

TYLER
REFRIGERATION

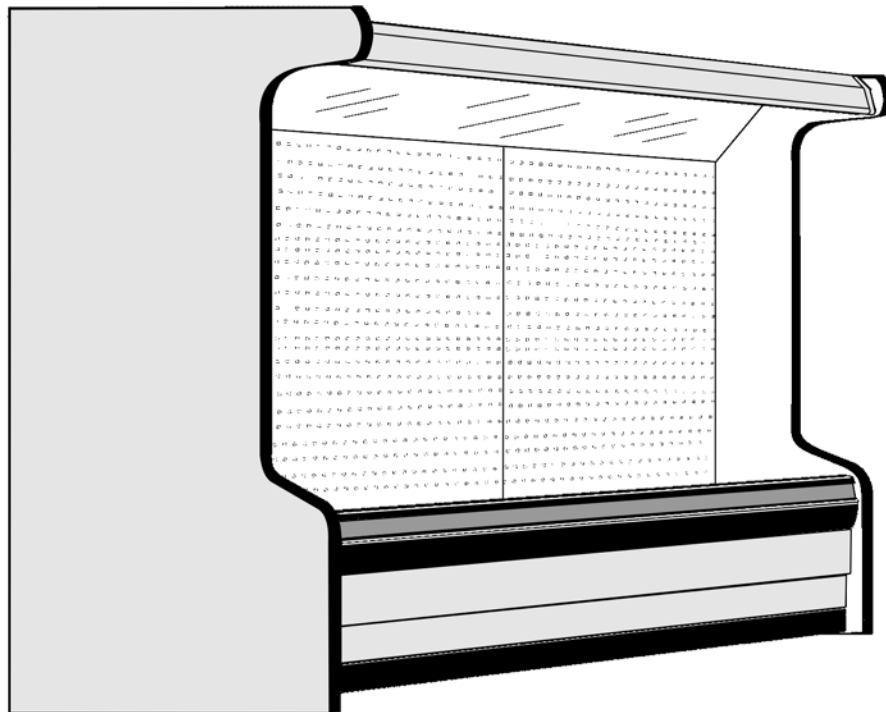


Carrier

A United Technologies Company

A series
Advantage

Installation & Service Manual



N6PHPM26

**HIGH PERFORMANCE MULTI-SHELF CRITICAL TEMP PRODUCE
MERCHANTISERS**

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.

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The following High Performance Medium Temperature Critical Temp Produce Merchandiser models are covered in this manual:

MODELS	DESCRIPTION
N6PHPM26	8' & 12' HIGH PERFORMANCE CRITICAL TEMP PRODUCE MERCHANDISER WITH 26" FRONT

SPECIFICATIONS

N6PHPM26 High Perf. 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)	
N6PHPM26	8' & 12'	MED TEMP	1,290*	1,320*	+29**	+27	+33	250***	0.48

* Capacity data listed for cases with optional 3 rows of T-8 canopy lights, 12" mirror and a customer supplied produce insert. For sizing all refrigeration equipment other than TYLER, use conventional BTUH values.

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

*** Air velocity measured 1 hour after defrost at the top discharge air duct using a 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	
			AMPS	WATTS	AMPS	WATTS
N6PHPM26	8'	2	2.00	165.2	N/A	N/A
N6PHPM26	12'	3	3.00	247.8	N/A	N/A

T-8 Lighting with Electronic Ballasts (120 Volt)

MODEL	CASE LENGTH	CANOPY LIGHTS	
		AMPS 3 ROWS	WATTS 3 ROWS
N6PHPM26	8'	1.45	170.0
N6PHPM26	12'	2.10	255.0

Defrost Data:

DEFROST TYPE*	DEFROSTS PER DAY	DURATION TIME (MIN)**	ELEK. THERMOSTAT / AIR SENSOR SETTINGS			EPR SETTINGS ***		CONVENTIONAL COMPRESSOR SETTINGS ****				DEFROST WATER (LB / FT / DAY)
			USAGE	CUT IN	CUT OUT	R22 (PSIG)	R404A (PSIG)	R22 (PSIG) CUT-IN	R22 (PSIG) CUT-OUT	R404A (PSIG) CUT-IN	R404A (PSIG) CUT-OUT	
TIME OFF	6	12	MED TEMP	34°F	32°F	54	68	52	36	66	47	N/A

* All high performance cases use OFF CYCLE defrost.

** NOTE: 12 minutes is for EPR with suction stop for defrost isolation. Defrost times increases by four minutes (16 min. total) when defrost isolation is by pump down.

*** If EPR is utilized, use the settings shown in the chart. NOTE: The customer will need to set the EPR on the parallel rack or single unit to the appropriate suction temperature and the N6PHPM26 cases must be on a separate suction stub with a separate EPR. ADD 0.5# to EPR setting for each 1000 foot rise in elevation.

**** Required setup for a conventional unit uses an electronic thermostat to assure accurate temperature control.

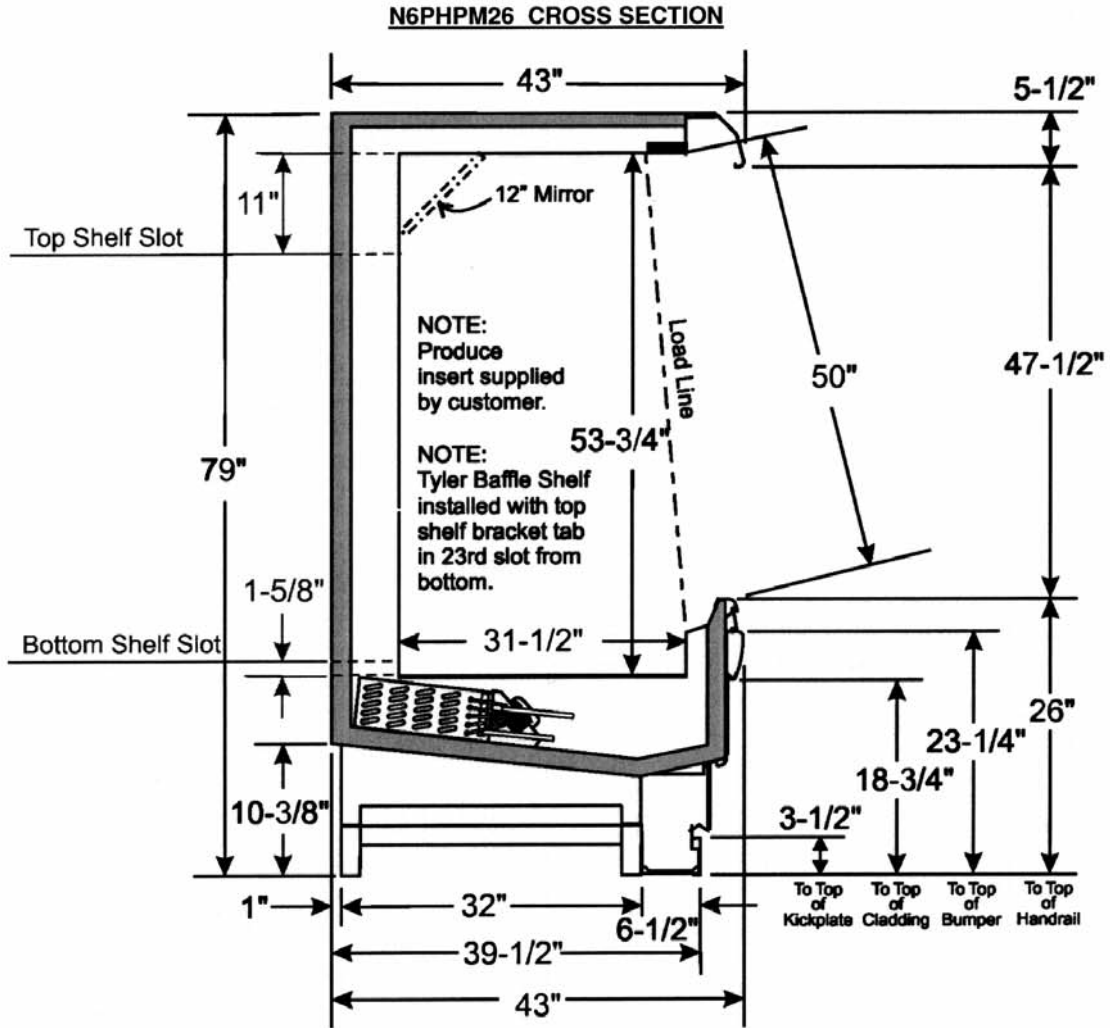
MODEL	CASE-TO-CASE SUCTION LINE SUB-FEED BRANCH LINE SIZING											
	8'	12'	16'	20'	24'	28'	32'	36'	40'	44'	48'	
N6PHPM26 / R22	7/8"	7/8"	7/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"	1 3/8"	1 3/8"	

CASE CIRCUITS: This case requires a 120V circuit for fans and lights.

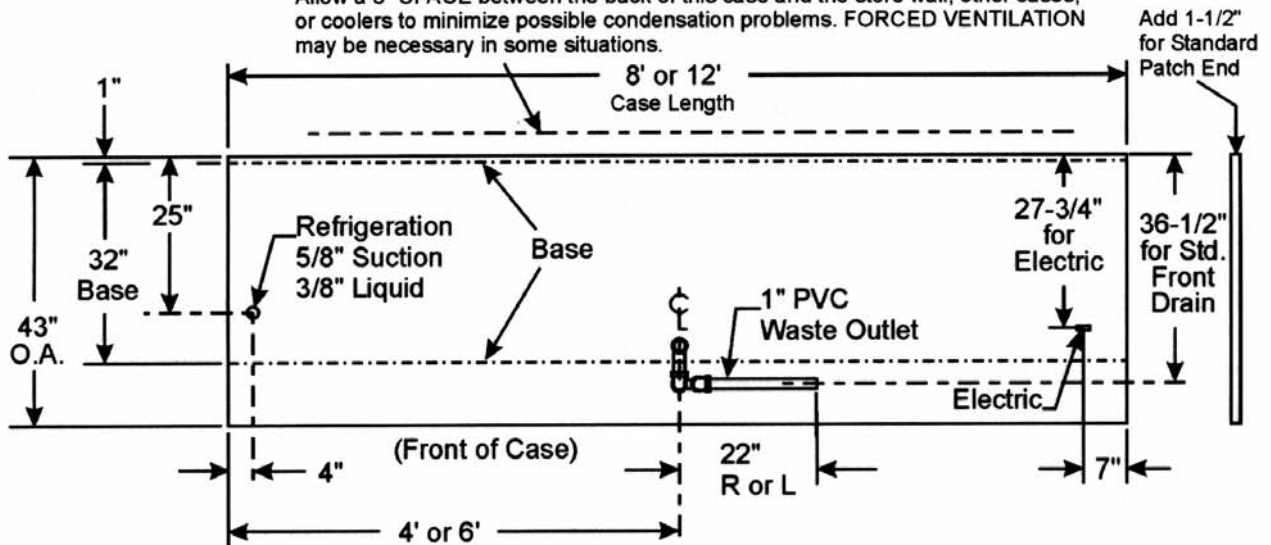
UL SANITATION approved in accordance with ANSI/NSF - 7.

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.



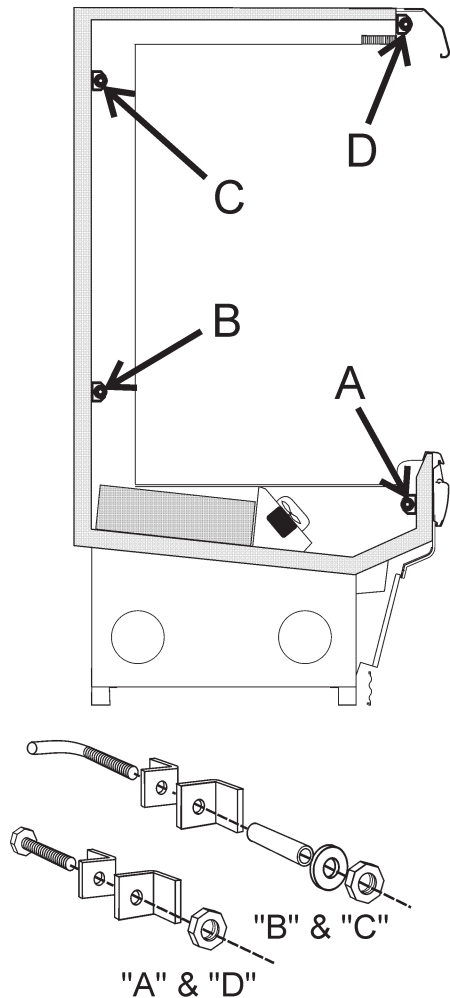
Allow a 3" SPACE between the back of this case and the store wall, other cases, or coolers to minimize possible condensation problems. FORCED VENTILATION may be necessary in some situations.



INSTALLATION PROCEDURES

Carpentry Procedures

Case Pull-Up Locations



The N6PHP 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 will prevent burning of electrical terminals and/or premature component failure.

NOTE

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

Case Fan Circuit

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

Fluorescent Lamp Circuit

N6PHPM26 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. The N6PHPM26 also offers up to 3-rows of optional canopy lights.

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	16	-----

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 7 and 8 will cover the N6PHPM26 case and lighting circuits.

CLEANING AND SANITATION

Component Removal and Installation Instructions for Cleaning

Mirrors

1. Remove mounting screws and end molding end of mirror line-up.
2. Carefully grasp and lift mirror section until bottom edge clears the lower mirror track.
3. Carefully lower mirror out of upper mirror track and remove from case.
4. After cleaning, replace in reverse order.

Produce Insert Baffle

1. Remove product, produce insert shelves and produce insert shelf rack assembly.
2. If case has a baffle shelf behind the shelf rack assembly, Note and mark position of produce insert baffle shelf.
3. Push baffle shelves back and then lift up and out to remove them from the baffle shelf brackets.
4. Remove baffle shelf brackets from slots in rear uprights.
5. After cleaning, replace in reverse order.

NOTE

Baffle shelf must be installed in the same position as it was removed. The position is critical to the proper operation of the case.

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 mirrors, shelves and/or 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 mirrors, 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: install the top socket assembly: 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.

Top Duct

1. Remove mirror and/or shelves and shelf brackets, see page 9.
2. Remove screws, rear retainer plate and honeycomb grid sections from top of case.
3. Remove screws and top duct from case.
4. After cleaning, replace top duct and remaining components in reverse order.

Lower Cladding

1. Remove kickplate from kickplate supports. (See General-UL/NSF I&S Manual.)
2. 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 above.
2. Remove color band, bumper and bumper retainer from case. (See General-UL/NSF I&S Manual.)
2. Remove mounting screws from top and bottom of upper cladding and remove upper cladding.
3. 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.

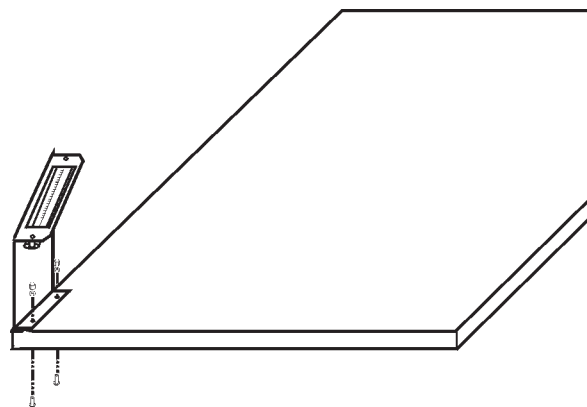
NOTE

Recommended bottom tray position is with the lips up.

2. Position bracket in front left corner of the left-most bottom tray. Making sure the bracket is flush with the left edge, use the bracket holes as a template for where to drill the holes.
3. Drill two .196" holes in the bottom tray.

NOTE

For ease of installation, position the washers and capnuts on the top side of the bracket and bottom tray.



4. Mount the bracket to the bottom tray with two screws, washers and capnuts.

Mirror Installation

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

Water Spray Accessories

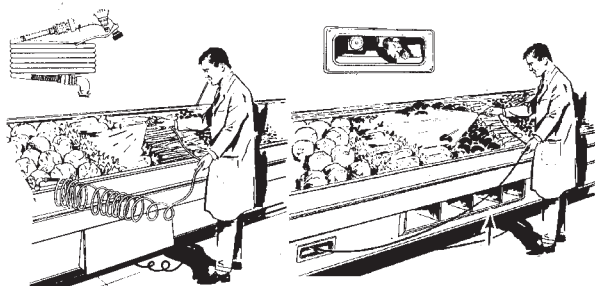
WARNING

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

CAUTION

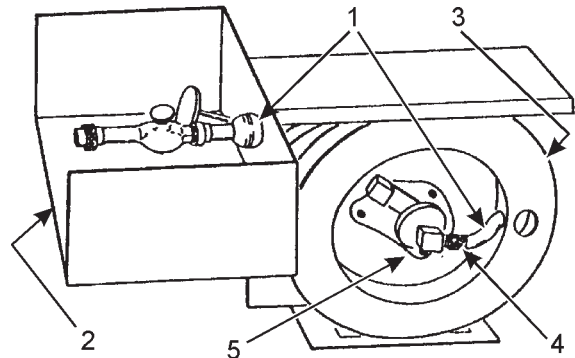
Do not spray lighted shelves when using any water spray accessories. Moisture on light fixtures could cause an electrical short and/or damage the case operating system.

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



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

Retractable Hose Replacement



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

CAUTION

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

NOTE

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

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

NOTE

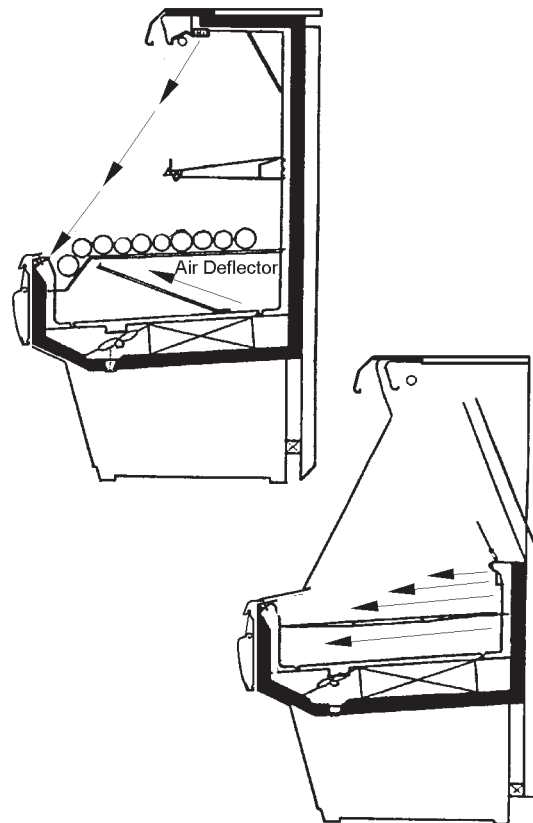
If reel does not work properly after rewinding, replace the reel assembly.

Produce Handling Tips

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

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

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



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

Produce Handling Chart

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

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

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

For additional information, consult:

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

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

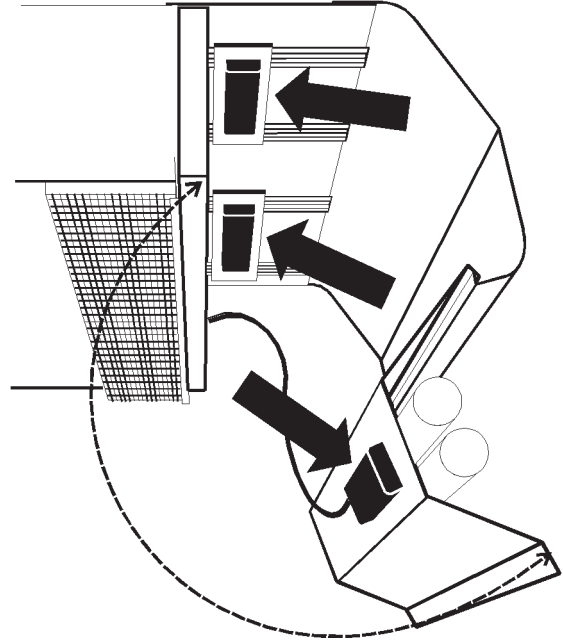
“Fresh Fruits and Vegetables - Handling and Care”, Corporate Extension Service, Michigan State University.

SERVICE INSTRUCTIONS

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

Ballast and Lighting Locations

All light ballasts are located under the canopy and mounted on the top of the canopy light channel. 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 under the top interior liner above each shelf section.



PARTS INFORMATION

Operational Parts List

Case Usage	Domestic	
Electrical Circuit	115 Volt 60 Hertz	
Case Size	8'	12'
Fan Motor	9458944 23 Watt	9458944 23 Watt
Fan Motor Brackets	5205112	5205112
Fan Bracket Plate	9041077	9041077
Fan Blades (8.75" 35° 5B)	5643563	5643563
T-8 Lamp Ballast (canopy or shelf) (3 lamp)	5991030	5991030
T-8 Lampholder (canopy or shelf)	5232279	5232279
T-8 Lampshield (shelf)	5981622	5981622
NSF Product Thermometer	5967100	5967100

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

Cladding and Trim Parts List

Item	Description	N6PHPM26	
		8'	12'
1	End Cover	9026103(2)	9026103(2)
2	Screw	5183536(8)	5183536(8)
3	Screw	5183536(6)	5183536(8)
4	Canopy Hood, Ptd.	9302828	9302829
5	Screw	5199134(4)	5199134(4)
6	Canopy Hood Joint Trim, Ptd.	9602486	9602486
7	Bumper Retainer / Handrail	color per order	
8	Color Band, Ptd.	9023798	9023800
9	Handrail Backer, Ptd.	9025316	9025316
10	Color Band Backer, Ptd.	9040223	9040223
11	Bumper Backer	color per order	
12	Bumper End Trim	color per order	
13	Bumper	color per order	
14	Upper Front Cladding, Ptd.	9305239	9305025
15	Lower Front Cladding, Ptd.	9305244	9305027
16	Screw	5183536(9)	5183536(12)
17	Metal Kickplate, Ptd.	9324474	9324477
18	Screw	5183536(6)	5183538(8)
19	Kickplate Support	9305024(3)	9305024(4)
20	Screw	5183536(6)	5183536(8)
21	Raceway	9300243	9300244
22	LH End Close-off, Ptd.	9305045	9305045
	RH End Close-off, Ptd.	9305043	9305043
23	Horizontal Joint Trim	5211585	5211585

