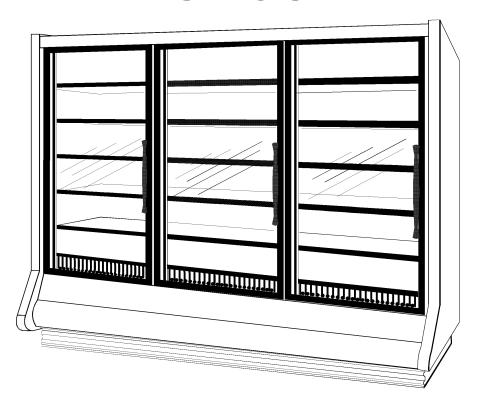


# Installation & Service Manual



# L5FGA, L5NGA

# GLASS DOOR MERCHANDISER (ARDCO) Frozen Food & Normal Temp Cases With Reversible Doors

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	7/99	DATE	8/99	NO.	9023757	rev. C	

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The following Frozen Food and Normal Temperature Glass Door Merchandiser models are covered in this manual:

MODEL	DESCRIPTION
L5FG2A/L5NG2A	2-DR, GLASS DOOR MERCHANDISER (5', 2")
L5FG3A/L5NG3A	3-DR, GLASS DOOR MERCHANDISER (7', 8 7/16")
L5FG4A/L5NG4A	4-DR, GLASS DOOR MERCHANDISER (10', 2 7/8")
L5FG5A/L5NG5A	5-DR, GLASS DOOR MERCHANDISER (12', 9 5/16")

# **SPECIFICATIONS**

# L5FGA Glass Door Merchandiser (ARDCO) Specification Sheets

MODEL	L5FGA	L5FGA
USAGE	FROZEN	ICE CREAM
BTUH/DR	1538	1656
SUCTION®	-16F	-23F
ENTER AIR°	-5F	-12F

Capacity data listed is for cases with T-8 electronic vertical lighting (Prism). Lights remain on during defrost. See Capacity Adjustments below:

Add 916 Btuh per glass end for frozen food cases
Add 1000 Btuh per glass end for ice cream cases
Add 100 Btuh/Dr for opt. 800MA horizontal lighting
Add 200 Btuh/Dr for opt. 800MA vertical lighting

Add 318 Btuh/Dr for opt. VHO 1500MA horiz, lighting

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	DEFRO	ST (AM	PS)					
DRS	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FF/IC 1 PH	6.6 TG-30	10.8 TG-30	15.0 TG-30	19.3 TG-30	21.6 TG-30	25.8 TG-40	30.1 TG-40	34.3 TG-50	38.6 TG-50	N/A	N/A	N/A	N/A	N/A
FF/IC 3 PH	N/A	N/A	N/A	N/A	19.0 TG-3 -30	23.0 TG-3 -30	26.0 TG-3 -40	30.0 TG-3 -40	34.0 TG-3 -40	26.0 TG-3 -40	30.0 TG-3 -40	34.0 TG-3 -40	34.0 TG-3 -40	34.0 TG-3 -40
			CASE-	O-CAS	E SUCT	TION LII	NE SUB	-FEED	BRANC	H LINE	SIZING	·		
R404A FF	5/8"	7/8"	7/8"	7/8"	7/8"	7/8"	1 1/8"	1 3/8"						
R404A IC	5/8"	7/8"	7/8"	7/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"	1 3/8"	1 3/8"	1 3/8"

DEFROST CONTROL					PRESSURE SE	EPR SETTINGS		
PER DAY	MODE	TIME	TERM.		CUT IN	CUT OUT	R22	R404A
1	ELECT/FF	60 MIN.	60F	FF	16# @ R22	8# @ R22	12#	
2	ELECT / IC	60 MIN.	60F	IC	12# @ R22	4# @ R22	8#	
2	HOT GAS / FF	18-20 MIN.	55F	FF	23# @ R404A	14# @ R404A		19#
2	HOT GAS / IC	20-25 MIN.	55F	IC	19# @ R404A	9# @ R404A		14#

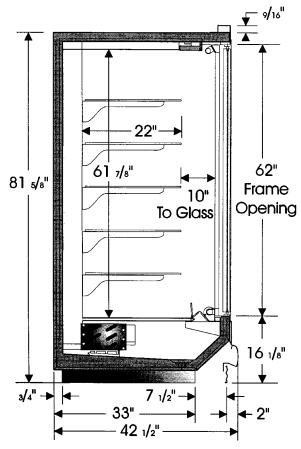
CASE CIRCUITS: This case requires a separate 120V circuit for fans, lights, anti-sweats, and a 208V circuit for Electric Defrost (if used). The fan circuit for Gas Defrost includes the drain pan heater which is on only when the fans are off. The anti-sweat circuit feeds power to both the cyclable and non-cyclable heaters. When an Energy Saving Anti-Sweat Controller is used a relay is added and a jumper is removed to control the cyclable heaters.

The temperature control mode used should prevent excessively low discharge air temps which irritates product frosting. This limit should be -12F.

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

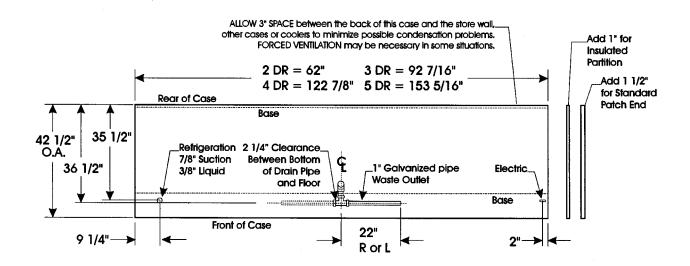
The information contained herein is based on technical data and tests which we believe to be reliable and is intended for use by persons having technical skill, at their own discretion and risk. Since conditions of use are outside Tyler's' control, we can assume no liability for results obtained or damages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

# L5FGA Glass Door Merchandiser (ARDCO)



	120 VOLT ELECTRICAL DATA (AMPS)												
DRS	STD.	FANS	ECM	ECM FANS									
DIXO	H.G.	H.G. ELEC.		ELEC.	ANTI-SWT								
2	1.5 1.2		.9	.6	2.9								
3	2.2	1.8	1.3	.9	4.2								
4	2.8 2.5		1.5	1.2	5.5								
5	3.5 3.0		2.0	1.5	6.8								

	120 VOLT LIGHTING DATA (AMPS)											
DRS	HORIZ	ONTAL	VERT T8	VERT H.O.								
	V.H.O.	H.O.		VERTINO.								
2	2.9	1.6	1.6	3.2								
3	2.9	2.1	2.1	3.2								
4	5.8	3.1	2.6	4.8								
5	6.0	3.1	3.2	4.8								



# L5NGA Glass Door Merchandiser (ARDCO) Specification Sheets

MODEL	L5NGA			
USAGE	MEDIUM TEMP			
BTUH/DR	1305			
SUCTION°	+20F			
ENTER AIR°	+30F			

Capacity data listed is for cases with T-8 electronic vertical lighting (Prism). Lights remain on during defrost. See Capacity Adjustments below:

Add 520 Btuh per glass end for medium temperature cases

Add 100 Btuh/Dr for optional 800MA horizontal lighting

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.

	CASE-TO-CASE SUCTION LINE SUB-FEED BRANCH LINE SIZING													
DRS	DRS 2 3 4 5 6 7 8 9 10 11 12 13 14 15											15		
R22														

	DEFROST CON	ITROL	PRESSUF	EPR SETTINGS		
PER DAY	MODE	TIME	CUT IN CUT OUT		R22	R404A
1	TIME OFF	60 MIN.	64# @ R22	29-38# @ R22	43	
			80# @ R404A	39-49# @ R404A		55

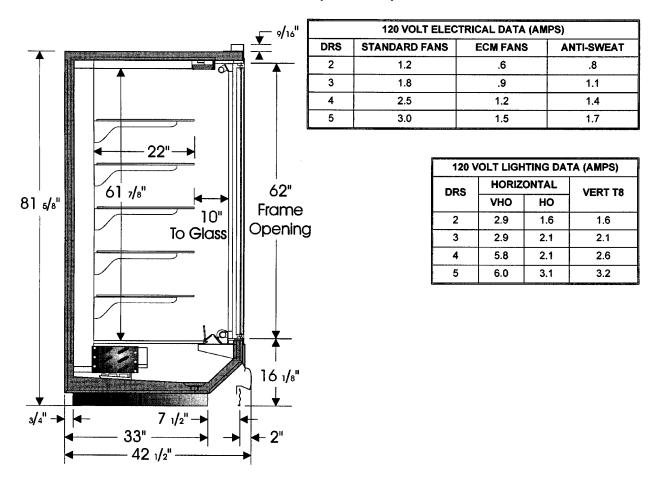
**CASE CIRCUITS:** There is a 120v Case Fan Circuit plus the 120v Case Anti-sweat Heater Circuit. Interior lights require a separate 120v circuit which can be switched at the back room for convenience in controlling the lights.

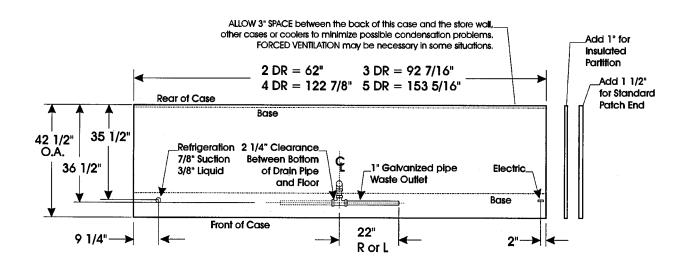
**CASE BTUH REQUIREMENTS** are calculated to produce approximately the indicated entering air temperature with absolute maximum operating ambient limits of **75F & 55RH**.

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.

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# L5NGA Glass Door Merchandiser (ARDCO)





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# INSTALLATION PROCEDURES

# **Carpentry Procedures**

# Case Line-Up

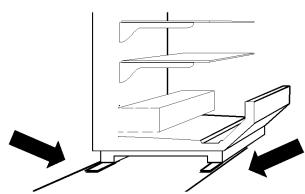
Before starting the case line-up, review the store layout floorplans and survey the areas where case line-ups are going to be installed.

# **WARNING**

These cases are very heavy and require two or more people to move and/or position them. Improper handling of these cases could result in personal injury.

# **NOTE**

Allow at least 3" of air space between the back of these cases and store walls or other cases to minimize possible condensation problems. Forced ventilation might be necessary in some situations.



1. Snap chalk lines where the front and rear base rails of the cases are to be located for the entire line-up.

#### NOTE

Front and rear edges of base rails should always be used to line-up cases. 6" shims allow adjoining ends of cases to be shimmed together.

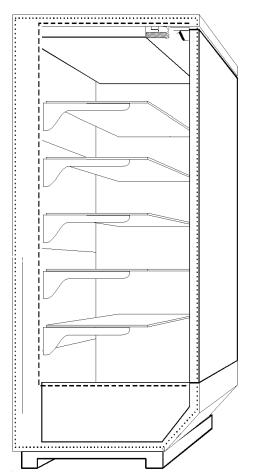
Locate highest point on chalk lines as a reference for determining the number of shims to be placed under the case base rails. Position first case at highest point on the chalk lines and shim case supports as required. Check leveling at hand rails and top of case and back of case.

# **CAUTION**

Shipping braces should only be removed from case ends that are to be joined. This protects the cases from possible damage during the line-up procedure.

### **NOTE**

A foam gasket is factory installed on one end of the case. This gasket fits into a groove on the adjoining case when cases are pulled together. Do not depend on the foam gasket alone to make a good seal!



3. Apply two heavy beads of caulking compound from the Filler Kit to the end of case at dotted (. . .) and dashed (- - -) lines. Proper caulking provides good case refrigeration and sanitation.

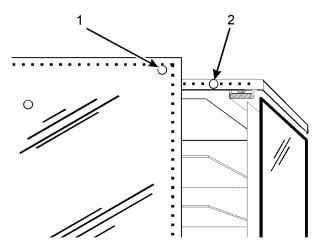
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4. If the case requires a plexiglas system divider or 1" partition, install as follows:

# Plexiglas System Divider Installation

#### **NOTE**

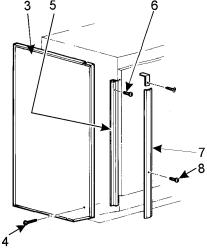
The holes in the divider will only line-up one way.



- a. Line-up the four holes in the divider (1) with the four holes for the case pull-ups (2). Position divider on sealant on case end.
- b. Apply sealant to outside surface of divider (1) in same position as the case sealant application.

#### 1" Partition Installation

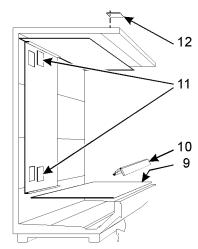
1" partitions are shipped installed as specified in the case order. Make sure the partitioned case is being installed in the proper location in the case line-up. This assures proper refrigeration to all parts of the case line-up.



a. Apply sealant to outside surface of partition (3) where the two surfaces of the adjoining case will contact the partition (3). Drill 3/16" holes through partition and secure to one of the cases with four screws (4).

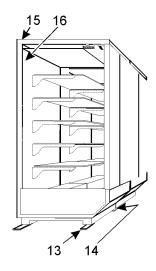
After cases are joined, install the partition trim:

- b. Install vertical trim support (5) on front edge of partition (3) with four screws (6).
- c. Install vertical joint trim (7) to vertical trim support (5) with four screws (8).



5. Remove bottom tray (9), front duct (10), rear pull-up access covers (11), and top pull-up access cover (12) from adjoining ends of both cases. This provides access to the case pull-ups.

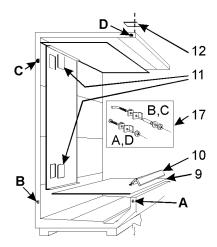
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- 6. Push cases tightly together making sure the pull-ups are aligned.
- 7. Add shims (13), as required, under the adjoining case base rails (14). Check leveling at top of case (15), and back of case (16).

# **CAUTION**

Do not drill or use other holes through the case end for pull-ups. This may deform the case end and could cause joint leaks and/or poor refrigeration.

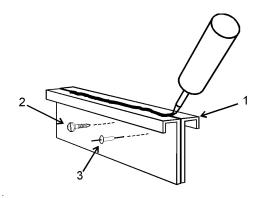


- Position all pull-up bolts and mounting hardware (17) at pull-up locations A, B, C, and D. Do not tighten any pull-up hardware until all of it has been installed. Tighten all pull-up hardware equally starting at point A and finishing at point D. Do not overtighten.
- Install top pull-up access cover (12), rear pull-up access covers (11), front duct (10), and bottom tray (9).
- 10. Remove shipping tape from fluorescent lamps.

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# Trim Installation/Alignment

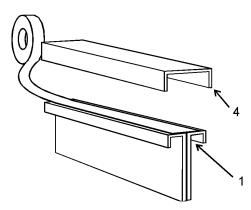
**Horizontal & Vertical Joint Trim Installation** 



1. Apply bead of caulking compound from the Filler Kit to the top of each horizontal joint (1). If gap at horizontal joint is too large, pull together with sheet metal screws (2) or pop-rivets (3).

#### **NOTE**

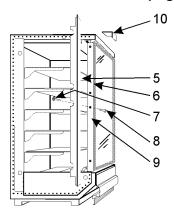
If additional sealing is preferred, 2" wide duct tape can be applied to the top of the internal bottom joint between cases. The tape will be covered by the horizontal joint trim. Duct tape is not furnished.



2. Apply sealer to horizontal joint trim (4) and install joint trim (4) on the horizontal joint (1).

#### NOTE

The following information is for joining cases without 1" partitions. For cases with 1" partition between them, see page 9.



- 3. Position vertical joint trim (5) in front case line-up joint (6) and secure by tightening four screws (7) and screw nuts (8) through adjoining case door frames (9).
- 4. Install top backer (10) before joining cases, or install exterior top joint trim after cases are joined.

# **NOTE**

See "General I&S Manual" for raceway cover, kickplate and end closeoff installation instructions.

# **Refrigeration Procedures**

#### **NOTE**

See "General I&S Manual" for all other refrigeration procedure information.

# L5FGA Application Requirements

# **Temperature Control Strategy**

- A suction stop EPR valve is the preferred method for maintaining temperature control on parallel compressor system applications.
- When using a thermostat and liquid line solenoid for temperature control, the maximum line-up length that may be controlled is 24 feet.
- The discharge air temperature shall be maintained between -3°F to -5°F for frozen food applications and between -10°F to -12°F for ice cream applications.

### **Temperature Sensor Locations**

- The sensor used for temperature control shall be located in the discharge air.
- If a case controller is used, the sensor used for defrost termination MUST be insulated and located where the standard defrost termination klixon is located. If a case controller is used and the case is defrosted using electric heaters, the defrost termination klixon must be replaced with a 70°F fail safe klixon. This meets the safety requirements.

# **Defrost Control Strategy**

- High door openings loads associated with high food product sales may require two defrost periods per 24 hour period.
- Pumping down the refrigeration circuit at the beginning of the defrost period is not recommended.

#### **Electrical Procedures**

# **Electrical Considerations**

#### Case Fan Circuit

This circuit is to be supplied by an uninter-

rupted, protected 120V circuit. At case startup, the fans will not come on until the fan delay thermostat on the coil senses 20°F. After the case has been running, the fan operation is interrupted by the defrost relay whenever the defrost cycle is initiated. The defrost relay activates the defrost and drain pan heaters at the same time it shuts off the fans. After defrost, the defrost and drain heaters will shut off and refrigeration will resume.

#### NOTE

The fans will not restart until the coil temperature reaches 20°F at the fan delay thermostat.

# Fluorescent Lamp Circuit

The standard case lighting system is T8 Electronic Vertical (Prism) lamps. The standard lighting is 3 to 6 rows of vertical T8 lighting located on each side of all doors.

#### ATTENTION: INSTALLER

- Do not turn on the lights inside the case unless operating temperature has been reached. Ballast failure may occur when the lights are operating without refrigeration in the case.
- Do not leave power on to the door and frame heaters unless operating temperature inside the case has been reached.
   Failure to follow this instruction could cause damage to the door frame.
- The light switch should be left off if refrigeration is turned off for periods longer than normal defrosting times.
   This prevents possible distortion and/or damage to non-metal parts from lighting heat.

#### **NOTE**

All lighting options, except Prism Lighting, have a 100°F klixon built into the door frame. This klixon keeps the case lighting from becoming too hot, especially during the installation process. Lights will remain on during defrost cycle.

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# ESM/ESS Anti-Sweat Control System

When a line-up of cases are ordered with the optional ESM/ESS control system, up to 10 cases can be controlled by one master unit (ESM). The ESM should be mounted on the top right hand end of one of the cases in the line-up. By pulling the two required wires from the ESM to the first slave unit (ESS) in the line-up, you can daisy chain all the ESS together at their individual terminal blocks. The ESS terminal blocks are located in the lower raceway of each case (see ESM/ ESS wiring diagram in this manual).

The TYLER ESM/ESS control system is designed to effect energy savings in the operation of L5FGA glass door merchandisers. This is accomplished by cycling the antisweat heat in the door frames and door glass. 522 watts of heat - (0.87 amps per door) in a 5 door case can be cycled on and off based on the dewpoint. Less energy is used as the dewpoint lowers. The ESM draws its very small requirements of 3 watts @ 120 volts (0.03A) from the case.

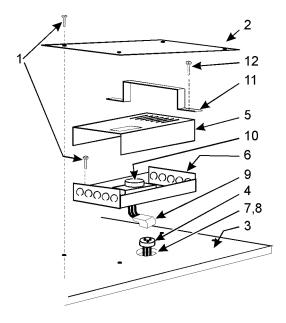
#### Installation of the ESM Controller

# **WARNING**

Make sure all power supplies to the case are disconnected to avoid possible product damage and/or personal injury.

#### NOTES

- ESM dewpoint controller should be installed by an authorized service person.
- The ESM controller must only be connected to the case it was shipped with.



- Remove four screws (1) and metal cover (2) from top of case (3). Do not discard the screws. This will expose the female receptacle (4).
- 2. Remove ESM cover (5) from ESM controller (6), then remove knock out (7) nearest the wiring leads. Install 7/8" plastic bushing (8) in the knock out hole (7).
- 3. Position the ESM controller (6) over the female receptacle (4).
- 4. Connect controller plug (9) to female receptacle (4).
- 5. Set selector (10) on "C" setting.
- 6. Secure ESM controller (6) to top of case (3) with four screws (1). Install the ESM cover (5).
- 7. Position metal bracket (11) over the grill area on the ESM cover (5) and secure to top of case (3) with two screws (12).

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# **Defrost Information**

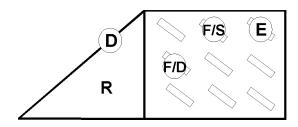
See "General I&S Manual" for operational descriptions for each type of defrost control.

#### **Defrost Control Charts**

L5FGA/L5NGA Defrost Option Settings

		Defrost	
Defrost	Defrosts	Duration	Term.
<u>Type</u>	Per Day	<u>(Min)</u>	Temp.
L5FGA			
Electric (	(FF) 1	60	60°F
Electric (	(IC) 2	60	60°F
Gas (FF)	2	18-20	55°F
Gas (IC)	2	20-25	55°F
L5NGA			
Off Time	1	60	

Most klixons are located on the right end of the evaporator coil. The diagram shows the location for each klixon.



E = Electric Defrost Termination
F/D = Defrost Fan Delay
Electric Defrost (40/20)
Gas Defrost (25/10)
D = Gas Drain Heater
F/S = Electric Defrost Failsafe (Opt.)

#### NOTE

The defrost termination klixon for gas defrost is located at 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.

### **Optional Gas Defrost**

The area over the drain trough is heated by an auxiliary electric heater. The drain pan is also heated by four passes of suction line which acts as a heat exchanger for incoming liquid during the refrigeration cycle and as a drain pan heater during gas defrosting.

At the initiation of a defrost cycle, a reversing valve introduces hot gas into the suction line as normal flow is reversed. When the fan/heater delay thermostat senses 25°F, it turns off the fans and activates the auxiliary heaters. The defrost continues until the coil and drain pan are completely clear. A gas defrost termination klixon senses the gas leaving the coil. When termination temperature is reached, a contact closure signals the rack to close a hot gas valve and terminate defrosting. (See BUFF section in Spec Guide.) This valve should be allowed to cycle, if needed, until fail safe time is reached.

When fail safe time elapses, the refrigeration cycle resumes. Case fans will not run until the coil temperature is brought down to 10°F.

- Fan circuit powers auxiliary heater fan and auxiliary heater circuit. Since the heater draws more current than the fans, the entire circuit is marked to show the highest load rating.
- The fan/heater delay thermostat shuts off the fans at 25°F, and turns the heater on.
- The heater will shut off if the safety klixon exceeds 55°F, but stays on below 40°F.
- The fan resume running when coil temperature pulls down to 10°F.

# WIRING DIAGRAMS

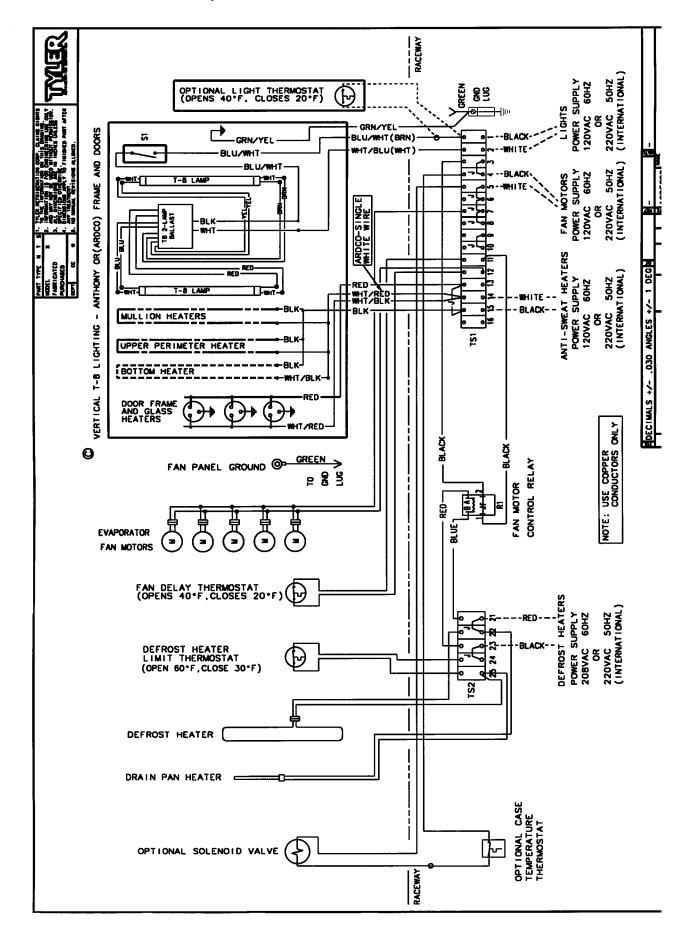
# ELECTRICIAN NOTE - OVERCURRENT PROTECTION

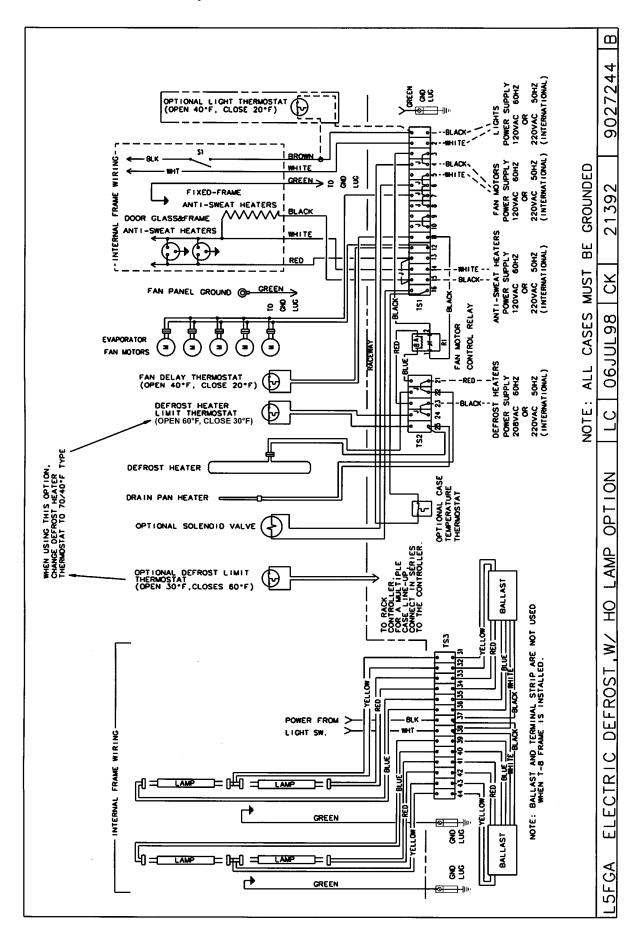
120V circuits should be protected by 15 or 20 Amp devices per the requirements noted on the cabinet nameplate or the National Electrical Code, Canadian Electrical Code - Part 1, Section 28. 208V defrost circuits employ No. 12 AWG field wire leads for field connections. On remote cases intended for end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

The wiring diagrams on pages 15 thru 24 will cover all L5EGA/L5NGA case circuits.

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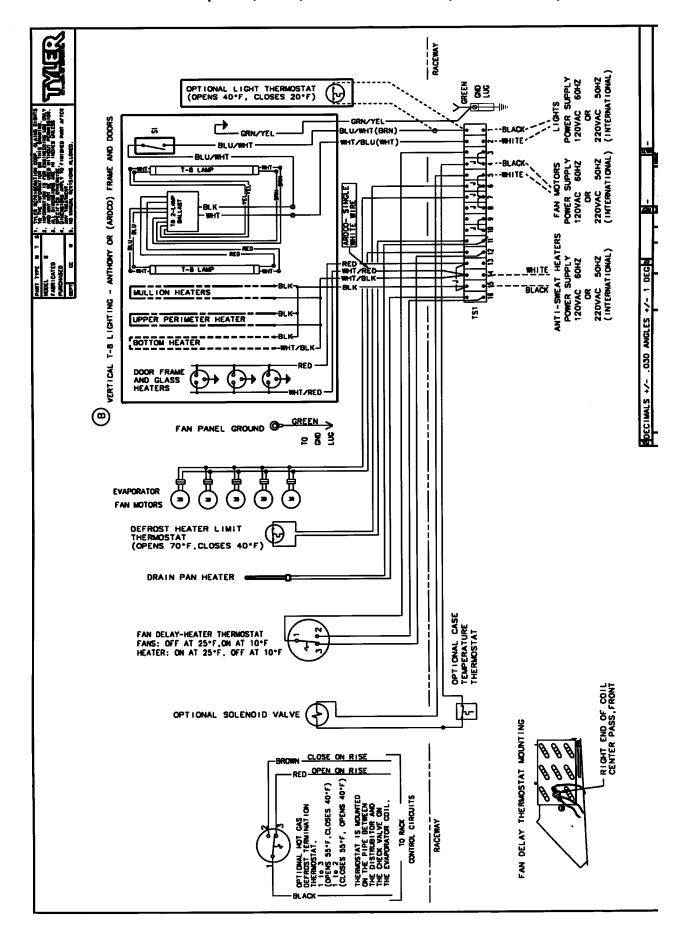
# L5FGA Domestic & Export (50Hz) Case Circuits (Electric Defrost)

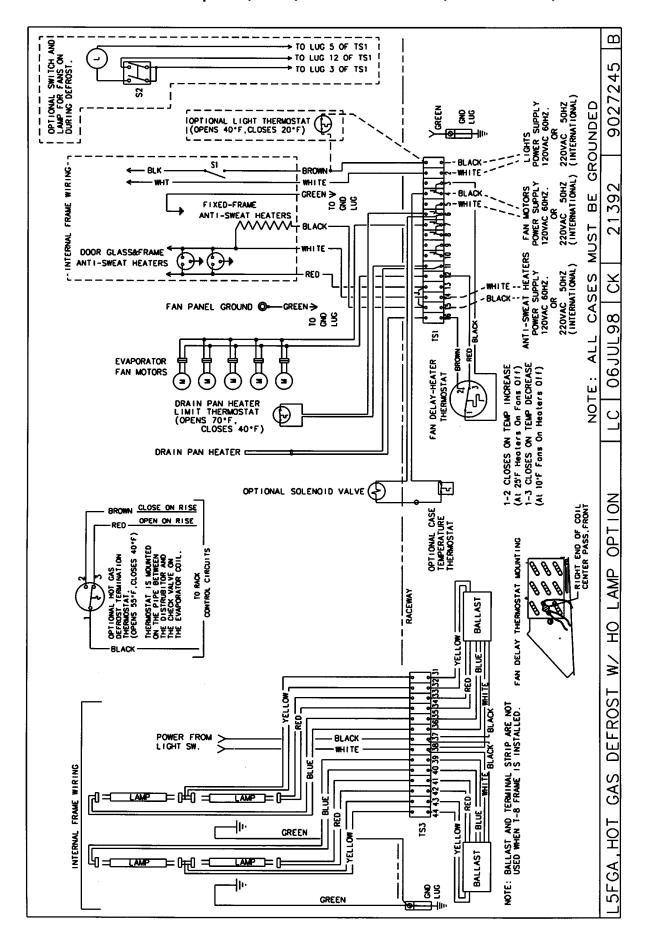




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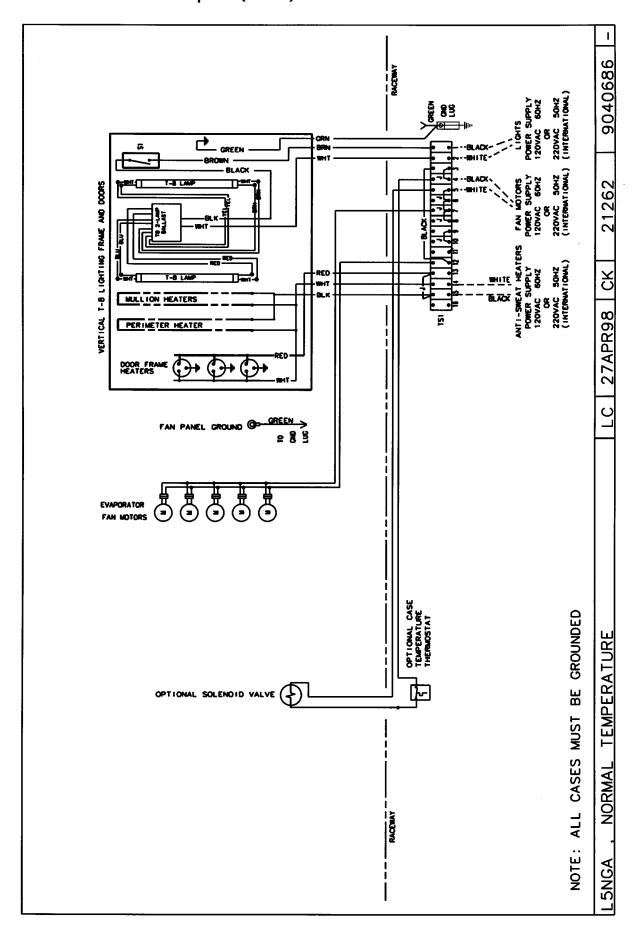
# L5FGA Domestic & Export (50Hz) Case Circuits (Gas Defrost)



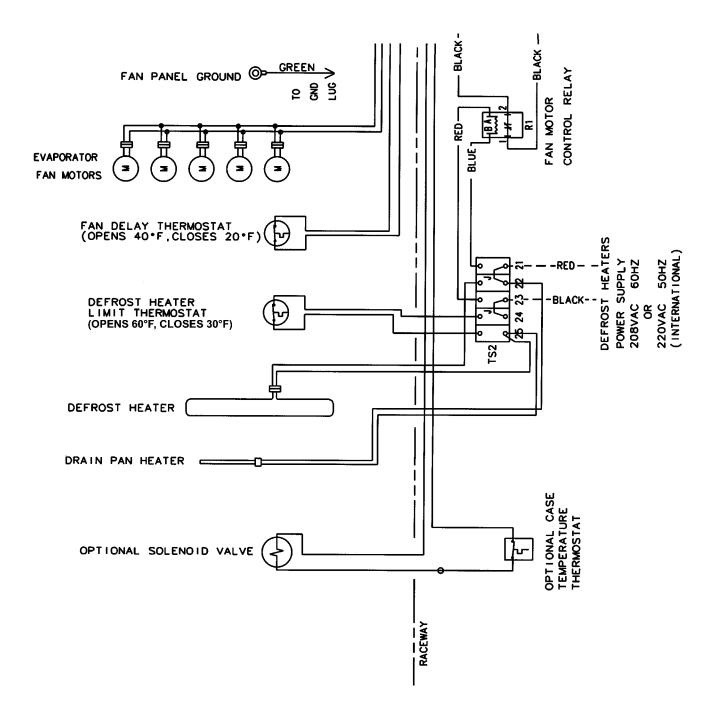


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# L5NGA Domestic & Export (50Hz) Case Circuits



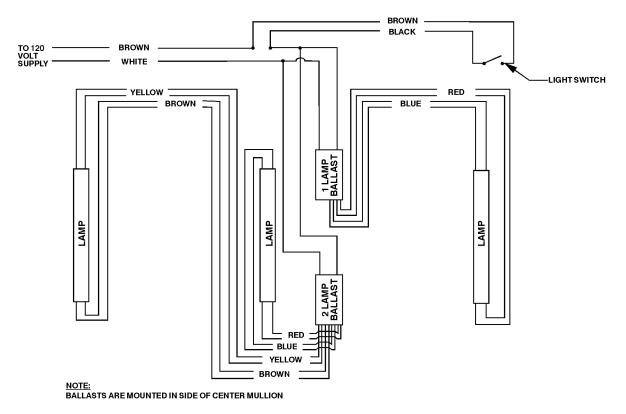
# Electric Defrost Circuit (L5FGA only)



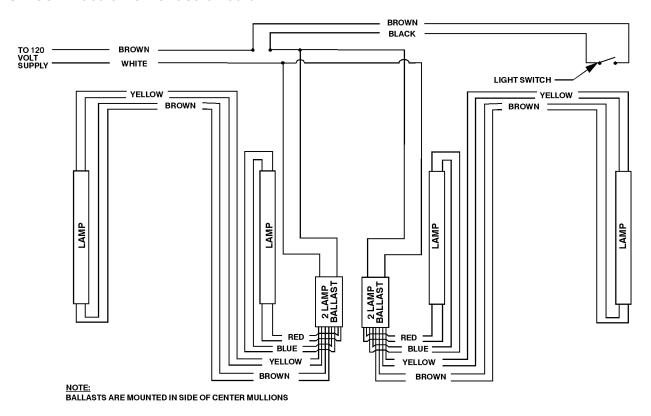
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# **T-8 Prism Lighting Circuits**

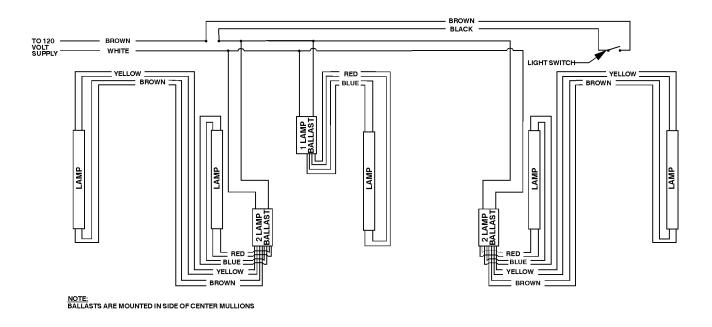
# 2-Door Electronic Ballast Circuit



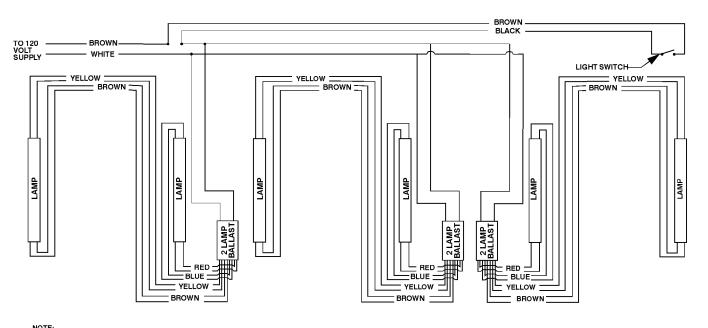
# 3-Door Electronic Ballast Circuit



# 4-Door Electronic Ballast Circuit



# 5-Door Electronic Ballast Circuit



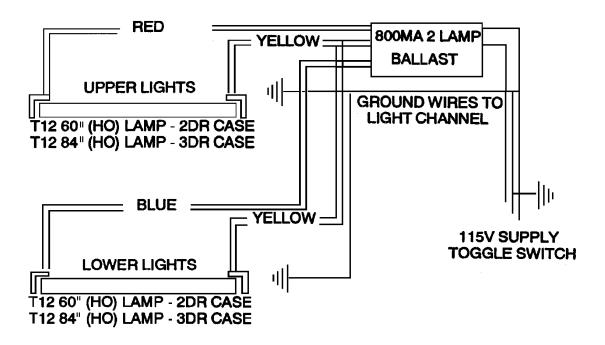
NOTE: BALLASTS ARE MOUNTED IN SIDE OF 1ST, 3RD & 4TH CENTER MULLIONS

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# Optional Horizontal 800MA H.O. Fluorescent Lighting Circuit

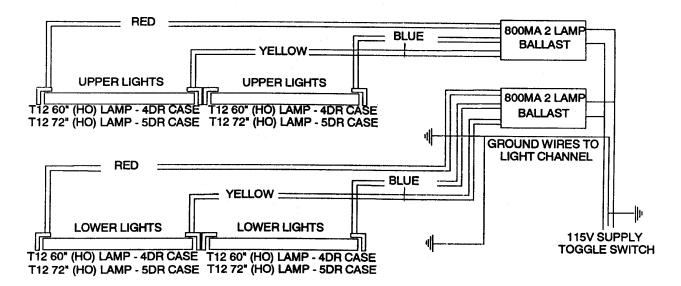
2-Door or 3-Door Case Lighting

# 2 DR 0R 3 DR CASE LIGHT WIRING DIAGRAM

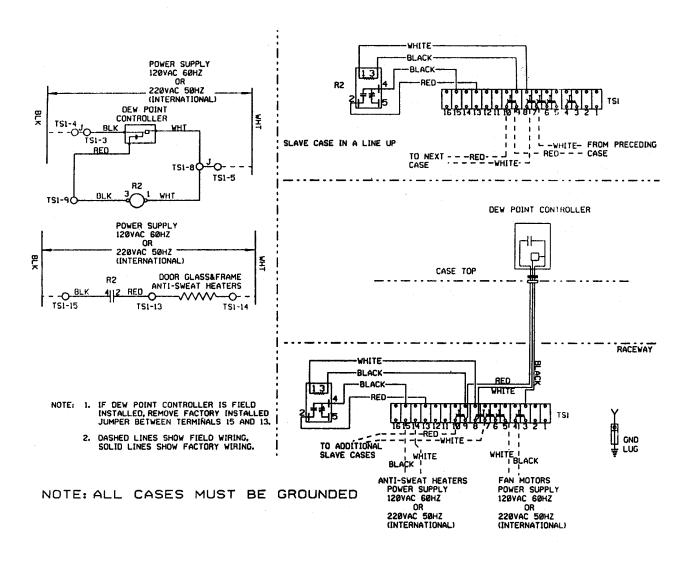


# 4-Door or 5-Door Case Lighting

# 4 DR 0R 5 DR CASE LIGHT WIRING DIAGRAM



# ESM/ESS Anti-Sweat Circuit



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# **GENERAL INFORMATION**

# **Preferred Line-up Combinations\***

**TYLER - Glass Door Merchandiser** 

<u>DRS</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	TTL. LGTH. <u>W/O ENDS</u>
2	1	0	0	0	5' - 2"
3	0	1	0	0	7′ - 8 7/16″
4	0	0	1	0	10' - 2 7/8"
5	0	0	0	1	12' - 9 5/16"
6	0	2	0	0	15' - 4 7/8"
7	0	1	1	0	17′ - 11 5/16
8	0	1	0	1	20' - 5 3/4"
9	0	0	1	1	23' - 3/16"
10	0	0	0	2	25' - 6 5/8"
11	0	2	0	1	28' - 2 3/16"
12	0	1	1	1	30' - 8 5/8"
13	0	1	0	2	33' - 3 1/16"
14	0	0	1	2	35' - 9 1/2"
15	0	0	0	3	38' - 3 15/16"
16	0	2	0	2	40' - 11 1/2"
17	0	1	1	2	43' - 5 15/16"
18	0	1	0	3	46' - 3/8"
19	0	0	1	3	48' - 6 13/16"
20	0	0	0	4	51' - 1 1/4"
21	0	2	0	3	53' - 8 13/16"
22	0	1	1	3	56' - 3 1/4"
23	0	1	0	4	58' - 9 11/16"
24	0	0	1	4	61' - 4 1/8"
25	0	0	0	5	63' - 10 9/16"
26	0	2	0	4	66' - 6 1/8"
27	0	1	1	4	69' - 9/16"
28	0	1	0	5	71' - 7"
29	0	0	1	5	74' - 1 7/16"
30	0	0	0	6	76' - 7 7/8"
31	0	2	0	5	79' - 3 7/16"
32	0	1	1	5	81' - 9 7/8"

<u>DRS</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	TTL. LGTH. <u>W/O ENDS</u>
33	0	1	0	6	84' - 4 5/16"
34	0	0	1	6	86' - 10 3/4"
35	0	0	0	7	89' - 5 3/16"
36	0	2	0	6	92′ 3/4″
37	0	1	1	6	94' - 7 3/16"
38	0	1	0	7	97' - 1 5/8"
39	0	0	1	7	99' - 8 1/16"
40	0	0	0	8	102' - 2 1/2"

Add 1 1/2" Per End

# Ice Cream Recommendations

Use the following recommendations for merchandising ice cream products in L5FGA cases.

- 1. Use solid shelves or solid F.R.P. overlays on top of screens.
- 2. Never position top shelf more than 12" from the top of the case.
- Proper termination of defrost is an absolute must to prevent overdefrosting and product frosting. Set the thermostat termination as described in this manual.
- Ice cream products should be placed in the case at the desired temperature. The product should be properly rotated to avoid frost accumulation on the packaging.

<sup>\*</sup>Based on cost effectiveness.

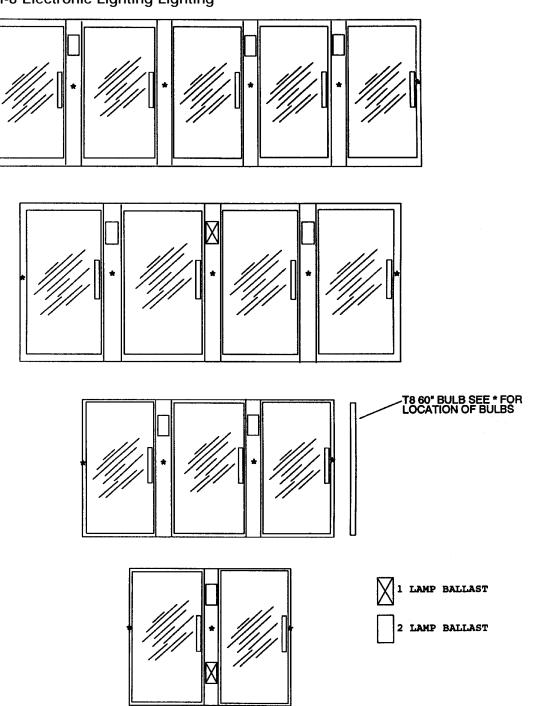
# **SERVICE INSTRUCTIONS**

See "General I&S Manual" for fan blade and motor replacement and raceway cover removal instructions.

# **Light Servicing**

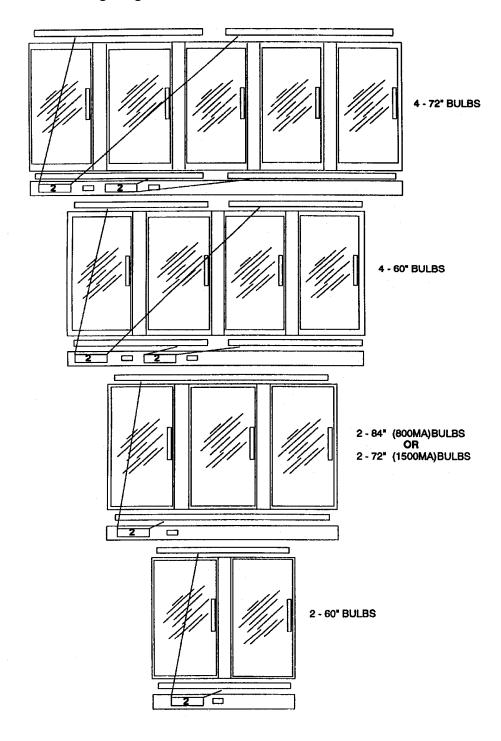
**Ballast and Lighting Locations** 

**Vertical T-8 Electronic Lighting Lighting** 



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# Optional Horizontal H.O. Lighting

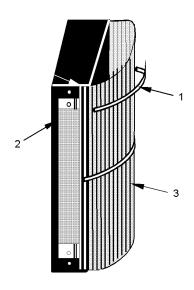


# **Lamp Replacement**

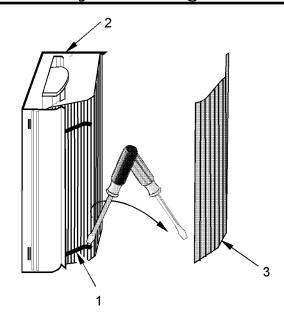
# **CAUTION**

Shut off light switch or disconnect power supply before changing a lamp. Lighting system power and/or ballast surges can burn out adjacent lamps if power is left on.

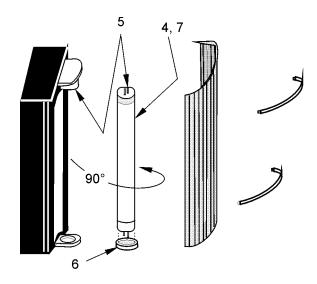
T-8 Electronic Vertical Lamp (Prism)



 To access mullion lamp, carefully remove two steel clips (1) from light fixture (2). After steel clips (1) are removed, compress and twist lens (3) to one side to remove it from light fixture (2). Save clips for reinstallation.



To access end lamp, depress the lens clips (1) while carefully prying the end lens (3) with a screwdriver to remove end lens (3) from light fixture (2).



- 2. Hold lamp assembly with fingers and twist 90° to line up tabs on end of lamp (4) with slots in receptacles (5). Carefully remove lamp assembly (4) from receptacles (5) and case.
- 3. Remove insulator tubes (6) from each end of lamp (4). Carefully remove lamp (4) from lampshield (7).

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# **CAUTION**

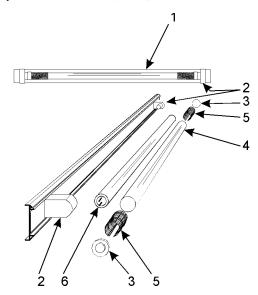
Lampshield, foam end caps and insulator tubes must be properly installed. Improper installation of these components could decrease lamp efficiency and/or product life.

- 4. Carefully position new lamp (4) in lampshield (7). Install insulator tubes (6) on ends of new lamp (4).
- 5. Install new lamp assembly (4) in receptacle slots (5) and carefully turn 90°.
- 6. Make sure foam end caps are in place above and below the receptacles (5).
- 7. **To install mullion lens**, insert one side of lens (3) under lip of light fixture (2) and rotate lens (2) over lamp (4) until other side seats in the light fixture (2). While holding lens (2), snap two steel clips (1) over the lens (2) and edges of the light fixture (2).

To install end lens, insert front edge of end lens (3) under the lens clips (1) in the light fixture (2). Push the other side of the end lens (3) under the back lip of the light fixture (2).

8. Turn on the light switch or reconnect the power to the lights.

# Optional 800MA (H.O.) Horizontal Lamp



- 1. Slide burned out lamp assembly (1) to one side or the other against spring loaded lampholder (2) and carefully remove lamp assembly (1) from the lampholders (2).
- 2. Remove two end caps (3), lampshield (4) and two heat sink screens (5) from the lamp (6).
- 3. Insert one heat sink screen (5) on each end of the new lamp (6).
- 4. Position lamp (6) in lampshield (4) and install two end caps (3) on each end of the lampshield (4).
- 5. Insert end of lamp assembly (1) in spring loaded lampholder (2) and push in until opposite end of lamp assembly (1) can be inserted into the lampholder (2)
- 6. Turn on the light switch or reconnect the power to the lights.

# Electronic Ballast Replacement (Prism Lighting)

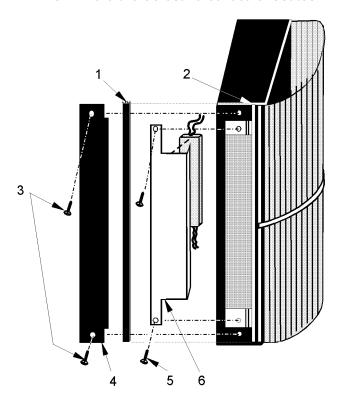
# WARNING

Before replacing a ballast, make sure all power is off to the case. Electrical servicing should always be done by a qualified electrician. Improper servicing could result in product damage and/or personal injury.

#### **NOTE**

Refer to T-8 ballast location page and wiring diagrams in this manual for specific model information.

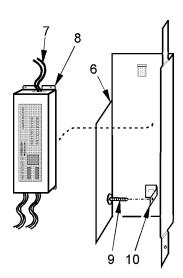
1. Open door to expose the side of the mullion where the defective ballast is located.



- 2. Remove vinyl strip (1) from inside side edge of mullion (2).
- 3. Remove two screws (3) and ballast cover (4) from side of mullion (2).
- 4. Remove two screws (5) and slide out ballast drawer (6) from side of mullion (2).

#### NOTE

If wire leads are cut during removal, make sure to leave enough wire to reconnect a new ballast with a wire nut.



- 5. Disconnect or cut all wire leads (7) to ballast (8).
- 6. Remove screw (9), retainer clip (10) and ballast (8) from ballast drawer (6).
- 7. Insert bottom of new ballast (8) under tab on bottom of ballast drawer (6) and secure with retainer clip (10) and screw (9).
- 8. Reconnect wire leads (7) to new ballast (8) following the wiring diagram on the new ballast (8).

# **CAUTION**

Be careful not to pinch wires during installation. Damaged wires could cause premature light component failure.

- 9. Install ballast drawer (6) in side of mullion(2) and secure with two screws (5).
- 10. Install ballast cover (4) on side of mullion(2) with two screws (3).
- 11. Replace vinyl strip (1) on inside side edge of mullion (2). Close the door.
- 12. Reconnect power to the case.

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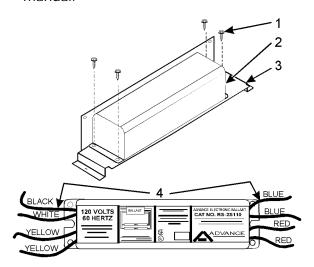
# Optional 800MA Ballast Replacement (Horizontal Lighting)

# **WARNING**

Before replacing a ballast, make sure all power is off to the case. Electrical servicing should always be done by a qualified electrician. Improper servicing could result in product damage and/or personal injury.

#### **NOTE**

- Refer to 800MA horizontal lighting for ballast location page and wiring diagrams in this manual for specific model information.
- If wire leads are cut during removal, make sure to leave enough wire to reconnect a new ballast with a wire nut.
- Remove raceway cover following the raceway cover removal instructions in this manual.

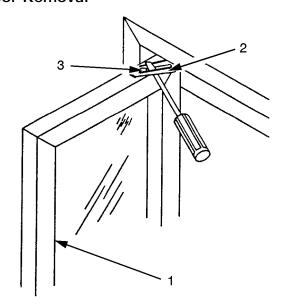


- 2. Remove four screws (1) and defective ballast (2) from support bracket (3).
- 3. Disconnect or cut all wire leads (4) to ballast (2).
- 4. Install new ballast (2) on support bracket (3) with four screws (1).
- 5. Reconnect wire leads (4) to new ballast (2) following the horizontal lighting wiring diagram in this manual.

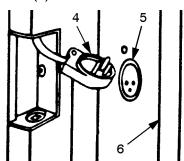
- 6. Replace raceway cover following the raceway cover installation instructions in this manual.
- 7. Reconnect power to the case.

# **Door Servicing**

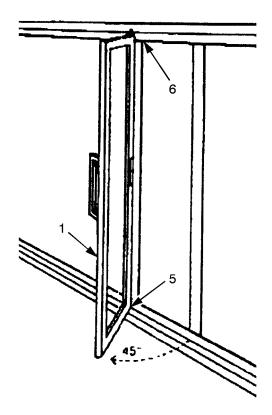
# **Door Removal**



- 1. Open and hold door (1) at approximately 45°.
- Disconnect the hold open spring (2) by inserting a flat-headed screwdriver between the legs of the spring. Push screwdriver up until the hold open spring (2) disconnects from the pin (3) on top of the door (1).

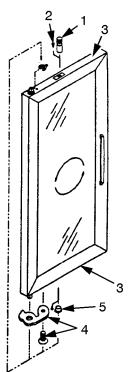


3. Remove retaining screw and unplug door power cord (4) from receptacle (5) in mullion or door frame (6).



- 4. Lift door (1) up and out of bottom hinge plate (5) to disengage bottom of door (1). Carefully pull out bottom of door (1) and lower the door (1) until it clears the top hinge plate (6).
- 5. Place door (1) face down on a soft cloth to protect door finish and glass.

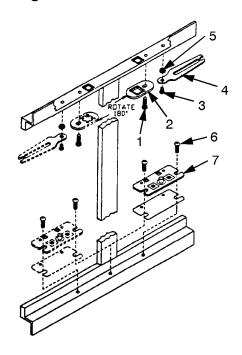
# **Reversing Door Hardware**



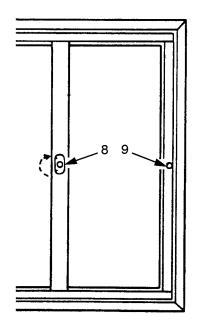
- Remove the hold open pin (1) and screw
   from the top of the door (3). Reinstall in the bottom of the door.
- 2. Remove the door stop plate and screw (4) and plug button (5) from the bottom of the door (3). Reinstall in the top of the door.
- 3. Turn door (3) upside down before reinstalling on the case.

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# **Reversing Frame Hardware**

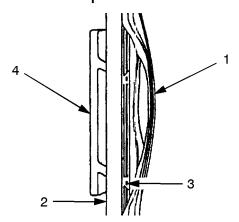


- 1. Remove screw (1) and top hinge plate (2). Rotate top hinge plate 180° and reinstall on opposite side of door opening with screw (1).
- 2. Remove screw (3), hold open spring (4) and washer (5) and reinstall on opposite side of door opening.
- 3. Remove two screws (6) and bottom hinge mounting plate (7) and reinstall on opposite side of door opening.



4. Remove two screws and rotate electrical outlet coverplate (8) 180° and reinstall with screws. Reposition electrical outlet cap (9) to opposite end of the frame.

# **Door Handle Replacement**



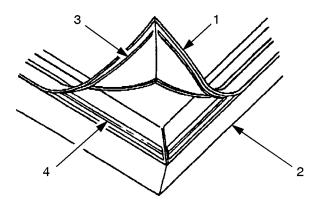
1. Peel the gasket (1) away from the door frame (2) to expose the handle screws (3).

#### **NOTE**

Be careful not to drop the handle screws inside the door channel.

- 2. Remove two handle screw (3) and handle(4) from door frame (2) from retainer strip(2) on handle side of the door (3).
- 3. Install new handle (4) in reverse order.

# **Door Gasket Replacement**



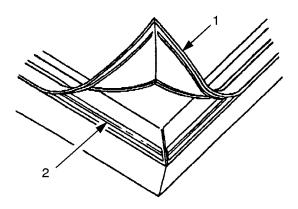
- 1. **To remove**, start at a corner and peel the gasket (1) away from the door (2).
- 2. **To install**, start each of the new gasket (1) by pulling the gasket dart (3) into the dart groove (4) in the aluminum back molding that faces the glass.
- 3. Push the gasket dart (3) into the dart groove (4).
- 4. Notch the new gasket (1) in the adjustment cut-out area.

# **Door and Mullion Heater Replacement**

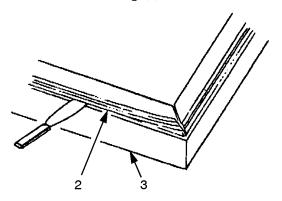
All glass door cases use the same door and mullion heaters. Medium and low temperature cases run different wattages through them. Low temperature cases also use electrically heated door glass. Frame and mullion heaters are located in four different locations. Door frame heater is a full length wire in each door frame. Frame "U" heater is a wire that runs up one side, across the top and down the other side of the case frame. Frame bottom heater is a wire across the lower part of the case frame. Mullion heaters have a separate wire in each vertical mullion between the doors.

#### **Door Heater**

1. Remove door from case following the door removal instruction in this manual.

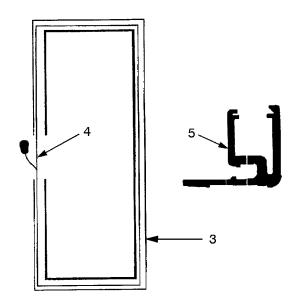


2. Starting at corner, remove gasket (1) from aluminum molding (2).

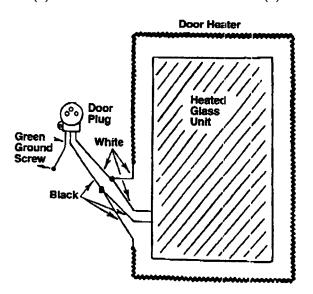


3. Insert a putty knife under the aluminum molding (2) at a corner. Pry entire length of the aluminum molding (2) to remove it from the door frame (3). Repeat this step until all four pieces of aluminum molding have been removed from the door frame.

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4. Disconnect or cut solid heater lead wire(4). Remove heater wire (4) and retainers(5) from channel in the door frame (3).



**Glass Door Wiring Diagram** 

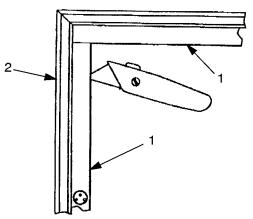
- Insert and connect new heater wire (4) in door frame channel (3) and secure with retainers (5) in same locations as removed.
- 5. Reinstall aluminum molding (2) and gasket (1) on door frame (3).
- 6. Replace door on case following the door installation instructions in this manual.

#### **Mullion Heaters**

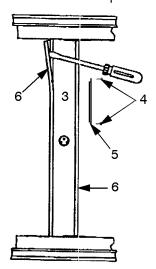
# WARNING

Before replacing mullion heaters, shut off electrical power to the case to avoid personal injury and/or death.

1. Remove necessary door(s) following the door removal instructions in this manual.

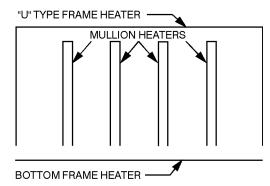


2. To remove the top, bottom and end height coverplates (1), use a utility knife. These coverplates are attached to the frame (2) with double-sided tape. Remove and discard the double-sided tape.

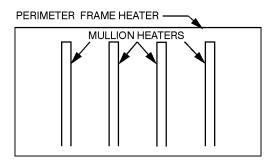


3. To remove the mullion coverplates (3), remove any screws (4) and/or ballast cover(s) (5) from both sides of the side vinyl (6). Using a screwdriver under the front edge of the side vinyl (6), slide downward until entire mullion coverplate (3) can be removed.

#### L5FGA



#### L5NGA



4. Disconnect or cut defective heater wire and remove from mullion or frame.

#### **NOTE**

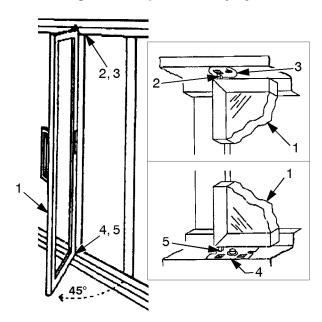
Use care to prevent the heater wire from touching itself. It may be necessary to use permagum between the wire ends to keep them from touching.

- Connect and install new heater wire in the groove in the mullion or frame. Check the heater wire for continuity.
- 6. Replace the mullion coverplates (3) under the front edges of the side vinyl (6).Replace ballast cover(s) (5) and screws (4) in the side vinyl (6).
- 7. When replacing the top, bottom and end height coverplates (1), apply new double-sided tape to the coverplates (1) where it contacts the frame (2). Line-up and install the end height, bottom and top coverplates (1).
- 8. Replace door(s) following the door installation instructions in this manual.
- 9. Reconnect power to the case.

#### **Door Installation**

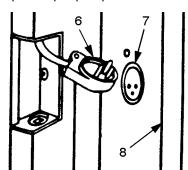
# **WARNING**

Door is heavy! Use two people when lifting and positioning the door to avoid product damage and/or personal injury.



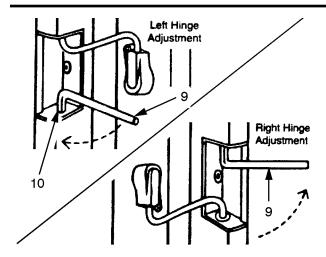
Lift door (1) and place top door hinge pin

 (2) into top hinge plate (3). Reset door on bottom hinge plate (4). Open door to approximately 45° to align bottom door pin (5) with correct hole in bottom hinge plate (4). Swing door (1) open or closed to drop into proper position.



2. Plug power cord (6) into receptacle (7) in mullion or frame (8) and secure with retaining screw.

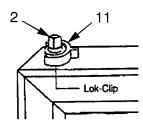
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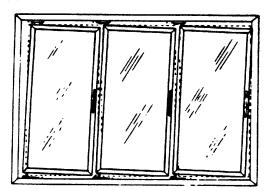
3. Adjust the door closing tension with a 5/16" allen wrench. Insert tool (9) into adjusting nut (10) (recessed location in door frame opposite power cord). Rotate tool in direction door opens 3 to 4 ratchet "clicks" for the approximate proper tension. Increase tension until positive closing occurs with door open approximately one inch.

# **WARNING**

Doors are heavy and require Lok-Clips to be in place. Properly installed Lok-Clips prevent doors from accidentally falling out of frames. Premature release of a door could cause product damage and/or personal injury or death.



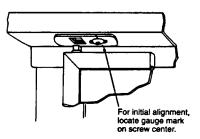
4. Install Lok-Clip (11) on top door hinge pin (2).



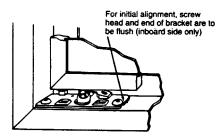
#### **NOTE**

If door(s) sag, complete step 5 to correct the problem. If door(s) are aligned properly, skip to step 6.

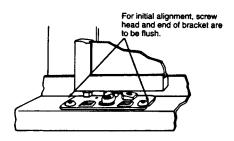
5. Check the top and bottom hinge plates for proper positioning.



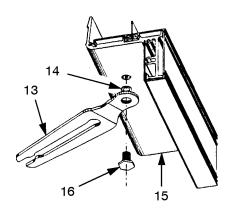
 The mounting screw in the top hinge plate should be centered with the gauge mark on the plate.



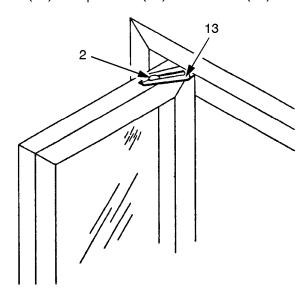
 When the hinge is at an end frame, the bottom hinge plate should have the inboard side of the plate flush with the mounting screws.



- When the hinge is at a mullion, the bottom hinge plate should have the mounting screw flush with the ends of bottom hinge plate.
- To correct the problem shown, shift top hinge plates to the left. If additional adjustment is needed, shift bottom hinge plates to the right.



6. Open door to approximately 45° and locate the door open spring (13). If the hold open spring is not on the top frame, install washer (14) and hold open spring (13) in top frame (15) with screw (16).

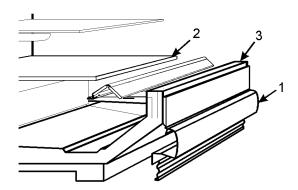


- 7. Place one side of the hold open spring (13) into the groove on the top door hinge pin (2) in top of the door. Apply pressure to the other side of the hold open spring (13) until it snaps into the pin groove. Close the door.
- 8. Remove all protective tape on door(s) before energizing it for any extended period of operation.

# Defrost & Drain Pan Heater Replacement

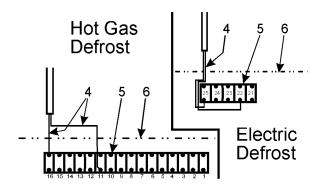
# WARNING

Before replacing defrost or drain pan heater, shut off electrical power to the case to avoid personal injury and/or death.



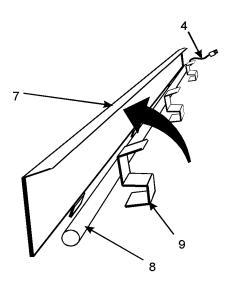
- 1. Remove raceway cover (1) following the "Raceway Cover Removal" instructions in the "General I&S Manual".
- 2. Remove bottom trays (2) from case (3).

# **Drain Pan Heater Replacement**



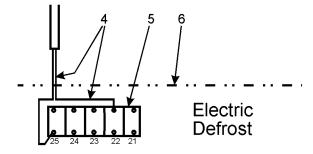
1. Disconnect heater wire (4) from terminal block (5) in raceway (6).

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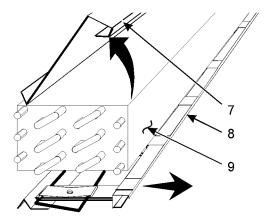


- 2. Lift up drain trap heater support (7) and remove defective heater (8) from mounting brackets (9).
- 3. Install new heater (8) in mounting brackets (9) and lower drain trap heater support (7).
- 4. Connect heater wire (4) to terminal block (5) in raceway (6).
- 5. Install bottom trays (2) in case (3).
- 6. Install raceway cover (1) following raceway cover installation instructions in this manual.
- 7. Reconnect power to the case.

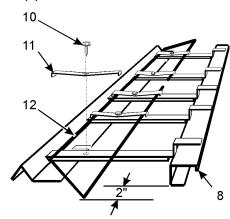
#### **Electric Defrost Heater Replacement**



1. Disconnect heater wire (4) from terminal block (5) in raceway (6).



2. Lift up fan plenum (7) and slide out bottom closeoff assembly (8) from under the coil (9).



3. Remove screws (10), heater clamps (11) and defrost heater (12) from bottom closeoff assembly (8).

#### NOTE

Defrost heater should extend at least 2" beyond ends of the closeoff assembly.

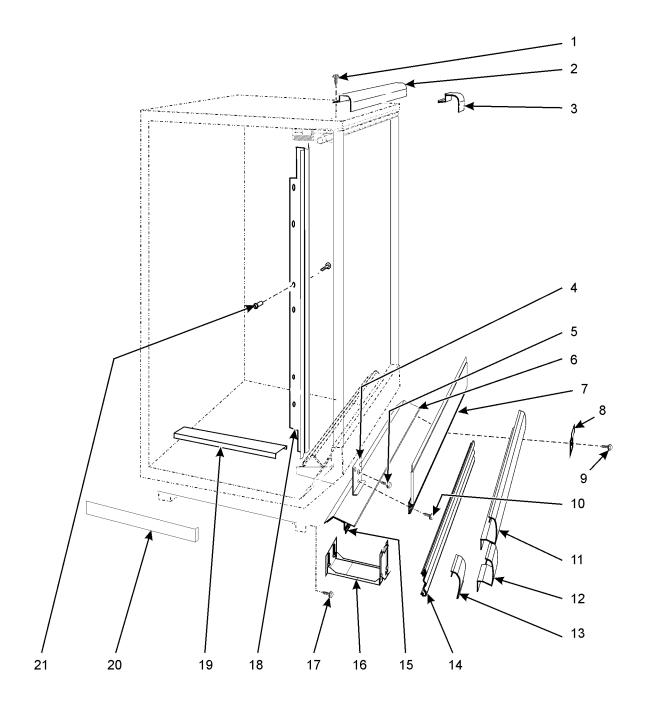
- 4. Install new defrost heater (12) on bottom closeoff assembly (8) with heater clamps (11) and screws (10).
- 5. Completely push in bottom closeoff assembly (8) under the coil (9) and lower fan plenum (7).
- 6. Connect heater wire (4) to terminal block (5) in raceway (6).
- 7. Install bottom trays (2) in case (3).
- 8. Install raceway cover (1) following raceway cover installation instructions in this manual.
- 9. Reconnect power to the case.

# PARTS INFORMATION

# **Cladding and Trim Parts List**

<u>Item</u>	<u>Description</u>	2DR	3DR	4DR	<u>5DR</u>
1	Screw	5183536 (5)	5183536 (6)	5183536 (7)	5183536 (7)
2	Top Cladding, Painted	9025454	9025455	9025456	9025457
3	Top Cladding Backer,	9025656	9025656	9025656	9025656
	or External Top Joint Trim	9302743	9302743	9302743	9302743
4	Cladding Retainer	9300197 (2)	9300197 (3)	9300197 (4)	9300197 (5)
5	Screw	5183536 (6)	5183536 (9)	5183536 (12)	5183536 (15)
6	Raceway Assembly	9300221	9300222	9300223	9300224
7	Front Cladding, Painted	9025450	9025451	9025452	9025453
8	RCWY Cover Retainer Plate	9023841 (4)	9023841 (4)	9023841 (5)	9023841 (5)
9	Screw	5183536 (8)	5183536 (8)	5183536 (10)	5183536 (10)
10	Screw	5183536 (2)	5183536 (3)	5183536 (4)	5183536 (5)
11	Raceway Cover		color	oer order	
12	Raceway Cover End Trim		color p	oer order	
13	Raceway Cover Backer		color	oer order	
14	Kickplate	color per order			
	Kickplate Backer	9041790	9041790	9041790	9041790
15	Raceway Cover Support	9041323 (4)	9041323 (6)	9041323 (8)	9041323 (10)
16	Kickplate Support Assy.	9042416 (2)	9042416 (4)	9042416 (4)	9042416(4)
17	Shoulder Screw	9025833 (6)	9025833 (8)	9025833 (8)	9025833 (8)
18	Door Joint Trim	9320568	9320568	9320568	9320568
19	Horizontal Joint Trim	5238229	5238229	5238229	5238229
20	LH End Close-off, Painted	9022461	9022461	9022461	9022461
	RH End Close-off, Painted	9022468	9022468	9022468	9022468
21	Binding Screw	5076411 (6)	5076411 (6)	5076411 (6)	5076411 (6)

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# **Operational Parts List**

Desc. (Domestic & Export)	2DR	3DR	4DR	<u>5DR</u>
Electric Defrost Heater*	9029930 1200W/208V	9029931 2000W/208V	9029932 2800W/208V	9029933 3600W/208V
Elec. Drain Pan Heater* - Rod Type	5236464	5236462	5236465	5236463
Electric Defrost 60/30 Klixon*	9029929	9029929	9029929	9029929
Electric Defrost Fan Delay T'Stat*	5236993	5236993	5236993	5236993
T8 Vert. Ballast (1 lamp)	5092722		5092722	
T8 Vert. Ballast (2 lamp)	5092723	5092723**	5092723**	5092723†
Opt. 800MA Ballast (domestic)	5049140	5204769	5049140	5204769
T8 Vert. Flrscnt. Lamp F040/841	5093932	5093932	5093932	5093932
800MA Hor. Dbl. Lt. Shld. Upr/Lwr (L5FGA)	5644091 (2) 60"	5644093 (2) 84"	5644091 (4) 60"	5644092 (4) 72"
800MA Hor. Sgl. Lt. Shld. Upr/Lwr (L5NGA)	5644087 (2) 60"	5644089 (2) 84"	5644087 (4) 60"	5644088 (4) 72"
Hot Gas Drain Pan Heater Klixon*	9023506	9023506	9023506	9023506
Fan Motors (domestic)	5243498	5243498	5243498	5243498
Fan Motors (export)	5647901	5647901	5647901	5647901
Fan Blades 8.75" x 25	5984399	5984399	5984399	5984399
Fan Motor Brackets	5235087	5235087	5235087	5235087
Fan Relay* (electric defrost)	5236978	5236978	5236978	5236978
Hot Gas Fan Delay Klixon*	9023509	9023509	9023509	9023509
Hot Gas Termination Klixon*	9023508	9023508	9023508	9023508
Opt. ECM Fan Motors 12W 8.75"	9025000	9025000	9025000	9025000
Opt. ECM Fan Blades 8.75" x 25	5984399	5984399	5984399	5984399
Opt. ECM Fan Motor Brackets	5205112	5205112	5205112	5205112
Hot Gas Drain Pan Heater*	5239252	5239254	5239253	5239255

\*L5FGA only \*\*Quantity = 2  $\dagger$ Quantity = 3

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

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