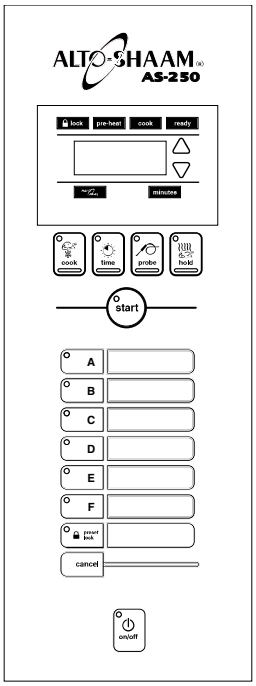
ALTO SHAAM®
HALO HEAT®

INSTALLATION
OPERATION
AND
MAINTENANCE
MANUAL



Oven

Low Temperature

Cooking and Holding

Electronic

MODEL:
AS-250

24•7
Your Service Hotline
1-800-558-8744

W164 N9221 Water Street • P.O. Box 450 • Menomonee Falls, Wisconsin 53052-0450 USA
PHONE: 262.251.3800 • 800.558-8744 USA/CANADA Fax: 262.251.7067 • 800.329.8744 USA/CANADA
WEB SITE: www.alto-shaam.com

PRINTED IN U.S.A.

#812 • 12/2005

INDEX

Installation
- Unpacking and Setup 1
- Heating Characteristics 1
- Start-Up 1
- Electrical Installation 1
- Outside Dimensions 2
- Options & Accessories 2

Control
- Control Panel 3
- Audible Signals 4
- Operating Features & Functions 4
- Control Operation 5-8
- General Holding Guidelines 9

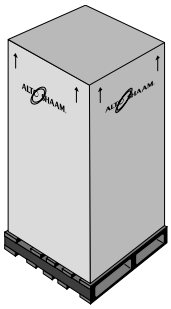
Care and Cleaning
- Cleaning and Preventive Maintenance 10
- Clean the Oven Daily 11
- Clean the Door Vents 11
- Do Not Use Oven if Controls are not Properly Functioning . . 11
- Check Overall Condition 11
- Sanitation Guidelines 12

Service
- Troubleshooting 13
- Troubleshooting Internal Electrical Components 14
- Service View Parts List 15
- Service View 16
- Wiring Diagrams 17

Transportation Damage and Claims

Warranty

UNPACKING and SET-UP



The Alto-Shaam Electronic Cooking and Holding Oven has been thoroughly tested, checked for calibration and inspected to insure only the highest quality oven is provided. When you receive your oven, check for any possible shipping damage and report it at once to the delivering carrier. See Transportation Damage and Claims section located in this manual.

The oven may be delivered in one or more packages. Check to insure that all the following items have been received with each unit:

Drip Pan (1) *Guide to Low Temperature Cooking(1)*
Wire Shelf (1) *Oven Side Racks (2)* *Base Support Bars (1)*

PLUS: Any options or accessories which may have been ordered with the equipment.

Save all the information and instructions packed inside the unit. Complete and return the warranty card to the factory as soon as possible to insure prompt service in the event of a warranty parts/labor claim.

Alto-Shaam cook and hold ovens are designed for the purpose of maintaining hot food at a temperature for safe consumption. The unit must be installed in a location that will permit the equipment to function for its intended purpose and allow adequate access for proper cleaning and maintenance.

Installation minimum clearance recommendations are 3-inches (76mm) at the back, 2-inches (51mm) at the top, and 1-inch (25mm) at both sides

The unit must not be installed in any area where it will be affected by steam, grease, dripping water, high temperatures, or any other severely adverse conditions.

HEATING CHARACTERISTICS

The oven is equipped with a special, high-heat-density, heating cable. Through the Halo Heat concept, the heating cable is mounted against the walls of the cooking cavity to provide an evenly applied, thermostatically controlled, heat input. The design and operational characteristics of the unit eliminate the need for a moisture pan and/or heat circulating fan. Because of the even heat application, the quality of a food product is maintained for long periods of time. The actual time depends on the type and quantity of product.

START UP

The computer control maintains an exceptionally close temperature tolerance and automatic control of the cooking cycle by either internal product temperature or timed cooking. Holding temperatures are maintained with reduced oven power consumption in the automatic, HOLD mode.

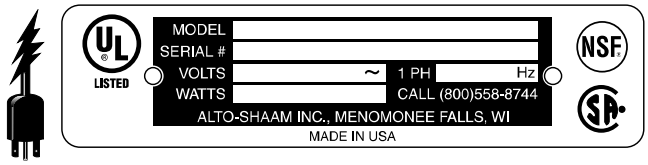
Before using the oven, become familiar with the operation of the control. Read the following "Operation" section of this manual and operate the various function modes of the computer control. For reference during actual operation, the basic operational procedures are printed on the control panel.

Clean both the interior and exterior of the oven with a mild soap solution and a damp cloth rinse before operating.

ELECTRICAL INSTALLATION

1. Ensure that the voltage stamped on the nameplate matches the available power source.

SAMPLE



2. This unit must be grounded in accordance with requirements of the National Electrical Code or applicable local codes.

125 V.A.C. — 60 Hz, 1Ph • 1300 Watts • 10.4 Amps
230 V.A.C. — 50/60 Hz, 1 Ph • 1200 Watts (max.) • 5.5 Amps (max.)

3. If necessary a proper outlet configuration, or permanent wiring for this oven must be installed by a licensed electrician in accordance with applicable, local electrical codes.
4. Plug the unit into a properly grounded receptacle only, positioning the appliance so that the power supply cord is easily accessible in case of an emergency.

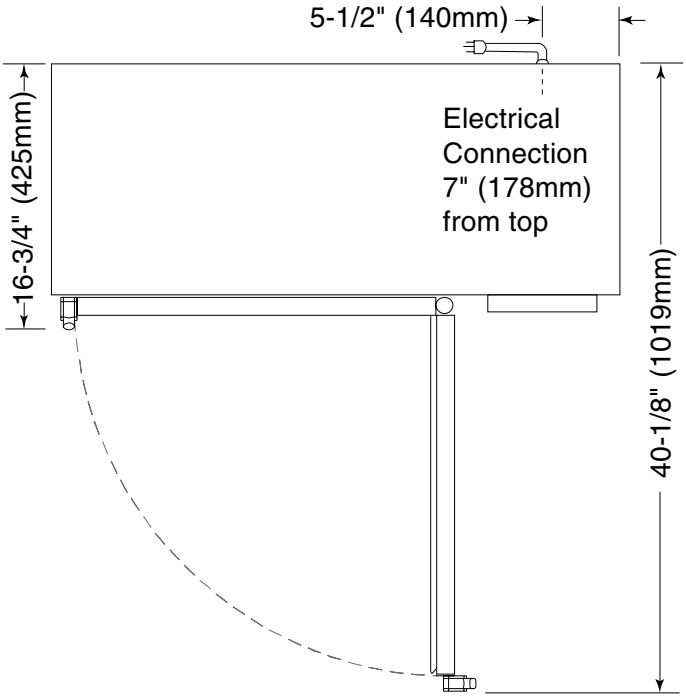
For 230V units: To prevent an electrical shock hazard between the appliance and other appliances or metal parts in close vicinity, an equalization-bonding stud is provided. An equalization bonding lead must be connected to this stud and the other appliances / metal parts to provide sufficient protection against potential difference. The terminal is marked with the following symbol.

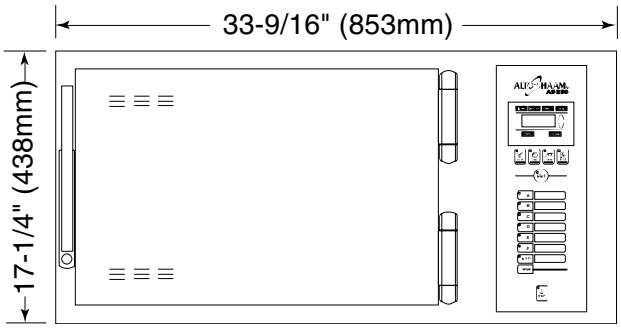
ENSURE POWER SOURCE MATCHES VOLTAGE STAMPED ON APPLIANCE NAMEPLATE

AT NO TIME SHOULD THE INTERIOR OR EXTERIOR BE STEAM CLEANED, HOSED DOWN, OR FLOODED WITH WATER OR LIQUID SOLUTION.
DO NOT USE WATER JET TO CLEAN.
SEVERE DAMAGE OR ELECTRICAL HAZARD COULD RESULT.
WARRANTY BECOMES VOID IF APPLIANCE IS FLOODED.

INSTALLATION

OUTSIDE DIMENSIONS

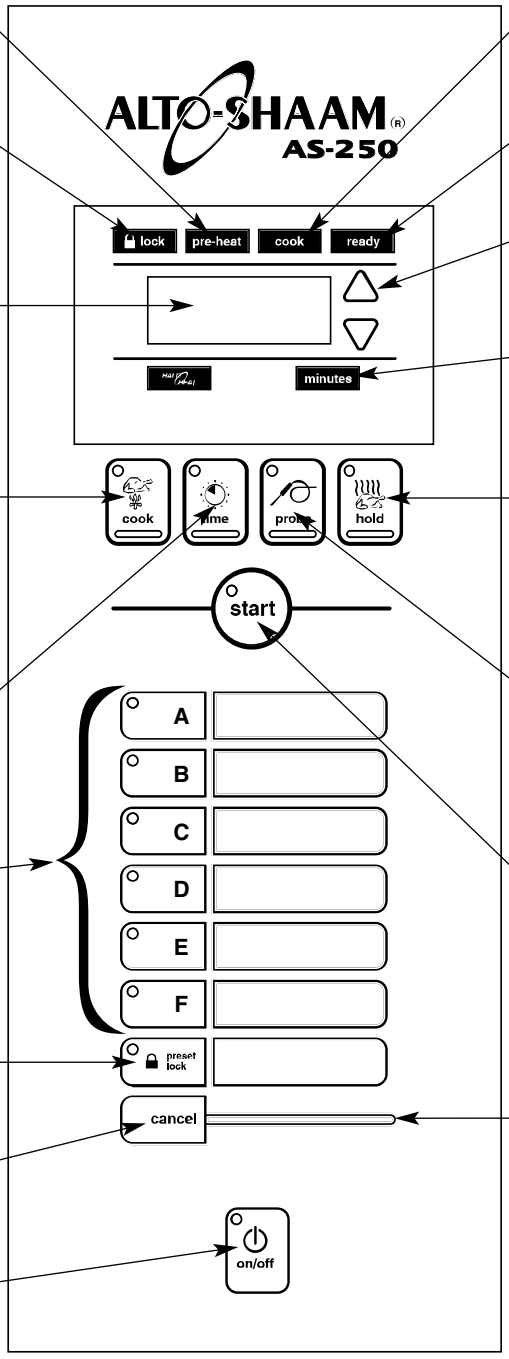




OPTIONS AND ACCESSORIES

Shelf, Stainless Steel Wire	SH-2786
Stacking Hardware	4928
Carving Holder, Prime Rib	HL-2635

CONTROL PANEL • AS-250



PRE-HEAT INDICATOR
Illuminates until the oven is preheated.

LOCK INDICATOR
When illuminated, this symbol indicates settings used in the cooking sequence are locked and cannot be changed.

DIGITAL DISPLAY
Indicates appropriate time or temperature and displays control in °F or °C mode.

COOK BUTTON
Used for setting COOK temperature or recalling and checking previously set cooking temperature.

TIME BUTTON
Used for setting cooking time or recalling and checking previously set time. (3 digits - Minimum)

PRESETS PROGRAM KEYS
Provides memory storage and operation of operator set cooking programs for specific products.

PRESET LOCK
Enables locking abilities.

PRE-SET PROGRAM CANCEL BUTTON
Used to erase a program from memory storage

POWER ON BUTTON
Used to start control set-up sequence from the reset mode.

COOK INDICATOR
Illuminates when oven is cooking.

READY INDICATOR
Illuminates when the oven has finished preheating.

UP/DOWN ARROWS
Used to increase or decrease set time, including cooking, holding and probe temperature settings.

MINUTES INDICATOR
Illuminates when minutes are displayed on the Digital Display.

HOLD BUTTON
Used for setting HOLD temperature or recalling and checking previously set holding temperature.

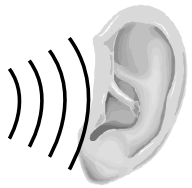
PROBE BUTTON
Used for setting probe cut-off temperature or recalling and checking previously set probe cut-off temperature.

START BUTTON
After all required settings have been entered, START begins the cooking-holding sequence.

PROGRAM MENU IDENTIFICATION CARD SLOT

CONTROL OPERATION

AUDIBLE SIGNALS



OVEN BEEPING is used to indicate a YES or NO response to operator input. Beeps also indicate mode CHANGES and ERROR conditions.

One brief beep indicates a YES (enabled) response to the information entered into the control.

Two brief beeps indicate a NO (disabled) response to the information entered into the control.

A beep that lasts for one second indicates an oven mode TRANSITION. Example: Preheat to Ready-Start.

Three brief beeps indicate the oven is in the READY mode for product loading and START-UP.

Four brief beeps indicate an existing FAULT condition. Refer to the Trouble Shooting section of this manual.

Beeper volume can be changed. With the control in the OFF mode, press and hold the DOWN ARROW Key. After 4 seconds, the display will exhibit one of the 4 volume levels (0 being OFF or the lowest, and 3 being the highest). After each change, the button must be released and the display must clear before the procedure can be repeated to select a different volume level.

OPERATING FEATURES & FUNCTIONS

Turn the Oven Control Panel Off:
Press and hold the ON/OFF Key for three seconds. Oven will beep. The ON/OFF indicator light will go out.

Stop an Operation:
Press and hold the START Key for several seconds until the control beeps, indicating the operation has been cancelled. The oven will remain in a power-on state.

Arrow Keys:
Cook, Hold and Probe Temperature set points can be adjusted by 1° when pressing the ARROW Keys. To change a set point more rapidly, *press and hold* the ARROW Key along with the key for the temperature function, and the temperature changes in steps of 10°F or 5°C.

The **Time** setting is adjusted in increments of one minute by pressing the ARROW Keys. To make adjustment in steps of ten minutes, *press and hold* the TIME Key and ARROW Key at the same time.

Probe Usage:
When the probe is left in the probe bracket, the LED temperature display will indicate the ambient air temperature inside the oven. To use the probe for cooking remove it from the bracket and wipe the full length of the metal probe with a disposable alcohol pad to clean and sanitize before using.

SPECIAL ATTENTION:

When preheating, the temperature of the product probe reaches the air temperature inside the oven. Always allow the product probe temperature to decrease to the internal temperature of the raw product by inserting the probe and waiting one full minute before pressing the start button. A false reading of the internal temperature of the product may cause the oven to default to a holding temperature.

Only the tip of the probe senses the internal product temperature; therefore, it is important the tip be placed correctly in the product for internal temperature accuracy. Push the probe tip halfway into the product, positioning the tip at the center of the food mass. When inserting the probe into solid foods such as meat roast or poultry breasts, push the probe in from a straight downward position or in from the side to the center position. If placing into a semi-liquid or liquid product, the probe cable must be secured to keep the probe positioned properly. Do not let the probe tip touch the edges, bottom or side of a container. Tape the probe cable to the lip or edge of the container.

Display High/Low Probe Temperatures:
To observe the recorded maximum or minimum probe temperature during a cooking program press the following keys:

Highest Temperature: Press PROBE Key and UP ARROW Key at same time.

Lowest Temperature: Press PROBE Key and DOWN ARROW Key at same time.

Halo Heat Indicator:
When the oven is preheating the Halo Heat indicator light will remain illuminated until it reaches the set cook temperature. Once the temperature has stabilized, this indicator will illuminate periodically as the oven calls for heat.

Green and Amber Indicators:
Each program key includes a green light which indicates a requirement for additional programming by the operator or the current operational state of the oven.

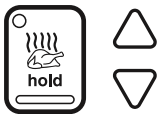
The COOK, TIME, PROBE, and HOLD keys include an amber indicator light to identify the information being displayed.

Cook by Time: *IS THE MAIN ELECTRICAL POWER SWITCH ON?*

> ***HELPFUL HINT***
>
> To avoid prolonged preheat times between loads, leave the oven in the hold mode.

Press and release control ON/OFF key.

- The green indicator light on the ON/OFF key will illuminate.
- The oven will beep for one second.
- The oven will begin operating in the hold mode.
- The amber hold indicator will illuminate.
- The previously set hold temperature will be displayed.



Press the HOLD Key.

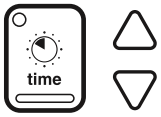
➥To change the hold temperature, press the UP or DOWN ARROW Keys.

Note: If the oven is being used for hot food holding only, adjust the set holding temperature. *Do not* press the COOK, TIME, or PROBE Keys.

Press COOK Key to preheat.

- The green indicator light on the COOK Key will illuminate.
- Last set cooking temperature will be displayed.

  ➥To change the cook temperature, press the UP or DOWN ARROW Keys.
- The green indicator light on the TIME Key and on the PROBE Key alternately flash.



Press TIME Key.

- The green indicator light on the TIME Key will illuminate.
- Last set time is displayed.

  ➥To change the cook time, press the UP or DOWN ARROW Keys.
- The green indicator light on the TIME Key will illuminate.
- Halo Heat and Pre-Heat indicator will illuminate.

  ➥The oven is automatically programmed to preheat to the cook temperature.
- The oven will beep when preheated and the preheat indicator light will go out.
- Both the Ready and Start indicator lights will flash.

  ➥The set cook temperature will be maintained by the oven and appear in the display while in the ready/start mode.

> *Cold food for rethermalization or reheating must never be added to the oven while hot food is being held.*

Load the food inside oven and close the oven door.

Note: The oven will beep 3 times every 25 seconds until the oven is loaded and the START Key pressed.

Press and release START key.

COOK

- The oven will beep.
- The green indicators for power, cook, time, and start will illuminate.
- The display will alternate between showing the set cook temperature and the remaining time.

HOLD

- The oven will beep at the end of the timed cooking cycle.
- The green indicator for cook will remain illuminated.
- The display will alternate between showing the set hold temperature and the amount of time the product has remained in the holding mode.
- The Ready indicator light will illuminate after 2 hours in the hold mode.

Note: The ready indicator does not necessarily indicate a product-ready state. For best results, the product must remain in the oven at the set holding temperature for the minimum number of hours indicated in the individual cooking instructions.

- The oven will remain operating in the hold mode until the control ON/OFF Key is pressed.

Cook by Probe: *IS THE MAIN ELECTRICAL POWER SWITCH ON?*

Cold food for rethermalization or reheating must never be added to the oven while hot food is being held.

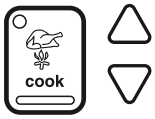
Press and release control ON/OFF Key.

- The green indicator light on the ON/OFF key will illuminate.
- The oven will beep for one second.
- The oven will begin operating in the hold mode.
- The amber hold indicator will illuminate.
- The previously set hold temperature will be displayed.

Press the HOLD Key.

➥To change the hold temperature, press the UP or DOWN ARROW Keys.

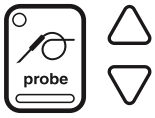
Note: If the oven is being used for hot food holding only, adjust the set holding temperature. *Do not* press the COOK, TIME, or PROBE keys.



Press COOK Key to preheat.

- The green indicator light on the COOK Key will illuminate.
- Last set cooking temperature will be displayed.

  ➥To change the cook temperature, press the UP or DOWN ARROW Keys.
- The green indicator light on the TIME Key and on the PROBE Key alternately flash.



Press PROBE Key.

- The green indicator light on the PROBE Key will illuminate.
- Last set internal product temperature is displayed.

  ➥To change the internal product temperature, press the UP or DOWN ARROW Keys.
- The green indicator light on the PROBE Key will illuminate.
- Halo Heat and Pre-Heat indicator will illuminate.

  ➥The oven is automatically programmed to preheat to the cook temperature.
- The oven will beep when preheated and the preheat indicator extinguished.
- Both the Ready and Start indicator lights will flash.

  ➥The set cook temperature will be maintained by the oven and appear in the display while in the ready/start mode.

Load the food inside oven. Remove probe from its bracket, wipe the probe tip with a disposable alcohol pad and insert probe properly into the product. Close the oven door.

Note: Oven will beep 3 times every 25 seconds until oven is loaded and START Key pressed.

Press and release START key.

COOK

- The oven will beep.
- The green indicators for power, cook, probe, and start will illuminate.
- The display will alternate between showing the probe temperature and the elapsed time.

HOLD

- The oven will beep when the set probe temperature has been reached.
- The green indicator for cook will remain illuminated.
- The display will alternate between showing the set hold temperature and the amount of time the product has remained in the holding mode.
- Ready indicator light will illuminate after 2 hours in the hold mode.

Note: The ready indicator does not necessarily indicate a product-ready state. For best results, the product must remain in the oven at the set holding temperature for the minimum number of hours indicated in the individual cooking instructions.

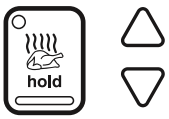
- The oven will remain operating in the hold mode until the control ON/OFF Key is pressed.

Preset Menu Keys:

Alto-Shaam Cook and Hold ovens allow the operator to set up to eight cooking programs. Each cooking program can be preset in any program mode to cook by time or internal product temperature. Cooking programs are recalled and stored using the PRESET Keys labeled "A through H." These keys, along with the key labeled "I" share additional functions described in the "User Options" section of this manual.

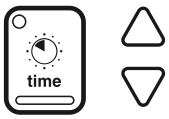
Programming a Cooking Program

Prior to this procedure, make sure the oven is "OFF". Select the food product to be programmed. Press and release control ON/OFF key. The oven will beep for one second and power to the unit will be indicated by an illuminated green indicator light located in the upper left corner of the ON/OFF key. The oven will begin operating in the hold mode. The amber hold indicator will be illuminated and the last set hold temperature will be displayed.



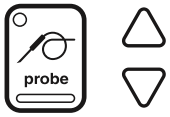
Press HOLD Key. To change the hold temperature, press the UP or DOWN ARROW Keys.

Press COOK Key. Oven preheat indicator will illuminate and the last set cooking temperature is displayed. To change the cook temperature, press the UP or DOWN ARROW Keys.



To cook by time — press the TIME Key. Last set cooking time is displayed. To change the set time, press the UP or DOWN ARROW Keys. The green Time indicator will illuminate.

— or —



To cook by probe — press the PROBE Key. Last set internal product temperature is displayed. To change the set temperature, press the UP or DOWN ARROW Keys. The green Probe indicator will illuminate.

The oven preheat indicator will illuminate. Oven is now in the preheat mode and is automatically programmed to preheat to the cook temperature.

PRESETS

Select a letter code for the product programmed by the previous steps. Press and hold the selected PRESET key until you hear a brief, four second beep. The letter key program indicator light will illuminate and the product programmed is now stored in memory for the specific letter key pressed. Additional programs can be stored in the remaining PRESET Keys if not previously programmed.

Note: The last PRESET Key used will be the oven cooking run sequence for the next product to be programmed. Settings can be manually changed for the next product and an alternate pre-programmed letter key selected.

Erasing a Cooking Program

To erase a program, the oven must be in either the power-up hold mode or in the preheat mode. The oven cannot be running a Preset Menu program.

When the oven is in the power-up hold mode or in the preheat mode, press and hold both the CANCEL Key and the appropriate letter PRESET Key to be erased. The oven will beep in approximately four seconds and the program's indicator light will go out to indicate the program has been erased.

IMPORTANT

After programming a specific product into memory in a programmable preset key, it is very important to make a written permanent record of the product and the program letter assigned. Menu card (PE-23384) is provided for this purpose.

Cook Using Preset Menu Keys:

Press and release control ON/OFF Key.

- The green indicator light on the ON/OFF key will illuminate.
- The oven will beep for one second.
- The oven will begin operating in the hold mode.
- The amber hold indicator will illuminate.
- The previously set hold temperature will be displayed.
- PRESET Keys with stored cooking programs will have green indicator illuminated.

Press Desired PRESET Key (A through H)

- Halo Heat and Pre-Heat indicator will illuminate.

  ➥The oven is automatically programmed to preheat to the cook temperature programmed.
- The oven will beep when preheated and the preheat indicator will go out.
- Both the Ready and Start indicator lights will flash.

  ➥The set cook temperature will be maintained by the oven and appear in the display while in the ready/start mode.

Load the food inside oven. If cooking by probe, remove probe from its bracket, wipe the probe tip with a disposable alcohol pad and insert probe properly into product. Close the oven door.

Note: The oven will beep 3 times every 25 seconds until the oven is loaded and the START key pressed.

Press and release START Key.

COOK

- The oven will beep.
- The green indicators for power, cook, probe or time, and start will illuminate.
- If programmed to cook by time, the display will alternate between showing the set cook temperature and the time remaining.
- If programmed to cook by probe, the display will alternate between showing the set cook temperature and the elapsed time.

HOLD

- The oven will beep when the set probe temperature has been reached or set time has elapsed.
- The green indicator for cook will remain illuminated.
- The display will alternate between showing the set hold temperature and the amount of time the product has remained in the holding mode.
- The Ready indicator light will illuminate after 2 hours in the hold mode.

  Note: The ready indicator does not necessary indicate a product-ready state. For best results, the product must remain in the oven at the set holding temperature for the minimum number of hours indicated in the individual cooking instructions.
- The oven will remain operating in the hold mode until the control ON/OFF Key is pressed.

GENERAL HOLDING GUIDELINES

Chefs, cooks and other specialized food service personnel employ varied methods of cooking. Proper holding temperatures for a specific food product must be based on the moisture content of the product, product density, volume, and proper serving temperatures. Safe holding temperatures must also be correlated with palatability in determining the length of holding time for a specific product.

Halo Heat maintains the maximum amount of product moisture content without the addition of water, water vapor, or steam. Maintaining maximum natural product moisture preserves the natural flavor of the product and provides a more genuine taste. In addition to product moisture retention, the gentle properties of Halo Heat maintain a consistent temperature throughout the cabinet without the necessity of a heat distribution fan, thereby preventing further moisture loss due to evaporation or dehydration.

When product is removed from a high temperature cooking environment for immediate transfer into equipment with the lower temperature required for hot food holding, condensation can form on the outside of the product and on the inside of plastic containers used in self-service applications. Allowing the product to release the initial steam and heat produced by high temperature cooking can alleviate this condition. To preserve the safety and quality of freshly cooked foods, however, a maximum of 1 to 2 minutes must be the only time period allowed for the initial heat to be released from the product.

Most Halo Heat Holding Equipment is provided with a thermostat control between 60° and 200°F (16° to 93°C). If the unit is equipped with vents, close the vents for moist holding and open the vents for crisp holding.

If the unit is equipped with a thermostat indicating a range of between 1 and 10, use a metal-stemmed indicating thermometer to measure the internal temperature of the product(s) being held. Adjust the thermostat setting to achieve the best overall setting based on internal product temperature.

HOLDING TEMPERATURE RANGE

MEAT	FAHRENHEIT	CELSIUS
BEEF ROAST — Rare	140°F	60°C
BEEF ROAST — Med/Well Done	160°F	71°C
BEEF BRISKET	160° — 175°F	71° — 79°C
CORN BEEF	160° — 175°F	71° — 79°C
PASTRAMI	160° — 175°F	71° — 79°C
PRIME RIB — Rare	140°F	60°C
STEAKS — Broiled/Fried	140° — 160°F	60° — 71°C
RIBS — Beef or Pork	160°F	71°C
VEAL	160° — 175°F	71° — 79°C
HAM	160° — 175°F	71° — 79°C
PORK	160° — 175°F	71° — 79°C
LAMB	160° — 175°F	71° — 79°C
POULTRY		
CHICKEN — Fried/Baked	160° — 175°F	71° — 79°C
DUCK	160° — 175°F	71° — 79°C
TURKEY	160° — 175°F	71° — 79°C
GENERAL	160° — 175°F	71° — 79°C
FISH/SEAFOOD		
FISH — Baked/Fried	160° — 175°F	71° — 79°C
LOBSTER	160° — 175°F	71° — 79°C
SHRIMP — Fried	160° — 175°F	71° — 79°C
BAKED GOODS		
BREADS/ROLLS	120° — 140°F	49° — 60°C
MISCELLANEOUS		
CASSEROLES	160° — 175°F	71° — 79°C
DOUGH — Proofing	80° — 100°F	27° — 38°C
EGGS —Fried	150° — 160°F	66° — 71°C
FROZEN ENTREES	160° — 175°F	71° — 79°C
HORS D'OEUVRES	160° — 180°F	71° — 82°C
PASTA	160° — 180°F	71° — 82°C
PIZZA	160° — 180°F	71° — 82°C
POTATOES	180°F	82°C
PLATED MEALS	180°F	82°C
SAUCES	140° — 200°F	60° — 93°C
SOUP	140° — 200°F	60° — 93°C
VEGETABLES	160° — 175°F	71° — 79°C

The holding temperatures listed are suggested guidelines only.

CLEANING AND PREVENTIVE MAINTENANCE

PROTECTING STAINLESS STEEL SURFACES

It is important to guard against corrosion in the care of stainless steel surfaces. Harsh, corrosive, or inappropriate chemicals can completely destroy the protective surface layer of stainless steel. Abrasive pads, steel wool, or metal implements will abrade surfaces causing damage to this protective coating and will eventually result in areas of corrosion. Even water, particularly hard water that contains high to moderate concentrations of chloride, will cause oxidation and pitting that result in rust and corrosion. In addition, many acidic foods spilled and left to remain on metal surfaces are contributing factors that will corrode surfaces.

Proper cleaning agents, materials, and methods are vital to maintaining the appearance and life of this appliance. Spilled foods should be removed and the area wiped as soon as possible but at the very least, a minimum of once a day. Always thoroughly rinse surfaces after using a cleaning agent and wipe standing water as quickly as possible after rinsing.

CLEANING AGENTS

Use non-abrasive cleaning products designed for use on stainless steel surfaces. Cleaning agents must be chloride-free compounds and must not contain quaternary salts. Never use hydrochloric acid (muriatic acid) on stainless steel surfaces. Always use the proper cleaning agent at the manufacturer's recommended strength. Contact your local cleaning supplier for product recommendations.

CLEANING MATERIALS

The cleaning function can usually be accomplished with the proper cleaning agent and a soft, clean cloth. When more aggressive methods must be employed, use a non-abrasive scouring pad on difficult areas and make certain to scrub with the visible grain of surface metal to avoid surface scratches. Never use wire brushes, metal scouring pads, or scrapers to remove food residue.

CAUTION

CAUTION

TO PROTECT STAINLESS STEEL SURFACES, COMPLETELY AVOID THE USE OF ABRASIVE CLEANING COMPOUNDS, CHLORIDE BASED CLEANERS, OR CLEANERS CONTAINING QUATERNARY SALTS. NEVER USE HYDROCHLORIC ACID (MURIATIC ACID) ON STAINLESS STEEL.

CARE AND CLEANING

The cleanliness and appearance of this equipment will contribute considerably to operating efficiency and savory, appetizing food. Good equipment that is kept clean works better and lasts longer.

CLEAN DAILY

1. Disconnect unit from power source, and let cool.
2. Remove all detachable items such as wire shelves, side racks, and drip pans. Clean these items separately.

3. Wipe the interior metal surfaces of the oven with a paper towel to remove loose food debris.
4. Clean the interior metal surfaces of the cabinet with a damp clean cloth or sponge and any good commercial detergent.

NOTE: Avoid the use of abrasive cleaning compounds, chloride based cleaners, or cleaners containing quaternary salts. Never use hydrochloric acid (muriatic acid) on stainless steel.

5. Spray heavily soiled areas with a water soluble degreaser and let stand for 10 minutes, then remove soil with a plastic scouring pad.
6. Wipe control panel, door vents, door handles, and door gaskets thoroughly since these areas harbor food debris.
7. Rinse surfaces by wiping with sponge and clean warm water.
8. Remove excess water with sponge and wipe dry with a clean cloth or air dry. Leave doors open until interior is completely dry. Replace side racks and shelves.
9. Wipe door gaskets and control panel dry with a clean, soft cloth.
10. Interior can be wiped with a sanitizing solution after cleaning and rinsing. This solution must be approved for use on stainless steel food contact surfaces.
11. To help maintain the protective film coating on polished stainless steel, clean the exterior of the cabinet with a cleaner recommended for stainless steel surfaces. Spray the cleaning agent on a clean cloth and wipe with the grain of the stainless steel.
12. Clean any glass with a window cleaner.

Always follow appropriate state or local health (hygiene) regulations regarding all applicable cleaning and sanitation requirements for equipment.

CLEAN THE DOOR VENTS

Door vents need to be inspected and cleaned as required.

DO NOT USE OVEN IF CONTROLS ARE NOT PROPERLY FUNCTIONING

Refer to the Trouble Shooting Guide located in this manual or call an authorized service technician.

CHECK OVERALL CONDITION OF OVEN ONCE A MONTH

Check the oven once a month for physical damage and loose screws. Correct any problems before they begin to interfere with the operation of the oven.

AT NO TIME SHOULD THE INTERIOR OR EXTERIOR BE STEAM CLEANED, HOSED DOWN, OR FLOODED WITH WATER OR LIQUID SOLUTION.
DO NOT USE WATER JET TO CLEAN.
SEVERE DAMAGE OR ELECTRICAL HAZARD COULD RESULT.
WARRANTY BECOMES VOID IF APPLIANCE IS FLOODED.

SANITATION GUIDELINES

Food flavor and aroma are usually so closely related that it is difficult, if not impossible, to separate them. There is also an important, inseparable relationship between cleanliness and food flavor. Cleanliness, top operating efficiency, and appearance of equipment contribute considerably to savory, appetizing foods. Good equipment that is kept clean, works better and lasts longer.

Most food imparts its own particular aroma and many foods also absorb existing odors. Unfortunately, during this absorption, there is no distinction between GOOD and BAD odors. The majority of objectionable flavors and odors troubling food service operations are caused by bacteria growth. Sourness, rancidity, mustiness, stale or other OFF flavors are usually the result of germ activity.

The easiest way to insure full, natural food flavor is through comprehensive cleanliness. This means good control of both visible soil (dirt) and invisible soil (germs). A thorough approach to sanitation will provide essential cleanliness. It will assure an attractive appearance of equipment, along with maximum efficiency and utility. More importantly, a good sanitation program provides one of the key elements in the prevention of food-borne illnesses.

A controlled holding environment for prepared foods is just one of the important factors involved in the prevention of food-borne illnesses. Temperature monitoring and control during receiving, storage, preparation, and the service of foods are of equal importance.

The most accurate method of measuring safe temperatures of both hot and cold foods is by internal product temperature. A quality thermometer is an effective tool for this purpose, and should be routinely used on all products that require holding at a specific temperature.

A comprehensive sanitation program should focus on the training of staff in basic sanitation procedures. This includes personal hygiene, proper handling of raw foods, cooking to a safe internal product temperature, and the routine monitoring of internal temperatures from receiving through service.

Most food-borne illnesses can be prevented through proper temperature control and a comprehensive program of sanitation. Both these factors are important to build quality service as the foundation of customer satisfaction. Safe food handling practices to prevent food-borne illness is of critical importance to the health and safety of your customers. HACCP, an acronym for Hazard Analysis (at) Critical Control Points, is a quality control program of operating procedures to assure food integrity, quality, and safety. Taking steps necessary to augment food safety practices are both cost effective and relatively simple. While HACCP guidelines go far beyond the scope of this manual, additional information is available by contacting

Center for Food Safety and Applied Nutrition
Food and Drug Administration
1-888-SAFEFOOD

INTERNAL FOOD PRODUCT TEMPERATURES		
HOT FOODS		
DANGER ZONE	40° TO 140°F	(4° TO 60°C)
CRITICAL ZONE	70° TO 120°F	(21° TO 49°C)
SAFE ZONE	140° TO 165°F	(60° TO 74°C)
COLD FOODS		
DANGER ZONE	ABOVE 40°F	(ABOVE 4°C)
SAFE ZONE	36°F TO 40°F	(2°C TO 4°C)
FROZEN FOODS		
DANGER ZONE	ABOVE 32°F	(ABOVE 0°C)
CRITICAL ZONE	0° TO 32°F	(-18° TO 0°C)
SAFE ZONE	0°F OR BELOW	(-18°C OR BELOW)

TROUBLE SHOOTING

Error Code	Possible Cause Description/Results	Service Required
E-10	**Air Sensor Fault (shorted)** *Inoperative Oven*	Air sensor defective? See following page for air sensor test.
E-11	**Air Sensor Fault (open)** *Inoperative Oven*	
E-20	**Product Probe Fault (shorted)** *Oven will cook in time only*	Probe defective? See following page for probe sensor test.
E-21	**Product Probe Fault (open)** *Oven will cook in time only*	
E-30	**Under temperature** *Oven will shut down*	Oven door closed? Door gasket need replacement? Preheat skipped? Oven overloaded or has frozen product? Defective air sensor or probe? Defective solid state relay? Bad wire connections or open heating cable? Is the high limit switch tripped? If none of the above, call service.
E-31	**Over temperature** *Oven will shut down*	Shorted cable? Defective solid state relay? Defective air sensor? If none of the above, call service.
E-70	**Configuration connector error** *Inoperative Oven*	Check control connections for loose wires. If none, control must be replaced.
E-78	**Voltage low** *Inoperative Oven*	If 125 VAC unit, incoming voltage is below 90 VAC. Correct. If 208-240 VAC unit, incoming voltage is below 190 VAC. Correct.
E-79	**Voltage high** *Inoperative Oven*	If 125 VAC unit, incoming voltage is over 130 VAC. Correct. If 208-240 VAC unit, incoming voltage is over 250 VAC. Correct.
E-80	**EEPROM - Function data error** *Inoperative Oven*	Replace control.
E-82	**EEPROM - Calibration data error** *Inoperative Oven*	Replace control.
E-84	**EEPROM - Unit ID error** *Inoperative Oven*	Replace control.
E-86	**EEPROM - Preset data error** *Inoperative Oven*	Replace control.

This section is provided for the assistance of qualified technicians only and is not intended for use by untrained or unauthorized service personnel.

Do not replace any electrical components without first disconnecting electrical power to the unit by switching off the electrical power at the rear of the oven. A warning sign should be posted on the panel indicating the oven is being serviced and that the power must remain off.

TROUBLE SHOOTING INTERNAL ELECTRICAL COMPONENTS

A. No power. Display will not light.

1. Verify that power is available at the outlet or junction box.
2. Verify that the circuit breaker switch on the back of the unit is turned on.
3. Verify that the power cord is not open. Check continuity with a VOM meter.
4. If none of the above steps help, call a qualified service technician or refer to the Service Manual for this particular oven.

B. Display is lit and unit calls for heat, but unit is not heating; Error Code E30

Check to verify that the high limit switch located at the rear of the unit top has not been tripped. If it has been tripped, reset by pressing in the hit limit reset button at the rear of the oven.

After resetting, the cause of the high limit trip must be corrected. If the high limit switch will not reset, the high limit switch is defective and must be replaced. ***This is a safety device and must not be jumped out or removed from the circuit.***

C. To test air sensor:

Test air sensor by placing sensor in ice water bath and using an ohmmeter set on the ohm scale. The reading should be 100 ohms resistance. If it is more than 2 ohms higher or lower, sensor needs to be replaced.

D. To test probe sensor:

Test food probe by placing in ice water bath and using an ohmmeter set on the ohm scale. The reading should be 100 ohms resistance.

This section is provided for the assistance of qualified technicians only and is not intended for use by untrained or unauthorized service personnel. If your Alto-Shaam® unit is not operating properly, check the following before calling your Authorized Alto-Shaam® Service Agent:

☛ Check the power flow to the unit. Plug in outlet? Circuit breaker switch at back of unit turned on? ***Do not attempt to repair or service the Cook and Hold unit beyond this point.*** **Contact Alto-Shaam® for the nearest authorized service agent. Repairs made by any other service agents without prior authorization by Alto-Shaam® will void the warranty on the unit.**

SERVICE VIEW PARTS LIST - See following page.

11/05

AS-250

PART DESCRIPTION	UNIT QTY	ALTO-SHAAM PART NO.
1. TOP	1	1820
2. TOP MOUNTING SCREWS	5	SC-2425
3. TUBE ASSB. MTG. SCREWS	3	SC-2425
6. CONTROL ASSEMBLY		
125V CELSIUS	1	5003883
125V FAHRENHEIT	1	5003881
230V, E-INT CELSIUS	1	5003884
230V, E-INT FAHRENHEIT	1	5003882
230V, G-INT CELSIUS	1	5003880
7. CASING ASSEMBLY	1	4812
8. INSULATION BOTTOM	1	1827
9. INSULATION CORNER	2	1837
10. INSULATION	1	IN-2381
	.5	IN-22364
11. CABLE CONNECTION HARDWARE		
12. HEATING CABLE: Length 70' (21336mm)	1	CB-3045
13. POWER SWITCH	1	SW-3563
14. FAN (125V)	1	FA-3599
FAN (230V)	1	FA-3568
FAN GUARD	1	GD-2396
FAN GUARD MTG. SCREWS	4	SC-2661
15. FAN BI-METAL THERMOSTAT	1	TT-3562
MOUNTING SCREWS	2	SC-2459
THERMOSTAT, MANUAL RESET	2	TT-3859
16. CORD SET, 125V, 9'	1	CD-3232
CORD SET, 230V, 9'	1	CD-3922
17. SENSOR PLATE	1	11324
18. SENSOR PLATE MOUNTING SCREWS	4	SC-2459
19. OVEN SENSOR (NOT SHOWN)	1	SN-3560
MOUNTING SCREWS	2	SC-2472
SENSOR SUPPORT BRACKET	1	BK-2758
MOUNTING SCREWS	1	SC-2064
SENSOR GUARD	1	GD-2751
20. MEAT PROBE ASSEMBLY	1	5081
MOUNTING SCREWS	2	SC-2254
PROBE CABLE HOLDER	1	HL-2771

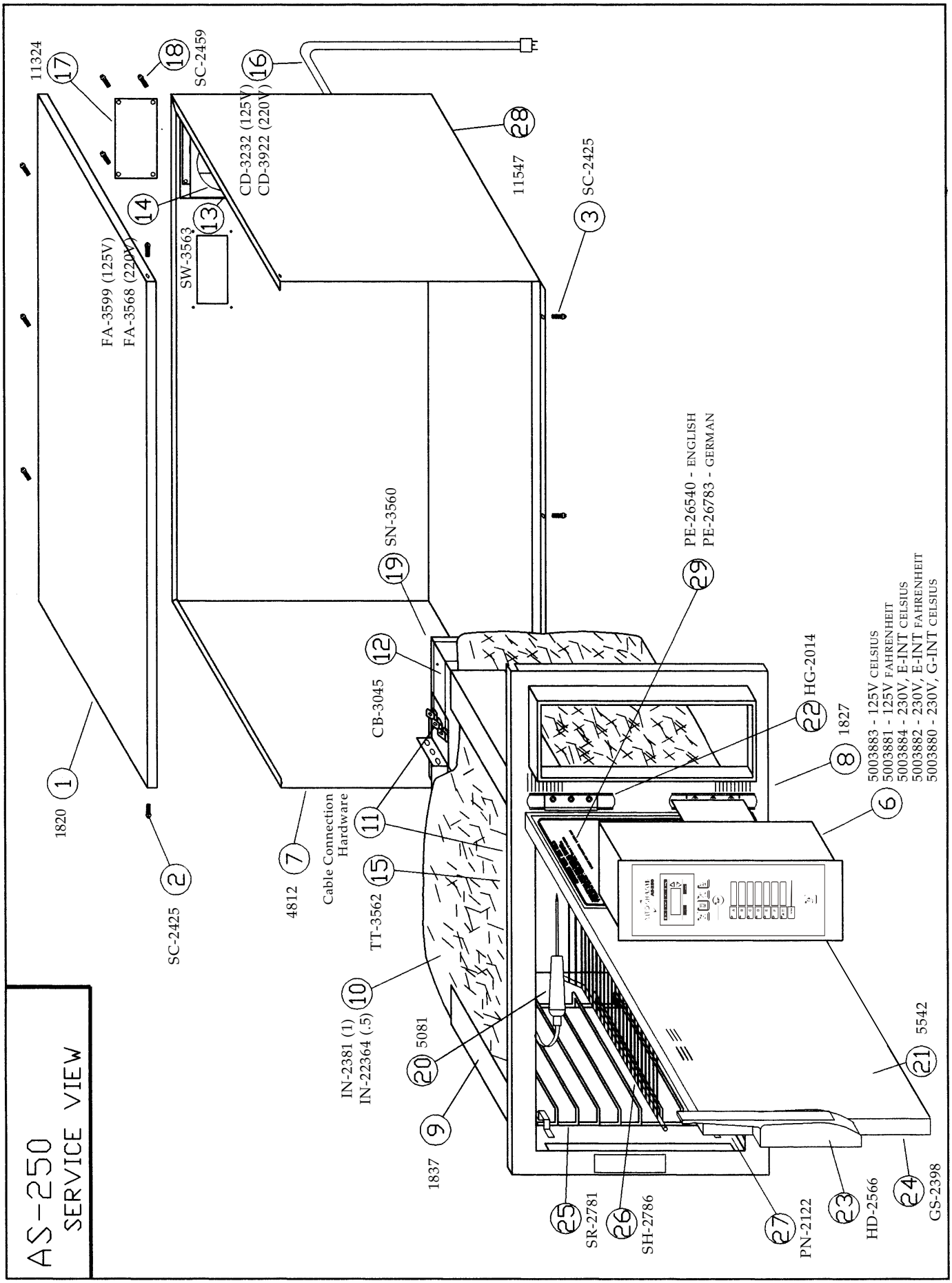
PART DESCRIPTION	UNIT QTY	ALTO-SHAAM PART NO.
21. DOOR, RIGHT-HAND	1	5542
22. HINGE SET (1 Pair of 2 Hinges)	1	HG-2014
HINGE TO DOOR MTG. SCREWS	6	SC-2072
HINGE TO UNIT MTG. SCREWS	6	SC-2073
23. DOOR HANDLE	1	HD-2566
DOOR HANDLE MTG. SCREWS	4	SC-2073
DOOR CATCH MTG. SCREWS	2	SC-2162
24. DOOR GASKET: Length 6.1' (1859mm)	1	GS-2398
25. SIDE RACK	2	SR-2781
26. SHELF	1	SH-2786
27. PAN	1	PN-2122
28. LEGS	2	11547
LEG MOUNTING SCREWS	4	SC-2464
29. COOKING GUIDELINES OVERLAY		
ENGLISH	1	PE-26540
GERMAN	1	PE-26783
30. RELAY (NOT SHOWN)	1	RL-33829
31. T-BLOCK (NOT SHOWN)	1	BK-33546
32. POWER SUPPLY BOARD (NOT SHOWN)	1	BA-33554
33. CIRCUIT BOARD ASSB. (NOT SHOWN)		BA-33900
34. BEEPER (NOT SHOWN)	1	BP-3567
35. CONTROL PANEL OVERLAY	1	PE-26344

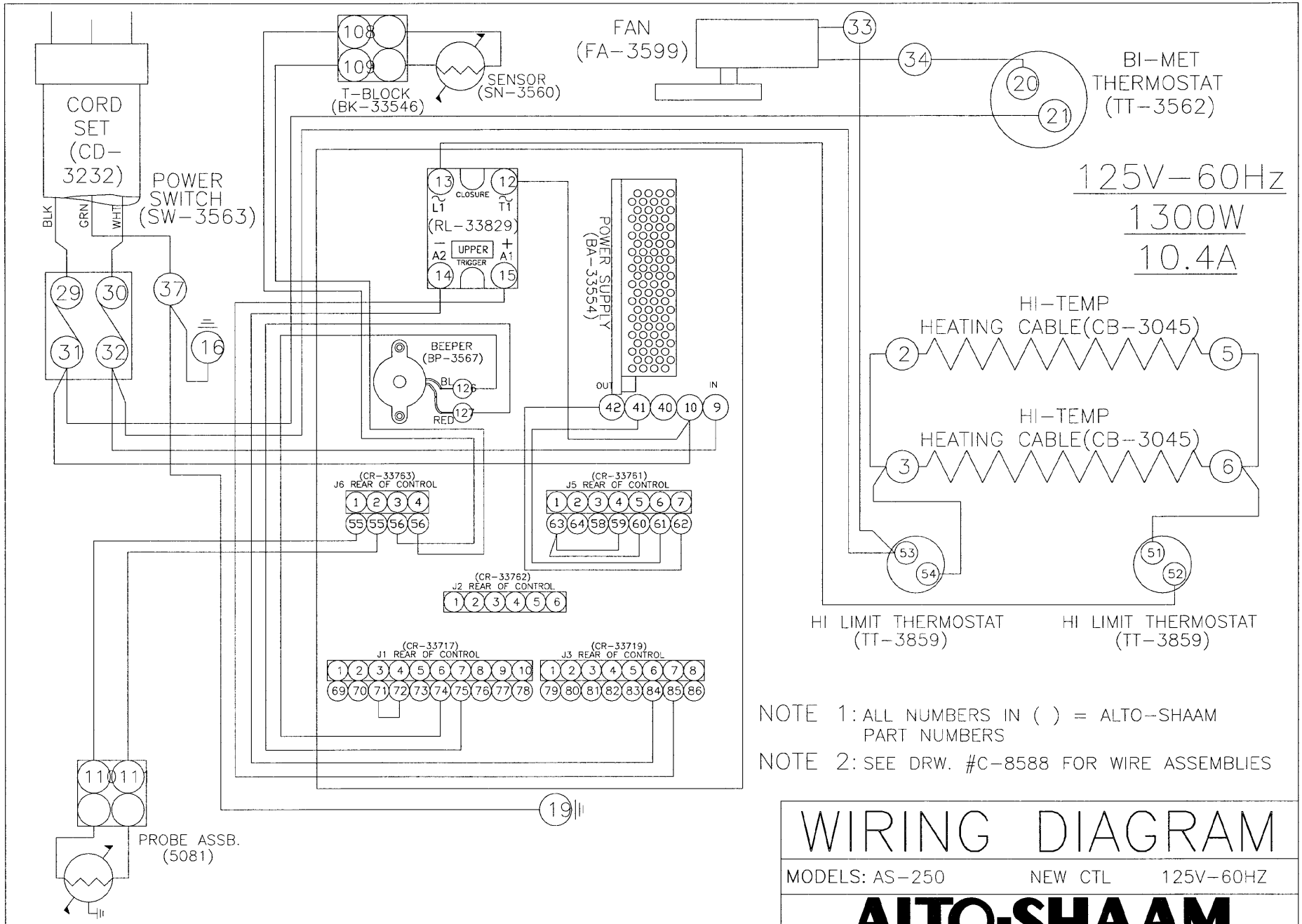
DISCONNECT UNIT FROM POWER SOURCE BEFORE CLEANING OR SERVICING.

Cable Heating Service Kit 4878

Includes:

CB-3045	Cable Heating Element	72 feet
CR-3226	Ring Connector	4
IN-3488	Insulation Corner	1 foot
BU-3105	Shoulder Bushing	4
BU-3106	Cup Bushing	4
SL-3063	Insulating Sleeve	4
TA-3540	Electrical Tape	1 roll
ST-2439	Stud, 10/32	4
NU-2215	Hex Nut	8


AS-250
SERVICE VIEW
1 1820
2 SC-2425
3 SC-2425
4812
7 Cable Connection Hardware
IN-2381 (1)
IN-22364 (.5)
10
TT-3562
15
11
CB-3045
12
SN-3560
19
1837
9
20 5081
25 SR-2781
26 SH-2786
27 PN-2122
23 HD-2566
24 GS-2398
21 5542
6
5003883 - 125V CELSIUS
5003881 - 125V FAHRENHEIT
5003884 - 230V, E-INT CELSIUS
5003882 - 230V, E-INT FAHRENHEIT
5003880 - 230V, G-INT CELSIUS
8 1827
22 HG-2014
29
PE-26540 - ENGLISH
PE-26783 - GERMAN
28 11547
16
CD-3232 (125V)
CD-3922 (220V)
13 SW-3563
14
FA-3599 (125V)
FA-3568 (220V)
17 11324
18 SC-2459



NOTE 1: ALL NUMBERS IN ( ) = ALTO-SHAAM PART NUMBERS

NOTE 2: SEE DRW. #C-8588 FOR WIRE ASSEMBLIES

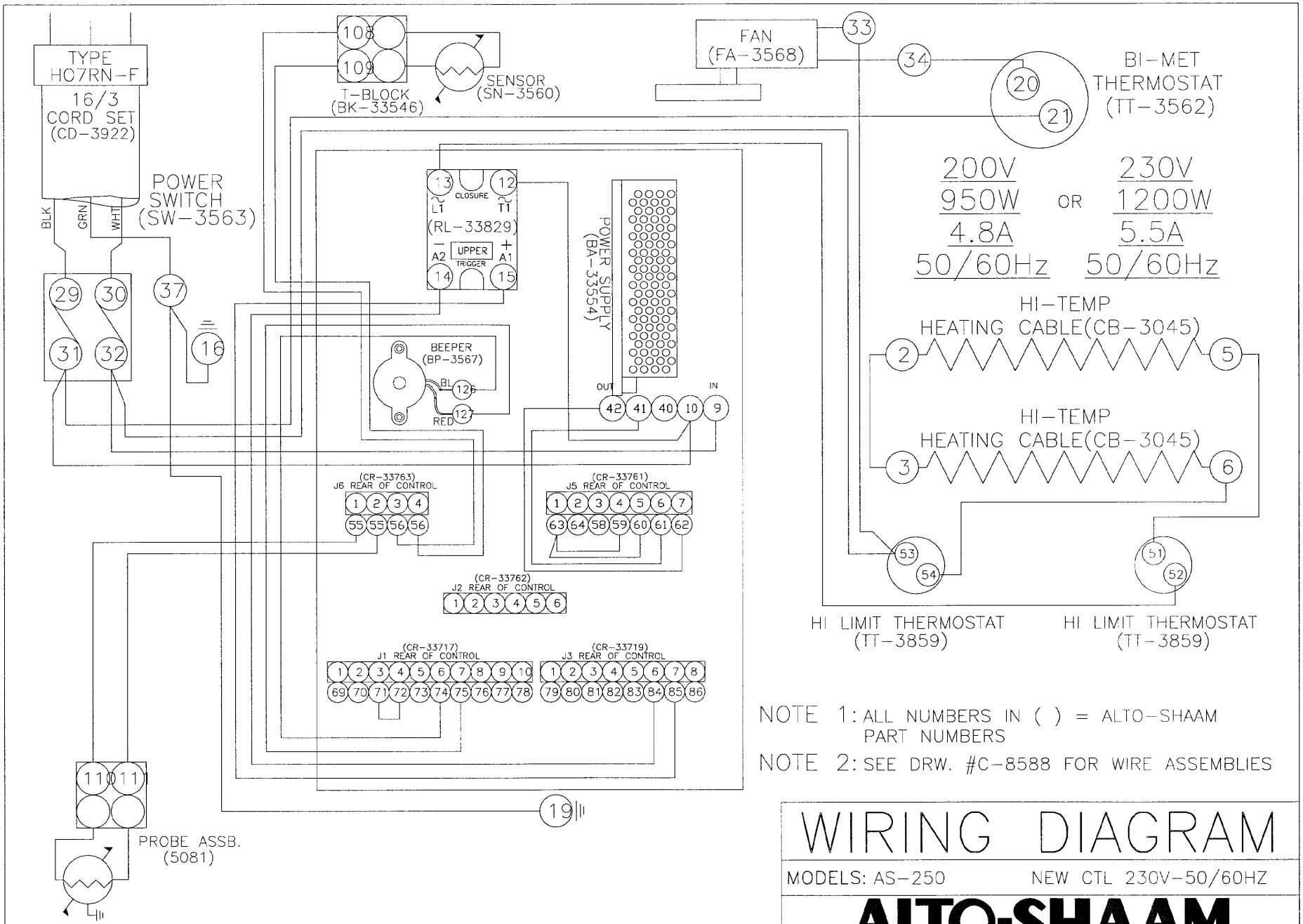
WIRING DIAGRAM

MODELS: AS-250 NEW CTL 125V-60HZ

ALTO-SHAAM

MENOMONEE FALLS, WISC. 53052-450

BY: ALO	SCALE: NONE	DWG: A-7785
APP'D: PED	DATE: 11/15/05	



NOTE 1: ALL NUMBERS IN ( ) = ALTO-SHAAM PART NUMBERS

NOTE 2: SEE DRW. #C-8588 FOR WIRE ASSEMBLIES

WIRING DIAGRAM

MODELS: AS-250 NEW CTL 230V-50/60HZ

ALTO-SHAAM®
MENOMONEE FALLS, WISC. 53052-450

BY: ALO	SCALE: NONE	DWG: A-7786
APP'D: PED	DATE: 11/15/05	

TRANSPORTATION DAMAGE and CLAIMS

All Alto-Shaam equipment is sold F.O.B. shipping point, and when accepted by the carrier, such shipments become the property of the consignee.

Should damage occur in shipment, it is a matter between the carrier and the consignee. In such cases, the carrier is assumed to be responsible for the safe delivery of the merchandise, unless negligence can be established on the part of the shipper.

1. Make an immediate inspection while the equipment is still in the truck or immediately after it is moved to the receiving area. Do not wait until after the material is moved to a storage area.

2. Do not sign a delivery receipt or a freight bill until you have made a proper count and inspection of all merchandise received.

3. Note all damage to packages directly on the carrier's delivery receipt.

4. Make certain the driver signs this receipt. If he refuses to sign, make a notation of this refusal on the receipt.

5. If the driver refuses to allow inspection, write the following on the delivery receipt:

   Driver refuses to allow inspection of containers for visible damage.

6. Telephone the carrier's office immediately upon finding damage and request an inspection. Mail a written confirmation of the time, date, and the person called.

7. Save any packages and packing material for further inspection by the carrier.

8. Promptly file a written claim with the carrier and attach copies of all supporting paperwork.

We will continue our policy of assisting our customers in collecting claims which have been properly filed and actively pursued. We cannot, however, file any damage claims for you, assume the responsibility of any claims, nor accept deductions in payment for such claims.

ALTO SHAAM LIMITED WARRANTY

Alto-Shaam, Inc. warrants to the original purchaser that any original part that is found to be defective in material or workmanship will, at our option, subject to provisions hereinafter stated, be replaced with a new or rebuilt part.

The labor warranty remains in effect one (1) year from installation or fifteen (15) months from the shipping date, whichever occurs first. Alto-Shaam will bear normal labor charges performed during standard business hours not subject to overtime, holiday rates or any additional fees.

The parts warranty remains in effect one (1) year from installation or fifteen (15) months from the shipping date, whichever occurs first.

Exceptions to the one year part warranty period are as listed:

A. Halo Heat cook/hold ovens include a five (5) year parts warranty on the heating element. Labor will be covered under the terms of the standard warranty period of one (1) year or fifteen (15) months.

B. Alto-Shaam Quickchillers include a five (5) year parts warranty on the refrigeration compressor. Labor will be covered under the terms of the standard warranty period of one (1) year or fifteen (15) months.

This warranty does not apply to:

1. Calibration.
2. Replacement of light bulbs and/or the replacement of display case glass due to damage of any kind.
3. Equipment damage caused by accident, shipping, improper installation or alteration.
4. Equipment used under conditions of abuse, misuse, carelessness or abnormal conditions including equipment subjected to harsh or inappropriate chemicals including but not limited to compounds containing chloride or quaternary salts, poor water quality, or equipment with missing or altered serial numbers.
5. Any losses or damage resulting from malfunction, including loss of product or consequential or incidental damages of any kind.
6. Equipment modified in any manner from original model, substitution of parts other than factory authorized parts, removal of any parts including legs, or addition of any parts.

This warranty is exclusive and is in lieu of all other warranties, expressed or implied, including the implied warranties of merchantability and fitness for purpose. In no event shall the Company be liable for loss of use, loss of revenue, or loss of product or profit, or for indirect or consequential damages. This warranty is in lieu of all other warranties expressed or implied and Alto-Shaam, Inc. neither assumes or authorizes any persons to assume for it any other obligation or liability in connection with Alto-Shaam equipment.

ALTO-SHAAM, INC.

Warranty effective October 1, 2005

RECORD THE MODEL AND SERIAL NUMBER OF THE APPLIANCE FOR EASY REFERENCE.
ALWAYS REFER TO BOTH MODEL AND SERIAL NUMBER IN ANY CONTACT WITH ALTO-SHAAM REGARDING THIS APPLIANCE.

Model Number: _____ Date Installed: _____
Voltage: _____ Purchased From: _____
Serial Number: _____ _____

W164 N9221 Water Street • PO Box 450 • Menomonee Falls, Wisconsin 53052-0450 • USA
Phone: 262.251.3800 800.558.3744 USA/Canada • Fax: 262.251.7067 800.329.3744 USA/Canada
website: www.alto-shaam.com