

OPERATION and CARE MANUAL



500-1D MARINE



500-2D MARINE



500-3D MARINE

CABINET, FOOD HOLDING - DRAWER WARMER 230V MARINE

MODELS:

500-1D MARINE - 202736

500-2D MARINE (MANUAL) - 202756

500-2D MARINE (ELECTRONIC) - 202760

500-3D MARINE - 202776



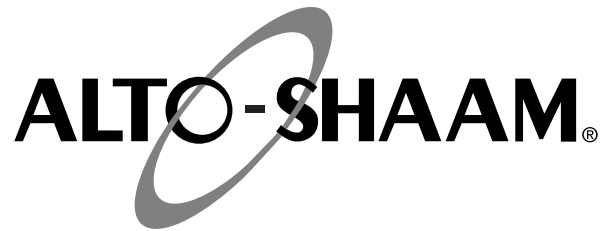
COOK/HOLD/SERVE SYSTEMS

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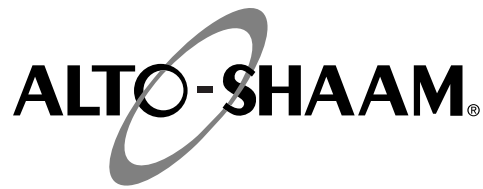
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Warranty

Transportation Damage and Claims Back Cover
Limited Warranty Back Cover



DELIVERY

This Alto-Shaam appliance has been thoroughly tested and inspected to ensure only the highest quality unit is provided. Upon receipt, 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.*

This appliance, complete with unattached items and accessories, may have been delivered in one or more packages. Check to ensure that all standard items and options have been received with each model as ordered.

Save all the information and instructions packed with the appliance. Complete and return the warranty card to the factory as soon as possible to ensure prompt service in the event of a warranty parts and labor claim.

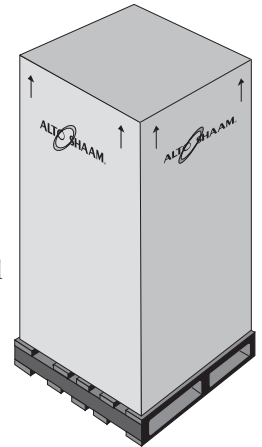
This manual must be read and understood by all people using or installing the equipment model. Contact the Alto-Shaam service department if you have any questions concerning installation, operation, or maintenance.

NOTE: All claims for warranty must include the full model number and serial number of the unit.

UNPACKING

1. Carefully remove the appliance from the carton or crate.

NOTE: Do not discard the carton and other packaging material until you have inspected the unit for hidden damage and tested it for proper operation.



2. Read all instructions in this manual carefully before initiating the installation of this appliance.

DO NOT DISCARD THIS MANUAL.

This manual is considered to be part of the appliance and is to be provided to the owner or manager of the business or to the person responsible for training operators. *Additional manuals are available from the Alto-Shaam service department.*

3. Remove all protective plastic film, packaging materials, and accessories from the appliance before connecting electrical power. Store any accessories in a convenient place for future use.

SAFETY PROCEDURES AND PRECAUTIONS

Knowledge of proper procedures is essential to the safe operation of electrically and/or gas energized equipment. In accordance with generally accepted product safety labeling guidelines for potential hazards, the following signal words and symbols may be used throughout this manual.

DANGER



Used to indicate the presence of a hazard that **WILL** cause severe personal injury, death, or substantial property damage if the warning included with this symbol is ignored.

WARNING



Used to indicate the presence of a hazard that **CAN** cause personal injury, possible death, or major property damage if the warning included with this symbol is ignored.

CAUTION



Used to indicate the presence of a hazard that can or will cause minor or moderate personal injury or property damage if the warning included with this symbol is ignored.

CAUTION

Used to indicate the presence of a hazard that can or will cause minor personal injury, property damage, or a potential unsafe practice if the warning included with this symbol is ignored.

NOTE: Used to notify personnel of installation, operation, or maintenance information that is important but not hazard related.

1. This appliance is intended to cook, hold or process foods for the purpose of human consumption. No other use for this appliance is authorized or recommended.
2. This appliance is intended for use in commercial establishments where all operators are familiar with the purpose, limitations, and associated hazards of this appliance. Operating instructions and warnings must be read and understood by all operators and users.
3. Any troubleshooting guides, component views, and parts lists included in this manual are for general reference only and are intended for use by qualified technical personnel.
4. This manual should be considered a permanent part of this appliance. This manual and all supplied instructions, diagrams, schematics, parts lists, notices, and labels must remain with the appliance if the item is sold or moved to another location.

NOTE



For equipment delivered for use in any location regulated by the following directive:

DO NOT DISPOSE OF ELECTRICAL OR ELECTRONIC EQUIPMENT WITH OTHER MUNICIPAL WASTE.

INSTALLATION

DANGER



IMPROPER INSTALLATION, ALTERATION, ADJUSTMENT, SERVICE, OR MAINTENANCE COULD RESULT IN SEVERE INJURY, DEATH OR CAUSE PROPERTY DAMAGE.

READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.

CAUTION



METAL PARTS OF THIS EQUIPMENT BECOME EXTREMELY HOT WHEN IN OPERATION. TO AVOID BURNS, ALWAYS USE HAND PROTECTION WHEN OPERATING THIS APPLIANCE.

CAUTION



TO PREVENT PERSONAL INJURY, USE CAUTION WHEN MOVING OR LEVELING THIS APPLIANCE.



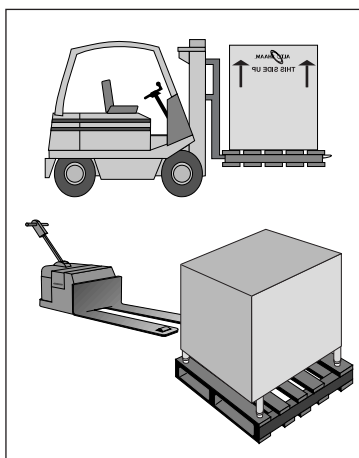
DANGER



DO NOT store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

SITE INSTALLATION

This Alto-Shaam appliance must be installed in a location that will permit it to function for its intended purpose and to allow adequate clearance for ventilation, proper cleaning, and maintenance access.



1. This appliance must be installed on a stable and level surface.
2. **DO NOT** install this appliance in any area where it may be affected by any adverse conditions such as steam, grease, dripping water, high temperatures, or any other severely adverse conditions.
3. This appliance must be kept free and clear of any obstructions blocking access for maintenance or service.

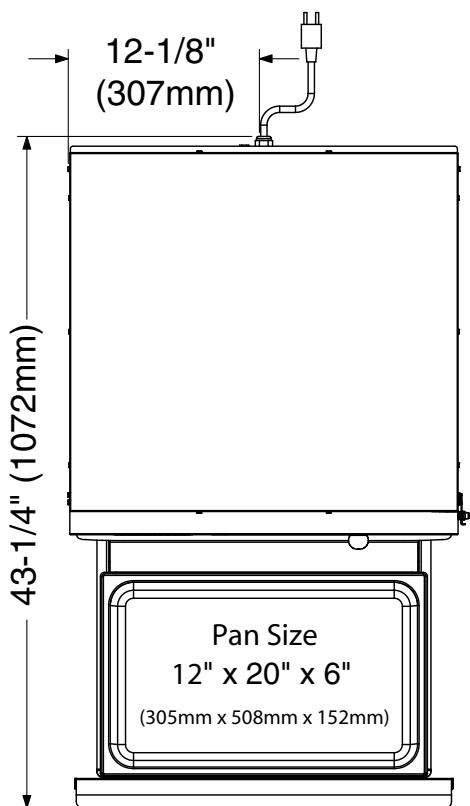
MINIMUM CLEARANCE REQUIREMENTS

BACK	3" (76mm)
LEFT SIDE	1" (25mm)
RIGHT SIDE	1" (25mm)
TOP	2" (51mm)

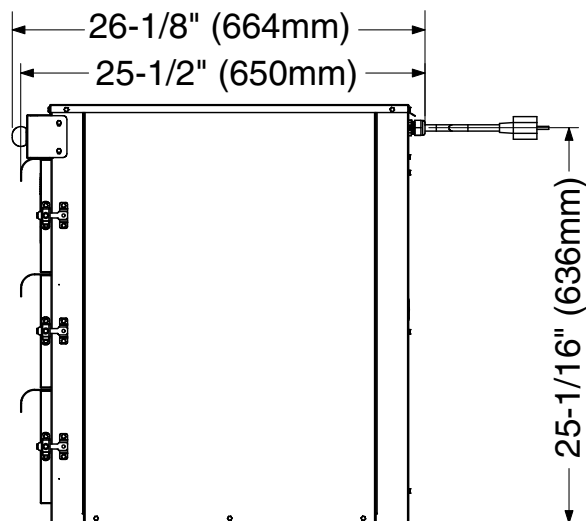
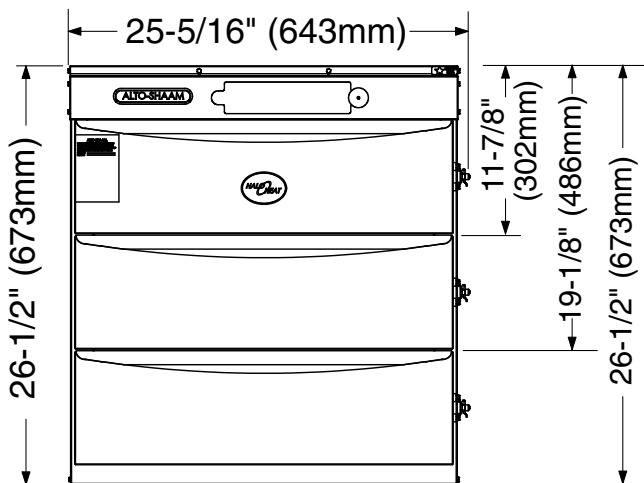
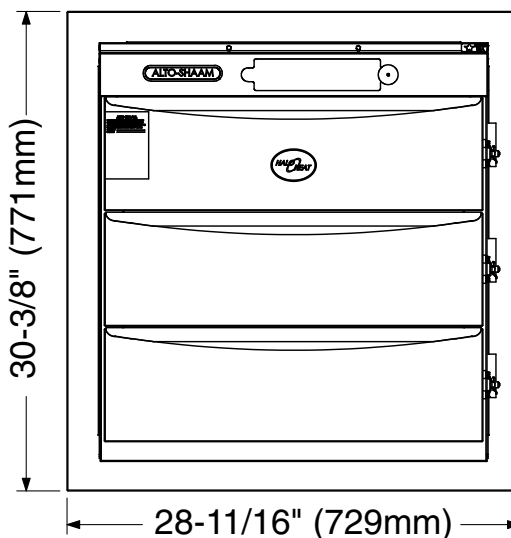
INSTALLATION

SITE INSTALLATION

MANUAL CONTROL



Shown with optional trim kit



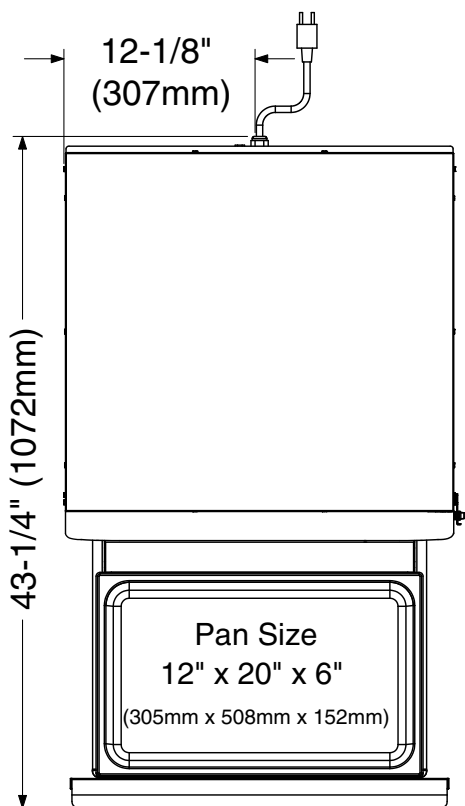
WEIGHT			
	500-1D	500-2D	500-3D
NET	80 lb (36 kg)	115 lb (52 kg)	150 lb (68 kg)
SHIP	90 lb (41 kg)	125 lb (57 kg)	165 lb (75 kg)
CRATE DIMENSIONS: (H x W x D)			
	16" x 27" x 30"	23" x 27" x 30"	30" x 27" x 30"
	(406mm x 686mm x 762mm)	(584mm x 686mm x 76mm)	(762mm x 686mm x 762mm)

PRODUCT CAPACITY
20 lbs (9 kg) MAXIMUM • EACH DRAWER (34 BAKED POTATOES, 50 DINNER ROLLS)

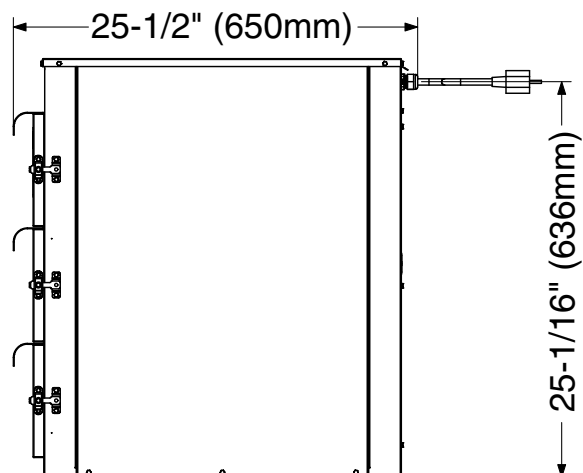
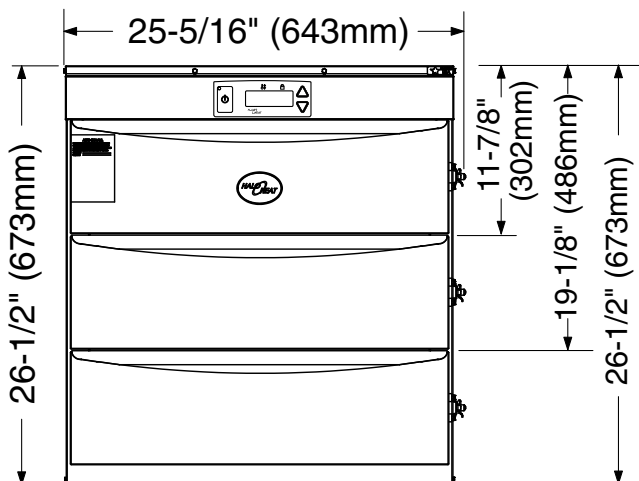
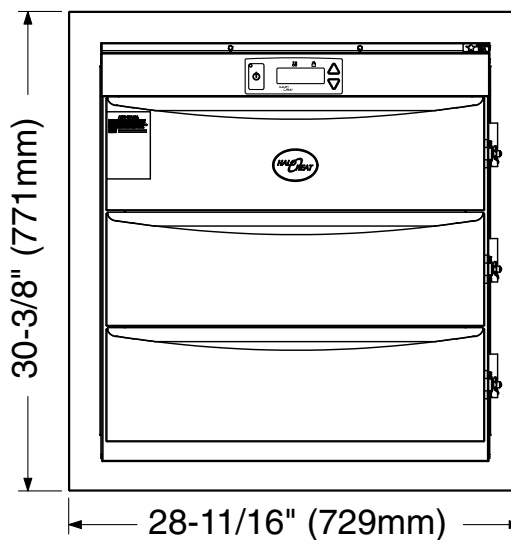
INSTALLATION

SITE INSTALLATION

ELECTRONIC CONTROL



Shown with optional trim kit



OPTIONS & ACCESSORIES


Built-in Trim Kit		Caster Stand Assembly	5004099
500-1D	1004234	Pan, oversize, 15" x 20" x 5" (381 x 508 x 127mm)	PN-2123
500-2D	1004251	Perforated pan grid, 15" x 20" (381 x 508mm)	1231
500-3D	1004571	Perforated pan grid, 12" x 20" (305 x 508mm)	16642

INSTALLATION

ELECTRICAL CONNECTION

1. An identification tag is permanently mounted on the cabinet.
2. Plug cabinet into a properly grounded receptacle **ONLY**, positioning the unit so the power supply cord is easily accessible in case of an emergency.
Arcing will occur when connecting or disconnecting the unit unless all controls are in the "OFF" position.
3. If necessary, a proper receptacle or outlet configuration as required for this unit, must be installed by a licensed electrician in accordance with applicable, local electrical codes.

For 230V:

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. 

NOTE:

230V appliances must be connected to an electrical circuit that is protected by an external GFCI outlet.

CAUTION

THIS SECTION IS PROVIDED FOR THE ASSISTANCE OF QUALIFIED SERVICE TECHNICIANS ONLY AND IS NOT INTENDED FOR USE BY UNTRAINED OR UNAUTHORIZED SERVICE PERSONNEL.



DANGER



ENSURE POWER SOURCE
MATCHES VOLTAGE STAMPED
ON APPLIANCE NAMEPLATE.


DANGER



To avoid electrical shock, this appliance **MUST** be adequately grounded in accordance with local electrical codes or, in the absence of local codes, with the current edition of the National Electrical Code ANSI/NFPA No. 70. In Canada, all electrical connections are to be made in according with CSA C22.1, Canadian Electrical Code Part 1 or local codes.



ELECTRICAL				
VOLTAGE	PHASE	CYCLE/ HZ	AMPS	kW
230	1	50/60	4.2	0.97


CEE 7/7
220-230V PLUG

OPERATING INSTRUCTIONS

USER SAFETY INFORMATION

CAUTION



METAL PARTS OF THIS EQUIPMENT BECOME EXTREMELY HOT WHEN IN OPERATION. TO AVOID BURNS, ALWAYS USE HAND PROTECTION WHEN OPERATING THIS APPLIANCE.

The Alto-Shaam holding cabinet is intended for use in commercial establishments by qualified operating personnel where all operators are familiar with the purpose, limitations, and associated hazards of this appliance. Operating instructions and warnings must be read and understood by all operators and users.

START-UP OPERATION

BEFORE INITIAL USE:

Interior oven surfaces must be heated to remove surface oils and the accompanying odor produced during the first use of the oven.

1. Wipe all wire shelves, side racks and the full cabinet interior with a clean, damp cloth. Install the side racks and shelves. Shelves are installed with the curved edge toward the back of the unit.
2. Close the oven doors, press the ON key and set the temperature to 200°F (93°C) by using the UP/DOWN arrow keys.
3. Allow the oven to cycle for approximately 2 hours or until no odor is detected.

PREHEATING:

Always preheat the appliance for a minimum of 30 minutes before holding product. Follow the operating instructions indicated on the next page of this manual.

HEATING CHARACTERISTICS

The cabinet is equipped with a special heating cable. Through this Halo Heat concept, the heating cable is mounted against the walls of the unit to provide an evenly applied heat source controlled by a thermostat. The design and operational characteristics of the unit eliminate the need for a moisture pan or a heat circulating fan. Through even heat application, the quality of food products is maintained up to several hours or more.



DANGER



DISCONNECT UNIT FROM POWER SOURCE BEFORE CLEANING OR SERVICING.

DANGER



AT NO TIME SHOULD THE INTERIOR OR EXTERIOR BE STEAM CLEANED, HOSED DOWN, OR FLOODED WITH WATER OR LIQUID SOLUTION OF ANY KIND. DO NOT USE WATER JET TO CLEAN.

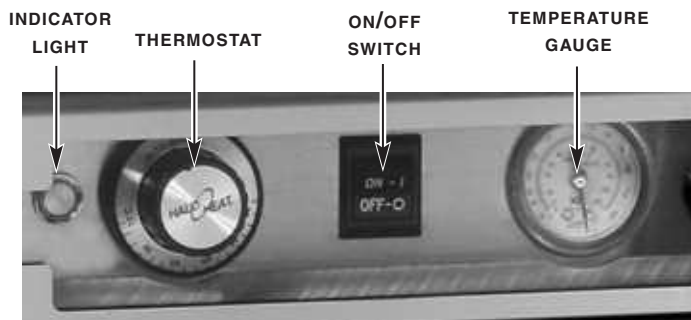


SEVERE DAMAGE OR ELECTRICAL HAZARD COULD RESULT.

WARRANTY BECOMES VOID IF APPLIANCE IS FLOODED

OPERATING INSTRUCTIONS

MANUAL CONTROL



1. Preheat at 200°F (93°C) for 30 minutes.

When the thermostat is turned clockwise to an "ON" position, the indicator light will illuminate and will remain lit as long as the unit is calling for heat. Allow a minimum of 30 minutes of preheating before loading the warmer with food. The indicator light will go "OUT" after approximately 30 minutes, or when the air temperature inside the unit reaches the temperature set by the operator.

2. Load the drawer warmer with pans of hot food only.

The purpose of the unit is to maintain hot food at proper serving temperatures. Only hot food should be placed into the warmer. Before loading the unit with food, use a food thermometer to make certain all food products are at an internal temperature range of 140° to 160°F (60° to 71°C). All food not within the proper temperature range should be heated before putting into the drawer warmer.

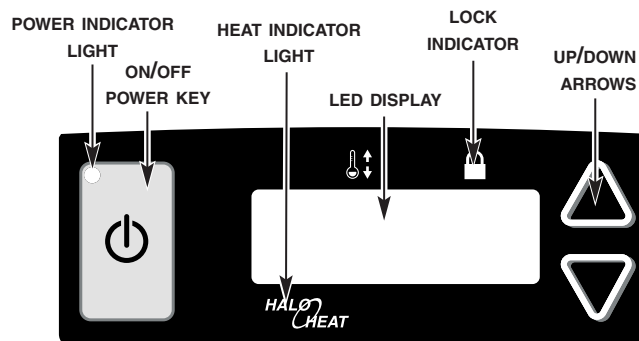
3. Reset the thermostat to 160°F (71°C).

Check to make certain the drawer is securely closed, and reset the thermostat to 160°F (71°C).

THIS WILL NOT NECESSARILY BE THE FINAL SETTING.

The proper temperature range for the food being held will depend on the type and quantity of product. When holding food for prolonged periods, it is advisable to periodically check the internal temperature of each item to assure maintenance of the proper temperature range.

ELECTRONIC CONTROL



1. Preheat at 200°F (93°C) for 30 minutes.

Press the ON key, and set the temperature to 200°F (93°) by using the UP/DOWN arrow keys. Allow a minimum of 30 minutes preheating time before loading the holding cabinet with hot food. Closing the vents on the inside of the door will speed the preheating process. The LED heat indicator light will go "Out" after approximately 30 minutes preheat time, or when the air temperature inside the unit reaches the temperature set by the operator. The Set indicator will light up anytime the temperature is set or reset.

2. Load the drawer warmer with pans of hot food only.

The purpose of the holding cabinet is to maintain hot food at proper serving temperature. Only hot food should be placed into the cabinet. Before loading the cabinet with food, use a food thermometer to make certain all products are at an internal temperature range of 140° to 160°F (60° to 71°C). Any food product not within the proper temperature range should be heated before loading into the holding cabinet.

3. Reset the thermostat to 160°F (71°C).

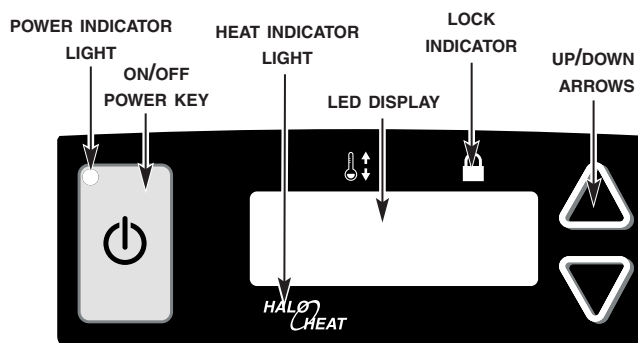
Check to make certain the cabinet door is securely closed, and reset to 160°F (71°C) by using the UP/DOWN keys

THIS WILL NOT NECESSARILY BE THE FINAL SETTING.

The proper temperature range and OPEN or CLOSED door vent position will depend on the type and quantity of product. When holding food for prolonged periods, it is advisable to periodically check the internal temperature of each item with a food thermometer to assure maintenance of the proper temperature range of 140° to 160°F (60° to 71°C).

OPERATING INSTRUCTIONS

ELECTRONIC CONTROL



ON/OFF KEY

Press the on/off key once and the power indicator light will illuminate. Press and hold the on/off key until the LED display turns off (at least three seconds) and on/off indicator goes out.

UP/DOWN ARROW KEY

The up and down arrow keys are used for a variety of settings when selecting the holding temperature. If an arrow key is pressed and released the display will show the current set temperature for two seconds. If an arrow key is held (at least eight seconds), the value will change at a rapid rate. If the arrow key is pressed and released in rapid succession, the set temperature will change by increments of one degree.

ENABLE/DISABLE BEEPER

A beeper sounds when an error code is displayed. To choose between beeper on and beeper off mode, the control must be OFF, then press and hold the down arrow key until either "ON" or "OFF" is shown in the LED display. Release arrow key when desired mode is displayed.

FAHRENHEIT / CELSIUS

With the control OFF, to choose between Fahrenheit and Celsius, press and hold the up arrow key until either °F or °C is shown in the LED display. Release key when desired setting is displayed.

The control has a four-digit LED display. When the display is ON, it will show current holding temperature, as well as diagnostic information.

CONTROL LOCK

The warmer controls can be locked so that no changes can be made to the set temperature.

To lock the display, press and hold the ON/OFF key and the Up Arrow key at the same time. The lock indicator will illuminate. When the lock indicator is illuminated, additional programming will not be functional other than the key sequence required to unlock the panel.

To unlock the display, press and hold the ON/OFF key and the Down Arrow key at the same time. The lock indicator will extinguish. The panel keys will resume normal function.

FOOD PRODUCT TIPS

Bread and Rolls

Breads and rolls are traditionally difficult to hold for prolonged periods due to the very low moisture content of these products. For best results and longest possible holding life, it is recommended these products be placed in a plastic bag while in the warming drawer. Breads and rolls should be held at a temperature no higher than 120° to 140°F (49° to 60°C).

Potatoes - FOR THE BEST RESULTS IN HOLDING POTATOES

1. Do not overcook.

Regardless of the temperature at which potatoes are cooked or what type of oven is used, it is important that this product does not achieve a final internal product temperature in excess of 195°F (91°C). Over-cooking will further reduce the moisture content and consequently, reduce the holding life. Potatoes should be removed from the oven when they reach an internal temperature of approximately 190°F (88°C). After they are removed from the oven, the internal temperature will continue to increase.

2. Allow potatoes to stabilize before placing in drawer warmer.

When potatoes are removed from a conventional high-temperature oven, they have an extremely high surface temperature. If they are placed in the drawer warmer while they are this hot on the outside, moisture will be pulled from the inside of the potato and condensation will form on the outside. Holding results under these conditions will not be totally satisfactory. Remove potatoes from the oven and allow the surface temperature to stabilize before placing them in the controlled holding atmosphere of the drawer warmer.

OPERATING INSTRUCTIONS

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.

HOLDING TEMPERATURE RANGE		
MEAT	FAHRENHEIT	CELSIUS
BEEF ROAST — Rare	130°F	54°C
BEEF ROAST — Med/Well Done	155°F	68°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	130°F	54°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	140° — 165°F	60° — 74°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. ALL FOOD HOLDING SHOULD BE BASED ON INTERNAL PRODUCT TEMPERATURES. ALWAYS FOLLOW LOCAL HEALTH (HYGIENE) REGULATIONS FOR ALL INTERNAL TEMPERATURE REQUIREMENTS.		

CARE AND CLEANING

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	
 NO SCRAPERS	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. NEVER USE WIRE BRUSHES, METAL SCOURING PADS OR SCRAPERS.
 NO WIRE BRUSHES	
 NO STEEL PADS	

CARE AND CLEANING



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

THOROUGHLY CLEAN THE UNIT DAILY


1. Disconnect unit from power source, and let cool.
2. Remove, cover or wrap, and refrigerate food.
3. Remove drawer pans and clean separately. The drawer assembly is completely removable. Remove from the cabinet and clean to prevent a build-up of food residue from interfering with the function of the drawer assembly. Regular cleaning will help prolong the life of these parts.
4. Clean interior metal surfaces of the unit with a damp, clean cloth and any good commercial detergent or grease solvent at the recommended strength. Use a plastic scouring pad or oven cleaner for difficult areas. Rinse surfaces thoroughly by wiping with sponge and clean, warm water.





5. Wipe control panel, vents, handles, and gaskets thoroughly since these areas harbor food debris.
6. 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.
7. To help maintain the protective film coating on polished stainless steel, clean the exterior of the unit with a cleaner recommended for stainless steel surfaces. Spray the cleaning agent on a cloth and wipe with the grain of the stainless steel.

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

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.

 DANGER	
	DISCONNECT UNIT FROM POWER SOURCE BEFORE CLEANING OR SERVICING.

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

SANITATION

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 is 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° TO 40°F	(2° 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)

SERVICE

MANUAL CONTROL

THERMOSTAT and HEAT LIGHT SEQUENCE

Whenever the thermostat is turned "ON," the heat indicator light will indicate the power ON/OFF condition of the heating cable, and consequently, the cycling of the cabinet as it maintains the dialed cavity temperature. If the light does not illuminate after normal start-up, the main power source, thermostat, and/or light must be checked. If the warming cabinet does not hold the temperature as dialed, the calibration of the thermostat must be checked. If the warmer fails to heat or heats continuously with the thermostat "OFF," the thermostat must be initially checked for proper operation. If these items are checked and found to be in order, a continuity and resistance check of the heating cable should be made. *SEE CIRCUIT DIAGRAM.*

THERMOSTAT CALIBRATION

The thermostat is precision calibrated at the factory. Normally, no adjustment or recalibration is necessary unless the thermostat has been mishandled in transit, changed or abused while in service. A thermostat with a sensing bulb operates on hydraulic pressure, consequently, any bending of the bulb results in a change in its volume, and alters the accuracy of the thermostat calibration.

A thermostat should be checked or recalibrated by placing a quality, thermal indicator at the center of an empty holding cavity. *DO NOT CALIBRATE WITH ANY FOOD PRODUCT IN THE CABINET.* The thermostat should be set at 140°F (60°C), and should be allowed to stabilize at that setting for a minimum of one hour. Following temperature stabilization, the center of the thermal swing of the air temperature within the cabinet should approximately coincide with the thermostat dial setting.

If calibration is necessary, the calibration screw should be adjusted with great care. The calibration screw of the thermostat is located in the thermostat dial shaft. With the shaft held stationary, a minute, clockwise motion of the calibration screw appreciably lowers the thermostat setting. A reverse, or counter-clockwise motion appreciably raises the thermostat setting. After achieving the desired cycling of the thermostat, the calibration screw must be sealed. Place a few drops of enamel sealant directly on the calibration screw. *(RED NAIL POLISH OR EQUIVALENT IS ACCEPTABLE.)*

TROUBLE SHOOTING CHECKLIST • ELECTRONIC CONTROL

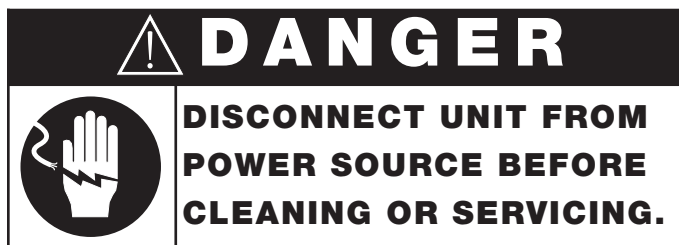
Repairs should be made by authorized service agents only.

TROUBLE	POSSIBLE CAUSE	REMEDY
Unit does not operate.	Insufficient power supply.	Check power source.
	Defective power cord or plug.	Check and replace if necessary.
No display in electronic control.	Faulty power supply board.	Check line voltage for 24V across pins 7 and 8 on the power supply board and across terminals J9 and J10 on the electronic control.
	Faulty electronic control.	Replace control.
Cannot control temperature but sensor and electronic control checks O.K.	Faulty relay	Replace relay.
	Heating element grounded.	Replace element.
Temperature readout incorrect.	Dirty or faulty sensor.	Check sensor at 32°F (0°C). If Ohm reading is 100, replace display.
	Faulty control.	If Ohm reading is not 100, replace sensor.

SERVICE

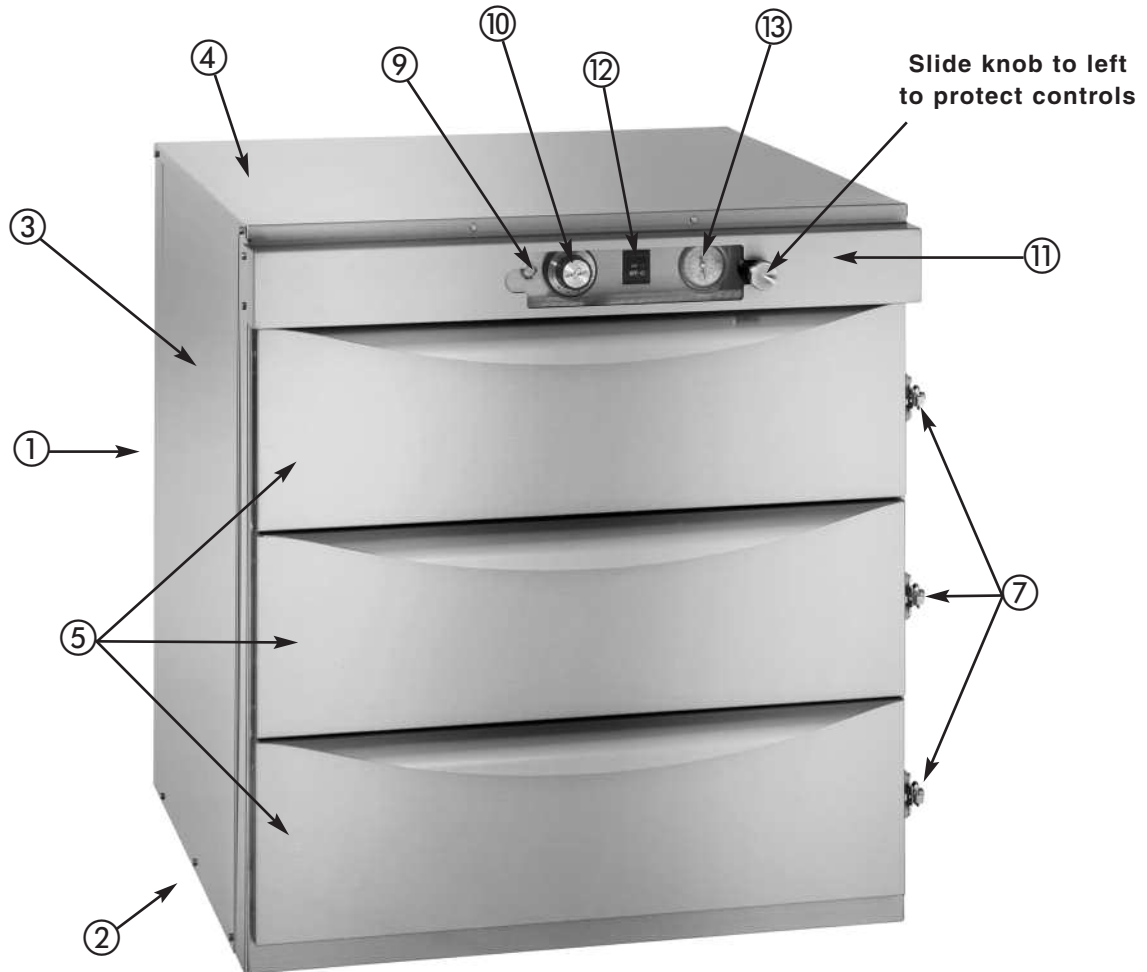
ELECTRONIC CONTROL

Error Code	Description/Results	Possible Cause Service Required
E-10	Air Sensor Fault (shorted) <i>Inoperative Unit</i>	Air sensor is shorted. Air sensor defective? Test air sensor by placing sensor in ice water bath 32°F (0°C) 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. If Ohm reading is 100, replace display. If Ohm reading is not 100, replace sensor.
E-11	Air Sensor Fault (open) <i>Inoperative Unit</i>	Air sensor is open or connection failure. Air sensor defective? See above for air sensor test.
E-30	Under temperature <i>Oven will not reach set temperature</i>	Unit door closed? Door gasket need replacement? Preheat skipped? Unit overloaded or holding frozen product? Defective air sensor or probe? Defective solid state relay? Bad wire connections or open heating cable? If none of the above, contact Alto-Shaam Service Department.
E-31	Over temperature <i>Unit will shut down</i>	Unit has exceeded its maximum allowable set temperature by 25 degrees for at least 3 minutes. Unit will shut down. Defective sensor or poor sensor connection? Defective relay? Shorted heater element? If none of the above, contact Alto-Shaam Service Department.
E-70	Configuration error <i>Inoperative Unit</i>	Contact Alto-Shaam Service Department for correct DIP-switch settings.
E-82 or E-83	EEPROM Error - Bad Checksum <i>Inoperative Unit</i>	Contact Alto-Shaam Service Department for help resetting the control.
E-90	Button shorted <i>Inoperative Control</i>	Stuck button on control panel. Check buttons. If control is still inoperative, contact Alto-Shaam Service Department.
E-91	Input failure	Contact Alto-Shaam Service Department.
-AC-	Power Failure	Press any key to acknowledge.



SERVICE

500-3D MARINE DRAWER WARMER - MANUAL CONTROL



MODEL >				500-1D, 2D, 3D MANUAL CONTROL			
ITEM	DESCRIPTION	PART NO.	QTY	ITEM	DESCRIPTION	PART NO.	QTY
1	CASING, BACK - 500-1D	1004196	1	6	DRAWER BEARING (NOT SHOWN)	BG-24890	6*
	CASING, BACK - 500-2D	1004243	1	7	DRAWER LATCH	LT-25808	1
	CASING, BACK - 500-3D	1004567	1	8	DRAWER PAN (NOT SHOWN)	PN-25088	1*
2	CASING, BOTTOM	1004212	1	9	INDICATOR LIGHT	LI-3951	1
3	CASING, SIDE - 500-1D	1004225	1	10	KNOB, THERMOSTAT	KN-3474	1
	CASING, SIDE - 500-2D	1004250	1	11	SPLASH GUARD ASSEMBLY	5003269	1
	CASING, SIDE - 500-3D	1004568	1	12	SWITCH, ON/OFF	SW-33923	1
4	CASING, TOP	1004228	1	13	TEMPERATURE GAUGE	TH-33713	1
5	DRAWER ASSEMBLY	55502	1		* PER DRAWER		

Part numbers and drawings are subject to change without notice.

SERVICE

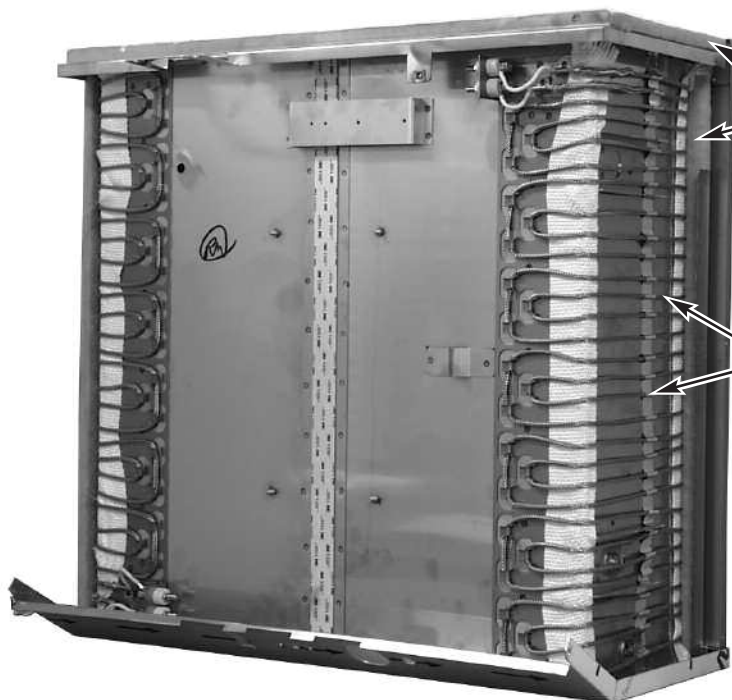
500-2D MARINE DRAWER WARMER - ELECTRONIC CONTROL



MODEL >				500-2D ELECTRONIC CONTROL			
ITEM	DESCRIPTION	PART NO.	QTY	ITEM	DESCRIPTION	PART NO.	QTY
1	CASING, BACK	1011542	1	6	DRAWER ASSEMBLY	55502	1
2	CASING, BOTTOM	1004212	1	7	DRAWER BEARING (NOT SHOWN)	BG-24890	6*
3	CASING, SIDE	1004250	1	8	DRAWER LATCH	LT-25808	1
4	CASING, TOP	1004228	1	9	DRAWER PAN (NOT SHOWN)	PN-25088	1*
5	CONTROL PANEL OVERLAY	PE-25327	1		* PER DRAWER		

Part numbers and drawings are subject to change without notice.

SERVICE

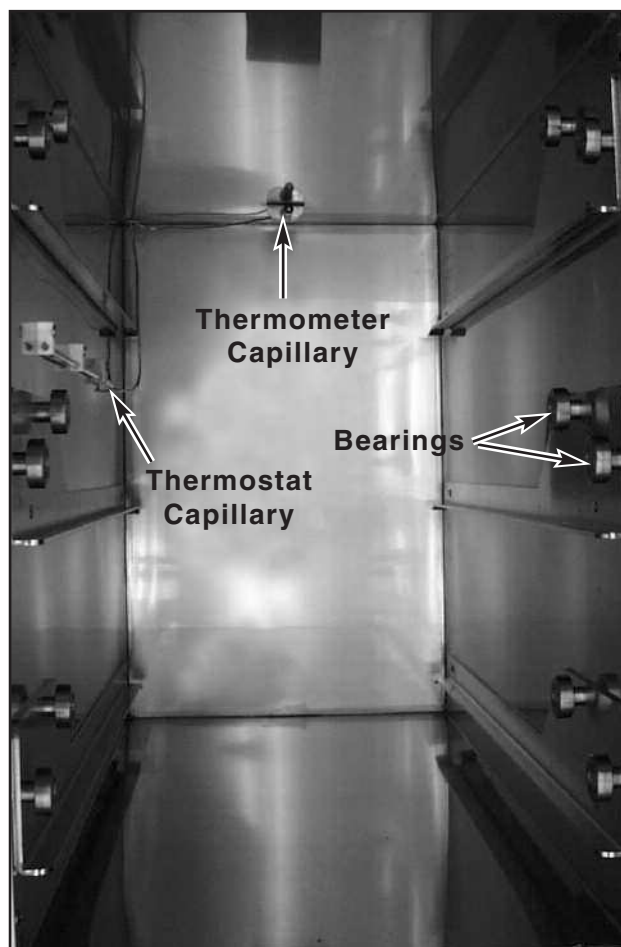


Insulation
IN-2003

**500-3D
Heat Cable Wrap**

Heat Element Cable
CB-3044

**500-3D
Interior**



Thermometer
Capillary

Bearings

Thermostat
Capillary



DANGER



**DISCONNECT UNIT FROM
POWER SOURCE BEFORE
CLEANING OR SERVICING.**

HEATING CABLE REPLACEMENT KIT NUMBER 4874

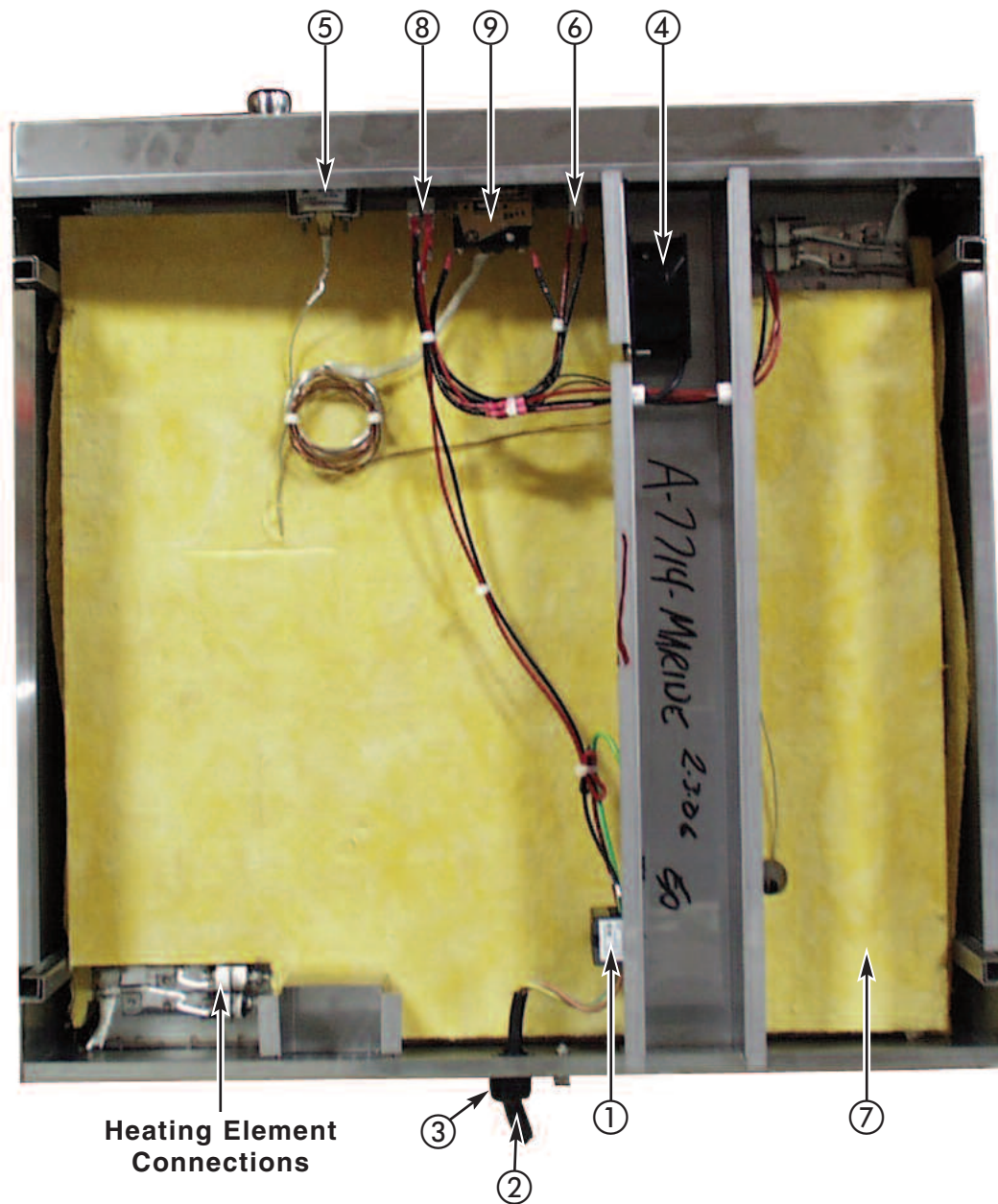
INCLUDES:

CB-3044	....	CABLE HEATING ELEMENT	....	108 FEET
CR-3226	....	RING CONNECTOR	.....	4
IN-3488	....	INSULATION CORNER	.....	1 FOOT
BU-3105	....	SHOULDER BUSHING	.....	4
BU-3106	....	CUP BUSHING	.....	4
ST-2439	....	STUD	.....	4
NU-2215	....	HEX NUT	.....	8
SL-3063	....	INSULATING SLEEVE	.....	4
TA-3540	....	ELECTRICAL TAPE	.....	1 ROLL

Part numbers and drawings are subject to change without notice.

SERVICE

500-3D • Manual Control • Top Removed



Heating Element
Connections

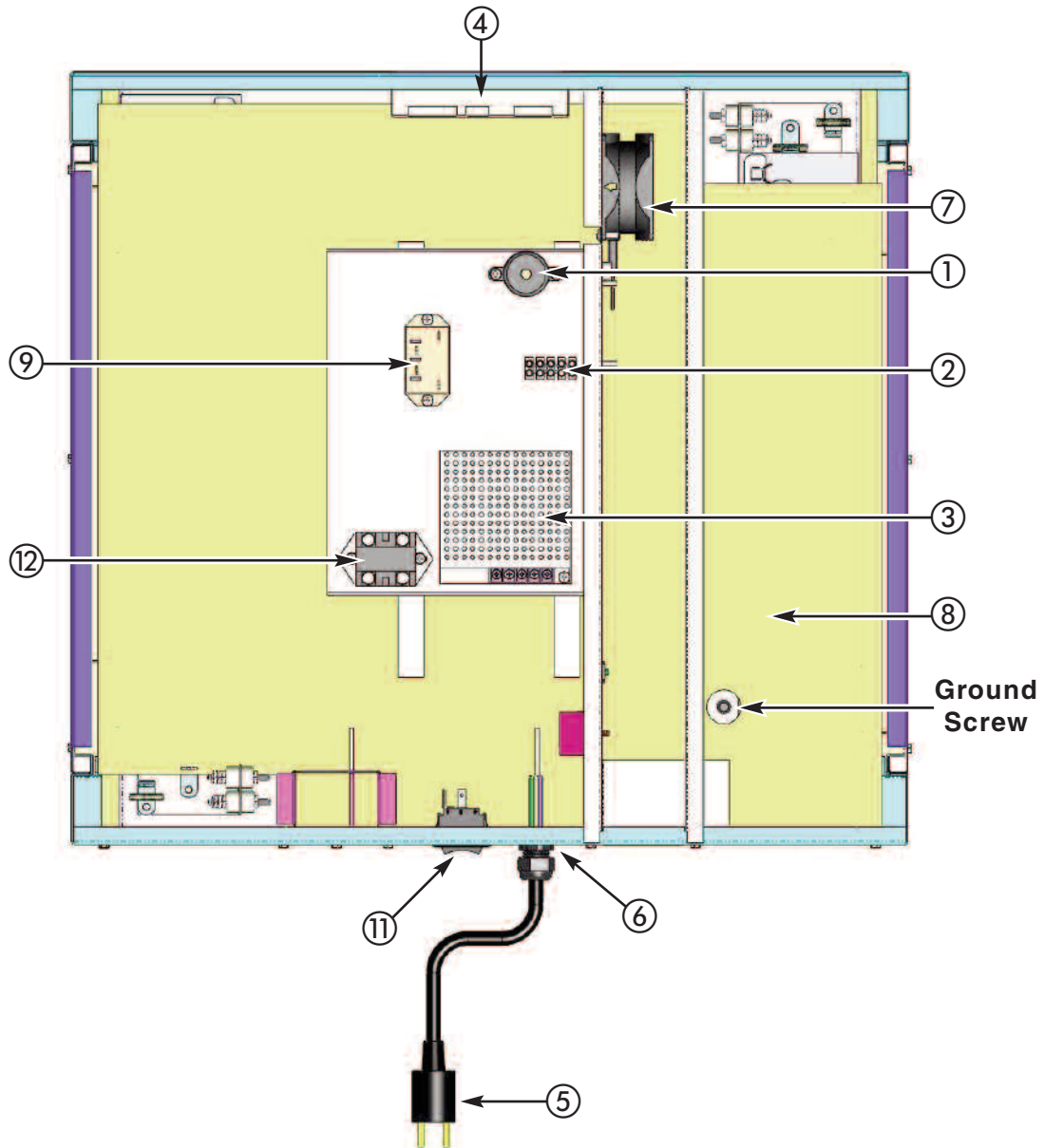
MODEL >				500-1D, 2D, 3D MANUAL CONTROL			
ITEM	DESCRIPTION	PART NO.	QTY	ITEM	DESCRIPTION	PART NO.	QTY
1	BLOCK, TERMINAL	BK-3019	1	6	INDICATOR LIGHT	LI-3951	1
2	CORD	CD-3922	1	7	INSULATION	IN-2003	1
3	CORD BUSHING	BU-3964	1	8	SWITCH, ON/OFF	SW-33923	1
4	FAN	FA-3974	1	9	THERMOSTAT	TT-3626	1
5	GAUGE, TEMPERATURE	TH-33713	1				

Part numbers and drawings are subject to change without notice.

SERVICE

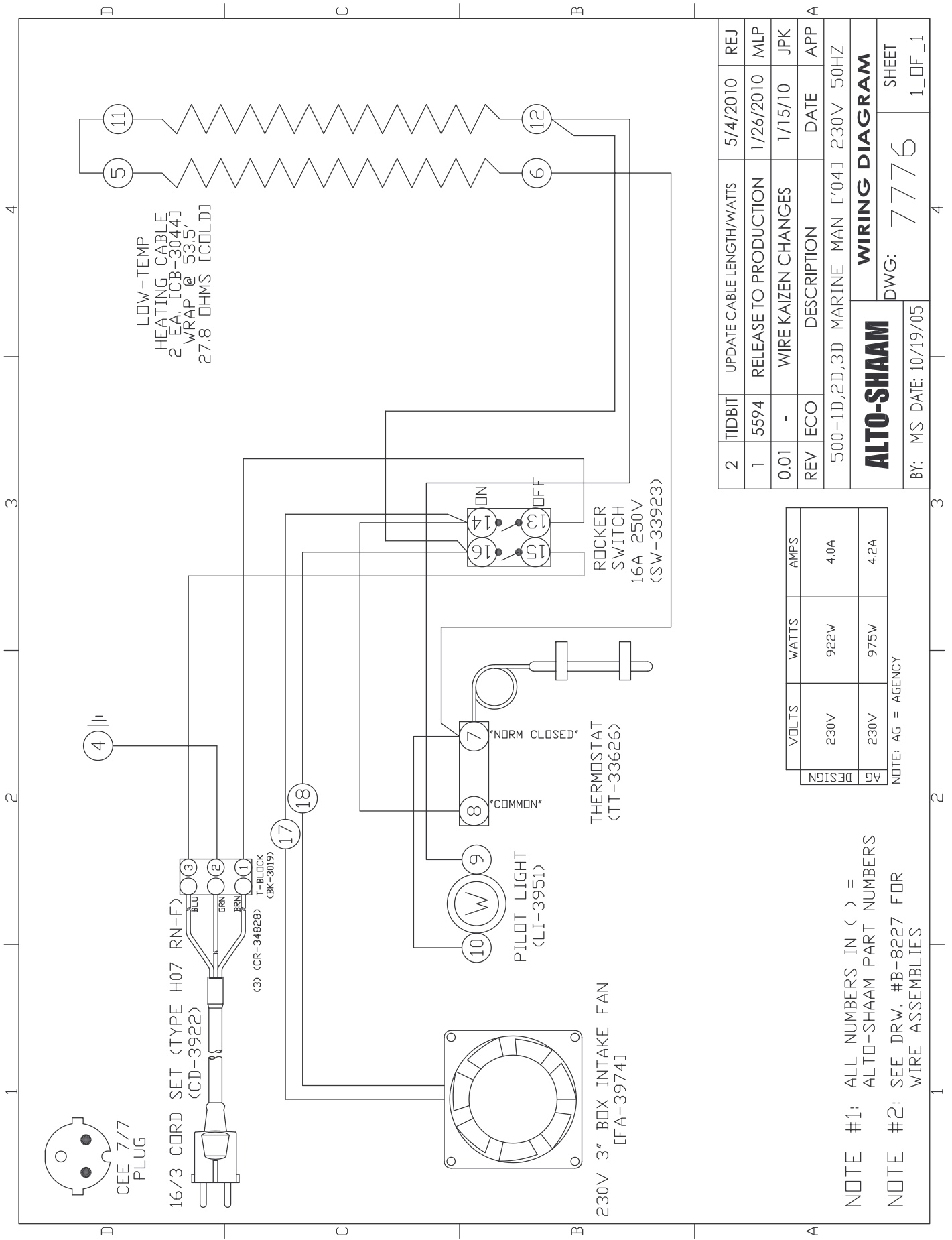
500-2D • Electronic Control

CONTROL CC-34222 WITHOUT HACCP • CONTROL 5000877 WITH HACCP



MODEL >				500-1D, 2D, 3D ELECTRONIC CONTROL			
ITEM	DESCRIPTION	PART NO.	QTY	ITEM	DESCRIPTION	PART NO.	QTY
1	BEEPER	BP-3567	1	7	FAN	FA-3974	1
2	STRIP, TERMINAL	BK-33546	1	8	INSULATION	IN-2003	1
3	BOARD, POWER SUPPLY	BA-33554	1	9	RELAY	RL-33558	1
4	CONTROL, ELECTRONIC	CC-34222	1	10	SENSOR (NOT SHOWN)	SN-33541	1
5	CORD	CD-3922	1	11	SWITCH, POWER	SW-34769	1
6	CORD BUSHING	BU-3964	1	12	THERMOSTAT	TT-33789	

Part numbers and drawings are subject to change without notice.



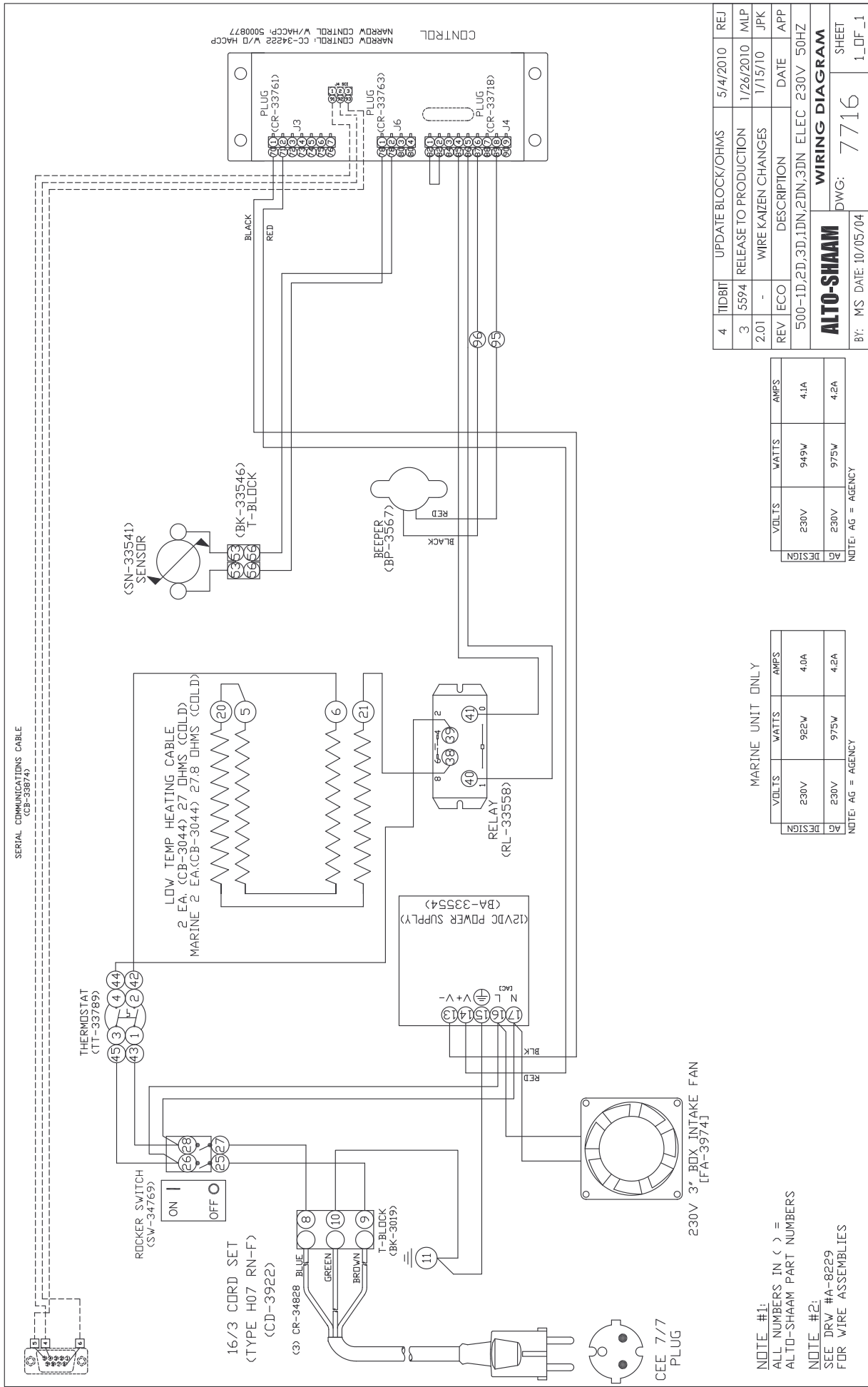
2	TIDBIT	UPDATE CABLE LENGTH/WATTS	5/4/2010	REJ
1	5594	RELEASE TO PRODUCTION	1/26/2010	MLP
0.01	-	WIRE KAIZEN CHANGES	1/15/10	JPK
REV	ECO	DESCRIPTION	DATE	APP
500-1D,2D,3D MARINE MAN [04] 230V 50HZ				
ALTO-SHAAM			WIRING DIAGRAM	
BY: MS DATE: 10/19/05			DWG: 7776	SHEET 1_DF_1

DESIGN	VOLTS	WATTS	AMPS
PS	230V	922W	4.0A
PS	230V	975W	4.2A

NOTE: AG = AGENCY

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

NOTE #2: SEE DRW. #B-8227 FOR WIRE ASSEMBLIES



ID	DATE	DESCRIPTION	BY
4	5/4/2010	UPDATE BLOCK/OHMS	REJ
3	5594	RELEASE TO PRODUCTION	MLP
2.01	-	WIRE KAIZEN CHANGES	JPK
REV	ECO	DATE	APP
500-1D, -2D, -3D, 1DN, 2DN, 3DN	ELEC	230V 50HZ	

VOLTS	WATTS	AMPS
230V	949W	4.1A
230V	975W	4.2A

DESIGN AG

NOTE: AG = AGENCY

VOLTS	WATTS	AMPS
230V	922W	4.0A
230V	975W	4.2A

DESIGN AG

NOTE: AG = AGENCY

MARINE UNIT ONLY

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

NOTE #2:
SEE DRW #A-8229
FOR WIRE ASSEMBLIES

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, or accept deductions in payment for such claims.

LIMITED WARRANTY

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

The parts warranty period is as follows:

For the refrigeration compressor on Alto-Shaam Quickchillers™, five (5) years from the date of installation.

For the heating element on Halo Heat® cook/hold ovens, as long as the original purchaser owns the oven.

For all other parts, one (1) year from the date of installation or fifteen (15) months from the shipping date, whichever occurs first.

The labor warranty period is one (1) year from the date of installation or fifteen (15) months from the shipping date, whichever occurs first.

Alto-Shaam will bear normal labor charges performed during standard business hours, excluding overtime, holiday rates or any additional fees.

To be valid, a warranty claim must be asserted during the applicable warranty period. This warranty is not transferable.

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 but not limited to, 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. Damage incurred as a direct result of poor water quality, inadequate maintenance of steam generators and/or surfaces affected by water quality. Water quality and required maintenance of steam generating equipment is the responsibility of the owner/operator.
6. Damage caused by use of any cleaning agent other than Alto-Shaam's Combitherm® Cleaner, including but not limited to damage due to chlorine or other harmful chemicals. **Use of Alto-Shaam's Combitherm® Cleaner on Combitherm® ovens is highly recommended.**
7. Any losses or damage resulting from malfunction, including loss of product or consequential or incidental damages of any kind.
8. 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, express or implied, including the implied warranties of merchantability and fitness for a particular purpose. In no event shall Alto-Shaam be liable for loss of use, loss of revenue or profit, or loss of product, or for any indirect, special, incidental, or consequential damages. No person except an officer of Alto-Shaam, Inc. is authorized to modify this warranty or to incur on behalf of Alto-Shaam any other obligation or liability in connection with Alto-Shaam equipment.

Effective 02/09



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

W164 N9221 Water Street • P.O. Box 450 • Menomonee Falls, Wisconsin 53052-0450 • U.S.A.

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