
UNDERCOUNTER LABORATORY FRONT BREATHING REFRIGERATORS AND FREEZERS

Installation, Operation and Maintenance Instructions

Please read this manual completely prior to installing and operating this equipment. This manual describes how to install, operate and maintain the product in order to obtain the optimum in performance, efficiency and reliability.

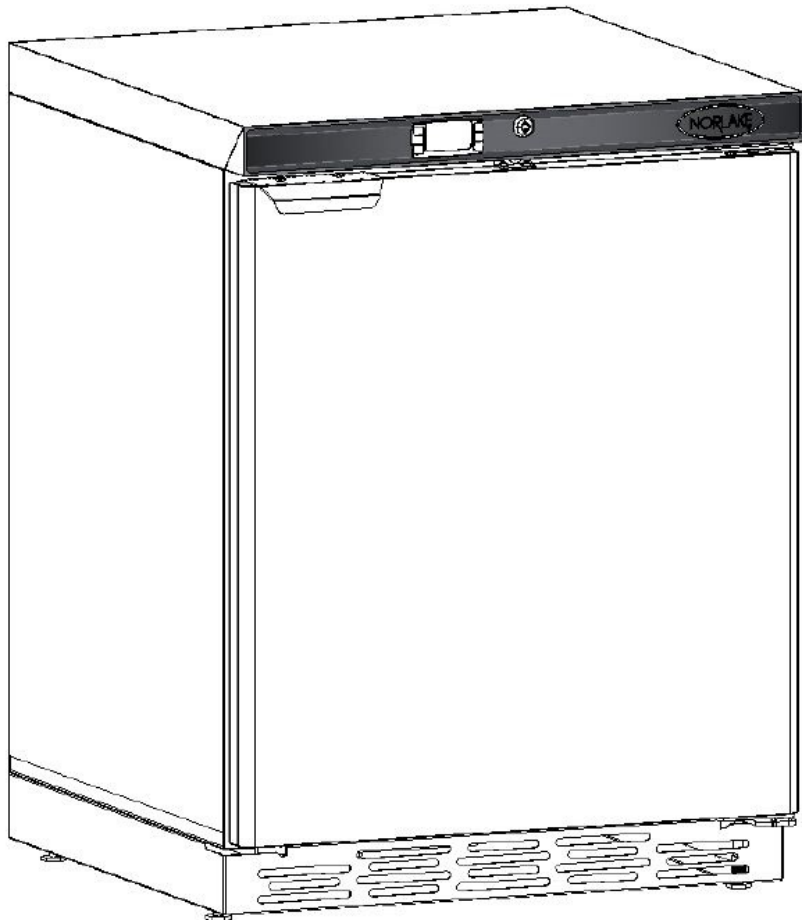


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SPECIFICATIONS

UNDERCOUNTER REFRIGERATORS				
MODEL	STORAGE CAP. (CuFt)	ELECTRICAL	REFRIGERANT	WEIGHT (LBS)
Solid Door Refrigerator	4.2	115/60/1/3.0	R-134a	120
Glass Door Refrigerator	4.2	115/60/1/3.0	R-134a	120
Glass Door Blood Bank Refrigerator	4.2	115/60/1/3.0	R-134a	130

UNDERCOUNTER FREEZERS				
MODEL	STORAGE CAP. (CuFt)	ELECTRICAL	REFRIGERANT	WEIGHT (LBS)
-20°C Freezer	4.2	115/60/1/5.2	R-404a	130
-30°C Freezer	4.2	115/60/1/5.2	R-404a	130
-30°C Plasma Freezer	4.2	115/60/1/5.2	R-404a	140

INTENDED USE

These units are designed to meet the demanding requirements for scientific and laboratory research. Advance engineering design incorporates the latest in cabinet, refrigeration, temperature control and monitoring features. Provides energy efficient, convenient, safe and reliable performance for optimal temperature environments necessary for a wide range of life science, pharmacy, biological, medical, clinical and industrial applications.

RECEIVING INSPECTION

Congratulations on your purchase of a quality built product. This product was built, packaged and inspected under our ISO 9001 Quality system to assure the best product available. When properly installed and maintained this product will give many years of trouble free service. It was shipped using trusted carriers with a history of careful handling, good customer service and prompt delivery.

Even with all of these precautions taken occasionally accidents may happen which result in shipping damage. When the product was picked up by the carrier, they assume responsibility for the product until they deliver it to you, thus any claims for shipping damages must be filed with the delivering carrier.

Always thoroughly inspect the product for visible damages and shortages. Should any damages or shortages be found be sure to note them in detail on the delivery receipt before you sign off on it. Make sure the driver signs and dates the delivery receipt acknowledging the damages. This is critical in protecting yourself should a claim need to be filed. You can consult the carrier for their specific claim procedures. Remember it is your responsibility to file a claim with the carrier.

In the case of concealed damages that are not discovered in the initial inspection but are found upon removing packaging, time is critical. You should unpack and inspect the unit as soon as possible. If concealed damage is found, stop unpacking and contact the delivering carrier immediately to alert them of the damages and get a claim number. Save all packaging for inspection by the carrier. Consult the carrier for details in filing a concealed damage claim.

Please remember, the carrier is your only source for reclaiming freight damages. The manufacturer should not be contacted to attempt a return of the product. No returns are accepted without a prior authorization.

SAFETY INFORMATION

This manual may contain notices that identify situations that could cause death, serious injury and /or damage to the appliance or property.

Please make note of the following definitions;

! WARNING	Indicates a hazardous situation which could result in death or serious injury.
NOTICE	Indicates a situation which could result in damage to the product or property.
IMPORTANT	Indicates important information about the use and care of the product.

! WARNING

This product should be applied only for the use for which it has been expressly intended. Any other use would be considered improper and therefore dangerous. The manufacturer cannot be held responsible for injury or damage resulting from improper, incorrect and unreasonable use. Failure to install, operate, and maintain the product in accordance with this manual will adversely affect safety, performance, component life and warranty coverage.

To reduce the risk of death, electric shock, serious injury or fire, follow basic precautions including but not limited to the following;

- Only qualified service technicians should install and service this product.
- This product must be installed in accordance with applicable national, state and local codes and regulations.
- To reduce the risk of electrical shock, do not touch the product or plug with wet hands.
- Disconnect the product from power before servicing.
- The product requires an independent power supply of proper capacity. See the product nameplate for electrical specifications. Failure to use an independent power supply of proper capacity can result in a tripped breaker, blown fuse, damage to existing wiring or component failure. This could lead to heat generation or fire.
- The product must be properly grounded. This product is equipped with a NEMA 5-15P three prong grounded plug to reduce the risk of potential electrical shock hazards. It must be connected to a properly grounded, independent 3 prong wall outlet. Do not remove the ground prong from the product plug and do not use an adapter plug. Failure to follow these instructions may result in death, electrical shock or fire.
- Do not use an extension cord to supply power to the product.

- Do not use the product should the power cord become damaged. The power cord should not be altered, jerked, pinched, bundled and/or used to hang objects from. Such actions could result in electrical shock or fire. To disconnect the unit from power, be sure to grasp and pull on the plug, not the cord.
- Should the power cord require replacement or service, use only the manufacturer's replacement parts and be sure to connect the green ground wire to the product in the same manner the original wire was connected.
- Do not spray or splash water on the product as this may cause short circuits, electrical shock, corrosion or failure.
- Do not make alterations or modifications to the product as these could result in electric shock, injury, fire or damage to the product.
- Children must be properly supervised around this product.
- This product is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge unless they have been given supervision or instruction concerning its use by a person responsible for their safety.
- Do not climb, stand, or hang on or into the product or its components. Death or serious injury could occur or the product could be damaged.
- Use caution when opening doors or lids and keep fingers out of pinch points areas.
- Do not use combustible sprays or aerosols around the product as they may catch fire.
- Do not store gasoline or other flammable substances in or near the product as they may catch fire.
- Keep the area around the product clean. Dirt, dust or insects around the product could cause harm to individuals or damage to the equipment.
- Do not load the shelves with more than 100 pounds of load as they could fall and cause injury.
- Do not block air inlets or outlets as this would cause cooling performance to be reduced.
- Do not overload the storage capacity of the product. Allow space between stored items for air flow.
- Do not load warm or hot items into the product. Allow them to cool first or they will raise the cabinet temperature and could hasten the deterioration of other foods stored in the cabinet.
- This product is designed for the temporary storage to food products. Use proper sanitation practices.
- All food products should be covered or stored in sealed containers. Open foods may dry up, pass their smell to other foods and increase cross contamination. Some food products may accelerate corrosion of the evaporator resulting in failure of the appliance to cool.
- Component parts must be replaced with manufacturer original equipment parts.

SET-UP AND INSTALLATION

! WARNING

This product must be installed in accordance with all applicable national, state and local regulations.

This product is heavy. Use care when lifting and positioning. Work in pairs when needed to prevent injury or damage.

This product is not intended for outdoor use.

Operating conditions range: +45°F to +100°F (+7°C to +38°C).

Operating this product outside its range and installation requirements may affect performance and warranty coverage.

SET UP

Standard Base Mounting

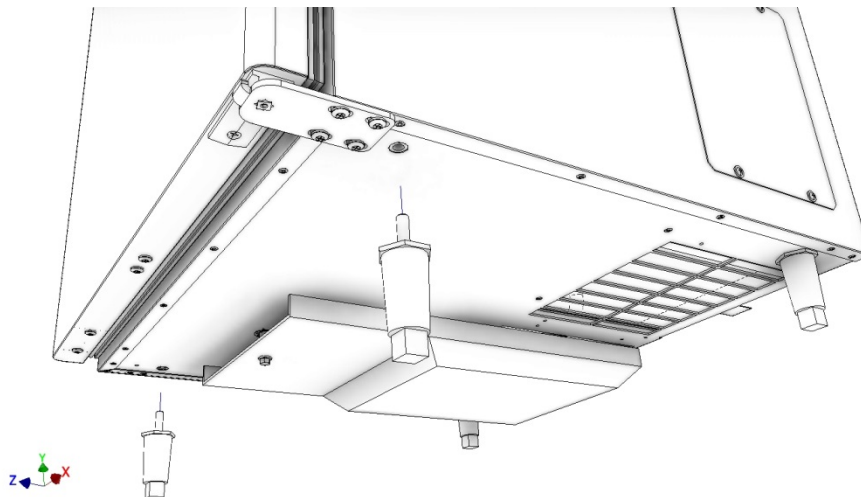
The unit comes standard with a vented base. The base comes with leveler legs. When setting the unit in its final location, adjust the leveler legs to level the unit. The unit needs to be level to allow for proper draining of condensate.

Optional Caster or Leg Installation

NOTICE

The Casters or legs supplied with the unit must be installed for the unit to operate properly. If they are not installed the unit will not perform properly and the warranty will be void.

Once the product has been removed from its shipping container the Casters or Legs will need to be installed when applicable. The Casters or Legs can be found packaged inside the unit. Lay the unit on its back (protect the back surface by placing cardboard down first). Protect the power cord so that it does not get pinched or damaged. The stem style Casters or Legs attach to the bottom of the cabinet using the threaded insets in the base. The Caster with the locks should be installed on the front of the unit. Be sure to tighten the Casters or Legs snug to prevent them from coming loose.

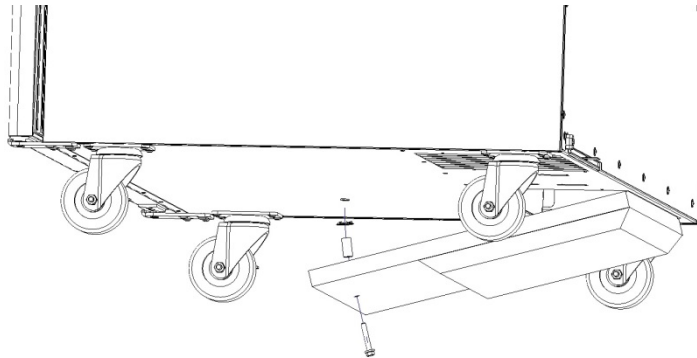


Air Duct/Condensate Pan Installation (Factory installed on Base Mount models)

NOTICE

Do not operate the unit without the Air Duct/Condensate Pan installed as the unit will not perform properly and will leak condensate water onto the floor and all warranties will be void.

The Air Duct/Condensate Pan assemble can be found packaged inside the cabinet. While the unit is laying on its back, install the Air duct/Condensate Pan assembly as shown below. The rear flange fits into the hole under the Condenser Coil and the hex head bolt screws into the threaded nut in the bottom of the cabinet.



Once the Casters or Legs and Air Duct/Condensate Pan are installed the unit can be returned to its upright position. Be sure to work in pairs when returning the unit to the upright position.

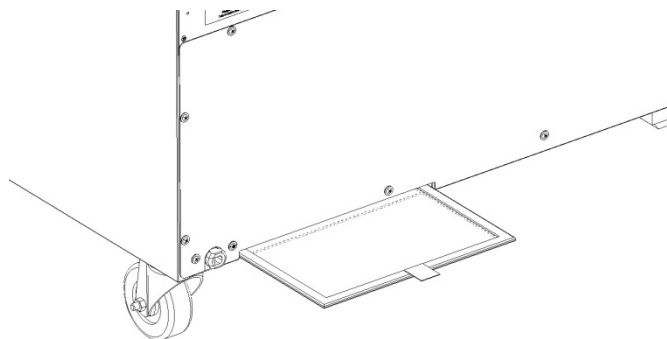
NOTICE

Do not operate the unit for 1 hour after returning the unit to its upright position to allow the oil to settle in the Compressor.

Filter Screen Installation

This appliance comes equipped with an air intake Filter Screen. This Filter Screen comes installed on the cabinet as shown below. Confirm that the Filter Screen is in place prior to operating the unit.

NOTICE - Do not operate the unit without the Filter Screen in place.



Shelf / Drawer Installation

The product is supplied with one Shelf per door and four Shelf Supports per Shelf. Install the Shelf Supports on the Shelf Pilasters (factory installed on inside walls) at the height desired. All Shelf Supports must be at the same height for each Shelf. Install the Shelf on the Shelf Supports. Blood Banks and Plasma Freezers have drawer assemblies in place of a shelf. The drawer assembly includes (4) four removable drawers.

Locating the Cabinet

This product is a zero clearance front breathing unit. It can be installed with no clearance space on the sides, top and back. The unit needs to have casters or legs installed as well as the Air Duct/Condensate Pan to operate properly.

IMPORTANT

- Confirm that the floor in the installation location is strong enough to support the unit.
- Confirm that the ambient temperatures are within the tolerances allowed.
- Do not locate next to heat generating appliances.
- The unit is intended for indoor installation.
- Confirm the unit is installed level.
- Do not use an extension cord to connect the unit to power. Use of an extension cord will void all warranties.
- Do not tamper with the ground pin on the power cord and confirm that the power receptacle has a properly wired ground connection.
- The product must be isolated on a power circuit.
- Confirm that the power supply matches the required power supply noted on the cabinet serial plate.

Door Alignment

If the door is not squared up on the cabinet, it can be adjusted. Open the door to 90 degrees to expose the top hinge mounting screws, loosen the screws as well as the screws securing the bottom hinge, close and adjust the door to be square on the cabinet and re-tighten the hinge screws.

Reversing the Door Swing (Solid door units only)

The cabinet comes standard with a right hand hinged door. To reverse the door to left-hand hinging, complete the following steps;

- 1) Disconnect the unit from power.
- 2) Lay the unit on its back
- 3) Remove the Bottom Hinge (4 screws) from the base of the cabinet
- 4) Slide and lift the Door of the cabinet
- 5) Remove the Top Hinge (2 screws)
- 6) Relocate the Top Hinge to the top left side of the cabinet using the threaded insert installed.
- 7) Remove the Hinge Cartridge from the bottom of the Door (2 Screws). Once the screws are removed use a slotted screwdriver to pry the Hinge Cartridge out of the bottom of the Door.

- 8) Remove the Door Handle and Lock Strike from the top of the door and relocate them on the bottom of the door using the threaded inserts provided.
- 9) Remove the white square Hinge Bushing from the top of the door and relocate it to the bottom of the door where the Hinge Cartridge was removed in step 7.
- 10) Install the Hinge Cartridge removed in step 7 into the hole the Hinge Bushing was in in step 10. The square hole will need to have the foam insulation removed to allow the Hinge Cartridge to fit (use a 4" long drill bit).
- 11) Place the Door on the cabinet inserting the top hinge pin into the Hinge bushing on the door.
- 12) Secure the bottom hinge to the bottom left of the cabinet using the 4 screws from step 3.
- 13) Return the cabinet to the upright position
- 14) Check the door to confirm the self-closing feature is operating correctly
- 15) Wait one hour before re-connecting the unit to power

Remote Alarm Contacts

The factory installed Remote Alarm Contacts are located in the rear machine compartment and are labeled Alarm Contacts. With the unit disconnected from power, remove the Back Panel from the unit. The Alarm Contacts are located on the right side of the machine compartment and are labeled "Normally Open" and "Normally Closed". The end user is responsible for proper field installation. Terminal connections are rated for class II circuits only per NEC table 11(A). Limited power source less than 30 vac 8 amp max.

Chart Recorder Feature (Blood Bank and Plasma Freezer)

The Blood Bank and Plasma cabinets come with a Chart Recorder that is powered separately from the refrigerated cabinet. Follow the instructions supplied with the recorder to install it. The sensor bulb/lead can be routed through the 1" diameter port in the back of the cabinet. With the refrigerator disconnected from power, remove the inside rear evaporator panel (4 screws) so the sensor bulb/lead can be routed through the 1" diameter access port in the back of the cabinet. Route the sensor bulb/lead out the gap in the bottom of the evaporator panel and up to the glycerin well. Install the sensor bulb into the glycerin well. Re-install the evaporator panel.

Note: The chart recorder is optional on other models.

START-UP AND OPERATION

After meeting the set-up and installation requirements the unit is ready to start-up. Once the power cord is connected to a live outlet the unit will start running. Allow the unit to run for two (2) hours prior to loading it with product.

Temperature Controller/Display

The Temperature Control with digital display is located on the front top edge of the cabinet. The control is preset for cabinet temperatures of +4°C for the refrigerator products, -20°C for the freezer products and -30°C for the extra-low temperature products and blood bank freezers. Instructions for using the Temperature Control are located in a separate document included with the unit.

Loading Product

Once that cabinet has been operating at the desired temperature for a sufficient period of time, product can be loaded into the cabinet. Prior to loading product adjust the shelving to the desired position.

IMPORTANT

When loading product use caution not to block airflow to achieve maximum cooling performance.

Do not load product where it would block the air intake or discharge at the back inside wall of the cabinet.

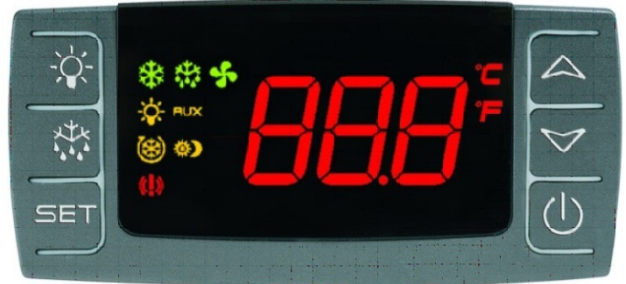
Do not load warm product into the cabinet as it will affect the cabinet temperature and products previously stored in the cabinet.

Products should be in covered containers or wrapped to prevent cross contamination.

MICROPROCESSOR CONTROL FEATURES (Auto Defrost Models)


The temperature control is located on the front panel.


1. Main temperature display: During normal operations displays cabinet temperature.





SET: To display target set point; in programming mode it selects a parameter or confirm an operation.

 (DEF) To start a manual defrost


 (UP): To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value.

 (DOWN) To see the min stored temperature; in programming mode it browses the parameter codes or decreases the displayed value.


 To activate / deactivate the energy saving cycle.

 To switch the light, if oA3 = Lig.

KEY COMBINATIONS:











 +  To lock & unlock the keyboard.

SET +  To enter in programming mode.

SET +  To return to the room temperature display.

LED DISPLAYS

Each LED function is described in the following table.

LED	MODE	FUNCTION
	ON	Compressor enabled
	Flashing	Anti-short cycle delay enabled
	ON	Defrost enabled
	Flashing	Drip time in progress
	ON	Fans enabled
	Flashing	Fans delay after defrost in progress.
	ON	An alarm is occurring
	ON	Continuous cycle is running
	ON	Energy saving enabled
	ON	Light on
AUX	ON	Auxiliary relay on
°C/°F	Flashing	Programming phase
°C/°F	ON	Measurement unit

FUNCTIONS

HOW TO SEE THE SETPOINT



1. Push and immediately release the **SET** key: the display will show the Set point value.
2. Push and immediately release the **SET** key or wait for 5 seconds to display the probe value again.

HOW TO CHANGE THE SETPOINT

1. Push the **SET** key for more than 2 seconds to change the set point value;
2. The value of the set point will be displayed and the “°C” or “°F” LED starts blinking.
3. To change the Set value push the **UP** or **DOWN** arrows with in 10 seconds.
4. To memorize the new set point value push the **SET** key again or wait 10 seconds.

HOW TO START A MANUAL DEFROST



1. Push the **DEF** key for more than 2 seconds and a manual defrost will start.

HOW TO SET ALARMS



1. Enter the programming mode by pressing the SET + V (down) KEYS FOR 3's (the “C” of “F” LED starts blinking)
2. Press set key to desired parameter “ALU” and “ALL”. Press set again to see alarm set point.
3. Use “up” and “down” arrow keys to change value.
4. Press set to store the value and move to the following parameter.

HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value, operate as follows:

1. Enter the Programming mode by pressing the **Set + V** (down) keys for 3s (the “°C” or “°F” LED starts blinking).
2. Select the required parameter. Press the “**SET**” key to display its value
3. Use “**UP**” or “**DOWN**” to change its value.
4. Press “**SET**” to store the new value and move to the following parameter.

To exit: Press **SET + UP** or wait 15s without pressing a key.

NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

CONTROL CONFIGURATIONS AND DEFAULT SETTINGS

(set-points shown are for reference only)

Label	Parameter	Minimum to Maximum Ranges	Set Points
Set	Set Point	LS to US	4/-20/-30
ALU	MAXIMUM Temperature Alarm	Set point to +230°F (+110° C)	110
ALL	MINIMUM Temperature Alarm	-58°F to Set point -50° C	-50
ALd	Temperature Alarm Delay	0 to 255 minutes	15
dAO	Delay of temperature alarm at start up	0 to 23hr 50 min	1.3
i1F	Digital input configuration	EL = external Alarm / bL = lock regulation	dor
HY	Differential	0 to 25	2/4/4
US	Max set point	+110° C	25/25/25
LS	Min set point	-50° C	0/-35/-35
IdF	Defrost interval	1 to 120 hours	12/6/6
MdF	Defrost length	0 to 255 minutes	10/30/30

CLEANING AND MAINTENANCE

! Warning

Disconnect the unit from the power supply prior to conducting any maintenance, cleaning or servicing the product. Only re-connect the power when finished with the job. Do not spray or splash any water directly onto the appliance.

Important

Do not use caustic chemicals when cleaning the product
Do not use acidic cleaners when cleaning the product
Do not use chlorinated cleaners on the stainless steel as this can lead to corrosion
Do not use scouring or abrasive pads on the stainless steel
Use only mild soap or stainless steel cleaners and soft cloth when cleaning.

Cleaning

Exterior and Interior Surfaces

Use stainless steel cleaners or mild soap/warm water solution and a soft cloth to clean the cabinet exterior. Wipe with the grain of the metal to avoid scratches. Do not use abrasive cleaning pads.

A Baking Soda solution can be used to help remove odors on the interior.

Shelves

Remove the shelves from the cabinet and clean with a soft cloth or brush and mild soap/warm water in a sink.

Door Gasket

Door Gaskets should be cleaned periodically with the mild soap/warm water solution to remove any debris collected in the bellows. The gasket can be easily removed if necessary by pulling it out of the groove starting at the corners. Replace by pushing the gasket back into the groove starting at the corners.

Maintenance

Filter Screen

The Filter Screen must be cleaned regularly to maintain the product performance. Dirty/clogged Filter Screens and Condenser Coils will result in compressor failure and/or performance loss and void all warranties. The Filter Screen is located on the back of the cabinet near the bottom left side. To remove the Filter Screen gently pull straight out on the Filter Screen tab. The Filter Screen should be washed gently in a sink with a mild soap/warm water solution or by running a gentle stream of water through the filter. Replace the Filter Screen in the cabinet after cleaning.

NOTICE - Do not operate the unit without the Filter Screen installed!

Drain Pan/Air Duct

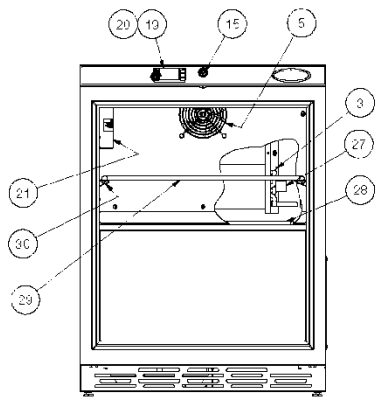
Occasionally the Drain Pan/Air Duct should be inspected and cleaned to remove any build up debris. To remove the Drain Pan/Air Duct remove the fastener at the front of

the Drain Pan and pull the assembly out the front of the cabinet. Clean the assembly with a mild soap/warm water solution. Replace the Drain Pan Air Duct in the cabinet after cleaning.

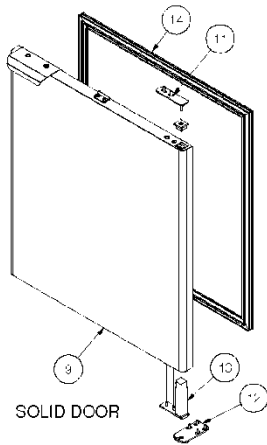
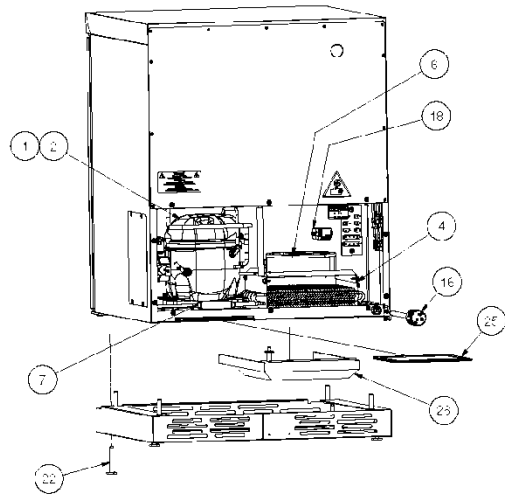
NOTICE - Do not operate the unit without the Drain Pan/Air Duct installed!

TROUBLE SHOOTING GUIDE

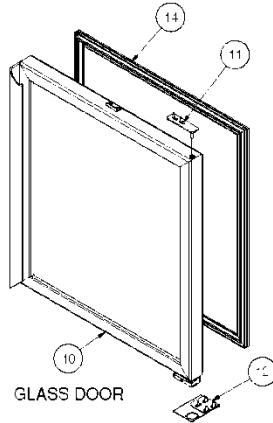
Problem	Remedy
Compressor will not start	<ul style="list-style-type: none">• Check the power cord and make sure it is plugged in.• Check the power supply to confirm power to outlet.• Check if the temperature controller is calling for cooling (see page 11)• Confirm unit is isolated on a power circuit.
Poor performance	<ul style="list-style-type: none">• Move the unit from direct sunlight.• Move the unit away from heating devices.• Install the unit in a well ventilated place,• Clean the Filter Screen if heavy dust is collected.• Clear contents from blocking the Drain Pan/Air Duct.• Check the Temperature Control for incorrect setting.• Check the refrigerant level, it may need to be charged.• Check the door and be sure it is completely closed.• Check the Door Gasket condition.• Check product load to confirm good airflow in cabinet.• Check fans to confirm all are working and not missing blades.
Unit noisy	<ul style="list-style-type: none">• Install the unit on a level surface.• Check for loose part or mounting.• Keep the tubing free from any contact to avoid rattle.• Check fans to confirm all are working and not missing blades.
Condensation on cabinet exterior	<ul style="list-style-type: none">• Reduce humidity where the unit is installed.



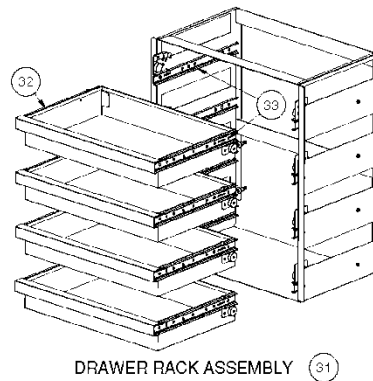
DOOR REMOVED



SOLID DOOR



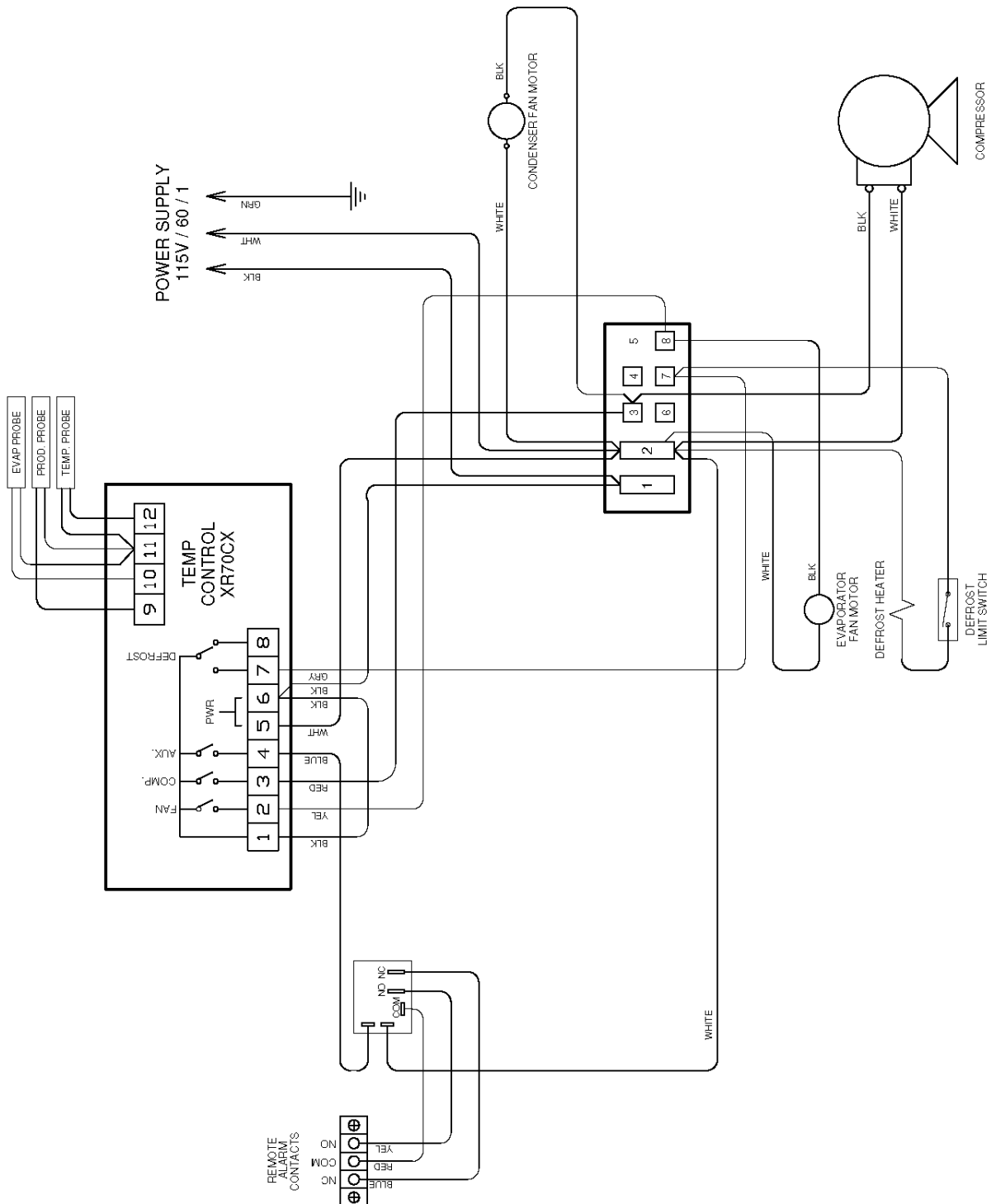
GLASS DOOR



DRAWER RACK ASSEMBLY 31

ITEM	DESCRIPTION	SOLID DOOR REFRIGERATOR	GLASS DOOR REFRIGERATOR	GLASS DR BLOOD BANK REFRIG.	-20° C FREEZER	-30° C FREEZER	-30° C PLASMA FREEZER
1	COMPRESSOR	150490	150490	150490	150371	150371	150371
2	COMPRESSOR ELECTRICAL KIT	150445	150445	150445	NA	NA	NA
3	EVAPORATOR COIL	156975	156975	156975	156975	156975	156975
4	CONDENSER COIL	150337	150337	150337	150337	150337	150337
5	EVAPORATOR FAN MOTOR	150493	150493	150493	150493	150493	150493
6	CONDENSER FAN MOTOR	150512	150512	150512	150512	150512	150512
7	DRIER	150367	150367	150367	150367	150367	150367
8	CAPILLARY TUBE (NOT SHOWN)	150368	150368	150368	150392	150392	150392
9	SOLID DOOR - REVERSIBLE	157057	NA	NA	157057	157057	160594
10	GLASS DOOR - RIGHT HAND	NA	160660	160660	NA	NA	NA
11	TOP HINGE	150072	150072	150072	150072	150072	150072
12	BOTTOM HINGE PLATE-UNIVERSAL	150073	157234	157234	150073	150073	150073
13	SELF CLOSING DOOR CARTRIDGE	015124	NA	NA	015124	015124	015124
14	DOOR GASKET	156902	157328	157328	156902	156902	156902
15	DOOR LOCK	143038	143038	143038	143038	143038	143038
16	POWER CORD	138745	138745	138745	138745	138745	138745
17	BACK PANEL (NOT SHOWN)	156890	156890	156890	156890	156890	156890
18	RELAY	113643	113643	113643	113643	113643	113643
19	TEMPERATURE CONTROL	161424	161424	161424	161425	161426	161426
20	TEMP CONTROL SENSOR	139831	139831	139831	139831	139831	139831
21	GLYCERIN BOTTLE KIT	143162	143162	143162	143162	143162	143162
22	LEVELER LEG	150569	150569	150569	150569	150569	150569
23	2.5" LEG KIT (NOT SHOWN)	150513	150513	150513	150513	150513	150513
25	FILTER SCREEN	153895	153895	153895	153895	153895	153895
26	DRAIN PAN ASSEMBLY	150455	150455	150455	150455	150455	150455
27	DEFROST THERMOSTAT	NA	NA	NA	150138	150138	150138
28	DEFROST HEATER	NA	NA	NA	157019	157019	157019
29	SHELF	156889	156889	NA	156889	156889	NA
30	SHELF SUPPORT	001585	001585	NA	001585	001585	NA
31	DRAWER RACK ASSEMBLY	NA	NA	159788	NA	NA	159788
32	DRAWER WELDMENT	NA	NA	159354	NA	NA	159354
33	DRAWER SLID SET	NA	NA	150561	NA	NA	150561

WIRING DIAGRAM - FREEZER MODELS



WIRING DIAGRAM – REFRIGERATOR MODELS

