

# STRATUS Single-Deck Display Case

# Installation and Operation Manual



**KYSOR WARREN**  
eptarefrigeration



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**Part No. 31E02067**

**Models:  
SX1LC-SC**

**Applications:**



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# Installation and Operation Manual

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## Introduction—General Information

This manual has been prepared for our customers and the personnel involved in installing and maintaining our cases.

Our STRATUS case line has been designed with a focus on things most important to your bottom line. Enhanced merchandise visibility, high energy efficiency, and merchandising flexibility have all merged in an attractive, modular design. Custom styles fit seamlessly into your floor plan and an eco-friendly design protects the environment while saving energy costs. The SX1LC-SC self-contained case is available in medium-temperature.

These cases should be installed and operated according to the instructions contained in this manual to ensure proper performance. They are designed for display of products in an air-conditioned store where temperature and humidity are maintained at a maximum of 75° dry-bulb temperatures and 55% relative humidity.

**CAUTION:** Failure to maintain maximum design conditions may result in operational issues such as the following: increased BTUH load, high product temperature, coil icing, product frosting, and external sweating.

These cases are connected to a single compressor condensing unit. Installation and Service instructions are provided by the condensing unit manufacturer and are not part of this manual.

## Case Description

Model	Description
SX1LC-SC	Self-contained: Sandwich, standard depth, single-deck, low front, display case with curved glass and produced in 4 ft. length.

## Receiving/Shipping Damage/Lost Items

All equipment should be examined for shipping damage before and during unloading. If there is any damage, the carrier should be notified immediately and an inspection requested. The delivery receipt must be noted that the equipment was received damaged. If damage is of a concealed nature, you must contact the carrier within three (3) days following delivery. The consignee for all damages must file a claim with the carrier.

**NOTE:** All claims for shortages must be within 10 days after receipt of shipment.

## Condensing Unit

The condensing unit is not intended to be removed from the case except in the event a compressor must be replaced. To remove the condensing unit, disconnect the suction/liquid connections on the base valves at the right front of the case.

**CAUTION:** Before attempting to remove the condensing unit, be sure that all electrical power to the case has been turned off. Also, caution should be used when releasing pressure on the refrigerant system.

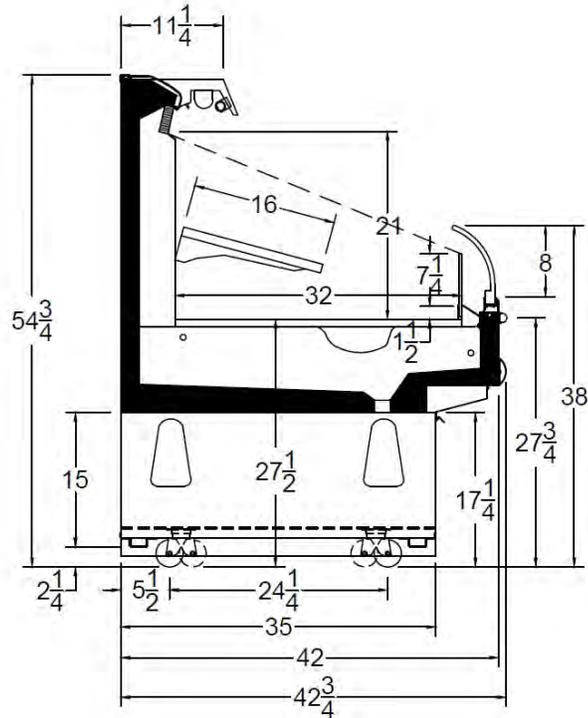
**NOTE:** The refrigerant charge for this case is very critical. If the case should need to be recharged, an accurate charging device must be used. No refrigerant should be released into the atmosphere; it must be reclaimed. There are several different refrigerant configurations to these units, refer to Case Data for detail.

**CAUTION:** During installation and service of this equipment, precautions should be taken to prevent loss of refrigerant to the atmosphere.

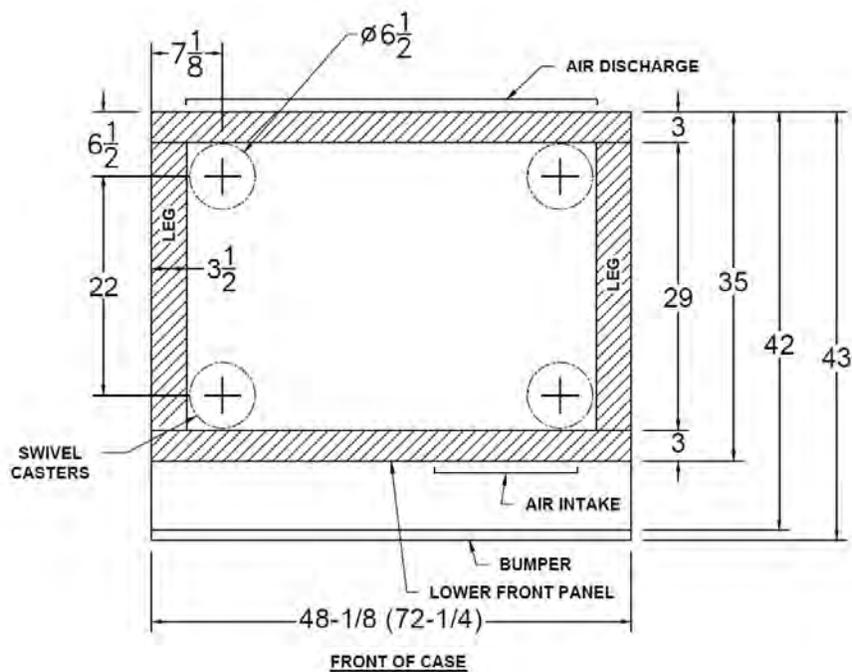
# STRATUS Multi-Deck Display Case

## Plan and Cross Views

### SX1LC-SC Cross View



### SX1LC-SC Plan View (Standard)



# Installation and Operation Manual

## Case Data

# SX1LC-SC - STRATUS

## SINGLE-DECK SPECIFICATION SHEET



**KYSOR WARREN**  
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General Case Data	Case Length (ft)		
	4'	6'	8'
Total Display Area (ft <sup>2</sup> )	13.67	20.52	26.36
Cubic Capacity (ft <sup>3</sup> )	12.58	18.90	25.16
Max Shelf Depth (in) [Top/Bottom]	16	16	16
Weight (lb)	-	-	-
<b>Thermal Load (General)</b>			
Evaporator Temperature (°F)	20	20	20
Discharge Air Temp (°F)	27	27	27
Discharge Air Velocity (fpm)	180-230	180-230	180-230
Fan Speed (rpm)	900	900	900
Refrigerant Type	R-513A	R-513A	R-513A
Refrigerant Charge (lbs)	3.30	3.70	4.70
Conventional Thermal Load, Single (Btuh) unlighted	3864	5796	7584
Additional Btuh per ft LED - Canopy / Shelf & Nose	13 / 11	13 / 11	13 / 11
Additional Btuh per ft T8	19	19	19
Superheat Setpoint (°F)	6 - 8	6 - 8	6 - 8
<b>Electrical Data (Amps/Watts)</b>			
Power Supply (Volts/Hertz/Phase)	115V/60HZ/1PH	208V/60HZ/1PH	208V/60HZ/1PH
Evaporator Fan Motor Amps (115 V)	0.06	0.11	0.11
Anti-sweat Heater Amps (115 V)	0	0	0
Lights Amps (115V)	0.24	0.43	0.47
Defrost Heater Amps	N/A	N/A	N/A
Condensate Pump Amps (115 V)	N/A	N/A	N/A
Condensate Pan Heater Amps	8.33	4.80	7.21
Compressor RLA	9.30	8.00	8.00
Compressor LRA	50.00	46.00	46.00
Condenser Fan Motor Amps	0.53	0.54	0.54
Refrigeration Cycle Amps	18.47	13.82	16.36
Defrost Cycle Amps	8.64	5.28	7.82
Minimum Circuit Ampacity	20.79	15.82	18.36
Maximum Overcurrent Protection	25.00	20	25

Defrost Data (off Cycle)			
Defrosts per Day	Failsafe Duration (min) <sup>1</sup>	Termination Temp (°F)	Drip Time (min)
6	60	45 (Coil)	0

<sup>1</sup> At ASHRAE conditions. For conditions above 75°F, 55% RH, increase defrost time by 15 min. Type I refrigerator, intended for use in an area where the environmental conditions are controlled and maintained that conditions do not exceed 75°F and 55% relative humidity. Kysor Warren, whose policy is one of continuous improvement, reserves the right to change at any time specifications, designs, or prices without incurring obligation. DOE 2017 Compliant

### APPLICATIONS



The above case model has case lengths that are UL and NSF approved.

# STRATUS Multi-Deck Display Case

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**CAUTION:** Failure to maintain maximum design conditions may result in operational issues such as the following: increased BTUH load, high product temperature, coil icing, product frosting, and external sweating.

**CAUTION:** Failure to properly install electrical wiring and control wiring as per wiring diagram(s), defrost settings, and temperature set-points may result in operational issues such as: increased BTUH load, high product temperature, coil icing, product frosting, and external sweating.

**NOTE:** Refer to [www.kysorwarren.com](http://www.kysorwarren.com) for other electrical data and information.

## Case Installation

Preparation—Prepare the installation area as follows:

1. Clean area where case is to be installed.
2. Verify installation area is at least 15 feet from any outside entrances or heating and cooling outlets.
3. Ensure floor loading will support the case and the case contents.
4. Ensure proper AC power is available. Refer to case AC input requirements located in the electrical connections section of this manual.
5. Ensure expansion valve in case is the proper valve for the type of refrigerant used at the installation site.

**CAUTION:** To prevent condensation on the end panels of cases, a minimum of 3.0 inches between walls or other cases is required for airflow. If 3.0 inches is not possible, then the space between the cases must be completely filled and sealed or an updraft fan kit must be installed to provide air circulation through the space.

## Installation

The following instructions are provided for unpacking, moving, loading, and lifting the case prior to installation.

**NOTE:** READ ALL INSTRUCTIONS CAREFULLY BEFORE BEGINNING INSTALLATION.

## Unpacking

**WARNING:** Use caution when removing the strapping in the following procedure, as the shelves are very heavy and could fall causing personal injury or equipment damage.

1. Ensure the evaporator cover is installed correctly with the deck pans installed.
2. Move the case into position, install, and perform the operational checkout procedures following the instructions within this manual.

**CAUTION:** Be careful not to damage the factory-installed end while moving the case. Use the case lift points on the case to move it to the proper location.

## Installing Case

1. Ensure all preparation for installation, as outlined in the above paragraphs, have been fully complied with and are complete.
2. Allow a minimum of 6.0 inches between the rear of the case and the store walls and/or other cases. This space reduces the possibility of condensation problems. It may be necessary to provide forced air ventilation in some installations.

# Installation and Operation Manual

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## Electrical Connections—General

An electrical box is provided with each refrigerator for wiring your fan and light circuits. This is an approved method by the Underwriters' Laboratories; however, field wiring must be in accordance with local and national electrical codes.

All field connections are made in the electrical box. Make sure that proper voltage is supplied to your refrigerator. Check refrigerator nameplate for the required voltage for fans, lights, and defrost heaters.

**NOTE: ALL REFRIGERATORS MUST BE GROUNDED.**

The Recommended Control Settings in the Case Data shows the electrical ratings for your case. This is the same information that appears on your refrigeration nameplate.

**NOTE:** Fan motors must operate continuously and panel must be marked sufficiently to prevent the fan motors from being turned off accidentally. When refrigerators are multiplexed, add the total of these amperage values to determine wire size and circuit protection. Anti-condensate controllers can be used to control the anti-condensate heater.

**WARNING!** Ensure the Kickplate does not come in contact with the case electrical wiring. Live electrical wiring that comes in contact with the case is a shock hazard that may cause severe injury or death by electrocution.

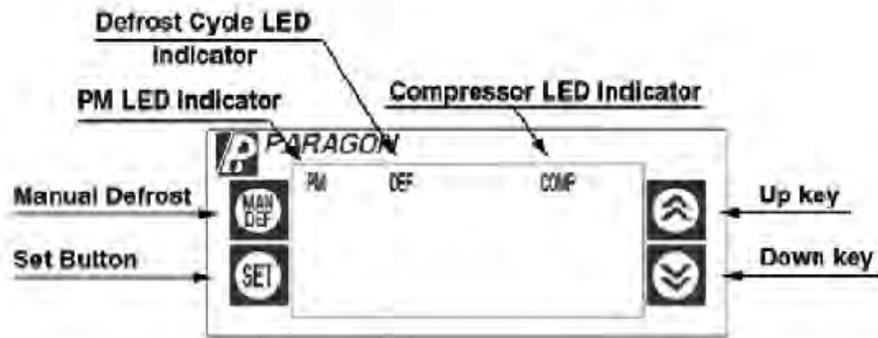
**WARNING!** Always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as fans, heaters, thermostats and light bulbs. Failure to disconnect the electrical power may result in personal injury or death.

## Electrical Termination

All electrical connections are made in the control box located in the base of the case.



## Paragon ERC-2 Set-Up Instructions



To change time of day and setpoint temperature (First Level), follow these steps:

1. Press and hold SET for five (5) seconds. The display will show "CLoC."
2. Press SET again to change the time of day.
3. Press UP or DOWN until the correct time of day is displayed.
4. Press SET to accept the new time.
5. Press DOWN to go to the next parameter -- Setpoint Temperature. The display will show "SEt."
6. Press SET to change the setpoint temperature.
7. Press UP or DOWN to go to the desired setpoint. The range is -40 to 60°F.
8. Press SET to accept the change.
9. Press DOWN to exit the first level of programming.

NOTE: During programming, if no button is pressed for thirty (30) seconds, the control will go back to the normal operation mode. This is valid for both programming levels.

NOTE: When changing the time, press and hold the MAN DEF button for three (3) seconds to change the AM / PM mode.

To change the other parameters (Second Level), follow these steps:

1. Press and hold SET and DOWN for ten (10) seconds. The display will show "dSPL." Press SET to change the parameter.
2. Press UP or DOWN to change options, time, or temperature for the currently selected parameter. Press SET to accept new value.
3. Press DOWN to go the next parameter. Then, go back to step 2. After the last parameter is displayed (ALHi), the display will return to the normal operating condition.

# Installation and Operation Manual

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To change the other parameters (Second Level), follow these steps:

1. Press and hold SET and DOWN for ten (10) seconds. The display will show “dSPL.” Press SET to change the parameter.
2. Press UP or DOWN to change options, time, or temperature for the currently selected parameter. Press SET to accept new value.
3. Press DOWN to go the next parameter. Then, go back to step 2. After the last parameter is displayed (ALHi), the display will return to the normal operating condition.

Set the following parameters as described:

CloC = Set Clock to local time.	SEt = 21	dSPL = rSP°	CLHr = 12HR
dSP = °F	dFtP = ELEC	CFAN = on	EFAN = yES
dFin = TdAy	CoFF = 0:00	Alrd = 0:00	Con = 0:00
CPrn = N/A	nodF = 6	dEFd = 60 minutes	dEF1 = 02:00 dEF2 = 06:00 dEF3 = 10:00 dEF4 = 14:00 dEF5 = 18:00 dEF6 = 22:00
Fand = 0:00	Pudn = 0:00	diF = 8	driP = 0:00
tDEF = N/A	dEF = 45°	ALLo = 18	FAn = 32
ALHi = 60			

*\*Set defrost intervals at every 4 hours.*

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Parameter	Display Symbol	Description	Range / Options
Display Status	dSPL	Information shown on the display during operation conditions.	tdAy - time of day rSP° - zone temperature (refrigerated space) CyCL - cycle between time and zone temperature Epr° - evaporator coil temperature
Clock Format	CLHr	Format of the time (12 / 24 hour mode)	12Hr - AM / PM Format 24Hr - 24 hour Format
Temperature Format	°dSP	Temperature Degrees	°F - degrees Fahrenheit °C - degrees Celsius
Defrost Type	dFtP	Type of defrost used in the application	ELEC - electric heater defrost / off cycle HgAS - hot gas
Fan Status During Defrost	EFAN	Enable or not the fan during defrost	no - fan is turned off during defrost yES - fan remains on during defrost
Fan Status During Normal Mode	CFAN	Enable or not the fan during normal compressor on/off mode	on - fan is always on during normal mode CyAP - fan cycles with compressor
Defrost Interval	dFin	Type of defrost interval	TdAy - time of day setpoint CPrn - compressor run time tdEF - temperature initiated defrost
Minimum Compressor Off Time	CoFF	Minimum time that the compressor will remain turned off	Range: 0 - 15 minutes
Minimum Compressor On Time	Con	Minimum time that the compressor will remain turned on	Range: 0 -15 minutes
Alarm Delay	ALrd	Time delay before the alarm goes off after the temperature falls off the two alarm setpoints	Range: 0 - 59 minutes
Compressor Run Time	CPrn	Time the compressor will run between defrosts	
Number of Defrosts	nodF	Number of defrosts per day	from 0 -8 (0 means 1 defrost every 48 hours)
Defrost Start Time	dEF1-8	Start time of each defrost	
Defrost Duration	dEFd	Defrost duration time (Back up for defrost termination temperature)	Range: 0 mins - 4 hours
Fan Delay	FAnd	Delay time for the fan after defrost (back up for fan cut-in temperature)	Range: 0 - 15 minutes
Pump Down	Pudn	Pump down duration	Range: 0 -59 minutes
Drip Time	driP	Drip Time Duration	Range: 0 -59 minutes
Setpoint Differential	diF°	Cut-in temperature differential (NOTE: cut-in is cut-out plus differential)	Range: 1 - 25°
Temperature Initiated Defrost	tdEF	Temperature that will initiate a defrost cycle	Range -40 to 40°F / -40 to 4°C
Defrost Termination Temperature	dEF°	Temperature in the evaporator that will terminate the defrost cycle	Range: 0 - 75°F / -18 to 24°C
Fan Cut-in Temperature	FAn°	Temperature that will turn the fan on after defrost	Range: -40 to 60°F / -40 to 16°C
Low Temperature Alarm	ALLo	Low temperature setpoint that will make the alarm go off and the error message appear on the display	Range: -40 to 83°F / -40 to 28°C
High Temperature Alarm	ALHi	High temperature setpoint that will make the alarm go off and the error message appear on the display	Range: -40 to 83°F / -40 to 28°C

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NOTE: To change from degrees C to F, and vice versa, the user must reprogram all the parameters that are related to the temperature. The unit DOES NOT convert the parameters automatically from degrees C to F or vice versa.

PLEASE SEE BELOW PARAGON DISPLAY AND ERROR CODES

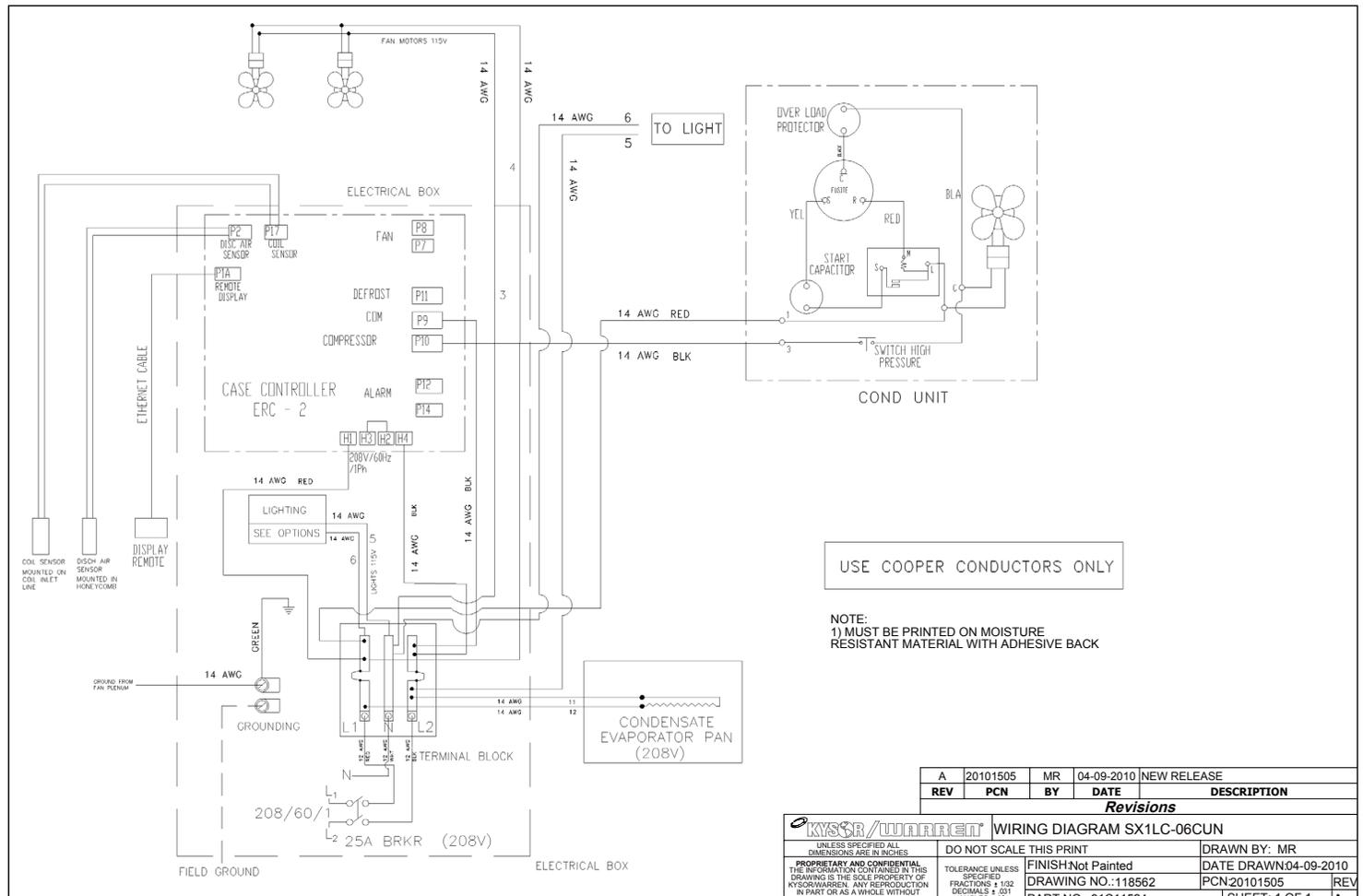
Display	Control Status
Error 1	ERC Fault - software or hardware failure
Error 2	ERC Communications Fault - indicates that there is a problem with the display module cable
Error 3	Zone Sensor Fault - indicates an open or shorted temperature sensor
Error 4	Evaporator Sensor Fault - indicates an open or shorted evaporator sensor
Error 6	Low Temperature Alarm - indicates that the temperature has dropped below the low alarm setpoint
Error 7	High Temperature Alarm - indicates that the temperature has risen above the high alarm setpoint

For error codes 1 and 2, disconnect the power to the unit and correct the problem to reset the display.

For error codes 3 and 4, press the UP or DOWN button on the display to reset the message. If the display still shows the error message, the sensor must be replaced.

The error codes 6 and 7 will automatically reset once the temperature is back within the two setpoints.

## Wiring Diagram



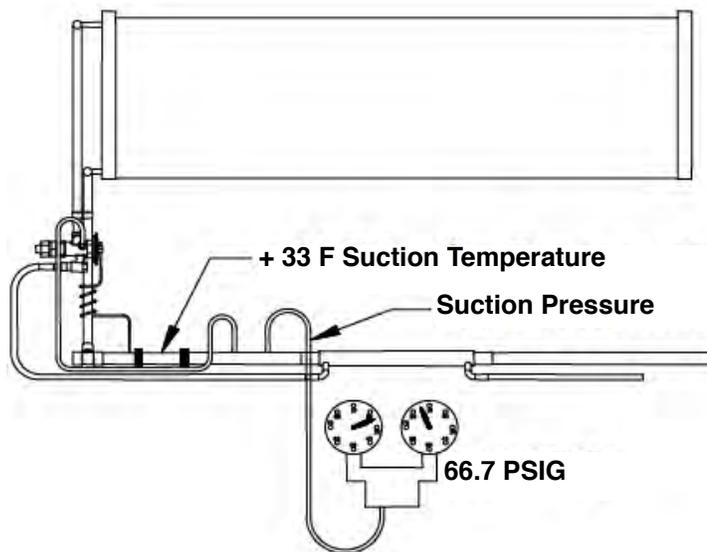
## Expansion Valve and Superheat

**CAUTION:** During service of this equipment, precautions should be taken to prevent loss of refrigerant to the atmosphere. Always install the expansion valve stem cap after making valve adjustments.

The expansion valve furnished with your case has been sized for maximum coil efficiency. To adjust superheat, perform the following:

1. Place a thermocouple near the expansion valve bulb. Read the suction line pressure as near coil as possible. If closest is at the condensing unit, estimate suction line loss at 2 PSIG.
2. Convert coil suction pressure to temperature. The difference between coil temperature and the thermocouple temperature is superheat. Use average superheat when expansion valve is hunting.
3. Do not set the superheat until cases have pulled down to operating temperature and never open or close the valve over  $\frac{1}{4}$  turn between adjustments and allow 10 minutes or more between adjustments.
4. Superheat should be set at 6-8°F.
5. After the initial setting, the superheat should be rechecked when product is stocked and at designed temperature.

## Superheat Calculations



**Example: R-404**

**+ 33 F Suction Temperature**

**+ 28 F Suction Pressure Converted to Temperature**

**= +5 F Superheat**

# Installation and Operation Manual

## Operation

Merchandise should not be placed in the fixture until all controls have been adjusted and the case is at the proper temperature. AT NO TIME SHOULD THE CASE BE STOCKED BEYOND THE LOAD LINE OR OVER THE FRONT EDGE OF THE ADJUSTABLE SHELVES.

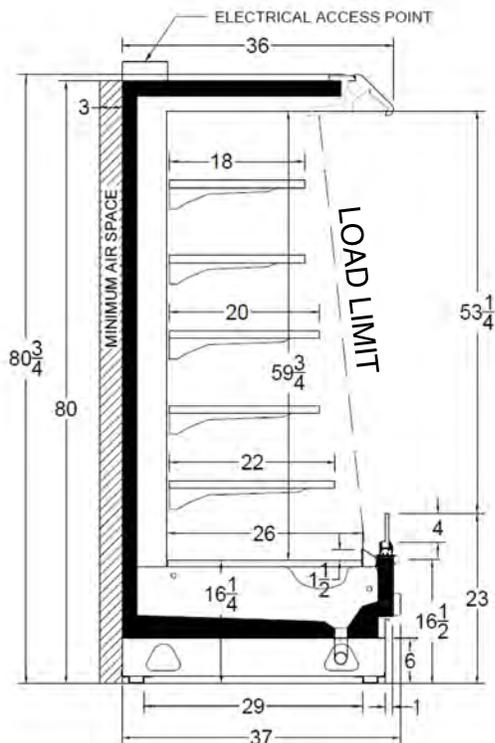
**CAUTION:** Air discharge and return flues must remain open and free of debris or obstruction at all times to provide proper refrigeration and air current performance.

**CAUTION:** Do not allow any product, signs, debris, etc., to block these grilles.

**CAUTION:** Do not use any non-approved shelving, display racks, or any accessory that could hamper air current performance.

**WARNING!** Do not walk on top of the cases! This could result in damage to the case and serious personal injury could occur. These cases are not designed to support excessive external weight. Do not use top of cases for storage.

Off cycle defrost is standard on these models and the fans run continuously.



## Cleaning

As a general rule, always use mild soap and water to wipe the case down, including the sliding doors at the back of the case. Special precautions must be taken when cleaning some components of the case.

Exterior surfaces should be cleaned with warm water and mild soap to protect and maintain the finish. Do not use cleaners containing abrasive materials or ammonia, which will scratch or dull the finish. The waste outlet should be flushed with water following each cleaning.

Interior surfaces may be cleaned with most mild soap formulas, ammonia based cleaners, and sanitizing solutions with no harm to the surface.

**WARNING!** Always shut power off during the cleaning process. Cleaning the case with electrical power applied is a shock hazard that may cause serious injury or death.

**WARNING!** DO NOT USE HOT WATER ON COLD GLASS SURFACES. This could cause the glass to shatter and could result in personal injury. Glass fronts and ends should be warm before applying hot water.

# STRATUS Multi-Deck Display Case

CAUTION—The following could damage the case:

- Use of cleaning products containing chlorine, chloride ion, the words Bleach, is not recommended for unpainted stainless steel surfaces as it may cause rust to form. The operational warranty of the equipment will be voided if these products cause rust to form on the SS parts or any other parts of the equipment.
- Do not use solvent, oil, or acidic-based cleaners on any interior surfaces as the surface may become damaged.
- Do not use abrasive cleaners and scouring pads, as these will mar the finish.
- Never introduce water into the case faster than the waste outlet can release it.
- Do not use steam or high pressure systems to clean the case, as seals may be broken which will cause the case to leak.

## Condensing Units

Follow the previous general cleaning of the interior and exterior parts with the exception of DO NOT USE WATER HOSE to clean evaporator or tub of the case.

CAUTION: Condensing units should have at least 18” clearance from any wall or other obstruction in order to operate properly.

WARNING! Always shut power off at the main breaker during the cleaning process. Cleaning the case or condensing unit with electrical power applied is a shock hazard that may cause serious injury or death.

CAUTION: DO NOT FLUSH WITH WATER. This case is not connected to a drain system and has its own evaporating pan with limited capacity.

Condensing Units: Once a month compressed air should be blown through evaporator to clear any debris or dust – opposite to direct normal air flow.

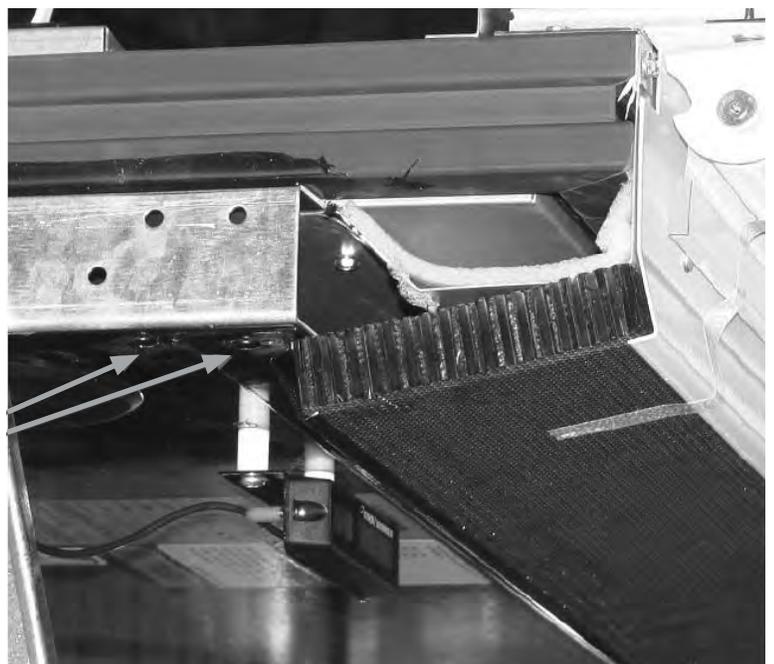
CAUTION: Care should be taken with compressed air. Debris and dust may be blown into eyes.

NOTE: Do not stack anything that may block airflow in front of louvers or rear of case. Self-contained cases draw air from back to front and blocking this airflow will cause case to overheat and shut down.

## Honeycomb Assembly

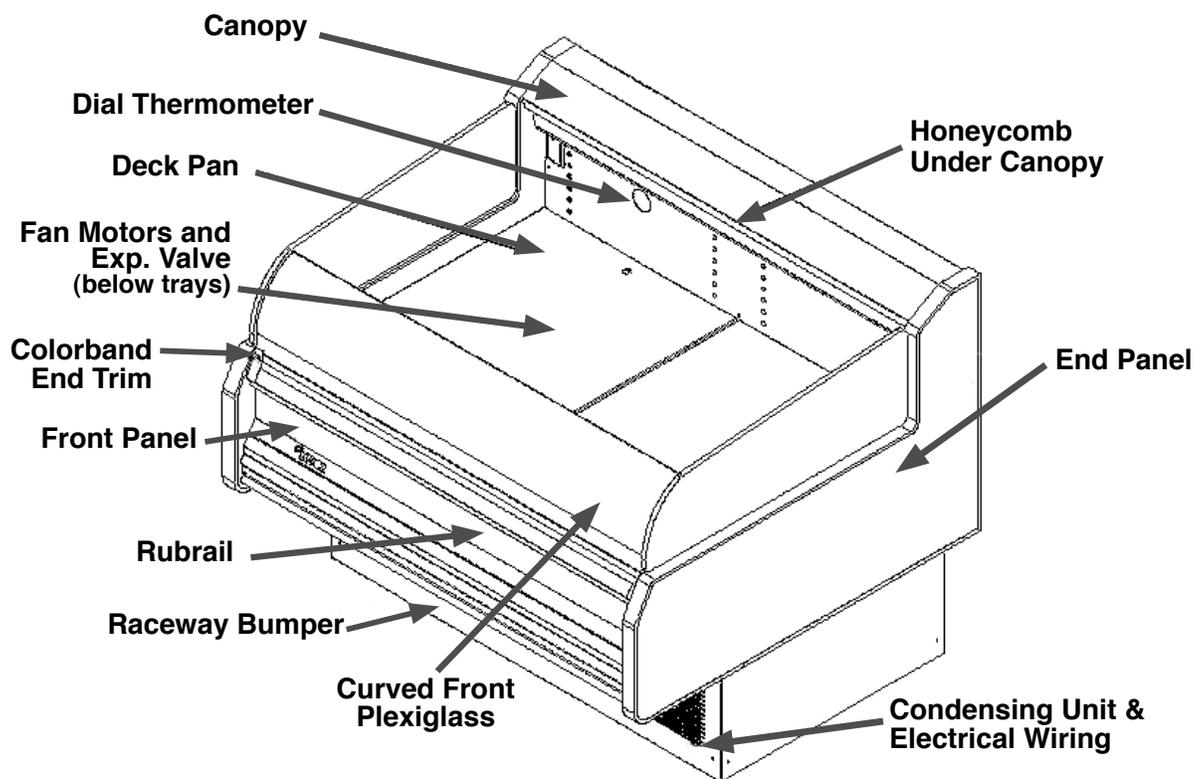
The honeycomb should be cleaned every 6–8 months, depending on store conditions. The honeycomb may be cleaned with a vacuum cleaner or removed to be washed with soap and water. The honeycomb must be completely dry before returning it to the case. Note the position and angle of the honeycomb when removing from the case. Honeycomb must be replaced at the same angle.

**SCREWS**



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## Parts List



Description	Part No.	
	4 FT	6 FT
Expansion Valve	03A28006	03A28007
Evap Fan Motor	09A10114	09A10116
Fan Wiring Harness	10M10499	10M10499
Curved Front Plexiglass	13A10399	13A10568
Plexiglass Wing End	13A10741	13A10741
Honeycomb White	13A15147	13A15149
Honeycomb Black	13A15148	13A15150
Condensate Drain Pan (1000 Watt)	28H12042	28H12027

NOTE: Standard parts are provided in the parts lists. Cases may be equipped with specialty parts that were incorporated into the case(s) at the time they were manufactured. It is important to have the case serial number when contacting Kysor Warren for replacement parts.

NOTE: Standard parts are listed. Individual cases may have options different than listed and the serial number for these cases is required when ordering parts.

## Warranty

KYSOR WARREN EPTA US CORPORATION EQUIPMENT LIMITED WARRANTY

[www.kysorwarren.com/warranty](http://www.kysorwarren.com/warranty)  
for complete details



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