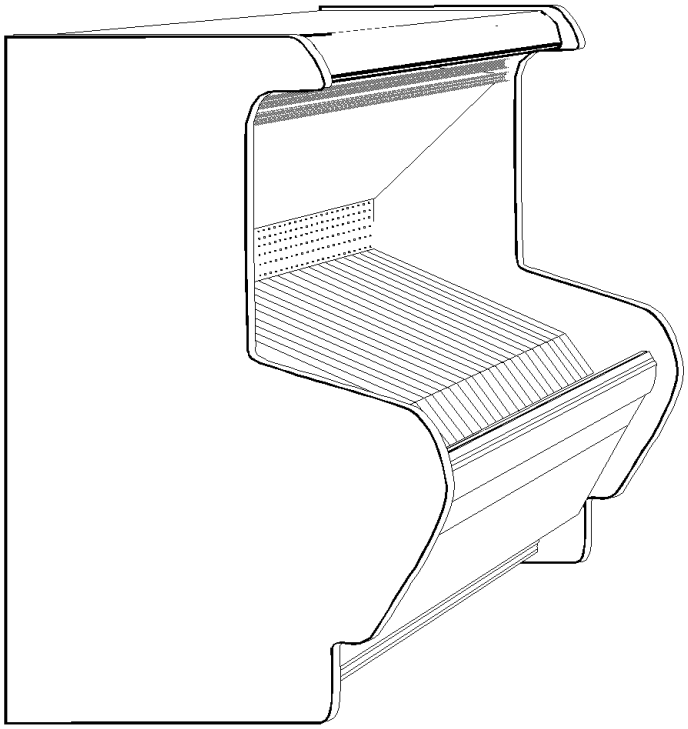
TYLER

series Advantage

Installation & Service Manual



L4V

MULTI-SHELF PRODUCE MERCHANDISERS
Critical Medium Temperature Self Serve Display Cases

This manual has been designed to be used in conjunction with the General Installation & Service Manual.
Save the Instructions in Both Manuals for Future Reference!!

This merchandiser conforms to the Commercial Refrigeration Manufacturers Association Health and Sanitation standard CRS-S1-96.

PRINTED IN	Specifications subject to	REPLACES	ISSUE		PART		
IN U.S.A.	change without notice.	EDITION	DATE	11/99	NO.	9036623	REV.

Tyler Refrigeration Corporation * Niles, Michigan 49120

CONTENTS

The following Critical Medium Temperature Multi-Shelf Produce Merchandiser models are covered in this manual:

MODEL	DESCRIPTION
L4V	**8’ & 12’ MULTI-SHELF PRODUCE MERCHANDISER**

SPECIFICATIONS

L4V Multi-Shelf Produce Merchandiser Specification Sheets

MODEL	L4V
USAGE	PRODUCE
CAPACITY*	1215
EVAPORATOR°***	+20F
ENTER AIR°	+33F

NOTES:
* Capacity data listed is for cases with one or two rows of T-8 canopy lighting, no shelf lighting and a double row of price tag molding above a 27" mirror.

** Evaporator temperature is defined as the saturated suction temperature leaving the case.

NOTE: COMPRESSOR SIZING SHOULD ALLOW FOR SUCTION LINE PRESSURE DROP.

THE ABOVE RATINGS ARE FOR COMPRESSOR SELECTION ONLY. FOR ENERGY CALCULATION DATA REFER TO THE ENERGY SECTION. FOR COMPRESSOR SIZING INFORMATION REFER TO THE "GOLD" SECTION & FOR LINE SIZING INFORMATION REFER TO THE "BUFF" SECTION OF THE TYLER SPECIFICATION GUIDE.

208 VOLT DEFROST (AMPS)											
FT	8	12	16	20	24	28	32	36	40	44	48
1 PH	6.9 TG-30	10.3 TG-30	13.9 TG-30	17.2 TG-30	20.6 TG-30	24.1 TG-40	27.5 TG-40	30.9 TG-40	34.4 TG-50	37.8 TG-50	41.2 TG-50
3 PH	N/A	N/A	12.0 TG-3 -30	15.0 TG-3 -30	18.0 TG-3 -30	15.0 TG-3 -30	18.0 TG-3 -30	18.0 TG-3 -30	21.0 TG-3 -30	25.0 TG-3 -40	28.0 TG-3 -40
CASE-TO-CASE SUCTION LINE SUB-FEED BRANCH LINE SIZING											
R22 WRAP	5/8"	7/8"	7/8"	7/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"	1 3/8"
R22 BULK	5/8"	7/8"	7/8"	7/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"	1 3/8"

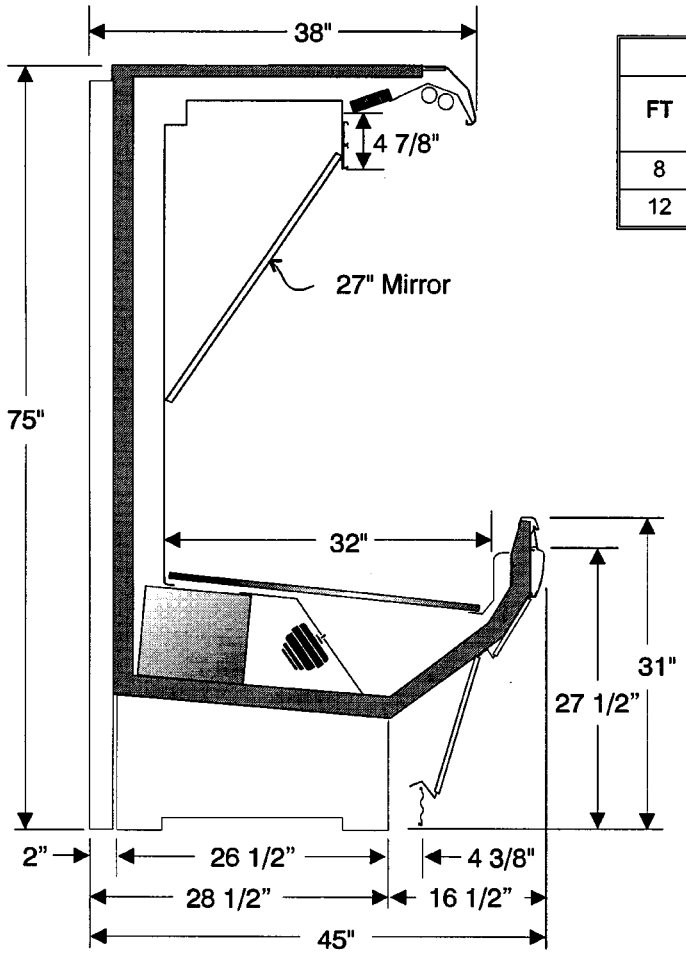
DEFROST CONTROL				PRESSURE SETTINGS		EPR SETTINGS	
PER DAY	MODE	TIME	TERM.	CUT IN	CUT OUT	R22	R404A
4	TIME OFF	30 MIN.	50°F	65-68# @ R22	43-45# @ R22	43#	- - -
4	TIME OFF	30 MIN.	50°F	81-84# @ R404A	55-58# @ R404A	- - -	55#

CASE CIRCUITS: This case requires a separate 120v circuit for fans, lights, anti-sweats, and a 208v circuit for Electric Defrost (if used).

CASE BTUH REQUIREMENTS are calculated to produce approximately the indicated entering air temperature with absolute maximum operating ambient limits of **75F & 55RH**.

The information contained herein is based on technical data and tests which we believe to be reliable and is intended for use by persons having technical skill, at their own discretion and risk. Since conditions of use are outside Tyler's' control, we can assume no liability for results obtained or damages incurred through the applications of the data presented. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

L4V Multi-Shelf Produce Merchandisers

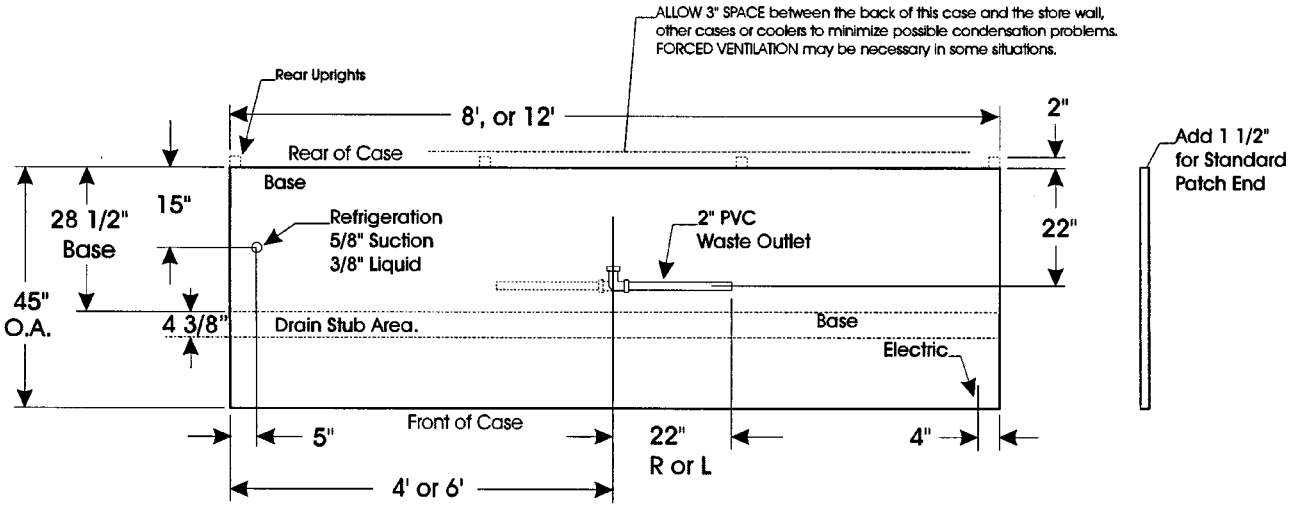


120 VOLT ELECTRICAL DATA (AMPS)			
FT	STD. FANS	ECM FANS	ANTI-SWEATS* DISC./AIR
8	1.2	.6	.3
12	1.8	.9	.5

120 VOLT LIGHTING (AMPS) T-8/ ELECTRONIC BALLASTS (CANOPY)*		
FT	STANDARD LIGHTING 1 ROW	OPTIONAL LIGHTING 2 ROW
8	.6	1.1
12	.9	1.8

* Discharge air anti-sweat heater and canopy lighting on same circuit.

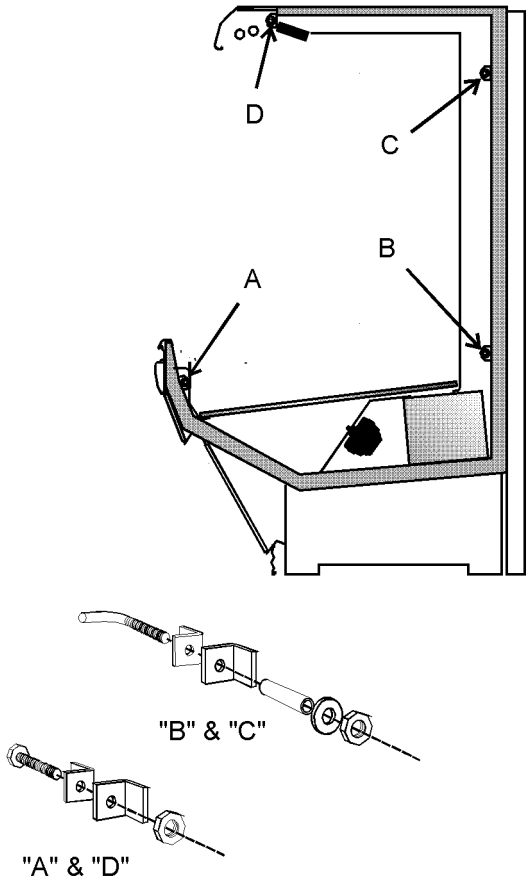
L4V CROSS SECTION AND FLOOR PLAN



INSTALLATION PROCEDURES

Carpentry Procedures

Case Pull-Up Locations



The L4V models have four pull-ups at each end of the case. Pull-ups A, B, C and D are located as shown and should be installed and tightened starting with A and finishing with D.

See "General I&S Manual" for line-up assembly instructions.

Electrical Procedures

Electrical Considerations

CAUTION

Make sure all electrical connections at components and terminal blocks are tight. This prevents burning of electrical terminals and/or premature component failure.

NOTE

The raceway houses the electrical wiring, components and terminal blocks for the case. Remove the lower front cladding to access the raceway.

Case Fan Circuit

This circuit is to be supplied by an uninterrupted, protected 120V circuit. The case fan circuit is not cycled, except when equipped for gas defrost. On gas defrost cases the fan circuit is controlled by a 50/30 klixon.

NOTE

With gas defrost, the fans will not start until the coil temperature reaches 30°F at the fan delay thermostat.

Fluorescent Lamp Circuit

L4V case lighting is supplied by T-8 electronic ballast lights. It is controlled by a light switch in each case. The standard lighting is 1-row of horizontal canopy lights. Case lighting options include 2-row of horizontal canopy lights.

Anti-Sweat Circuit

The L4V case has one anti-sweat heater in the discharge grid. This anti-sweat heater is wired into the light circuit.

Defrost Information

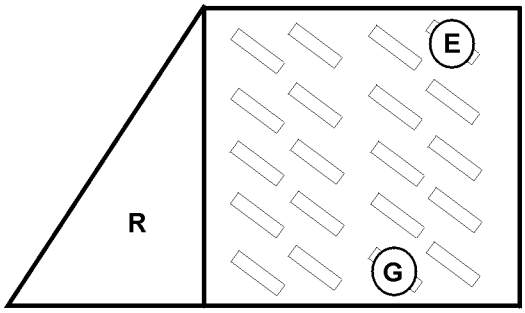
See "General I&S Manual" for operational descriptions for each type of defrost control.

Defrost Control Chart

L4V Defrost Option Settings

Defrost Type	Defrosts Per Day	Defrost Duration (Min)	Term. Temp.
Off Time	4	46	-----
Electric	4	36	50°F
Gas	4	12-15	55°F

All klixons are located on the right end of the evaporator coil. The diagram shows the location for each defrost type that uses a klixon.



G = Gas Defrost (Fan Delay)
E = Electric Defrost Termination

NOTE

The termination thermostat for gas defrost is located on the bypass check valve.

CAUTION

If electronic sensors are used in place of the klixons, the sensors must be located in the same location as the klixons for that defrost type. Any other locations will effect the refrigeration efficiency of the case.

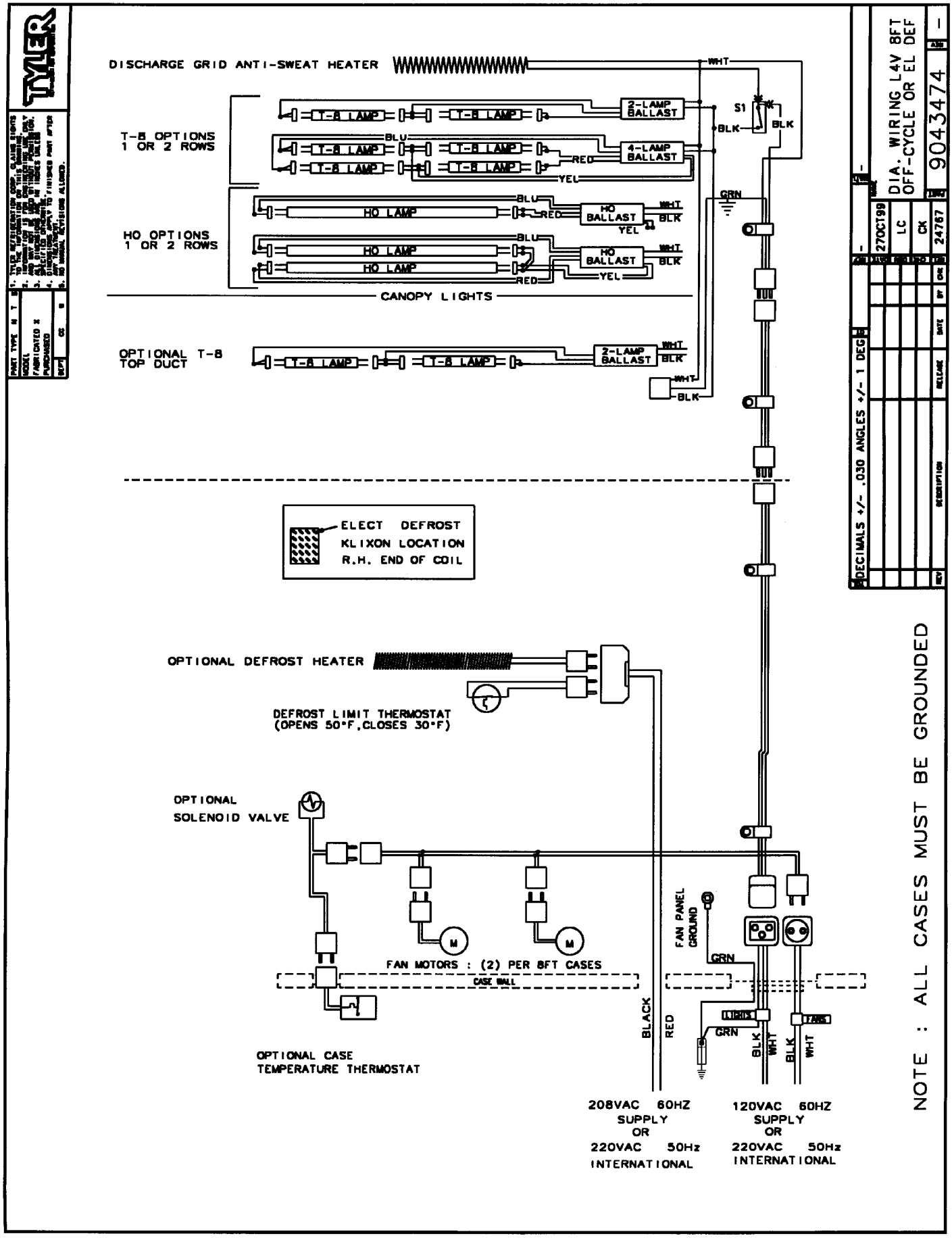
WIRING DIAGRAMS

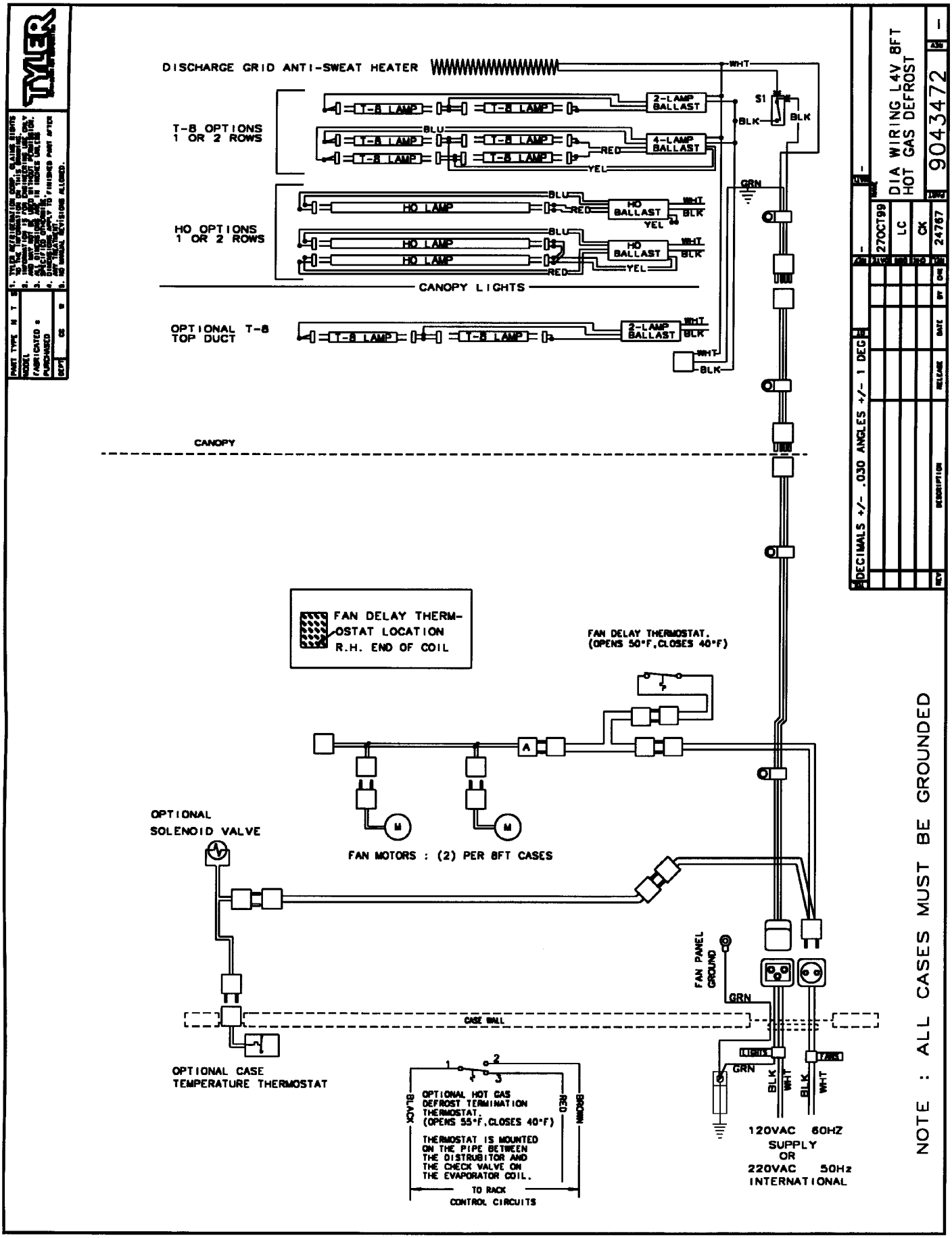
ELECTRICIAN NOTE - OVERCURRENT PROTECTION

120V circuits should be protected by 15 or 20 Amp devices per the requirements noted on the cabinet nameplate or the National Electrical Code, Canadian Electrical Code - Part 1, Section 28. 208V defrost circuits employ No. 12 AWG field wire leads for field connections. On remote cases intended for end to end line-ups, bonding for ground may rely upon the pull-up bolts.

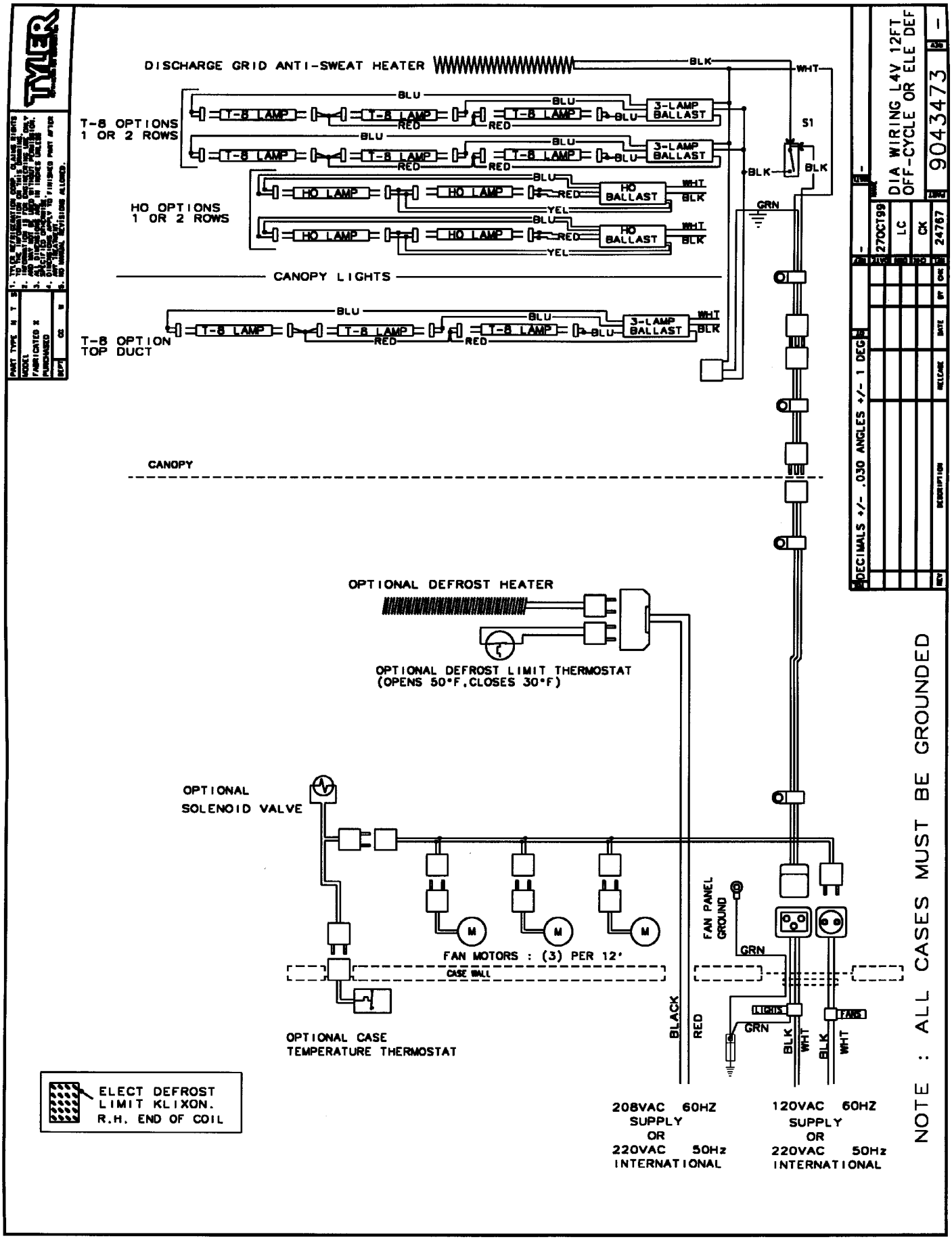
The following wiring diagrams on pages 8 thru 12 will cover the L4V case circuits, electric defrost circuit, gas defrost circuit, and lighting circuits.

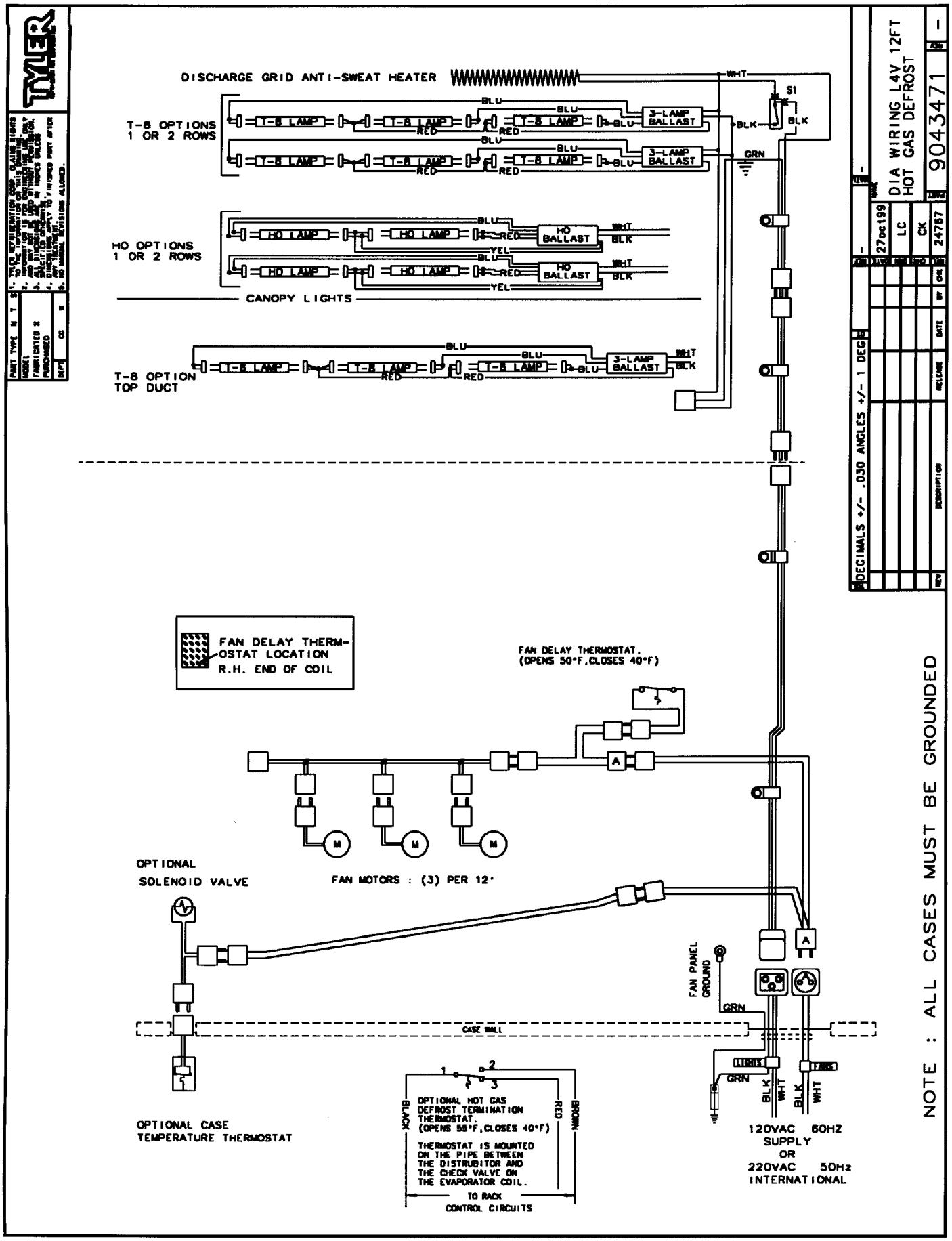
L4V Domestic & Export (50Hz) Case Circuits (8' Cases)




DISCHARGE GRID ANTI-SWEAT HEATER
T-8 OPTIONS
1 OR 2 ROWS
HO OPTIONS
1 OR 2 ROWS
CANOPY LIGHTS
OPTIONAL T-8
TOP DUCT
T-8 LAMP
HO LAMP
2-LAMP BALLAST
4-LAMP BALLAST
HO BALLAST
S1
WHT
BLK
BLU
RED
YEL
GRN
CANOPY
FAN DELAY THERM-OSTAT LOCATION R.H. END OF COIL
FAN DELAY THERMOSTAT. (OPENS 50°F,CLOSES 40°F)
OPTIONAL SOLENOID VALVE
FAN MOTORS : (2) PER 8FT CASES
FAN PANEL GROUND
CASE WALL
OPTIONAL CASE TEMPERATURE THERMOSTAT
OPTIONAL HOT GAS DEFROST TERMINATION THERMOSTAT. (OPENS 55°F,CLOSES 40°F)
THERMOSTAT IS MOUNTED ON THE PIPE BETWEEN THE DISTRUBITOR AND THE CHECK VALVE ON THE EVAPORATOR COIL.
TO RACK CONTROL CIRCUITS
120VAC 60HZ SUPPLY OR 220VAC 50Hz INTERNATIONAL
NOTE : ALL CASES MUST BE GROUNDED
DIA WIRING L4V 8FT HOT GAS DEFROST
9043472
DECIMALS +/- .030 ANGLES +/- 1 DEG
27OCT99
LC
CK
24787

L4V Domestic & Export (50Hz) Case Circuits (12' Cases)




DISCHARGE GRID ANTI-SWEAT HEATER
WHT
S1
BLK
T-8 OPTIONS
1 OR 2 ROWS
T-8 LAMP
3-LAMP BALLAST
BLU
RED
GRN
HO OPTIONS
1 OR 2 ROWS
HO LAMP
HO BALLAST
YEL
CANOPY LIGHTS
T-8 OPTION
TOP DUCT
DIA WIRING L4V 12FT
HOT GAS DEFROST
9043471
DECIMALS +/- .030 ANGLES +/- 1 DEG
FAN DELAY THERM-
OSTAT LOCATION
R.H. END OF COIL
FAN DELAY THERMOSTAT.
(OPENS 50°F,CLOSES 40°F)
FAN MOTORS : (3) PER 12'
OPTIONAL
SOLENOID VALVE
FAN PANEL
GROUND
CASE WALL
OPTIONAL CASE
TEMPERATURE THERMOSTAT
OPTIONAL HOT GAS
DEFROST TERMINATION
THERMOSTAT.
(OPENS 55°F,CLOSES 40°F)
THERMOSTAT IS MOUNTED
ON THE PIPE BETWEEN
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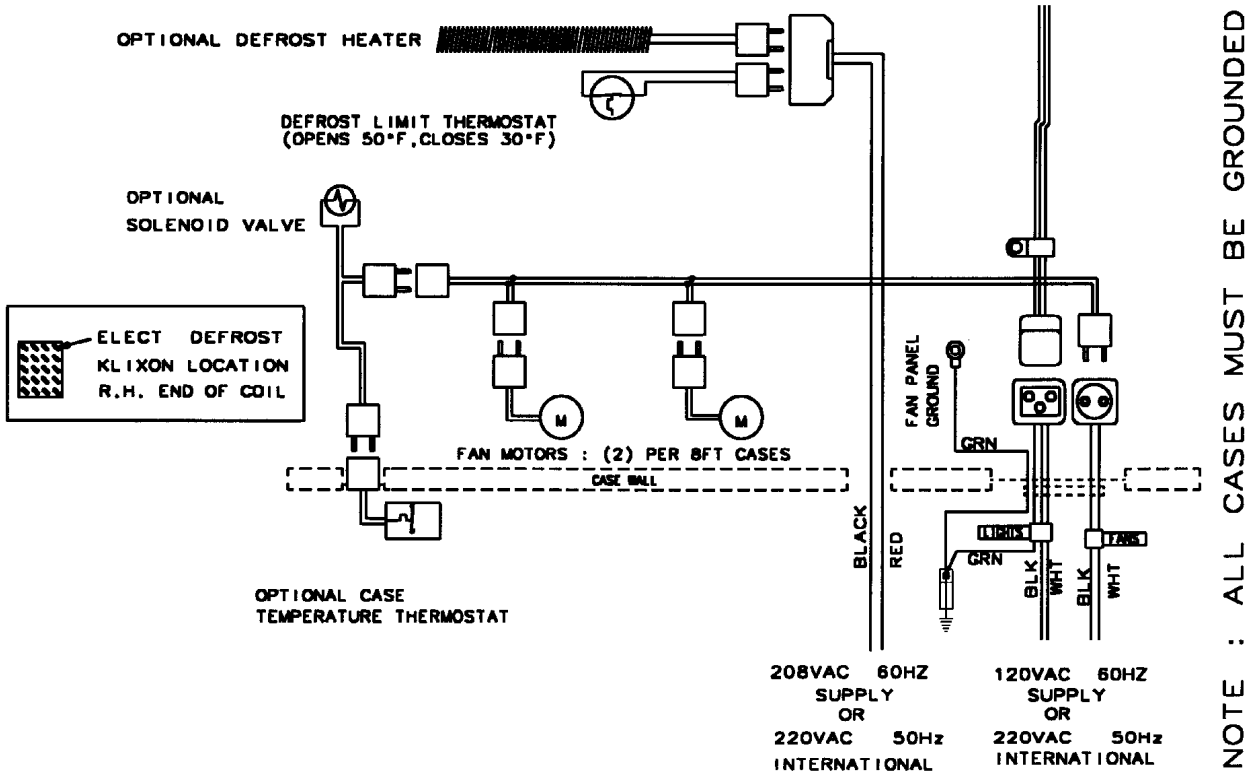
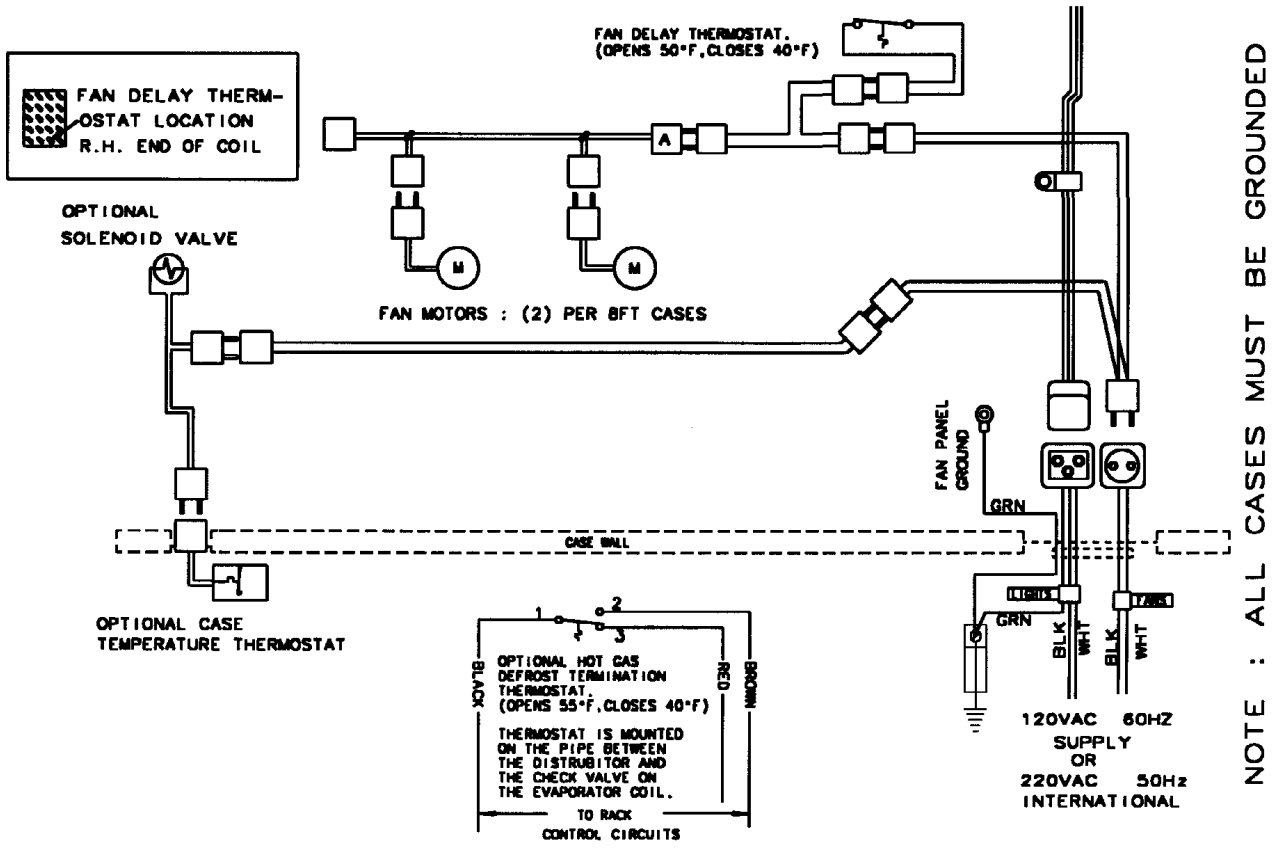
TO RACK
CONTROL CIRCUITS
BLACK
BROWN
LIGHTS
FANS
120VAC 60HZ
SUPPLY
OR
220VAC 50Hz
INTERNATIONAL
NOTE : ALL CASES MUST BE GROUNDED

Electric Defrost Circuit



Optional Gas Defrost Circuit



GENERAL INFORMATION

Mirror Installation

When installing mirrors you must be aware that on longer line-ups it is possible to end up with a gap at the end of the line-up. To help prevent this, leave a gap at the starting end that can be covered by the stainless steel trim. Additional mirror positioning adjustments may be required to make sure the gaps at each end of the line-up don't show when the stainless steel trim is in place. Also make sure all mirrors have a good tight seal between each mirror.

Water Spray Accessories

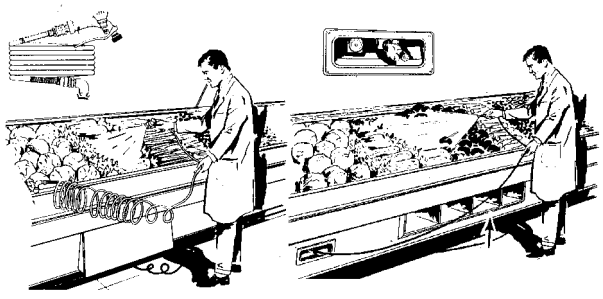
WARNING

When using water spray accessories it may be necessary to install approved anti-backflow devices in the water supply line. Local codes should be checked in this regards. Installation of this device is the responsibility of the end user and would be performed by plumbers.

CAUTION

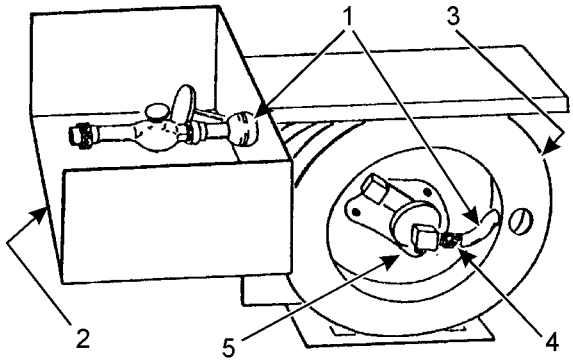
Do not spray lighted shelves when using any water spray accessories. Moisture on light fixtures could cause an electrical short and/or damage the case operating system.

The water supply pressure should not exceed 45 lb to assure proper operation. Water supply pressures above 45 lb should use a pressure reducing valve.



The spring coil spray hose or retractable spary hose are the two manual systems available for produce cases. To use the retractable spray hose, pull the nozzle and hose out smoothly to the desired length. When the reel rachet sounds, let the hose back against the rachet to hold it in place. To rewind, pull hose out slightly to release the reel rachet, then guide the hose back into the front of the case. Do not allow hose to rewind by itself. Hose jamming and/or reel damage could result.

Retractable Hose Replacement



1. Pull hose (1) completely out of front of case (2) and engage reel rachet.
2. Fasten locking pliers on the reel edge (3) to prevent the reel from accidentally rewinding. The reel spring is fully wound in this position.
3. Remove hose (1) from hose clamps on the reel (3) and disconnect hose end fitting (4) from swivel assembly (5). Remove hose (1) from reel (3) and front of case (2).

CAUTION

Do not allow the reel to rewind suddenly or attempt to turn reel clockwise. This will damage the spring motor in the reel.

NOTE

If reel spring is unwound, wind the reel 19 complete turns counterclockwise, engage the reel rachet and install locking pliers on the reel edge.

4. Insert hose (1) through the front of the case (2) and the hole in the reel (3).
5. Apply pipe dope to threads of hose end fitting (4). Install hose end fitting (4) in the swivel assembly (5).
6. Attach the hose (1) securely to the reel (3) with the hose clamps on the reel.
7. Retract the hose (1) onto the reel (3).

NOTE

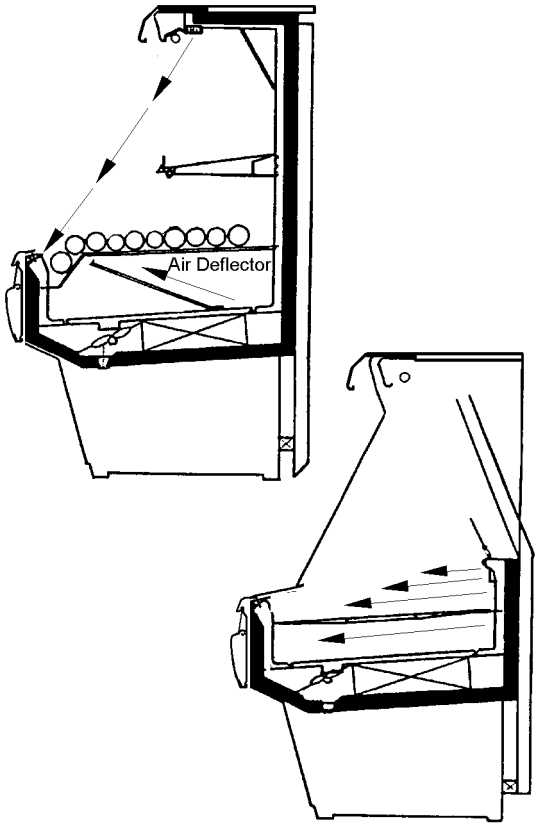
If reel does not work properly after rewinding, replace the reel asembly.

Produce Handling Tips

Fresh fruits and vegetables are living things, even after they have been harvested. They continue the process of respiration and transpiration after harvesting. Respiration is the process of self feeding to provide energy for maintaining life. (EXAMPLE: Asparagus and sweet corn generate heat after they are picked.) Transpiration is the process of water loss through vapor from the plant tissues. Post-havest life can be maintained by slowing the rate of water loss. Refrigeration lowers the rate of respiration and transpiration. Store most types of product close to freezing prior to display. There are a number of explanations (ex. Cucumbers can be kept relatively cool by themselves, but could be damaged by temperatures below 40°F). See chart on folowing pages for specifics.

Non-refrigerated produce cases are called “Dry” cases. They are used to display potatoes, dry onoins, bananas, avocados and other products which don’t need refrigeration. These cases can also be used with a bed of cracked ice to display perishables.

Refrigerated produce cases display produce products that requir refrigeration. The refrigeration coil is below the display and fans are used to circulate air through the case display. This moving air will pick up moisture from unwrapped produce and carry it to the coil. It is necessary to replace this moisture by using a water spray several times during the day. At night the produce should be covered with a wet cloth. The alternate to sprinking is to wrap the produce.



In order to maintain case air flow, the return air ducts must not be blocked by product. An important aid to improve air circulation is to use air deflectors below the elevated screens in the case. These deflectors will direct the air flow into the display and prevent cool air from “short circuiting” the display. Deflectors are furnished with hump screen option. See illustration.

Produce Handling Chart

	Ideal Storage Conditions			Display Rack Care		
Produce	**Temperature (°F)**	**Relative Humidity (%)**	**Sell Quickly (1-2 days)**	**Refrigerate (40°F)**	**Sprinkle with Water**	**Special Notes**
Apples	30-32	85-95		Helpful	No advantage	Avoid bruising
Apricots	31-32	85-90	Yes	Helpful	No	
Asparagus	32-36	90-95	Yes	Profitable	No	Trim butts and stand in ice or shallow water
Avocados	40-55	85-90	Yes	No	No	Display on padded surface
Bananas, Ripe	56-58	85-90	Yes	No	No	Display on padded surface
For Ripening	58-68	90-95		No	No	Avoid bruising
Beans, Lima	32-40	85-90	Yes	Profitable	No	Shake up to aerate
Beans, Snap	40-45	90-95	Yes	Profitable	Yes	
Beets	32	85-95	Yes	Profitable	Yes	Moisten roots only
Berries	31-32	90-95	Yes	Helpful	No	Keep well ventilated
Broccoli	32-35	90-95	Yes	Profitable	Yes	Keep out of sun
Brussel Sprouts	32-35	90-95	Yes	Profitable	Yes	Remove yellow leaves
Cabbage	32	90-95		Helpful	Yes	
Carrots	32	90-95		Profitable	Yes	Moisten roots only of bunches
Cauliflower	32	90-95	Yes	Profitable	Yes	Sprinkle only if refrigerated
Celery	31-32	90-95	Yes	Profitable Yes		
Cherries	31-32	90-95	Yes	Helpful	No	Keep well ventilated
Corn, Sweet	31-32	90-95	Yes	Profitable	Yes	Keep cold to keep sweetness
Cucumbers	45-50	85-90	Yes	No	No advantage	
Eggplants	45-50	85-90	Yes	No	No advantage	Do not bruise, keep on ice
Grapefruit	50-60	85-90		Helpful	No advantage	Remove decayed fruit
Grapes	30-32	85-95	Yes	Helpful	No	Keep well ventilated
Honeydews	45-50	85-90		Helpful	No	Cover cut melons with transparent film
Lemons	38-40	85-90		Helpful	Yes	Sprinkling may be helpful
Lettuce	32	90-95	Yes	Profitable	Yes	Avoid soaking with water
Limes	48-50	85-90		Helpful	No advantage	
Mushrooms	32-35	80-90	Yes	Helpful	No	Handle carefully, keep dry
Muskmelons	32-35	85-90	Yes	Helpful	No	Cover cut melons with transparent film
Onions, Dry	32	65-70		No	No	Remove loose wrappers, keep dry
Onions, Green	32	90-95	Yes	Profitable	Yes	Keep well ventilated
Oranges	34-38	85-90		Helpful	No advantage	Remove decayed fruit
Parsnips	32	90-95		Helpful	Yes	Moisten roots only
Peaches, Ripe	31-32	90	Yes	Helpful	No	Ripen at room temperature before storage
Pears	29-31	90-95	Yes	Helpful	No	Display in single or double layer on pads

	Ideal Storage Conditions			Display Rack Care		
Produce	**Temperature (°F)**	**Relative Humidity (%)**	**Sell Quickly (1-2 days)**	**Refrigerate (40°F)**	**Sprinkle with Water**	**Special Notes**
Peas, Green	32	90-95	Yes	Profitable	Yes	Shake up to aerate, keep cold
Peppers	45-50	90-95	Yes	Profitable	Yes	
Pineapples, Ripe	45-55	85-90	Yes	No	No	Remove decayed fruit
Plums	31-32	90-95	Yes	Helpful	No	Remove decayed fruit
Potatoes	40-50	85-90		No	No	Keep out of sun
Radishes	32	90-95	Yes	Profitable	Yes	Keep water off tops, avoid tight packing
Rhubarb	32	90-95	Yes	Profitable	No	Trim thin slice off stems and stand in cold water
Squash, Summer	40-50	85-95	Yes	Helpful	Yes	
Winter & Pmpkns	50-55	50-75		No	No	
Spinach	32	90-95	Yes	Profitable	Yes	Keep ventilated
Sweet Potatoes	55-60	85-90		No	No	Keep ventilated
Tangerines	32	85-90	Yes	Profitable	Yes	Remove decayed fruit
Tomatoes, Ripe	45-50	85-90	Yes	Helpful	No	Sell quickly, refrigerate to hold
Tomatoes, Green	55-70	85-90		No	No	Ripen in back room, sort frequently
Turnips	32	90-95		Profitable	Yes	Sprinkle roots only
Watermelons	40-45	80-85		Helpful	No	Cover cut melons with transparent film

The “Produce Handling Chart” is courtesy of Produce Marketing Association, Inc., Newark, Delaware 19711, from their 1973 Yearbook. This book is published as a service to the Fresh Produce Industry.

For additional information, consult:

“The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stocks”, USDA Handbook No. 66, 1968.

“The Shelf Life of Fresh Fruits and Vegetables - Retail Store Display Cases”, USDA HT&S Office Report No. 247, October 1951.

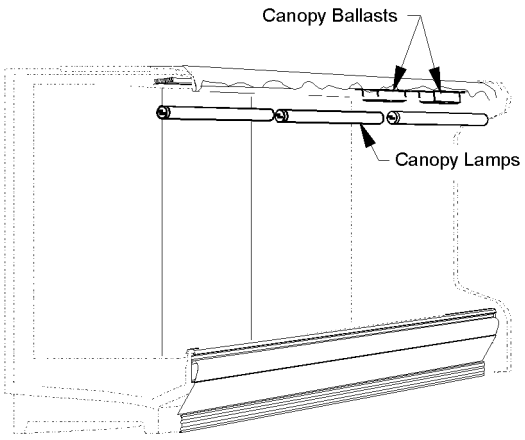
“Fresh Fruits and Vegetables - Handling and Care”, Corporate Extension Service, Michigan State University.

SERVICE INSTRUCTIONS

Light Servicing

See "General I&S Manual" for T-8 lamp and ballast, fan blade and motor, and color band and bumper replacement instructions.

Ballast and Lighting Locations

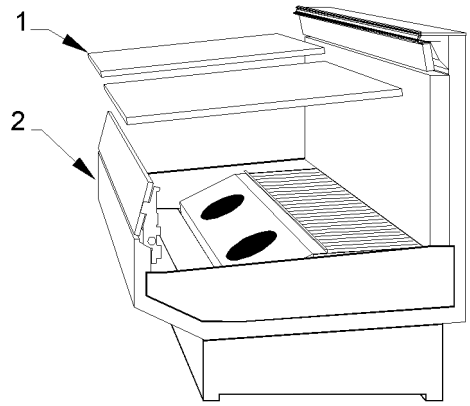


All light ballasts are located under the canopy and mounted on the top of the canopy light channel. The canopy light(s) are under the canopy light channel in the top of the case.

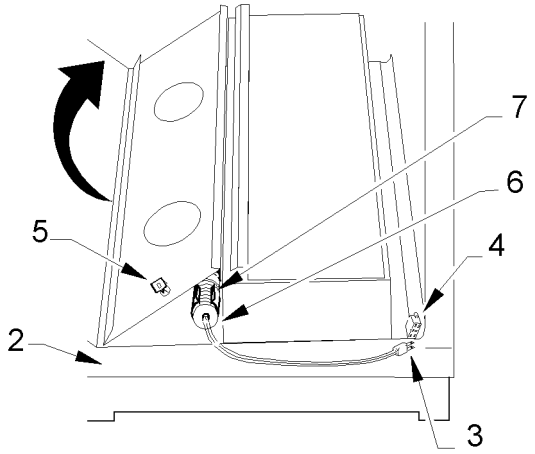
Defrost Heater Replacement

WARNING

Always shut off electricity to case before replacing a defrost heater. Automatic cycling of fans or electrical power to wire ends could cause personal injury and/or death.



1. Remove bottom trays (1) from case (2).



2. Disconnect defrost heater plug (3) from junction block (4).
3. Unclip and lift up fan plenum (5).
4. Remove defrost heater (6) from mounting clips (7) and case (2).
5. Install new defrost heater (6) in reverse order.
6. Restore electrical power to case.

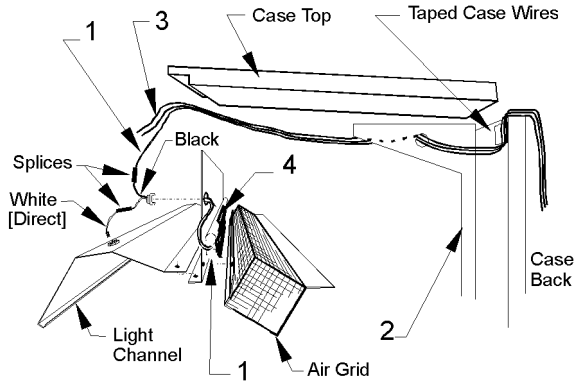
Anti-Sweat Replacement

All cases have at least one anti-sweat heater. L4V cases have a discharge grid anti-sweat heater. All anti-sweat heaters are wires that run the length of the above mentioned components. Use the following instructions to replace an anti-sweat heater.

WARNING

Shut off or disconnect power supply to case before changing an anti-sweat. Electrical power from wire ends could damage other components and/or cause personal injury or death.

1. Expose the full length of the defective anti-sweat wire (1) in the case (2).



2. Disconnect or cut the defective anti-sweat wire (1) from the case wires (3).
3. Remove the aluminum tape (4) and defective anti-sweat wire (1) from the case (2).
4. Position new anti-sweat wire (1) in case (2) and secure with new aluminum tape (4).
5. Connect or splice the new anti-sweat wire (1) to case wires (3).
6. Replace all components that were removed to expose the anti-sweat wire (1).
7. Restore electrical power to case.

PARTS INFORMATION

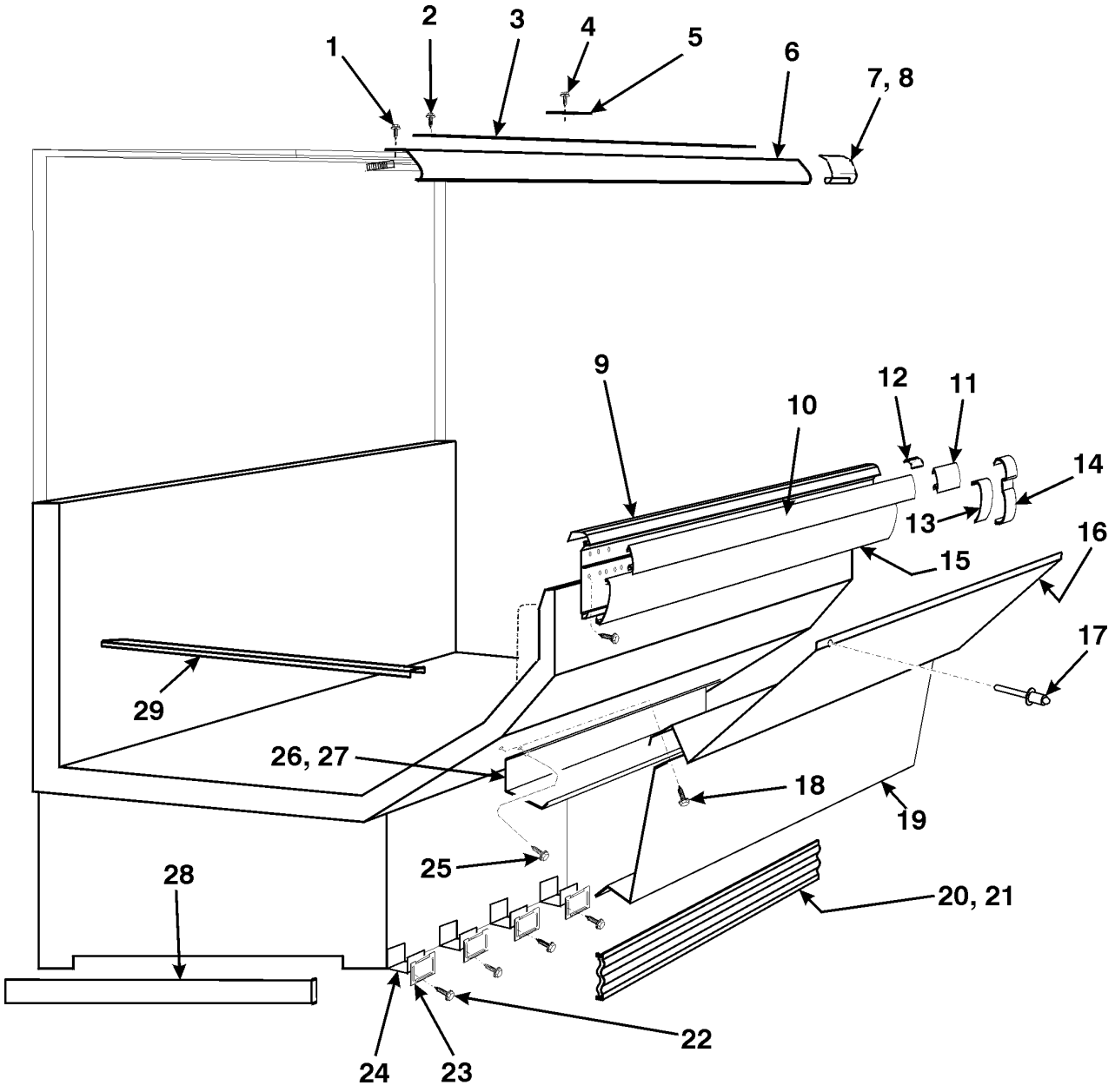
Operational Parts List

Case Usage	**Domestic**		**Export**	
Electrical Circuit	115 Volt 60 Hertz		220 Volt 50 Hertz	
Case Size	8’	12’	8’	12’
Fan Motor	5243498 9 Watt	5243498 9 Watt	5223696 18.3 Watt	5223696 18.3 Watt
Fan Motor Brackets	5235087	5235087	5205112	5205112
Fan Blades (8.75” 25° 5B)	5984399	5984399	5984399	5984399
T-8 Ballast (canopy)	5991029	5991030	9028437	9028438
T-8 Lampholder (canopy)	5232279	5232279	5232279	5232279
Light Switch	5193982	5193982	5193982	5193982
Anti-Sweat Heater Wire	5124216	5124217	5081147	5081148
Opt. Elec. Def. Heater	5124521	5124522	----	----
Opt. Elec. Def. Limit Switch	5125211	5125211	----	----
Opt. Gas Def. Fan Delay Switch	9023503	9023503	9023503	9023503
Opt. Gas Def. Term. T’stat	9023508	9023508	9023508	9023508

For information on operational parts not listed above contact the TYLER Service Parts Department.

Cladding and Trim Parts List

Item	Description	L4V	
		8’	12’
1	Screw	5183536 (8)	5183536 (10)
2	Screw	5183536 (5)	5183536 (7)
3	Close-off, Hood	9026069	9026070
4	Screw (per cover)	5183536 (4)	5183536 (4)
5	End Cover (1 per side)	9026103	9026103
6	Canopy Hood, Painted	9025223	9025224
7	Canopy Backer, Painted	9025983	9025983
8	Screw	5199134 (4)	5199134 (4)
9	Bumper Retainer	--------- color by order ---------	
	Screw	9025833 (16)	9025833 (24)
10	Color Band, Painted	9023799	9023800
11	Color Band Backer, Painted	9040223	9040223
12	Handrail Backer, Painted	9025316	9025316
13	Bumper Backer	--------- color by order ---------	
14	Bumper End Trim	--------- color by order ---------	
15	Bumper	--------- color by order ---------	
16	Upr. Frt. Cladding, Painted	9025201	9025202
17	Rivet	5104702 (3)	5104702 (3)
18	Screw, Shoulder	5183536 (6)	5183536 (6)
19	Lwr. Frt. Cladding, Painted	9023139	9023140
20	Kickplate	--------- color by order ---------	
21	Kickplate Backer	9041790	9041790
22	Screw	5205213 (6)	5205213 (8)
23	Kickplate Support	9041329 (3)	9041329 (4)
24	Cladding Retainer	9022955 (3)	9022955 (4)
	Screw	5205213 (6)	5205213 (8)
25	Screw	5183536 (8)	5183536 (10)
26	Raceway	9025127	9025128
27	Raceway Cover	9022953	9022954
	Screw	5183536 (5)	5183536 (7)
28	End Close-off, Painted (1 per end)	9602575	9602575
	Screw	5222637 (4)	5222637 (4)
29	Horizontal Joint Trim	9025959	9025959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