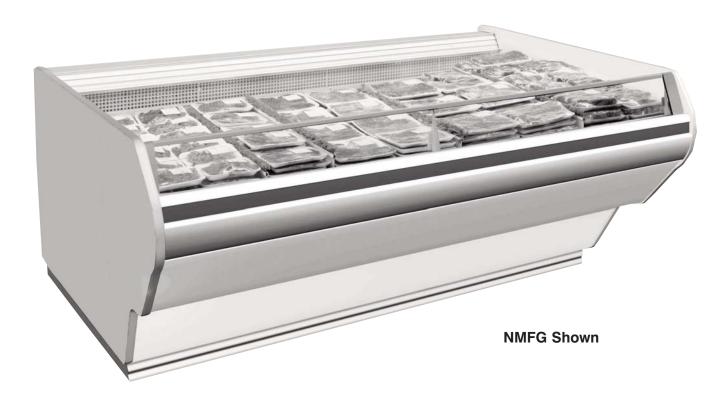




Installation & Service Manual



NMF / NMFG

SINGLE DECK FROZEN MEAT MERCHANDISERS Low 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!!

PRINTED IN	Specifications subject to	REPLACES		ISSUE		PART			
IN U.S.A.	change without notice.	EDITION	1/05	DATE	3/08	NO.	9037161	REV. E	3

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



CONTENTS

Specifications
NMF/NMFG Specification Sheets 4
Line Sizing Requirements (See General-UL/NSF I&S Manual)
Pre-Installation Responsibilities (See General-UL/NSF I&S Manual)
Installation Procedures
Carpentry Procedures 6
Case Pull-Up Locations 6
1" Solid Partition 6
Plexiglas Partition 6
Plumbing Procedures (See General-UL/NSF I&S Manual)
Refrigeration Procedures
Optional Dual Temperature Control
Electrical Procedures
Electrical Considerations
Defrost Information
Defrost Control Chart 7
Installation Procedure Check Lists (See General-UL/NSF I&S Man.
Wiring Diagrams 7
NMF/NMFG Domestic & Export (50Hz) Case Circuits 8
Dual Temperature Control Circuits
Cleaning and Sanitation (See General-UL/NSF I&S Manual)
Component Removal and Installation Instructions for Cleaning 11
Bottom Trays
NSF Product Thermometer
Discharge Air Honeycomb
Rear Air Duct Panels
Front Air Duct Panels
Front Lower Cladding
Front Upper Cladding

Page 2 March, 2008

<u>Page</u>
General Information
NSF Product Thermometer Installation
Service Instructions
Preventive Maintenance (See General-UL/NSF I&S Manual)
Fan Blade and Motor Replacement (See General-UL/NSF I&S Man.)
Color Band and Bumper Replacement (See GenUL/NSF I&S Man.)
Defrost Heater Replacement
Anti-Sweat Replacement
Front Glass Replacement (NFMG)
Parts Information
Cladding and Optional Trim Parts List
Operational Parts List
TYLER Warranty (See General-UL/NSF I&S Manual)

The following Low Temperature Single Deck Frozen Meat Merchandiser models are covered in this manual:

MODEL DESCRIPTION

NMF 6', 8' & 12' FROZEN MEAT MERCHANDISER

NMFG 6', 8' & 12' GLASS FRONT FROZEN MEAT MERCHANDISER



SPECIFICATIONS

NMF/NMFG Frozen Meat Merchandisers

Refrigeration Data:

			CAPACI	TY (BTUH / FT)			DISCHARGE AIR		AVG. REF.
MODEL	CASE LENGTH	CASE USAGE	PARALLEL	CONVENTIONAL	EVAPORATOR (°F)	UNIT SIZING (°F)	TEMPERATURE (°F)	VELOCITY (FPM)	CHARGE (LBS/FT)
NMF	6'/8'/12'	FROZEN FOOD	327*	341*	-25**	-28	-15	155***	0.27****
NMFG	6'/8'/12'	FROZEN FOOD	327*	341*	-25**	-28	-15	155***	0.27****

^{*} For sizing all refrigeration equipment other than TYLER, use conventional BTUH values.

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)

	CASE	FANS/		TAL FANS		TAL FANS	TOTAL ANTI-SWEATS (120V)								DEFROST HEATER (208V)	
MODEL	LENGTH		AMPS	WATTS	AMPS	WATTS	DISCHA AMPS	RGE AIR WATTS	TRIM AMPS	RAIL WATTS	GLASS F	ETAINER WATTS	FRONT AMPS	GLASS WATTS	AMPS	WATTS
NMF	6'	2	0.68	60.4	0.44	22.0	0.61	73.0	N/A	N/A	N/A	N/A	N/A	N/A	6.5	1,352
NMF	8'	2	0.68	60.4	0.44	22.0	0.95	114.0	N/A	N/A	N/A	N/A	N/A	N/A	6.9	1,435
NMF	12'	3	1.02	90.6	0.66	33.0	1.26	152.0	N/A	N/A	N/A	N/A	N/A	N/A	10.3	2,142
NMFG	6'	2	0.68	60.4	0.44	22.0	0.61	73.0	0.22	27.0	0.61	73.0	0.07	8.4	6.5	1,352
NMFG	8'	2	0.68	60.4	0.44	22.0	0.95	114.0	0.30	36.0	0.94	113.0	0.10	12.0	6.9	1,435
NMFG	12'	3	1.02	90.6	0.66	33.0	1.26	152.0	0.45	54.0	1.25	150.0	0.14	16.8	10.3	2,142

Heaters (208 Volt)

	208 VOLT DEFROST (AMPS)													
FT	6	8	12	16	20	24	28	32	36	40	44	48	52	56
1 PH	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-40	34.3 TG-50	37.8 TG-50	41.2 TG-50	44.6 TG-50	N/A
3 РН	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	33.0 TG-3-50

Defrost Data:

				EPR SET			
DEFROST TYPE*	DEFROSTS PER DAY	DURATION TIME (MIN)	TERMINATION (°F)	R22 (PSIG)	R404A (PSIG)	DEFROST WATER (LB / FT / DAY)	
ELECTRIC	1	60	50	7.4	14	N/A	
HOT GAS	2 16-20		55*	7.4	17	19/7	

^{*} If an Electronic Sensor is used for termination, it should be set at 70°F termination temperature. The sensor must be located in the same location as the defrost termination klixon for that defrost type.

^{**} Set EPR to give this pressure at the case.

CASE-TO-CASE SUCTION LINE SUB-FEED BRANCH LINE SIZING														
MODEL	6'	8'	12'	16'	20'	24'	28'	32'	36'	40'	44'	48'	52'	56'
NMF(G) / R404A	1/2"	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 1/8"	1 1/8"	1 1/8"

CASE CIRCUITS: In addition to the 208V defrost circuit, there is the 120V case fan circuit plus the 120V case anti-sweat heater circuit. Anti-sweat heater circuit includes allowance for lower glass retainer heater, upper glass trim rail and heated glass. **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.

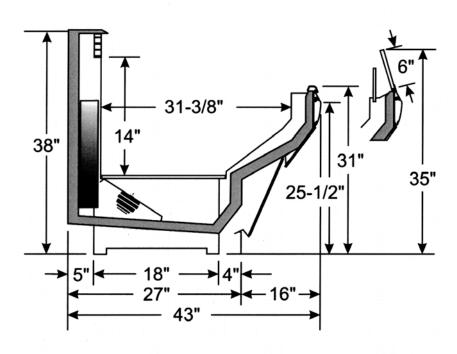
Page 4 March, 2008

^{**} Evaporator temperature is based on the saturated pressure leaving the case.

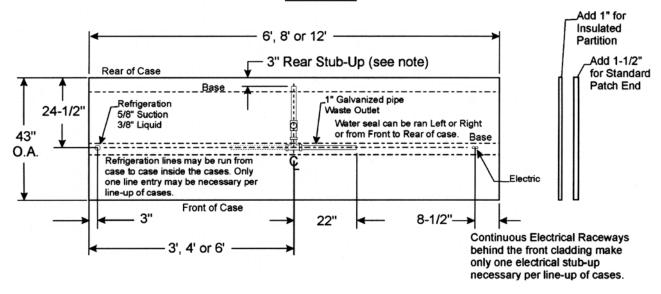
^{***} Air velocity measured 1 hour after defrost at the top discharge air duct using an ALNOR JR. velometer with a scoop.

^{****} This is an average refrigeration charge per foot based on R22 and R404A refrigerant usage.

NMF / NMFG CROSS SECTION



FLOOR PLAN

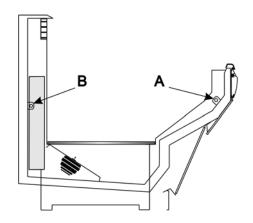


March, 2008 Page 5



INSTALLATION PROCEDURES

Carpentry Procedures Case Pull-Up Locations



The NMF and NFMG models have two pull-ups at each end of the case. Pull-ups A and B are located as shown and used for joining all cases.

1" Solid Partition

A 1" insulated partition is required between adjacent gas defrost cases that are on different refrigeration systems. 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.

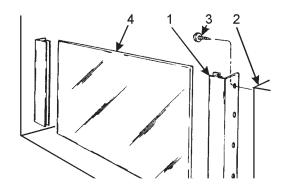
Apply sealant to outside surface of partition where the two surfaces of the adjoining case will contact the partition.

See "General-UL/NSF I&S Manual" for lineup assembly instructions.

After all case pull-ups have been secured, all interior wall joint seams should be sealed with duct tape.

Plexiglas Partition

A plexiglas plug partition is required on adjacent electric defrost cases that are on different refrigeration systems. These partitions can be installed after the cases have been joined.



- Install partition brackets (1) at case joint on front, center and/or rear case wall (2) with screws 3)
- 2. Slide plexiglas partitions (4) into partition brackets (1).

Refrigeration Procedures

See "General-UL/NSF I&S Manual" for general system, control and superheat information.

Optional Dual Temperature Control

The dual temperature control unit is a factory installed option. This control allows the user to easily switch from medium to low temperature operation by flipping a switch. The dual temperature control consists of an EPR valve in the suction line coming off the evaporator. The EPR valve can be bypassed with a solenoid controlled bypass line around it. The toggle switch opens or closes this solenoid.

When the solenoid is open, the evaporator is connected directly to the compressor suction that allows for low temperature operation. When the solenoid is closed, the evaporator must operate through the EPR valve which has been preset to the desired medium temperature.

EXAMPLE: R-404A system with 12 psig of suction pressure. With the suction line solenoid open, the coil pressure operates at 12 psig with a temperature of -29°F. When the toggle switch is flipped, the solenoid closes directing the flow through the EPR valve. If the EPR valve is set for 48 psig, the evaporator will see a coil temperature of 12°F and will operate at a discharge air temperature of about 22°F.

Page 6 March, 2008

When gas defrost is used, an additional check valve is mounted around the EPR valve to allow reverse flow for the defrosting gas. A fan delay is also connected with gas defrost to cycle the fans off, but only during the medium temperature mode.

Electrical Procedures

Electrical Considerations

CAUTION

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

NOTE

The raceway houses the electrical wiring and components for 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 when used for medium temperatures.

NOTE

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

Anti-Sweat Circuit

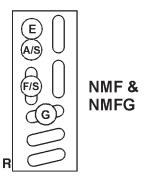
All cases have at least one anti-sweat heater in each discharge air grid. Cases with glass have two additional anti-sweat heaters in the rubrail and under the glass retainer and heated glass. Anti-sweat heaters and the heated glass are wired directly to the main power supply so they can operate at all times.

Defrost Information

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

Defrost Control Chart

		Defrost	
Defrost	Defrosts	Duration	Term.
Type	Per Day	(Min)	Temp.
Electric	1	60	50°F
Gas	2	16-20	55°F



E = Electric Defrost Termination F/S = Electric Defrost Failsafe (Opt.) G = Gas Defrost Fan Delay (Dual Temp) A/S = Glass Anti-Sweat (Dual Temp)

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

NOTE

The defrost termination klixon for gas defrost is located at the bypass check valve.

CAUTION

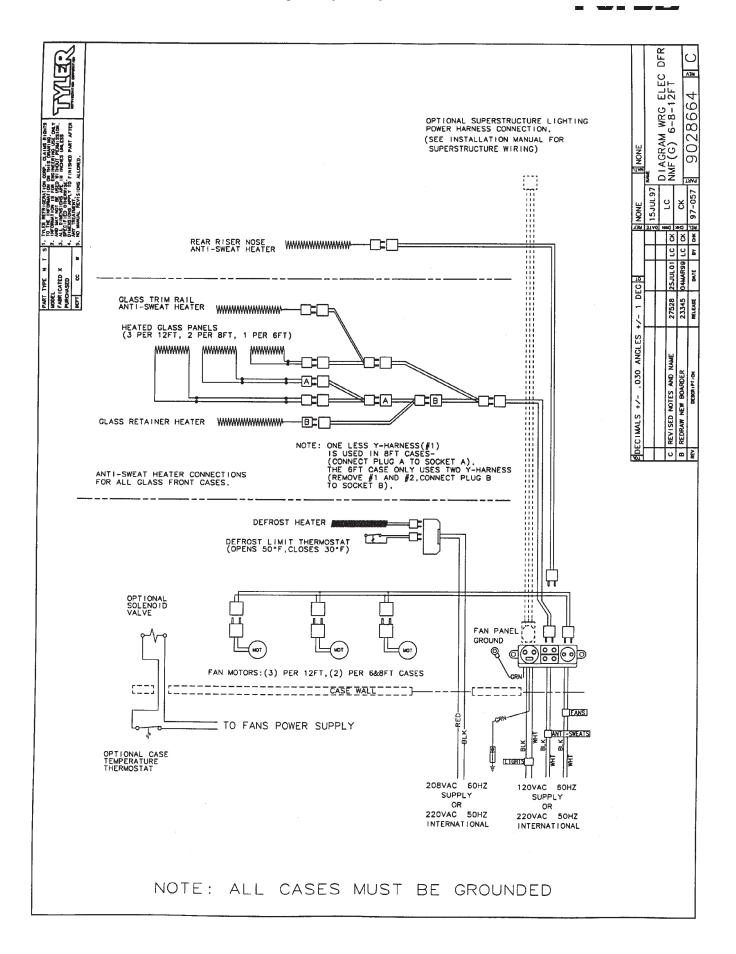
If electronic sensors are used in place of the klixons, the sensors must be located in the same location as the klixons for that defrost type. Any other locations will effect the refrigeration efficiency of the case.

WIRING DIAGRAMS

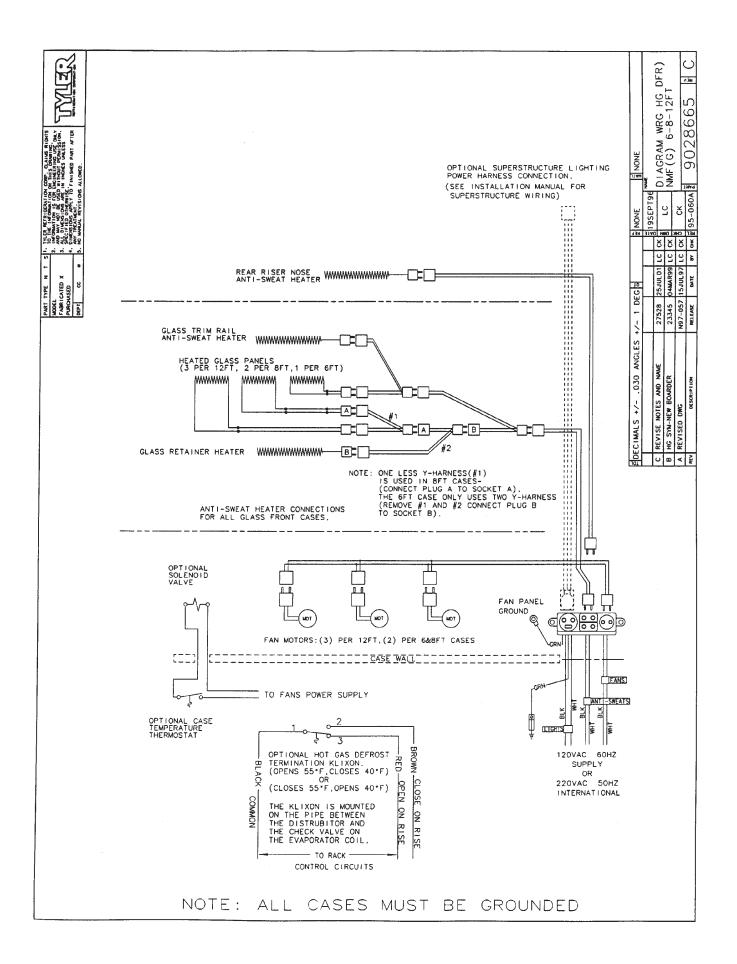
ELECTRICIAN NOTE - OVERCURRENT PROTECTION

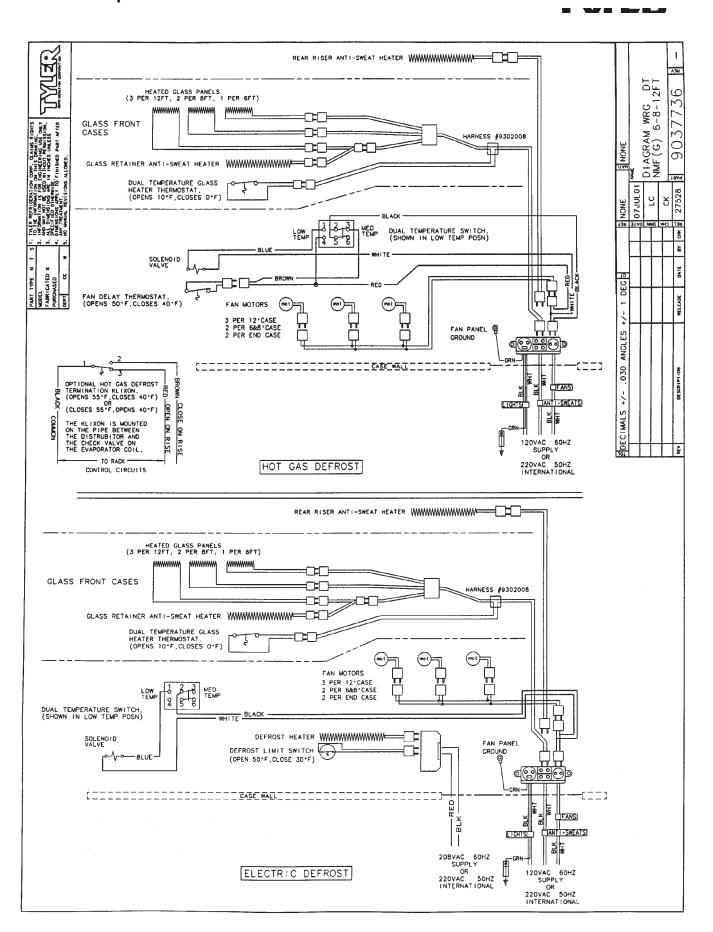
120V circuits should be protected by 15 or 20 Amp devices per the requirements noted on the cabinet nameplate or the National Electrical Code, Canadian Electrical Code - Part 1, Section 28. 208V defrost circuits employ No. 12 AWG field wire leads for field connections. On remote cases intended for end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

The following wiring diagrams on pages 8 thru 10 will cover the NMF and NMFG case circuits.



Page 8 March, 2008





Page 10 March, 2008

CLEANING AND SANITATION

Component Removal and Installation Instructions for Cleaning

Bottom Trays

- 1. Remove product from bottom of case.
- Grasp and lift out each of the bottom trays from the case interior and carefully remove through the door openings
- 3. After cleaning, replace in reverse order.

NSF Product Thermometer

Remove two screws and access panel with product thermometer bracket assembly on it from right front location in the case. After cleaning, replace access panel assembly and secure with two screws.

Discharge Air Honeycomb

1. Remove screws and bottom retainer strip from front or rear interior of case.

NOTE

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

2. Remove honeycomb grid sections from the front or rear duct.

CAUTION

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

 After cleaning, replace honeycomb grid sections as they were removed and secure with the bottom retainer strip and screws.

Rear Air Duct Panels

- 1. Remove bottom trays and discharge air honeycomb, see this page.
- 2. Remove mounting screws from rear duct panel.
- 3. After cleaning, replace in reverse order.

Front Air Duct Panels

- 1. Remove bottom trays, see this page.
- 2. Remove screws and front air duct panels from case.
- 3. After cleaning, replace in reverse order.

Lower Cladding

- 1. Remove kickplate from kickplate supports. (See General-UL/NSF I&S Manual.)
- Remove mounting screws from top and bottom of lower cladding and remove lower cladding.
- 3. After cleaning, replace in reverse order.

Upper Cladding

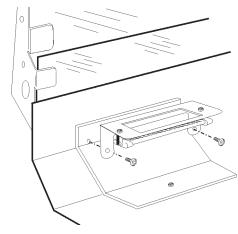
- 1. Remove lower cladding, see this page.
- Remove color band, bumper and bumper retainer from case. (See General-UL/NSF I&S Manual.)
- 3. Remove mounting screws from top and bottom of upper cladding and remove upper cladding.
- 4. After cleaning, replace upper cladding and remaining components in reverse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



GENERAL INFORMATION

NSF Product Thermometer Installation

1. Unwrap the thermometer and bracket assembly shipped loose with the case.



2. Position thermometer and bracket assembly so it is centered on the top portion of the secured right front access panel.

NOTE

The bottom of the bracket tabs should be at the bend on the access panel.

3. Mount the thermometer and bracket assembly to the access panel with two self-tapping screws.

NOTE

This positioning will allow the front access panel and the thermometer assembly to be removed as an assembly.

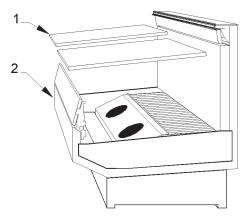
SERVICE INSTRUCTIONS

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

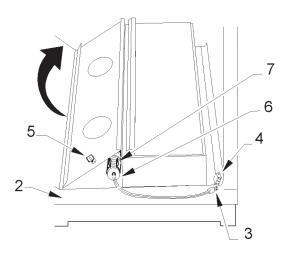
Defrost Heater Replacement

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.

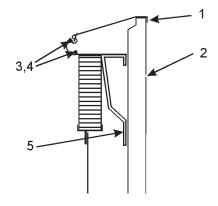
Page 12 March, 2008

Anti-Sweat Replacement

WARNING

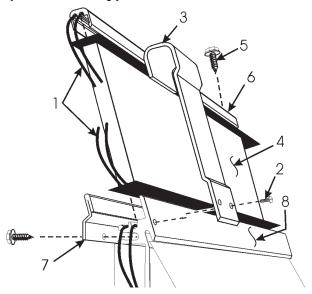
Shut off or disconnect power supply to case before changing an anti-sweat. Electrical power from wire ends could damage other components and/or cause personal injury or death.

Discharge Air Grid Anti-Sweat



- 1. Remove screws and rear guard trim (1) from top of rear case wall (2).
- 2. Disconnect or cut the defective anti-sweat wire (3) from the case wires.
- 3. Remove and replace the aluminum tape (4) and defective anti-sweat wire (3) from top of rail and wire trim assembly (5).
- 4. Reconnect anti-sweat wires to case wires and reinstall rear guard trim with screws.

Front Glass Replacement (NMFG Only)



- 1. Unplug or disconnectglass anti-sweat and heated glass wires (1).
- 2. Remove two screws (2) and glass joint trim (3) from both joints of the broken glass (4).
- 3. Remove screws (5) and glass trim rail (6) from top of glass (4).
- 4. Loosen rear retainer (7) and remove broken glass (4) from glass retainer assembly (8).

NOTE

Inspect the anti-sweat wire in glass retainer assembly. If wire is damaged or broken, replace it before replacing the front glass.

- 5. Apply sealant tape to top and bottom edge of new glass (4).
- 6. Position new glass (4) in glass retainer assembly (8) and secure by tightening rear retainer (7).
- 7. Install glass trim rail (7) with screws (6) over top edge of new glass (4).
- 8. Install glass joint trim (3) with two screws (2) over the joint areas of glass (4).
- 9. Reconnect the anti-sweat and heated glass wires (1).

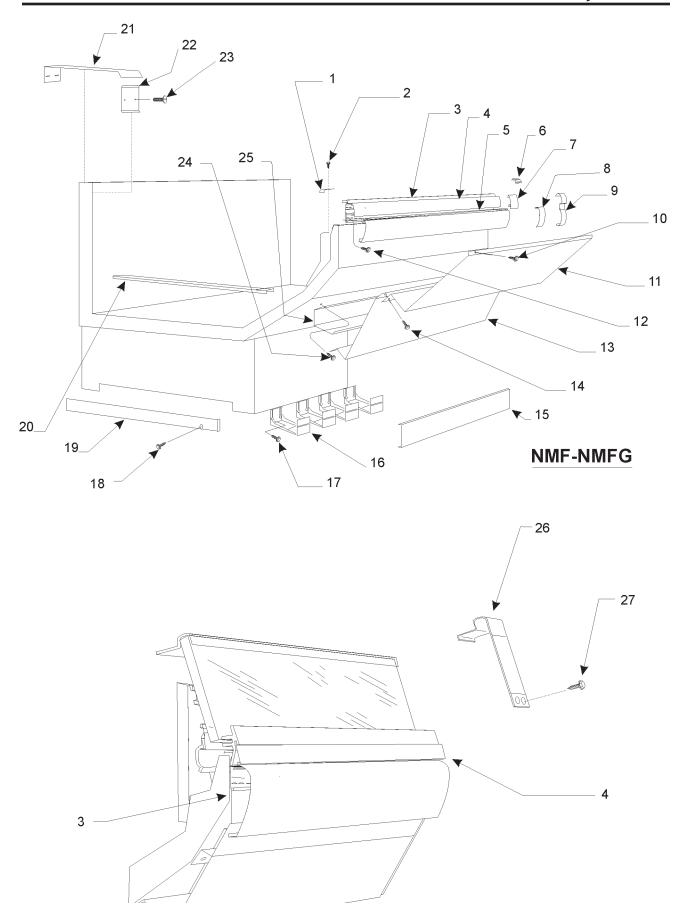


PARTS INFORMATION

Cladding and Optional Trim Parts List

			NMF and NMFG	
	Description	6'	8'	12'
1	Return Air Duct Joint Trim	5207497	5207497	5207497
2	Screw	5205439 (2)	` ,	5205439 (2)
3	Bumper Retainer/Hand Rail (N	MF)	00.0. po. 0.0.0.	
	Bumper Retainer (NMFG)	9025052	9025058	9025061
4	Color Band, Ptd. (NMF)	9020978	9020981	9020982
	(NMFG)	9020968	9020971	9020972
5	Bumper		color per order	
6	Hand Rail Backer, Ptd. (NMF)	9025316	9025316	9025316
7	Color Band Backer, Ptd.	9025982	9025982	9025982
8	Bumper Backer		color per order	
9	Bumper End Trim		color per order	
10	Screw (NMF)	5183536 (3)	5183536 (3)	5183536 (3)
	(NMFG)	5183536 (4)	5183536 (4)	5183536 (4)
11	Upr. Frt. Cladding, Ptd. (NMF)	9025244	9025201	9025202
	(NMFG)	9025245	9025205	9025206
12	Screw	5183536 (14)	5183536 (18)	5183536 (26)
13	Lwr. Frt. Cladding, Ptd.	9025246	9025203	9025204
14	Screw	5183536 (6)	5183536 (6)	5183536 (6)
15	Metal Kickplate, Ptd.	9039268	9039269	9039270
	Kickplate Joint Trim, Ptd.	9039020	9039020	9039020
	Screw, BLK.	9037551 (7)	8037551 (7)	9037551 (8)
16	Kickplate Support Assy.	9043347 (3)	9043347 (3)	9043347 (4)
17	Shoulder Screw	9025833 (6)	9025833 (8)	9025833 (8)
18	Binding Screw	5048626 (6)	5048626 (6)	5048626 (6)
19	LH End Close-off, Ptd.	9022459	9022459	9022459
	RH End Close-off, Ptd.	9022466	9022466	9022466
20	Horizontal Joint Trim	5201252	5201252	5201252
21	Rear Riser Joint Trim	5199829	5199829	5199829
	Screw	5619204 (2)	5619204 (2)	5619204 (2)
22	Rear Joint Trim	5202428	5202428	5202428
23	Screw	5205439 (2)	52.5439 (2)	52.5439 (2)
24	Screw	5183536 (6)	5183536 (8)	5183536 (10)
25	Raceway	9025126	9025127	9025128
26	Glass Joint Trim	9025959	9025959	9025959
27	Screw	5048626 (2)	5048626 (2)	5048626 (2)

Page 14 March, 2008





Operational Parts List

(Models NMF and NMFG)

Case Usage Electrical Circuit	11	Domestic 5 Volt 60 He	ertz	22	Export 20 Volt 50 He	ertz
Case Size	6'	8'	12'	6'	8'	12'
Fan Motor	5125532 5 Watt	5125532 5 Watt	5125532 5 Watt		5126572 5 Watt	5126572 5 Watt
Fan Motor Brackets	5213132	5213132	5213132		5213132	5213132
Fan Bracket Plate	9041077	9041077	9041077		9041077	9041077
Fan Blades (6" 21° 3B)	5105621	5105621	5105621		5105621	5105621
Opt. ECM Fan Motor	9025002 8 Watt	9025002 8 Watt	9025002 8 Watt			
Opt ECM Fan Motor Brackets	5205279	5205279	5205279			
Opt. ECM Fan Blades (6" 15° 3B)	9408191	9408191	9408191			
Anti-Sweat Heater Wire (Discharge Air)(NMF/NMFG)	5233734	5124216	5124217		5081149	5081150
(Trim Rail)(NMFG)	5227379	5124818	5124819		5081147	5081148
(Glass Retainer)(NMFG)	5233734	5218331	5218332		5081149	5081150
Electric Def. Heater (NMF/NMFG)	5125153	5124521	5124522	5125153	5124521	5124522
Electric Def. Term. Klixon	5125211	5125211	5125211	5125211	5125211	5125211
Opt. Gas Def. Fan Delay Klixon	9023503	9023503	9023503	9023503	9023503	9023503
Opt. Gas Def. Term. Klixon	9023508	9023508	9023508	9023508	9023508	9023508
NSF Product Thermometer	5967100	5967100	5967100	5967100	5967100	5967100

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

Page 16 March, 2008