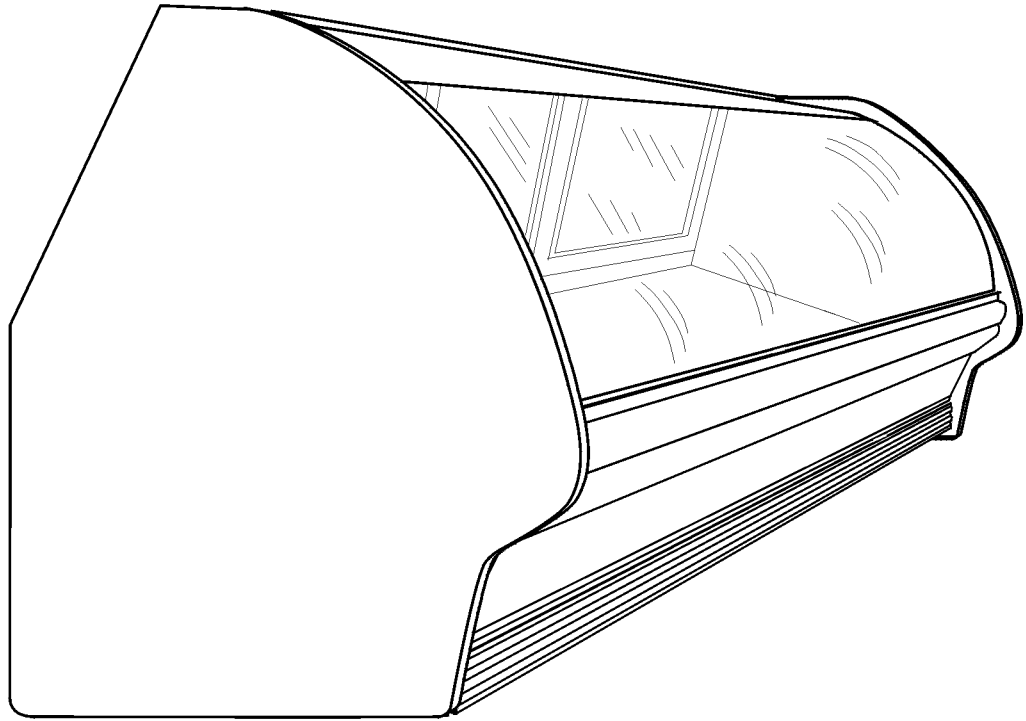


TYLER

series
Advantage



Installation & Service Manual



LLM, LLF, LLD

LIFT FRONT CURVED GLASS MEAT/SEAFOOD/DELI MERCHANDISERS
Medium Temperature Service Display Cases

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 U.S.A.	Specifications subject to change without notice.	REPLACES EDITION	1/97	ISSUE DATE	7/99	PART NO.	9027535	REV.	B
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The following Medium Temperature Lift Glass Meat, Seafood and Deli Service Merchandiser models are covered in this manual:

MODEL	DESCRIPTION
LLM	6', 8' & 12' LIFT GLASS GRAVITY COIL MEAT SERVICE MERCHANDISER
LLF	6', 8' & 12' LIFT GLASS GRAVITY COIL SEAFOOD SERVICE MERCHANDISER
LLD	6', 8' & 12' LIFT GLASS FORCED AIR DELI SERVICE MERCHANDISER

LLM/LLF/LLD Lift Front Glass Service Merchandiser Specification

MODEL	LLM/LLF	LLM/LLF	LLF	LLD	LLD
USAGE	SINGLE UNIT GRAVITY MEAT/FISH	PARALLEL SYSTEM GRAVITY MEAT/FISH	ICED DISPLAY GRAVITY FISH	SINGLE UNIT FORCED AIR DELI	PARALLEL SYSTEM FORCED AIR DELI
BTUH/FT	350	230	150	440	290
SUCTION°	+20F	+15F	+20F	+20F	+15F

THE ABOVE RATINGS ARE FOR COMPRESSOR SELECTION ONLY. FOR ENERGY CALCULATION DATA REFER TO THE ENERGY SECTION.

NOTE: 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											
FT	6'	8'	12'	16'	20'	24'	28'	32'	36'	40'	44'
R22 SINGLE GRAVITY	3/8"	3/8"	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"	7/8"	7/8"	7/8"
R22 PARALLEL GRAVITY	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"
R22 GRAVITY FISH	3/8"	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
R22 SINGLE FORCED AIR	3/8"	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"	7/8"	7/8"	7/8"	7/8"
R22 PARALLEL FORCED AIR	3/8"	3/8"	1/2"	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"	5/8"	7/8"

DEFROST CONTROL					EPR SETTINGS	
PER DAY	MODE	TIME	CUT IN	CUT OUT	R22	R404A
1 GRAVITY	TIME OFF	110 MIN.	41# @ R22	28# @ R22	39#	---
1 FORCED AIR	TIME OFF	46 MIN.	53# @ R404A	37# @ R404A	---	44#

CONVENIENCE OUTLET CIRCUIT: One single convenience outlet is on the back of the 6' case and two single convenience outlets are on the back of the 8' & 12' cases. Plan suitable 15A circuits for these 120V outlets.

An evaporator Pressure Regulator should be installed on each system to aid in temperature control. Set the EPR for 34 PSIG (R-22)

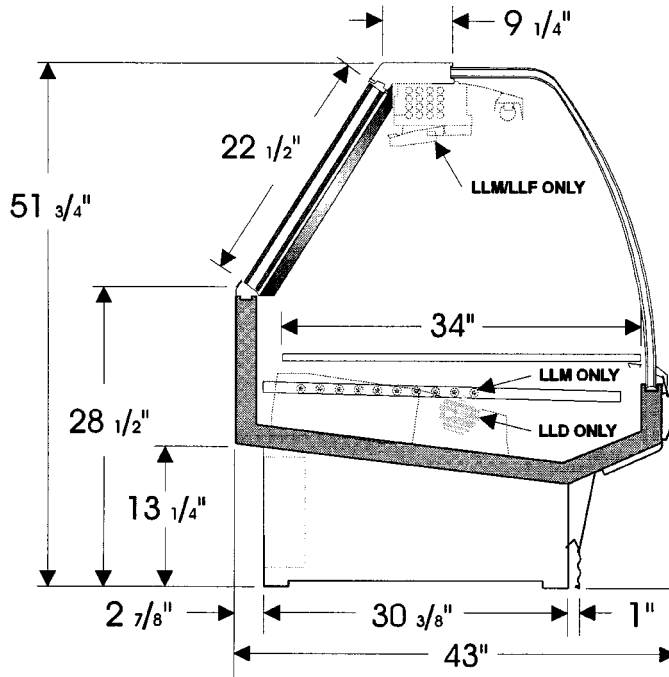
Shelves in Gravity Coil cases disrupt air flow and can compromise performance. Shelves work better in Blower style cases.

Pressure Control Settings shown in the above table are for backup purposes only. The actual temperature control should be set by the thermostat. LFM setting for this case = CUT IN @ 29F and CUT OUT @ 19F. LFF setting for this case = CUT IN @ 34F and CUT OUT @ 33F.

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.

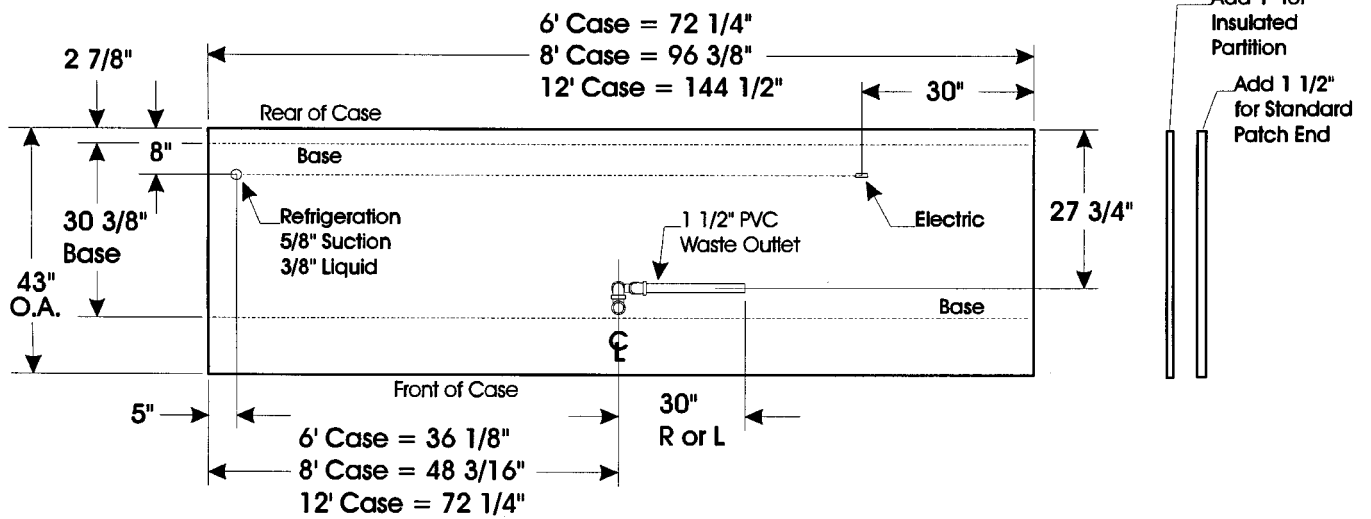
LLM/LLF/LLD Lift Front Glass Service Merchandiser



120 VOLT ELECTRICAL DATA (AMPS)			
FT	STD. FANS LLD	ECM FANS LLD	ANTI-SWEAT LLD only
6	1.0	.4	.9
8	1.0	.4	1.0
12	1.5	.6	1.3

STANDARD 120 VOLT LIGHTING (AMPS) T-8/ ELECTRONIC BALLASTS (CANOPY)			
ROW	6'	8'	12'
1	.5	.6	.9
OPTIONAL FLOOR LIGHT			
1	.5	.6	.9

OPTIONAL 120 VOLT LIGHTING (AMPS) T-8 ELECTRONIC BALLASTS (SHELVES)			
ROW	6'	8'	12'
1	.5	.6	.9
2	1.0	1.2	1.8

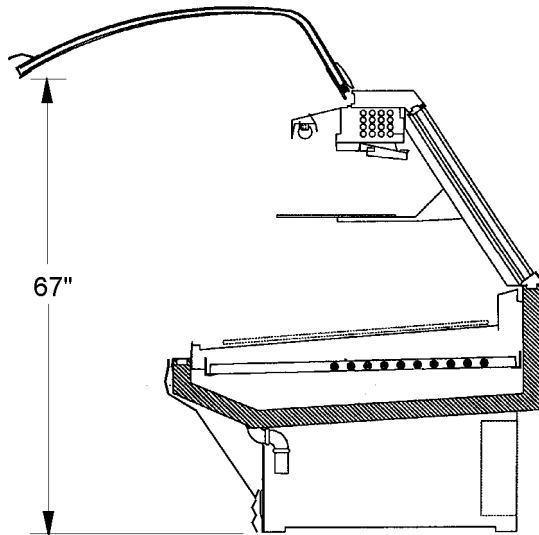


INSTALLATION PROCEDURES

WARNING

The raised front glass projects in front of the case and could cause personal injury to workers, operators and/or customers.

- Do not remove orange warning tags from front edge of lift glass.
- Do not leave lift glass raised and unattended.
- Know where the front edge of the raised glass is when working near it.



This case is designed so the front glass can be raised for cleaning and merchandising only. It is recommended that any cleaning or merchandising be done when the store is closed. If this is not possible, it should be done at a time when customer traffic is low.

The raised glass should not be left unattended and should be lowered whenever leaving the case.

The glass front is marked with orange warning tags to make it noticeable when in the raised position. **Do not remove the orange warning tags.**

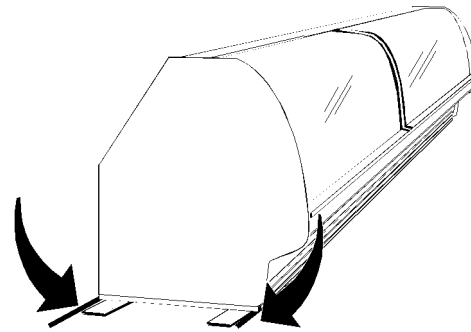
Carpentry Procedures

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.



1. Snap chalk lines where the front and rear base rails of the case 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.

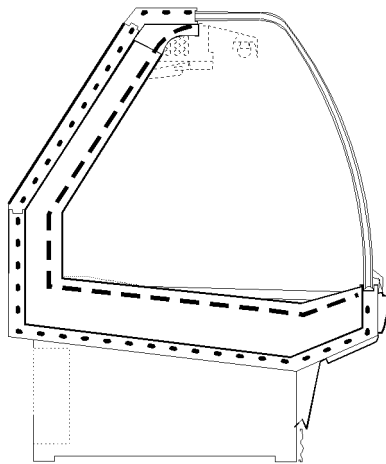
2. Locate highest point on chalk lines as a reference for determining the number of shims to be placed under the case base rails. Position first case at highest point on the chalk lines and shim case supports as required. Check leveling across the top of the case and on top of the color band.

CAUTION

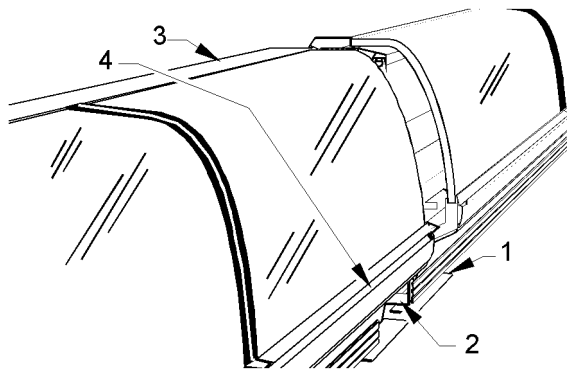
If the base of this case is not sitting evenly on the floor, the case could warp when loaded and possibly break the lift glass.

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!



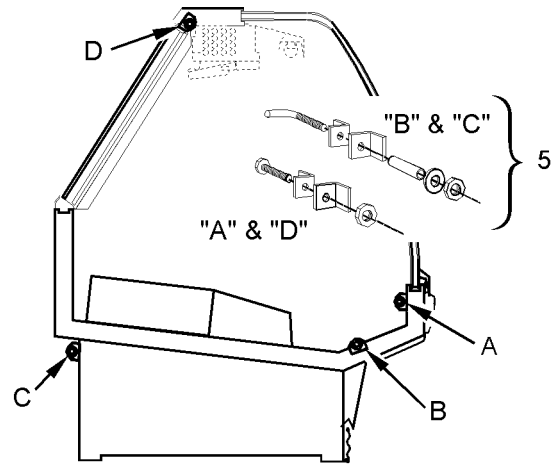
3. Apply two heavy beads of caulking compound from the Filler Kit to the end of case at dotted (. . .) and dashed (- - -) lines. Proper caulking provides good case refrigeration and sanitation.
4. Remove shipping tape from color band backer and bumper backer.



5. Push cases tightly together making sure the pull-ups are aligned.
6. Add shims (1), as required, under the adjoining case base rails (2). Check leveling at top of the case (3) and on top of the color band (4).

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.



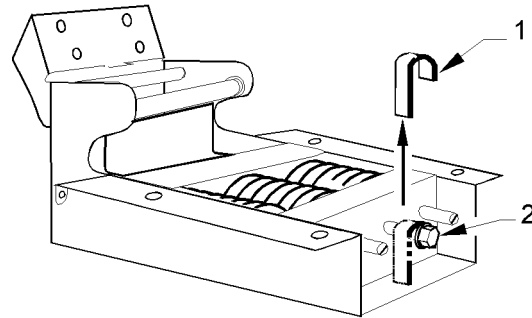
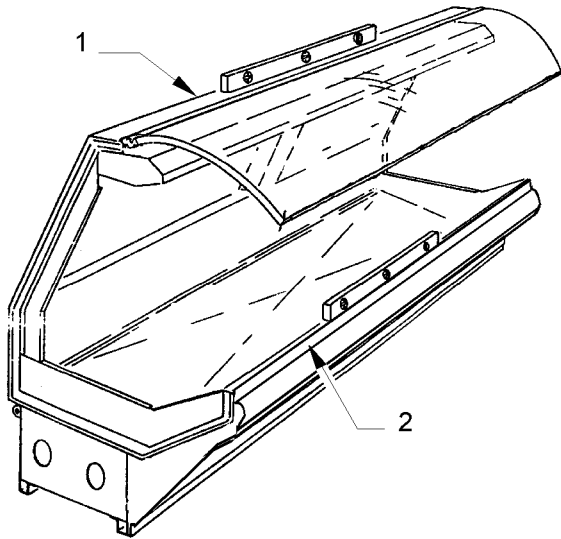
7. Position pull-up bolts and mounting hardware (5) at pull-up locations (A, B, C and D). Do not tighten any pull-up hardware until all of it has been installed. Tighten all pull-up hardware equally starting at point A and finishing at point D. **Do not overtighten.**

Lift Front Glass Leveling Instructions

Accurate leveling is critical for the proper operation of the lift glass on this case.

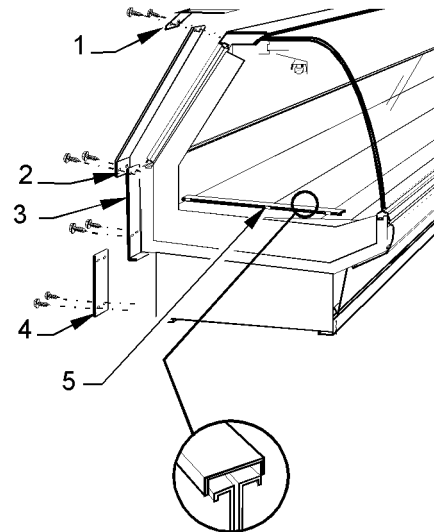
In some instances, setting the case on an apparently level floor can cause the lift glass to fit improperly. If there is any twist in the body, it could cause the lift glass not to fit or work properly.

The emphasis when leveling this case must be on making sure the lift glass works and seals properly.



2. Remove all hinge stops (1) from the shanks of the hex head bolts (2).

Trim Installation



The case should be leveled across the top (1), close to the hinge, and on the color band (2). A 4 foot level is recommended, and **both places should be level!** This will enable the lift glass to fit and work properly.

If the lift glass still doesn't close or line-up properly, add shims to case corners. Shimming will ensure proper operation and alignment of the lift glass.

The handle on the lift glass must rest evenly on the color band. Proper lift glass sealing is essential for good product refrigeration.

NOTE

- Do not anchor the base to the floor or enclose the case until the lift glass is fitting properly and working correctly.
- Make sure all lift glass hinge stops have been removed to ensure proper operation.

To remove lift glass hinge stops:

1. Open rear of fixture and locate the hinge assemblies (2 on 4' glass and 3 on 6' glass).

The joint trim and mounting hardware are shipped loose. Trim includes top joint trim (1), rear upper joint trim (2), rear lower joint trim (3), rear base joint trim (4) and horizontal joint trim (5).

Horizontal joint trim covers gaps between the cases. The trim is glued onto the shipping cardboard. It is applied after running beads of caulking on the edges of the cases. Sheet metal screws or pop-rivets 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.

See "General I&S Manual" for bumper and color band installation and alignment.

Refrigeration Procedures

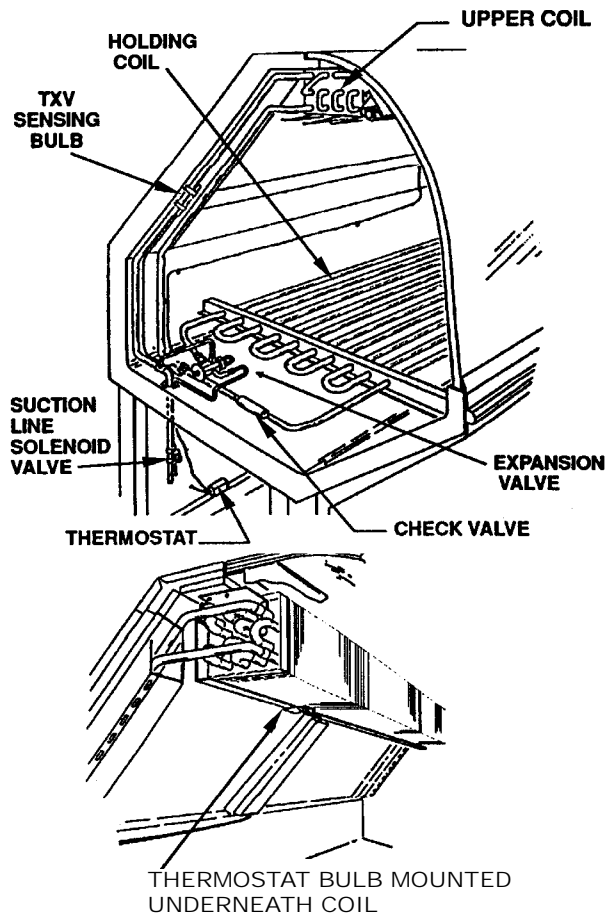
Refrigeration system and superheat instructions can be found in the "General I&S Manual". Service case temperature control information is listed below.

Temperature Control

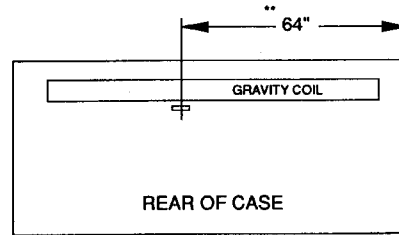
The temperature of each case is controlled with a thermostat and suction line solenoid. One thermostat and one solenoid are required for up to three cases.

The LLM and LLF cases use a gravity coil with an electronic thermostat for improved temperature control. LLD case uses a conventional mechanical thermostat.

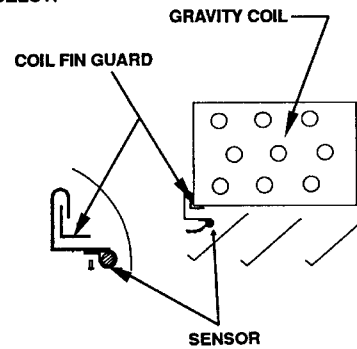
Typical Service Case with Gravity Coil



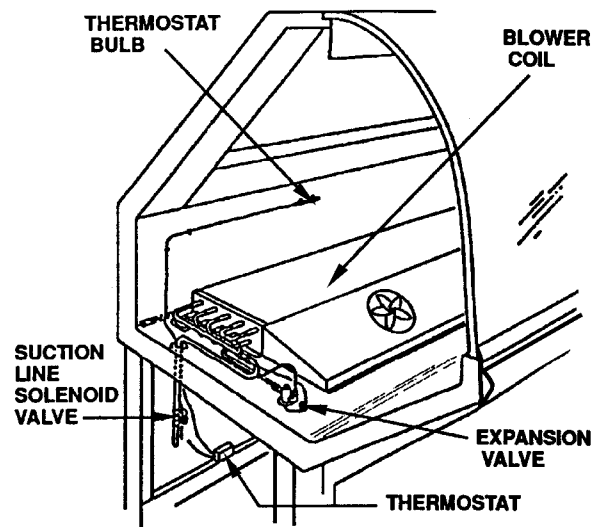
THERMOSTAT BULB PLACEMENT



** 64" APPLIES TO 8 & 12 FOOT CASES ONLY. LOCATE APPROXIMATELY IN CENTER OF CASE FOR 6 FOOT CASES. HOOK ONTO COIL FIN GUARD AS SHOWN BELOW



Typical Service Case with Blower Coil



In addition to the thermostat and suction solenoid, a suction stop EPR valve is required in the suction line. The EPR valve acts as a low pressure limit to aid in the overall temperature control.

Setting Electronic Thermostat (LLM/LLF)

1. Remove the four screws and cover from the electronic thermostat.
2. Set the heating/cooling jumper blocks to the "COOL" position.
3. Adjust the differential potentiometer marked "DIFF" to 10°F (LLM) or 1°F (LLF).
4. Position the setpoint dial, on the front cover, to 29°F (LLM) or 34°F (LLF).
5. Check the temperature cycles by suspending a thermometer in the same general area as the thermostat probe. The temperature should cycle between 19°F and 29°F (LLM) or 33°F and 34°F (LLF).
6. Replace the cover and secure with four screws.

With the cooling mode selected, the differential is below the setpoint. The relay will energize and the LED indicator will illuminate when the temperature reaches the setpoint (29°F or 34°F). When the temperature drops to the setpoint (29°F or 34°F) minus the differential setting (10° or 1°F), the relay and LED indicator will de-energize and refrigeration will stop.

Start the refrigeration system (note that the LED indicator is illuminated) and allow the case to cool. This allows the thermostat to cycle the suction solenoid valve from open to close.

The settings above are specific to TYLER service cases with gravity coils only. Other applications will require different set points

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 ballast box is located at the lower left rear corner of the case. It houses ballasts and terminal blocks.

Case Fan Circuit (LLD only)

This circuit is to be supplied by an uninterrupted, protected 120V circuit. The case fan circuit is not cycled on this case.

Fluorescent Lamp Circuit

LL(M/F/D) 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 horizontal canopy lights.

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

Defrost Control Chart

LLM/LLF Defrost Option Settings

Defrost Type	Defrosts Per Day	Defrost Duration (Min)	Term. Temp.
Off Time	1	110	-----

LLD Defrost Option Settings

Defrost Type	Defrosts Per Day	Defrost Duration (Min)	Term. Temp.
Off Time	1	46	-----

Thermostat and sensor locations are shown on page 9 of this manual.

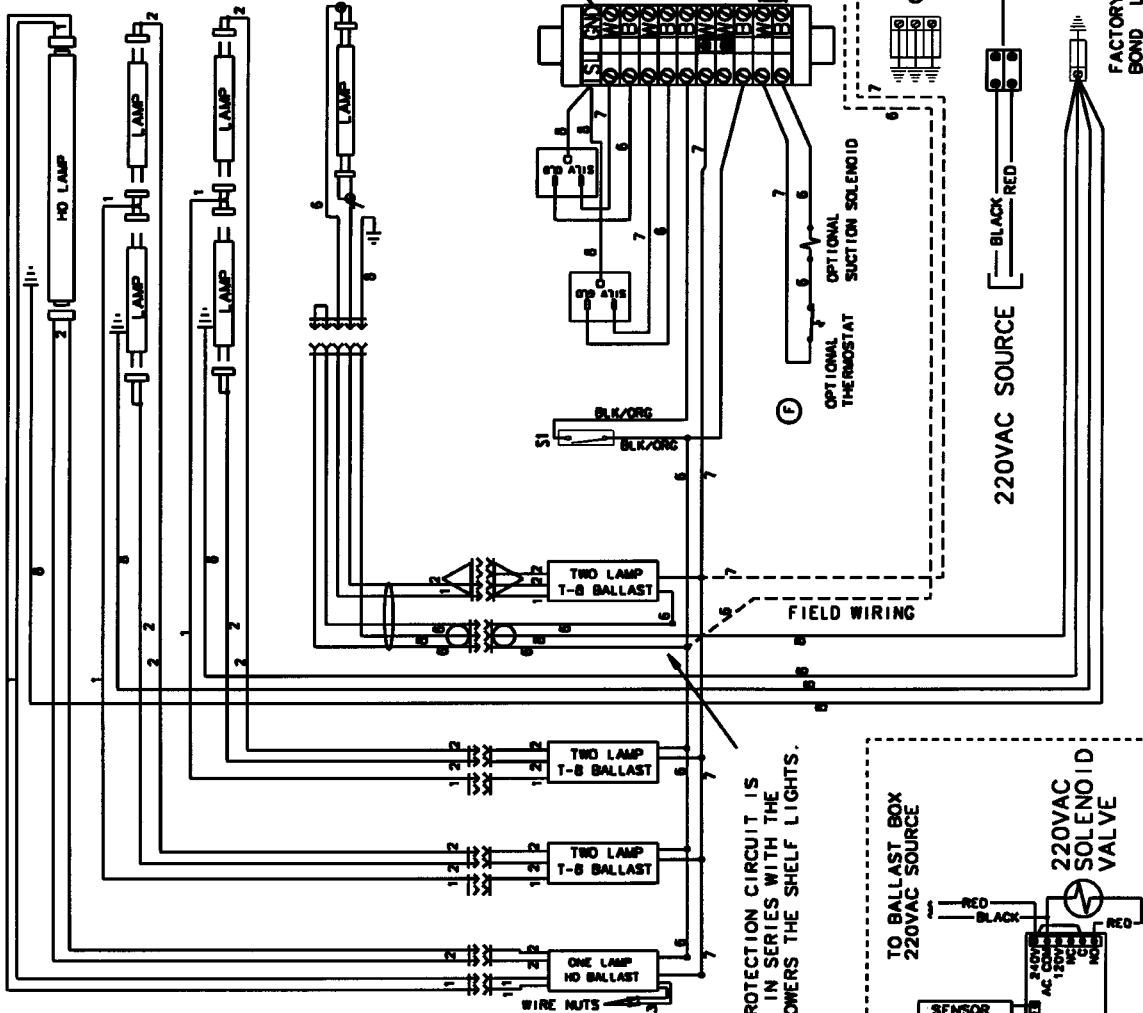
WIRING DIAGRAMS

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 pages 11 thru 15 show wiring diagrams for case and lighting circuits

WIRE LEGEND	
NO.	COLOR
1	RED
2	BLUE
3	YELLOW
4	PINK
5	ORANGE
6	BLACK
7	WHITE
8	GREEN



OPTIONAL HO TOP LIGHTS

INTERIOR TOP LIGHTS

OPTIONAL FRONT FLOOR LIGHTS

OPTIONAL MEZZANINE SHELF LAMPS AND BALLAST CONNECTIONS FOR ONE ROW OF LIGHTED SHELVES

CONNECT TO FACTORY BOND LUG OR CONNECT IN FIELD FOR ISOLATED GROUND

GENERAL PURPOSE RECEPTACLES 120VAC OR 220VAC 50HZ INTERNATIONAL LIGHTS 60HZ SUPPLY OR 220VAC 50HZ INTERNATIONAL SOLENOID AND ANTI-SWEAT HEATER 120VAC OR 220VAC 50HZ INTERNATIONAL

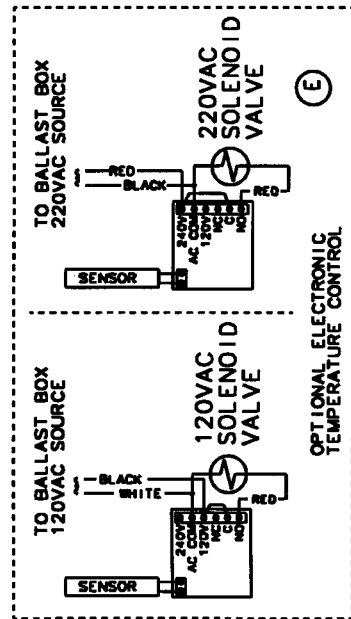
FIELD WIRING FOR SHELF LIGHTS THAT ARE NOT FACTORY INSTALLED

220VAC SOURCE [BLACK RED] ELECT TEMP CONTROL 220VAC 60HZ SUPPLY

NOTE: USE COPPER CONDUCTORS ONLY

FACTORY BOND LUG

THE ANTI-ARC PROTECTION CIRCUIT IS ONLY CONNECTED IN SERIES WITH THE BALLAST THAT POWERS THE SHELF LIGHTS.

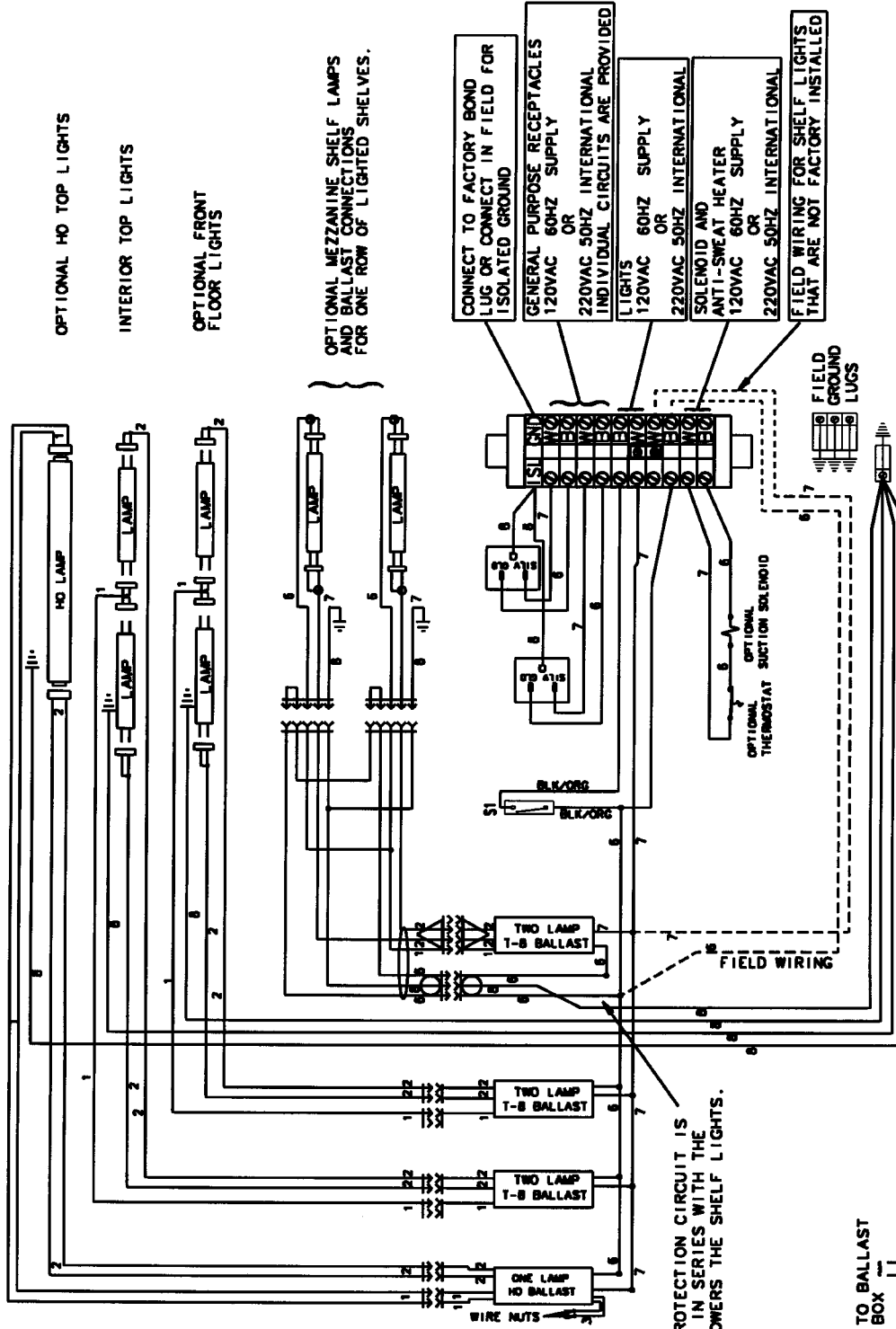


OPTIONAL ELECTRONIC TEMPERATURE CONTROL

DECIMALS +/-	.030	ANGLES +/-	1	DEGR	02APR98	LC	DIA WIRING LL(F)(M)
F	REMOVED	ANTI-SWEAT HEATER	23953	19JUL99	LC	LC	6FT CASES

NOTE: ALL CASES MUST BE GROUNDED

WIRE LEGEND	NO.	COLOR
	1	RED
	2	BLUE
	3	YELLOW
	4	PINK
	5	ORANGE
	6	BLACK
	7	WHITE
	8	GREEN



OPTIONAL HO TOP LIGHTS

INTERIOR TOP LIGHTS

OPTIONAL FRONT FLOOR LIGHTS

OPTIONAL MEZZANINE SHELF LAMPS AND BALLAST CONNECTIONS FOR ONE ROW OF LIGHTED SHELVES.

CONNECT TO FACTORY BOND LUG OR CONNECT IN FIELD FOR ISOLATED GROUND

GENERAL PURPOSE RECEPTACLES 120VAC OR 220VAC 50HZ INTERNATIONAL LIGHTS INDIVIDUAL CIRCUITS ARE PROVIDED

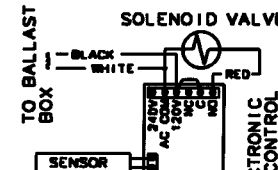
120VAC OR 220VAC 50HZ INTERNATIONAL

SOLENOID AND ANTI-SWEAT HEATER 120VAC OR 220VAC 50HZ INTERNATIONAL

FIELD WIRING FOR SHELF LIGHTS THAT ARE NOT FACTORY INSTALLED

NOTE: USE COPPER CONDUCTORS ONLY

THE ANTI-ARC PROTECTION CIRCUIT IS ONLY CONNECTED IN SERIES WITH THE BALLAST THAT POWERS THE SHELF LIGHTS.



OPTIONAL ELECTRONIC TEMPERATURE CONTROL

REV	DESCRIPTION	DATE	BY	CHK	APP
1	DECIMALS +/- .030 ANGLES +/- 1 DEGR				
2					
3					
4					
5	REMOVED GLASS HEATER	23953	18JUL98	LC	CK
6	REVISED PER ECH 22731	22731	15OCT98	LC	CK

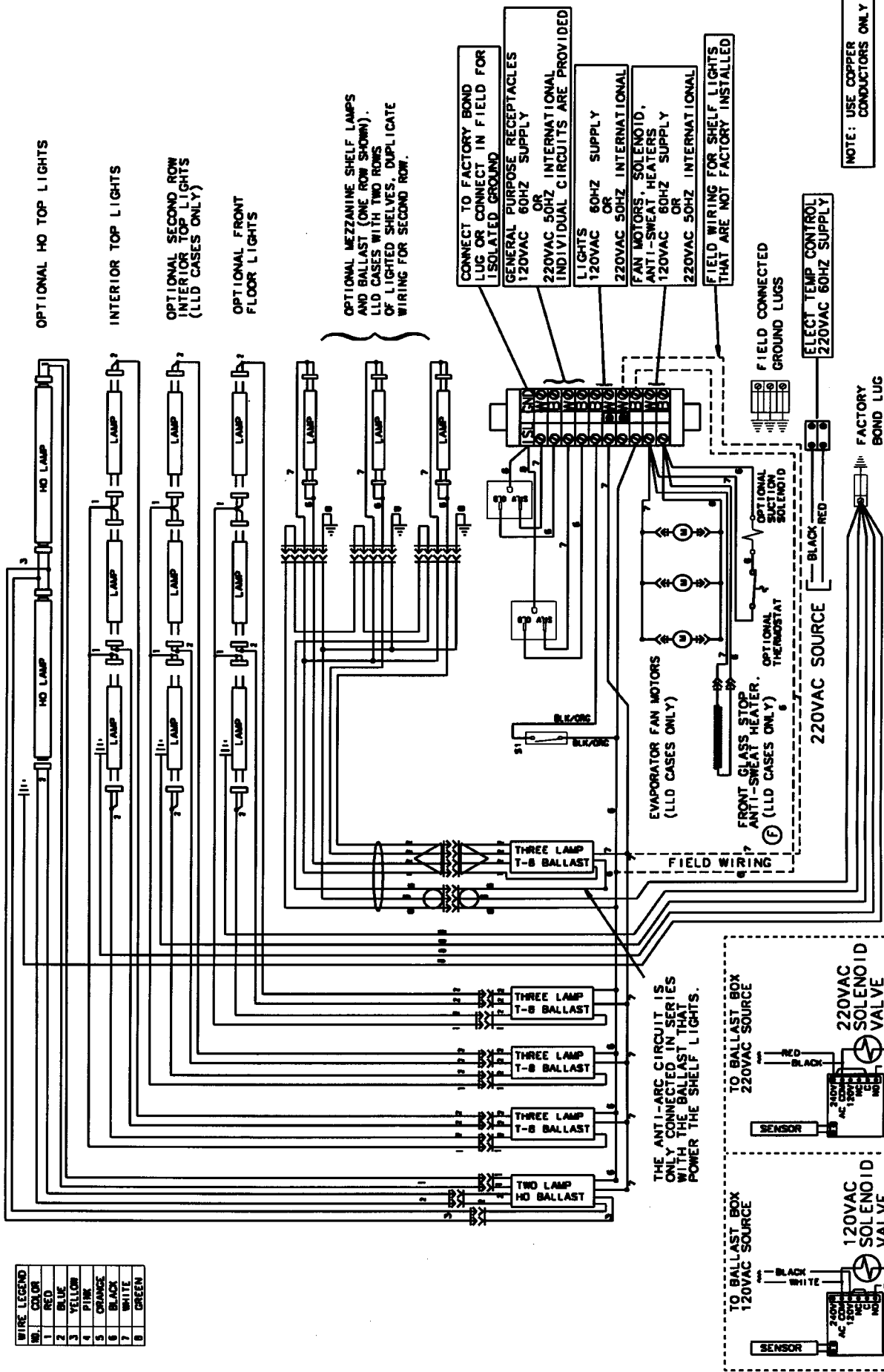
14OCT98

DIA WIRING LL(F)(M) 8FT. CASES

0075R17

NOTE: ALL CASES MUST BE GROUNDED

NO.	COLOR
1	RED
2	BLUE
3	YELLOW
4	PINK
5	ORANGE
6	BLACK
7	WHITE
8	GREEN



NOTE: USE COPPER CONDUCTORS ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION
1	07-088				
2	02APR98				
3	19JUL98		LC	CK	LC
4	23R53		LC	CK	LC
5	22731		LC	CK	LC
6	19OCT98		LC	CK	LC
7	22731		LC	CK	LC

DECIMALS +/- .030 ANGLES +/- 1 DEG

DIA WIRING LL(D)(F) (M), 12FT. CASES

075R1R 1 F

NOTE: ALL CASES MUST BE GROUNDED

CLEANING INSTRUCTIONS

WARNING

TYLER Refrigeration does not recommend the use of high pressure cleaning equipment on service style cases!! The sealing of front glass and end joints is critical in these cases and high pressure cleaners can penetrate and/or damage these seals. Damaged seals allow water leaks and/or air leaks that can cause poor case refrigeration.

CAUTION

- When cleaning this case, try not to introduce water into the case faster than it can be carried away by the waste outlet.
- Always use a soft cloth or sponge with mild detergent and water to clean the front glass. Never use abrasives or scouring pads to clean glass. They can scratch and/or damage the glass.

See "General I&S Manual" for case cleaning instructions. Stainless steel cleaning is covered in the following chart.

Stainless Steel Cleaning Methods

The cleaning data in the following stainless steel cleaning chart was supplied by AISI. The information was supplied by Prime Metals Division, Alumax Aluminum Corporation.

<u>TYPE OF CLEANING</u>	<u>CLEANING AGENT*</u>	<u>APPLICATION METHOD**</u>	<u>EFFECT ON FINISH</u>
Routine cleaning	Soap, ammonia or detergent and water.	Sponge with cloth, then rinse with clear water and wipe dry.	Satisfactory for use on all finishes.
Smears and fingerprints	Arcal 20, Lac-O-Nu, Lumin Wash O'Cedar Cream Polish, Stainless Shine	Rub with cloth as directed on the package.	Satisfactory for use on all finishes. Provides barrier film
Stubborn spots and stains, baked-on splatter, and other light discolorations	Allchem Concentrated Cleaner	Apply with damp sponge or cloth.	Satisfactory for use on all finishes.
	Samae, Twinkle, or Cameo Copper Cleaner	Rub with damp cloth.	Satisfactory for use on all finishes if rubbing is light.
	Grade FFF Italian pumice, whiting or talc	Rub with damp cloth.	Use in direction of polish lines on No. 4 (polished) finish. May scratch No. 2 (mill) and No. 7 and 8 (polished) finishes.
	Liquid NuSteel	Rub with dry cloth. Use a small amount of cleaner.	Use in direction of polish lines on No. 4 (polished) finish. May scratch No. 2 (mill) and No. 7 and 8 (polished) finishes.
	Paste NuSteel or DuBois Temp	Rub with dry cloth. Use a small amount of cleaner.	Use in direction of polish lines on No. 4 (polished) finish. May scratch No. 2 (mill) and No. 7 and 8 (polished) finishes.
	Cooper's Stainless Steel Cleaner, Revere Stainless Steel Cleaner	Apply with damp sponge or cloth.	Use in direction of polish lines on No. 4 (polished) finish. May scratch No. 2 (mill) and No. 7 and 8 (polished) finishes.
	Household cleaners (Old Dutch, Lighthouse, Sunbrite, Wyandotte, Bab-O, Gold Dust, Sapolio, Bon Ami, Ajax or Comet)	Rub with a damp cloth. May contain chlorine bleaches. Rinse thoroughly after use, if left on surface, may lead to corrosion.	Use in direction of polish lines on No. 4 (polished) finish. May scratch No. 2 (mill) and No. 7 and 8 (polished) finishes.

<u>TYPE OF CLEANING</u>	<u>CLEANING AGENT*</u>	<u>APPLICATION METHOD**</u>	<u>EFFECT ON FINISH</u>
	Grade F Italian pumice, Steel Bright, Lumin Cleaner, Zud, Restoro, Bon Ami, Ajax or Comet	Rub with a damp cloth.	Use in direction of polish lines on No. 4 (polished) finish. May scratch No. 2 (mill) and No. 7 and 8 (polished) finishes.
	Penny-Brite or Copper-Brite	Rub with a dry cloth. Use a small amount of cleaner.	Use in direction of polish lines on No. 4 (polished) finish. May scratch No. 2 (mill) and No. 7 and 8 (polished) finishes.
Heat tint or heavy discoloration	Penny-Brite or Copper-Brite	Rub with a dry cloth.	Use in direction of polish lines on No. 4 (polished) finish. May scratch No. 2 (mill) and No. 7 and 8 (polished) finishes.
	Paste NuSteel or DuBois Temp	Rub with dry cloth. Use a small amount of cleaner.	Use in direction of polish lines on No. 4 (polished) finish. May scratch No. 2 (mill) and No. 7 and 8 (polished) finishes.
	Revere Stainless Steel Cleaner	Apply with a damp sponge or cloth.	Use in direction of polish lines on No. 4 (polished) finish. May scratch No. 2 (mill) and No. 7 and 8 (polished) finishes.
	Allen Polish, Steel Bright, Wyandotte, Bab-O or Zud	Rub with a damp cloth.	Use in direction of polish lines on No. 4 (polished) finish. May scratch No. 2 (mill) and No. 7 and 8 (polished) finishes.
Burnt-on foods and grease, fatty acids, milkstone (where swabbing or rubbing is not practical)	Easy-Off, De-Grease-It, 4-6% hot solution of such agents as trisodium tripolyphosphate, or 5-15% caustic soda solution	Apply generous coating. Allow to stand for 10-15 min. Repeated application may be necessary.	Excellent removal, satisfactory for use on all finishes.
Tenacious deposits, rusty discolorations, industrial atmospheric stains	Oakite No. 33, Dilac, Texo 12, Texo N.Y., Flash-Klenz, Caddy Cleaner, Turco Scale 4368 or Permag 57.	Swab and soak with clean cloth. Let stand 15 minutes or more according to directions on package. Rinse and dry.	Satisfactory for use on all finishes.
Hard water spots and scale	Vinegar	Swab or wipe with a cloth. Rinse with water and dry.	Satisfactory for use on all finishes.
	5% oxalic acid, 5% sulamic acid, 5-10% phosphoric acid, or Dilac, Oakite No. 33, Texo 12 or Texo N.Y.	Swab or soak with a cloth. Let stand 10-15 minutes. Always follow with neutralizer rinse, and dry.	Satisfactory for use on all finishes. Effective on tenacious deposits or where scale has built up.
Grease and oil	Organic solvents such as carbon tetrachloride, trichlorethylene, acetone, kerosene, gasoline, benzene, alcohol and chlorethane n.u.	Rub with a cloth. Organic solvents may be flammable and/or toxic. Observe all precautions against fire. Do not smoke while vapors are present. Be sure area is well ventilated.	Satisfactory for use on all finishes.

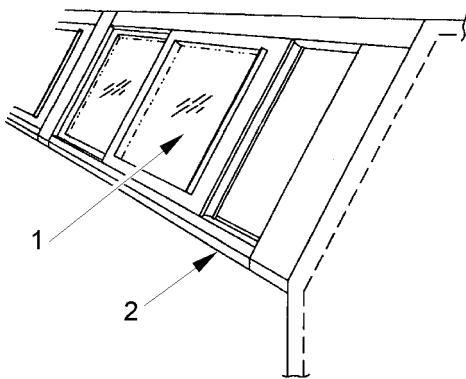
* Use of proprietary names is intended only to indicate a type of cleaner, and does not constitute an endorsement, nor is omission of any proprietary cleanser to imply its inadequacy. It should be emphasized that all products should be used in strict accordance with instructions on package.

** In all applications a stainless steel wool or sponge or fibrous brush or pad are recommended. Avoid use of ordinary steel wool or steel brushes for scouring stainless steel.

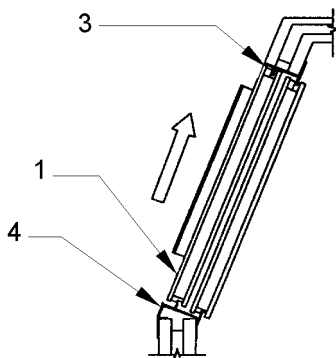
GENERAL INFORMATION

Rear Sliding Door Removal and Installation

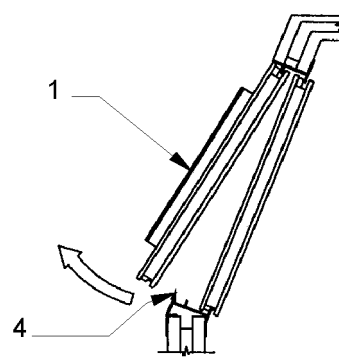
The sliding doors come installed from the factory in the door frame. These doors are removable for cleaning and to aid in case maintenance. **NOTE: DO NOT FULLY IMMERSE DOORS WHEN CLEANING.** The inner and outer doors are marked with labels from the factory. If the doors are not labeled, the inner door can be identified as having the limiter stops on it.



1. Remove the outer door (1) by sliding it to the right end of the door frame (2) (within an inch of being closed).

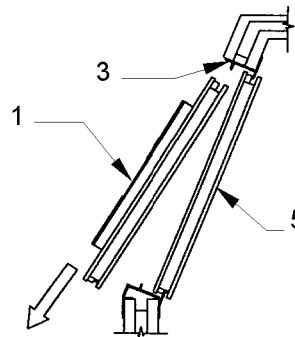


2. Firmly grasp both sides of the outer door (1) and lift into the upper track (3) until it



clears the lower track (4).

3. Tilt out the bottom of the outer door (1) so

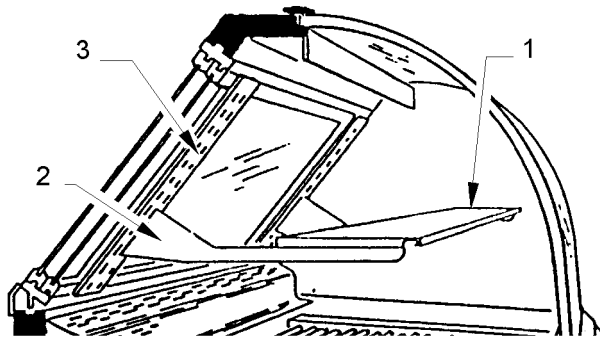


it can clear the lower track (4).

4. Lower the outer door (1) out of the upper track (3) to remove it from the case.
5. Repeat steps 1 thru 4 to remove the inner door (5).
6. Reverse the above steps to replace the inner and outer doors (5 and 1).

Mezzanine Shelving

Mezzanine shelves are available in 10" or 12" widths. One level of shelving is optionally available for LLM and LLF cases, while two levels of shelving is available for LLD cases. The shelves can be moved forward from the mullions in two inch increments and can be



locked into three positions.

To install mezzanine shelving, position and insert the mezzanine shelf (1) and captive shelf brackets (2) into slots in the uprights (3).

NOTE

The brackets can be moved vertically at 1" increments in the uprights.

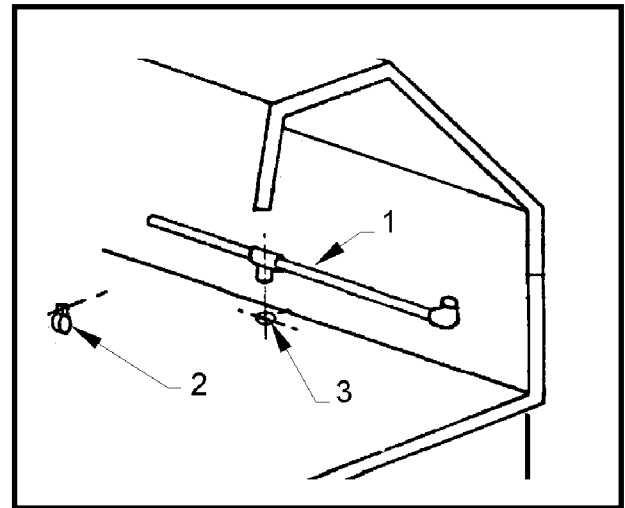
Lighted Shelves

Lights are optional on the 10" and 12" mezzanine shelves. Wiring harnesses for all shelf locations are factory installed. Ballasts are optionally supplied for all shelf light sockets. The ballasts are located in the electric box on the lower left rear portion of the case, facing rear of case.

Service Case Flush System

Flush systems are offered only on LLF cases to provide a convenient and effective means of maintaining case cleanliness. The system may be operated either manually by a hand valve or automatically using a solenoid and a time clock. The flush water is drained from the case via the normal drain path.

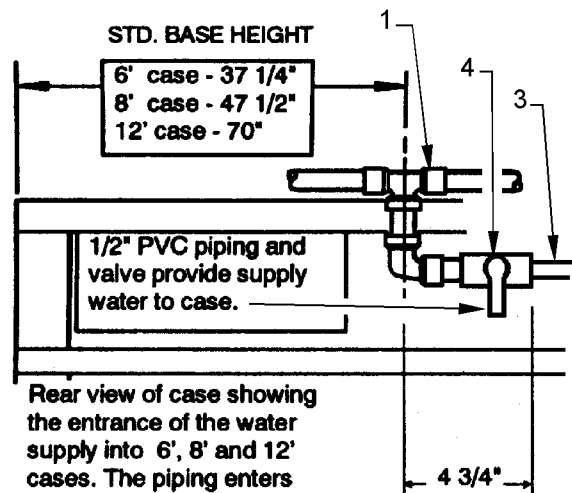
Water is supplied to the system through a pressurized water connection to a domestic water supply. The water is fed to a nozzle array which provides even flushing throughout the case interior. It is recommended to



flush cases at least once a day. Flush time varies depending on the specific case needs.

1. Position the manifold (1) near the rear case wall and secure with manifold anchor clamps (2).
2. Cut a hole in the case well just large enough to connect manifold to 1/2" PVC water supply piping (3).

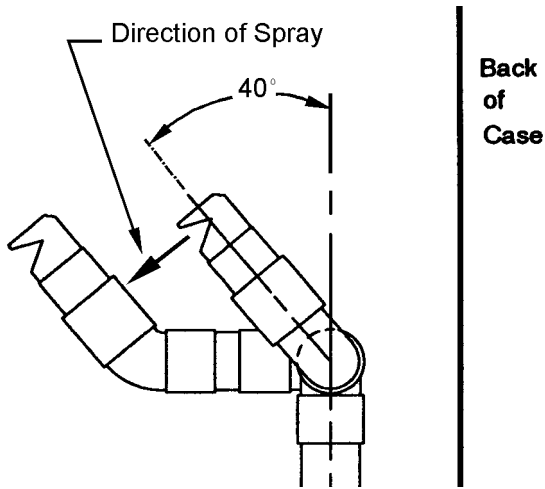
NOTE



Rear view of case showing the entrance of the water supply into 6', 8' and 12' cases. The piping enters through the bottom of the case.

A suitable water supply must be downstream of the isolation valve.

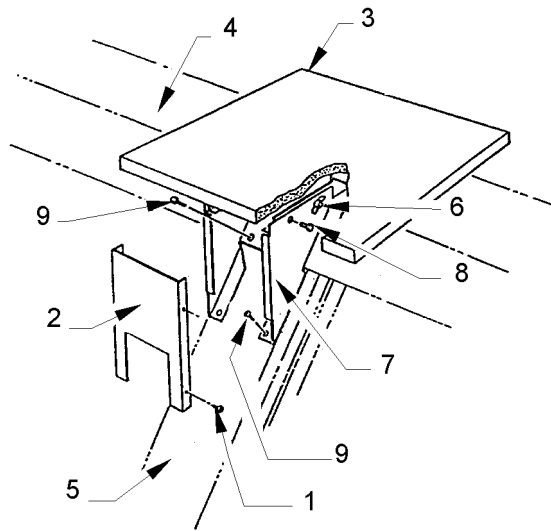
3. Install isolation valve (4) (hand or solenoid) and manifold (1) to water supply piping (3).



4. Caulk the area where the water supply piping (3) enters the case well to prevent water leakage during system flushing.

Top Mounted Scale Shelf Installation

The optional scale shelf is mounted to the



mullion on the back of the case. The shelf rests on the flat portion of the top of the case. Use the follow instructions to mount the scale shelf assembly.

1. Remove the screws (1) and rear cover (2)

from the scale shelf assembly (3).

2. Center the scale shelf assembly (3) on the top rear of the case (4) at the selected mullion (5) location.
3. Loosen wing nut (6) on the front right side of the lower rear support (7) and the two locking capscrews (8) at the rear.
4. Adjust scale shelf (3) to sit level from front-to-rear and side-to-side. When the shelf is level, retighten the wing nut (6) and the two locking capscrews (8).
5. Drill pilot holes in the top two holes in the lower rear support (7), and start two screws (9). Check for proper shelf alignment, then tighten two screws (9).
6. Drill pilot holes thru lower two holes in lower rear support (7) and secure with two screws (9).
7. Replace rear cover (2) and screws (1) on scale shelf assembly (3).

SERVICE INSTRUCTIONS

Light Servicing

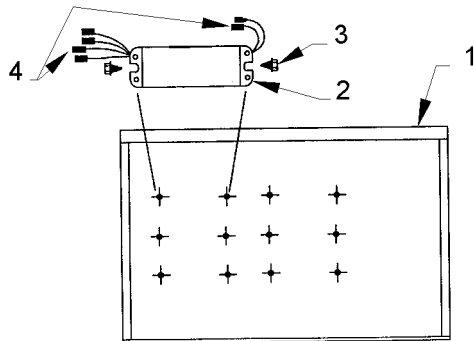
See "General I&S Manual" for T-8 lamp, fan blade and motor (LLD only), and color band and bumper replacement instructions.

Ballast and Lighting Locations

All light ballasts are located in the electric box on the left end of the rear of the case.

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 instruc-

tions. Only qualified personnel are autho-



rized to install the accessory items. TYLER Refrigeration recommends you order all component parts from its Service Parts Department.

Ballast Installation

1. Remove cover from electric box (1) located on the left rear side of the case.

NOTE

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

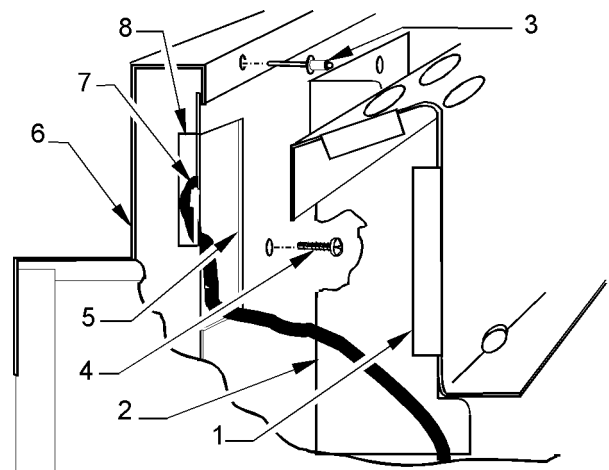
2. Install required number of ballasts (2) in electric box (1) with two screws (3) each.
3. Identify and connect required wiring harnesses (upper, lower, etc...) to the ballast connectors (4).
4. Replace cover on electric box (1).

Anti-Sweat Replacement

LL(M/F/D) cases have a front glass anti-sweat heater. Use the following instructions to replace an anti-sweat heater.

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.

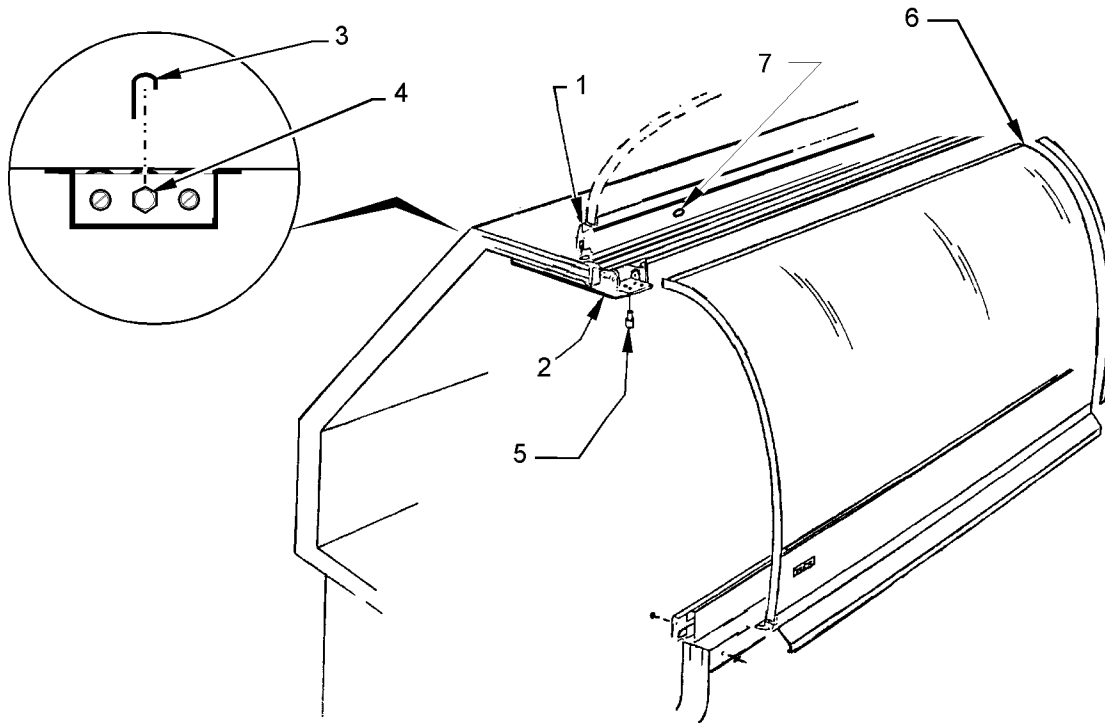
1. Open the lift glass and remove the bottom screens and/or bottom trays from the case.
2. Remove front ducts (1) and front duct supports (2) from the case.
3. Drill out rivets (3) and remove screws (4) and anti-sweat cover (5) from interior surface of bottom glass support (6).
4. Disconnect or cut the defective anti-sweat wire (7) from the case wires.
5. Remove the aluminum tape (8) and defective anti-sweat wire (7) from the anti-sweat cover (5).
6. Position new anti-sweat wire (7) on anti-sweat cover (5) and secure with new aluminum tape (8).
7. Connect or splice the new anti-sweat wire (7) to case wires.

8. Install anti-sweat cover (5) under bottom glass support (6) and secure with screws (4) and rivets (3).
9. Replace all components that were removed to expose the anti-sweat cover.

10. Close the lift glass and restore the electrical power to case.

Lift Glass Replacement

NOTE



If lift glass is shattered, start with step 1, otherwise start with step 2 to replace the lift glass.

WARNING

Wear safety glasses and gloves and use at least two people when replacing glass. Glass is heavy and weight distribution is uneven. Mishandling of glass could cause breakage and/or personal injury.

1. Pull down the glass frame clamp (1) by applying significant force at the hinge assemblies (2). The hinge assemblies are located inside the rear at the top of the fixture. Hold hinges down until step 2 is performed.
2. Place the metal hinge stops (3), shipped

with the glass, over the shank of the center bolt (4) at the rear of each hinge assembly (2). This prevents the hinges from popping upright when the lift glass is removed.

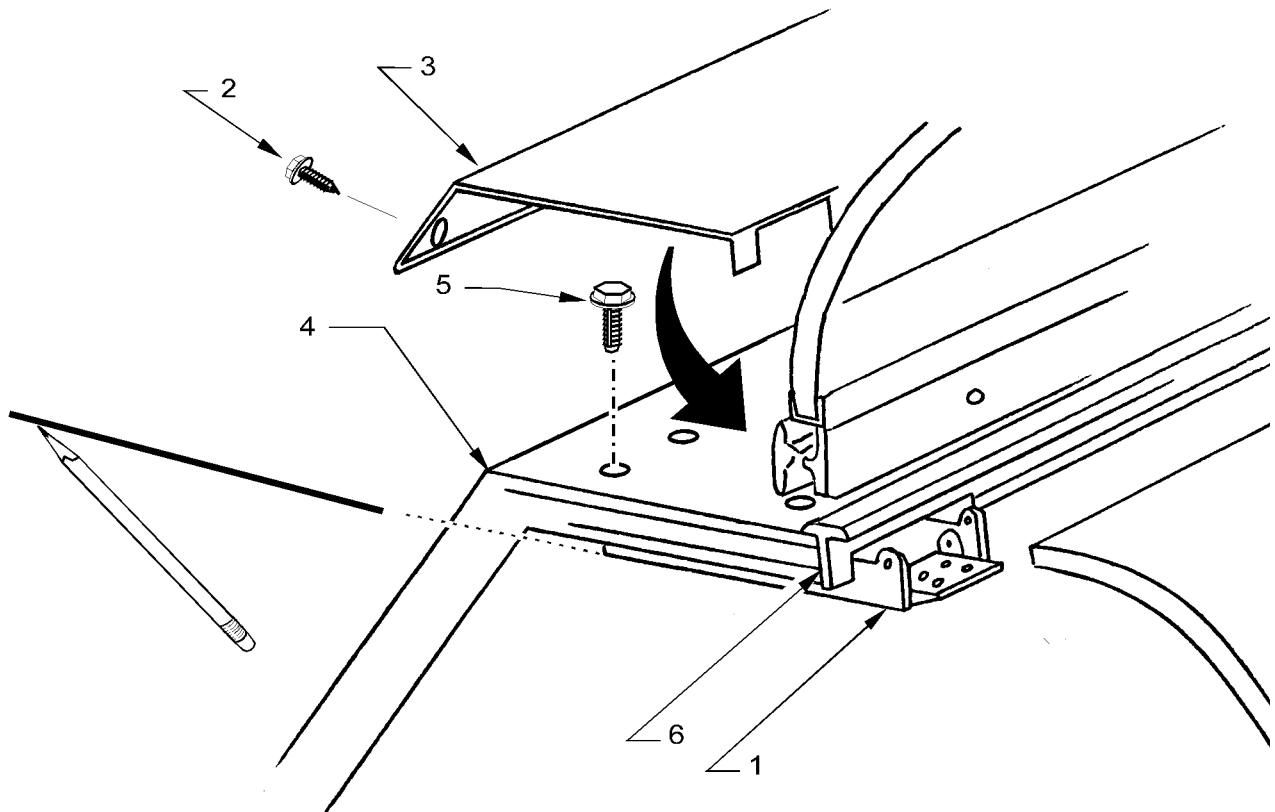
3. While holding glass, remove screws (5) from hinges (2) and glass frame clamp (1).
4. Replace broken lift glass (6) with new lift glass (6).
5. Install screws (5) in hinges (2) and glass frame clamp (1). Tighten each hinge-screw (5) to 60 lb-in. of torque. **Do not overtighten.**
6. Check torque of glass frame clamp setscrews (7). It should be pre-torqued to 150 lb-in. **Do not overtighten.**

NOTE

Lift glass must seal tightly to ensure proper operating temperatures! 5/8" replacement seals are available through TYLER Service Parts.

- After the lift glass has been replaced, remove the metal hinge stops (3). Make sure the lift glass wipers overlap and seals tightly against the color band.

Lift Glass Hinge Replacement



NOTE

All product should be removed from the case and the surrounding area before making this repair.

WARNING

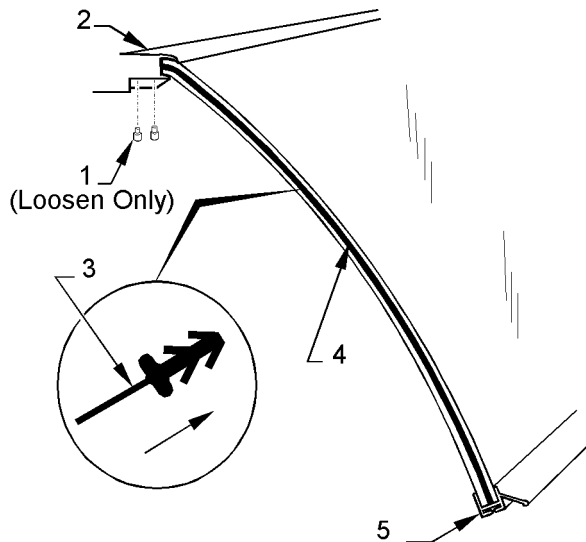
Do not take hinge apart! The glass assembly is extremely heavy and could fall without proper support. Glass breakage and/or personal injury could result.

- Remove the lift glass by following the instructions on the previous page.

- Mark the position of the defective hinge (1) on the top interior of the case.
- Remove screws (2) from back edge of stainless steel top (3). Lift up and pull out on back edge of stainless steel top (3) to remove it from top of case (4).
- Remove four screws (5) from top of case (4) and remove defective hinge assembly (1) from inside top of case (4).
- Position new hinge assembly (1) inside

top of case (4) as marked during removal and secure with four screws (5). After rechecking the hinge positioning, tighten the four screws (5) to 125 lb-in. of torque.

6. Push front edge of stainless steel top (3)



under "T" rail (6) and insert back edge behind door frame trim. Secure stainless steel top (3) with screws (2).

7. Install the lift glass by following the instructions on the previous page.

Lift Glass Edge Seal Replacement

In order to attach the rubber edge seal to the lift glass, **the glass must be clean**. Use rubbing alcohol to clean the glass and the inside of the replacement trim.

1. Loosen two setscrews (1) in the glass frame clamp (2) closest to the edge of the glass. **Do not remove the setscrews.**
2. Remove the defective glass seal (3) by pulling out of the groove (4) in the edge of glass.

3. Clean the groove (4) in the edge of the glass thoroughly.
4. Beginning at the top of the edge of the glass, snap new glass seal (3) into the groove (4) by the pushing small "V"'s into the groove (4).
5. Cut off any excess glass seal (3) that extends beyond the handle (5).
6. Retighten and torque the setscrews (1). They should be torqued to 150 lb-in. **Do not overtighten.**

PARTS INFORMATION

Operational Parts List

Case Usage	Domestic			Export		
	115 Volt 60 Hertz			220 Volt 50 Hertz		
Case Size	6'	8'	12'	6'	8'	12'
Fan Motor (LLD)	5125532 5 Watt	5125532 5 Watt	5125532 5 Watt	5222975 5 Watt	5222975 5 Watt	5222975 5 Watt
Fan Motor Brackets (LLD)	5962269	5962269	5962269	5962269	5962269	5962269
Fan Blades (7" 25° 5B) (LLD)	5236974	5236974	5236974	5236974	5236974	5236974
Rocker Switch	5961377	5961377	5961377	5961377	5961377	5961377
Rectangular Outlet	5236335	5236335	5236335	5236335	5236335	5236335
T-8 Lamp Ballast (canopy)(1-row)	5991029	5991029	5991030	9028437	9028437	9028438
(opt. can.)(2-row)(LLD)	5966635	5966635	5991030	9028439	9028439	9028438
(opt. front floor)	5991029	5991029	5991030	9028437	9028437	9028438
(opt. shelf)(per row)	5991029	5991029	5991030	9028437	9028437	9028438
Opt. 800MA Ballast (canopy)	5049140	5049140	5049140	5204859	5204859	5204859
T-8 Lampholder (canopy)	5232279	5232279	5232279	5232279	5232279	5232279
(shelf)	5092414	5092414	5092414	5092414	5092414	5092414
Opt. 800MA Lampholder (telescopic)	5614628	5614628	5614628	5614628	5614628	5614628
(stationary)	5614629	5614629	5614629	5614629	5614629	5614629
Anti-Sweat Heater Wire	5234596	5124818	5124819	5998198	5081149	5081150
Suction Solenoid Valve	5191445	5191445	5191445	5231619	5231619	5231619

Cladding and Trim Parts List

<u>Item</u>	<u>Description</u>	<u>6'</u>	<u>8'</u>	<u>12'</u>
1	Edge Seal, Glass	5246375	5246375	5246375
2	Bumper Retainer	9025052	9025058	9025061
3	Screw, Shoulder	9025833(12)	9025833(16)	9025833(24)
4	Color Band, Painted	9025232	9025233	9025234
5	Color Band Backer, Painted	9025654	9025654	9025654
6	Bumper Backer	-----	color per order	-----
7	Bumper	-----	color per order	-----
8	Upr. Frt. Cladding, Painted	9025129	9025130	9025131
9	Rivet	5104702(4)	5104702(5)	5104702(7)
10	Screw, Shoulder	9025833(6)	9025833(10)	9025833(12)
11	Lwr. Frt. Cladding, Painted	9025120	9025121	9025122
12	Kickplate	-----	color per order	-----
13	Screw	5183536(6)	5183536(6)	5183536(8)
14	Kickplate Support	9041329(3)	9041329(3)	9041329(4)
15	Screw, Binding	5100217(3)	5100217(3)	5100217(3)
16	LH End Close-off, Painted	9022468	9022468	9022468
17	RH End Close-off, Painted	9022467	9022467	9022467
18	Horizontal End Trim	5211585	5211585	5211585
19	Rear Base Joint Trim	5233638	5233638	5233638
20	Screw	5619204(4)	5619204(4)	5619204(4)
21	Rear Lower Joint Trim	5233635	5233635	5233635
22	Screw	5199134(4)	5199134(4)	5199134(4)
23	Rear Upper Joint Trim	5992570	5992570	5992570
24	Screw	5199134(4)	5199134(4)	5199134(4)
25	Top Joint Trim	5234825	5234825	5234825
26	Screw	5199134(4)	5199134(4)	5199134(4)

