS, REMOVED DRIVER	2/28/22	AL		936374

DRAWN BY: CRAIG BOOREY
PROJECT TITLE: TY3-4X6E-R
DRAWING TITLE: DIAGRAM-TY3-4X6E-R

FILE LOCATION:
DRAWING ORDER #:
DRAWING #:

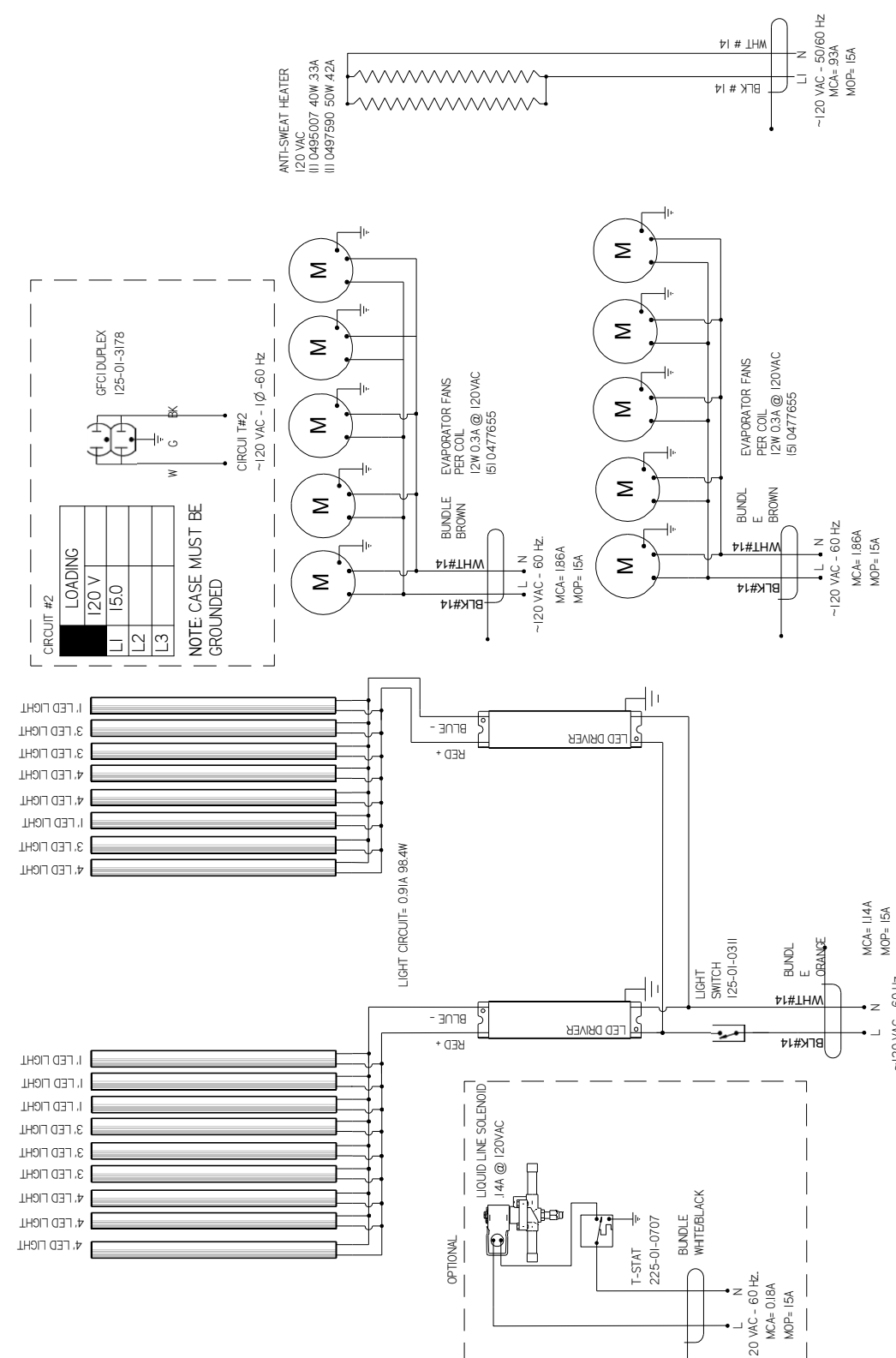
REVISION HISTORY		REV BY	CHKD BY	APPR BY
A	ECN-CAP-0006457	20170214	CB	CB
REVISION DESCRIPTION				
RELEASED TO PRODUCTION				

CIRCUIT #1	LOADING
L1	4.7
L2	
L3	

CIRCUIT #2	LOADING
L1	15.0
L2	
L3	

CIRCUIT #2	LOADING
L1	15.0
L2	
L3	

NOTE: CASE MUST BE GROUNDED



MATERIAL - NA	DATE DRAWN - 2-14-17
DRAWN BY - CRAIG BOOREY	ECN-CAP-0006457
REVIEWED BY - CRAIG BOOREY	REF -
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	TOLERANCES ARE:
DECIMALS .XX ±0.3 .XXX ±0.10	ANGLES ± 2°

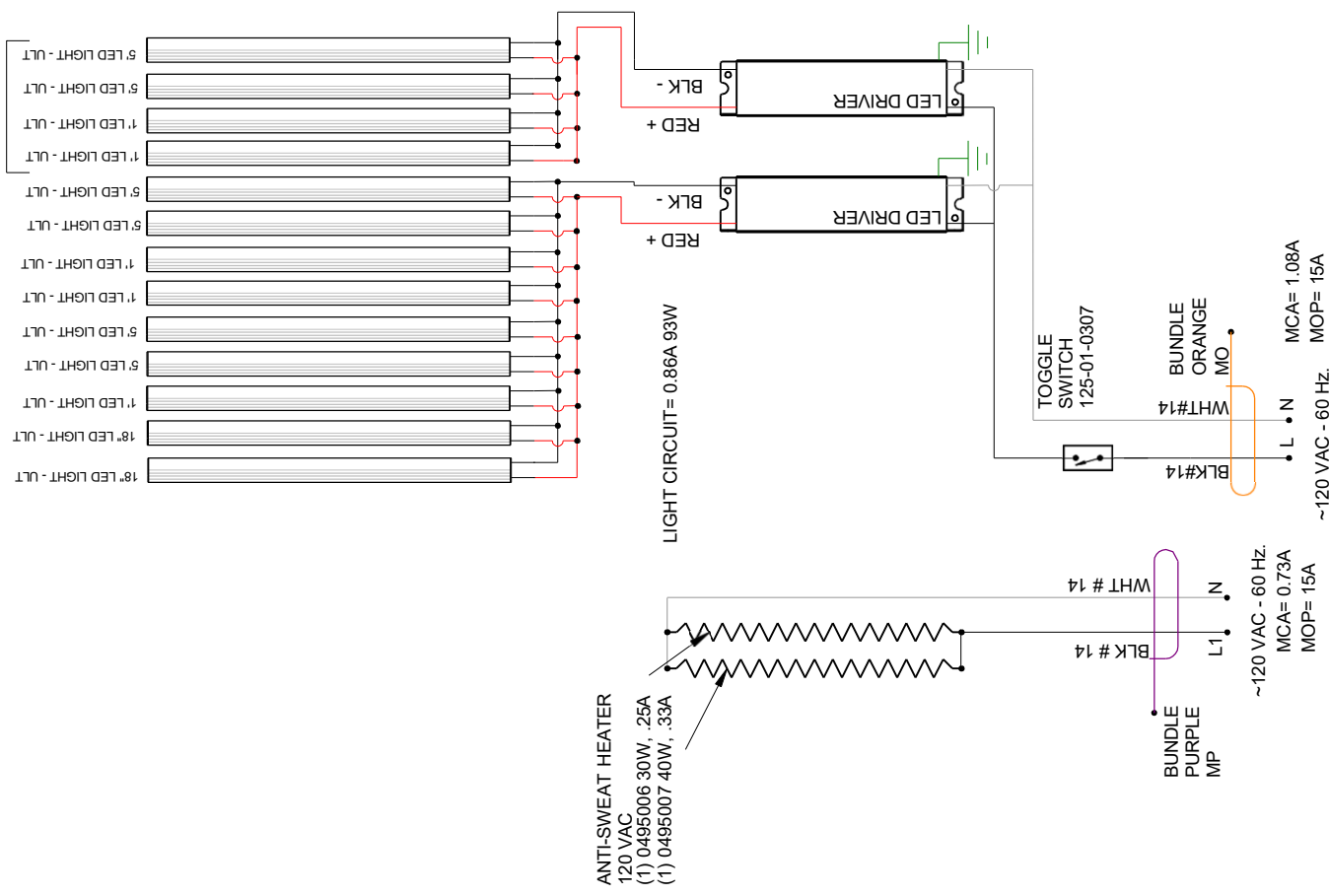
PROJECTION

3025698 A

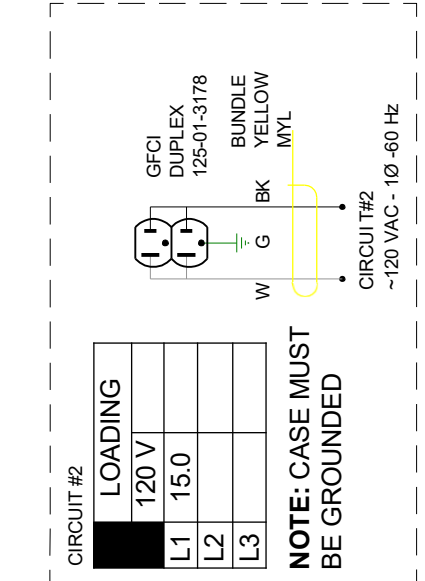
HUSSMANN
DIAGRAM-1Y3-5X95
E-R

NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

CANOPY LIGHTS



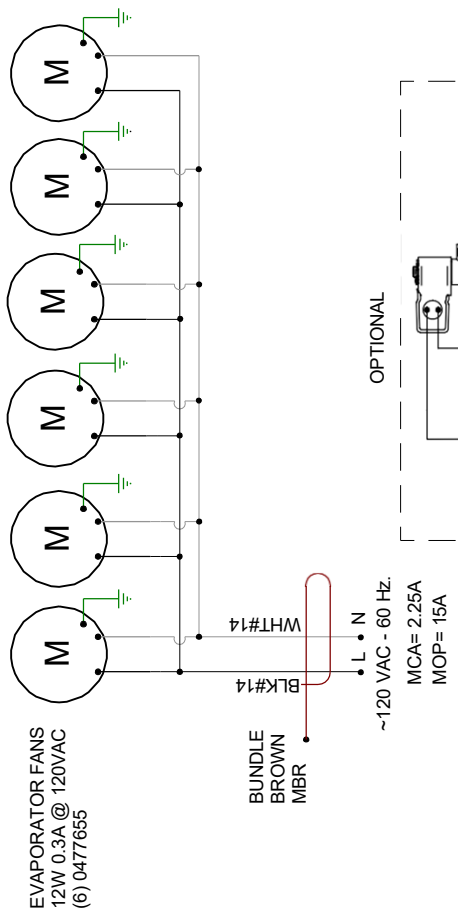
CIRCUIT #2



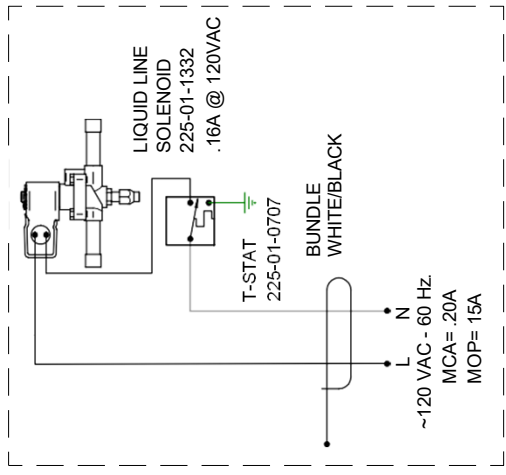
LOADING	
120 V	
L1	3.24
L2	
L3	

NOTE: CASE MUST BE GROUNDED

EVAPORATOR FANS
12W 0.3A @ 120VAC
(6) 0477655



OPTIONAL



REVISIONS:

#	DESCRIPTION:	DATE:	BY:
A	CN# 720718	6/5/13	CB
B	CN#980241 Revised ANTI-SWEAT HEATER	4/16/15	CB
C	ECN-COD-0015255 NEW LIGHTS, ADDED DRIVER	2/28/22	AL

DRAWN BY: CRAIG BOOREY
CHECKED BY:

DATE: 6/5/13
PRODUCTION ORDER #:

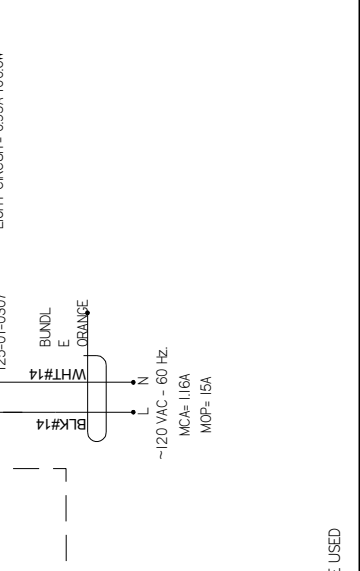
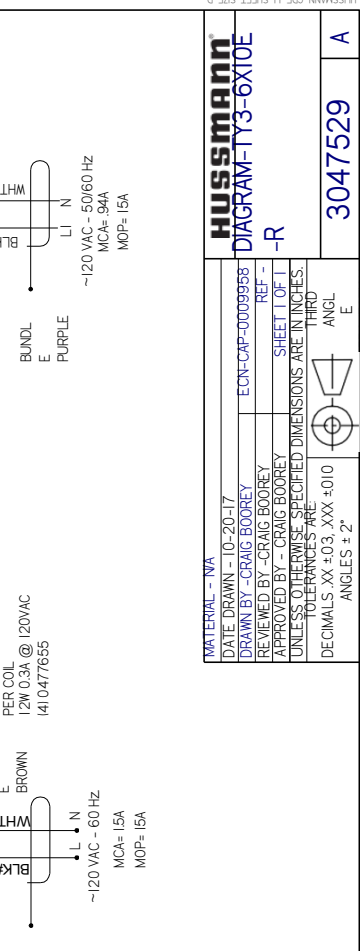
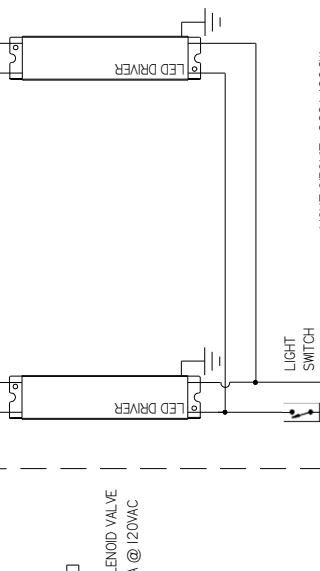
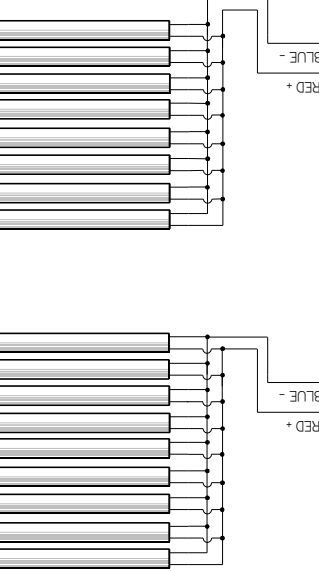
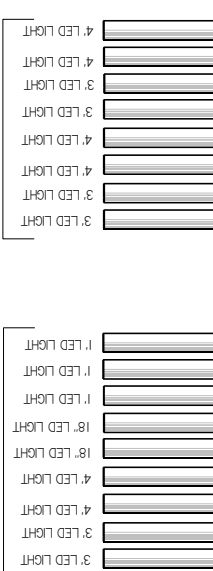
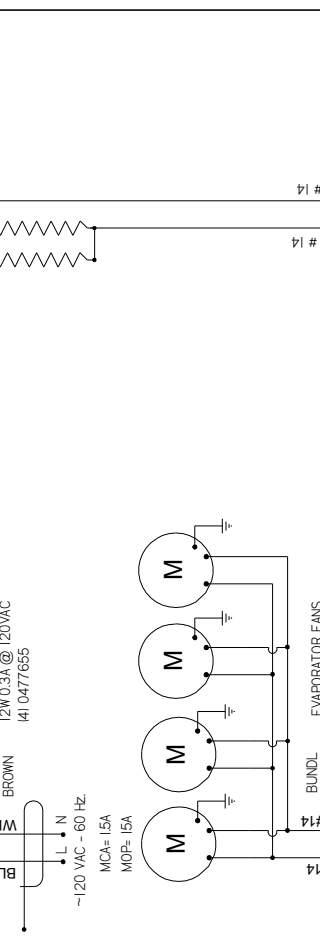
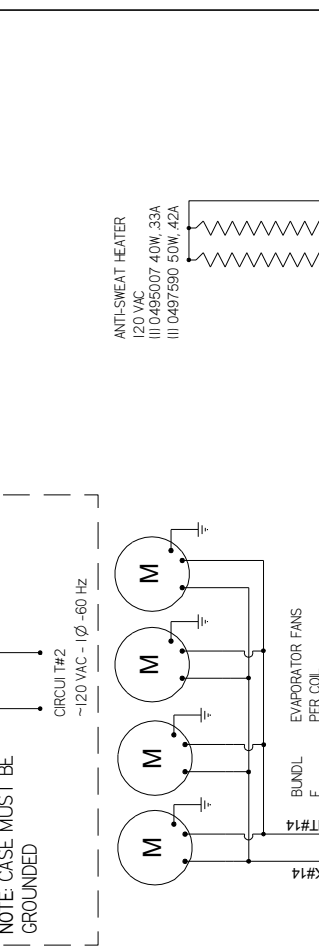
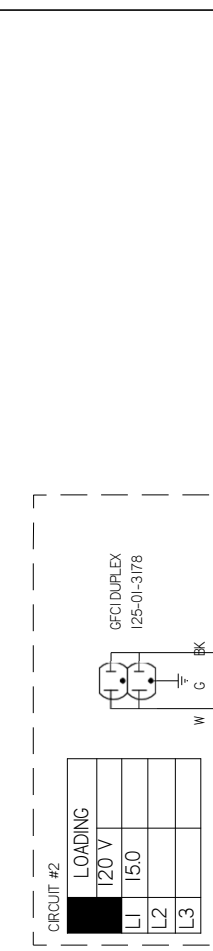
FILE LOCATION:

PROJECT TITLE: **TY3-CASE**
DRAWING TITLE: **DIAGRAM-TY3-6X8E-R**

REVISION HISTORY		REV BY	CHKD BY	APPR BY
1	ECN-CAP-0009958	2010/02/20	CB	CB
REVISION DESCRIPTION		CB	CB	CB
RELEASED TO PRODUCTION		CB	CB	CB

CIRCUIT #1	LOADING
L1	41
L2	
L3	

CIRCUIT #2	LOADING
L1	150
L2	
L3	



HUSSMANN
DIAGRAM-1Y3-6XT0E
-R

MATERIAL - NA
 DATE DRAWN - 10-20-17
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 SHEET 1 OF 1
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 DECIMALS .XX ±0.3 .XXX ±0.10
 ANGLES ± 2°

ECN-CAP-0009958
 REF -
 THIRD
 PROJECTION

3047529

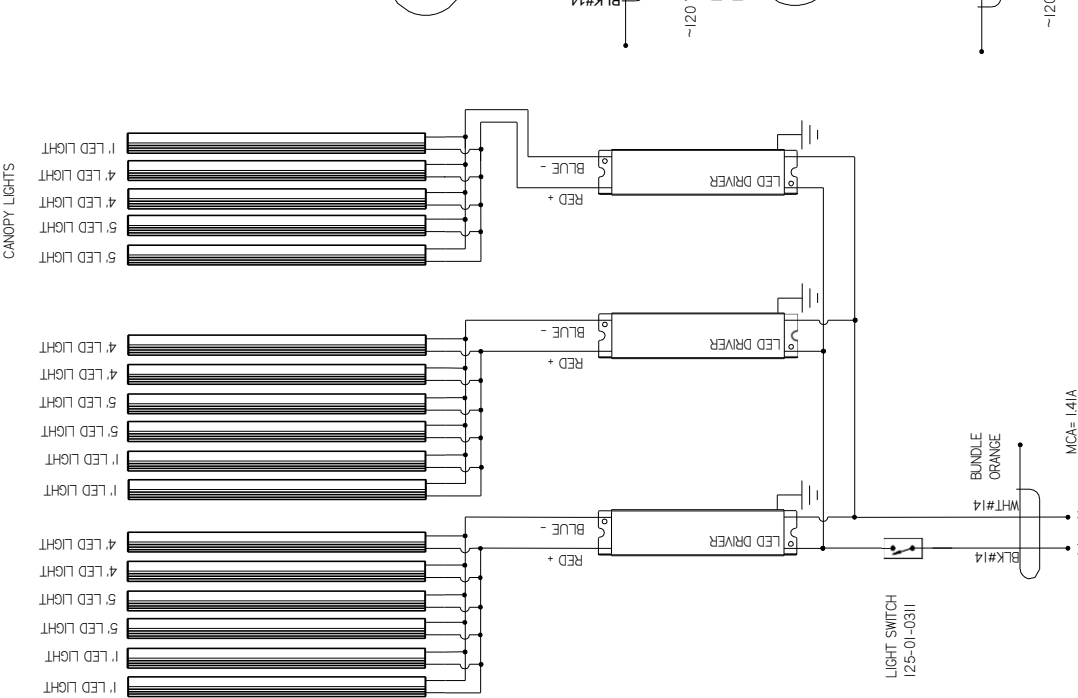
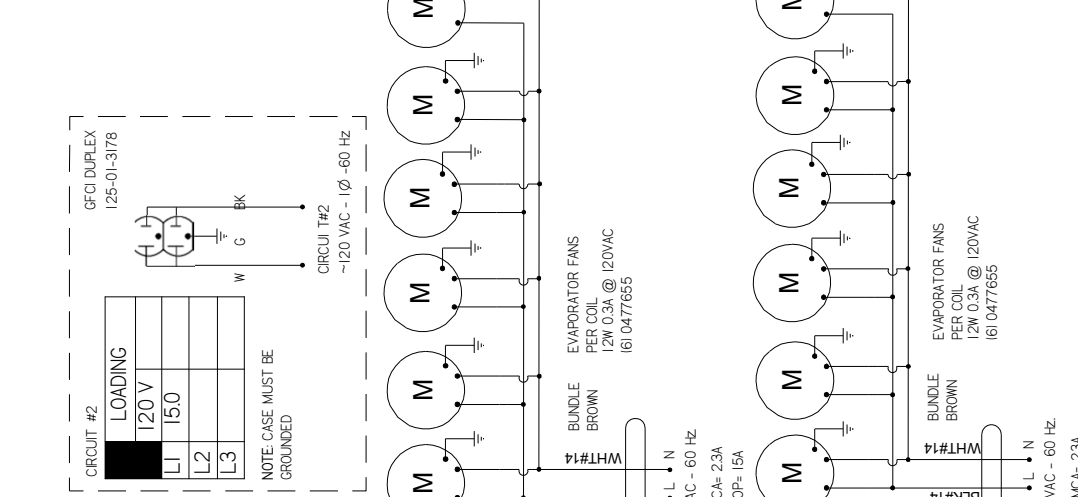
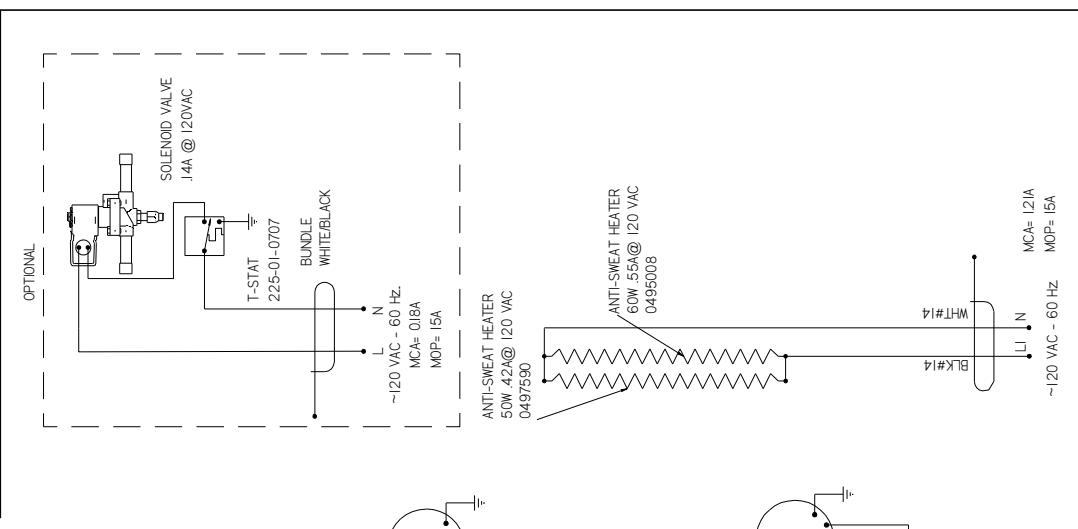
A

NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
1	ECN-CAP-0006457	2017/02/14	RELEASED TO PRODUCTION	CB	CB	CB
2	ECN-CAP-0007702	2017/05/18	REVISED CANOPY LIGHTS	CB	CB	CB

CIRCUIT #1	LOADING
	120V
	L1 6.7
	L2
	L3

CIRCUIT #2	LOADING
	120V
	L1 15.0
	L2
	L3



MATERIAL - N/A	DATE DRAWN - 2-14-17	ECN-CAP-0006457
DRAWN BY - CRAIG BOOREY	REV -	REF -
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 1	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		
TOLERANCES ARE:		
DECIMALS .XX +0.3 .XXX +0.10	ANG	E
ANGLES ± 2°		

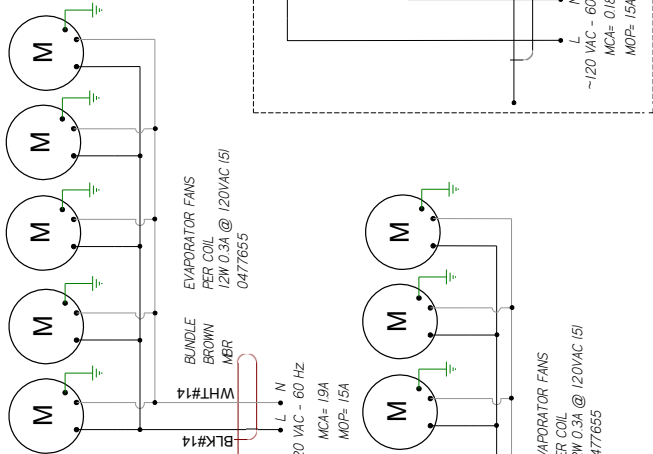
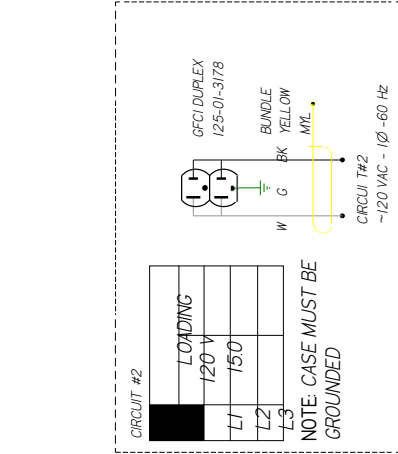
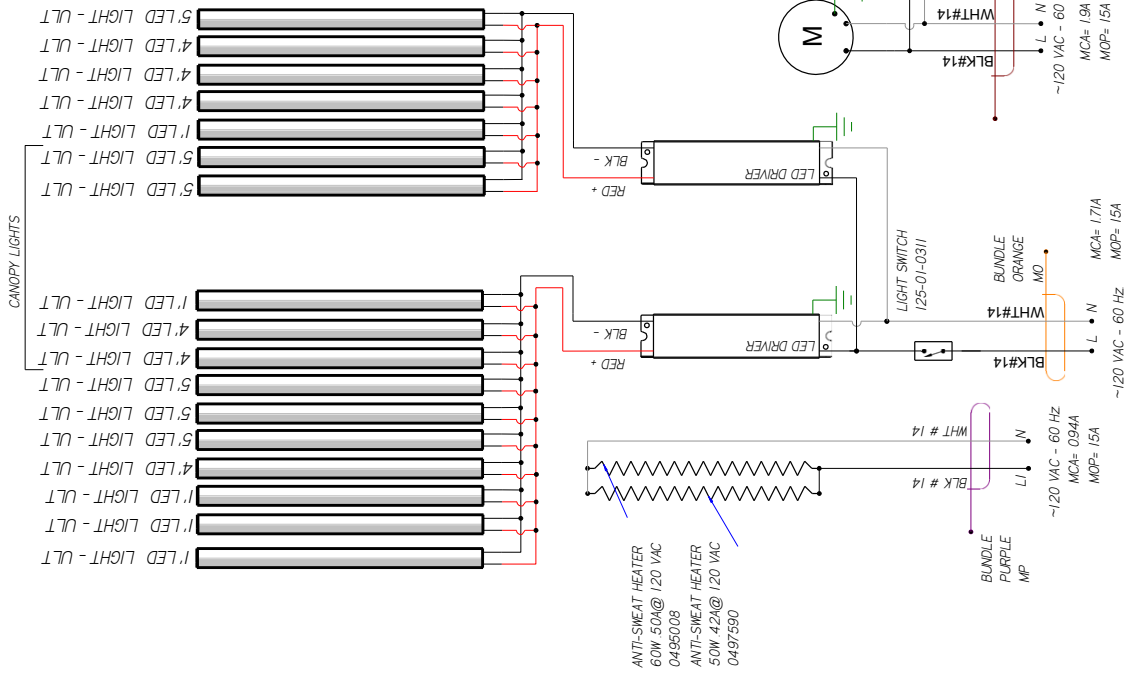
3025699	B
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PROJECTION

NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

CIRCUIT #1	LOADING	120V	150	175

LIGHT CIRCUIT= 137A 1484W



REV	ECN	DATE	DESCRIPTION	REV BY	CHK BY	APP BY
A	765011	2010/10/14	RELEASED TO PRODUCTION	CB	CB	CB
B	880241	2015/04/16	CHANGED ANTI-SWEAT #/FR	CB	CB	CB
C	LEAD-00006255	2022/02/28	NEW LIGHTS	A	CB	CB

REVISION HISTORY

HUSSMANN
DIAGRAM -
TY3-6X12E-
R

MATERIAL - NA
DATE DRAWN - 10/14/13
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX ± 0.3, .XXX
± 0.0
ANGLES ± 2°
PROJECTION
E
C

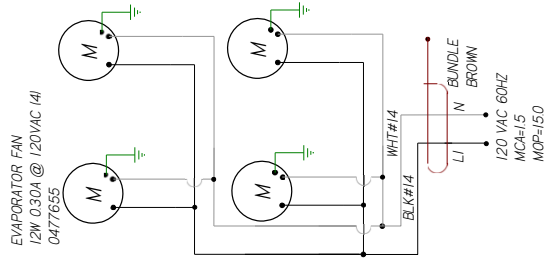
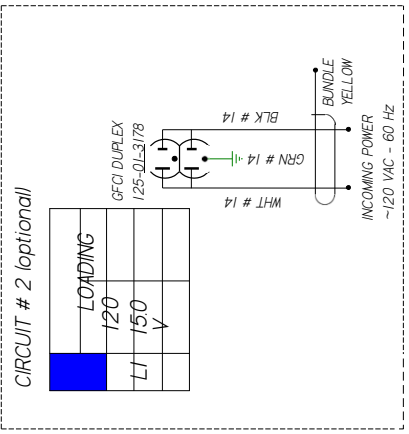
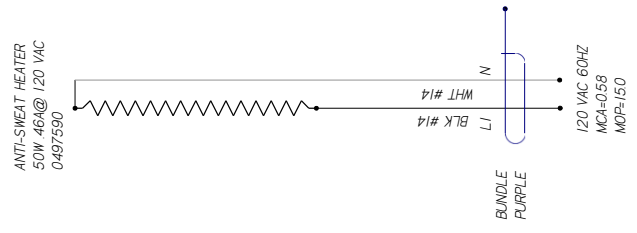
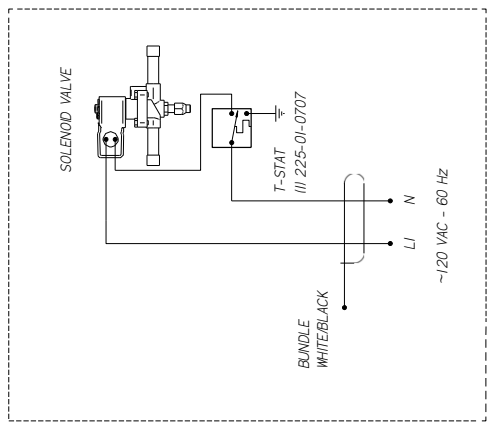
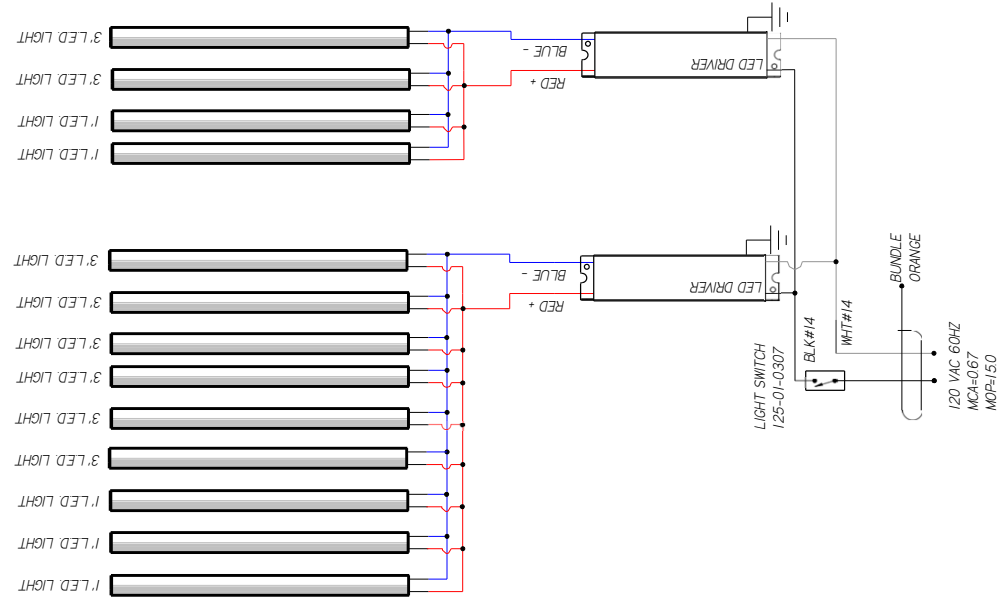


NOTES:
CASE MUST BE GROUNDED

CIRCUIT #1				
LOADING				
	120V			
	L1	250		

REVISION HISTORY				
REV	ECN	DATE	REVISION DESCRIPTION	REV BY / CHKD BY / APPR BY
A	ECN-000-0013658	4-15-21	RELEASED TO PRODUCTION	CB CB CB

LIGHT CIRCUIT
054A 582W @ 120V



CIRCUIT # 2 (optional)

LOADING			
	120		
	L1	150	

HUSSMANN
DIAGRAM-TY4-3X4.5 E-R
3147394

FACTORY 14GA WIRE
 _FACTORY 10GA WIRE
 _ _ _ FIELD WIRE
 _ _ _ _ _

DO NOT SCALE DRAWING
 SHEET 1 OF 1

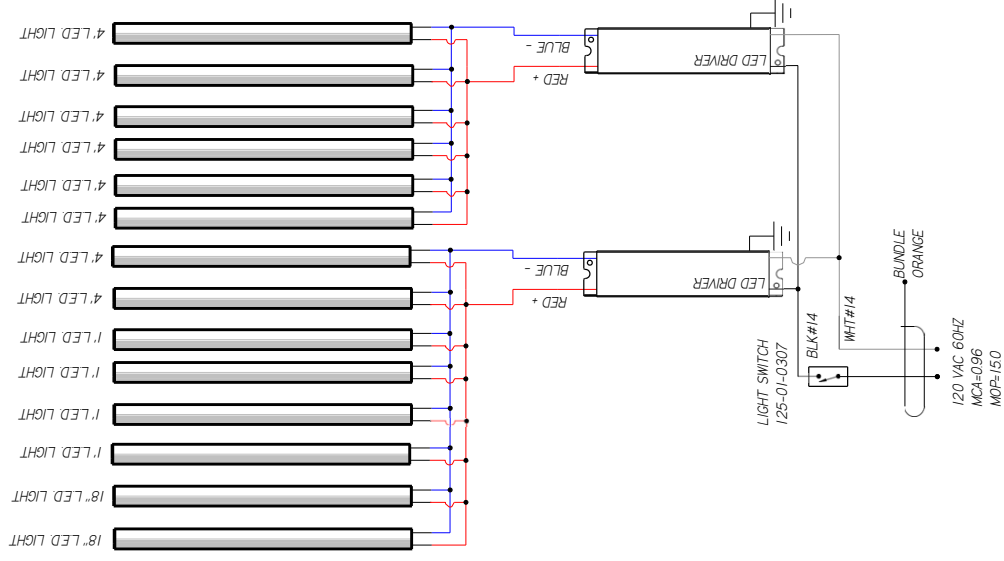
UL COLOR CODES / ABBREVIATIONS
 RED = RD
 BLACK = BK
 BLUE = BL
 YELLOW = YL
 GRAY = GR
 WHITE = WT
 GREEN = GN
 BROWN = BN
 ORANGE = OR
 OR VIOLET = VT

- NOTES:
1. PRINTED DOCUMENT REQUIRED SETTING. ALL COLORS BLACK & WHITE
 2. CASE & ANY REMOVABLE PANEL WITH ELECTRICAL PARTS MUST BE GROUNDED.
 3. WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

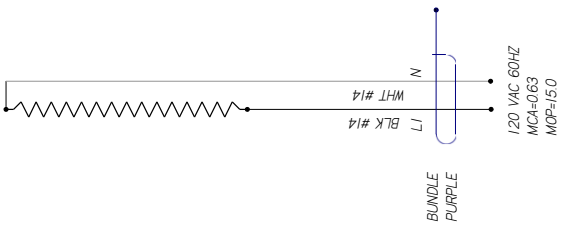
CIRCUIT #1			
LOADING			
120V			
175A			

REVISION HISTORY			
REV	ECN	DATE	REVISION DESCRIPTION
A	ECN-CAP-0019092	8-21-19	RELEASED TO PRODUCTION
			REV BY / CHKD BY / APPR BY
			CB / CB / CB

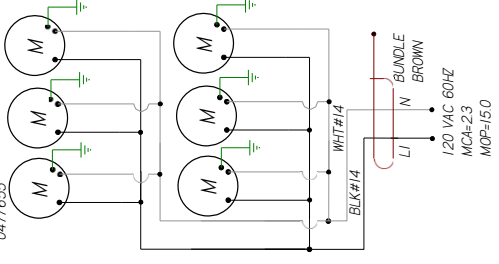
LIGHT CIRCUIT
077A 82.6W @ 120V



ANTI-SWEAT HEATER
60W 50A @ 120 VAC
0495008



EVAPORATOR FAN
12W 0.30A @ 120VAC (6)
0477655



HUSSMANN
DIAGRAM-TY4-3X5.5 E-R

FACTORY 14GA WIRE
FACTORY 10GA WIRE
FIELD WIRE
DO NOT SCALE DRAWING
SHEET 1 OF 1

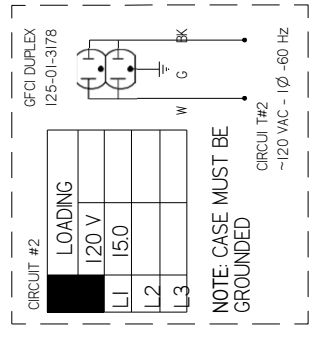
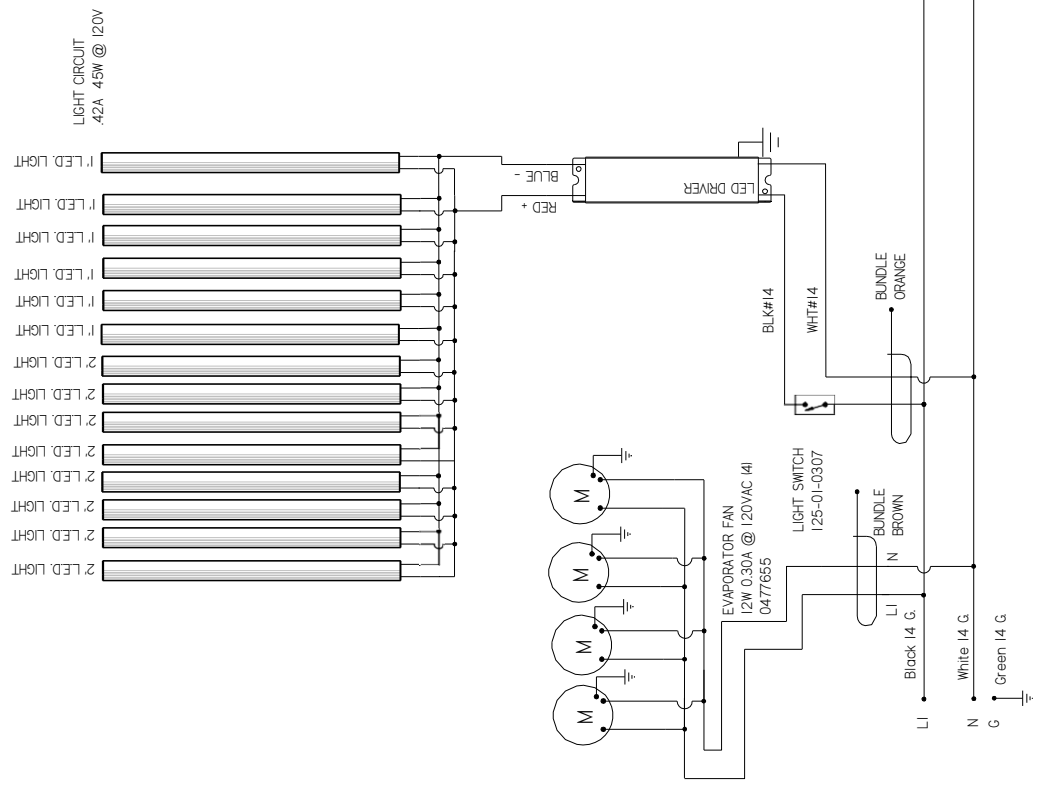
UL COLOR CODES / ABBREVIATIONS
 RED = RD
 BLACK = BK
 BLUE = BL
 YELLOW = YL
 GRAY = GR
 WHITE = WT
 GREEN = GN
 BROWN = BN
 ORANGE = OR
 PURPLE = VT

3105086
REV A

- NOTES:
1. PRINTED DOCUMENT REQUIRED SETTING: ALL COLORS BLACK & WHITE
 2. CASE & ANY REMOVABLE PANEL WITH ELECTRICAL PARTS MUST BE GROUNDED.
 3. WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY		REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
1	EN	EN-CAP-0009957	2007/01/13	RELEASED TO PRODUCTION	CB	CB	CB	CB

CIRCUIT #1	LOADING
	120V
	L1 120
	L2
	L3



MATERIAL - NA		DATE DRAWN	10-13-17
DRAWN BY - CRAIG BOOREY		ECN-CAP-0009957	REF -
REVIEWED BY - CRAIG BOOREY		SHEET 1 OF 1	THIRD
APPROVED BY - CRAIG BOOREY		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE:	
DECIMALS	XX ±0.3, XXX ±0.10	ANGL	E
ANGLES ± 2°		PROJECTION	
3047020		A	

NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY			
REV	EN	DATE	DESCRIPTION
A	ECN-CAP-0009958	2017/01/20	RELEASED TO PRODUCTION
B	ECN-COR-0015265	2022/04/20	NEW LIGHTS

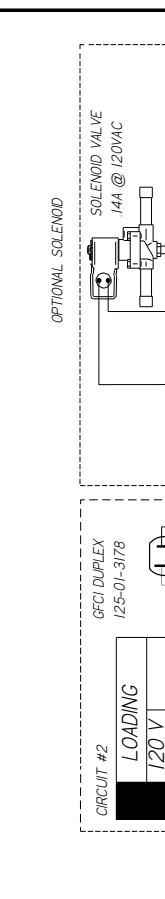
REV	CHD	BY	APPR	BY
CB				
CB				
CB				

CIRCUIT #1	LOADING
L1	120V
L2	150
L3	

NOTE: CASE MUST BE GROUNDED



CIRCUIT #2
~120 VAC - 60 Hz
MCA= 18A
MOP= 15A

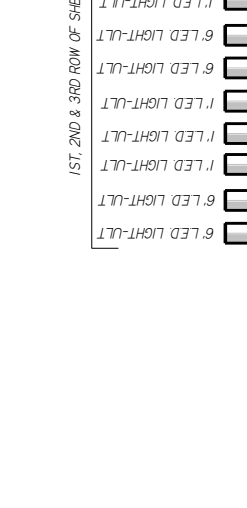


OPTIONAL SOLENOID
SOLENOID VALVE
1/4" @ 120VAC
T-STAT
225-01-0707
BUNDLE
WHITE/BLACK

ANTI-SWEAT HEATER
40W, 3TA @ 120V
121 0495007



BUNDLE
PURPLE
MP
~120 VAC - 60 Hz
MCA= 093A
MOP= 15A



EVAPORATOR FAN
12W, 0.30A @ 120VAC
181 0477655

LIGHT CIRCUIT
117A 1265W @ 120V
LIGHT SWITCH
125-01-0307
BUNDLE
BROWN
MER
~120 VAC - 60 Hz
MCA= 30A
MOP= 15A

BUNDLE
ORANGE
MO
WHT#14
BLK#14
~120 VAC - 60 Hz
MCA= 146A
MOP= 15A

1ST, 2ND & 3RD ROW OF SHELVES
CANOPY LIGHTS

1' LED LIGHT-ULT
6' LED LIGHT-ULT
1' LED LIGHT-ULT
6' LED LIGHT-ULT
1' LED LIGHT-ULT
6' LED LIGHT-ULT
1' LED LIGHT-ULT
6' LED LIGHT-ULT
1' LED LIGHT-ULT
6' LED LIGHT-ULT
1' LED LIGHT-ULT
6' LED LIGHT-ULT
1' LED LIGHT-ULT
6' LED LIGHT-ULT
1' LED LIGHT-ULT
6' LED LIGHT-ULT

ANGLES ± 2°

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
THIRD ANGLE PROJECTION

DECIMALS .XX ± 0.3, .XXX ± 0.10

DATE DRAWN - 10-20-17
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
SHEET NO. 1
REF -
ECN-CAP-0009958
DIAGRAM-F14-4X8E-R

MATERIAL - NA

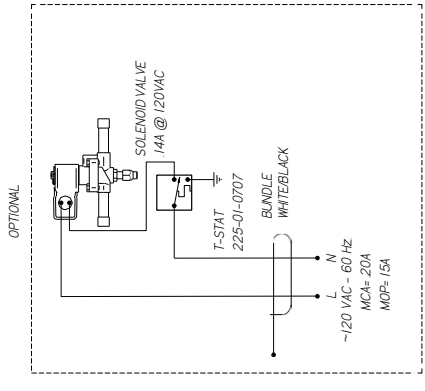
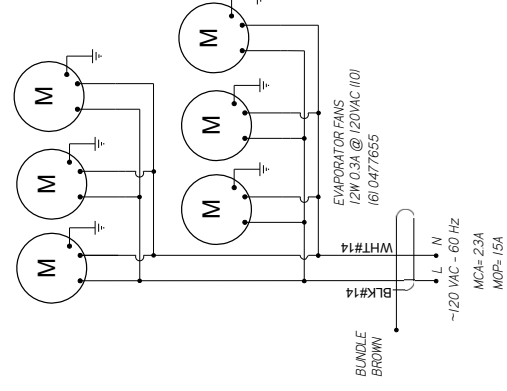
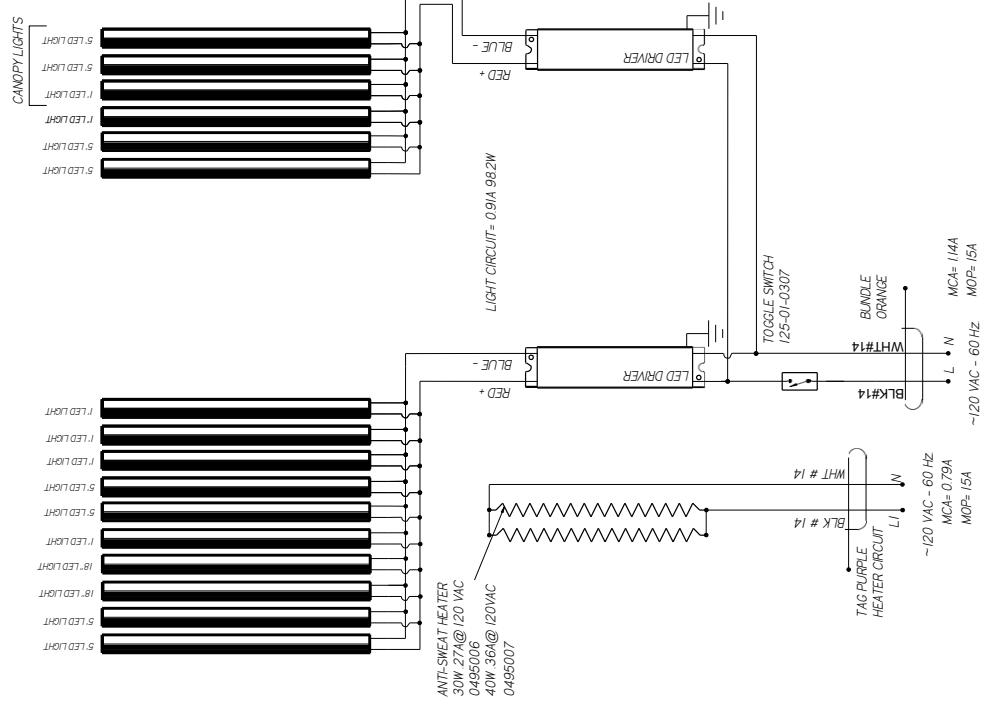
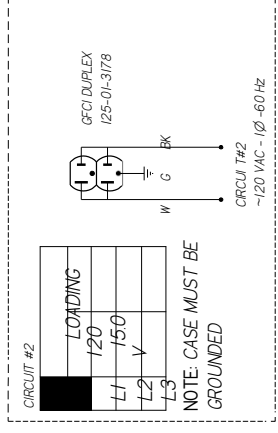
3047526 | B

HUSSMANN

NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY		REV. BY	CHKD BY	APPR BY
1.	ECN-CAP-003270	2018/07/09	CB	CB
REVISION DESCRIPTION				
RELEASED TO PRODUCTION				

CIRCUIT #1	LOADING	120V	150V



HUSSMANN
DIAGRAM-114-
5X7.5 E-R

MATERIAL - N/A
DATE DRAWN - 7-9-18
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
SHEET NO. 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
THIRD ANGL
E
PROJECTION

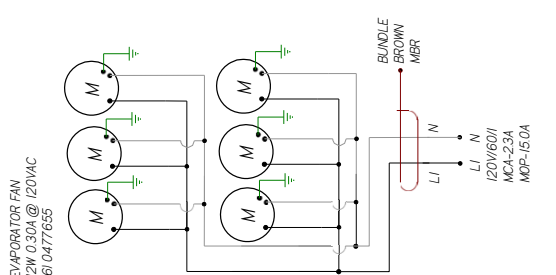
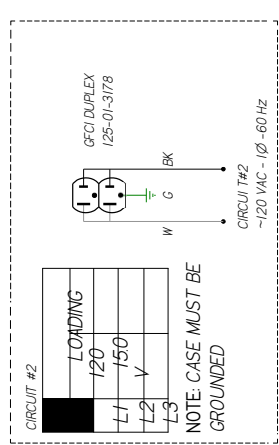
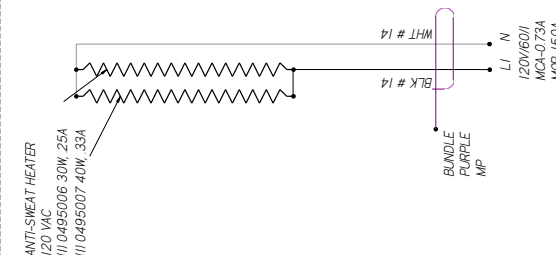
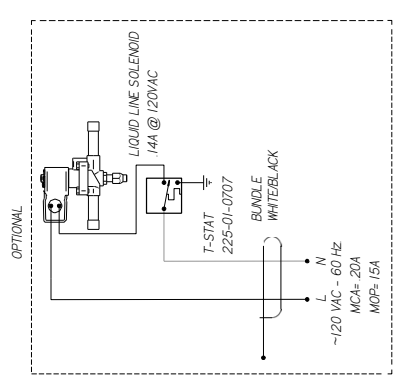
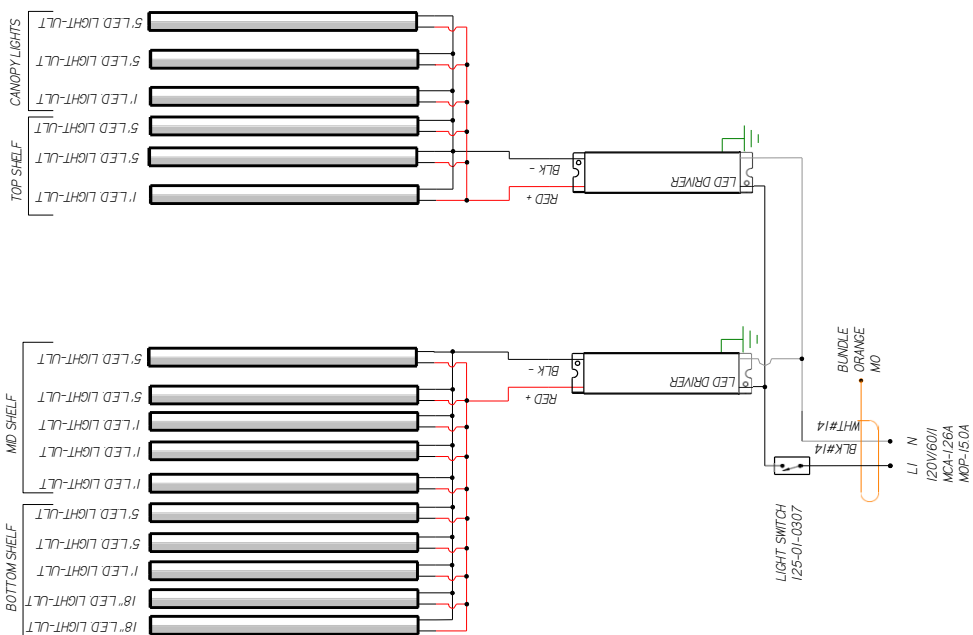
3068286 | A

NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY			
REV	EN	DATE	DESCRIPTION
A	ECN-CAP-0003235	20160807	RELEASED TO PRODUCTION
B	ECN-CAP-0015289	20220429	NEW LIGHTS

REV	CHKD BY	APPR BY
CB	CB	CB
CB	CB	CB

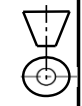
LIGHT CIRCUIT
101A 1091W @ 120V



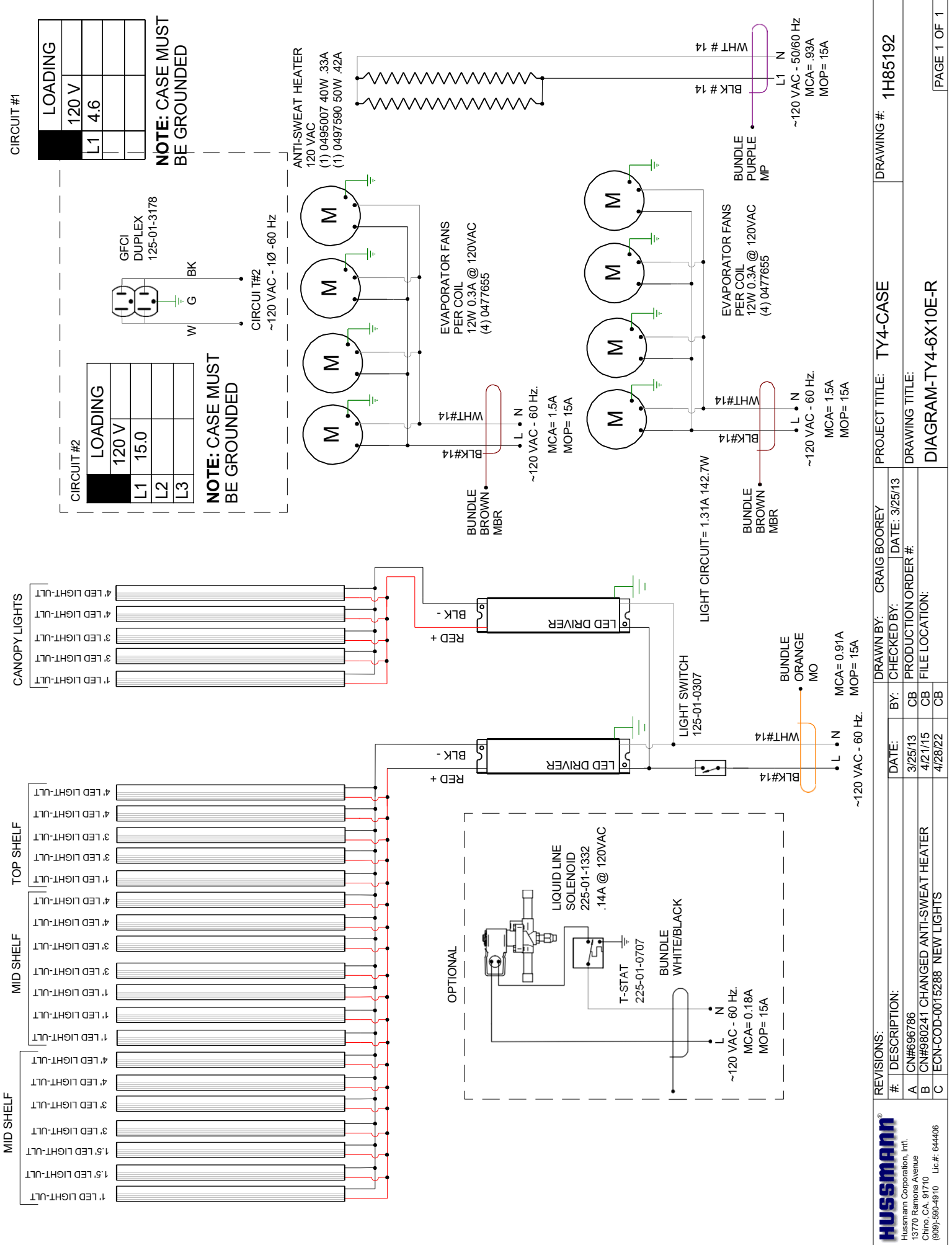
CIRCUIT #1	LOADING	120V	150V

HUSSMANN
DIAGRAM-IY4-6X8E-R
MATERIAL - NA
DATE DRAWN - 8-17-16
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX ±0.3 .XXX
±0.0
ANGLES ± 2°
PROJECTION
E
REF - ECN-CAP-0003235
SHEET 1 OF 1

3013477 | B



NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED



CIRCUIT #1

LOADING	120 V	
L1	4.6	
L2		
L3		

NOTE: CASE MUST BE GROUNDED

CIRCUIT #2

LOADING	120 V		
L1	15.0		
L2			
L3			

NOTE: CASE MUST BE GROUNDED

ANTI-SWEAT HEATER
120 VAC
(1) 0485007 40W .33A
(1) 0497590 50W .42A

EVAPORATOR FANS
PER COIL
12W 0.3A @ 120VAC
(4) 0477655

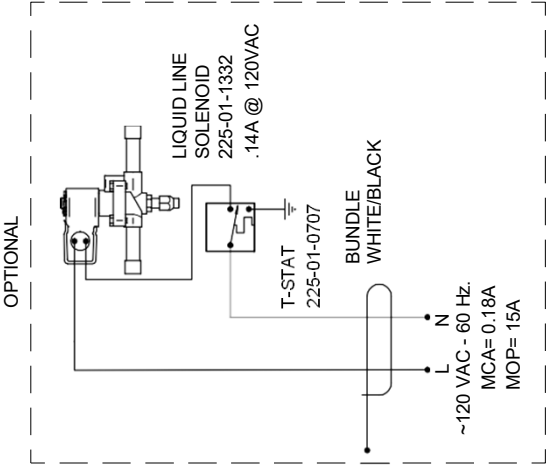
EVAPORATOR FANS
PER COIL
12W 0.3A @ 120VAC
(4) 0477655

CANOPY LIGHTS
4 LED LIGHT-ULT
4 LED LIGHT-ULT
3 LED LIGHT-ULT
3 LED LIGHT-ULT
1 LED LIGHT-ULT

TOP SHELF
4 LED LIGHT-ULT
4 LED LIGHT-ULT
3 LED LIGHT-ULT
3 LED LIGHT-ULT
1 LED LIGHT-ULT
4 LED LIGHT-ULT
4 LED LIGHT-ULT
3 LED LIGHT-ULT
3 LED LIGHT-ULT
1 LED LIGHT-ULT
1 LED LIGHT-ULT

MID SHELF
4 LED LIGHT-ULT
4 LED LIGHT-ULT
3 LED LIGHT-ULT
3 LED LIGHT-ULT
1 LED LIGHT-ULT
1 LED LIGHT-ULT
4 LED LIGHT-ULT
4 LED LIGHT-ULT
3 LED LIGHT-ULT
3 LED LIGHT-ULT
1 LED LIGHT-ULT
1 LED LIGHT-ULT

MID SHELF
1.5 LED LIGHT-ULT
1.5 LED LIGHT-ULT
4 LED LIGHT-ULT
4 LED LIGHT-ULT
3 LED LIGHT-ULT
3 LED LIGHT-ULT
1 LED LIGHT-ULT
1 LED LIGHT-ULT



REVISIONS:		PROJECT TITLE: TY4-CASE		DRAWING #: 1H85192	
#	DESCRIPTION:	DATE:	CHECKED BY:	DATE:	3/25/13
A	CN#696786	3/25/13	CB	PRODUCTION ORDER #:	
B	CN#980241 CHANGED ANTI-SWEAT HEATER	4/21/15	CB	FILE LOCATION:	
C	ECN-COD-0075288 NEW LIGHTS	4/28/22	CB		
HUSMANN Hussmann Corporation, Int'l 13770 Ramona Avenue Chino, CA. 91710 (909)-590-4910 Lic.#: 644406		DIAGRAM-TY4-6X10E-R			
PAGE 1 OF 1					

REVISION HISTORY						
REV	EN	DATE	DESCRIPTION	REV BY	CHKD BY	APPR BY
A	EDM-CAP-0013270	2018/01/02	RELEASED TO PRODUCTION	CB	CB	CB
B	EDM-CAP-0016286	2022/09/13	REVISED LIGHTS	CB	CB	CB

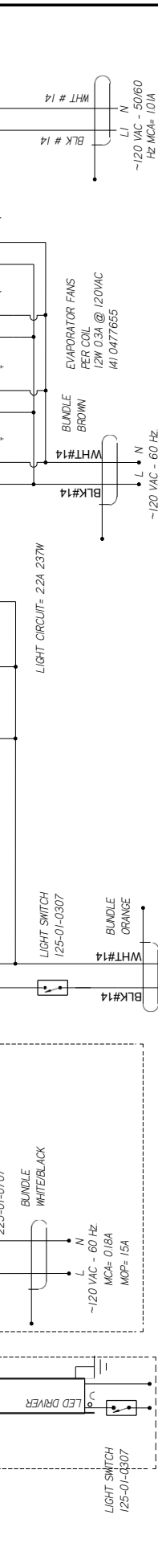
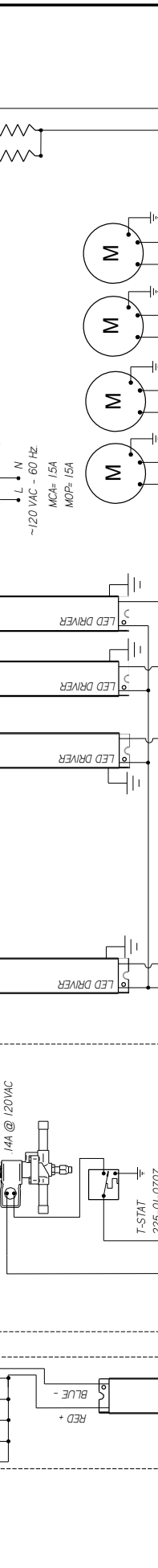
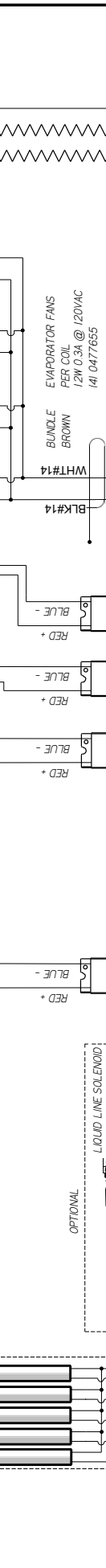
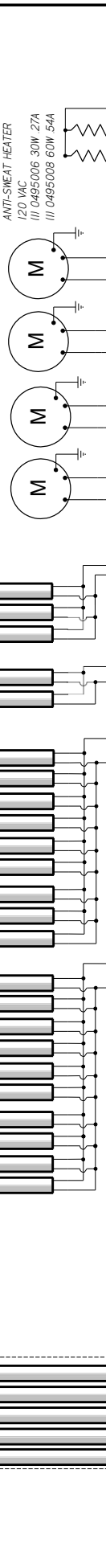
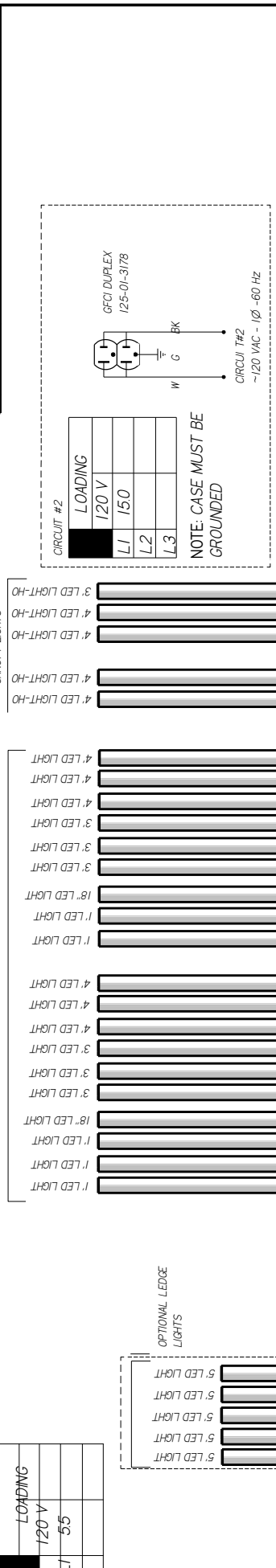
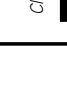
CIRCUIT #1	LOADING
L1	55
L2	
L3	

CIRCUIT #2	LOADING
L1	150
L2	
L3	

NOTE: CASE MUST BE GROUNDED



ANTI-SWEAT HEATER
120 VAC
III 04950006 30W 27A
III 04950008 60W 54A



HUSSMANN
DIAGRAM-
TY4ECRC-6X10E-R

MATERIAL - N/A
DATE DRAWN - 7-2-18
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX ± 0.3 .XXX
± 0.0
ANGLES ± 2°
PROJECTION
E
ANG

CON-CAP-0013270
REF -
SHEET 1 OF 1
THIRD

3067655 | B

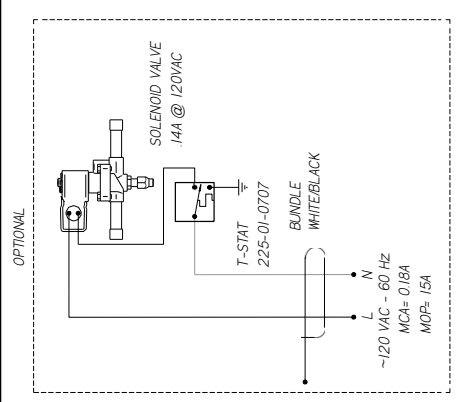
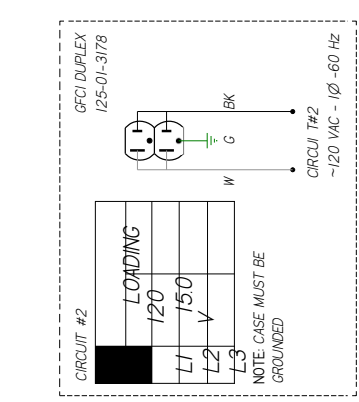
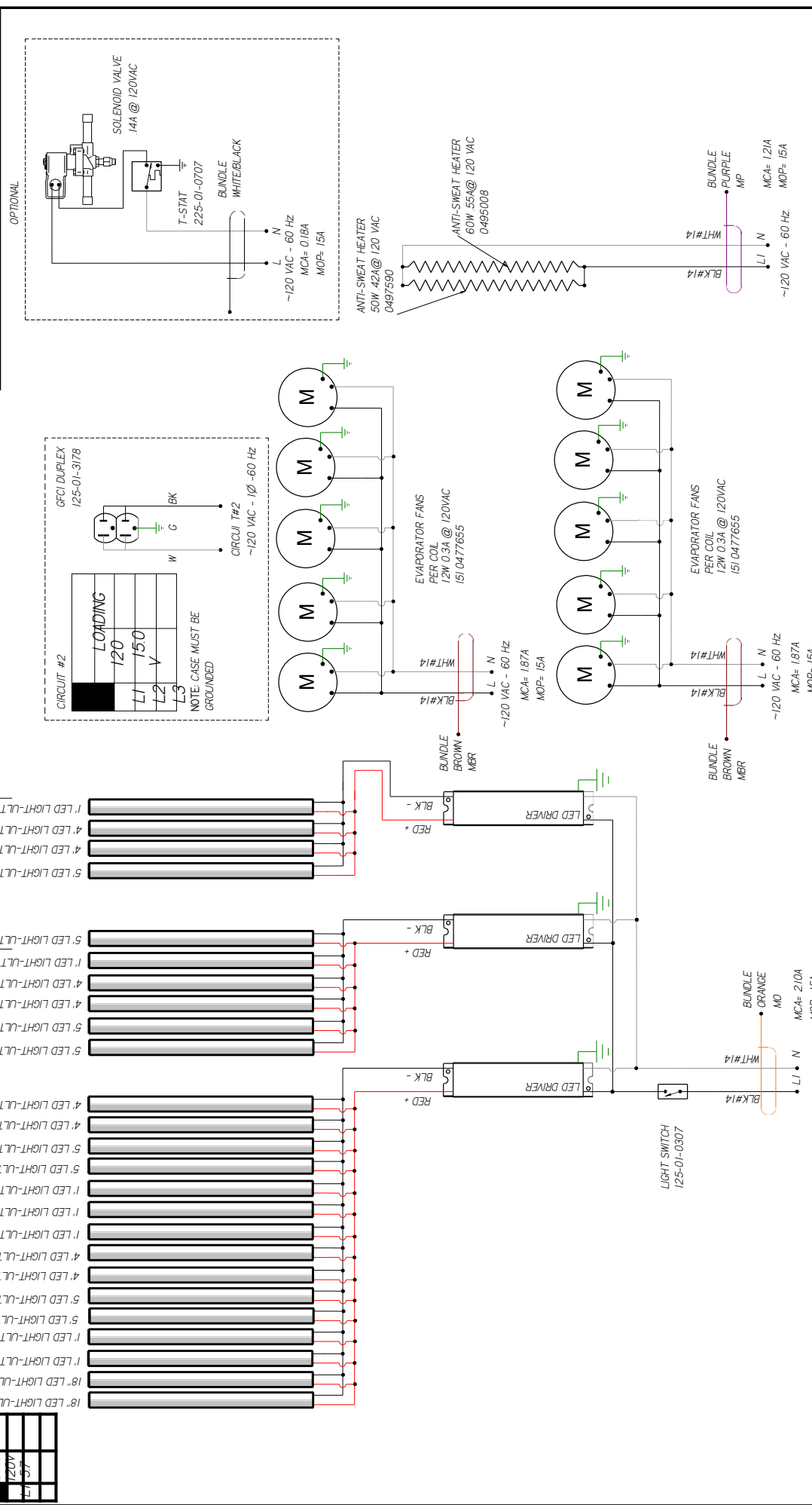
NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY			
REV	EN	DATE	DESCRIPTION
1	EDN-CAP-0003967	2016/09/28	RELEASED TO PRODUCTION
2	EDN-CAP-0015293	2022/03/02	NEW LOGOS

REVISION HISTORY			
REV	EN	DATE	DESCRIPTION
1	EDN-CAP-0003967	2016/09/28	RELEASED TO PRODUCTION
2	EDN-CAP-0015293	2022/03/02	NEW LOGOS

REVISION HISTORY			
REV	EN	DATE	DESCRIPTION
1	EDN-CAP-0003967	2016/09/28	RELEASED TO PRODUCTION
2	EDN-CAP-0015293	2022/03/02	NEW LOGOS

CIRCUIT #1



HUSSMANN
DIAGRAM-1Y4-6X1Z
-R

MATERIAL - NA
 DATE DRAWN - 9-28-16
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 DECIMALS .XX ±0.3, .XXX
 ANGLES ±2°
 PROJECTION
 E

CON-CAP-0003967
 REF -
 SHEET 1 OF 1

3016190 | B

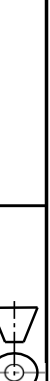
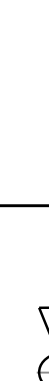
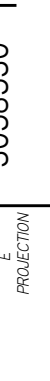
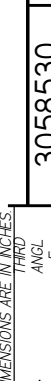
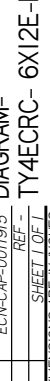
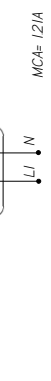
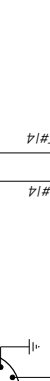
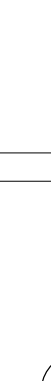
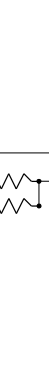
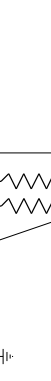
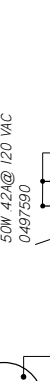
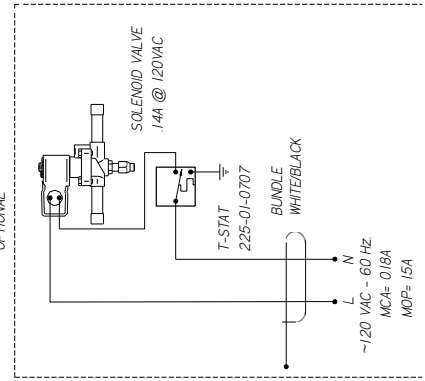
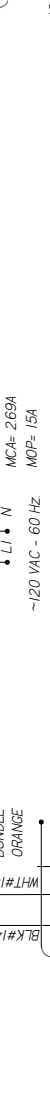
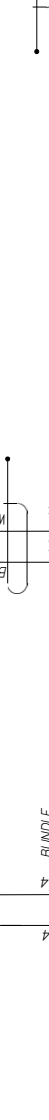
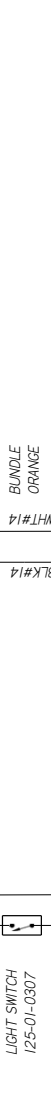
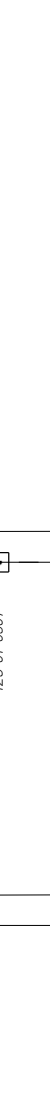
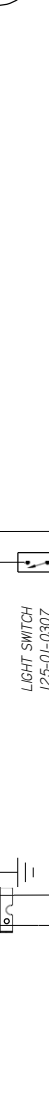
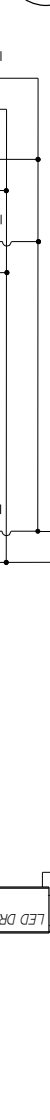
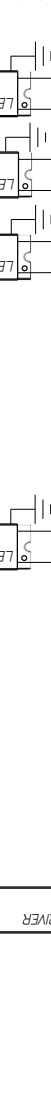
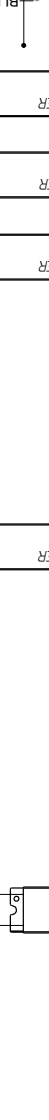
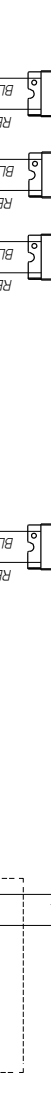
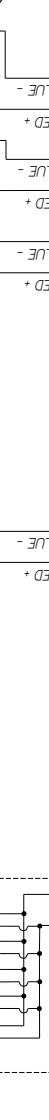
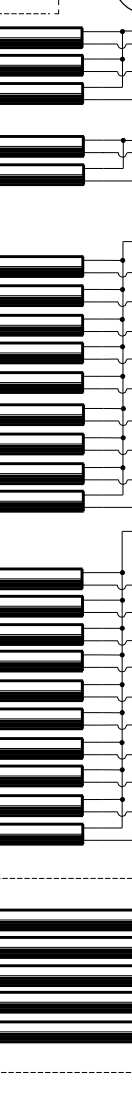
NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY		REV	BY	CHD	BY	APPR	BY
A	ECN-CAP-001915	20/06/19			CB	CB	CB
B	ECN-COD-001667	20/01/08/04			CB	CB	CB

REV	BY	CHD	BY	APPR	BY
A	ECN-CAP-001915	20/06/19			CB
B	ECN-COD-001667	20/01/08/04			CB

CIRCUIT #1	
LOADING	
120	
L1	150
L2	V
L3	

NOTE CASE MUST BE GROUNDED



HUSSMANN
DIAGRAM-
TY4ECRC- 6X12E-R

MATERIAL - IVA
 DATE DRAWN - 3-19-18
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS XX ± 0.3, XXX
 DECIMALS XX ± 0.0
 ANGLES ± 2°
 PROJECTION

3058530 | B

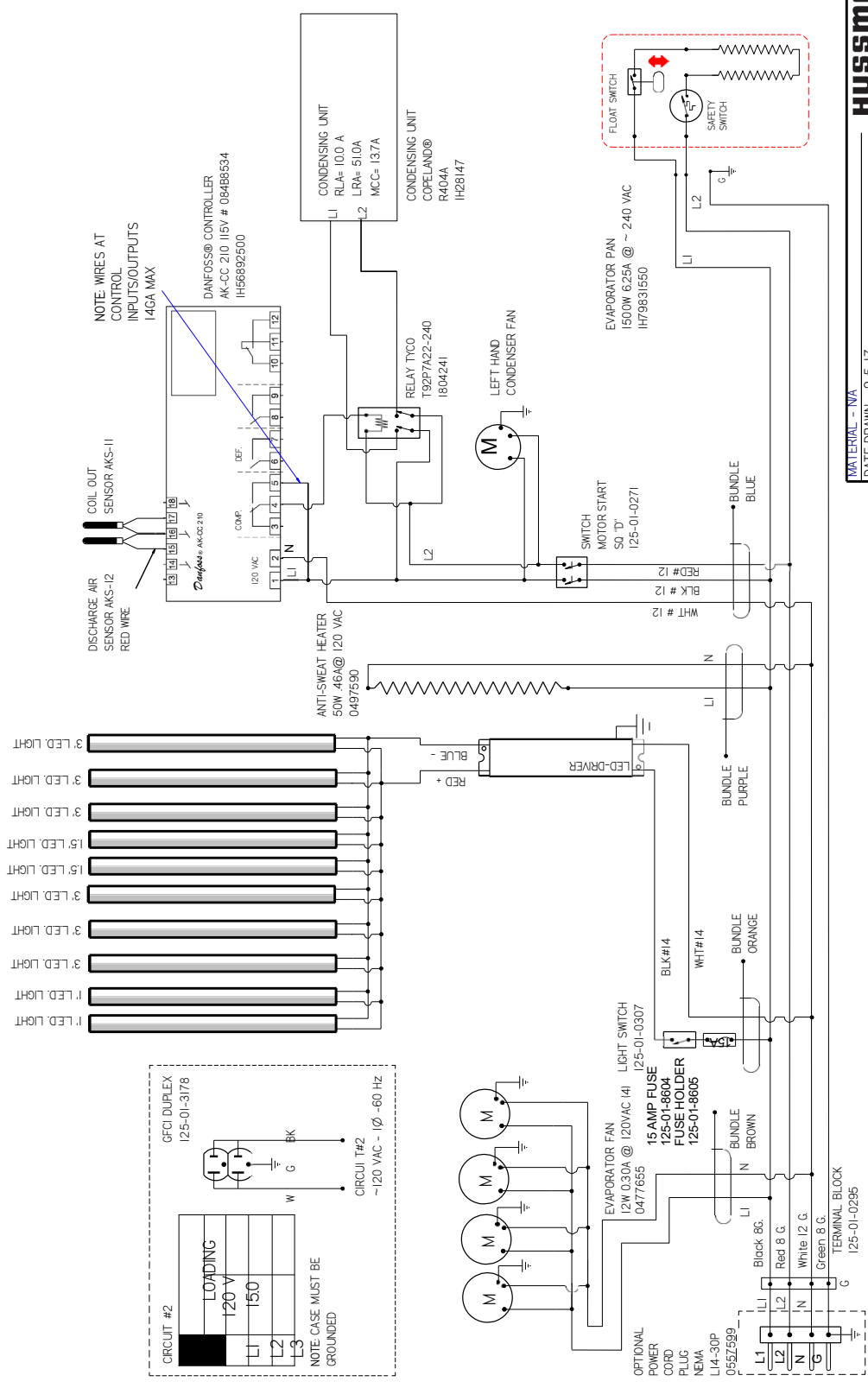


NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY			
REV	EN	DATE	DESCRIPTION
A	ECN-CAP-0008239	2017/08/05	RELEASED TO PRODUCTION
B	ECN-CAP-0014942	2018/02/26	CHANGED COMPRESSOR
C	ECN-CAP-0017659	2019/04/22	CHANGED POWER CORD

CIRCUIT #1	
LOADING	
200V	240V
L1	100%
L2	100%
L3	100%

LIGHT CIRCUIT
43A 46.6W @ 120V



HUSSMANN
DIAGRAM-1Y3-
3X4.5 E-S

MATERIAL - NA
 DATE DRAWN - 9-5-17
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY

ECN-CAP-0008239
 REF -
 SHEET 1 OF 1
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 ANGLES ± 2°
 DECIMALS .XX +0.0, .XXX
 THIRD PROJECTION

3043372 | C

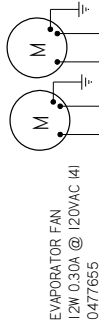
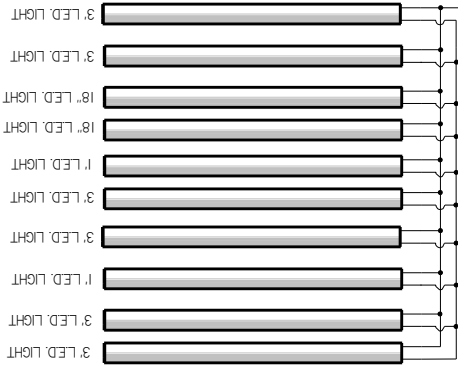
NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

CIRCUIT #1

200V	240V
150	100
144	100

2

LIGHT CIRCUIT
043A 46.8W @ 120V



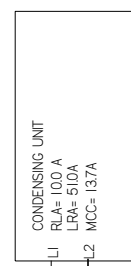
REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0009957	2017/01/16	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-CAP-0014942	2018/02/26	CHANGED COMPRESSOR	CB	CB	CB
C	ECN-CAP-0017659	2019/04/22	CHANGED POWER CORD	CB	CB	CB

REVISION HISTORY



NOTE: WIRES AT CONTROL INPUTS/OUTPUTS I4CA MAX

DANFOSS® CONTROLLER
AK-CC 210 115V # 08488534
IH566892500



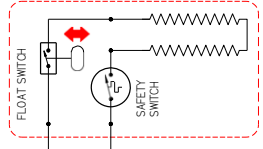
CONDENSING UNIT
COPELAND®
R404A
IH28147



RELAY TYCO
T92P7A22-240
1804241



CONDENSER FAN



EVAPORATOR PAN
1500W 6.25A @ ~ 240 VAC
IH79831950



SWITCH
MOTOR START
125-01-0271

TERMINAL BLOCK
2H07970550

MATERIAL - NA

DATE DRAWN - 10-16-17

DRAWN BY - CRAIG BOOREY

REVIEWED BY - CRAIG BOOREY

APPROVED BY - CRAIG BOOREY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

THIRD DECIMALS .XX +0.03 .XXX

ANGLES ± 2°

ECN-CAP-0009957

REF -

SHEET # OF 1

DIAGRAM-1Y3EC-

3X 4.5E-S

3047158

C

PROJECTION

ANG E

THIRD

DIMENSIONS ARE IN INCHES

UNLESS OTHERWISE SPECIFIED

APPROVED BY - CRAIG BOOREY

REVIEWED BY - CRAIG BOOREY

DATE DRAWN - 10-16-17

MATERIAL - NA

NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

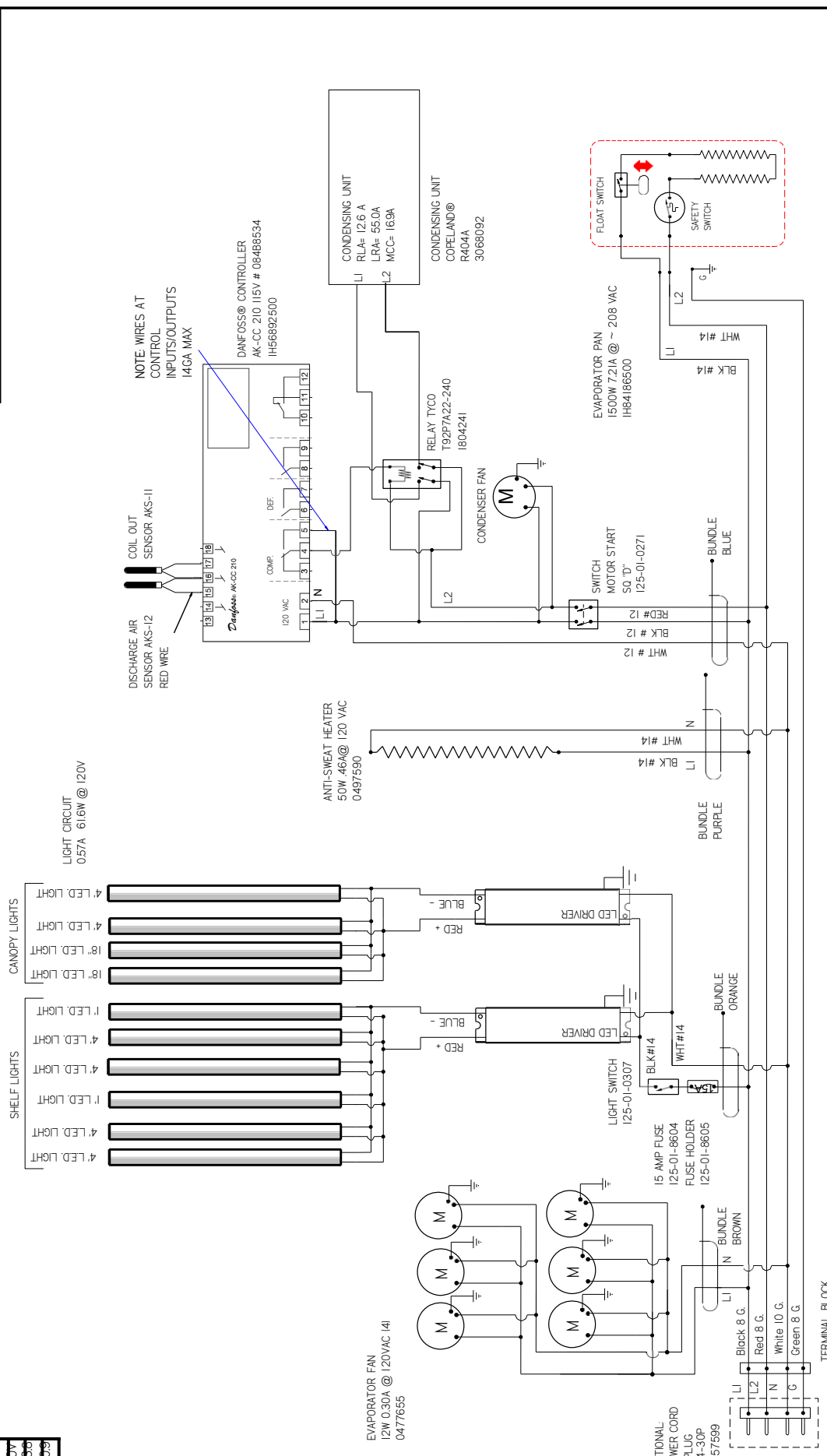


CIRCUIT #1
LOADING

Z08V	Z40V
L1	Z00
L1	Z09
L1	Z09

2

REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHK BY	APPR BY
A	CEK	2018/03/23	RELEASED TO PRODUCTION	CE	CE	CE
B	CEK	2018/02/26	CHANGED COMPRESSOR	CE	CE	CE
C	CEK	2019/04/22	CHANGED POWER CORD	CE	CE	CE



MATERIAL - NA
 DATE DRAWN - 3-23-18
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS XX ±0.03, .XXX
 DECIMALS .XX ±0.03, .XXX
 ANGLES ± 2°
 PROJECTION
 E
 C

HUSSMANN
DIAGRAM-1Y3EC-
3X 5.5E-S

ECN-CAP-001916
 REF -
 SHEET 1 OF 1
 DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS XX ±0.03, .XXX
 DECIMALS .XX ±0.03, .XXX
 ANGLES ± 2°
 PROJECTION
 E
 C

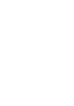
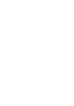
3058910

3058910

3058910

3058910

NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

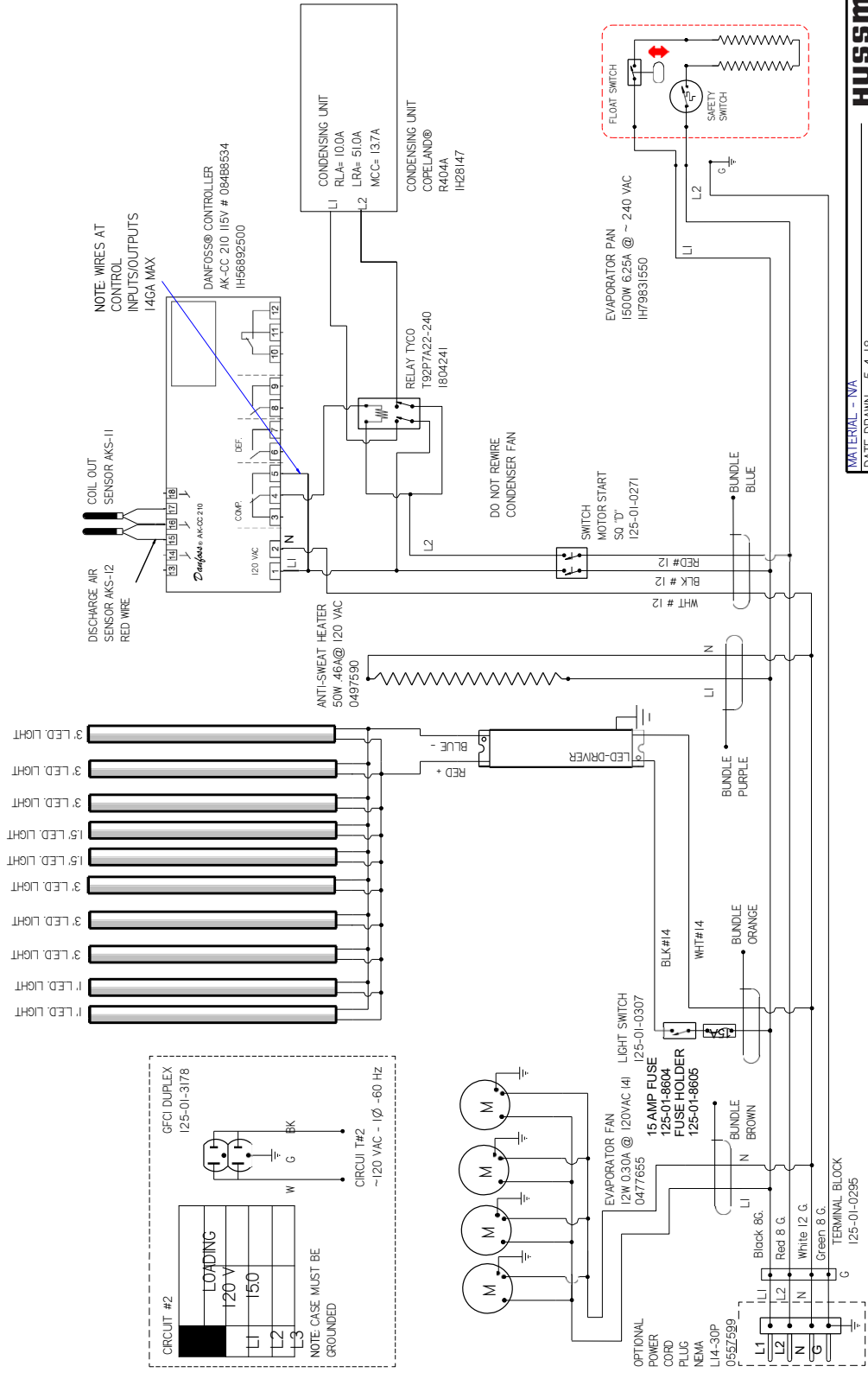


3058910

REVISION HISTORY			
REV	EN	DATE	DESCRIPTION
A	ENX-CAP-0012690	2018/04/04	RELEASED TO PRODUCTION
B	ENX-CAP-0014942	2018/02/26	CHANGED COMPRESSOR
C	ENX-CAP-0017659	2019/04/23	CHANGED POWER CORD

CIRCUIT #1	
LOADING	
208V	240V
L1	100%
L2	100%
L3	100%

LIGHT CIRCUIT
43A 46.6W @ 120V



HUSSMANN
DIAGRAM-1Y3-
3X4.5 E-S SPECIAL

MATERIAL - NA
DATE DRAWN - 5-4-18
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY

ECN-CAP-0012690
REF -
SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS XX ±0.03, .XXX
DECIMALS .XX ±0.03, .XXX
ANGLES ± 2°

3062195 | C

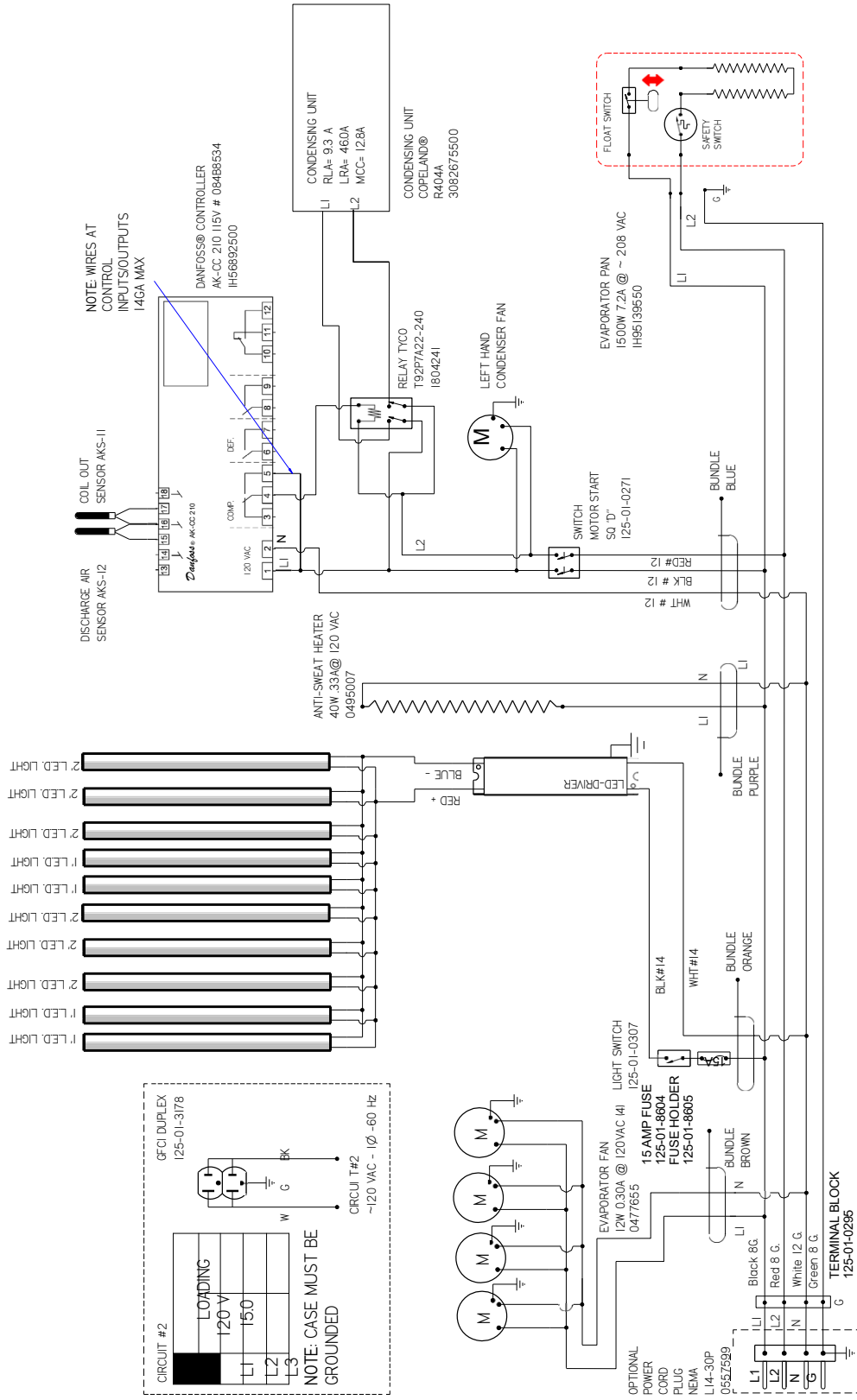
NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED



CIRCUIT #1	LOADING
208	24
L1	160
L2	14.4
	0.6

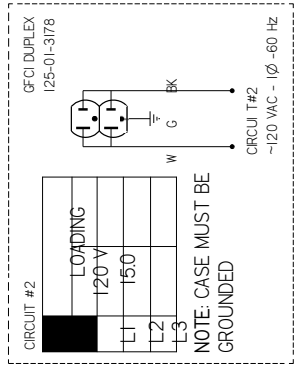
LIGHT CIRCUIT
 .30A 33W @ 120V

REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHK BY	APP BY
A	ECN-CAP-0008239	20170808	RELEASED TO PRODUCTION	CB	CE	CB
B	ECN-CAP-004834	20191009	REMOVED C.U.I MODEL NUMBER	CB	CE	CB
C	ECN-CAP-0016801	20190408	CHANGED COND UNIT # POWER CORD	CB	CE	CB



NOTE: WIRES AT CONTROL INPUTS/OUTPUTS 14GA MAX

DISCHARGE AIR SENSOR AKS-I2
 COIL OUT SENSOR AKS-II



HUSSMANN
 MATERIAL - NA
 DATE DRAWN - 9-6-17
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS XX ±0.03, .XXX
 DECIMALS .XX ±0.03, .XXX
 ANGLES ± 2°
 REF -
 SHEET 1 OF 1
 DIAGRAM-F13-4X4E-S
 ECN-CAP-0008239
 3043374 | C

NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

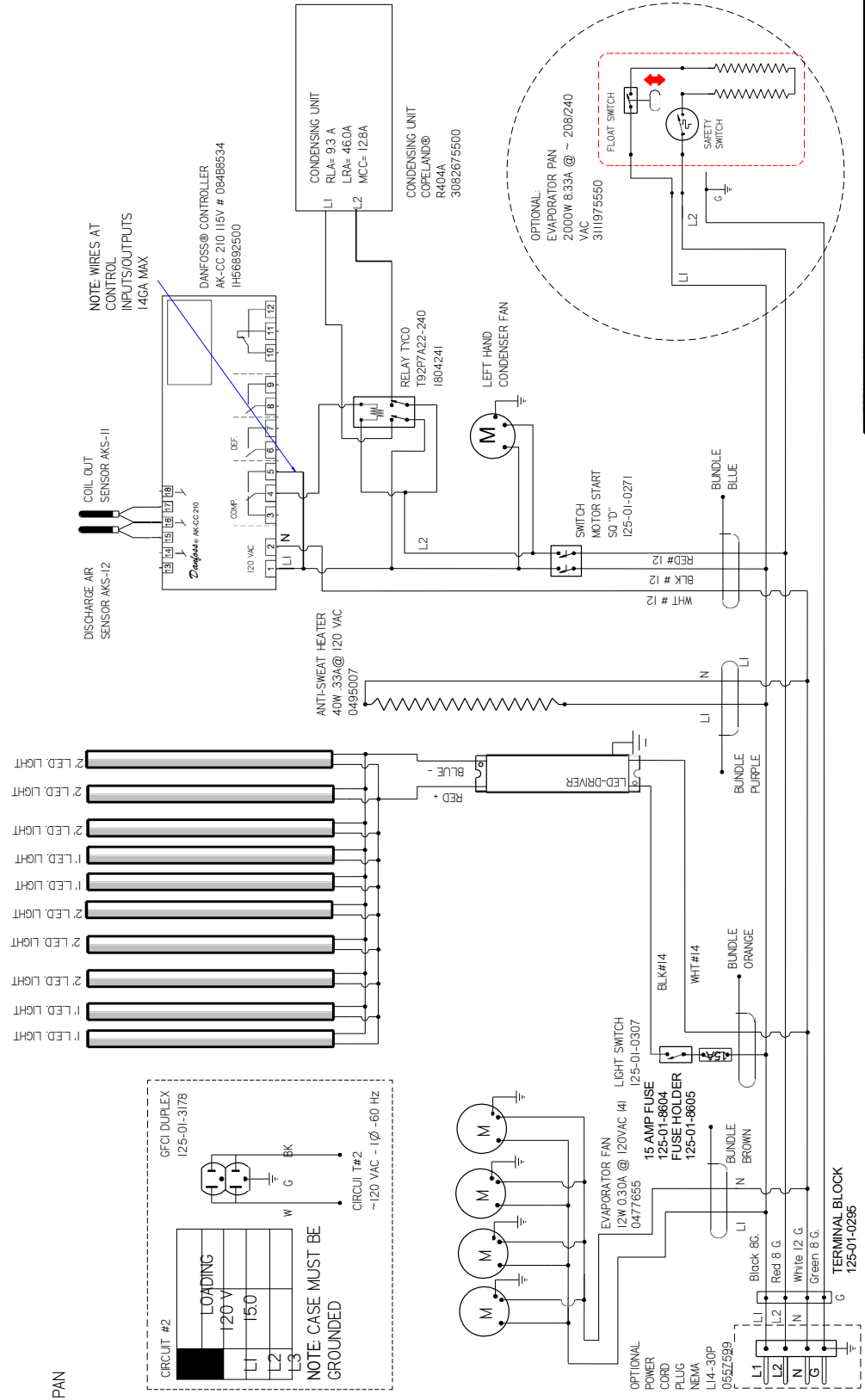


CIRCUIT #1 W/EVAP PAN	
LOADING	
208	
L1	169
L2	V+5.3

CIRCUIT #1 W/OUT EVAP PAN	
LOADING	
208	
L1	112
L2	V+3

REVISION HISTORY						
REV	EN	DATE	DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECK-CAP-0013865	2018/09/01	RELEASED TO PRODUCTION	CB	CB	CB
B	ECK-CAP-0014934	2018/09/09	REMOVED C.U.I MODEL NUMBER	CB	CB	CB
C	ECK-CAP-0015900	2018/11/21	REVISED EVAPORATOR PAN	CB	CB	CB
D	ECK-CAP-0016801	2019/04/08	CHANGED COND UNIT & POWER CORD	CB	CB	CB
E	ECK-CAP-0019897	2019/11/20	CHANGED EVAPORATOR PAN	CB	CB	CB
F	ECK-COQ-001843	2020/01/01	REVISED FOR OPTIONAL EVAP PAN	CB	CB	CB

LIGHT CIRCUIT
30A 33W @ 120V



MATERIAL - INVA	
DATE DRAWN - 8-1-18	REF -
DRAWN BY - CRAIG BOOREY	ECON-CAP-0013865
REVIEWED BY - CRAIG BOOREY	DIAGRAM-1Y3-
SHEET NO. 1	4X4E- S/WPARKING
DIMENSIONS ARE IN INCHES	
TOLERANCES ARE	
THIRD	LOT
DECIMALS .XX +0.03 .XXX	3070437
±0.0	F

HUSSMANN

DATE DRAWN - 8-1-18

DRAWN BY - CRAIG BOOREY

REVIEWED BY - CRAIG BOOREY

SHEET NO. 1

DIMENSIONS ARE IN INCHES

TOLERANCES ARE

THIRD

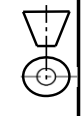
DECIMALS .XX +0.03 .XXX

±0.0

ANGLS ± 2°

PROJECTION

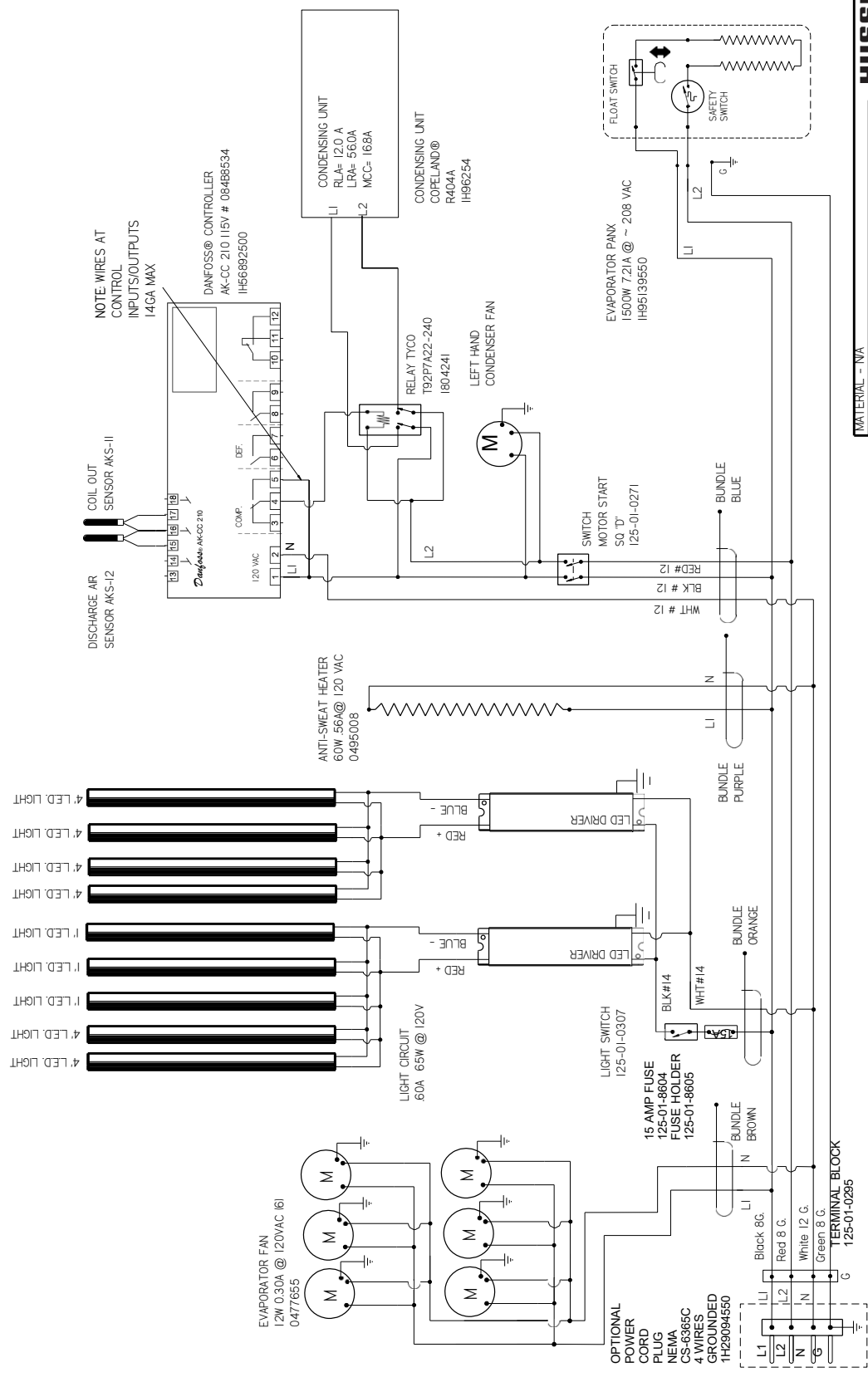
NOTE:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED



CIRCUIT #1

LOADING	24
L1	18.4
L2	15.9

REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0008239	2017/04/05	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-CAP-0014834	2018/02/09	REMOVED C.U.I MODEL NUMBER	CB	CB	CB



MATERIAL - NA
 DATE DRAWN - 9-6-17
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS - AS SHOWN
 DECIMALS .XX +0.3 .XXX
 ANGLES ± 2°
 PROJECTION
 REF -
 SHEET OF 1
 DIAGRAM-1Y3-
 4X6E- S
 3043375 | B



NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

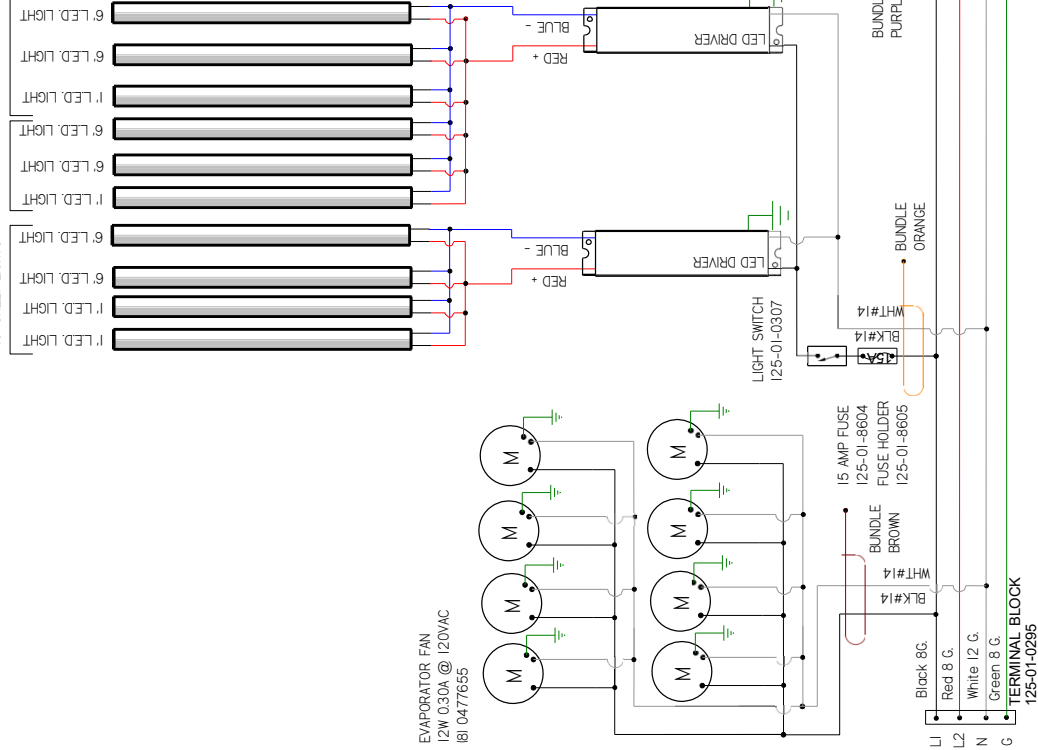
CIRCUIT #1

DWG	Z10
REV	Z10
REV	Z10
REV	Z10

REVISION HISTORY		
REV	ECN	DATE
A	ECN-CAP-0018247	7-29-19
		RELEASED TO PRODUCTION
		REV BY CHKD BY APPR BY
		CB CB CB

LIGHT CIRCUIT
0.81A 87.6W @ 120V

10' SHELF LIGHTS 8' SHELF LIGHTS CANOPY LIGHTS



HUSSMANN
DIAGRAM-TY3-4X8E-SC
3102623
SHEET 1 OF 1

UL COLOR CODES / ABBREVIATIONS
 RED = RD
 BLACK = BK
 BLUE = BL
 YELLOW = YL
 GRAY = GR
 WHITE = WT
 GREEN = GN
 BROWN = BN
 ORANGE = OR
 OR VIOLET = VT

FACTORY 14GA WIRE
 - FACTORY LOGGA WIRE
 - FIELD WIRE
 - DO NOT SCALE DRAWING

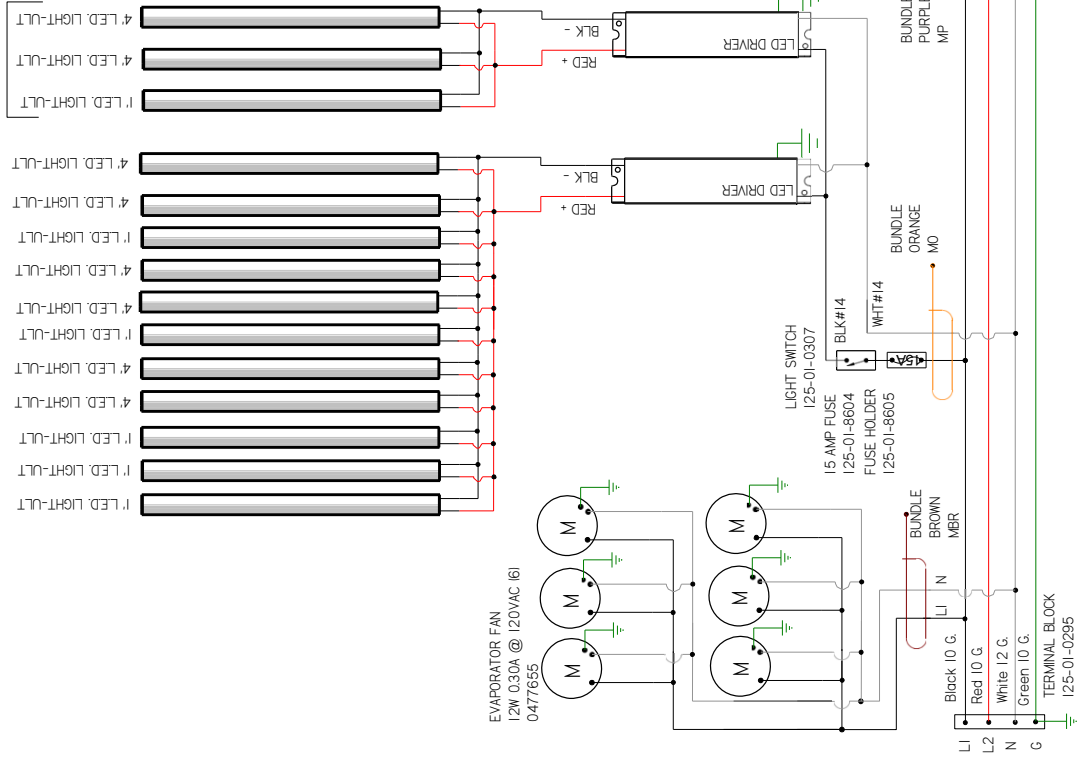
- NOTES:
1. PRINTED DOCUMENT REQUIRED SETTING: ALL COLORS BLACK & WHITE
 2. CASE & ANY REMOVABLE PANEL WITH ELECTRICAL PARTS MUST BE GROUNDED.
 3. WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

CIRCUIT #1

LOADING	0
208	24
L1	217
L2	191
0	

LIGHT CIRCUIT
78A 83.7W @ 120V

CANOPY



REVISION HISTORY			
REV	ECN	DATE	REVISION DESCRIPTION
A	ECN-COD-0011339	7-28-20	RELEASED TO PRODUCTION
B	ECN-COD-0015282	3-31-22	NEW LIGHTS

REVISION HISTORY			
REV	CHKD BY	DATE	DESCRIPTION
CB	CB		
CB	CB		
CB	CB		

HUSSMANN
DIAGRAM-TY4-4X6E-S
3129626

FACTORY 14GA WIRE
FACTORY LOGA WIRE
FIELD WIRE
DO NOT SCALE DRAWING
SHEET 1 OF 1

UL COLOR CODES / ABBREVIATIONS
 RED = RD
 BLACK = BK
 BLUE = BL
 YELLOW = YL
 GRAY = GR
 WHITE = WT
 GREEN = GN
 BROWN = BN
 ORANGE = OR
 PURPLE = VP
 VIOLET = VT

NOTES:
 1. PRINTED DOCUMENT REQUIRED SETTING: ALL COLORS BLACK & WHITE
 2. CASE & ANY REMOVABLE PANEL WITH ELECTRICAL PARTS MUST BE GROUNDED.
 3. WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

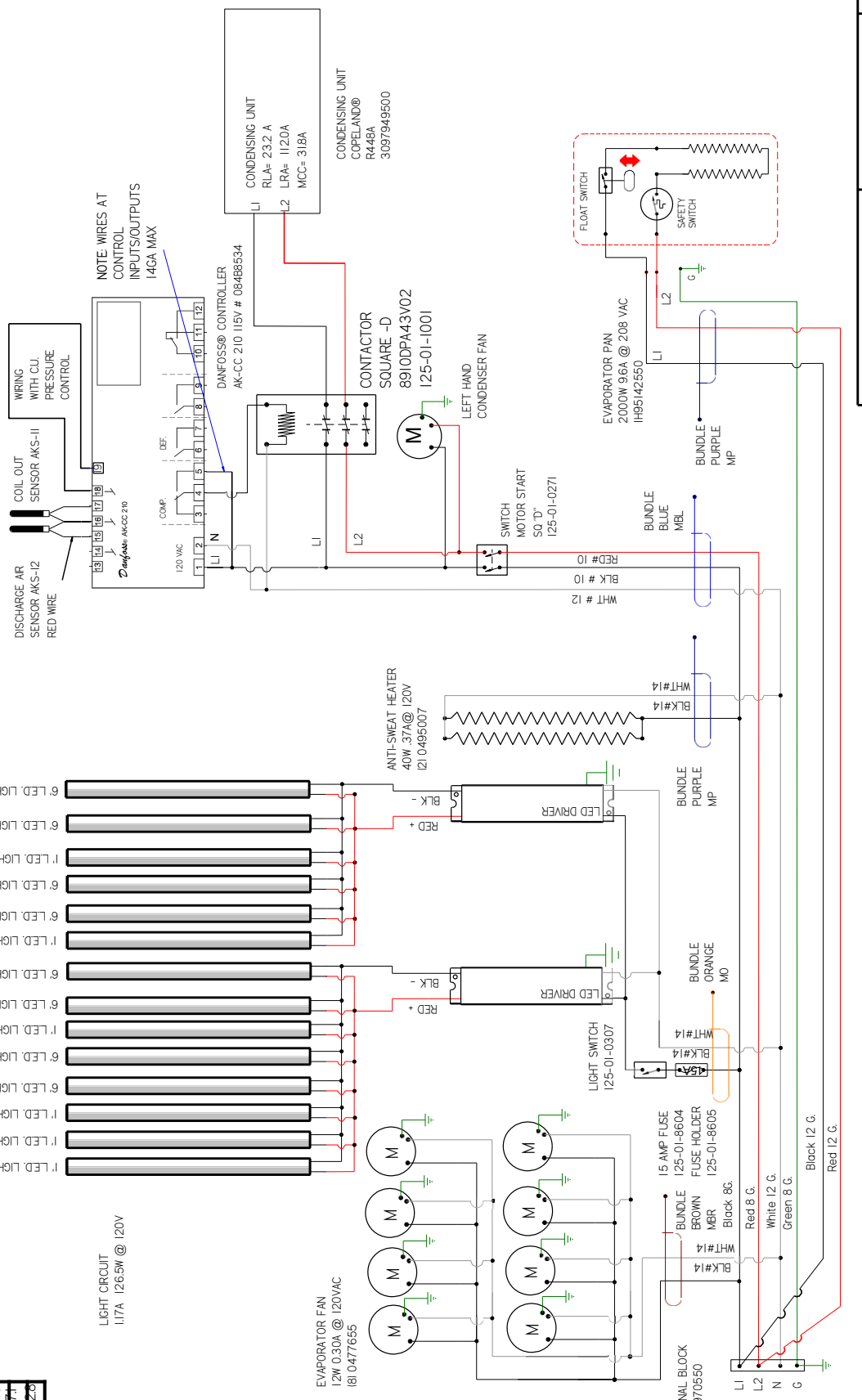
REVISION HISTORY			
REV	ECN	DATE	REVISION DESCRIPTION
A	ECN-COD-0011339	7-29-20	RELEASED TO PRODUCTION
B	ECN-COD-0015282	3-31-22	NEW LIGHTS

REV	CHKD BY	APPR BY
A	CB	CB
B	CB	CB

REV	DATE	REVISION DESCRIPTION	CHKD BY	APPR BY
A	7-29-20	RELEASED TO PRODUCTION	CB	CB
B	3-31-22	NEW LIGHTS	CB	CB

CIRCUIT #1	DWG	Z009	Z40

2



HUSSMANN
DIAGRAM-TY4-4X8E-S
3129628

FACTORY 14GA WIRE
 -FACTORY LOGA WIRE
 -FIELD WIRE
 -DO NOT SCALE DRAWING
 SHEET 1 OF 1

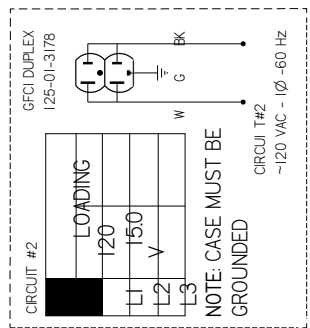
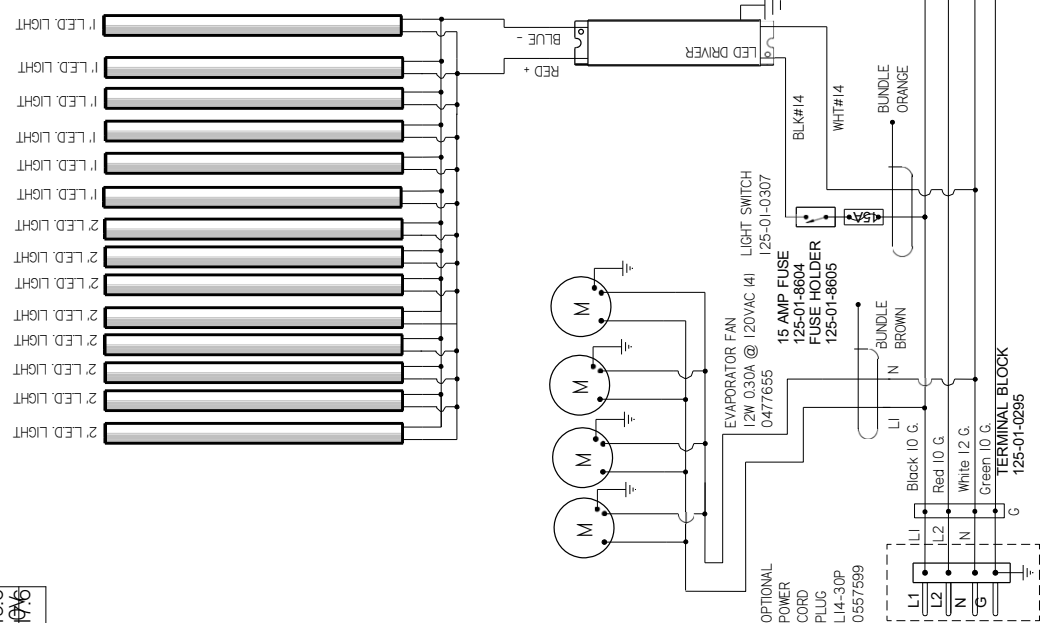
UL COLOR CODES / ABBREVIATIONS
 RED = RD
 BLACK = BK
 BLUE = BL
 YELLOW = YL
 GRAY = GR
 WHITE = WT
 GREEN = GN
 BROWN = BN
 ORANGE = OR
 PURPLE = VT

- NOTES:
 1. PRINTED DOCUMENT REQUIRED SETTING: ALL COLORS BLACK & WHITE
 2. CASE & ANY REMOVABLE PANEL WITH ELECTRICAL PARTS MUST BE GROUNDED.
 3. WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

CIRCUIT #1

LOADING	24
L1	208
L2	170
	196
	15.3

LIGHT CIRCUIT
42A 45W @ 120V



REVISION HISTORY

REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHK BY	APPR BY
A	ECN-CAP-0008241	2018/09/22	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-CAP-0014934	2018/09/28	REMOVED C.U.I MODEL NUMBER	CB	CB	CB
C	ECN-CAP-0015900	2018/11/21	REVISED EVAPORATOR PAN	CB	CB	CB
D	ECN-CAP-0016801	2019/04/08	CHANGED COND UNIT & POWER CORD	CB	CB	CB
E	ECN-CAP-0019897	2019/11/20	CHANGED EVAPORATOR PAN	CB	CB	CB

NOTE: WIRES AT CONTROL INPUTS/OUTPUTS 14GA MAX

HUSSMANN
DIAGRAM-1Y4-4X4E-S

MATERIAL - NA
 DATE DRAWN - 8-22-17
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 SHEET NO. 1
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS XX +0.0, .XXX
 DECIMALS .XX +0.0, .XXX
 ANGLES ± 2°
 PROJECTION

NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

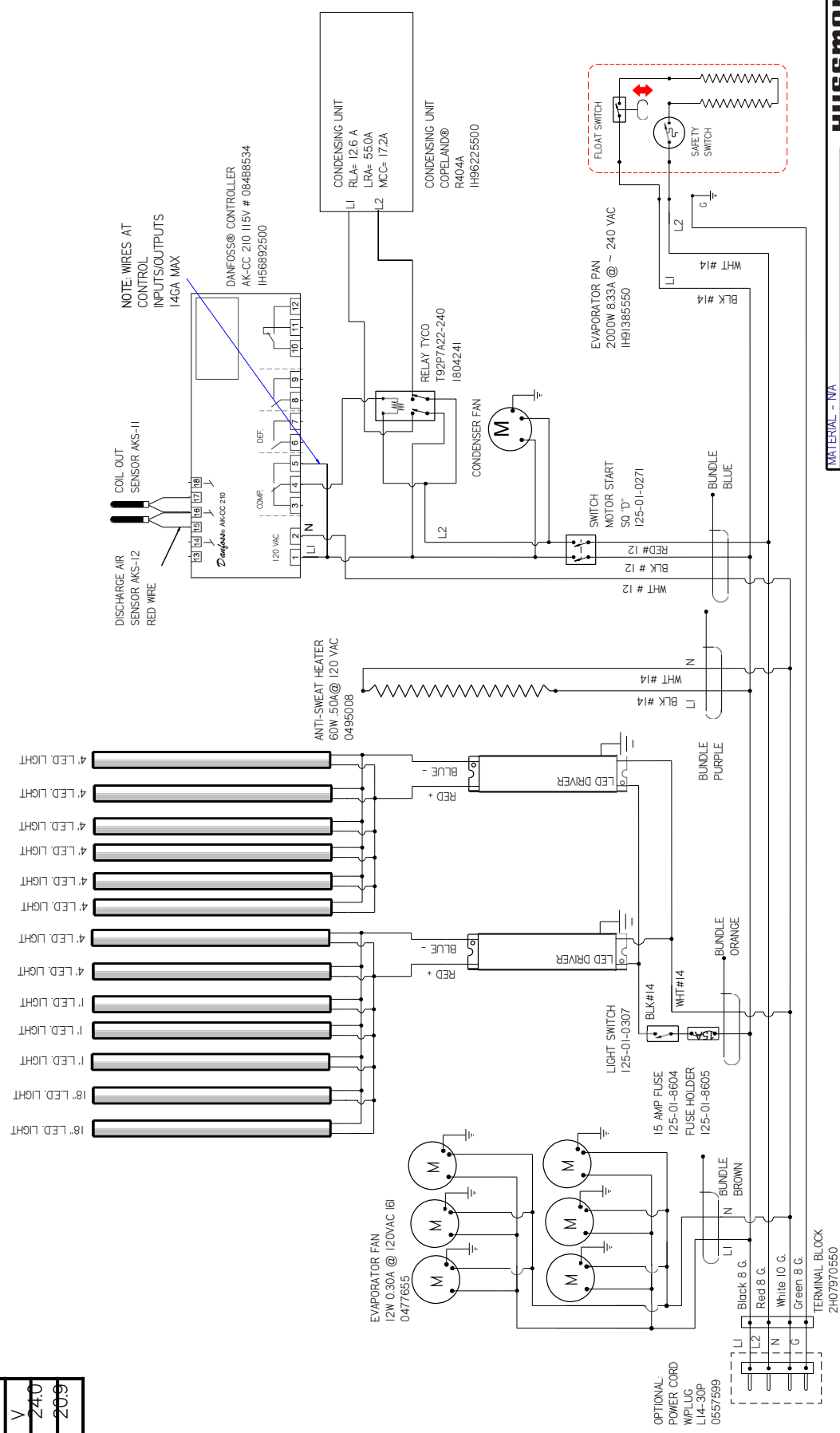


CIRCUIT #1

208V	240
L1 20.6	V
L2 16.1	20.9

LIGHT CIRCUIT
.76A 82W @ 120V

REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHK BY	APP BY
A	ECON-CAP-000824	2017/08/22	RELEASED TO PRODUCTION	CB	CB	CB
B	ECON-CAP-0014834	2018/10/03	REVISED CLI MODEL NUMBER	CB	CB	CB
C	ECON-CAP-0017659	2019/04/23	CHANGED POWER CORD	CB	CB	CB

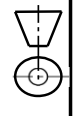


HUSSMANN
DIAGRAM-1Y4-3X5.5 E-S

MATERIAL - NA
DATE DRAWN - 8-22-17
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE THIRD ANGLE PROJECTION
DECIMALS .XX +0.3 .XXX +0.0 ANGLES ± 2°

ECON-CAP-000824 REF -
3042640 | C

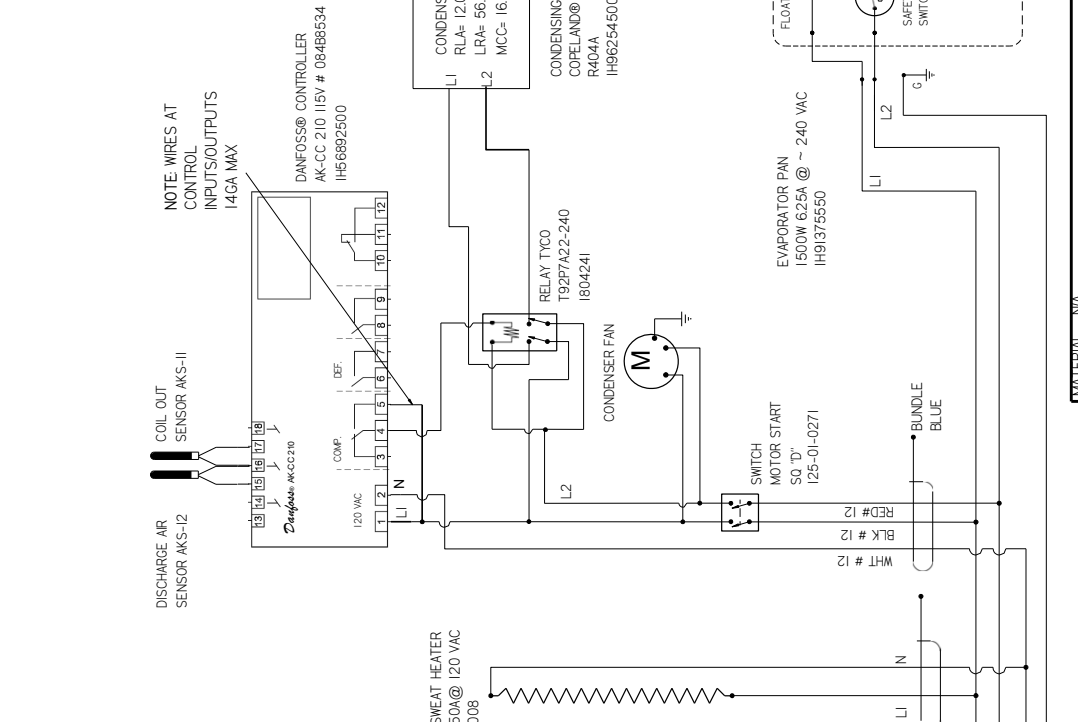
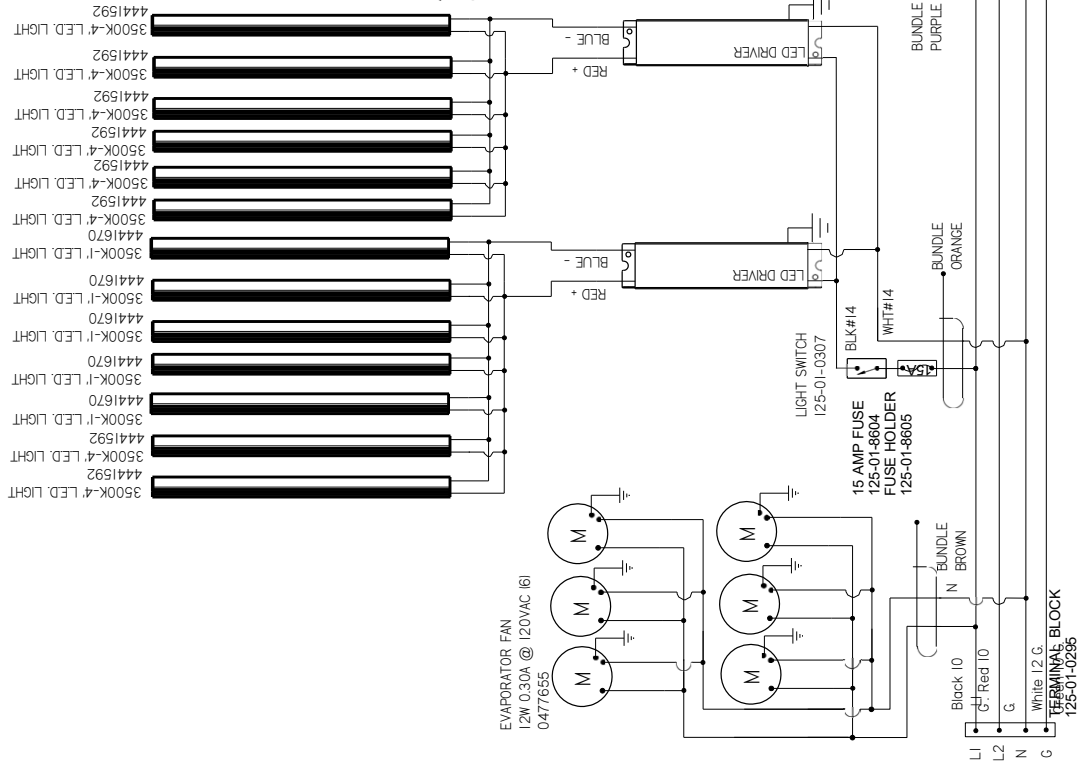
NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED



CIRCUIT #1

LOADING	24
L1	186
L2	158

LIGHT CIRCUIT
79A 85W @ 120V



REVISION HISTORY			
REV	EN	DATE	DESCRIPTION
A	ECN-CAP-0008241	20170822	RELEASED TO PRODUCTION
B	ECN-CAP-0014834	20181003	REVISED C.U.I. MODEL NUMBER

REVISION HISTORY			
REV BY	CHKD BY	APPR BY	CB
CB	CB	CB	CB
CB	CB	CB	CB

NOTE: WIRES AT CONTROL INPUTS/OUTPUTS 14GA MAX

MATERIAL - NA
DATE DRAWN - 8-22-17
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX +0.03 .XXX
ANGLES ± 2°

HUSSMANN
DIAGRAM-1Y4-
4X6E-S

3042642 | B

CON-CAP-0008241
REF -
SHEET 1 OF 1
THIRD
ANGI
E
PROJECTION



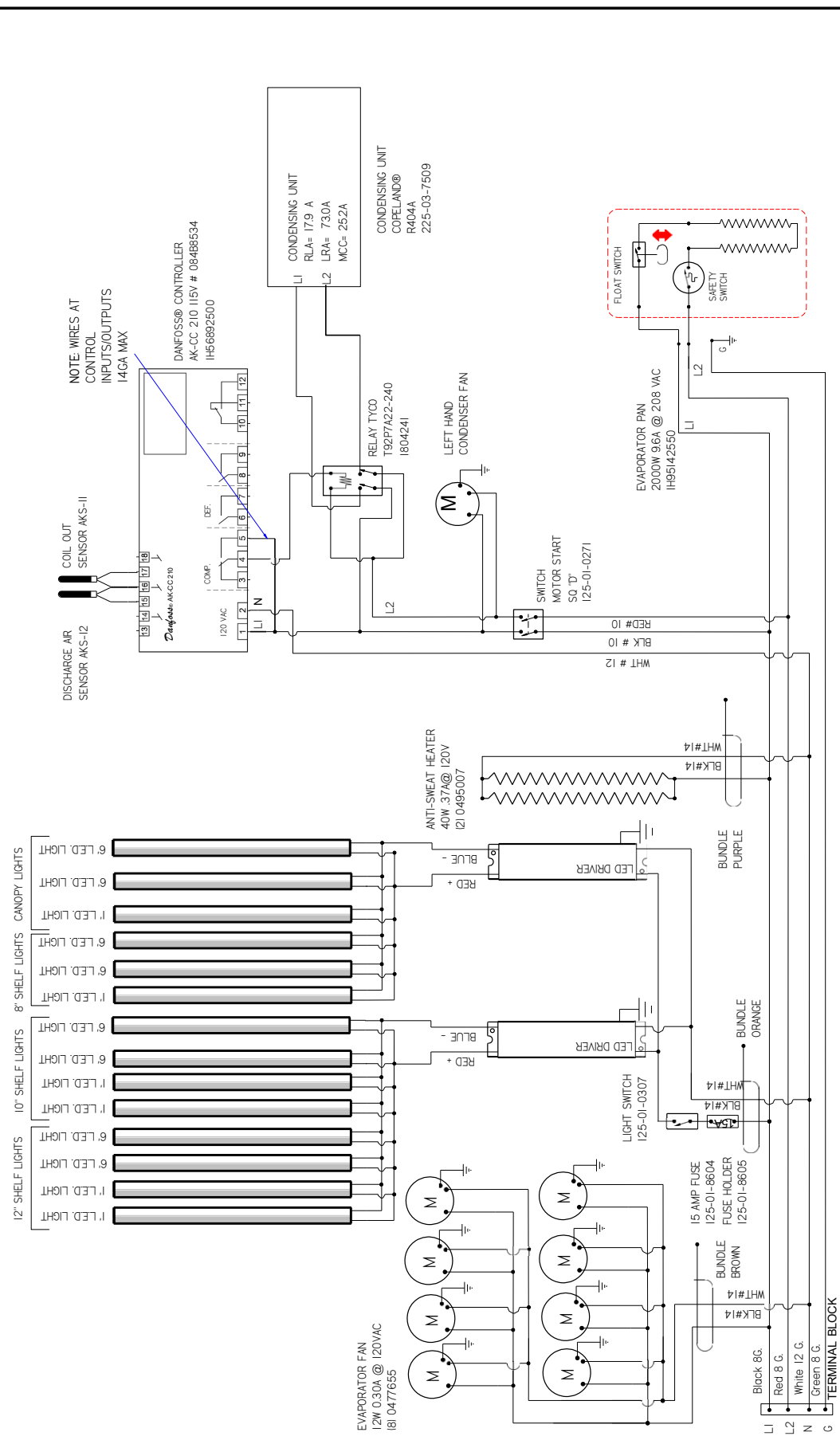
NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY		REV	BY	DATE	DESCRIPTION	REV	BY	DATE	DESCRIPTION
A	ECN-CAP-0013888	2018/09/09	CB	2018/09/09	RELEASED TO PRODUCTION	CB	CB		
B	ECN-CAP-0016253	2019/08/14	CB	2019/08/14	REVISED ANTI-SWEAT HEATERS	CB	CB		

CIRCUIT #1

DWG	Z40
REV	2/7/19
DATE	2/7/19
BY	WJ

2



HUSSMANN
DIAGRAM-IY4-4X8E-S
 MATERIAL - NA
 DATE DRAWN - 8-9-18
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS - AS SHOWN
 DECIMALS .XX +0.03 .XXX
 ANGLES ± 2°
 PROJECTION
 E
 B
 3071170

NOTE:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

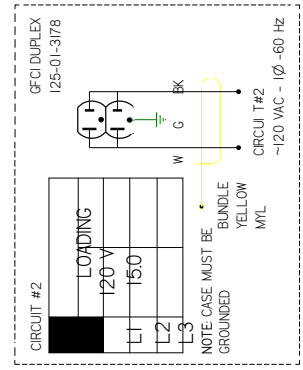
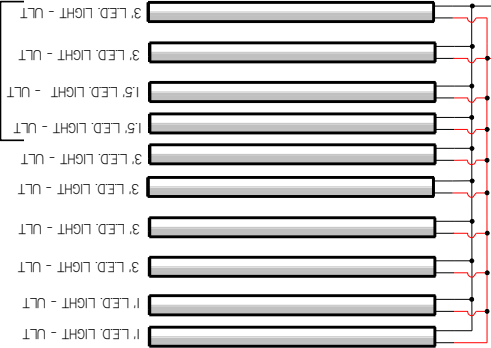


CIRCUIT #1	DWG
200V	250V
104	100
143	100

CIRCUIT #1

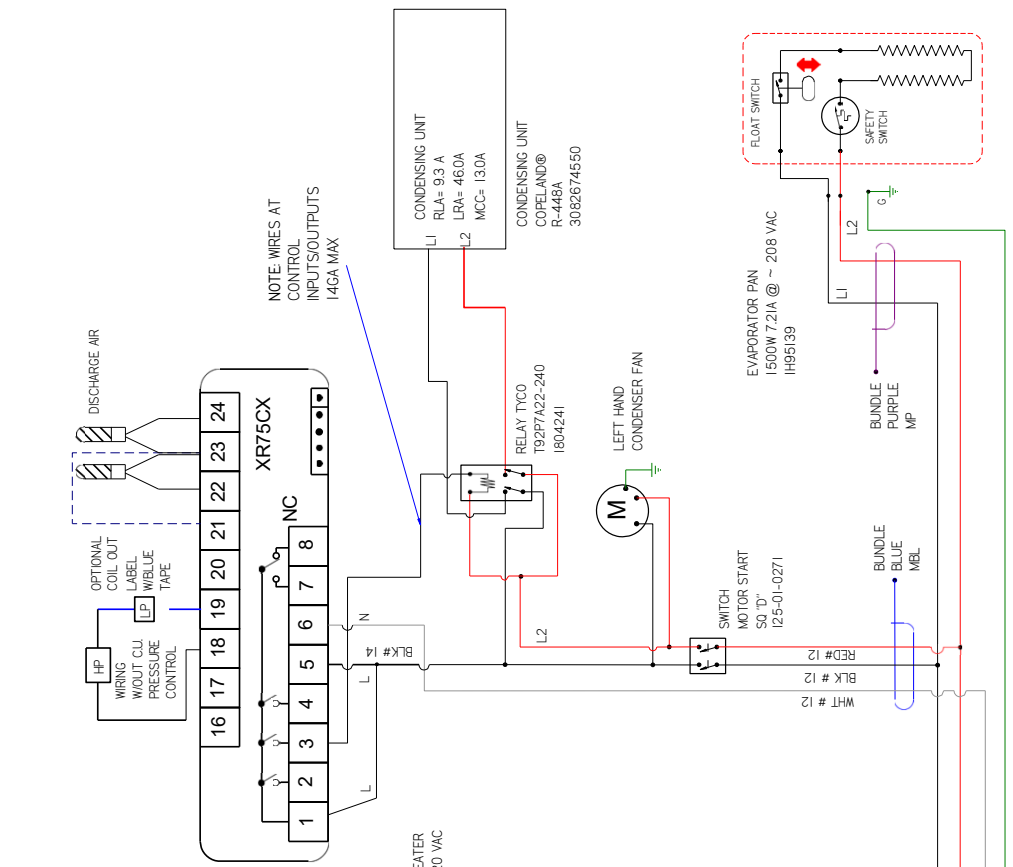
LIGHT CIRCUIT
0.58A 62.4W @ 120V

CANOPY



REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-COD-0016099	6-27-22	RELEASED TO PRODUCTION	CB	CB	CB

REVISION HISTORY



NOTE WIRES AT CONTROL INPUTS/OUTPUTS 14GA MAX

WIRE MARKER COLORS/ABBREVIATIONS

BLACK = MBK	MAROON =
BLUE = MBL	MNR ORANGE =
BROWN = MBR	MO PINK = MPI
DARK BLUE =	PURPLE = MP
DB GREEN = MG	RED = MR
LIGHT BLUE = MLB	YELLOW = MYL

UL COLOR CODES / ABBREVIATIONS

RED = RD	WHITE = WT
BLACK = BK	GREEN = GN
BLUE = BL	BROWN = BN
YELLOW =	ORANGE =
YL GRAY =	OR VIOLET =
GY	VT

HUSSMANN
DIAGRAM-TY3EC-3X
4.5E-S WXR75 CTLR
3168381

FACTORY 14GA WIRE

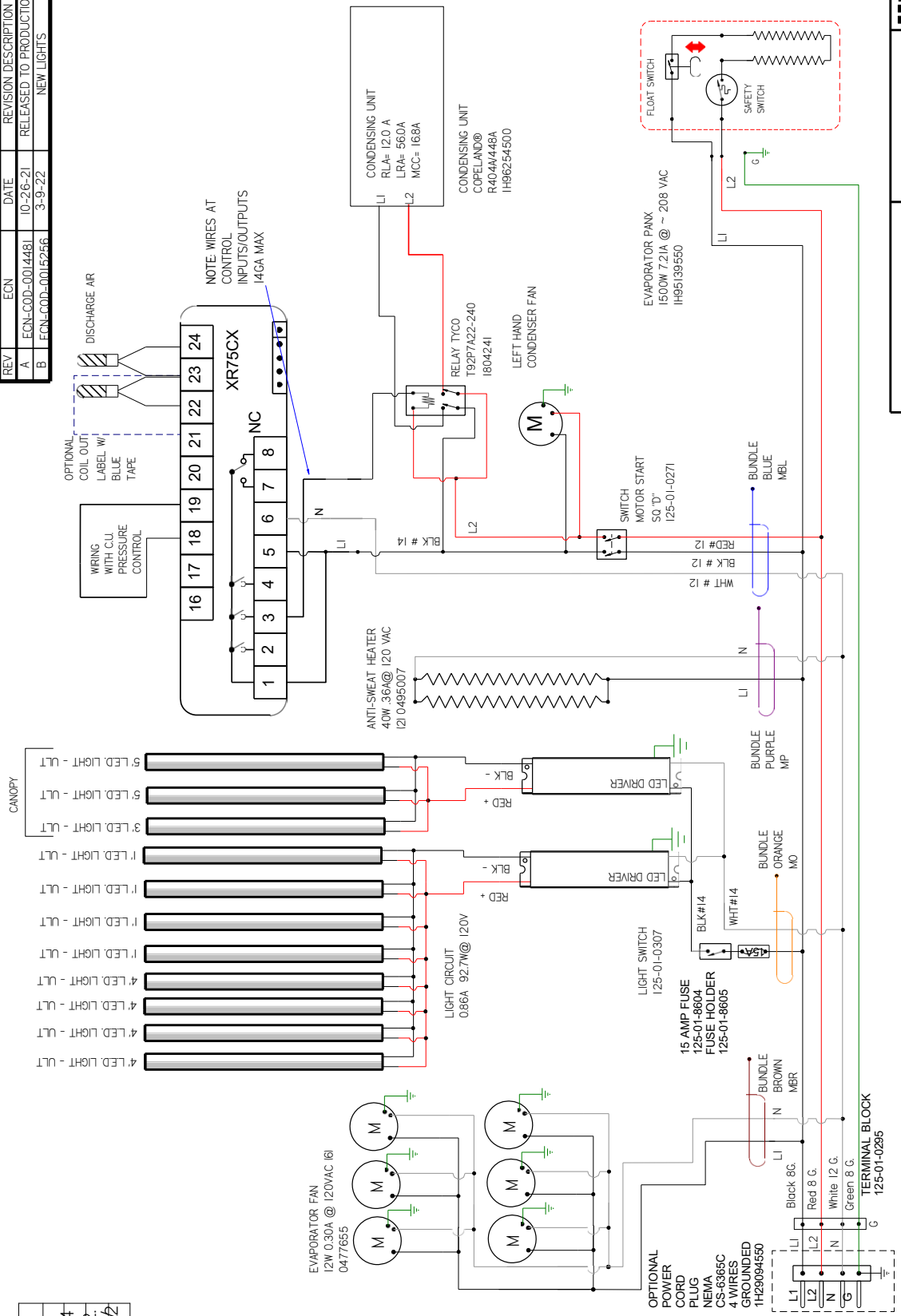
-FACTORY LOGA WIRE
--- FIELD WIRE ---
DO NOT SCALE DRAWING
SHEET 1 OF 1

- NOTES:**
1. PRINTED DOCUMENT REQUIRED SETTING: ALL COLORS BLACK & WHITE
 2. CASE & ANY REMOVABLE PANEL WITH ELECTRICAL PARTS MUST BE GROUNDED.
 3. WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

CIRCUIT #1

LOADING	24
208	22
L1	193
L2	V167
	2

REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-COD-001448L	10-26-21	RELEASED TO PRODUCTION	AL	CB	CB
B	ECN-COD-0016256	3-9-22	NEW LIGHTS	AL	CB	CB



UL COLOR CODES / ABBREVIATIONS	WHITE = WT GREEN = GN BROWN = BN ORANGE = OR OR VIOLET = VT CY
WIRE MARKER COLORS/ABBREVIATIONS	MAROON = MMR ORANGE = MO PINK = MPI PURPLE = MP DARK BLUE = MDB GREEN = MG LIGHT BLUE = MLB YELLOW = MYL
FACTORY 14GA WIRE	FACTORY 10GA WIRE FIELD WIRE DO NOT SCALE DRAWING
SHEET 1 OF 1	

UL COLOR CODES / ABBREVIATIONS	WHITE = WT GREEN = GN BROWN = BN ORANGE = OR OR VIOLET = VT CY
WIRE MARKER COLORS/ABBREVIATIONS	MAROON = MMR ORANGE = MO PINK = MPI PURPLE = MP DARK BLUE = MDB GREEN = MG LIGHT BLUE = MLB YELLOW = MYL

WIRE MARKER COLORS/ABBREVIATIONS	MAROON = MMR ORANGE = MO PINK = MPI PURPLE = MP DARK BLUE = MDB GREEN = MG LIGHT BLUE = MLB YELLOW = MYL
UL COLOR CODES / ABBREVIATIONS	WHITE = WT GREEN = GN BROWN = BN ORANGE = OR OR VIOLET = VT CY

NOTES:
1. PRINTED DOCUMENT REQUIRED SETTING: ALL COLORS BLACK & WHITE
2. CASE & ANY REMOVABLE PANEL WITH ELECTRICAL PARTS MUST BE GROUNDED.
3. WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

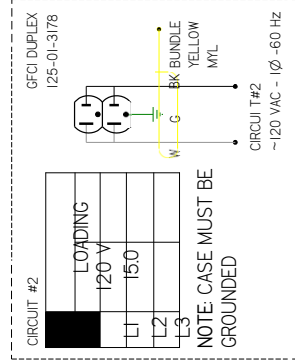
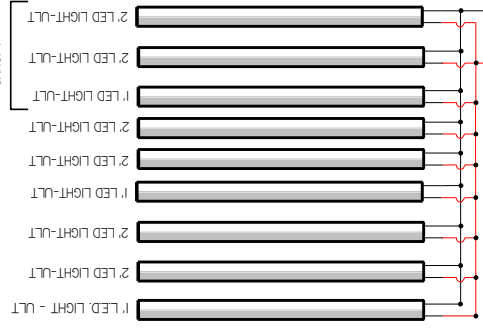
HUSSMANN
DIAGRAM-
TY3ECRC-4X6E-S

3157152
B

CIRCUIT #1	LOADING
208	24
L1	18.6
L2	V17.0

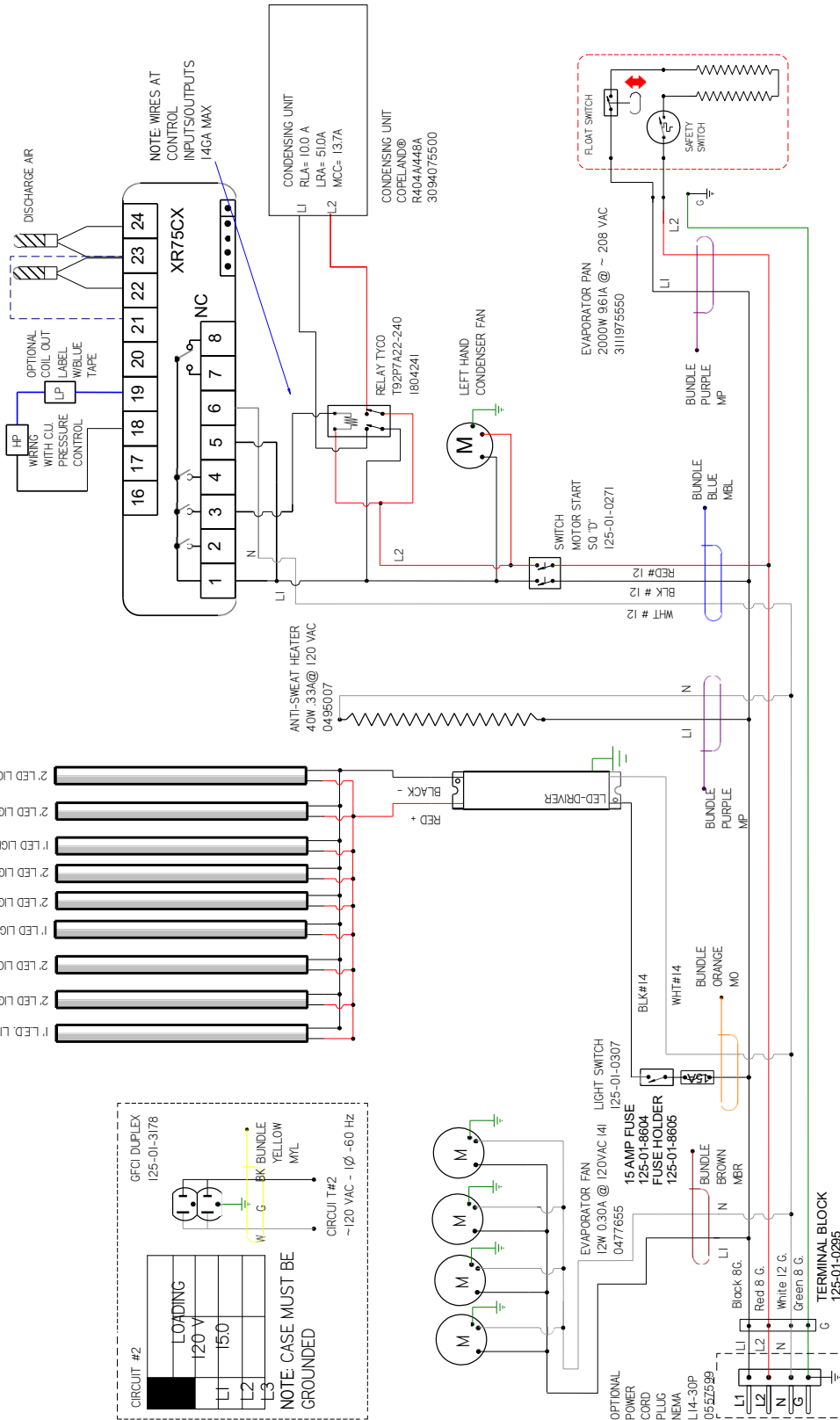
LIGHT CIRCUIT
0.34A 36.8W @ 120V

CANOPY



REVISION HISTORY			
REV	ECN	DATE	REVISION DESCRIPTION
B	ECN-COD=0015256	3-7-22	NEW LIGHTS
C	ECN-COD=0016836	10-10-22	ADDED OPTIONAL PROBE

REVISION HISTORY			
REV	ECN	DATE	REVISION DESCRIPTION
B	ECN-COD=0015256	3-7-22	NEW LIGHTS
C	ECN-COD=0016836	10-10-22	ADDED OPTIONAL PROBE



WIRE MARKER COLORS/ABBREVIATIONS

- BLACK = MBK
- BLUE = MBL
- BROWN = MBR
- DARK BLUE = MDB
- GREEN = MGR
- LIGHT BLUE = MLB
- MAROON = MMR
- PINK = MPI
- PURPLE = MP
- RED = MR
- YELLOW = MYL

UL COLOR CODES / ABBREVIATIONS

- RED = RD
- BLACK = BK
- BLUE = BL
- YELLOW = YL
- GRAY = GY
- WHITE = WT
- GREEN = GN
- BROWN = BN
- ORANGE = OR
- OR VIOLET = OV

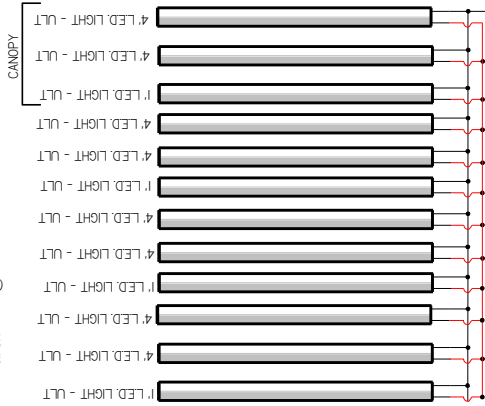
HUSSMANN
DIAGRAM-TY3-
4X4E- SXR75 CTLR
3160998
SHEET 1 OF 1

- NOTES:**
1. PRINTED DOCUMENT REQUIRED SETTING: ALL COLORS BLACK & WHITE
 2. CASE & ANY REMOVABLE PANEL WITH ELECTRICAL PARTS MUST BE GROUNDED.
 3. WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

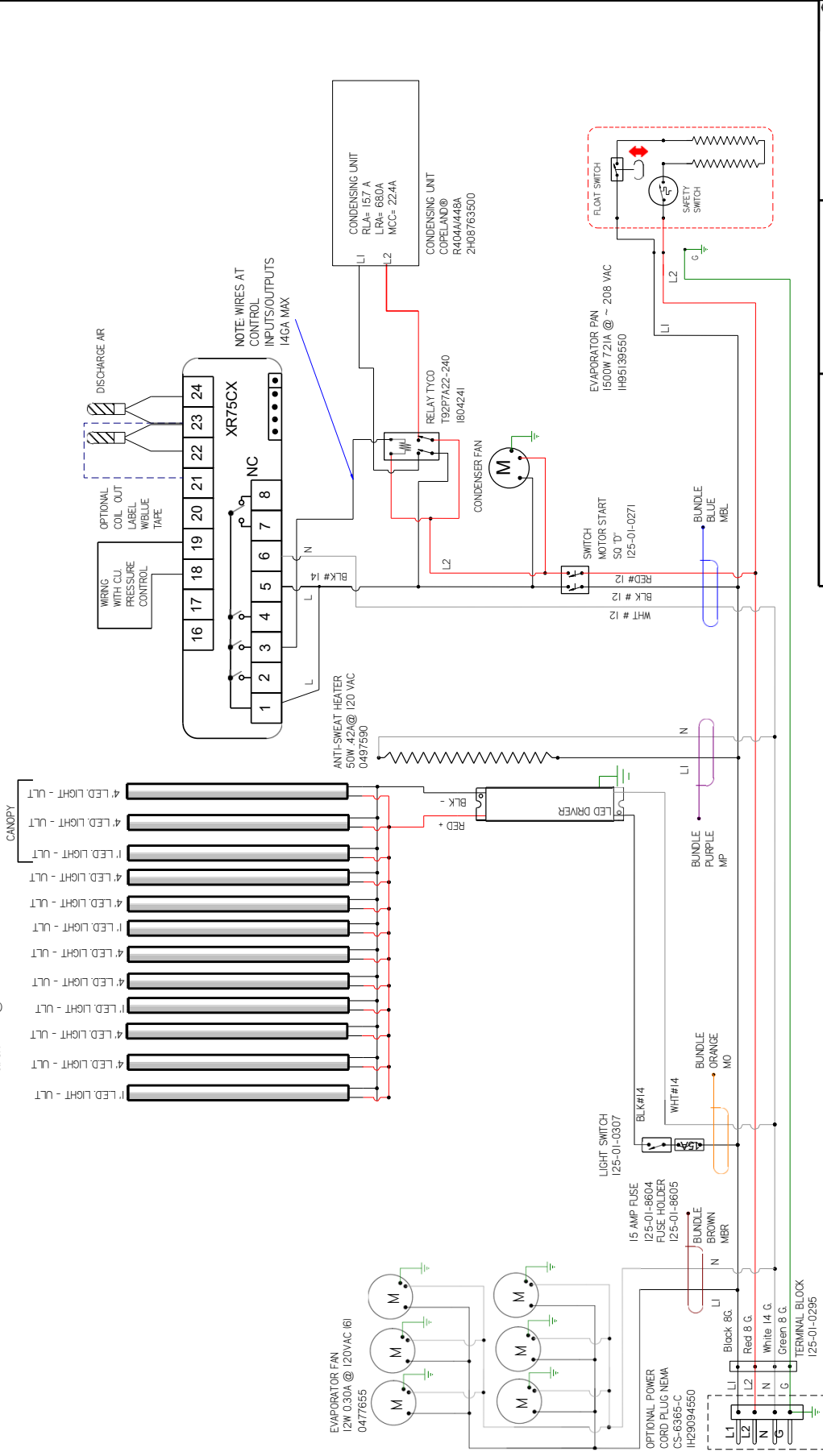
CIRCUIT #1

LOADING	24
L1	224
L2	199

LIGHT CIRCUIT
075A 811W @ 120V



REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-COD-001450Z	10-29-21	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-COD-0015256	03-08-22	NEW LIGHTS	AL	CB	CB



- NOTES:
1. PRINTED DOCUMENT REQUIRED SETTING: ALL COLORS BLACK & WHITE
 2. CASE & ANY REMOVABLE PANEL WITH ELECTRICAL PARTS MUST BE GROUNDED.
 3. WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

HUSSMANN

DIAGRAM-TY4-
4X6E- S/WXR75
CTLR

FACTORY 14GA WIRE
-FACTORY LOGGA WIRE
-FIELD WIRE
-DO NOT SCALE DRAWING

3157267

SHEET 1 OF 1

REVISION HISTORY			
REV	ECN	DATE	REVISION DESCRIPTION
A	ECN-COD-0015266	1-11-22	RELEASED TO PRODUCTION
B	ECN-COD-0015266	3-8-22	NEW LIGHTS

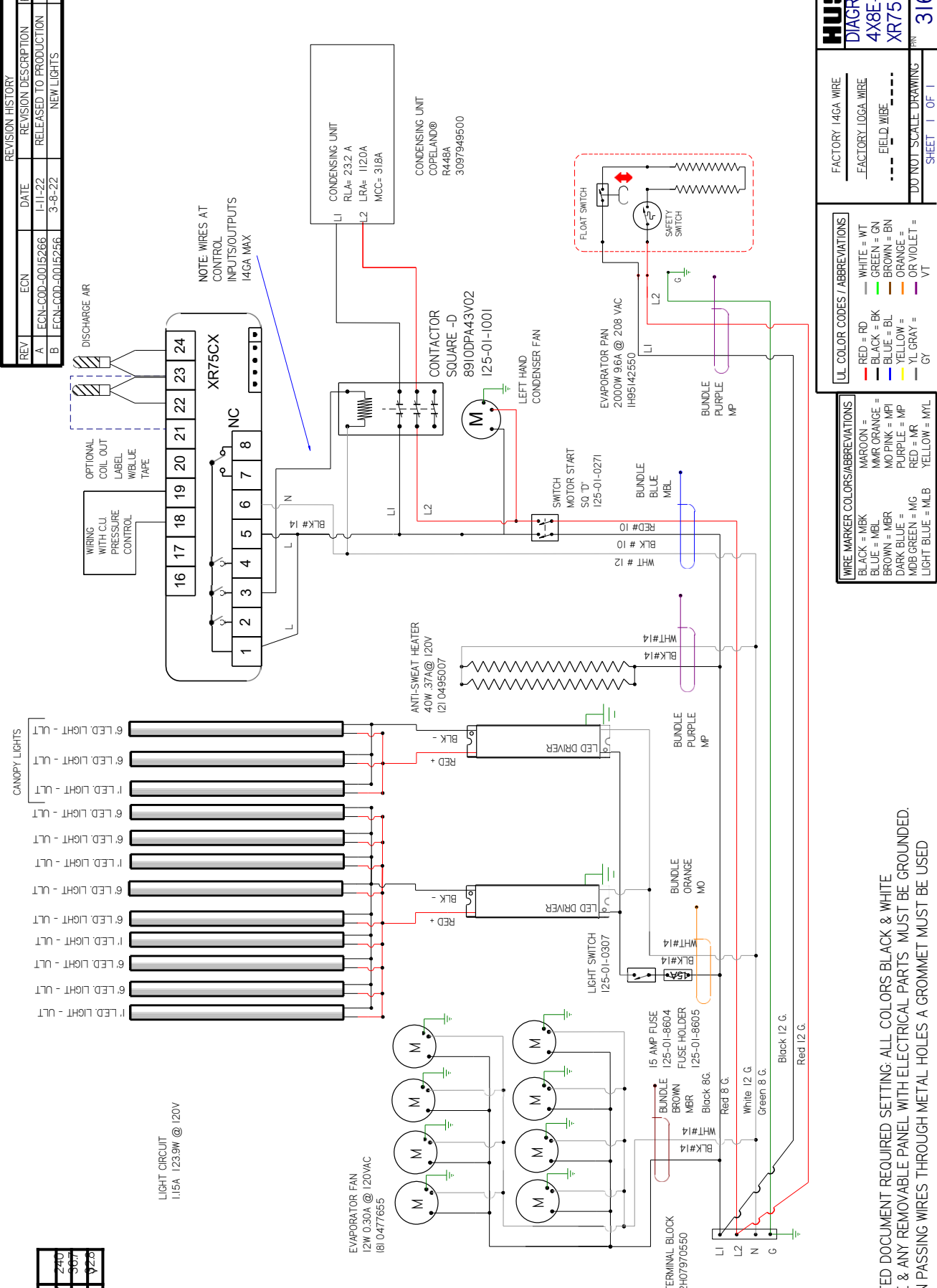
REV	CHKD BY	APPR BY
A	CB	CB
B	AL	CB

REV	DATE	DESCRIPTION
1	11/22	RELEASED TO PRODUCTION
2	03/08	NEW LIGHTS

REV	DATE	DESCRIPTION
1	11/22	RELEASED TO PRODUCTION
2	03/08	NEW LIGHTS

CIRCUIT #1

2



NOTE: WIRES AT CONTROL INPUTS/OUTPUTS 14GA MAX

OPTIONAL COIL OUT LABEL W/BLUE TAPE

WIRING WITH C.U. PRESSURE CONTROL

DISCHARGE AIR

EVAPORATOR FAN

ANTI-SWEAT HEATER

CONTACTOR

CONDENSING UNIT

EVAPORATOR PAN

LEFT HAND CONDENSER FAN

SWITCH MOTOR START

SAFETY SWITCH

FLLOAT SWITCH

TERMINAL BLOCK

LED DRIVER

LED LIGHT

EVAPORATOR FAN

ANTI-SWEAT HEATER

CONTACTOR

CONDENSING UNIT

EVAPORATOR PAN

LEFT HAND CONDENSER FAN

SWITCH MOTOR START

SAFETY SWITCH

FLLOAT SWITCH

TERMINAL BLOCK

LED DRIVER

LED LIGHT

EVAPORATOR FAN

ANTI-SWEAT HEATER

CONTACTOR

CONDENSING UNIT

EVAPORATOR PAN

LEFT HAND CONDENSER FAN

SWITCH MOTOR START

SAFETY SWITCH

FLLOAT SWITCH

TERMINAL BLOCK

LED DRIVER

LED LIGHT

EVAPORATOR FAN

ANTI-SWEAT HEATER

CONTACTOR

CONDENSING UNIT

EVAPORATOR PAN

LEFT HAND CONDENSER FAN

SWITCH MOTOR START

SAFETY SWITCH

FLLOAT SWITCH

TERMINAL BLOCK

LED DRIVER

LED LIGHT

EVAPORATOR FAN

ANTI-SWEAT HEATER

CONTACTOR

CONDENSING UNIT

EVAPORATOR PAN

LEFT HAND CONDENSER FAN

SWITCH MOTOR START

SAFETY SWITCH

FLLOAT SWITCH

TERMINAL BLOCK

LED DRIVER

LED LIGHT

EVAPORATOR FAN

ANTI-SWEAT HEATER

CONTACTOR

CONDENSING UNIT

EVAPORATOR PAN

LEFT HAND CONDENSER FAN

SWITCH MOTOR START

SAFETY SWITCH

FLLOAT SWITCH

TERMINAL BLOCK

UL COLOR CODES / ABBREVIATIONS

WIRE MARKER COLORS/ABBREVIATIONS

FACTORY 14GA WIRE

DO NOT SCALE DRAWING

SHEET 1 OF 1

HUSSMANN

DIAGRAM-TY4-

4X8E- S/W/DXKELL

XR75 CTR

3160098

REV BY

CHKD BY

APPR BY

DATE

REVISION DESCRIPTION

REV

ECN

DATE

REVISION DESCRIPTION

REV

NOTES:
 1. PRINTED DOCUMENT REQUIRED SETTING: ALL COLORS BLACK & WHITE
 2. CASE & ANY REMOVABLE PANEL WITH ELECTRICAL PARTS MUST BE GROUNDED.
 3. WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

10. Spec Sheets



SELF-SERVICE DELI

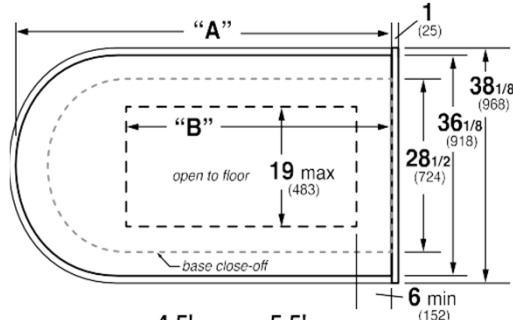
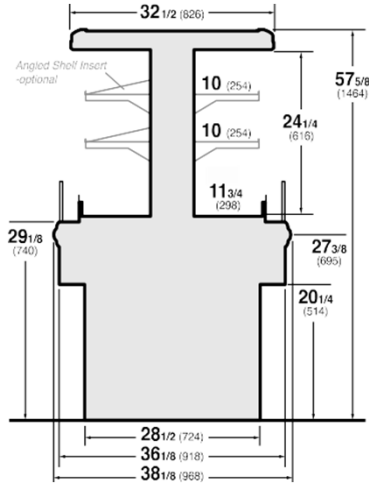
HUSSMANN - TY3-3 E-END REMOTE (CHINO)



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

REVISION DATE

01/29/19



	4.5'	5.5'
"A"	54 1/2 (1384)	66 1/2 (1689)
"B"	34 (864) max	46 (1168) max



REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CAPACITY *** (BTU/HR/FT)		TEMPERATURE (°F)			VELOCITY (FT/MIN)
		RATING CONDITION		EVAPORATOR		DISCHARGE AIR ** (°F)	
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	
4.5E, 5.5E	DELI	1525	1525	24	24	28~32	125~175

CASE LENGTHS	EST. REFG. CHR.G. (LBS)	20°F GLYCOL 6° RISE	
		GPM	PSI
4.5E	1.5	2.4	3.0
5.5E	2.0	2.9	4.5

**FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

***REFRIGERATION NOTES:

- 1) BTU'S INCLUDE LIGHTS
- 2) AHRI 1200 RATING POINT FOR ENERGY CONSUMPTION COMPARISON ONLY
- 3) USE DEW POINT FOR HIGH GLIDE REFRIGERANTS. CARE SHOULD BE TAKEN TO USE THE DEW POINT IN P/T TABLES FOR MEASURING AND ADJUSTING SUPERHEAT. ADJUST EVAPORATOR PRESSURE AS NEEDED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SHOWN.
- 4) RATING CONDITION IS NSF TYPE I, 75°F/55% RH

REFRIGERATION DATA CONTINUED:

USAGE	ELEC. THERMOSTAT / AIR SENSOR SETTINGS		DEFROST TYPE	TIME (MIN)	DEFROST FREQUENCY (#/DAY)	TERM. TEMP (°F) COIL ONLY	DRIP TIME	DEFROST WATER (LBS/DAY/FT)
	CUT IN (°F)	CUT OUT (°F)						
DELI	34	26	OFF TIME	40	6	48	N/A	3.8

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)

CASE LENGTH	EVAPORATOR FANS					CANOPY LIGHTS LED		OPTIONAL LED SHELF LIGHTS		MAX. LED LOAD (W/ ALL OPTIONS)		ANTI-SWEAT HEATERS		CONVENIENCE OUTLETS (OPTIONAL)		
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS
4.5E	4	8	10	1.2	32	0.2	22	0.3	35	0.5	58	0.4	50	1	115	15
5.5E	6	8	10	1.8	48	0.2	28	0.4	46	0.6	73	0.4	50	1	115	15

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
4.5E	N/A	N/A	N/A	N/A	N/A	N/A
5.5E	N/A	N/A	N/A	N/A	N/A	N/A

Spec Sheets



SELF-SERVICE DELI

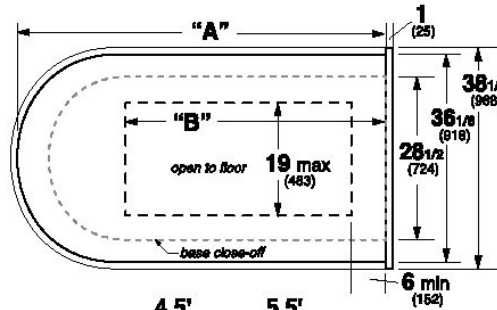
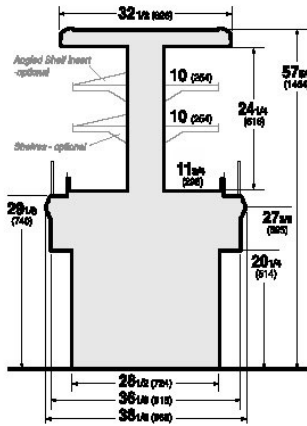
HUSSMANN - TY3-3 E-END SELF-CONTAINED (CHINO)



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

REVISION DATE

07/09/20



	4.5'	5.5'
"A"	54 1/2 (1384)	66 1/2 (1689)
"B"	34 (864) max	46 (1168) max

REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CONVENTIONAL CAPACITY *** (BTU/HR/FT)	AVERAGE DISCHARGE AIR** (°F) (SEE SETPOINTS BELOW)	VELOCITY (FT/MIN)
4.5E, 5.5E	DELI	1750	28-32	125-175

**FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

***REFRIGERATION NOTES:

- 1) CAPACITY FOR REFERENCE ONLY
- 2) APPROVED UP TO TYPE II CONDITIONS (80°F/55% RH)
- 3) DEFROST FOR IS BASED ON TERMINATION TEMP, WHICH UNDER NORMAL CIRCUMSTANCES, IS SHORTER THAN FAILSAFE TIME.

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	SET POINT (°F)	DIFFERENTIAL (°F)						
DELI	23	10	OFF TIME	40	6	48	N/A	3.8

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)

CASE LENGTH	EVAPORATOR FANS				CANOPY LIGHTS LED		OPTIONAL LED SHELF LIGHTS		MAX. LED LOAD (W/ ALL OPTIONS)		ANTI-SWEAT HEATERS		CONVENIENCE OUTLETS (OPTIONAL)			
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS
4.5E	4	8	10	1.2	32	0.2	22	0.3	35	0.5	58	0.4	50	1	115	15
5.5E	6	8	10	1.8	48	0.2	28	0.4	46	0.6	73	0.4	50	1	115	15

CONDENSING UNIT AND EVAPORATIVE PANS

CASE LENGTH	CONDENSING UNIT				EVAPORATIVE PAN			NEMA PLUG	EST. REFG. CHR.G. (LBS)	
	NOM. HP	REFRIG.	Hz/Ph	Volts	RLA	VOLTS	AMPS			WATTS
4.5E	1	R-404A	60 / 1	208	10.0	240	6.3	1500	L14-30P	3.6
5.5E	1 1/2		60 / 1	208	12.6	208	7.2	1500	L14-30P	4.4
4.5E	1 1/4	R-448A	60 / 1	208	10.0	240	6.3	1500	L14-30P	3.6
5.5E	1 3/4		60 / 1	208	12.6	208	7.2	1500	L14-30P	4.4

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
4.5E	N/A	N/A	N/A	N/A	N/A	N/A
5.5E	N/A	N/A	N/A	N/A	N/A	N/A

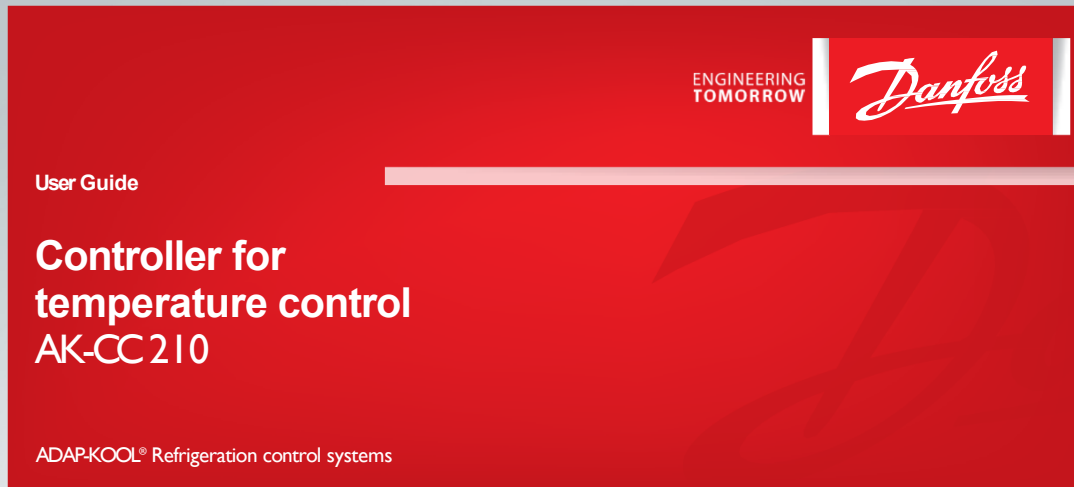
11. TY Parameter Report





TY					PGM0010A01		PGM0010A02	
					TANDARD CASE REV B 9/6/1		Sheetz REV B 9/21/17	
Parameter	Code	Min	Max	Default	Actual (°C)	Actual (°F)	Actual (°C)	Actual (°F)
Temperature (set point)								
Deli (Type I)	---	-50.0°C	50.0°C	2.0°C	-3.3	26	-5.0	23
Deli (Deli Type II)	---	-50.0°C	50.0°C	2.0°C	-5.0	23		
Thermostat								
Differential	r01	0.1 K	20.0K	2.0 K	5.6	10	4.5	8
Max. limitation of setpoint setting	r02	-49.0°C	50°C	50.0°C	5.6	42	3.9	39
Min. limitation of setpoint setting	r03	-50.0°C	49.0°C	-50.0°C	-7.8	18	-5.0	23
Adjustment of temperature indication	r04	-20.0 K	20.0 K	0.0 K	0.0 K		0.0 K	
Temperature unit (°C=0/°F=1)	r05	0	1	0	1		1	
Correction of the signal from S4	r09	-10.0 K	+10.0 K	0.0 K	0.0 K		0.0 K	
Correction of the signal from S3	r10	-10.0 K	+10.0 K	0.0 K	0.0 K		0.0 K	
Manual service, stop regulation, start regulation (-1, 0, 1)	r12	-1	1	0	1		1	
Displacement of reference during night operation	r13	-10.0 K	10.0 K	0.0 K	0.0 K		0.0 K	
Definition and weighting, if applicable, of thermostat sensors - S4% (100%=S4, 0%=S3)	r15	0%	100%	100%	100%		100%	
The heating function is started a number of degrees below the thermostats cutout temperature	r36	-15.0 K	-3.0 K	-15.0 K	-15.0 K		-15.0 K	
Activation of reference displacement r40	r39	OFF	ON	OFF	OFF		OFF	
Value of reference displacement (activate via r39 or DI)	r40	-50.0 K	50.0 K	0.0 K	0.0 K		0.0 K	
Alarm								
Delay for temperature alarm	A03	0 min	240 min	30 min	30 min		30 min	
Delay for door alarm	A04	0 min	240 min	60 min	60 min		60 min	
Delay for temperature alarm after defrost	A12	0 min	240 min	90 min	60		60	
High alarm limit	A13	-50.0°C	50.0°C	8.0°C	5.0	41	5.0	41
Low alarm limit	A14	-50.0°C	50.0°C	-30.0°C	-9.4	15	-9.4	15
Alarm delay DI1	A27	0 min	240 min	30 min	30 min		30 min	
Alarm delay DI2	A28	0 min	240 min	30 min	30 min		30 min	
Signal for alarm thermostat. S4% (100%=S4, 0%=S3)	A36	0%	100%	100%	100%		100%	
Compressor								
Min. ON-time	c01	0 min	30 min	0 min	1		1	
Min. OFF-time	c02	0 min	30 min	0 min	2		2	
Time delay for cutin of comp.2	c05	0 sec	999 sec	0 sec	0 sec		0 sec	
Compressor relay 1 must cutin and out inversely (NC-function)	c30	0	1	0	0		0	
		OFF	ON	OFF	OFF		OFF	
Defrost								
Defrost method (none/EL/GAS/BRINE)	d01	no	bri	EL	EL		EL	
Defrost stop temperature	d02	0.0°C	25.0°C	6.0°C	11.1	52	11.1	52
Interval between defrost starts	d03	0 hours	240 hours	8 hours	4		4	
Max. defrost duration	d04	0 min	180 min	45 min	50		50	
Displacement of time on cutin of defrost at start-up	d05	0 min	240 min	0 min	0 min		0 min	
Drip off time	d06	0 min	60 min	0 min	0 min		0 min	
Delay for fan start after defrost	d07	0 min	60 min	0 min	0 min		0 min	
Fan start temperature	d08	-15.0°C	0.0°C	-5.0°C	-5.0°C		-5.0°C	
Fan cutin during defrost	d09	0	2	1	1		1	
0: Stopped 1: Running 2: Running during pump down and defrost								
Defrost Sensor (0=time, 1=S5, 2=S4)	d10	0	2	0	1		1	
Pump down delay	d16	0 min	60 min	0 min	0 min		0 min	
Drain delay	d17	0 min	60 min	0 min	0 min		0 min	
Max. aggregate refrigeration time between two defrosts	d18	0 hours	48 hours	0 hours	4		4	
Defrost on demand - S5 temperature's permitted variation during frost build-up. On central plant choose 20 K (=off)	d19	0.0 K	20.0 k	20.0 K	1.7	3	1.7	3
Delay of hot gas defrost	d23	0 min	60 min	0 min	0 min		0 min	
Fan								
Fan stop at cutout compressor	F01	no	yes	no	no		no	
Delay of fan stop	F02	0 min	30 min	0 min	0 min		0 min	
Fan stop temperature (S5)	F04	-50.0°C	50.0°C	50.0°C	50.0°C		50.0°C	
HACCP								
Actual temperature measurement for the HACCP	h01							
Last registered peak temperature	h10							
Selection of function and sensor for the HACCP	h11	0	2	0	0		0	
HACCP function. 1 = S4 used (maybe also S3). 2 = S5								
Alarm limit for the HACCP function	h12	-50.0°C	50.0°C	8.0°C	8.0°C		8.0°C	
Time delay for the HACCP alarm	h13	0 min.	240 min.	30 min.	30 min.		30 min.	
Select signal for the HACCP function. S4% (100% = S4,	h14	0%	100%	100%	100%		100%	

TY Parameter Report

Real time clock							
Six start times for defrost. Setting of hours. 0=OFF	t01-t06	0 hours	23 hours	0 hours	0 hours		0 hours
Six start times for defrost. Setting of minutes. 0=OFF	t11-t16	0 min	59 min	0 min	0 min		0 min
Clock - Setting of hours	t07	0 hours	23 hours	0 hours	0 hours		0 hours
Clock - Setting of minute	t08	0 min	59 min	0 min	0 min		0 min
Clock - Setting of date	t45	1	31	1	1		1
Clock - Setting of month	t46	1	12	1	1		1
Clock - Setting of year	t47	0	99	0	0		0
Miscellaneous							
Delay of output signals after start-up	o01	0 s	600 s	5 s	5 s		5 s
Input signal on DI1. Function:	o02	1	11	0	0		0
Network address	o03	0	240	0	0		0
On/Off switch (Service Pin message)	o04	OFF	ON	OFF	OFF		OFF
Access code 1 (all settings)	o05	0	100	0	0		0
Used sensor type (Pt /PTC/NTC)	o06	Pt	ntc	Pt	Pt		Pt
Display step = 0.5 (normal 0.1 at Pt sensor)	o15	no	yes	no	no		no
Max hold time after coordinated defrost	o16	0 min	60 min	20	20		20
Select signal for display view. S4% (100%=S4, 0%=S3)	o17	0%	100%	100%	100%		100%
Input signal on DI2. Function:	o37	0	12	0	0		0
Configuration of light function (relay 4)	o38	1	3	1	1		1
Activation of light relay (only if o38=2)	o39	OFF	ON	OFF	OFF		OFF
Rail heat On time during day operations	o41	0%	100%	100	100		100
Rail heat On time during night operations	o42	0%	100%	100	100		100
Rail heat period time (On time + Off time)	o43	6 min	60 min	10 min	10 min		10 min
Case cleaning. 0=no case cleaning. 1=Fans only. 2=All	o46	0	2	0	0		0
Selection of EL diagram. See overview page 6	o61	1	10	1	1		1
Download a set of predetermined settings. See	o62	0	6	0	0		0
Access code 2 (partly access)	o64	0	100	0	0		0
Save the controllers present settings to the	o65	0	25	0	0		0
Load a set of settings from the programming key	o66	0	25	0	0		0
Replace the controllers factory settings with the	o67	OFF	On	OFF	OFF		OFF
Service							
Status codes are shown on page 17	S0-S33						
Temperature measured with S5 sensor	u09						
Status on DI1 input. on/1=closed	u10						
Temperature measured with S3 sensor	u12						
Status on night operation (on or off) 1=closed	u13						
Temperature measured with S4 sensor	u16						
Thermostat temperature	u17						
Read the present regulation reference	u28						
Status on DI2 output. on/1=closed	u37						
Temperature shown on display	u56						
Measured temperature for alarm thermostat	u57						
Status on relay for cooling	u58						
Status on relay for fan	u59						
Status on relay for defrost	u60						
Status on relay for railheat	u61						
Status on relay for alarm	u62						
Status on relay for light	u63						
Status on relay for valve in suction line	u64						
Status on relay for compressor 2	u67						

12. Danfoss Controller







- ①  Open Camera
- ②  iPhone User
Hold the camera up to the QR code
-  Android User
Open QR Code Reader app if necessary.
Hold the camera up to the QR code
- ③  Tap the notification to be taken to the destination of the QR code

13. Dixell Controller

026-1210 Rev 3 03-FEB-2015

XR75CX Digital Controller for Medium-Low Temperature Refrigeration Applications Installation and Operation Manual



- ①  Open Camera
- ②  iPhone User
Hold the camera up to the QR code
-  Android User
Open QR Code Reader app if necessary.
Hold the camera up to the QR code
- ③  Tap the notification to be taken to the destination of the QR code

14. Troubleshooting Guide

Problem	Possible Cause	Possible Solution
Case temperature is too warm.	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door, window, electric fan or air conditioning vent that may cause air currents? Case must be located minimum 15 Ft away from doors or windows. Cases are designed to operate at 55% Relative humidity and a temperature of 75°F.
	Discharge air temp is out of spec.	Check evaporator fan operation. Check electrical connections and input voltage.
		Fans are installed backwards. Check airflow direction.
		Fan blades are installed incorrectly. Make sure fan blades have correct pitch and are per specification.
		Check to see that fan plenum is installed correctly. It should not have any gaps.
		Check suction pressure and insure that it meets factory specifications.
	Case is in defrost.	Check defrost settings. See Technical Specifications section.
	Product load may be over its limits blocking airflow.	Redistribute product so it does not exceed load level. There is a sticker on the inside of the case indicating what the maximum load line is.
	Coil is freezing over.	Return air is blocked, make sure debris is not blocking the intake section.
Coil close-offs are not installed. Inspect coil to make sure these parts are on the case.		
Condensing coil or evaporator coil is clogged or dirty.	Clean coil.	
Case temperature is too cold.	The t-stat temp is set too low.	Check settings. See Technical Specifications section.
	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door, window, electric fan or air conditioning vent that may cause air currents? Case must be located minimum 15 Ft away from doors or windows. Cases are designed to operate at 55% Relative humidity and a temperature of 75°F.
Condensation on glass.	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door, window, electric fan or air conditioning vent that may cause air currents? Case must be located minimum 15 Ft away from doors or windows. Cases are designed to operate at 55% Relative humidity and a temperature of 75°F.

Troubleshooting Guide (Cont'd)

Problem	Possible Cause	Possible Solution
Water has pooled under case.	Case drain is clogged.	Clear drain.
	PVC drains under case may have a leak.	Repair as needed.
	Case tub has unsealed opening.	Seal as needed.
	Evaporator pan is overflowing (if applicable).	Check electrical connection to evaporator pan.
Case is not draining properly.	Case is not level.	Level the case.
	Drain screen is plugged.	Clean drain screen and remove any debris.
	Drain or P-trap is clogged.	Clear any debris.
Frost or ice on evaporator coil.	Evaporator fans are not functioning.	Check electrical connections.
	Defrost clock is not functioning.	Case should be serviced by a qualified service technician.
	Coil is freezing over.	Return air is blocked, make sure debris is not blocking the intake section.
Lights do not come on.	LED Driver/light socket wiring.	Check electrical connections. See Electrical Section and check wiring diagram.
	LED Driver needs to be replaced.	Case should be serviced by a qualified service technician. See Electrical Section.
	Lamp socket needs to be replaced.	Case should be serviced by a qualified service technician.
	Lamp needs to be replaced.	See Maintenance Section.
	Light Switch needs to be replaced.	Case should be serviced by a qualified service technician.
Condition	Troubleshooting	
Water is on the Floor	Caution! Water on flooring can cause much damage! Until cause is determined (and repaired), following these procedures:	
	Use wet-dry vacuum (or mop & bucket) to remove standing water.	
	Use 'catch pans' for water to drain into. Swap out regularly until case has completely drained.	
	Check that the drain trap is free of debris.	
	Check that the PVC drain pipes are correctly positioned over evaporator pan.	
	Check store conditions. To prevent condensation in NSF® Type 1 environments, maximum conditions are to be 55% humidity / 75° Fahrenheit. For NSF® Type 2, maximum conditions are to be 60% humidity / 80° Fahrenheit. See serial label (at case rear near main power switch) for NSF® Type of your case.	
	Check that evaporator pan is plugged in.	
	Caution! Evaporator pan may be malfunctioning. If so, water will overflow pan and seep onto flooring causing damage! Until evaporator pan is functioning (or is replaced).	
	Caution! Disruption of power can cause water to overflow pan and seep onto flooring causing damage! Check that power to case is constant. Until power is restored, following these procedures:	
	When power to case is restored, evaporator pan should function properly and water will no longer overflow onto flooring.	

Troubleshooting (Cont'd)

Condition	Troubleshooting
Fan Emits Excessive Noise	Check that the case is aligned, level and plumb.
	Check evaporator fan for cleanliness.
	Unplug fan motors; check motor shaft for excessive bearing wear.
	Check the fan motors are securely mounted in brackets.
	Verify that fan blades are securely mounted to fan motor.
	Check that nothing is preventing blade rotation.
	Check that the fan shroud is properly secured.
Fans are not Working	Check that the MAIN power switch (if present) is ON.
	Check that fans are plugged into fan shroud.
	Check for foreign material obstructing fan performance.
	Check that fan blades freely rotate within fan shrouds.
	Check that power is going to fans.
	Check that fan wiring is connected on terminal blocks.
System is not Operating	Check that the utility power is on.
	Check the circuit breaker box for tripped circuits.
Case is not Holding Temperature	If a large amount of warm product was added to the case, it will take time for the temperature to adjust. Product should be pre-chilled before placing in display case.
	Check Temperature Controller section in this manual
	Check that the case is not in the sun or near heat or air conditioning vent.
	If case is located near outside doors, temperature fluctuation can hinder unit's ability to maintain temperature.
	Check Set Point Temperature; it may be adjusted too high.
Case Lights are not working	Check that Light switch is in the ON position
	Check for burned out bulbs. Turn lights off & replace.
	Clean dirt and dust from the bulbs to prevent flickering.
	Check to insure voltage at LED Driver. If voltage is entering but not exiting the LED Driver, LED Driver is faulty.
	Check that ALL lights are plugged in and receptacles capped.
Control Display is Flashing	Check Temperature Controller section in this manual.
Considering Unit is not Operating (Self-Contained units only)	Check Temperature Controller section in this manual.
	Check that the power is turned on.
	Review Temperature Controller's Settings for accuracy

Troubleshooting (Cont'd)

Troubleshooting Condensing System (Qualified Service Technicians Only)

Condition	Troubleshooting
Head Pressure too High	Check that the Condensing Coil is not dirty or covered.
	Check the Condensing Fans are working.
	Check that the refrigeration system is not overcharged.
	Check that case is free of non-condensables.
	Check that the Liquid Line Drier Filter is not plugged.
	Check Set Point temperature; it may be adjusted to high.
	Check System Operating temperatures.
Head Pressure too low	Check that Store Ambient temperature isn't above maximum allowed. See Overview and Warnings Section.
	Check that Refrigerant Charge isn't too low.
	Check that Suction Pressure isn't too low.
	Check to verify that Compressor Valves aren't faulty.

Troubleshooting (Cont'd)

Troubleshooting Condensing System (Qualified Service Technicians Only)

Condition	Troubleshooting
Low Suction Pressure	Check for low refrigerant
	Check that Expansion valve isn't restricted
	Check that Liquid Line or Filter isn't restricted.
	Check that Evaporator Motors are working.
	Check for Superheat setting.
	Check that the Thermostatic Element charge isn't depleted.
High Suction Pressure	Check that the Coil is not iced up.
	Check that Refrigerant Charge isn't too high
	Check that Compressor Valves aren't faulty.
	Check that there is no air seepage around Condensing Coil.
	Check that the Cooling Load isn't high.
	Check that Superheat adjustment isn't low.
	Check TXV Bulb Installation
	a. Poor thermal contact.
b. Warm location	
	Check Compressor: Low capacity means it is undersized for its application.

15. Maintenance

Case Cleaning

To insure long life, proper sanitation and minimum maintenance costs, the refrigerator should be thoroughly cleaned frequently. **SHUT OFF FAN BEFORE CLEANING:** It can be unplugged within the case, or shut off entire case at the source. The interior bottom may be wiped with any domestic soap or detergent based cleaners. Sanitizing solutions will not harm the interior bottom,

WARNING! DO NOT USE WATER HOSES! A self contained case empties into an evaporator pan that **WILL OVERFLOW IF TOO MUCH WATER IS INTRODUCED** during cleaning

- USE WATER AND A MILD DETERGENT FOR THE EXTERIOR ONLY
- Wipe interior with damp non abrasive cloth. Soap and hot water are not enough to kill bacteria; a sanitizing solution must be included with each cleaning process to eliminate bacteria.
- Clean any visible debris surrounding or on top of the drain location. The drain is located under the deck pans.
- DO NOT USE A CHLORINATED CLEANER ON ANY SURFACE.
- DO NOT USE ABRASIVES OR STEEL WOOL SCOURING PADS (these will mar the finish)
- DO NOT 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)

Service

- Replace Filter every 6 months or as needed to maintain efficient operation.(if applicable)
- To maintain good refrigeration performance, a refrigeration service person should be called periodically (at least twice a year) to clean the discharge honeycomb and remove any accumulated dirt from the condenser coil and condensate evaporator pan on self-contained models. **POOR CIRCULATION OF AIR THROUGH THE CONDENSER COIL WILL RESULT IN POOR REFRIGERATION PERFORMANCE.**
- Dirt accumulation inside the condensate evaporator pan will reduce the pan's capacity and affect the efficiency of the heater causing a burned out heater and an overflow of defrost water onto the store floor.

Tips and Troubleshooting

Before calling for service:

- Check power. Ensure reliable electrical power supply to the equipment
- Check shelf loading. Overstocking will adversely affect case performance.
- If frost is collecting on fixture or product, verify that store Humidity Control is working properly, and that no outside doors/windows allow moisture into store.

FOR CALIFORNIA INSTALLATIONS ONLY:



WARNING:

Cancer and Reproductive Harm

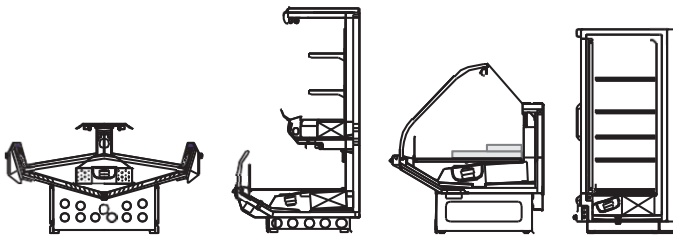
www.P65Warnings.ca.gov

16. 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
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. 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.
2. The installer is responsible for following the installation instructions and recommendations provided by Hussmann for the installation of each individual type refrigerator.
3. 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 Hussmann's recommendations.

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.
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 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 (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. 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 air-stream 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 Hussmann?
 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. 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.
 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 build-up.

Appendices (Cont'd)

2. Load levels as defined by the manufacturer must be observed.
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.

Service Record

Last service date: By:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

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SERIAL NUMBER: