

Installation & Service Manual



NSSD

THREE DECK MEAT/DELI/CRITICAL TEMP PRODUCE MERCHANDISERS WITH CURVED FRONT GLASS Medium Temperature Self Serve Display Cases

This manual has been designed to be used in conjunction with the
General (UL/NSF) Installation & Service Manual.

Save the Instructions in Both Manuals for Future Reference!!

This merchandiser conforms to the American National Standard Institute & NSF International Health and Sanitation standard ANSI/NSF 7 - 2003.

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The following Medium Temperature, Top Display Meat, Deli and Critical Temp Produce Merchandiser models are covered in this manual:

MODEL	DESCRIPTION
NSSD	4', 6', 8' & 12' CURVED GLASS FRONT 3-DECK MEAT/DELI MERCHANDISER

SPECIFICATIONS

NSSD Three Deck Meat/Deli/Critical Temp Produce Merchandisers

Refrigeration Data:

MODEL	CASE LENGTH	CASE USAGE	CAPACITY (BTUH / FT)		EVAPORATOR (°F)	UNIT SIZING (°F)	DISCHARGE AIR		AVG. REF. CHARGE (LBS/FT)
			PARALLEL	CONVENTIONAL			TEMPERATURE (°F)	VELOCITY (FPM)	
NSSD	4'/6'/8'/12'	MED TEMP	811*	918*	+15**	+13	+27	150***	0.18

* Capacity data listed for cases with 1 row of T-8 canopy lights and 3 rows of optional lighted shelves. Adjustments must be made to this base rating for each option installed on this case. DEDUCT 23 BTUH/FT for each row of unlighted shelves. For sizing all refrigeration equipment other than TYLER, use conventional BTUH values.

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

*** Air velocity measured 1 hour after defrost at the top discharge air duct using an ALNOR JR. velometer with a scoop.

FOR SPECIFIC COMPRESSOR SIZING INFORMATION, REFER TO TYLER APPLICATIONS FOR RACK SYSTEM COMPRESSORS AND/OR THE COMPRESSOR MANUFACTURERS FOR SINGLE COMPRESSORS. FOR LINE SIZING INFORMATION, REFER TO THE MISCELLANEOUS SECTION "BUFF" IN THE TYLER SPECIFICATION GUIDE.

Electrical Data:

Fans and Heaters (120 and 208 Volt)

MODEL	CASE LENGTH	FANS / CASE	TOTAL STANDARD FANS		TOTAL ECM FANS		TOTAL ANTI-SWEATS		208 VOLT DEFROST HEATER	
			AMPS	WATTS	AMPS	WATTS	DISCHARGE AIR AMPS	WATTS	AMPS	WATTS
NSSD	4'	2	1.06	96	N/A	N/A	0.14	17.0	4.50	936
NSSD	6'	2	1.06	96	0.44	22	0.10	12.0	6.50	1,352
NSSD	8'	2	1.06	96	0.44	22	0.13	15.6	6.90	1,436
NSSD	12'	3	1.59	144	0.66	33	0.20	24.0	10.30	2,143

Heaters (208 Volt)

208 VOLT DEFROST (AMPS)														
FT	4	6	8	12	16	20	24	28	32	36	40	44	48	52
1 PH	4.5 TG-30	6.5 TG-30	6.9 TG-30	10.3 TG-30	13.8 TG-30	17.2 TG-30	20.6 TG-30	24.1 TG-40	27.5 TG-40	30.9 TG-30	34.4 TG-50	37.8 TG-30	41.2 TG-50	44.7 TG-50
3 PH	N/A	N/A	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	30.0 TG-3-40

T-8 Lighting with Electronic Ballasts (120 Volt)

MODEL	CASE LENGTH	CANOPY LIGHTS*		SHELF LIGHTS – PER ROW						MAXIMUM LIGHTING (4 ROWS)	
		AMPS	WATTS	AMPS			WATTS			AMPS	WATTS
		1	1	1	2	3	1	2	3		
NSSD	4'	0.35	42	0.45	0.60	0.80	54	72	96	1.15	138
NSSD	6'	0.40	48	0.50	0.80	1.10	60	96	132	1.50	180
NSSD	8'	0.50	60	0.70	1.10	1.40	84	132	168	1.90	228
NSSD	12'	0.70	84	1.05	1.65	2.10	126	198	252	2.80	336

* One row of canopy lights is standard for this case.

Defrost Data:

DEFROST TYPE*	DEFROSTS PER DAY	DURATION TIME (MIN)	TERMINATION (°F)	EPR SETTINGS **		DEFROST WATER (LB / FT / DAY)	
				R22 (PSIG)	R404A (PSIG)	N3MG	N3MGE
TIME OFF	6	28	---	38	50	5.5	5.2
ELECTRIC	6	36	50				
HOT GAS	6	12-15	55*				

* If an Electronic Sensor is used for termination, it should be set at 70°F termination temperature. ** Set EPR to give this pressure at the case.

The sensor must be located in the same location as the defrost termination klixon for that defrost type.

DEFROST CIRCUITS: OFF CYCLE defrost is standard (use TC defrost module) – **OPTIONAL ELECTRIC** defrost uses a single or 3 phase circuit – **OPTIONAL HOT GAS** defrost uses 2 control wires @ 208V per lineup.

CASE CIRCUITS: This case requires a 120V circuit for fans, lights and anti-sweat heaters.

Screens are standard. Shelving must be ordered separately. All rows of shelving require a shelf gasket. Shelves are available in 12", 15", 16", 18" and 20" deep sizes. When multiple shelf sizes are used, position smallest shelf size on top to largest shelf size on bottom.

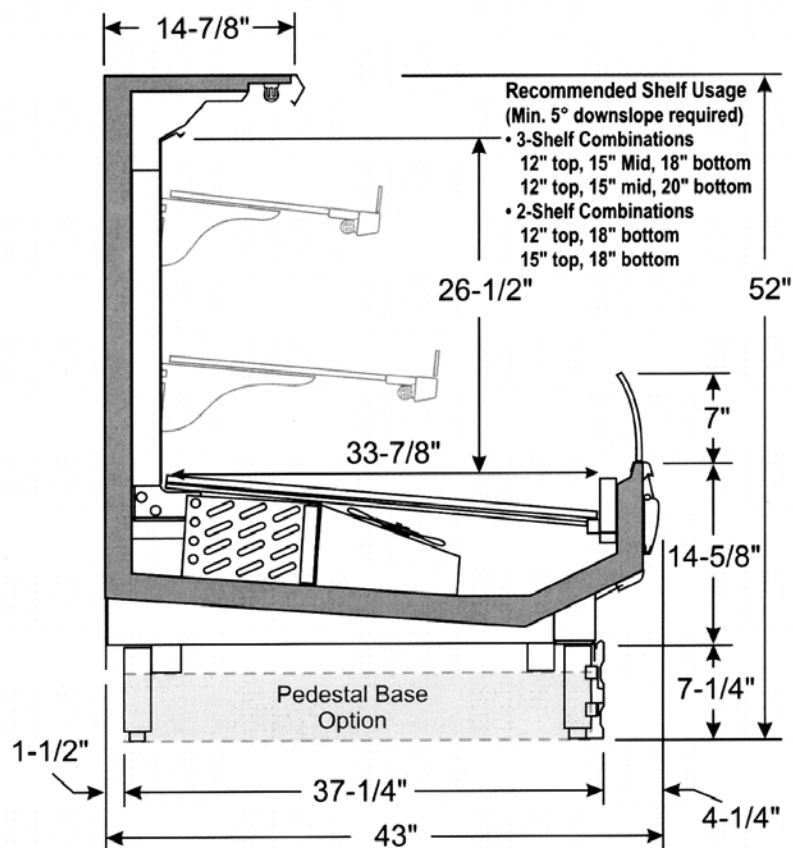
UL SANITATION approved in accordance with ANSI/NSF – 7. **CASE BTUH REQUIREMENTS** are calculated to produce approximately the indicated entering-air temperature with absolute maximum operating ambient limits of **75°F & 55RH**.

The information contained herein is based on technical analysis and/or tests performed in a controlled lab environment that are consistent with industry practices, and is intended as a reference for system sizing and configuration purposes only and for use by persons having technical skill at their own discretion and risk. Conditions of use are outside of Tyler's control and we do not assume and hereby disclaim any liability for results obtained or damages incurred through application of or reliance on the data presented, including but not limited to specific energy consumption with any particular model or installed application. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

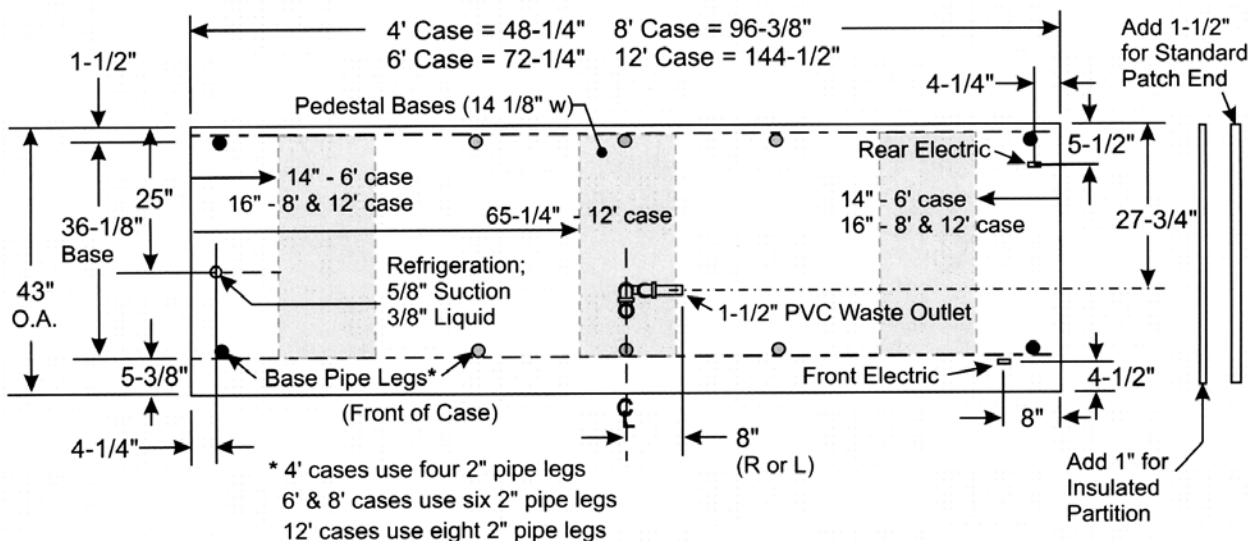
30-July-08

CASE-TO-CASE SUCTION LINE SUB-FEED BRANCH LINE SIZING														
MODEL	4'	6'	8'	12'	16'	20'	24'	28'	32'	36'	40'	44'	48'	52'
NSSD / R22	1/2"	5/8"	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"	1 3/8"

NSSD CROSS SECTION



FLOOR PLAN



INSTALLATION PROCEDURES

Carpentry Procedures

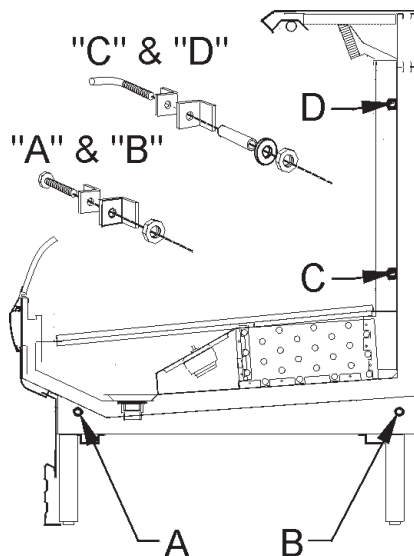
Case Line-Up

NOTE

The NSSD cases are shipped on casters that are replaced with adjustable legs during case line-up and installation.

See the "General-UL/NSF I&S Manual" for the proper case line-up procedures.

Case Pull-Up Locations



All NSSD 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-UL/NSF 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 NSSD has two raceway locations that can house the electrical wiring, components and terminal blocks. All components and wiring can be located in either the lower front or the lower rear of the case.

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 50/40 klixon.

NOTE

With gas defrost, the fans will not start until the coil temperature reaches 40°F at the fan delay thermostat.

Fluorescent Lamp Circuit

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 T-8 canopy lights. NSSD models also offer up to 3 rows of optional T-8 shelf lights.

Anti-Sweat Heater Circuit

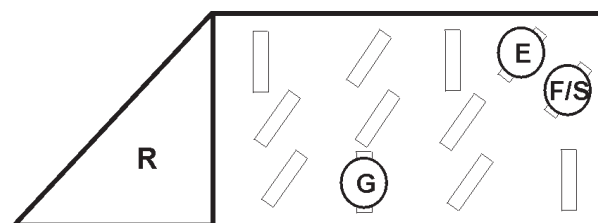
NSSD cases have three anti-sweat heaters. One in the top light assembly, one in the front glass trim rail and one in the front glass retainer. All anti-sweat heaters are wired directly to the main power supply so they can operate at all times.

Defrost Information

See “General-UL/NSF I&S Manual” for operational descriptions for each type of defrost control.

Defrost Control Chart

Defrost Type	Defrosts Per Day	Defrost Duration (Min)	Term. Temp.
Off Time	6	28	----
Electric	6	36	50°F
Gas	6	12-15	55°F



E = Electric Defrost Termination

G = Gas Defrost (Fan Delay)

F/S = Electric Defrost Failsafe (Opt.)

NOTE

The termination klaxon for gas defrost is located at the bypass check valve at the left end of the evaporator coil.

Most klaxons are located on the right end of the evaporator coil. The diagram shows the location for each defrost type that uses a klaxon.

CAUTION

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

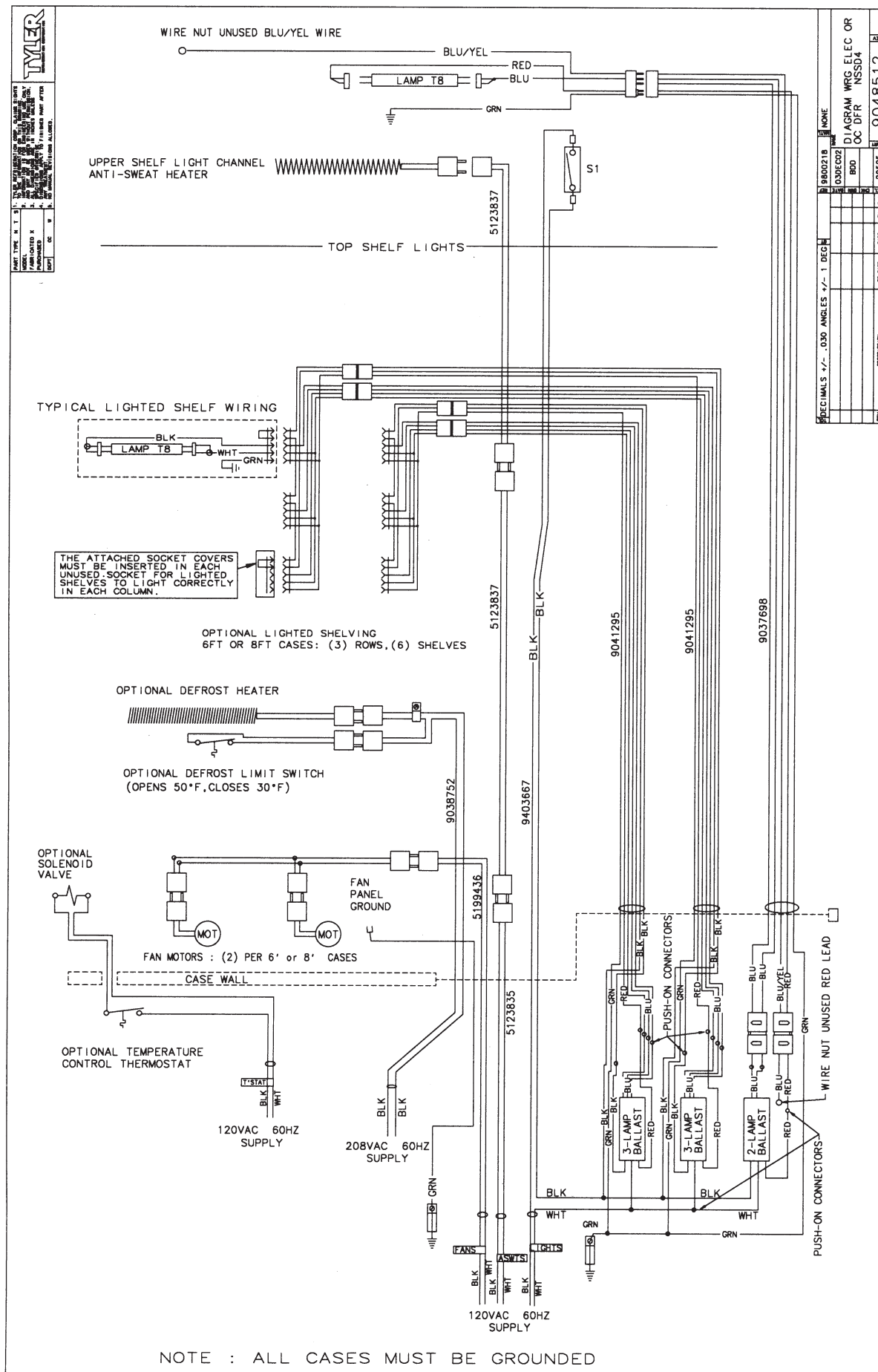
WIRING DIAGRAMS

ELECTRICIAN NOTE - OVERCURRENT PROTECTION

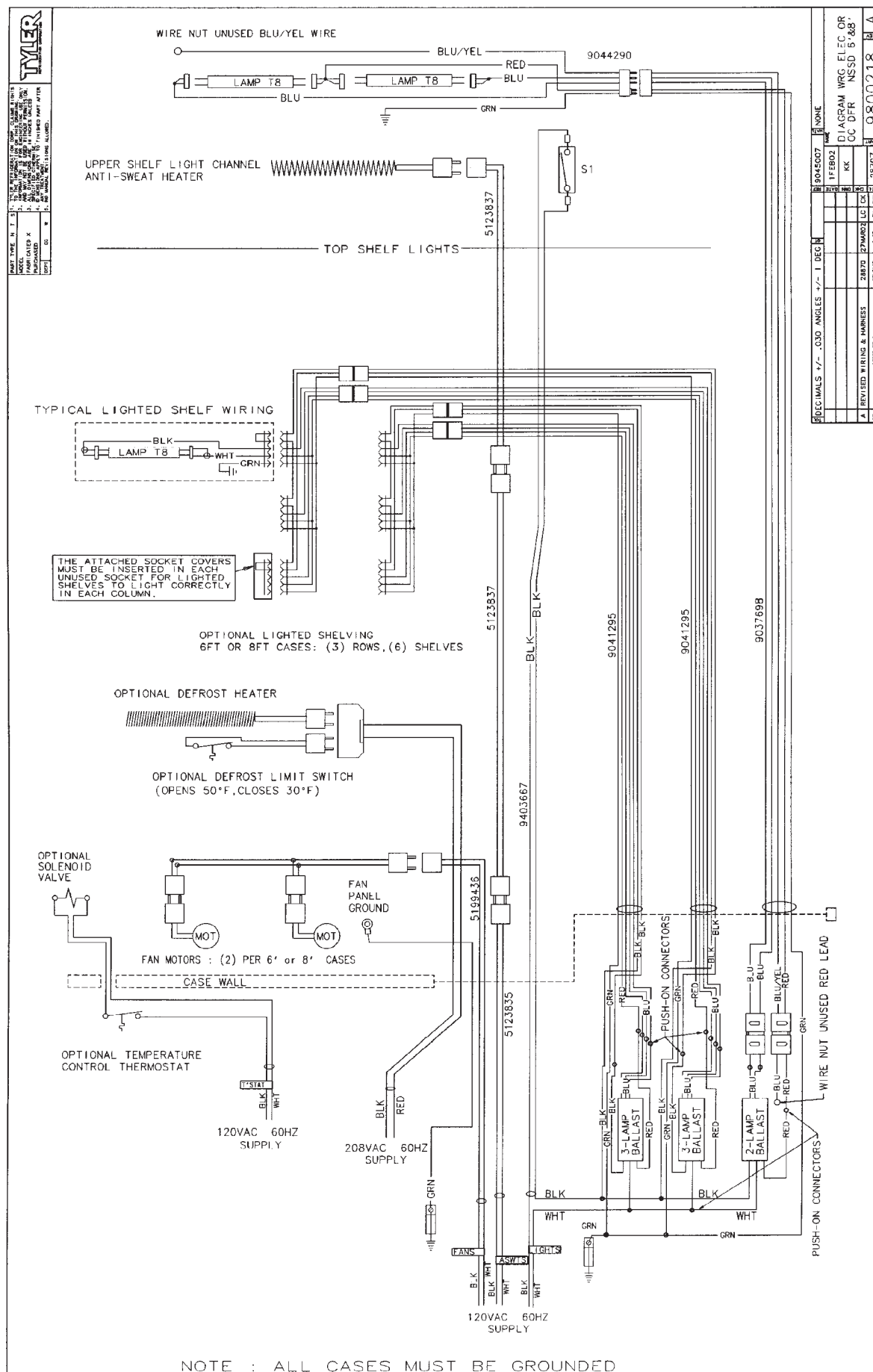
120V circuits should be protected by 15 or 20 Amp devices per the requirements noted on the cabinet nameplate or the National Electrical Code, Canadian Electrical Code - Part 1, Section 28. 208V defrost circuits employ No. 12 AWG field wire leads for field connections. On remote cases intended for end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

The following wiring diagrams on pages 8 thru 13 will cover the NSSD case circuits including all defrost and lighting wiring circuits.

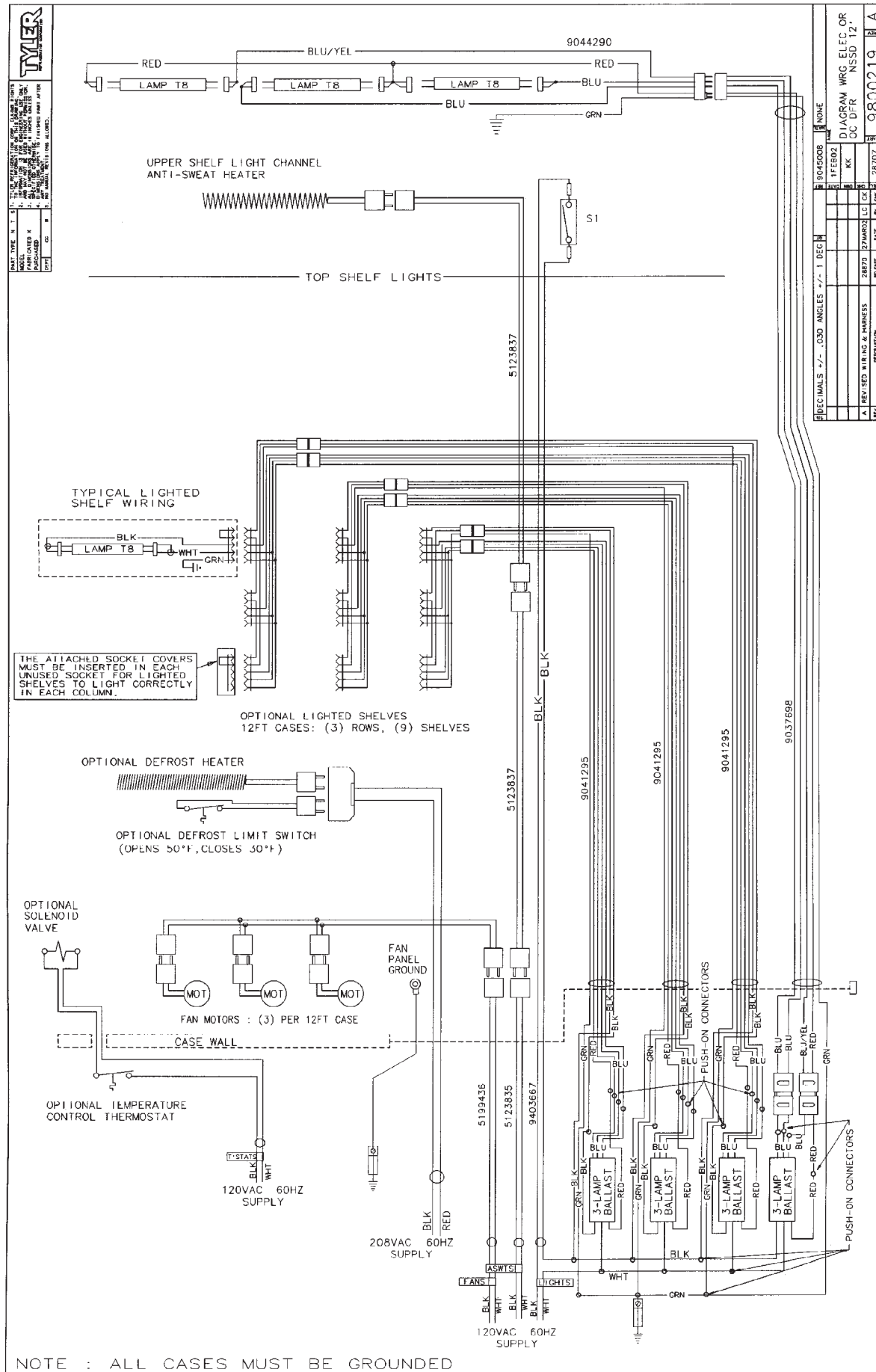
NSSD Domestic & Export (50 Hz) Case Circuits (4' Cases)



NSSD Domestic & Export (50 Hz) Case Circuits (6' & 8' Cases)



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



CLEANING AND SANITATION

Component Removal and Installation Instructions for Cleaning

Shelves and Shelf Brackets

1. Remove product from shelves.
2. If shelf has a light, unplug the light cord from the socket in the rear duct panel. Completely insert socket cover in the light socket to protect the receptacle.
3. Push shelves back and then lift up and out to remove them from the shelf brackets.
4. Remove shelf brackets from slots in rear uprights.
5. After cleaning, replace in reverse order.

Bottom Trays

1. Remove product from bottom of case.
2. Grasp and lift out each of the bottom trays from the case interior.
3. After cleaning, replace in reverse order.

Front Air Ducts

1. Remove lower trays, see this page.
2. Lift out front air duct sections.
3. After cleaning, replace in reverse order.

Rear Duct Panels (w/o Shelf Light Sockets)

1. Remove shelves and bottom trays, see above.
2. Remove mounting screws and rear duct panels from case.
3. After cleaning, replace and secure rear duct panels in reverse order.

(with Shelf Light Sockets)

1. Remove shelves and bottom trays, see above.
2. Remove mounting screws from rear duct panel.

3. Slowly lift out rear duct panel until the shelf harness connector near the top of the panel can be accessed.
4. Disconnect shelf harness connector and complete removing the rear duct panel.

WARNING

Rear duct panels with electrical receptacles can be cleaned without removing the electrical receptacles. Do not get moisture on electrical wires when cleaning under this cover. Moisture on wires could cause premature product failure and/or personal injury or death from electrical shock.

5. After cleaning, reconnect the shelf harness connector and replace and secure rear duct panels in reverse order.

Discharge Air Honeycomb

1. Loosen screws securing rear retainer plate.

NOTE

Note position of the honeycomb grid during removal so it can be reinstalled the same way.

2. Slide rear retainer plate back until the honeycomb grid sections can be removed from the top duct.

CAUTION

Improper installation of the honeycomb grid section could result in improper air flow and/or poor refrigeration.

3. After cleaning, replace honeycomb grid sections as they were removed and secure with the rear retainer plate and screws.

Front Lower Cladding

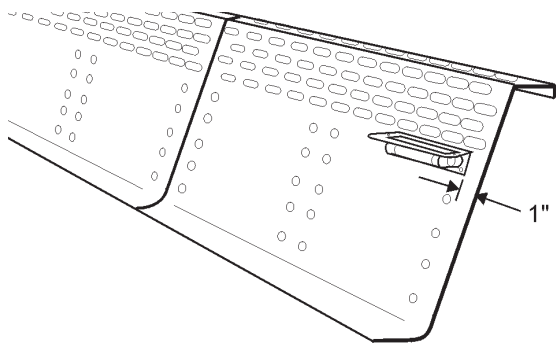
1. Remove front kickplate.
2. Lift and pull out front lower cladding until rear tabs clear holes in front of frame assembly. After rear tabs are clear, pull down on cladding to clear upper tabs from slots in bottom of upper front cladding and remove cladding from case.

Front Upper Cladding

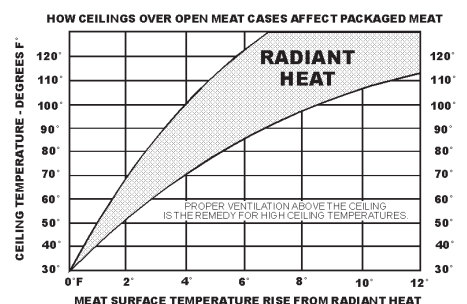
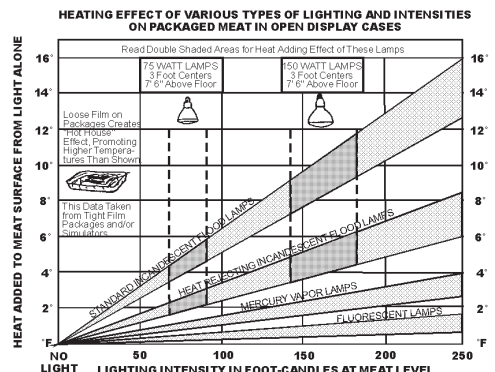
1. Remove plexiglas from plexiglas retainer. Remove screws and plexiglas retainer from top of bumper retainer
1. Remove color band, bumper and bumper retainer from the case. (See General-UL/NSF I&S Manual.)
2. Remove front kickplate.
3. Remove screws and front lower cladding. See page 14.
4. Remove screws from top and bottom of upper cladding and remove front upper cladding.
5. After cleaning, replace front upper cladding and remaining front components in the reverse order.

GENERAL INFORMATION

NSF Product Thermometer Installation

1. Unwrap the thermometer and bracket assembly shipped loose with the case.
 2. Remove left front return air duct.
- 
3. Position bracket 1" in from left edge and just under the bottom return air duct holes.
 4. Mount the bracket to the return air duct with two self-tapping screws.
 5. Replace the front return air duct.

Radiant Heat Information



A wide temperature range is shown for each type of lighting. This data does not show all situations. Many situations will have higher package warm-up figures than indicated.

It is generally known that the temperature of displayed meat in refrigerated cases will run higher than the circulated air temperature of the cases. A dial thermometer stuck into the center of a piece of meat compared with one in the air stream quickly confirms this fact. Another fact is that the surface temperature of the meat will be higher than the center temperature due to radiant heat. TYLER's ongoing research identifies sources of radiant heat and accurately measures and records it. These charts were developed from the information gathered during this research. Two major sources of radiant heat are from display lights and ceiling surfaces. Additional heat sources come from bad display practices which either overload the case with product or allow voids in the product display. Poor display practices impair the efficiency of the refrigeration, adding to the surface temperature of the meat. Bacteria and molds grow when surface

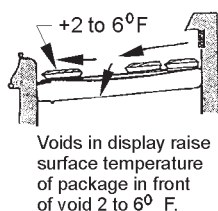
temperatures rise above 45°F. This prematurely discolors displayed meats and causes unnecessary meat department losses.

Radiant Heat Measurement

Place two accurate dial thermometers side by side in a case. Cover one of the thermometer stems with black friction tape. The temperature difference is the approximate amount of radiant heat. A change in display lighting or a reduction of high ceiling temperatures (over 80°F) could reduce the radiant heat in the case.

Display Practices

Encourage butchers to maintain all meat below the case load lines and to eliminate product voids. Case screens could be covered in some instances to keep the refrigerated air over the display.



CAUTION

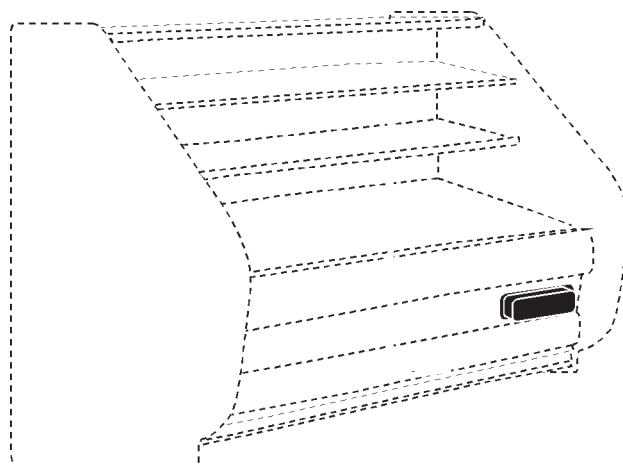
The quality damage done to meat products by high temperatures and/or contamination during delivery, cooler storage, cutting and wrapping cannot be repaired by placing the products into properly operating display cases.

SERVICE INSTRUCTIONS

Light Servicing

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

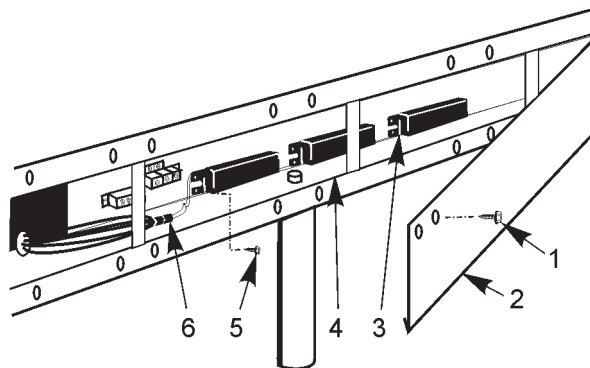
Ballast and Lighting Locations



All NSSD light ballasts are located either in the front raceway behind the lower front cladding, or in the rear raceway behind the rear rail cover. This includes remote ballasts for optional shelf lights. The canopy light(s) are under the canopy light channel in the top of the case. The optional shelf lights are mounted in separate light fixtures under the front of each shelf section.

In order to retain safety approval with Underwriters Laboratory and the Canadian Standards Association, the mounting of electrical components and interconnecting wires must not deviate from the following instructions. Only qualified personnel are authorized to install the accessory items. TYLER Refrigeration recommends you order all component parts from its Service Parts Department.

Rear Ballast Location Replacement



1. Remove screws (1) and rear rail cover (2) from rear of case.

NOTE

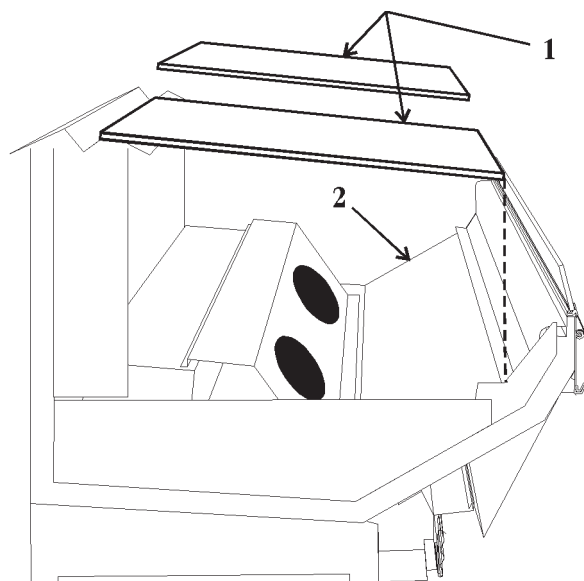
If tappit screws are not available, a star-washer should be used between the ballast and the heads of the screws.

2. Install required number of ballasts (3) in rear electrical raceway (4) with two screws (5) each.
3. Identify and connect required wiring harnesses (upper, lower, etc...) to the ballast connectors (6).
4. Replace rear rail cover (2) and secure with screws (1).

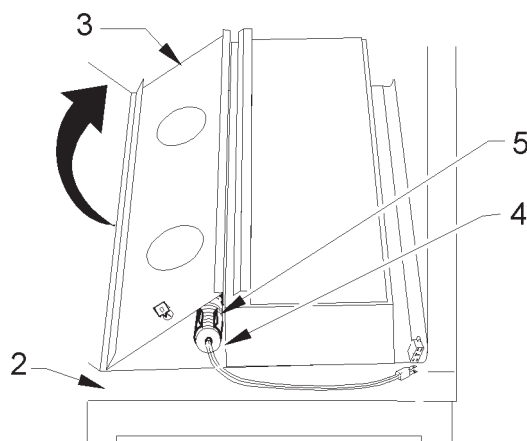
Defrost Heater Replacement

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).



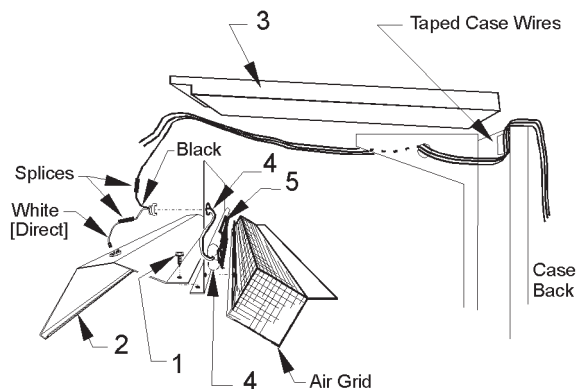
2. Unclip and lift up fan plenum (3).
3. Disconnect and remove defrost heater (4) from mounting clips (5) and case (2).
4. Install new defrost heater (4) in reverse order.
5. Restore electrical power to case.

Anti-Sweat Replacement

WARNING

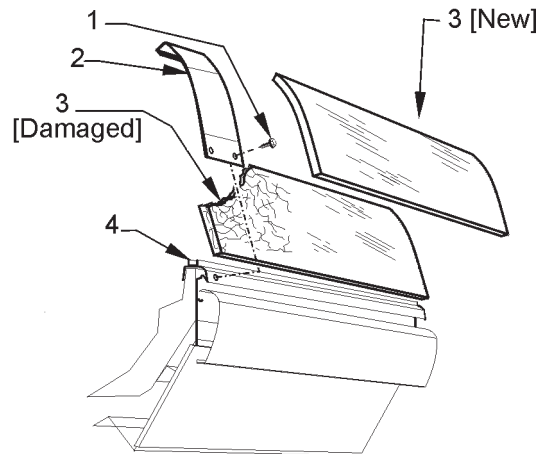
Shut off or disconnect power supply to case before changing an anti-sweat. Electrical power from wire ends could damage other components and/or cause personal injury or death.

Top Light Channel Anti-Sweat Replacement



1. Remove screws (1) and lower the top light channel assembly (2) from top of the case (3).
2. Disconnect or cut the defective anti-sweat wires (4) from the case wires.
3. Remove and replace the aluminum tape (5) and defective anti-sweat wire (4) from the back of the top light channel assembly (2).
4. Position new anti-sweat wire (4) in case) and secure with new aluminum tape (5).
5. Reconnect the new anti-sweat wires (4) to case wires and reinstall the top light channel assembly (2) with screws (1).
6. Restore electrical power to the case.

Front Curved Plexiglas Replacement



1. Remove two screw (1) and plexiglas joint trim (2) from both joints of the damaged plexiglas (3).
2. Remove damaged plexiglas (3) from plexiglas retainer (4).
3. Position new plexiglas (3) in plexiglas retainer (4).
4. Install plexiglas joint trim (2) with screw (1) over the joint areas of plexiglas (3).

PARTS INFORMATION**Operational Parts List****Case Usage****Domestic**

Electrical Circuit

115 Volt 60 Hertz

Case Size

6'

8'

12'

Fan Motor

5243498

5243498

5243498

9 Watt

9 Watt

9 Watt

Fan Motor Brackets

5962268

5962268

5962268

Fan Bracket Plate

9041077

9041077

9041077

Fan Blades (7" 35° 5B)

9044934

9044934

9044934

Opt. ECM Fan Motor

9025002

9025002

9025002

8 Watt

8 Watt

8 Watt

Opt. ECM Fan Motor Brackets

9025005

9025005

9025005

Opt. ECM Fan Blades (7" 35° 5B)

9044934

9044934

9044934

T-8 Ballast (canopy & shelf)

(canopy / 1-row)

5991029

5991029

5991030

(opt. shelf / 2-row or 3-row)

5991030

5991030

5991030

T-8 Lampholder (canopy or shelf)

9041897

9041897

9041897

Anti-Sweat Heater Wire (top light)

9043426

9043427

9043428

Opt. Elec. Def. Heater

5125153

5124521

5124522

Opt. Elec. Def. Limit Klixon

5125211

5125211

5125211

Opt. Gas Def. Fan Delay Klixon

9023503

9023503

9023503

Opt. Gas Def. Term. Klixon

9023508

9023508

9023508

NSF Product Thermometer

5967100

5967100

5967100

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

Cladding and Trim Parts Lists

Item	Description	NSSD		
		6'	8'	12'
1	Screw (per cover)	5100217 (2)	5100217 (2)	5100217 (2)
2	Joint Trim, Rear Riser	5932659	5932659	5932659
3	Plexiglas, Curved	9800193	9800194	9800193 (2)
	RH Plexiglas Trim Assy.	9800225	9800225	9800225
	LH Plexiglas Trim Assy.	9800226	9800226	9800226
	CTR Plexiglas Trim Assy.	-----	-----	9800211
	Plexglas Retainer	9800203	9800204	9800203 (2)
4	Plexiglas Joint Trim	9800211	9800211	9800211
5	Screw	5100217 (2)	5100217 (2)	5100217 (2)
6	Bumper Retainer	-----	color per order	-----
7	Color Band, Ptd.	9023796	9023799	9023801
8	Color Band Backer, Ptd.	9040223	9040223	9040223
9	Bumper Backer	-----	color per order	-----
10	Bumper End Trim	-----	color per order	-----
11	Bumper	-----	color per order	-----
12	Upper Front Cladding, Ptd.	9800000	9800003	9800006
	Screw	5183536 (8)	5183536 (10)	5183536 (12)
13	Upr. Frt. Cladding Joint Trim	9800021	9800021	9800021
	Screw	9024814 (2)	9024814 (2)	9024814 (2)
14	Shoulder Screw, Bumper Ret.	9025833 (12)	9025833 (16)	9025833 (24)
15	Lwr. Frt. Cladding, Ptd.	9800212	9045243	9037941
16	Lwr. Frt. Cladding Joint Trim	9800024	9800024	9800024
	Screw	9024814 (2)	9024814 (2)	9024814 (2)
17	Frt. Kickplate Assembly	9024937	9024938	9024939
18	Kickplate Joint Trim	9043816	9043816	9043816
	Screw	5619204 (4)	5619204 (4)	5619204 (4)
19	Pipe Leg (2" X 7.25")	9045242 (6)	9045242 (6)	9045242 (8)
20	Horizontal End Trim	5964733	5964733	5964733
21	End Close-off, Ptd. (per patch end)	9037922	9037922	9037922
22	Opt. Rear Base Close-off	-----	9037907	9037908
23	Rear Rail Cover, Ptd.	9024929	9024928 (2)	9024929 (2)
	Screw	9043080 (16)	9043080 (24)	9043080 (32)

