Sahara

Electric Hot Box

OWNER'S MANUAL:
Electric Models

Model No._____
Serial No._____

Designed, Patented and Manufactured by:
BENKO PRODUCTS
ENGINEERED TO BE MORE
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SECTION 1 - INTRODUCTION

1-1 GENERAL

This manual has been prepared for use in familiarizing personnel with the design, installation, operation, and maintenance of the Drum Warming Oven. Information presented herein should be given careful consideration to assure safe, optimum performance of this equipment.

1-2 RECEIVING/HANDLING

Prior to installation of the equipment, remove packaging material around unit and carefully inspect for any damage that may have occurred during shipment. Remove optional accessories from inside the Drum Warming Oven and inspect these for damage also. Any claims for loss or damage that may have occurred in transit must be filed by the purchaser with the carrier.

1-3 SAFETY - ELECTRIC DRUM WARMING OVEN

CAUTION: The Sahara Electric Drum Warming Oven should not be used to heat flammable or combustible materials or used in flammable or hazardous areas.

CAUTION: The Hot Box outer skin temperature may exceed 120 degrees Fahrenheit. Prolonged contact may result in bodily injury.

CAUTION: Do not stack Hot Boxes more than two (2) high.

CAUTION: When Hot Box ovens are used for heating materials that may generate hazardous vapors, venting or exhausting of the unit is required. Always open doors slowly and avoid breathing the air from inside the unit.

SECTION 2 - INSTALLATION OF UNIT

2-1 LEVELING INSTRUCTIONS

IMPORTANT: For best operation of the oven door latching mechanism and proper fit and sealing of the doors, the ovens should be installed on a flat solid surface.

1. If the floor in the desired installation location is not flat and level, then the oven corners must be shimmed to achieve a square front opening.
2. We recommend ¼" thick shim plates, at least 4"x 4" square, be used under the necessary corner to be raised. Use one shim at a time and test the doors. Keep stacking the shim plates until the doors close and seal.
3. It is best to first try to achieve a bubble level condition across the top of the oven in both directions - left to right and front to back. Once this has been achieved, then the doors should close properly.

In some cases this will not work and then the second method of squaring the oven opening to within 1/8 " is required:

1. First, before checking the oven front opening for square, it is important to shim the rear corners to achieve a bubble level condition on both sides of the oven roof from front to rear.
2. Once the oven is level front to back, then take diagonal measurements across the front opening of the oven. Measure from the lower right corner to the upper left corner of the oven and record this dimension. Then measure from the lower left corner to the upper right corner and record this dimension. We recommend that these 2 readings be within 1/8" of each other.
3. To achieve this 1/8"dimension, place a shim under the lower corner of the longest diagonal measurement. Place one shim at a time and then measure again.

In some cases, it is simply easiest to take a trial and error approach: raise one corner of the oven at a time and check the fit of the doors to see if they get better or worse. Alternate by adding or removing shims from each corner of the oven until good door closure is achieved.

SECTION 2 - INSTALLATION

2-2 ELECTRIC CONNECTIONS

Connect power to electrical control enclosure. Reference electrical schematic located inside control enclosure.

2-3 TEMPERATURE SETTING

Set desired temperature. See operating instructions section of manual.

2-4 OVERTEMPERATURE SETTING

The Hot Box is equipped with a high temperature cutoff. The high temperature cutoff adjustment is located inside the electrical control enclosure.

CAUTION: DO NOT ENTER, DISCONNECT, OR CONTROL ENCLOSURES WITHOUT SHUTTING OFF POWER TO THE UNIT. INSTALLATION AND ADJUSTMENT OF CONTROLS SHOULD BE MADE BY A QUALIFIED ELECTRICIAN.

SECTION 3 - OPERATING INSTRUCTIONS

SAHARA HOT BOX Ovens utilize a SELF-TUNING FUZZY LOGIC TEMPERATURE CONTROLLER. What this means is that the temperature controller will self-adjust its internal control parameters to match the oven it is attached to. The end result of this self-tuning action is that over time the oven temperature control will become more consistent and will automatically adjust to changing ambient conditions. The user should not find it necessary to make any adjustments to the control parameters.

SET IT AND FORGET IT!!

3-1 OVEN OPERATING INSTRUCTIONS

1. Turn power switch to the “ON” position.
2. Wait about five seconds for the FDC 9100 and the FDC-L91 to cycle through self-test.
3. Once self-test is complete:
    - The upper display on the Temperature Control (FDC 9100) will show the current oven temperature (PV).
    - The lower display on the FDC 9100 will show the oven set point temperature. (Note: when you first turn your oven on this value will usually be 200° F. which is the normal test temperature used at the factory.)
    - The display on the Over Temperature Controller (FDC-L91) will show the current oven temperature (PV).
4. If your oven has a blower option the oven will not heat unless the blower switch is turned to the “ON” position. The green lamp should light and the oven will be heating.
5. If your oven has a 7 Day Timer option you have two modes of operation available:
    - Timer Switch “ON” oven will only operate during the programmed times set in the timer. (See the Omron H2S-B operating manual) you must set the “Time of Day” and select the daily operating “ON and OFF” times for the oven to operate in this mode.
    - Timer Switch “Bypass” the oven will operate continuously.

NOTE: The Omron timer used has two (2) output relays available, however the SAHARA OVEN controls only use output 1 and only time values set for output 1 will control the oven.

3-2 OVER -TEMPERATURE CONTROL OPERATING IN-STRUCTIONS

1. After the power up sequence is complete the over temperature set point may be changed.
2. Press the SCROLL key once located on the lower left of the FDC-L91 to view the High Set Point 1 (HSP1) value. NOTE: THIS VALUE MUST BE SET AT LEAST 20 DEGREES HIGHER THAN THE OPERATING TEMPERATURE SET POINT SELECTED ON THE TEMPERATURE CONTROLLER (FDC 9100)
3. To change this value use the up and down arrow keys. If the LOCK light is "ON" the "RESET" button must be pressed once to turn the "LOCK" light off and then the arrow keys will work. The FDC-L91 will automatically go back into "LOCK" mode after about 2 minutes.
4. If an over temperature event has occurred (the temperature in the oven exceeds the HSP1 value) the Over Temperature Controller (FDC-L91) will go into an alarm condition and will shut off and lock out the power to the heating elements. The oven will oven will return to room temperature and will not heat up again until the unit is reset.
5. If an over temperature event has occurred, the small green light OP1 will turn on. When OP1 is "ON" the oven will not heat. Once the oven temperature has cooled to below the HSP1 value the RESET key on the lower right of the Over Temperature Controller (FDC-L91) may be pressed once and released. This will turn "OFF" the OP1 indicator and the oven will again begin to heat up.

3-3 AUTO TUNE INSTRUCTIONS

1. Turn power switch to the "ON" position
2. Wait about 5 seconds for the FDC 9100 and the FDC L-91 to cycle through self test
3. Once self test is complete:
    - The upper display on the Temperature Control (FDC 9100) will show the current oven temperature (PV).
    - The lower display on the FDC 9100 will show the oven set point temperature.

3-4 SET THE OVEN OPERATING TEMPERATURE

1. On the Temperature Controller (FDC 9100) press the up or down arrow keys and observe the value on the SV display. This number should be changing is response to the arrow keys; once the desired value is reached the set point has been changed.
2. During Auto Tune make sure to set the value on the FDC-L91 limit control at least 30 degrees higher than the operating set point. After auto tune is complete you can reduce the high limit set point to between 10 and 20 degrees above the operating set point.
3. After the power up sequence is complete the over temperature set point may be changed.
4. Press the SCROLL key once located on the lower left of the FDC L91 to view the High Set Point 1 (HSP1) value. NOTE: THIS VALUE MUST BE SET AT LEAST 30 DEGREES HIGHER THAN THE OPERATING TEMPERATURE SET POINT SELECTED ON THE TEMPERATURE CONTROLLER!
5. To change this value use the up and down arrow keys.

3-5 INITIATE AUTO-TUNE

1. Press and hold the circular arrow key located on the lower left of the Temperature controller. The upper display will cycle through the menu options when the display shows " A-t " release the button momentarily.
2. Now press and hold the circular arrow key again for about 3 seconds and the "AT" light to the left of the bottom display will begin to flash. The oven is now in auto tune mode. When the "AT" light stops flashing the "PID" parameters internal to the instrument will have been changed to optimum values.
3. The oven is now ready to be used for normal operation.

Change the value for HSP1 on the high limit controller (FDC-L91) to suit your normal safety limit of operation!

SECTION 4 - REPLACEMENT PARTS

SAHARA ELECTRIC MODELS

PLEASE STATE MODEL AND SERIAL NUMBER ON FRONT OF MANUAL WHEN ORDERING REPLACEMENT PARTS.

DESCRIPTION

DIGITAL TEMPERATURE CONTROLLER
(FDC 9100)

PID DIGITAL OVER TEMPERATURE CONTROLLER
(FDC-L91)

RIGHT DOOR W/ HINGES

LEFT DOOR W/ HINGES

DOOR GASKET REPLACEMENT KIT

CAUTION DECAL REPLACEMENT KIT

RESISTANCE HEATING ELEMENT