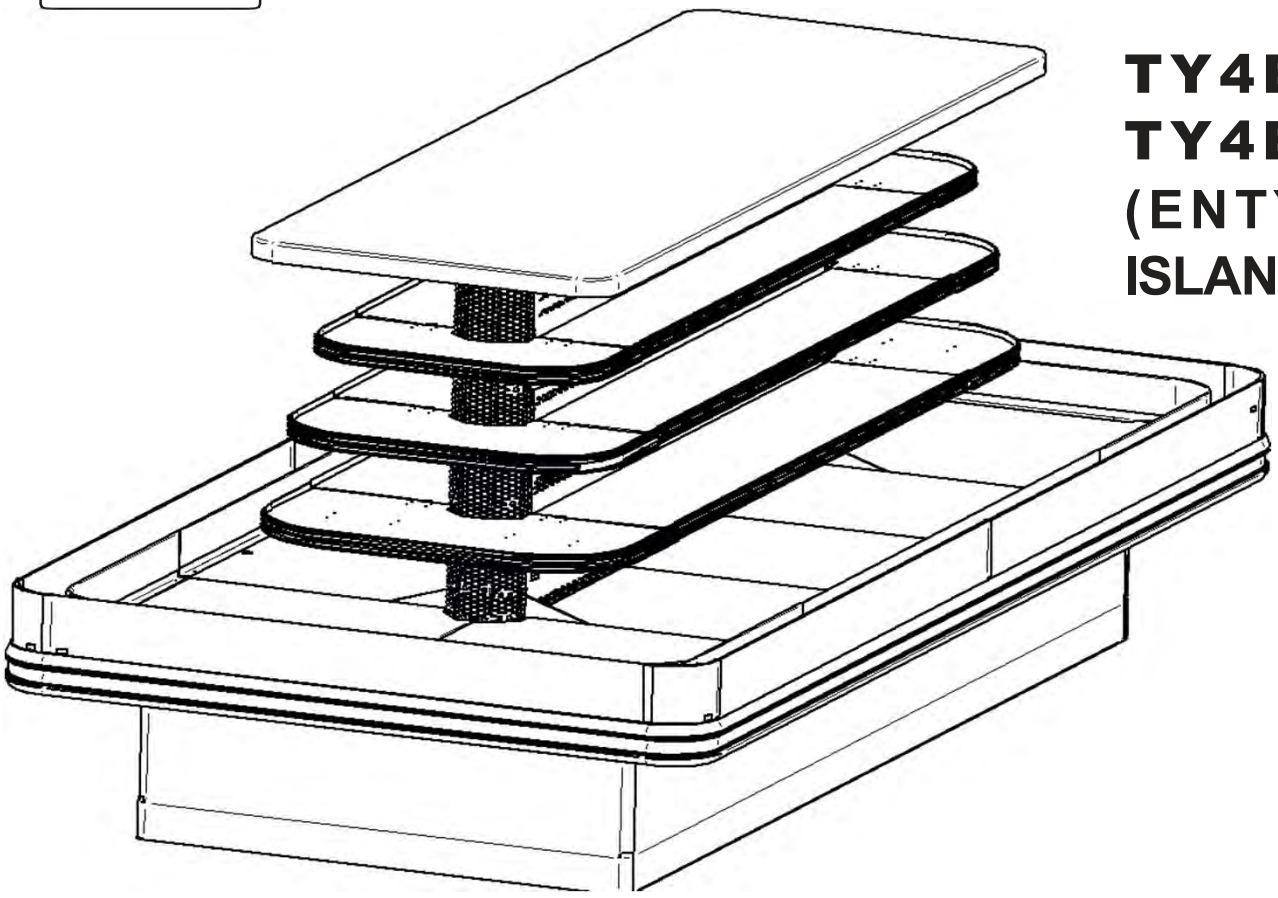
HUSSMANN®/CHINO

TY4 ECSQ (ENTYCE)

ISLAND CASE

Installation & Operation Manual

REV. 0324



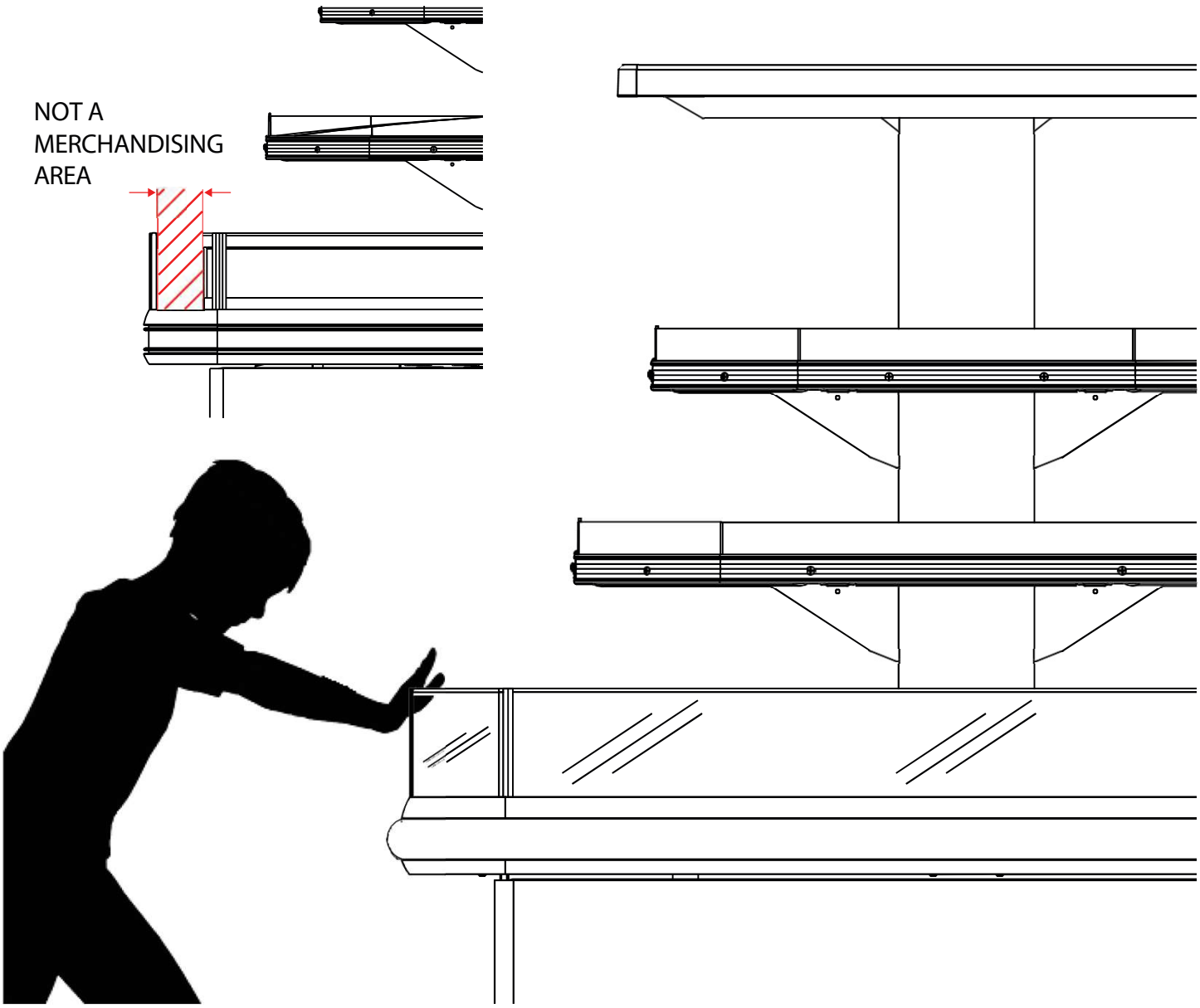
TY4ECSQ
TY4ECRC
(ENTYCE)
ISLAND CASE

INSTALLATION & OPERATION GUIDE

Table of Contents

WARNING

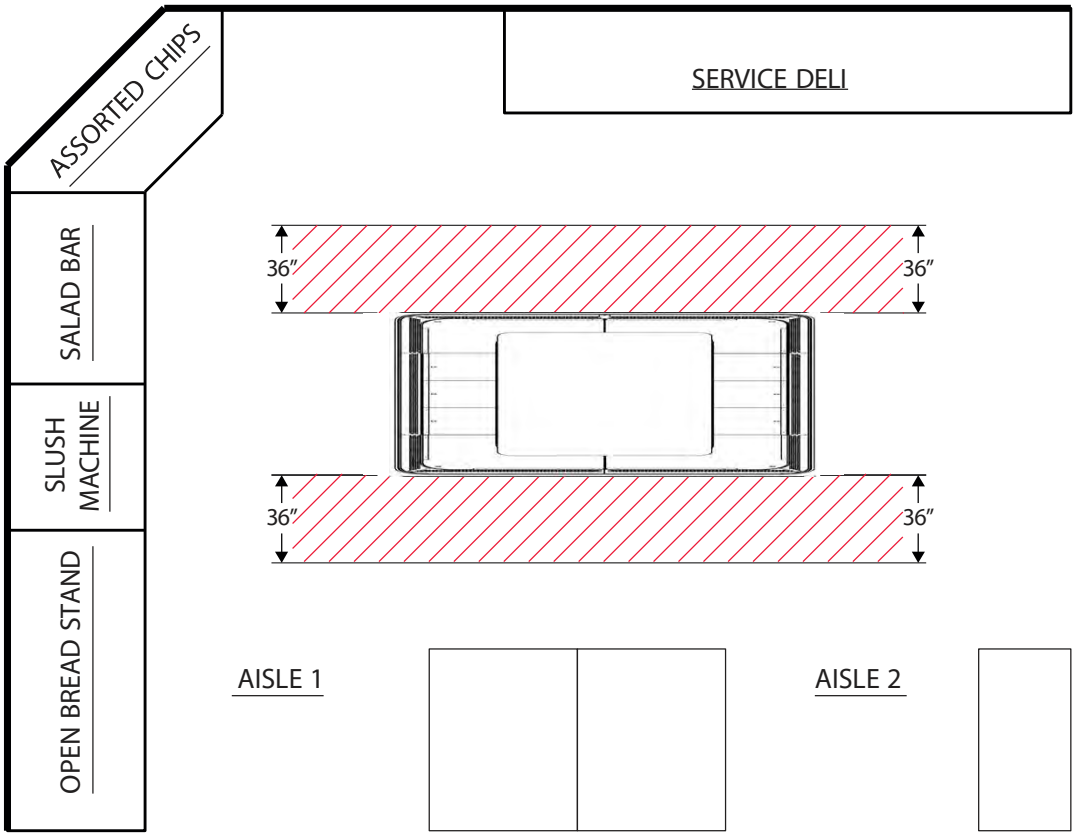
1. Do Not Push, Pull, Adjust, or Manipulate the TY case by any glass component.
    - Doing so will result in severe damage to such components
    - Glass breakage may result in serious injury
2. Never stand on the TY Top, Deck, or any Shelves for any reason.
    - Misusing these surfaces as steps will 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.



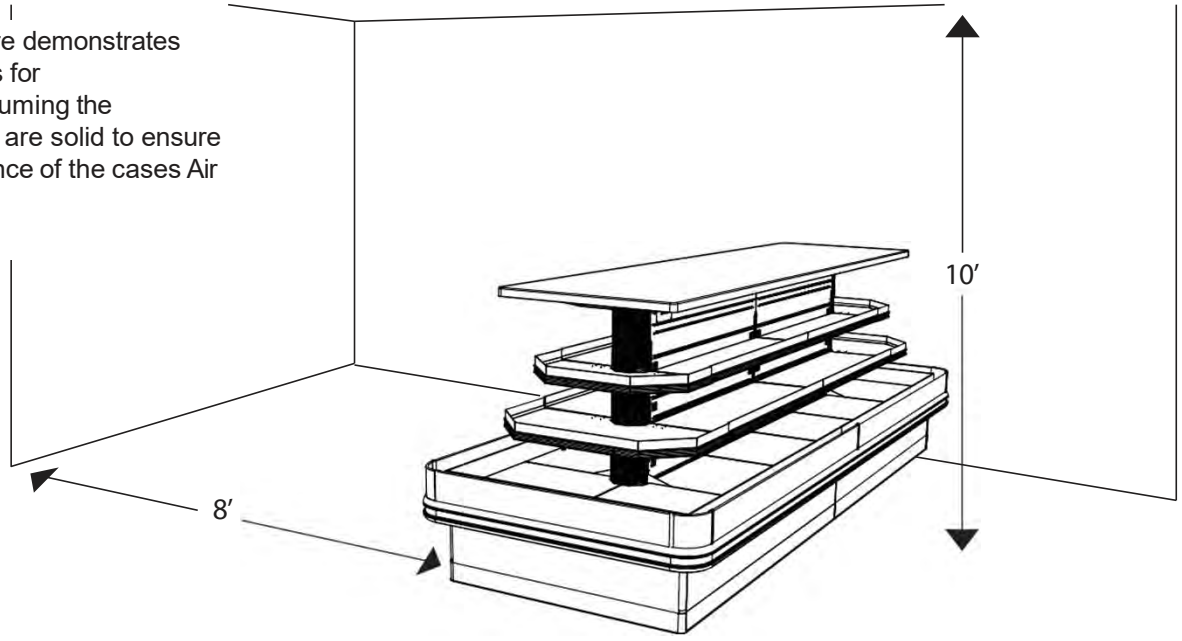
Warning

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)



The folowing 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 - 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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A publication of HUSSMANN® Chino
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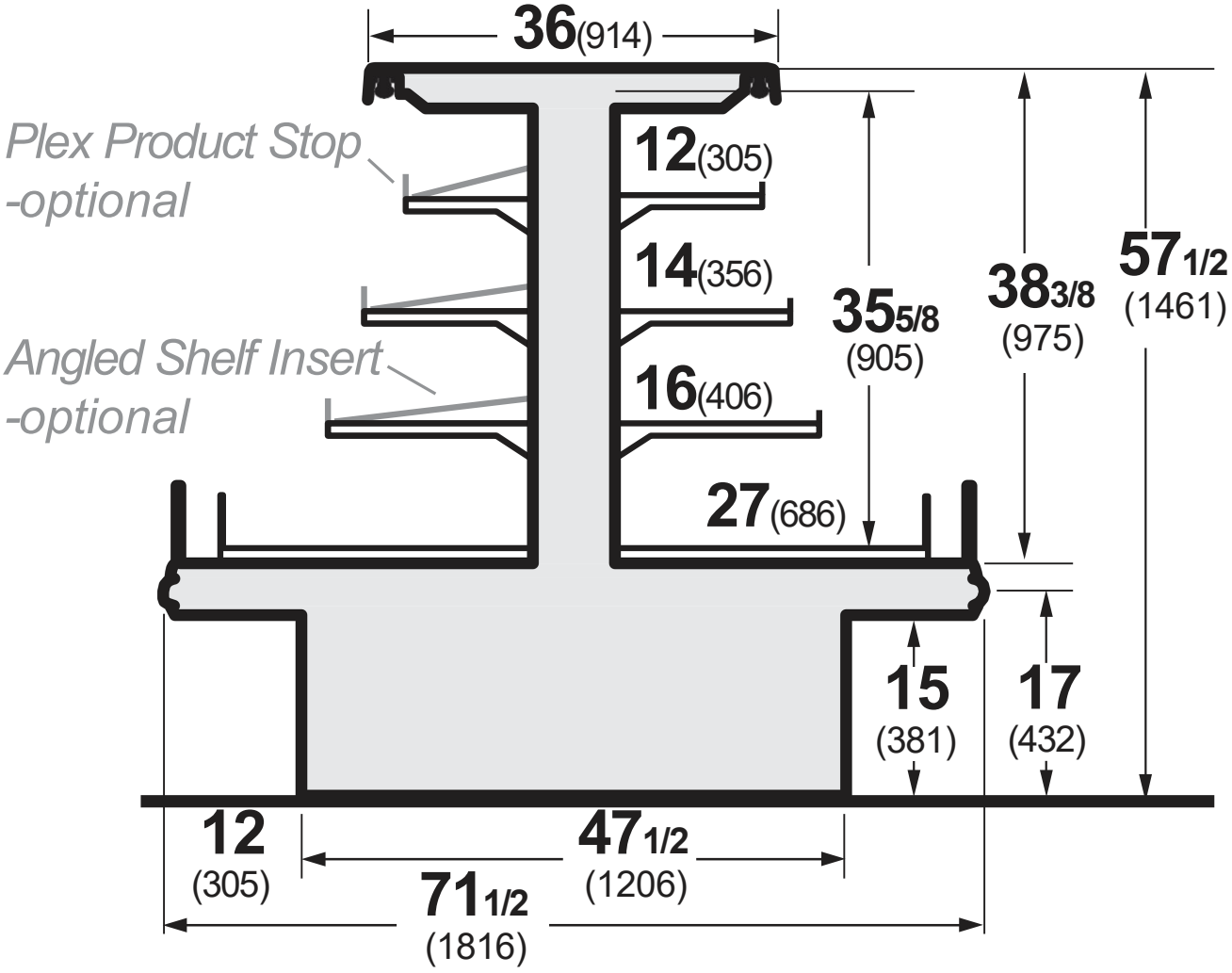
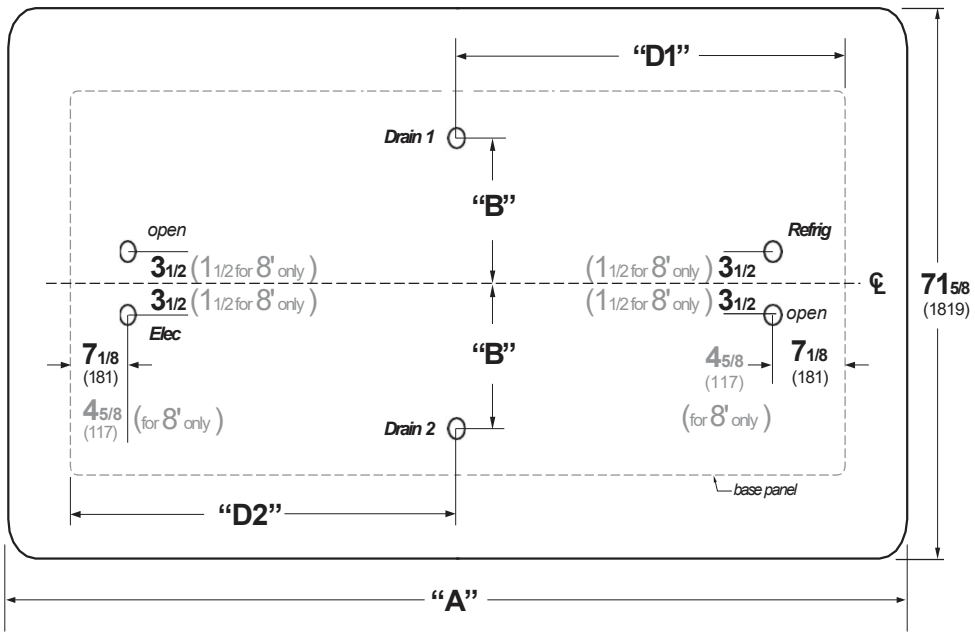
This equipment is to be installed to comply with the applicable NEC, Federal, State, and Local Plumbing and Construction Code having jurisdiction.

Cut and Plan Views



TY4ECRC-6I - Island



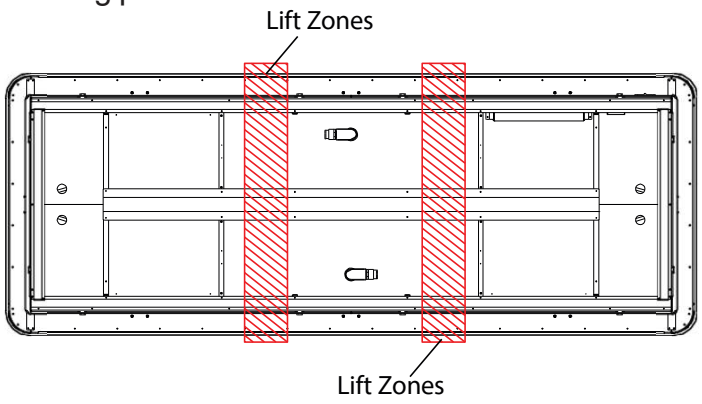
"A"	96 (2438)	120 (3048)	144 (3658)	168 (4267)	192 (4877)
"B"	12 1/2 (318)	12 1/2 (318)	15 5/8 (387)	15 5/8 (387)	15 5/8 (387)
"D1"	N/A	N/A	71 3/4 (1822)	71 3/4 (1822)	95 3/4 (2432)
"D2"	66 7/8* (1699)	88 3/8* (2245)	47 3/4 (1213)	71 3/4 (1822)	71 3/4 (1822)

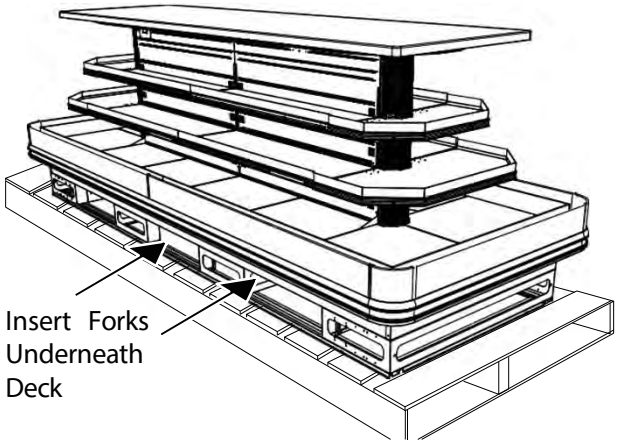
*same for 2nd drain location

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

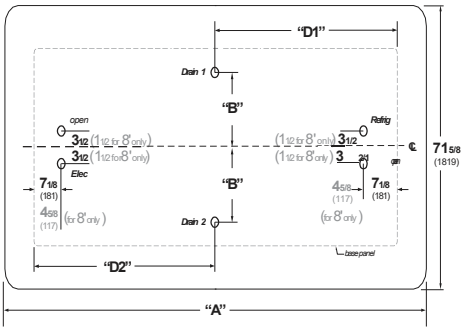
2. Ensure lower body panels are removed before lifting with a forklift. Serious damage will occur if the body panels are not removed.
3. Make sure that fork spacing and width will not damage drain or come in contact with piping, or electrical lines
4. Be sure that the forks are long enough to support 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 dollie to properly support the case.

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

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

Center Drain

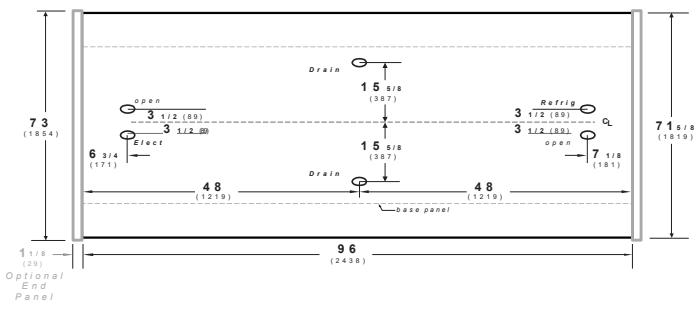
TY4ECRC-6I - Island



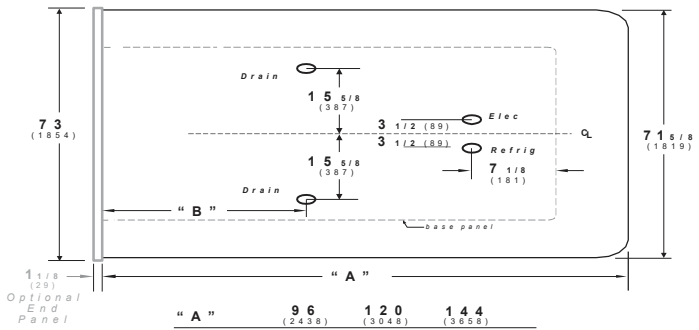
"A"	96 (2438)	120 (3048)	144 (3658)	168 (4267)	192 (4877)
"B"	12 1/2 (318)	12 1/2 (318)	15 5/8 (387)	15 5/8 (387)	15 5/8 (387)
"D1"	N/A	N/A	71 3/4 (1822)	71 3/4 (1822)	95 3/4 (2432)
"D2"	66 7/8* (1699)	88 3/8* (2245)	47 3/4 (1213)	71 3/4 (1822)	71 3/4 (1822)

*same Br 2nd drain location

TY4ECRC-6X8C - Center



TY4ECRC-6E - Flat End



"A"	96 (2438)	120 (3048)	144 (3658)
"B"	37 (940)	49 (1245)	72 7/8* (1851)

*consult Cadblock for 2nd drain location

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.

Uncrating 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

Do NOT walk on top of the merchandisers or damage to the merchandisers and serious personal injury could occur. They are not structurally designed to support excessive external loading such as the weight of a person. Do not place heavy objects on the case.

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 ½" P-TRAP and threaded adapter must be installed to prevent air leakage and insect entrance into the fixture.

Installing Condensate Drain

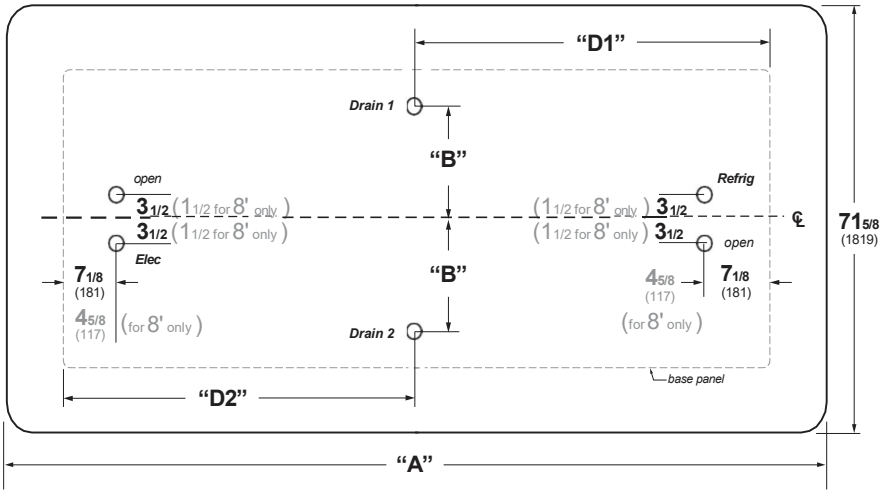
Poorly or improperly installed condensate drains can seriously restrict the operation of this refrigerator, and result in costly maintenance and product losses. Please follow the recommendations listed below when installing condensate drains to insure a proper installation:

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.

WARNING!
Do NOT apply thread sealer to ABS P-Trap.

Center Drain

TY4ECRC-6I - Island



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"D2"	66 7/8* (1699)	88 3/8* (2245)	47 3/4 (1213)	71 3/4 (1822)	71 3/4 (1822)

*same for 2nd drain location

Note: Cases are typical, length of cases vary

Refrigeration Piping

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.

Set the superheat for 5°F - 7°F.

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.

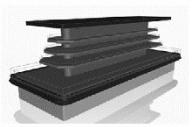
Pressure drop can rob the system of capacity. To keep the pressure drop to a minimum, keep refrigerant line run as short as possible, using the minimum number of elbows. Where elbows are required, use long radius elbows only. All refrigeration components are located underneath the left hand side case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

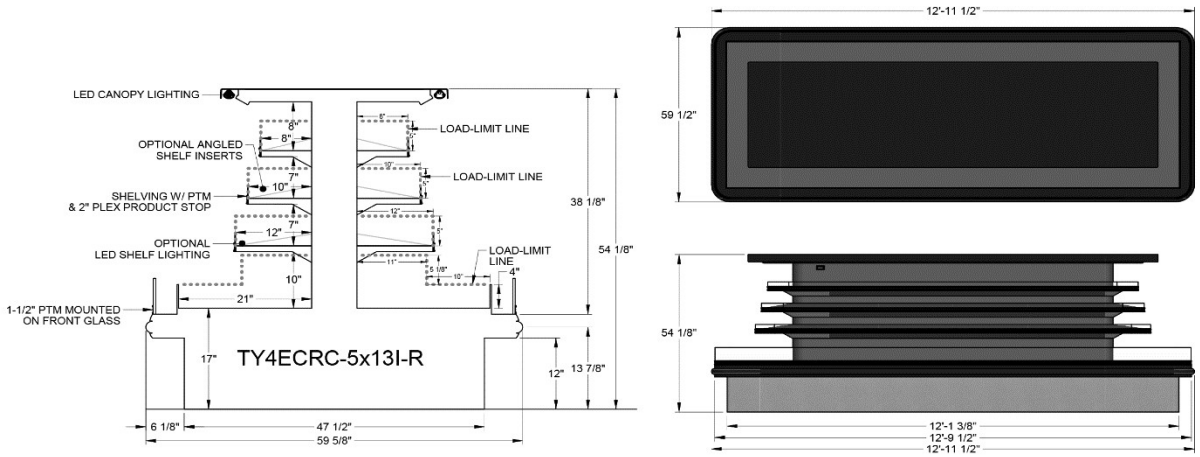
Specifications

DELI SELF-SERVICE REVISION DATE 12/21/2020

HUSSMANN - TY4ECRC-5 I-ISLAND (CHINO)

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





REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CAPACITY *** (BTU/HR/FT)		TEMPERATURE (°F)			VELOCITY (FT/MIN)
		RATING CONDITION		EVAPORATOR		DISCHARGE AIR ** (°F)	
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	NSF 7
7I,13I	DELI	2220	2100	20	26	30~32	80~170

CASE LENGTHS	EST. REFG. CHRG. (LBS) 404a	20°F GLYCOL 6° RISE	
		GPM	PSI
7I	2.2	5.4	4.3
13I	4.4	10.2	10.1

****FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB**

*****REFRIGERATION NOTES:**

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

REFRIGERATION DATA CONTINUED:

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	20	12	50	N/A	10.2

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		CONVENIENCE OUTLETS (OPTIONAL)		
	# 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	0.9	106	0.9	102	1.8	208	0.5	60	1	115	15
13I	12	8	20	3.6	96	1.5	174	1.4	164	2.9	338	1.0	110	1	115	15

OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

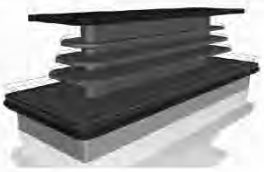
CASE LENGTH	CANOPY LIGHTS H.O. LED		OPTIONAL SHELF		MAX. H.O. LED LOAD	
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
7I	N/A	N/A	N/A	N/A	N/A	N/A
13I	N/A	N/A	N/A	N/A	N/A	N/A

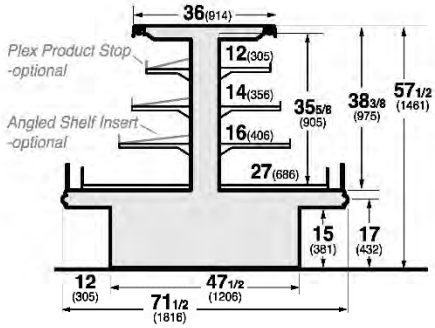
Specifications

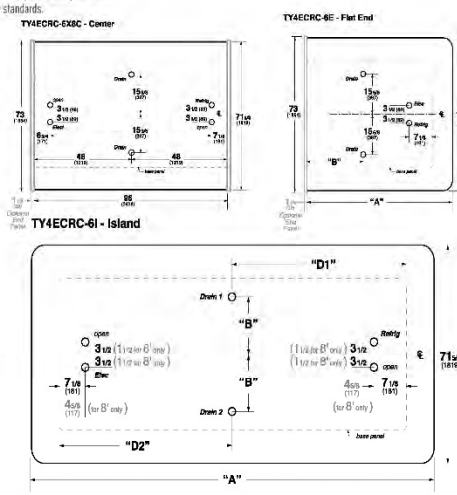
DELI SELF-SERVICE REVISION DATE 03/14/19

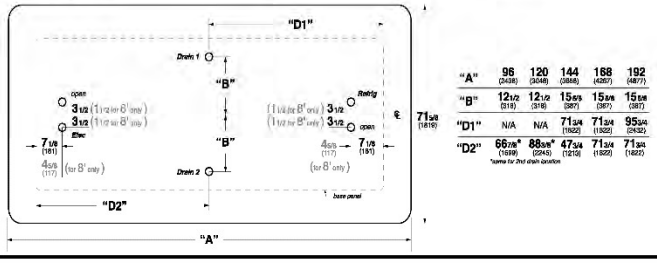
HUSSMANN - TY4ECRC-6 I-ISLAND E-END C-CENTER (CHINO)

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









REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CAPACITY *** (BTU/HR/FT)		TEMPERATURE (°F)			VELOCITY (FT/MIN)
		RATING CONDITION		EVAPORATOR		DISCHARGE AIR ** (°F)	
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	NSF 7
8I,10I,12I, 14I,16I,18I	DELI	2200	2050	20	26	30~32	125~175
8E, 10E, 12E	DELI	2480	2050	20	29	34~38	100~200
8C	DELI	1700	1700	24	24	32~36	100~200

CASE LENGTHS	EST. REFG. CHRG. (LBS) 404a	20°F GLYCOL 6° RISE	
		GPM	PSI
8I	1.1	5.8	8.4
10I	1.3	7.2	5.8
12I	1.8	8.5	7.7
14I	2.2	9.7	9.9
16I	2.3	11.0	7.0
18I	2.7	12.2	7.9
8E	1.3	5.8	4.6
10E	1.8	7.2	6.4
12E	2.2	8.5	8.4
8C	1.3	4.8	3.7

****FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB**
*****REFRIGERATION NOTES:**

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

REFRIGERATION DATA CONTINUED:

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	20	12	50	N/A	10.2

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		CONVENIENCE OUTLETS (OPTIONAL)		
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS
8I	6	8	20	1.8	48	0.8	92	0.6	69	1.4	162	0.5	60	1	115	15
10I	8	8	20	2.4	64	0.9	106	0.9	102	1.8	208	0.7	80	1	115	15
12I	10	8	20	3.0	80	1.3	146	1.2	142	2.5	288	0.9	100	1	115	15
14I	12	8	15	3.6	96	1.3	146	1.3	151	2.6	297	1.0	120	1	115	15
16I	14	8	15	4.2	112	1.3	146	1.7	196	3.0	342	1.2	140	1	115	15
18I	16	8	15	4.8	128	1.3	146	1.9	223	3.2	369	1.4	160	1	115	15
8E	8	8	20	2.4	144	0.8	97	0.8	94	1.7	190	0.6	70	1	115	15
10E	8	8	20	2.4	144	1.1	127	1.1	126	2.2	253	0.8	90	1	115	15
12E	10	8	20	3.0	180	1.3	155	1.4	158	2.7	313	1.0	110	1	115	15
8C	8	8	20	2.4	64	0.9	108	1.1	124	2.0	231	0.7	80	1	115	15

OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

CASE LENGTH	CANOPY LIGHTS H.O. LED		OPTIONAL SHELF		MAX. H.O. LED LOAD	
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
8I	N/A	N/A	N/A	N/A	N/A	N/A
10I	N/A	N/A	N/A	N/A	N/A	N/A
12I	N/A	N/A	N/A	N/A	N/A	N/A
14I	N/A	N/A	N/A	N/A	N/A	N/A
16I	N/A	N/A	N/A	N/A	N/A	N/A
18I	N/A	N/A	N/A	N/A	N/A	N/A
8E	N/A	N/A	N/A	N/A	N/A	N/A
10E	N/A	N/A	N/A	N/A	N/A	N/A
12E	N/A	N/A	N/A	N/A	N/A	N/A
8C	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 COULER POUR FILS DE BOITIER NORMALISE

COLOR DESCRIPTION	DESCRIPCION	DESCRIPTION
GROUND	TIERRA MASA	MASSE
ANTI-SWEAT	ANTICONDENSACION	ANTI-SUINTEMENT
LIGHTS	LUCES	ECLAIRAGE
RECEPTACLES	ENCHUFES	PRISE DE COURANT
T-STAT/SOLENOID 230VAC	TERMOSTATO/SOLENOIDE (230VAC)	SOUPAPE A SOLENOID (230 VAC)
T-STAT/SOLENOID 115VAC	TERMOSTATO/SOLENOIDE (115VAC)	SOUPAPE A SOLENOID (115 VAC)
T-STAT/SOLENOID 24VAC	TERMOSTATO/SOLENOIDE (24VAC)	SOUPAPE A SOLENOID (24 VAC)
FAN MOTORS	VENTILADORES	VENTILATEUR
BLUE CONDENSING UNIT	UNIDAD DE CONDENSACION	UNITE DE CONDENSATION

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

CASE MUST BE GROUNDED

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

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

Field Wiring and Serial Plate Amperage

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

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

TY4	**ECRC-5X7I-R**	**7'**	**3144548**
	TY4ECRC-6X8I-R ULTRA LED TOP, 10",12",16"	**8'**	**3123818**
	TY4ECRC-6X8C-R HO CANOPY LIGHTS	**8'**	**3064025**
	TY4ECRC-6X8E-R W/LEDGE LIGHTS ALSO	**8'**	**3160163**
	TY4ECRC-6X10E-R W/10",12",14" & LEDGE LT	**10'**	**3067655**
	TY4ECRC-6X12E-R 10", 12", 14" SHELVES	**12'**	**3058530**
	TY4ECRC-6X12I-R 10",12" & 14" SHELVES	**12'**	**3080512**
	TY4ECRC-6X14I-R	**14'**	**3047157**
	TY4ECRC-6X16I-R	**16'**	**3043948**
	TY4ECRC-6X18I-R W/LEDGE LIGHTS ALSO	**18'**	**3160164**

REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-COD-0012732	2-25-21	RELEASED TO PRODUCTION	CB	CB	CB

CIRCUIT #1
LOADING

	120V	
L1	3.5	

LIGHT CIRCUIT= 1.03A 111.6W

2" LED LIGHT
2" LED LIGHT
2" LED LIGHT
2" LED LIGHT
18" LED LIGHT
18" LED LIGHT
18" LED LIGHT
1' LED LIGHT
1' LED LIGHT
1' LED LIGHT
1' LED LIGHT
1' LED LIGHT
1' LED LIGHT
1' LED LIGHT

CANOPY LIGHTS

18" LED LIGHT ULTRA
18" LED LIGHT ULTRA
3' LED LIGHT ULTRA
3' LED LIGHT ULTRA
3' LED LIGHT ULTRA
3' LED LIGHT ULTRA

ANTI-SWEAT HEATER
30W .27A@ 120 VAC
(21) 0495006

RED +
BLUE -
LED DRIVER
RED +
BLUE -
LED DRIVER

TOGGLE SWITCH
125-01-0307

TAG PURPLE
HEATER CIRCUIT
BLK # 14
WHT # 14
L1
N
~120 VAC - 60 Hz
MCA= 0.68A
MOP= 15A

BLK#14
WHT#14
BUNDLE
ORANGE
L
N
~120 VAC - 60 Hz
MCA= 1.29A
MOP= 15A

CIRCUIT #2

	LOADING	
	120 V	
L1	15.0	
L2		
L3		

NOTE: CASE MUST BE GROUNDED

GFCI DUPLEX
125-01-3178
W
G
BK
CIRCUIT #2
~120 VAC - 1Ø -60 Hz

M M M
M M M
EVAPORATOR FANS
12W 0.3A @ 120VAC (10)
(16) 0477655

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

OPTIONAL

SOLENOID VALVE
1.4A @ 120VAC
T-STAT
225-01-0707
BUNDLE
WHITE/BLACK
L
N
~120 VAC - 60 Hz
MCA= 20A
MOP= 15A

OPTIONAL

SOLENOID
1.4A @ 120VAC
T-STAT
SENSOR
N
120
C
NO
WHITE #14
BLK/WHT STRIPE#14
WHITE #14
BLACK #14
BUNDLE
WHITE/BLACK
N L1
~120 VAC - 60 Hz

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

UL COLOR CODES / ABBREVIATIONS

- RED = RD
- BLACK = BK
- BLUE = BL
- YELLOW = YL
- GRAY = GY
- 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

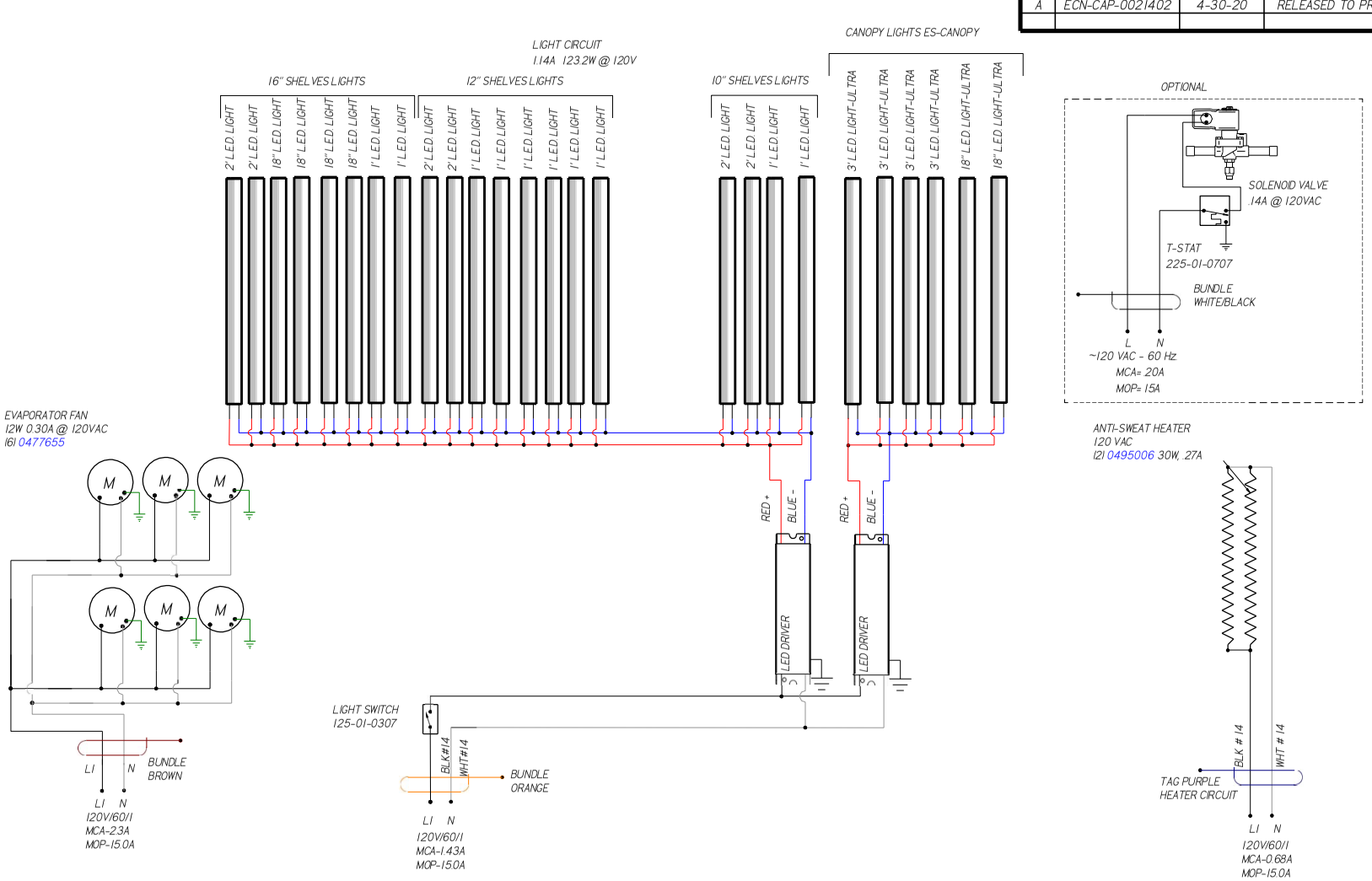
HUSSMANN®
DIAGRAM-
TY4ECRC- 5X7I-R
P/N 3144548
REV A

CND_10 WIRE DIAGRAM SIZE C

REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0021402	4-30-20	RELEASED TO PRODUCTION	CB	CB	CB

CIRCUIT #1

LOADING	
120V	
LT 3.5	



NOTES:
1. PRINTED DOCUMENT REQUIRED SETTING: ALL COLORS BLACK & WHITE
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- BLUE = BL
- YELLOW = YL
- GRAY = GY
- 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

HUSSMANN®

DIAGRAM-
TY4ECRC- 6X8I-R
W/10",12" &
16" SHELVES

312381R | REV A

CND_10 WIRE DIAGRAM SIZE C

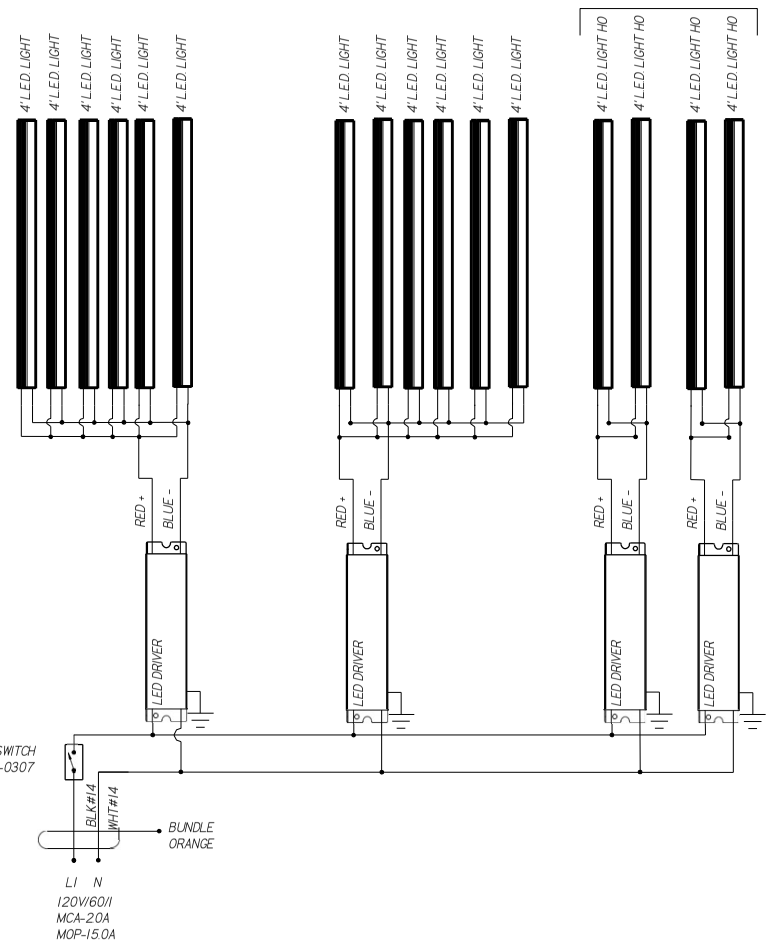
CIRCUIT #1

LOADING	
120V	
LI 4.7	

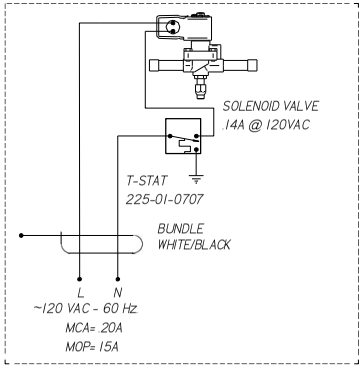
REVISION HISTORY						
REV.	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0012696	2018/05/25	RELEASED TO PRODUCTION	CB	CB	CB

LIGHT CIRCUIT
1.60A 172.4W @ 120V

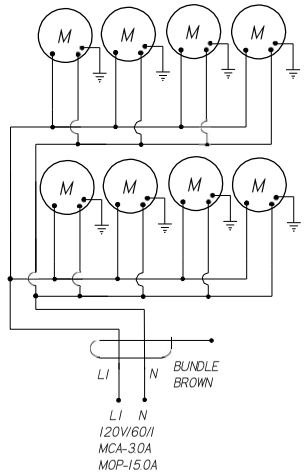
CANOPY LIGHTS HIGH OUTPUT



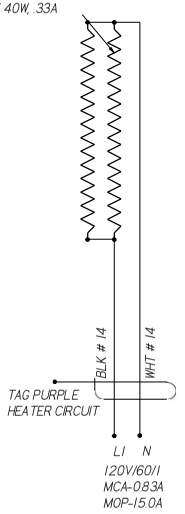
OPTIONAL



EVAPORATOR FAN
12W 0.30A @ 120VAC (8)
0477655



ANTI-SWEAT HEATER
120 VAC
(2) 0495007 40W, .33A



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

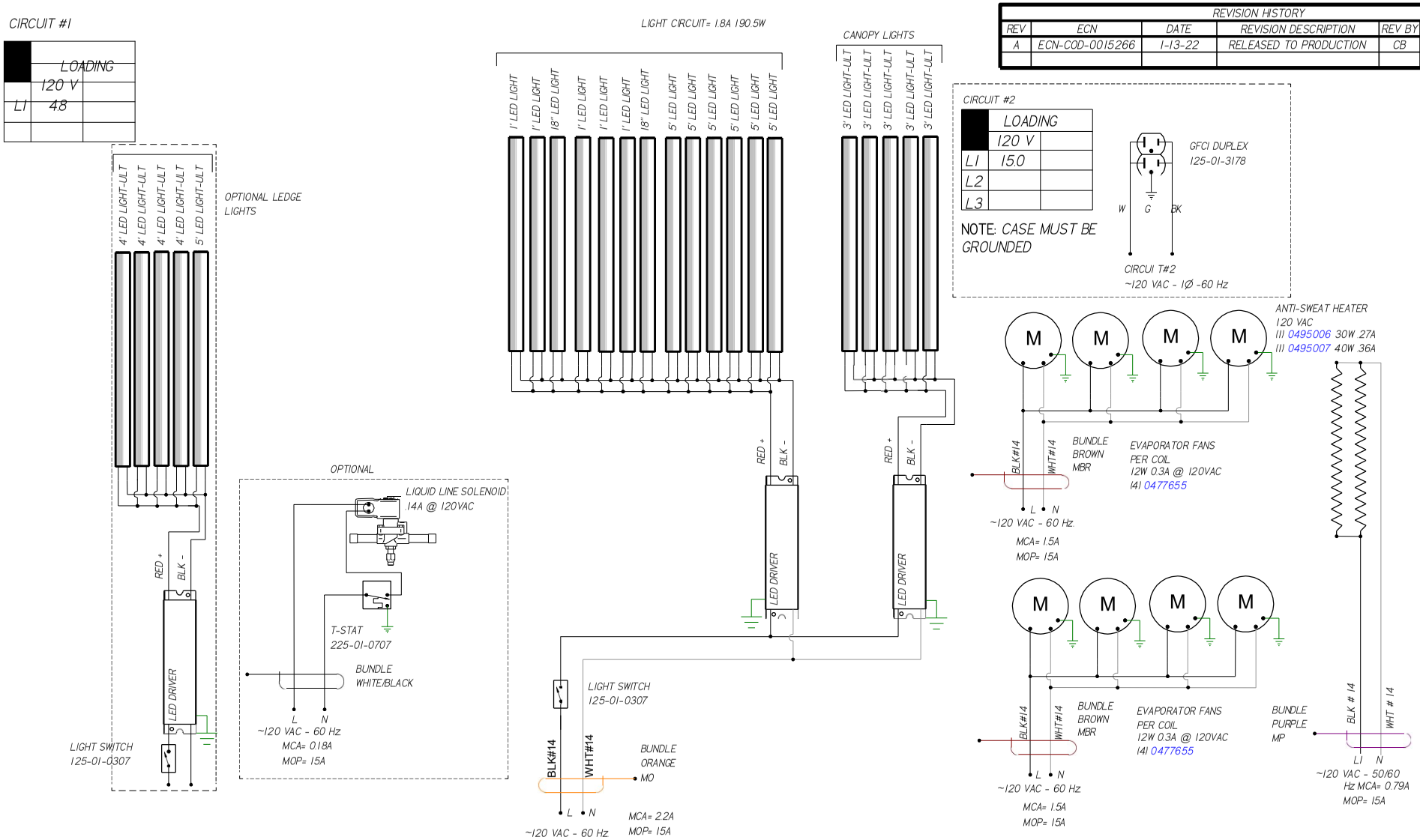
MATERIAL - N/A	
DATE DRAWN - 5-25-18	
DRAWN BY -CRAIG BOOREY	ECN-CAP-0012696
REVIEWED BY -CRAIG BOOREY	REF -
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ARE: DECIMALS .XX ±.03, .XXX ±.010 ANGLES ± 2°	THIRD ANGL E PROJECTION

HUSSMANN

DIAGRAM- TY4ECRC- 6X8C-R

3064025 | A

HUSSMANN_CGF_1 | SHEET SIZE D



REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-COD-0015266	1-13-22	RELEASED TO PRODUCTION	CB	CB	CB

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

WIRE MARKER COLORS/ABBREVIATIONS	
BLACK = MBK	MAROON =
BLUE = MBL	MMR ORANGE =
BROWN = MBR	MO PINK = MPI
DARK BLUE =	PURPLE = MP
MDB GREEN = MG	RED = MR
LIGHT BLUE = MLB	YELLOW = MYL

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

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

HUSSMANN®
DIAGRAM-
TY4ECRC- 6X8E-R
P/N 3160163
REV A
CND_10 WIRE DIAGRAM SIZE C

REVISION HISTORY						
REV.	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0013270	2018/07/02	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-COD-0015266	2022/01/13	REVISED LIGHTS	CB	CB	CB

CIRCUIT #1

	LOADING
	120 V
L1	5.5

10", 12", 14" SHELVES

CANOPY LIGHTS

1' LED LIGHT
1' LED LIGHT
1' LED LIGHT
18" LED LIGHT
3' LED LIGHT
3' LED LIGHT
3' LED LIGHT
4' LED LIGHT
4' LED LIGHT
4' LED LIGHT
1' LED LIGHT
1' LED LIGHT
18" LED LIGHT
3' LED LIGHT
3' LED LIGHT
3' LED LIGHT
4' LED LIGHT
4' LED LIGHT
4' LED LIGHT
4' LED LIGHT-HO
4' LED LIGHT-HO
4' LED LIGHT-HO
4' LED LIGHT-HO
4' LED LIGHT-HO
4' LED LIGHT-HO
3' LED LIGHT-HO

OPTIONAL LEDGE LIGHTS

5' LED LIGHT
5' LED LIGHT
5' LED LIGHT
5' LED LIGHT
5' LED LIGHT

RED +
BLUE -
LED DRIVER

LIGHT SWITCH
125-01-0307

OPTIONAL

LIQUID LINE SOLENOID
.14A @ 120VAC

T-STAT
225-01-0707

BUNDLE
WHITE/BLACK

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

LIGHT SWITCH
125-01-0307

BLK#14
WHT#14
BUNDLE
ORANGE

L N
~120 VAC - 60 Hz
MCA= 2.74A
MOP= 15A

LIGHT CIRCUIT= 2.2A 237W

CIRCUIT #2

	LOADING	
	120 V	
L1	15.0	
L2		
L3		

NOTE: CASE MUST BE GROUNDED

GFCI DUPLEX
125-01-3178

W G BK

CIRCUIT #2
~120 VAC - 1Ø -60 Hz

M M M M

BLK#14
WHT#14
BUNDLE
BROWN

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

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

ANTI-SWEAT HEATER
120 VAC
(1) 0495006 30W .27A
(1) 0495008 60W .54A

BLK # 14
WHT # 14

L1 N
~120 VAC - 50/60 Hz MCA= 1.01A
MOP= 15A

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

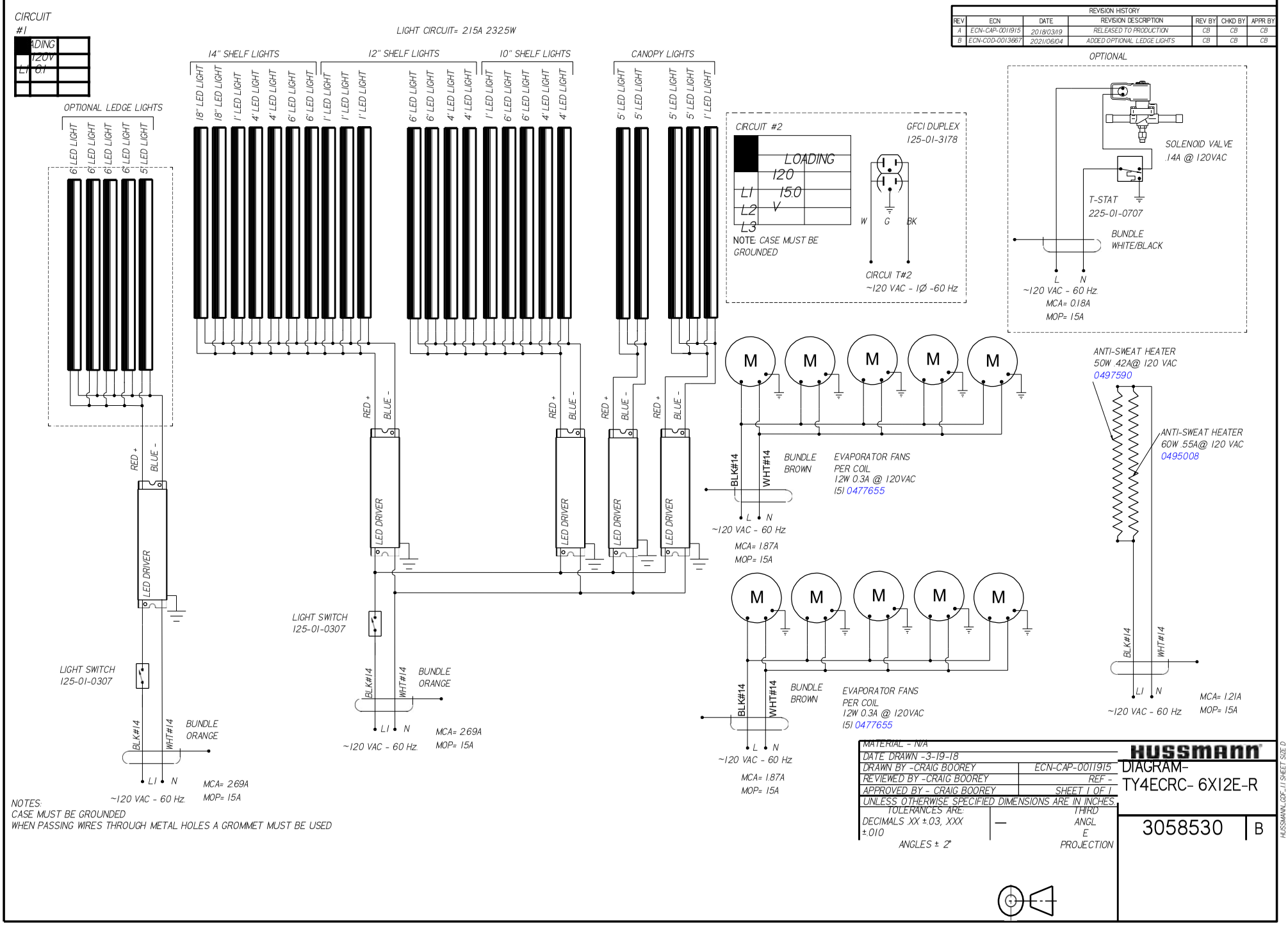
MATERIAL - N/A	
DATE DRAWN -7-2-18	
DRAWN BY -CRAIG BOOREY	ECN-CAP-0013270
REVIEWED BY -CRAIG BOOREY	REF -
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ARE: DECIMALS .XX ±.03, .XXX ±.010 ANGLES ± 2°	THIRD ANGL E PROJECTION

HUSSMANN

DIAGRAM- TY4ECRC- 6X10E-R

3067655 | B

HUSSMANN_COF_1 | SHEET SIZE D



REVISION HISTORY						
REV.	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0011915	2018/03/19	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-COD-0013667	2021/06/04	ADDED OPTIONAL LEDGE LIGHTS	CB	CB	CB

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

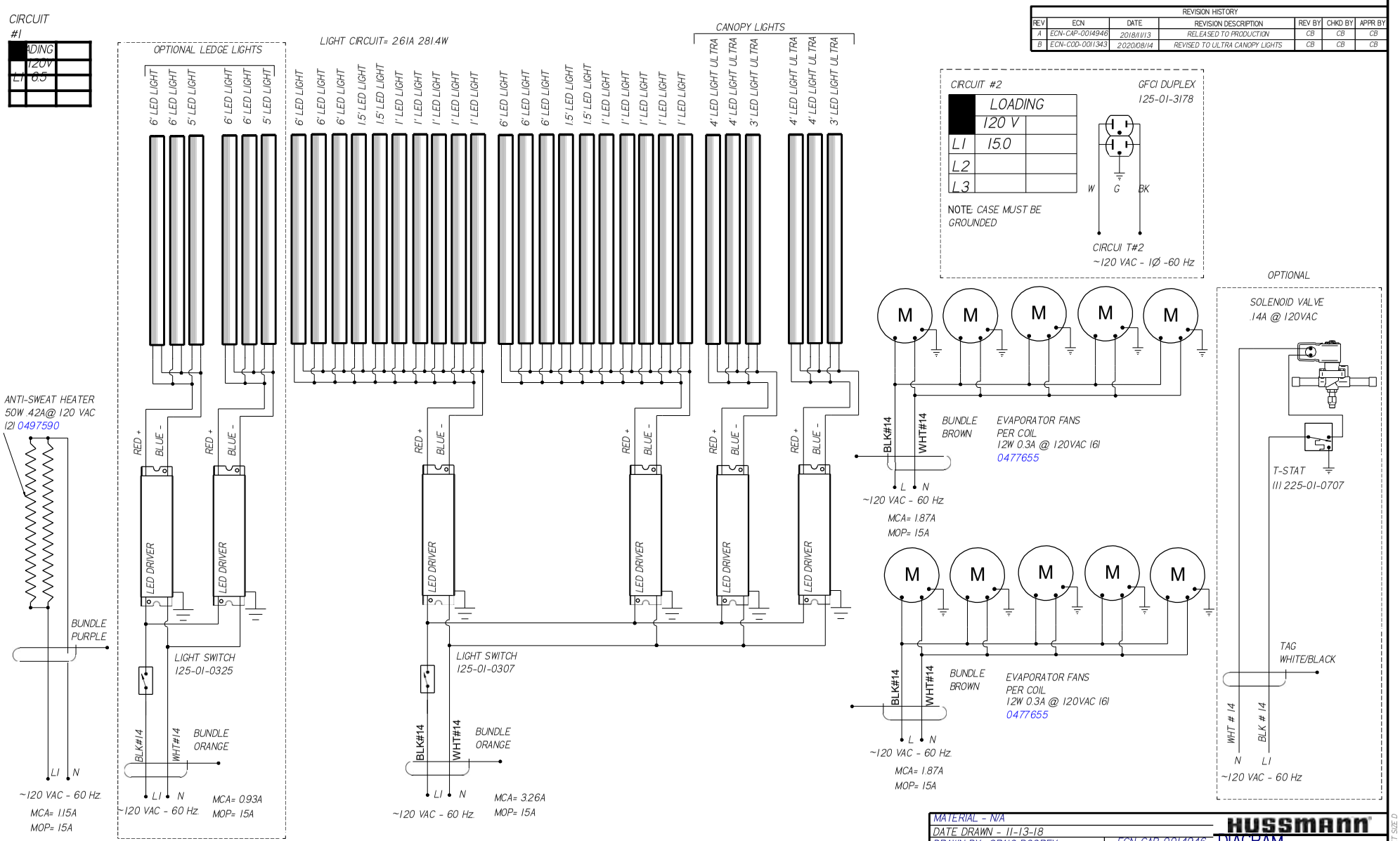
MATERIAL - N/A		
DATE DRAWN -3-19-18		
DRAWN BY -CRAIG BOOREY	ECN-CAP-0011915	
REVIEWED BY -CRAIG BOOREY	REF -	
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 1	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		
TOLERANCES ARE: DECIMALS .XX ±.03, .XXX ±.010 ANGLES ± 2°	—	THIRD ANGLE PROJECTION

HUSSMANN

DIAGRAM- TY4ECRC- 6X12E-R

3058530 | B

HUSSMANN_CGF_1 | SHEET SIZE D



REVISION HISTORY						
REV.	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0014946	2018/11/13	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-COD-0011343	2020/08/14	REVISED TO ULTRA CANOPY LIGHTS	CB	CB	CB

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

MATERIAL - N/A
DATE DRAWN - 11-13-18
DRAWN BY -CRAIG BOOREY
REVIEWED BY -CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
ECN-CAP-0014946
REF -
SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX ±.03, .XXX ±.010
ANGLES ± 2°
THIRD ANGL E PROJECTION

HUSSMANN

DIAGRAM-
TY4ECRC- 6X12-R
10",12",14" SHELVES

3080512 | B

HUSSMANN.DGF_1 | SHEET SIZE D

CIRCUIT #1
LOADING

	120V	
L1	6.8	

REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0009957	2017/10/16	RELEASED TO PRODUCTION	CB	CB	CB

1ST, 2ND & 3RD ROW OF SHELVES. 1/2 SIDE

1ST, 2ND & 3RD ROW OF SHELVES. 1/2 SIDE

CANOPY

4' LED LIGHT
5' LED LIGHT
3' LED LIGHT

CIRCUIT #2

	LOADING	
	120 V	
L1	15.0	
L2		
L3		

NOTE: CASE MUST BE GROUNDED

GFCI DUPLEX
125-01-3178

W G BK

CIRCUIT#2
~120 VAC - 1Ø -60 Hz

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

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

L1 N
~120 VAC - 60 Hz.
MCA= 1.15A
MOP= 15A

RED +
BLUE -
LED DRIVER

LIGHT CIRCUIT= 2.27A 245W

LIGHT SWITCH
125-01-0311

BLK#14
WHT#14
BUNDLE
ORANGE

L1 N
~120 VAC - 60 Hz.
MCA= 1.64A
MOP= 15A

M

BLK#14
WHT#14
BUNDLE
BROWN

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

L N
~120 VAC - 60 Hz.
MCA= 1.87A
MOP= 15A

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

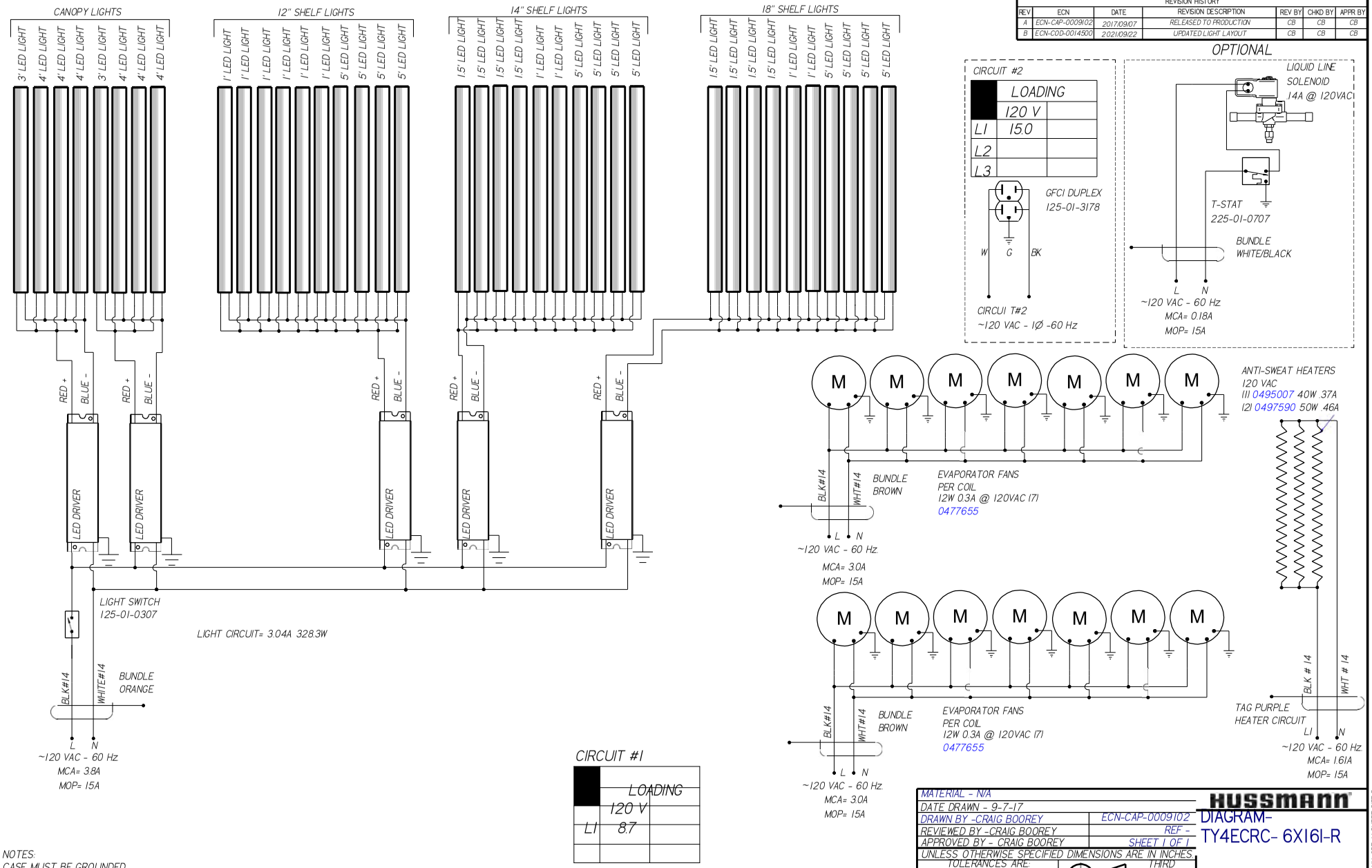
MATERIAL - N/A	
DATE DRAWN - 10-16-17	
DRAWN BY -CRAIG BOOREY	ECN-CAP-0009957
REVIEWED BY -CRAIG BOOREY	REF -
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: DECIMALS .XX ±.03, .XXX ±.010 ANGLES ± 2°	THIRD ANGLE PROJECTION

HUSSMANN

DIAGRAM-TY4ECRC-6X14I-R

3047157 | A

HUSSMANN_CDF_11 SHEET SIZE D



REVISION HISTORY						
REV.	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0009102	2017/09/07	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-COD-0014500	2021/09/22	UPDATED LIGHT LAYOUT	CB	CB	CB

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

MATERIAL - N/A
DATE DRAWN - 9-7-17
DRAWN BY -CRAIG BOOREY
REVIEWED BY -CRAIG BOOREY
APPROVED BY - CRAIG BOOREY
ECN-CAP-0009102
REF -
SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX ±.03, .XXX ±.010
ANGLES ± 2°
THIRD ANGL E PROJECTION

HUSSMANN

DIAGRAM-
TY4ECRC- 6X16I-R

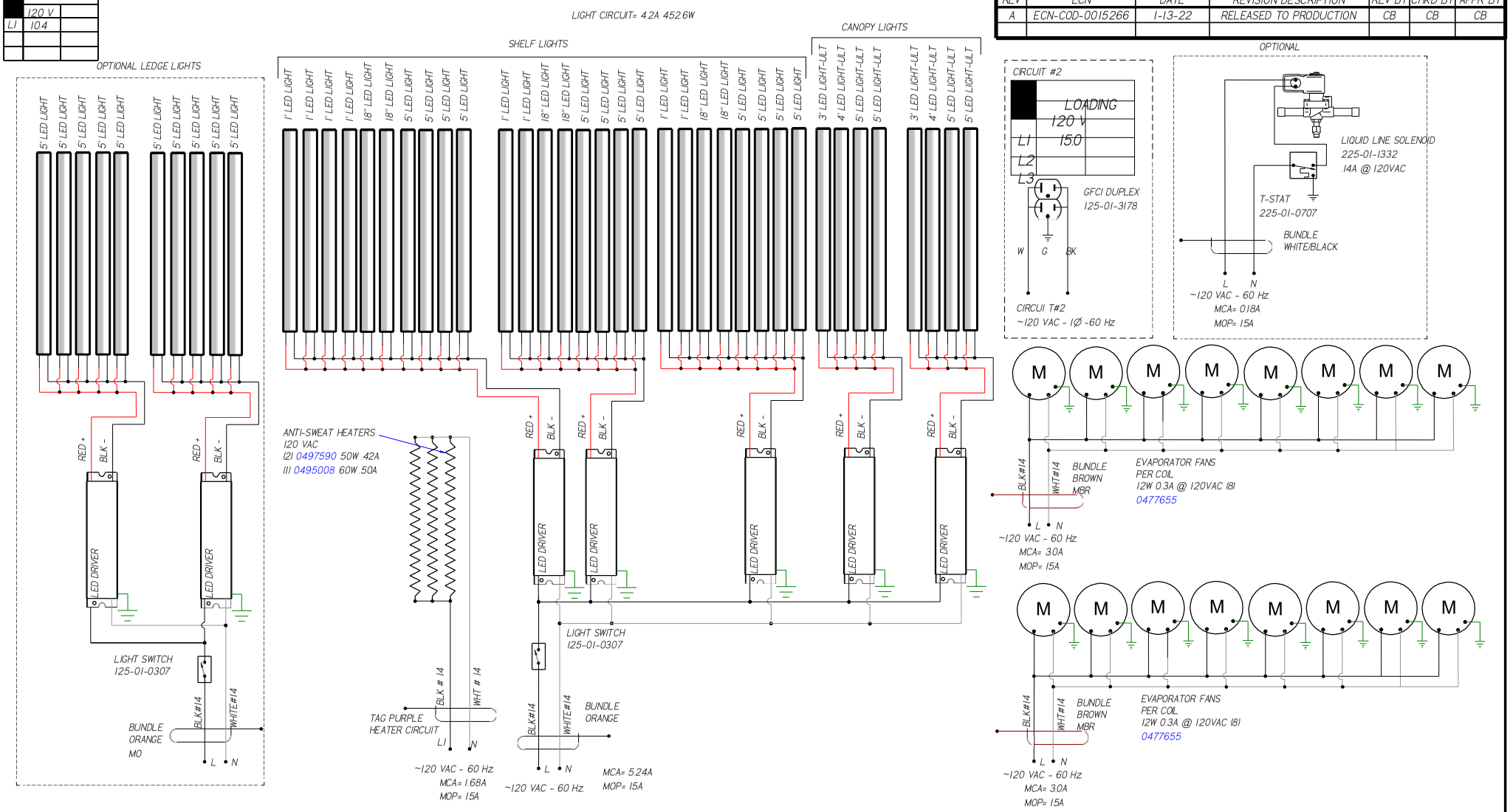
3043948 | B

HUSSMANN.DGF_1 | SHEET SIZE D

CIRCUIT #1

	LOADING	
	120 V	
L1	10.4	

REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-COD-0015266	1-13-22	RELEASED TO PRODUCTION	CB	CB	CB



NOTES:
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2. CASE & ANY REMOVABLE PANEL WITH ELECTRICAL PARTS MUST BE GROUNDED.
3. WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

WIRE MARKER COLORS/ABBREVIATIONS	
BLACK = MBK	MAROON = MMR
BLUE = MBL	ORANGE = MO
BROWN = MBR	PINK = MPI
DARK BLUE = MDB	PURPLE = MP
GREEN = MG	RED = MR
LIGHT BLUE = MLB	YELLOW = MYL

UL COLOR CODES / ABBREVIATIONS	
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BLUE = BL	BROWN = BN
YELLOW = YL	ORANGE = OR
GRAY = GY	VIOLET = VT

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

HUSSMANN®
DIAGRAM-
TY4ECRC- 6X18I-R
P/N 3160164
REV A
CND_10 WIRE DIAGRAM SIZE C

ENTYCE JOINT CHECKSHEET

PART#: CS00029

INSPECTOR _____

SALES ORDER # _____

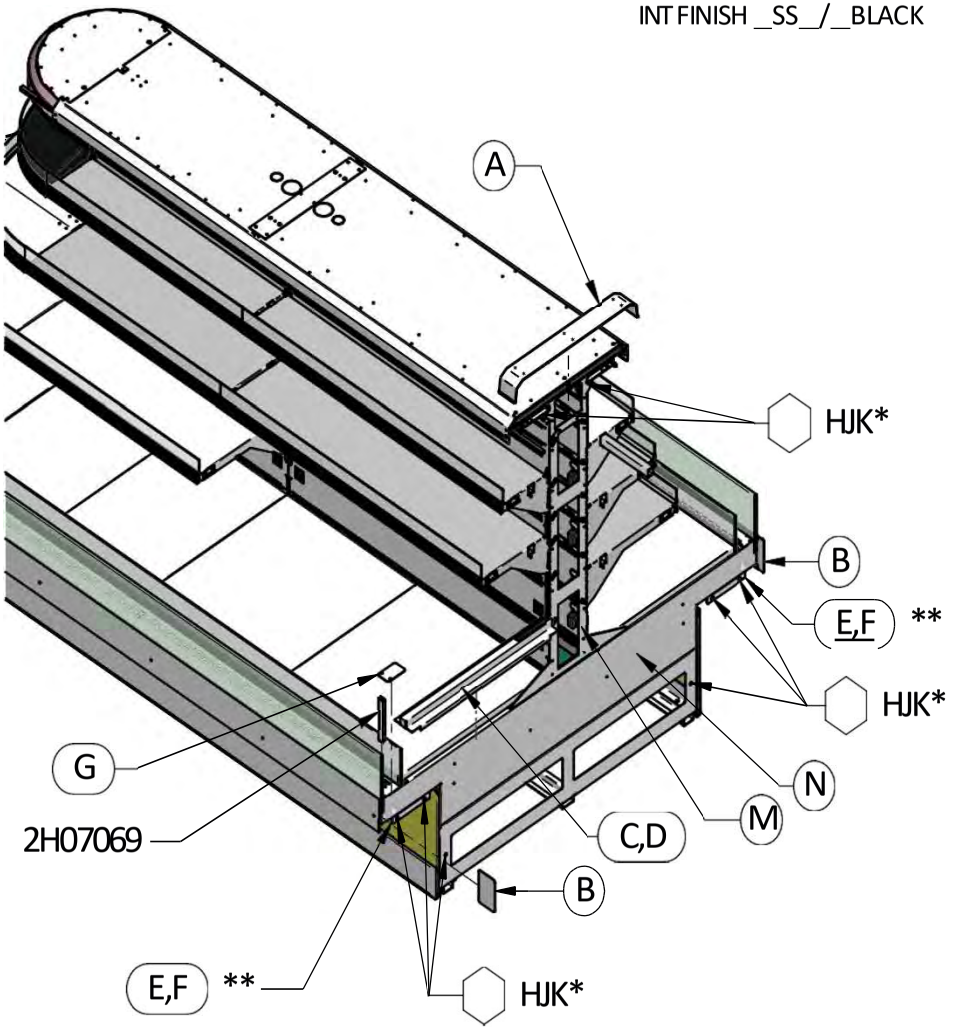
EXT COLOR _____

INT FINISH _SS_/_BLACK

*SEE INSTALLATION GUIDE

⬡ INDICATES CASE BOLTING/ALIGNMENT POINT

☐ ☐	TRIM - UPPER JOINT	1H84970007 (PAINTED) 1H84970009 (BLACK)	1	A
☐ ☐	TRIM - UPPER JOINT (ECRC)	13057217007 (PAINTED EXT) 13057217005 (POWDER EXT)	1	A
☐ ☐	TRIM - BODY PANEL JOINT	1H84971004 (STAINLESS) 1H84971007 (EXT COLOR)	2	B
☐ ☐	TRIM - DECK JOINT CAP (6W)	1H87896004 (STAINLESS) 1H87896005 (POWDER INT)	2	C
☐ ☐	TRIM - DECK JOINT CAP (4W)	1H91106004 (STAINLESS) 1H91106005 (POWDER INT)	2	D
☐	ALIGNMENT BRKT, LOWER (6W)**	1H29847005	2	E
☐	ALIGNMENT BRKT, LOWER (4W)**	1H91104005	2	F
☐ ☐	TRIM - AIR GRILL	1H91105004 (STAINLESS) 1H91105005 (POWDER INT)	2	G
☐	NUT, 3/8 - 16	300-03-1370	10	H
☐	WASHER, 3/8*	300-03-1320	10	J
☐	BOLT, 3/8 - 16 X 1	300-03-0845	10	K
☐	GASKET SEAL TAPE	225-01-0628	10 FT	M
☐	SEALANT, BUTYL, TUBE	100-01-0121	1	N
☐	SHIM	375-01-3004-B	20	-
☐ ☐ ☐	SEALANT, SILICONE, TUBE	100-01-0051 (WHITE) 100-01-0063 (SILVER) 100-01-0065 (BLACK)	1	-
☐	SCREW, SELF TAP #8 X 1/2	300-03-0037	20	-
☐	VHB DOUBLE-SIDED TAPE	175-01-0562	10 FT	-
☐	DRAIN TRAP, PVC	225-01-1552	2	-



**FACTORY INSTALLED

HUSSMANN

REV C 01/25/2019

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

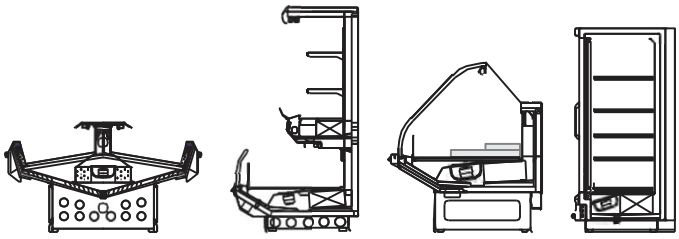
Problem	Possible Cause	Possible Solution
Water has pooled under case.	Case drain is clogged.	Clear drain.
	PVC drains under case may have a leak.	Repair as needed.
	Case tub has unsealed opening.	Seal as needed.
	If the case is in a line-up, case to case joint is missing or unsealed.	Install case to 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.	Ballast/light socket wiring.	Check electrical connections. See Electrical Section and check wiring diagram.
	Ballast 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 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.

Table 1

Type of Refrigerator	Typical Entering Air Temperature
I. OPEN DISPLAY	
A. Non frozen:	
1) Meat	28°F
2) Dairy/Deli	32°F
3) Produce	
a. Processed	36°F
b. Unprocessed	45°F
B. Frozen	0°F
C. Ice Cream	-5°F
II. CLOSED DISPLAY	
A. Non frozen:	
1) Meat	34°F
2) Dairy/Deli	34°F
3) Produce	
a. Processed	36°F
b. Unprocessed	45°F
B. Frozen	0°F
C. Ice Cream	-5°F



Single Deck Multi Deck Service Case Reach-In

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

Appendix B. - Application Recommendations

1. 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.