



Operation Manual
Northwind Blast Chiller
Models: 500 and 1000



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OPERATIONAL MANUAL: BALLY NORTHWINDS BLAST CHILLER

BEFORE TURNING THE CONTROLLER ON, ensure that all wire connections are secure and correctly color coded.
Inspect all of the external wiring according to the wiring specifications.

WARNING: DO NOT OPERATE THE NORTHWINDS CONTROLLER WHEN THE CONTROL COVER HAS BEEN REMOVED.

1. The Control Panel:

- On/Off Power Switch for the unit.
- Backlight for screen is always on, unless power is shutoff at the breaker box.
- Operational Alarm displays red in a critical failure. (See #11)
Push to silence Alarm.
- F1 thru F4 are referenced from the screen.
- Previous/Next are shown when you can page through multiple screens. (See Auto & Manual Mode)

2. The Probes

Air Probe: Monitors air temperature

Product Probe: Monitors food temperature that the Blast Chiller used in Auto Mode.

Auxiliary Mode: Monitors food temperatures in other locations for data collection only.

3. The Stages

Chilling: This is where the Blast chiller chills the food as quickly as possible. The air temperature is driven to 5°F.

- If the air temperature goes below 5° the refrigeration will turn off for 3 minutes.
- If the door is opened, the fans and refrigeration will turn off. When the door is closed, the fans turn on and the refrigeration turns back on for 3 minutes after the door was originally opened.

Holding: The unit is holding the food until the user removes it from the blast chiller. The air temperature is kept below 45°F.

- If the air temperature goes above 45° the refrigeration will turn on for three minutes.

4. Modes of Operation

The Northwinds blast chiller has 3 different Modes or Cycles of operation.

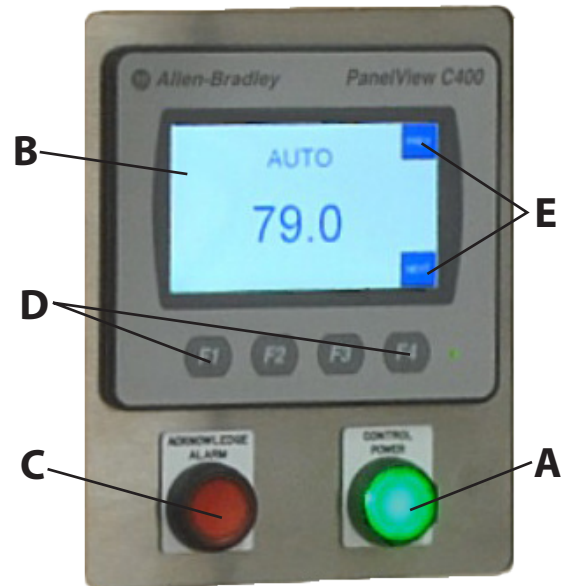
Automatic: Default Cycle. Fans and refrigeration cool food to 36°F using the Product Probe (inserted in the middle of the product) to determine when the cycle is complete.

Manual: Instead of inserting the Product Probe, a chilling time is entered in the controller. After the time is up the Northwind enters Auto mode.

Defrost: Melts the ice that may have accumulated on the coil, then returns to Auto mode.

5. Automatic Mode

- Put food cart into the Northwinds.
- Insert Product probe and Auxiliary Probes in the middle of the tray of food.
- Close the door.
- Turn the Northwinds on.
- The fans and refrigeration will turn on until the Product probe temperature reaches 36°F.
- The system moves into the Holding stage. The refrigeration is off, but the fans stay on.



6. The Display Screens in Automatic Mode:

While in automatic, you can push the Next/Previous buttons on the display to page through information appropriate for this mode. When the automatic mode begins, you will see the word "AUTO" and the product temperature. As you push the **next** arrow, you will see the following screens:

Screen Reads	Appears When
Probe Temperatures:	Show temperatures for the Air, Product, and Auxiliary Probes.
Chill Time:	Indicates time since the food probe temperature went below 140°F.
Refrigeration Status:	This is an on/off indicator
Fault Page	Indicates if there are any faults (such as broken thermocouple circuits).
Special Screens	
Product temperature is close to air temperature	Product temperature and air are within 15°F of each other at the start.
Product Temperature Reached	Chill process has ended and the unit is in holding mode.

7. Defrost Mode

During the Defrost Cycle heaters in the evaporator coils will turn on (they stay on even if the door is opened). The Defrost Cycle will end after 20 minutes or by the Defrost Termination Switch (DTS, see #8). Following the completion of the Defrost Cycle, a timer countdown will be shown on the display screen while the refrigeration turns on for 3 minutes before the fans. This causes any water on the coil fins to freeze.

To enter Defrost:

- After the Chilling cycle has been completed, remove the food cart, and push **F2**.
- You will be prompted to insert the password, which is: **22**.
- Push and hold the **+/-10's** button until you see 20.
- Push the **+/- 1's** buttons to reach 22.
- After 22 is showing on the screen, hit **F2** again.
- The Defrost Cycle will begin.

8. Defrost Termination System (DTS)

The defrost termination switch is a "switch with a memory" that turns on when it senses a temperature of 60°F, and stays on until it senses a temperature down to 20°F. It stays off until the temperature goes back up to 60°F again. In the blast chiller, once the air temperature gets down to 20°F during a cycle, you should be able to go into defrost immediately after using it. If the unit sits for a while and gets warm enough to melt all the ice on the coil without defrosting it, then the unit will let you know by displaying "Defrost not Needed" when F2 is initially pushed.

NOTE:

- If the evaporator coil fills up with ice it can diminish the performance of your Northwinds.
- If the unit runs for three to six hours a day then remains idle, the Defrost Cycle typically isn't needed because the temperature rise will thaw and drain any ice on the evaporator coils.

9. Manual Mode

To use Manual Mode:

- Turn the Northwinds on.
- Push **F3**.
- Insert the code, which is **22**, as described in "Defrost".
- Push **F3** again.
- Adjusting the Chilling Time to fit your needs (see Manual Time, #10).
- Put the food cart in the Northwinds.
- Insert food probes - *Optional*.
- Close the door.

The Chill Time chosen will be the length of time that the refrigeration system will run. When the chill time is up, the unit returns to Automatic Mode. If the product probe is in the food, it will continue to chill the food if the food is still above 36°F. Otherwise, the unit will be in holding stage.

10. The Display Screens in Manual Mode:

Manual Mode: Air temperature in large letters on the top line, followed by the total chill time in small letters, and the current time (Time since chilling started). As you push the down arrow, you will see the following screens in this order:

Screen Reads	Appears When
Measured Temperatures:	Show temperatures for the Air, Product, and Auxiliary Probes.
Manual Mode Time	Set the time for the manual cycle to run by following instructions on the screen. Any time changes take effect immediately.
Refrigeration Status:	This is an on/off indicator
Fault Page	Indicates if there are any faults (<i>such as broken thermocouple circuits</i>).

11. The Red Light: When there is a critical failure a red operational error light and an alarm turns on. Possible triggers are:

Error displayed on screen	Meaning
Air temperature above 100°	This is most likely due to a refrigeration failure. The unit will shut down so that the fans will not draw out even more heat from the food, perhaps triggering the fire suppression system. The food must be cooled some other way, and the refrigeration system must be serviced.
Fan contactor failure	This is a self-diagnosis by the controller. The fans will not come on if the fan contactor fails. Any food must be cooled elsewhere, and replace the contactor.
Defrost contactor failure	This is self-diagnosis by the controller. The unit will not defrost. This may not prevent acceptable performance, since it only effects defrost. Replace the contactor.
Air probe open	The air temperature input probe is not working correctly, and the unit cannot operate.

12. Item Maintenance Locations for Bally Northwinds Blast Chillers

Item	Part#	Location/Means of Access
Fan Motor	016915	Inside Fan Frame/Remove entire Fan Cover (<i>not the wire fan guards</i>).
Refrigeration Valve	005424	Part of the Liquid Line, left side of Coil Frame. Unscrew the 6 black topped screws, and remove coil filter and side cover.
Solenoid Valve	061514	Attached to the Refrigeration Valve. Part of the Liquid Line. (<i>See above</i>).
TXV	000388	Part of the Liquid Line (<i>See above</i>).
Power Head	099644	Attached to TXV, above (<i>Special 60" bulb tube</i>).
Defrost Switch	088779	In the top bend of coil frame, usually on the Liquid Line side. (<i>Wired closely to the coil junction box.</i>)
Air Probe	046759	Behind the upper fan motor. Remove the Fan Cover (<i>not the Wire guard</i>).
Auxiliary Probe	089226	In plain sight. Plugged into top of coil frame.
LED Light	014936	Remove plenum screws, slide plenum to side so to access 3/8 nuts holding LED housing. Use 5/16 nut driver and 3/8 wrench to remove two hex head screws holding the LED housing in place. LED can now be unplugged and replaced.
LED Power Cord	061735	
Heater	016661	Coil assembly will have to be disconnected (refrigerant line, electrical, trim) and coil pulled forward until heater are accessible from back of coil.

Probe plugs: The temperature probes are low voltage circuits that are routed through plugs located at the top of the coil frame and behind the fan frame.

Problem	Solution
Erroneous probe readings	Use a light abrasive pad (like Scotch-Brite) to clean the plugs, and a Q-tip to clean the receptacles.

Defrost Switch: The defrost switch sends a signal back to the controller indicating the temperature of the coil. The switch is designed to handle high amperages and has a life span of about 100,000 cycles.

Problem	Symptom
Fails Closed	The Defrost Cycle cannot be initiated. Even when the coil is frozen solid
Fails Open	The full 20 minute Defrost Cycle will occur at back request. Even when the blast chiller interior is at room temperature.

A Northwind 500 Model is shown. A Northwind 1000 Model is twice as deep.

