



Installation and Operations Manual

Models

BD Style Cabinets

BS Style Cabinets

DIP Style Cabinets

BDC (push cart) Style Carts

R290 Series

C Nelson Manufacturing

265 N. Lake Winds Pkwy, Oak Harbor, OH

419-898-3305

Safety precautions:

- This equipment contains a refrigeration system charged with R290 Propane flammable refrigerant.
- Do not plug in the unit if you observe freight damage.
- For electrical requirements, Refrigerant Charge amount and Model Name, see the Data Tag and labels located on the end exterior panel.
- Carefully read all labels attached to the unit prior to plugging it into an electrical outlet.

CAUTION – Risk of Fire or Explosion. Flammable Refrigerant Used. Follow Handling Instructions Carefully in Compliance with U.S. Government Regulations. R290 Refrigerant

CAUTION – Risk of Fire or Explosion. Flammable Refrigerant Used. Consult Repair Manual/Owner's Guide Before Attempting To Install or Service This Product. All Safety Precautions Must Be Followed. R290 Refrigerant

DANGER – Risk of Fire or Explosion. Flammable R290 Refrigerant Used. Do Not Use Mechanical Devices to Defrost Refrigerator. Do Not Puncture Refrigerant Tubing. R290 Refrigerant **DANGER**

– Risk of Fire or Explosion. Flammable R290 Refrigerant Used. To Be Repaired Only by Trained Service Personnel. Do not Puncture Refrigerant Tubing. R290 Refrigerant

CAUTION – Risk of Fire or Explosion. Dispose of Properly in Accordance with Federal or Local Regulations. Flammable Refrigerant Used. R290 Refrigerant

CAUTION – Risk of Fire or Explosion. Due to Puncture of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used. R290 Refrigerant

NOTE:

- We strongly recommend all preventive maintenance and servicing be performed by qualified HVAC Technicians.
- Leak check with Combustible Gas Detector before and after any Servicing.
- Unplug unit before Servicing.
- If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer, or its service agent.
- Component parts shall be replaced with OEM parts only.
- Freezer must be plugged into its own individual electric circuit, which has an amp rating that matches the data tag on the cabinet.
- DO NOT, under any circumstances, cut or remove the ground prong from the power cord. For personal safety, this appliance must be properly grounded. Do not plug into two prong outlets.
- DO NOT, under any circumstances, use adaptor plugs or extension cords.

Installation and Operating Instructions:

- Use this freezer for its intended purpose as described in this manual.
- BD/BS/DIP style cabinets- NSF standards require cabinet to be installed with casters, 6" legs, or sealed to the floor with an NSF approved silicone sealant.
- Before using the equipment, inspect for freight damage. Refuse delivery if there is any damage.
- Remove the packaging CAREFULLY (wood crate, cardboard, bubble wrap, Styrofoam corners, and/or clear plastic). Inspect for concealed damage. Again, immediately file a claim with the freight carrier if there is damage.

- **CAUTION** – This unit contains R290, a flammable hydro-carbon refrigerant. While installing, moving, or using the freezer, do not disturb the refrigerant lines, (bend, puncture, or apply heat). If you notice anything unusual, find damage, or it is not functioning properly, remove the unit from service, and call an HVAC technician certified to handle flammable refrigerants.
- The BD/BS/DIP style cabinets are intended for indoor use with a store temperature of 75 degrees (F) and 55% relative humidity. Locate the cabinet to avoid direct sunlight, drafts from vents, air conditioning or open doors that will affect the freezers performance.
- The cabinet must be located 3 – 6 inches away from the back wall. The louvers (front and rear) must be clear of any obstructions to ensure proper air flow to the condensing unit.
- If installing paneling in front of freezer, please take air flow under consideration. Trapped hot discharge air will cause poor performance. It is important to have full opening on the paneling where the louver exists.
 - **NOTE:** Blocking the louvers on the customer or operator side of the cabinet will cause the compressor to overheat and cause poor performance.
- Before your new unit is connected to a power supply, check that the incoming voltage at the outlet is the same as the data tag on the cabinet.
- For the BD/BS/Dip cabinets, plug in and turn the toggle switch “ON”. Allow the freezer to run for at least 24 hours to ensure that it reaches the temperature set point and ensure that the freezer has reached its operating temperature before reloading the cabinet with product. The BDC Style carts do not have a toggle switch.
 - **NOTE:** This is a pre-startup check to ensure the unit is working properly. Remember, our factory warranty does not cover product loss!
- BD/BS/Dip cabinets are equipped with a digital temperature controller. The controller is preset for the proper freezer temperature your operation requires. For BDC-Style carts, a digital controller is required in a 0 degree cart and optional in a -9 degree cart.
- If temperature adjustment is desired, the controller may be located behind the louver grill. Unplug the unit before removing the louver. Increase or decrease the temperature in small increments and allow the unit to stabilize. Repeat as needed to achieve desired temperature.
 - **NOTE:** A Wiring Diagram is located inside the condensing unit area.

CAREL PJEZS0E130

Controls are factory programmed to provide the freezer temperature your operation requires. Allow several hours after initial startup to observe its operation. Setting may be adjusted if desired.

Note: The "dot" near the upper left corner indicates that the control is providing power for the compressor to run. The initial temperature shown at startup is room temperature in degrees Fahrenheit.

To Change the Temperature Setting:

- Press the SET key and hold until the temperature setting displays and begins to flash (2-Sec) THEN RELEASE.
- Use the up & down arrows to select the new temperature desired.
- Press and release the SET key: The display will return to show the temperature of the freezer.

To set desired temperature, pay attention to decimal points. For example, to set controller at 5 degrees, **set to 5.0, NOT .5**

HOW COLD PLATES WORK:

Cold plates are filled with a eutectic solution, which is a substance that has a consistent chemistry as the material transitions from liquid to solid to liquid. These solutions are non-toxic. Eutectic solutions (as opposed to glycols or organic materials like “blue ice”) are the most efficient method to store cold energy.

When water freezes, it stores tremendous energy. As it melts, it releases the stored energy very efficiently. For instance, the amount of energy to make a pound of water change from 34 degrees to 33 degrees is 1 BTU. The energy required to go from 33 degrees to 32 degrees (ice) is 144 BTU. We call the transition from liquid to ice and ice to liquid a phase change in the material. The energy to keep products cold for extended periods relies on the energy stored during the phase change of the solution. The requirement to have the solution go through the phase change leads to a very important point. Cold plates will only work for any length of time when they are completely frozen. Putting product in a cold plate cart if the cold plates are not frozen solid prior to use will not do well for the product.

OPERATION & CARE OF THE CABINET:

CAUTION – This unit contains R290, a flammable hydro-carbon refrigerant. If the unit is not functioning properly, remove it from service, and call an HVAC technician certified to handle flammable refrigerants.

Do not operate the freezer unless the louver grills are properly secured in place.

Simply plug the freezer into an outlet following the guidelines above. The compressor will run until the freezer shuts off when it reaches the thermometer set point.

Your new C. Nelson mfg. low temperature cabinet represents the finest in engineering design, quality of material and craftsmanship effort. It will give you many years of trouble-free service with a minimum of attention.

The easy-to-clean exterior surfaces should be wiped off regularly with a lukewarm, mild detergent solution. Do not use any solvent-type cleaners, that could attack the plastic and vinyl parts of the cabinet. Never use abrasive cleansers or scoring pads as these will mar the surface. Never clean the lids or cabinet with steam or extremely hot water. **DO NOT WASH LIDS IN A DISHWASHER.**

From a sanitation standpoint, it is important that the interior of the cabinet also be cleaned periodically. Before cleaning the interior, the unit must be defrosted. See defrost instructions below before proceeding. A damp cloth using the same type of lukewarm detergent solution used for the exterior can be used on the interior. After cleaning, wipe the interior of the cabinet dry, replace the lids and plug in the freezer. Wait several hours to ensure that the freezer has reached its operating temperature before reloading the cabinet with product. No oiling of the equipment is required.

DEFROSTING & PREVENTIVE MAINTENANCE OF THE CABINET:

DEFROSTING – The freezer should be defrosted every 2-4 weeks or as needed to avoid excessive frost build-up. Excessive frost build-up significantly degrades the freezers performance and reduces operating efficiency.

To defrost the unit, remove the lids and the product. Unplug the unit or turn the switch to “OFF” position. When the cabinet has warmed up, any remaining frost accumulation may be scraped off the walls

CAREFULLY with a plastic or wood scraper. Never use a sharp or pointed metal scraper since it could damage the finish or possibly pierce the walls or refrigerant tubing.

Wipe the interior of the cabinet dry. This would be a good time to clean the interior of the cabinet per the instructions provided in OPERATION & CARE OF THE CABINET.

After the interior of the cabinet is dry, replace the lids and plug in the unit and/or turn the temperature control to the “ON” position. Wait several hours to ensure that freezer has reached its operating temperature before reloading the cabinet with product.

Cleaning Condenser: The freezer’s condenser should be cleaned every 6-months by a qualified HVAC technician. To clean the condenser, unplug the unit before removing any louvers. Once the louvers are removed, vacuum dust and debris from the coils and louvers using a soft brush attachment. Never use a sharp or pointed tool to clean condenser coils to avoid risk of puncturing tubing. Vacuum the condenser tunnel. Replace the louvers. Plug in the unit and ensure that the temperature control is in the “ON” position.

GENERAL TROUBLE SHOOTING GUIDE FOR CERTIFIED TECHNICIANS

The following guide deals with common performance issues related to the entire line of cabinets, such as electrical problems of the unit, plugged cap tubes, moisture, etc.

Problem	Probable Cause	Remedy
Condensing unit will not start and fan will not start	<ol style="list-style-type: none"> 1. Power cord is disconnected or no voltage at source¹ 2. Blown fuse or tripped circuit breaker¹ 3. Control stuck in “On” position 4. Loose wire on temperature control 	<ol style="list-style-type: none"> 1. Verify power cord is OK and check voltage at outlet with a voltmeter. Voltage must be +/- 10% of name plate voltage¹ 2. Replace fuse or reset circuit breaker. Check power at outlet with voltmeter. If circuit is overloaded, reduce load or use another circuit¹ 3. Replace 4. Check/tighten all connections
Compressor Unit will not start, but fan motor starts	<ol style="list-style-type: none"> 1. Loose wire on compressor connections 2. Low voltage¹ 3. Start Capacitor bad 4. Relay bad 5. Defective compressor 	<ol style="list-style-type: none"> 1. Check and tighten all compressor connections 2. Measure voltage at compressor with a voltmeter. Voltage must be +/- 10% of name plate voltage¹ 3. Replace 4. Replace 5. Replace
Condensing Unit starts but short cycles	<ol style="list-style-type: none"> 1. Overload defective 2. Defective thermostat 3. Check capillary tube 4. Low voltage 5. Defect in compressor winding 6. Loose connections on control or compressor housing 7. Low refrigerant level 	<ol style="list-style-type: none"> 1. Replace 2. Replace 3. Replace capillary tube and filter drier 4. Correct problem 5. Replace Compressor 6. Check and tighten all electrical connections 7. Check pressure/leak and, as necessary, charge with the proper amount of refrigerant as shown on name plate²
Compressor operates continuously, too warm	<ol style="list-style-type: none"> 1. Low refrigerant level 2. Poor ventilation 3. Room temperature is too warm 4. Excessive frost build-up 5. Plugged condenser 6. Fan motor not running or too noisy 7. Fan blade unbalanced or loose 8. Dirty condenser 9. Weak compressor 10. Check Capillary Tube 	<ol style="list-style-type: none"> 1. Check for leaks and, as necessary, charge with the proper amount of refrigerant as shown on name plate² 2. Ensure 3 – 6” clearance from walls for air flow 3. Adjust room temperature to achieve 75 degrees (F) and 55% RH 4. Defrost and clean cabinet 5. Clean Condenser 6. Replace fan motor 7. Replace 8. Clean 9. Replace 10. Replace Capillary Tube and Filter Drier

Compressor operates continuously, too cold	<ol style="list-style-type: none"> 1. Thermostat controller set incorrectly 2. Thermostat stuck in closed position 3. A short in the wire harness or compressor cord 4. Thermostat improperly located 	<ol style="list-style-type: none"> 1. Follow Temperature Adjustment guidelines 2. Check pressure and, as necessary, charge with the proper amount of refrigerant as shown on name plate² 3. Replace 4. Call C. Nelson
Wide temperature variations	<ol style="list-style-type: none"> 1. Improper refrigerant level² 2. Defective Thermostat 3. Plugged Capillary Tube 	<ol style="list-style-type: none"> 1. Check pressure and, as necessary, charge with the proper amount of refrigerant as shown on name plate² 2. Replace 3. Replace Capillary Tube and Filter Drier
Frosted Suction Valve	<ol style="list-style-type: none"> 1. Too much refrigerant² 	<ol style="list-style-type: none"> 1. Adjust charge and pressure to the proper amount of refrigerant as shown on name plate²
Noisy Unit	<ol style="list-style-type: none"> 1. Fasteners loose 2. Fan Noise 	<ol style="list-style-type: none"> 1. Repair as required 2. Replace fan motor if bearings show signs of wear or replace fan blade if unbalanced or mounting hole is worn
Led Lights	<ol style="list-style-type: none"> 1. Lights not On 2. Lights are dim or not lighting up 	<ol style="list-style-type: none"> 1. Check connector to Led Light strip, Check Led Lights on/off Switch 2. Check incoming voltage at connector end, must be 12 volts. Check Transformer Check the light strip

LIMITED WARRANTY

C. Nelson Manufacturing Company warrants, for a period of (12) months from original shipment from its factory, all products manufactured to be free from inherent defects in workmanship and materials, and will replace without charge, f.o.b. Oak Harbor, Ohio, a part or parts returned, transportation charges prepaid (customer pays freight), which our inspection proves to be thus defective.

C. Nelson warrants for a period of (5) years from original shipment from its factory, prorated insulation integrity, leaks in any internal tubing, and leaks or failures of cold plates installed by the factory. C. Nelson will repair or replace, at its option, based on the depreciated value of the equipment over a 5-year period.

This warranty shall not apply to any of our products, repaired or altered outside of our factory in any way so as, in our judgment, to affect its reliability, nor to any product which has been subject to misuse, negligence, or accident, nor shall this warranty apply to any product installed or connected otherwise than in accordance with instructions furnished. This warranty does not cover refrigerant expense or labor incidental to the replacement of parts under this warranty.

This warranty does not cover consequential damages, including but not limited to loss of product, loss of use or any other consequential damages resulting from any warranty claims against C. Nelson Mfg. Co.

The return of parts or complete product for any reason must be made with our prior consent, and the return of such parts must be made with transportation charges prepaid.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PRODUCT.

WARRANTY GUIDELINES AND PROCEDURES

Contact the C. Nelson Manufacturing Service Department, which can be reached at 419-898-3305, with request for warranty coverage. The Service Department will need the model number and serial number of the cabinet to initiate any warranty request.