



# Installation & Service Manual



# **NDRLHPA**

HIGH PERFORMANCE REAR LOAD ROLL-IN DAIRY 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.

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The following High Performance Medium Temperature Rear Load Roll-In Dairy Merchandiser models are covered in this manual:

MODELS DESCRIPTION

NDRLHPA 8' & 12' HIGH PERFORMANCE REAR LOAD ROLL-IN DAIRY

**MERCHANDISERS** 



## SPECIFICATIONS

## NDRLHPA High Performance Rear Load Roll-In Dairy Merchandisers

#### **Refrigeration Data:**

			CAPACITY (BTUH / FT)				DISCHARG	E AIR	AVG. REF.
MODEL	CASE LENGTH	CASE USAGE	PARALLEL	CONVENTIONAL	(°F)	UNIT SIZING (°F)	TEMPERATURE (°F)	VELOCITY (FPM)	CHARGE (LBS/FT)
NDRLHPA	8'/12'	DAIRY w/Shelving	407*	462*	+25**	+23	+28.7	648***	0.61****
NDRLHPA	8'/12'	DAIRY w/ Roll-In Carts	416*	463*	+27**	+25	+31.2	652***	0.61****

Capacity data listed for cases with 2 rows of T-8 canopy lights and 1 row of T-8 top lights. Adjustments must be made to this base rating for each option installed on this case. ADD 23 BTUH/FT for each row of optional lighted shelves. For sizing all refrigeration equipment other than TYLER, use conventional BTUH values.

Evaporator temperature is based on the saturated pressure leaving the case.

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)

	0405	FANC /	TOTAL STANDARD FANS					TOTAL ANTI-SWEATS			
MODEL	CASE LENGTH	FANS / CASE	AN UPPER	IPS LOWER	WA UPPER	TTS LOWER	DISCHA AMPS	RGE AIR WATTS			
NDRLHPA	8'	8	3.20	1.36	284.0	120.8	0.42	50.0			
NDRLHPA	12'	12	4.80	2.04	426.0	181.2	0.63	75.0			

#### T-8 Lighting with Electronic Ballasts (120 Volt)

			LIGHTS* DWS)		IGHTS* DWS)		SHELF LIGHTS – PER ROW				MAX. LI				
MODEL	CASE LENGTH	AMPS	WATTS	AMPS	WATTS	1	AN 2	MPS 3	4	1	WA 2	TTS 3	4	AMPS	WATTS
NDRLHPA	8'	0.95	114.0	0.50	60.0	0.90	1.20	1.60	1.90	108.0	144.0	192.0	228.0	3.35	402.0
NDRLHPA	12'	1.40	168.0	0.70	84.0	1.35	1.80	2.40	2.85	162.0	216.0	288.0	342.0	4.95	594.0

Standard lighting for this case is 2 rows of T-8 canopy lights and 1 row of T-8 top lights.

#### **Defrost Data:**

		TERM. ELEK. THER					EPR CONVEN				DEFROST		
DEFROST TYPE*	DEFROSTS PER DAY	DURATION TIME (MIN)	TEMP. (°F)	USAGE	CUT IN	CUT	R22 (PSIG)	R404A (PSIG)	1122 (1 010)		(PSIG) CUT-OUT	WATER (LB / FT / DAY)	
NDRLHPA-	6	24		MED TEMP w/Shelving	29°F	27°F	49	62	47	36	60	47	0.75
TIME OFF	6	24		MED TEMP w/Roll-In Carts	31°F	29°F	51	65	49	36	63	47	1.8

All high performance cases are OFF CYCLE defrost.

The minimum size coils required behind the Roll-In cases are; 8' case use a Model EFA - 130M and for a 12' case use a Model EFA - 190M. Upsize the coils as necessary based on the revised total load and size at a 9°F temperature differential. The case coils and the cooler units coils can be run on separate refrigeration circuits, but both must be defrosted at the same time.

NOTE: The cooler and case should be controlled by a Thermostat & Solenoid or EPR. Defrost needs to be at the same time.

**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.

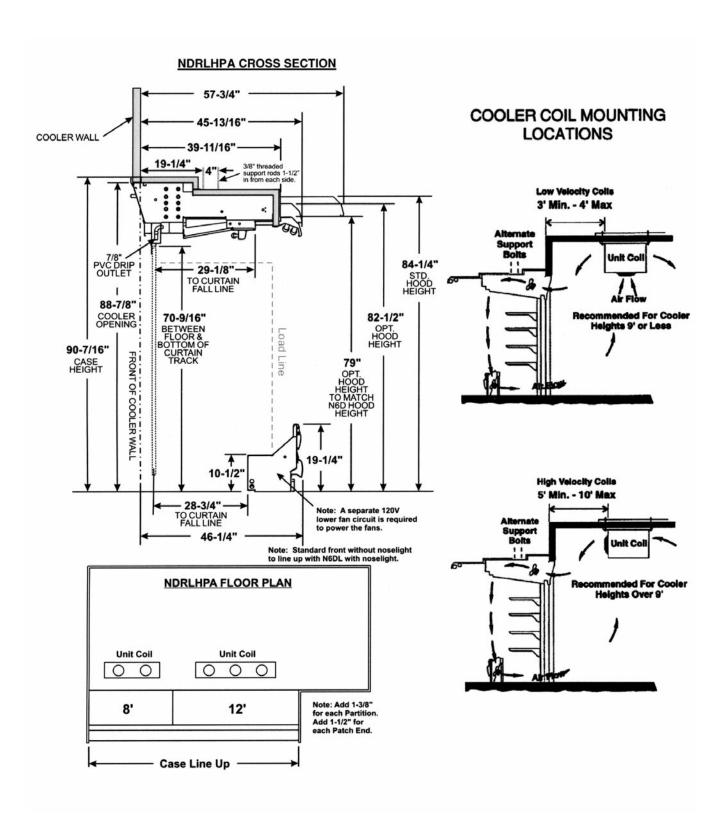
<sup>\*\*\*</sup> Air velocity measured 1 hour after defrost at the top discharge air duct using an ALNOR JR. velometer with a scoop.
\*\*\*\*This is an average refrigeration charge per foot based on R22 and R404A refrigerant usage.

<sup>&</sup>lt;sup>†</sup> NOTE: ADD 800 BTUH/FT OF CASE OPENING TO THE NORMAL WALK-IN COOLER LOAD. USE LOW VELOCITY COILS TO BACK UP THE REAR LOAD ROLL-IN CASE FOR CEILING HEIGHTS UNDER 9'. FOR CEILINGS HEIGHTS OVER 9', USE HIGH **VELOCITY FORCED AIR STYLE COILS.** 

NOTE: 24 minutes is for EPR with suction stop for defrost isolation. Defrost times increase by four minutes when defrost isolation is pump down.

<sup>\*\*\*</sup> If EPR is utilized, use the settings shown in the chart. 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.

CASE CIRCUITS: NDRLHPA case requires four separate 120V circuits: 1) an Upper Case Fan Circuit, 2) a Lower Case Fan Circuit, 3) an Anti-Sweat Heater Circuit, and 4) a Shelf & Canopy Light Circuit.





#### INSTALLATION PROCEDURES

## **Carpentry Procedures**

## **Planning**

The cooler will need to be erected prior to installing the cases. The cases can then be raised and butted into the existing cooler.

The case is attached to the cooler and can be supported by either structural suspension supports or partitions.

Patch ends can be used on either a single 8' or 12' line-up to support the case. If you have more than a single case you will need to use either a one inch structural partition or a hanging support to provide the needed structural support. Alternative hanging support methods are described below.

#### Method #1 - Structural Partitions

The one inch structural partition can be used between every case, real load or front load, so that the entire line-up will be self-supporting. This method of supporting cases at every joint satifies structural requirements. The problem with this method is that later alterations may | be difficult or not even possible. There is also the added difficulty of alignment, as you will have to depend much more on having a level floor.

Rods tied into the ceiling joists and the top of the case at each case joint can also be used to support the case.

If structural partitions are to be used, make sure to add 1 3/8" for each partition to the total cut opening of the cooler.

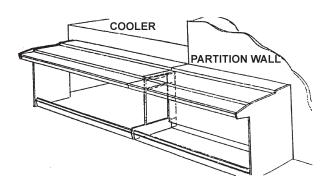
#### Method #2 - Cantilever

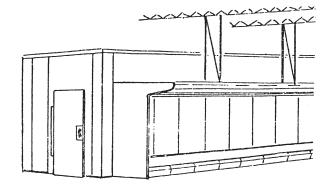
Cantilever beam systems project over the case tops and are supported by two threaded rods in each case end. A column is also to support the case sections. The beams are to be anchored at the rear to a suitable supporting structure. **Every joint must be supported.** 

To assist in the structural planning, the NDRLHPA case weights are as follows:

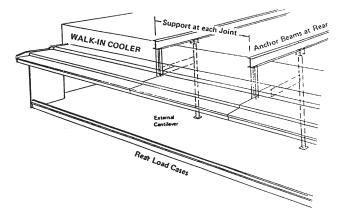
NDRLHP-8A 1250 lb NDRLHP-12A 1450 lb

#### Method #1





#### Method #2



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#### **Unpacking and Placement**

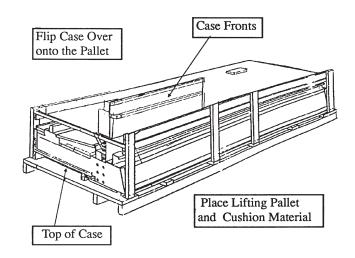
#### **WARNING**

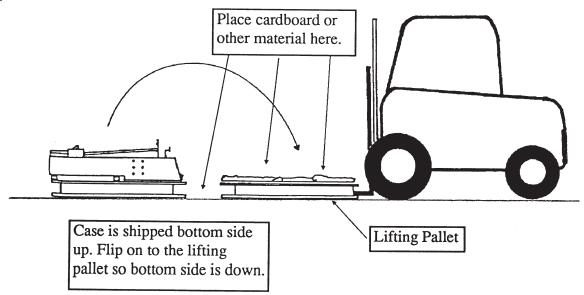
Cases are heavy and require a lifting device and two or more people to position and support during installation. Improper handling of cases could result in personal injury.

Place pallet in the general area where the case is going to be assembled. Remove all the hold down and shipping braces from the pallet. You will need a fork lift to raise and support the case during installation.

Since the case is shipped inverted, it will need to be flipped over before it can be moved into place.

- 1. Remove the case end panels and inspection plates from the case.
- Place a standard 4 foot pallet with cardboard on top of it on the floor behind the shipping pallet. This pallet will be used to raise and support the case during installation. The cardboard prevents the curtain track from being damaged.
- 3. Place material on the floor to prevent damage to the case cladding during the flipping and positioning of the case onto the lifting pallet.
- 4. Using the fork lift and atleast two addition people, flip the case over onto the lifting pallet.

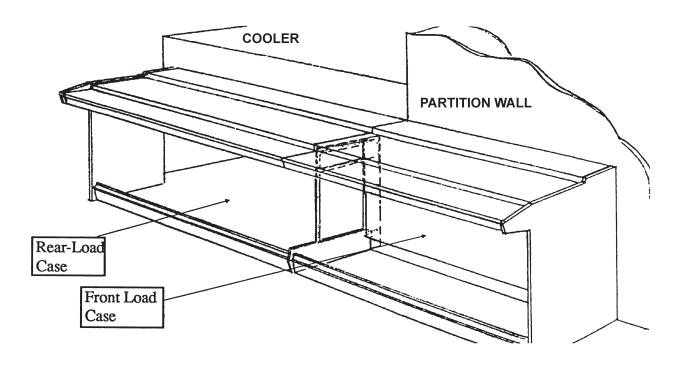






## **Locating and Installing**

Start installing cases at either end of the line-up where the patch end is to be located. If the case is to be supported from the ceiling joists, lift the case into place and prepare to attach the patch end to the case.



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#### **Attaching Patch End Supports**

- 1. Prepare the patch end by inserting the ethofoam gasket into place.
- 2. Thoroughly caulk both sides of the masonite spacer.
- 3. Attach the patch end with four 1/2" bolts and one 3/8" bolt. Snug, but do not tighten bolts until the case is completely assembled.

#### **Ceiling Support**

- 1. Prop the case up in position with boards.
- Prepare the case for adjoining by inserting the ethofoam gaskets in place and prepare the masonite spacers with caulk.

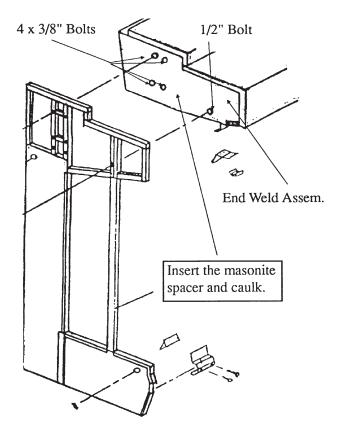
#### **NOTE**

Adjoining sections of case must be next to the each other before the center brace can be inserted.

- Place the center support in between the two case sections and fasten with bolts.
   The center support can now be attached to the ceiling joists with the threaded rod.
- 4. Continue this process until all sections of the case are in place.

#### **Center Partitioning**

- Prepare the patch end for attachment by inserting the ethofoam gaskets in place and prepare the masonite spacers with caulk.
- 2. Attach the patch end with four 1/2" bolts and one 3/8" bolt. Snug, but do not tighten bolts until the case is completely assembled.
- 3. Prepare the other end of the case for the center partition. Prop the end of the case into position and prep the case end in the same manner as you did for the patch end. Make sure that the prop is holding the case into place.



- Place the center partition into position and ready the adjacent case to be placed in the line-up.
- 5. Lower pallet being held by the fork lift and place the next case on the pallet as you did the first case. Lift this case into the line-up as you did the first.
- 6. Align the cases at the center joint and join the cases with the attaching bolts found in the filler kit.

#### **NOTE**

The five bolts shown are used to join one case to the next through the center partition.

7. Continue this procedure for all cases in the line-up. When all cases have been placed, remove the top cover of the case and secure cases to the wall of walk-in cooler with self-tapping screws. The screws should be spaced at approximately one foot intervals to assure good attachment.

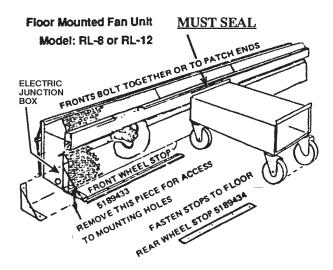


#### **Installing the Front Fan Panels**

#### NOTE

Floor anchors and mounting hardware are not provided. The installer must provide the required mounting hardware.

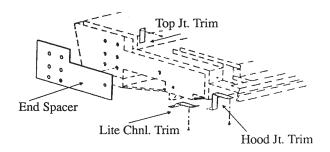
Install the 8' and/or 12' front fan panels with floor anchors. All front fan panel braces are located on the underside of the front panel. The braces are located every four feet and at the ends of the front fan panels. The front fan panels may also be attached to the patch ends, if desired. Floor stops are also provided to keep the carts in position near the front of the case. Install these after the carts have been positioned in the case.



#### **IMPORTANT NOTE**

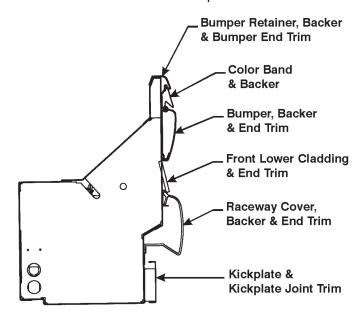
Make sure the cart wheels are straight and the wheel stops keep the carts tight against the front of the case. This will prevent short circuiting of air flow and maintain the proper air flows within the case.

#### Finishing the Case





Attach the inside cooler end joints trim and align the cases at the joints. Make sure to thoroughly caulk at every case joint and where the case meets the top of the cooler.

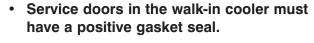


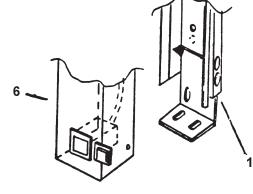
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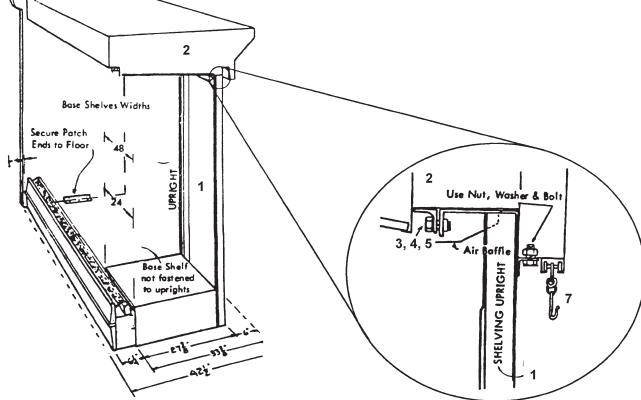
#### **Shelving**

#### **IMPORTANT**

- Shelves must be fixed, not flip up type, to maintain proper air flow.
- Product stacking in walk-in cooler must be a minimum of 3' away from the back of the case.







Shelving uprights (1) fasten to the overhead structure (2) with 3/8" bolts (3), lockwashers (4) and nuts (5) (when weldnuts are not provided). The baffle needs only be removed when uprights for 24" shelves are installed. Holes into the supporting angles will have to be drilled as well. When the shelving uprights are full length, they must be secured to the floor. Remove the wiring cover (6) to secure

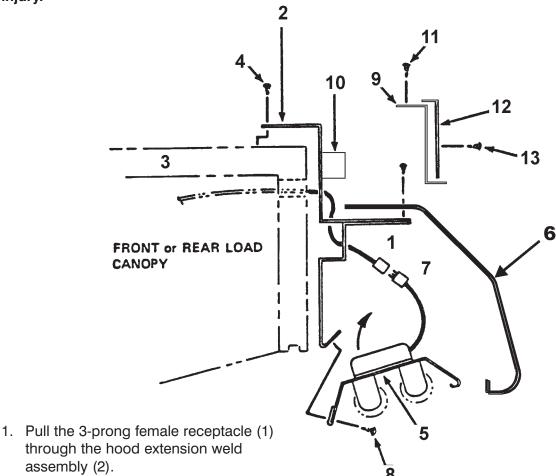
bottom of shelving upright (1) to the floor, then replace the wiring cover (6). Mount the curtain carriers (7) to the back of the case uprights (1) as shown. The curtains may be mounted before or after the case is in place. The curtains are weighted at the bottom to help keep them closed. It is important to keep the curtains closed to provide a good seal and proper case operation.



## **Hood Assembly**

#### **WARNING**

Make sure all power is off to the case. Electrical servicing should always be done by a qualified electrician. Improper servicing could result in product damage and/or personal injury.



- 2. Fasten hood extension weld assembly (2) to the canopy (3) with tappit screws (4).
- 3. Hook the light channel assembly (5) into the front lip of the front hood (6).
- 4. Plug the light channel wire (7) into the female receptacle (1).
- 5. Swing the light channel assembly (5) up into place and secure with truss head screws (8).
- 6. Install top front cladding (9) over ballast (10) with screws (11).
- 7. Complete the assembly by installing the hood extension joint trim (12) with truss head screws (13).

## **WIRING DIAGRAM**

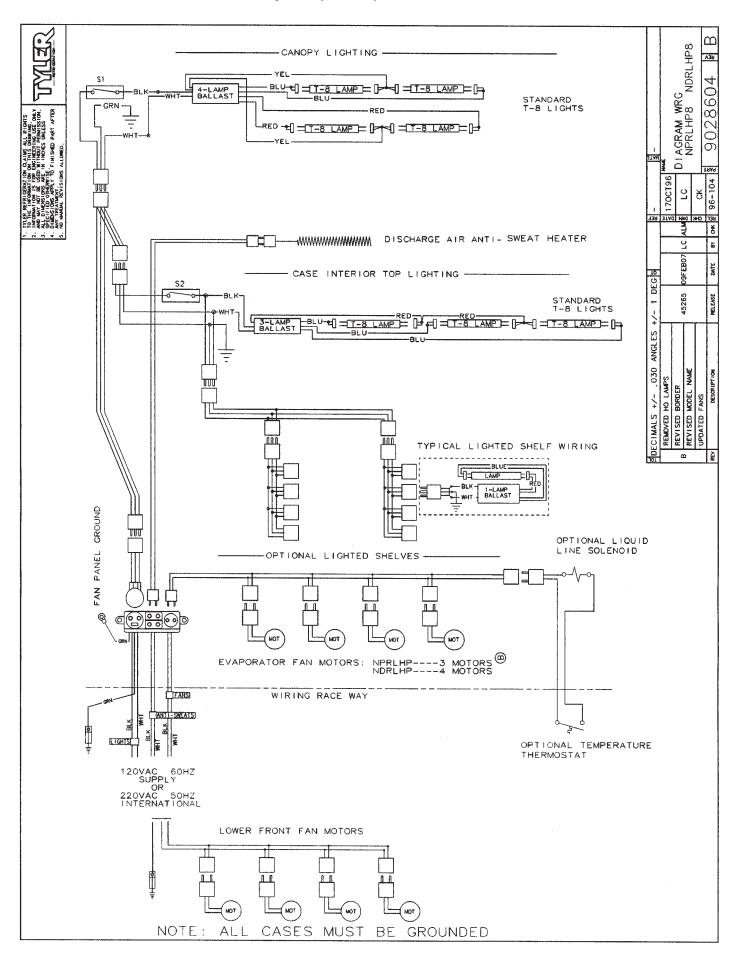
# ELECTRICIAN NOTE - OVERCURRENT PROTECTION

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.

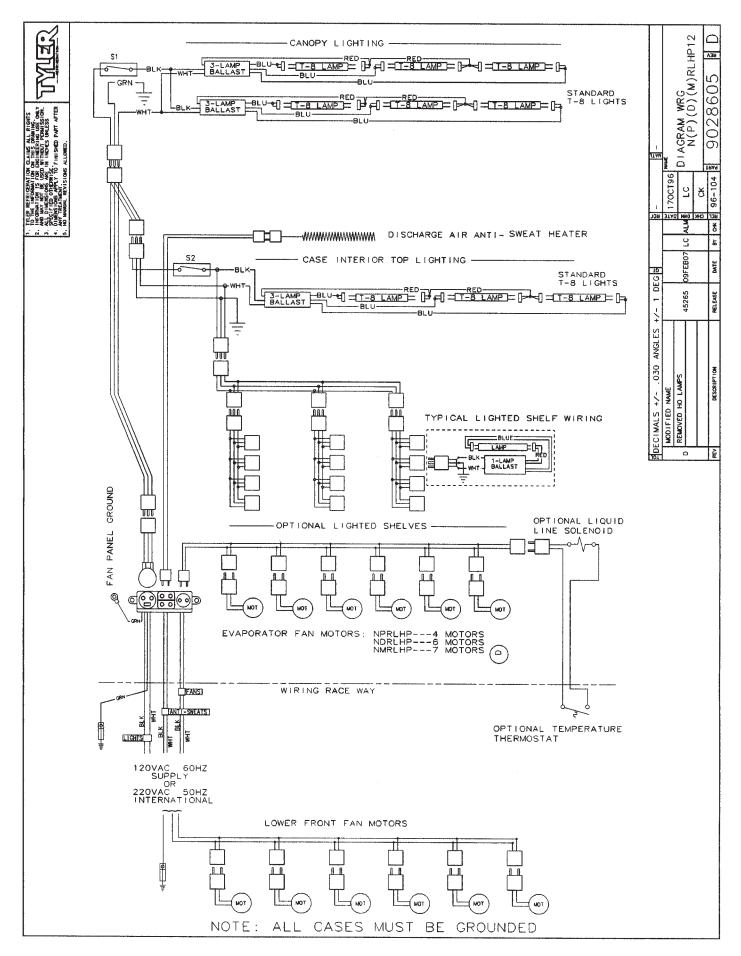
The wiring diagrams on the following pages 13 thru 15 will cover the NDRLHPA case circuits, lighting circuits and anti-sweat circuits. The lighting and anti-sweat circuits are shown in the case circuit diagrams.

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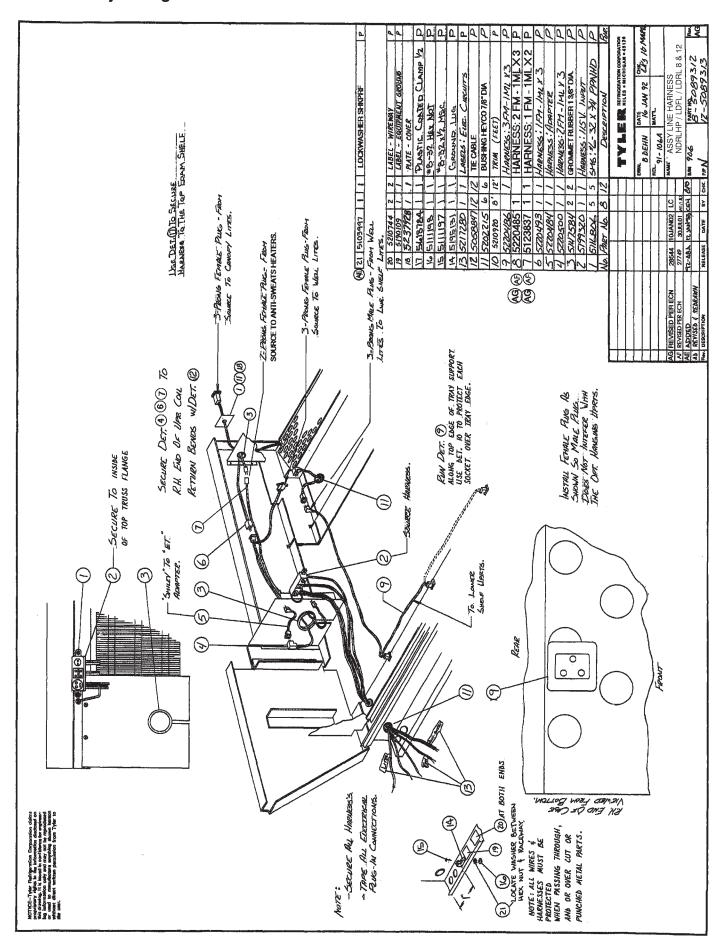
## NDRLHPA Domestic & Export (50 Hz) 8' Case Circuits



## NDRLHPA Domestic & Export (50 Hz) 12' Case Circuits



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## **PARTS INFORMATION**

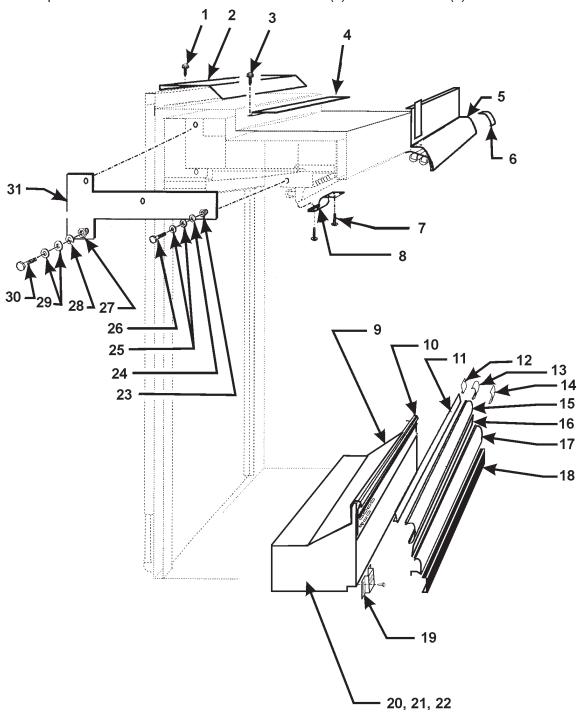
# **Cladding and Trim Parts Lists**

Ν	D	R	LI	Н	Р	Α

Item	Description	8'	12'
1	Screw (per close-off panel assy)	1309067 (9)	1309067 (12)
2	Close-off Panel Assembly	9026544	9026546
3	Screw (per top cover)	5183536 (5)	5183536 (10)
4	Top Cover	5186277	5186278
5	Opt. Short Hood Assembly, Ptd. (NDRLHPA to N6D)	9605004	9602848
	Std. Canopy Hood, Ptd.	9025223	9025224
6	Opt. Short Hood Joint Trim	5222048	5222048
	Std. Hood Joint Trim	5222015	5222015
7	Screw (per hood joint trim)	5205439 (6)	5205439 (6)
8	Light Channel Joint Trim	5222014	5222014
9	Front Duct	9053728 (2)	9053728 (3)
10	Bumper Retainer	color by	order
	Shoulder Screw (per bumper retainer)	9025833 (16)	9025833 (24)
11	Color Band, Ptd.	9023798	9025119
12	Color Band Backer, Ptd.	9025982	9025982
13	Bumper Backer	color by	order
14	Bumper End Trim	color by	order
15	Bumper	color by	order
16	Front Cladding, Ptd.	9301434	9301435
	Screw	5183536 (9)	5183536 (12)
17	Raceway Cover	color by	order
	Raceway Cover Retainer	9023841 (4)	9023841 (6)
	Screw (per retainer)	5183536 (2)	5183536 (2)
	Raceway Cover End Trim	color by	order
	Raceway Cover Backer	color by	order
18	Metal Kickplate, Ptd.	9324402	9324407
	Kickplate Joint Trim, Ptd.	9324550	9324550
19	Kickplate Support	9039022 (6)	9039022 (8)
20	LH End Close-off	9053718	9053718
	LH Top End Close-off	9053722	9053722
21	RH End Close-off	9053719	9053719
	RH Top End Close-off	9053724	9053724
22	Electrical Junction Box (in assembly)	5102187	5102187
	Junction Box Cover (in assembly)	5102157	5102157
	Electrical Conduit (in assembly)	5102195	5102195
23	Nut (per end spacers)	5100634 (2)	5100634 (2)
24	Lock Washer (per end spacers)	5101006 (2)	5101006 (2)

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Item	Description	8'	12'
25	Flat Washer (per end spacers)	5100979 (4)	5100979 (4)
26	Machine Screw (per end spacers)	5107443 (2)	5107443 (2)
27	Nut (per end spacers)	5100643 (6)	5100643 (6)
28	Lock Washer (per end spacers)	5628631 (6)	5628631 (6)
29	Flat Washer (per end spacers)	5100982 (12)	5100982 (12)
30	Machine Screw (per end spacers)	5120913 (6)	5120913 (6)
31	End Spacer	5184602 (2)	5184602 (2)





# **Operational Parts List**

Case Usage	Domestic				
Electrical Circuit	115 Volt 6	0 Hertz			
Case Size	8'	12'			
Upper Fan Motor	9458939 16 Watt	9458939 16 Watt			
Upper Fan Motor Brackets	5205112	5205112			
Upper Fan Bracket Plate	9041007	9041007			
Upper Fan Blades (8.75" 30° 5B)	9407319	9407319			
Opt. ECM Upr. Fan Motor	N/A	N/A			
Opt. ECM Upr. Fan Bracket	N/A	N/A			
Opt. ECM Upr. Fan Blades	N/A	N/A			
Lower Fan Motor	5125532 5 Watt	5125532 5 Watt			
Lower Fan Motor Brackets	5120098	5120098			
Lower Fan Blades (7.75" 37° 5B) T-8 Lamp Ballast (canopy) (1st & 2nd row)	9454640 5966635	9454640 5991030			
(3rd row)	5991029	5991030			
,					
T-8 Lampholder (canopy)	5232279	5232279			
Light Switch (SPST)	5100565	5100565			
Anti-Sweat Heater (air grid retainer)	5124818	5124819			

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

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