

TYLER
REFRIGERATION



Carrier

A United Technologies Company

A series
Advantage

Installation & Service Manual



NNG

GLASS FRONT SELF-SERVE CHEESE/DELI MERCHANDISERS
Medium Temperature Refrigerated 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.

PRINTED IN U.S.A.	Specifications subject to change without notice.	REPLACES EDITION	11/05	ISSUE DATE	4/08	PART NO.	9037144	REV.	B
-------------------	--	------------------	-------	------------	------	----------	---------	------	---

Tyler Refrigeration * Niles, Michigan 49120

CONTENTS

	<u>Page</u>
Specifications	
NNG 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
Rear Rail Cover & Close-off Installation	6
Trim & NSF Thermometer Installation	7
Electrical Procedures	7
Case Fan Circuit	7
Anti-Sweat Circuit	7
Plumbing Procedures (See General-UL/NSF I&S Manual)	
Refrigeration Procedures (See General-UL/NSF I&S Manual)	
Defrost Information	7
Defrost Control Chart	7
Installation Procedure Check Lists (See Gen.-UL/NSF I&S Manual)	
Wiring Diagrams	7
NNG Domestic & Export (50Hz) 6' and 8' Case Circuits	8
NNG Domestic & Export (50Hz) 12' Case Circuits	9
Cleaning and Sanitation	10
Component Removal and Installation Instructions for Cleaning	
Lower Trays	10
Front Air Ducts	10
Rear Air Ducts	10
Front Lower Cladding	10
Front Upper Cladding	10
Cleaning Instructions (See General-UL/NSF I&S Manual)	

	<u>Page</u>
Service Instructions	
Preventive Maintenance	(See General-UL/NSF I&S Manual)
Connecting the Refrigeration Piping and Components	10
Front Glass Replacement	11
Anti-Sweat Heater Replacement	11
Discharge Grid Replacement	11
Fan Blade and Motor Replacement (See Gen.-UL/NSF I&S Manual)	
Color Band & Bumper Replacement (See Gen.-UL/NSF I&S Man.)	
Parts Information	
Cladding and Optional Trim Parts List	12
Operational Parts List	14
TYLER Warranty	(See General-UL/NSF I&S Manual)

The following Medium Temperature Cheese and Deli Merchandiser models are covered in this manual:

MODELS	DESCRIPTION
NNG	6', 8' & 12' GLASS FRONT, SELF-SERVE CHEESE/DELI MERCHANDISERS

SPECIFICATIONS

NNG Glass Front Self-Serve Cheese/Deli 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)	
NNG	6'8'/12'	MED TEMP - CHEESE	470*	532*	+20**	+18	+28	475***	0.26
NNG	6'8'/12'	MED TEMP - DELI	579*	656*	+15**	+13	+25	475***	0.26

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

** 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.

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 Volt)

MODEL	CASE LENGTH	FANS / CASE	TOTAL STANDARD FANS		TOTAL ECM FANS		DISCHARGE AIR ANTI-SWEAT (120V)	
			AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
NNG	6'	2	0.68	60.4	0.44	22	0.22	27.0
NNG	8'	2	0.68	60.4	0.44	22	0.30	36.0
NNG	12'	3	1.02	90.6	0.66	33	0.45	54.0

Defrost Data:

DEFROST TYPE*	DEFROSTS PER DAY	DURATION TIME (MIN)	TERMINATION (°F)	EPR SETTINGS *		DEFROST WATER (LB / FT / DAY)
				R22 (PSIG)	R404A (PSIG)	
TIME OFF - CHEESE	6	28	---	43	56	N/A
TIME OFF - DELI	6	28	---	38	50	

* Set EPR to give this pressure at the case.

TEMPERATURE CONTROL can be achieved by a thermostat, suitably sized EPR, or Low Pressure Control. The Discharge Air Thermostat should be set @ 28°F CUT IN; EPR set at 43# (R22); and Low Pressure Control (see table).

CASE-TO-CASE SUCTION LINE SUB-FEED BRANCH LINE SIZING (R22 REFRIGERANT)											
MODEL	6'	8'	12'	16'	20'	24'	28'	32'	36'	40'	44'
NNG - CHEESE	1/2"	1/2"	1/2"	5/8"	5/8"	7/8"	7/8"	7/8"	7/8"	7/8"	7/8"
NNG - DELI	1/2"	1/2"	5/8"	5/8"	7/8"	7/8"	7/8"	7/8"	7/8"	7/8"	1-1/8"

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

UL SANITATION approved in accordance with ANSI/NSF - 7.

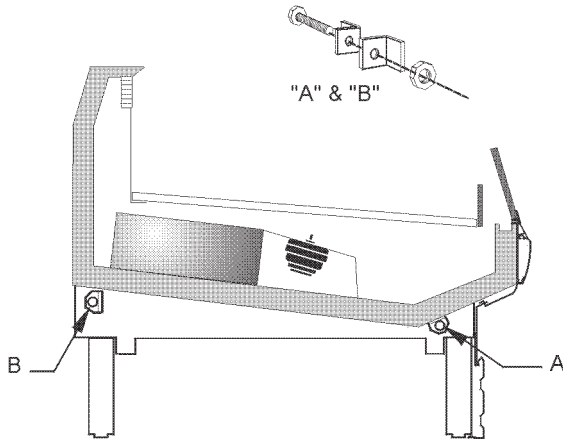
CASE BTUH REQUIREMENTS are calculated to produce approximately the indicated entering-air temperature with absolute maximum operating ambient limits of 75°F & 55RH.

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.

INSTALLATION PROCEDURES

Carpentry Procedures

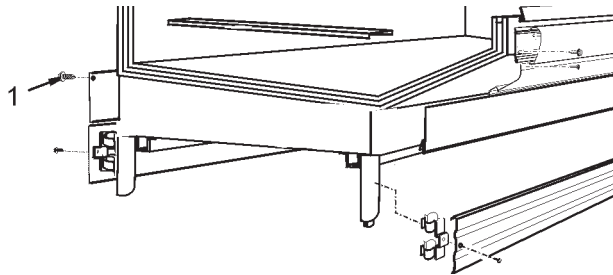
Case Pull-Up Locations



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

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

Rear Rail Cover & Close-off Installation



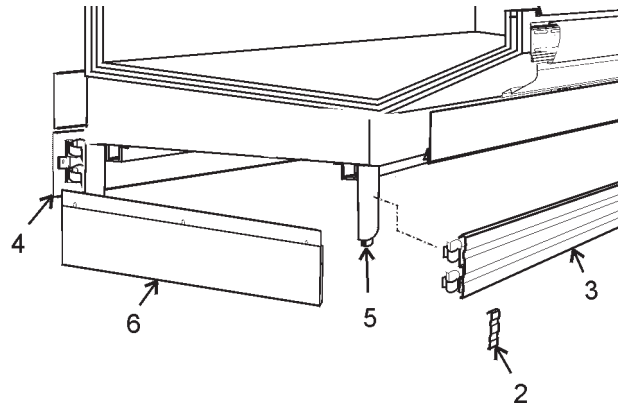
Position rear rail cover (1) over rear raceway opening and secure with screws in every hole.

Bottom and End Close-off Installation

Kickplate, optional rear bottom and end closeoffs have spring clips on their back sides that secure to the pipe legs.

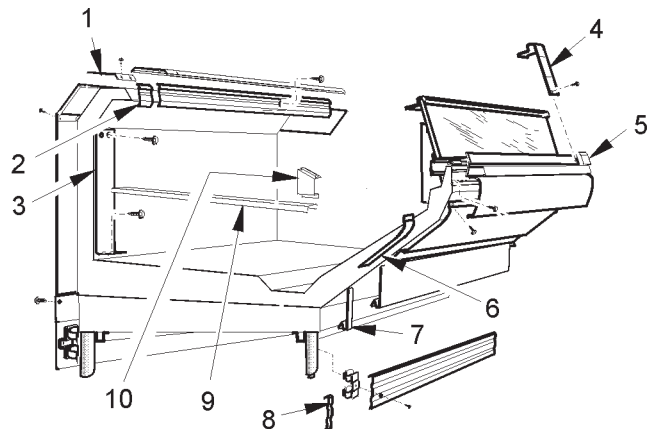
NOTE

Optional rear bottom close-offs do not require joint trim.



1. Before installing kickplates on a multiple case lineup, snap a joint trim (2) over the top and bottom of one end of each kickplate (3).
2. Lineup each kickplate (3) and/or optional rear bottom close-off (4) and push to secure the spring clips to the legs (5).
3. Slide joint trims (2) over the case-to-case joints.
4. Position end close-offs (6) over the end of the kickplate (3) and/or optional rear bottom close-off (4) and push until the spring clips secure to the legs (5).

Trim & NSF Thermometer Installation



The joint trim and mounting hardware are shipped loose. Trim includes rear riser joint trim (1), card molding joint trim (2), rear duct joint trim (3), glass joint trim (4), glass retainer joint trim (5), upper front cladding joint trim (6), lower front cladding joint trim (7), kickplate joint trim (8) and horizontal joint trim (9).

Horizontal joint trim covers gaps between the cases. The trim is glued onto the shipping cardboard. Apply trim with notch side towards front of case, after running beads of caulking on the edges of the cases. Sheet metal screws can be used for additional securing.

Patch end trim is shipped factory installed. If field installation is required, be sure the patch end is pulled up enough to fit snugly against the sealing tubing on the inside of the case. The patch end must seal tightly against the lift glass wiper to ensure proper operating temperatures.

The NSF case thermometer and bracket assembly (10) is shipped loose with the case.

After removing the thermometer and bracket assembly from the shipping packaging, position bracket over left horizontal joint trim and case-to-case joint where the joint trim is notched out. Make sure the bracket is positioned to the front of the case, flush with the top and left inside edge of the bottom case end welds. Secure thermometer bracket to with two screws in the pre-drilled holes.

Electrical Procedures

Electrical Considerations

CAUTION

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

NOTE

The raceway houses the electrical wiring and components for the case. Since the lower front cladding is shipped loose, the raceway has immediate access.

Case Fan Circuit

This circuit is to be supplied by an uninterrupted, protected 120V circuit. The case fan circuit is not cycled during defrost on any of these models.

Anti-Sweat Circuit

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 Off Time defrost control.

Defrost Control Chart

Defrost Type	Defrosts Per Day	Defrost Duration (Min)	Term. Temp.
Off Time	6	28	-----

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 and 9 will cover the NNG case circuits. The lighting circuits are shown in the case circuits.

CLEANING AND SANITATION

Component Removal and Installation Instructions for Cleaning

Lower Trays and Screens

1. Open the front curved glass by lifting the handle at the bottom.
2. Remove product from the case interior.
3. Grasp and lift out each lower tray or screen from the bottom of the case.
4. After cleaning, replace in reverse order.

Front Air Ducts

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

Rear Air Ducts

1. Remove lower trays or screens, see this page.
2. Remove mounting screws from rear air duct.
3. Lift out rear air duct sections.
4. After cleaning, replace in reverse order.

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.
3. After cleaning, replace front lower cladding by inserting top tabs, then rear tabs. Make sure all tabs are securely fit in each slot. Replace front kickplate.

Front Upper Cladding

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

SERVICE INSTRUCTIONS

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

Connecting the Refrigeration Piping and Components

WARNING

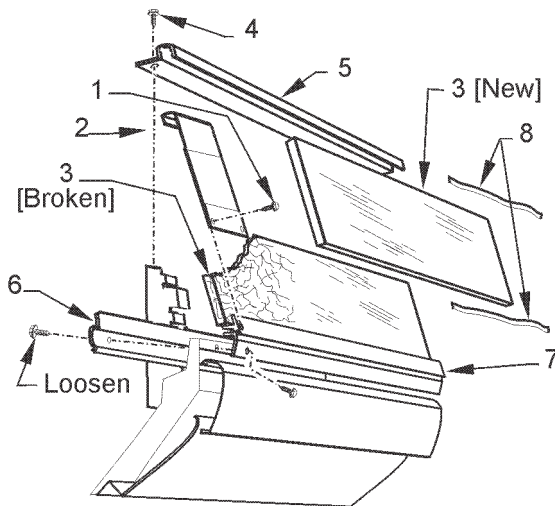
Be sure to position a flame and heat-resistant shield over the bottom of the case liner. Heat from brazing could damage the liner and/or cause personal injury or death from fire.

1. Remove screws and refrigeration piping cover from the left bottom of the case.
2. Position loose refrigeration piping and/or optional valves between the open lines in the bottom and upright of the case.

NOTE

- **Make sure all sensor and thermostat wires are clear of areas being heated.**
 - **Mount all refrigeration lines off the floor to allow for cleaning access.**
3. Apply flux to all joint ends. Starting at one end, thoroughly heat each new pipe joint and braze it together. Repeat this process until all new pipe joints have been brazed.
 4. After piping has cooled, route and connect thermostat and sensor wires through openings in the bottom of the case.

Front Glass Replacement

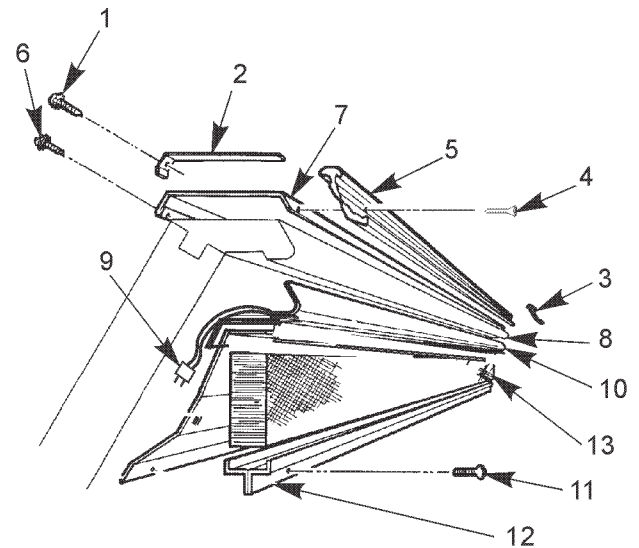


1. Remove screw (1) and glass joint trim (2) from both joints of the broken glass (3).
2. Remove screws (4) and glass trim rail (5) from top of glass (3).
3. Loosen rear retainer (6) and remove broken glass (3) from glass retainer assembly (7).
4. Apply sealant tape (8) to top and bottom edge of new glass (3).
5. Position new glass (3) in glass retainer assembly (7) and secure by tightening rear retainer (6).
6. Install glass trim rail (5) with screws (4) over top edge of new glass (3).
7. Install glass joint trim (2) with screw (1) over the joint areas of glass (3).

Anti-Sweat Heater Replacement (Discharge Air)

WARNING

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



1. Remove screws (1), rear riser joint trim (2) and card molding joint trim (3).
2. Remove screws (4) and card molding (5) from front of rear riser.
3. Remove screws (6) and upper rear riser trim (7) and insulation (8) from top of rear riser.
4. Disconnect or cut the defective anti-sweat wire (9) from case wires.
5. Remove the aluminum tape and defective anti-sweat wire (9) from the lower riser trim (10).
6. Position new anti-sweat wire (9) on the lower riser trim (10) and secure with aluminum tape.
7. Connect or splice the new anti-sweat wire (9) to the case wires.
8. Position the insulation (8) and install the upper rear riser trim (7) with screws (6).
9. Install card molding (5) with screws (4).
10. Replace card molding joint trim (3) and install rear riser joint trim (2) with screws (1). Restore electrical power to case.

Discharge Grid Replacement

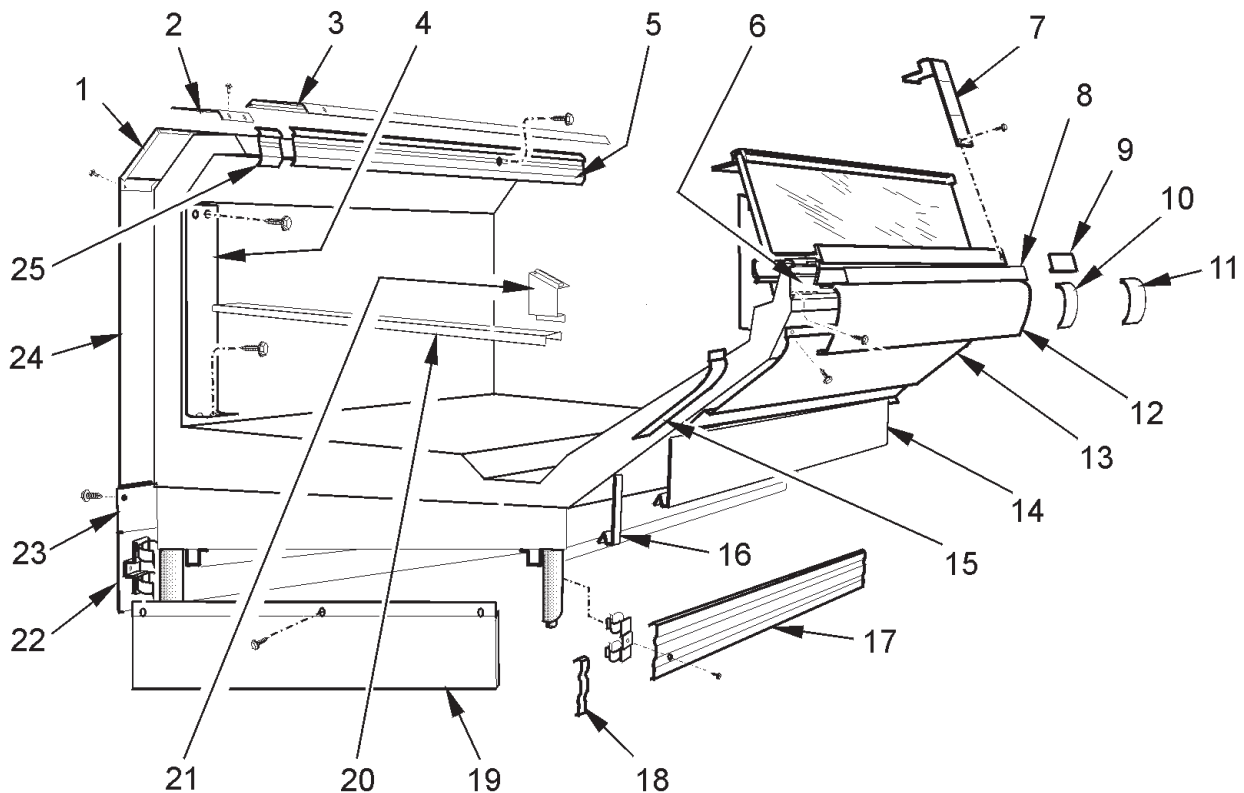
1. Remove screws (11) lower grid retainer (12) and discharge grid (13).
2. Replace discharge grid (13) and lower grid retainer (12) and secure with screws (11).

PARTS INFORMATION

Cladding and Optional Trim Parts List

Item	Description	6'	8'	12'
1	Upper Rear Cladding	5029000	5029001	5029002
	Screw	9024814 (4)	9024814 (5)	9024814 (7)
2	Rear Riser Joint Trim	5964734	5964734	5964734
	Screw	9024814 (2)	9024814 (2)	9024814 (2)
3	Upper Rear Riser Trim	5964673	5964674	5964675
	Screw	9024814 (4)	9024814 (5)	9024814 (7)
4	Rear Duct Joint Trim	5964735	5964735	5964735
	Screw	5048626 (4)	5048626 (4)	5048626 (4)
5	Card Molding	5236878	5236930	5236936
	Screw	9024814 (5)	9024814 (6)	9024814 (8)
6	Bumper Retainer	9025052	9025058	9025061
	Screw, Shoulder	9025833 (12)	9025833 (16)	9025833 (24)
7	Glass Joint Trim	9034801	9034801	9034801
	Screw	9029415 (2)	9029415 (2)	9029415 (2)
8	Color Band, Ptd.	9025979	9025980	9025981
9	Color Band Backer, Ptd.	9025655	9025655	9025655
10	Bumper Backer	-----	color per order	-----
11	Bumper End Trim	-----	color per order	-----
12	Bumper	-----	color per order	-----
13	Upper Front Cladding	9024922	9024923	9024924
	Screw	5183536 (8)	5183536 (10)	5183536 (14)
14	Lower Front Cladding, Std.	9043822	9043823	9043824
	Lower Front Cladding, Opt.	9043825	9043826	9043827
15	Upper Cladding Joint Trim	9043829	9043829	9043829
	Screw	9024814 (4)	9024814 (4)	9024814 (4)
16	Lower Cladding Joint Trim, Std.	9043893	9043893	9043893
	Lower Cladding Joint Trim, Opt.	9043891	9043891	9043891
	Screw	9024814 (4)	9024814 (4)	9024814 (4)
17	Kickplate Assembly, Std.	9024937	9024938	9024939
	Kickplate Assembly, Opt.	9024974	9024975	9024976
18	Kickplate Joint Trim	9043816	9043816	9043816
	Screw	5619204 (4)	5619204 (4)	5619204 (4)

Item	Description	6'	8'	12'
19	LH Base End Close-off, Ptd. (per patch end)	9043066	9043066	9043066
	RH Base End Close-off, Ptd. (per patch end)	9024986	9024986	9024986
	Opt. Base End Close-off, Ptd. (per patch end)	9024980	9024980	9024980
20	Horizontal End Trim	9037279	9037279	9037279
21	NSF Product Thermometer	5967100	5967100	5967100
22	Opt. Rear Base Close-off Assy.	9024934	9024935	9024936
23	Rear Rail Cover, Ptd.	9024929	9024928	9024929 (2)
	Screw	9043080 (16)	9043080 (24)	9043080 (32)
24	Lower Shell Cover	5233044	5232958	5232959
	Screw	9024814 (6)	9024814 (7)	9024814 (12)
25	Card Molding Joint Trim	5941919	5941919	5941919



Operational Parts List

Case Usage	Domestic			Export		
	115 Volt 60 Hertz			220 Volt 50 Hertz		
Case Size	6'	8'	12'	6'	8'	12'
Electrical Circuit						
Fan Motor	5125532 5 Watt	5125532 5 Watt	5125532 5 Watt	5126572 5 Watt	5126572 5 Watt	5126572 5 Watt
Fan Motor Brackets	5962269	5962269	5962269	5962269	5962269	5962269
Fan Bracket Plate	9041077	9041077	9041077	9041077	9041077	9041077
Fan Blades (7" 25° 5B)	5236974	5236974	5236974	5236974	5236974	5236974
Opt. ECM Fan Motor	9025002 8 Watt	9025002 8 Watt	9025002 8 Watt	-----	-----	-----
Opt. ECM Fan Motor Brackets	9025005	9025005	9025005	-----	-----	-----
Opt. ECM Fan Blades (7" 20° 5B)	5960943	95960943	5960943	-----	-----	-----
NSF Product Thermometer	5967100	5967100	5967100	5967100	5967100	5967100
Anti-Sweat Heater Wire	5227379	5124216	5124217	-----	5081147	5081147

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