



Cook, Hold, Smoke Oven

Deluxe Control



Model:

300-TH-III
500-TH-III
750-TH-III
1000-TH-III
1200-TH-III
767-SK-III
1767-SK-III
1000-SK-III
1200-SK-III



- Installation
- Operation
- Maintenance

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www.alto-shaam.com



Consult instructions
for operation and use.



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Enjoy your Alto-Shaam Cook & Hold Oven!

Halo Heat® Technology Precise, low-temperature cooking with Halo Heat® technology perfected prime rib for decades. Free up time with overnight cooking for corned beef, confit and even yogurt. Cook your food to perfection and hold for hours without compromising food quality. No fans. No hood needed. Only big flavor and savings.

Protect your original manufacturer's warranty

Register

Registering your appliance ensures prompt service in the event of a warranty claim. You will also receive direct notifications of software updates and additional product information.

Your personal information will not be shared with any other company.

www.alto-shaam.com/warranty

Alto-Shaam 24/7 Emergency Repair Service

Call

Call 800-558-8744 to reach our 24-hour emergency service call center for immediate access to local authorized service agencies outside standard business hours. The emergency service access is provided exclusively for Alto-Shaam equipment and is available throughout the United States through Alto-Shaam's toll free number.

Availability

Emergency service access is available seven days a week, including holidays.

Delivery



This Alto-Shaam appliance has been thoroughly tested and inspected to ensure only the highest quality appliance 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, including unattached items and accessories, may be delivered in one or more packages. Ensure all standard items and options have been received with each appliance as ordered. Save all the information packed with the appliance. Register the appliance online at www.alto-shaam.com/en/support/warranty-registration 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 appliance. Contact the Alto-Shaam Tech Team Service Department if you have any questions concerning installation, operation, or maintenance.

1-800-558-8744; servicedept@alto-shaam.com

The serial number is required for all inquiries.

Always include both model and serial number(s) in any correspondence regarding the appliance.

Model: _____

Serial number: _____

Purchased from: _____

Date installed: _____ **Voltage:** _____



CAUTION



Appliance and accessories may be heavy. To prevent serious injury, **always** use a sufficient number of trained and experienced workers when moving or leveling appliance and handling accessories.

Environmental Conditions

Operational Environmental Conditions

- Before use, appliance must acclimate to room temperature in the environment it is placed — 24 hours is recommended.
- Ambient temperature range of 60°F to 110°F (16°C to 43°C).
- Relative humidity of less than 95% non-condensation.
- Atmospheric pressure range of 50kPa to 106kPa.

Transportation and Damage Claims



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

Should damage occur in shipment, do not put the appliance into service until the damage has been inspected by an authorized Alto-Shaam service provider.

Shipping damages are 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 appliance is still in the truck or immediately after it is moved to the receiving area. Do not wait until after the appliance is moved to a storage area.
2. Do not sign a delivery receipt or a freight bill until a proper count has been made and inspection of all appliances are received.

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: _____

Serial Number: _____

Date Installed: _____

Voltage: _____

Purchased From: _____

3. Note all damage to packages directly on the carrier's delivery receipt.
4. Make certain the driver signs the delivery receipt. If the driver 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. Contact the carrier's office immediately upon finding damage, and request an inspection. Mail a written confirmation to the carrier's office with 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.

Alto-Shaam will continue our policy of assisting our customers in collecting claims which have been properly filed and actively pursued. Alto-Shaam cannot, however, file any damage claims, assume the responsibility of any claims, or accept deductions in payment for such claims.



Alto-Shaam has established a twenty-four hour emergency service call center to offer immediate customer access to a local authorized service agency outside of standard business hours. The emergency service access is provided exclusively for Alto-Shaam equipment and is available throughout the United States through the use of Alto-Shaam's toll-free number. Emergency service access is available seven days a week including holidays.

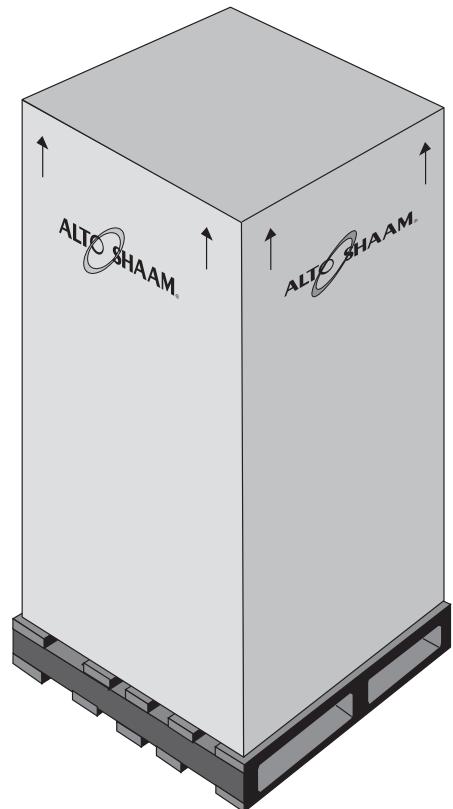
Unpacking

- Carefully remove the appliance from the carton or crate.

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

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 manufacturer.

- Read all instructions in this manual carefully before installing this appliance, using the appliance or performing routine maintenance. Following procedures other than those indicated in this guide to use and clean the appliance is considered inappropriate and may cause damage, injury or fatal accidents, in addition to voiding the warranty and relieving Alto-Shaam of all liability.
- 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.



- The appliance is intended to cook, hold or process foods for the purpose of human consumption. No other use for this appliance is authorized and is therefore considered dangerous. The appliance must not be used to cook food containing flammable materials (such as food with alcohol). Substances with a low flash point can ignite spontaneously and cause a fire.
- The 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. Alto-Shaam recommends regular staff training to avoid the risk of accident or damage to the appliance. Operators must also receive regular safety instructions.
- Any troubleshooting guides, component views, and parts lists included in this manual are for general reference only and are intended for use by qualified and trained technicians.
- 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.



NOTICE: For equipment delivered for use in any location regulated by the following directive: 2012/95/EC WEEE

Do not dispose of electrical or electronic equipment with other municipal waste.

Knowledge of proper procedures is essential to the safe operation of electrically and/or gas energized equipment. The following signal words and symbols may be used throughout this manual.

! DANGER

Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

! WARNING

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

! CAUTION

Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

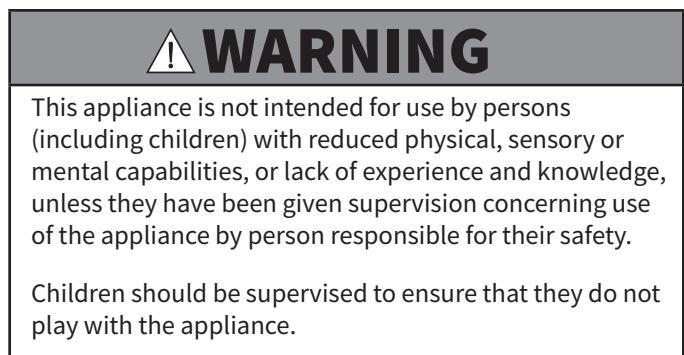
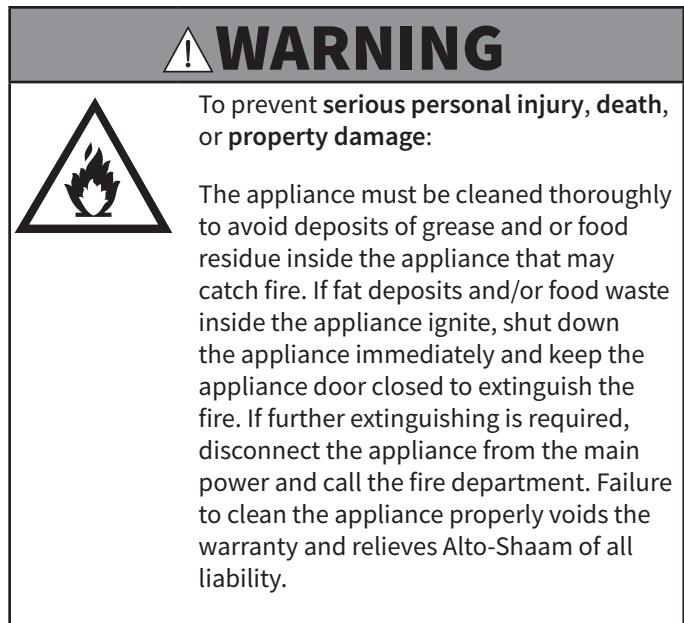
NOTICE: Indicates information considered important, but not hazard-related (e.g., messages relating to property damage).



Indicates that referral to operating instructions is recommended to understand operation of equipment.

Safety Procedures

- To prevent serious injury, death or property damage, the appliance should be inspected and serviced at least every twelve (12) months by an authorized service partner or trained technician.
- **Only** allow an authorized service partner or trained technician to service or to repair the appliance. Installation or repairs that are not performed by an authorized service partner or trained technician, or the use of non-factory authorized parts will void the warranty and relieve Alto-Shaam of all liability.
- When working on this appliance, observe precautions in the literature, on tags, on labels attached to or shipped with the appliance and other safety precautions that may apply.
- If the appliance is installed on casters, freedom of movement of the appliance must be restricted so that utility connections (including gas, water, and electricity) cannot be damaged when the appliance is moved. If the appliance is moved, ensure that all utility connections are properly disconnected. If the appliance is returned to its original position, ensure that retention devices and utility connections are properly connected.
- **Only** use the appliance when it is stationary. Mobile appliance racks, mobile plate racks, transport trolleys, and appliances on casters can tip over when being moved over an uneven floor or threshold and cause serious injury.
- **Always** apply caster brakes on mobile appliances or accessories when these are not being moved. These items could move or roll on uneven floors and cause property damage or serious injury.
- Be extremely careful when moving appliances because the food trays may contain hot fluids that may spill, causing serious injury.
- **Always** open the appliance door very slowly. Escaping hot vapors or steam can cause serious injury.



! WARNING

Improper installation, alteration, adjustment, service, cleaning, or maintenance could result in property damage, severe injury, or death.

Read and understand the installation, operating and maintenance instructions thoroughly before installing, servicing, or operating this equipment.

! CAUTION

Appliance and accessories may be heavy. To prevent serious injury, **always** use a sufficient number of trained and experienced workers when moving or leveling appliance and handling accessories.

! CAUTION

To prevent personal injury or property damage:



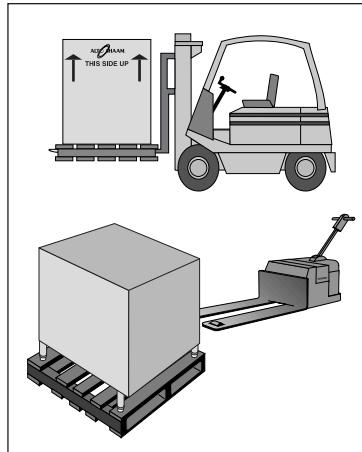
Always use hand protection when operating this appliance to avoid burns. Metal parts of this equipment become extremely hot when in operation.

! CAUTION**! WARNING**

To prevent personal injury, death or property damage:

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

The Alto-Shaam Cook & Hold oven must be installed in a location that will permit the oven to function for its intended purpose and to allow adequate clearance for ventilation, proper cleaning, and maintenance access.



Cook & Hold emissions testing conducted by Underwriters Laboratories, Inc.® was found to be in compliance with the applicable requirements of NFPA96: Eighth Edition, Par. 4.1.1.2. U.L emissions sampling of grease laden vapor resulted in a total of 0.55 milligrams per cubic meter and is considered representative of all oven models in the line.

Smoker resulted in a total of 0.21 milligrams per cubic meter.

Based on these results, hood installation and/or outside venting should not be a requirement in most areas. Verify local codes for locations where more restrictive codes are applicable.

1. The oven 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. **Do not** store or use any flammable liquids or allow flammable vapors in the vicinity of this oven or any other appliance.
4. This appliance must be kept free and clear of any combustible materials.
5. This appliance must be kept free and clear of any obstructions blocking access for maintenance or service.

Clearance Requirements

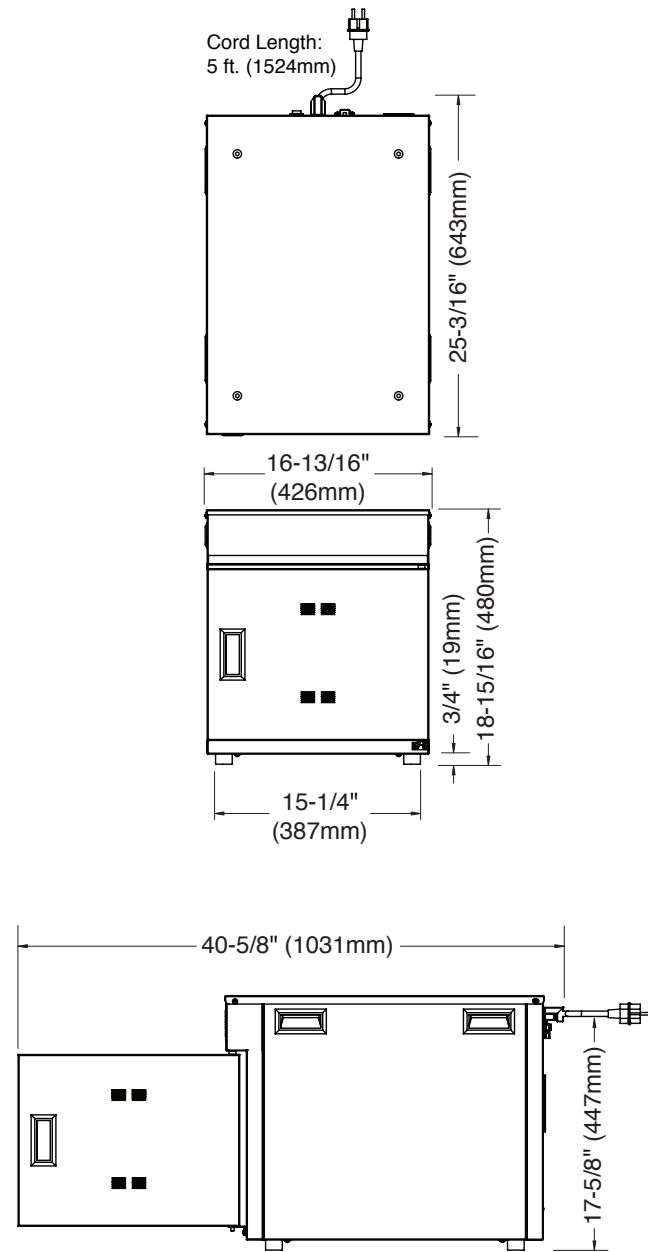
Rear	3" (76mm) from non-heated surfaces 18" (457mm) from heat producing equipment
Top	2" (51mm)
Left, Right	1" (25mm)

NOTICE

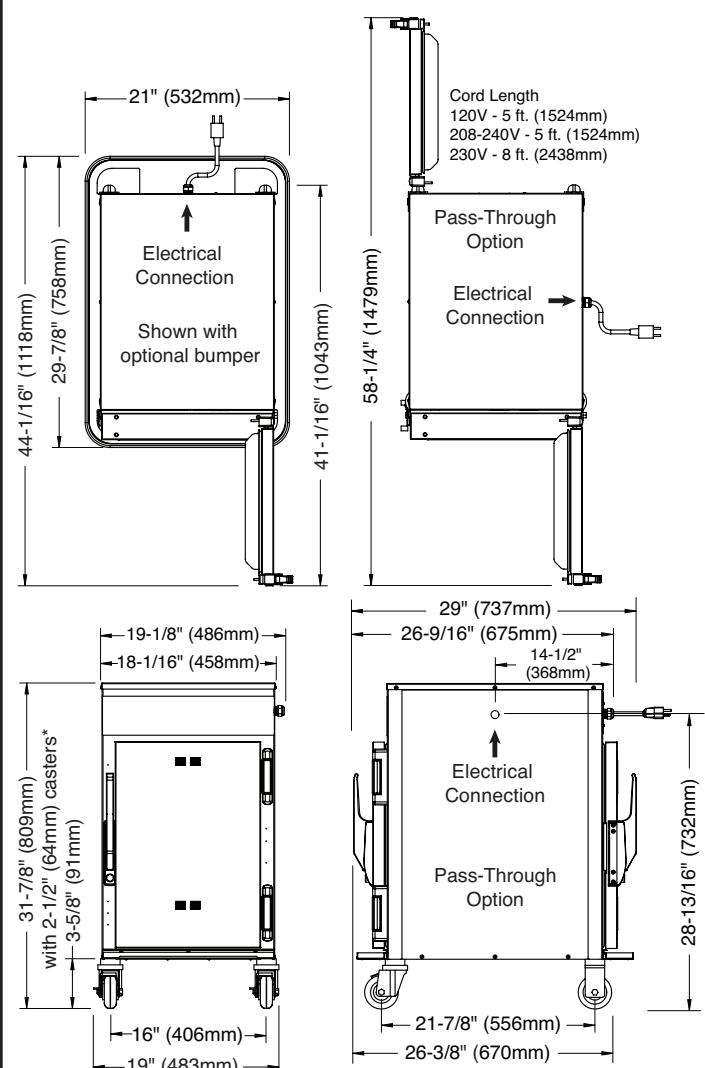
If the appliance has been unplugged for an extended period of time, the Real Time Clock may require recharging. Turn main breaker to the unit off for 10 seconds and then restore power. For more information, see Error Code E-60 in the Troubleshooting section of this manual.

Installation

300-TH-III



500-TH-III



*33-3/8" (848mm) - with optional 3-1/2" (89mm) casters

*35-1/4" (894mm) - with optional 5" (127mm) casters

*33-3/4" (857mm) - with optional 6" (152mm) legs

Weight - 300-TH-III

Net: 69 lb (31 kg)

Ship: Contact factory

Weight - 500-TH-III

Net: 140 lb (64 kg)

Ship: 180 lb (82 kg)

Product capacity - 300-TH-III

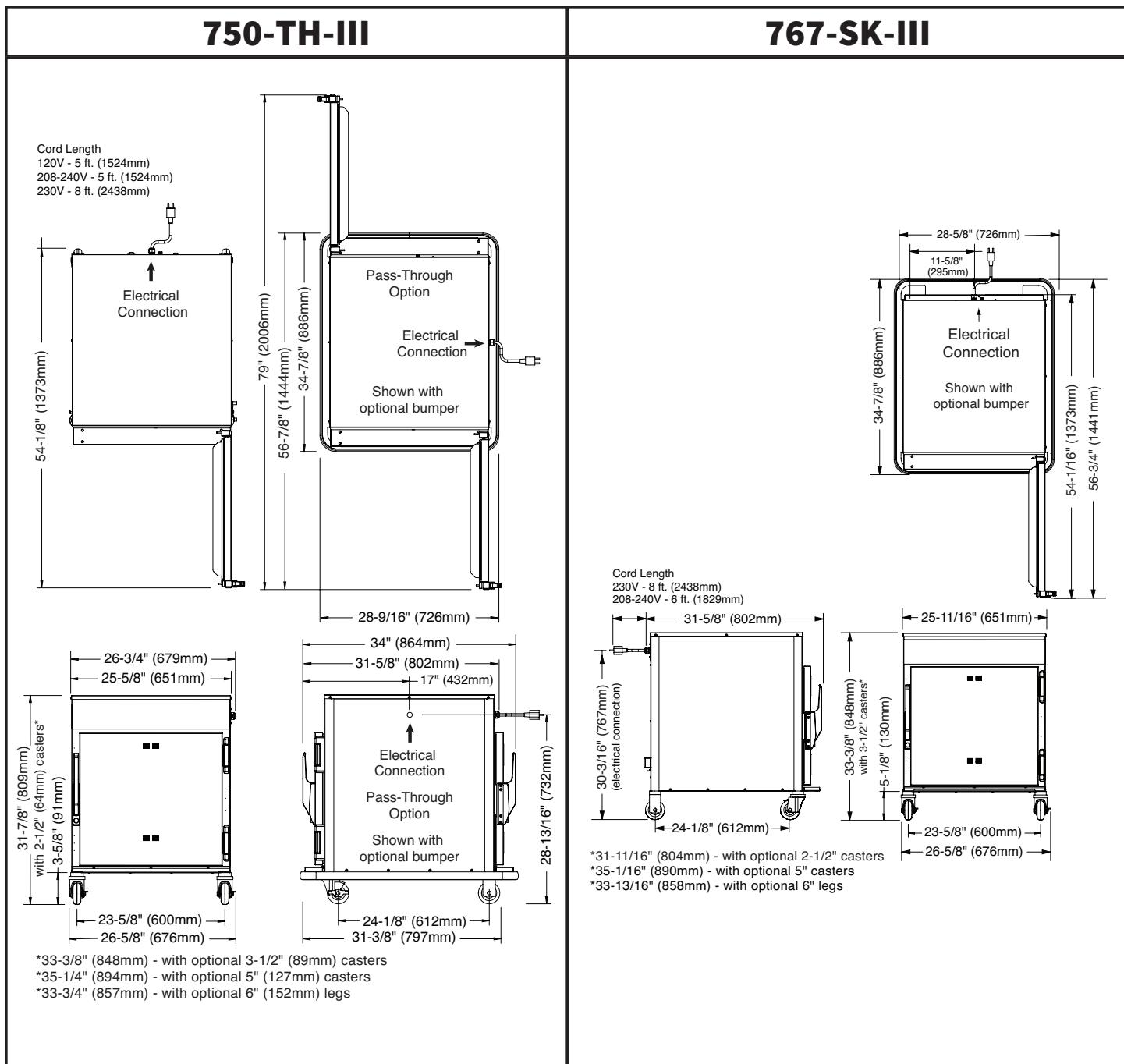
36 lb (16 kg) maximum

Volume maximum: 22.5 quarts (28.5 liters)

Product capacity - 500-TH-III

40 lb (18 kg) maximum

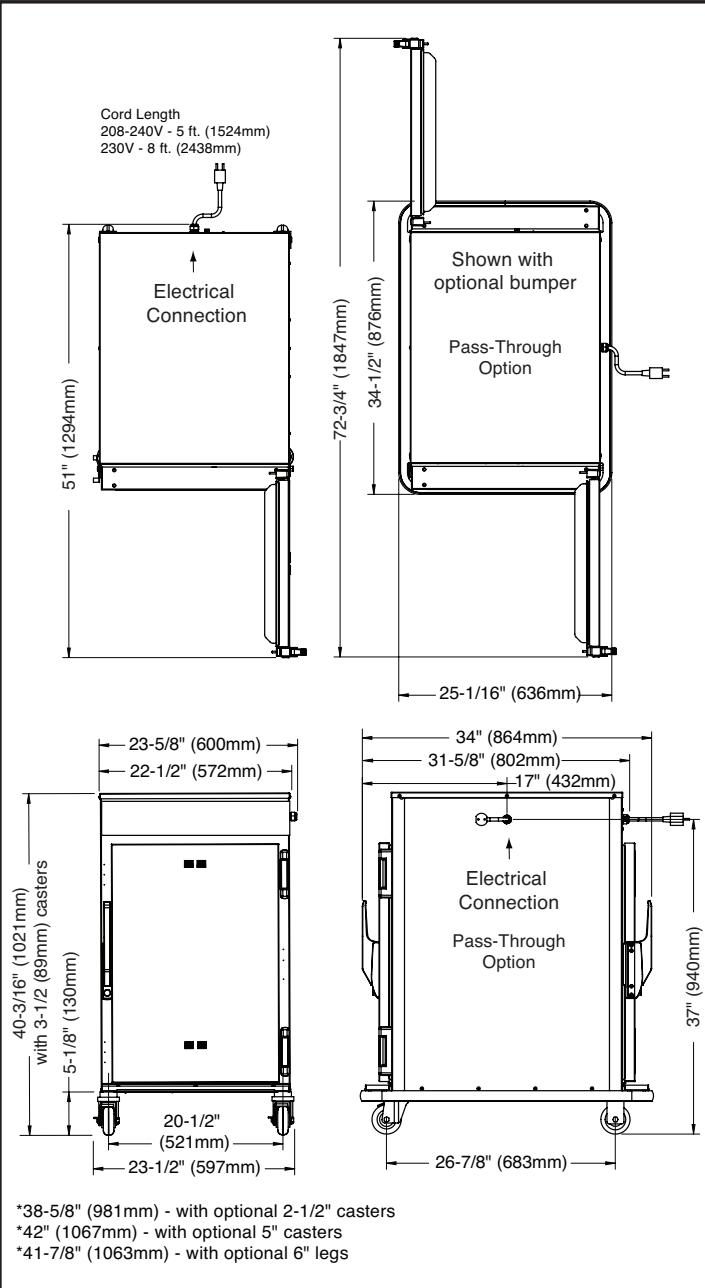
Volume maximum: 30 quarts (38 liters)



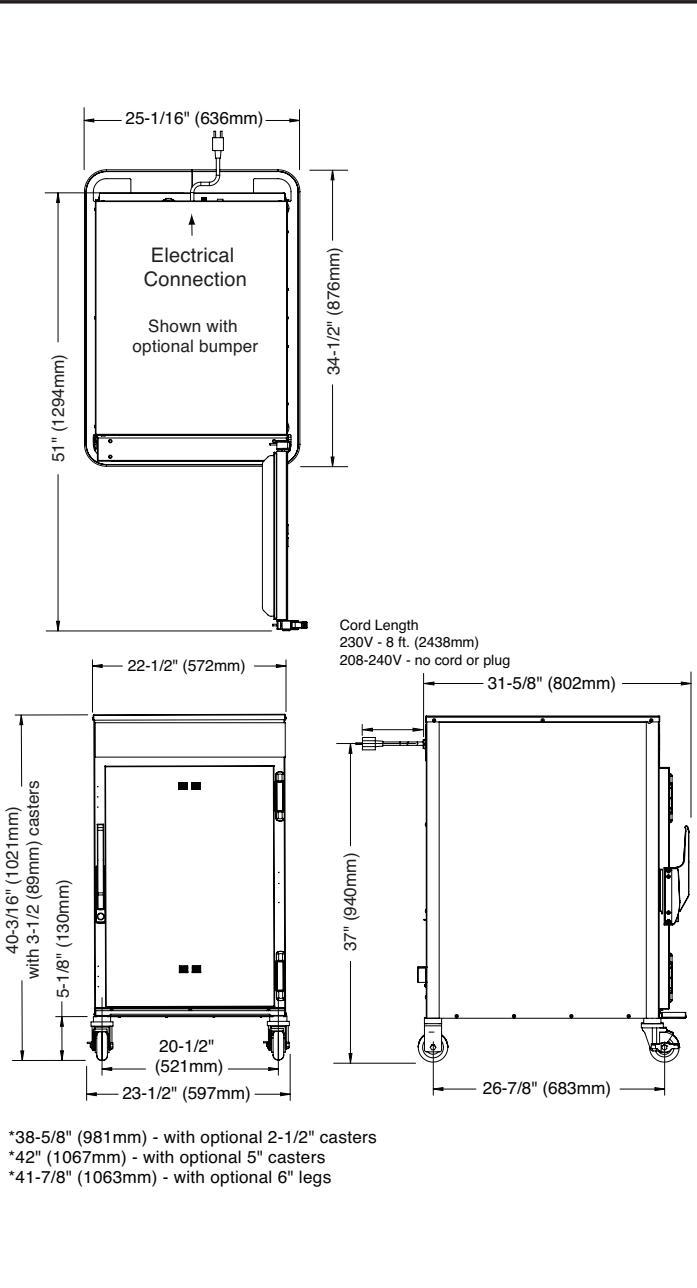
Weight	Product Pan capacity	
Model	Net Weight	Ship Weight
750-TH-III	192 lb (87 kg)	260 lb (118 kg)
767-SK-III	196 lb (89 kg)	275 lb (125 kg)

Installation

1000-TH-III



1000-SK-III

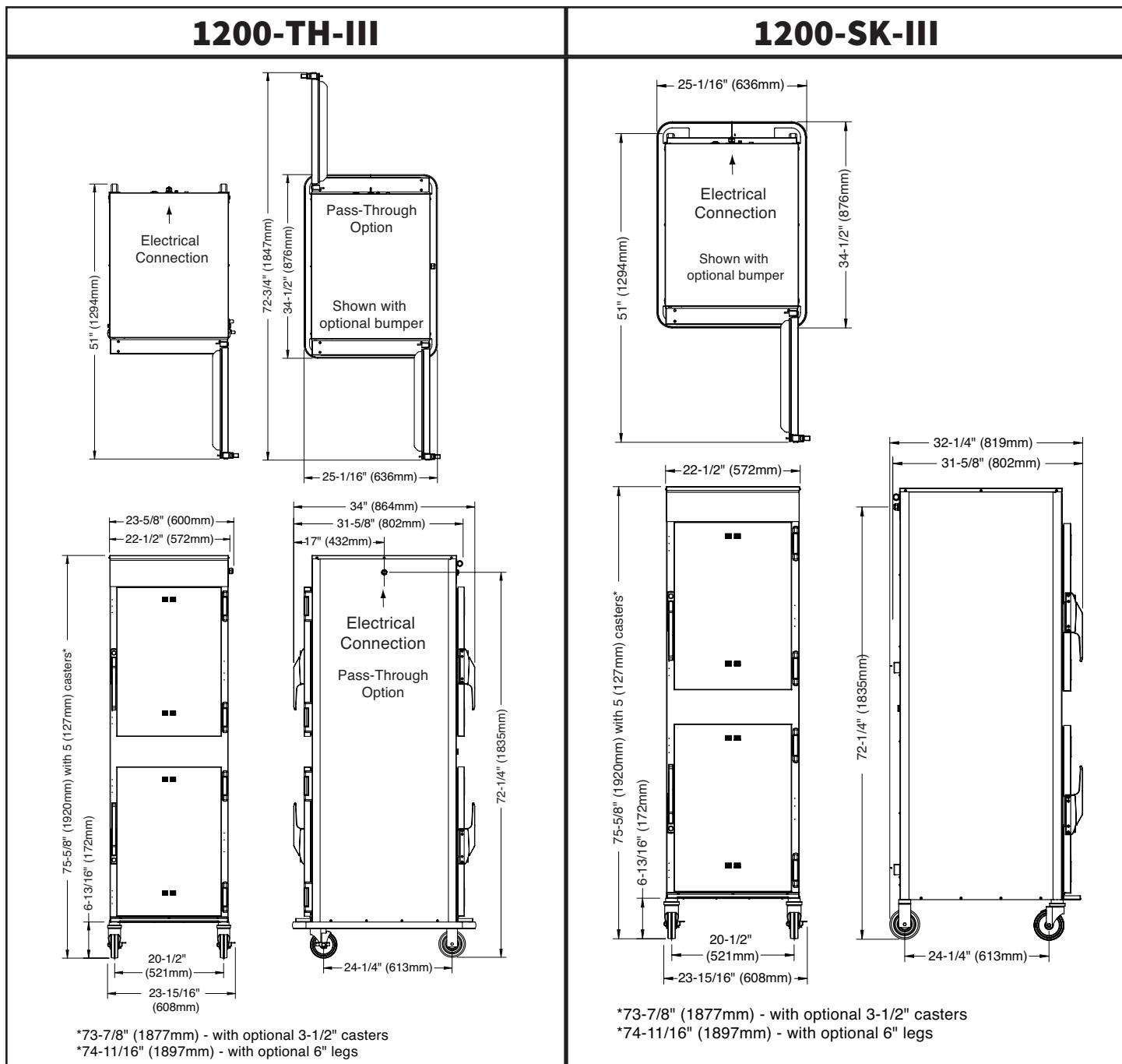


Weight

Model	Net Weight	Ship Weight
1000-TH-III	230 lb (104 kg) est.	275 lb (125 kg)
1000-SK-III	203 lb (92 kg) est.	282 lb (128 kg)

Product|Pan capacity

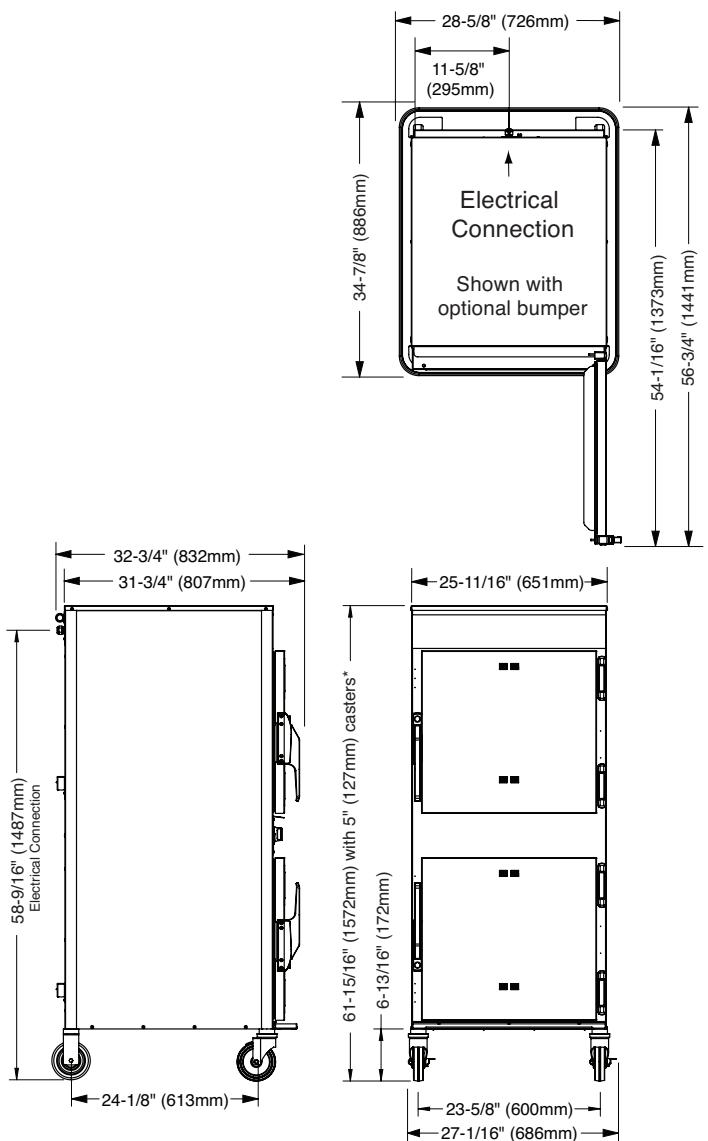
120 lb (54 kg) maximum
 Volume maximum: 60 quarts (76 liters)



Weight			Product Pan capacity (per compartment)	
Model	Net Weight	Ship Weight		
1200-TH-III	345 lb (156 kg)	435 lb (197 kg)		120 lb (54 kg) maximum
1200-SK-III	390 lb (177 kg) est.	465 lb (211 kg)		Volume maximum: 60 quarts (76 liters)

Installation

1767-SK-III



Weight

Model	Net Weight	Ship Weight
1767-SK-III	359 lb (163 kg) est.	450 lb (204 kg)

Product|Pan capacity (per compartment)

100 lb (45 kg) maximum
Volume maximum: 53 quarts (67 liters)

Cook & Hold Accessories

Accessories	300-TH-III	500-TH-III	750-TH-III	1000-TH-III	1200-TH-III
Bumper, Full Perimeter (not available with 2-1/2" casters)	--	5011161	5010371	5009767	5009767
Carving Holder Prime rib Steamship (cafeteria) round	HL-2635 --	HL-2635 4459	HL-2635 4459	HL-2635 4459	HL-2635 4459
Casters - 2 rigid, 2 swivel w/brake 5" (127mm) 3-1/2" (89mm) 2-1/2" (64mm)	-- -- --	5004862 5008017 5008022	5004862 5008017 5008022	5004862 5008017 5008022	5004862 5008017 --
Door Lock with Key	--	LK-22567	LK-22567	LK-22567	LK-22567
Drip Pan With drain Without drain Extra deep	-- -- PN-2122	14813 11898 --	14831 1014684 --	5005616 11906 15929	5005616 11906 15929
Extended Drip Tray Kit (not available with pass-through or bumper)	--	--	5024725	5024723	5024723
HACCP Data Logger (factory installed)	5015563	5015563	5015563	5015563	5015563
Legs, 6" (152mm), Stemmed (set of four)	--	5011149	5011149	5011149	5011149
Pan Grid, Wire - Fits inside of a 18" x 26" sheet pan	--	--	PN-2115	PN-2115	PN-2115
Probe, Sous Vide	PR-34747	PR-34747	PR-34747	PR-34747	PR-34747
Security Panel with lock - requires door lock LK-22567	--	5013939	5013936	5013934	5013934
Shelf, Stainless Steel Flat wire, reach-in Flat wire, pass-through Rib rack	SH-2107 -- --	SH-2326 SH-2326 --	SH-2324 SH-2327 SH-2743	SH-2325 SH-2346 SH-29474	SH-2325 SH-2346 SH-29474
Stacking Hardware - Over or under TH, SK, or S-Series Under CTX4-10 Combitherm™	-- --	5004864 --	5004864 5019679	5004864 5019679	--

Installation

Smoker Accessories

Accessories	767-SK-III	1767-SK-III	1000-SK-III	1200-SK-III
Bumper, Full Perimeter (not available with 2-1/2" casters)	5010371	5010371	5009767	5009767
Carving Holder Prime rib Steamship (cafeteria) round	HL-2635 4459	HL-2635 4459	HL-2635 4459	HL-2635 4459
Casters - 2 rigid, 2 swivel w/brake 5" (127mm) 3-1/2" (89mm) 2-1/2" (64mm)	5004862 5008017 5008022	5004862 5008017 --	5004862 5008017 5008022	5004862 5008017 --
Door Lock with Key	LK-22567	LK-22567	LK-22567	LK-22567
Drip Pan With drain Without drain Extra deep	14831 1014684 --	14831 1014684 --	5005616 11906 15929	5005616 11906 15929
Extended Drip Tray Kit (not available with pass-through or bumper)	5024725	5024725	5024723	5024723
HACCP Data Logger (factory installed)	5015563	5015563	5015563	5015563
Legs, 6" (152mm), Stemmed (set of four)	5011149	5011149	5011149	5011149
Pan Grid, Wire - Fits inside of an 18" x 26" sheet pan	PN-2115	PN-2115	PN-2115	PN-2115
Probe, Sous Vide	PR-34747	PR-34747	PR-34747	PR-34747
Security Panel with lock - requires door lock LK-22567	5013936	5013936	5013934	5013934
Shelf, Stainless Steel Fat wire, reach-in Rib rack	SH-2324 SH-2743	SH-2324 SH-2743	SH-2325 SH-29474	SH-2325 SH-29474
Stacking Hardware - Over or under TH, SK, or S-Series Under CTX4-10 Combitherm™	5004864 5019679	-- --	5004864 5019679	-- --

Woodchips			
	2.0 lb bag (.9 kg)	1.25 cu. ft. bag (35 L)	2.5 cu. ft. bag (71 L)
Cherry	WC-22540	WC-22541	WC-37746
Apple	WC-22542	WC-22543	WC-37747
Maple	WC-22544	WC-22545	WC-37748
Hickory	WC-2828	WC-2829	WC-37749

Stacking Instructions

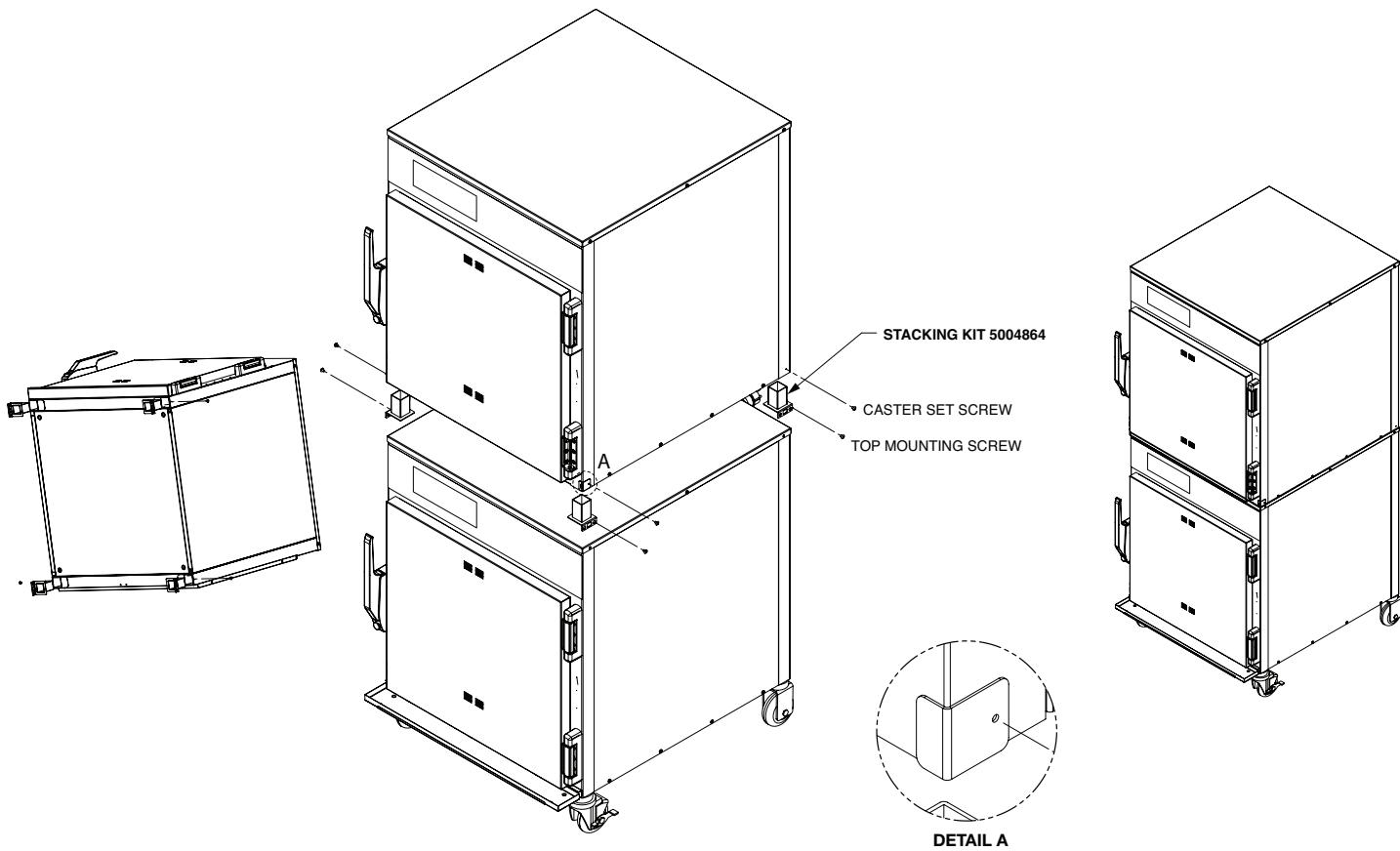
1) If the two appliances were shipped together from the factory, the top appliance will have the casters already removed. A stacking kit will be included with the shipment.

If casters need to be removed, lay the appliance on its back, and using a rubber or non-marring hammer, tap on the top and underside of the caster, alternating sides, until the caster slides out.

2) While appliance is laid on its back, insert one stacking post in each of the four corners of the upper appliance. Secure the stacking posts using one screw and two flat washers that are included with the stacking kit. Use template 68696 to locate set screw hole. Drill with #30 Bit and Tap 8-32.

NOTE: The flange on the stacking posts must face the outside of the appliance.

3) Remove the four top mounting screws from the lower appliance. Place the upper appliance, which has the stacking posts installed, on top of the bottom appliance. Center the top appliance from front to back. Re-install the four screws through the flange of the four stacking posts.



Stacking Configurations	
Model	Can be stacked with
300-TH-III	300-TH-III or 300-S No Stacking Hardware needed. Align dimples at top and bottom of units. It is recommended that the legs be removed from the top unit before stacking.
500-TH-III	500-TH-III, 500-TH-II or 500-S
750-TH-III or 767-SK-III	750-TH-III, 750-TH-II, 750-S, 767-SK, 767-SK-III
1000-TH-III or 1000-SK-III	1000-TH-III, 1000-SK-III, 1000-SK/II, 1000-S

Installation

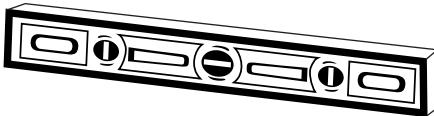
A number of adjustments are associated with initial installation and start-up. It is important that these adjustments be conducted by a qualified service technician. Installation and start-up adjustments are the responsibility of the dealer or user. These adjustments include but are not limited to thermostat calibration, door adjustment, leveling, electrical hook-up and installation of optional casters or legs.

Leveling

Level the oven from side-to-side and front-to-back with the use of a spirit level. For ovens installed with casters, it is important that the installation surface be level due to the probability of frequent oven repositioning.

We recommend checking the level of the oven periodically to make certain the floor has not shifted nor the oven moved.

NOTICE: Failure to properly level this oven can cause improper function and will result in the uneven baking with products consisting of semi-liquid batter.



Restraint Requirements —Mobile Equipment



WARNING

RISK OF ELECTRIC SHOCK.

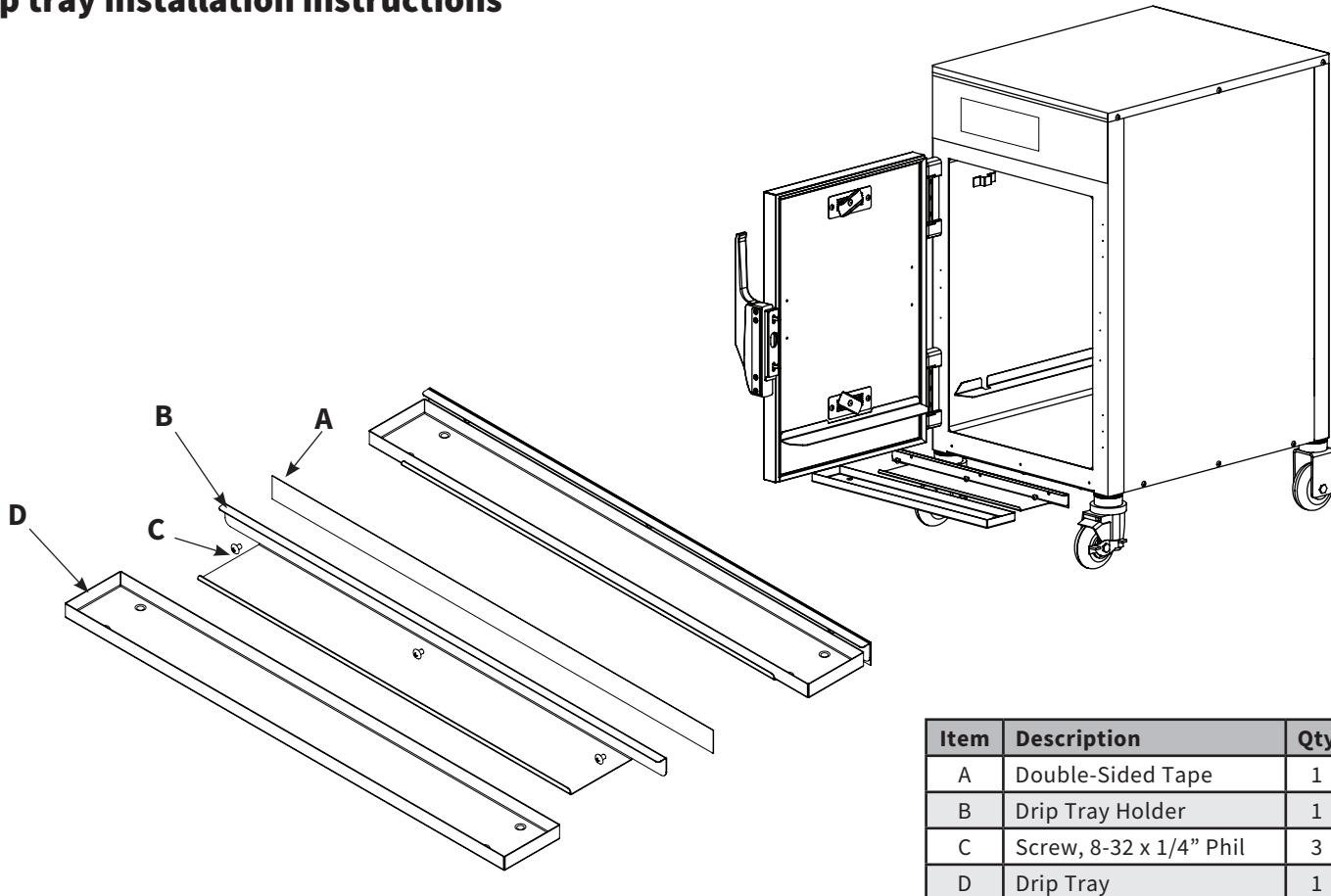


Appliance must be secured to building structure. Failure to observe this precaution may result in damage to the equipment and severe personal injury.

Any appliance that is not furnished with a power supply cord but that includes a set of casters must be installed with a tether. Adequate means must be provided to limit the movement of this appliance without depending on or transmitting stress to the electrical conduit. The following requirements apply:

1. Maximum height of casters is 6" (152mm).
2. Two of the casters must be of the locking type.
3. Such mobile appliances or appliances on mobile stands must be installed with the use of a flexible connector secured to the building structure.

A mounting connector for a restraining device is located on the upper back flange of the appliance. A flexible connector is not supplied by nor is it available from the factory.

Drip tray installation instructions

1. Poke holes through double-sided tape **A** which is attached to the back of drip tray holder **B**.
2. Remove backing on double-sided tape **A**.
3. Put screws **C** through holes and attach drip tray holder **B** to unit.
4. Optional - apply a line of food-grade silicone caulk along top edge of drip tray holder **B** to seal.
5. Place drip tray **D** in drip tray holder **B**.



Electrical Connection

! WARNING



Appliances without a cord provided by the factory must be equipped with a cord of sufficient length to permit the appliance to be moved for cleaning.

Always use the correct AWG wire size based on the electrical requirements for the appliance.

! CAUTION



Power source must match voltage identified on appliance rating tag. The rating tag provides essential technical information required for any appliance installation, maintenance or repairs. Do not remove, damage or modify the rating tag.

The appliance must be installed by a qualified service technician. The oven must be properly grounded in accordance with the National Electrical Code and applicable local codes.

Plug the unit into a properly grounded receptacle **only**, positioning the unit so that the plug 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.

Proper receptacle or outlet configuration or permanent wiring for this unit must be installed by a licensed electrician in accordance with applicable local electrical codes.

REGARDING INTERNATIONAL STANDARD UNITS:

If the unit is not equipped with flexible cord and plug, an all-pole country approved disconnection device which has a contact separation of at least 3mm in all poles must be incorporated in the fixed wiring for disconnection. When using a cord without a plug, the green/yellow conductor shall be connected to the terminal which is marked with the ground symbol. If a plug is used, the socket outlet must be easily accessible. If the power cord needs replacement, use a similar one obtained from the distributor.

! WARNING



To prevent serious injury, death, or property damage:

All electrical connections must be made by a qualified and trained service technician in accordance with applicable electrical codes.



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 accordance with CSA C22.1, Canadian Electrical Code Part 1 or local codes.

CE-approved appliances include an equipotential-bonding terminal marked with the symbol shown on the left. Provisions for earthing are to be made in accordance with IEC:2010 60335-1 section 27 or local codes.

Hard wired models

Hard wired models must be equipped with a country certified external allpole disconnection switch with sufficient contact separation. Hard wired models that are mounted on casters must have a strain relief device (tether) to prevent strain on the power supply cord. If a power cord is used for the connection of the product an oil resistant cord like H05RN or H07RN or equivalent must be used.

NOTICE: Where local codes and CE regulatory requirements apply, appliances must be connected to an electrical circuit that is protected by an external GFCI outlet.

Electrical Specifications (Wire diagrams are located inside the bonnet of the unit)

Voltage	Phase	Hz	Amps	kW						
300-TH-III										
120V	1	60	6.7	.80	✓	✓				
230V	1	50/60	3.2	.80			✓	✓	✓	
500-TH-III										
120V	1	60	16.0	1.9		✓				
208V 240V	1	60	11.2 12.5	2.7 3.0					Cord, no plug	
230V	1	50/60	12.0	2.8			✓	✓	✓	✓
750-TH-III										
120V	1	60	14.2	1.7		✓				
208V 240V	1	60	14.0 16.0	2.9 3.9					Cord, no plug	
230V	1	50/60	12.2	2.8			✓	✓	✓	✓
1000-TH-III										
208V 240V	1	60	14.0 16.0	2.9 3.9					Cord, no plug	
230V	1	50/60	12.2	2.8			✓	✓	✓	✓
1200-TH-III (U.K. ONLY)										
230V	1	50/60	21.5	4.9					No cord or plug	
767-SK-III										
208V 240V	1	60	16.0 18.5	3.9 4.4					Cord, no plug	
230V	1	50/60	14.0	3.1			✓	✓	✓	✓
1767-SK-III										
208V 240V	1	60	32.0 36.3	7.7 8.7					No cord or plug	
230V	1	50/60	30.0	6.2					No cord or plug	
380-415V	3	50/60	17.2	6.4					No cord or plug	
1000-SK-III										
208V 240V	1	60	16.0 18.3	3.3 4.4					Cord, no plug	
230V	1	50/60	14.0	3.1			✓	✓	✓	✓
1200-SK-III										
208V 240V	1	60	32.0 36.3	7.7 8.7					No cord or plug	
230V	1	50/60	31.5	7.2					No cord or plug	

Other plugs are available. Contact factory for more information.

Cord Length: 120V - 6 ft. (1.8m) 208-240V - 9 ft. (2.7m) 230V - 8ft. (2.5m)

Operation

! CAUTION



To prevent personal injury or property damage:

Always use hand protection when operating this appliance to avoid burns. Metal parts of this equipment become extremely hot when in operation.

The Alto-Shaam cook and hold oven 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 or after removing the appliance from storage:

1. Remove all packing material from the appliance.
2. Remove and wash any detachable items such as wire shelves, side racks, pans, and drip pans with hot, soapy water. Dry with a clean damp lint-free cloth.
3. Remove all visible grease or oil from the appliance.
4. Clean the interior and exterior of the appliance with a mild soap and water solution. Apply the solution with a clean damp cloth. Do not use commercial or household cleaners that contain ammonia. Wipe with a clean, damp cloth to remove all detergent residue. Dry with a clean, lint-free cloth.
5. Clean the appliance glass with glass cleaner or distilled vinegar.
6. Install the side racks and wire shelves - position shelves with the curved end up and toward the rear of the appliance. Re-install drip pan.
7. Operate the oven without food for a period of two (2) hours at a temperature of 300°F (149°C) to remove surface oils and any accompanying odor.

The appliance is now ready for operation.

! WARNING



To prevent serious personal injury, death, or property damage:

Do not steam clean, hose down or flood the interior or exterior with water or liquid solution of any kind. **Do not** use water jet to clean. Failure to observe this precaution will void the warranty.

! WARNING



To prevent serious injury, death, or property damage, **always** disconnect the appliance from the power source before cleaning or servicing.

Audible Signals

Oven beeping indicates a response, mode changes, and error conditions.

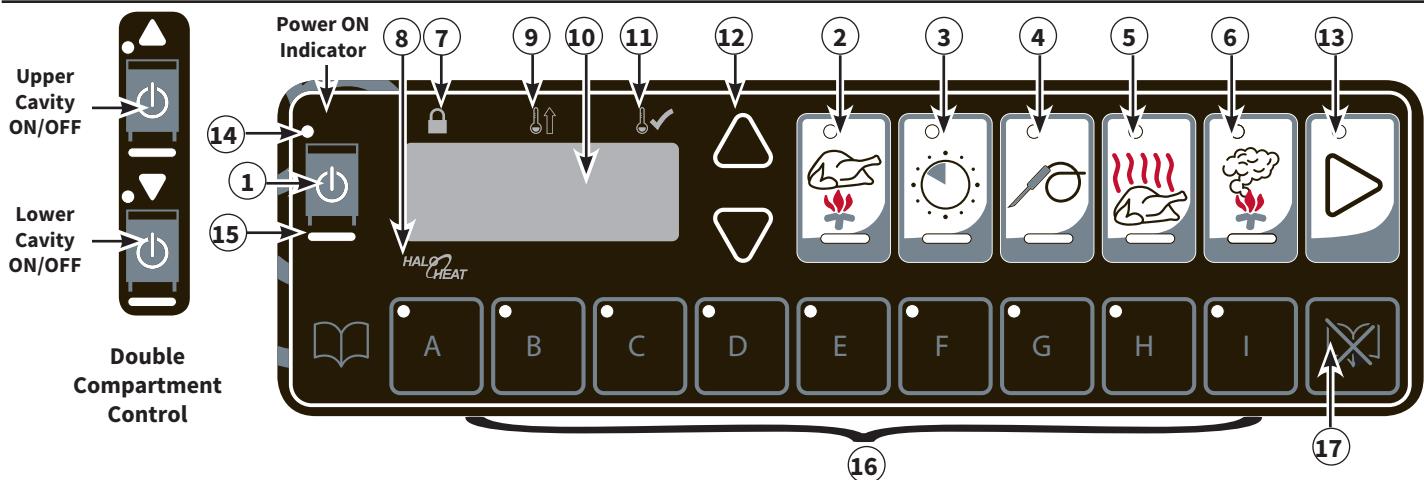
One brief beep - response to a button being pressed.

Two brief beeps - informative beep that indicates that something has been changed, such as the user entering a volume change, entering a temperature scale change, etc.

Three brief beeps - indicates the oven is done preheating, the probe has exceeded set-point in cold smoking, the door has been open too long, or the control is unlocked.

Four brief beeps - indicates an error. Refer to the Troubleshooting section of this manual.





Control Features

1. On/Off Button

The On/Off control system button operates the functions of the control panel. If there is any power loss during operation, the on/off indicator light will flash. To clear, push button and release.

2. Cook Button — Temperature range 200°F to 325°F (93°C to 162°C)

Used to select cooking mode and to review the cook temperature setting.

3. Time Button — Maximum time 24 hours

Used to select cook time and to review set time.

4. Probe Button — Temperature range 50°F to 195°F (10°C to 91°C)

Used to select internal product probe temperature mode, review probe temperature setting, enable Probe Hold mode, and edit probe holding temperature.

5. Hold Button — Temperature range 60°F to 205°F (15°C to 96°C)

Used to select food holding mode and to review set holding temperature.

6. Smoker Button — Time range 0 to 4 hours

Used to select warm smoke or cold smoke and to review the smoke time remaining.

7. Lock Indicator

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

8. Halo Heat Indicator

When the oven is preheating, the Halo Heat indicator will illuminate during preheating and remain steady until the oven reaches the set cooking temperature. When the temperature has stabilized, the indicator will illuminate periodically as the oven calls for heat.

9. Oven Preheat Light

Illuminates until the oven is preheated or in ready mode.

10. LED Display

Indicates interior oven air temperature, internal product probe temperature, time, or when used in conjunction with other buttons, will review original cooking, holding and probe temperature settings. The display will also indicate various programming and diagnostic information.

11. Ready Indicator Light

Illuminates when the oven has finished preheating.

12. Up/Down Arrows

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

13. Start Button

Used to initiate a selected mode sequence when pressed and released. You may stop any mode of operation by pressing and holding the Start button until you hear a 2-second beep.

14. Green Indicator Lights

Located within each function button, the green light functions as an operator prompt indicating additional operator action is required and also identifies current mode of operation.

15. Amber Indicator Lights

Located below the Cook, Time, Probe and Hold buttons, these indicators will illuminate to identify the current mode of operation and allows the operator to identify the information currently shown in the LED display.

16. Preset Program Buttons

Provides memory storage and operation of up to eight operator set cooking programs for specific products (A thru H). I enables locking abilities.

17. Cancel Button

Used to erase a program from memory storage.

IMPORTANT

Do not use the oven if the controls are not properly functioning. Refer to the Troubleshooting Guide located in this manual or call an authorized service technician.

Operation

Cook/Hold/Smoke Instructions

-  **Press and release control On/Off button.** 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 button. 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.
-  **Set cook temperature** — Press **Cook** button. Oven preheat indicator will illuminate and the last set cooking temperature will be displayed. Press the **Up** or **Down Arrow** buttons to change the cook temperature.
-  **If cooking by time** — Press the **Time** button. The green time indicator will illuminate and the last set cooking time will be displayed. Press the **Up** or **Down Arrow** buttons to change the set time. The display will alternate between the set temperature and the elapsed time.
-  **If cooking by probe** — Press the **Probe** button. The green probe indicator will illuminate and the last set internal product temperature will be displayed. Press the **Up** or **Down Arrow** buttons to change the set temperature. The display will alternate between the set temperature, the elapsed time, and the probe temperature.
-  **Set hold temperature** — Press the **Hold** button. The green cook indicator light will remain illuminated. Press the **Up/Down Arrow** buttons to change set hold temperature. The display will alternate between the set hold temperature and the amount of time the product has been in the hold mode. Oven will remain in the hold mode until the **On/Off** button is pressed.
-  **To enable Probe Hold mode (optional when cooking by probe)** — Press the **Probe** button. The probe cooking temperature will be displayed. Press the **Probe** button again to toggle to the Probe Hold temperature. The yellow LEDs below the **Probe** and **Hold** buttons will alternate, signaling the Probe Hold mode. Press the **Up** or **Down Arrow** buttons to set probe holding temperature.
-  **Set Smoke time if desired (hot smoke)** — Press **Smoke** button. Press the **Up** or **Down Arrow** buttons to set the smoke time desired. The last set time will be displayed.
-  **To save program to a preset** — Select desired **Preset** button (A-H) for the product programmed by the previous steps. Press and hold the selected **Preset** button for two seconds. When the preset has been saved, you will hear a one second beep and the preset light will illuminate.
- NOTICE:** Only one preset can be programmed at a time. If programming an additional preset is desired, the unit must be started and stopped either by cycling the power to the cavity or by pressing the **Start/Stop** button. The last **Preset** button 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 button selected.
-  **Start cooking cycle** - Press **Start** button.

To Cook/Hold/Smoke using Preset Menu Buttons

-  Press desired **Preset** button (A through H). **Preset** buttons with stored cooking programs will have green indicator illuminated. The oven will automatically enter preheat mode. Oven will beep periodically when it has reached a preheat ready state, and both the Ready and Start indicator lights will flash.
-  **Start cooking cycle** - Press **Start** button.

To Erase a Preset — 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 the **Cancel** button and then the appropriate letter **Preset** button to be erased for two seconds. When the preset has been erased the oven will beep for one second.

Important - After programming a specific product into memory in a programmable preset button, 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.

Operating Features & Functions

To stop an operation at any time :

Press and hold the Start button until the control beeps for two seconds, indicating the operation has been cancelled. The oven will remain in a power-on state.

To turn oven control panel off:

Press and hold the **On/Off** button until the oven beeps. The On/Off indicator light will go out.

Door open indicator:

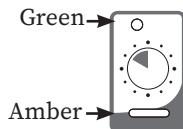
Display will flash "door" and a triple beep will alert the user. Press **On/Off** button to acknowledge error and disable triple beep.

Arrow Buttons:

Cook, Hold and Probe temperature, and the time setting can be adjusted by pressing the Up or Down Arrow buttons. Pressing and releasing the **Up** or **Down** Arrow button will change settings in increments of one. To change a setting more rapidly, press and hold the **Up** or **Down** Arrow button. Once the setting reaches a number divisible by 10, it will begin to increase in increments of 10.

Green and amber indicators:

Each program button 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 buttons include an amber indicator light to identify the information being displayed.

Power fail detect:

If the power were to fail for any reason while heating, the control will retain, in memory, the programmed operating conditions. When power is restored, the control will resume operating from the point where it was interrupted and the On/Off indicator light will flash, indicating that such an event did occur. The operator can acknowledge the power failure by pressing the **On/Off** button. Pressing the button will display the amount of time that the power has been off. The control will stop counting the amount of time the power has been off when it has been off for more than 24 hours.

NOTICE: If such an event has occurred, it is strongly recommended that you ensure the food is safe for consumption according to local health regulations.

To set date and time:

All oven cavities must be turned Off.

To set time of day (HH:mm) Hours/minutes - press and hold "A" button for three seconds, then press Up/Down Arrow button.

To set year - press and hold "B" button for three seconds, then press the **Up** or **Down** Arrow button.

To set month and day (MM.dd) - press "C" button for three seconds, then press the **Up** or **Down** Arrow button.

Operation

Operating Features and Functions

To Enable Probe Hold

(optional when cooking by Probe)

- Press the Probe button to see the probe cooking temperature.
- Press the Probe button again to toggle to the probe hold temperature.



NOTICE: The yellow LEDs below the Probe and Hold buttons will alternate, signaling the Probe Hold mode.

- Press the Up/Down arrow buttons to set desired probe holding temperature.
- Press Start button to begin cooking cycle.



Display High/Low Probe Temperatures:

To observe the recorded maximum or minimum probe temperature when cooking by probe, press the following buttons while the probe remains in the product:

Highest Temperature: Press Probe button and Up Arrow button at same time.

Lowest Temperature: Press Probe button and Down Arrow button at same time.

Probe Calibration:

1. To verify product probe calibration, place the probe in a glass of ice water.
2. After allowing the temperature to settle, press the probe button for five (5) seconds. Compare reading against 32°F (0°C).
3. If calibration is required, the unit must be in the power up hold mode. From the off state turn the unit on. The unit will begin to operate in the power up hold mode, press the probe button for eight (8) seconds until the unit beeps twice and a temperature is displayed. Adjust the probe offset temperature by pressing the up or down arrows to increase or decrease the temperature. Repeat step 2 to verify.
4. Repeat steps 1 and 2 to verify the probe calibration as necessary.

Probe Usage:

When the oven probe remains inserted 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.

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, avoiding the bone. 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.

Sous Vide Cooking:

With the oven in a preheat mode, press and hold the Probe button. After 5 seconds, it will display "SouS" if in sous-vide mode, or "rE9" if in a regular probe mode. If changes are desired, continue holding the Probe button for an additional three seconds which will toggle the option.

When cooking by probe, insert the probe into the raw product after the oven has been preheated.

Wait one full minute to allow the probe temperature to decrease to the internal temperature of the product. Press the start button to begin the cooking process after this probe temperature adjustment period. A false probe reading of the internal product temperature will cause the oven to default to a holding temperature.

! CAUTION

To maintain safe temperature levels, cold food for rethermalization or reheating must never be added to the oven while hot foods are being held.

Preparation

Always keep door vents closed when smoking. Insert drip pan on the bottom of the oven cavity.

Wood Chips

Soak one full tray of wood chips in water as instructed by National Fire Protection Agency Standard NFPA-96 or local codes. Shake off excess water, and place the moistened chips in the smoker box. Close the smoker box lid and place the box over the smoker element.

**Hot Smoke Procedure**

- Press and release On/Off button.
- Press and set Cook thermostat to required cooking temperature.
- Press and set Time or Probe.
- Press and set Hold thermostat to required holding temperature.
- Enable and set Probe Hold mode if desired.
- The oven is automatically programmed to preheat to the set cooking temperature. The oven will produce an audible signal when fully preheated.
- Prepare product for cooking.
Load product on shelves.

To Set Smoking Time

- Press the Smoker Button.
- Press the Up/Down arrow buttons to select the smoke time in minutes.
- Press Start.
- NOTICE:** The smoking timer activates the heating element located within the wood chip container when in either a cook or hold mode. The smoke element will not turn on during preheat or ready modes. A full wood chip container will produce smoke for a period of approximately 1 hour, even though the timer can go past one hour.

For maximum product tenderizing and to reduce labor during peak preparation hours, products can be cooked and held overnight.

These instructions are basic operational guidelines only. For complete instructions, see the Halo Heat Cooking, Holding, Smoking Guidelines provided with the oven.

WARNING**Fire Hazard**

The use of improper materials for the smoke function could result in a fire which may lead to personal injury or property damage. Only use wood chips supplied by Alto-Shaam. Soak one full tray of wood chips in water as instructed by National Fire Protection Agency Standard NFPA-96 or local codes. As of 2017, the NFPA-96 Standard reads 24 hours.

Cold Smoke Procedure**To Enter Cold Smoke Mode**

- Press and release power switch On/Off Control button.
- Press and hold the Smoker Button for a period of 3 seconds.

To Set Cold Smoke Holding Temperature

The temperature will default to the last smoke holding temperature set by the user. The holding temperature range is 14°F to 205°F (-10°C to 96°C).

- To increase this default temperature, press the Hold button and press the Up Arrow to set a higher default temperature.

To Set Smoking Verification Temperature (if desired)

- Press the Probe button
- Press the Up/Down Arrow buttons to select the verification temperature. The probe range is 14°F to 195°F (-10°C to 91°C).

This will incorporate the probe into the cold-smoking process and the control will alarm if the temperature exceeds the probe set point.

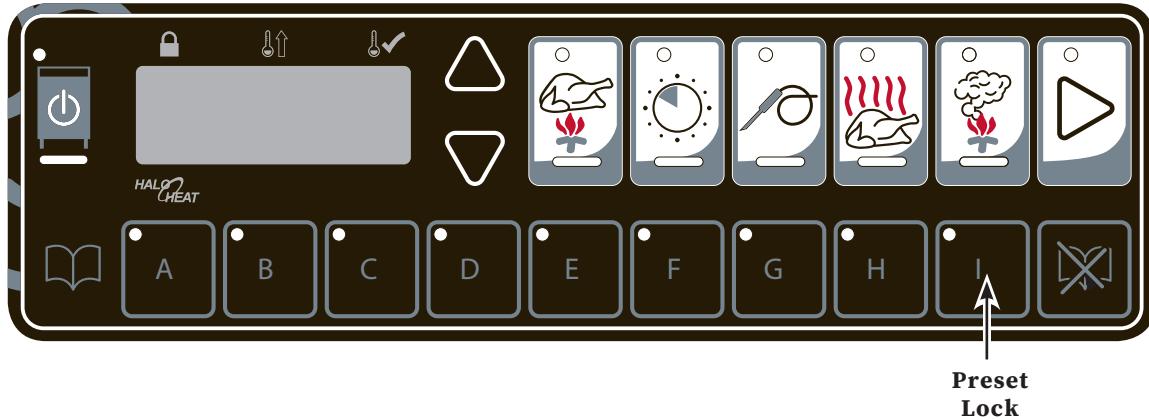
To Set Smoking Time

- Press the Smoker button.
- Press the Up/Down Arrow buttons to select the smoke time in minutes.
- Prepare product for smoking.
- Place stainless steel tray filled with ice on shelf above the smoker tray.
- Load product on shelves.
- Press Start.

Taste preference	Minimum Smoking time
Light Smoke Flavor	10 min.
Medium Smoke Flavor	30 min.
Heavy Smoke Flavor	40 min.
Very Heavy Smoke Flavor	60 min.
Extra Heavy Smoke Flavor	80 min.

Operation

User Options



Preset Buttons Lock and Unlock

Preset buttons A through H can be locked in order to prevent storing, altering or erasing a program.

To lock the Preset buttons, press and hold the "I" button until the oven beeps. Release the "I" button. The green indicator light on the "I" button will illuminate. Oven Preset buttons A through H are now locked.

NOTICE: Only the oven Preset buttons A through H are affected by this lock-out in order to also allow the oven to be used with the unprogrammed Cook, Probe, or Hold modes.

To unlock the Preset buttons, press and hold the Cancel button along with the "I" button for two seconds until the "I" button light no longer illuminates. Release all buttons. The oven preset buttons are now unlocked.

Fahrenheit or Celsius Selection

With the control in the Off mode, press and hold the Up Arrow button until the display shows the current selection. Press the Up/Down Arrow buttons to toggle between the two options. After each change the button must be released. The display must clear before the procedure can be repeated.



Control Panel Lock and Unlock

The control panel can be locked at any time in order to prevent inadvertent or accidental setting changes.

To lock the control panel, press and hold the Up Arrow button and then press the On/Off button. You will hear a brief beep and the panel lock indicator will illuminate. Release all buttons. The oven's control panel is now locked.

NOTICE: The control panel is now fully locked with the exception of the On/Off button and Up/Down Arrow buttons. You will be unable to turn the oven control off at this point.

To unlock the control panel, press and hold the Down Arrow button and then press the On/Off button. You will hear three beeps and the panel lock indicator light will extinguish. Release all buttons. The panel is now unlocked and ready for normal use.

Beeper Volume Selection

With the control in the Off mode, press and hold the Down Arrow button until the display shows the current control volume. Press the Up or Down Arrow button to cycle through the four options (0 = Off, 1 = Low, 2 = Mid, 3 = High).



HACCP

HACCP Documentation, Data Logger - Optional

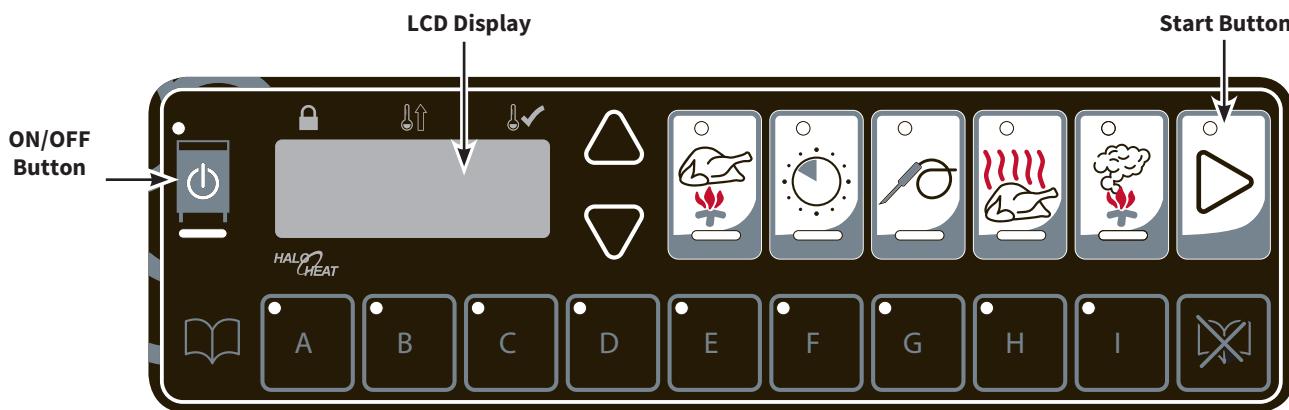
This oven meets the requirements of established HACCP criteria by providing automated sampling, record keeping, set-point validation, recipe used, dates and time. This data is retained for the last 30 days. This information can be viewed on screen or downloaded to a USB drive and then copied to your computer. The file format is a comma-separated variable (*.csv), that is easily opened using a spreadsheet software.

To download the data collected:

1. All oven cavities must be turned Off.
2. It is recommended that a completely empty USB flash drive is used. Remove the cap of the USB port located on the right side of the control panel and insert the USB flash drive. Display will show "Usb". If display does not show "Usb", try again with another flash drive device or call Alto-Shaam Service.
3. Press and hold the Start button until display shows "XYZ". The number at the far right is the percentage of the download completed. The Start button indicator light will flash while the download is in process. When display shows "100", the download is complete.
4. Remove the USB flash drive and replace the cap on the USB port. When the USB is removed, the oven will beep for 1-second, acknowledging the removal.

A26	
1	Unit Serial Number 01:10:04
2	Software Version: 0.12
3	Control Personality: 0
4	Start Time 7/26/2012 10:33
5	Cavity Upper
6	Program Name Preset A
7	Cook Set Temperature ("F) 250
8	Cooking by: Time
9	Cook Time 2:24
10	Hold Set Temperature ("F) 150
11	
12	
13	
14	Date Time Mode Cavity Set-Temperature ("F) Cavity ("F) Probe ("F) Additional Information
15	7/26/2012 10:33:57 Preheat 250 250 146
16	7/26/2012 10:37:29 Cook 250 249 146
17	7/26/2012 10:38:57 Cook 250 251 146
18	7/26/2012 10:43:57 Cook 250 250 146
19	7/26/2012 10:47:29 Hold 150 150 146
20	7/26/2012 10:48:57 Hold 150 151 146
21	
22	
23	

HACCP Data Sample



Operation

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°F 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°F-175°F	71°C-79°C
Corn Beef	160°F-175°F	71°C-79°C
Pastrami	160°F-175°F	71°C-79°C
Prime Rib — Rare	130°F	54°C
Steaks — Broiled/Fried	140°F-160°F	60°C-71°C
Ribs — Beef Or Pork	160°F	71°C
Veal	160°F-175°F	71°C-79°C
Ham	160°F-175°F	71°C-79°C
Pork	160°F-175°F	71°C-79°C
Lamb	160°F-175°F	71°C-79°C
Poultry		
Chicken — Fried/Baked	160°F-175°F	71°C-79°C
Duck	160°F-175°F	71°C-79°C
Turkey	160°F-175°F	71°C-79°C
General	160°F-175°F	71°C-79°C
Fish/Seafood		
Fish — Baked/Fried	160°F-175°F	71°C-79°C
Lobster	160°F-175°F	71°C-79°C
Shrimp — Fried	160°F-175°F	71°C-79°C
Baked Goods		
Breads/Rolls	120°F-140°F	49°C-60°C
Miscellaneous		
Casseroles	160°F-175°F	71°C-79°C
Dough — Proofing	80°F-100°F	27°C-38°C
Eggs — Fried	150°F-160°F	66°C-71°C
Frozen Entrees	160°F-175°F	71°C-79°C
Hors d'oeuvres	160°F-180°F	71°C-82°C
Pasta	160°F-180°F	71°C-82°C
Pizza	160°F-180°F	71°C-82°C
Potatoes	180°F	82°C
Plated Meals	140°F-165°F	60°C-74°C
Sauces	140°F-200°F	60°C-93°C
Soup	140°F-200°F	60°C-93°C
Vegetables	160°F-175°F	71°C-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.		

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 per 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. Failure to observe this precaution will void the warranty. Always use the proper cleaning agent at the manufacturer's recommended strength. Contact your local cleaning supplier for product recommendations.

Cleaning Materials

Cleaning can usually be accomplished with the proper cleaning agent and a soft, clean cloth. When more aggressive methods are needed, 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. Failure to observe this precaution will void the warranty.

NOTICE

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.

! WARNING

To prevent serious personal injury, death, or property damage:

The appliance must be cleaned thoroughly to avoid deposits of grease and or food residue inside the appliance that may catch fire. If fat deposits and/or food waste inside the appliance ignite, shut down the appliance immediately and keep the appliance door closed to extinguish the fire. If further extinguishing is required, disconnect the appliance from the main power and call the fire department. Failure to clean the appliance properly voids the warranty and relieves Alto-Shaam of all liability.

Cleaning and Preventative Maintenance

! WARNING



To prevent serious personal injury, death, or property damage:

Do not steam clean, hose down or flood the interior or exterior with water or liquid solution of any kind. **Do not** use water jet to clean. Failure to observe this precaution will void the warranty.

Daily cleaning

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, door vents, and front drip tray with a damp clean cloth or sponge and any good commercial detergent.

NOTICE: Never 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.

! WARNING



To prevent serious injury, death, or property damage, **always** disconnect the appliance from the power source before cleaning or servicing.

Clean the probes daily

Remove all food soil from probes. Wipe entire probe and cable assembly with warm detergent solution and a clean cloth. Remove detergent by wiping each probe and cable with clean rinse water and a cloth. Wipe probes, and probe brackets with disposable alcohol pad or sanitizing solution recommended for food contact surfaces. Allow probe and cable to air dry in probe holding bracket.

Check the cooling fan in the oven control area

While the oven is warm, check that the cooling fan in the oven control area is functioning. The fan is located at the back of the unit, toward the top.

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.

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.

Clean the probe prongs daily

To ensure accurate internal product temperature readings the prongs on the removable probe must be cleaned daily.

1. Remove all food debris from prongs at the end of each production shift. Wipe the entire prong casing, and between each prong with a clean cloth and warm detergent solution.
2. Remove detergent by wiping with a cloth and clean rinse water.
3. Allow prongs to air dry before replacing detachable probe.



Daily

- Perform daily oven cleaning as stated in this guide.
- Clean front drip tray as recommended in this guide.

Monthly

- Inspect the door gasket for signs of cracking, deformation, or damage and replace as needed.
- Inspect the door window gasket for proper seal.
- Inspect the cavity door vent slides for proper operation.
- Inspect the side racks, shelves and shelf supports for damage and replace as needed.
- Calibrate removable product probe (if applicable).
- Clean the cooling fan intake area and exhaust vents.
- Visually inspect the smoke element (if applicable). If any visual signs of deformation, cracks or breaks are seen, remove the oven from service and contact a factory authorized service technician for service.

Every 12 months (Inspection by a factory authorized technician)

- Open the control area and inspect and tighten all electrical connections.
- Inspect all electrical components.
- Inspect the smoke element and smoke element wiring (if applicable).
- Visually inspect the smoke element (if applicable). If any visual signs of deformation, cracks or breaks are seen, remove the oven from service and contact a factory authorized service technician for service.
- Confirm proper current draw of heating elements.
- Test heating elements for electrical short to ground. Replace/repair as needed.
- Inspect the condition of the plug and cord and replace if damaged.
- Tighten the cord connection inside the appliance control area.
- Test/replace independent indicator lights (where applicable).
- Replace the control cooling fans (if applicable).
- Check the site voltage.
- Set the voltage switch (where applicable).
- Inspect and test the product probe and product probe receptacle.
- Inspect and test the control and control functions.
- Visually inspect the cavity for structural integrity.
- Replace the door gasket.
- Visually inspect any door handles and hinges. Replace/repair as needed.
- Remove any loose handle and hinge screws. Apply Loctite® and then properly secure the screws.
- Inspect the perimeter bumper. Repair/replace as needed.
- Inspect the casters. Repair/replace as needed.
- Perform cavity temperature calibration per manufacturer's recommended calibration procedures.

Food Safety

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, operating efficiency, and appearance of equipment contribute considerably to savory, appetizing foods.

Most food imparts its own particular aroma and many foods also absorb existing odors. Unfortunately, during this absorption there is not a 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 undesirable flavors are usually the result of germ activity.

The easiest way to ensure 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 ensure 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 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 food temperatures from the time the food is received through the time the food is served.

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 thermometer is an effective tool for this purpose, and should be routinely used on all products that require holding at a specific temperature.

Internal Food Product Temperatures		
Hot Foods		
Danger Zone	40°F to 140°F	4°C to 60°C
Critical Zone	70°F to 120°F	21°C to 49°C
Safe Zone	140°F to 165°F	60°C 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°F to 32°F	-18°C to 0°C
Safe Zone	0°F or Below	-18°C or Below

Hazard Analysis (at) Critical Control Points (HACCP), 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. Additional HACCP information is available by contacting:

Center for Food Safety and Applied Nutrition
 Food and Drug Administration
 Phone: 1-888-SAFEFOOD
www.foodsafety.gov

Code	Description	Possible Causes
E-10	Cavity air sensor shorted	Cavity air sensor reading < 5°F (-15°C). Verify sensor integrity.
E-11	Cavity air sensor open	Cavity air sensor reading > 517°F (269°C). Verify sensor integrity.
E-20	Product probe is shorted <i>Oven will cook in time only</i>	Product probe reading < 5°F (-15°C). Verify sensor integrity.
E-21	Product probe is open <i>Oven will cook in time only</i>	Product Probe reading > 517°F (269°C). Verify sensor integrity.
E-30	Under temperature	Unit has been more than 25°F (14°C) below set point for longer than 90 minutes.
E-31	Over temperature	Unit has been more than 60°F (33°C) above the maximum set-point for longer than 3 minutes. Holding Cabinets with this error code are more than 145°F (81°C) above the maximum set-point.
E-32	Safety switch open (Aux hi-limit switch)	Contact factory.
E-38	Internal software error	Contact factory.
E-39	Sensor error	Contact factory.
E-50	Temp. measurement error	Contact factory.
E-51	Temp. measurement error	Contact factory.
E-60	Real time clock error	Data set to factory default. Ensure that date and time are correct if applicable.
E-61	Real time clock error	Contact factory.
E-64	Clock is not oscillating	Contact factory.
E-70	Configuration connector error (DIP switch)	Refer to the electrical schematic and ensure dip switches on the control match the settings called out on the schematic. If the dip switch settings are correct, according to the schematic, replace the control.
E-78	Voltage low	Voltage below 90 VAC on a 125 VAC unit, or below 190 VAC on a 208-240 VAC unit. Adjust DC voltage. See "How to Adjust DC Voltage" in this manual.
E-79	Voltage high	Voltage over 135 VAC on a 125 VAC unit, or over 250 VAC on a 208-240 VAC unit. Adjust DC voltage. See "How to Adjust DC Voltage" in this manual.
E-80	EEPROM Error	Ensure that all temperatures and times are properly set. Contact factory if problem persists.
E-81	EEPROM Error	Contact factory.
E-82	EEPROM Error	Contact factory.
E-83	EEPROM Error	Contact factory.
E-85	EEPROM Error	All timers, if previously on, are now off. Possible bad EEPROM.
E-86	EEPROM Error	Stored HACCP memory corrupted. HACCP Address reset to 1. Possible bad EEPROM. Contact factory if problem persists.
E-87	EEPROM Error	Stored offsets corrupted. Offsets reset to 0. Control may need a recalibration. Possible bad EEPROM. Contact factory if problem persists.
E-88	EEPROM Error	All timer set-points are reset to 1 minute. Timers, if previously on, are now off. Possible bad EEPROM.
E-90	Button stuck	A button has been held down for > 60 seconds. Adjust control. Error will reset when the problem has been resolved.
E-91	Input failure	Contact factory.
E-dS	Datakey error	Datakey digital signature incompatible. Cycle power, and install compatible Datakey if error persists.
E-dT	Datakey error	Datakey incompatible with control. Install compatible Datakey.
E-dU	Datakey unplugged	Install Datakey and cycle power to control to clear error.
dLto	Datalogger has timed out	Cycle power. Contact factory if error persists.
dLSD	Micro SD card not plugged in	Plug in SD card and cycle power. Contact factory if error persists.

NOTE: If in doubt, always cycle the power to the control and contact factory if the problem persists.

Troubleshooting

! DANGER



To prevent serious injury, death, or property damage, **always** lock-out or post breaker panel until service work has been completed.

! WARNING



To prevent serious injury, death, or property damage, **always** disconnect the appliance from the power source before cleaning or servicing.

ALWAYS check the circuit breaker is turned “ON” and your unit is receiving power BEFORE calling your Authorized Alto-Shaam Service Agent.

NOTICE

This section is provided for the assistance of qualified and trained service technicians only and is not intended for use by untrained or unauthorized service personnel. Do not attempt to repair or service the oven 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.

Troubleshooting

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 the problem persists, call a qualified Alto-Shaam service technician at 1-800-558-8744.

B. Display is lit but unit is not heating.

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 hi-limit reset button at the rear of the appliance.



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 bypassed or removed from the circuit.**

NOTICE

If the appliance has been unplugged for an extended period of time, the Real Time Clock may require recharging. Turn main breaker to the unit off for 10 seconds and then restore power. For more information, see Error Code E-60 in the Troubleshooting section of this manual.

How to verify sensor integrity

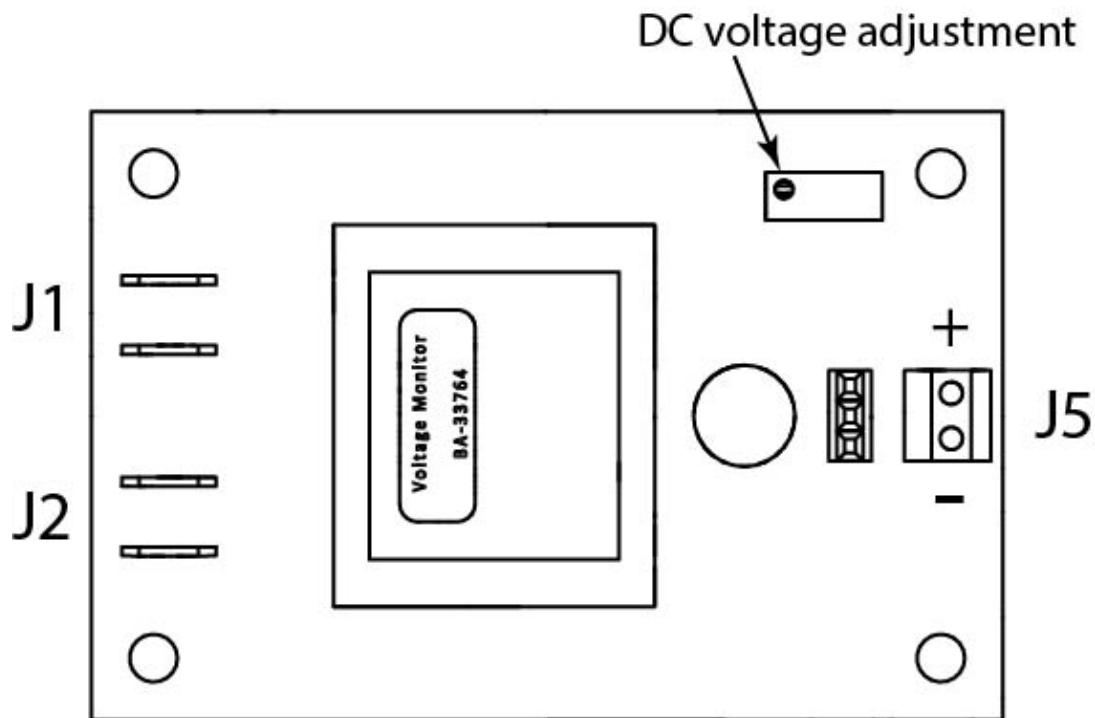
Place the sensor in ice water. Test with an ohmmeter set to the ohm scale.

Product probe	100 ohms \pm 2
Product probe, 300-TH-III	1000 ohms \pm 20
Air sensor	100 ohms \pm 2

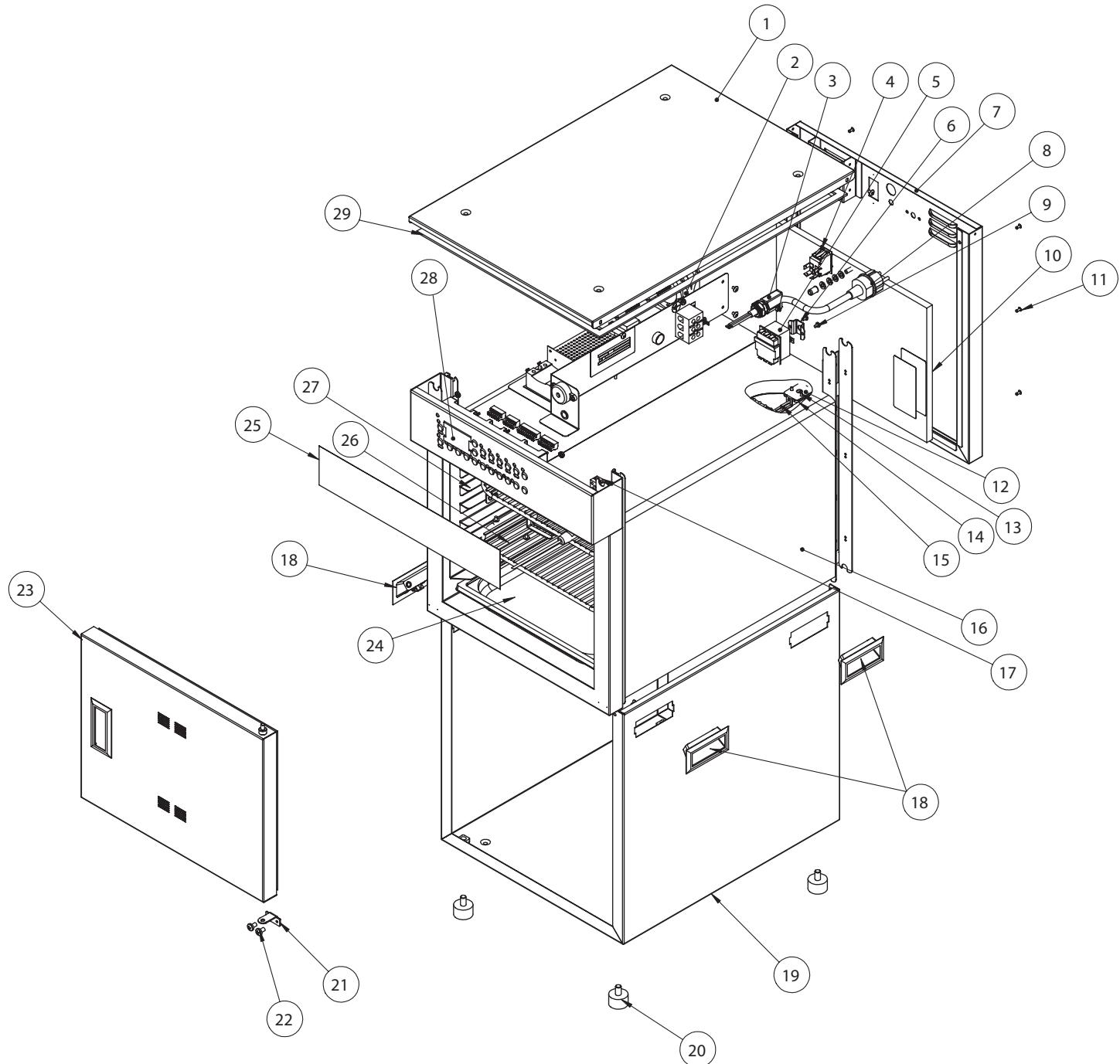
If the reading is more or less than above parameters, replace sensor.

How to adjust DC voltage

1. Measure the AC voltage across terminals J1 and J2 on the voltage monitor circuit board.
2. Measure the DC voltage across the plus (+) and minus (-) terminals of connector J5.
3. Reference the voltage monitor table on the electric schematic.
4. Turn the DC voltage adjustment screw until the DC voltage at connector J5 corresponds to the AC input voltage listed in the voltage monitor table on the electric schematic.



Exterior Service View - 300-TH-III (A)



Part numbers and drawings are subject to change without notice.

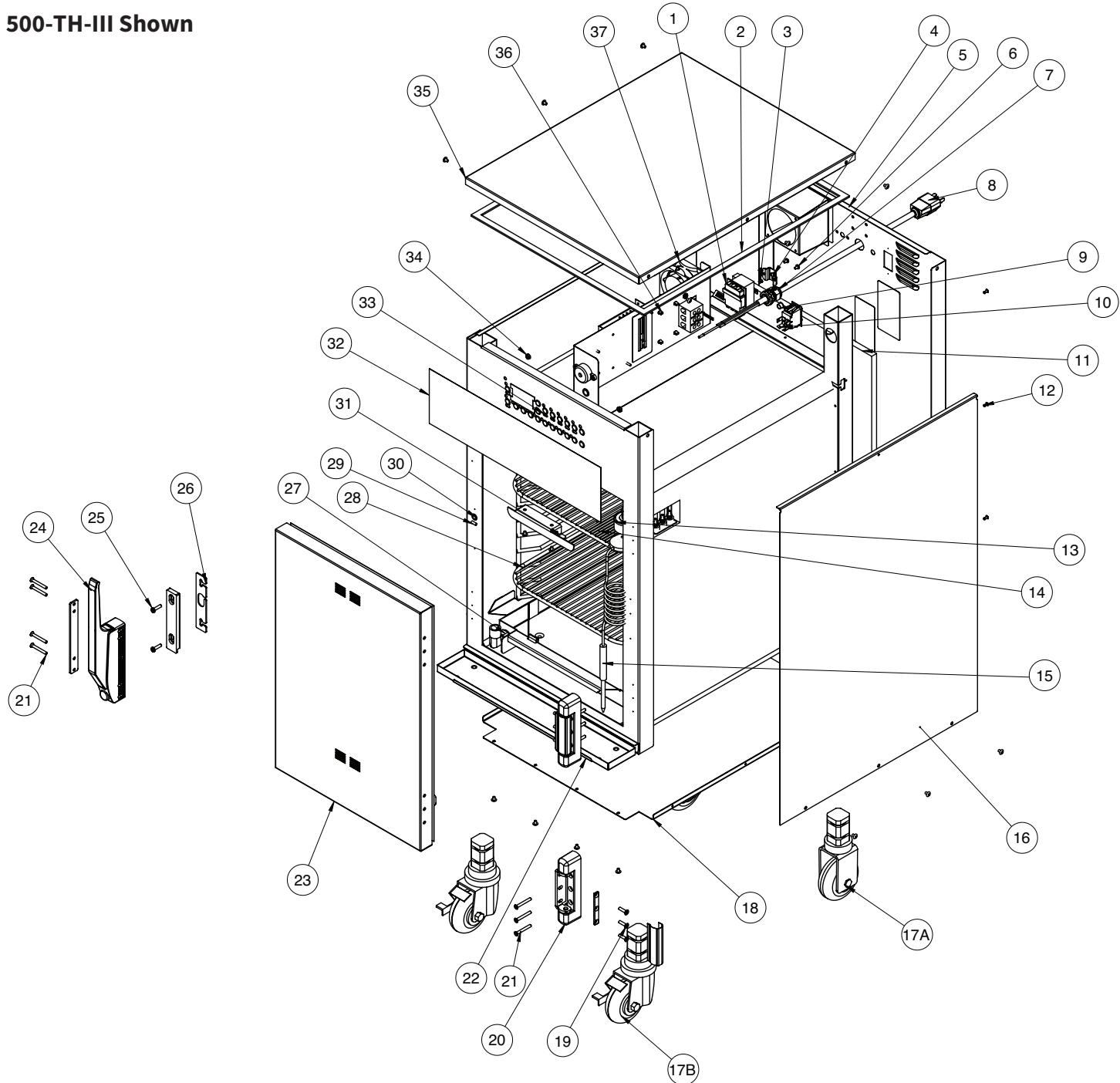
Exterior Parts List - 300-TH-III (A)

Item	Description	Part No.	Qty	
1	BONNET TOP COVER	1012831	1	
2	FAN BOX, 120V	FA-3973	1	
	FAN BOX, 230V	FA-34524	1	
3	BUSHING, STRAIGHT, STRAIN RELIEF, 230V	BU-34898	1	
	BUSHING, STRAIGHT, STRAIN RELIEF, 120V	BU-3964	1	
4	SWITCH, ROCKER, 125-277V, 20A	SW-34769	1	
*	SWITCH COVER, 230V, 380V ONLY	CV-38297	1	
5	HI-LIMIT THERMOSTAT	TT-33476	1	
6	HI-LIMIT PROTECTION COVER	1003936	1	
7	REAR TRIM	5014525	1	
8	CORDSET	SEE ELEC VIEW		
9	SCREWS, M4-0.7 x 6mm PHIL	SC-22271	2	
10	INSULATION	IN-2003	1	
11	RIVET, BLIND, #44, S/S	RI-2100	16	
12	GUARD SENSOR	1493	1	
13	SCREW, 6-32 x 1/2, NC PHIL, FLAT	SC-2254	2	
14	BLOCK, SENSOR	BK-29605	1	
15	SENSOR	SN-38110	1	
16	INSULATION	IN-22364	1	
17	PRODUCT PROBE	15892R	1	
18	HANDLE, PULL, RECESSED	HD-28789	4	
19	OUTER CASING SPOT	5014538	1	
20	FEET, 3-1/2" (89mm) RIGID	FE-29203	4	
21	HINGE PLATE, BOTTOM	RIGHT	5021070	1
		LEFT*	5022273	1
22	SCREW, M6 x 1.0 x 10 PAN	SC-27078	2	
23	DOOR ASSEMBLY	5014458	1	
	DOOR GASKET	GS-35092	1	
24	DRIP PAN	PN-2122	1	
25	PANEL, OVERLAY	PE-35086	1	
26	SHELF, WIRE	SH-2107	2	
27	SIDE RACK	1012872	2	
28	CONTROL	CC-34194	1	
29	GASKET, ADHESIVE, .125 x .375 [in ft]	GS-23622	1	
30*	PROBE WIRE HOLDER	1017495	1	
31*	NUT, THREADED INSERT, M6	NU-22770	1	
32*	NUT, 8-32 UNC FEPS ZP	NU-26526	4	
33*	SCREW, 8-32 x 2 SLOT PAN HEAD 18-8 S/S	SC-23154	2	
34*	SCREW, HHCS M6 x 20, W/NO MARKING	SC-22924	1	
35*	SCREW, 8-32 x 1/4" TRH PHH	SC-2459	12	
36*	FOIL PAD HEATER, 230V	EL-29740	1	
	FOIL PAD HEATER, 120V	EL-35173	1	

* NOT SHOWN

Exterior Service View - 500, 750, 1000-TH-III B

500-TH-III Shown



Part numbers and drawings are subject to change without notice.

! WARNING



To prevent serious injury, death, or property damage, **always** disconnect the appliance from the power source before cleaning or servicing.

! DANGER



To prevent serious injury, death, or property damage, **always** lock-out or post breaker panel until service work has been completed.

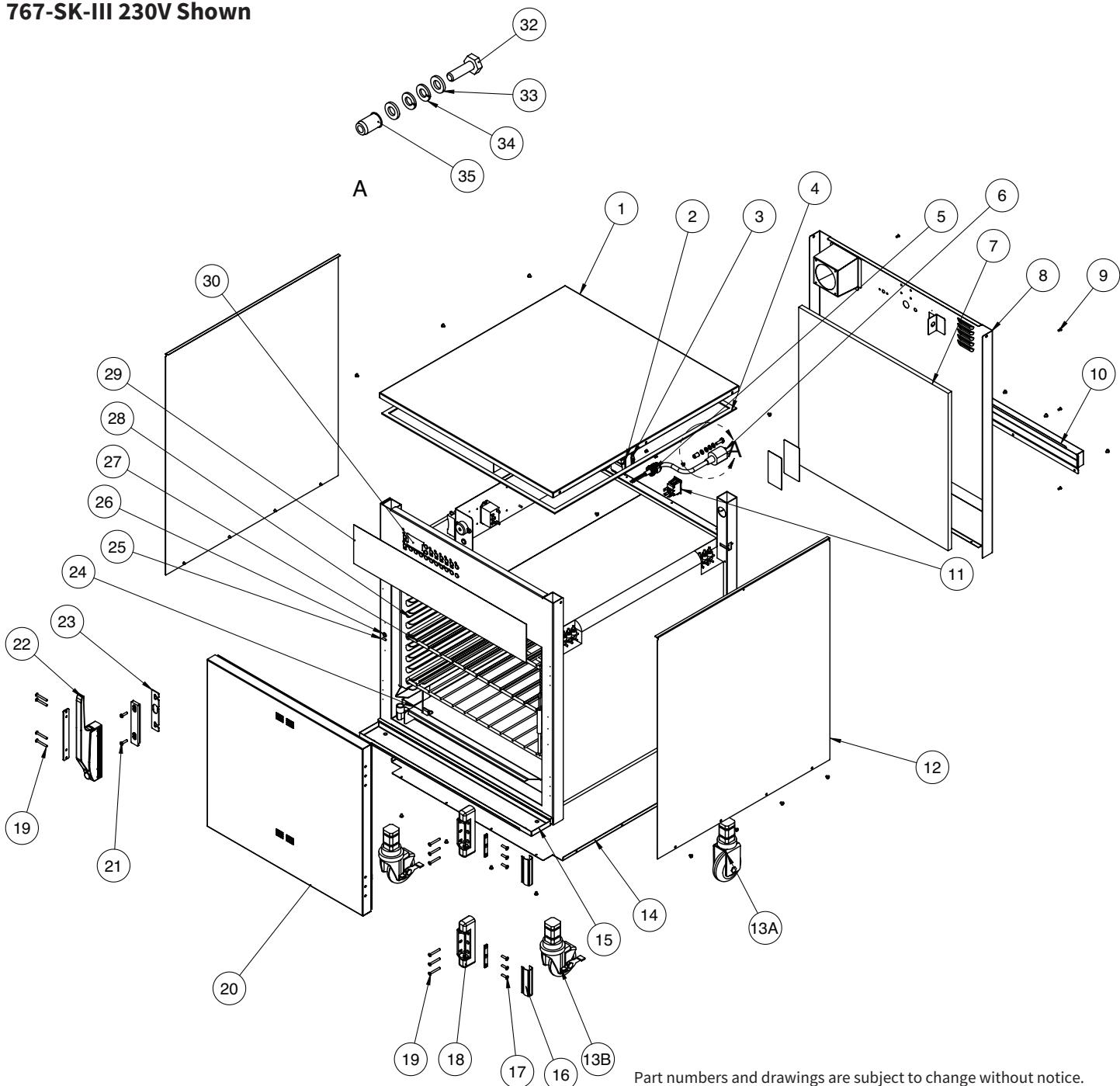
Exterior Parts List - 500, 750, 1000-TH-III

B

* Not shown		Model >	500-TH-III		750-TH-III		1000-TH-III	
Item	Description		Part No.	Qty	Part No.	Qty	Part No.	Qty
1	THERMOSTAT, HI LIMIT		TT-33476	1	TT-33476	1	TT-33476	1
2	GASKET ADHESIVE 0.125 x 0.375 [LIN FT]		GS-23622	1	GS-23622	1	GS-23622	1
3	PLUG, DOME, .187" HOLE		PG-28439	4	PG-28439	4	PG-28439	4
4	HIGH LIMIT PROTECTION COVER		1003936	1	1003936	1	1003936	1
5	REAR TRIM, SPOT		5014004	1	5014081	1	5014172	1
6	SCREW, M4-0.7 x 6mm PHIL		SC-22271	2	SC-22271	2	SC-22271	2
7	BUSHING, STRAIN RELIEF		BU-3964	1	BU-3964	1	BU-3964	1
8	CORDSET		SEE ELEC VIEW		SEE ELEC VIEW		SEE ELEC VIEW	
9	PLUG, 3/8" HOLE		PG-25574	1	PG-25574	1	PG-25574	1
10	SWITCH, ROCKER, 125-277V, 20A		SW-34769	1	SW-34769	1	SW-34769	1
*	SWITCH COVER, 230V ONLY		CV-38297	1	CV-38297	1	CV-38297	1
11	INSULATION		IN-2003	1	IN-2003	1	IN-2003	1
12	RIVET, BLIND, #44 STAINLESS		RI-2100	6	RI-2100	6	RI-2100	6
13	PROBE RECEPTACLE		PR-34705	1	PR-34705	1	PR-34705	1
14	SHELF, STAINLESS STEEL		SH-2326	2	SH-2324	3	SH-2325	3
15	PROBE, PRODUCT		PR-36065	1	PR-36065	1	PR-36065	1
	PROBE, PRODUCT (UK 230V ONLY)		—	—	—	—	PR-34298	1
16	PANEL, SIDE		5015081	2	5015083	2	5015088	2
17	CASTER PACKAGE		5008022	1	5008022	1	5014422	1
17A	- CASTER, 3-1/2" (89mm) RIGID		—	—	—	—	CS-25674	2
	- CASTER, 2-1/2" (64mm) RIGID		CS-28178	2	CS-28178	2	—	—
17B	- CASTER, 3-1/2" (89mm) SWIVEL W/ BRAKE		—	—	—	—	CS-25675	2
	- CASTER, 2-1/2" (64mm) SWIVEL W/ BRAKE		CS-28179	2	CS-28179	2	—	—
17C*	- SHIM		—	—	—	—	1012735	4
18	BOTTOM PANEL		1010774	1	1010394	1	1009941	1
19	SCREW, 10-32 x 3/4", NF PHIL		SC-2072	6	SC-2072	6	SC-2072	6
20	HINGE		HG-22338	1	HG-22338	1	HG-22338	1
21	SCREW, 10-32 x 1-1/2", NF, PHIL		SC-2073	10	SC-2073	10	SC-2073	10
22	DRIP TRAY KIT		5010736	1	5010391	1	5009716	1
	- DRIP TRAY HOLDER		1010782	1	1010584	1	1010188	1
	- DRIP TRAY		1010783	1	1010585	1	1010189	1
23	DOOR ASSEMBLY, SLAB, RH		5010828	1	5010946	1	5010081	1
	*DOOR ASSEMBLY, WINDOW, RH		5010830	1	5010948	1	5010082	1
	*DOOR ASSEMBLY, SLAB, LH		5010824	1	5010947	1	5010071	1
	*DOOR ASSEMBLY, WINDOW, LH		5010829	1	5010949	1	5010076	1
	*DOOR GASKET		GS-22950	1	GS-22951	1	GS-22952	1
24	HANDLE, OFFSET MAG. LATCH		HD-27080	1	HD-27080	1	HD-27080	1
25	SCREW, 3/4" PAN HD		SC-2071	2	SC-2071	2	SC-2071	2
26	SHIM, HANDLE		13947	1	13947	1	13947	1
27	DRIP PAN WELD		14813	1	14831	1	5005616	1
28	SIDE RACK, CHROME		SR-28403	2	SR-28405	2	SR-2266	2
	PAN SLIDES, 230V ONLY		1010880	2	1010813	2	—	—
29	REED SWITCH, DOOR (QTY PER DOOR)		SW-33559	1	SW-33559	1	SW-33559	1
30	BUSHING, 3/8" BLACK HOLE		BU-3419	1	BU-3419	1	BU-3419	1
31	PROBE WIRE HOLDER		1017495	1	1017495	1	1017495	1
32	PANEL OVERLAY		PE-26710	1	PE-26839	1	PE-26713	1
33	CONTROL		CC-34194	1	CC-34194	1	CC-34194	1
34	NUT, #8-32 UNC KEPS ZP		NU-26526	4	NU-26526	4	NU-26526	4
35	TOP COVER		1011946	1	1011872	1	1011534	1
36	SCREW, 8-32 x 2 SLOT PAN HEAD 18-8 S/S		SC-23154	2	SC-23154	2	SC-23154	2
37	FAN, BOX - 120V ONLY		FA-3973	1	FA-3973	1	FA-3973	1
	FAN, BOX		FA-34524	1	FA-34524	1	FA-34524	1
38*	SENSOR GUARD		1493	1	1493	1	1493	1
39*	PROBE COVER		5009712	1	5009712	1	5009712	1
40*	SENSOR MOUNTING BLOCK		BK-29605	1	BK-29605	1	BK-29605	1
41*	SCREW, 6-32 x 1/2", NC PHIL, FLAT		SC-2254	2	SC-2254	2	SC-2254	2
42*	SCREW, 8-32 x 1/4" PHIL		SC-2459	18	SC-2459	20	SC-2459	26
43*	SCREW, 8-32 x 1/2" PHIL, S/S		SC-2425	6	SC-2425	6	SC-2425	6
44*	SENSOR, OVEN TEMPERATURE		SN-38110	1	SN-38110	1	SN-38110	1
46*	WASHER, FLAT, M6 DIN 125		WS-22297	2	WS-22297	2	WS-22297	2
47*	WASHER, M6 SPLIT LOCK S/S 18-8		WS-22302	2	WS-22302	2	WS-22302	2

Exterior Service View - 767, 1000-SK-III C

767-SK-III 230V Shown



Part numbers and drawings are subject to change without notice.

** Shown with electrical chassis prior to 5/1/13

! WARNING



To prevent serious injury, death, or property damage, **always** disconnect the appliance from the power source before cleaning or servicing.

! DANGER



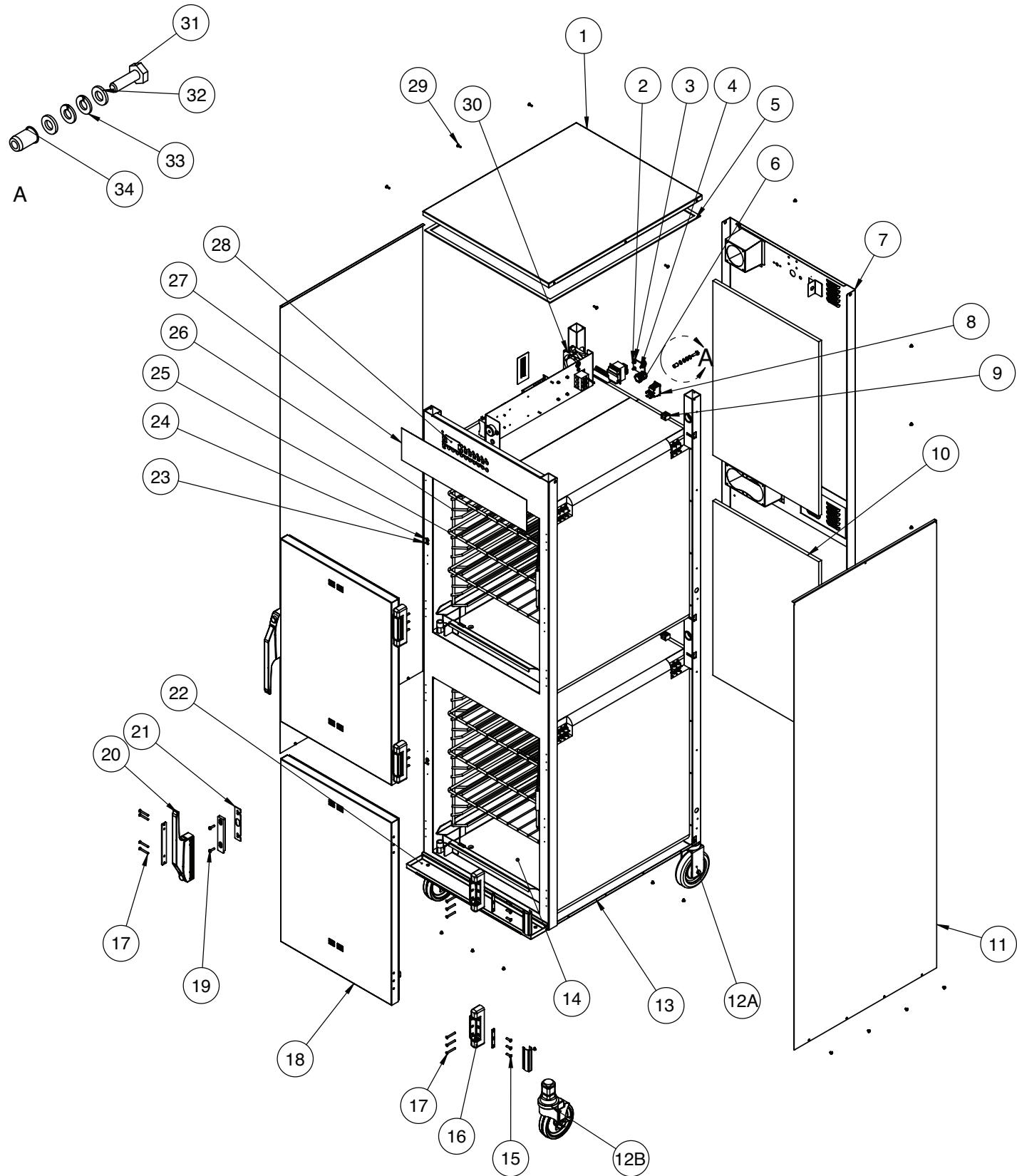
To prevent serious injury, death, or property damage, **always** lock-out or post breaker panel until service work has been completed.

Exterior Parts List - 767, 1000-SK-III

(C)

* Not shown		Model >	767-SK-III		1000-SK-III	
Item	Description		Part No.	Qty	Part No.	Qty
1	TOP COVER		1011872	1	1011534	1
2	THERMOSTAT, HI-LIMIT		TT-33476	1	TT-33476	1
3	HI-LIMIT PROTECTION COVER		1003936	1	1003936	1
4	GASKETS, ADHESIVE, 0.125 x 0.375 [linear ft]		GS-23622	1	GS-23622	1
5	BUSHING, STRAIGHT, STRAIN RELIEF		BU-3964	1	BU-3964	1
6	CORDSET		SEE ELEC VIEW		SEE ELEC VIEW	
7	INSULATION		IN-2003	1	IN-2003	1
8	REAR TRIM, SPOT		5014137	1	5014204	1
9	RIVET, BLIND, #44, STAINLESS STEEL		RI-2100	6	RI-2100	6
10	ELEMENT COVER		1010409	1	1011813	1
11	SWITCH, ROCKER, 20A		SW-34769	1	SW-34769	1
*	SWITCH COVER, 230V ONLY		CV-38297	1	CV-38297	1
12	SIDE PANEL		5015083	2	5015088	2
13	CASTER PACKAGE		5014422	1	5014422	1
13A	- CASTER, 1.5" STEM, RIGID 5" (127mm)		CS-24874	2	CS-24874	2
13B	- CASTER, 1.5" STEM, 5" (127mm) SWIVEL W/ BRAKE		CS-24875	2	CS-24875	2
13C*	- SHIM		1012735	4	1012735	4
14	BOTTOM PANEL		1010394	1	1009941	1
15	DRIP TRAY KIT		5010391	1	5009716	1
	— DRIP TRAY		1010584	1	1010188	1
	— DRIP TRAY HOLDER		1010585	1	1010189	1
16	HINGE COVER		CV-22171	2	CV-22171	2
17	SCREW, M5 x 0.8 x 20mm FLAT		SC-23868	6	SC-23868	6
18	HINGE, 1-3/8" OFFSET, PAIR, CHROME		HG-22338	1	HG-22338	1
19	SCREW, MS x 0.8 x 30mm FLAT		SC-22853	10	SC-22853	10
20	DOOR ASSEMBLY, RH		5011828	1	5012859	1
	*DOOR ASSEMBLY, LH		5011829	1	5012861	1
	*DOOR GASKET		GS-22951	1	GS-22952	1
21	SCREW, M5 x 0.8 x 20mm PAN		SC-22779	2	SC-22779	2
22	HANDLE, OFFSET MAGNETIC LATCH		HD-27080	1	HD-27080	1
23	SHIM, HANDLE		13947	1	13947	1
24	DRIP PAN WELD		14831	1	5005616	1
25	REED SWITCH, DOOR		SW-33559	1	SW-33559	1
26	BUSHING, 3/8" BLACK HOLE		BU-3419	1	BU-3419	1
27	SHELF, WIRE S/S		SH-2324	2	SH-2325	2
	*SHELF, RIB RACK		SH-2743	2	SH-29474	1
28	SIDE RACKS		SR-28405	2	SR-2266	2
	PAN SLIDES (230V ONLY)		1010813	2	—	—
29	PANEL OVERLAY		PE-27178	1	PE-29385	1
30	CONTROL		CC-34194	1	CC-34194	1
31	SCREW, HHCS, M6 X 20mm		SC-22924	1	SC-22924	1
32	WASHER, FLAT, M6, DIN 125		WS-22297	2	WS-22297	2
33	WASHER, M6 SPLIT LOCK S/S 18-8		WS-22302	2	WS-22302	2
34	NUT, #8-32 UNC KEPS ZP		NU-26526	4	NU-26526	4
35*	SENSOR MOUNTING BLOCK		BK-24427	1	BK-24427	1
36*	BRACKET, CHIP TRAY		BT-29217	1	BT-29217	1
37*	BUSHING, 5/8" SNAP, BLACK		BU-3611	2	BU-3611	2
38*	CHIP TRAY WELD		4652	1	4652	1
39*	SMOKE ELEMENT KIT - 208-240V, 230V		5025683	1	5025683	1
	SMOKE ELEMENT KIT - 120V		5025684	1	5025684	1
40*	FAN, BOX, 120V		FA-3973	1	FA-3973	1
	FAN BOX		FA-34524	1	FA-34524	1
	NUT, THREADED INSERT, M6		NU-22770	1	NU-22770	1
41*	NUT, 1/4-20 HEX S/S		NU-2437	2	NU-2437	2
42*	PLUG, DOME, .187" HOLE		PG-28439	4	PG-28439	4
43*	PROBE ASSEMBLY, PRODUCT		PR-36065	1	PR-36065	1
44*	PROBE COVER		5009712	1	5009712	1
45*	PROBE WIRE HOLDER		1017495	1	1017495	1
46*	PROBE RECEPICAL, PRODUCT		PR-34705	1	PR-34705	1
47*	SCREW, 6-32 x 1/2, NC PHIL, FLAT		SC-2239	2	SC-2239	2
48*	SCREW, M4-0.7 x 6mm PHIL		SC-22271	2	SC-22271	2
49*	SCREW, M3 x 0.5 x 16mm PAN		SC-22270	6	SC-22270	6
50*	SCREW, 8-32 x 2 SLOT PAN HEAD 18-8 S/S		SC-23154	2	SC-23154	2
51*	SENSOR, CAVITY		SN-38110	1	SN-38110	1
52*	SENSOR GUARD		1493	1	1493	1
53*	SMOKE HEATER PLATE WELD		5023426	1	5023426	1

Exterior Service View - 1200-TH-III

D

Part numbers and drawings are subject to change without notice.

** Shown with electrical chassis prior to 5/1/13

Exterior Parts List - 1200-TH-III

D

Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	TOP COVER	1011534	1		- DRIP TRAY	1010189	1
2	SCREW, 10-32 x 1/2, NF PHIL, FLAT	SC-23670	4	23	SWITCH, REED (QTY PER DOOR)	SW-33559	1
3	NUT, 10-32 UNF HEX MS, 18-8 SST	NU-2215	4	24	BUSHING, 3/8" BLACK HOLE	BU-3419	1
4	BRACKET, TETHER	BT-26884	1	25	SHELF, STAINLESS STEEL	SH-2325	6
5	GASKET ADHESIVE 0.125 x 0.375	GS-23622	1	26	SIDE RACK, CHROME	SR-2266	4
6	BUSHING, STRAIN RELIEF	BU-3964	1	27	PANEL OVERLAY	PE-26714	1
7	REAR TRIM, SPOT	5014268	1	28	CONTROL	CC-34194	1
8	SWITCH, ROCKER, 125-277V, 20A	SW-34769	1	29	SCREW, 8-32 x 1/2" PHIL SCREW	SC-2425	6
*	SWITCH COVER, 230V, 380V ONLY	CV-38297	1	30	FAN, BOX	FA-34524	2
9	SENSOR MOUNTING BLOCK	BK-29605	1	31	SCREW, HHCS, M6 x 20	SC-22924	1
10	INSULATION	IN-2003	2	32	WASHER, FLAT, M6 DIN 125	WS-22297	2
11	PANEL, SIDE	5015105	2	33	WASHER, M6 SPLIT LOCK S/S 18-8	WS-22302	2
12	CASTER PACKAGE	5014421	1	34	NUT, THREADED INSERT	NU-22770	1
12A	- CASTER, 5" (127mm) RIGID	CS-24874	2	35*	SENSOR GUARD	1493	1
12B	- CASTER, 5" (127mm) SWIVEL W/ BRAKE	CS-24875	2	36*	PROBE WIRE HOLDER	1017495	1
12C*	- SHIM	1012735	4	37*	HIGH LIMIT PROTECTION COVER	1003936	1
13	BOTTOM PANEL	1009941	1	38*	PROBE COVER	5009712	1
14	DRIP PAN WELD	5005616	2	39*	BUSHING, 1-1/8" SNAP BUSHING	BU-3378	8
15	SCREW, 10-32 x 3/4", NF PHIL	SC-2072	12	40*	NUT, #8-32 UNC KEPS ZP	NU-26526	4
16	HINGE	HG-22338	2	41*	PROBE, PRODUCT	PR-36065	1
	HINGE COVER	CV-22171	4		PROBE, PRODUCT (UK 230V ONLY)	PR-34298	1
17	SCREW, 10-32 x 1-1/2", NF, PHIL	SC-2073	20	42*	PROBE RECEPTACLE, 2200mm WIRE	PR-34704	1
18	DOOR ASSEMBLY, RH	5010081	2	43*	PROBE RECEPTACLE, 600mm WIRE	PR-34705	1
	DOOR ASSEMBLY, WIDOW, RH	5010082	2	44	SCREW, M4-0.7 x 6mm PHIL	SC-22271	4
	DOOR ASSEMBLY, LH	5010071	2	45	SCREW, 6-32 x 1/2", NC PHIL, FLAT	SC-2254	4
	DOOR ASSEMBLY, WINDOW, LH	5010076	2	46	8-32 x 2 SLOT PAN HEAD 18-8 S/S	SC-23154	4
	DOOR GASKET	GS-22952	2	47	SCREW, 8-32 x 1/4" PHIL	SC-2459	22
19	SCREW, 3/4" PAN HD	SC-2071	4	48*	SENSOR, OVEN TEMPERATURE	SN-38110	2
20	HANDLE, OFFSET MAG. LATCH	HD-27080	2	49*	THERMOSTAT, HI LIMIT	TT-33476	2
21	SHIM, HANDLE	13947	1				
22	DRIP TRAY KIT	5009716	1				
	- DRIP TRAY HOLDER	1010188	1				

! WARNING

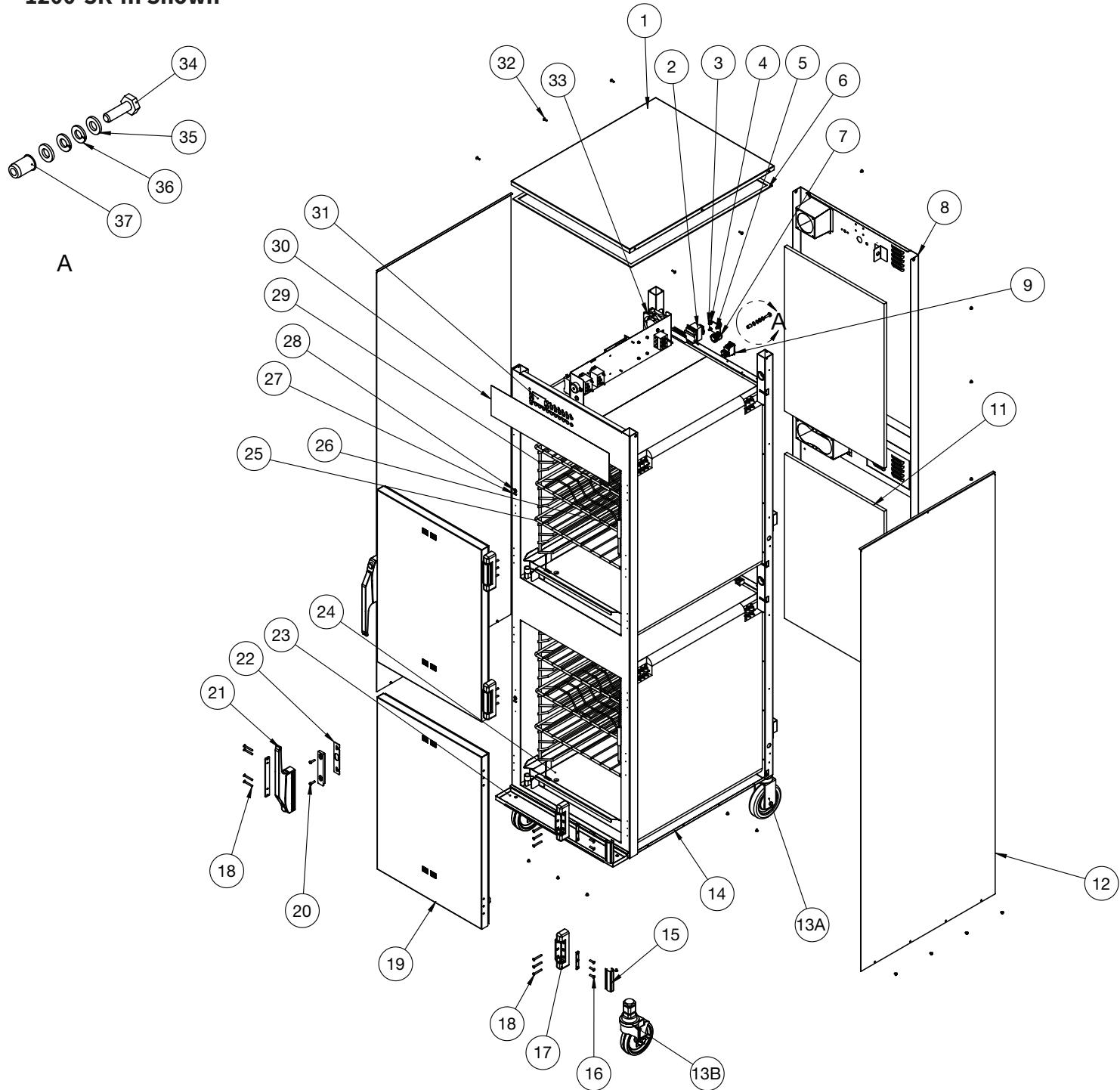
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! DANGER

To prevent serious injury, death, or property damage, **always** lock-out or post breaker panel until service work has been completed.

Exterior Service View - 1200, 1767-SK-III E

1200-SK-III Shown



Part numbers and drawings are subject to change without notice.

** Shown with electrical chassis prior to 5/1/13

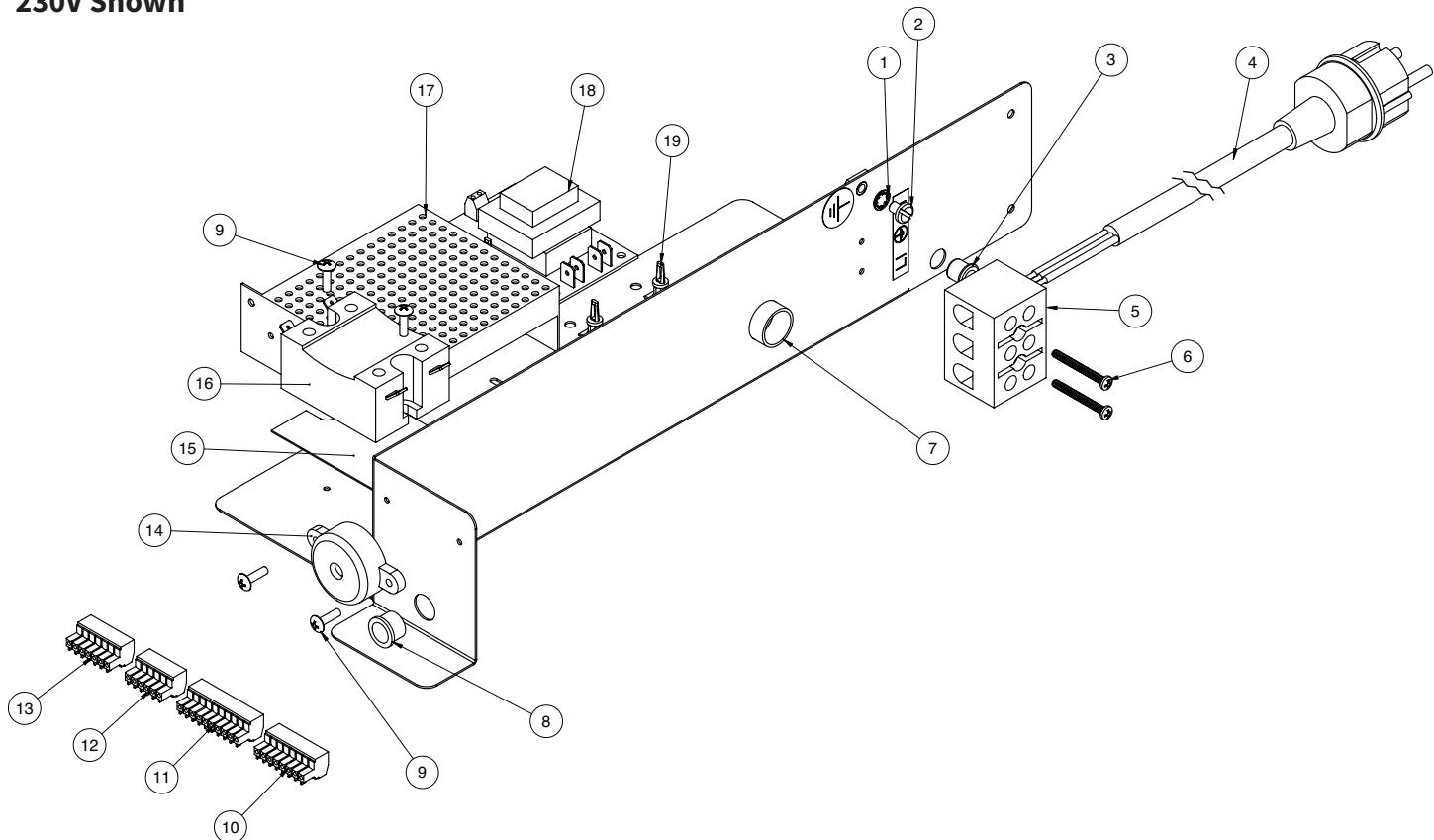
Exterior Parts List - 1200, 1767-SK-III

E

*not shown		Model >	1767-SK-III		1200-SK-III	
Item	Description		Part No.	Qty	Part No.	Qty
1	TOP COVER		1011872	1	1011534	1
2	THERMOSTAT, HI-LIMIT		TT-33476	2	TT-33476	2
3	SCREW, M5 x 0.8 x 16mm FLAT		SC-22281	4	SC-22281	4
4	NUT, CT, M5-0.8 HEX, 18-8		NU-22289	4	NU-22289	4
5	HI-LIMIT PROTECTION COVER		1003936	2	1003936	2
6	GASKET, ADHESIVE, 0.125 x 0.375 [linear ft]		GS-23622	1	GS-23622	1
7	BRACKET, TETHER		BT-26884	1	BT-26884	1
8	REAR TRIM, SPOT		5014223	1	5014293	1
9	SWITCH, ROCKER, 20A		SW-34769	1	SW-34769	1
10*	SWITCH COVER, 230V ONLY		CV-39421	1	CV-39421	1
11	INSULATION		IN-2003	2	IN-2003	2
12	SIDE PANEL		5015102	2	5015105	2
13	CASTER PACKAGE		5014421	1	5014421	1
13A	- CASTER, 1.5" STEM, RIGID 5" (127mm)		CS-24874	2	CS-24874	2
13B	- CASTER, 1.5" STEM, 5" (127mm) SWIVEL W/ BRAKE		CS-24875	2	CS-24875	2
*	- SHIM		1012735	4	1012735	4
14	BOTTOM PANEL		1010394	1	1009941	1
15	HINGE COVER		CV-22171	4	CV-22171	4
16	SCREW, M5 x 0.8 x 20mm FLAT		SC-23868	12	SC-23868	12
17	HINGE, 1-3/8" OFFSET, PAIR, CHROME		HG-22338	2	HG-22338	2
18	SCREW, MS x 0.8 x 30mm FLAT		SC-22853	20	SC-22853	20
19	DOOR ASSEMBLY, RH		5011828	2	5012859	2
	*DOOR ASSEMBLY, LH		5011829	2	5012861	2
	*DOOR GASKET		GS-22951	2	GS-22952	2
20	SCREW, M5 x 0.8 x 20mm PAN		SC-22779	4	SC-22779	4
21	HANDLE, OFFSET MAGNETIC LATCH		HD-27080	2	HD-27080	2
22	SHIM, HANDLE		13947	2	13947	2
23	DRIP TRAY KIT		5010391	1	5009716	1
	- DRIP TRAY		1010584	1	1010188	1
	- DRIP TRAY HOLDER		1010585	1	1010189	1
24	DRIP PAN WELD		14831	2	5005616	2
25	SHELF, WIRE S/S		SH-2324	4	SH-2325	4
26	SHELF, RIB RACK		SH-2743	2	SH-29474	2
27	REED SWITCH, DOOR		SW-33559	2	SW-33559	2
28	BUSHING, 3/8" BLACK HOLE		BU-3419	2	BU-3419	2
29	SIDE RACKS		SR-28405	4	SR-2266	4
	PAN SLIDES (230V ONLY)		1010813	4	—	—
30	PANEL OVERLAY		PE-27181	1	PE-29386	1
31	CONTROL		CC-34194	1	CC-34194	1
32	RIVET, BLIND, #44, STNLS		RI-2100	12	RI-2100	12
33	FAN BOX		FA-34524	2	FA-34524	2
34	SCREW, HHCS, M6 x 20		SC-22924	1	SC-22924	1
35	WASHER, FLAT, M6, DIN 125		WS-22297	2	WS-22297	2
36	WASHER, M6 SPLIT LOCK S/S 18-8		WS-22302	2	WS-22302	2
37	NUT, THREADED INSERT, M6		NU-22770	1	NU-22770	1
38*	BRACKET, CHIP TRAY		BT-29217	2	BT-29217	2
39*	BUSHING, 5/8" SNAP, BLACK		BU-3611	4	BU-3611	4
40*	CHIP TRAY WELD		4652	2	4652	2
41*	SMOKER ELEMENT - 208-240V, 230V		5025683	2	5025683	2
42*	ELEMENT COVER		1010409	2	1011813	2
43*	NUT, 1/4-20 HEX S/S		NU-2437	4	NU-2437	4
44*	NUT, #8-32 UNC KEPS ZP		NU-26526	4	NU-26526	4
45*	PLUG, DOME, .187" HOLE		PG-28439	4	PG-28439	4
46*	PROBE ASSEMBLY, PRODUCT		PR-36065	2	PR-36065	2
47*	PROBE COVER		5009712	2	5009712	2
48*	PROBE WIRE HOLDER		1017495	2	1017495	2
49*	PROBE RECEPITAL, PRODUCT		PR-34705	1	PR-34705	1
50*	SCREW, 6-32 x 1/2, NC PHIL, FLAT		SC-2239	4	SC-2239	4
51*	SCREW, M4-0.7 x 6mm PHIL		SC-22271	4	SC-22271	4
52*	SCREW, 8-32 x 2 SLOT PAN HEAD 18-8 S/S		SC-23154	4	SC-23154	4
53*	SCREW, M3 x 0.5 x 16mm PAN		SC-22270	6	SC-22270	6
54*	SENSOR, CAVITY		SN-38110	2	SN-38110	2
55*	SENSOR GUARD		1493	1	1493	1
56*	SENSOR MOUNTING BLOCK		BK-24427	2	BK-24427	2
57*	SMOKE HEATER PLATE WELD		5023426	2	5023426	2

Electronic Components - 300-TH-III

230V Shown



Part numbers and drawings are subject to change without notice.

Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	WASHER, STAR LOCK	WS-2467	1	9	SCREW, 6-32 x 1/2" NC PHIL TRUSS	SC-2472	6
2	SCREW, 10-32 x 1/4" PAN HD GROUND	SC-2190	1	10	CONNECTOR, 6 PIN	CR-33719	1
3	BUSHING, 3/8" BLACK HOLE	BU-3419	1	11	CONNECTOR, 10 PIN	CR-33717	1
4	CORDSET 120V (NEMA 5-20)	CD-3397	1	12	CONNECTOR, 7 PIN	CR-33762	1
	230V (CEE 7/7)	CD-3922	1	13	CONNECTOR, 8 PIN	CR-33761	1
	230V (CH2-16P)	CD-36231	1	14	BEEPER	BP-3567	1
	230V (BS1363)	CD-33925	1	15	HEATSINK	HE-33926	1
5	T-BLOCK	BK-3019	1	16	RELAY	RL-33829	1
6	SCREW, 6-32 x 1-1/4" ROUND HD	SC-2365	2	17	BOARD, POWER SUPPLY	BA-38586	1
7	BUSHING, HOLE, 3/4"	BU-3008	1	18	BOARD, VOLTAGE MONITOR	BA-33764	1
8	BUSHING, HOLE, 1/2"	BU-3006	1	19	SPACER, LOCK MOUNT	SP-33832	4

! WARNING



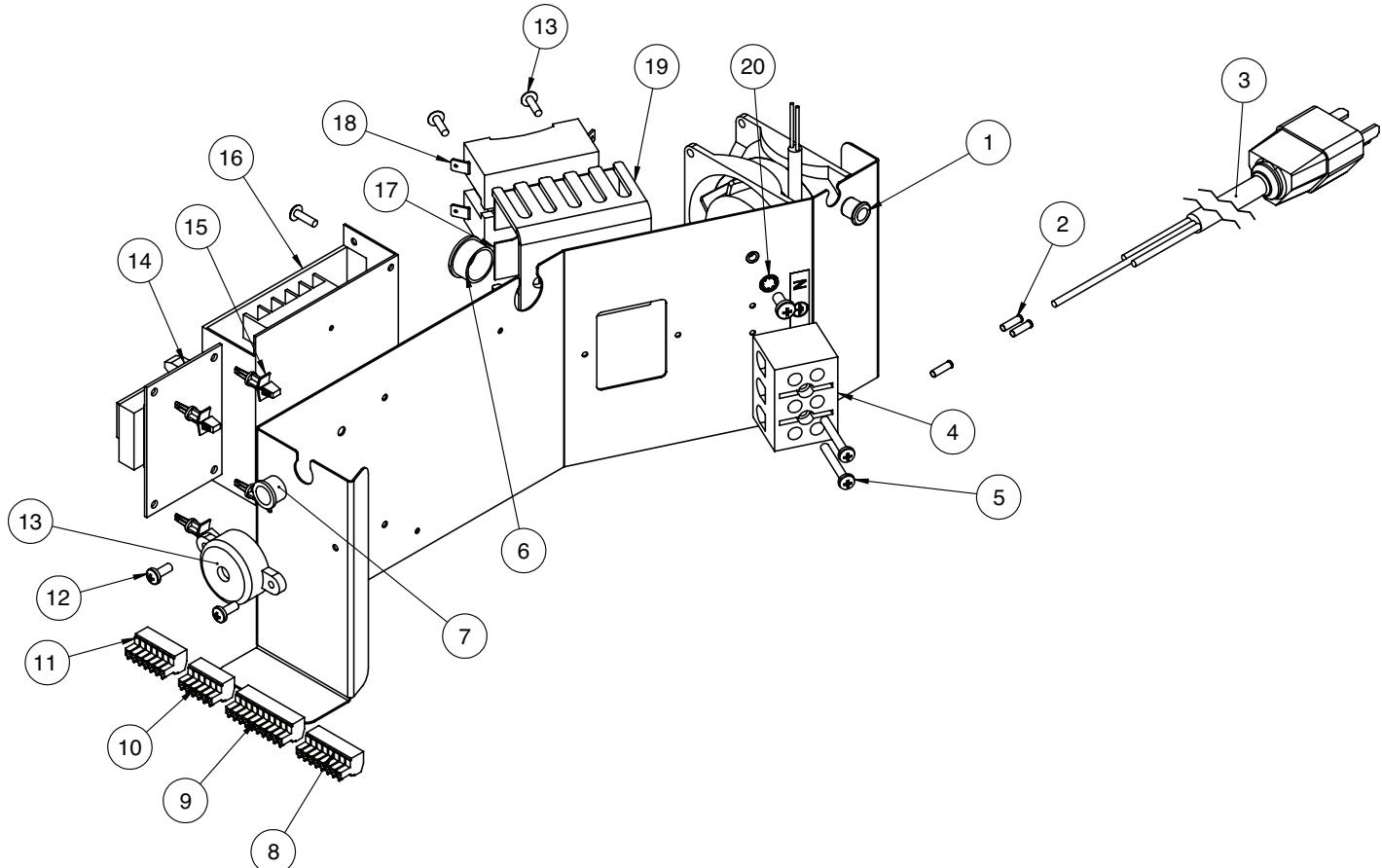
To prevent serious injury, death, or property damage, **always** disconnect the appliance from the power source before cleaning or servicing.

! DANGER



To prevent serious injury, death, or property damage, **always** lock-out or post breaker panel until service work has been completed.

Electronic Components - 500-TH-III



Part numbers and drawings are subject to change without notice.

Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	BUSHING, 3/8" BLACK HOLE	BU-3419	1	9	CONNECTOR, 10 PIN	CR-33717	1
2	CONNECTOR, #12 FERRULE	CR-34830	3	10	CONNECTOR, 7 PIN	CR-33762	1
3	CORDSET 120V (NEMA 5-20)	CD-3397	1	11	CONNECTOR, 8 PIN	CR-33761	1
	230V (CEE 7/7)	CD-3922	1	12	SCREW, 6-32 x 1/2" NC PHIL TRUSS	SC-2472	6
	230V (CH2-16P)	CD-36231	1	13	BEEPER	BP-3567	1
	230V (BS1363)	CD-33925	1	14	BOARD, VOLTAGE MONITOR	BA-33764	1
	230V (AS/NZS 3112)	CD-38149	1	15	SPACER, LOCK MOUNT	SP-33832	4
4	T-BLOCK	BK-3019	1	16	BOARD, POWER SUPPLY	BA-38586	1
5	SCREW, 6-32 x 1-1/4" ROUND HD	SC-2365	2	17	HEATSINK	HE-33926	1
6	BUSHING, 3/4" HOLE	BU-3008	1	18	RELAY	RL-33829	1
7	BUSHING, 1/2" HOLE	BU-3006	1	19	HEATSINK, BASE	1014450	1
8	CONNECTOR, 6 PIN	CR-33719	1	20	STAR LOCK WASHER	WS-2467	1

WARNING

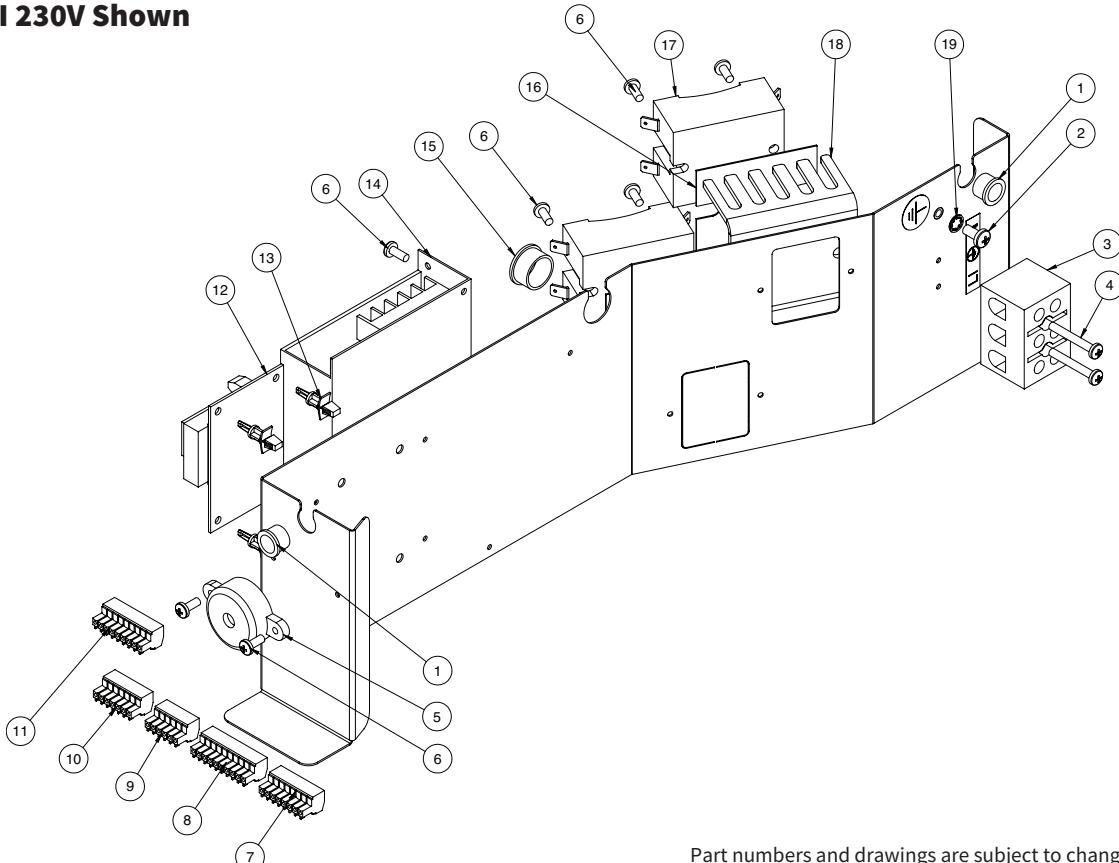

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DANGER


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Electronic Components - 750, 1000, 1200-TH-III

1200-TH-III 230V Shown



Part numbers and drawings are subject to change without notice.

Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	BUSHING, 1/2" HOLE	BU-3006	1	15	BUSHING, 3/4" WHITE SNAP	BU-3008	1
2	SCREW, M5 x 0.8 x 10mm PAN	SC-22766	1	16	HEATSINK PAD	HE-33926	1**
3	T-BLOCK	BK-3019	1	17	RELAY	RL-33829	1**
4	SCREW, M4 x 0.7 x 30mm PAN	SC-29276	2	18	HEAT SINK, SSR BASE	1014450	1**
5	BEEPER	BP-3567	1	19	STAR LOCK WASHER	WS-2467	1
6	SCREW, M4 x 0.7 x 10mm PAN	SC-22273	8	20*	CORDSET 230V (CEE 7/7)	CD-3397	1
7	CONNECTOR, 6 PIN	CR-33719	1		230V (CH2-16P)	CD-3922	1
8	CONNECTOR, 10 PIN	CR-33717	1		230V (BS1363)	CD-36231	1
9	CONNECTOR, 7 PIN	CR-33762	1		230V (AS/NZS 3112)	CD-33925	1
10	CONNECTOR, 8 PIN	CR-33761	1		CONNECTOR, #12 FERRULE	CD-38149	1
11	CONNECTOR, 9 PIN, 1200-TH-III ONLY	CR-33718	1	21*	RELAY SERVICE KIT - 1 COMPARTMENT TH/III	CR-34830	3
12	BOARD, VOLTAGE MONITOR	BA-33764	1	22*	RELAY SERVICE KIT - 2 COMPARTMENT TH/III	5016623	1
13	SPACER, LOCK MOUNT	SP-33832	4			5016625	1
14	BOARD, POWER SUPPLY	BA-38586	1				

**per compartment * not shown

WARNING



To prevent serious injury, death, or property damage, **always** disconnect the appliance from the power source before cleaning or servicing.

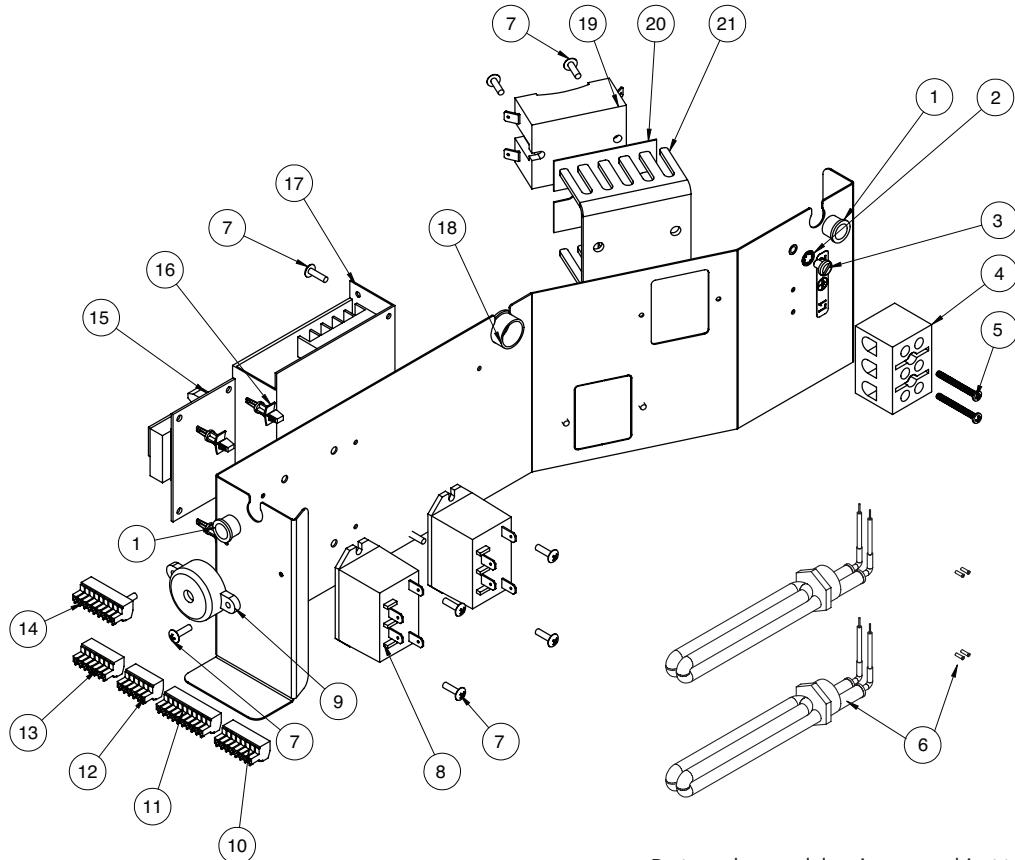
DANGER



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Electronic Components - 767, 1000, 1200, 1767-SK-III

1767-SK-III 208-240V Shown



Part numbers and drawings are subject to change without notice.

Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	BUSHING, 1/2" HOLE	BU-3006	1	16	SPACER, LOCK MOUNT	SP-33832	4
2	STAR LOCK WASHER	WS-2467	1	17	BOARD, POWER SUPPLY	BA-38586	1
3	SCREW, 10-32 x 1/4" PAN HD GROUND	SC-2190	1	18	BUSHING, 3/8" WHITE SNAP	BU-3008	1
4	T-BLOCK	BK-3019	1	19	RELAY, SPST 30A @ 277 VAC 12VDC	RL-33558	1**
5	SCREW, 6-32 x 1-1/4" ROUND HD	SC-2365	2	20	HEATSINK PAD, RELAY	HE-33926	1**
6	SMOKER ELEMENT KIT	5025683	1**	21	HEAT SINK, SSR BASE	1014450	1**
7	SCREW, 6-32 x 1/2, PHIL TRUSS	SC-2472	12	22*	CORDSET 120V (NEMA 5-20)	CD-3397	1
8	RELAY, 230V, 25A	RL-33829	1**		230V (CEE 7/7)	CD-3922	1
9	BEEPER	BP-3567	1		230V (CH2-16P)	CD-36231	1
10	CONNECTOR, 6 PIN	CR-33719	1		230V (BS1363)	CD-33925	1
11	CONNECTOR, 10 PIN	CR-33717	1		230V (AS/NZS 3112)	CD-38149	1
12	CONNECTOR, 7 PIN	CR-33762	1	23*	CONNECTOR, #12 FERRULE	CD-34830	3
13	CONNECTOR, 8 PIN	CR-33761	1	24*	SERVICE KIT - 1 COMPARTMENT SK/III	5016624	1
14	CONNECTOR, 9 PIN	CR-33718	1		SERVICE KIT - 2 COMPARTMENT SK/III	5016626	1
15	BOARD, VOLTAGE MONITOR	BA-33764	1				

**per compartment * not shown

! WARNING



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! DANGER



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Cable Heating Kits

Cable Heating Kit > (one kit required per cavity)		#4880 (500)	#4881 (750, 1000, 1200, 1767)	#4880 UK ONLY (1200) 4900W
Item	Description	Qty	Qty	Qty
CB-3045	CABLE HEATING ELEMENT	134 ft.	210 ft.	134 ft.
CR-3226	RING CONNECTOR	4	12	4
IN-3488	INSULATION CORNER	1 ft.	1 ft.	1 ft.
BU-3105	SHOULDER BUSHING	4	12	4
BU-3106	CUP BUSHING	4	12	4
ST-2439	STUD	4	12	4
NU-2215	HEX NUT	8	24	8
SL-3063	INSULATING SLEEVE	4	12	4
TA-3540	ELECTRICAL TAPE	1 ROLL	1 ROLL	1 ROLL

⚠ WARNING



To prevent serious injury, death, or property damage, **always** disconnect the appliance from the power source before cleaning or servicing.

⚠ DANGER

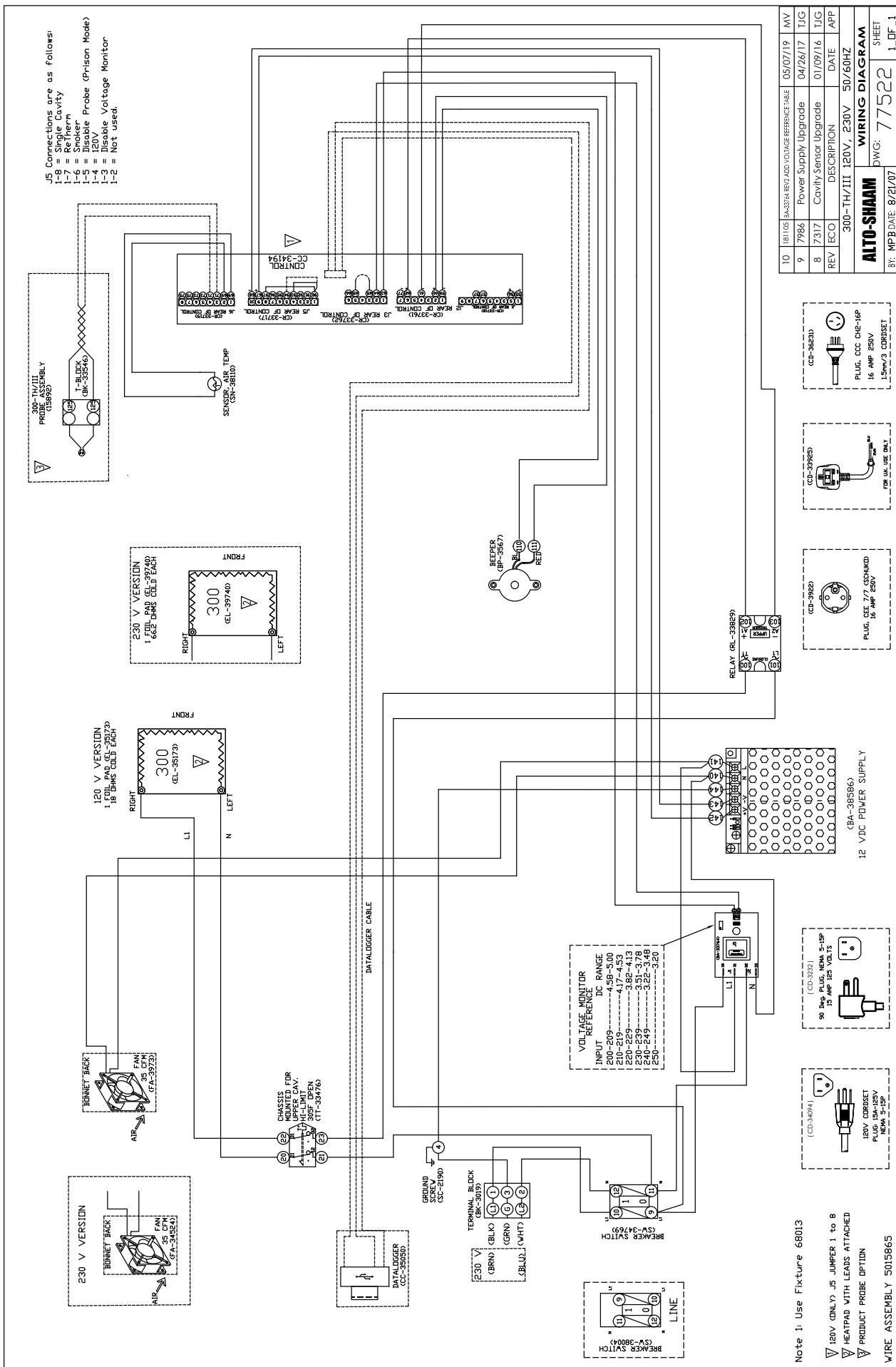


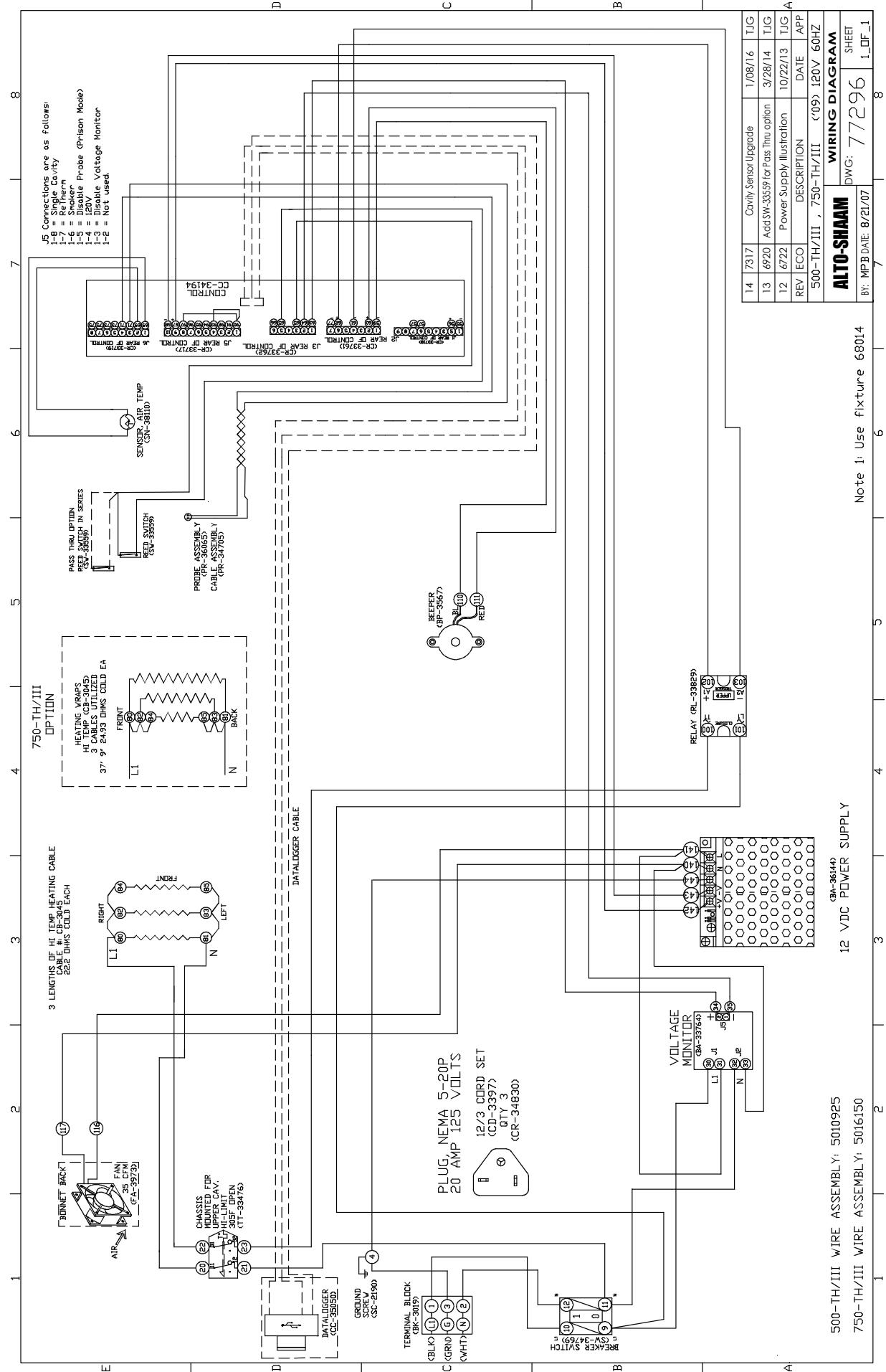
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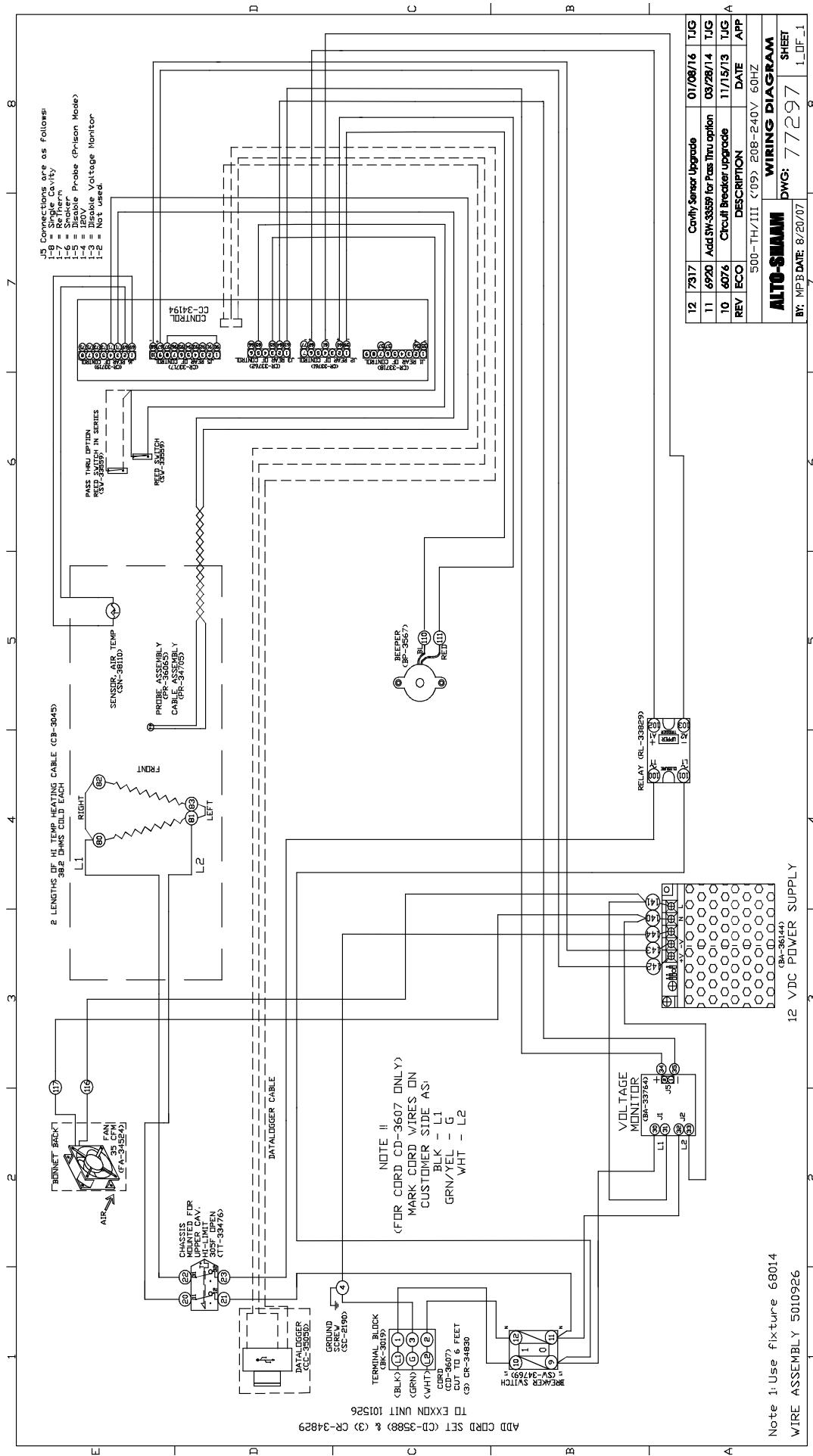
HACCP Data Logger (option)

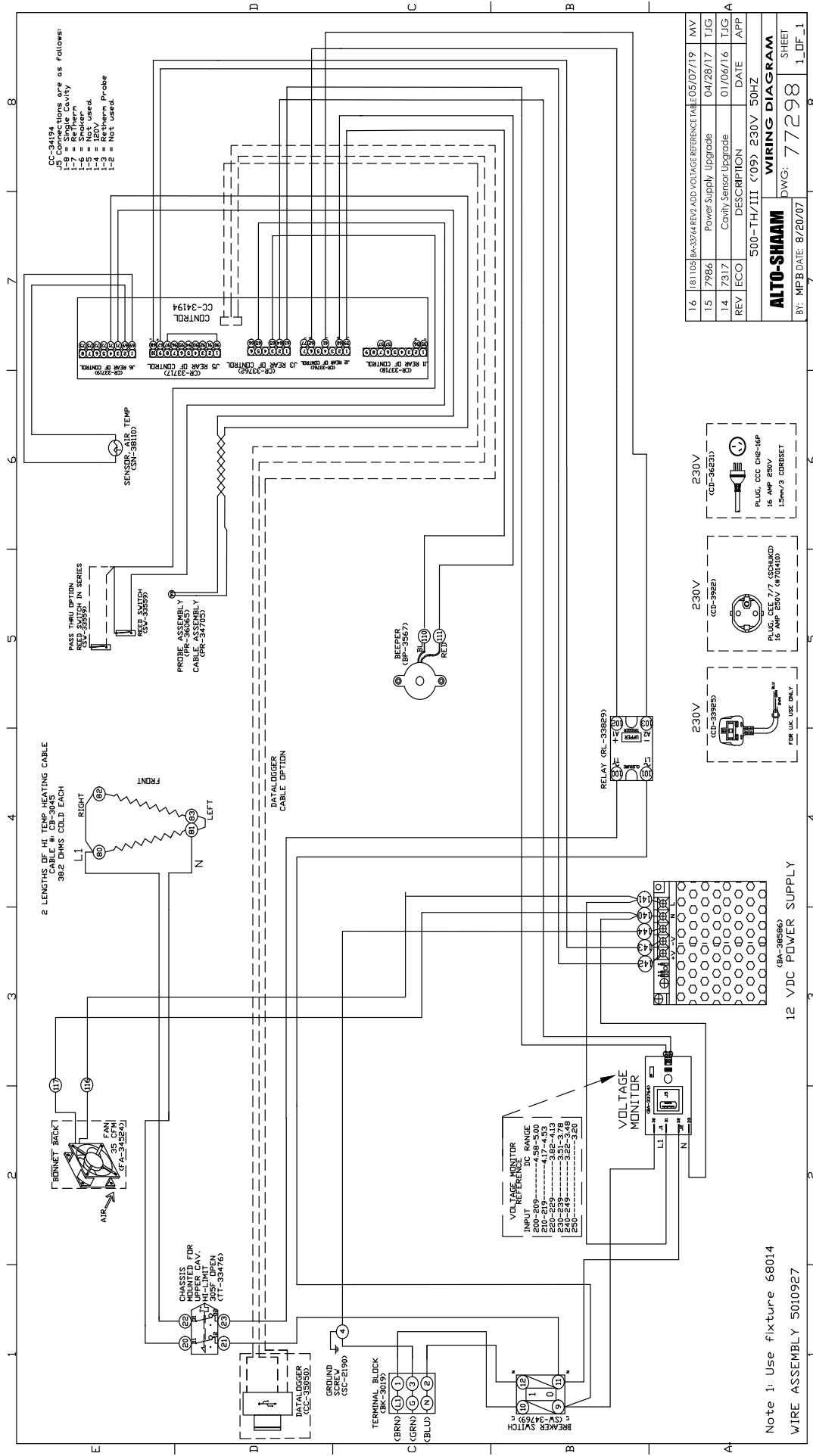
Item	Description	Qty
5015562	HACCP DATA LOGGER, RETRO-FIT KIT	1
CC-37264	— HACCP DATA LOGGER*	1
5014750	HACCP PACKAGE WITH USB PORT	1
CB-34893	— CAP, WATERPROOF USB SHIELDED	1
CB-34894	— CABLE USB WATERPROOF SHIELDED	1

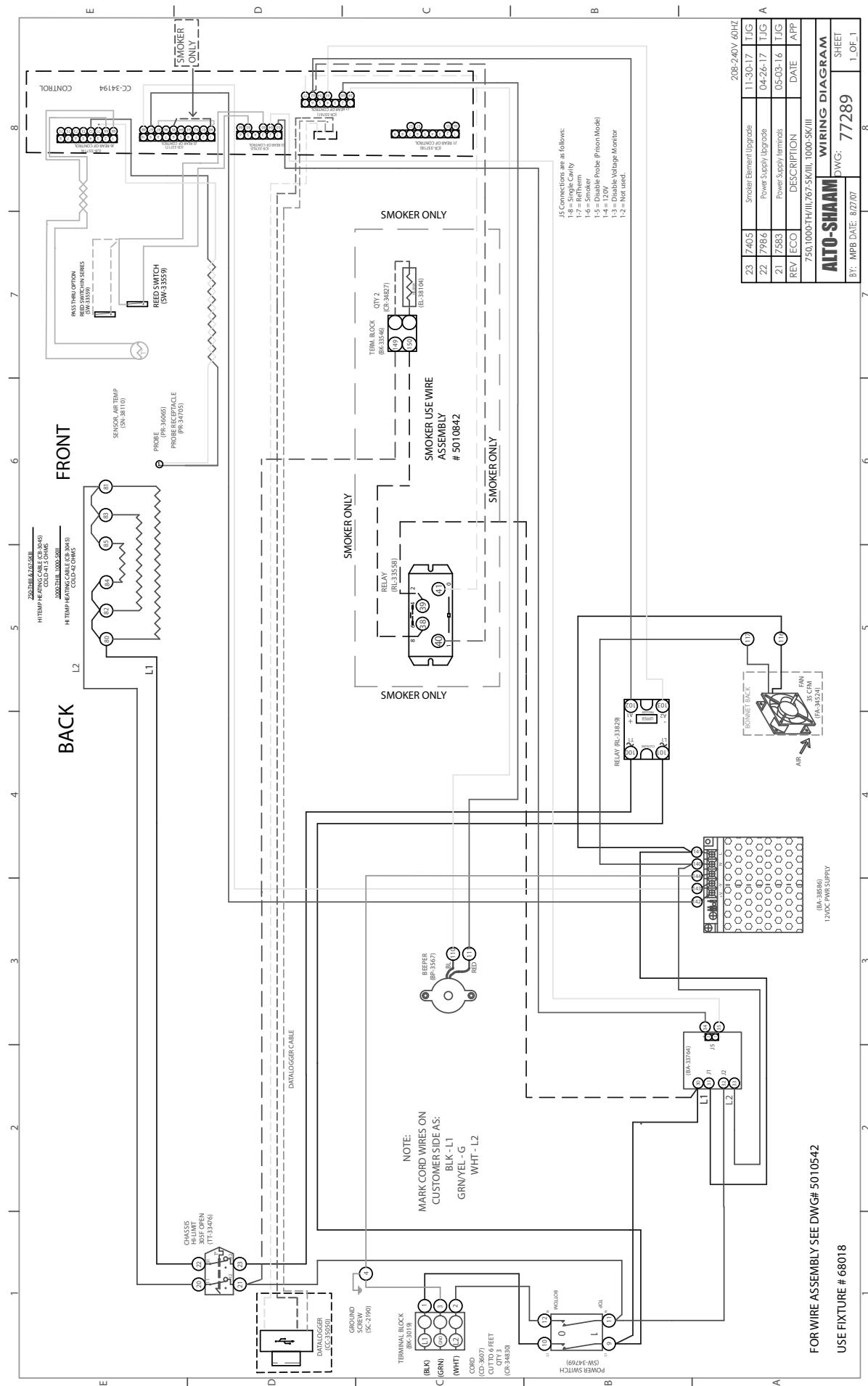
* CC-37264 may be ordered as a separate item for units that already have the Data Logger Kit installed.

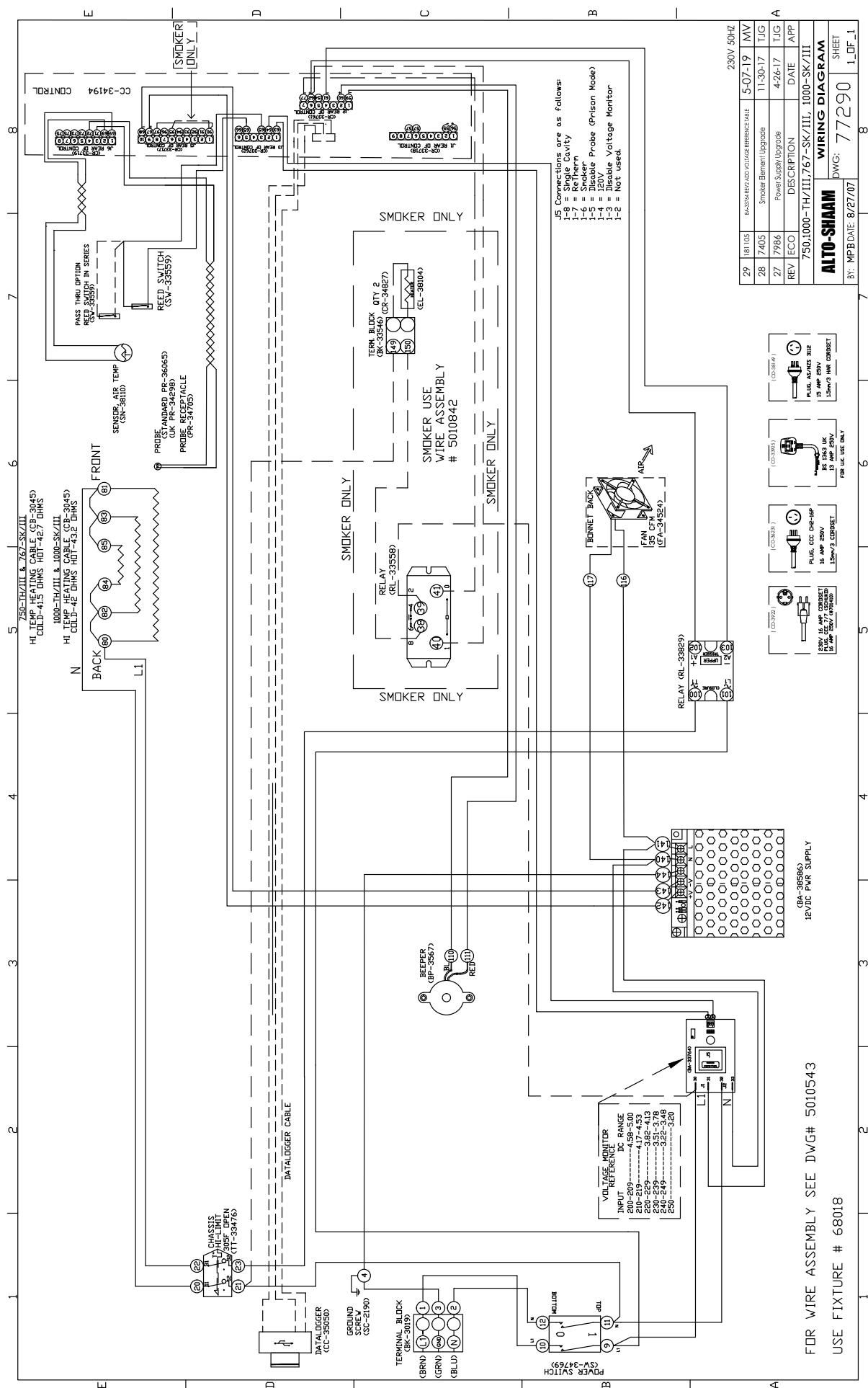


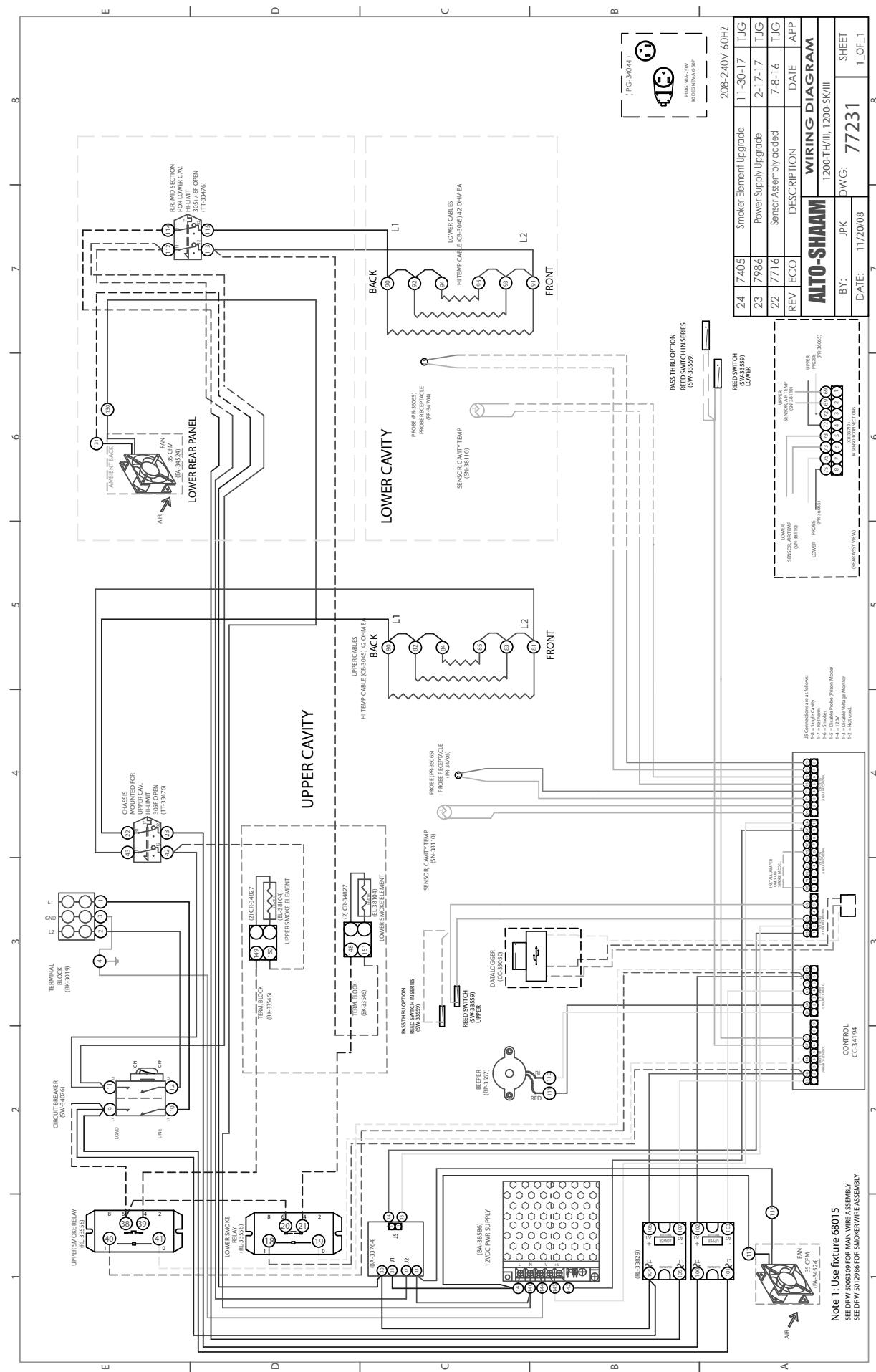


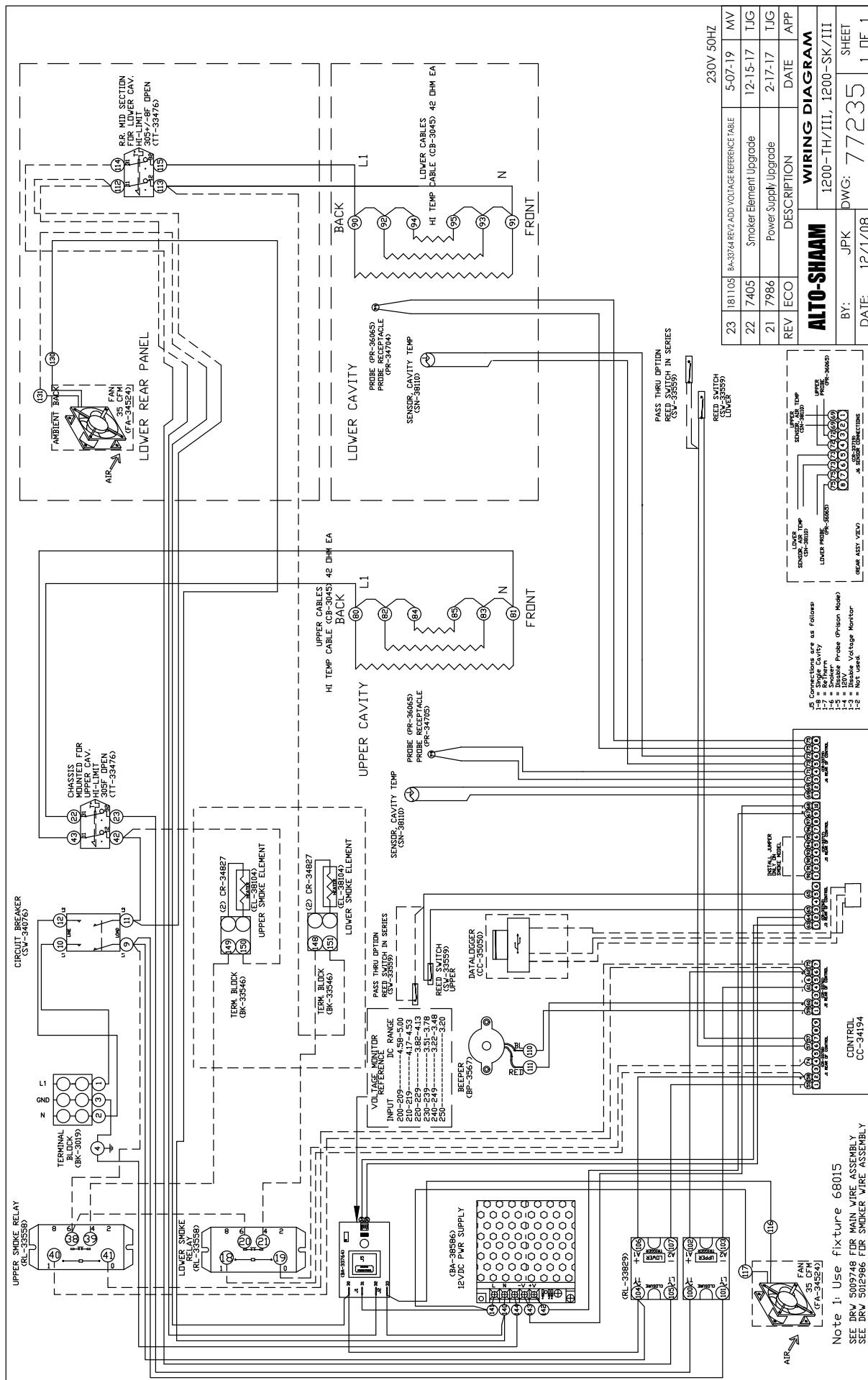


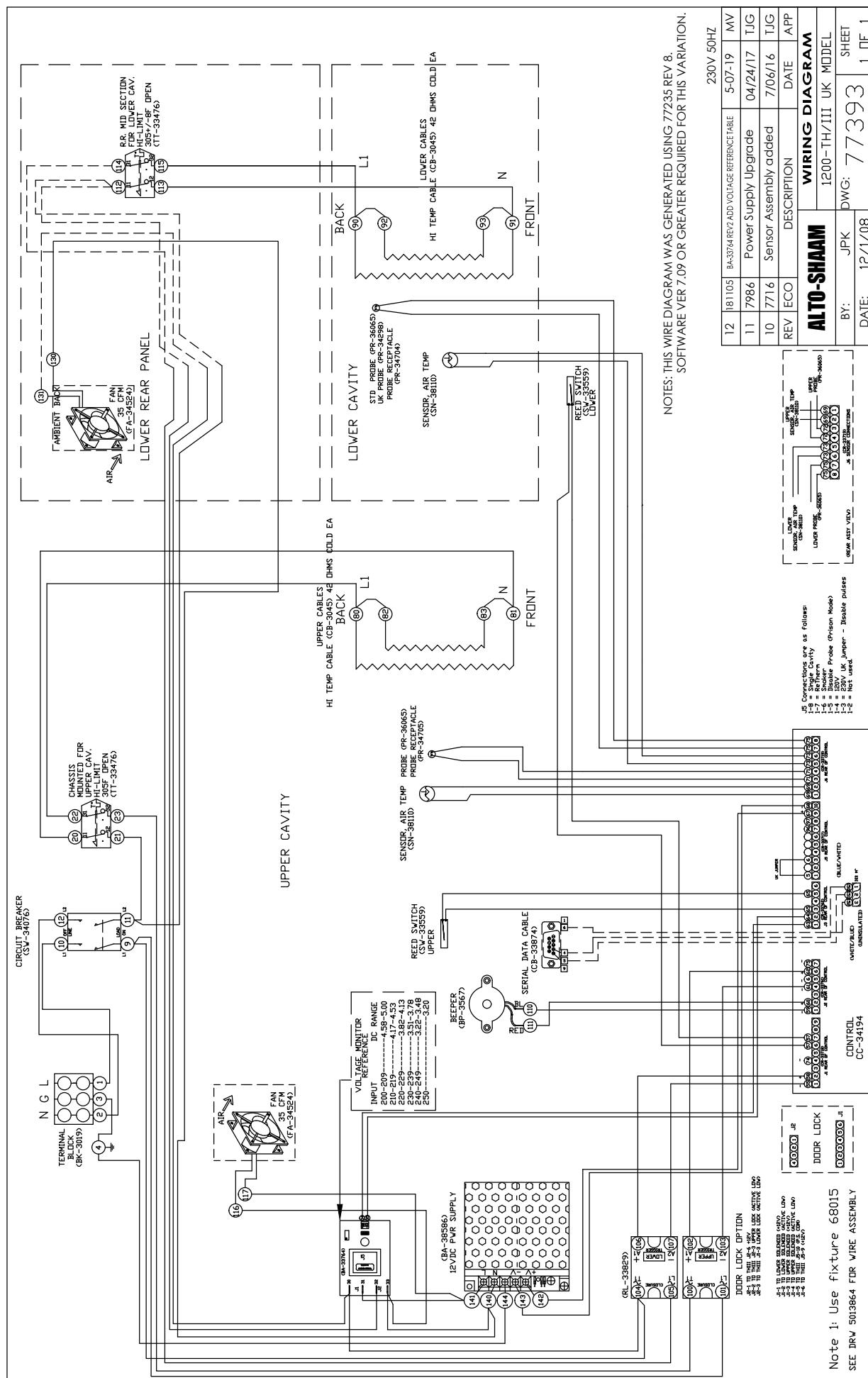




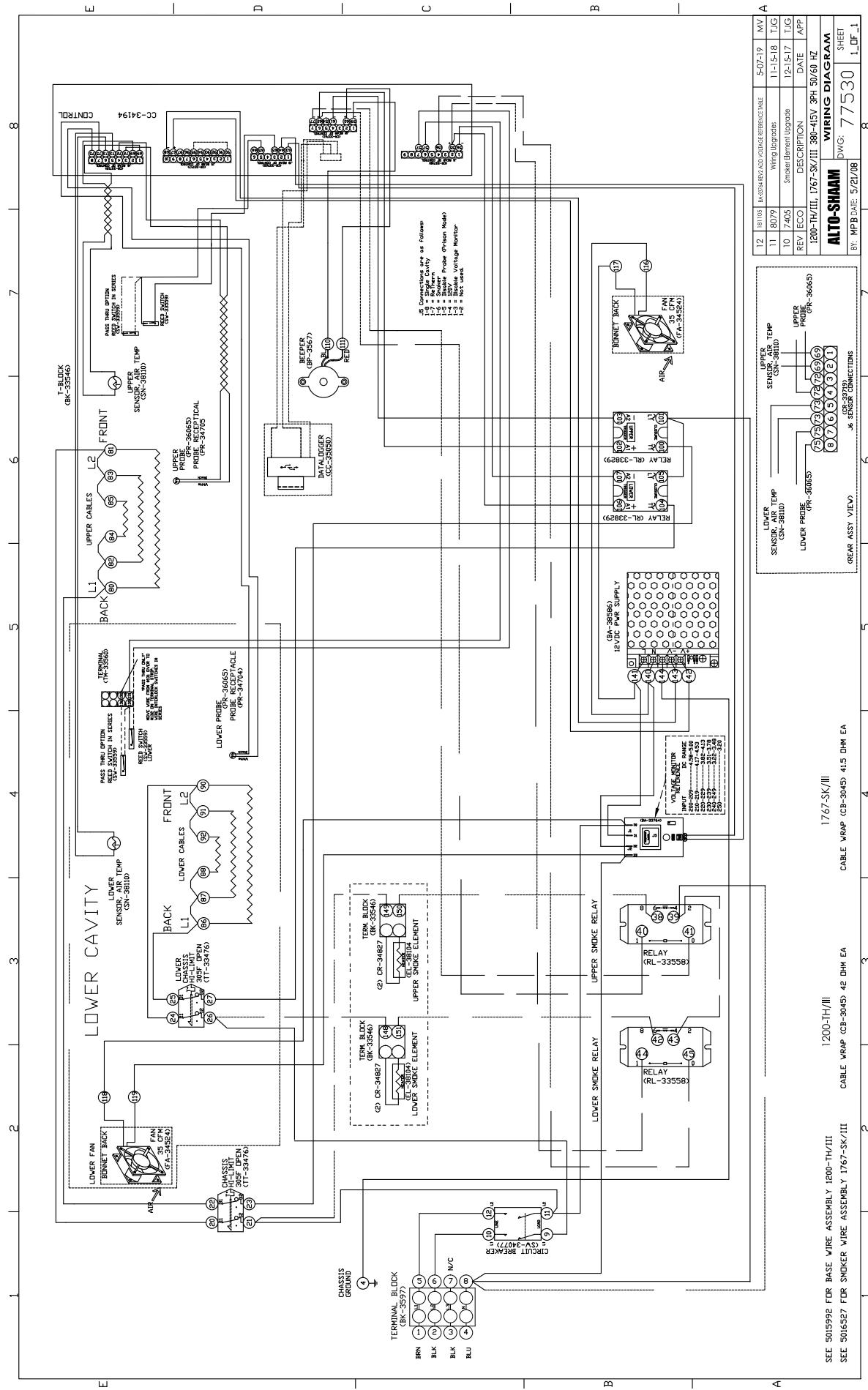


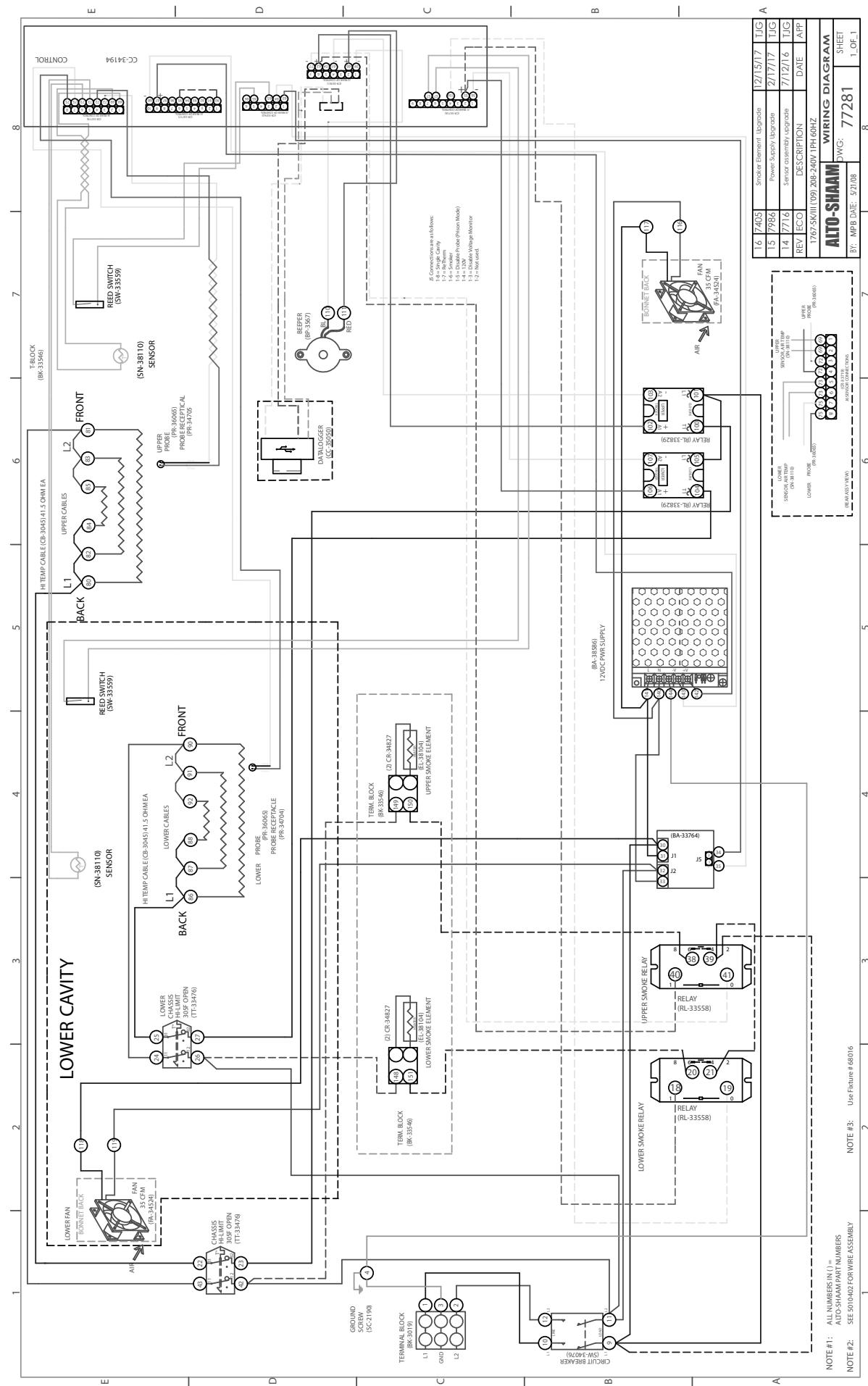


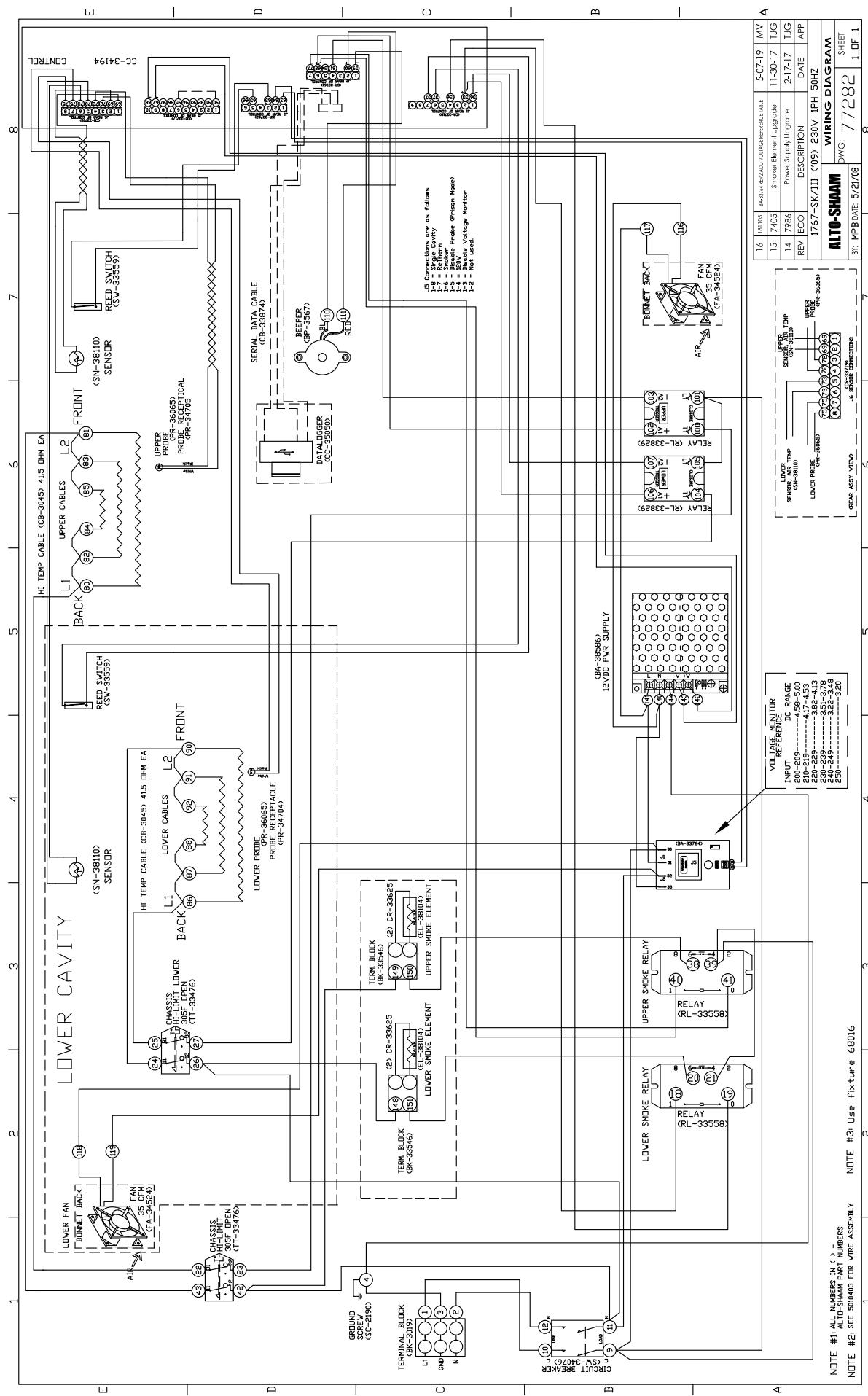




MN-29758 • Rev 13 • 05/19 • TH-III and SK-III Series Cook, Hold, Smoke







Introduction	Alto-Shaam, Inc. warrants to the original purchaser only, that any original part found to be defective in material or workmanship will be replaced with a new or rebuilt part at Alto-Shaam's option, subject to provisions hereinafter stated.
Warranty Period	<p>The original parts warranty period is as follows:</p> <ul style="list-style-type: none">For all other original parts, one (1) year from the date of installation of appliance 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.For the refrigeration compressor, if installed, the warranty period is five (5) years from the date of original installation of the appliance.For heating elements on Halo Heat® Cook and Hold ovens, the warranty period is for as long as the original owner owns the oven. This warranty period applies to units sold after 2/1/2009 and excludes holding-only ovens.To be valid, a warranty claim must be asserted during the applicable warranty period. This warranty is not transferable.
Exclusions	<p>This warranty does not apply to:</p> <ul style="list-style-type: none">Calibration.Replacement of light bulbs, rubber gaskets, grease filters, air filters, racks, jet plates, and/or the replacement of glass due to damage of any kind.Equipment damage caused by accident, shipping, improper installation or alteration.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.Equipment damage caused by use of any cleaning agents other than those recommended by Alto-Shaam, including but not limited to damage due to chlorine or other harmful chemicals.Any losses or damage resulting from malfunction, including loss of food product, revenue, or consequential or incidental damages of any kind.Equipment modified in any manner from original model, substitution of parts other than factory authorized parts, unauthorized removal of any parts including legs, or unauthorized addition of any parts.Equipment damage incurred as a direct result of poor water quality*, inadequate maintenance of steam generators and/or surfaces affected by water. Water quality and required maintenance of steam generating equipment is the responsibility of the owner/operator.Equipment damage incurred as a result of not following the required maintenance schedule published in the manuals for the equipment.

Conclusion 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. 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.

**Refer to the product spec sheet for water quality standards.*