WWD30
Service Manual

General Information 2
Installation Information 4
Controls & Operation 7
Component Access & Removal 19
Troubleshooting Guide 26
Technical Data 30
Wiring Diagrams 31

INTRODUCTION

This Wolf Warming Drawer Technical Service Manual (WWD30), Part #807858, has been compiled to provide the most recent technical service information about the Wolf Warming Drawer including parts list and exploded views. This information will enable service technician's to troubleshoot and diagnose malfunctions, perform necessary repairs and return a Wolf Warming Drawer to proper operational condition.

The Service Technician should read the complete instructions contained in this technical service manual before initiating any repairs on a Wolf Appliance.

IMPORTANT SAFETY INFORMATION

Below are Product Safety Labels used in this manual. The "Signal Words" used are **WARNING** and **CAUTION**.

Please note that these safety labels are placed in areas where awareness of personal safety and product safety should be taken.

⚠ WARNING

INDICATES THAT HAZARDOUS OR UNSAFE PRACTICES COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH

⚠ CAUTION

Indicates that hazardous or unsafe practices could result in minor personal injury or product and/or property damage

In addition, please pay attention to the signal word ***"NOTE"***, which highlights especially important information within each section.

TECHNICAL ASSISTANCE

If you should have any questions regarding a Wolf appliance and/or this manual, please contact:

Wolf Appliance, Inc.
ATTN: Service Department
P.O. Box 44988
Madison, WI 53744-4988

Customer Service & Parts / Warranty Claims
Phone #: (800) 332 - 9513

Technical Assistance
Phone #: (800) 919 - 8324

Customer Service & Technical Assistance
Facsimile #: (608) 441 - 5887

Parts / Warranty Claims
Facsimile #: (608) 441 - 5886

Service Department e-mail Address
customerservice@wolfappliance.com

Office Hours:
7:00 AM to 7:00 PM Central Time
Monday through Friday

This manual is designed to be used by Authorized Service Personnel only. Wolf Appliance, Inc. assumes no responsibility for any repairs made to Wolf appliances by anyone other than Authorized Service Technicians.

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WARRANTY INFORMATION

This page contains a summary of the 2 *& 5 Year Warranty* that is supplied with every Wolf product, followed by a *Non Residential Warranty summary*, then notes about the warranties.

TWO & FIVE YEAR Warranty Summary

- Two year TOTAL PRODUCT warranty, parts and labor.
- Limited Parts Only Warranty for the 3rd through 5th year on the following parts: heating element, electronic control system.

  NOTE: *This warranty only applies to products installed for normal residential use in the United States or Canada.*

NON RESIDENTIAL Warranty Summary

- Two year TOTAL PRODUCT warranty, parts and labor.

  NOTE: *This warranty only applies to products installed in test kitchens, culinary and school kitchens, and other installations which help promote Wolf Appliance products. Restaurant installations and other similar commercial applications carry no warranty.*

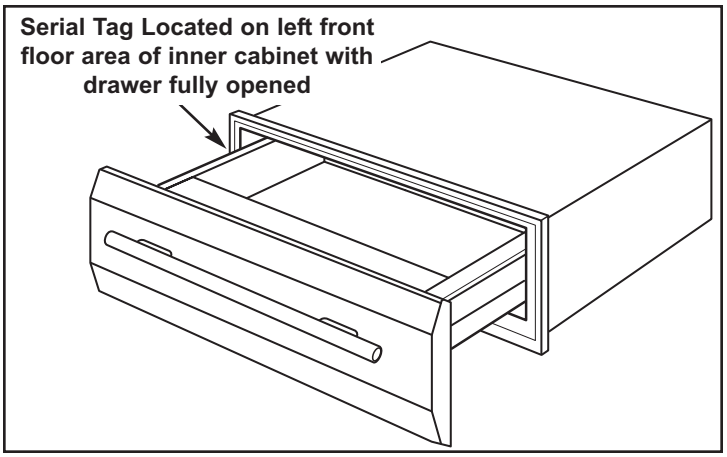


Figure 1-1. Serial tag location

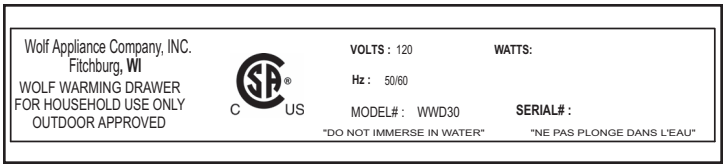


Figure 1-2. Serial tag

Warranty Notes:

- *All warranties begin at the time of the unit's initial installation.*
- *All Warranty and Service information collected by Wolf Appliance Inc. is arranged and stored under the unit serial number and/or the customer's name. It is requested to have the model and serial number available whenever contacting the factory or parts distributor.*
- See Figure 1-1 serial tag location and Figure 1-2 serial tag layout.

Model Features

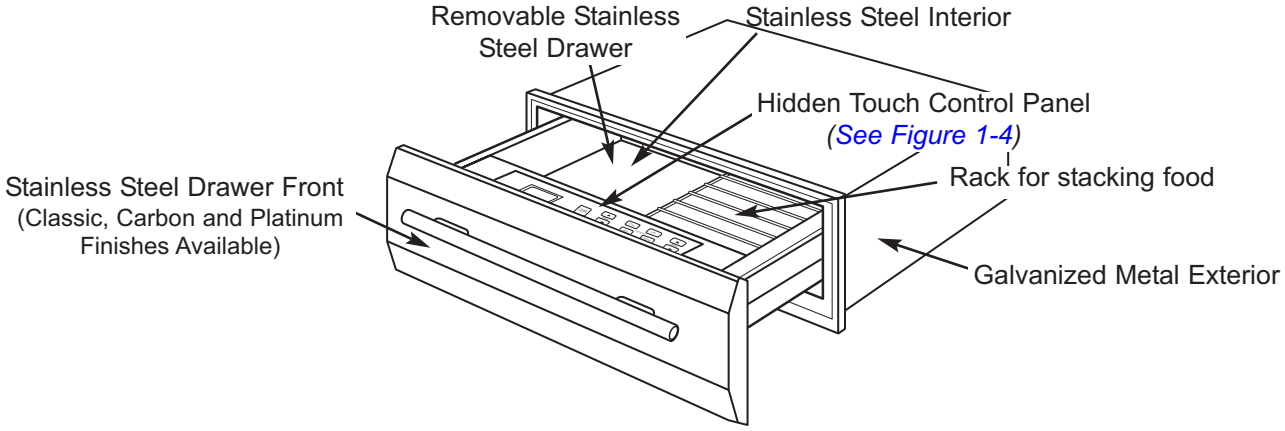


Figure 1-3. Control Panel Layout

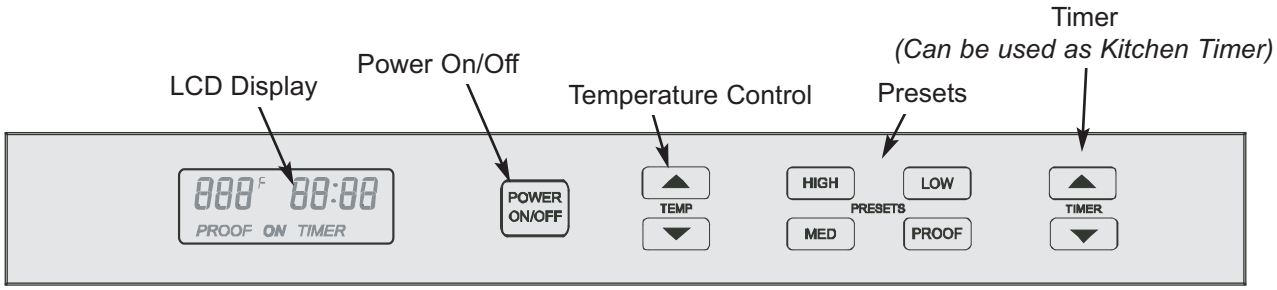


Figure 1-4. Keypad Layout

INSTALLATION INFORMATION

The Wolf Warming Drawer is designed to be set into a built-in wall or cabinet installation.

This section of the manual covers some of the installation issues that a service technician may need to know when servicing a Wolf warming drawer. If additional installation information is needed after reviewing this section of the manual, please refer to the installation guide or contact Wolf Appliance Co., LLC Customer Service Department at (800) 332-9513.

Electrical Requirements:

NOTE: *All National Electrical Code regulations must be followed. In addition, be aware of local codes and ordinances when installing your service.*

- Dedicated 110 to 120 Volts AC, 60Hz, 15 or 20 ampere fused electrical supply
- Separate electrical circuit serving only this appliance
- A properly grounded 3-prong receptacle

NOTE: *For outdoor applications, the unit must be be connected to a properly grounded GFCI circuit.*

⚠ WARNING

TO AVOID SHOCK HAZARD, THE INSTALLATION SITE MUST BE EQUIPPED WITH A PROPERLY GROUNDED 3-SLOT RECEPTACLE TO MATCH THE 3-PRONG (GROUNDED) POWER SUPPLY CORD PROVIDED ON THE APPLIANCE.

TO AVOID SHOCK HAZARD, NEVER REMOVE THE GROUND PRONG FROM THE PLUG OF THE POWER SUPPLY CORD.

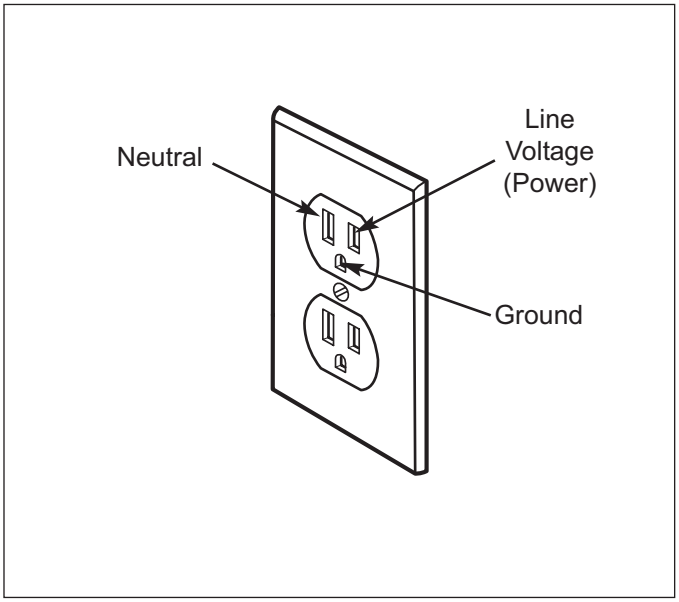


Figure 2-1. Electrical Receptacle

NOTE: *This appliance must be installed in accordance with National Electrical Codes, as well as all state, municipal and local codes. The correct voltage, frequency and amperage must be supplied to the appliance from a dedicated, grounded circuit which is protected by a properly sized circuit breaker or time delay fuse. The proper voltage, frequency, and amperage ratings are listed on the product rating plate.*

Cabinet Supports:

NOTE: *When the warming drawer is installed with a built-in oven, additional clearance between openings may be required. Check that oven supports do not obstruct the interior dimensions required for the warming drawer.*

NOTE: *Dimensions in parentheses are in millimeters unless otherwise specified.*

The warming drawer may be supported by either a solid platform or 2" (51) x 2" (51) or 2" (51) x 4" (102) runners. The platform or runners must be level, rigidly mounted and flush with the bottom edge of the opening. They must be able to support 200 lbs. (90.7 kg).

NOTE: *Make sure that the platform or runners are level. There is no way to level the warming drawer once it has been installed.*

Warming Drawer Installation:

Install a 2" (51) x 2" (51) or 2" (51) x 4" (102) anti-tip block against the rear cabinet wall.

Turn power off to the electrical outlet.

Slide the left corner of the warming drawer into the opening.

NOTE: *A 6 foot power cord is supplied with the unit. Depending on the outlet location, the unit can be set in front of opening and plugged in.*

If the electrical outlet is installed inside the opening, plug the power cord into the outlet. The excess cord should be coiled and secured directly behind warming drawer. If the outlet is located in an adjacent cabinet, thread the power cord through the hole in the cabinet wall. Push the drawer back into the opening until the front flange is flush with the cabinet front. Make sure the power cord does not get trapped under the warming drawer.

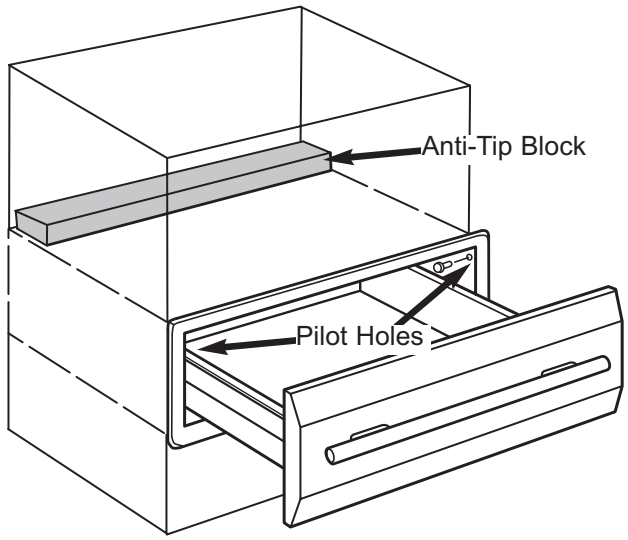


Figure 2-2. Drilled Pilot Holes for Securing Unit

Open the warming drawer to its full extension.

Drill pilot holes in each corner of the warming drawer through holes in the side frame and install the wood screws provided with the unit. (See Figure 2-2)

Installation Specifications:

The following pages provide the overall dimensions, finished rough opening dimensions and electrical placement for the Wolf warming drawer with stainless steel drawer front. For information on integrated Drawer Fronts, see the installation instructions provided with the product.

Wolf recommends using a 33" (838) wide cabinet for the warming drawer with stainless steel drawer front. A minimum 30" (762) wide by 24" (610) deep cabinet is required with a minimum base support of 200 lbs (91 kg). (See Figure 2-3 and 2-5)

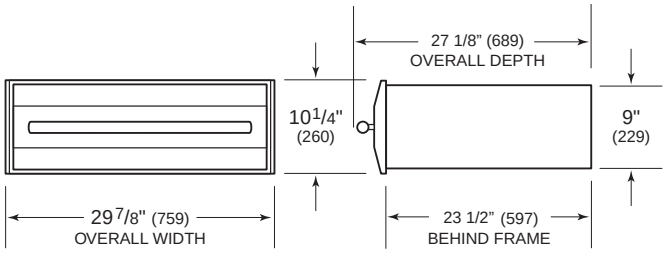


Figure 2-3. Overall Unit Dimensions

MODEL WWD30
with Stainless Steel Drawer & Integrated Front

Overall Width	29 7/8" (759)
Overall Height	10 1/4" (340)
Overall Depth	27 1/8" (689)
Overall Depth (behind frame)	23 1/2" (597)
Minimum Cabinet Width	30" (762)
Minimum Cabinet Depth	24" (610)
Minimum Base Support	200 lbs (91 kg)
Opening Width	28 5/8" (727)
Opening Height	9 1/8" (232)
Opening Depth	23 7/8" (606)

Dimensions may vary to ± 1/8" (3).

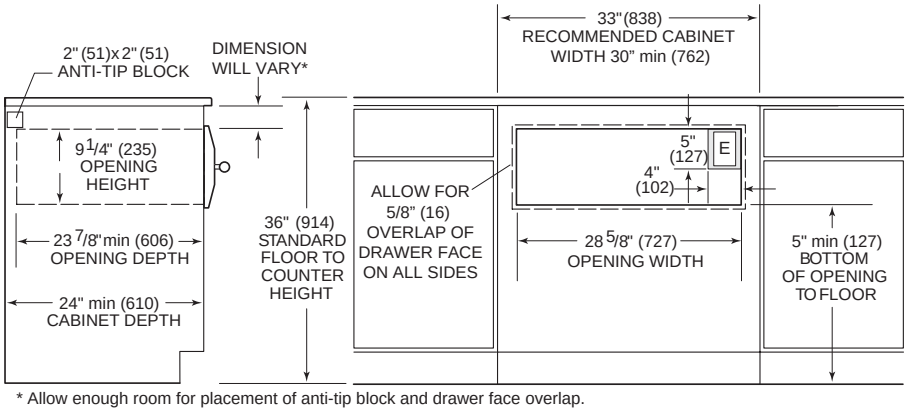
Allow 3/8" (11) Additional depth for cord thickness

Figure 2-4. Overall Cabinet Dimensions

Undercounter Installation:

For undercounter installations, 23 5/8" (600) from the bottom of the warming drawer opening to the floor is recommended. Electrical can be installed anywhere except location shown. A minimum of 5" (127) above the floor or 1" (25) above the toe kick.

The Wolf warming drawer with stainless steel drawer front may be installed below an electric or gas cooktop, provided the warming drawer is fully enclosed, top and bottom. Refer to installation instructions for the cooktop for additional specifications. Dimensions will vary according to the specific installation. (See Figure 2-5)



* Allow enough room for placement of anti-tip block and drawer face overlap.

Figure 2-5. Undercounter Installation

Warming Drawer Installation with Built-In Oven:

The Wolf warming drawer with stainless steel drawer front may be installed below or above a Wolf 30" (762) single oven, provided the warming drawer is fully enclosed, top and bottom. See Figure 2.6

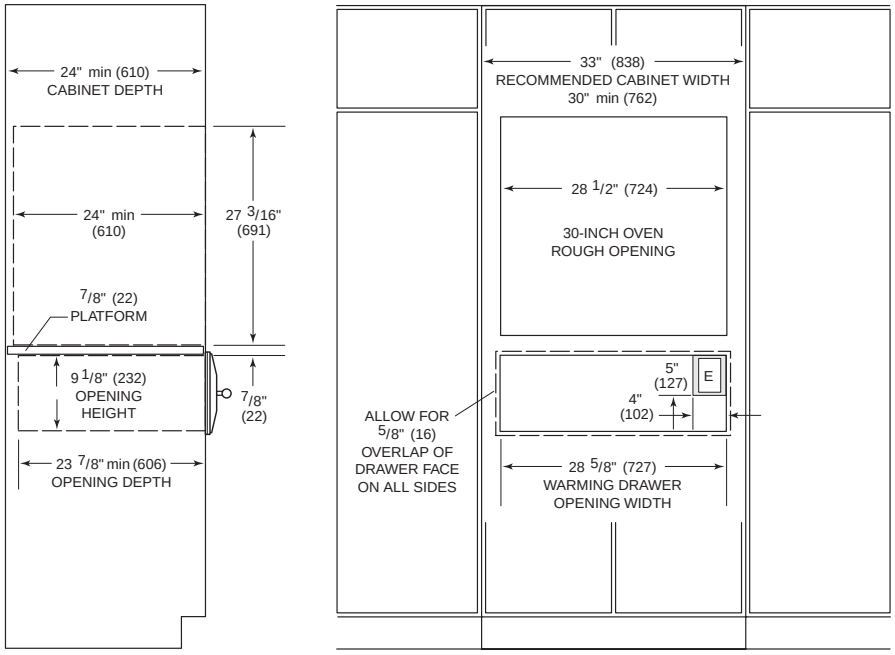
NOTE: *Dimensions will vary according to the specific installation.*

The Wolf warming drawer is designed and agency approved for installation with Wolf built-in ovens. See the label attached to the top of the warming drawer for approved models.

The warming drawer platform must be able to support 200 lbs. (91 kg). It must be a minimum of 1" (25) above the toe kick to allow for the overlap of the warming drawer trim.

NOTE: *Additional clearance between warming drawer and oven openings may be required. Check that oven supports do not obstruct the interior dimensions required for the warming drawer.*

When the warming drawer is installed below a built-in oven, a minimum of 2 3/8" (60) between warming drawer and oven openings is required for clearance of overlaps. When installed above a built-in oven, a minimum of 2" (51) is required.



NOTE: Refer to the built-in 30" (762) single oven specifications for electrical location.

Figure 2-6. Installation with Built-In Wall Oven

NOTE: *When the warming drawer is installed above a built-in oven, a 2" (51) platform with a decorative edge is required to allow for clearance of overlaps.*

GENERAL INFORMATION:

Electronic control will provide temperature control in the warming drawer as determined and set by user. Up and down arrow keys are provided to increase and decrease, respectively, the temperature of the drawer and operation time. Temperature control range of the warming drawer main board control will be 80ºF to 200ºF (26.7ºC to 93.3ºC). Amplitude of this temperature control will be ± 5ºF. When the control sees a temperature at the thermistor 5ºF above setpoint, control will open the element relay. Once the control sees a thermistor temperature of 5ºF below setpoint, the relay will close allowing element to cycle on.

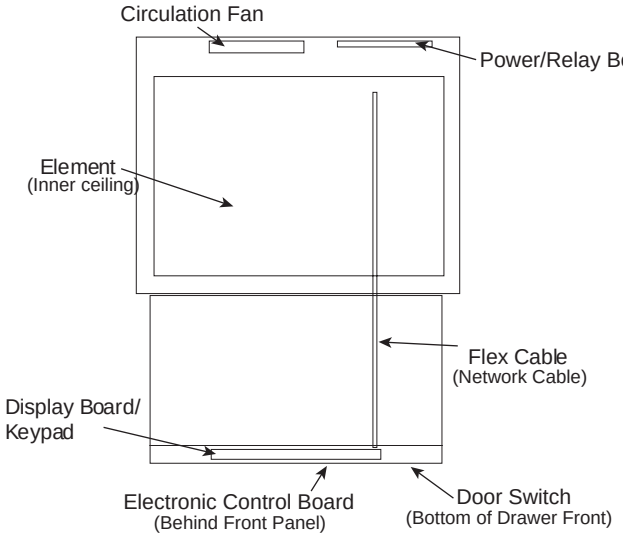


Figure 3-1. Component Location Top View.

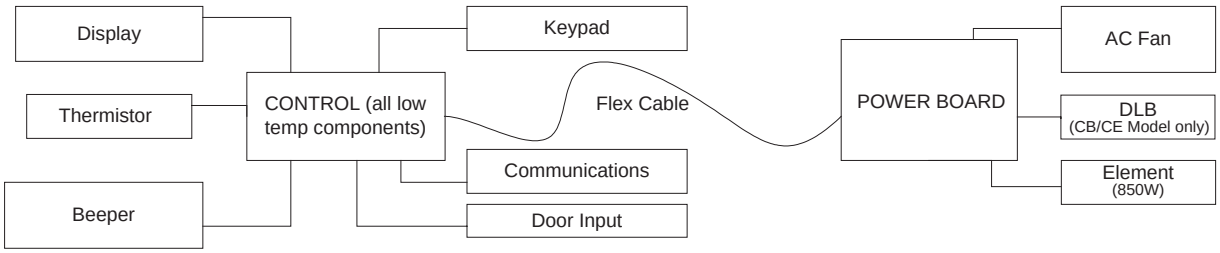


Figure 3-2. Electronic Control System Diagram.

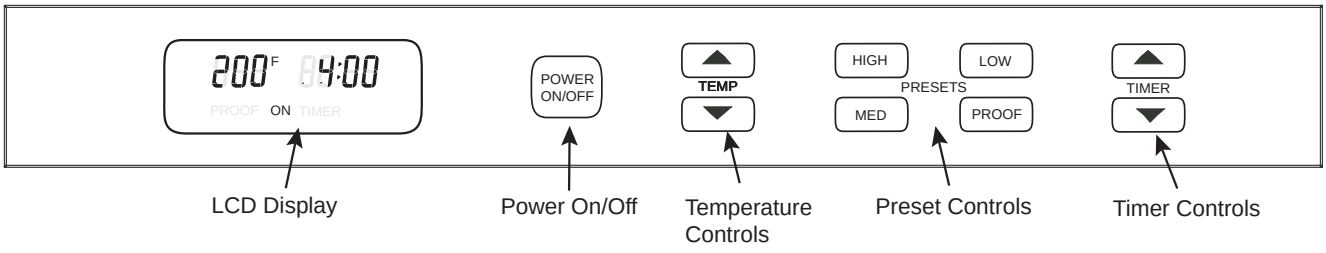


Figure 3-3. Keyboard Layout.

DESCRIPTION OVERVIEW:

***Element*:**
The element will be powered by the element relay (normally-open contacts). This allows the element to be disabled under most conditions. Only during a call for heat from the main controller, will the element relay be energized.

Fan:
The fan will be powered by the fan relay (normally-open contacts). This allows the fan to be disabled under most conditions. Only during a warming mode from the main controller, will the fan be in use.

Drawer Input:

The drawer switch will be a normally open switch, (when drawer is open), and closed when drawer is closed. When drawer is opened and is in a normal heating mode, unit will de-energize relays to fan and element. If back lighting of the LCD is enabled, then opening of the drawer will turn on back lighting, and by closing the drawer, back lighting will go off.

NOTE: *Sabbath mode has unique requirements. Please see Sabbath mode this section.*

User Display:

The user display shows warming drawer preset temperature, any timed feature which is in process, and whether the unit is in Proof mode. Other indicators include the 'ON' indicator which notes when unit is heating, (always on when in the Sabbath mode), and displays which temperature units, (°F or °C), the temperature is being displayed in. This area also informs user if there is an issue with the control and will display an error code in the temperature and/or timer display. The user display numbers will be displayed as shown in the following pages.

The characters in the user display will only be illuminated when a normal warming mode, service diagnostic mode, or kitchen timer is being used. At all other times, display will be remain off.

The "PROOF" is on anytime "PROOF" mode is being used.

The "ON" indicator is on anytime control is calling for heat. The exception is during Sabbath mode where the "ON" indicator stays on constantly.

NOTE: *"TIMER" is on anytime there is a timed warming event or if kitchen timer is being used.*

NOTE: *"TIMER" is not an option in Sabbath mode.*

POWER Key:

The "POWER" key is used to turn unit on and off. While unit is in "OFF" mode, the Power key and "TIMER" up and down arrow keys remain active. If unit is powered up and Power key is pressed, the display will turn off along with any associated backlighting. If unit is off and the Power key is pressed, the control backlighting (if applicable), will turn on and the rest of the keys will be active.

NOTE: *If no other key is pressed within 20 seconds, unit will turn off.*

TEMP Up/Down Key:

The "TEMP" up or down arrow keys can be used to adjust temperature. By pressing and holding the up or down arrow, unit will begin changing at the rate of 1º per ½ second until the first 5º increment is obtained. If the user continues pressing, control will increment in 5º increments per ½ second. The "TEMP" up or down arrow keys remain active as long as control is On.

NOTE: *Exception to this is in the Sabbath Mode.*

NOTE: *Temperature range is 80ºF to 200ºF, except in "PROOF" mode where maximum temperature is 120ºF.*

TIMER Key:

The "TIMER" up or down arrow key is used to change time left in normal warming mode. Timer keys can also be used as a Kitchen Timer. The rate of this ascension shall be ½ second per increment and in the following order: one minute from 1-5 minutes; every five minutes from 5-30 minutes; 30 minute increments up to 5 hours; then hourly up to 24 hours. At any time during a Normal Heating Mode, operator can adjust time left for warming by pressing "TIMER" up or down arrow keys.

NOTE: *The exception to this is during the Sabbath Mode (only the "Power On/Off" key is active in this mode).*

SYSTEM MODES:

The control can be placed into several different operational modes which changes preset conditions inside the warming drawer. Details as to what each mode does to the operation of the drawer can be found below.

POWER UP:

Power up is defined as the initial powering of unit through electrical cord. Not to be confused with pressing "Power On/Off" key, defined as turning the unit on/off. Upon product power up, all segments of the LCD will illuminate for 5 seconds before going into a unit off mode.

NOTE: *There will be a delay of 5 - 10 seconds before LCD will illuminate after power up.*

After entering unit off mode, display will show "PF" in the time display until user presses a button. If unit was previously in a warming mode prior to power loss, control will also emit a power failure chime every 30 seconds while displaying "PF" until the "Power On/Off" is pressed.

NOTE: *Pressing any key will clear "PF" error and unit will operate normally.*

ON MODES:

On Modes control behavior of electrical components of the warming drawer when unit is "ON". Unit can be placed into "ON" mode by pressing the"Power On/Off" button from an "OFF" Mode. Any back lighting will be immediately activated when "Power On/Off" key is pressed and "- - -' will be displayed in the temperature display with the respective temperature scale (F or C) blinking. (See Figure 3-4)

NOTE: *If no other key is pressed within 20 seconds, unit will turn off.*

NORMAL WARMING MODE:

Normal warming mode is the basic operating mode when power is turned on and any warming function is selected. This will include heating by the element and circulation of air by use of the fan.

Mode Entry:

The unit can be placed into a normal warming mode by simply pressing the "Power On/Off" button followed by either "TEMP" up or down arrow keys, or any preset is pressed. (See Figure 3-4)

NOTE: *If no other key is pressed within 20 seconds, unit will turn off.*

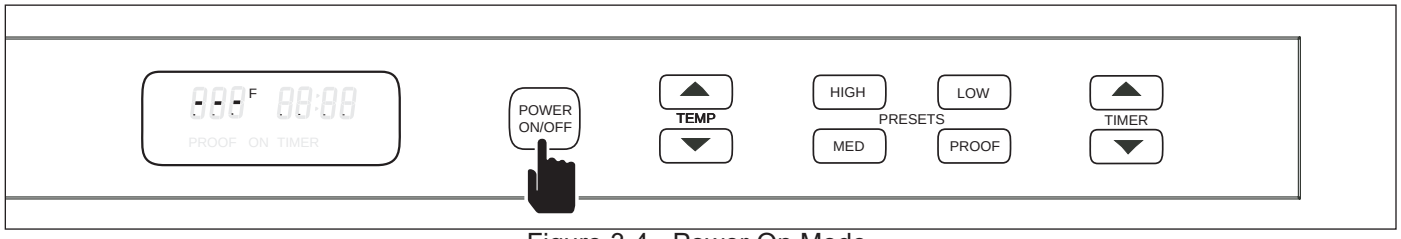


Figure 3-4. Power On Mode.

Operations:

Once unit is turned on and "TEMP" up or down arrow is pressed, unit will initiate at 120°F and can be adjusted in increments of 1°F. If you press and hold either arrow, the display will increase by 1° each 1/2 second until the first 5° increment is obtained then will increase by 5° per 1/2 seconds. (See Figure 3-5)

NOTE: *Temperature is adjustable from 80°F to 200°F (26.7°C to 93.3°)*

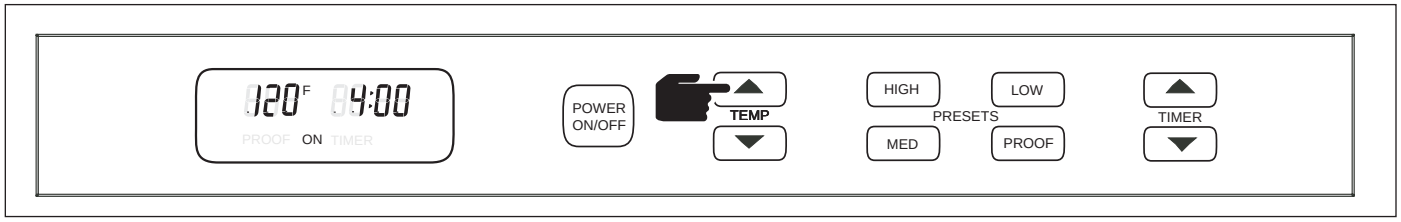


Figure 3-5. Temperature Adjustment in Normal Warming Mode.

Mode Exit:

Pressing "Power On/Off" key will terminate Normal Warming Mode and shut unit off.

NOTE: *The mode will also exit by reaching '0:00,' on the timer. At this point, '0:00' will begin flashing and the elements and fan will shut off. The control will also yield three chimes every 30 seconds to denote unit has shut off. After 5 minutes the timer will self power down if the "Power On/Off" key is not pressed.*

NORMAL WARMING MODE:

Operations: (Continued)

If temperature of unit is greater than 10ºF above setpoint, control will chime and “hot” will flash in the temperature display. Control will continue to check if temperature has dropped, every 20 seconds. Once temperature, as monitored by the thermistor, is within 10°F of set temperature, set temperature will be displayed and resume cycling normally. “HOT” indicator will no longer be illuminated. (See Figure 3-6)

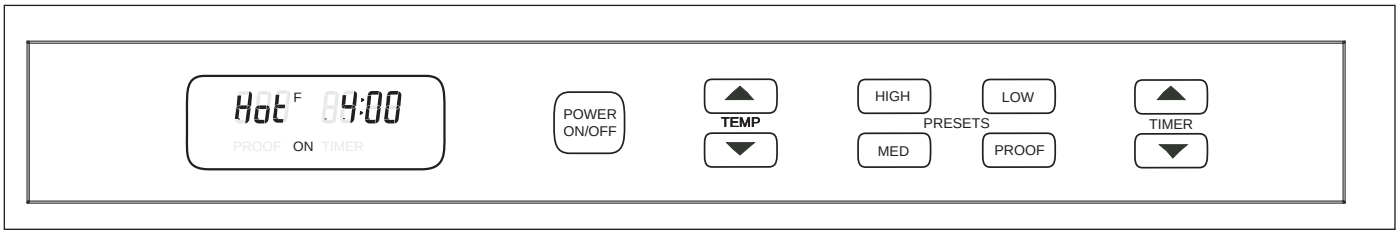


Figure 3-6. “HoT” Indication if Temperature of unit is 10° above setpoint.

NOTE: *If drawer is closed at the time of power down, control will initiate a failure tone.*

NOTE: *If no time is set, timer will automatically default to 4:00 hours. This ensure a definitive stop time. This does not occur in Sabbath Mode.*

NOTE: *If any presets are depressed, unit will begin to function. See Preset for further information.*

NOTE: *During normal warming mode, all keys remain active to allow for changes to mode.*

PRESET MODES: *(High, Medium and Low Presets)*

Mode Entry:

Press “Power On/Off” button followed by either the HIGH, MED or LOW preset key. (See Figure 3-7)

NOTE: *“TIMER” will illuminate and flash when first entering mode. Once mode is active the “TIMER” will no longer be illuminated.*

NOTE: *If no time is set, timer will automatically default to 4:00 hours. This ensures a definitive stop time.*

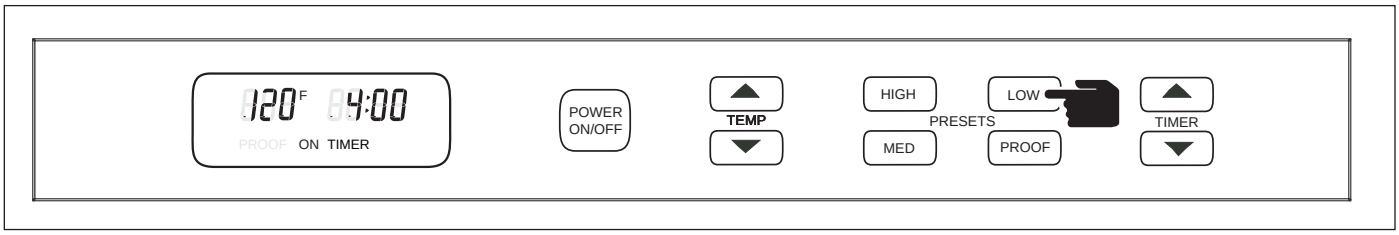


Figure 3-7. Example of “LOW” preset.

Operations:

When “HIGH” Preset key is depressed, control will display “200F” in temperature display. For “MED” temperature display will read “160F” and for “LOW” temperature display will read “120F”. In timer area of display, “4:00” along with “TIMER”’ will be flashing. Temperature can be adjusted by pressing the “TEMP” up or down arrow keys. By touching the “TIMER” up or down arrow keys, additional time can be added or subtracted. Anytime a change is being made, the control begins flashing the changing value. Mode activation time for the control will be 2 seconds and the “ON” indicator will illuminate and “TIMER” will no longer be illuminated.

Mode Exit:

Pressing “Power On/Off” button will cancel preset and any related timer feature of this mode. If timer expires during preset mode, and after signaling end of time chime for 5 minutes, the unit will time out and power off.

PRESET MODES: *(Proof Mode)*

Proof mode allows the customer to use the warming drawer for bread dough proofing. (See Figure 3-8)

Mode Entry:

Press the “Power On/Off” button followed by the “PROOF” key.

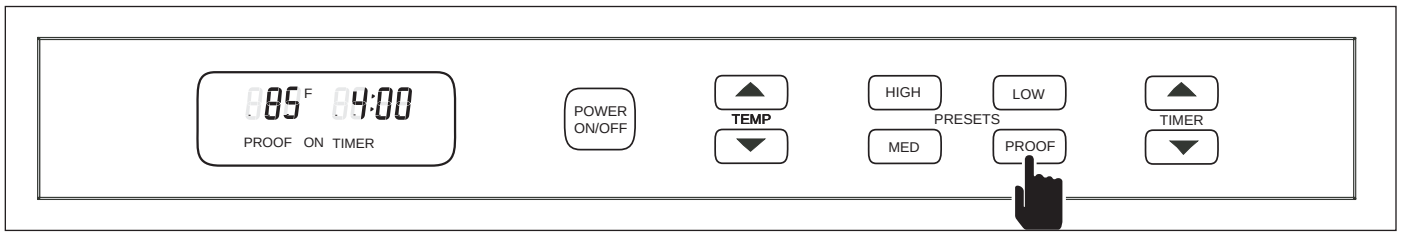


Figure 3-8. Example of “PROOF” preset.

Operations:

Upon pressing the “PROOF” key. Control will display “85F” in the temperature display. In the timer area of display, “‘4:00” along with “TIMER” will be flashing. Temperature can be adjusted by pressing the “TEMP” up or down arrow keys. By touching the TIMER up or down keys, additional time can be added or subtracted from this mode. Anytime a change is being made, the control begins flashing the changing value.
The mode activation time for the control will be 2 seconds at which time the ‘ON’ indicator will illuminate and changes will be applied and additional indicators will stop flashing.

NOTE: *Circulation fan runs while heating element is on during Proof Mode.*

NOTE: *If the unit is greater than 10ºF above the setpoint, control will chime and “hot” will flash in the temperature display until the unit temperature is within 10° of set temperature. The control will continue to check if temperature has dropped every 20 seconds.*

Mode Exit:

Pressing “Power On/Off” button will cancel this mode and any related timer feature. If timer expires during “PROOF”, and after signaling end of time chime for 5 minutes, unit will time out and power off.

TEMPERATURE MAINTENANCE:

During temperature maintenance, element and fan maintains drawer temperature to setpoint temperature. Fan is on while element is on during warming mode, (as long as drawer switch returns a drawer closed value). If element has cycled off, fan will continue to circulate air inside drawer for a pre-determined time before turning off. Fan will then re-energize when element is turned back on during a call for heat.

PREHEAT:

Preheat can be described as the control operation occurring when trying to raise the temperature from more of an ambient temperature to the operating temperature desired by the user.

Mode Entry:

The unit can be placed into a preheat mode by simply pressing the “Power On/Off” button and any other keys, when the drawer is cool (room temperature or less than setpoint).

Operations:

If the “TEMP” up or down arrow key is pressed, unit will initiate at “120F” and can be adjusted in increments of 1°.

NOTE: *If you press and hold either arrow, the display will increase by 1° each 1/2 second until the first 5° increment is obtained then will increase by 5° per 1/2 second.*

During preheat, control temperature read out will toggle between the setpoint and actual drawer temperature. At temperatures lower than 85F, “LO” will be displayed. Temperatures equal to or greater than 85F, the actual temperature measured by the thermistor and setpoint temperature, will be toggled back and forth at a rate of 5 seconds. Once temperature has reached desired setpoint temperature, control will emit a chime.

Mode Exit:

A press of the “Power On/Off” key will terminate Preheat mode and shut unit off.

END OF WARMING TIME:

Upon reaching “0:00”, “0:00” will begin flashing. Element and fan will shut off at this time. Control will also emit three chimes every 30 seconds to denote unit has shut off. After 5 minutes the timer will power down and turn unit off.

NOTE: *Operator can cancel chime earlier by pressing the “Power On/Off” key.*

OFF MODES:

This mode is obtained by pressing the “Power On/Off” key once unit is in any “On” mode. All active modes on unit will be cancelled, including Sabbath Mode.

TIMER MODE:

This allows the unit to be used as a kitchen timer, if so desired. (See Figure 3-9)

Mode Entry:

To set timer, first depress “TIMER” up or down arrow keys. “TIMER” will be flashing in display. Press “TIMER” up arrow key and unit begins counting up from “00:00”.

NOTE: *Pressing and holding “TIMER” up or down arrow key, display will increase, or decrease, by 1 second each 1/2 second until the first 5 second increment is obtained then will increase by 5 seconds per 1/2 second. If “TIMER” up or down arrow key is depressed for longer than 30 seconds display will increase by 30 minute increments each 1/2 second until 5:00 Hours is reached then increase in one hour increments up to 24:00 hours.*

NOTE: *Timer will count up in time with 1 minute as the minimum setting and going up to 24:00 (hours:minutes).*

Operations:

In Timer mode, the temperature display will show nothing and “ON” indicator will not illuminate.
Once set, this timer will count down in hours and minutes. Upon reaching 1 minute, the control will produce an audible tone.

Mode Exit:

Upon reaching “0:00”, “0:00” will begin flashing. The control will also chime three times every 30 seconds to denote the unit has shut off.

NOTE: *After 5 minutes the timer will power down.*

NOTE: *Timer mode can be cancelled at any time by pressing the “Power On/Off” key.*

NOTE: *Operator may cancel chime by pressing “Power On/Off” key. This will also remove the flashing “0:00” from display.*

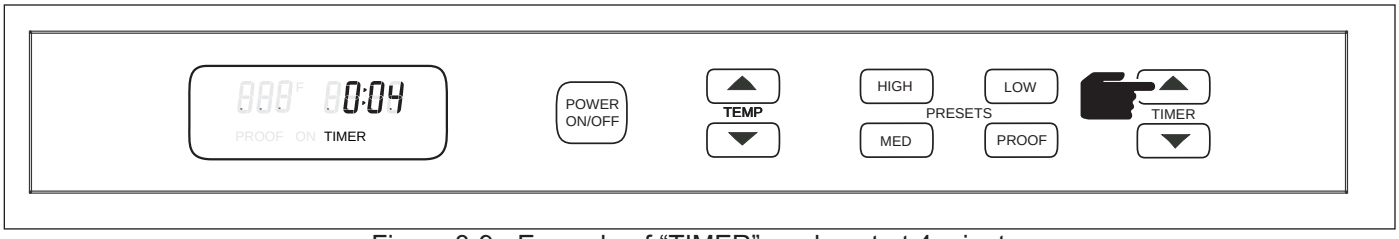


Figure 3-9. Example of “TIMER” mode set at 4 minute.

SABBATH MODE:

To accommodate Sabbath holidays, a special mode exists where control will only react to the “Power On/Off” button. In Sabbath Mode, control display will not change. “ON” remains on all the time. LCD back lighting will also remain on at all times during this mode at a rate of 50% normal power.

Mode Entry:

Starting from a unit “Off” mode, hold “Power On/Off” button for 5 seconds. (See Figure 3-10)

Operations:

The control will flash “SAb” in timer display area and selections can be made for 5 seconds, while the “SAb” is flashing, at which time control will emit a tone twice and unit will remain in Sabbath mode.

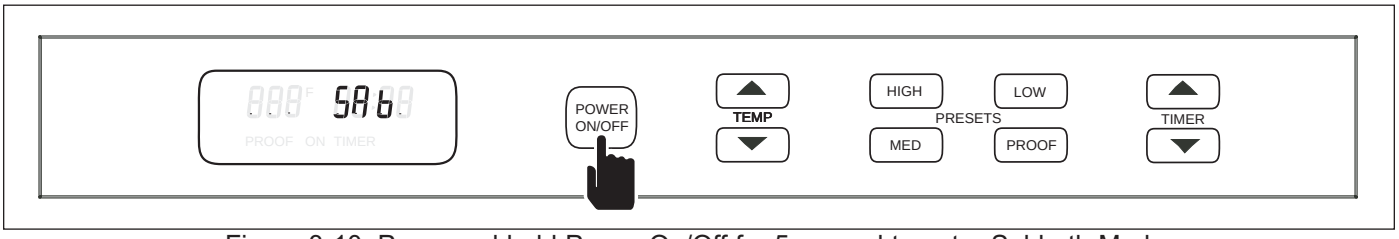


Figure 3-10. Press and hold Power On/Off for 5 second to enter Sabbath Mode.

NOTE: *If back lighting was turned off prior to entering Sabbath mode then back light will remain off. See Back Lighting Display Change instructions, this section, for details on how to enable or disable.*

NOTE: *Selections for Sabbath mode include “TEMP” up or down arrow buttons and any “PRESET” buttons.*

NOTE: *“TIMER” up or down arrow buttons will yield an invalid key press in Sabbath mode.*

NOTE: *If unit power is interrupted (unplugged), unit will return to Sabbath Mode upon next power up.*

Once in Sabbath mode, unit will continue to say “SAb” in “TIMER” display area. While in Sabbath mode, control will not show any changes to display. This includes “ON” light in display remaining on at all times during Sabbath mode. Element can cycle as it would in normal warming mode. Fan runs while element is on and for a short period of time after element turns off. If after Sabbath mode is entered and a second keypress does not occur, the unit will time out after 10 seconds and go into a unit “OFF” mode. If drawer is opened, fan and element will not shut off.

NOTE: *If drawer is open for longer than 1 minute, element will randomly turn on and off.*

NOTE: *If drawer is open and the unit calls for heat, element will randomly turn on and off.*

Mode Exit:

A press of the “Power On/Off” key will terminate Sabbath mode and shut off unit at any time.

SHOWROOM MODE:

Showroom mode allows unit to be run in a demonstration mode. Heating element and fan operation are disabled.

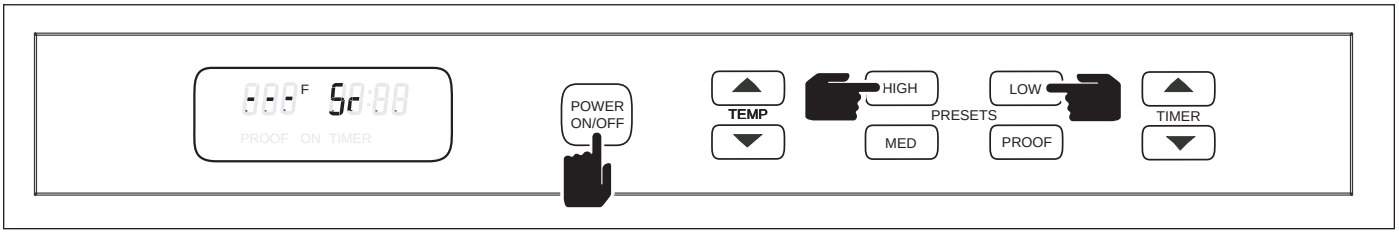


Figure 3-11. Press and hold Power On/Off, HIGH and LOW PRESET Buttons simultaneously for 5 seconds.

Mode Entry:

Starting from Unit Off mode, press “Power On/Off” key along with “HIGH” and “LOW” PRESET keys for 5 seconds. A single soft tone will signify unit is in showroom mode and “Sr” will show in timer display. (See Figure 3-11)

NOTE: *If power is turned off to unit, showroom mode will remain active.*

NOTE: *If unit power is interrupted (unplugged), unit will leave showroom mode upon next power up.*

Operations:

Unit will function just as it normally would, but the fan and element will not energize while in this mode. The unit can be turned on and/or off, temperature adjusted, and timer used, but the unit will not provide heat/air circulation.

***Mode Exit*:**

Another press of the same key combination from the Showroom mode will toggle showroom mode off.

USER PREFERENCE SETUP

NOTE: *Following changes must be made when unit is in "ON" mode.*

Preset Change:

Changes can be made to presets by completing the following sequence. Press "Power On/Off" key, then press preset key you wish to change and hold for 5 seconds. After 5 seconds, timer display, temperature display and "TIMER" will illuminate and flash. Using "TEMP" up or down arrow keys, and/or the "TIMER" up or down arrow keys, change the values to your own personalized presets. After all settings are complete, press and hold the preset key being changed for 5 seconds again. Three quick tones will signify preset has been changed and unit will shut off.

NOTE: *"PROOF" mode can only be adjusted from 80°F to 120°F.*

NOTE: *Unit will turn off after 30 seconds if no key presses are made.*

NOTE: *Changes to preset mode entered will be saved only if key being changed is pressed and held for 5 seconds after making changes.*

USER PREFERENCE OFFSETS (UPO)

NOTE: *Following changes must be made when unit is in "OFF" mode.*

NOTE: *See Figure 3-20 for a quick reference to keystrokes to enter modes and features.*

Temperature Display Preference:

Control can be switched between Fahrenheit or Celsius by pressing and holding both "TEMP" up and down arrow key for 5 seconds. Use the "TEMP" Up or Down arrow key to change from °F to °C or °C to °F. (See Figure 3-12)

NOTE: *Press "Power On/Off" key to exit and save changes.*

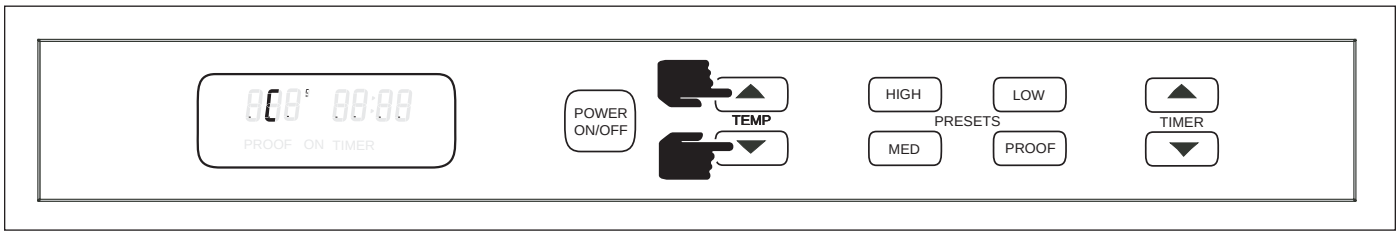


Figure 3-12. Press TEMP up and down arrow key to enter. Press TEMP arrow up or down to change scale.

Display Contrast Change:

Display contrast can be adjusted by pressing and holding both the TIMER up and down arrow keys for 5 seconds. Use the "TIMER" Up and/or down arrow keys to change contrast from the preset. (See Figure 3-13)

NOTE: *Contrast setting is from 0 to 15 with 15 being the darkest contrast setting. Unit default is 7.*

Press the "Power On/Off" key to exit and save changes.

NOTE: *Unit will turn off after 30 seconds if no key presses are made.*

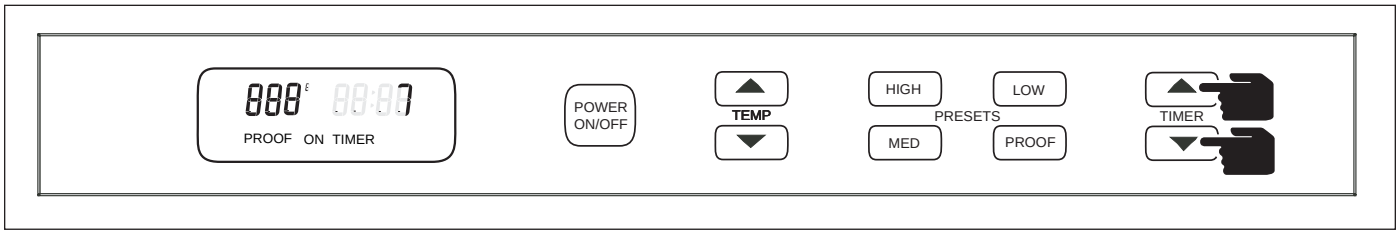


Figure 3-13. Press TIMER up and down arrow key to enter. Press TIMER arrow up or down to change scale.

LED Back Lighting Change:

Mode Entry:

Enter backlight setting preference by pressing and holding both “TEMP” and “TIMER” up arrow keys for 5 seconds. Current backlight setting will appear in display. (See Figure 3-14)

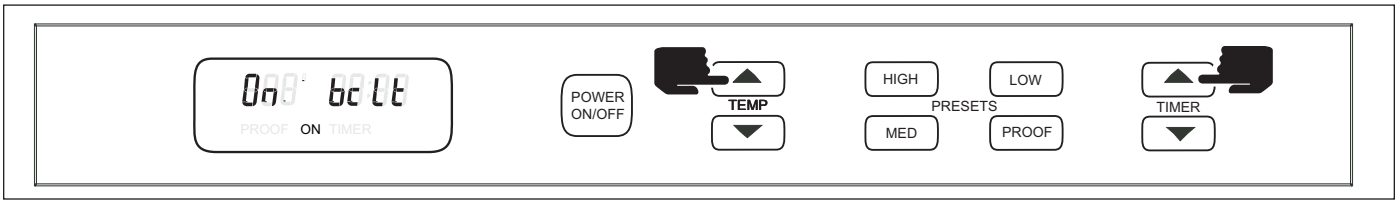


Figure 3-14. Press TEMP & TIMER up arrow keys to enter. Press TIMER up arrow key to change settings.

Operations:

Use “TIMER” up arrow key to select the various setting. Setting will be saved and recalled in the event of a power loss. Three settings available are Continuous mode Off (off bclt ALL, Continuous mode On, and ALL disabled. Default setting is Continuous Mode Off.

Continuous mode refers to the Sabbath mode where appliance is running continuously and backlight can be selected to be off or on.

Continuous mode On, refers to backlight on continuously at a reduced illumination level to conserve LED life. Outside of Sabbath mode, backlight works as normal based on drawer state at full illumination.

NOTE: *Left side of display will show “On” continuously, and the right side of display will flash between “bclt” and “Sab”.*

Continuous mode Off, refers to backlight continuously off only in Sabbath mode. Outside of Sabbath mode, backlight works as normal based on drawer state at full illumination.

NOTE: *Left side of display will show “Off” continuously, and the right side of display will flash between “bclt” and “Sab”.*

Disabled mode*, refers to backlight is always off regardless of operating mode.*

NOTE: *Left side of display will show “Off” continuously, and the right side of display will flash between “bclt” and “ALL”.*

Mode Exit:

Once back lighting has been set to desired state, press “Power On/Off” key and setting will be saved.

NOTE: *If after 30 seconds of no additional key presses, mode will exit with last known state saved as LCD back lighting preference.*

FIELD SERVICE MODE

Initiating Diagnostics Mode:

Note: *Diagnostics mode can only be entered from a unit "'OFF" state.*

Mode Entry:

The Field Service mode can be entered by pressing and holding "Power On/Off" key, along with "MED" and "PROOF" keys simultaneously for 5 seconds. (See Figure 3-16)

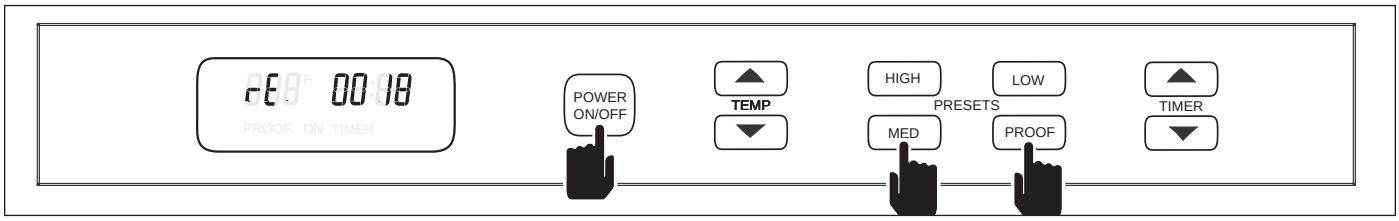


Figure 3-16. Press Power On/Off, MED & PROOF Simultaneously to Enter Diagnostics Mode.

***Operations*:**

Once in this mode, software version will read in timer area. Revision will be displayed initially. (See Figure 3-16)

NOTE: *If unit is in Showroom Mode, temperature display will read "Sr" upon entering Field Service Mode. Cycling of fan, element and drawer is non-functional. Display will show Can, CEL then Sr will be displayed at 1 second per word then repeat until Field Service Mode is canceled or times out. To use this feature, Showroom Mode must be canceled. See Showroom Mode for details.*

To scroll through errors control has seen, use "TIMER" up or down arrow keys. Once you begin scrolling through errors, (i.e. "Err 10", where "Err" is displayed in the temperature readout and "10" is displayed in the timer section). You can also scroll through additional control information parameters such as total hours used. (See Figure 3-17 & 3-19)

NOTE: *Using the opposite "TIMER" up or down arrow key will reverse your previous order.*

NOTE: *To clear error codes logged, press and hold "TIMER" up and down arrow keys for 5 seconds, while in Field Service Mode. See Troubleshooting, Section 5, for list of error codes and meanings.*

NOTE: *Once you have made it through all errors and information parameters, revision of the control will again illu-*

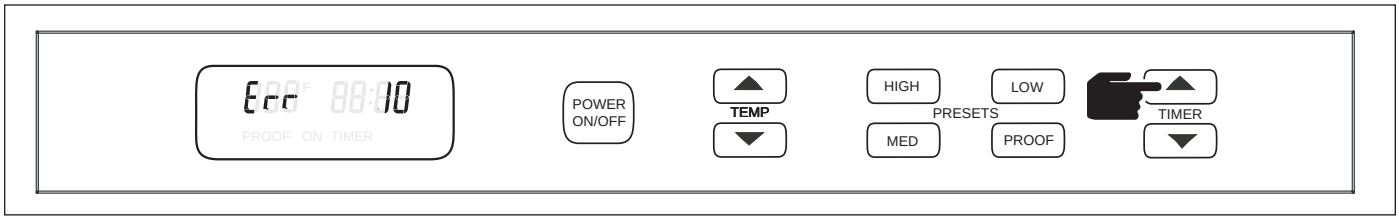


Figure 3-17. Example of Error 10 displayed.

minate, starting the sequence over.

Functionality of fan, element and drawer switch can be tested by pressing the "TEMP" up or down arrow key. (See Figure 3-18)

When checking operation of fan and element, power is either supplied or not supplied based on the selection made. (See Figure 3-21)

Mode Exit:

Pressing the "Power On/Off key will cancel field service mode.

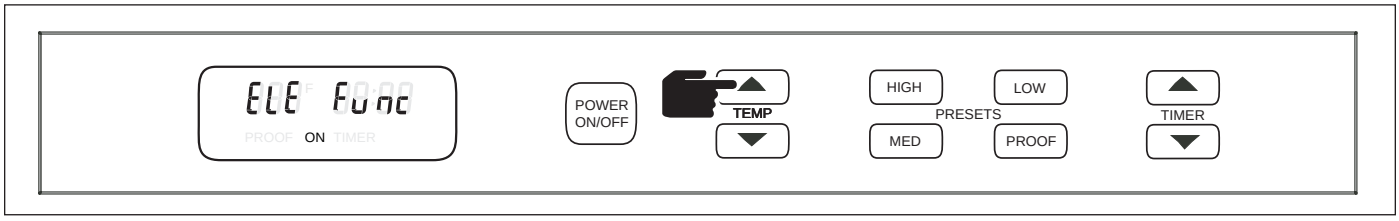


Figure 3-18. Example of Element ON display.

NOTE: *If no other keypresses are noted after 2 minutes, control will also exit field service mode and power down.*

Field Service Mode Unique Keystrokes:

KEYPRESS	TEMP DISPLAY	TIMER DISPLAY
Enter Diagnostics	**rE** (Sr if in showroom mode)	**0018** (Meaning revision 1.8)
TIMER ▲	**Err**	**10**
TIMER ▲	**Err**	**20**
TIMER ▲	**Err**	**30**
TIMER ▲	**Err**	**40**
TIMER ▲	**Err**	**50**
TIMER ▲	**Err**	**60**
TIMER ▲	**Con** (Control On Time) 1:60 = 16000 hr. *(See note below)*	
TIMER ▲	**ELE** (Element On Time) 95:00 = 950000 hr. *(See note below)*	
TIMER ▲	**FAn** (Fan On Time) 12:60 = 126000 hrs. use *(See note below)*	
TIMER ▲	**Dor** (Drawer Open/Close) 1:60 = 16000 cycles *(See note below)*	
TIMER ▲	**119** (Current Temp)	**deg**

Figure 3-19. Field Service Mode.

NOTE: *A colon (:) signifies the need to add two zeros (0) to the time shown. (i.e. 1:60 = 16000)*

ERROR CODE TROUBLESHOOTING GUIDE:

ERROR CODE	CAUSE	TEST / ACTION
10 ***(Invalid Checksum Error)***	Incorrect checksum	Replace Control Board
20 ***(Thermistor Open)***	Temperature >300ºF	In FSM (Field Service Mode), view temperature as view by thermistor. Verify wiring ok to element. Replace Thermistor if ok.
30 ***(Thermistor Short)***	Temperature <-30ºF	In FSM (Field Service Mode), view temperature as view by thermistor. Verify wiring ok to element. Replace Thermistor if ok.
40 ***(Element Sensing)***	<5º change in temperature over 10 minutes of continuous call for heat. Occurs only during preheat mode and the door is closed.	If unit outdoors and temperature below freezing point, instruct on unit limitations. Verify Thermal Cutout is not open. Verify Element is not open. Replace TCO or Element if open.
50 ***(Door Switch)***	Door switch closed when the keypad is being operated or unit turned on.	Check operation of Door Switch with Ohm meter. Replace if defective.
60 ***(Stuck Relay)***	Drawer temperature rises to 250ºF in any mode/state.	Check ambient Temp and installation. Check TCO. Replace if opened. Replace Relay Board.
70 ***(Cable Open)***	Cable wires that activate element or fan relays on power board are not making connection.	Check connection of comm cable. Use Figure 5-1 to check voltage and/or ohm reading of cable. If open, replace.

NOTE: *After correcting problem, errors must first be cleared in Field Service Mode before controls will refresh error display. To clear error codes logged, press and hold "TIMER" up and down arrow keys for 5 seconds, while in Field Service Mode.*

Figure 3-20. Field Service Mode.

Field Service Mode Functional Test Keystrokes:

KEYPRESS	TEMP DISPLAY	TIMER DISPLAY	"ON" INDICATOR
TEMP ▲	**ELE**	**Func**	**ON** (Relay closed, Element on)
TEMP ▲	**ELE**	**Func**	**OFF** (Relay Opens, Element Off)
TEMP ▲	**Fan**	**Func**	**ON** (Relay closed, Fan turns on)
TEMP ▲	**Fan**	**Func**	**OFF** (Relay Opens, Fan turns Off)
TEMP ▲	**Dor**	**CLOS** if Drawer Closed / **OPEn** If Drawer Open	

Figure 3-21. Field Service Mode Functionality Test of Element, Fan & Drawer.

Mode/Function Unique Keystroke:

MODE/FUNCTION	KEY PRESSES to ENTER
Diagnostic Mode	POWER ON/OFF & MED & PROOF 5 Seconds
Resetting Error Codes in Diagnostic Mode	TIMER ▲ & ▼ 5 Seconds
Sabbath Mode	POWER ON/OFF 5 Seconds
Showroom Mode	POWER ON/OFF & HIGH & LOW 5 Seconds
HIGH Preset Change (Range of 80°F to 200°F) (Press HIGH for 5 seconds again to save changes)	POWER ON/OFF Followed by HIGH 5 Seconds
MED Preset Change (Range of 80°F to 200°F) (Press MED for 5 seconds again to save changes)	POWER ON/OFF Followed by MED 5 Seconds
LOW Preset Change (Range of 80°F to 200°F) (Press LOW for 5 seconds again to save changes)	POWER ON/OFF Followed by LOW 5 Seconds
PROOF Preset Change (Range of 80°F to 110°F only) (Press PROOF for 5 seconds again to save changes)	POWER ON/OFF Followed by PROOF 5 Seconds
Temperature Scale Change Mode	TEMP ▲ & ▼ 5 Seconds
Display Contrast Change Mode	TIMER ▲ & ▼ 5 Seconds
LED Back Lighting Change Mode	TEMP ▲ & TIMER ▲ 5 Seconds

Figure 3-22. Quick Reference for Mode/Function Entry Key Presses.

COMPONENT ACCESS AND REMOVAL

This section explains how to access and remove components from a model WWD30 Warming Drawer.

An attempt has been made to arrange these procedures in such a way as to simulate which components would need to be removed first in order to gain access to other components. When following a component removal procedure, it may be necessary to reference another component removal procedure listed earlier in this section.

NOTE: *Before continuing, please take note of the WARNINGS and CAUTIONS below.*

⚠ WARNING

- **IF IT IS NECESSARY TO REMOVE A VENTILATION UNIT FROM ITS INSTALLATION, REMEMBER THAT THEY ARE HEAVY AND COULD FALL RESULTING IN SERIOUS INJURY OR DEATH. PULLING A UNIT FROM ITS INSTALLATION SHOULD ONLY BE PERFORMED BY A TRAINED AUTHORIZED SERVICE TECHNICIAN OR INSTALLER.**
- **TO AVOID ELECTRIC SHOCK, POWER TO A VENTILATION UNIT MUST BE DISCONNECTED WHENEVER ACCESSING AND/OR REMOVING COMPONENTS POWERED BY ELECTRICITY OR COMPONENTS NEAR OTHER ELECTRICAL COMPONENTS.**
- **IF REMOVING THE DRAWER, REMEMBER IT IS HEAVY. IF IT WERE TO FALL IT COULD CAUSE SERIOUS PERSONAL INJURY.**

⚠ CAUTION

- **Metal edges may be sharp. Use caution when servicing unit to avoid personal injury.**
- **The heating element can get very hot. To avoid personal injury use caution when servicing the unit, making sure the heater has cooled before working on or around it.**
- **If accessing components under the shell, the insulation must be properly reinstalled and positioned. Failure to do so may lead to damage to the surrounding cabinetry.**
- **Low voltage is used for most electronic control components. To avoid damaging the appliance, do NOT apply 115V AC to electronic control components.**

Stainless Steel Drawer Box

The side flanges of the stainless steel drawer box rest on top of the drawer frame.

To remove the drawer box, begin by opening the drawer until the stops are engaged. Then, at the center of left and right side flanges lift drawer box. (See Figure 4-1)

Drawer Removal

The drawer assembly rides on three slide assemblies, one on each sidewall, and one underneath the drawer. The slides extend until a stop is reached. The drawer can be separated from the slide assembly by moving the drawer release up for the left side and down for the right and pull for the bottom. (See Figures 4-2 & 4-2A) Moving the drawer release allows the drawer to be slid off the slide assembly. A control cable runs along the right side the drawer and connects to the power board behind cavity baffle on the rear wall.

To remove the drawer assembly, begin by opening the drawer fully. Reach inside of unit cavity and disconnect control cable from power board on the right side of cavity baffle. Release the control cable from the cable hold down clips and place free section of control cable in drawer. On outside of drawer with your index finger, move the drawer release on side slide assembly. (See Figure 4-2) At the same time, push drawer slide back into unit cavity until slide is past the stop. Repeat on other side. Then, reach under drawer, pulling forward on bottom drawer release, and pulling drawer forward until slide is past stop. (See Figure 4-2A)

Continue by pulling drawer off of slide assemblies.
NOTE: *Upon reassembly control cable must be arranged to avoid damage to cable.*
(See Figure 4-7 & 4-8)

⚠ CAUTION

Drawer is heavy, use care not to damage drawer slides or scratch frame of unit.

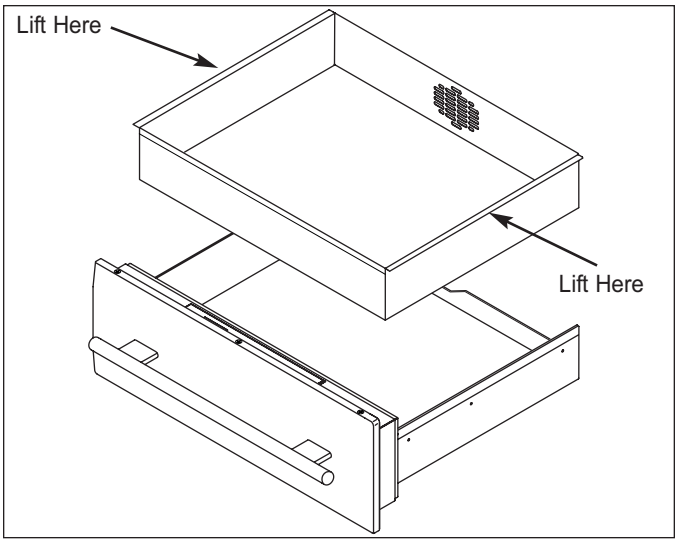


Figure 4-1. Stainless Steel Drawer Box Removal

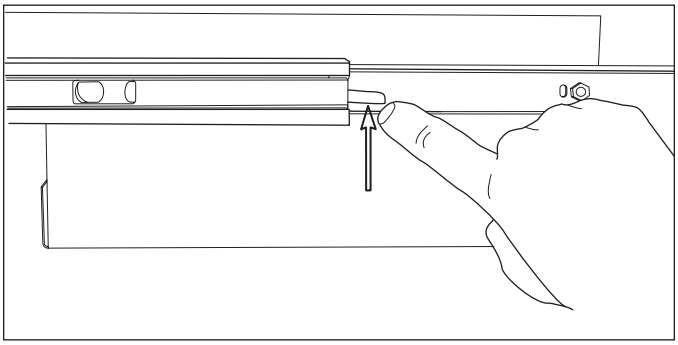


Figure 4-2. Left Drawer Release

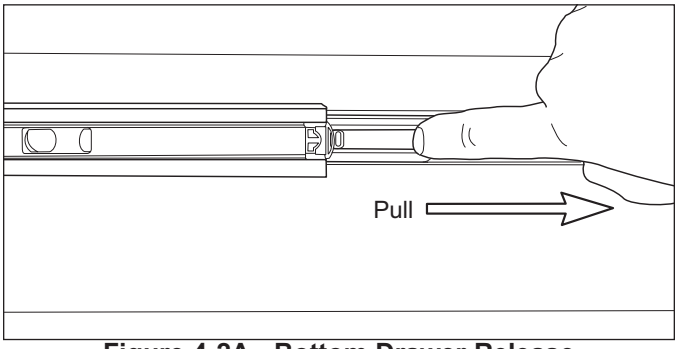


Figure 4-2A. Bottom Drawer Release

Drawer Slide Removal

The drawer slides are attached to the drawer frame by threaded studs that are pressed into the drawer frame sidewalls. The interior drawer slides are secured with screws to the slide brackets.

To remove the drawer slide assemblies, begin by removing the drawer from unit. Then, remove the nuts from the threaded studs that secure the drawer slide to the outside of the drawer frame. (See Figure 4-3)

Remove the drawer slide assemblies from the unit cavity by first positioning the slide so that all the screws securing the drawer slide to the slide bracket are visible. (See Figure 4-4) Extract drawer slide mounting screws and remove from unit.

The center slide bracket is removed by lifting bracket up off the dowel pins pressed into the floor of unit cavity.

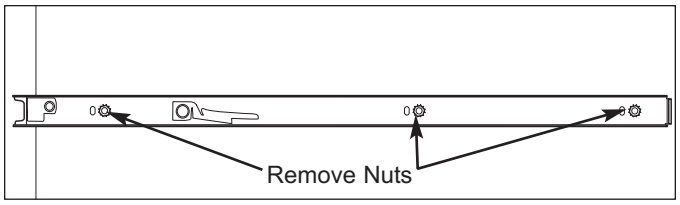


Figure 4-3. Drawer Slide Removal
Bottom of Drawer Shown

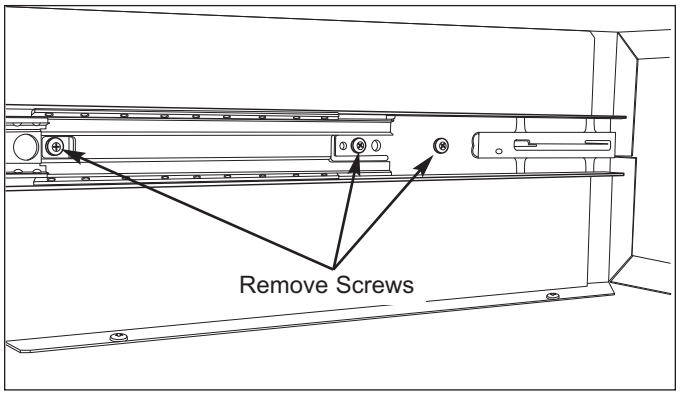


Figure 4-4. Drawer Slide Removal
Interior of Unit Cavity Shown

Drawer Front Panel Removal

The drawer front panel is secured with screws to the door mount panel. The handle assembly mounts to the drawer front panel with screws that pass through the front panel, the stainless steel spacers, and then fasten into the handle.

To remove the drawer front panel, begin by opening the drawer to the full open position. Then, extract the screws along the bottom inside edge of front panel. (See Figure 4-5) Extract the screws along the top flange of front panel. Lift front drawer panel off the drawer mounting panel.

The drawer handle mounting screws are accessible from the inside face of the front panel. Remove the drawer handle by extracting the mounting screws that secure the handle and spacer blocks to front panel.

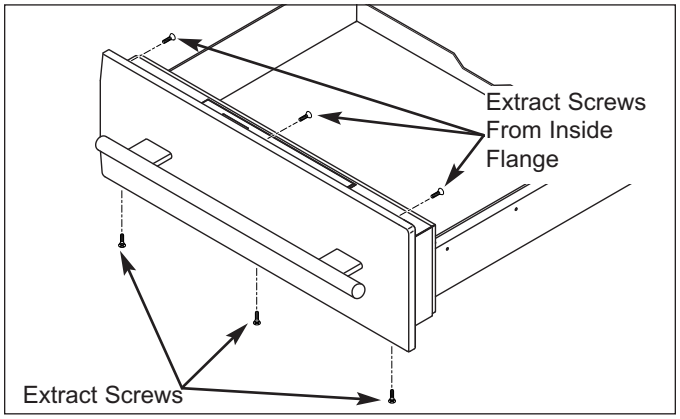


Figure 4-5. Drawer Front Panel Removal

Drawer Mount Panel Removal

The drawer mounting panel is secured with screws to the front face of the drawer frame assembly. A communications jack is mounted in the center of drawer mount panel, providing an interface with the control panel (For factory use only therefore it does not need to be reconnected when the front panel is installed).

To remove the door mounting panel, begin by removing the drawer from the unit and removing the drawer front panel. Extract the screws from the face of the drawer mounting panel. (See Figure 4-6) Pull mounting panel forward, then from back of panel, disconnect communications line from communications jack. The communications jack is removed by depressing the retaining clip from the front of the mounting panel, then pushing the retaining clip side of the jack through the mounting panel first, then pivoting jack out of the mounting panel.

NOTE: *Cable can also be disconnected from jack on inside of panel.*

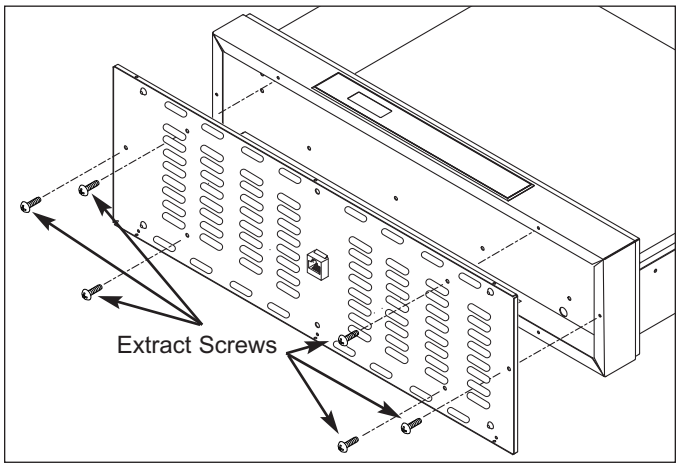


Figure 4-6. Door Mounting Plate Removal

Control Cable Removal

The control cable runs from a jack mounted on the underside of the control board, through a hole in the right side of the drawer frame and continuing along the right side of the drawer, through a cable guard, where it is secured by retaining clips along the back. From the drawer, the control cable is routed along the bottom of unit cavity and is secured by retaining clips. The cable then continues to the back wall where it plugs into a jack on the right side of power board.

To remove the control cable, open drawer. Next, remove front drawer panel and drawer mounting panel. Release cable from the clips located on the back of drawer. (See Figure 4-7) Remove the cable guard by extracting the four nuts securing it to the right side of the drawer. Push the cable strain relief fitting and control cable through hole on the right back face of drawer. From inside of drawer frame assembly, disconnect control cable from control board. Pull control cable out of drawer assembly.

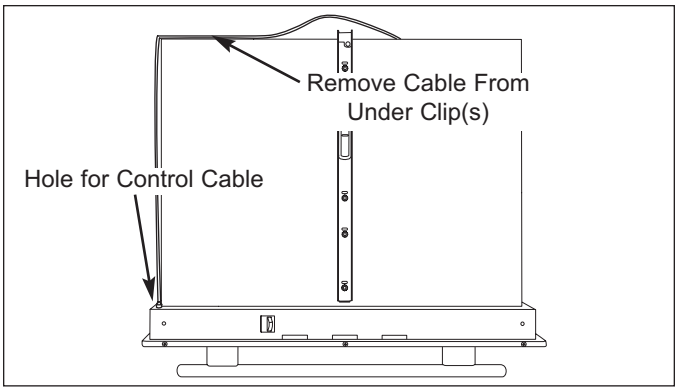


Figure 4-7. Drawer Bottom with Control Cable

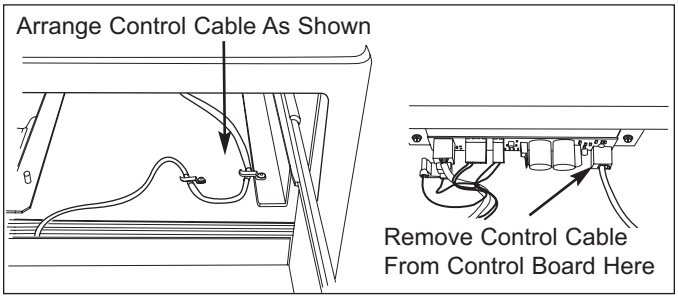


Figure 4-8. Control Cable Hook-ups and Routing

Control Panel Removal

The control board drops into a slot in the drawer frame assembly, and has flanges that rest upon the top surface of the drawer frame. From the bottom of the control panel, screws pass through a bracket and fasten into the control panel, securing the assembly to the drawer frame.

To remove the control panel, the front drawer panel and door mounting panel will need to be removed. Next, disconnect all electrical leads from control panel. (See Figure 4-8) Extract the control panel mounting screws from bracket. (See Figure 4-9) Lift control panel from drawer frame assembly.

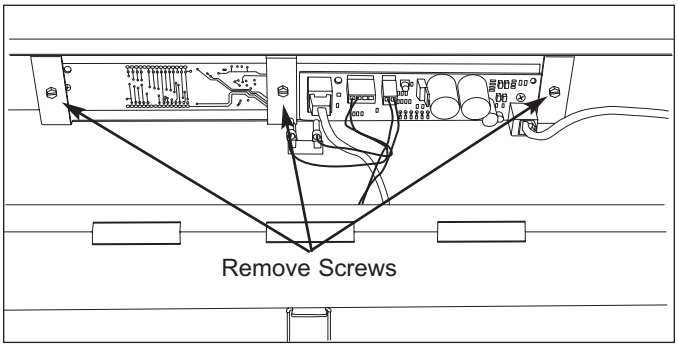


Figure 4-9. Control Panel Removal

Drawer Switch Removal

The drawer switch is located on the bottom right hand corner of the drawer frame assembly. The switch controls the heating element and fan operation. A retaining clip secures the switch to the drawer frame.

To remove the drawer switch, begin by removing drawer from unit. The front drawer panel and door mounting panel will need to be removed. From inside of drawer frame, disconnect electrical leads from drawer switch. (See Figure 4-10) Depress retaining clip on side of switch and push through drawer frame.

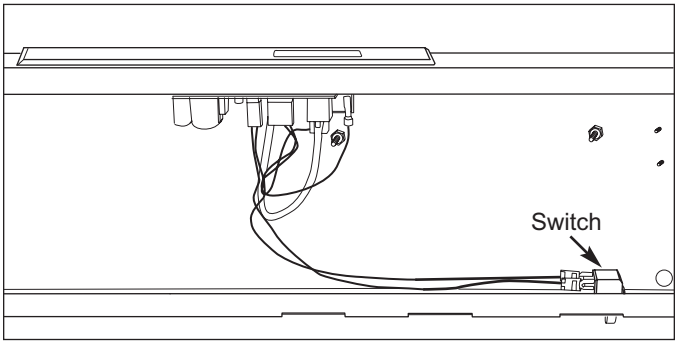


Figure 4-10. Drawer Switch Removal

Thermistor Removal

The thermistor is mounted to the inside wall of the drawer frame assembly, just below the control panel and behind an insulated panel. Screws, which are accessible by removing the insulated panel, secure the thermistor to the inside wall of drawer frame assembly.

To remove the thermistor, begin by removing the front drawer panel and door mounting panel. From inside of drawer frame, disconnect electrical leads from thermistor. Next, separate the drawer assembly by removing the eight 5/16" nuts and screws. (See Figure 4-11). Extract the four 5/16" nuts and screws that secure the insulated panel to the front part of the drawer assembly. (See Figure 4-12) Extract the screws securing the thermistor to the drawer frame and remove from drawer frame assembly.

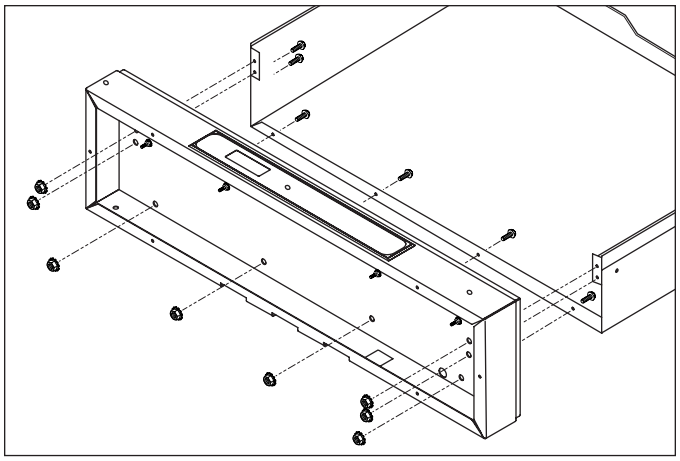


Figure 4-11. Thermistor Removal

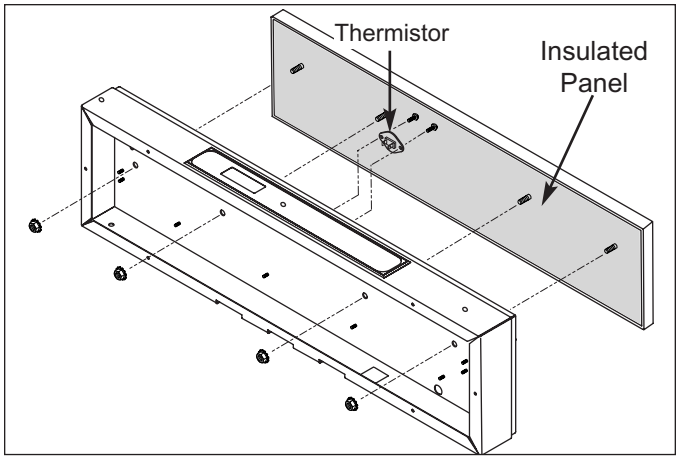


Figure 4-12. Thermistor Removal

Drawer Seal Removal

The drawer seals utilize spring clips to mount to a flange at the front of the unit cavity. These seals provide an air seal to maintain the desired temperature in the unit.

To remove the drawer seals, begin by opening drawer. Next, using your fingers or small pliers, compress spring clips and push through holes in flange. (See Figure 4-13)

NOTE: *Drawer can be removed to make access easier.*

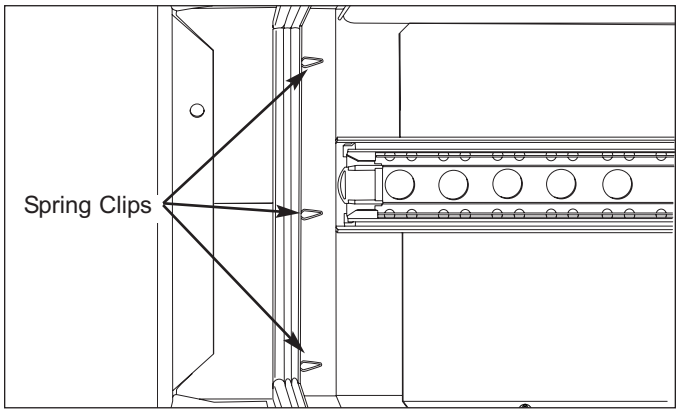


Figure 4-13. Drawer Seal Removal

Cavity Baffle Removal

The cavity baffle is located on the back wall of the unit and is secured in place with screws. The baffle provides protection for the fan assembly and power board.

To remove the cavity baffle, begin by removing the drawer from unit. Then, extract the screws securing the cavity baffle to the back wall and remove from unit. (See Figure 4-14)

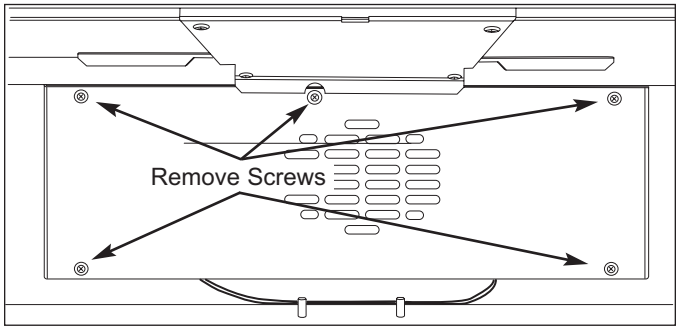


Figure 4-14. Cavity Baffle Removal

Fan Assembly Removal

NOTE: *Electrical shock potential. Refer to warnings on page 4-2.*

The fan assembly is mounted with screws to the back wall of the unit, behind the cavity baffle. The electrical leads for the fan motor are routed through a grommet in the fan mounting bracket, and connect to the power board.

To remove the fan assembly, begin by removing the drawer and cavity baffle from unit. Disconnect the fan motor electrical leads from the power board. (See Figure 4-15) Push electrical lead ends through grommet. Next, extract screws securing fan assembly to back wall of unit. Then, remove fan assembly through the cutouts provided in the mounting bracket.

Power Board Removal

NOTE: *Electrical shock potential. Refer to warnings on page 4-2.*

The power board is located to the right of the fan assembly on the outer back panel of unit. Four expanding mandrels secure the power board to the outer back panel.

NOTE: *You may want to mark the wire connectors to ensure their proper location when reattaching to board.*

To remove the power board, begin by removing the drawer and cavity baffle from unit. Then, disconnect all electrical leads from power board. With fingers, support the corners of power board and pull board off of the expanding mandrels. (See Figure 4-16)

Heating Element

NOTE: *Electrical shock potential. Refer to warnings on page 4-2.*

The heating element is mounted with two screws to a bracket which is then secured to the element mounting bracket with screws. The element mounting bracket is then secured to the ceiling of the unit with four hex head screws along the side flanges of the bracket, and three hex head screws at the front of the unit cavity. These three hex head screws pass through a small angle bracket and a second bracket running the width of the unit behind the drawer seals. Only the hex head screws need to be removed to access the element. After removing the hex head screws, push the element bracket twards the rear of the unit. Once the front of the element bracket clears the front frame of the unit, drop the front of the element bracket down and pull forward. (See Figure 4-17)

To remove the heating element, begin by removing the drawer from unit. Next remove the cavity baffle. (See Figure 4-14). Extract the seven hex head screws that secure the heating element bracket to the ceiling. (See Figure 4-17). Push bracket twards rear to release front from frame.

NOTE: *Screws that need to be removed will be 1/4" hex head.*

Once you have access to the element and wiring you can cut the electrical leads and remove the element from the bracket.

Disconnect the remaining element wiring from the power board and remove.

NOTE: *When installing new element, mount element to mounting bracket first, then feed wires through grommet and connect to power board.*

NOTE: *Once bracket and element are reattached, pull any remaining wire into power board location to avoid interference with fan operation.*

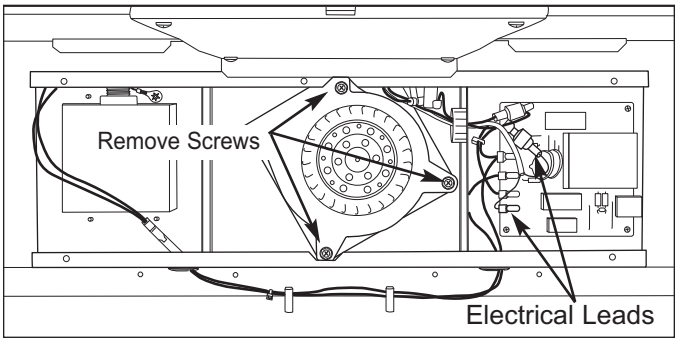


Figure 4-15. Fan Assembly Removal

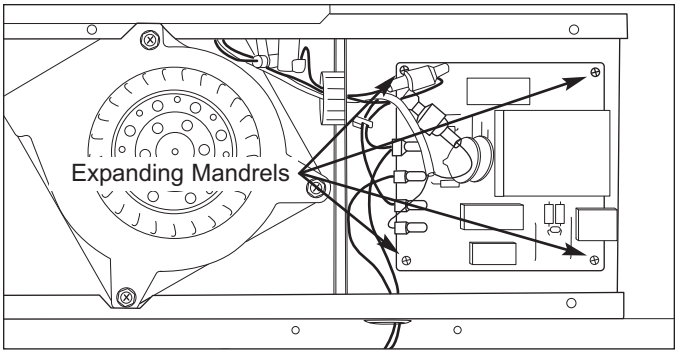


Figure 4-16. Power Board Removal

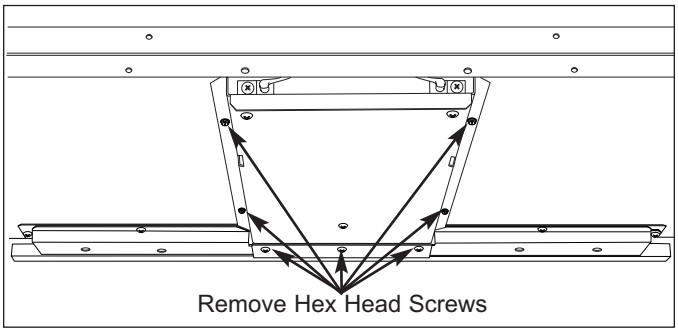


Figure 4-17. Heating Element Bracket Removal
(As Viewed from Inside Rear looking forward)

Thermal Cutout

NOTE: *Electrical shock potential. Refer to warnings on page 4-2.*

The thermal cutout is mounted above and to the left of the fan assembly on the inner back panel.

To remove the thermal cutout, begin by removing the drawer and cavity baffle from the unit. Next, remove unit from its installation position by extracting woodscrews from sidewalls, then sliding unit out of the installation opening and unplugging from wall socket. (See Figure 4-19) With needle nose pliers, disconnect electrical leads from thermal cutout and power board. Push the wire leads from thermal cutout and heating element through grommet of fan mounting bracket. Continue by extracting screws from outer back panel and remove from unit. (See Figure 4-20) Extract screws from back inner panel. Pull the bottom of inner back panel out first, then pull back at the top until thermal cutout is accessible. The thermal cutout is riveted into position. You will need to drill out the rivets to remove.

NOTE: *Use stainless steel screws when installing new* thermal cutout or rivets if available.

Power Cord

NOTE: *Electrical shock potential. Refer to warnings on page 4-2.*

The power cord enters the unit through a box mounted in the left rear corner of the outer back panel. The ground wire is secured to a screw which holds the electrical box in place.

To remove the power cord, begin by removing the drawer from the unit. Next, remove unit from its installation position by extracting woodscrews from sidewalls, then sliding unit out of the installation opening and unplugging from wall socket. Continue by extracting screws from outer back panel and tilt away from unit. (See Figure 4-21) Remove nut from heyco fitting at top of electrical box and grounding wire from outer back panel. Pull wire with heyco fitting attached, out of electrical box and remove from unit.

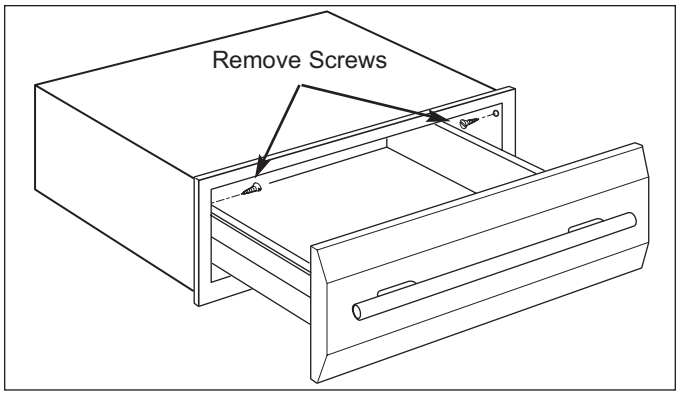


Figure 4-19. Remove Unit From Installation

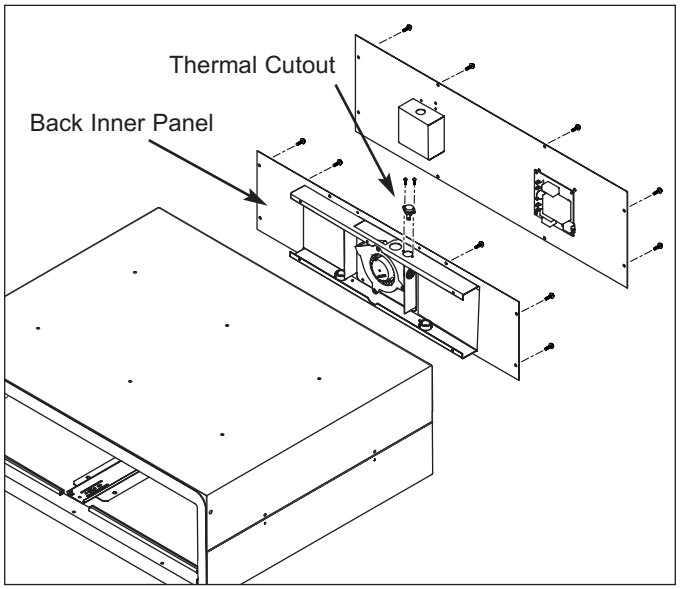


Figure 4-20. Back Panel Removal

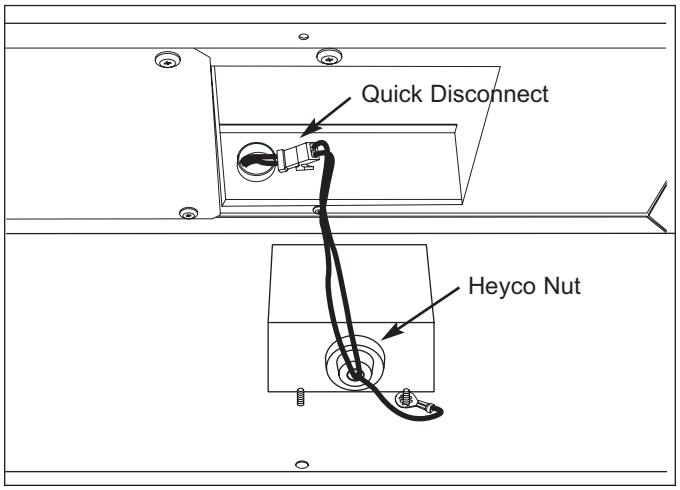


Figure 4-21. Back Panel Removal

TROUBLESHOOTING GUIDES

This section of the manual contains the General Troubleshooting Guide which will help the Service Technician troubleshoot a Wolf WWD30 unit. Following the General Troubleshooting Guide is the Electronic Control System Test Procedures to be performed after going through the General Troubleshooting Guide and determining that the electronic control system is suspect.

How to Use the General Troubleshooting Guide

The Table of Contents below indicate how the General Trouble Shooting Guide on the following pages is arranged. Locate the description of the problem that the unit is experiencing from the Table of Contents, below. To the left of the problem description in the Table of Contents is a letter. On the page indicated, locate that letter in the left column of the General Troubleshooting Guide. The center column of the General Troubleshooting Guide will identify the possible causes for the problem. The information in the right column of the General Troubleshooting Guide will explain what tests to perform and/or what action to take to correct the problem.

Before continuing, take note of the WARNINGS and CAUTIONS at the bottom of this page.

General Troubleshooting Guide Table of Contents

Page #

Error Codes Troubleshooting Guide 5-3
A. Unit does not function at all 5-4
B. No Heat at Any or All Settings 5-4
C. No Heat at PROOF Setting only 5-4
D. Excessive Heat at Any or All Settings 5-4
E. Excessive Condensation in Drawer 5-4
F. Food Dries Out 5-5
G. One or more LCD *(ON/OFF indicator, Temp. Range Indicator or segment(s) of Temp. Readout)* does not illuminate 5-5
H. LCD is black 5-5
I. One or more LCD *(ON/OFF indicator, Temp. Range Indicator or segment(s) of Temp. Readout)* illuminated Constantly .. 5-5
J. Drawer Does Not Slide Smoothly 5-5
K. Drawer Does Not “Pull In”..... 5-5

⚠ WARNING

- **IF REMOVING A WARMING DRAWER FROM ITS INSTALLATION FOR TROUBLESHOOTING PURPOSES, REMEMBER THAT THE UNIT IS HEAVY AND COULD TIP AND/OR FALL WHEN PULLED FORWARD BEYOND THE ANTI-TIP COMPONENTS, RESULTING IN SERIOUS INJURY OR DEATH.**
- **TO AVOID ELECTRIC SHOCK, POWER TO THE UNIT MUST BE DISCONNECTED WHENEVER ACCESSING AND/OR REMOVING COMPONENTS POWERED BY ELECTRICITY OR COMPONENTS NEAR OTHER ELECTRICAL COMPONENTS. IF THE UNIT IS PLUGGED IN, BUT HAS NOT BEEN SWITCHED ON BY PRESSING THE UNIT ON/OFF KEY, 115 VOLTS AC IS STILL PRESENT AT THE POWER BOARD.**

⚠ CAUTION

- **Metal edges may be sharp. Use caution when servicing unit to avoid personal injury.**
- **The heating element can get very hot. To avoid personal injury use caution when servicing the unit, making sure the heater has cooled before working on or around it.**
- **If accessing components under the shell, the insulation must be properly reinstalled and positioned. Failure to do so may lead to damage to the surrounding cabinetry.**
- **Low voltage is used for most electronic control components. To avoid damaging the appliance, do NOT apply 115V AC to electronic control components.**

ERROR CODE TROUBLESHOOTING GUIDE:

ERROR CODE	CAUSE	TEST / ACTION
10 ***(Invalid Checksum Error)***	Incorrect checksum	Replace Control Board
20 ***(Thermistor Open)***	Temperature >300ºF	In FSM (Field Service Mode), view temperature as view by thermistor. Verify wiring ok to element. Replace Thermistor if ok.
30 ***(Thermistor Short)***	Temperature <-30ºF	In FSM (Field Service Mode), view temperature as viewed by thermistor. Verify wiring ok to element. Replace Thermistor if ok.
40 ***(Element Sensing)***	<5º change in temperature over 10 minutes of continuous call for heat. Occurs only during preheat mode and the door is closed.	If unit outdoors and temperature below freezing point, instruct on unit limitations. Verify Thermal Cutout is not open. Verify Element is not open. Replace TCO or Element if open.
50 ***(Door Switch)***	Door switch closed when the keypad is being operated or unit turned on.	Check operation of Door Switch with Ohm meter. Replace if defective.
60 ***(Stuck Relay)***	Drawer temperature rises to 250ºF in any mode/state.	Check ambient Temp and installation. Check TCO. Replace if opened. Replace Relay Board.
70 ***(Cable Open)***	Cable wires that activate element or fan relays on power board are not making connection.	Check connection of comm cable. Use Figure 5-1 to check voltage and/or ohm reading of cable. If open, replace.

NOTE: *After correcting problem, errors must first be cleared in Field Service Mode before controls will refresh error display. To clear error codes logged, press and hold "TIMER" up and down arrow keys for 5 seconds, while in Field Service Mode.*

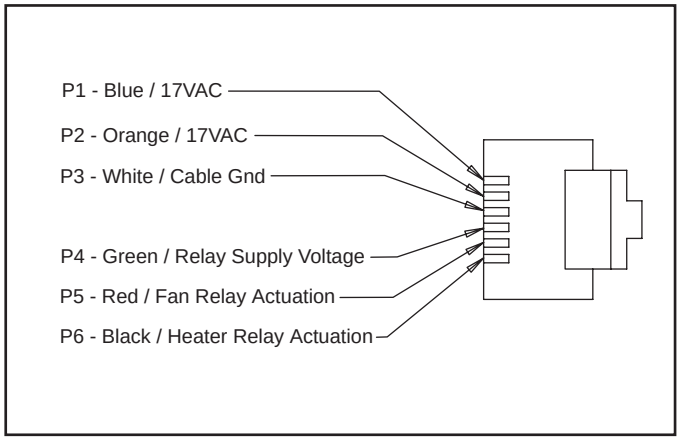


Figure 5-1 Communication Cable Pin Configuration

General Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
A. Unit Does Not Function at All	**No Power to Unit**	Check power to unit. Plug unit in, switch supply circuit breaker to ON position or replace fuse if defective.
	No power from power board	Check for power from power board. Replace if no voltage present.
	Disconnected Cable or Broken Wiring	Check for power from power board. Replace if no voltage present.
B. No Heat at Any or All Settings	**No Power to Unit**	Check power to unit. Plug unit in, switch supply circuit breaker to ON position or replace fuse if defective.
	Unit Switched OFF or no keypress made within 20 seconds after turning on.	Switch unit ON and set to desired temperature.
	Electronic Control System Fault	See Electronic Control Section for operational information. After turning unit on selection must be made within 20 seconds or unit turns off.
	Disconnected or Broken Wiring	Check all electrical connections and wires. Reconnect or repair wiring.
	Defective Heating Element	Check heater for 16.9 Ohms (±10%) or open. Replace if outside range or open.
	Defective Thermal Cutout (TCO)	Check resistance of thermal cutout. Replace if open.
C. No Heat at PROOF Setting Only	**High Room Ambient**	If room ambient exceeds temperature setting of warming drawer, it will not work. Instruct Customer.
D. Excessive Heat at Any or All Settings	**Electronic Control System Fault**	See Electronic Control System Test Procedures following General Troubleshooting Guide.
	Defective Heating Element	Check heater for 16.9 Ohms (±10%). Replace if outside range or open.
	Defective Thermal Cut-Out	Check resistance of thermal switch when hot (heat with lighter). Replace if it remains closed.
	Defective Thermistor	Check resistance at room temperature (70°F / 21°C). Resistance should be 12.9K Ohms ±10%. Replace if out of range or open. ***NOTE:*** *See Section 6 for further Thermistor Testing Information.*
	Check Offset in FSM (Default is "0")	Adjust offset ±30 in FSM.
E. Excessive Condensation in Drawer	**Temperature Setting too High**	Reduce temperature setting.
	Uncovered Food in Drawer	Cover food with lid or aluminum foil.
	Liquid in Drawer	Remove liquid. If outdoors, verify door shuts.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
F. Food Dries Out	**Temperature Setting too High**	Reduce temperature setting.
	Food Uncovered	Cover food with lid or aluminum foil.
	Food in Drawer too Long	Food in drawer longer then 4 hrs. will tend to dry out. Instruct Customer. (Timer default is 4 hrs.)
G. One or More LCD does not Illuminate	**No Power to Unit**	Check power to unit. Plug unit in, switch supply circuit breaker to ON position or replace fuse if defective.
	Unit Switched OFF *(**NOTE:** See Automatic Shut-off Information in Section 3.)*	Switch unit ON and set to desired temperature.
	Door Switch Faulty	Use ohm meter to verify switch operation. Replace switch if faulty.
	Electronic Control System Fault	See Electronic Control System Test Procedures following General Troubleshooting Guide.
	Disconnected or Broken Wiring	Check all electrical connections and wires. Reconnect or repair wiring.
	Contrast set to low	Adjust contrast level
H. LCD display is black	**Contrast is set to high**	Adjust contrast Level
	LCD exposed to direct sunlight	Allow to cool. Block from direct sunlight. Instruct Customer.
I. One or More LCD Illuminated Constantly	**Electronic Control System Fault**	See Electronic Control System Test Procedures following General Troubleshooting Guide.
J. Drawer Does Not Slide Smoothly	**Drawer Overloaded (Exceeding 80 lbs. limit) or Unbalanced Load**	Reduce and/or redistribute drawer contents.
	Drawer Glides Misaligned	Open drawer fully and close, then reopen and check operation. If problem persists, see Drawer Frame Skewed and Drawer Glides Defective, below.
	Drawer Frame Skewed	Remove drawer tub and inspect frame. If skewed, straighten.
	Drawer Glides Defective	Remove drawer tub and inspect glide operation. Replace if defective.
K. Drawer Does Not "Pull In"	**Self-Close Feature Broken**	Replace Slide. (*Wolf Recommends to replace ALL slides at same time)*
	Slide Mounting Screw is Loose	Tighten or Replace Screw
	Something Fell Behind Drawer	Remove Obstruction

TEMPERATURE INFORMATION			
Temp. Setting	**Preset Temp.**	**Temp. Setting Range**	**Approximate Preheat Time**
HIGH	200°F	80°F - 200°F	20 Minutes
MEDIUM	160°F	80°F - 200°F	15 Minutes
LOW	120°F	80°F - 200°F (Recommended 145°F - 159°F)	8 Minutes
PROOF	85°F	80°F - 110°F (Recommended 80°F - 100°F)	0 - 5 Minutes

HEAT ELEMENT INFORMATION	
Domestic: 850 Watts	16.9 ± 10% Ohms
International: 850 Watts	64.4 - 74.6 Ohms

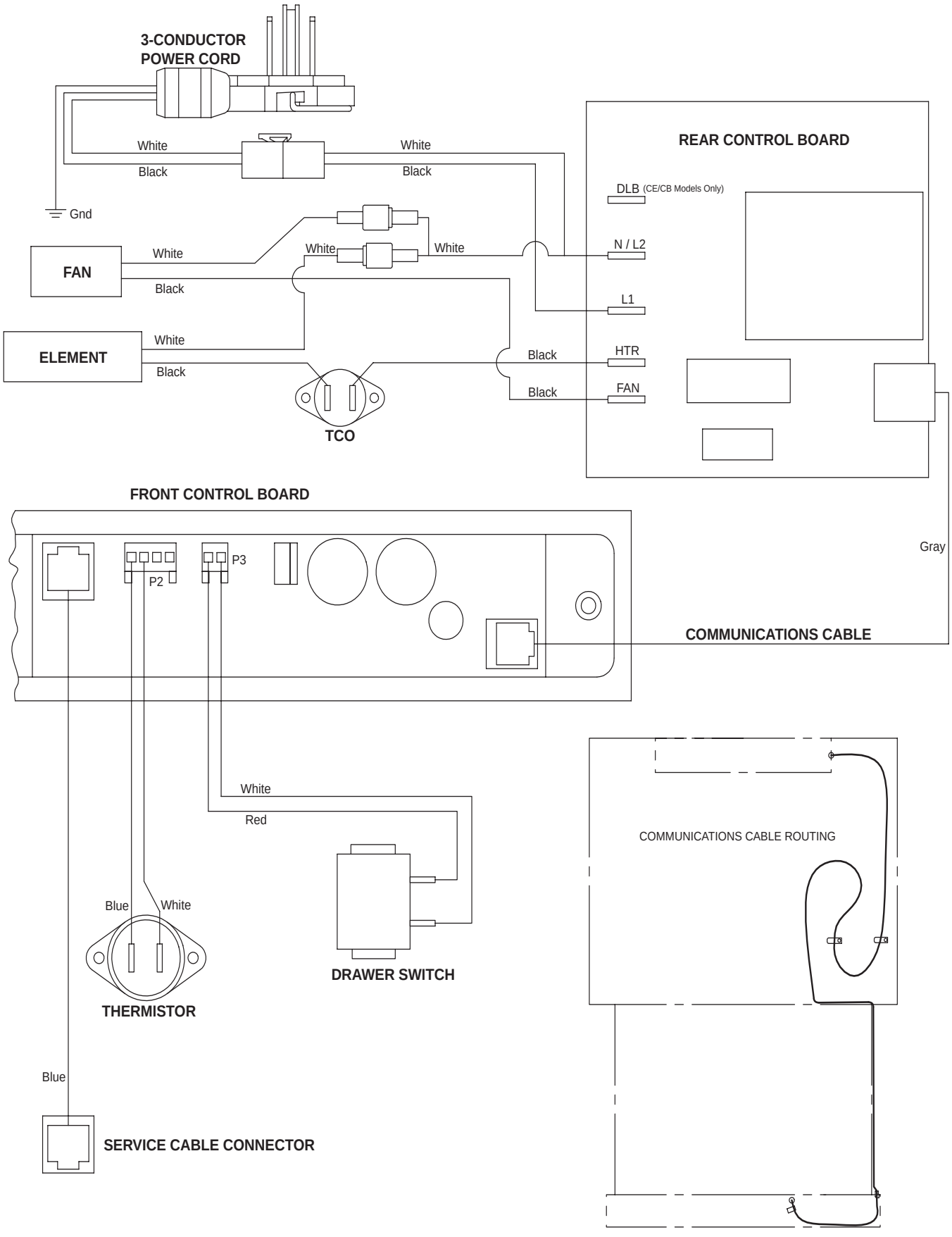
THERMAL CUT-OUT (TCO) INFORMATION (Auto Reset)	
Open Temperature - 213.8°F ±37.4°F (101°C ± 3°C)	Close Temperature - 158°F ± 40.1°F (70°C ± 4.5°C)

THERMISTOR TESTING INFORMATION	
TEMPERATURE (± 10%)	**OHM READING (± 10%)**
65°F (18.3°C)	**14.8K**
68°F (20°C)	**13.5K**
70°F (21.1°C)	**12.9K**
75°F (23.9°C)	**11.3K**

POWER BOARD IDENTIFICATION (Domestic vs. International)	
Domestic (120VAC 50/60Hz) - Yellow Label	International (240VAC 50/60Hz) - Green Label

NOTE: *For electronic control low voltage information, see Wiring Schematic in this manual.*

WWD30 WIRING DIAGRAM (Domestic)



WWD30 WIRING DIAGRAM (International)

