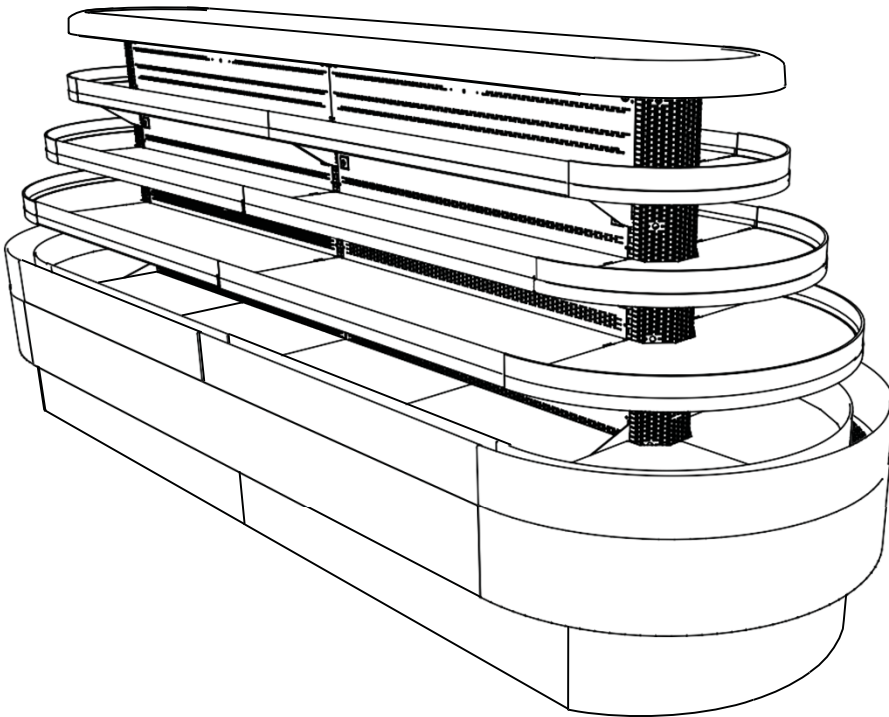


HUSSMANN®/CHINO

Installation
& Operation
Manual

REV. 1023

TY3, TY4 ISLAND CASE
(ENTYCE)



TY3, TY4
(ENTYCE)
ISLAND CASE

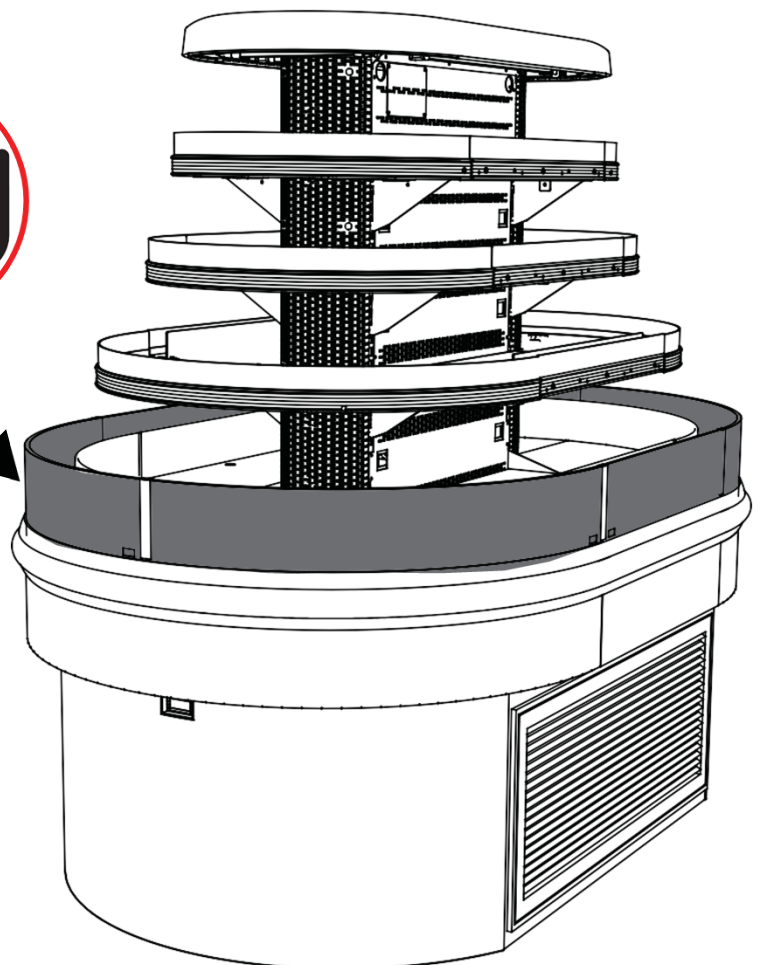
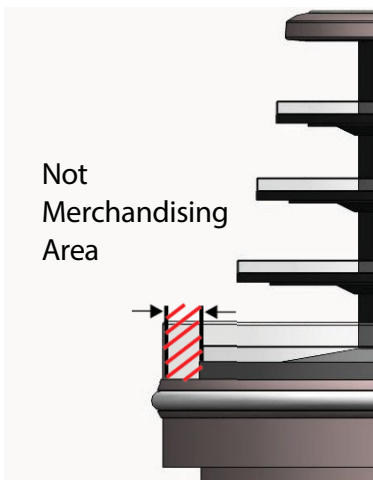
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WARNING

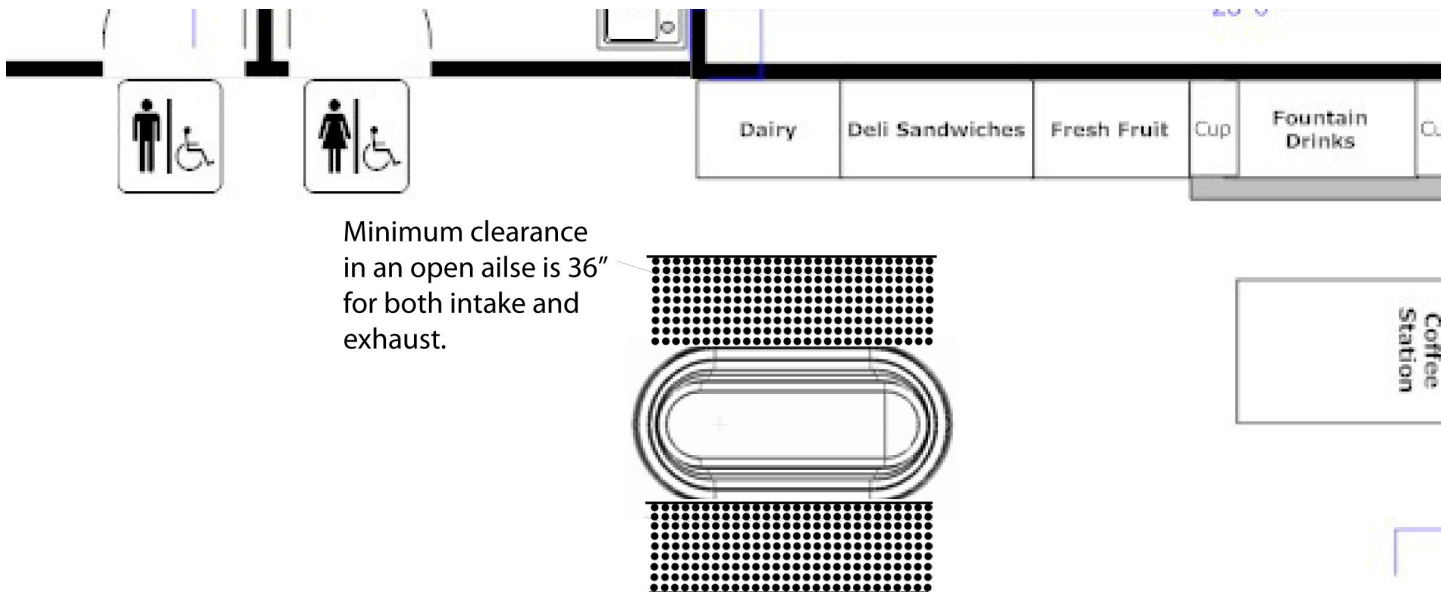
1. Do Not Push, Pull, Adjust, or Manipulate the TY case by any glass component.
 - Doing so will result in severe damage to such components
 - Glass breakage may result in serious injury
2. Never stand on the TY Top, Deck, or any Shelves for any reason.
 - Misusing these surfaces as steps will result in damage to the case
 - Misusing these surfaces as steps may result in 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)
3. DO NOT remove shelves. WARNING! will adversely impact case performance when merchandising.



Warning

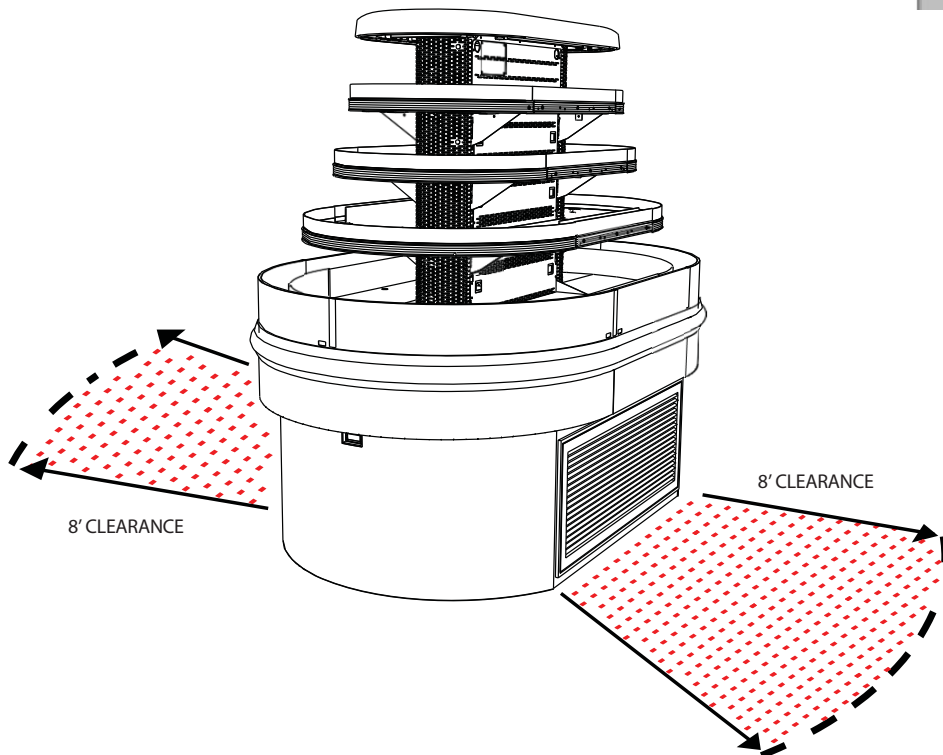
Minimum Clearances for TY cases are to be followed as instructed for proper placement inside store locations.

- A minimum clearance of 15' from door opening must be maintained in order for case to remain in optimal performance.
- Side 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 optimal Air Curtain cycling.
(Assumed 8' clearance from solid wall)



Promo	Candy			Candy		Donuts
		Candy			Candy	

The following figure demonstrates proper clearances for Entyce cases assuming the surrounding walls are solid to ensure optimal performance of the cases Air Curtain.



General Information

Case Description:

This Booklet specifically covers the following models:

- Entyce - TY3
- TY4

Description: Entyce A multi deck air curtain Self-Service case designed to display pre-packaged Deli, Bakery, Meat, Seafood, and/or Beverage products.

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 all 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.

Location/Store Conditions: The refrigerated merchandisers have been designed for use only in air conditioned stores where temperature and humidity are maintained at 80°F and 55% relative humidity or 75°F and 55% relative humidity. DO NOT allow air conditioning, electric fans, ovens, open doors or windows (etc.) to create air currents around the merchandiser, as this will impair its correct operation.

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.

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

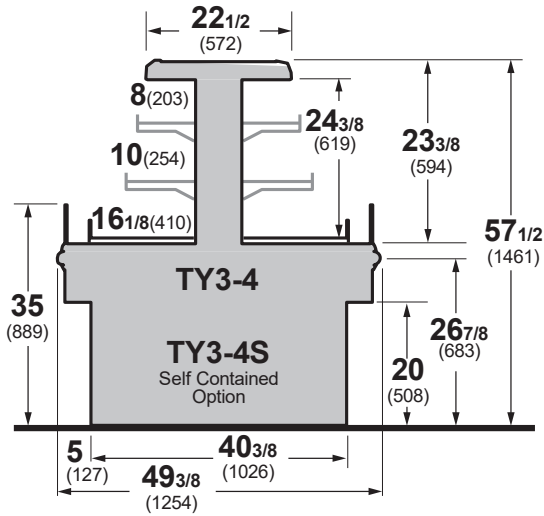
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 (909) 628-8942 FAX
 (909) 590-4910
 (800) 395-9229

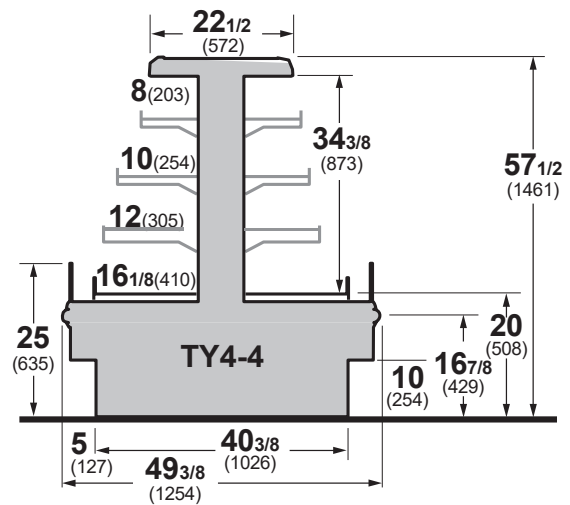


This equipment is to be installed to comply with the applicable NEC, Federal, State, and Local Plumbing and Construction Code having jurisdiction.

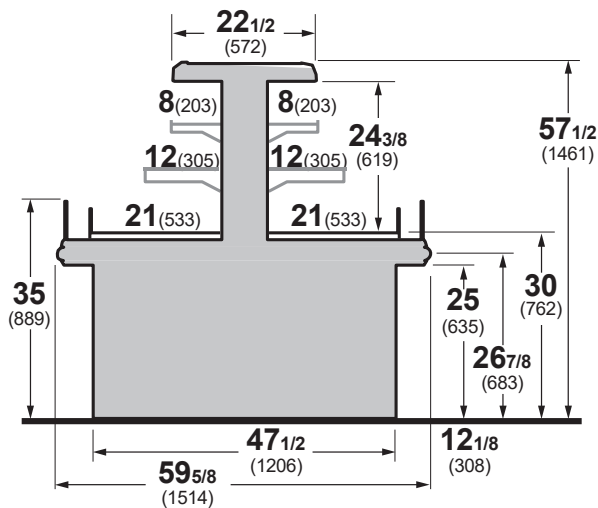
TY3-4 4' wide Merchandiser



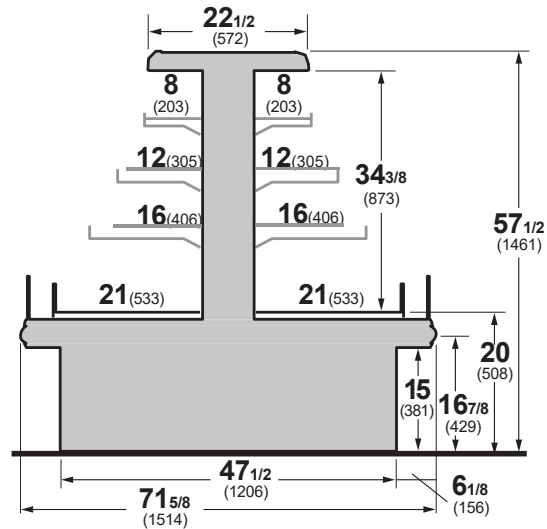
TY4-4 4' wide Merchandiser



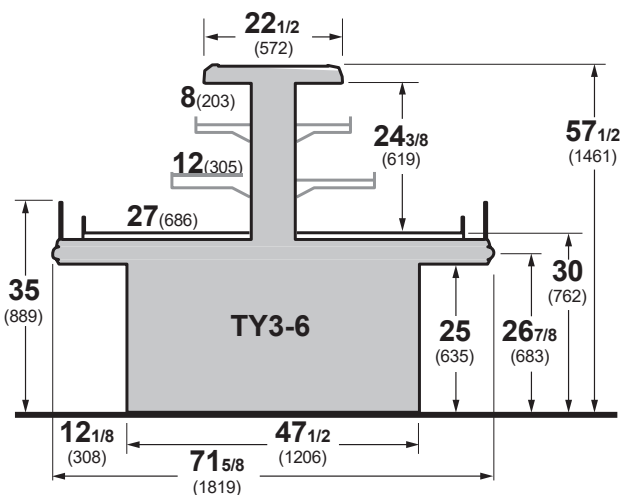
TY3-5 Entyce 3 level 5' wide island



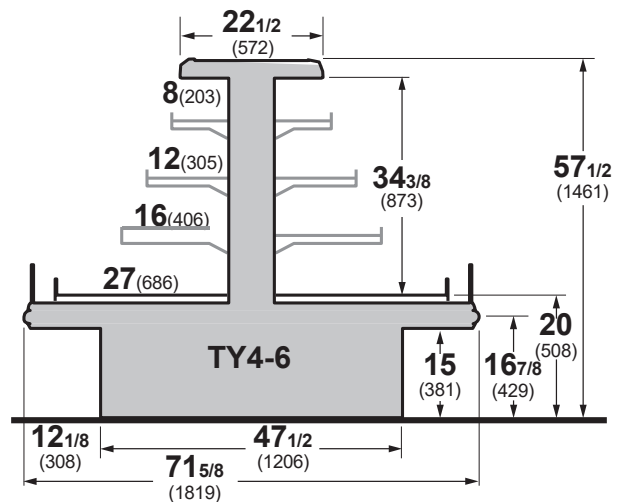
TY4-6 Entyce 4 level 6' wide island



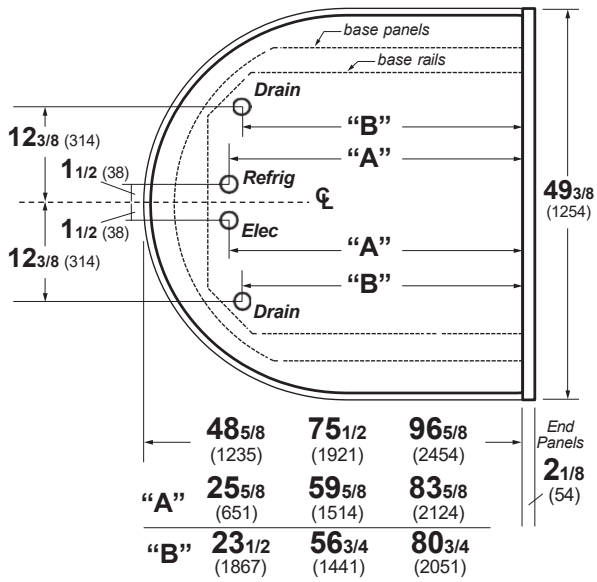
TY3-6 6' wide Merchandiser



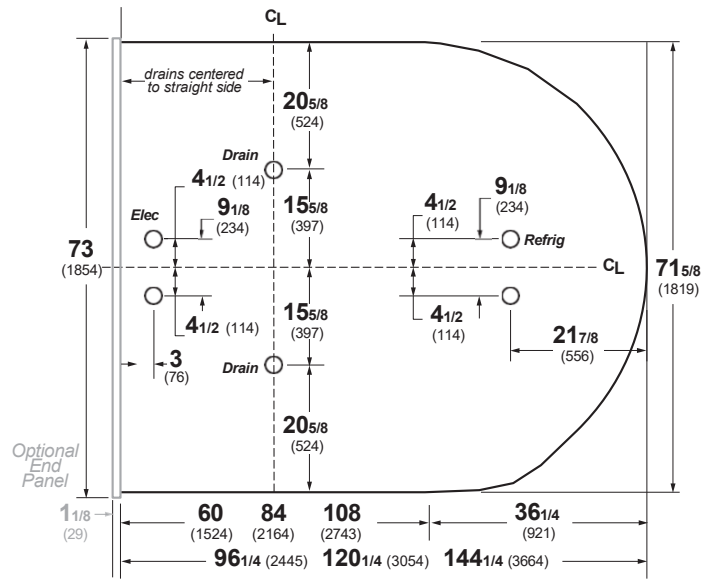
TY4-6 6' wide Merchandiser



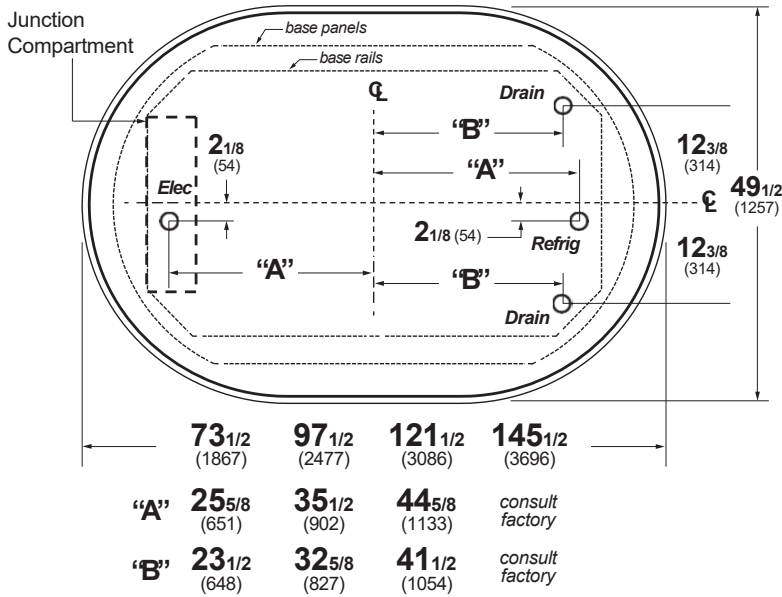
TY-4 4' wide Flat End Merchandiser



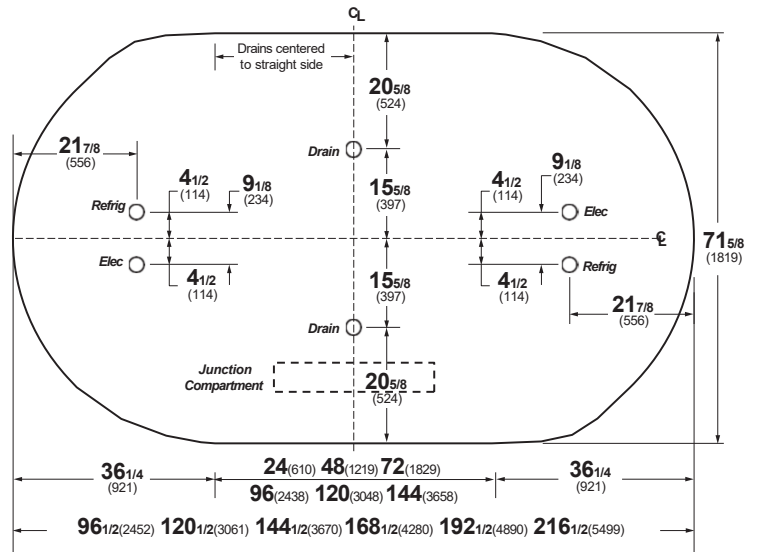
TY3-6X(case length) E - Flat End Merchandiser



TY-4 4' wide Island Merchandiser



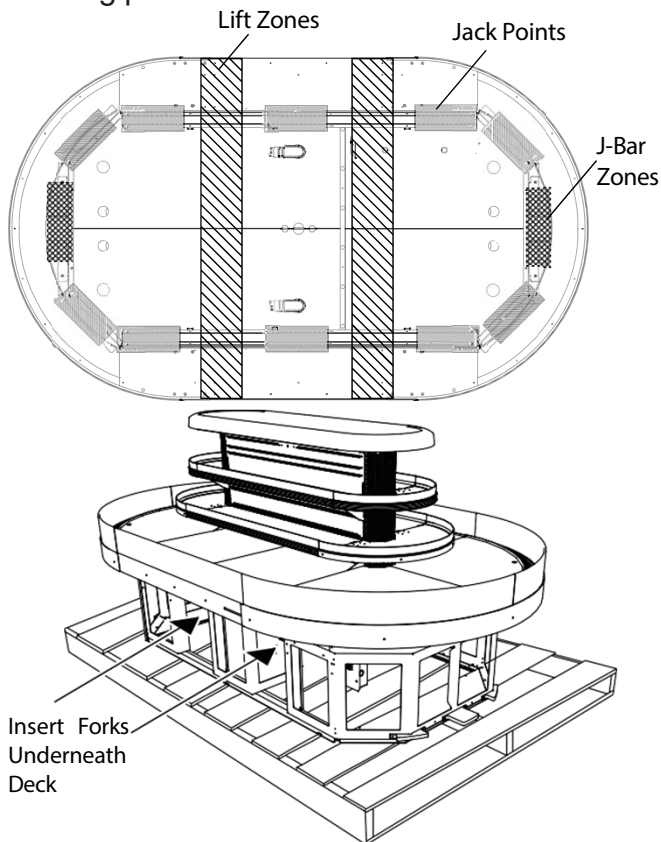
TY3-6X(case length) I - Island Merchandiser



Installation

TY Lifting and Transport Instructions

1. The Entyce can be lifted by a forklift at typical lifting points.



WARNING

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

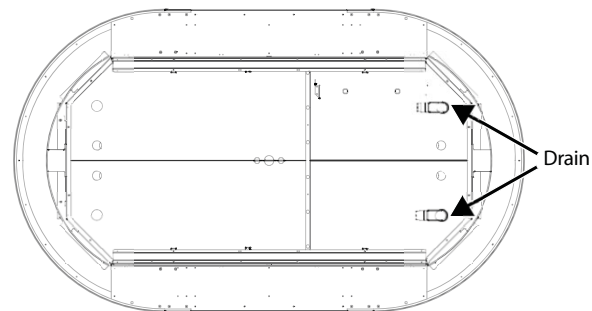
2. Ensure lower body panels are removed before lifting with a forklift. Serious damage will occur if the body panels are not removed.
3. Make sure that fork spacing and width will not damage drain or come in contact with piping, or electrical lines
4. Be sure that the forks are long enough to support beyond the center of the case but not damage near components. Check for proper balance before moving. A minimum fork length of 36" is recommended for 68" wide cases

5. The TY merchandiser can be raised at one end underneath the deck with a forklift to allow the placement of rollers or dollies.
6. 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.

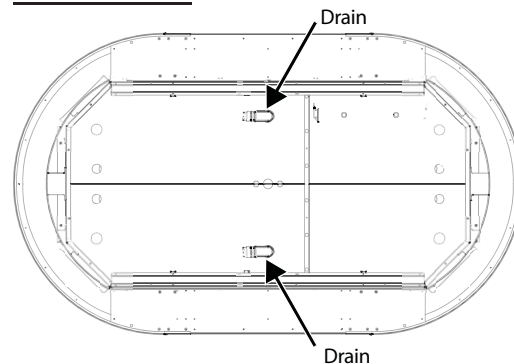
Lifting Points are typical and dependent upon size of case and refrigeration application, drainage configurations will call for alterations in Lifting Zones.

Below are the following drainage configurations and lifting should be altered to the expected model.

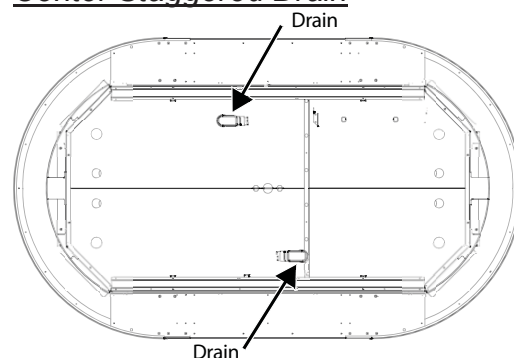
Full Side Drain



Center Drain



Center Staggered Drain



Installation

Location

The refrigerated merchandisers have been designed for use only in air conditioned stores where temperature and humidity are maintained at or 75°F and 55% relative humidity or below 80°F and 55% relative humidity. DO NOT allow air conditioning, electric fans, ovens, open doors or windows (etc.) to create air currents around the merchandiser, as this will impair its correct operation.



Uncratering the Stand

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

Exterior Loading

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



**ATTENTION
INSTALLER**

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

Leveling

A LEVEL CASE IS NECESSARY TO INSURE PROPER OPERATION AND WATER DRAINAGE. Note: A. To avoid removing concrete flooring, begin lineup leveling from the highest point of the store floor.

Plumbing

Waste Outlet and P-TRAP

The waste outlet is located in front and center of the case on both sides which allows for suitable access to each drain allowing drip piping to be run lengthwise under the fixture.

P-traps must be installed at the base of all refrigerated cases. The 1 1/2" P-TRAPS and threaded adapters must be installed to prevent air leakage and insect entrance into the fixture.

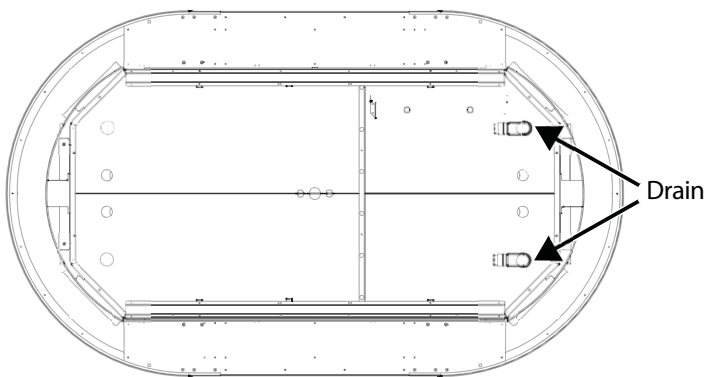
Installing Condensate Drain

Poorly or improperly installed condensate drains can seriously restrict the operation of this refrigerator, and result in costly maintenance and product losses. Please follow the recommendations listed below when installing condensate drains to insure a proper installation:

1. Never use pipe for condensate drains smaller than the nominal diameter of the pipe or P-TRAP supplied with the case.
2. When connecting condensate drains, the P-TRAP must be used as part of the condensate drain to prevent air leakage or insect entrance. Store plumbing system floor drains should be at least 14" off the center of the case to allow use of the P-TRAP pipe section. Never use two water seals in series in any one line. Double P-TRAPS in series will cause a lock and prevent draining.

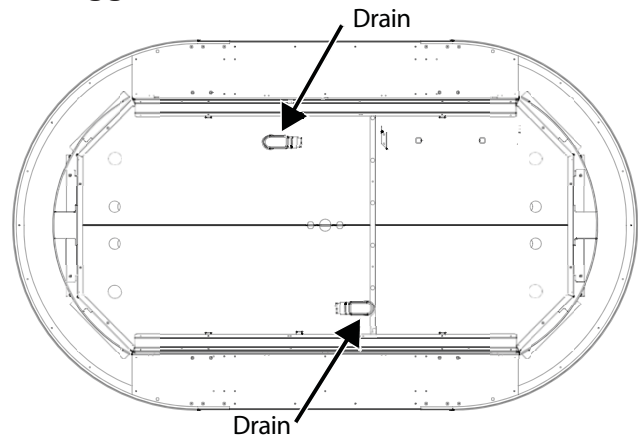
3. Always provide as much down hill slope ("fall") as possible; 1/8" per foot is the preferred minimum. PVC pipe, when used, must be supported to maintain the 1/8" pitch and to prevent warping.
4. Avoid long runs of condensate drains. Long runs make it impossible to provide the "fall" necessary for good drainage.
5. Provide a suitable air break between the flood rim of the floor drain and outlet of condensate drain. 1" is ideal.
6. Prevent condensate drains from freezing:
 - a. Do not install condensate drains in contact with non-insulated suction lines. Suction lines should be insulated with a nonabsorbent insulation material such as Armstrong's Armaflex.
 - b. Where condensate drains are located in dead air spaces (between refrigerators or between a refrigerator and a wall), provide means to prevent freezing. The water seal should be insulated to prevent condensation.

One Sided Drain

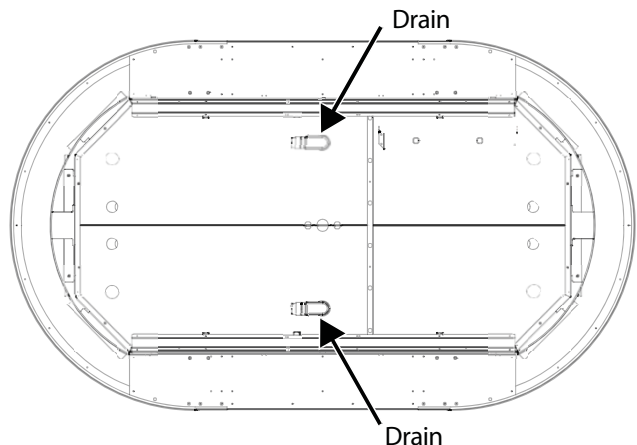


Note: Cases are typical, length of cases vary

Staggered Center Drain



Center Drain



Refrigeration Piping

The standard refrigerant will be R-404 unless otherwise specified on the customer order. Check the serial plate on the case for information. Refrigeration outlet access and the refrigeration components for the Entyce are situated on the left hand side near the centerline of the case to deliver optimal access which provides for easy installation and maintenance purposes without the probability of damaging any components.

Refrigeration Lines

<u>Liquid</u>	<u>Suction</u>
3/8" O.D.	5/8" O.D.

Refrigerant lines should be sized as shown on the refrigeration legend furnished by the store.

Oil traps must be installed at the base of all suction line vertical risers on refrigerated cases.

Pressure drop can rob the system of capacity. To keep the pressure drop to a minimum, keep refrigerant line run as short as possible, using the minimum number of elbows. Where elbows are required, use long radius elbows only. All refrigeration components are located underneath the left hand side case deck pans.

WARNING!

Do NOT apply thread sealer to ABS P-Trap.



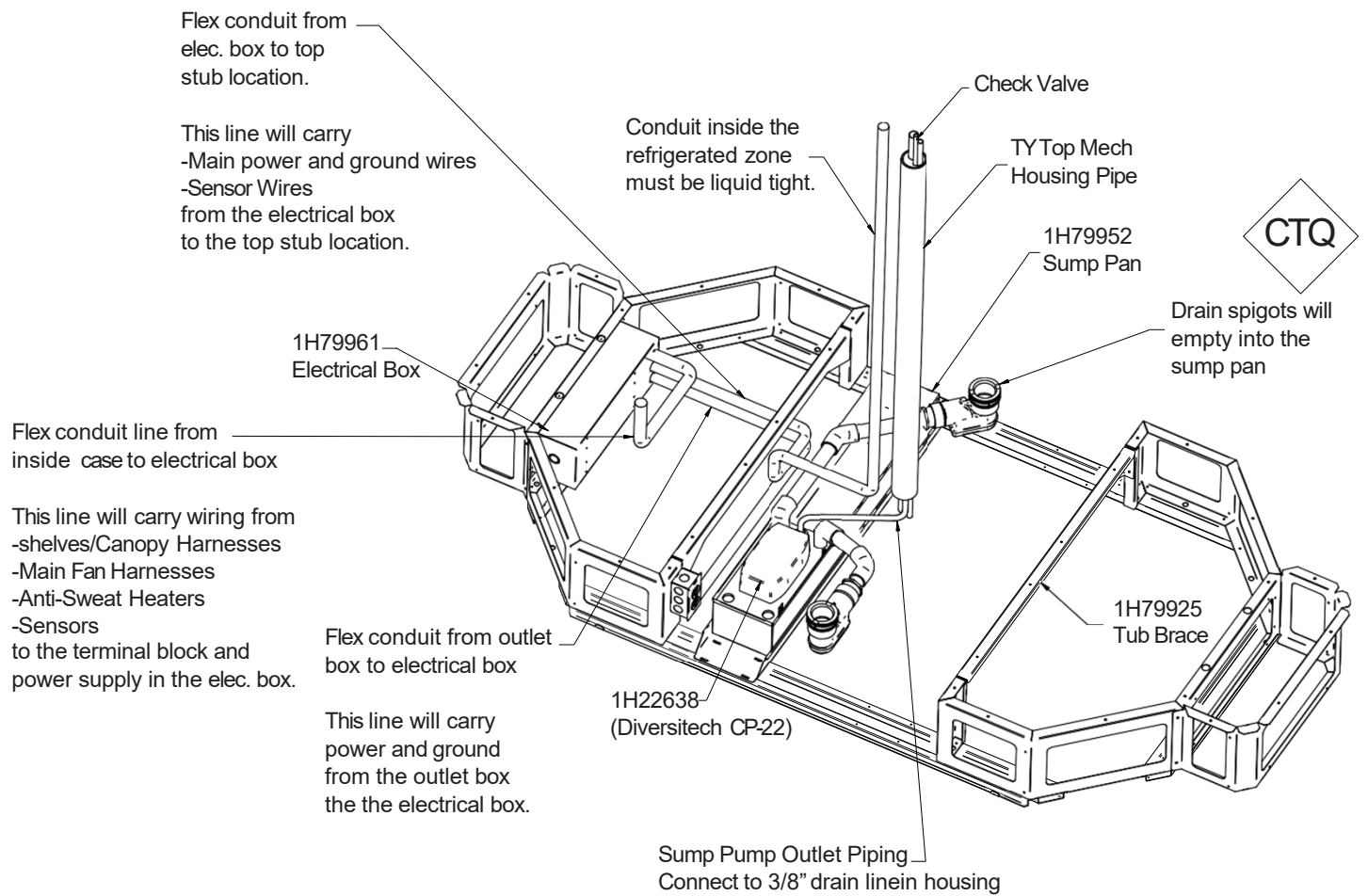
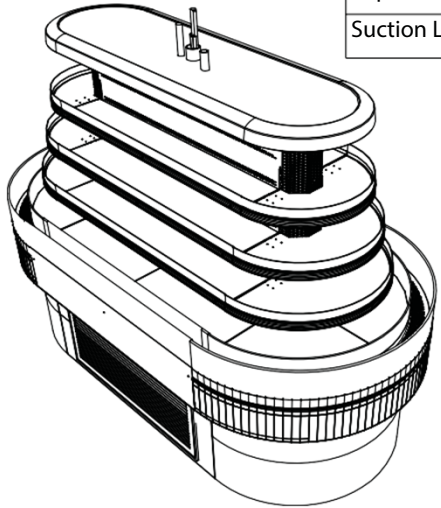
Sump Pump Configuration

Connecting Sump Lines

For Entyce cases with a Sump Pump Configuration connect liquid line, suction line, electrical, and drain line to top case stub-ups (outlets).

Note: Isolate Drain line from Suction line either by seperating the lines or insulating the suction line.

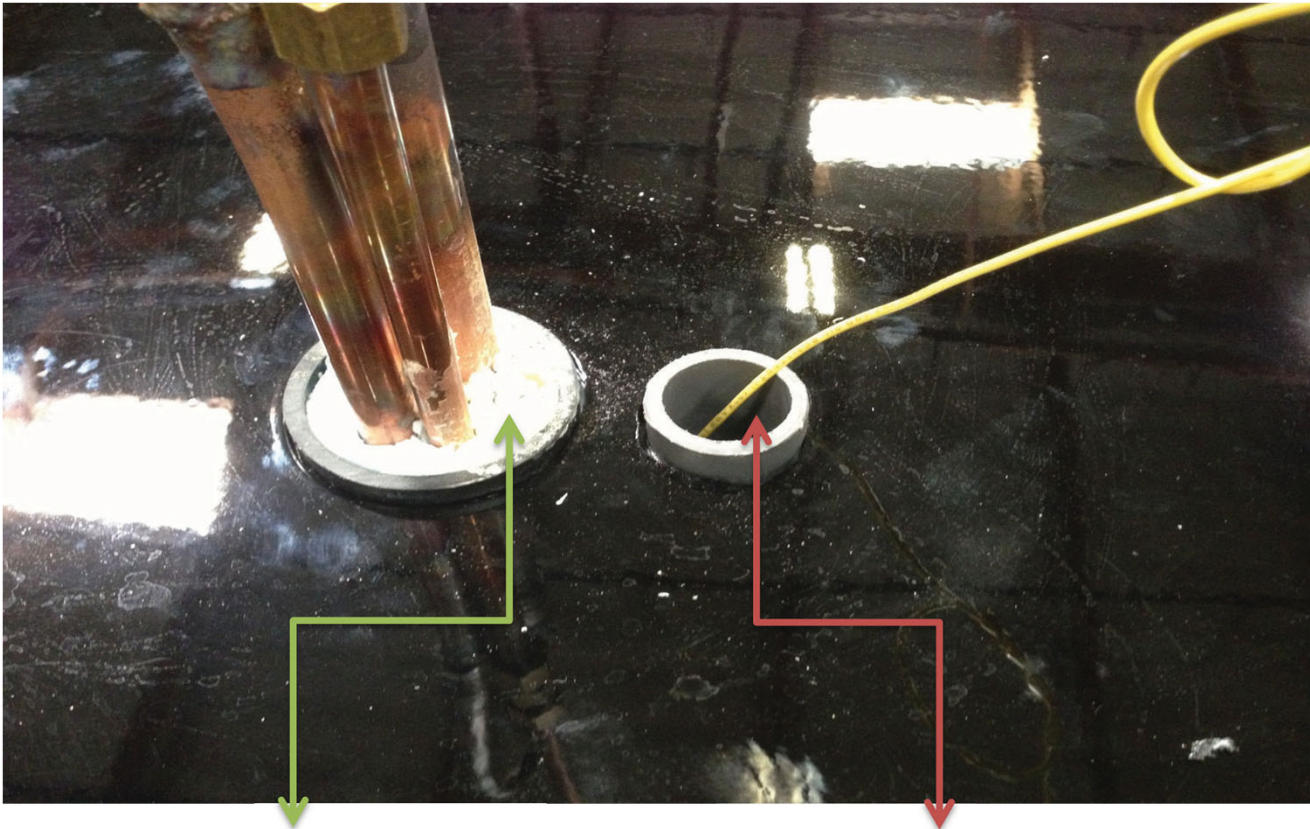
Liquid Line	1/2"	85 fpm
Suction Line	7/8"	1234 fpm



Sealing Sump Lines

For Entyce cases with a Sump Pump Configuration connect liquid line, suction line, electrical, and drain line to top case stub-ups (outlets).

Note: Example below demonstrates the proper method of sealing refrigeration and electrical access points. Ensure tight seal to eliminate any air penetration.



Sealed refrigeration lines inside of pipe.

This is an EXAMPLE of how to properly seal electrical lines (using silicone) once electrical lines are pulled using provided wire-chase.

Installers: After running electrical you MUST seal top (shown here) and bottom of this pipe to eliminate any air penetration!

Failure to do so will cause condensation inside of pipe and water will drip on floor!

Silicone is an acceptable material to seal pipe.



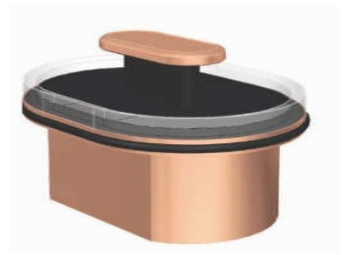
SELF-SERVICE DELI
HUSSMANN - TY1-6 I-ISLAND (CHINO)

REVISION DATE

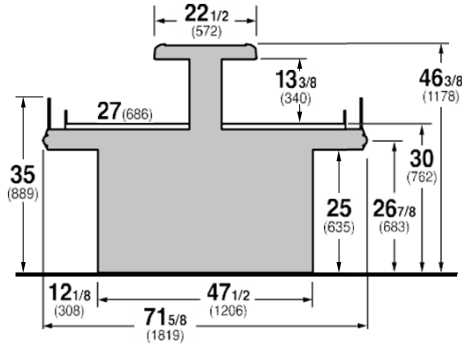
14/06/17



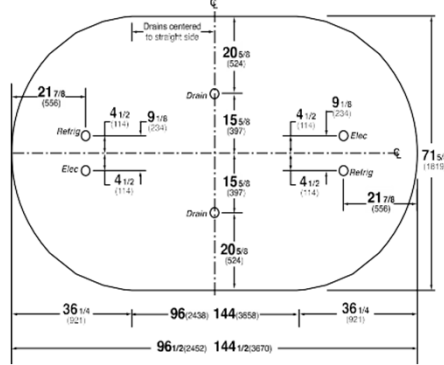
Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.



TY1-6 Single Level 6' wide Island



TY1-6X (case length) I - Island Merchandiser



REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CAPACITY *** (BTU/HR) TOTAL		TEMPERATURE (°F)			VELOCITY (FT/MIN)
		RATING CONDITION		EVAPORATOR		DISCHARGE AIR ** (°F)	
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	
8'-I	DELI	9600	9600	24	24	30~32	150~200
12'-I	DELI	14400	14400	24	24	30~32	150~200

CASE LENGTHS	EST. REFG. CHR.G. 404A (LBS)	GLYCOL (20°F INLET, 6° RISE)	
		GPM	PSI
8'-I	1.1	3.4	4.6
12'-I	1.8	5.0	4.4

**FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

***REFRIGERATION NOTES:

- 1) BTUS DO NOT INCLUDE LIGHTS.
- 2) ADD 10 BTU'S PER FOOT OF LED SHELF LIGHTS PER LIGHT MATRIX BELOW.
- 3) AHRI 1200 RATING POINT FOR ENERGY CONSUMPTION COMPARISON ONLY.
- 4) 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.
- 5) RATING CONDITION IS NSF TYPE I, 75°F/55% RH.

REFRIGERATION DATA CONTINUED:

ELEC. THERMOSTAT / AIR SENSOR SETTINGS			DEFROST TYPE	TIME (MIN)	DEFROST FREQUENCY (#/DAY)	TERM. TEMP (°F) COIL ONLY	DRIP TIME	DEFROST WATER (LBS/DAY/FT)
USAGE	CUT IN (°F)	CUT OUT (°F)						
DELI	32	29	OFF TIME	16	12	48	TBD	9.5

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

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 (ON FAN CIRCUIT)		CONVENIENCE OUTLETS (OPTIONAL)			LIGHT MATRIX FT OF LEDS
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS	
8'-I	6	8	10	1.8	48	0.12	14	N/A	N/A	0.12	14	0.43	50	1	115	15	6
12'-I	10	8	10	3	80	0.30	35	N/A	N/A	0.30	35	0.78	90	1	115	15	14

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
8'-I	N/A	N/A	N/A	N/A	N/A	N/A
12'-I	N/A	N/A	N/A	N/A	N/A	N/A



SELF-SERVICE DELI CHEESE

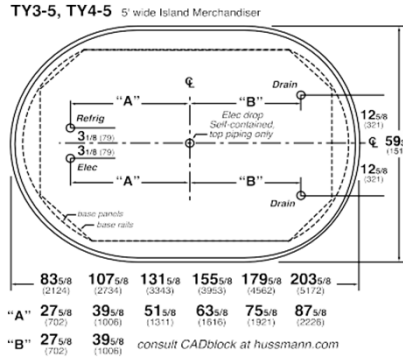
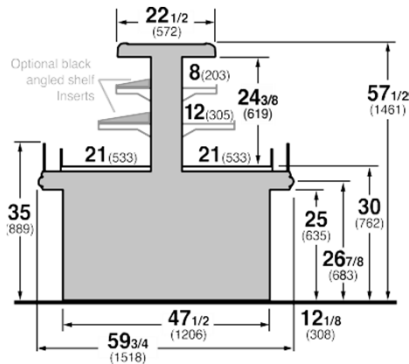
HUSSMANN - TY3-5 I-ISLAND (CHINO)



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 03/21/17

TY3-5 Entyce 3 level 5' wide island



REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CAPACITY *** (BTU/HR)		TEMPERATURE (°F)			VELOCITY (FT/MIN)
		RATING CONDITION		EVAPORATOR		DISCHARGE AIR ** (°F)	
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	
71	DELI / CHEESE	10770	10770	26	26	30-33	175-250
91	DELI / CHEESE	13790	13790	26	26	30-33	175-250
111	DELI / CHEESE	16810	16810	26	26	30-33	175-250
131	DELI / CHEESE	19830	19830	26	26	30-33	175-250
151	DELI / CHEESE	22850	22850	26	26	30-33	175-250
171	DELI / CHEESE	25870	25870	26	26	30-33	175-250

CASE LENGTHS	EST. REFG. CHR.G. (LBS)	20°F GLYCOL 6° RISE	
		GPM	PSI
71	1.1	3.8	5.2
91	1.3	4.8	3.8
111	1.8	5.8	5.1
131	2.2	6.7	6.7
151	2.7	7.6	4.7
171	3.1	8.5	5.4

**FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

***REFRIGERATION NOTES:

- 1) BTUS ARE SHOWN WITHOUT LIGHTS
- 2) ADD 10 BTU/FT OF LED LIGHTS PER LIGHT MATRIX BELOW
- 3) AHRI 1200 RATING POINT FOR ENERGY CONSUMPTION COMPARISON ONLY
- 4) 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.
- 5) RATING CONDITION IS NSF TYPE I, 75°F/55% RH

REFRIGERATION DATA CONTINUED:

SENSOR SETTINGS		DEFROST TYPE	TIME (MIN)	DEFROST FREQUENCY (#/DAY)	TERM. TEMP (°F) COIL ONLY	DRIP TIME	DEFROST WATER (LBS/DAY/FT)
USAGE	CUT IN (°F)						
DELI / CHEESE	33	OFF TIME	16	12	48	N/A	11

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 (ON FAN CIRCUIT)		CONVENIENCE OUTLETS (OPTIONAL)			LIGHT MATRIX FEET	
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS		AMPS
71	6	8	15	1.8	48	0.12	14.27	0.29	32.99	0.41	47	0.43	50	1	115	15	22
91	8	8	15	2.4	64	0.22	25.04	0.47	54.52	0.69	80	0.61	70	1	115	15	34
111	10	8	15	3.0	80	0.30	34.87	0.65	74.18	0.95	109	0.78	90	1	115	15	46
131	12	8	10	3.6	96	0.40	45.63	0.83	95.71	1.23	141	0.96	110	1	115	15	58
151	14	8	10	4.2	112	0.49	56.39	1.02	117.23	1.51	174	1.04	120	1	115	15	70
171	16	8	10	4.8	128	0.57	65.29	1.17	135.02	1.74	200	1.22	140	1	115	15	82

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
71	N/A	N/A	N/A	N/A	N/A	N/A
91	N/A	N/A	N/A	N/A	N/A	N/A
111	N/A	N/A	N/A	N/A	N/A	N/A
131	N/A	N/A	N/A	N/A	N/A	N/A
151	N/A	N/A	N/A	N/A	N/A	N/A
171	N/A	N/A	N/A	N/A	N/A	N/A



SELF-SERVICE DELI CHEESE
HUSSMANN - TY4-5 I-ISLAND (CHINO)

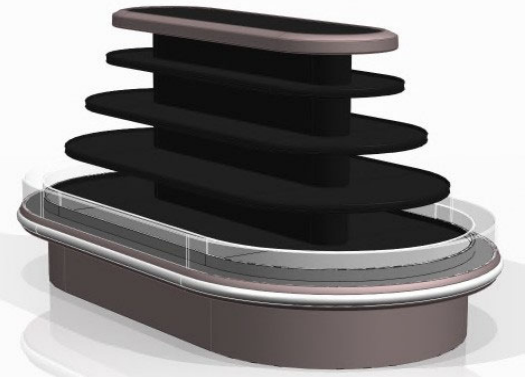
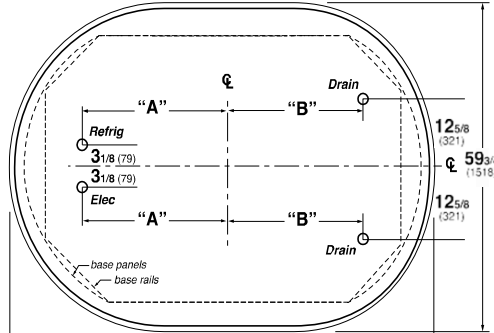
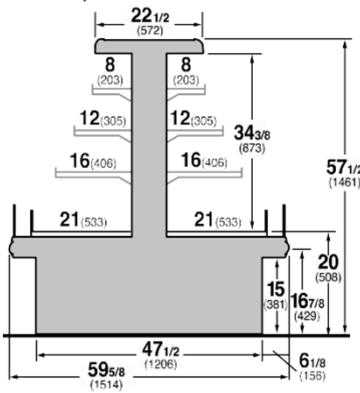
REVISION DATE 6/20/2018



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

TY-5 5' wide Island Merchandiser

TY4-5 Entyce 4 level 5' wide island



	83 ^{5/8} (2124)	107 ^{5/8} (2734)	131 ^{5/8} (3343)	155 ^{5/8} (3953)	179 ^{5/8} (4562)	203 ^{5/8} (5172)
"A"	27 ^{5/8} (702)	39 ^{5/8} (1006)	51 ^{5/8} (1311)	63 ^{5/8} (1616)	75 ^{5/8} (1921)	87 ^{5/8} (2226)
"B"	27 ^{5/8} (702)	39 ^{5/8} (1006)	consult CADblock at hussmann.com			

REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CAPACITY *** (BTU/HR)		TEMPERATURE (°F)			VELOCITY (FT/MIN)
		RATING CONDITION		EVAPORATOR		DISCHARGE AIR ** (°F)	
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	
7I	DELI /	13660	13660	22	22	28~30	100~150
9I	DELI /	17500	17500	22	22	28~30	100~150
11I	DELI /	21340	21340	22	22	28~30	100~150
13I	DELI /	25180	25180	22	22	28~30	100~150
15I	DELI /	29000	29000	22	22	28~30	100~150
17I	DELI /	32850	32850	22	22	28~30	100~150

CASE LENGTHS	EST. REFG. CHRGS. 404A (LBS)	GLYCOL (20°F INLET, 6° RISE)	
		GPM	PSI
7I	1.1	4.8	6.8
9I	1.3	6.2	4.9
11I	1.8	7.4	6.7
13I	2.2	8.7	8.7
15I	2.7	9.8	6.1
17I	3.1	11.0	7.0

**FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

***REFRIGERATION NOTES:

- 1) BTU'S SHOWN ARE WITHOUT LIGHTS.
- 2) ADD 10 BTU'S PER FOOT OF LED LIGHTS PER LIGHT MATRIX BELOW.
- 3) AHRI 1200 RATING POINT FOR ENERGY CONSUMPTION COMPARISON ONLY.
- 4) 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.
- 5) RATING CONDITION IS NSF TYPE I, 75°F/55% RH.

REFRIGERATION DATA CONTINUED:

ELEC. THERMOSTAT / AIR SENSOR SETTINGS		DEFROST TYPE	TIME (MIN)	DEFROST FREQUENCY (#/DAY)	TERM. TEMP (°F) COIL ONLY	DRIP TIME	DEFROST WATER (LBS/DAY/FT)
USAGE	CUT IN (°F)						
DELI / CHEESE	31	28	OFF TIME	16	12	N/A	12

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 (ON FAN CIRCUIT)		CONVENIENCE OUTLETS (OPTIONAL)			LIGHT MATRIX	
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS		AMPS
7I	6	8	20	1.8	48	0.12	14	0.57	66	0.70	80	0.43	50	1	115	15	34
9I	8	8	20	2.4	64	0.22	25	0.85	98	1.07	123	0.61	70	1	115	15	50
11I	10	8	20	3	80	0.30	35	1.11	128	1.41	162	0.78	90	1	115	15	66
13I	12	8	15	3.6	96	0.40	46	1.39	160	1.79	205	0.96	110	1	115	15	82
15I	14	8	15	4.2	112	0.49	56	1.67	192	2.16	249	1.04	120	1	115	15	98
17I	16	8	15	4.8	128	0.57	65	1.90	219	2.47	284	1.22	140	1	115	15	114

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
7I	N/A	N/A	N/A	N/A	N/A	N/A
9I	N/A	N/A	N/A	N/A	N/A	N/A
11I	N/A	N/A	N/A	N/A	N/A	N/A
13I	N/A	N/A	N/A	N/A	N/A	N/A
15I	N/A	N/A	N/A	N/A	N/A	N/A
17I	N/A	N/A	N/A	N/A	N/A	N/A

Electrical

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

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

CASE MUST BE GROUNDED

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

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.



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.**

Wiring Diagrams Index

TY1	5X7I-R	7'	3053753
	6X8I-R	8'	3008179
	6X12I-R	12'	3014692

TY3	4X6I-R	6'	1H85155
	4X8I-R	8'	1H91354
	4X10I-R	10'	3047530
	4X12I-R	12'	3008178
	5X7I-R	7'	3008177
	5X9I-R	9'	2H00213
	5X11I-R	11'	1H86614
	5X13I-R	13'	3008175
	6X8C-R	8'	3013478
	6X8I-R	8'	1H86612
	ECSQ-6X8I-R	8'	3017118
	6X10I-R	10'	1H78139
	6X12I-R	12'	3047528
	ECSQ-6X12I-R	12'	3048459
	6X14I-R	14'	1H77864
	ECRC-6X14I-R	14'	3055337
	6X16I-R	16'	1H93522
	ECRC-6X16I-R 10" & 14" SHELVES	16'	3059427
	6X18I-R	18'	3013482

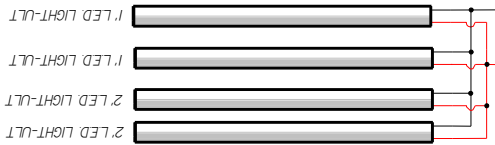
Wiring Diagrams Index (cont'd)

TY4	4X6I-R	6'	3047021
	4X10I-R	10'	3013474
	4X12I-R	12'	1H89619
	5X7I-R	7'	2H00212
	ECRC-5X7I-R	7'	3144548
	TY4EC-5X7I-R	7'	3078669
	5X9I-R	9'	2H14403
	5X11I-R	11'	1H92381
	5X12C-R	12'	3142085
	TY4EC-5X13I-R W/OPTIONAL SUMP PUMP	13'	2H22482
	TY4EC-5X13I-R 8",10",12" SHELVES	13'	3030997
	TY4EC-5X17I-R, 10",12",14" SHELVES	17'	3058176
	5X13I-R	13'	2H01103
	5X15I-R	15'	1H92380
	5X17I-R	17'	3008164
	6X8C-R	8'	1H89148
	TY4ECRC-6X8I-R ULTRA LED TOP, 12",14",16"	8'	3107535
	TY4ECRC-6X8I-R ULTRA LED TOP, 10",12",16"	8'	3123818
	TY4ECRC-6X8C-R HO CANOPY LIGHTS	8'	3064025
	6X8I-R	8'	1H85454
	6X10I-R	10'	1H93524
	6X12I-R	12'	1H91310
	TY4ECRC-6X12I-R 12" & 16" SHELVES	12'	3047242
	TY4ECRC-6X12I-R 10",12" & 14" SHELVES	12'	3080512
	TY4ECRC-6X12I-R 12",14" & 16" SHELVES	12'	3092240
	6X14I-R	14'	1H84139
	TY4ECRC-6X14I-R	14'	3047157
	6X16I-R	16'	1H85195
	TY4ECRC-6X16I-R	16'	3043948
	TY4ECRC-6X18I-R W/LEDGE LIGHTS ALSO	18'	3160164
	6X18I-R	18'	1H77863

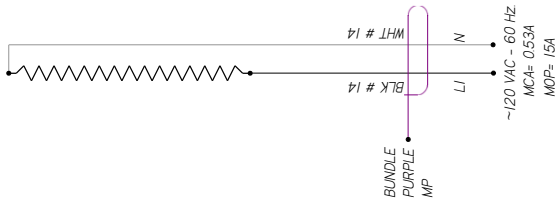
CIRCUIT #1

LOADING			
120V			
L1			
L2			

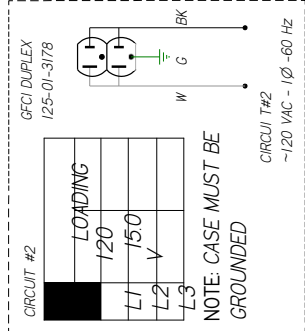
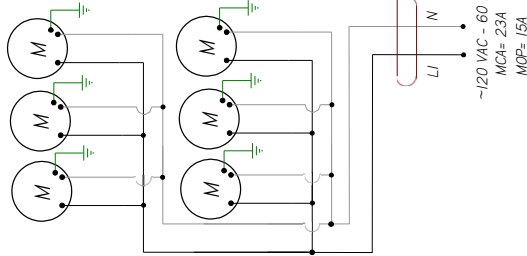
LIGHT CIRCUIT
26A 27.8W @ 120V



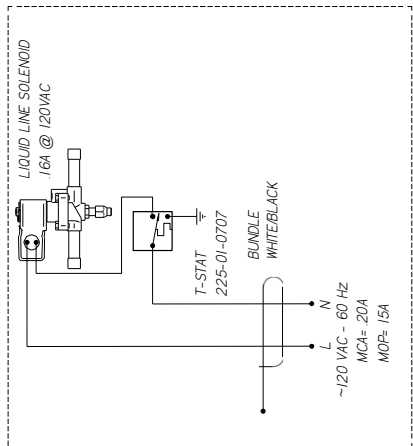
ANTI-SWEAT HEATER
50W 0.42A @ 120VAC
0497590



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



OPTIONAL SOLENOID



REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	EDY-CAP-000802	2018/01/27	RELEASED TO PRODUCTION	CB	CB	CB
B	EDY-COD-005276	2022/02/17	NEW LIGHTS	CB	CB	CB

HUSSMANN
DIAGRAM-YI-5X71-R

MATERIAL - NA
DATE DRAWN - 1-17-18
DRAWN BY - CRAIG ROOREY
REVIEWED BY - CRAIG ROOREY
APPROVED BY - CRAIG ROOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
THIRD ANGLE PROJECTION
DECIMALS .XX ±0.3 .XXX ±0.10 ANGLES ± 2°

REF -
SHEET 1 OF 1

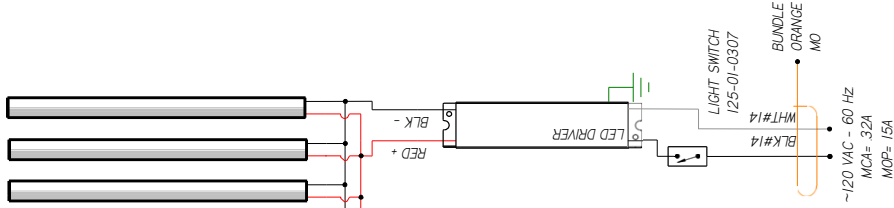
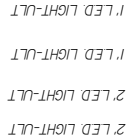
3053753 | B

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

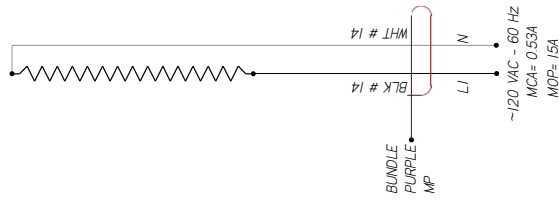
CIRCUIT #1

LOADING	
L1	120V
L2	150V
L3	

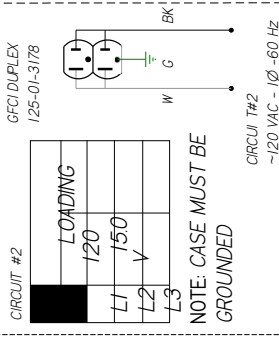
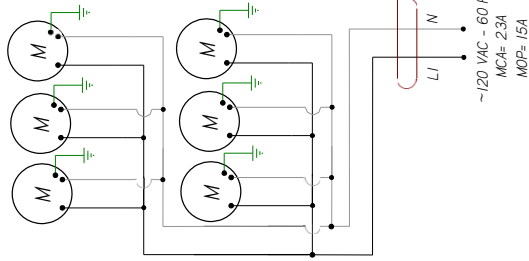
LIGHT CIRCUIT
26A 278W @ 120V



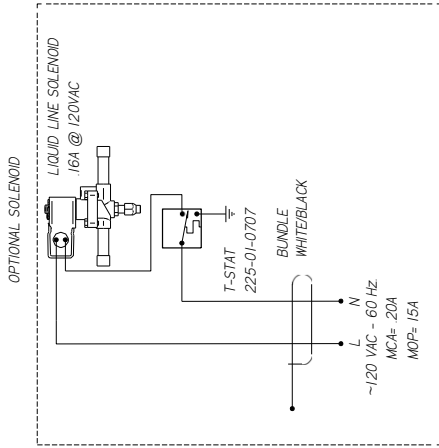
ANTI-SWEAT HEATER
50W 0.42A @ 120VAC
0487890



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



NOTE: CASE MUST BE GROUNDED



REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0002200	28/06/2013	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-COD-0015276	20/02/2017	NEW LOGOS	CB	CB	CB

REVISION HISTORY

HUSSMANN
DIAGRAM-1YI-6X81-R

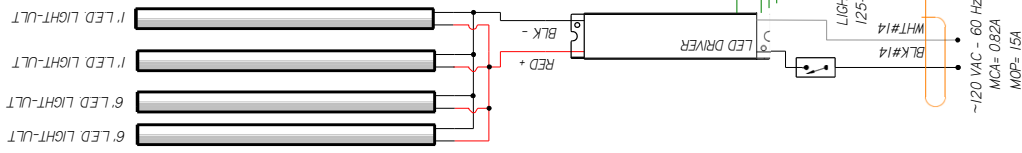
MATERIAL - NA
DATE DRAWN - 6-3-16
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX ±0.3 .XXX
±0.0
ANGLES ± 2°
PROJECTION
E
3008179 | B

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

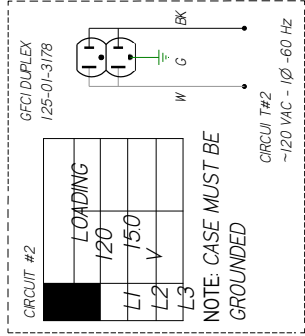
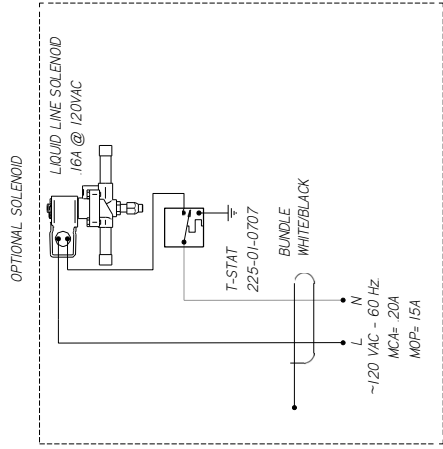
CIRCUIT #1

LOADING	
120V	
L1	
L2	
L3	

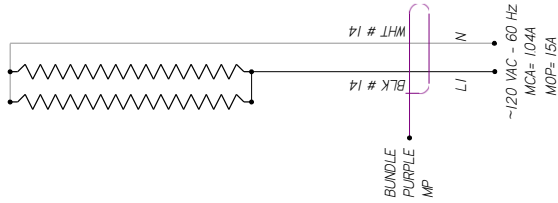
LIGHT CIRCUIT
66A 712W @ 120V



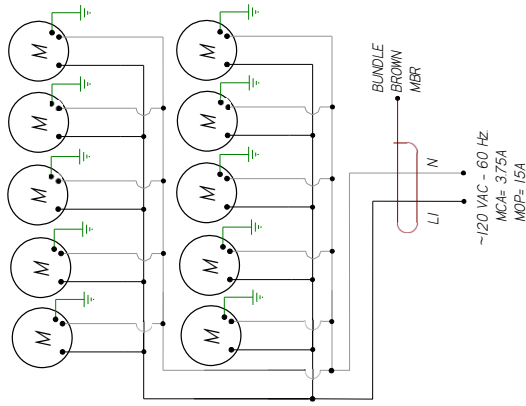
REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0003964	20160918	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-COD-0015276	20220207	NEW LOGOS	CB	CB	CB



ANTI-SWEAT HEATER
50W 0.83A @ 120VAC
111 0497590
111 0495007



EVAPORATOR FAN
12W 0.30A @ 120VAC
1101 0477655



MATERIAL - IVA

DATE DRAWN - 9-8-16
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
THIRD ANGL
E
PROJECTION

HUSSMANN

DIAGRAM-TY-
6X121-R

3014692

B

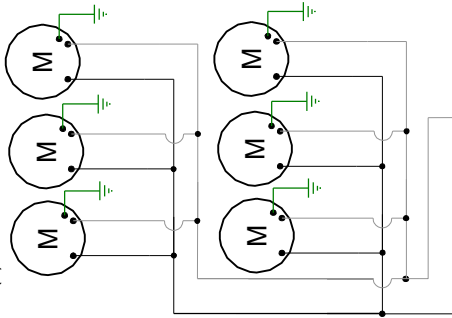
NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

CIRCUIT #1

LOADING	120V
L1	2.63
L2	
L3	

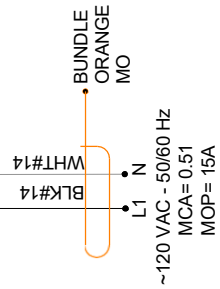
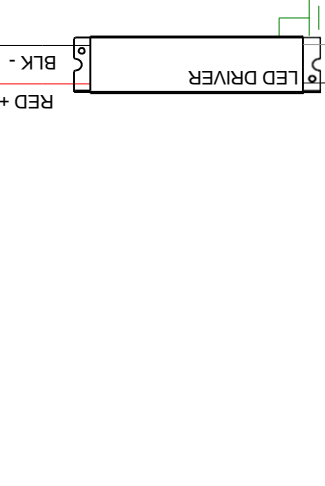
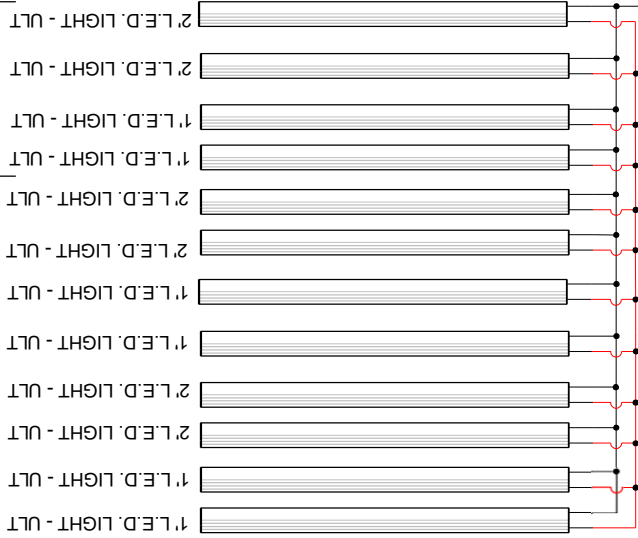
NOTE: CASE MUST BE GROUNDED

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



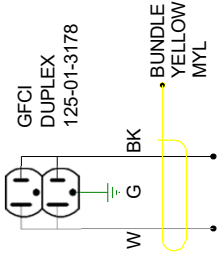
LIGHT CIRCUIT
0.41A 44.6W@120V

CANOPY LIGHTS

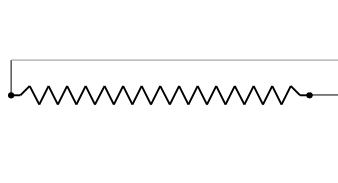


CIRCUIT #2	LOADING	120 V
L1	15.0	
L2		
L3		

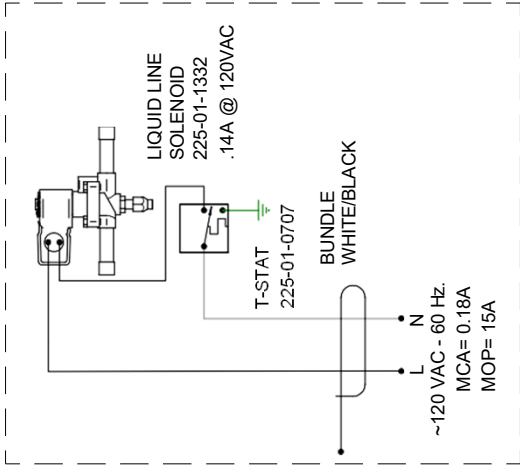
NOTE: CASE MUST BE GROUNDED



ANTI-SWEAT HEATER
50W .42A@120VAC
0497590



OPTIONAL



REVISIONS:

#	DESCRIPTION:	DATE:	BY:
A	CN#696786	3/21/13	CB
B	CN#980241 C-CHANGED ANTI-SWEAT HEATER	4/15/15	CB
C	ECN-COD-0015255 NEW LIGHTS; REMOVED DRIVER	2/28/22	AL

DRAWN BY: CRAIG BOOREY
CHECKED BY:

DATE:	3/21/13
PRODUCTION ORDER #:	936489
FILE LOCATION:	

PROJECT TITLE: TY3-4X6I-R
DRAWING TITLE: DIAGRAM-TY3-4X6I-R

REVISION HISTORY		REV BY	CHKD BY	APPR BY
1	ECN-CAP-0009958	2007/02/23	CB	CB
REVISION DESCRIPTION				
RELEASED TO PRODUCTION				

CIRCUIT #1	LOADING
120V	
L1	4.2
L2	
L3	

CIRCUIT #2	LOADING
120 V	
L1	15.0
L2	
L3	

NOTE: CASE MUST BE GROUNDED

EVAPORATOR FAN
12W 0.30A @ 120VAC IB
0477685

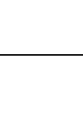
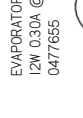
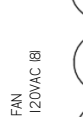
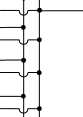
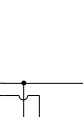
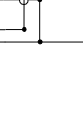
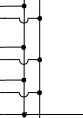
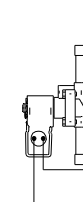
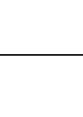
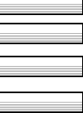
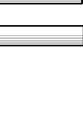
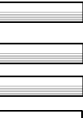
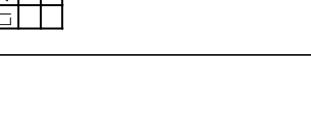
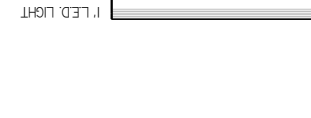
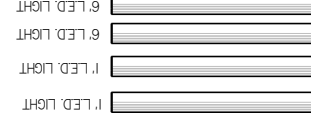
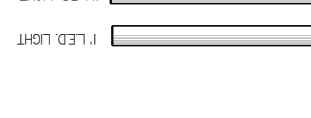
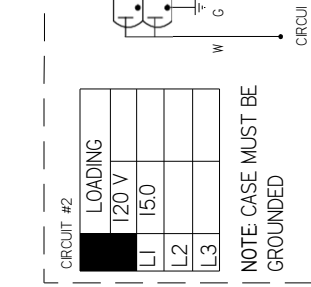
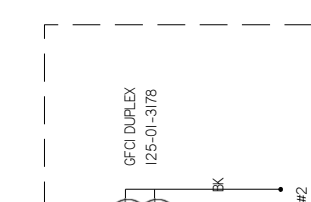
LIGHT SWITCH
125-01-0307

LED DRIVER

LED DRIVER

6 LED LIGHT
6 LED LIGHT
6 LED LIGHT
6 LED LIGHT
6 LED LIGHT
6 LED LIGHT
6 LED LIGHT
6 LED LIGHT

6 LED LIGHT
6 LED LIGHT
6 LED LIGHT
6 LED LIGHT
6 LED LIGHT
6 LED LIGHT
6 LED LIGHT
6 LED LIGHT



DATE DRAWN - 10-23-17
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°

MATERIAL - NA
ECN-CAP-0009958
REF -
SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX +0.3 .XXX +0.10
ANGLES ± 2°

3047530
A

PROJECTION

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

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

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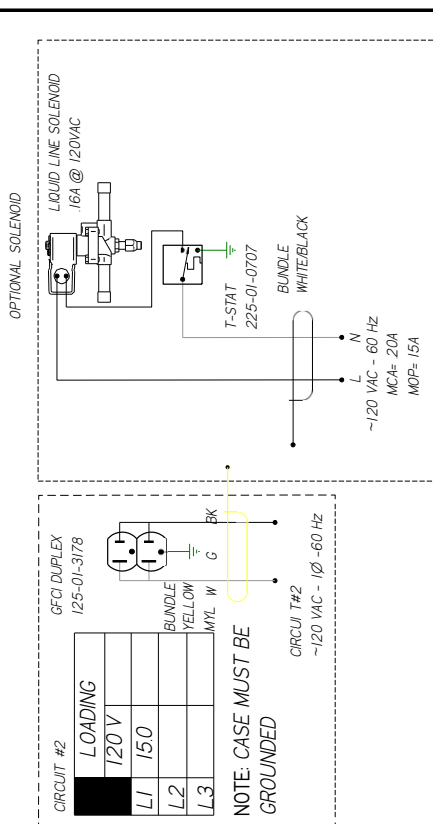
NOTE: CASE MUST BE GROUNDED WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY		REVISION DESCRIPTION		REV BY	CHK BY	APP BY
A	EON	DATE	RELEASED TO PRODUCTION	CB	CE	CE
B		EON-001-001-02525	2022/02/28	AL	CE	CE
		NEW LIGHTS				

CIRCUIT #1	LOADING
L1	120V
L2	150
L3	

CIRCUIT #2	LOADING
L1	120V
L2	150
L3	

NOTE: CASE MUST BE GROUNDED



ANTI-SWEAT HEATERS
60W 55A @ 120 VAC
III 0495008
50W 46A @ 120 VAC
III 0497590

CANOPY LIGHTS
LIGHT CIRCUIT = 125A 134.8W

EVAPORATOR FANS
12W 0.3A @ 120VAC
III 0477655

TOGGLE SWITCH
125-01-0307

BUNDLE PURPLE MP
BUNDLE ORANGE MO
BUNDLE WHITE WHT#14

~120 VAC - 60 HZ
MCA= 126A
MOP= 15A

~120 VAC - 60 HZ
MCA= 156A
MOP= 15A

~120 VAC - 60 HZ
MCA= 38A
MOP= 15A

~120 VAC - 60 HZ
MCA= 20A
MOP= 15A

~120 VAC - 60 HZ
MCA= 154

~120 VAC - 60 HZ
MCA= 154

~120 VAC - 60 HZ
MCA= 154

~120 VAC - 60 HZ
MCA= 154

~120 VAC - 60 HZ
MCA= 154

~120 VAC - 60 HZ
MCA= 154

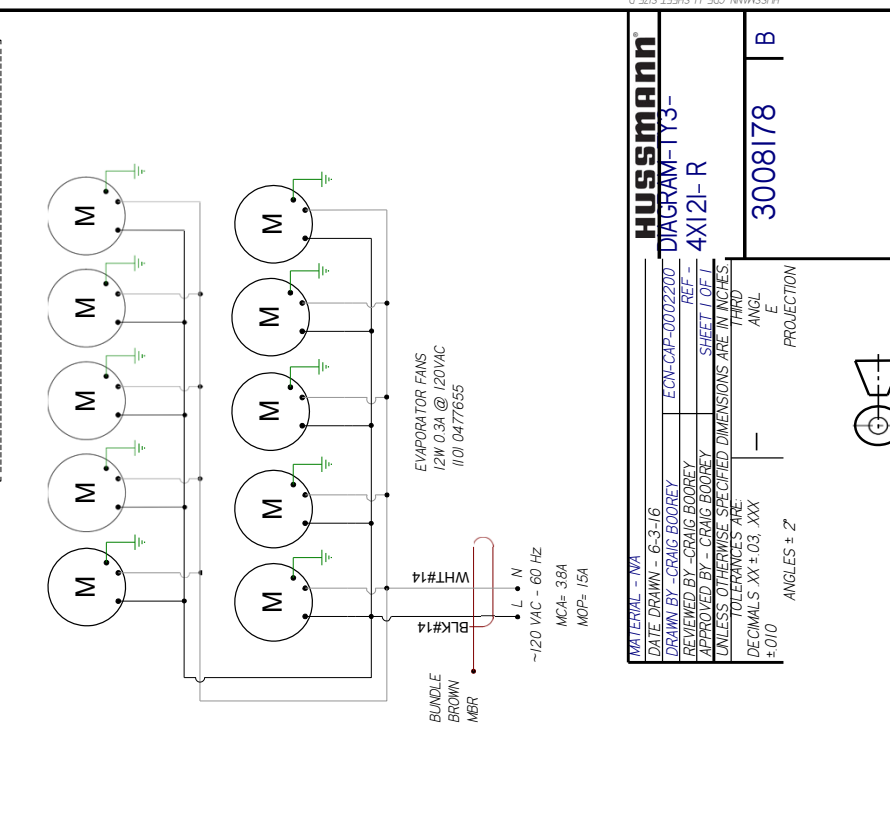
~120 VAC - 60 HZ
MCA= 154

~120 VAC - 60 HZ
MCA= 154

~120 VAC - 60 HZ
MCA= 154

~120 VAC - 60 HZ
MCA= 154

~120 VAC - 60 HZ
MCA= 154



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

MATERIAL - NA

DATE DRAWN - 6-3-16

DRAWN BY - CRAIG BOOREY

REVIEWED BY - CRAIG BOOREY

APPROVED BY - CRAIG BOOREY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

FRACTIONS: XX ± 0.0, XXX ± 0.1

DECIMALS: XX ± 0.0, XXX ± 0.1

ANGLES ± 2°

PROJECTION

ANG E

REF -

SHEET 1 OF 1

DIAGRAM-1Y3-4X121-R

ECN-CAP-0002200

3008178

B

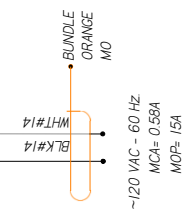
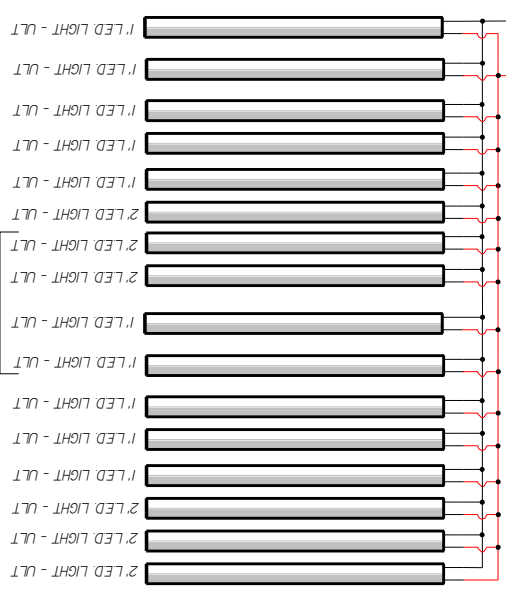
HUSSMANN

CIRCUIT #1	LOADING	120V	150V

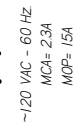
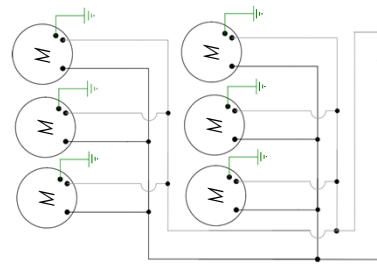
REVISION HISTORY		DATE	DESCRIPTION	REQ'D BY	CHK'D BY	APP'D BY
REV	EN	2016/06/03	RELEASED TO PRODUCTION	CB	CB	CB
B	EDN-CDD-0012626	2022/02/28	NEW LIGHTS & REMOVED DRIVER	AL	CB	CB

LIGHT CIRCUIT
46A 498W @ 120V

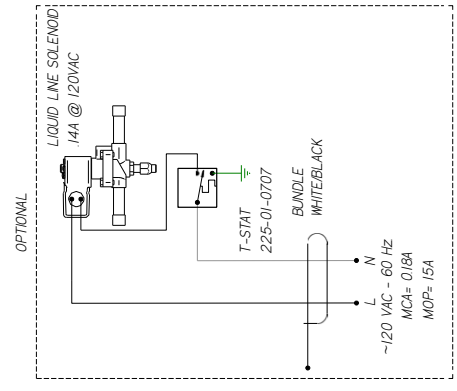
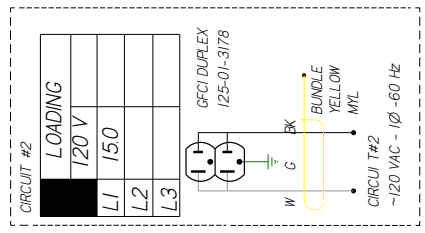
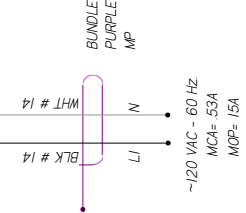
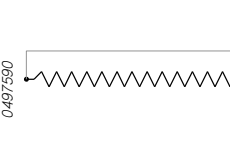
CANOPY LIGHTS



EVAPORATOR FAN
12W 0.30A @ 120VAC (6)
161 0477655



ANTI-SWEAT HEATER
50W 4.2A @ 120 VAC
0497590



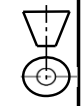
HUSSMANN
DIAGRAM-1Y3-
5X7I-R

MATERIAL - N/A
 DATE DRAWN - 6-3-16
 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 ± 0.3, .XXX
 ANGLES ± 2°
 PROJECTION

ECN-CAP-0002200
 REF -
 SHEET NO. 1
 THIRD

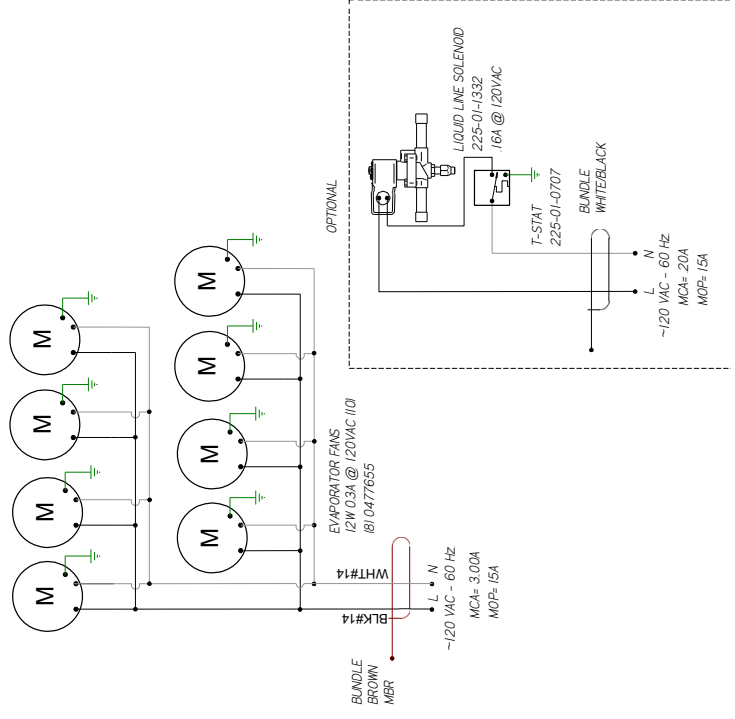
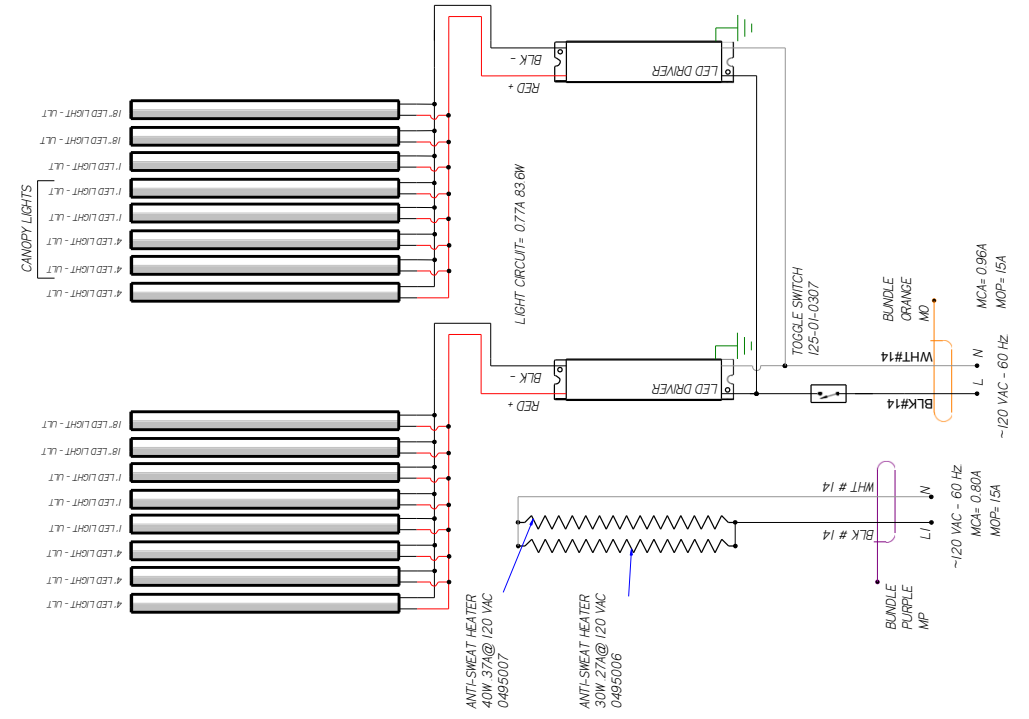
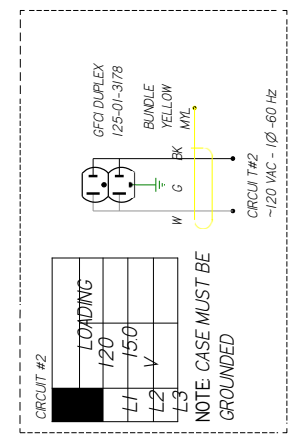
3008177 | B

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



REVISION HISTORY			
REV	ECN	DATE	DESCRIPTION
A	803263	2014/04/14	NEW DIAGRAM
B	ECN-000-005235	2022/02/28	NEW LIGHTS

CIRCUIT #1	LOADING
120V	
150V	
180V	



MATERIAL - NA

DATE DRAWN - 4/14/14

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°

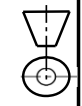
PROJECTION

ECN# - 803263 REF - NEW

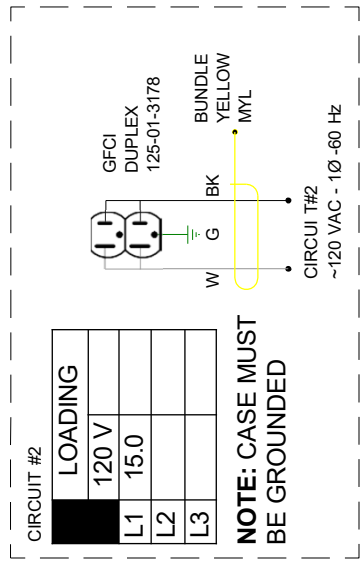
DIAGRAM= IY3-5X91-R

NOTES:
CASE MUST BE GROUNDED

2H00213 | B



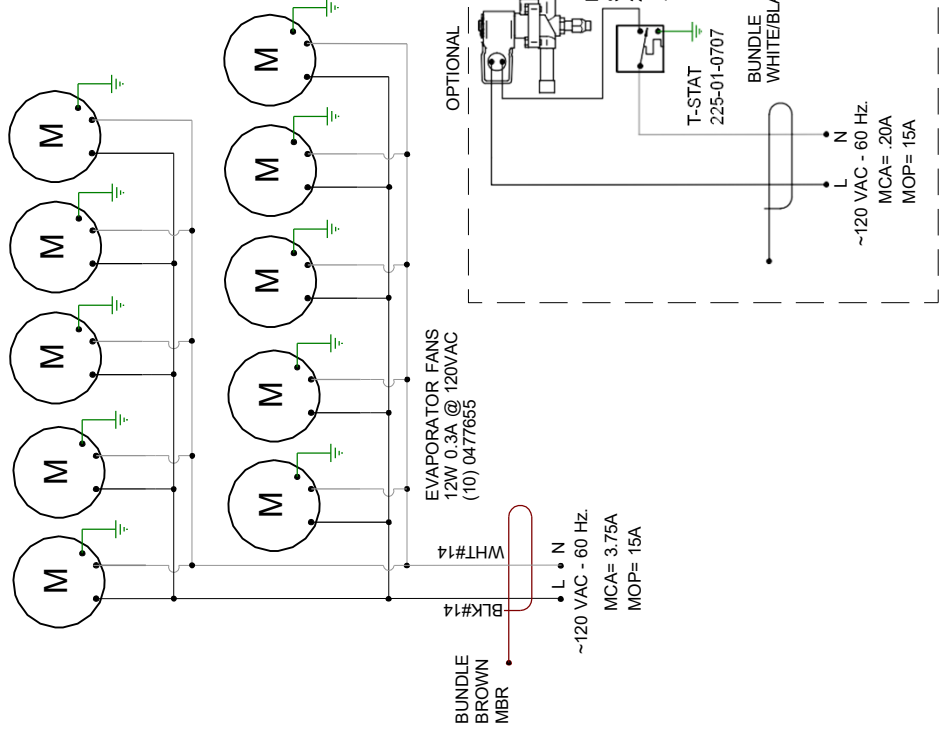
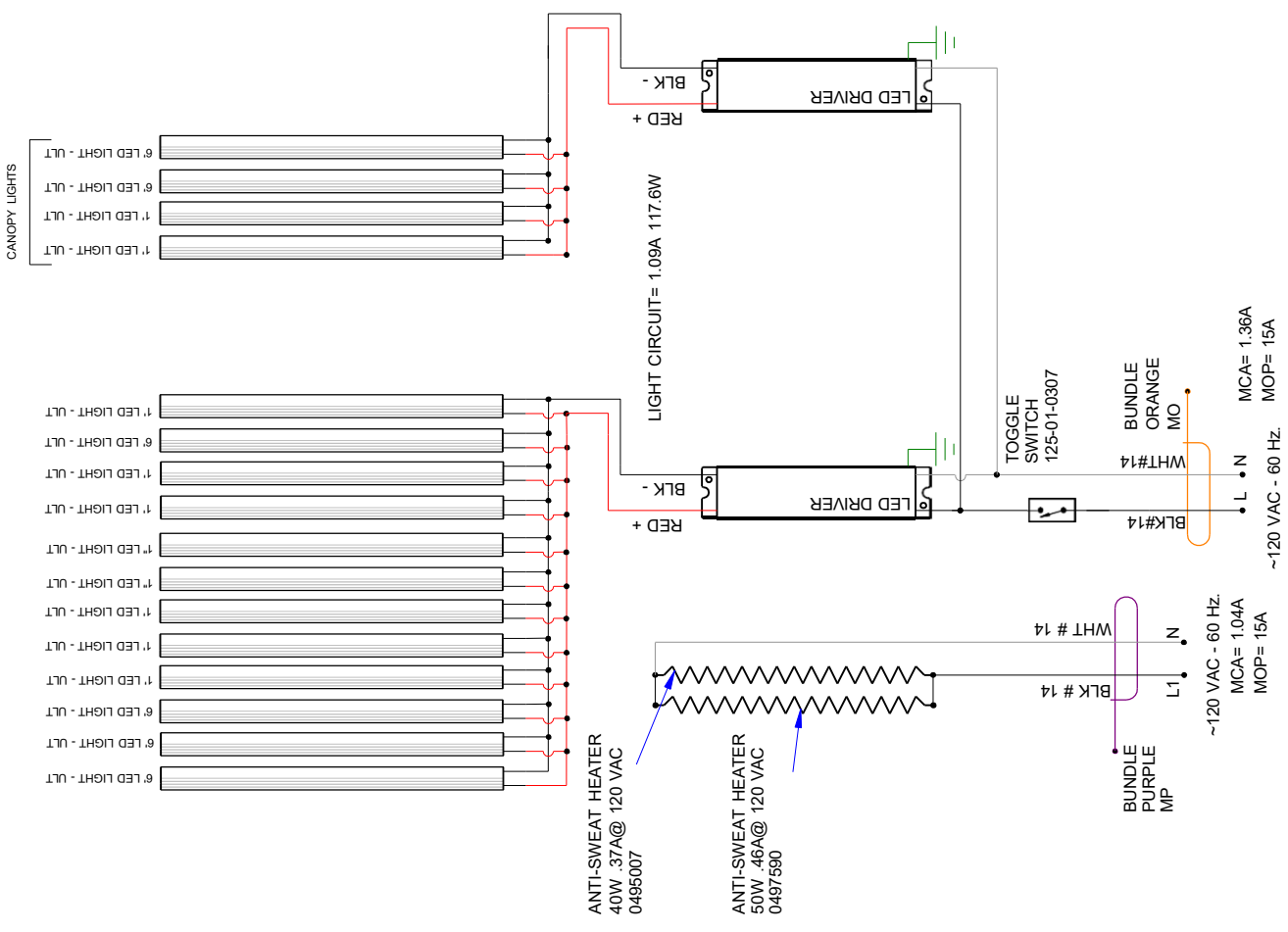
CIRCUIT #1



CIRCUIT #2	LOADING
	120 V
L1	15.0
L2	
L3	

CIRCUIT #1	LOADING
	120 V
L1	4.92

NOTE: CASE MUST BE GROUNDED



REVISIONS:

#	DESCRIPTION:
A	CN#720718
B	ECN-COD-0015255 NEW LIGHTS

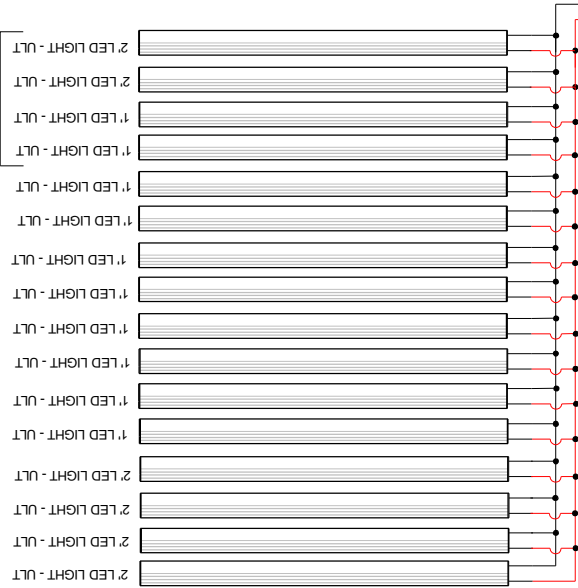
DATE:	BY:
5/6/13	CB
2/22/22	AL

FILE LOCATION:
AL

PRODUCTION ORDER #:
AL

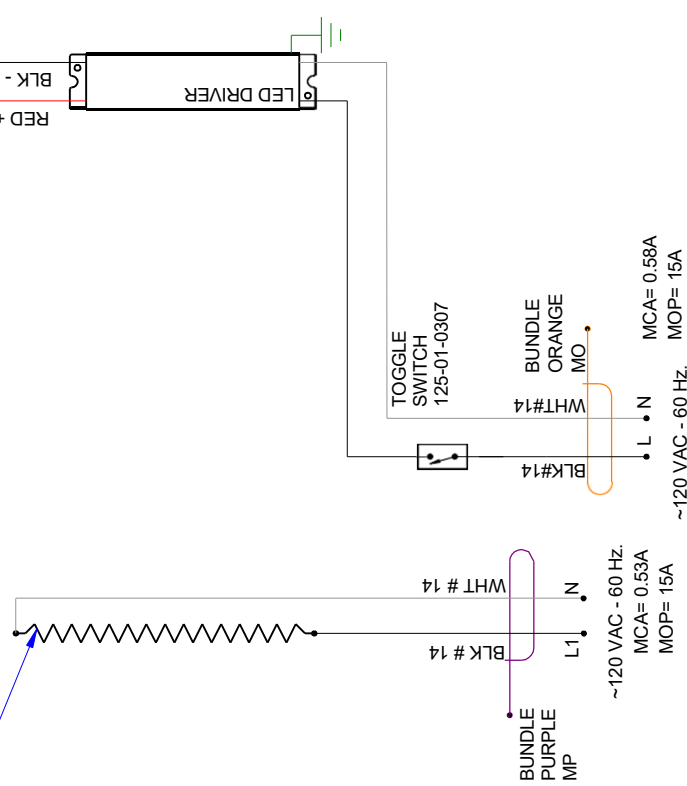
PROJECT TITLE:	DRAWING #:
TY3-CASE	1H86614

CANOPY LIGHTS



ANTI-SWEAT HEATER
50W .42A@ 120 VAC
0497590

LIGHT CIRCUIT= 0.46A 49.8W



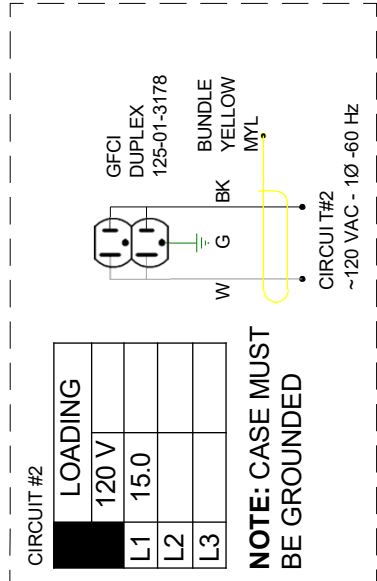
~120 VAC - 60 Hz.
MCA= 0.53A
MOP= 15A

~120 VAC - 60 Hz.
MCA= 0.58A
MOP= 15A

CIRCUIT #1

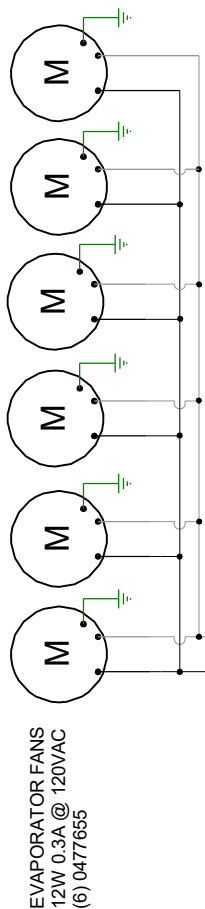
LOADING	
120 V	
L1	2.7

NOTE: CASE MUST BE GROUNDED



LOADING	
120 V	
L1	15.0
L2	
L3	

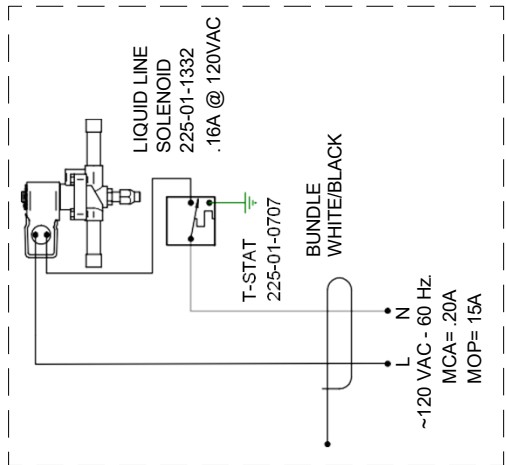
NOTE: CASE MUST BE GROUNDED



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

BUNDLE BROWN MBR
~120 VAC - 60 Hz.
MCA= 2.25A
MOP= 15A

OPTIONAL



~120 VAC - 60 Hz.
MCA= .20A
MOP= 15A

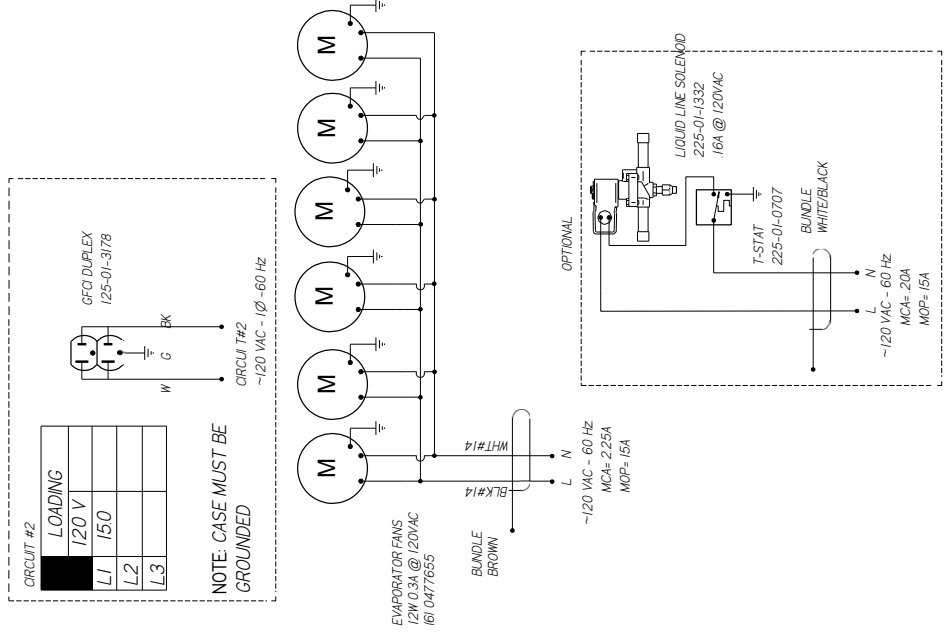
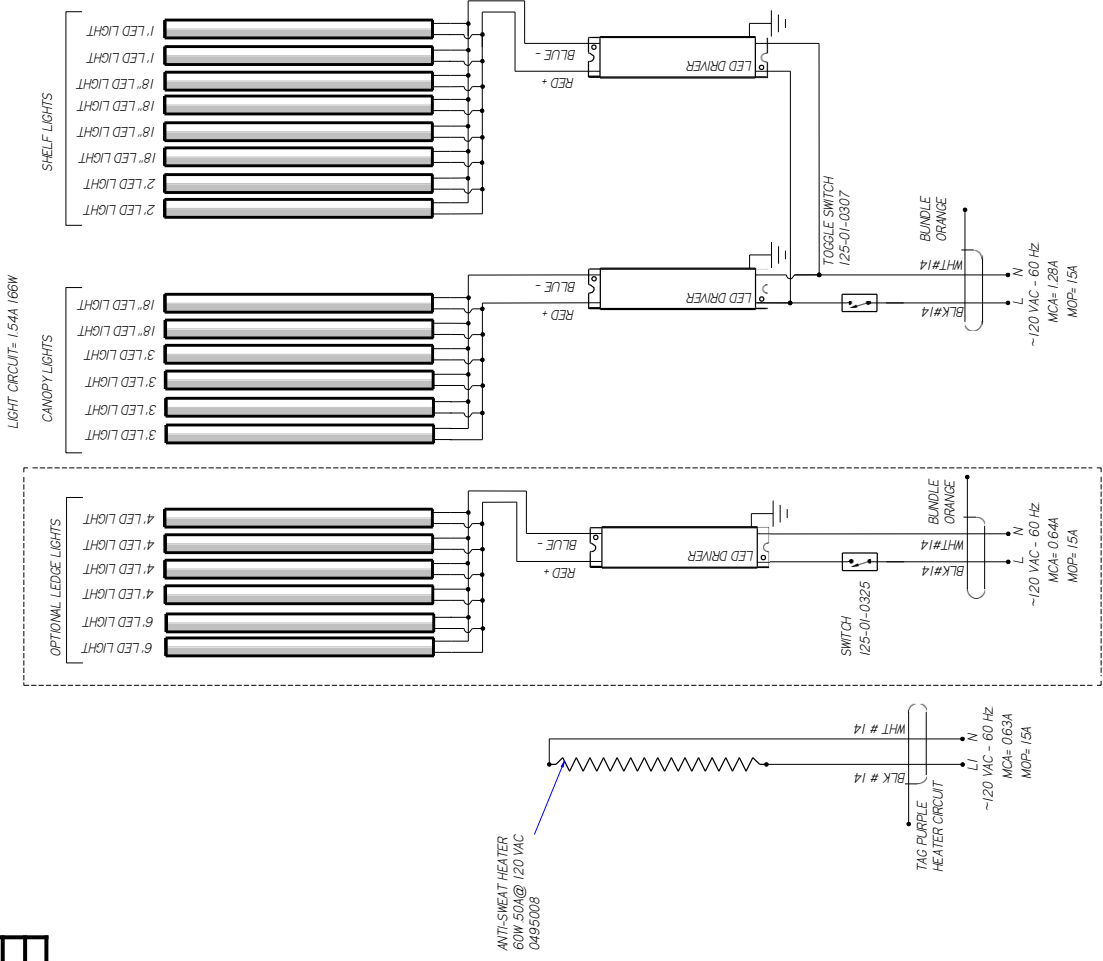
REVISIONS:		DATE:	BY:	DRAWN BY:	PROJECT TITLE:	DRAWING #:
#	DESCRIPTION:	5/6/13	CB	CRAIG BOOREY	TY3-CASE	1H86612
A	CN# 720718	2/28/22	AL			
B	ECN-COD-0015255 NEW LIGHTS					

DRAWING TITLE:

DIAGRAM-TY3-6X81-R

REVISION HISTORY			
REV	EN	DATE	REVISION DESCRIPTION
A	ECN-CAP-0003968	2016/01/13	RELEASED TO PRODUCTION
B	ECN-CAP-0014946	2018/01/13	REVISED ANTI-SWEAT HEATER

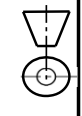
CIRCUIT #1	
LOADING	
120V	
L1	
L2	
L3	



HUSSMANN
DIAGRAM-
TY3ECSQ- 6X8I-R

MATERIAL - NA
 DATE DRAWN - 10-13-16
 DRAWN BY - CRAIG BOOREY
 ECN-CAP-0003968
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 REF - SHEET 1 OF 3
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 THIRD ANGLE PROJECTION
 DECIMALS .XX ±0.3 .XXX ±0.0
 ANGLES ± 2°

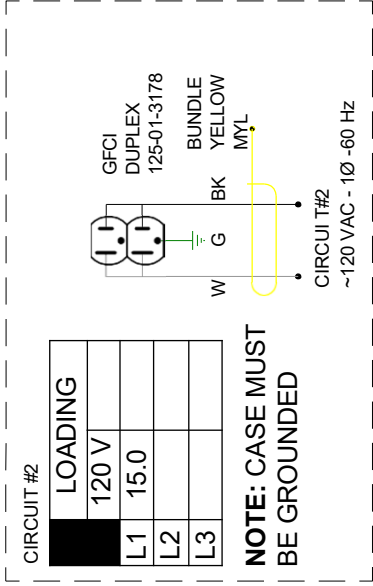
NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED



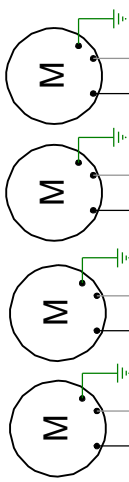
CIRCUIT #1

LOADING	
120 V	
L1	3.75

NOTE: CASE MUST BE GROUNDED



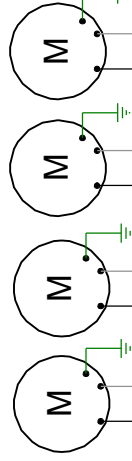
ANTI-SWEAT HEATER
120 VAC
(1) 0495007 40W .33A
(1) 0495006 30W .25A



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

BUNDLE BROWN MBR
WHT#14

~120 VAC - 60 Hz.
MCA= 1.5A
MOP= 15A



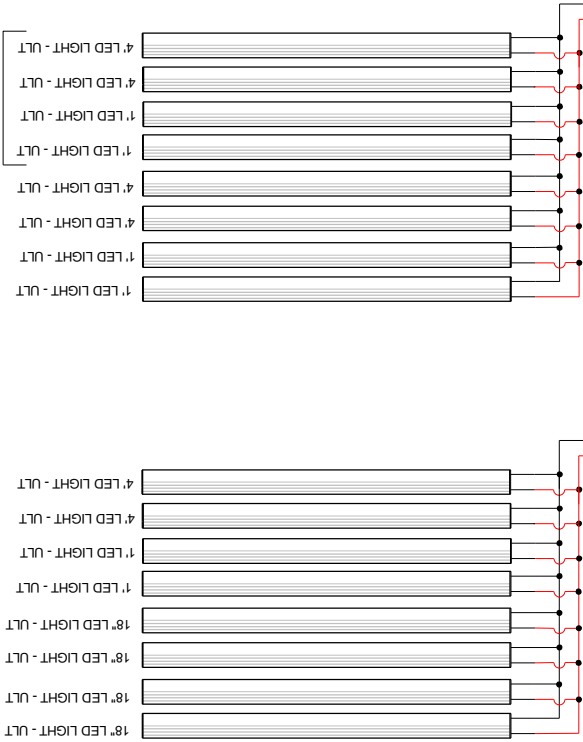
EVAPORATOR FANS
PER COIL
12W 0.3A @ 120VAC
(4) 0477655

BUNDLE BROWN MBR
WHT#14

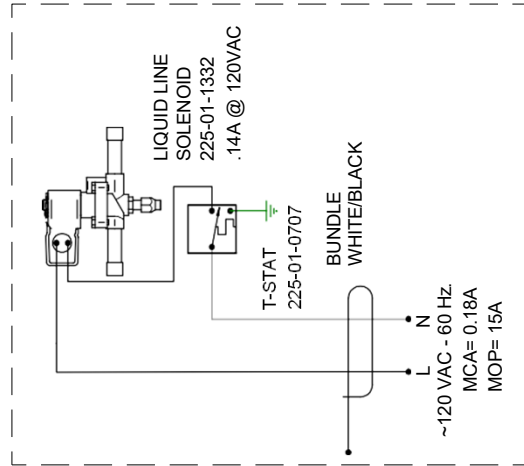
~120 VAC - 60 Hz.
MCA= 1.5A
MOP= 15A

BUNDLE PURPLE MP
WHT # 14
BLK # 14
L1 N
~120 VAC - 50/60 Hz
MCA= .93A
MOP= 15A

CANOPY LIGHTS



OPTIONAL



BUNDLE WHITE/BLACK

~120 VAC - 60 Hz
MCA= 0.18A
MOP= 15A

LIGHT SWITCH
125-01-0311

LIGHT CIRCUIT= 0.77A 83.6W

BUNDLE ORANGE MO
WHT#14

~120 VAC - 60 Hz.
MCA= 0.96A
MOP= 15A

HUSSMANN

Hussmann Corporation, Intl
13770 Ramona Avenue
Chino, CA. 91710
(909)-590-4910 Lic.#: 644406

REVISIONS:

#	DESCRIPTION:	DATE:	BY:	CHECKED BY:	DATE:
C	CN#696786 ADDED OPTIONAL SOLENOID	3/22/13	CB	CB	8/10/12
D	CN#980241 REVISED ANTI-SWEAT HTR	4/16/15	CB	CB	
E	ECN-COD-0015255 NEW LIGHTS, REMOVED DRIVER	2/28/22	AL	AL	

DRAWN BY: CRAIG BOOREY

FILE LOCATION:

PROJECT TITLE: TY3-CASE

DRAWING ORDER #:

DIAGRAM-TY3-6X101-R

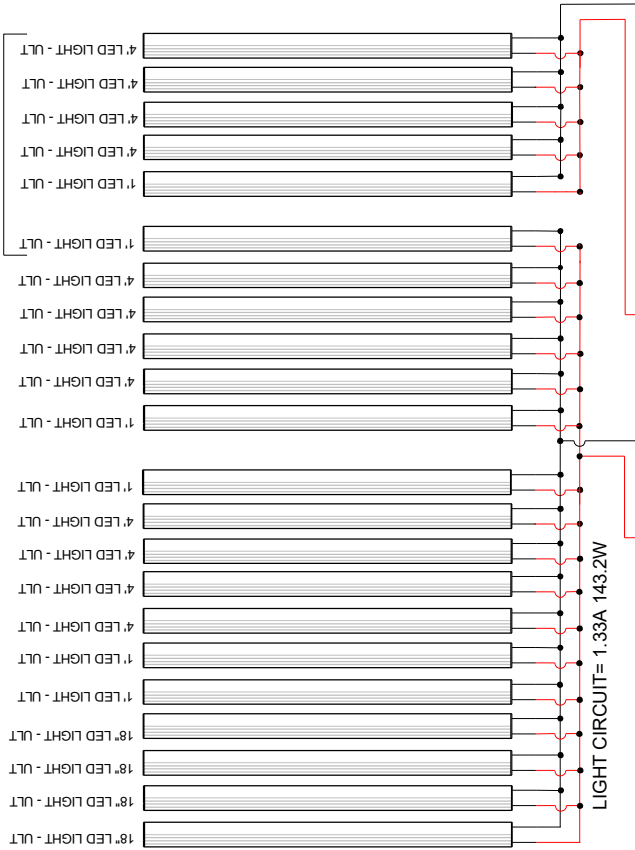
DRAWING #: 1H78139

CIRCUIT #1

LOADING	
120 V	
L1	5.8

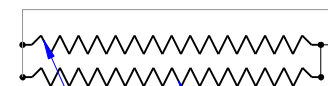
NOTE: CASE MUST BE GROUNDED

CANOPY LIGHTS



LIGHT CIRCUIT= 1.33A 143.2W

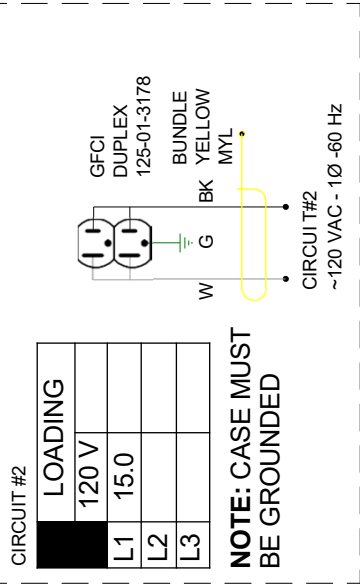
ANTI-SWEAT HEATER
60W .50A@ 120 VAC
0495008
ANTI-SWEAT HEATER
50W .42A@ 120 VAC
0497590



BUNDLE PURPLE MP
WHT # 14
L1
N
~120 VAC - 60 Hz
MCA= 1.15A
MOP= 15A

BUNDLE ORANGE MO
WHT # 14
L N
L N
~120 VAC - 60 Hz
MCA= 1.66A
MOP= 15A

BUNDLE BROWN MBR
WHT # 14
L N
L N
~120 VAC - 60 Hz
MCA= 2.3A
MOP= 15A

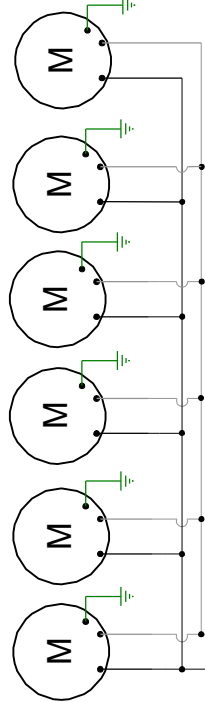


CIRCUIT #2

LOADING	
120 V	
L1	15.0
L2	
L3	

NOTE: CASE MUST BE GROUNDED

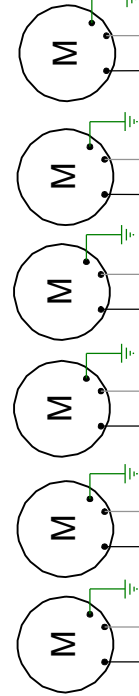
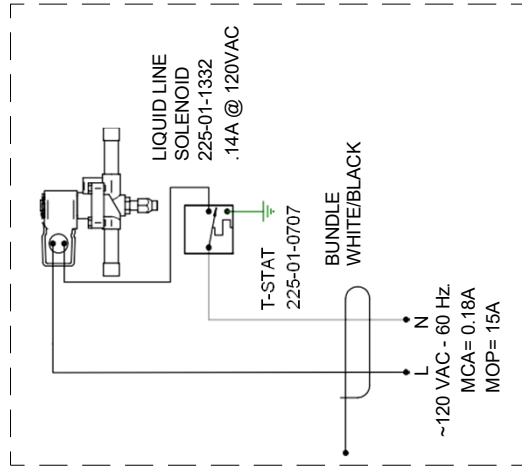
~120 VAC - 1Ø -60 Hz



BUNDLE BROWN MBR
WHT # 14
L N
L N
~120 VAC - 60 Hz.
MCA= 2.3A
MOP= 15A

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

OPTIONAL



BUNDLE BROWN MBR
WHT # 14
L N
L N
~120 VAC - 60 Hz
MCA= 2.3A
MOP= 15A

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

REVISIONS:

#	DESCRIPTION:
A	CN#634531
B	CN#696786 Added AS Htrs. & Solenoid
C	ECN-COD-0015255 NEW LIGHTS

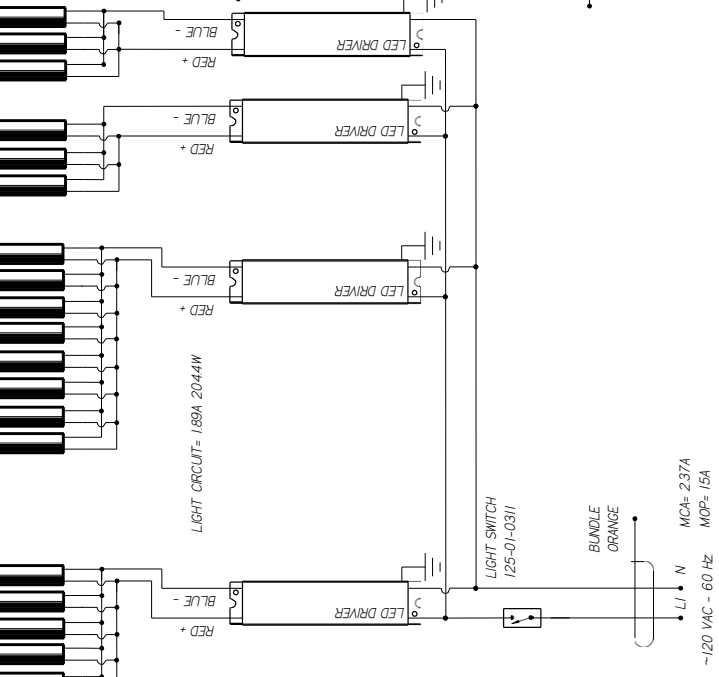
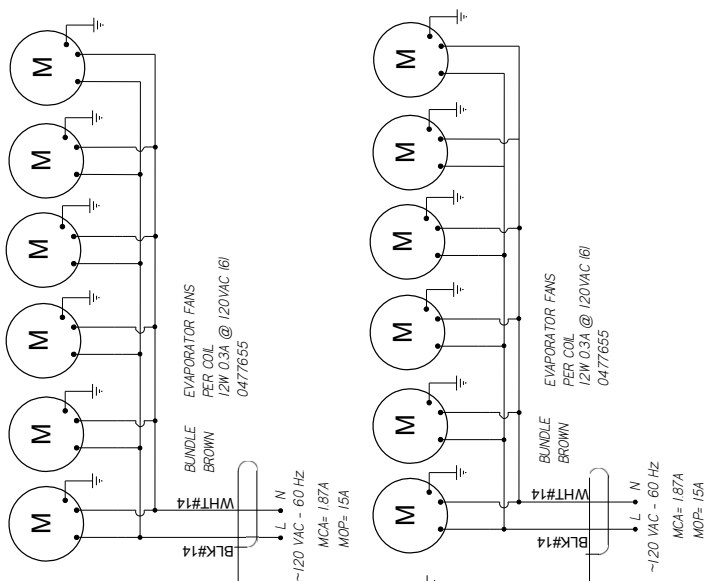
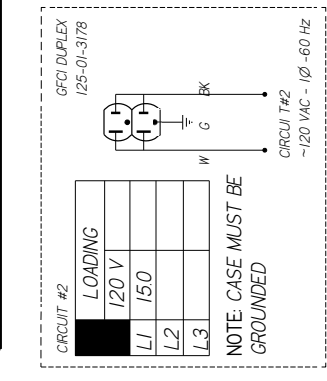
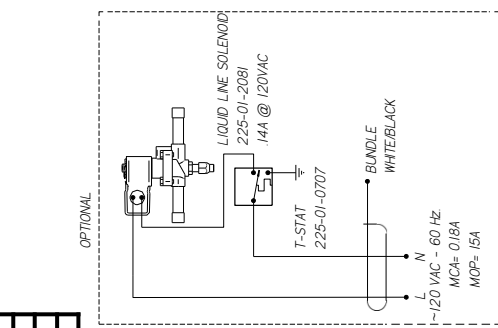
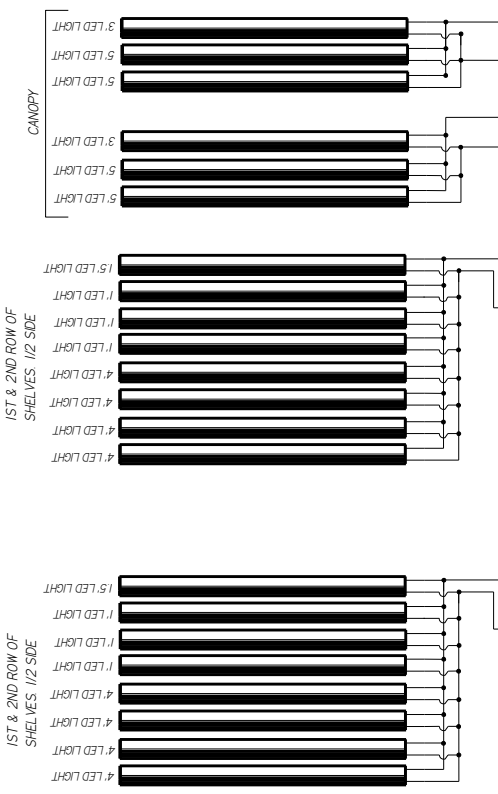
DATE:	BY:
8/7/12	CB
3/21/13	CB
2/28/22	AL

DRAWN BY: CRAIG BOOREY	PROJECT TITLE: TY3-ISLAND CASE
CHECKED BY:	DRAWING #: 1H77864
DATE: 8/8/12	
PRODUCTION ORDER #: 920172	
FILE LOCATION:	

DIAGRAM-TY3-6X141-R

REVISION HISTORY		REV. BY	DATE	DESCRIPTION	REV. BY	DATE	DESCRIPTION
1	LEO-CAP-001088	20080205	RELEASED TO PRODUCTION	CB	CB	APP. BY	CB

CIRCUIT #1	LOADING	120V	150V	180V

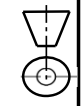


REVISION HISTORY		REV. BY	DATE	DESCRIPTION	REV. BY	DATE	DESCRIPTION
1	LEO-CAP-001088	20080205	RELEASED TO PRODUCTION	CB	CB	APP. BY	CB

HUSSMANN
DIAGRAM-
TY3ECRC- 6X141-R

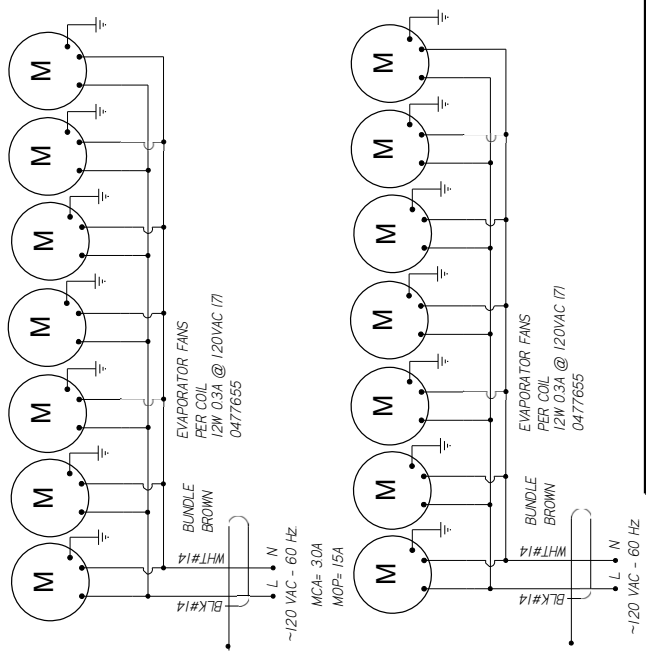
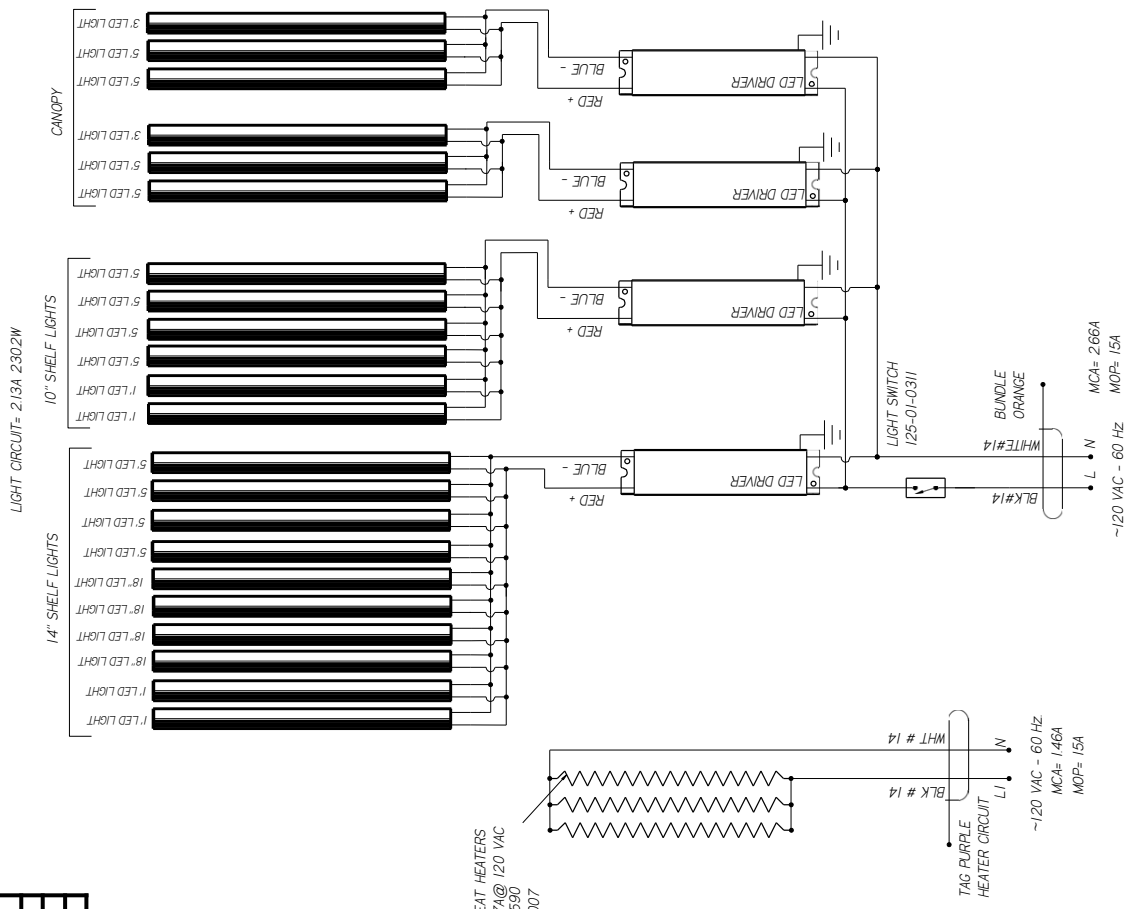
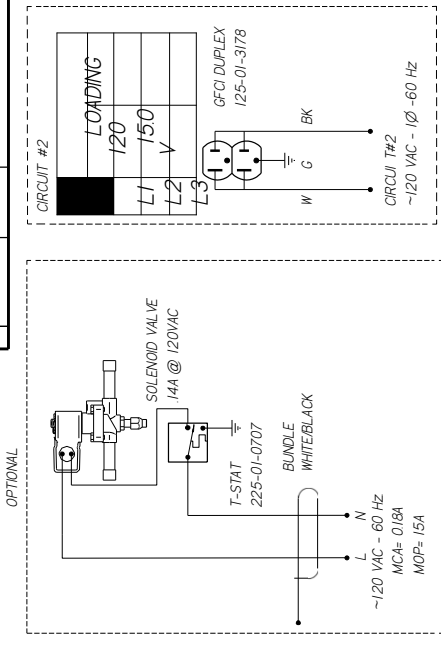
MATERIAL - N/A
 DATE DRAWN - 2-5-18
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS XX ± 0.3, XXX
 DECIMALS .XX ± 0.03, .XXX
 ANGLES ± 2°
 PROJECTION

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



REVISION HISTORY		REVISION DESCRIPTION		REV BY	CHKD BY	APPR BY
REV #	EN	DATE				
1	A	20080403	LEDA-CAP-001087	CB	CB	CB
			RELEASED TO PRODUCTION			

CIRCUIT #1	LOADING	120V	150V



HUSSMANN
DIAGRAM-
TY3ECRC-6X161-R

MATERIAL - N/A
 DATE DRAWN - 4-3-18
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS XX ± 0.3, XXX ± 0.0
 ANGLES ± 2°
 PROJECTION

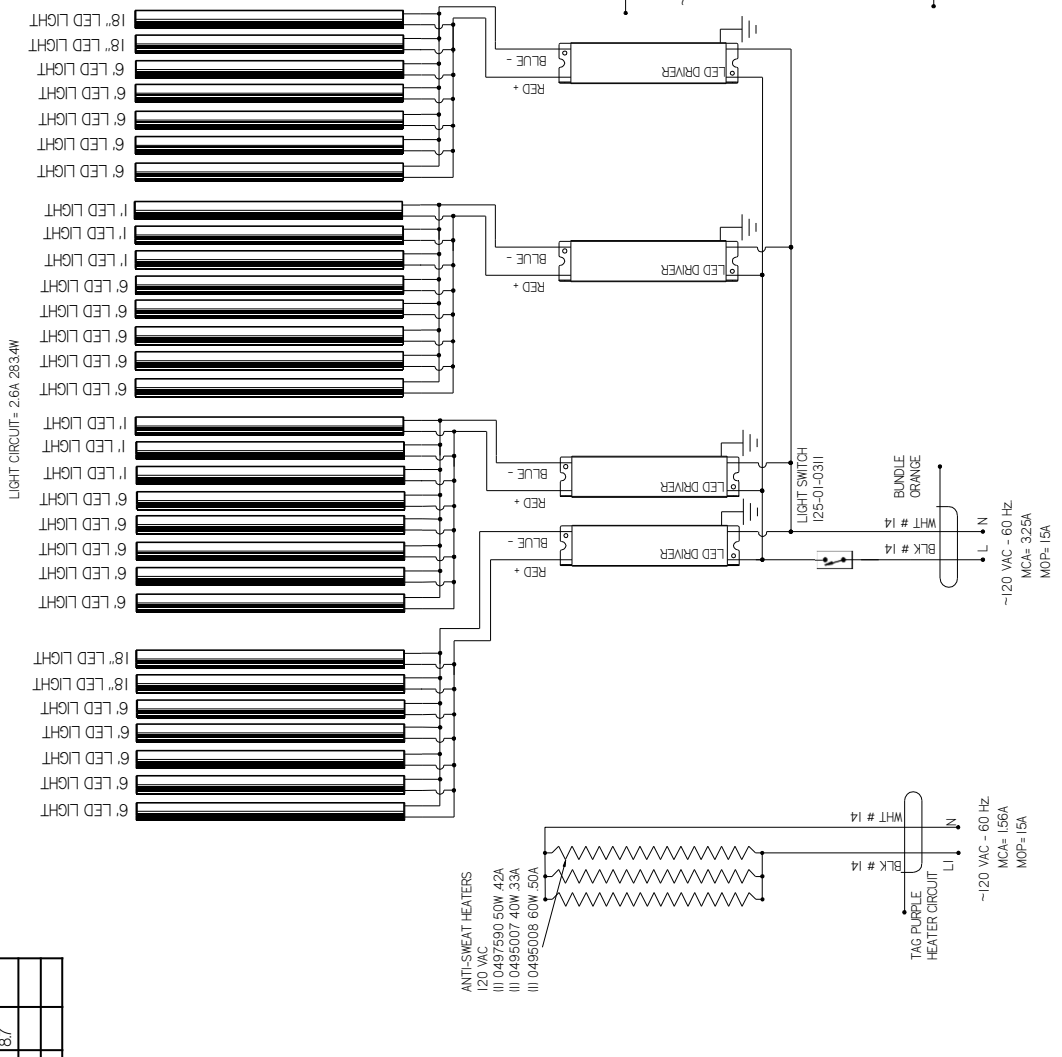
REF -
 SHEET OF
 DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS XX ± 0.3, XXX ± 0.0
 ANGLES ± 2°
 PROJECTION

3059427 | A

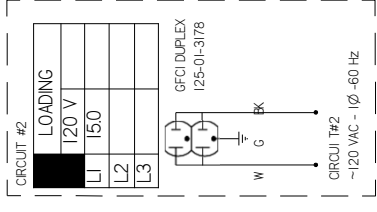
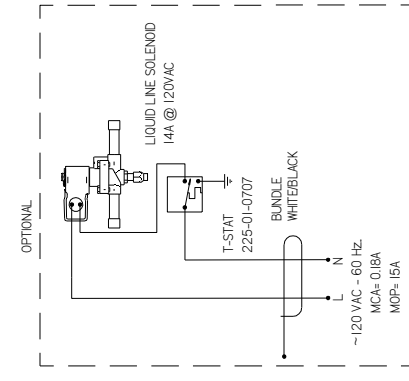
NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
1	A	2016/08/17	RELEASED TO PRODUCTION	CB	CB	CB

CIRCUIT #1	LOADING
120V	
L1 8.7	



LIGHT CIRCUIT= 26A 283.4W



Hussmann
DIAGRAM-1Y3-6X181-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 ±0.10
ANGLES ± 2°

PROJECTION

REF - ECN-CAP-0003235
SHEET 1 OF 1
THIRD ANGLE

3013482 A

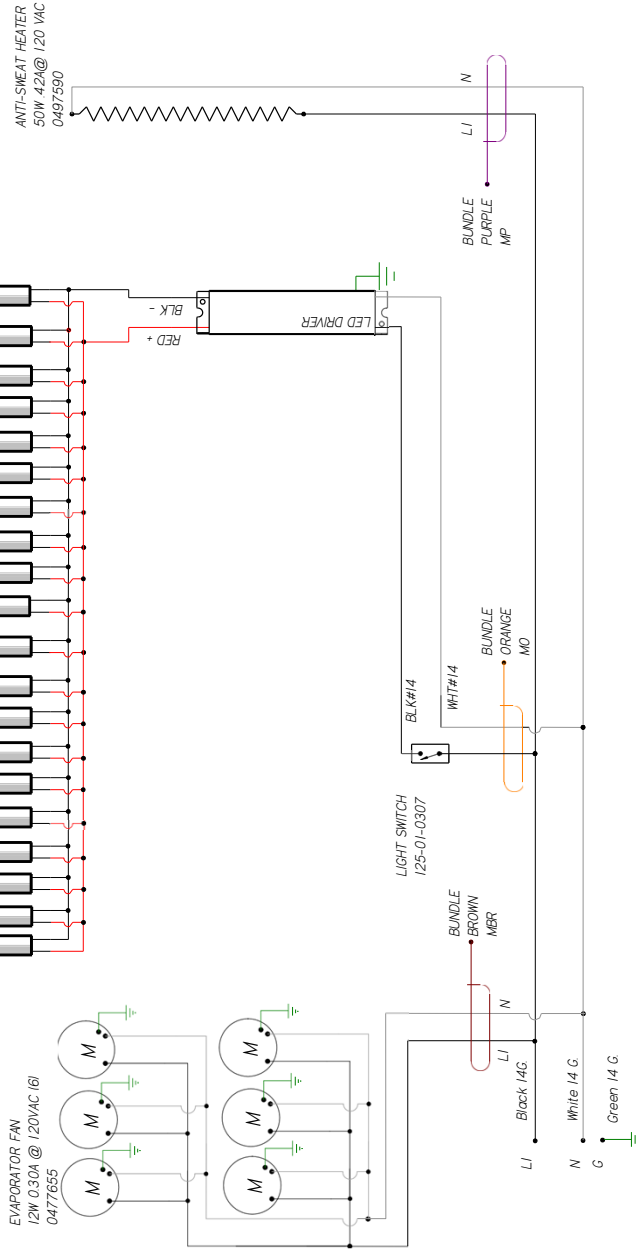
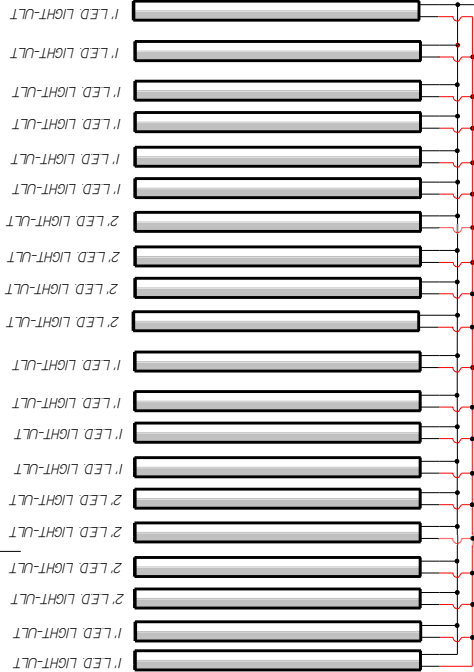
NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

CIRCUIT #1

LOADING	
120V	
1-20	

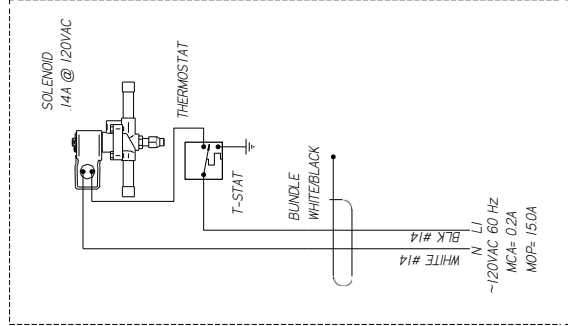
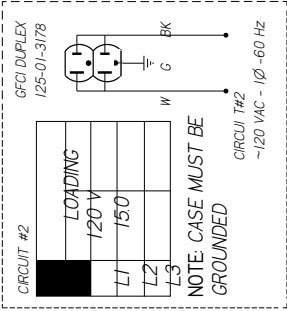
LIGHT CIRCUIT
53A 58.2W @ 120V

CANOPY LIGHTS



REV	EN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	EDN-CAP-0009957	2017/04/13	RELEASED TO PRODUCTION	CB	CB	CB
B	EDN-CAP-0009958	2022/04/09	NEW LIGHTS	CB	CB	CB

REVISION HISTORY



HUSSMANN
DIAGRAM-IY4-4X6I-R

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°
PROJECTION
E
ANG

ECN-CAP-0009957 REF -
SHEET 1 OF 1
DIMENSIONS ARE IN INCHES
THIRD ANGLE

3047021 | B

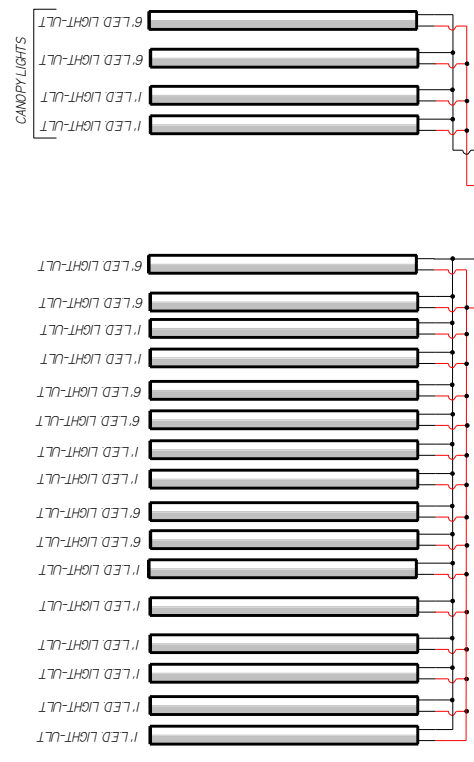


NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

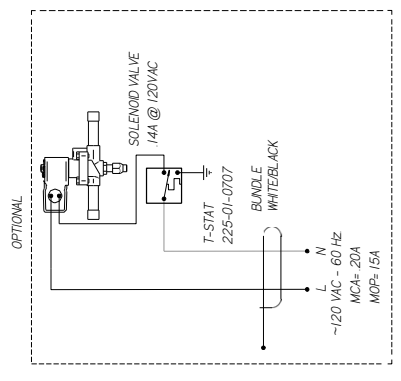
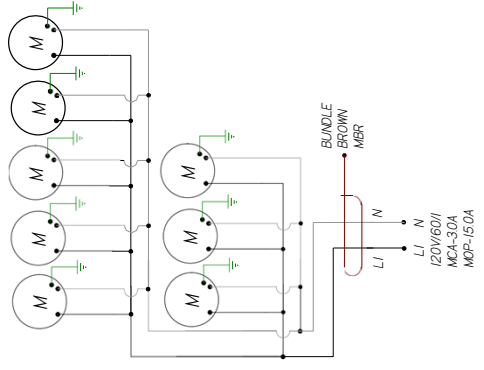
CIRCUIT #1	120V	120V	120V
	120V	120V	120V
	120V	120V	120V

REVISION HISTORY			
REV	EN	DATE	DESCRIPTION
A	ECN-CAP-0003235	2016/08/17	RELEASED TO PRODUCTION
B	ECN-COD-0015286	2022/04/20	NEW LIGHTS

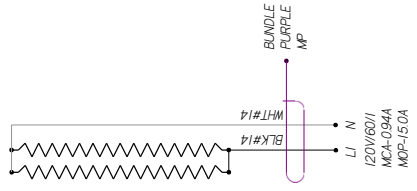
LIGHT CIRCUIT
128A 1382W @ 120V



EMPIRATOR FAN
12W @ 30A @ 120VAC (B)
0477655



ANTI-SWEAT HEATER
120 VAC
III 0495007 40W, 33A
III 0497590 50W, 42A

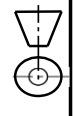


HUSSMANN
DIAGRAM-IY4-
4X10I-R
3013474 | **B**

MATERIAL - NA
 DATE DRAWN - 8-17-16
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 DECIMALS .XX ± 0.3 .XXX
 ANGLES ± 2°
 PROJECTION

ECN-CAP-0003235
 REF -
 SHEET 1 OF 1

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



REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHK BY	APPR BY
A	735331	2016/07/17	RELEASED TO PRODUCTION	CB	CB	CB
B	980241	2016/04/16	CHANGED ANTI-SWEAT HEATER	CB	CB	CB
C	EDC-CDD-0059286	2022/04/20	NEW LIGHTS	CB	CB	CB

REVISION HISTORY
REVISED TO PRODUCTION
CHANGED ANTI-SWEAT HEATER
NEW LIGHTS

LOADING
120 V
L1 15.0
L2
L3

CIRCUIT #2
NOTE: CASE MUST BE GROUNDED



HUSSMANN
DIAGRAM-1Y4-
4X121-R

MATERIAL - N/A
DATE DRAWN - 7/17/13
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

ECN# - 735331 REF - NEW
DIAGRAM SHEET NO. 1
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX ±0.3 .XXX
±0.0
ANGLES ± 2°
PROJECTION

EVAPORATOR FANS
12W 0.3A @ 120VAC
1101 0477655

ANTI-SWEAT HEATERS
60W 55A @ 120 VAC
111 0495008
50W 46A @ 120 VAC
111 0497590

CANOPY LIGHTS

TOGGLE SWITCH
125-01-0307

LED DRIVER

LIQUID LINE SOLENOID
16A @ 120VAC

T-STAT
225-01-0707
WHITE/BLACK

GFCI DUPLEX
125-01-3178

CIRCUIT #2
~120 VAC - 60 Hz

NOTE: CASE MUST BE GROUNDED

EVAPORATOR FANS
12W 0.3A @ 120VAC
1101 0477655

EVAPORATOR FANS
12W 0.3A @ 120VAC
1101 0477655

EVAPORATOR FANS
12W 0.3A @ 120VAC
1101 0477655

EVAPORATOR FANS
12W 0.3A @ 120VAC
1101 0477655

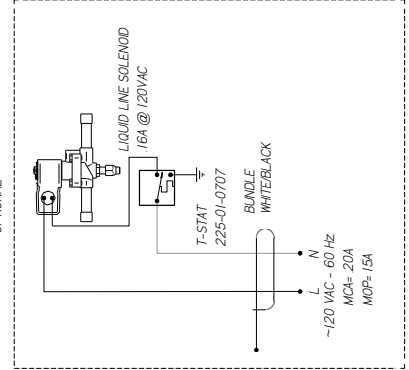
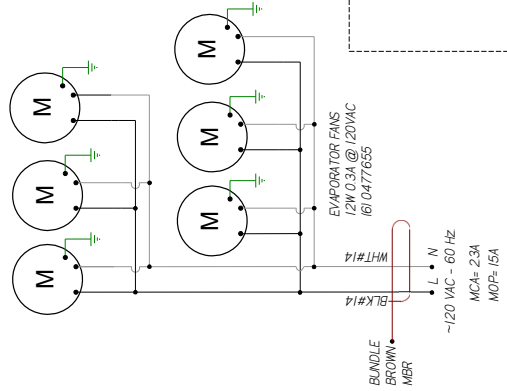
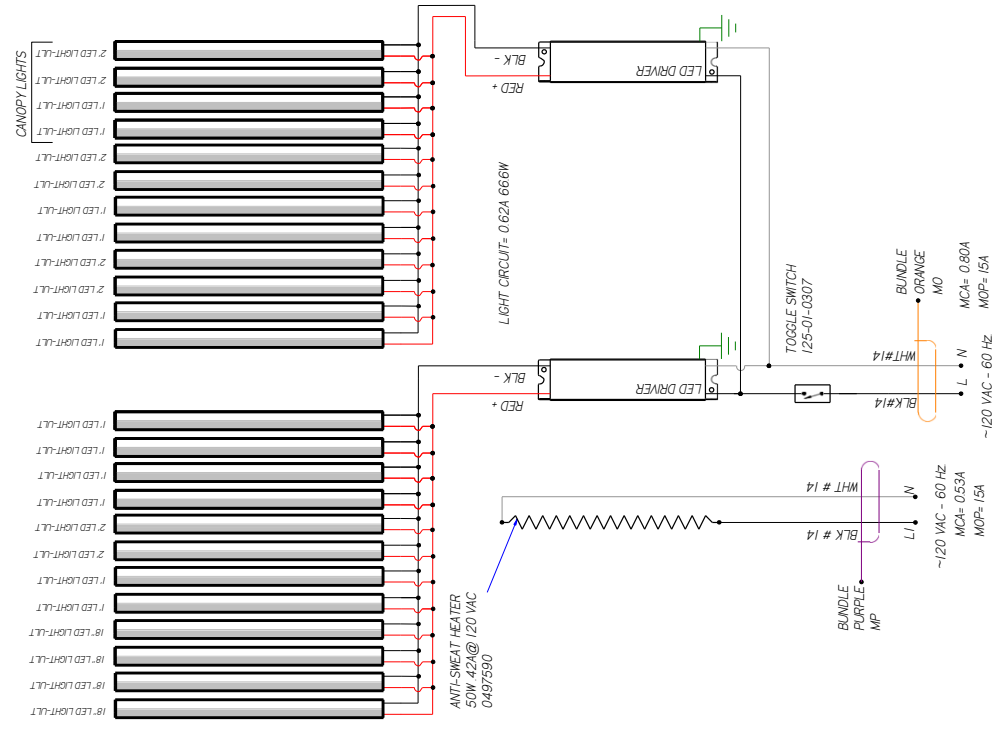
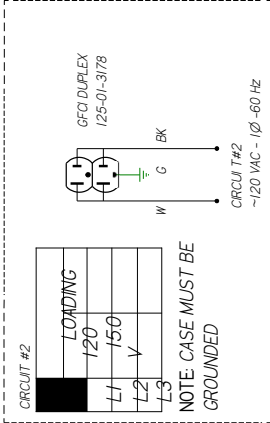
EVAPORATOR FANS
12W 0.3A @ 120VAC
1101 0477655

EVAPORATOR FANS
12W 0.3A @ 120VAC
1101 0477655

EVAPORATOR FANS
12W 0.3A @ 120VAC
1101 0477655

REVISION HISTORY		REV	BY	DATE	DESCRIPTION	APP'D BY
1	803263	2014/04/14	CB	CB	NEW DIAGRAM	CB
2	EDVCCB-005286	2022/04/27	CB	CB	NEW LIGHTS	CB

CIRCUIT #1	LOADING	120V	150V	200V



HUSSMANN
DIAGRAM-1Y4-
5X71-R

MATERIAL - NA

DATE DRAWN - 4/14/14

DRAWN BY - CRAIG BOOREY

REVIEWED BY - CRAIG BOOREY

APPROVED BY - CRAIG BOOREY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

THIRD ANGL

DECIMALS .XX ±0.3 .XXX ±0.10

ANGLES ± 2°

PROJECTION

ECN# - 803263 REF - NEW

DIAGRAM SHEET NO. 5X71-R

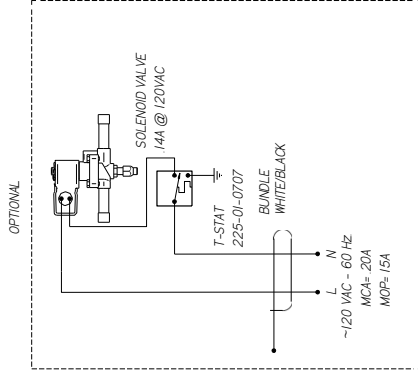
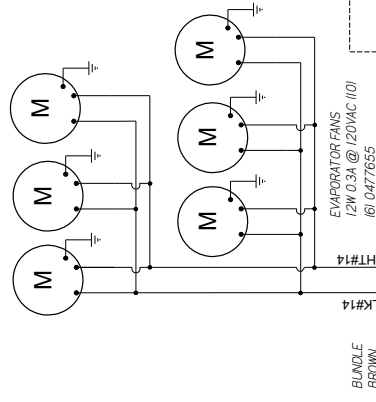
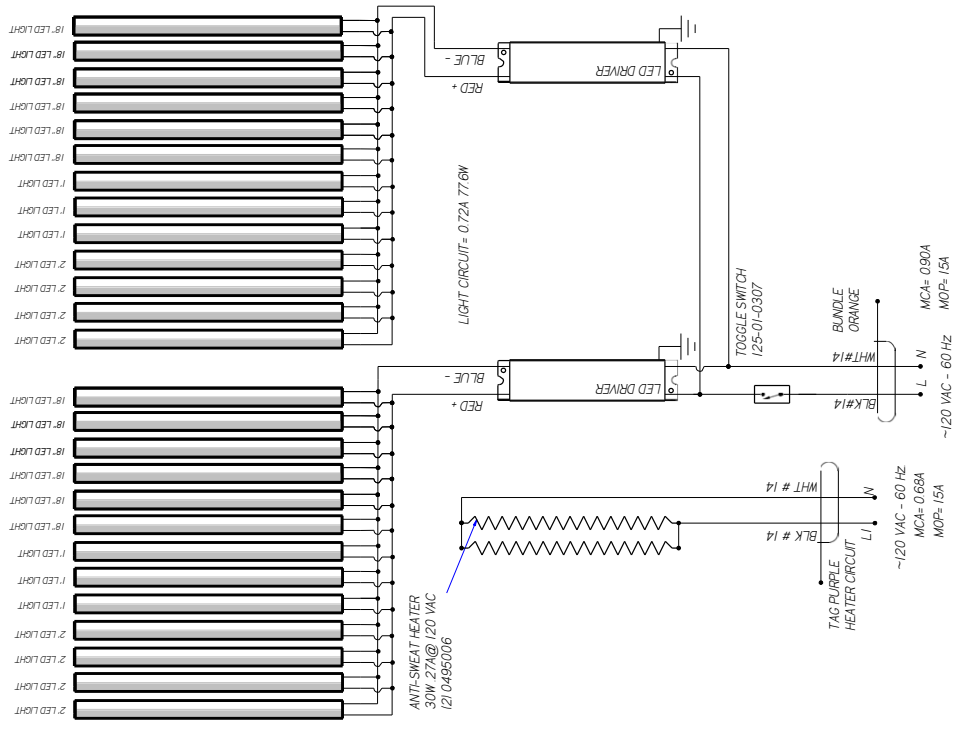
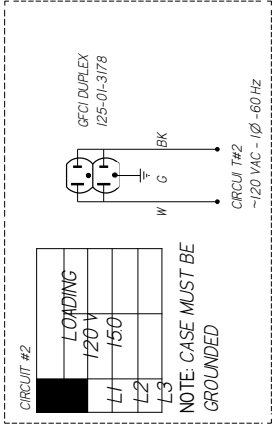
2H00212 | B

NOTES:
CASE MUST BE GROUNDED

REVISION HISTORY		REV	BY	DATE	DESCRIPTION	REV	BY	DATE	DESCRIPTION
1	LED/CAP-004942	1	LEON/CAP-004942	2018/01/26	RELEASED TO PRODUCTION	08	CB		APPR BY
									CB
									CB

CIRCUIT #1

LOADING			
120V			
L1			
L2			
L3			



HUSSMANN
DIAGRAM-IY4EC-5X7 I-R

MATERIAL - NA
DATE DRAWN - 10-26-18
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-007494Z
REF - SHEET 1 OF 3
DIMENSIONS ARE IN INCHES
THIRD ANGLE PROJECTION

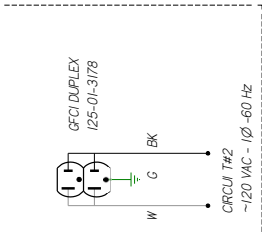
3078669 | A

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

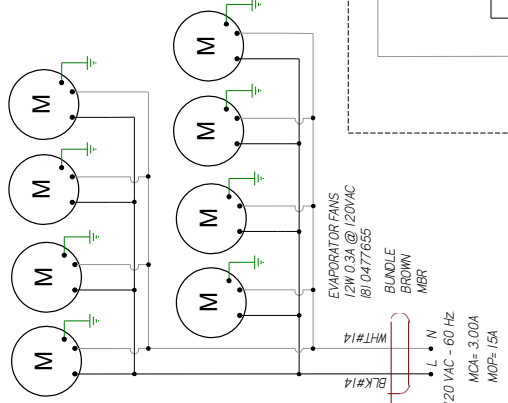
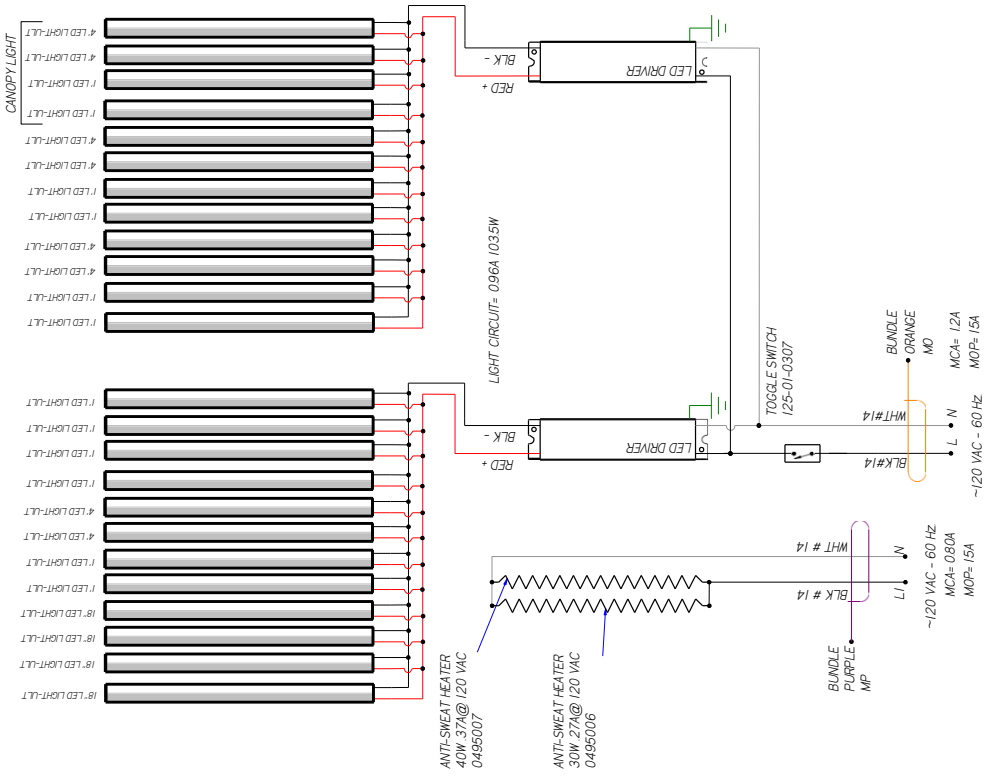
REV	EN	DATE	REVISION HISTORY	REV BY	CHKD BY	APPR BY
A	983529	2016/08/03	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-CDD-006286	2022/04/27	NEW LIGHTS	CB	CB	CB
C	ECN-CDD-007638	2023/02/09	REVISED SOLENOID WIRING	CB	CB	CB

CIRCUIT #2	LOADING
	120 V
L1	150
L2	
L3	

NOTE: CASE MUST BE GROUNDED



CIRCUIT #1	LOADING
	120 V
L1	150
L2	
L3	



HUSSMANN
DIAGRAM-IY4-
5X9I-R

MATERIAL - NA
DATE DRAWN - 6-3-15
DRAWN BY - CRAIG ROOREY
REVIEWED BY - CRAIG ROOREY
ECON# - 983529
REF -
SHEET NO. I
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
THIRD ANGL
E
PROJECTION

DECIMALS .XX ±0.3 .XXX ±0.10
ANGLES ± 2°

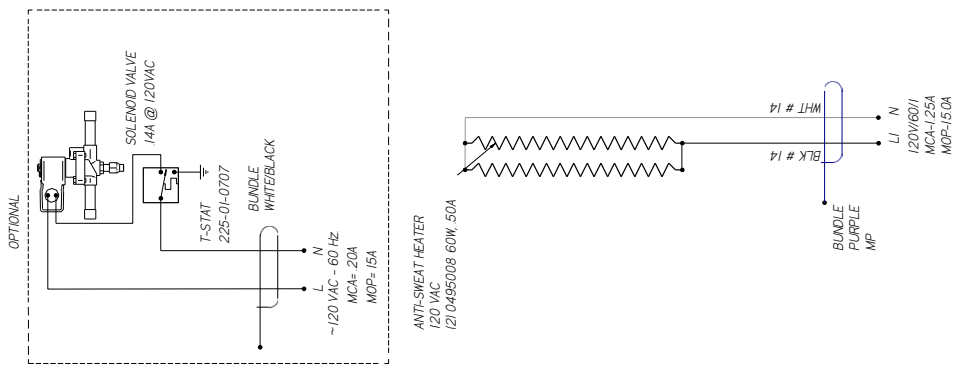
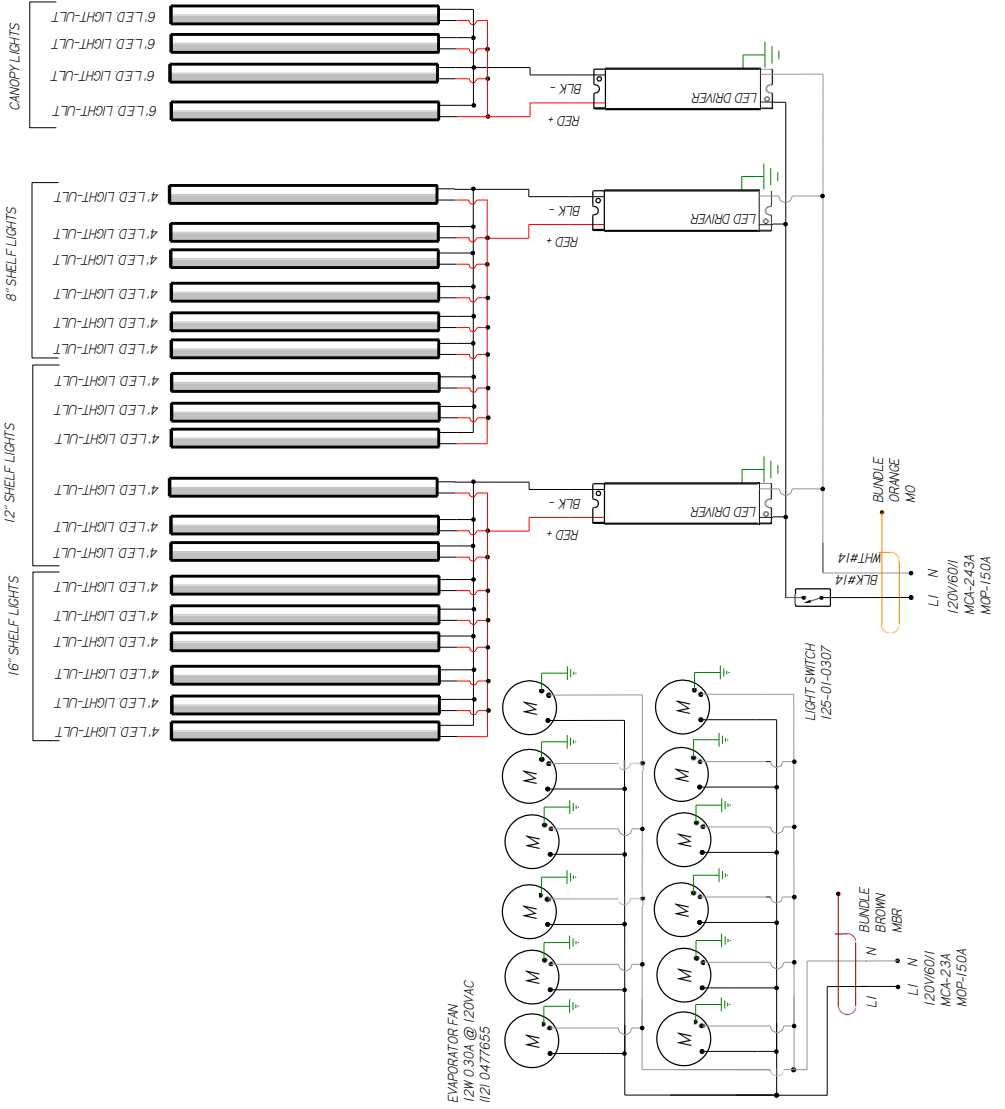
2H14403 | C

NOTES:
CASE MUST BE GROUNDED

CIRCUIT #

REV	DATE	DESCRIPTION	REV BY	CHKD BY	APPR BY
B	2-23-21	ADDED 3RD LED DRIVER	CB	CB	CB
C	3-29	REVISED LIGHT LAYOUT	CB	CB	CB

REV	DATE	DESCRIPTION	REV BY	CHKD BY	APPR BY
B	2-23-21	ADDED 3RD LED DRIVER	CB	CB	CB
C	3-29	REVISED LIGHT LAYOUT	CB	CB	CB



HUSSMANN
DIAGRAM-TY4-5X12C
-R

FACTORY 14GA WIRE
 _FACTORY 10GA WIRE
 _FIELD WIRE
 _DO NOT SCALE DRAWING
 SHEET 1 OF 1

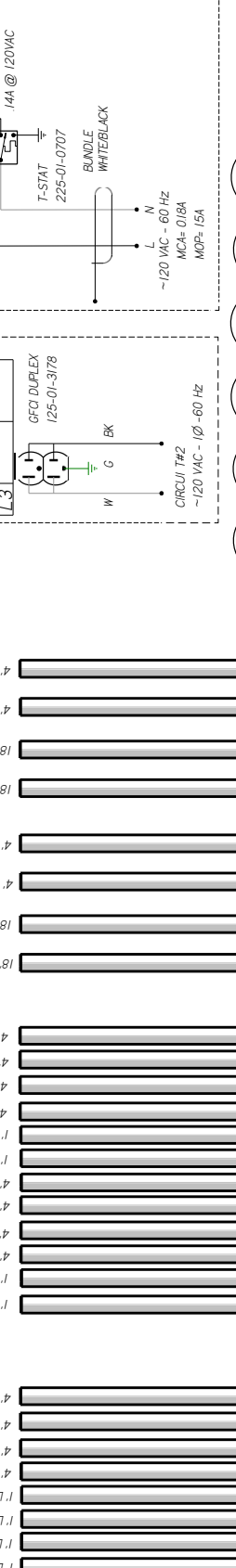
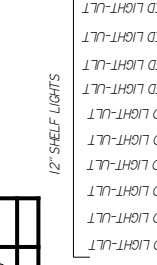
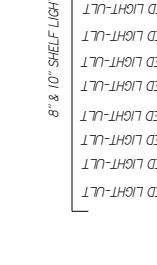
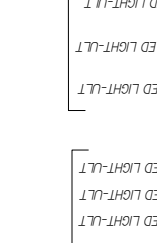
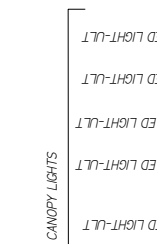
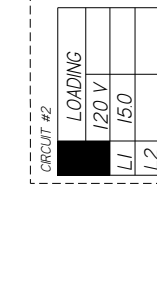
UL COLOR CODES / ABBREVIATIONS
 RED = RD
 BLACK = BK
 BLUE = BL
 YELLOW = YL
 GRAY = GR
 WHITE = WT
 GREEN = GN
 BROWN = BN
 ORANGE = OR
 PURPLE = PR
 VIOLET = VT

3142085
 1/21

- 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

REV	EN	DATE	DESCRIPTION	REV BY	CHK BY	APPR BY
A	ECN-CAP-0007285	20170406	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-COD-001543	20200814	ADDED DRIVER FOR LEAD CANOPY LIGHTS	CB	CB	CB
C	ECN-COD-004499	20210813	REMOVED LED LIGHTS	CB	CB	CB
D	ECN-COD-005286	20220427	NEW LIGHTS	CB	CB	CB

LOADING	120V	150
L1		
L2		
L3		



CIRCUIT #1	LOADING	120V	150
L1			
L2			
L3			



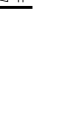
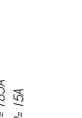
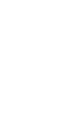
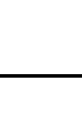
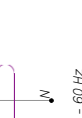
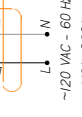
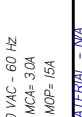
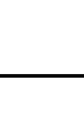
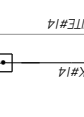
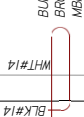
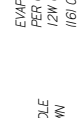
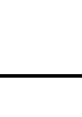
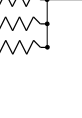
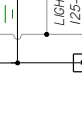
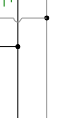
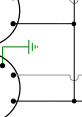
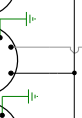
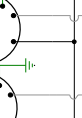
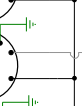
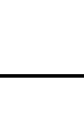
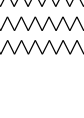
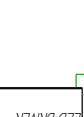
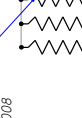
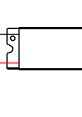
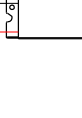
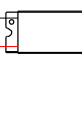
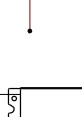
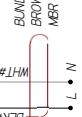
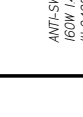
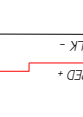
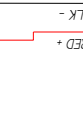
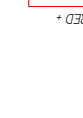
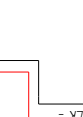
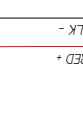
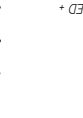
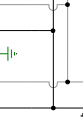
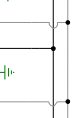
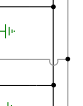
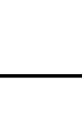
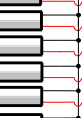
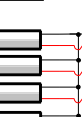
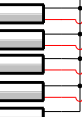
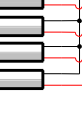
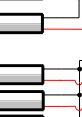
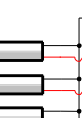
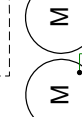
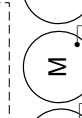
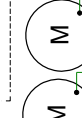
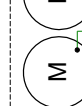
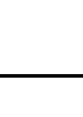
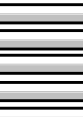
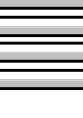
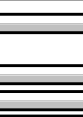
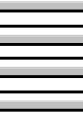
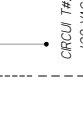
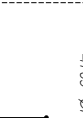
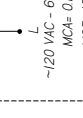
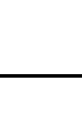
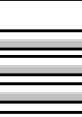
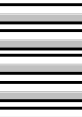
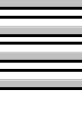
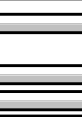
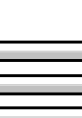
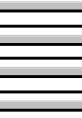
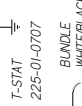
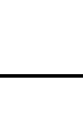
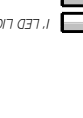
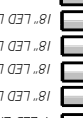
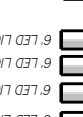
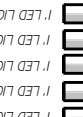
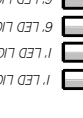
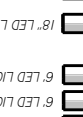
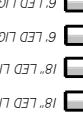
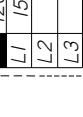
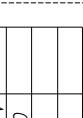
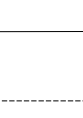
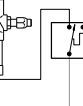
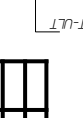
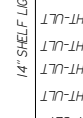
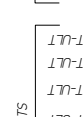
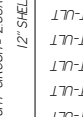
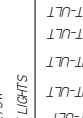
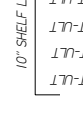
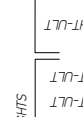
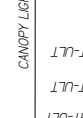
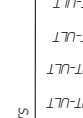
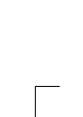
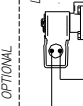
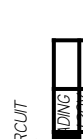
HUSSMANN
DIAGRAM-1Y4EC-
5X1 31-R W/8",10",12" SHELVES
3030997 | **D**

MATERIAL - NA
 DATE DRAWN - 4-6-17
 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
 ANGLES ± 2°
 PROJECTION
 ECN-CAP-0007285
 REF - SHEET 1 OF 3
 THIRD

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

REV	EN	DATE	REVISION HISTORY	REV BY	CHK BY	APP BY
A	ECN-CAP-001913	20080313	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-COD-001543	20020914	ADDED DRIVER FOR LEAD CANOPY LIGHTS	CB	CB	CB
C	ECN-COD-0015281	20220427	NEW LIGHTS	CB	CB	CB

LOADING	120 V	150	180
L1			
L2			
L3			



HUSSMANN
DIAGRAM-1Y4EC-
5XI 71-R

MATERIAL - IVA
 DATE DRAWN - 3-13-18
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY

ECN-CAP-001913 REF -
 ECN-COD-001543 SHEET 1 OF 1
 ECN-COD-0015281 SHEET 1 OF 1

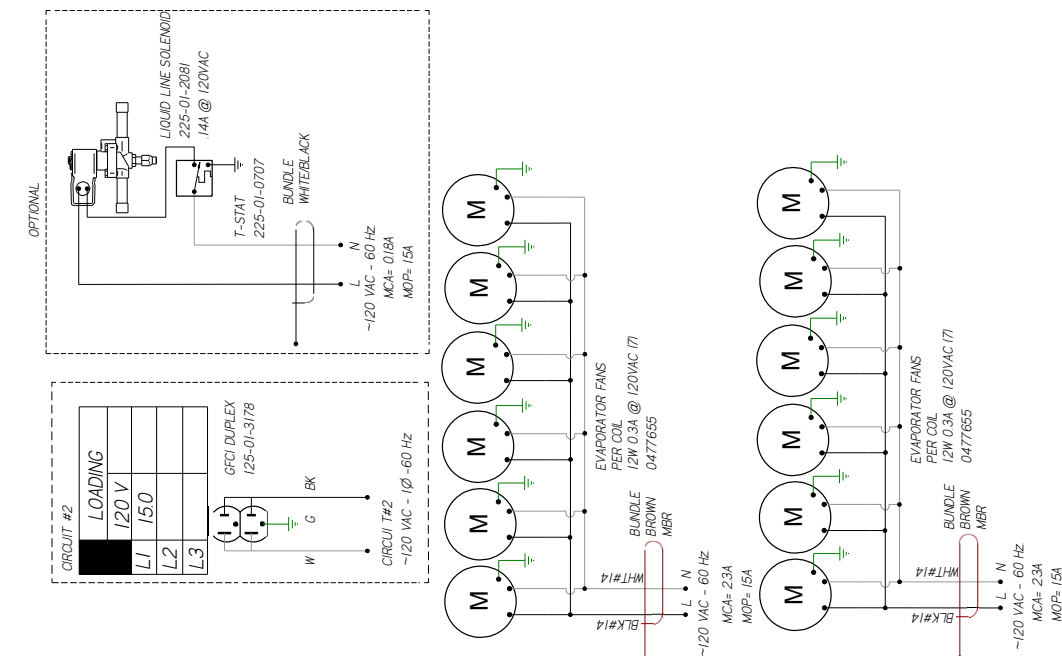
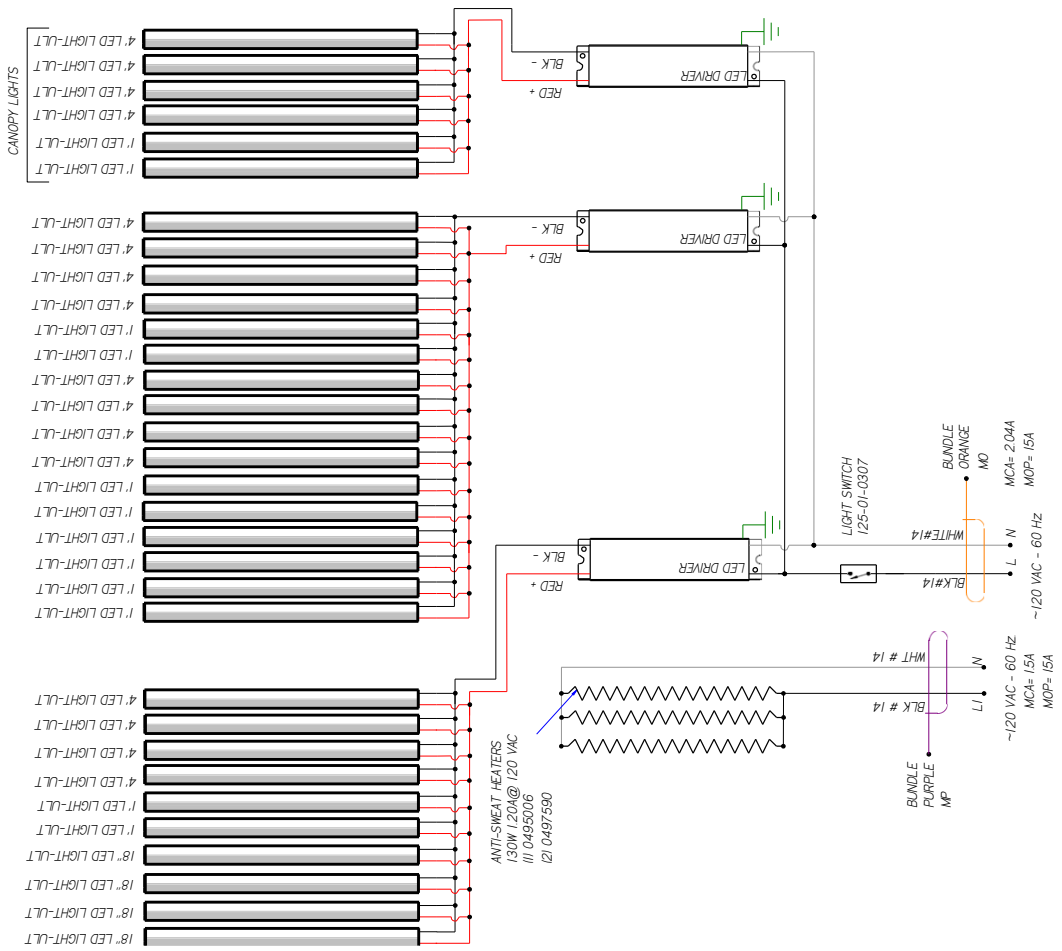
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS .XX ± 0.3 .XXX
 DECIMALS .XX ± 0.3 .XXX
 ANGLES ± 2°
 PROJECTION

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

REVISION HISTORY		REV	ECN	DATE	DESCRIPTION	REV BY	CHKD BY	APPR BY
A	830665	2014/05/08	NEW DIAGRAM	CB	CB	CB	CB	CB
B	EDM-CDD-0015248	2022/04/27	NEW LIGHTS	CB	CB	CB	CB	CB

CIRCUIT #1	LOADING	120V	1758W

LIGHT CIRCUIT= 163A 1758W



HUSSMANN
DIAGRAM-
TY4-5X131-R

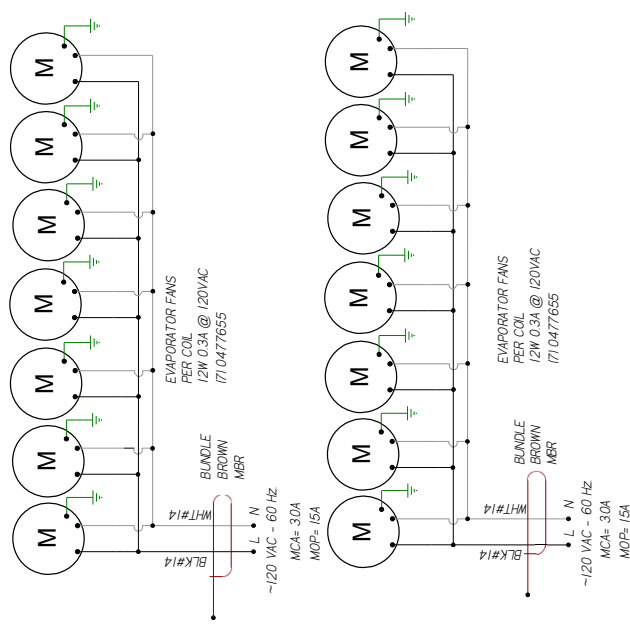
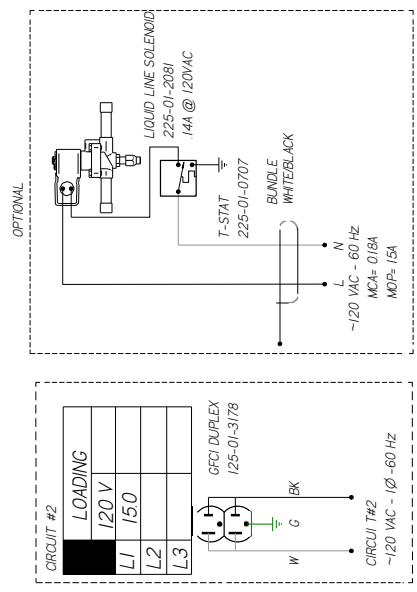
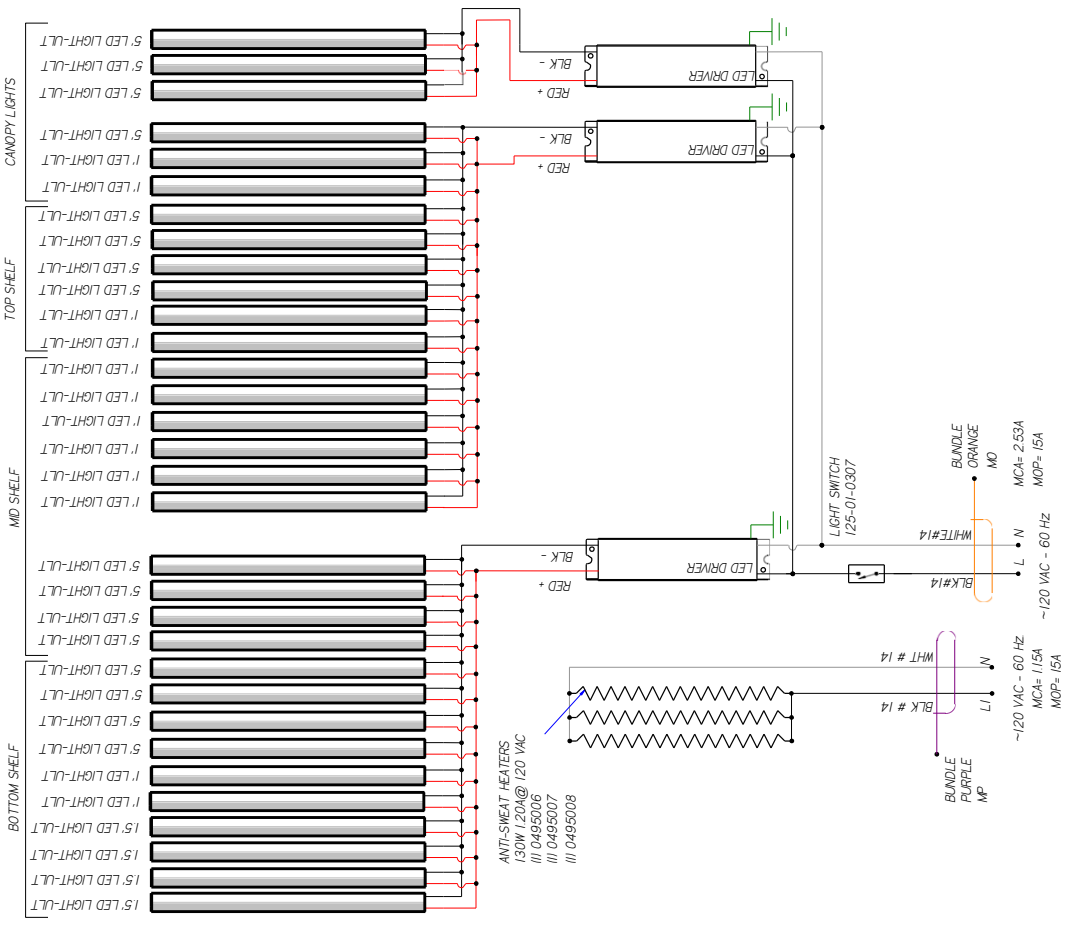
MATERIAL - N/A
 DATE DRAWN - 5-8-14
 DRAWN BY - CRAIG BOOREY
 ECN# - 830665 REF - NEW
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS XX ± 0.0, XXX
 DECIMALS .XX ± 0.0, .XXX
 ANGLES ± 2'
 PROJECTION

NOTES:
 CASE MUST BE GROUNDED

REVISION HISTORY		REV	ECN	DATE	DESCRIPTION	APP'D BY	CHK'D BY	DATE
A	765011	2019/09/24	NEW DIAGRAM	CB	CB	CB	CB	CB
B	LEGN-000-2018Z288	2022/04/27	NEW LIGHTS	CB	CB	CB	CB	CB

CIRCUIT #1	LOADING	120V	150V
	L1	150	
	L2		
	L3		

LIGHT CIRCUIT= 2024, 218,21W



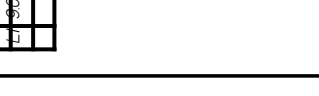
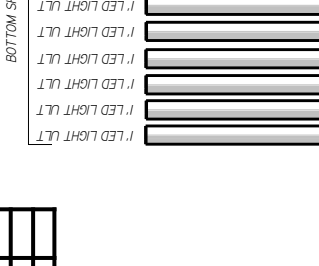
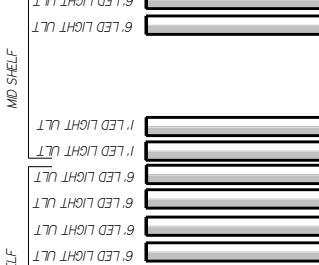
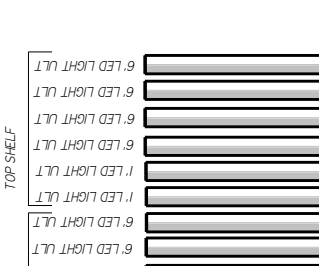
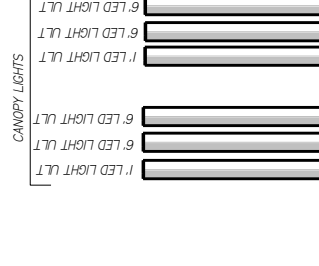
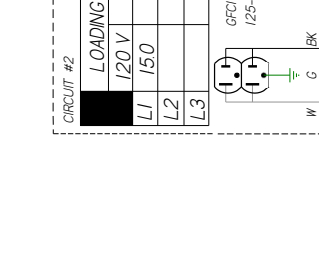
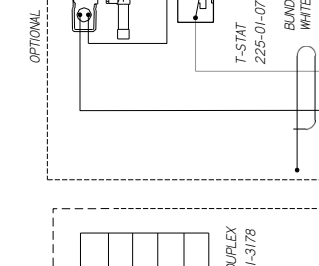
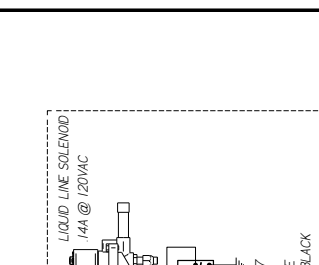
MATERIAL - NA
 DATE DRAWN - 9/24/13
 DRAWN BY - CRAIG BOOREY
 REVIEWED BY - CRAIG BOOREY
 APPROVED BY - CRAIG BOOREY
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS XX ± 0.3, XXX
 DECIMALS .XX ± 0.01
 ANGLES ± 2°
 PROJECTION

HUSSMANN
 DIAGRAM -
 TY4-5X151-
 R
 IH92380 | B

NOTES:
 CASE MUST BE GROUNDED

REVISION HISTORY			
REV	EN	DATE	DESCRIPTION
A	ECN-CAP-0002200	2016/08/03	RELEASED TO PRODUCTION
B	ECN-COD-0004489	2020/09/04	ADDED DRIVER & ULTRALIGHTS
C	ECN-COD-0015282	2022/04/28	NEW LIGHTS

LOADING	
CIRCUIT #2	LOADING
L1	150
L2	
L3	



ANTI-SWEAT HEATERS
150W 1.39A @ 120 VAC
III 0497590
III 0495007
III 0495008

LIGHT SWITCH
125-01-0307

EVAPORATOR FANS
PER COIL
12W 0.3A @ 120VAC
I161 0477655

MOTORS

MOTORS

MOTORS

MOTORS

MOTORS

OPTIONAL

LIQUID LINE SOLENOID
144 @ 120VAC

GFCI DUPLEX
125-01-3178

LED DRIVER

LED DRIVER

LED DRIVER

LED DRIVER

LED DRIVER

WHT # 14

BLK # 14

WHT # 14

BLK # 14

WHT # 14

BLK # 14

WHT # 14

BLK # 14

WHT # 14

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WHT # 14

BLK # 14

WHT # 14

BLK # 14

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

MATERIAL - NA

DATE DRAWN - 6-3-16

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 ± 0.3, XXX
± 0.0

ANGLES ± 2°



ANG E
PROJECTION

3008164 | C

HUSSMANN
DIAGRAM-IY4-
5X171-R

ECN-CAP-0002200
REF -
SHEET 1 OF 1

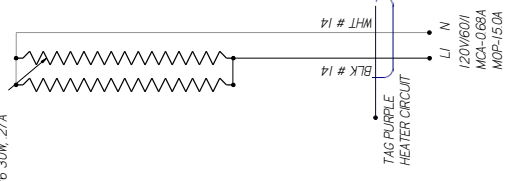
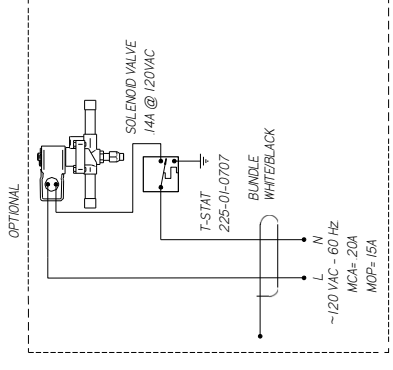
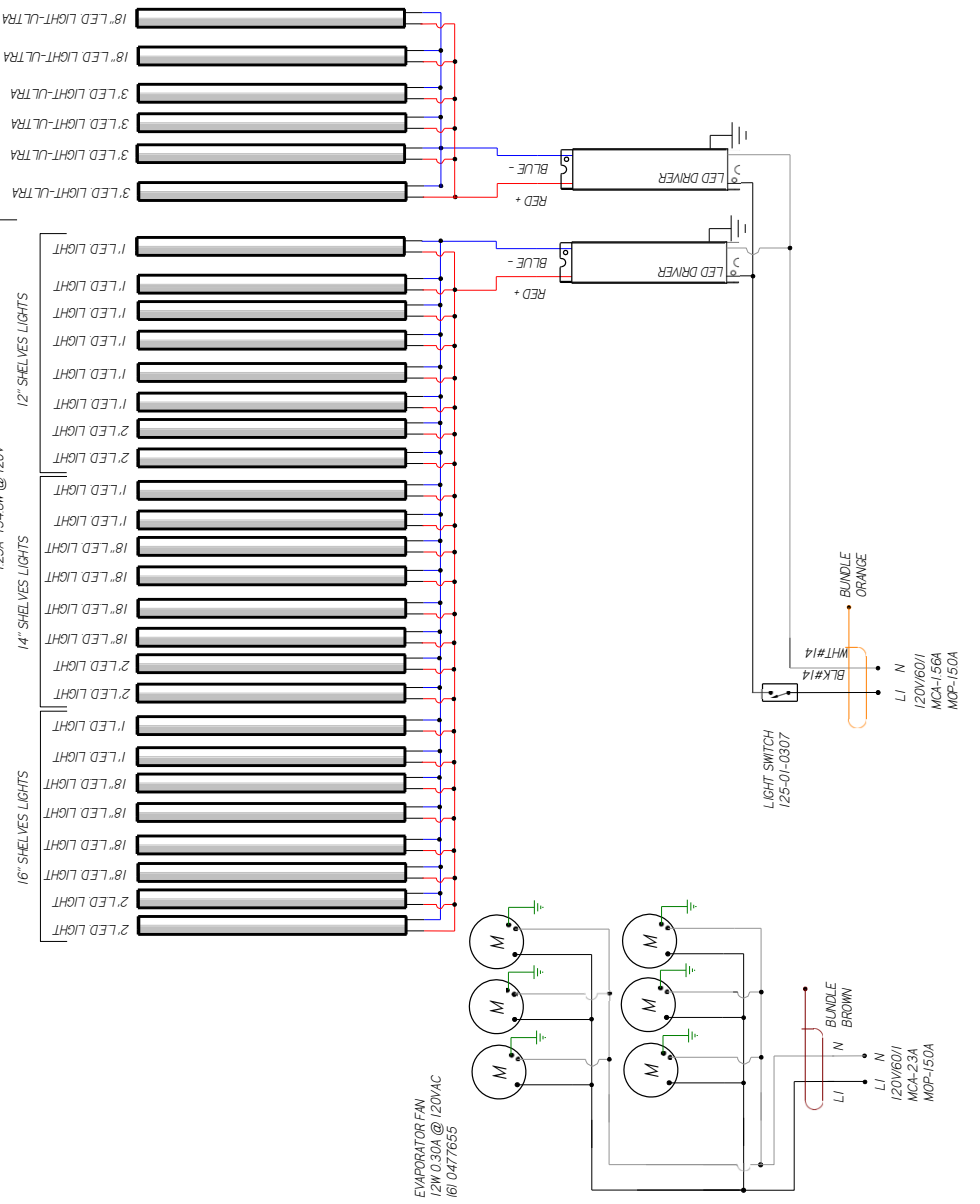
CIRCUIT #

REV	DATE	DESCRIPTION	REV BY	CHKD BY	APPR BY
A	9-19-19	RELEASED TO PRODUCTION	CB	CB	CB

REVISION HISTORY					
REV	DATE	DESCRIPTION	REV BY	CHKD BY	APPR BY
A	9-19-19	RELEASED TO PRODUCTION	CB	CB	CB

CANOPY LIGHTS ES-CANOPY

LIGHT CIRCUIT
1.25A 134.8W @ 120V



UL COLOR CODES / ABBREVIATIONS

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

FACTORY 14GA WIRE
FACTORY 10GA WIRE
FIELD WIRE

DO NOT SCALE DRAWING
SHEET 1 OF 1

HUSSMANN
DIAGRAM-
TY4ECRC-6X8I-R
3107535
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	ECN	DATE	REVISION DESCRIPTION
A	ECN-CAP-0021402	4-30-20	RELEASED TO PRODUCTION

REV	BY	CHKD	BY	APPR	BY

REV	BY	CHKD	BY	APPR	BY

REV	BY	CHKD	BY	APPR	BY

REV	BY	CHKD	BY	APPR	BY

REV	BY	CHKD	BY	APPR	BY

REV	BY	CHKD	BY	APPR	BY

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REV	BY	CHKD	BY	APPR	BY

REV	BY	CHKD	BY	APPR	BY

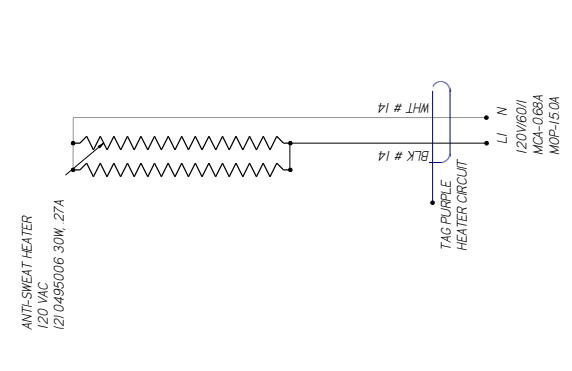
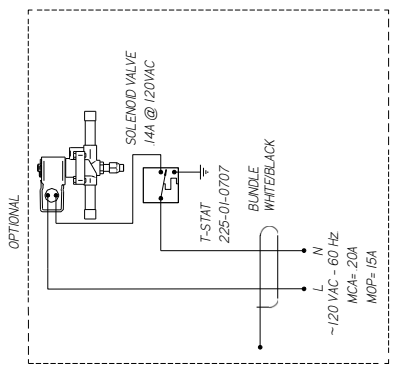
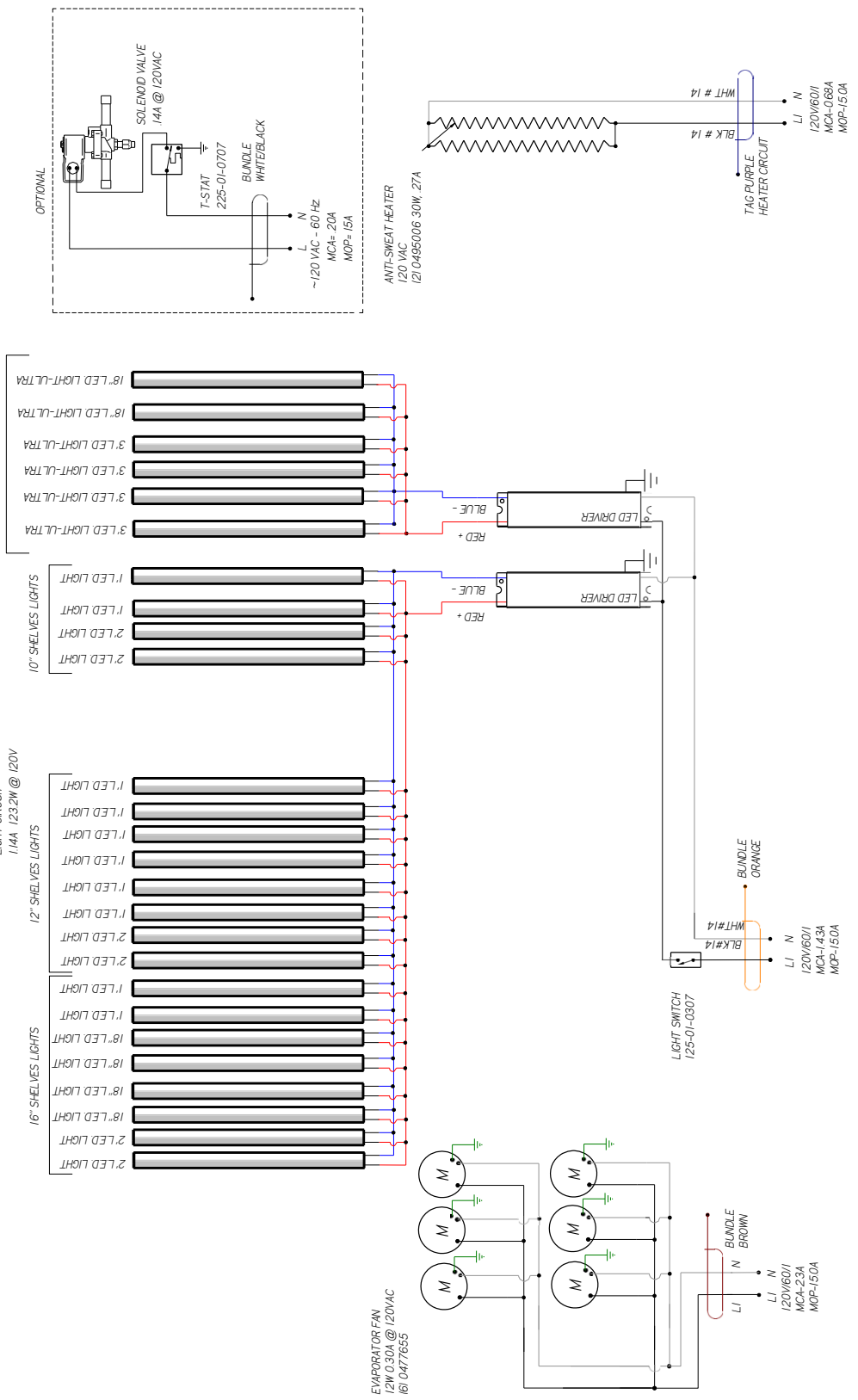
REV	BY	CHKD	BY	APPR	BY

REV	BY	CHKD	BY	APPR	BY

REV	BY	CHKD	BY	APPR	BY

REV	BY	CHKD	BY	APPR	BY

CANOPY LIGHTS ES-CANOPY



HUSSMANN
DIAGRAM-
TY4ECRC- 6X81-R
W10",12" &
16" ES-CANOPY

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

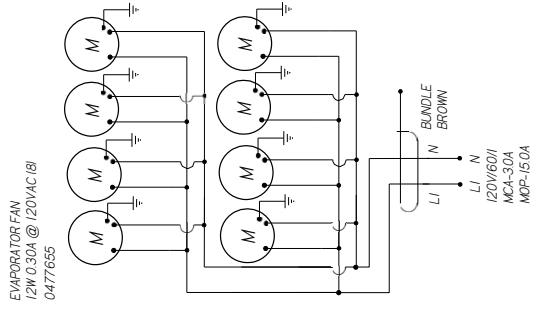
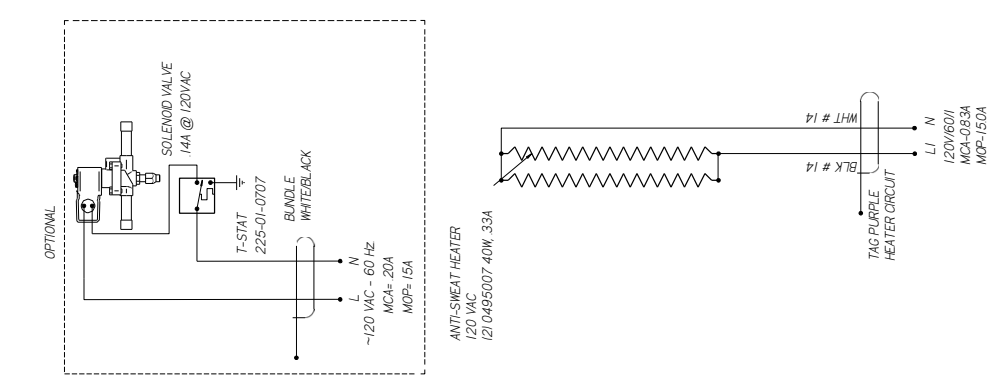
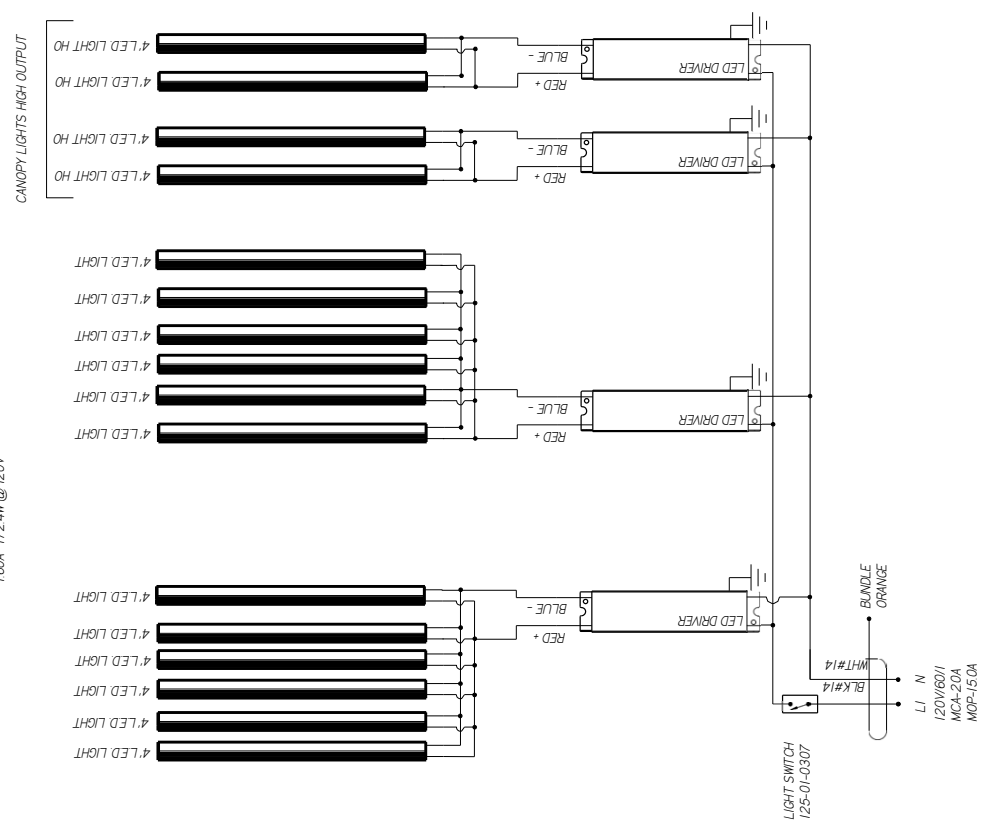
UL COLOR CODES / ABBREVIATIONS
RED = RD
BLACK = BK
BLUE = BL
YELLOW = YL
GRAY = GR
WHITE = WT
GREEN = GN
BROWN = BN
ORANGE = OR
OR VIOLET = VT

- 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		
	11	47	

REV	EN	DATE	DESCRIPTION	REV BY	CHKD BY	APPR BY
1		2018/05/25	RELEASED TO PRODUCTION	CB	CB	CB

LIGHT CIRCUIT
160A 1724W @ 120V

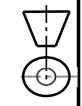


HUSSMANN
DIAGRAM-
TY4ECRC- 6X8C-R

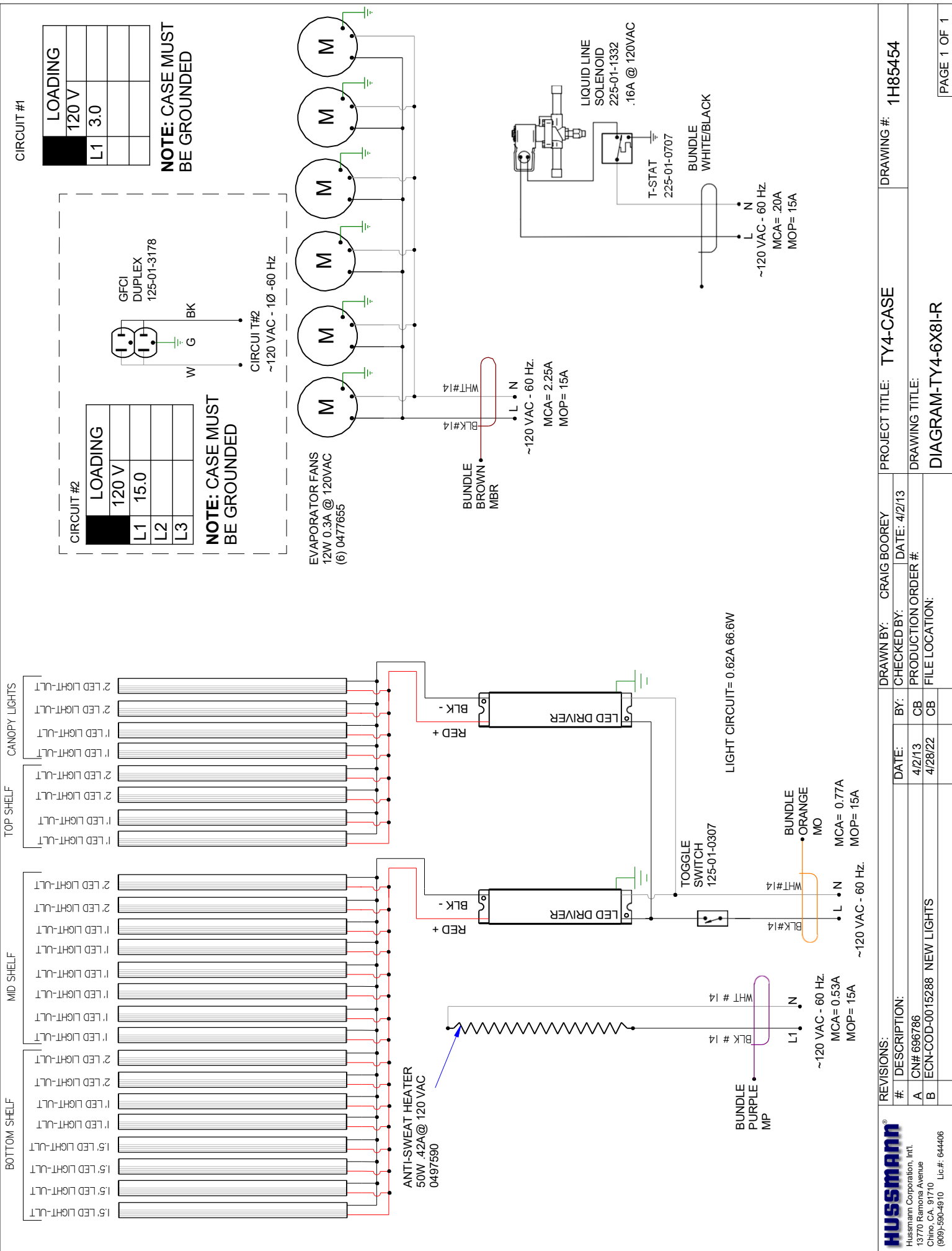
MATERIAL - NA
DATE DRAWN - 5-25-18
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX ±0.3 .XXX
±0.0

ECN-CAP-0012696
REF -
SHEET 1 OF 1
DIMENSIONS ARE IN INCHES
THIRD ANGLE PROJECTION

3064025 | A



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



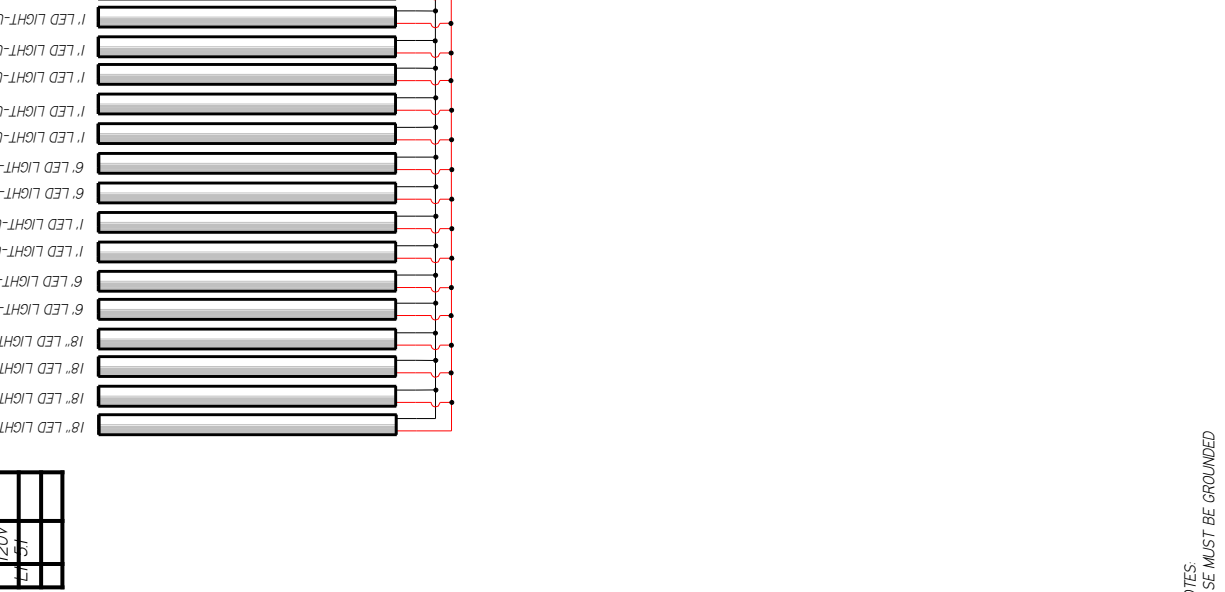
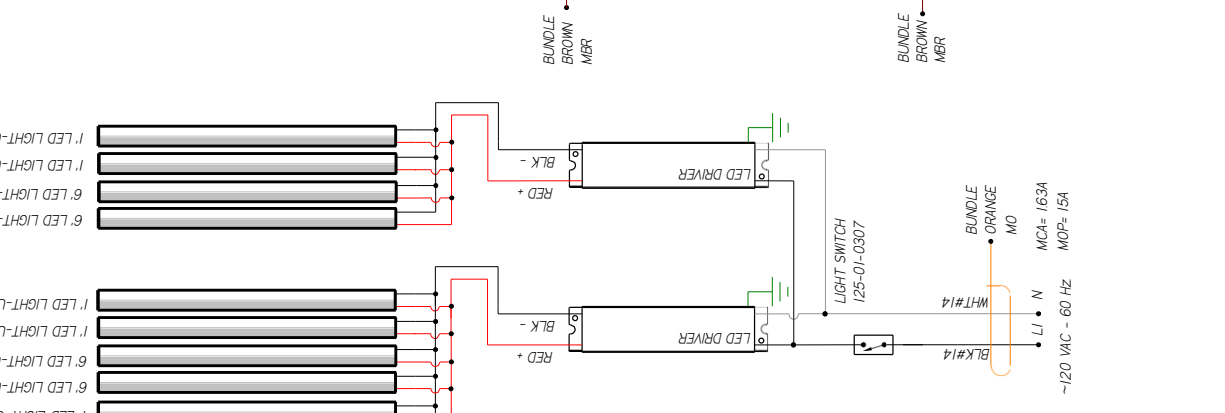
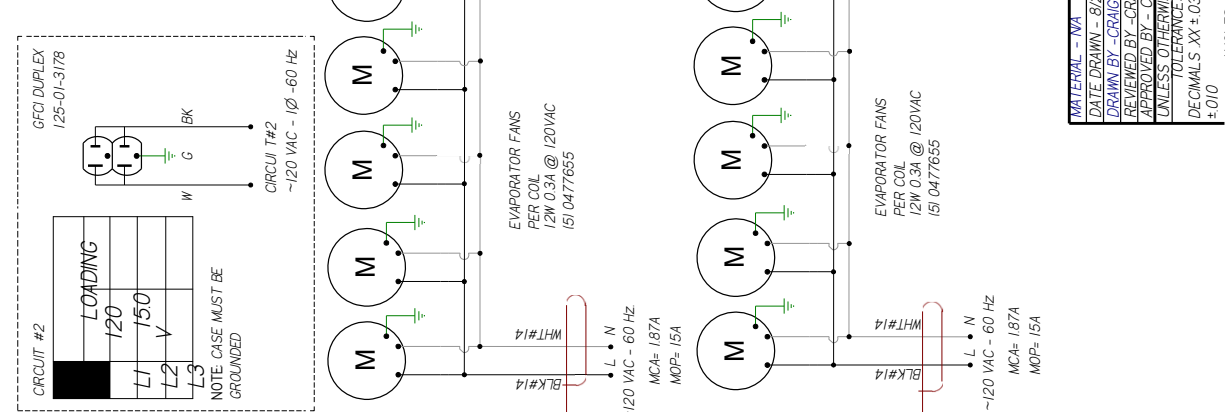
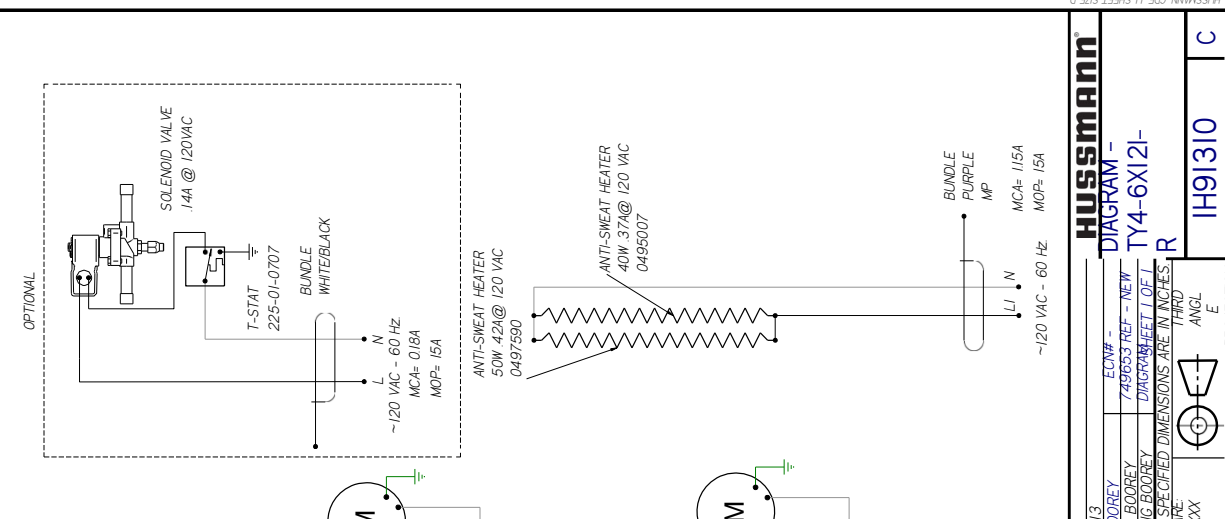
REVISIONS: # DESCRIPTION: A CN# 696786 B ECN-COD-0015288 NEW LIGHTS	DRAWN BY: CRAIG BOOREY CHECKED BY:	PROJECT TITLE: TY4-CASE DRAWING #: 1H85454
	DATE: 4/2/13 4/2/13 4/28/22	DATE: 4/2/13 PRODUCTION ORDER #: FILE LOCATION:

REVISION HISTORY		REV	DATE	DESCRIPTION	BY	CHKD BY	APPR BY
B	248653	2013/06/02	MATCH FAN REVISION	CY			CY
C	ECN#00-0162683	2022/05/02	NEW LIGHTS	CB			CB

REV	DATE	DESCRIPTION	BY	CHKD BY	APPR BY
B	248653	2013/06/02	MATCH FAN REVISION	CY	
C	ECN#00-0162683	2022/05/02	NEW LIGHTS	CB	

CIRCUIT #1	LOADING	120V	150V
1	120		
2	150		
3			

CIRCUIT #2	LOADING	120V	150V
1	120		
2	150		
3			



MATERIAL - NA

DATE DRAWN - 8/27/13

DRAWN BY - CRAIG BOOREY

REVIEWED BY - CRAIG BOOREY

APPROVED BY - CRAIG BOOREY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

THIRD ANGL

DECIMALS .XX ±0.3 .XXX ±0.0

ANGLES ± 2°

PROJECTION

HUSSMANN

DIAGRAM -

TY4-6X12-

R

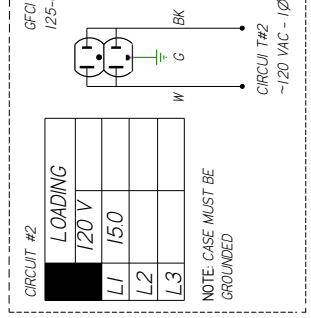
IH91310

C

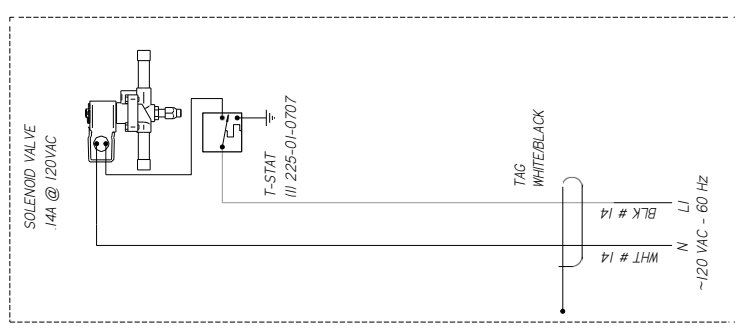
NOTES:
CASE MUST BE GROUNDED

REVISION HISTORY		REV	BY	DATE	DESCRIPTION	CHKD BY	APPR BY
A	ECN-CAP-0009957	01	CB	2017/01/17	RELEASED TO PRODUCTION	CB	CB
B	ECN-CAP-0015289	02	CB	2022/05/02	NEW LIGHTS	CB	CB

CIRCUIT #2	LOADING
L1	150
L2	
L3	



CIRCUIT #1	LOADING
L1	150
L2	
L3	



HUSSMANN
DIAGRAM-
TY4ECRC- 6X121-R

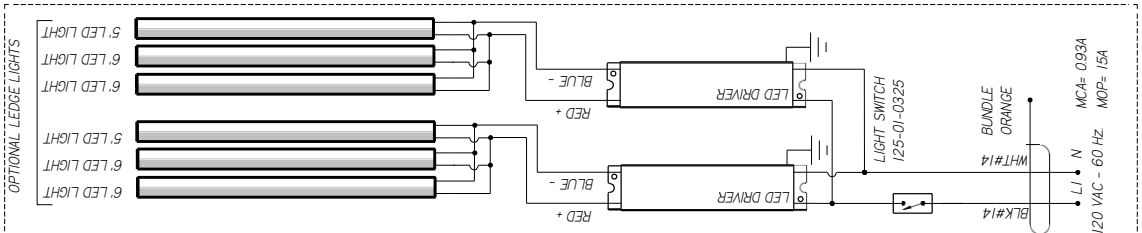
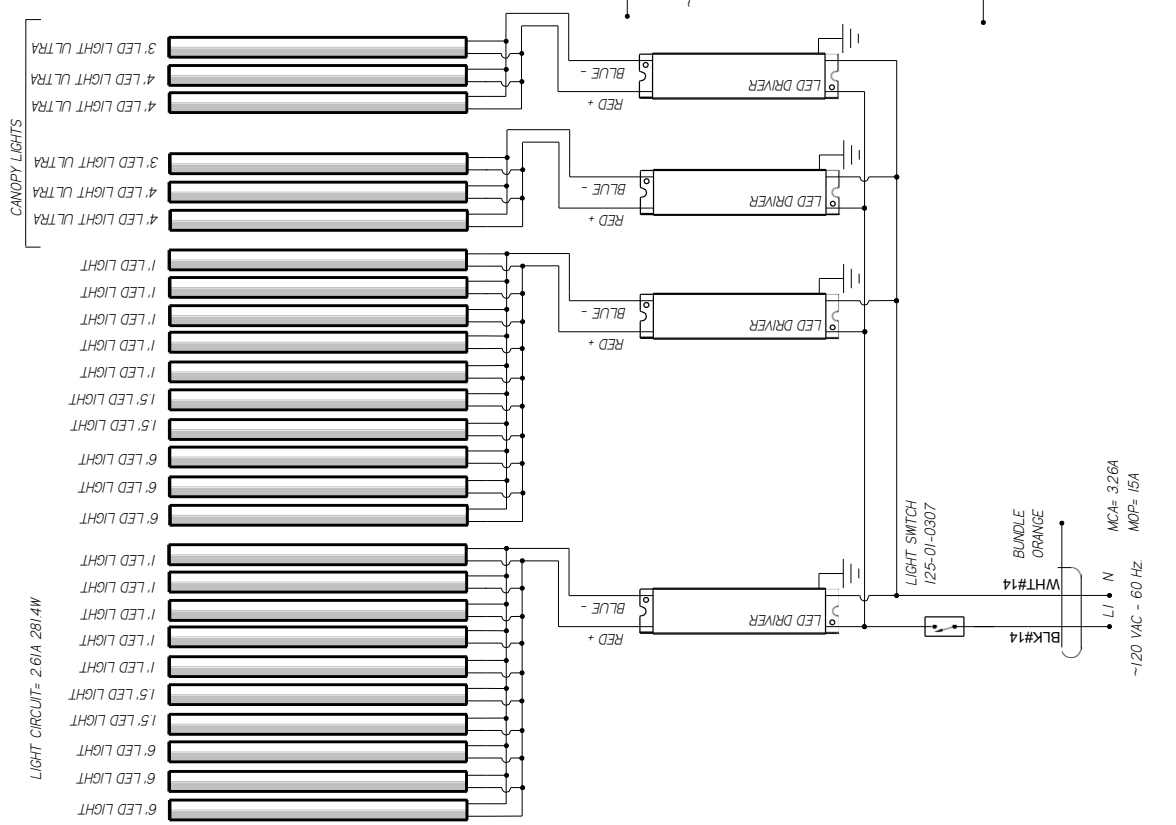
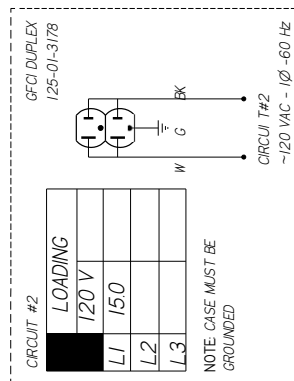
MATERIAL - N/A
DATE DRAWN - 10-17-17
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
SHEET NO. 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
THIRD ANGLE PROJECTION
DECIMALS .XX ±0.3, .XXX ±0.10
ANGLES ± 2°

ECN-CAP-0009957
REF-
SHEET NO. 1
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
THIRD ANGLE PROJECTION
DECIMALS .XX ±0.3, .XXX ±0.10
ANGLES ± 2°

3047242 | B

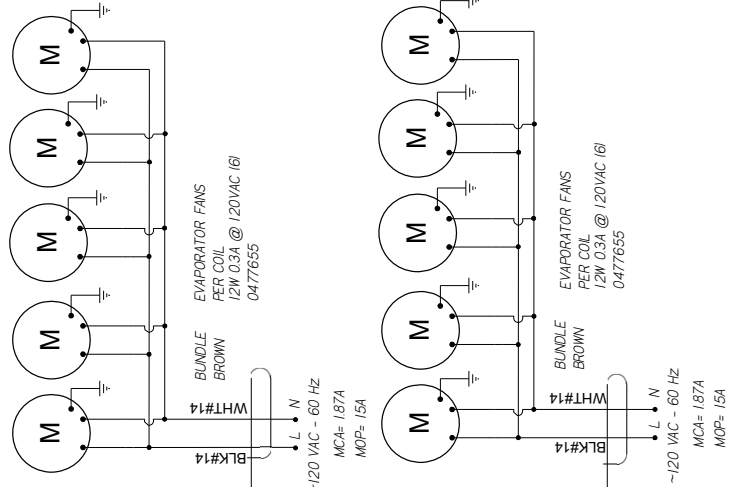
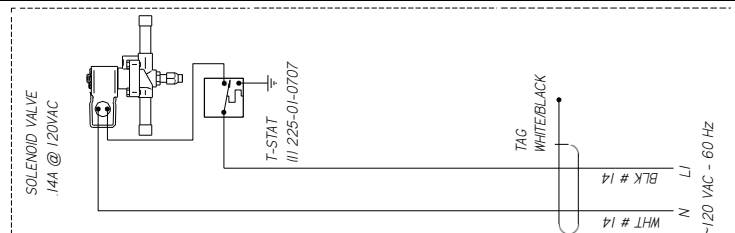
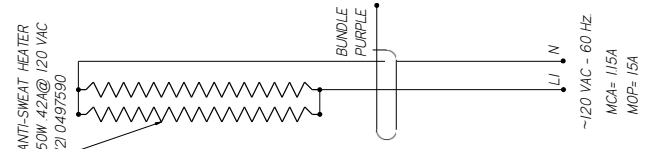
NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

REVISION HISTORY		REV	BY	DATE	DESCRIPTION	REV	BY	DATE	DESCRIPTION
A	LED-CAP-001849	1	CB	2018/01/3	RELEASED TO PRODUCTION	1	CB	2018/01/3	RELEASED TO PRODUCTION
B	LED-CAP-001843	2	CB	2020/08/14	REVISED TO UL TR4 CANOPY LIGHTS	2	CB	2020/08/14	REVISED TO UL TR4 CANOPY LIGHTS



CIRCUIT #1

LOADING
120V
150



HUSSMANN

DIAGRAM-
TY4CRC- 6X121-R
10"12"14" SHELVES

3080512 | B

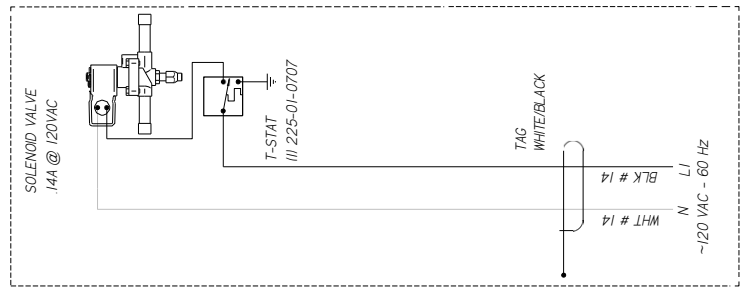
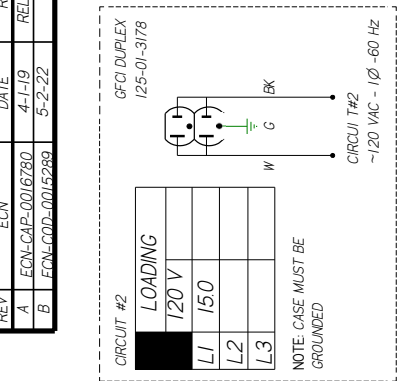
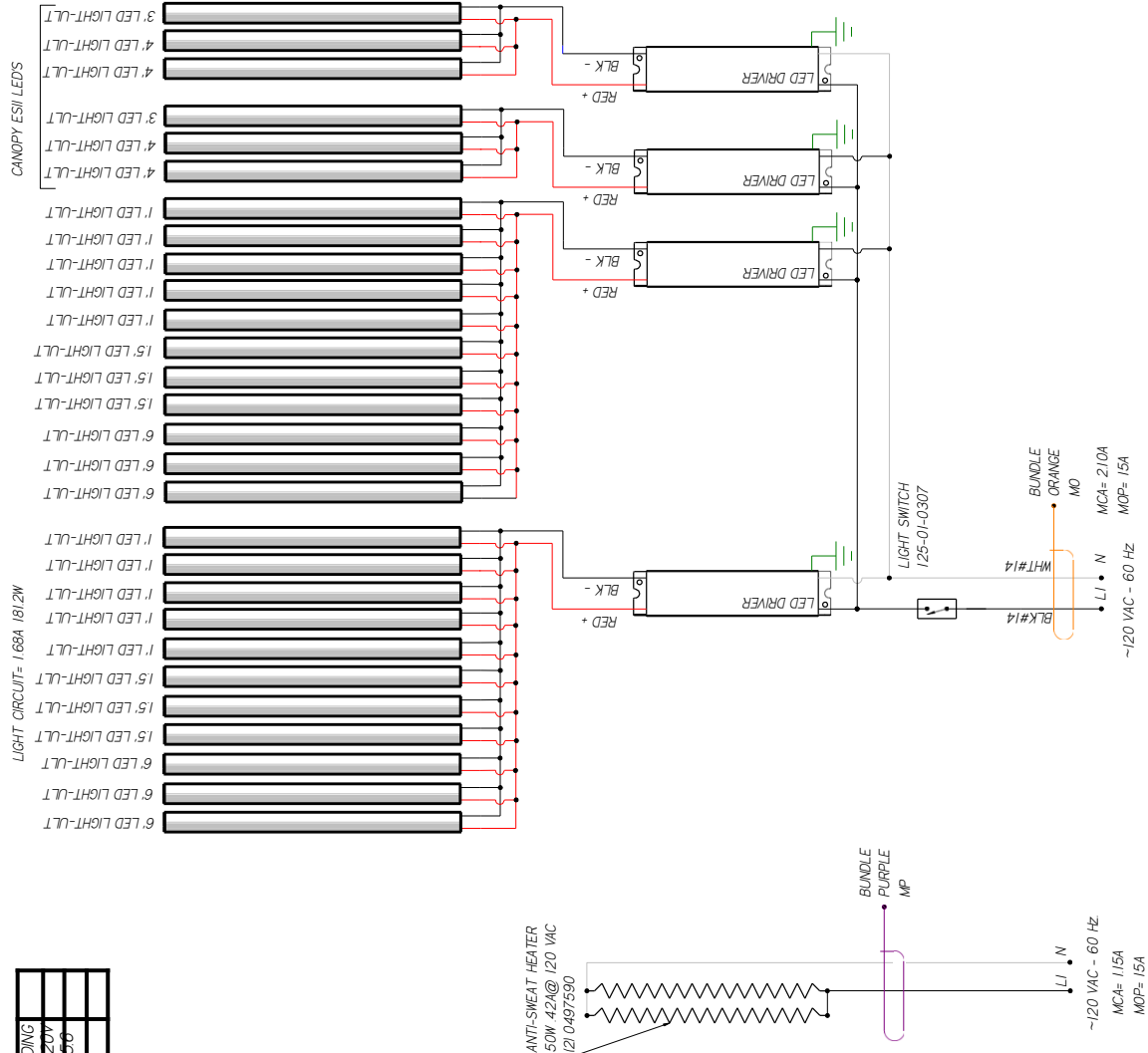
MATERIAL - NA
DATE DRAWN - 11-13-18
DRAWN BY - CRAIG BOOREY
REVIEWED BY - CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS - XX ± 0.3, XXX ± 0.10
DECIMALS - XX ± 0.3, XXX ± 0.10

REF -
ECON-CAP-001846
SHEET 1 OF 1
THIRD ANGLE PROJECTION

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

CIRCUIT #1	LOADING	DATE	REVISION HISTORY
L1	120V	4-1-19	REVISED BY APPR BY
L2	150	5-2-22	RELEASED TO PRODUCTION
L3			NEW LIGHTS

REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0016780	4-1-19	RELEASED TO PRODUCTION	CB	CB	CB
B	FCN-000-0016288	5-2-22	NEW LIGHTS	CB	CB	CB



HUSSMANN

DIAGRAM-
TY4ECRC- 6X12-I-R,
12",14",16" SHELVES

3092240

UL COLOR CODES / ABBREVIATIONS

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

FACTORY 14GA WIRE

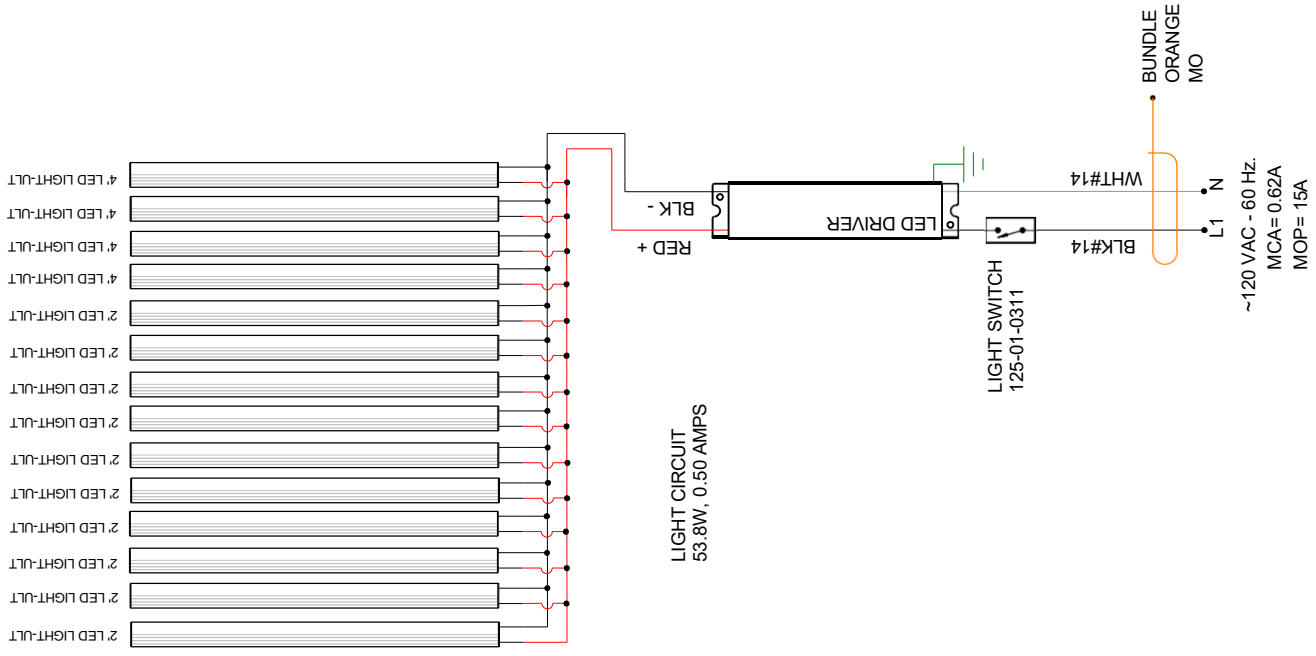
- FACTORY 10GA WIRE
- FIELD WIRE

DO NOT SCALE DRAWING

SHEET 1 OF 1

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

OPTIONAL LEDGE LIGHTS



CIRCUIT #2	LOADING
	120 V
L1	15.0
L2	
L3	

NOTE: CASE MUST BE GROUNDED

GFCI DUPLEX 125-01-3178

CIRCUIT T#2
~120 VAC - 1Ø -60 Hz

REVISIONS:	DESCRIPTION:	DATE:	BY:	CHECKED BY:	DRAWN BY:
A	CNF#696786	2/27/13	CB		CRAIG BOOREY
B	ECN-COD-0015284 ADDED OPTIONAL LEDGE LIGHTS	4/11/22	CB		

DATE: 2/27/13
 FILE LOCATION: CB
 PRODUCTION ORDER #236825

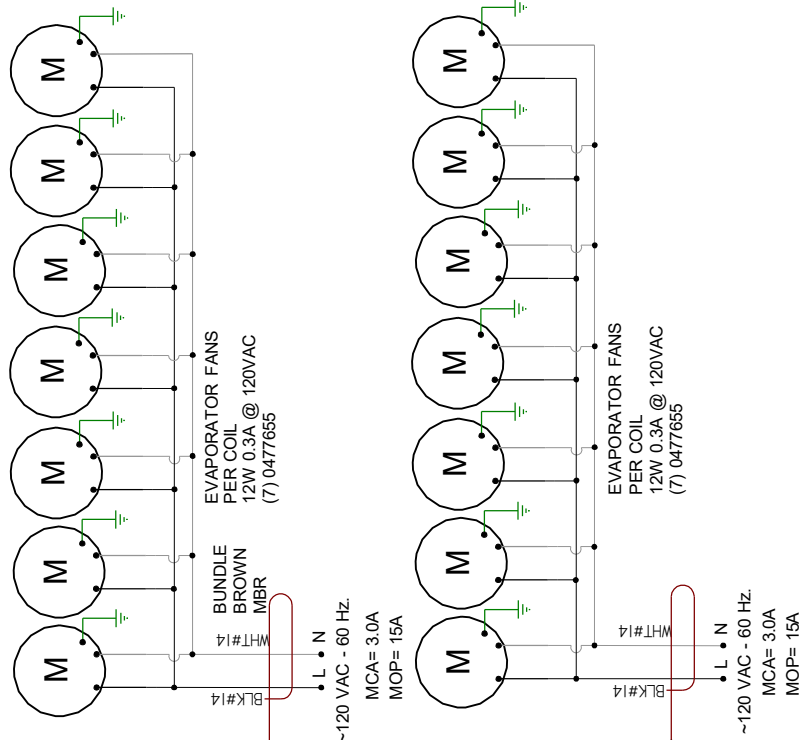
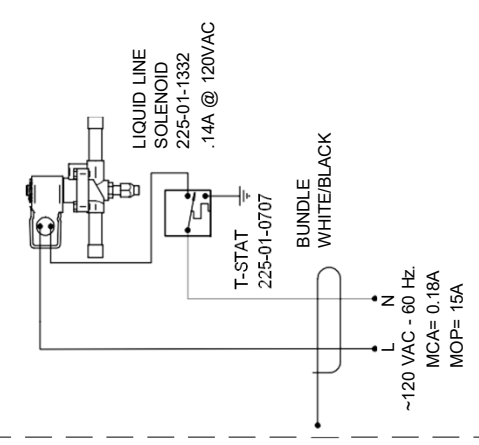
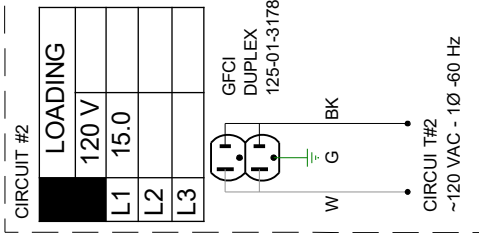
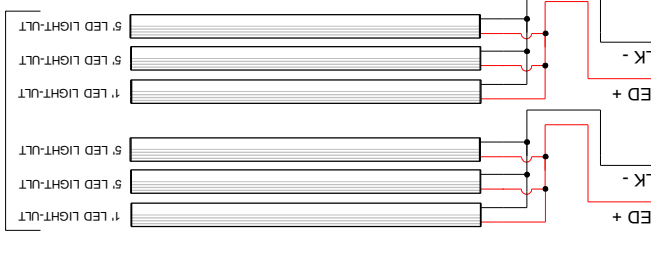
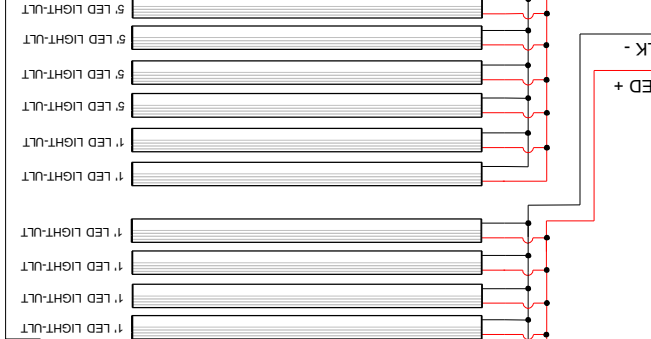
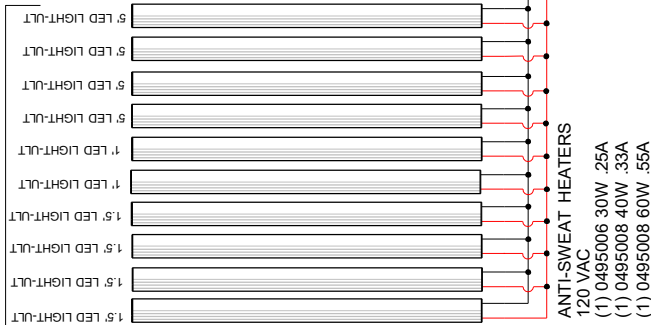
LIGHT CIRCUIT = 2.02A 218.2W

BOTTOM SHELF

MID SHELF

TOP SHELF

CANOPY LIGHTS



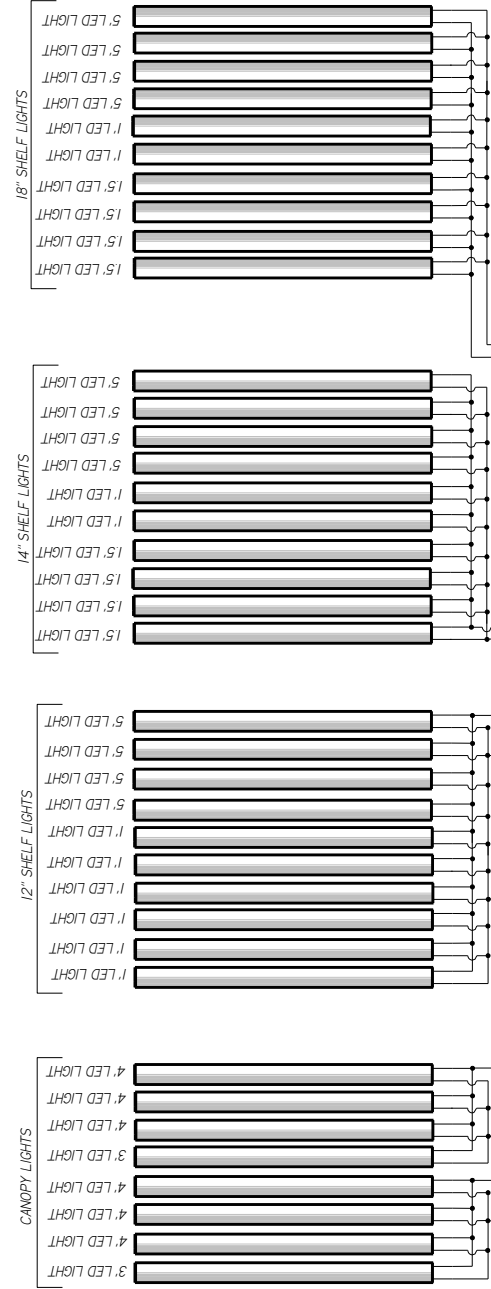
NOTE: CASE MUST BE GROUNDED

REVISIONS:

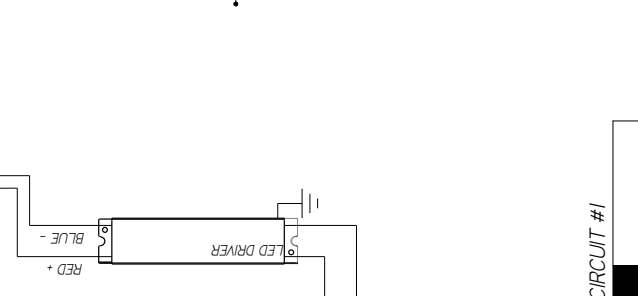
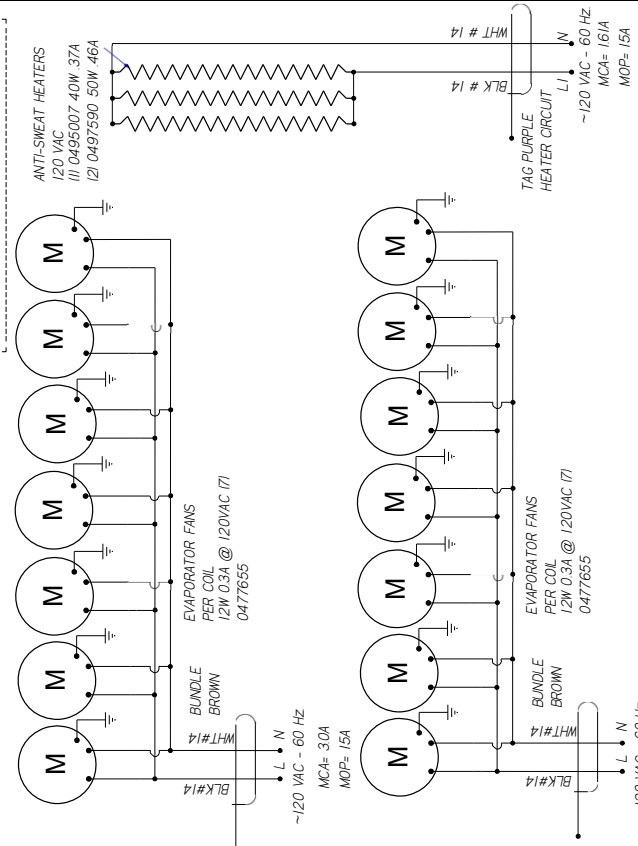
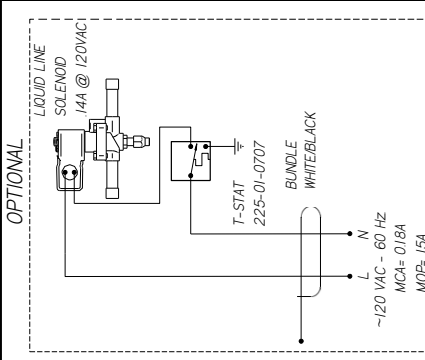
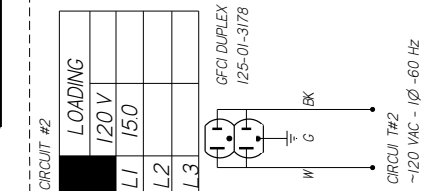
#	DESCRIPTION:	DATE:	BY:	CHECKED BY:	DATE:
A	CN#696786	3/25/13	CB		3/25/13
B	CN#980241 CHANGED ANTI-SWEAT HEATER	4/21/15	CB		PRODUCTION ORDER # : 632101
C	ECN-COD-0015289 NEW LIGHTS	5/3/22	CB		FILE LOCATION:

PROJECT TITLE: **TY4-CASE**
DRAWING TITLE: **DIAGRAM-TY4-6X161-R**

REVISION HISTORY		REV	BY	DATE	DESCRIPTION	REV	BY	DATE	DESCRIPTION
A	ECN-CAP-0009102	02		2017/04/27	RELEASED TO PRODUCTION	02		02	CB
B	ECN-CAP-0014600	02		2020/09/22	UPDATED LIGHT LAYOUT	02		02	CB



CIRCUIT #2	LOADING	120 V
L1	150	
L2		
L3		



CIRCUIT #1	LOADING	120 V
L1	87	
L2		
L3		

HUSSMANN
DIAGRAM-
TY4ECRC- 6X161R

MATERIAL - N/A
 DATE DRAWN - 9-7-17
 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
 ANGLES ±2°
 PROJECTION

3043948 | B

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

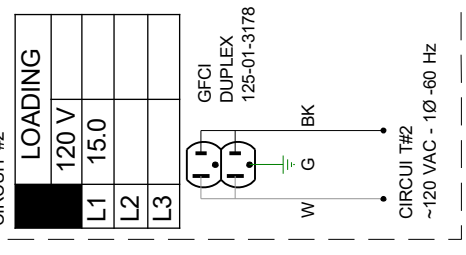
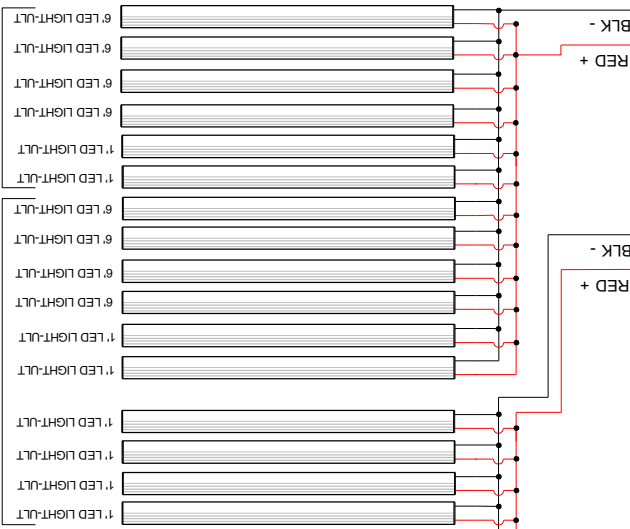
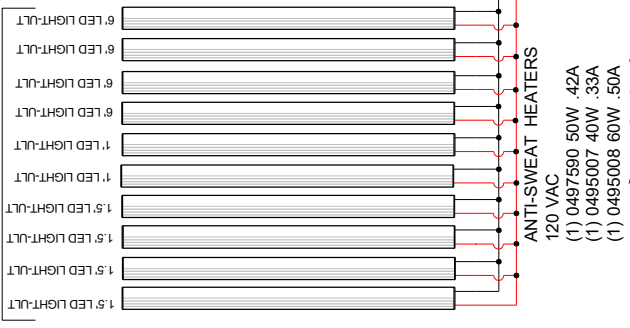
LIGHT CIRCUIT= 2.42A 261.4W

BOTTOM SHELF

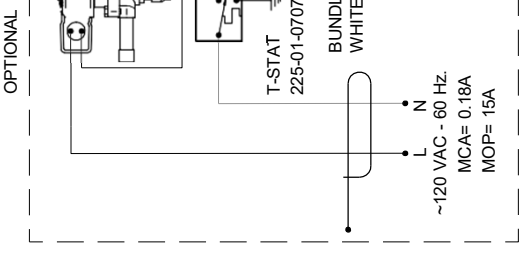
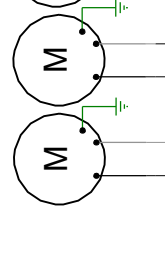
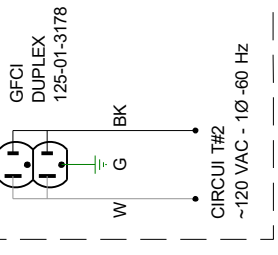
MID SHELF

TOP SHELF

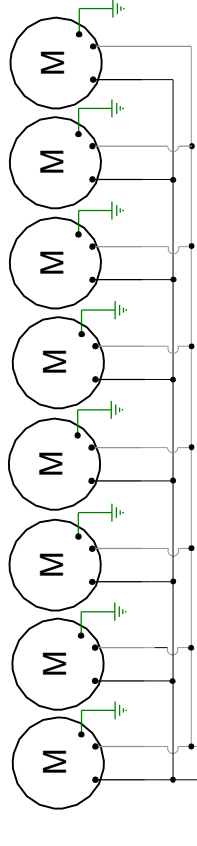
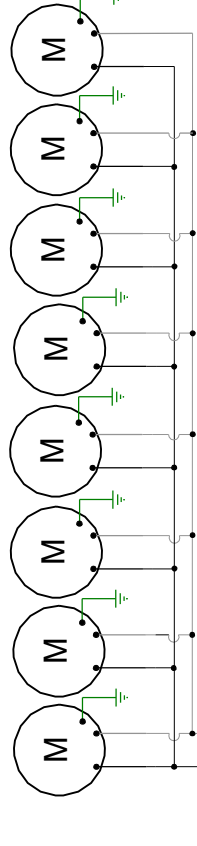
CANOPY LIGHTS



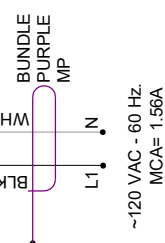
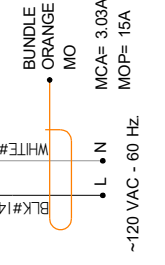
CIRCUIT #2	LOADING
	120 V
L1	15.0
L2	
L3	



OPTIONAL



CIRCUIT #1	LOADING
	120 V
L1	8.6



NOTE: CASE MUST BE GROUNDED

REVISONS:	DATE:	BY:	CHECKED BY:	DATE:	DRAWN BY:
#					CRAIG BOOREY
B	3/21/13	CB		8/7/12	
C	4/21/15	CB		920172	
D	5/3/22	CB			

PROJECT TITLE:	TY4-CASE
DRAWING TITLE:	DIAGRAM-TY4-6X18-R

User Information

Stocking

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

1. Minimize processing time to avoid damaging temperature rise to the product. Product should be at proper temperature.
2. Keep the air in and around the case area free of foreign gasses and fumes or food will rapidly deteriorate.
3. Maintain the display merchandisers temperature controls as outlined in the refrigerator section of this manual.
4. Do not place any product into these refrigerators until all controls have been adjusted and they are operating at the proper temperature. Allow merchandiser to operate a minimum of one (1) hour before stocking with any product.
5. When stocking, never allow the product to extend beyond the recommended load limit. Air discharge and return air fl ue must be unobstructed at all times to provide proper refrigeration.
6. Avoid the use of supplemental fl ood or spot lighting. Display light intensity has been designed for maximum visibility and product life at the factory. The use of higher output fl uorescent lamps (H.O. and V.H.O.), will shorten the shelf life of the product.

Case Cleaning

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

to degraded product appearance and significantly shortening product shelf life.

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

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

Plexiglass and Acrylic Care

Improper cleaning not only accelerates the cleaning cycle but also degrades the quality of this surface. Normal daily buffing motions can generated static cling attracting dust to the surface. Incorrect cleaning agents or cleaning cloths can cause micro scratching of the surface, causing the plastic to haze over time.

Cleaning

Hussmann recommends using a clean damp chamois, or a paper towel marked as “dust and abrasive free” with 210® Plastic Cleaner and Polish available by calling Sumner Labs at 1-800-542-8656. Hard, rough cloths or paper towels will scratch the acrylic and should not be used.

Troubleshooting

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.
	Inadequate air circulation.	Check if air sweep fans are functioning, check electrical connections.
	There is not enough heat provided in the airflow.	Check if air sweep heater is functioning, check electrical connections.
	There are glass gaps on the side of the case.	See glass adjustment section.
	Glass is not completely shut.	Close glass correctly.

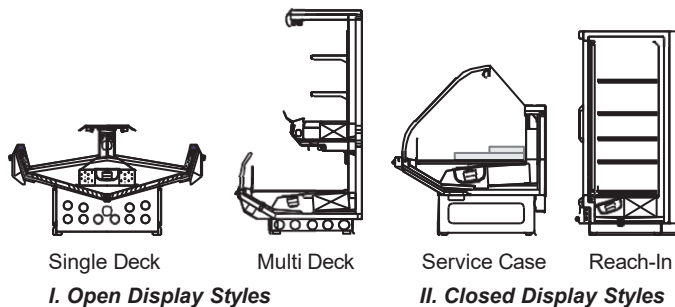
Troubleshooting

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.
	If the case is in a line-up, case to case joint is missing or unsealed.	Install case to case joint and seal as needed.
	Evaporator pan is overflowing (if applicable).	Check electrical connection to evaporator pan. Check float assembly, it should move freely up and down the support stem. Clear any debris.
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.
		Coil close-offs are not installed. Inspect coil to make sure these parts are on the case.
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.

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.

- 1.1 The following recommendations are made for the purpose of arriving at easily taken and understood data which, coupled with other observations, may be used to determine whether a display refrigerator is working as intended:
- a) **INSTRUMENT** - A stainless steel stem-type thermometer is recommended and it should have a dial a minimum of 1 inch internal diameter. A test thermometer scaled only in Celsius or dually scaled in Celsius and Fahrenheit shall be accurate to 1°C (1.8°F). Temperature measuring devices that are scaled only in Fahrenheit shall be accurate to 2°F. The thermometer should be checked for proper calibration. (It should read 32°F when the stem is immersed in an ice water bath).
 - b) **LOCATION** - The probe or sensing element of the thermometer should be located in the airstream where the air first enters the display or storage area, and not more than 1 inch away from the surface and in the center of the discharge opening.
 - c) **READING** - It should first be determined that the refrigerator is refrigerating and has operated at least one hour since the end of the last defrost period. The thermometer reading should be made only after it has been allowed to stabilize, i.e., maintain a constant reading.
 - d) **OTHER OBSERVATIONS** - Other observations should be made which may indicate operating problems, such as unsatisfactory product, feel/appearance.
 - e) **CONCLUSIONS** - In the absence of any apparent undesirable conditions, the refrigerator should be judged to be operating properly. If it is determined that such condition is undesirable, i.e., the product is above proper temperature, checks should be made for the following:
 1. Has the refrigerator been loaded with warm product?
 2. Is the product loaded beyond the "Safe Load Line" markers?
 3. Are the return air ducts blocked?
 4. Are the entering air ducts blocked?
 5. Is a dumped display causing turbulent air flow and mixing with room air?
 6. Are spotlights or other high intensity lighting directed onto the product?
 7. Are there unusual draft conditions (from heating/air-conditioning ducts, open doors, etc.)?
 8. Is there exposure to direct sunlight?
 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

- 1.0 Hussmann Corporation provides instructions and recommendations for proper periodic cleaning. The user will be responsible for such cleaning, including the cleaning of low temperature equipment within the compartment and the cooling coil area(s). Cleaning practices, particularly with respect to proper refrigerator unloading and warm-up, must be in accordance with applicable recommendations.
1. Cleaning of non frozen food equipment should include a weekly cleaning of the food compartment as a minimum to prevent bacteria growth from accumulating. Actual use and products may dictate more frequent cleaning. Circumstances of use and equipment design must also dictate the frequency of cleaning the display areas. Weekly washing down of the storage compartment is also recommended, especially for equipment subject to drippage of milk or other liquids, or the collection of vegetable, meat, crumbs, etc. or other debris or litter. Daily cleaning of the external areas surrounding the storage or display compartments with detergent and water will keep the equipment presentable and prevent grime buildup.
 2. Load levels as defined by the manufacturer must be observed.

1.3 The best preservation is achieved by following these rules:

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



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

Service Record

Last service date: By:

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

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

MODEL:

SERIAL NUMBER: