

HUSSmann®



DOE 2017
Energy Efficiency
Compliant

NAV & NAVC Medium Temperature Service Deli Self Contained Merchandisers



Installation & Operation Manual

IMPORTANT
Keep in store
for future reference!

P/N 2400204_J
September 2017

MANUAL- IO NAV/NAVC SC

Spanish 0531301
French 0531302

ATTENTION

Merchandiser must operate for 24 hours
before loading product!

Regularly check merchandiser temperatures.

Do not break the cold chain. Keep products in
cooler before loading into merchandiser.



IMPORTANT
KEEP IN STORE FOR FUTURE REFERENCE
Quality that sets industry standards!

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WARRANTY

REVISION HISTORY

REVISION J — 1. Page 2-3 -Replaced SAFENETIII with new controller information

2. Page 2-4 to 2-7 -Remove all Safenet information

3. Page 2-8-Change YELLOW Defrost Sensor to ORANGE Defrost Sensor-Change BLACK Ambient Sensor to GREEN Ambient Sensor -Replace sensor connections picture

4. Page 3-1 replace with new controller info.

5. Page A-1-Remove Safenet components and add the new components

6. Page A-8- Replace diagram with the new revision attached 0521228 (D)

REVISION H — COVER - DOE 2017 COMPLIANT
A-2 - REMOVE 1700502 & 1804576 MOTORS, REPLACE WITH 0527610- CONDENSER FAN MOTOR (115V, 12W, SSC2B12CHSIBA1) ON THREE MODELS

A-6 - REFRIGERANT CHARGE: ADD FOR WHICH MODEL IS EACH CHARGE: NAV/C-4 14.5 OZ, NAV/C-6 20 OZ, NAV/C-8 23 OZ

A-7 - UPDATE ENERGY CONSUMPTION VALUES ON NAV/C-4 FROM 5.77 TO 5.33 AND NAV/C-8 FROM 8.90 TO 8.39

REVISION G — Changed ambient temp in box; 1-1 iii — changed to pre-chilled; Added Section 2 Safe-NET; 3-1 Controls and Adjustments Table; 5-1 LED lamps; A-5 Defrost Data; A-6 lamp data; Energy Consumption A-7; New Wiring Diagram and Parts List

REVISION F — Added Check Lists Page 1-7; Added Warning Page 1-3; Cleaning Coils 4-3; Maintaining Fluorescent Lights 4-4, Check Lists Page, 4-6

REVISION E — JANUARY 2011

1. Added Location Drawing, Page 1-2
2. Added Light Switch, Refrigeration Unit Access, Page 1-4
3. Added Appendix A, Technical Data

ANSI Z535.5 DEFINITIONS



• **DANGER** – Indicate[s] a hazardous situation which, if not avoided, will result in death or serious injury.



• **WARNING** – Indicate[s] a hazardous situation which, if not avoided, could result in death or serious injury.



• **CAUTION** – Indicate[s] a hazardous situation which, if not avoided, could result in minor or moderate injury.

• **NOTICE** – *Not related to personal injury* – Indicates[s] situations, which if not avoided, could result in damage to equipment.

INSTALLATION

UL LISTING

These merchandisers are manufactured to meet ANSI/ UL 471 standard requirements for safety. Proper installation is required to maintain the listing.

FEDERAL / STATE REGULATION

These merchandisers at the time they are manufactured, meet all federal and state/provincial regulations. Proper installation is required to ensure these standards are maintained. Near the serial plate, each merchandiser carries a label identifying the environment for which the merchandiser was designed for use. A Type II fan speed control kit is required for each merchandiser to operate at Type II conditions.

ANSI/NSF-7 Type I – Display Refrigerator / Freezer
Intended for 75°F (24°C) / 55%RH Ambient Application

ANSI/NSF-7 Type II – Display Refrigerator / Freezer
Intended for 80°F / 55%RH Ambient Application

ANSI/NSF-7 – Display Refrigerator
Intended for Bulk Produce

HUSSMANN PRODUCT CONTROL

The serial number and shipping date of all equipment is recorded in Hussmann's files for warranty and replacement part purposes. All correspondence pertaining to warranty or parts ordering must include the serial number of each piece of equipment involved. This is to ensure the customer is provided with the correct parts.

Recommended operating ambient temperature is between 65°F (18°C) and 75°F (23.9°C). Maximum relative humidity is 55%.

SHIPPING DAMAGE

All equipment should be thoroughly examined for shipping damage before and during unloading. This equipment has been carefully inspected at our factory. Any claim for loss or damage must be made to the carrier. The carrier will provide any necessary inspection reports and/or claim forms.

Apparent Loss or Damage

If there is an obvious loss or damage, it must be noted on the freight bill or express receipt and signed by the carrier's agent; otherwise, carrier may refuse claim.

Concealed Loss or Damage

When loss or damage is not apparent until after equipment is uncrated, retain all packing materials and submit a written response to the carrier for inspection within 15 days.

LOCATION

These merchandisers are designed for displaying products in air conditioned stores where temperature is maintained at or below the ANSI / NSF-7 specified level and relative humidity is maintained at or below 55%. Placing refrigerated merchandisers in direct sunlight, near hot tables or near other heat sources could impair their efficiency. Like other merchandisers, these merchandisers are sensitive to air disturbances. Air currents passing around merchandisers will seriously impair their operation. Do NOT allow air conditioning, electric fans, open doors or windows, etc. to create air currents around the merchandiser.

For California Businesses:

WARNING

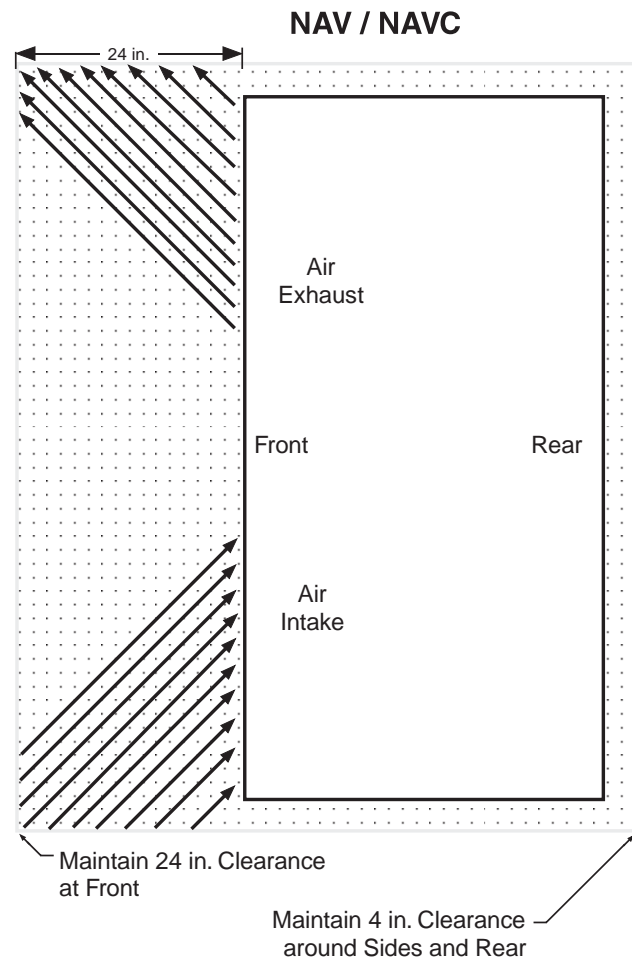
This product may contain chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

This warning is the result of the California State law known as the California Safe Drinking Water and Toxic Enforcement Act of 1986, which is commonly referred to as “Proposition 65.”

This warning does not mean that Hussmann products will cause cancer or reproductive harm, or is in violation of any product-safety standards or requirements. As clarified by the California State government, Proposition 65 can be considered more of a ‘right to know’ law than a pure product safety law. When used as designed, Hussmann believes that our products are not harmful. We provide the Proposition 65 warning to stay in compliance with California State law. It is your responsibility to provide accurate Proposition 65 warning labels to your customers when necessary. For more information on Proposition 65, please visit the California State government website.

SELF CONTAINED (LOCATION)

NAV and NAVC merchandiser models have front-facing condenser air intake and air discharge. Maintain a minimum clearance distance of 2 feet in front of the merchandiser and 4 inches on each side, so that air discharge and air intake are not obstructed.



MODEL DESCRIPTION

NAV/C service deli merchandisers offer versatility in the display of medium temperature (32° F to 41° F) products such as dairy products, prepared salads, pizza and fresh dinners that are pre-chilled in a cooler. Carefully read and follow the instructions before operating the merchandiser.

UNLOADING

Unloading from Trailer:

Lever Bar (also known as a Mule, Johnson Bar, J-bar, Lever Dolly, or Pry Lever)

Move the merchandiser as close as possible to its permanent location and remove all packaging. Check for damage before discarding packaging. Remove all separately packed accessories such as kits and shelves. Improper handling may cause damage to the merchandiser when unloading. To avoid damage:

1. Do not drag the merchandiser out of the trailer. Use a Johnson Bar, J-bar, Lever Dolly, or Pry Lever.
2. Use a forklift or dolly to remove the merchandiser from the trailer.



WARNING

Do NOT stand or walk on top of merchandiser. Do not store items or flammable materials atop the unit.

EXTERIOR LOADING

Do NOT walk on top of merchandisers or damage to the merchandisers and serious personal injury could occur.

MERCHANDISERS ARE NOT STRUCTURALLY DESIGNED TO SUPPORT EXTERNAL LOADING such as the weight of a person. Do not place heavy objects on the merchandiser.

SHIPPING SKID

Each merchandiser is shipped on a skid to protect the merchandiser's base, and to make positioning the case easier.

Do not remove the shipping skid until the merchandiser is near its final location.

The skid provides protection for both the merchandiser and the floor.

Remove the skid by raising one end of the merchandiser approximately 6 inches. Block the merchandiser securely, and remove the two skid bolts from the raised end. Replace the bolts with (provided) leg levelers. Repeat this procedure at opposing end. Once the leg levelers are secured in place, the merchandiser may be slid off the skid and placed in its final location.

DO NOT TILT MERCHANDISER ON ITS SIDE OR END WHEN REMOVING SKID.

Once the skid is removed, the merchandiser must be lifted —NOT PUSHED— to reposition.

Check floor where merchandisers are to be set to see if it is a level area. Determine the highest part of the floor.



WARNING

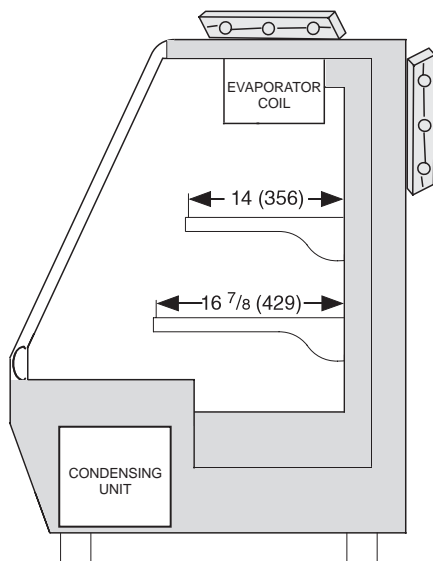
Do NOT remove shipping crate until the merchandiser is positioned for installation.

MERCHANDISER LEVELING

BE SURE TO POSITION MERCHANDISERS PROPERLY. Level the merchandiser by all four corners. Merchandiser(s) must be installed level to ensure proper operation of the refrigeration system, and to ensure proper drainage of defrost water.

OPTIONAL LEGS

NSF® approved legs replace the leg levelers if required by local health codes. The legs raise the case 6 inches for cleaning purposes. An optional skirt kit can be provided to snap on the legs.



SERIAL PLATE LOCATION

The serial plate is located in the top interior at the left side of the merchandiser. It contains all pertinent information such as model, serial number, amperage rating, refrigerant type and charge. This information will be needed to maintain, service or order parts for the merchandiser.



LIGHT SWITCH

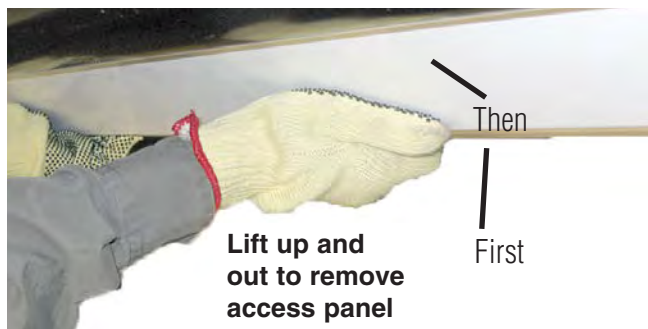
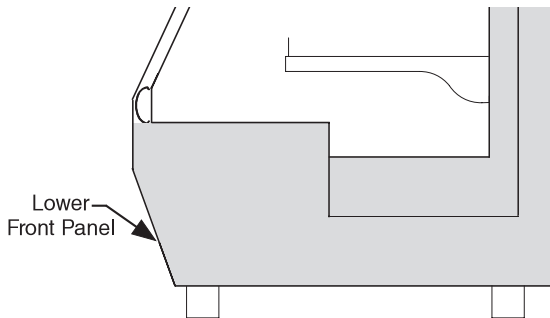
The light switch is located at the rear of the merchandiser. Ensure it is switched ON to turn on the display lights.



Light Switch

REFRIGERATION UNIT ACCESS

The lower front panel may be removed by lifting the panel upward and over the tabs on which it is hanging. The panel is replaced by reversing the above procedure.



SEALING MERCHANDISER TO FLOOR

If required by local sanitary codes, or if the customer desires, merchandisers may be sealed to the floor using a vinyl cove base trim. The size needed will depend on how much variation there is in the floor, from one end of the merchandiser to the other. Sealing of the lower front and rear panels on self contained models may hamper their removal for servicing or maintenance of the condensing unit.

NOTE: Do not allow trim to cover any intake or discharge grilles located in the lower front panel.

Hussmann Self-Contained Refrigeration Equipment Start Up Check List

Please note that failure to follow this start up document may void your factory warranty

Step	Startup Activity	Check
1	Locate, read and maintain install/operation manual in a safe place for future reference.	<input type="checkbox"/>
2	Examine unit. Confirm there is NO damage or concealed damage.	<input type="checkbox"/>
3	Level the unit, side to side and front to rear.	<input type="checkbox"/>
4	Remove all shipping brackets/compressor straps/bolts etc.	<input type="checkbox"/>
5	Unit must be run on a dedicated electrical circuit without the use of an extension cord.	<input type="checkbox"/>
6	Ensure that the proper electrical requirements for the equipment are supplied.	<input type="checkbox"/>
7	Verify field electrical connections are tight.	<input type="checkbox"/>
8	Verify all electrical wiring is secured and clear of any sharp edges or hot lines.	<input type="checkbox"/>
9	Verify the condensate drain line is properly trapped and pitched.	<input type="checkbox"/>
10	Verify all required clearances on the sides and back of unit.	<input type="checkbox"/>
11	Verify there are no air disturbances external to the unit. Heat and air registers, fans, and doors, etc.	<input type="checkbox"/>
Advise owner/operator that merchandiser must operate at temperature for 24 hrs prior to loading with product.		

Form HSCW01 Rev. 30MAY12 P/N 0525209_B

LEGAL DISCLAIMER:

Hussmann shall not be liable for any repair or replacements made without the written consent of Hussmann, or when the product is installed or operated in a manner contrary to the printed instructions covering installation and service which accompanied such product.

ELECTRICAL / REFRIGERATION

MERCHANDISER ELECTRICAL DATA

Refer to Appendix A of this manual or the merchandiser's serial plate for electrical information.

FIELD WIRING

Field wiring must be sized for component amperes stamped on the serial plate. Actual ampere draw may be less than specified.

**ALWAYS CHECK THE SERIAL PLATE
FOR COMPONENT AMPERES**

ELECTRICAL CONNECTIONS

All wiring must be in compliance with NEC and local codes.

POWER INPUT

NAV / NAVC merchandisers are provided with 3-Amp power receptacles. ELECTRICAL EQUIPMENT CONNECTED TO THE RECEPTACLE MUST NOT EXCEED 3 AMPS. The receptacle is in series with a GFCI safety device.

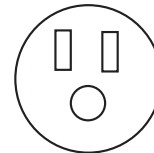
NAV / NAVC merchandisers do not have a power switch. Once power cord is connected to power, the merchandiser is energized.

The refrigeration thermostat has an OFF position that disconnects power to the CONDENSING UNIT ONLY.

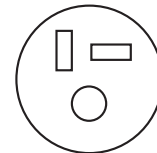
ELECTRICAL OUTLET

Before the merchandiser is connected to any wall circuit, use a voltmeter to check that the outlet is at 100% of the rated voltage. The wall circuit must be dedicated for the merchandiser. Failure to do so voids the warranty. Do not use an extension cord. Never plug in more than one merchandiser per electrical circuit.

- Always use a dedicated circuit with the amperage stated on the unit.
- Plug into an outlet designed for the plug.
- Do not overload the circuit.
- Do not use long or thin extension cords. Never use adapters.
- If in doubt, call an electrician.



NEMA 5-15R
Receptacle
NAV / C
4



NEMA 5-20R
Receptacle
NAV / C
6 & 8

WARNING

— LOCK OUT / TAG OUT —

To avoid serious injury or death from electrical shock, 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 doors, lights, fans, heaters, and thermostats.

CAUTION

Risk of Electric Shock. If cord or plug becomes damaged, replace only with a cord and plug of the same type.

WARNING

**Merchandiser must be grounded.
Do not remove the power supply cord ground.**

REFRIGERATION**(Self Contained Models)**

Each self contained model is equipped with its own condensing unit and control panel located beneath the display area. The correct type of refrigerant will be stamped on each merchandiser's serial plate. The merchandiser refrigeration piping is leak tested. The unit is charged with refrigerant, and shipped from the factory with all service valves open.

NAV/C models have a refrigeration system that uses a hermetic compressor and a capillary tube for refrigerant control. The capillary tube is soldered to the suction line pull-out coil for proper heat exchange. **If the capillary should become plugged or damaged, it is best to replace the heat exchanger.**

**WARNING**

Refrigeration lines are under pressure. Refrigerant must be recovered before attempting any connection or repair.

**CAUTION**

When brazing pipes, be sure to use the insulation blanket shipped with the merchandiser to prevent damage to the metal merchandiser bottom.

**WARNING**

Product will be degraded and may spoil if allowed to sit in a non-refrigerated area.

WASTE OUTLET

For self contained models like NAV / NAVC, condensate waste from defrost, drains into a condensate pan located beneath the merchandiser. The condensate pan has a hot gas loop that evaporates waste. **Ensure the drain hose is properly trapped, and the drain area is not clogged. Ensure waste outlet cap is fitted securely in place.**



Waste Outlet

NOTE: All lower base panels must be in place when the merchandiser is operating. If not, air-flow from the condenser will be directed over the evaporator pan and defrost waste in the pan may overflow.

CONTROLLER OPERATION

The electronic controller is located in the cassette compartment. The controller comes factory set, and is ready for use. The front grille must be removed in order to access this control.

When removing the grille for this operation or for condenser cleaning, care must be taken not to damage the display interface cable. It may be unplugged during this task.

1. Plug the merchandiser plug into its receptacle.
 - a. The controller display will illuminate.
 - b. The interior light will illuminate.
2. After the control preprogrammed time delay of up to 6 minutes, the compressor and evaporator fan(s) will start if the control is calling for cooling.
3. The control will cycle the compressor but may also cycle evaporator fan(s) on and off determined by the Set-Point and Differential temperatures.
 - a. The Set-Point is the adjustable preprogrammed temperature.
 - b. The Differential is the non-adjustable preprogrammed temperature.
 - c. The Control is designed to read and display a cabinet temperature not a product temperature.

This cabinet temperature may reflect the refrigeration cycle of the Set-Point and it's Differential. The most accurate temperature on a cabinets operation is to verify the product temperature.

Taking as an example a VRL case, freezer, If the Set-Point is -12°F and the Differential is 9°F. (Set-Point) -12°F + 9 (Differential) = -3°F. The compressor and evaporator fan(s) will cycle off -12°F and back on at -3°F.

Main Features:

- Panel-mounted
- Energy saving algorithms and optimised defrost control
- 8 preloaded applications
- Defrost at single / double evaporator
- Frame Heater
- Local network auto-configuration
- Direct load connection (up to 2 HP)
- Supply voltage control LVD
- Presence of an open collector output



KDEPLUS BUTTONS

The KDEplus keyboard has 4 keys, as shown in the illustration:



Information reprinted with permission from the controller manufacturer.

Key Functions:

- 2 ON/OFF regulators for HOT/COLD
 - Single defrost and double evaporator
(heatings, modulated heaters, reverse cycle, hot gas)
 - Evaporator fans and condenser fans
 - Frame Heater
 - AUX
 - Light
 - Door switch
 - ON /OFF
 - Deep cooling cycle
 - Day / Night
 - Diagnostics
 - “Easy Map” programming
 - Programmable inputs/outputs
 - LINK2 local area network
 - RS485 communication protocol: Modbus
 - Compatible with Device Manager (DM)
 - Compatible with Unicard and Multi-function key
-

TECHNICAL DATA

Classification:	electronic automatic control (not safety) device for incorporation
Mounting:	panel mounting
Type of action:	1.B
Pollution class:	2
Material class:	IIIa
Overvoltage category:	II
Nominal pulse voltage:	2500V
Temperature:	Use: -5 ... +55°C - Storage: -30 ... +85°C
Power supply:	SMPS 100-240Va ±10% 50/60 Hz
Power consumption:	5.5W max
Fire resistance category:	D
Software class:	A
RTC battery life:	In absence of external power, the clock battery will last 3 years.

FURTHER INFORMATION

INPUT CHARACTERISTICS

Measurement range:	NTC: -50.0°C ... +110°C; PTC: -55.0°C ... +150°C; PT1000: -60.0°C ... +150°C (on 3-digit display with +/- sign)
Accuracy:	±1.0° for temperatures below -30°C ±0.5° for temperatures between -30°C and +25°C ±1.0° for temperatures above +25°C
Resolution:	1 or 0.1°C
Buzzer:	NO
Analogue/Digital Inputs:	5 configurable NTC/PTC/PT1000/DI inputs 1 multi-function, voltage-free digital input (D.I.)

OUTPUT CHARACTERISTICS

Digital Outputs:	OUT1:	1 SPST relay:	2HP	max 240V~
	OUT2:	1 SPDT relay:	1HP	max 250V~
	OUT3:	1 SPDT relay:	8(4)A	max 250V~
	OUT4:	1 SPST relay:	8(4)A	max 250V~
OC (Open Collector) Output:	OC:	1 multifunctional output: 12V~ 20mA		

MECHANICAL CHARACTERISTICS

Dimensions:	121x92 mm
Terminals:	faston and screw for wires with cross-section of 2.5mm ²
Connectors:	TTL for Unicard / Device Manager connection (via DMI)
Humidity:	Usage / Storage: 10...90% RH (non-condensing)

REGULATIONS

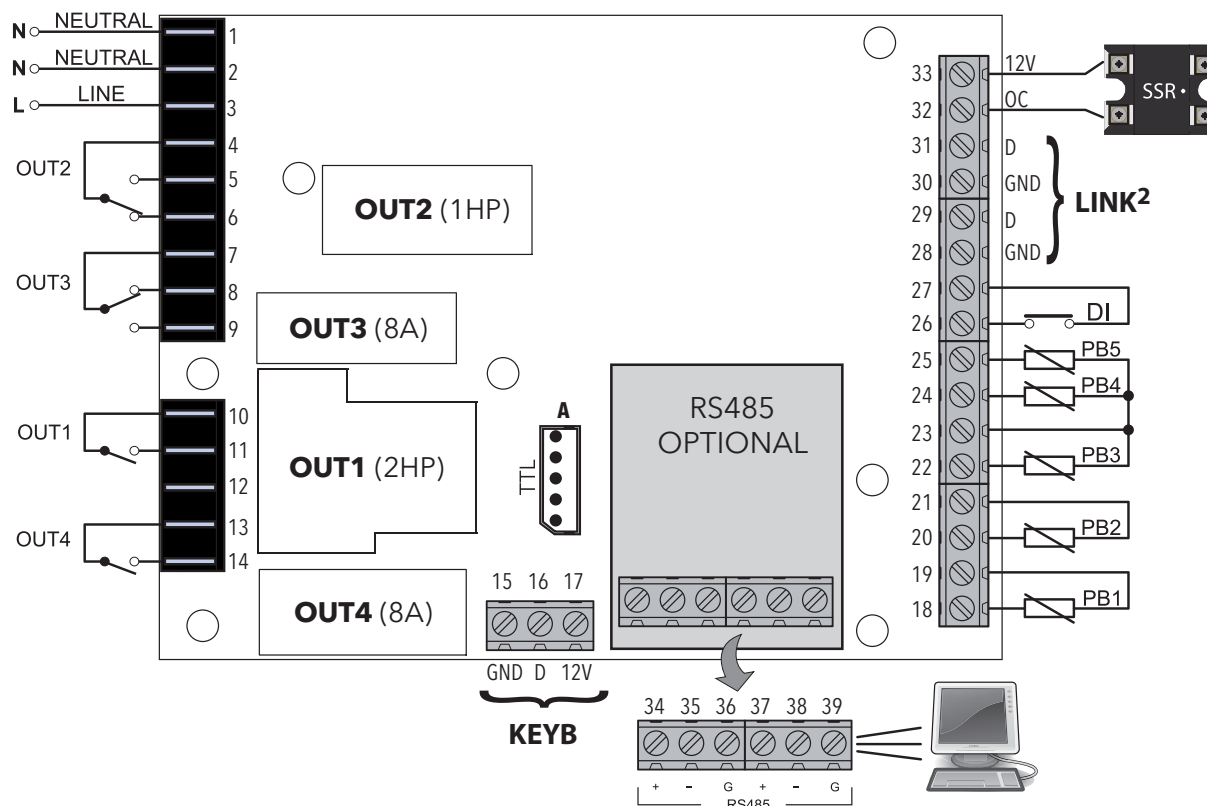
Electromagnetic compatibility:	The device complies with Directive 2004/108/EC
Safety:	The device complies with Directive 2006/95/EC
Food Safety:	The device complies with standard EN13485 as follows: <ul style="list-style-type: none"> • Suitable for storage. • Application: air. • Climate range A • measurement class 1 in the range from -25°C to 15°C (*)

(* **with Eliwell probes only**)

NOTE: The technical specifications stated in this document regarding measurement (range, accuracy, resolution, etc.) r the instrument alone and not to any accessories provided, such as the probes.
This means, for example, that the error introduced by the probe must be added to the error of the instrument.

CONNECTIONS

TERMINALS



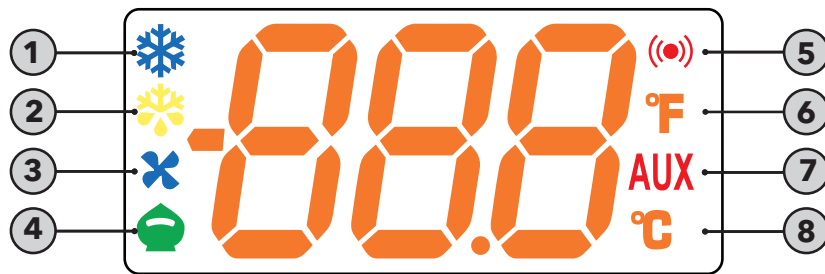
* **N.B.:** analogue inputs PB1...PB5 can also be configured as Digital Inputs DI.

TERMINALS			
1-2	NEUTRAL. These are power supply terminals.	15-16-17	Connection to KDEPlus or KDWPlus external keyboard or ECPlus echo module.
3	LINE. These are power supply terminals.	19-18	PB1 probe connection.
4	OUT2 Shared Terminal	21-20	PB2 probe connection.
5	N.O. OUT2	23-22	PB3 probe connection.
6	N.C. OUT2	23-24	PB4 probe connection.
7	OUT3 Shared Terminal	23-25	PB5 probe connection.
8	N.C. OUT3	27-26	Digital input (DI).
9	N.O. OUT3	28-29	LINK². Connection 1 - local area network.
10	OUT1 Shared Terminal	30-31	LINK². Connection 2 - local area network.
11	N.O. OUT1	32-33	Open Collector Output (OC).
12	Not Used	A	TTL Unicard/DMI/Multi Function Key connection
13	OUT4 Shared Terminal	34-35-36	RS485. Connection 1 - Supervision Gateway.
14	N.O. OUT4	37-38-39	RS485. Connection 2 - Supervision Gateway.









LED

RTN400 family controllers will also function even if a keyboard has not been connected.

With **KDEPlus** or **KDWPlus** keyboards (which are the same and guarantee the same functions), the display will be as follows:



Meaning of LEDs:

No	Icon	LED	Operation	Meaning
1		Compressor	Permanently on	compressor on
			Blinking	Delay, protection or start-up blocked
			OFF	otherwise
2		Defrost	Permanently on	Defrost active
			Blinking	Activated manually or from Digital Input
			OFF	otherwise
3		Fans	Permanently on	Fans active
			OFF	otherwise
4		Reduced SET / Economy	Permanently on	Energy Saving active
			Blinking	Reduced setpoint active
			OFF	otherwise
5		Alarm	Permanently on	alarm active
			Blinking	Alarm acknowledged
			OFF	otherwise
6		°F readout	Permanently on	°F setting (dro = 1)
			OFF	otherwise
7		AUX	Permanently on	Aux output active and/or light on
			Blinking	Deep cooling on
			OFF	otherwise
8		°C readout	Permanently on	°C setting (dro = 0)
			OFF	otherwise

N.B.: When the instrument is powered on it performs a lamp test, during which time the display and LEDs will flash for several seconds to check that they all function correctly.

KDEPLUS BUTTONS

The **KDEPlus** keyboard has 4 keys, as shown in the illustration:







Each key has a different function depending on whether it is:

- Pressed and released
- Pressed for at least 5 seconds
- Pressed and held at start-up
- Pressed in combination with another key.

KEYS

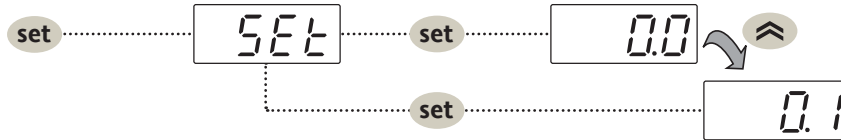
The following table summarizes the function of each key:

No	Key	Action		
		Pressed and released	Press for at least 5 secs	Start-up
1		<ul style="list-style-type: none"> • Scrolls through menu items • Decreases values 	Activates the Manual Defrost function (from outside menus).	---
2		<ul style="list-style-type: none"> • Scrolls through menu items • Decreases values 	Function can be configured by the user (from outside menus). (see parameter H32)	---
3		<ul style="list-style-type: none"> • Returns to the previous menu level • Confirms parameter value 	Activates the Stand-by function (from outside menus).	---
4		<ul style="list-style-type: none"> • Displays any alarms (if active) • Opens Machine Status menu • Confirms commands 	Opens the Programming Menu (User and Installer parameters)	When pressed during start-up it enables the user to select the application to be loaded.

SETPOINT: SETTING AND EDIT LOCK

To display the Setpoint value, press the **set** key to enter the "Machine Status" menu, then press the **set** key again when the "SEt" label is displayed.

The Setpoint value appears on the display. To change the Setpoint value, press the **⏮** and **⏭** keys within 15 seconds. Press **set** to confirm the modification.



It is possible to disable the keypad on this device.

The keypad can be locked by programming the "LOC" parameter appropriately.

With the keypad locked, you can still access the "Machine Status" menu by pressing **set** to display the Setpoint, but you cannot edit it. To disable the keypad lock, repeat the locking procedure.

DISPLAY PROBES VALUE

To display the value read by probes connected to the device, press the **set** key and enter the "Machine Status" menu, then press the key again when one of the probe-related labels "Pb1...Pb5" press the **set** key again. The value measured by the associated probe will appear on the display.

NOTE: The displayed value is read-only and cannot be modified.

KDEPLUS BUTTONS

The **KDEPlus** keyboard has 4 keys, as shown in the illustration:



KEY-ACTIVATED FUNCTIONS

All models have the **UP** key set to enable the "Manual Defrost" function.

The DOWN and ESC keys can also be set to activate any other function required by the user.

The parameters for configuring the two keys are:

- **H11** = DOWN key configuration
- **H33** = ESC key configuration

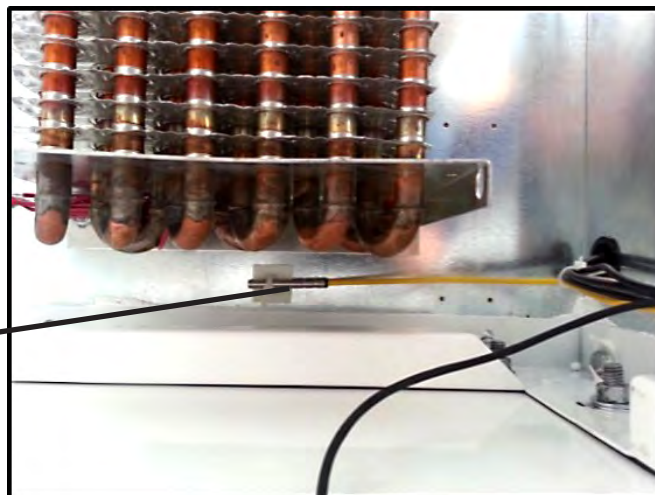
The values that can be set apply to both keys and the functions that can be activated are:

H32/H33 value	Function to enable
0	disabled
1	defrost
2	reduced set
3	Light
4	Energy saving
5	AUX
6	Stand-by
7	Deep cooling cycle
8	Start/end defrost

SENSOR LOCATION

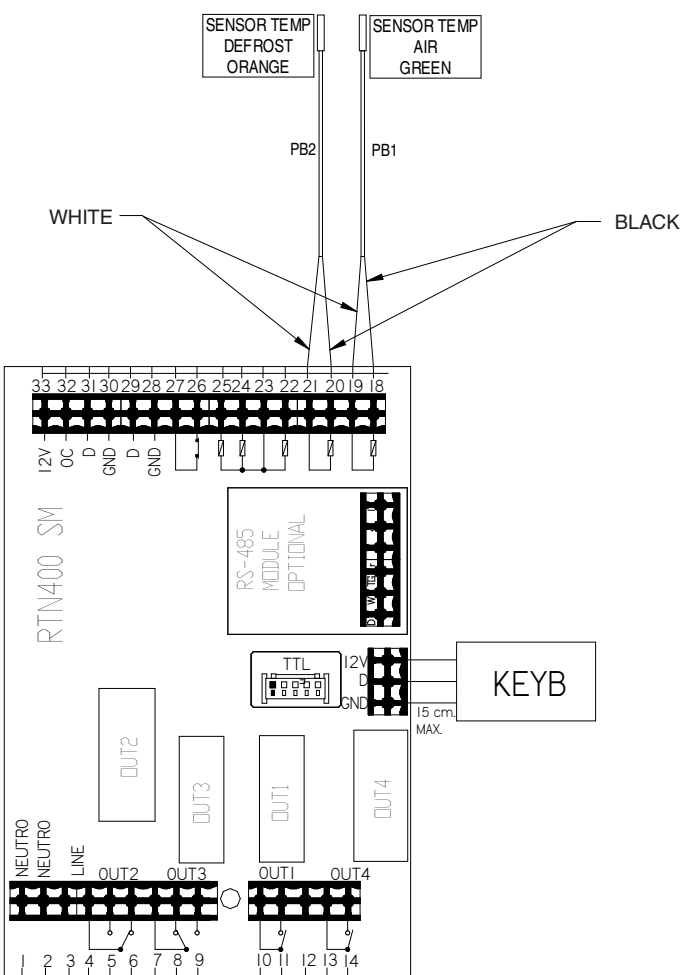
Orange Defrost Sensor is centered between the wall and evaporator with adhesive patch and plastic belt.

Orange Defrost Sensor



The Green Ambient Sensor is inside the PVC tube between the evaporator and the roof drain assembly.

Green Ambient Sensor



START UP / OPERATION

START UP

Follow the start up procedures as detailed in Section 2 of this manual.

Each self contained merchandiser has its own evaporator coil. NAV/C models have capillary tubes as expansion devices.

- Check the interior cabinet thoroughly for loose nuts, bolts and electrical connections.
- Inspect the refrigeration lines for visible damage or chafing.
- Replace electrical box cover and access panel if previously removed.
- Turn on the electrical power, power switch and start the merchandiser. The merchandiser must pull down in temperature.

Allow merchandiser 24 hours to operate before loading product.

1. The Controller controls refrigeration temperature. This is factory installed in the control panel. Adjust this control to maintain the discharge air temperature shown. Measure discharge air temperatures at the center of the discharge air opening.

Defrosts are time initiated and temperature terminated for self contained. The defrost setting is factory set as shown above.

To ensure a thorough defrost, defrost must be terminated by the temperature termination setting — not by time.

CONTROLS and ADJUSTMENTS

Refrigeration Controls			Defrost Controls			
Model	Product Application	Interior Air Temperature	Defrost Frequency (per day)	Type of Defrost	Temp. Termination	Failsafe Time (Minutes)
NAV/C-4 (Self Contained)	Medium Temp. (Dairy, Deli)	28° - 35° F	1	Off Time	Time	60
NAV/C-6 (Self Contained)	Medium Temp. (Dairy, Deli)	28° - 35° F	1	Off Time	Time	60
NAV/C-8 (Self Contained)	Medium Temp. (Dairy, Deli)	28° - 35° F	1	Off Time	Time	60

Each merchandiser has a load limit decal. Shelf life of perishables will be short if load limit is violated.

Do not load product past loadline decals

	kg	R-151B
FOAM CHARGE	21.41	lb R-141B
REFRIGERATOR (REFRIGERATOR)		12.3 A
CONTACTO (ACCEPTABLE)		3.0 A
TOTAL		15.3 A

Display Refrigerator
/ 55 % RH Ambient
SAMSUNG
SERIE: CARGA ALTA
#118D029516

DO NOT BLOCK AIR LOUVERS.

Product should NOT be placed inside the merchandisers until merchandisers are at proper operating temperature.

Allow merchandiser 24 hours to operate before loading product.

Proper rotation of product during stocking is necessary to prevent product loss. Always bring the oldest product to the front and set the newest to the back.

AIR OPENINGS MUST REMAIN OPEN AND FREE OF OBSTRUCTION AT ALL TIMES to provide proper refrigeration and air curtain performance.

Do not allow product, packages, signs, etc. to block these grilles.

Do not use non-approved shelving, baskets, display racks, or any accessory that could hamper air curtain performance.

Do not allow product to be placed outside of the designated loadline in the illustration at left. Air flows through the back wall, over the product on the shelves, across the face of the product (air curtain), and into the return air grille.

Your Case Configuration

Factory Setting	Average product temperature Knob position #5 -10°F
Adjustment knob has OFF position	Yes
Delay before compressor runs after startup	Delay Time 10 sec.
Compressor operation if case sensor fails	Compressor On
What the display shows during defrost?	dF
The case defrosts when the power is turned on	Yes
The method used to end defrost	Evaporator Sensor Temperature
Defrost terminated by termination switch	No

SHELF MAXIMUM WEIGHT LIMITS

Hussmann merchandiser shelves are designed to support the maximum weight load limits as indicated in the table below.

Exceeding these maximum weight load limits may cause damage to the shelf or shelves, damage to the merchandiser, damage to store products, and potentially create a hazardous condition for customers and staff. Exceeding the indicated maximum weight load limits constitutes misuse as described in the Hussmann Limited Warranty.

NAV/C models have two standard shelves. The top shelves are 13 inches wide and the bottom shelves are 16 inches wide.

Maximum Shelf Weight Limits

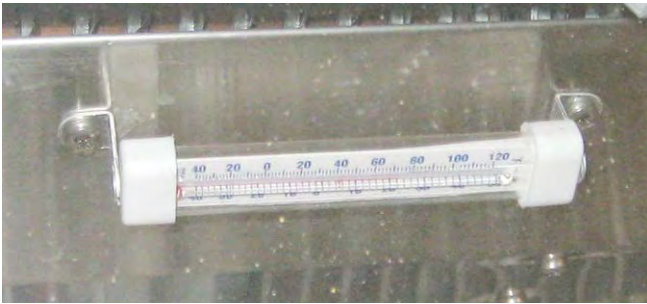
	¹ Flat	17° Tilt
Bottom Wire Racks	250 lb (113.4 kg)	N/A
Standard 16 in. (406 mm) Shelf	250 lb (113.4 kg)	250 lb (113.4 kg)
Standard 13 in. Shelf (330 mm)	125 lb (56.7 kg)	N/A

¹ Shelf load limits at 0° tilt

PENCIL THERMOMETER

NAV/C models have pencil thermometers. The thermometer is located at the top, front center of the merchandiser's cabinet interior (seen through front glass).

Temperature is displayed in Fahrenheit and Celsius degrees as a standard option. The thermometer may be replaced if it becomes damaged.



Pencil Thermometer

MAINTENANCE

CARE AND CLEANING

Long life and satisfactory performance of any equipment is dependent upon the care it receives. To ensure long life, proper sanitation and minimum maintenance costs, these merchandisers should be thoroughly cleaned, all debris removed and the interiors washed down, weekly.

Exterior Surfaces

The exterior surfaces must be cleaned with a mild detergent and warm water to protect and maintain their attractive finish. **NEVER USE ABRASIVE CLEANSERS OR SCOURING PADS.**

Interior Surfaces

The interior surfaces may be cleaned with most domestic detergents, ammonia based cleaners and sanitizing solutions with no harm to the surface. Self contained models empty into a limited capacity evaporation pan, which will overflow if excess water is used in cleaning.

Do NOT Use:

- Abrasive cleansers and scouring pads, as these will mar the finish.
- Coarse paper towels on coated glass.
- Ammonia-based cleaners on acrylic parts.
- Solvent, oil or acidic based cleaners on any interior surfaces.
- Do not use high pressure water hoses.

WARNING

Product will be degraded and may spoil if allowed to sit in a non-refrigerated area.

Do:

- Disconnect electrical power before cleaning.**
- Remove the product and all loose debris to avoid clogging the waste outlet.
- Store product in a refrigerated area such as a cooler. Remove only as much product as can be taken to the cooler in a timely manner.
- Thoroughly clean all surfaces with soap and hot water. **DO NOT USE STEAM OR HIGH WATER PRESSURE HOSES TO WASH THE INTERIOR.** THESE WILL DESTROY THE MERCHANDISERS' SEALING CAUSING LEAKS AND POOR PERFORMANCE.

WARNING

Do NOT allow cleaning agent or cloth to contact food product.

- Do NOT flood merchandiser with water. **NEVER INTRODUCE WATER FASTER THAN THE WASTE OUTLET CAN REMOVE IT.**

NAV/C merchandisers have a bottom drain. The bottom drain is accessible from the rear of the merchandiser. Connect the drain to a waste line or drain the water in a bucket during cleaning.

- Allow merchandisers to dry before resuming operation.
- After cleaning is completed, turn on power to the merchandiser.

4-2 MAINTENANCE

CLEANING STAINLESS STEEL SURFACES

Use non-abrasive cleaning materials, and always polish with grain of the steel. Use warm water or add a mild detergent to the water and apply with a cloth. Always wipe rails dry after wetting.

Use alkaline chlorinated or non-chlorine containing cleaners such as window cleaners and mild detergents. Do not use cleaners containing salts as this may cause pitting and rusting of the stainless steel finish. Do not use bleach.



CAUTION

DO NOT FLOOD!

Use only enough water necessary to clean surface. Water must not drip down the case!

Never use ammonia based cleansers, abrasive cleansers, or scouring pads.



WARNING

Do NOT use HOT water on Cold glass Surfaces. This can cause the glass to shatter and could result in personal injury. Allow glass fronts, to warm before applying hot water.

CLEANING PENCIL THERMOMETER

NAV/C models have pencil thermometers. The thermometer is located at the top, front center of the merchandiser's cabinet interior.

To clean the thermometer:

1. Remove the two screws securing the thermometer to its mounting bracket.
2. Remove the plastic ends from the thermometer. Then, slide out the glass tube.
3. Use non-abrasive cleaning materials and a mild detergent to clean glass tube and thermometer cover.
4. Replace thermometer.



Pencil Thermometer



WARNING

— LOCK OUT / TAG OUT —

To avoid serious injury or death from electrical shock, 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 doors, lights, fans, heaters, and thermostats.

CLEANING THE BOTTOM DECK

Remove the bottom wire racks and painted metal bottom racks. Clean the interior surfaces as described on Page 4-1. The merchandiser has a 1-inch floor drain that directs the water outside of the merchandiser.

Use a bucket or connect the drain to a hose to remove excess water. After cleaning the inside of the merchandiser, replace the drain caps in order to avoid air leaks and water dripping on the floor.



Drain Cap

! WARNING

**SHUT FANS OFF DURING
CLEANING PROCESS.**

CLEANING COILS

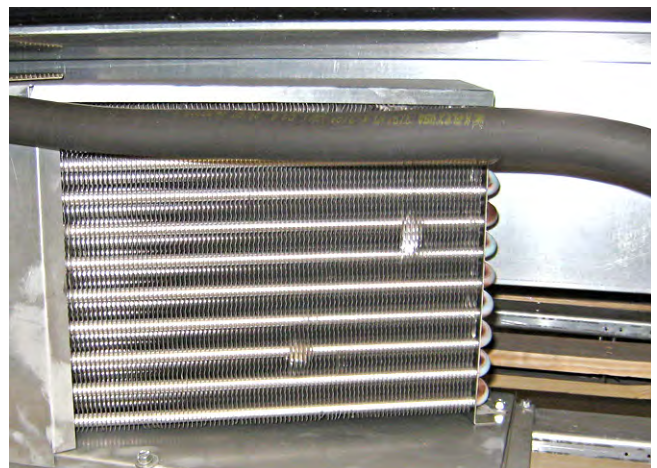
Condenser coils should be cleaned at least once per month. Additional cleaning may be needed depending on the operational environment. A dirty condenser blocks normal airflow through the coils.

Airflow blockage increases energy consumption and reduces the merchandiser's ability to maintain operating temperature.

Unplug merchandiser before servicing. Always wear gloves and protective eye wear when cleaning evaporation pan.



To clean the coils, use a vacuum cleaner with a wand attachment and a soft (non-metallic) brush to remove dirt and debris. Do not bend coil fins. Always wear gloves and protective eye wear when cleaning near sharp coil fins and dust particles.



Condenser Coils

NEVER USE SHARP OBJECTS AROUND COILS. Use a soft brush or vacuum brush to clean debris from coils. *Do not puncture coils!*

Do not bend fins. Contact an authorized service technician if a coil is punctured, cracked, or otherwise damaged.

ICE in or on the coil indicates the refrigeration and defrost cycle is not operating properly. Contact an authorized service technician to determine the cause of icing, and to make adjustments as necessary. To maintain product integrity, move all product to a cooler until the unit has returned to normal operating temperatures.

CLEANING EVAPORATION PAN

The condensate water outlet for self contained models empties into a limited capacity evaporation pan.

Debris or dirt accumulation inside the condensate evaporation pan will reduce the pan's evaporation capacity. The evaporation pan waste water will overflow and spill onto the floor if the pan capacity is reduced.

Unplug merchandiser before servicing. Always wear gloves and protective eye wear when cleaning evaporation pan. Remove accumulated debris from the evaporation pan. Be sure to remove any dirt, debris or liquids from the pan.



CAUTION

Evaporation Pan is Hot!

and poses risk of bodily injury – Always wear gloves and protective eye wear when servicing. Turn off evaporation pan heater, and allow pan to cool.



REMOVING SCRATCHES FROM BUMPER

Most scratches and dings can be removed using the following procedure.

1. Use steel wool to smooth out the surface area of the bumper.
2. Clean area.
3. Apply vinyl or car wax and polish surface for a smooth glossy finish.
4. Make sure proper cleaning procedures are followed. Lights and fans **MUST** be turned off when a case is cleaned and **MUST** be allowed to dry before turning power back on.
5. Do not use a pressure nozzle to clean inside of case.



PRECAUTION CLEANING PRECAUTIONS

When Cleaning:

- Do not use high pressure water hoses
- Do not introduce water faster than waste outlet can drain
- NEVER INTRODUCE WATER ON SELF CONTAINED UNIT WITH AN EVAPORATION PAN
- NEVER USE A CLEANING OR SANITIZING SOLUTION THAT HAS OIL BASE (these will dissolve the butyl sealants) or and AMMONIA BASE (this will corrode the copper components of the merchandiser)
- TO PRESERVE THE ATTRACTIVE FINISH:
- Use a water and a mild detergent for the exterior only
- Do NOT use a chlorinated cleaner on any surface
- Do NOT use abrasives or steel wool scouring pads (these will mar the finish)

Self-Contained Refrigeration Equipment Maintenance Check List

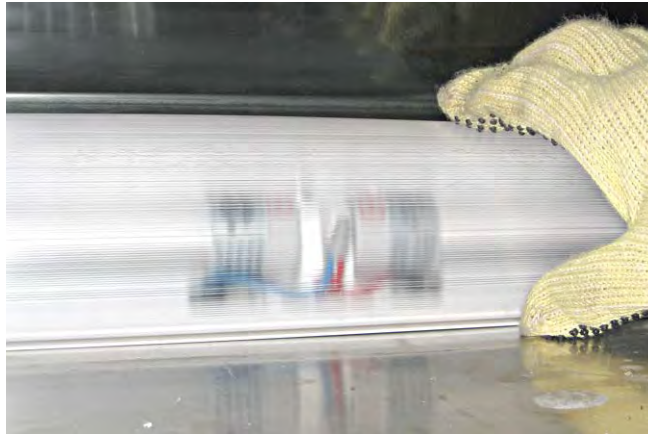
***** Warranty does not cover issues caused by improper installation or lack of basic preventative maintenance. *****											
Record starting date											
Store Name and Number											
Store Address											
Unit Model Number											
Unit Serial Number											
Contractor/Technician											
	Technician										
	PM date										
PM activity-For visual inspection items, denote "ok or complete" in the column to the right when PM has been performed. For measured data requested, record data requested in the appropriate column to the right	Quarterly	Semi-Annually	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Check in with store manager, record any complaints or issues they have with unit.	X										
Look unit over for any damage, vibrations or abnormal noise.	X										
Verify unit is level side to side and front to rear.	X										
Confirm refrigerant lines properly are secured and not touching or rubbing other lines, wires or frame work.	X										
Verify fan motors and motor mounts are tight.	X										
Confirm fan blade/s are tight and not rubbing or hitting.	X										
Make sure all electrical connections, factory and field, are tight.	X										
Verify electrical connections at lamps are they secure and dry.	X										
Check for and replace any frayed or chaffed wiring.	X										
Check all electrical wiring make sure it is secured and not on any sharp edges or hot lines.	X										
Check for air disturbances external to the unit. Heat and air registers, fans, and doors etc.	X										
Check for water leaks.	X										
Clean evaporator coil/s and fan blade/s. Do not use an acid base cleaner. Rinse off any cleaner residue.		X									
Clean discharge air honeycombs or grilles. Do not use an acid base cleaner. Rinse off any cleaner residue.		X									
Clean condenser coil/s and fan blade/s. Do not use an acid base Cleaner. Rinse off any cleaner residue.		X									
Clean condensate drain pan and drain line.		X									
Verify condensate drain lines are clear and functioning.		X									
Record voltage reading at unit with unit off?		X									
Verify condenser and evaporator fans are working.	X										
Record condenser air inlet temperature	X										
Record condenser air outlet temperature	X										
Is condenser air inlet or air exhaust restricted or recirculating?	X										
Verify there are no visual oil or refrigerant leaks.	X										
Record voltage reading with unit running.		X									
Record compressor amp draw.		X									
Record defrost heater voltage and amp draw.		X									
Record anti-sweat heater voltage and amp draw.		X									
Record case product temperature.	X										
Record unit discharge air temperature.	X										
Record unit return air temperature.	X										
Record ambient conditions around unit (wet Bulb temperature and dry bulb temperature).	X										
Check product loading, do not load beyond the units load limits.	X										
Verify clearances on sides/back of unit.	X										
Check unit controller for proper operation. See controller or 1/0 Manual for proper controller operation.		X									
Confirm door switches function.	X										
Verify unit doors and lids work and are sealed correctly.	X										
Verify that all the panels, shields and covers are in place.	X										
Technician Notes:											

Notes:

SERVICE

REPLACING DISPLAY LAMPS

Remove the plastic shield to replace LED lamps. The switch on the back side of the merchandiser controls the lights.



Display lamp

WARNING

— LOCK OUT / TAG OUT —

To avoid serious injury or death from electrical shock, 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 doors, lights, fans, heaters, and thermostats.

WARNING

Product will be degraded and may spoil if allowed to sit in a non-refrigerated area.

TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	SOLUTION
Compressor will not start (no noise)	<ol style="list-style-type: none"> 1. Power disconnected 2. Blown fuse or breaker 3. Defective or broken wiring 4. Defective overload 5. Defective temperature control 	<ol style="list-style-type: none"> 1. Check service cord or wiring connection 2. Replace fuse or reset breaker 3. Repair or replace 4. Replace 5. Replace
Compressor will not start; cuts out on overload	<ol style="list-style-type: none"> 1. Low voltage 2. Defective compressor 3. Defective relay 4. Restriction (pinched cap tube) 5. Restriction (moisture) 6. Condenser blocked with dust and dirt 7. Defective condenser fan motor 	<ol style="list-style-type: none"> 1. Cabinet voltage must not be more than 5% below rating 2. Replace 3. Replace 4. Repair or replace 5. Leak check, replace drier, evacuate and recharge 6. Clean condenser 7. Replace

PROBLEM	PROBABLE CAUSE	SOLUTION
Warm storage temperature	<ol style="list-style-type: none"> 1. Temperature control not set properly 2. Short or refrigerant 3. Cabinet location too warm 4. Refrigerant over-charge 5. Low voltage, compressor cycling on overload 	<ol style="list-style-type: none"> 1. Reset control 2. Leak check, replace drier evacuate and recharge 3. Move to cooler location or correct excessive heat source 4. Purge system, evacuate and recharge 5. Compressor voltage must not be more than 5% below rating
Compressor runs continuously; product too warm	<ol style="list-style-type: none"> 1. Short of refrigerant 2. Warm ambient temperature 3. Product past loadline 	<ol style="list-style-type: none"> 1. Leak check, replace drier, evacuate and recharge 2. Decrease ambient temperature 3. Product past load line
Compressor runs continuously; product too cold	<ol style="list-style-type: none"> 1. Defective control 2. Control sensing element not in positive contact 3. Short on refrigerant 	<ol style="list-style-type: none"> 1. Replace 2. Assure proper contact 3. Leak check, replace drier evacuate and recharge

TROUBLESHOOTING LIGHT GUIDE

PROBLEM	SOLUTION
Lights won't start	<ol style="list-style-type: none"> 1. Check light switch 2. Check continuity to ballast 3. Check to see if bulbs are inserted properly in sockets 4. Check voltage
Lights flicker	<ol style="list-style-type: none"> 1. Allow lamps to warm up 2. Check lamp sleeve for cracks 3. Check sockets for moisture and proper contact 4. Bulb replacement may be necessary 5. Check voltage 6. New bulbs tend to flicker until used

Parts List

Models		NAV/C-4	NAV/C-6	NAV/C-8
Standard Parts				
Description	Part Number			
Sensor NTC 4 mts Green	3023554	X	X	X
Sensor NTC 4 mts Orange	3031571	X	X	X
Control Eliwell RTN400	3023537	X	X	X
Control Display KDE	3023552	X	X	X
Display cable 5 meter	3023553	X	X	X
Compressor Relay (T92P7A22-120)	0459304	X	X	X
Power Switch	03S422	X	X	X
Horizontal Thermometer	1700559	X	X	X
Power Cord	0521094	X		
Power Cord	19S63612		X	X
GFCI Duplex Receptacle	0309655	X	X	X
Fuse 3A	1801455	X	X	X
Fuse Holder	1801456	X	X	X
Wire Shelf White 16 X 47	1201558	X	X	X
Wire Shelf Grey 16 X 47	7406929	X	X	X
Wire Shelf White 13 X 47	1201559	X	X	X
Wire Shelf Grey 13 X 47	7406928	X	X	X
Wire Shelf White 16 X 23.5	1201560		X	
Wire Shelf Grey 16 X 23.5	7406931		X	
Wire Shelf White 13 X 23.5	1201561		X	
Wire Shelf Grey 13 X 23.5	7406930		X	
Drain Cover	0301266002	X	X	X
Bumper (Black)	1006128	X		X
Bumper (Black)	1006129		X	
Bumper (Black)	1006130			X
Light Switch	1801241	X	X	X
Caster	1900771	X	X	X

LED Lights				
LED Lamp (E1N5K-4100K-C3-S3)	0515964	X		
LED Lamp (E1N5K-4100K-C3-S4)	0515965		X	X
Lamp Holder	1803435	X	X	X
LED Power Supply	0547639	X	X	X
LED Light Clip	0518906	X	X	X

Parts List

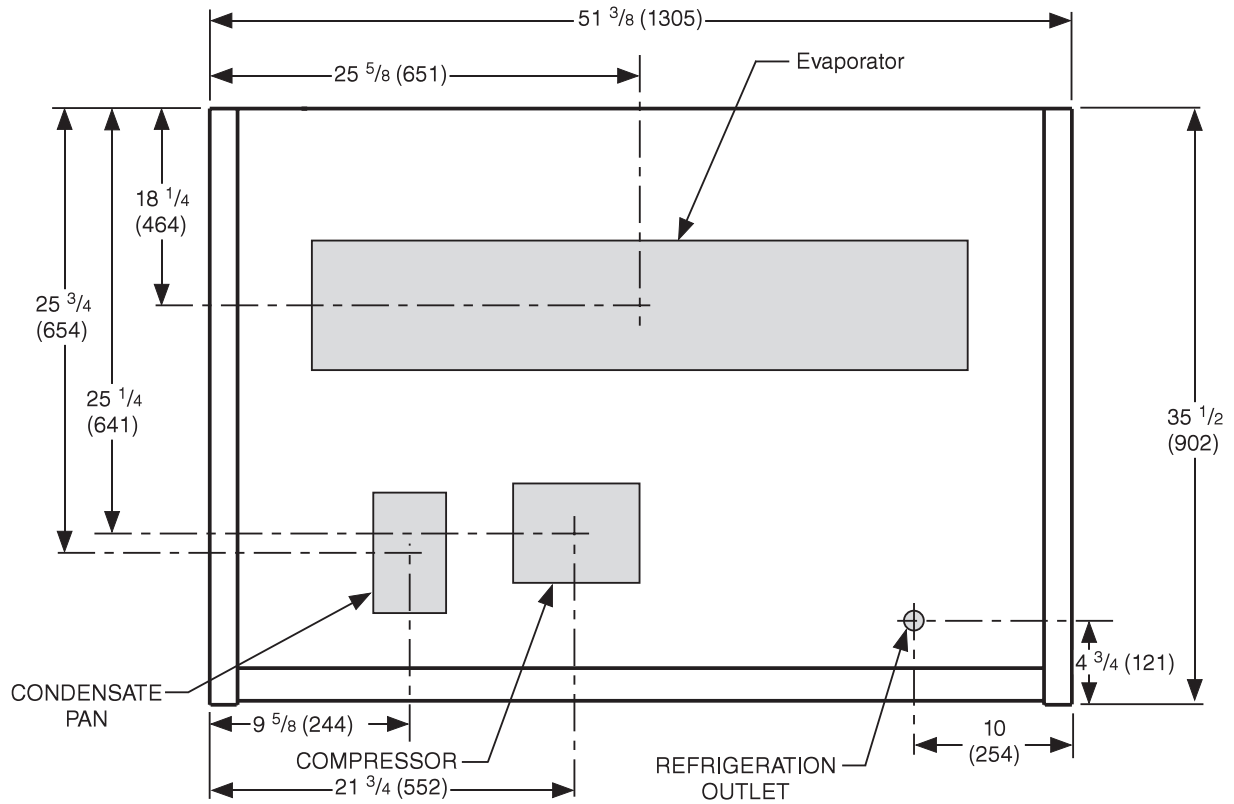
Refrigeration				
Compressor 1/3Hp AEA2413YXA	2000092	X	X	
Compressor 1/2HP AJA2419YXA	2100093			X
Drier (243 VAL-22 DAI)	1700481	X	X	X
Condenser	2100033	X		
Condenser	2100043		X	
Condenser	2100051			X
Condenser Fan Guard (wire)	1200178	X	X	
Condenser Fan Guard (wire)	1200184			X
Cap Tube Assembly	7600076	X	X	X
Condenser Fan Motor (115V,12W) SSC2B12CHSIBA1	0527610	X	X	X
Condenser Fan Blade (AC8CW50UB)	1700085	X	X	X
Evaporator Coil	2200174	X		
Evaporator Coil	2200175		X	
Evaporator Coil	2200176			X
Accumulator	1602503	X	X	X

Rear Doors				
Solid Rear Door Exterior	7101316	X		X
Solid Rear Door Interior LH	7101317	X	X	X
Solid Rear Door Interior RH	7101318		X	
Solid Rear Door Exterior Center	7101319		X	
Glass Rear Door Interior	7101326	X	X	X
Glass Rear Door Exterior LH	7101327	X		X
Glass Rear Door Interior RH	7101328		X	
Glass Rear Door Exterior Center	7101329		X	

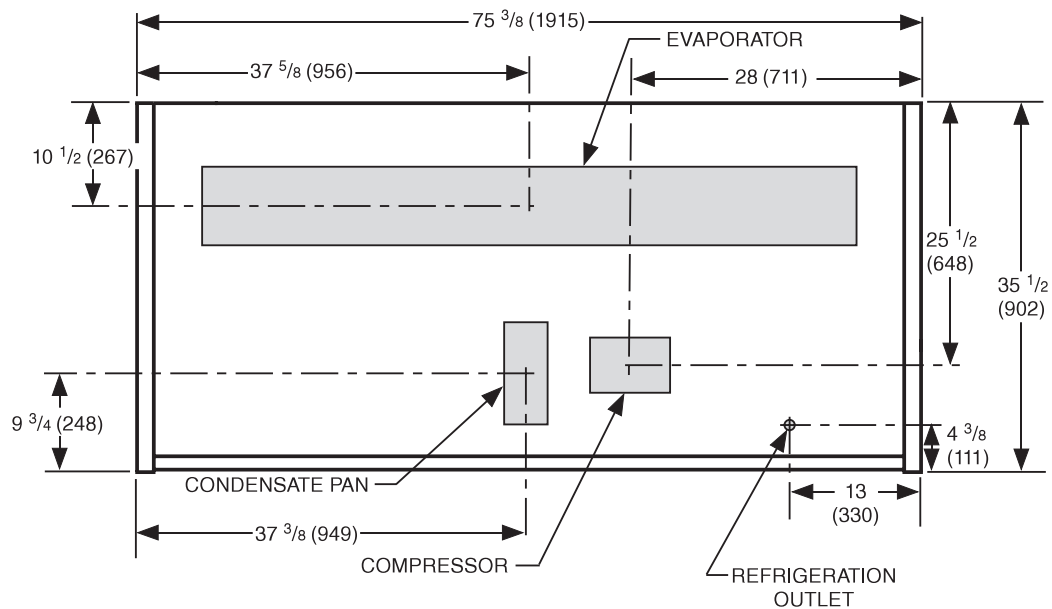
Sheet Metal Replacement Parts				
Front Louvered Access Panel	7408305	X		
Front Louvered Access Panel	7408306		X	
Front Louvered Access Panel	7408307			X
Base end Cover LH	0517231	X	X	X
Base end Cover RH	0517232	X	X	X
Bottom Interior Grates	0517233	X	X	X
Bottom Interior Grates	0517244		X	
Bottom Interior Grate Center	0517258			X
Evaporator Drain Pan Assy W/ Horiz. T	7408474	X		
Evaporator Drain Pan Assy W/ Horiz. T	7408475		X	
Evaporator Drain Pan Assy W/ Horiz. T	7408476			X
Condensate Pan Assy	7408477	X	X	X

NAV/C-4 — Plan View

Dimensions shown as inches and (mm).

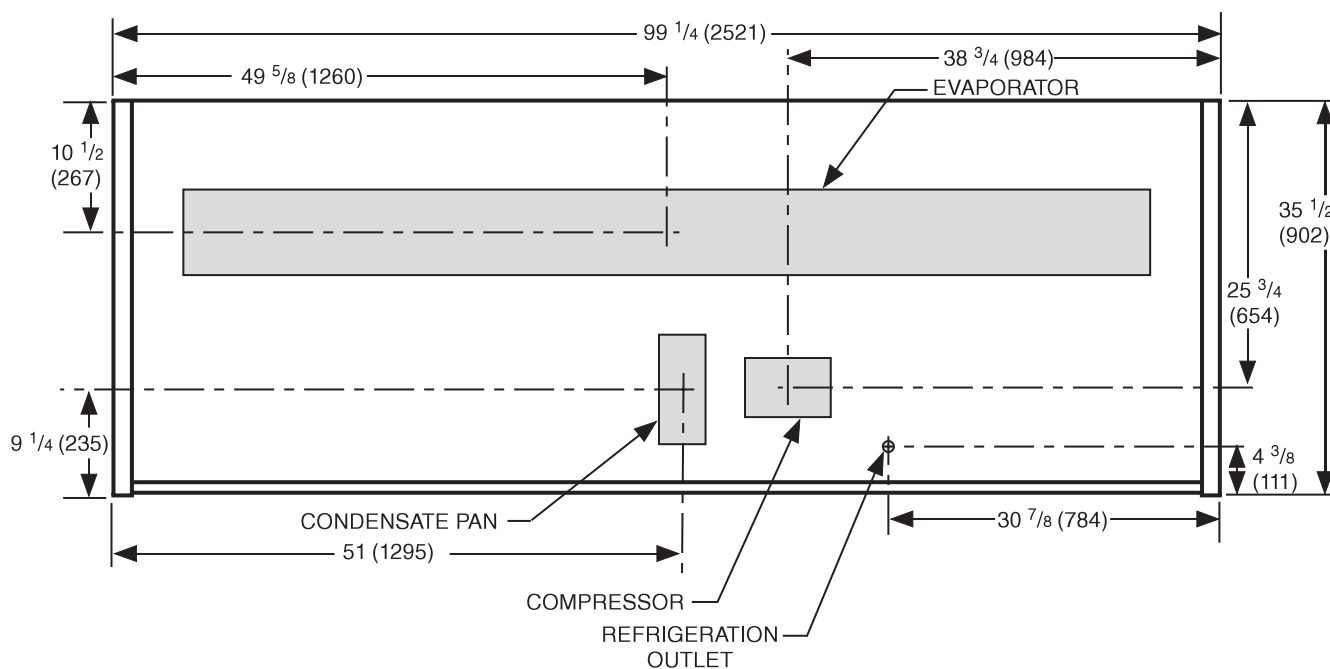


NAV/C-6 — Plan View

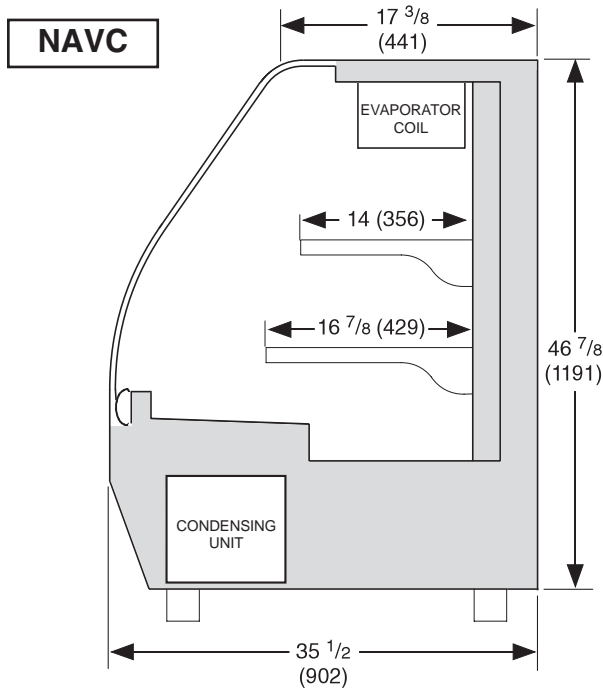
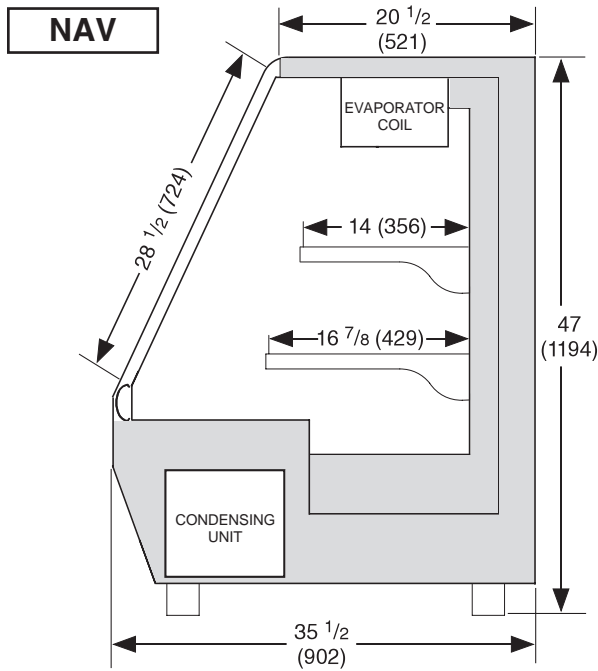


NAV/C-8 — Plan View

Dimensions shown as inches and (mm).



Dimensions shown as inches and (mm).



REFRIGERATION DATA

NAV/C

Compressor (hp)

NAV/C-4	1/3 hp
NAV/C-6	1/3 hp
NAV/C-8	1/2 hp

Condensing Unit

Capacity

NAV/C-4	2829
NAV/C-6	2829
NAV/C-8	3764
(@ 10° F evap. and 110° F cond. temperature)	

DEFROST DATA

Frequency (hr)

NAV/C-4/6	24
NAV/C-8	24

OFFTIME

Failsafe (minutes)

NAV/C-4	60
NAV/C-6	60

Defrost Termination

Time Terminated

Note: This data is based on store temperature and humidity that does not exceed 80°F and 55% R.H. unless otherwise stated. Schedule defrost at night while lights are off.

Refrigerant Charge

NAV/C-4	14.5 oz	0.411 kg
NAV/C-6	20 oz	0.567 kg
NAV/C-8	23 oz	0.653 kg

Note: These are rated values for individual components and should not be added together to determine total merchandiser electrical load.

	Provided Lamps	Watts	Total Watts
NAV/C-4	2	14.49	28.98
NAV/C-6	2	19.32	38.64
NAV/C-8	2	19.32	38.64

NAV/C-4/6	
Compressor LRA	40
Compressor RLA	5.9
NAV/C-8	
Compressor LRA	68
Compressor RLA	6.8

NAV/C-4	
Refrigerator interior volume (Cu Ftl/Case)	22.78 ft ³ /case (654.34 liters /case)
NAV/C-6	
Refrigerator interior volume (Cu Ftl/Case)	37.30 ft ³ /case (1056.22 liters /case)
NAV/C-8	
Refrigerator interior volume (Cu Ftl/Case)	50.22 ft ³ /case (1422.07 liters /case)

Model Number	Exterior Dimensions (in inches)			Stainless Steel Exterior Top	Number of Rear Doors	Nominal HP	Refrigeration Type
	L	D	H*				
NAV/C-4	51 ⁵ / ₁₆	35 ¹ / ₂	45 ⁵ / ₈	NAV - 20 ⁵ / ₁₆ NAVC - 17 ⁷ / ₈	2	¹ / ₃	R134a
NAV/C-6	75 ⁵ / ₁₆	35 ¹ / ₂	45 ⁵ / ₈	NAV - 20 ⁵ / ₁₆ NAVC - 17 ⁷ / ₈	3	¹ / ₃	R134a
NAV/C-8	99 ⁵ / ₁₆	35 ¹ / ₂	45 ⁵ / ₈	NAV - 20 ⁵ / ₁₆ NAVC - 17 ⁷ / ₈	4	¹ / ₂	R134a

* Height includes leveling pods

Model Number	Electrical			Fuse Amps	Hz/Ph	Approx. Ship Wt. (lb)	AC Load (BTU/h)	Energy Consumption (kWh/day)
	Volts	Run Amps	Nema Plug					
NAV/C-4	115	9.2	5-15P	15	60/1	505	4280	5.33
NAV/C-6	115	12.8	5-20P	20	60/1	700	4280	6.67
NAV/C-8	115	15.3	5-20P	20	60/1	890	5690	8.39

Wiring Diagram Shown on Next Page
Color Code Shown Below

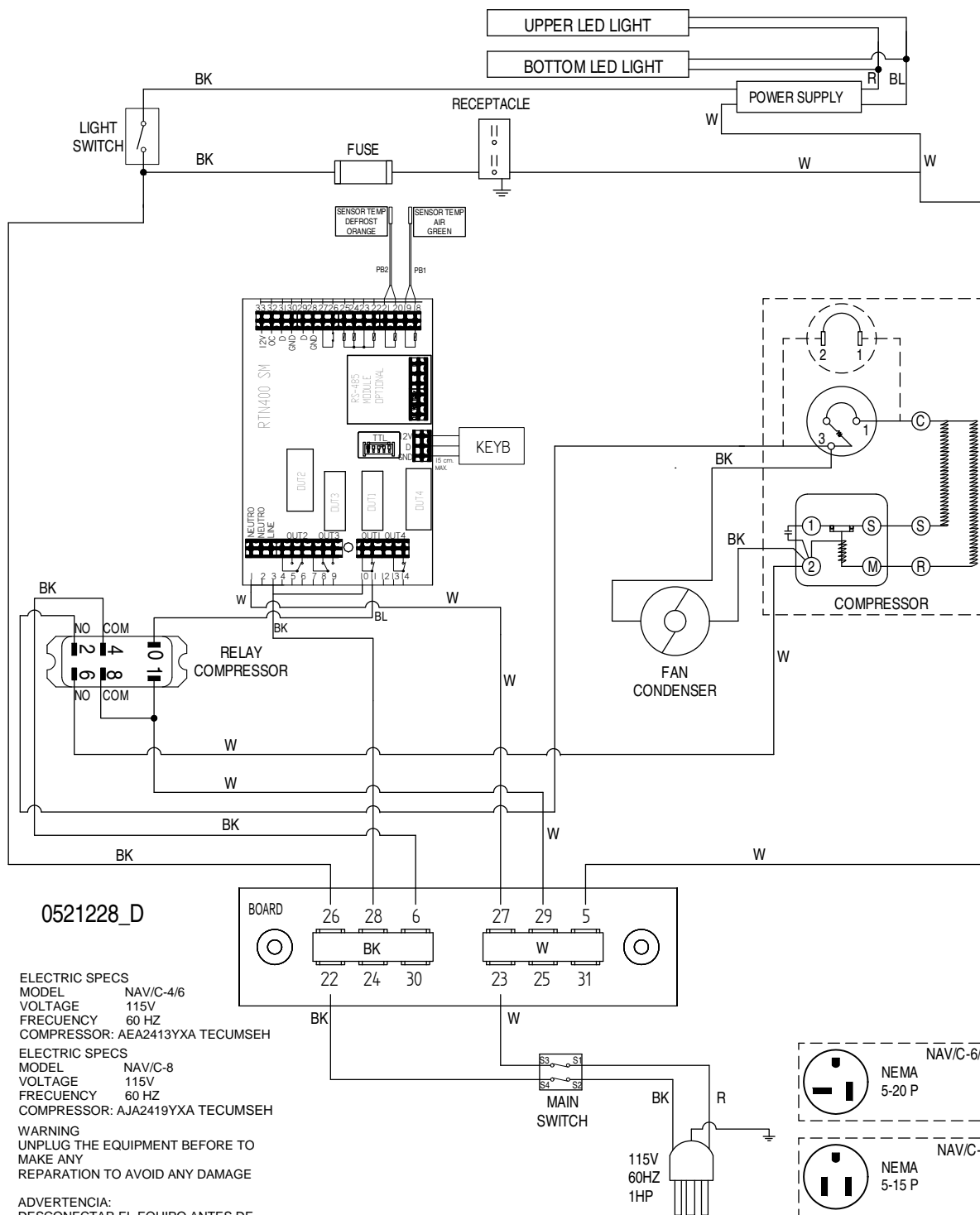
WARNING

All components must have mechanical ground, and the merchandiser must be grounded.

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

R = Red Y = Yellow G = Green BL = Blue BK = Black W = White

● = 120V POWER ○ = 120V NEUTRAL ⚡ = FIELD GROUND ⏏ = CASE GROUND

**WARNING**

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CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

R = Red Y = Yellow G = Green BL = Blue BK = Black W = White

● = 120V Power ○ = 120V NEUTRAL $\frac{1}{2}$ = FIELD GROUND mm = CASE GROUND

A decorative border made of a repeating blue geometric pattern, resembling interlocking squares or a stylized knot, surrounds the entire page content.

HUSSmann®

**To obtain warranty information
or other support, contact your
Hussmann representative.
Please include the model and
serial number of the product.**

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