

HUSSmann®



NAV & NAVC Medium Temperature Service Deli Self Contained Merchandisers



Installation & Service Manual

IMPORTANT
Keep in store
for future reference!

P/N 2400204_F
October 2013

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.

These merchandisers are designed
for pre-frozen products only.



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

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www.husmann.com

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WARRANTY

REVISION HISTORY

REVISION F — Added Checklists Page 1-7; Added Warning Page 1-3; Cleaning Coils 4-3; Maintaining Fluorescent Lights 4-4, Checklist 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

CERTIFICATION

These merchandisers are manufactured to meet ANSI / National Sanitation Foundation (NSF®) Standard #7 requirements. Proper installation is required to maintain certification. Near the serial plate, each case carries a label identifying the type of application for which the case was certified.

ANSI/NSF-7 Type I - Display Refrigerator / Freezer
Intended for 75°F / 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.

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

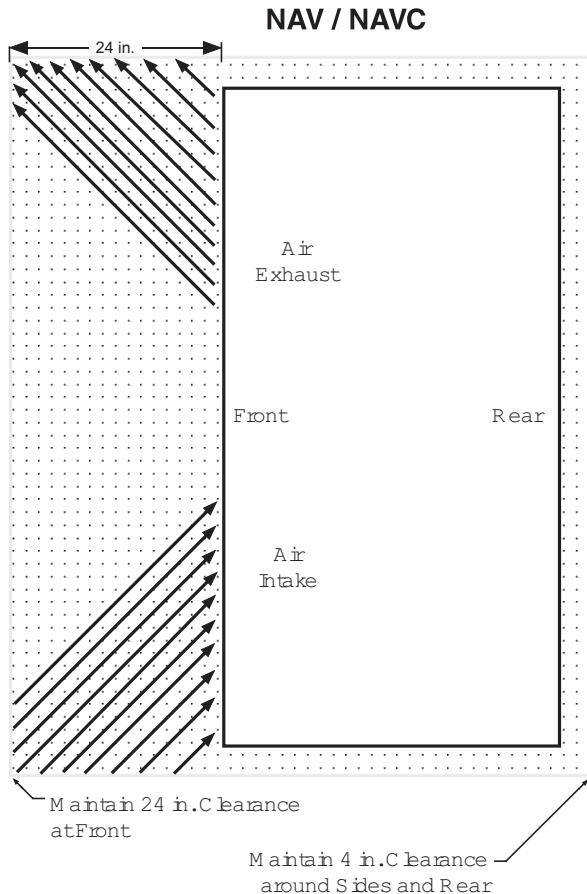
These merchandisers are designed for displaying products in air conditioned stores where temperature is maintained at or below the ANSI / NSF-7 specified level and relative humidity is maintained at or below 55%.

**Recommended operating ambient
temperature is between
65°F (18°C) and 80°F (26.7°C).
Maximum relative humidity is 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.

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.

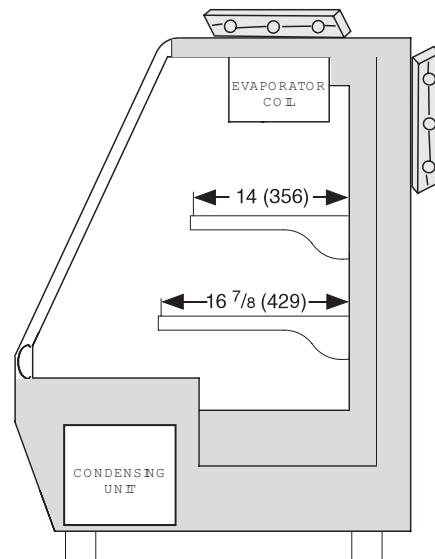


WARNING

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.

1-4 INSTALLATION

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.



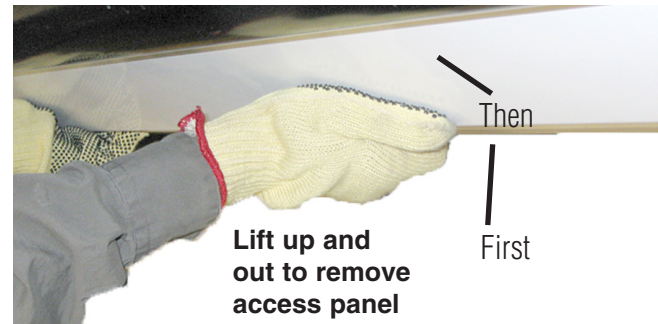
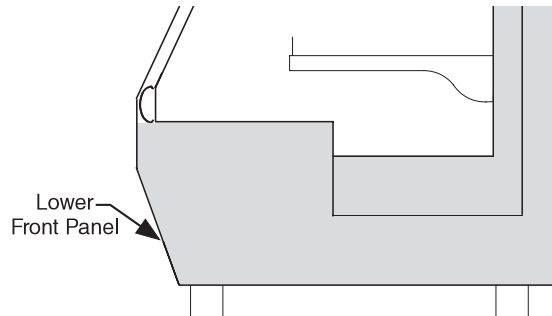
LIGHT SWITCH

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



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.

Husmann 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:

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

1-6 INSTALLATION

NOTES:

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.

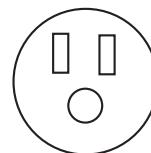
NAV / NAVC merchandisers do not have a power switch. Once power cord is connected to power, the merchandiser is energized.

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

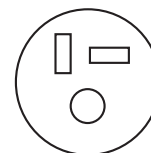
ELECTRICAL OUTLET:

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 5-15P
Receptacle
NAV / C
4 & 6



NEMA 5-15P
Receptacle
NAV / C
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.**

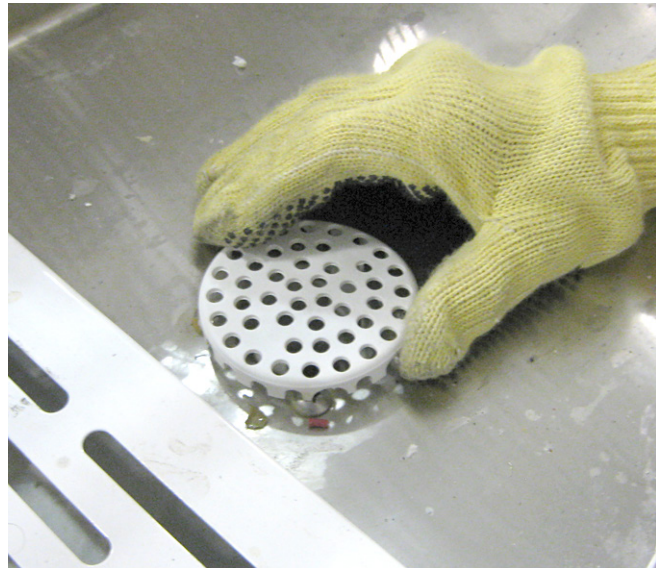


WARNING

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

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.**



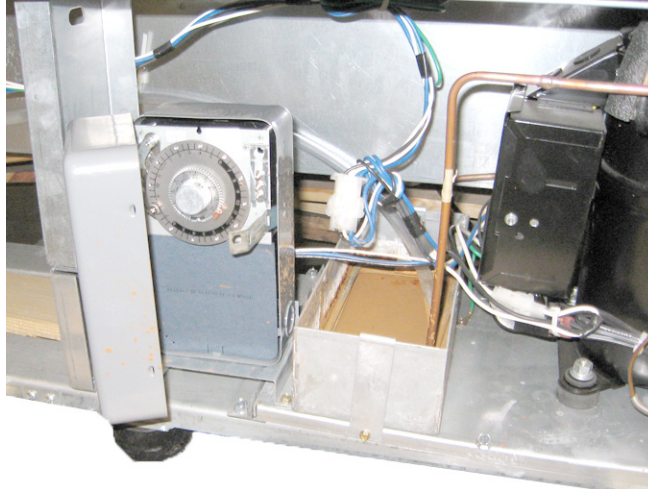
Waste Outlet

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.

ELECTROMECHANICAL CONTROLS

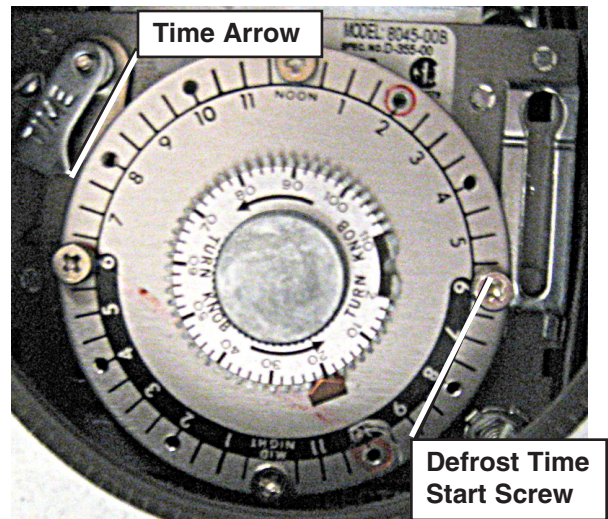
These merchandisers require defrost cycles for proper operation. Defrosts are time initiated and time terminated. The defrost timer duration is factory set.

Access Panel Removed



DEFROST TIME CLOCK

To access the defrost time clock remove the front access panel, and remove the electrical box cover.



The clock has screws that initiate defrost according to the time of day. The failsafe setting sets the length of defrost from two minutes to 110 minutes.

To ensure a thorough defrost, it may be necessary to increase the failsafe time in high ambient conditions.

The time arrow must be set to the correct time of day. Turn the knob until the appropriate time on the wheel lines up with the time arrow.

SETTING DEFROST TIMES

Defrost times are factory set for one defrost per day. NAV/C -4 and NAV/C-6 are set for 60 min. defrost duration. NAV/C-8 is set up for 100 min. defrost duration — two times per day.

Additional defrosts may be required for merchandisers located in high humidity or high use areas. Avoid setting defrost during the day, or peak use periods.

To change the factory-set defrost settings, move the defrost start time screw to correspond to the desired defrost time on the defrost wheel.

Set the length of time for the defrost (failsafe). Push down on the adjustment and slide it to the length of time.



WARNING

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



CAUTION

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

TEMPERATURE CONTROL

Interior cabinet temperatures are controlled through the use of a bulb and capillary type temperature control. The temperature control is located inside the merchandiser, on the right side next to the gravity coil (interior top).



Temperature Control

The differential is pre-set and can not be changed. The indicated dial temperature will not directly correspond to the actual cabinet temperature due to the bulb location and depending on various conditions. A certain amount of time lag will be noticed between the new setting and the resulting temperature.

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.

- a. Check the interior cabinet thoroughly for loose nuts, bolts and electrical connections.
- b. Inspect the refrigeration lines for visible damage or chafing.
- c. Replace electrical box cover and access panel if previously removed.
- d. 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.

CONTROLS AND ADJUSTMENTS

1. The T-stat controller controls refrigeration temperature. This is factory installed inside the merchandiser.

Defrosts are time initiated and time terminated for self contained and remote. The defrost setting is factory set as shown above (Interior Temperature).

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	2	Off Time	Time	100

LOAD LIMITS

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

AT NO TIME SHOULD MERCHANDISERS BE STOCKED BEYOND THE LOAD LIMITS INDICATED.



DO NOT BLOCK AIR LOUVERS.

STOCKING

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.

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

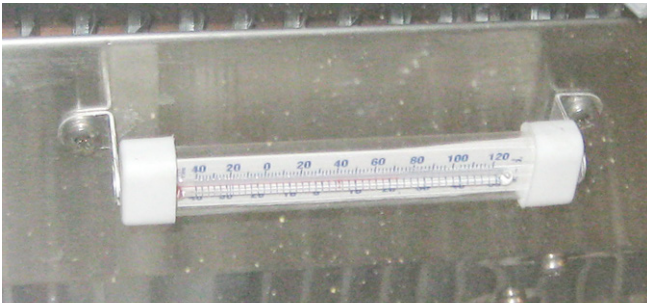
	¹ Flat	17° Tilt
Bottom Wire Racks	250 lb (113.4 kg)	N/A
Standard 16 in. (406 mm) Shelf	250 lb (113.4 kg)	250 lb (113.4 kg)
Standard 13 in. Shelf (330 mm)	125 lb (56.7 kg)	N/A

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.
2. Use non-abrasive cleaning materials and a mild detergent to clean glass tube and thermometer cover.
3. 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

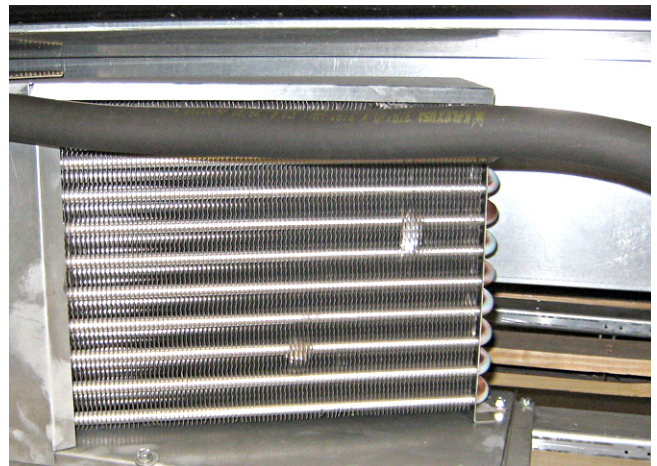
Condenser coils should be cleaned at least once per month. Additional cleaning may be needed depending on the operational environment. A dirty condenser blocks normal airflow through the coils.

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.



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.
3. 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.
4. Do not use a pressure nozzle to clean inside of case.



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.

MAINTAINING FLUORESCENT LAMPS (IF APPLICABLE)

Many of the self-contained cases are equipped with LEDs. For cases with fluorescent lamps, follow these directions to ensure long-lasting life of the lights: Fluorescent lamps should not be allowed to run to failure. If a re-lamp schedule is not in place, the tubes should be inspected for signs of degradation (blackened ends). Degraded or failed tubes should be replaced.

Allowing severely degraded lamps to operate may cause a ballast failure or could expose the lamp holder to excessive heat. Replacing degraded bulbs is more cost effective than replacing ballast and lamp-holders. Traditional re-lamp programs are 18-to-24 month intervals. In the absence of a re-lamp program, a yearly inspection of the lighting system is recommended.

1. Inspect all lamp sockets and plug-receptacle connections for signs of arcing. Replace any component that shows signs of arcing.
2. Make sure all unused receptacles have their close-off covers securely installed.
3. 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.
4. 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 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:

SERVICE

REPLACING FLUORESCENT LAMPS

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

Display Lamps.



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

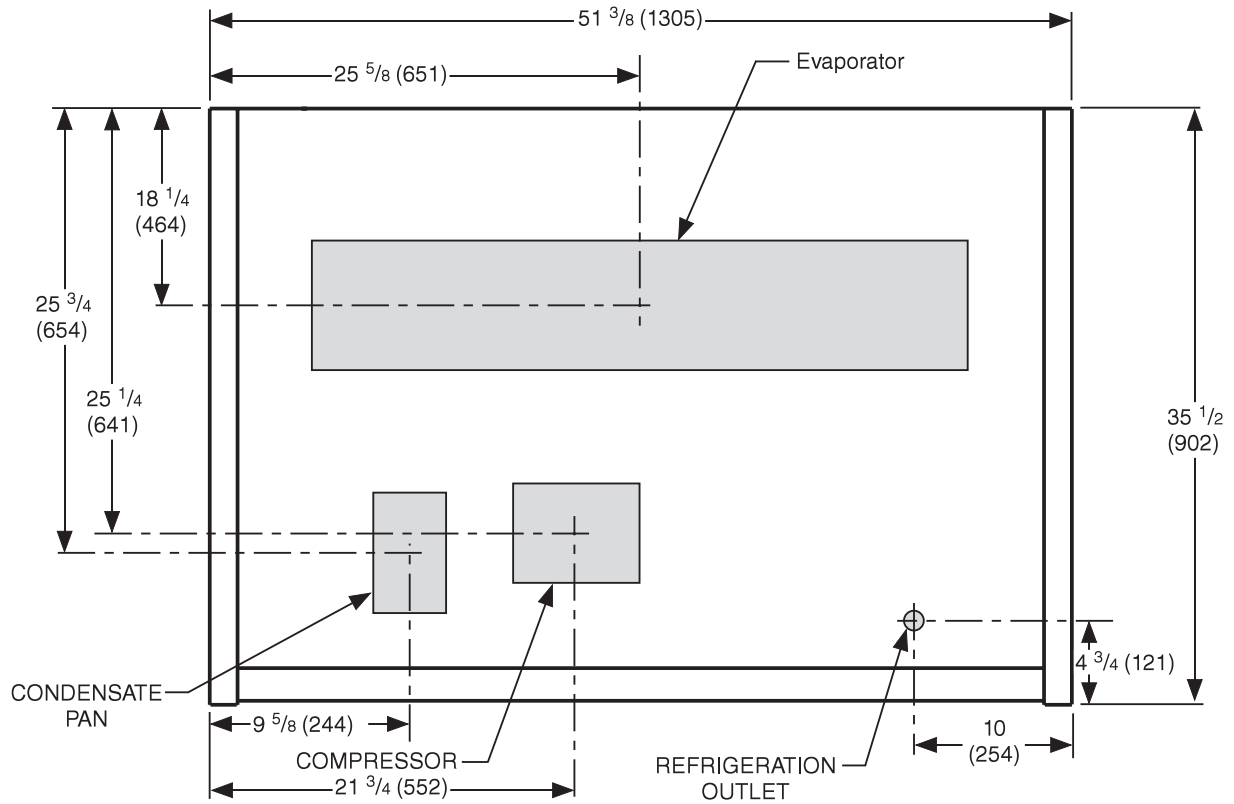
NAV/C-4, NAV/C-6, NAV/C-8

Item Part #	Description	Item Part #	Description
THERMOSTATS, POWER CORDS, AND CONTROLS		REFRIGERATION	
CT.4481666	Refrigeration Thermostat NAV/C-4 and NAV/C-6	NAV/C-4	
CT.4481667	Refrigeration Thermostat NAV/C-8	CU.4200549	Compressor
EP.4441820	Power Cord - 15 Amp, 115V NAV/C-4 and NAV/C-6	CO.4671540	Condenser
EP.4441821	Power Cord - 20 Amp, 115V NAV/C-8	MO.4410685	Condenser Fan Motor
SW.4440823	Light Switch - all models	FB.4780859	Condenser Fan Blade
TC.4440782	Defrost Timer - NAV/C 4, 6	EV.4671541	Evaporator
TC.4483089	Defrost Timer - NAV/C 8	RC.4671284	Capillary Tube Assembly
EP.4440594	Receptacle GFCI - all models	FI.4613274	Filter Drier
		<hr/>	
		NAV/C-6	
GL.4996570	Flat Front Glass Pack, NAV-4	CU.4200549	Compressor
GL.4996571	Flat Front Glass Pack, NAV-6	CO.4671535	Condenser
GL.4996572	Flat Front Glass Pack, NAV-8	MO.4410685	Condenser Fan Motor
GL.4996723	Curved Front Glass Pack, NAVC-4	FB.4780859	Condenser Fan Blade
GL.4996724	Curved Front Glass Pack, NAVC-6	CO.4671531	Evaporator
GL.4996723	Curved Front Glass Pack (2), NAVC-8	RC.4671284	Capillary Tube Assembly
		FI.4613274	Filter Drier

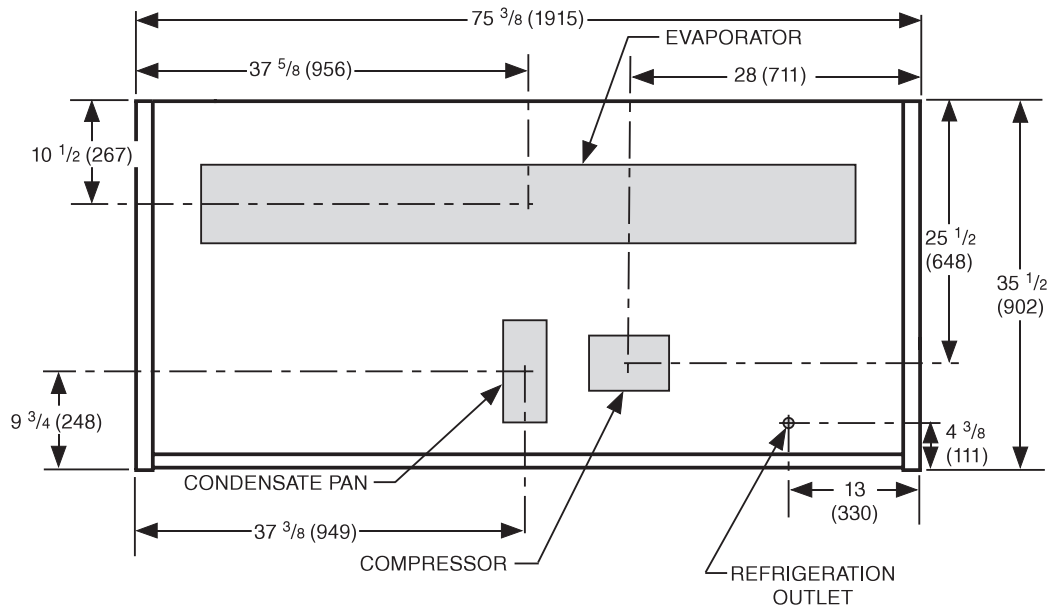
Item Part #	Description	Item Part #	Description
REFRIGERATION		DOORS	
NAV/C-8		NAV/C-4	
CU.4200186	Compressor	DO.4961264	Interior
CO.4671536	Condenser	DO.4961265	Exterior
MO.4410685	Condenser Fan Motor	<hr/>	
FB.4780859	Condenser Fan Blade	NAV/C-6	
CO.4671532	Evaporator	DO.4961264	Interior
RC.4671284	Capillary Tube Assembly	DO.4961266	Exterior
FI.4613274	Filter Drier	<hr/>	
LIGHTING (ALL MODELS)		NAV/C-8	
BA.4481505	Ballasts	DO.4961264	Interior
THERMOMETER (ALL MODELS)		DO.4961265	Exterior
TM.4914521	Thermometer		

NAV/C-4 — Plan View

Dimensions shown as inches and (mm).

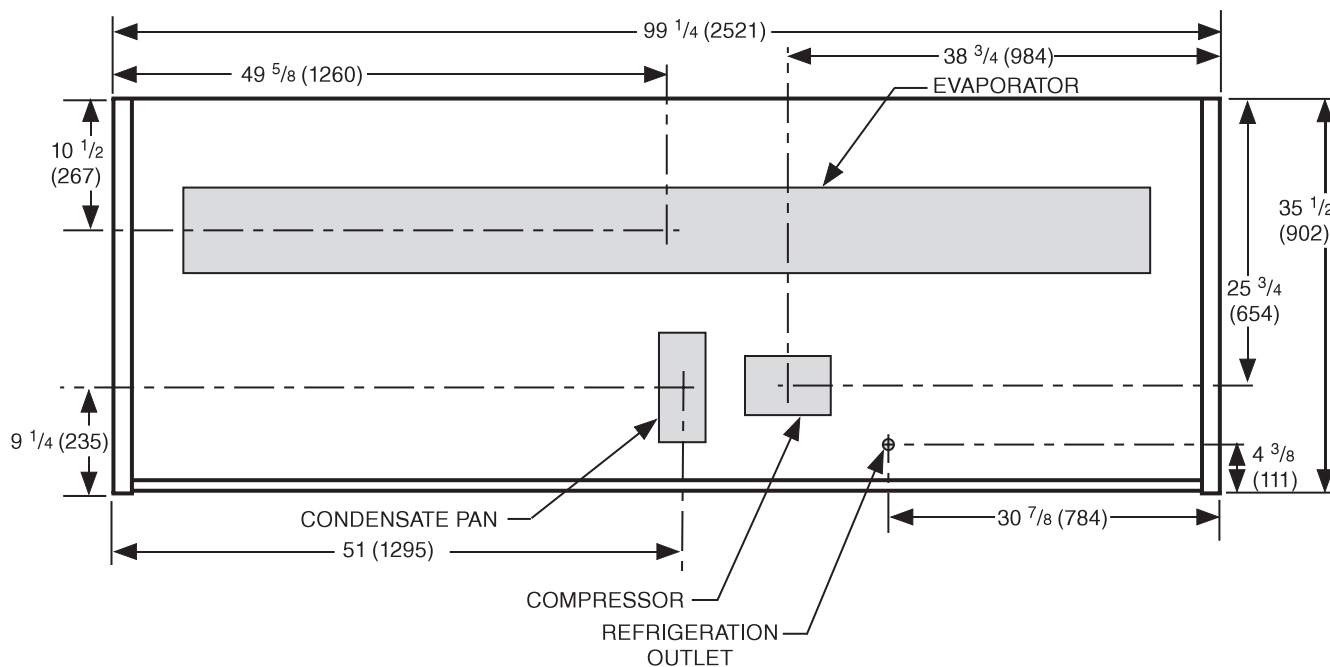


NAV/C-6 — Plan View

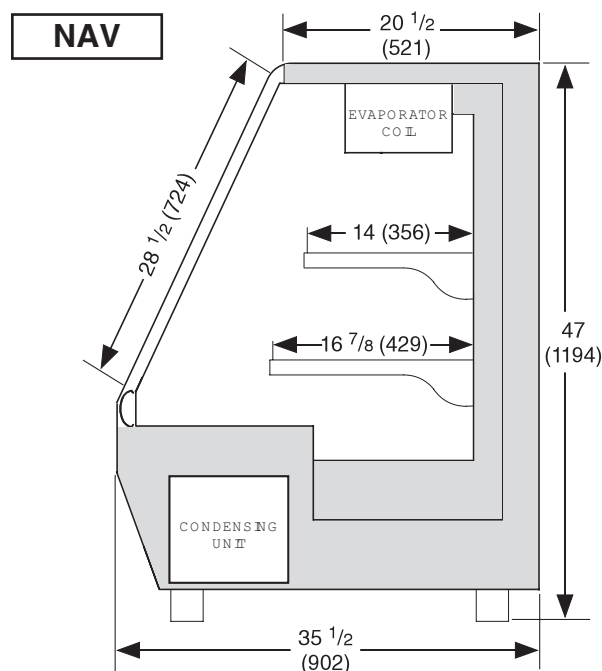


NAV/C-8 — Plan View

Dimensions shown as inches and (mm).



Dimensions shown as inches and (mm).



REFRIGERATION DATA

NAV/C

Thermostat

Setting Cut In /Cut Out (°F)

Position # 5 28 / 35

Compressor (hp)

NAV/C-4 1/3 hp

NAV/C-6 1/3 hp

NAV/C-8 1/2 hp

Condensing Unit

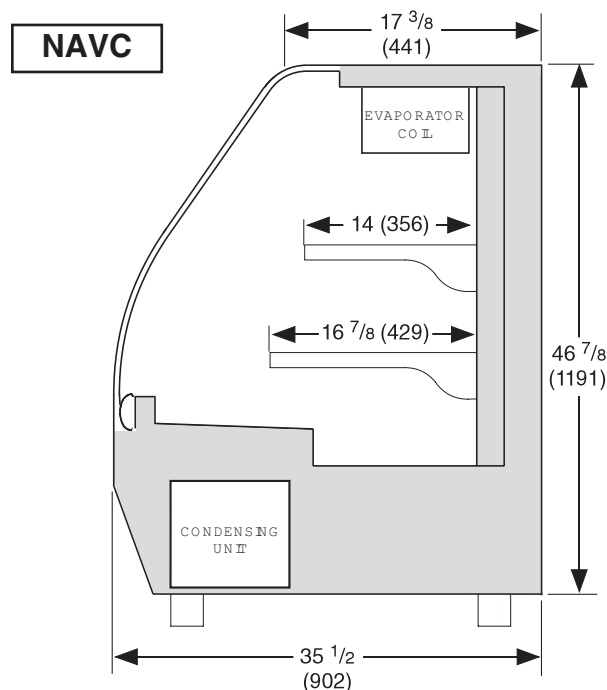
Capacity

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 12

OFFTIME

Failsafe (minutes)

NAV/C-4 60

NAV/C-6 100

Defrost Termination

Time Terminated

PHYSICAL DATA

Refrigerant Charge

14.5 oz 0.411 kg

20 oz 0.567 kg

23 oz 0.653 kg

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.

Electrical Data

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

Lamps

	Provided	Lamps	Watts	Total Watts
NAV/C-4	2	39		78
NAV/C-6	4	55		220
NAV/C-8	4	72		288

Condensing Unit (115V, 1Ph, 60Hz) Standard

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

Product Data**NAV/C-4**

Refrigerator interior volume (Cu Ft/Case) 22.78 ft³ /case (654.34 liters /case)

NAV/C-6

Refrigerator interior volume (Cu Ft/Case) 37.30 ft³ /case (1056.22 liters /case)

NAV/C-8

Refrigerator interior volume (Cu Ft/Case) 50.22 ft³ /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

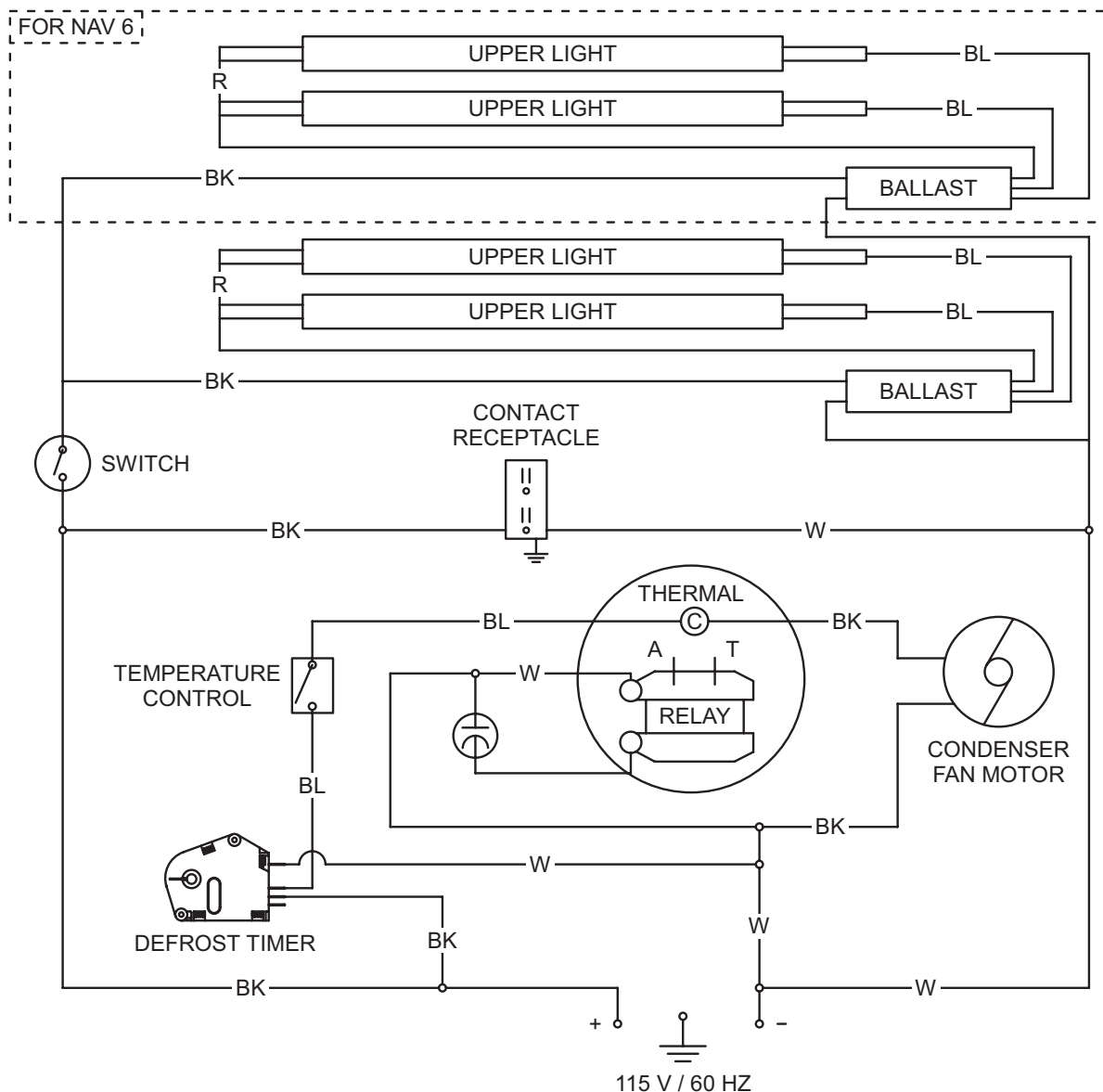
Model Number	Electrical			Fuse Amps	Hz/Ph	Approx. Ship Wt. (lb)	AC Load (BTU/h)	Energy Consumption (kWh/day)
	Volts	Run Amps	Nema Plug					
NAV/C-4	115	9.2	5-15P	15	60/1	505	4280	8.20
NAV/C-6	115	12.8	5-15P	15	60/1	700	4280	11.18
NAV/C-8	115	15.3	5-20P	20	60/1	890	5690	13.40

ELECTRICAL SPECIFICATIONS

MODEL: NAV/C4, NAV/C6
 VOLTAGE: 115V
 FREQUENCY: 60HZ
 COMPRESSOR: 1/3 HP

WARNING

BEFORE MAKING ANY REPAIRS, UNPLUG THE UNIT TO AVOID DAMAGING IT.




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

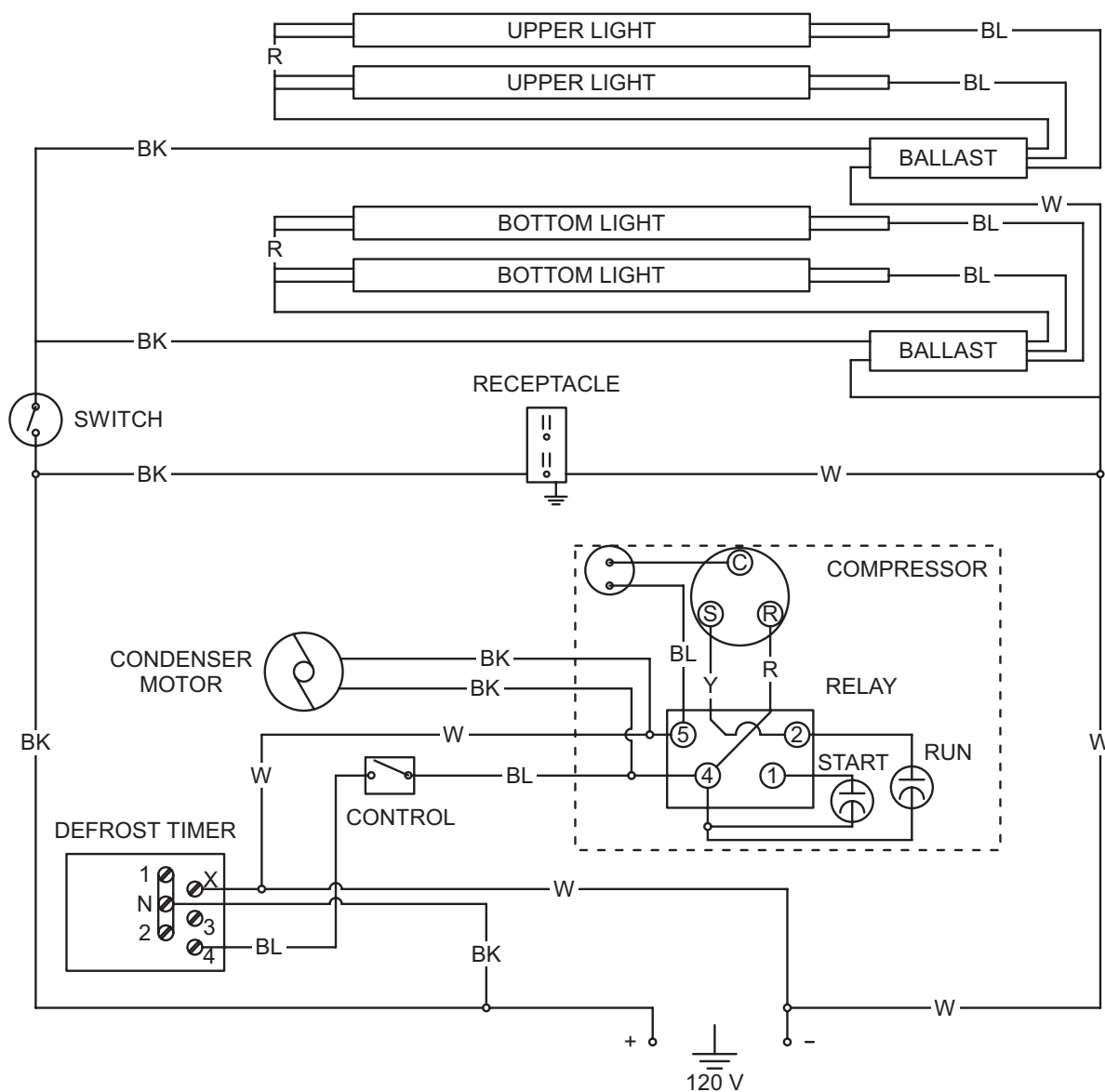
● = 120V POWER ○ = 120V NEUTRAL ⊥ = FIELD GROUND  = CASE GROUND

ELECTRICAL SPECIFICATIONS

MODEL: NAV/C8
 VOLTAGE: 115V
 FREQUENCY: 60HZ
 COMPRESSOR: 1/3 HP

WARNING

BEFORE MAKING ANY REPAIRS, UNPLUG THE UNIT TO AVOID DAMAGING IT.

**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

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.**