ALTO SHAAM®

OPERATION and CARE MANUAL

pictured with optional motor drive system

HOT FOOD DELIVERY SYSTEM

MODEL: 1300-DCH/40

1300-DCH/48

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

HALO HEAT® COOK/HOLD/SERVE SYSTEMS

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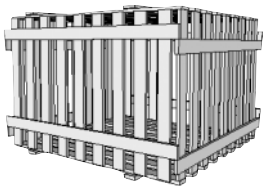
RECEIVING and UNPACKING

The Alto-Shaam Delivery Cart has been thoroughly tested, checked for calibration, and inspected to insure only the highest quality cart is provided. When you receive your cart, 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.



If the Delivery Cart was not received from the carrier in an upright position but appears to be undamaged, carefully restore the unit to the correct position as soon as possible.

Remove uncrated unit from the skid with a lift-truck or roll it off the skid by means of a temporary ramp provided in the crate.

CAUTION: If a lift-truck is used to remove the Delivery Cart from the skid, caution should be used to avoid damage to the drive motor assembly located beneath the unit.

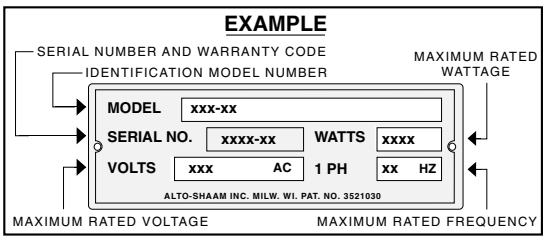
The cart is complete with accessories. Check to insure that all the accessories ordered have been received with the unit.

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

NOTE: Any claims for warranty must include the full model number and serial number of the cart.

ELECTRICAL INSTALLATION

1. Insure that the voltage stamped on the nameplate matches the available power source. An identification tag is permanently mounted on the cart.



2. This unit is provided with an electrical power cord.
3. The electrical outlets used for the Delivery Cart must be properly grounded in accordance with the National Electrical Code and applicable local codes. For further details, please refer to the appropriate electrical wiring diagram.
4. Before plugging the unit in or disconnecting from the power source, make certain all thermostats are in "OFF" position. The unit power switches are located on the control panel.

ENSURE POWER SOURCE MATCHES VOLTAGE STAMPED ON UNIT NAMEPLATE

SYSTEM DESCRIPTION

Food quality and service are more important than ever in today's institutional food service market. Alto-Shaam recognizes this fact and developed the Delivery Cart using the highest quality stainless steel, insulating material, and the finest workmanship. This cart is a self-contained, complete hot meal delivery system. It is simple in concept and is designed to adapt to a completely new or to any existing institutional food service method of preparation.

The heat source for the hot compartments consist of a resistance wire element. This thermal cable element is wrapped in exact configurations against the walls of the heated compartments providing an evenly applied, highly controlled heat input. The design and operational characteristics of the cart provide even heat application and maintain the quality of hot foods for longer periods of time.

Through the best arrangement of the controls, operation of this appliance is simplified. The power switches will automatically energize all functions.

IMPORTANT SAFEGUARDS

- ✓Read this manual before operating the unit, and observe all safety precautions noted.
- ✓The Delivery Cart should be used for food preparation only.
- ✓For the best service, the unit should be level.
- ✓The Delivery Cart should not be operated in an enclosed area, exposed to excessive heat, steam, water, or any other adverse conditions.
- ✓Use caution to protect against the risk of electric shock when operating in the presence of water or other liquids.
- ✓Always move the unit to the workplace BEFORE connecting the power cord to the appropriate outlet.
- ✓If a motor drive is on the unit, always refer to the motor drive instructions BEFORE moving the cart.

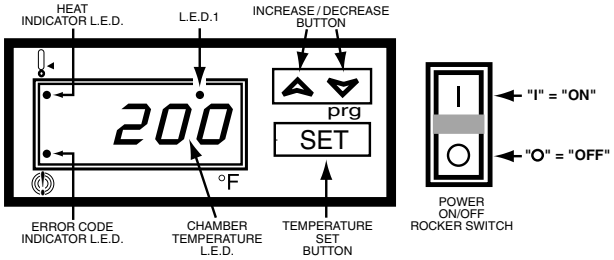
EXTENDED STORAGE & BATTERY CHARGING FOR MOTOR DRIVE UNIT OPTION

1. The cart contains rechargeable batteries that were fully charged prior to shipment. Failure to properly store the unit and charge the batteries will cause battery failure, and the battery warranty will become null and void.
2. Be sure to store the delivery cart in a cool and dry location. If the cart will not be activated for service within 30 days of receipt, the batteries must be charged by connecting the cord to electrical power for storage duration.
3. When removed from active service, the unit can remain continuously connected to power to maintain full battery charge. Be sure to turn the drive system power switch off when not in use.

START-UP and PREPARATION

1. Clean the cart thoroughly before using. Wipe exterior with a clean damp cloth. Clean interior, side racks, and trays with a mild soap solution and sanitize. Clean the door gaskets prior to use.
2. To install the side racks in the compartments, position the keyhole openings in the tray side racks over the shoulder bolts located on the sides of the interior oven compartments. Push down to lock the tray side racks into position. Insert drip spill pan directly on the bottom surface of each oven compartment.

Thermostat Control and LED



VIEW or CHANGE HOLDING TEMPERATURE....

1. Push the SET button once. The set point value (current holding temperature) will be displayed for 5 seconds.

2. This temperature can be changed by pressing and holding the SET button for at least 3 seconds. The programming mode becomes active and the LED1 indicator light will blink. Press and hold the UP or DOWN arrow keys to change the value shown in the display. This value can be stored by pressing the SET button again. The new set temperature will flash three times to confirm. The minimum set point temperature is 90°F (32°C) while the maximum set point temperature is 200°F (93°C).

START-UP....

1. Connect the power cord into an appropriate power outlet. NOTE: *If the optional retractable cord is on the unit (for minimal wear to the cord) pull and release the retractable cord horizontally, not vertically or slanted, guiding it gently back into its receptacle.*

2. Close the compartment vents located on the inside of each compartment door.

3. Press the power switch ON for the appropriate compartment. The heat indicator light will illuminate and remain lit while the unit is calling for heat. The digital display will indicate air temperature of the heated compartment. The heat indicator light will go out when the air temperature inside the unit reaches the temperature set on the electronic thermostat.

HOLD....

1. Preheat the empty compartments (without trays) at 200° F (93°C) for approximately one hour.

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

3. Load covered plates, bowls and service trays into appropriate compartments. Plates, bowls and covers should be heat resistant. Load assembled trays into preheated cart as quickly as possible to maintain maximum heat.

4. Securely close the doors of the cart after loading trays. When loading or unloading individual heated compartments, the doors to the other compartments should remain closed.

5. After the cart has been completely filled with product, check to make certain the doors are securely closed, and reset the thermostat to 180°F (82°C).

6. The proper temperature range for the products being held, and whether or not the door vents should be opened or closed, will depend on the type and quantity of product. When holding food for prolonged periods, it is advisable to periodically check the internal temperature of each item with a food thermometer to assure maintenance of the proper temperature range of 140° to 160°F (60° to 71°C).

DELIVERY....

1. Transport the cart to the designated service area. Before moving the cart, turn power switch OFF. Disconnect power cord from the outlet and return **properly** to its receptacle. Upon reaching the service area, plug the power cord into an appropriate outlet and turn power switches ON. Foods will be automatically maintained at proper serving temperatures throughout the service period.

2. Unload covered plates or trays as needed for meal service. When unloading one compartment of the cart, the doors to the remaining compartments should remain closed in order to retain maximum heat. For best service all meals should be served in a timely manner. Following meal service, press the power switches OFF and return power cord properly to its receptacle.

3. Transport cart to designated cleaning areas. Clean cart and trays after each meal service. Follow care and cleaning guidelines located in this manual.

4. The motor drive brake must be engaged at all times unless it becomes necessary to move the cart manually. After moving the cart manually, the wheels of the cart and the motor drive assembly will respond to even a slight incline unless the break is reset. Maintaining a "set" break to keep the cart in a stationary position is an important safety factor.

For proper sanitation, do not put soiled trays back into the cart until all meals are served.

Use hand protection when handling hot compartment items

SANITATION GUIDELINES

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

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

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

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

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

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

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

Most food-borne illnesses can be prevented through proper temperature control and a comprehensive program of sanitation. Both these factors are important to build quality service as the foundation of customer satisfaction. Safe food-handling practices to prevent food-borne illness is of critical importance to the health and safety of your customers. HACCP, an acronym for Hazard Analysis (at) Critical Control Points, is a quality control program of operating procedures to assure food integrity, quality, and safety. Taking steps necessary to augment food safety practices are both cost effective and relatively simple. While HACCP guidelines go far beyond the scope of this manual, additional information is available by contacting the USDA/FDA Food-borne Illness Education Information Center at (301) 504-6803.

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.

In an enclosed holding environment, too much moisture content is a condition which can be relieved. A product achieving extremely high temperatures in preparation must be allowed to decrease in temperature before being placed in a controlled holding atmosphere. If the product is not allowed to decrease in temperature, excessive condensation will form increasing the moisture content on the outside of the product. If the unit is equipped with vents, close the vents for moist holding and open the vents for crisp holding.

Use a metal-stemmed indicating thermometer to measure the internal temperature of the product(s) being held. Adjust the thermostat setting to achieve the best overall setting based on internal product temperature.

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

THE HOLDING TEMPERATURES LISTED ARE SUGGESTED GUIDELINES ONLY.

CARE and CLEANING

The cleanliness and appearance of this equipment will contribute considerably to operating efficiency and savory, appetizing food. Good equipment that is kept clean works better and lasts longer. A comprehensive program of sanitation will provide essential cleanliness. It will assure an attractive appearance of the equipment, along with maximum efficiency and utility. All these factors are important to build quality service as the foundation of patient satisfaction.

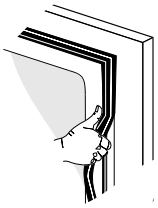
Disconnect the food delivery cart from the power source before cleaning or servicing.

1. Wipe the power cord clean if necessary, and return properly to its appropriate receptacle. Let the unit cool.

2. Remove all trays and side racks. Wash these items in the dishwasher or in hot soapy water. Let dry.

3. Clean all interior compartments after each meal service. Any spilled food should be removed with a damp cloth and any good alkaline or alkaline chlorinated based commercial detergent or grease solvent at the recommended strength. Use a plastic scouring pad or oven cleaner for difficult areas. Avoid the use of abrasive cleaning compounds, chloride based cleaners, or cleaners containing quaternary salts. Rinse well to remove all residue and wipe dry.

4. All delivery cart door gaskets are removable. To maintain a good door seal and to extend the life of the gaskets, periodically wash the gaskets with warm sudsy water. Always rinse well to remove all soap or detergent residue.



5. 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 the cloth and wipe with the grain of the stainless steel.
   NOTE: Never use hydrochloric acid (muriatic acid) on stainless steel.

Do not steam clean the exterior or interior of the unit. Use caution to prevent flooding the exterior, particularly the electrical control panel and motor areas. Severe damage or electrical hazard could result, voiding the warranty.

6. In the event the delivery cart is out of operation for an extended period of time, thoroughly clean and sanitize the cart and clean the door gaskets prior to use.

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

TIRE MAINTENANCE

Tire pressure requires periodic checking. Add air as required to maintain a pressure level not to exceed 60 pounds per square inch (4 bars).

INITIAL BATTERY CHARGE

The battery life expectancy(for the optional motor drive) is about two years and once fully charged, will hold its charge approximately four hours.

Before putting the delivery cart into service, the motor drive batteries must be fully charged. Move the delivery cart to the designated work area and connect the unit to the power source for a minimum of 12 hours prior to use.

The brake on the motor drive must be engaged at all times unless it becomes necessary to manually push the cart. (See section titled Motor Drive Control for more information.)

HEATING ELEMENTS

Continuity of the cable heating elements should be checked with an ohm meter from each element to ground. There should be no continuity to ground. If there is continuity to ground, replace the shorted element.

Check the resistance of each cavity separately. Cable resistance is approximately .66 ohms/foot (305mm). The resistance for each cavity should measure between 65 and 70 ohms. If the element resistance is very high or low, replace the defective length of element.

If only one length of cable requires replacement, check the other elements for signs of deterioration and replace at the same time.

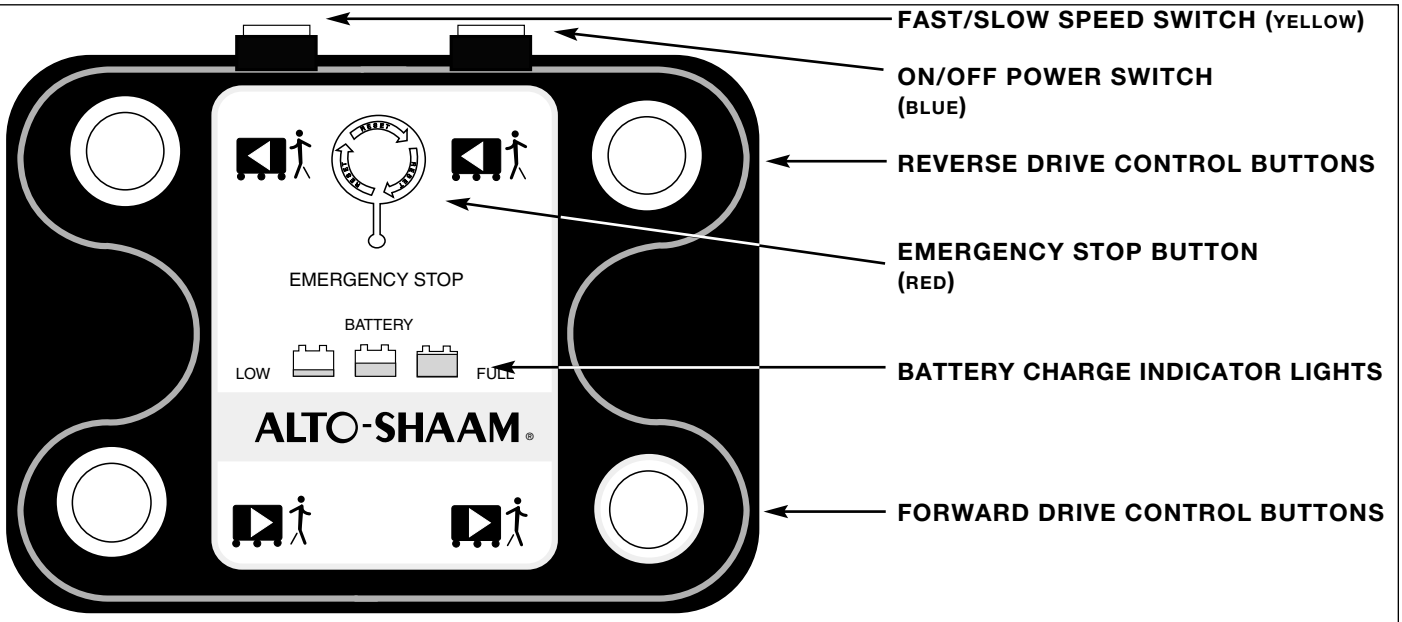
DOOR ADJUSTMENT

The doors on all compartments of the delivery cart have been adjusted at the factory to provide a proper seal. Routine maintenance of the delivery cart should include a periodic examination of the door gasket to make certain a good seal is maintained. Proper adjustment can be tested by pulling a dollar bill through the gasket seal and feeling a slight resistance.

Minor adjustment to the doors is made at the hinges in one direction -- IN and OUT. There is no need to adjust the doors up-and-down, or side-to-side.

For in-and-out adjustment, loosen the three (3) screws holding the plate to the door hinge. Move the door OUTWARD to LOOSEN the gasket seal or INWARD to TIGHTEN the gasket seal. The adjustment faces are grooved so that movement is fixed when the screws are retightened. Adjust the hinges so that the door face and the unit face are parallel, and the portion of the gasket at the hinge-side does not bind when the door closes. Following adjustment, retest for proper seal as indicated above.

OPERATION • MOTOR DRIVE CONTROL • OPTION



MOTOR DRIVE CONTROL

A two-speed Motor Drive Control is located at both ends of the cart to propel the unit in both forward and reverse. Slow speed is 0.9 mph (1.4 km/hr) and fast speed is 1.9 mph (3.1 km/hr).

ON/OFF POWER SWITCH

The ON/OFF power switch (BLUE) controls the Motor Drive Control and is located at the top of the drive control housing at one end of the cart only. To engage the drive control press the ON/OFF power switch to the "ON" position. Allow 2 to 3 seconds for control to initialize before using Forward/Reverse Control buttons.

FAST/SLOW SPEED SWITCH

The yellow FAST/SLOW speed switch is located left of the ON/OFF Power Switch. To engage Fast Speed, depress the yellow switch – the switch will illuminate. For best results, start in Slow Speed. The cart will accelerate to speed within 3 to 4 seconds. Once cart is moving – engage Fast Speed. This will minimize cart "surge".

REVERSE DRIVE CONTROL BUTTONS

The reverse drive control buttons are located toward the top of the drive control housing. Pressing either of these buttons will move the cart in reverse or away from the operator.

EMERGENCY STOP BUTTON

When pushed, the red emergency stop button completely disengages the motor drive control and will immediately halt all cart movement. To restore motor drive function, turn and release the emergency stop button in a clockwise direction.

BATTERY INDICATOR LIGHTS

When the motor drive control switch is in the "ON" position, a battery light will illuminate indicating the condition of the battery charge: RED, low; YELLOW, medium; or GREEN, full. To recharge the battery when indicating a medium or low charge, connect the cart to the power source until the charge is restored (one hour minimum). If battery charge is insufficient to maintain the cart through the service period or while en route, the motor drive assembly brake must be released and the cart manually moved to a power source. (SEE SECTION TITLED *MOTOR DRIVE* FOR DETAILED INSTRUCTIONS.)

FORWARD DRIVE CONTROL BUTTONS

The forward drive control buttons are located toward the bottom of the drive control housing. Pressing either of these buttons will move the cart forward or toward the operator.

MOTION BEEPER

There is an audible signal whenever the drive control is engaged in either a forward or reverse motion.

IMPORTANT

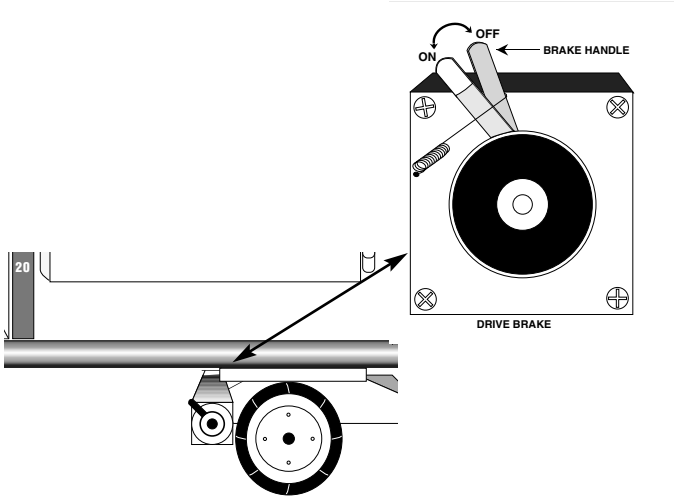
FOR THE SAFEST METHOD OF OPERATION, A CART OPERATOR SHOULD ALWAYS BE POSITIONED AT THE FRONT OF THE CART IN WHICHEVER DIRECTION THE CART IS MOVING.

CAUTION

AS A SAFETY PRECAUTION DO NOT GUIDE CART FROM THE BACK. GUIDE THE UNIT TO DESTINATION BY PULLING FROM EITHER END OF THE CART.

To keep drive batteries fully charged, the cart must remain connected to the power source when not in service. Turn drive system power switch OFF when not in use.

MOTOR DRIVE BRAKE



IF DRIVE BATTERY LOSES CHARGE IN TRANSIT, DISENGAGE BRAKE

1. Move handle of brake clockwise to the OFF position. Turn Drive System Power Switch OFF.
2. Manually push the cart to an appropriate outlet and connect power cord for a minimum of 30 minutes. FOR A FULL CHARGE, CART MUST BE CONNECTED TO THE POWER SOURCE FOR A MINIMUM OF 1 HOUR.
3. Following recharge period, move brake handle counter-clockwise to the ON position.

To keep batteries fully charged, the cart must remain connected to the power source when not in service. Turn Drive System Power Switch OFF when not in use.

BATTERY CHARGER

The battery charger is located on the Motor Drive Assembly. The charger includes one bi-color indicator light to show the charging state of the battery.

A. The yellow light indicates the charger is in operation but the motor drive battery has not yet reached full charge.

B. A green light indicates the battery has reached full charge. Charger can operate indefinitely without harming the battery.

CART FREEWHEELING and DRIVE SAFETY FEATURES

To freewheel the cart manually, the Drive Power Switch must be OFF – then the Drive Brake must be placed in the OFF position. See Drive Brake Caution below. Restore the Drive Brake to the ON position upon freewheeling completion.

ALARM CONDITION No. 1

With the Drive Power Switch ON – and then the Drive Brake turned OFF – the drive unit provides dynamic braking (movement is possible, but difficult). If either Forward/Reverse Drive Control Buttons are depressed, the motion beeper will sound an alarm and the Drive Motor will not operate. To clear the alarm and restore operation, turn the Drive Brake ON.

ALARM CONDITION No. 2

If the Drive Power Switch and Drive Brake are both OFF – then the Drive Power Switch is turned ON, the motion beeper will sound an alarm and the drive motor will not operate. To clear the alarm and restore operation, turn the Drive Brake ON, then turn the Drive Power Switch OFF and then ON again.

ALARM CONDITION No. 3

If either Forward or Reverse Drive Control Button is depressed and the Drive Power Switch is turned ON, the motion beeper will sound an alarm and the drive motor will not operate - OR - if either Forward or Reverse Drive Control Button is depressed immediately after the Drive Power Switch is turned on, the motion beeper will sound an alarm and the drive motor will not operate.

ALARM CONDITION No. 4

If the cart power cord is connected to power and then the Drive Power Switch is turned ON, the motion beeper will sound an alarm, the green "full" battery indicator light will flash, and the drive motor will not operate. To clear the alarm and restore operation, disconnect the cart power cord from the power supply; turn the Drive Power Switch OFF for 5 seconds and then turn it ON again.

ALARM CONDITION No. 5

If the Drive Power Switch is ON, and the cart power cord is connected to power, the green "full" battery indicator light will flash. If either Forward/Reverse Drive Control Button(s) are depressed, the motion beeper will sound an alarm and the drive motor will not operate. To clear the alarm and restore operation, disconnect the cart power from the power source; turn the Drive Power Switch OFF for 5 seconds and then turn it ON again.

Drive Brake • Caution

The motor drive brake must be engaged at all times unless it becomes necessary to move the cart manually. After moving the cart manually, the wheels of the cart and the motor drive assembly will respond to even a slight incline unless the brake is reset. Maintaining a "set" brake to keep the cart in a stationary position is an important safety factor.

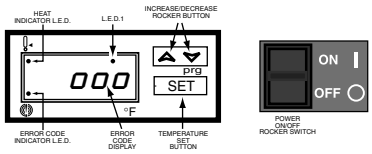
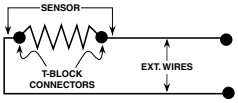
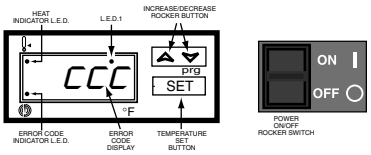
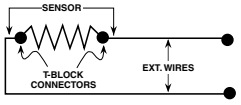
CAUTION

CAUTION

This chart is provided for the assistance of qualified technicians only and is not intended for use by untrained or unauthorized service personnel. If your unit is not operating properly, check the following before calling your authorized service agent. Check the power applied to the unit. Plug in outlet? Fuse OK?

Do not attempt to repair or service beyond this point. Contact manufacturer for nearest authorized service agent. Repairs made by any other service agent without prior authorization by manufacturer will void the warranty on the unit.

Trouble Shooting Guide

Error Code	Possible Cause	Action Required
Control displays "OOO". 	A.Sensor is open circuited. 	Detach the sensor from the terminal block. Use an Ohm meter to measure the resistance of the sensor. Check sensor at 32°F (0°C) using a container of ice water. If Ohm reading is 100, replace display. If Ohm reading is not 100, replace sensor.
	B. Associated wiring is open circuited.	Check wires for integrity. Check for proper and secure connections at the thermostat and terminal block. If necessary, re-secure the faulty connections.
	C. Control is faulty.	Energize system after the above steps have been completed. If control still reads "OOO", call service technician.
Control displays "CCC". 	A. Sensor is short circuited. 	Detach the sensor from the terminal block. Use an Ohm meter to measure the resistance of the sensor. Check sensor at 32°F (0°C) using a container of ice water. If Ohm reading is 100, replace display. If Ohm reading is not 100, replace sensor.
	B. Associated wiring is short circuited.	Check wires for integrity. Check for proper and secure connections at the thermostat and terminal block. If necessary, re-secure the faulty connections.
	C. Control is faulty.	Energize system after the above steps have been completed. If control still reads "CCC", call service technician.
Unit does not operate.	A. Insufficient power supply.	Check power source.
	B. Defective power cord or plug.	Check and replace if necessary.
No display in electronic control.	A. Faulty power supply board.	Check line voltage for 24V across pins 6 and 7 on the power supply board.
	B. Faulty electronic control.	Replace control.
Cannot control temperature but sensor and electronic control check OK.	A. Faulty relay.	Replace relay.
	B. Heating element sensor.	Replace element.,
Temperature readout incorrect.	A. Dirty or faulty sensor. B. Faulty control.	Detach the sensor from the terminal block. Use an Ohm meter to measure the resistance of the sensor. Check sensor at 32°F (0°C) using a container of ice water. If Ohm reading is 100, replace display. If Ohm reading is not 100, replace sensor.

CAUTION

Remember to disconnect unit from power source before servicing or cleaning.

At no time should the inside or outside of the cabinet be washed down, flooded with water or liquid solution. NEVER STEAM CLEAN. Severe damage or electrical hazard could result.

CAUTION

SERVICE PARTS LIST

4/01

1300-DCH

	PART DESCRIPTION	UNIT QUANTITY	ALTO-SHAAM PART NUMBER
1.	T-BLOCK, 4 SCREW	2	BK-3023
2.	HANDLE, CABINET '"U"	4	HD-22257
3.	SOCKET HEAD CAP SCREWS, 1/4-20 x 3/4	8	SC-22339
4.	BOX FAN, 230V	2	FA-3568
5.	HINGE, 1-3/8 OFFSET	8 PAIRS	HG-22338
6.	HANDLE, LOCKING, STANDARD	8	HD-2565
	HANDLE W/OFFSET, LOCKING, OPTIONAL	8	HD-24172
7.	BLOCK, SENSOR MOUNTING	4	BK-24427
8.	SENSOR, 1-3/4	4	SN-33541
9.	ROCKER SWITCH, ON/OFF	2	SW-33251
10.	TRANSFORMER	2	T-3935
11.	SENSOR GUARD	4	1496
12.	SWIVEL CASTER, WITHOUT BRAKE, 8" (203mm)		CS-22028
	SWIVEL CASTER, WITH BRAKE, 8 " (203mm)		CS-22029
	CASTER, RIGID, 8" (203mm)		CS-22030
13.	BUMPER W/INSERT, 16' (4877mm)	1	BM-22417
14.	SPADE CONNECTOR, DUAL 1/4	3	CR-3849
15.	BUSHING, 3/8" (9.5mm)	2	BU-3419
16.	BUSHING, 1/2" (13mm)	1	BU-3006
17.	HOLE PLUG, 3/4" (19mm)	5	PG-3398
18.	PANEL, UPPER OVERLAY	1	PE-24348
19.	PANEL, LOWER OVERLAY	1	PE-24349
20.	DOOR GASKET	8	GS-23409
21.	CORD, STANDARD	1	CD-33533
	RETRACTABLE CORD, OPTION	1	CD-3031
22.	SHELF DECAL, 1 TO 24	1	PE-22401
	SHELF DECAL, 25-48	1	PE-22699
	SHELF DECAL, 1 TO 20	1	PE-22399
	SHELF DECAL, 21-40	1	PE-22698
23.	MOTOR DRIVE, TWO SPEED, DUAL CONTROL	1	MO-33514
	MOTOR DRIVE, TWO SPEED, ONE CONTROL	1	MO-33515
24.	CERAMIC T-BLOCK	4	BK-33546
25.	DRIP TRAY	4	11977
26.	MENU CARD HOLDER	2	12285
27.	C° THERMOSTAT	4	TT-33564
	F° THERMOSTAT	4	TT-33563
28.	RELAY	4	RL-3736
29.	FUSE, 1 AMP	4	FU-33097
30.	SIDERACK STUD	32	ST-2546
31.	END CASING	2	13129
32.	SIDE RACK (40 CAPACITY) (DOMESTIC)	8	14322
	SIDE RACK (40 CAPACITY) (INTL)	8	12208
	SIDE RACK (48 CAPACITY) (DOMESTIC)	8	12211
	SIDE RACK (48 CAPACITY) (INTL)	8	16199

4/01

Two-Speed Drive Option Assembly Components

Description	Part No.
Charger	CH-33524
Handle Assembly "A" ON/OFF, SLOW/FAST	HD-33525
Illuminated Switch, YELLOW, SLOW/FAST	SW-33526
Emergency Stop Switch	SW-33032
Push button "Motion" Switch, WHITE, FORWARD/REVERSE	SW-33527
ON/OFF Switch - BLUE	SW-33029
Handle Assembly "B" (**no** On/OFF)	HD-33529
Control Board for Handle Assembly A & B	BA-33636
Handle Assembly "C" EMERGENCY STOP ONLY	HD-33530
Grip Handle	HD-22257
Circuit Breaker - 30 Amp	CI-33531
Fuse, 2A	FU-33627
Brake Assembly	BR-33628
Main Control Module	CC-33532
Battery (two required)	BE-3889
Drive Motor	MO-33576
Differential with motor/brake/wheels	DI-33629
Differential only	DI-33630
Wheel and Tire Assembly	WH-3896
Key, Wheel/Shaft Lock	LK-33633
Tire, rubber	WH-33631
Inner Tube for Tire	WH-33632
Horn, Sound Generator	HN-3898

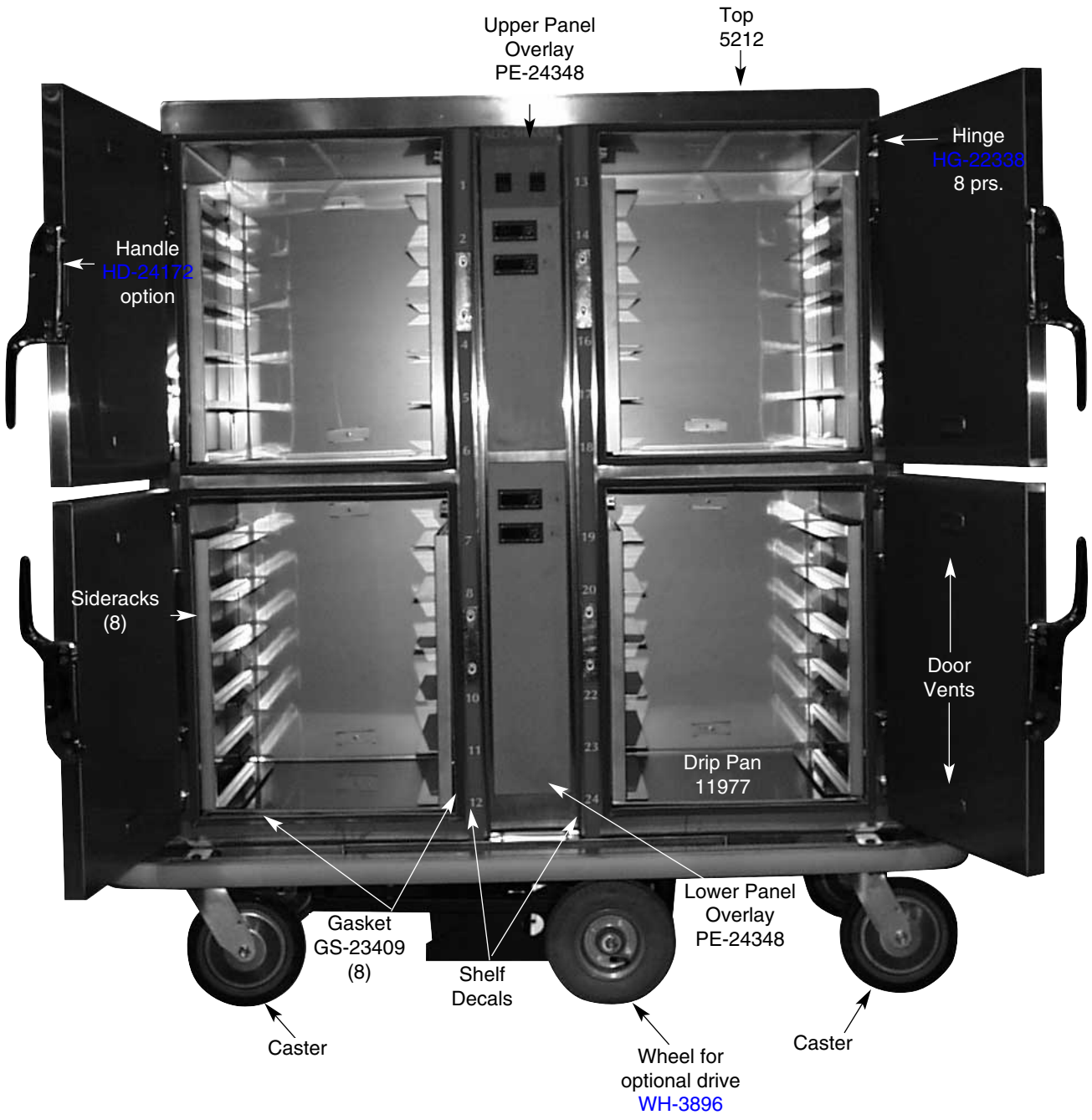
Always disconnect the food delivery cart from the power source before cleaning or servicing.

Cable Heating Service Kit . . . . . No. 4879

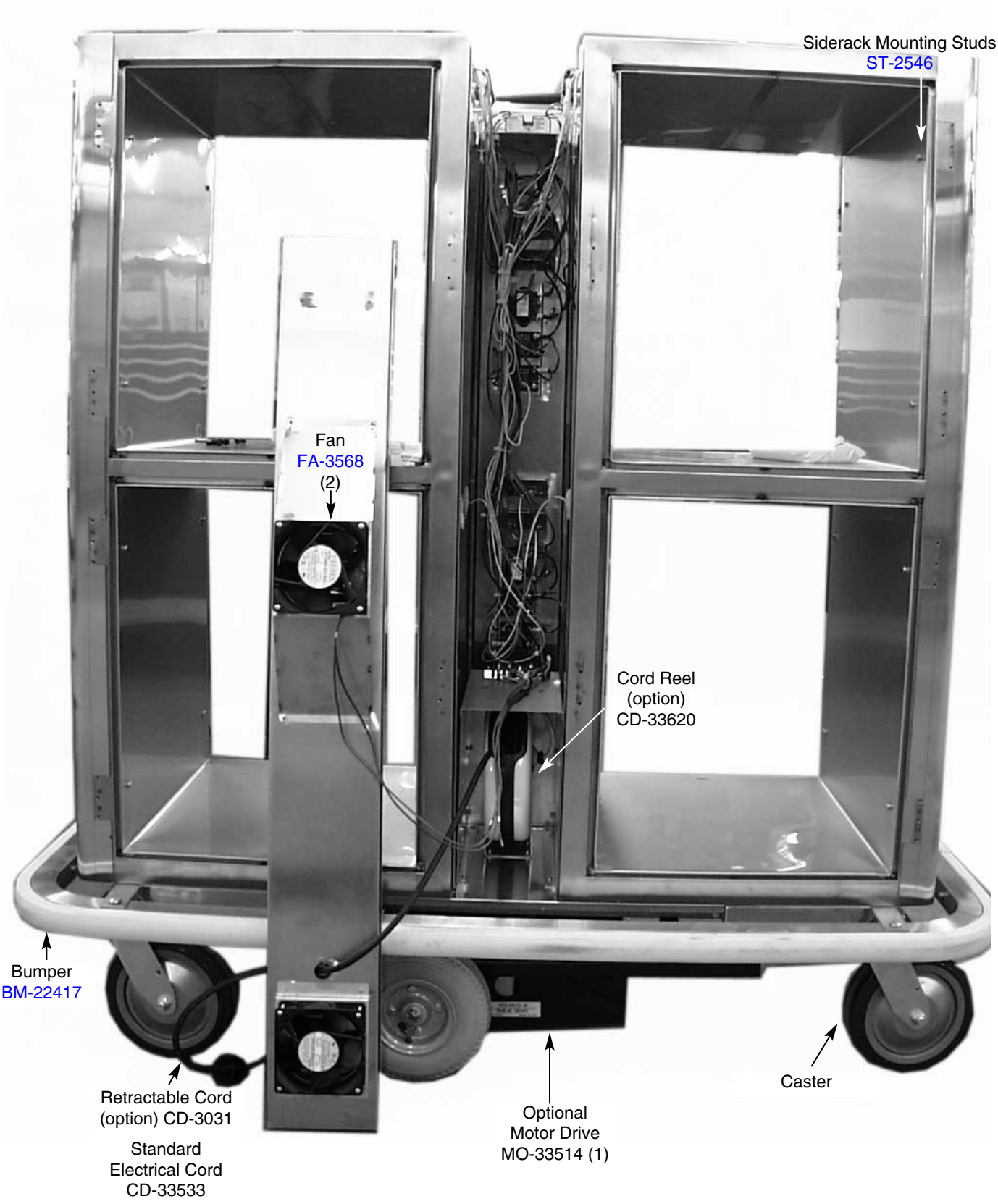
includes:

CB-3045	Cable Heating Element	102 feet
CR-3226	Ring Connector	6
IN-3488	Insulation Corner	1 foot
BU-3105	Shoulder Bushing	6
BU-3106	Cup Bushing	6
SL-3063	Insulating Sleeve	6
TA-3540	High Temperature Tape	1 roll
ST-2439	Stud, 10/32	6
NU-2215	Hex Nut	12

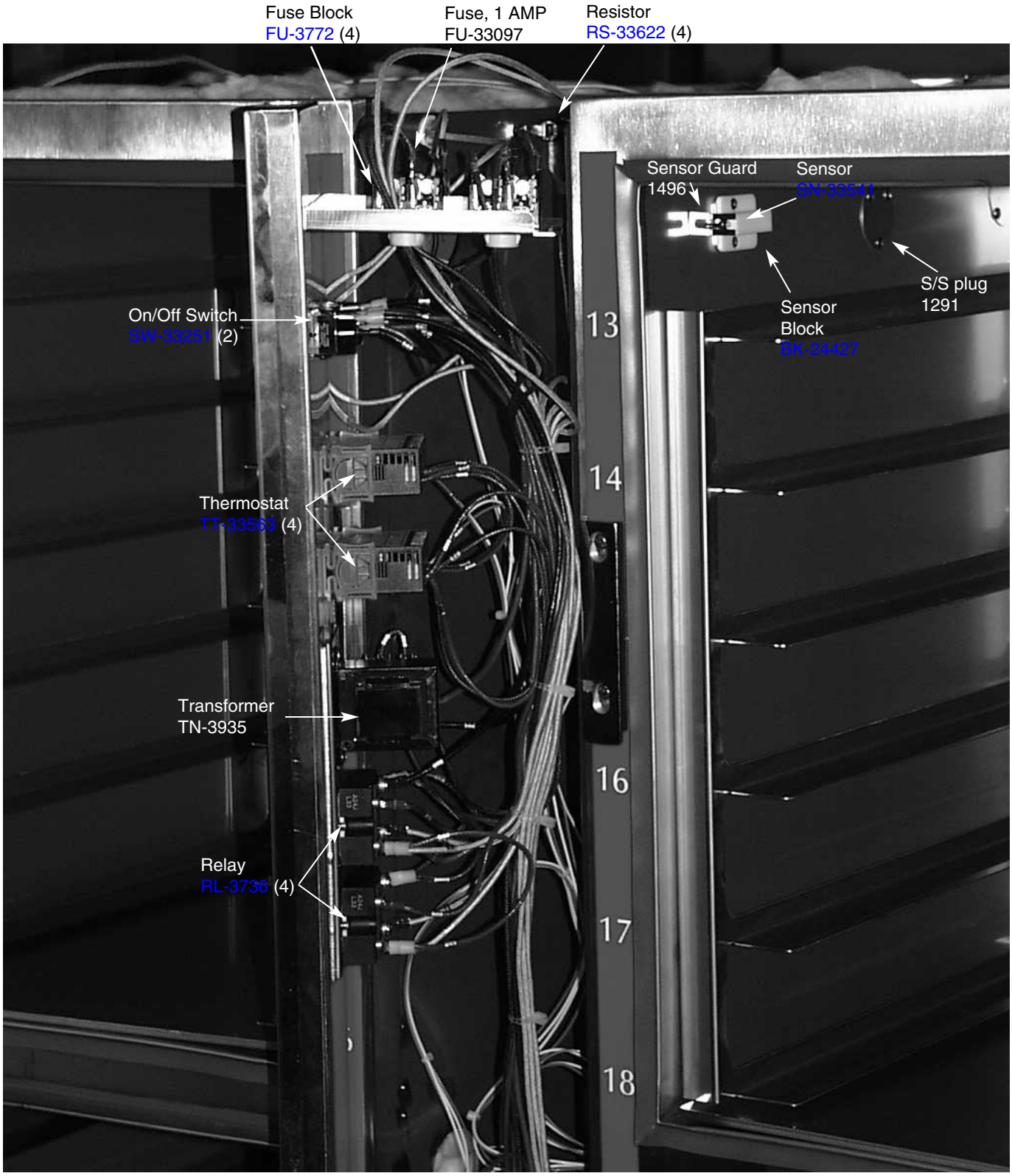
1300-DCH Hot Food Delivery Cart
pictured with optional motorized drive and retractable cord



1300-DCH • Hot Food Delivery Cart • Internal Service View
pictured with optional motorized drive and retractable cord

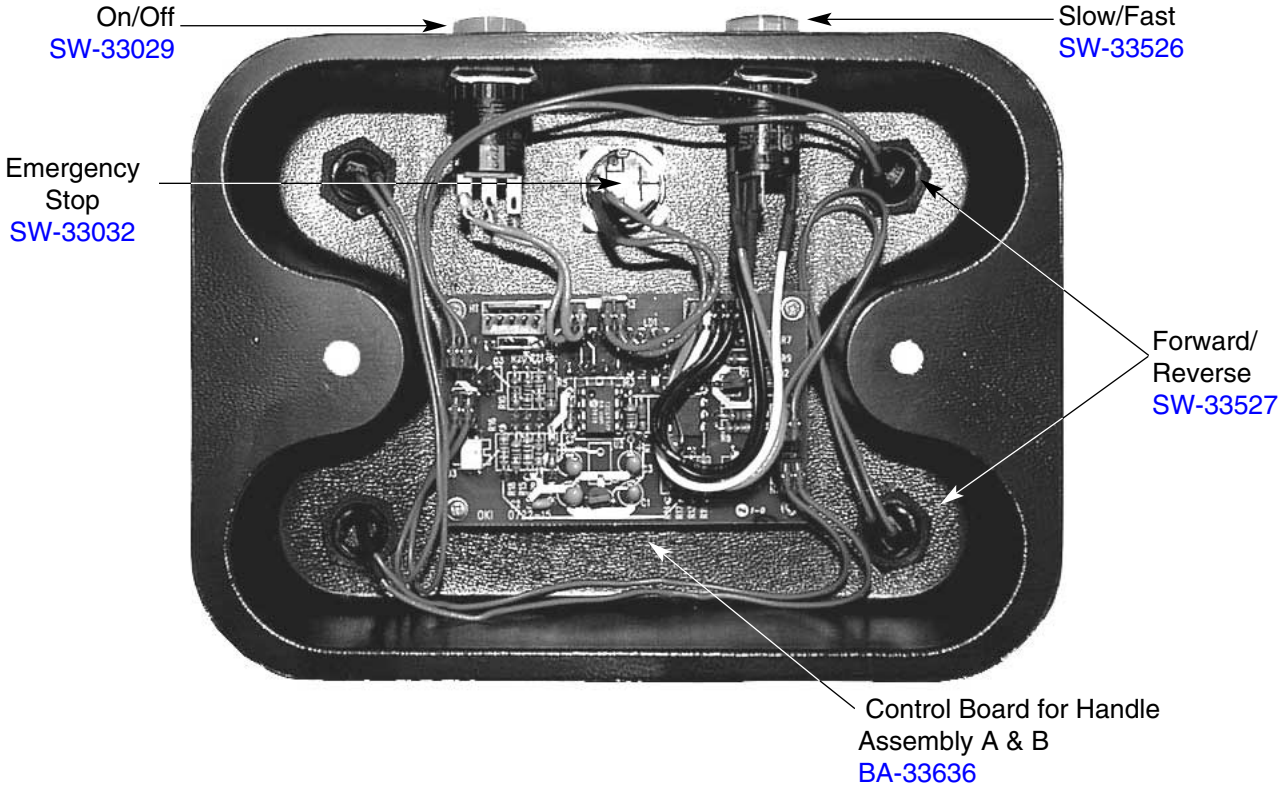


1300-DCH • Hot Food Delivery Cart • Internal Service View



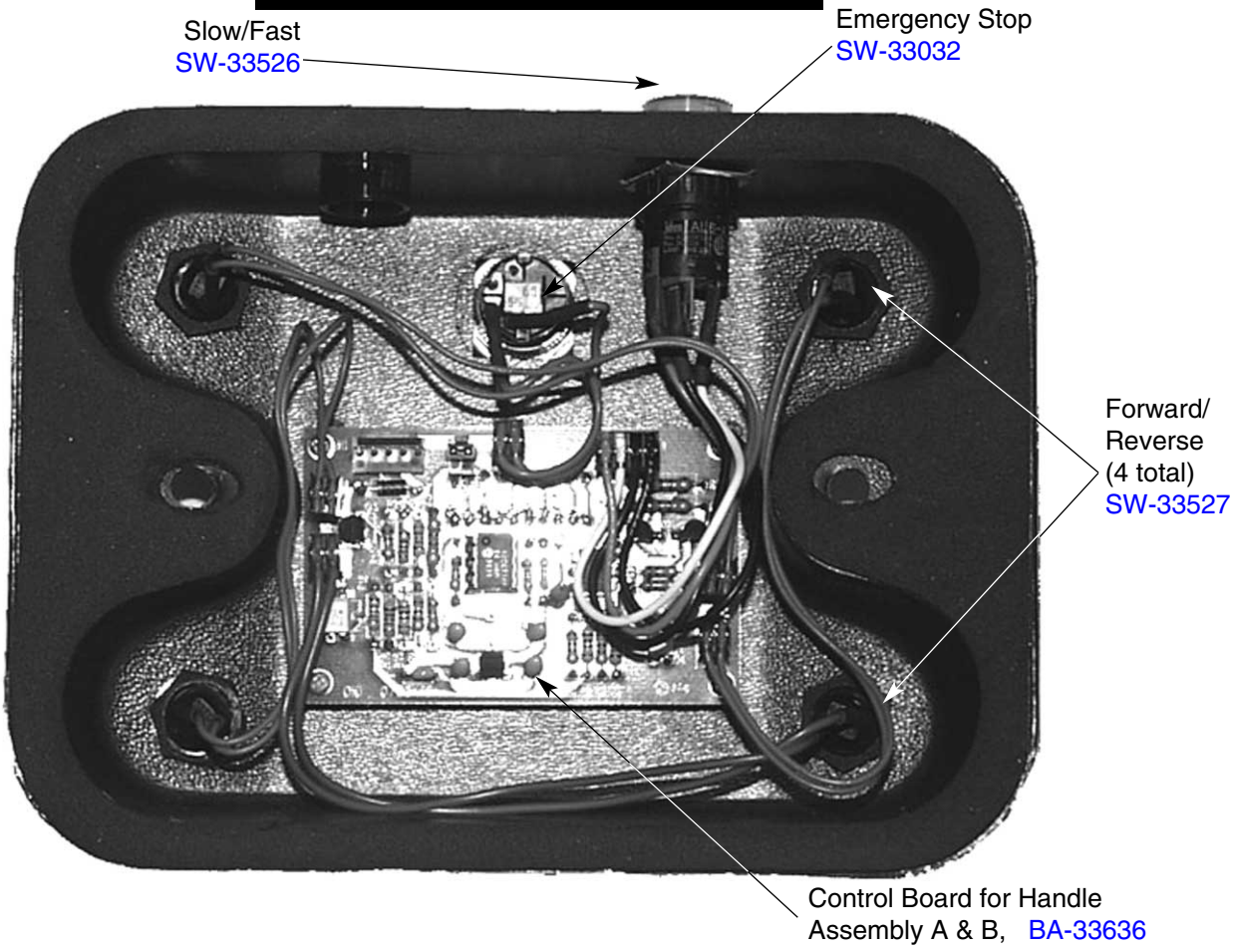
MOTOR DRIVE SYSTEM (option)

HANDLE 'A' ASSEMBLY
HD-33525
Front & Rear View

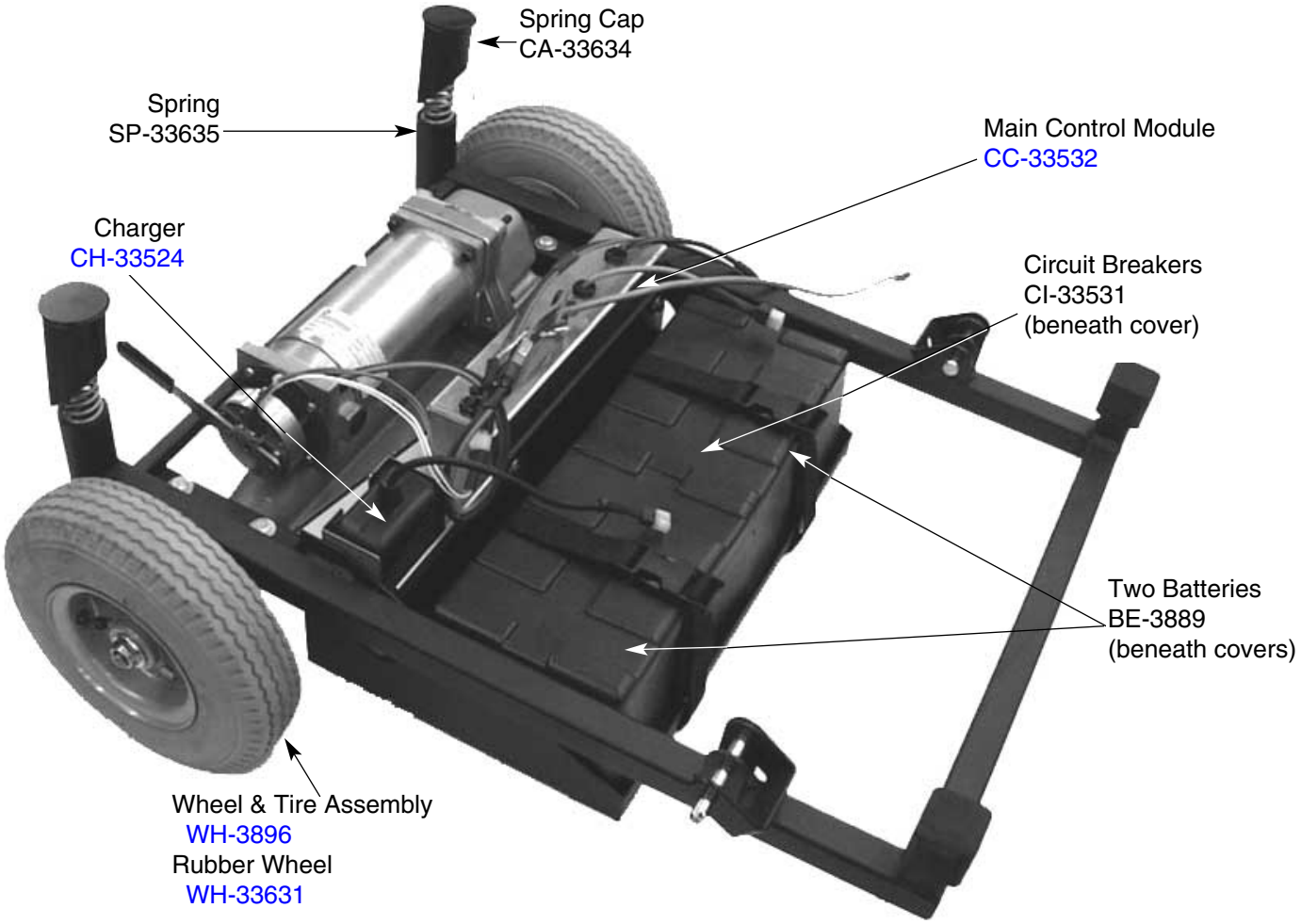


MOTOR DRIVE SYSTEM (option)

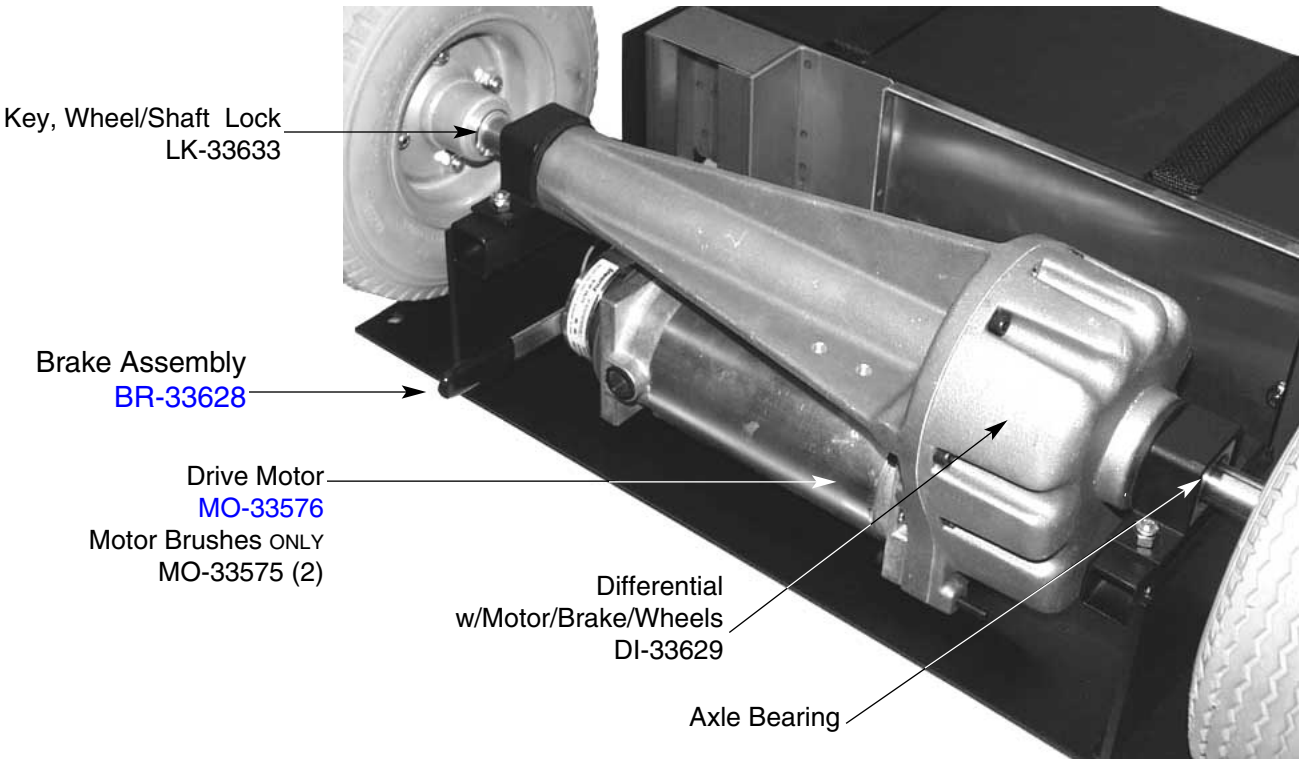
HANDLE ASSEMBLY "B"
HD-33529
Front & Rear View



MOTOR DRIVE SYSTEM (option)



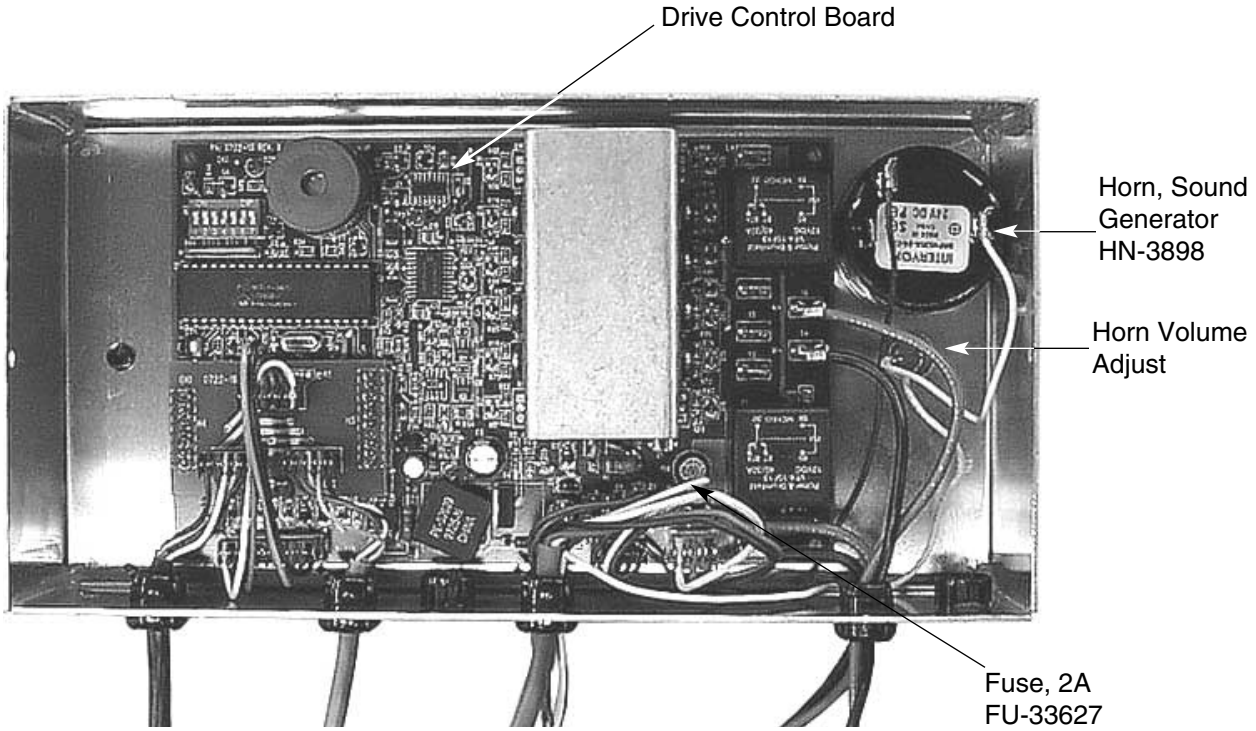
DRIVE ASSEMBLY
Top & Bottom



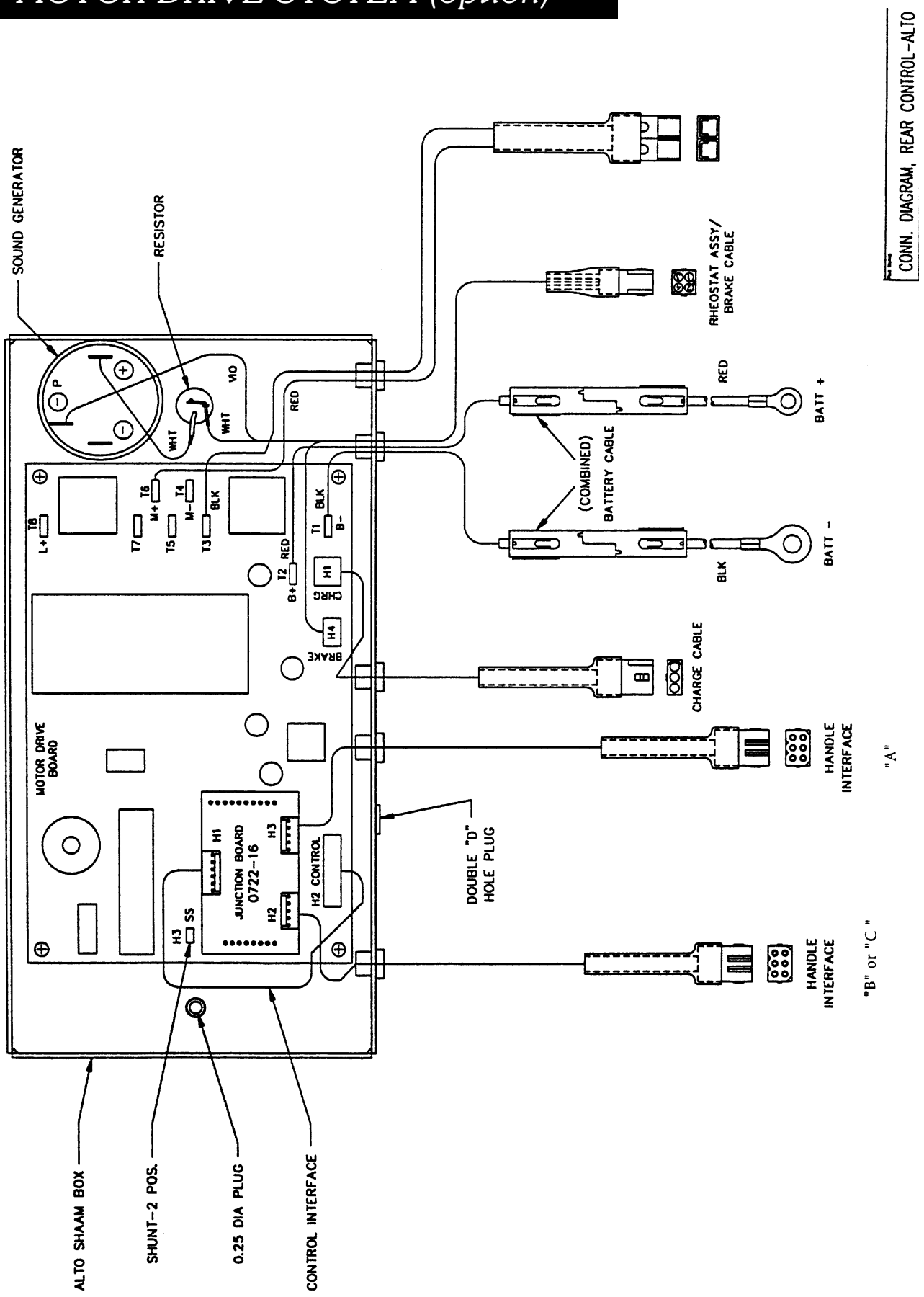
MOTOR DRIVE SYSTEM (option)

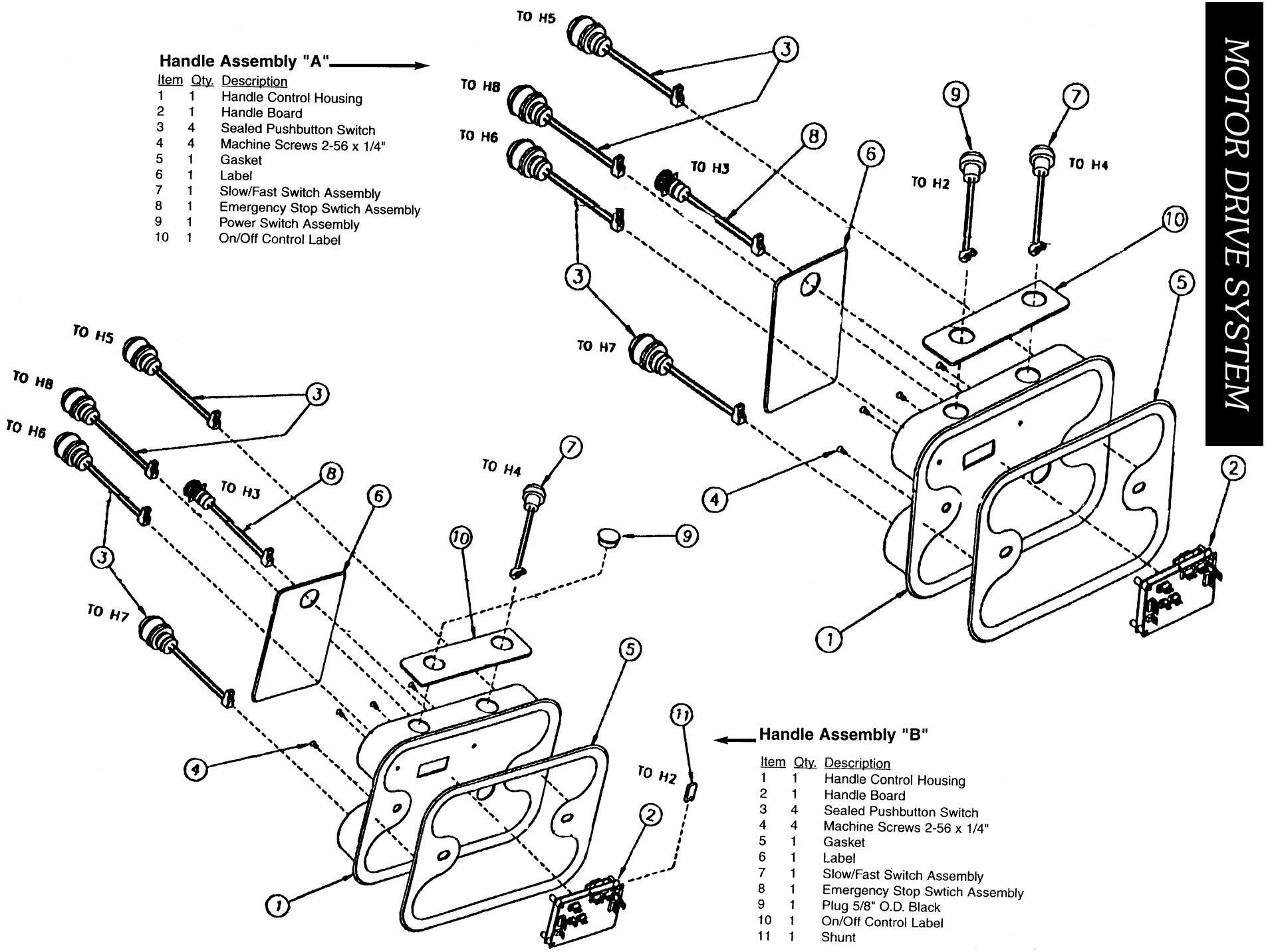
HANDLE ASSEMBLY 'C' • HD-33530
for unit that has drive control on one side only

CONTROL MODULE ASSEMBLY • CC-33532



MOTOR DRIVE SYSTEM (option)



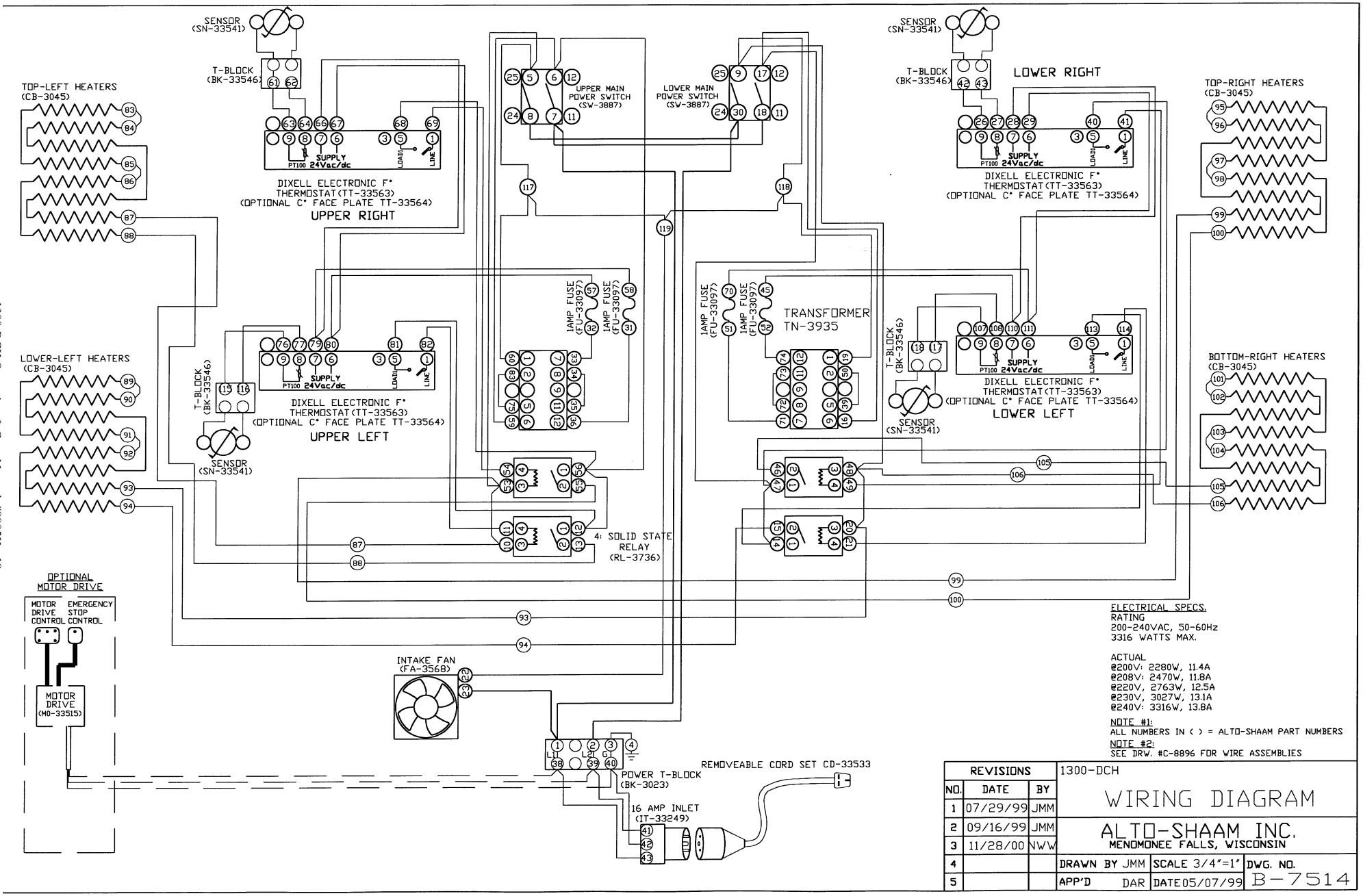


Handle Assembly "A"

Item	Qty.	Description
1	1	Handle Control Housing
2	1	Handle Board
3	4	Sealed Pushbutton Switch
4	4	Machine Screws 2-56 x 1/4"
5	1	Gasket
6	1	Label
7	1	Slow/Fast Switch Assembly
8	1	Emergency Stop Swtich Assembly
9	1	Power Switch Assembly
10	1	On/Off Control Label

Handle Assembly "B"

Item	Qty.	Description
1	1	Handle Control Housing
2	1	Handle Board
3	4	Sealed Pushbutton Switch
4	4	Machine Screws 2-56 x 1/4"
5	1	Gasket
6	1	Label
7	1	Slow/Fast Switch Assembly
8	1	Emergency Stop Swtich Assembly
9	1	Plug 5/8" O.D. Black
10	1	On/Off Control Label
11	1	Shunt



ELECTRICAL SPECS.
RATING
200-240VAC, 50-60Hz
3316 WATTS MAX.

ACTUAL
@200V: 2280W, 11.4A
@208V: 2470W, 11.8A
@220V, 2763W, 12.5A
@230V, 3027W, 13.1A
@240V: 3316W, 13.8A

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

NOTE #2:
SEE DRW. #C-8896 FOR WIRE ASSEMBLIES

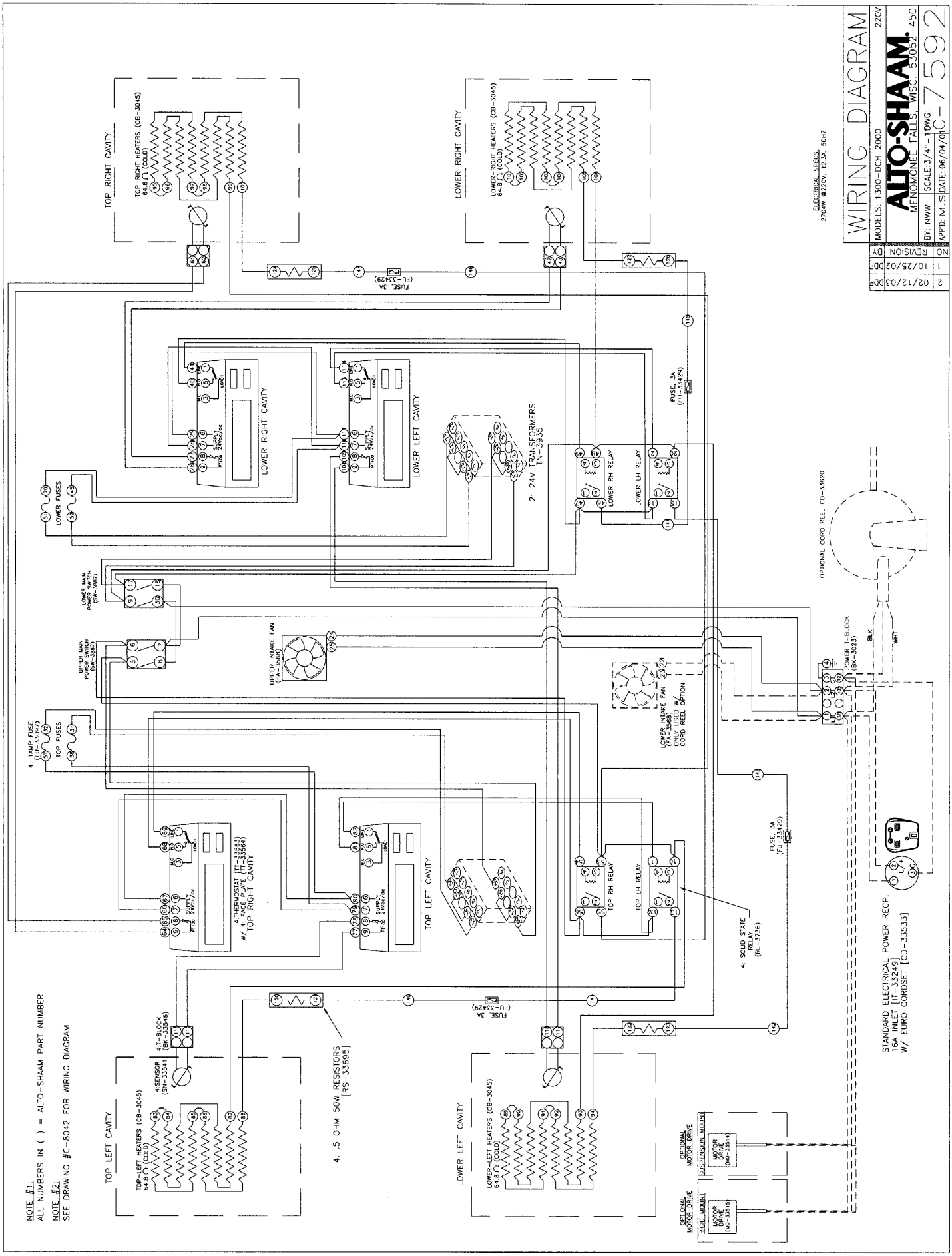
REVISIONS		
NO.	DATE	BY
1	07/29/99	JMM
2	09/16/99	JMM
3	11/28/00	NWW
4		
5		

1300-DCH

WIRING DIAGRAM

ALTO-SHAAM INC.
MENOMONEE FALLS, WISCONSIN

DRAWN BY JMM	SCALE 3/4"=1'	DWG. NO.
APP'D DAR	DATE 05/07/99	B-7514


WIRING DIAGRAM
220V
MODELS: 1300-DCH 2000
ALTO-SHAAM.
MENOMONEE FALLS, WISC. 53052-450
BY: NWW
SCALE 3/4" = 1"
APP'D: M. S
DATE: 06/04/01
DWG. C-7592
ELECTRICAL SPECS.
2764W @220V, 12.3A, 50HZ
NO. REVISION BY DATE
2 02/12/03 DDF
1 10/25/02 DDF
TOP RIGHT CAVITY
LOWER RIGHT CAVITY
TOP LEFT CAVITY
LOWER LEFT CAVITY
TOP-RIGHT HEATERS (CB-3045) 64.8 Ω (COLD)
LOWER-RIGHT HEATERS (CB-3045) 64.8 Ω (COLD)
TOP-LEFT HEATERS (CB-3045) 64.8 Ω (COLD)
LOWER-LEFT HEATERS (CB-3045) 64.8 Ω (COLD)
FUSE, 3A (FU-33429)
2: 24V TRANSFORMERS TN-3935
LOWER FUSES
TOP FUSES
4: 1AMP FUSE (FU-33097)
LOWER MAIN POWER SWITCH (SW-3937)
UPPER MAIN POWER SWITCH (SW-3937)
UPPER INTAKE FAN (FA-3568)
LOWER INTAKE FAN (FA-3568) ON USED W/ OPTIONAL CORD REEL OPTION
OPTIONAL CORD REEL CO-33620
POWER T-BLOCK (BK-3023)
LOWER RH RELAY
LOWER LH RELAY
TOP RH RELAY
TOP LH RELAY
4: SOLID STATE RELAY (RL-3736)
4: THERMOSTAT (TT-33561) W/ 4: FACE PLATE (TT-33584) TOP RIGHT CAVITY
4:1-BLOCK (BK-33546)
4: SENSOR (SN-33541)
4: .5 OHM 50W RESISTORS [RS-33695]
OPTIONAL MOTOR DRIVE
RIGHT MOUNT
SUSPENSION MOUNT
MOTOR MOVE (MO-3351-S)
MOTOR MOVE (MO-3351-S)
STANDARD ELECTRICAL POWER RECP. 16A INLET [IT-33249] W/ EURO CORDSET [CO-33533]
BLK
WHT
NOTE #1:
ALL NUMBERS IN ( ) = ALTO-SHAAM PART NUMBER
NOTE #2:
SEE DRAWING #C-8042 FOR WIRING DIAGRAM

TRANSPORTATION DAMAGE and CLAIMS

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

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

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

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

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

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

5. If the driver refuses to allow inspection, write the following on the delivery receipt:
   Driver refuses to allow inspection of containers for visible damage.

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

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

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

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

ALTO-SHAAM® *LIMITED WARRANTY*

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

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

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

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

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

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

This warranty does not apply to:

1. Calibration
2. Replacement of light bulbs and/or the replacement of display case glass due to damage of any kind.
3. Equipment damage caused by accident, shipping, improper installation or alteration.
4. Equipment used under conditions of abuse, misuse, carelessness or abnormal conditions.
5. Any losses or damage resulting from malfunction, including loss of product or consequential or incidental damages of any kind.
6. Equipment modified in any manner from original model, substitution of parts other than factory authorized parts, removal of any parts including legs, or addition of any parts.

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

ALTO-SHAAM, INC.

Warranty effective January 1, 2000

Record the model and serial numbers of the unit for easy reference. Always refer to both model and serial numbers in your correspondence regarding the unit.

Model: _____

Serial Number: _____

Purchased From: _____

Date Installed: _____ Voltage: _____

HALO HEAT COOK/HOLD/SERVE SYSTEMS BY ALTO-SHAAM®

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

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FAX: 262.251.7067 • 800.329.8744 U.S.A./CANADA 262.251.1907 INTERNATIONAL

WEBSITE: www.alto-shaam.com

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