

ELECTRO FREEZE



OPERATOR'S MANUAL

**Installation, Operation
and Maintenance Instructions**

**Arctic Swirl
Mixer
Model HDM75A**

184915 4-04

A. *Arctic Swirl*[®] Safety Alert



This safety alert symbol identifies important personal safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury. Do not attempt to continue until the safety precautions are read and thoroughly understood. See the next section, *Arctic Swirl* Decal Locations, and learn the locations of safety decals on the machine. Read and understand all warning decals before operating the machine.

It is important that you read and understand this manual before operating the mixer!

B. *Arctic Swirl*[®] Safety Decal Locations

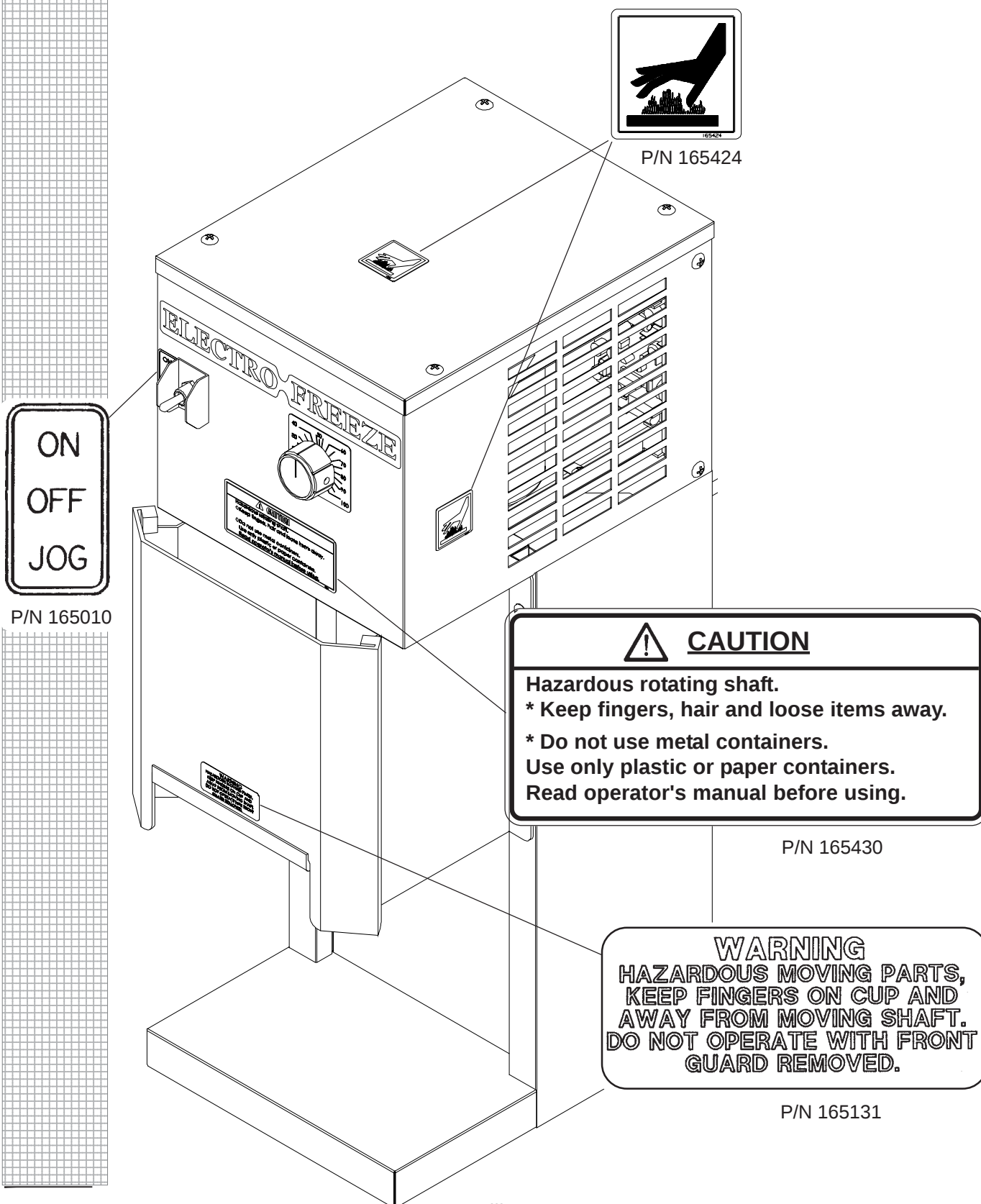
Please read and understand all warning decals. Note the location of *all* warning decals on the mixer (see next page). The decals are there to help maintain a safe working environment. All decals must remain legible for the life of the mixer. Check decals periodically to ensure that they are still in place and easy to read. Replace them if necessary. Know the part number of the decal, its type and location, before ordering.

To order new decals, call or write to H.C. Duke & Son, Inc., Electro Freeze Service Department, 2116 Eighth Avenue, East Moline, Illinois 61244

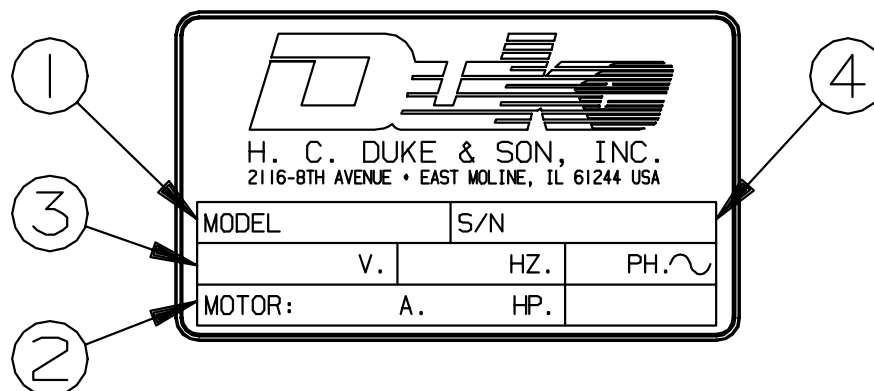


(309) 755-4553 or
FAX (309) 755-9858

B. Arctic Swirl® Safety Decal Locations



C. Data Plates



CAUTION
All materials and connections must conform to local requirements and be in compliance with the National Electric Code (NEC).



CAUTION
In order to prevent accidental electrical shock, a receptacle with a positive earth ground is required.

You will find the data plate on the rear panel of your *Arctic Swirl®* Model HDM75A. The data plate provides important information that the operator should record and have available for parts ordering, warranty inquiries and service requests.

Always check and verify voltage and amperage on the data plate.

Dimensions

Width - in/cm	9-1/8 / 23.2
Height - in/cm	25-3/4 / 65.4
Depth - in/cm	11-1/4 / 28.6

Write in Reference Information HERE!



Fill in the following information as soon as you receive your Arctic Swirl® Mixer. (The item numbers — encircled, below — correspond with the callout numbers in the figure above.)

- ① **Model Number:** _____
- ② **Rating:** _____
- ③ **Electrical Spec:** Voltage _____
Phase _____ Hertz _____
- ④ **Serial Number:** _____

Installation Date _____

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The Arctic Swirl® is manufactured by H.C. Duke & Son, Inc., 2116
Eighth Avenue, East Moline, Illinois 61244

For factory service assistance call the Electro Freeze Service
Department @ (309) 755-4553 or send a FAX to (309) 755-9858

1 Installation Instructions

1.1 Application

The *Arctic Swirl* Mixer Model HDM75A is a heavy duty, 3/4 hp, variable speed mixer designed to blend properly prepared soft serve with a variety of approved flavor ingredients.

1.2 Inspection

Inspect the *Arctic Swirl* Mixer shipping carton and its contents for shipping damage. Also inspect the internal components of the machine for damage.

If there is damage to the machine, it must be noted on the carrier's freight bill.

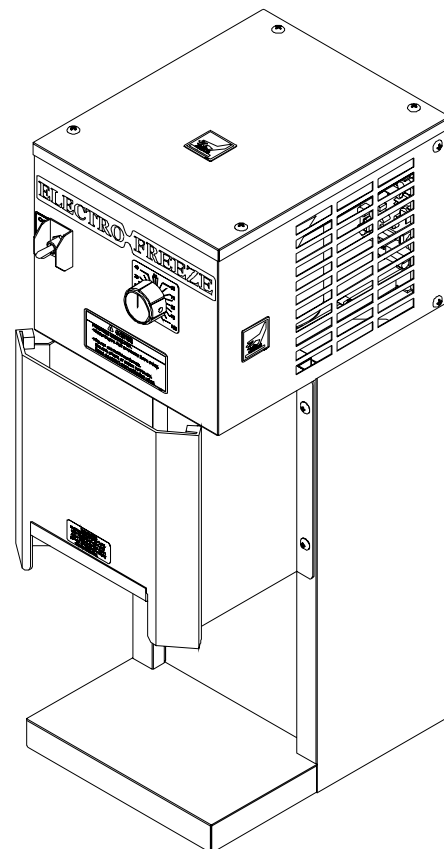
Call the local agent of the freight carrier and request an immediate inspection by their claims inspector. Keep the shipping carton until the machine has been inspected. Do not install the machine until all claims are resolved.

1.3 Handling

The carton may be moved on a two wheel dolly or carried in your arms. It must not be shaken, dropped or moved by "walking" the corners of the carton.

1.4 Removal from Shipping Carton

Open the top of the carton. Pull out the foam inserts and lift the machine out through the top of the carton. Save all shipping materials for future use.



1.5 Electrical Requirements

The *Arctic Swirl* Mixer Model HDM-75A machine motor will operate only on 120 volt, 60 Hz single-phase alternating current (AC) with ground. Make sure the electrical supply is 120 volts AC and that the voltage is within 10 percent of that specified. Your utility company will check the voltage if you so request.

The *Arctic Swirl* Mixer machine motor will not operate on direct current (DC) or on current of 50 Hz frequency. (The “overseas” model operates only on 220 volt, 50 Hz.)

1.6 Specifications

Specifications for the *Arctic Swirl* Mixer Model HDM-75A are given in table 1, below.

1.7 Location of the Arctic Swirl Machine

The base of the machine is provided with four rubber feet. The machine should be mounted on a solid surface, such as a topping cabinet, dip stand table, or countertop. It should be located as close as possible to the ingredients being used to make the finished *Arctic Swirl* product. The cord should be plugged into an outlet close to the machine.

Table 1. Specifications

120 Volt, 60 Hz Model (Domestic)	220 Volt, 50 Hz Model (Overseas)
Model: HDM75A Voltage: 120 Frequency: 60 Hz Phase: 1 Drive Motor: 3/4 hp RPM: 10,000 (maximum) Amperage: 10 Shipping Weight: 46 lbs.	Model: HDM75A Voltage: 220 Frequency: 50 Hz Phase: 1 Drive Motor: 3/4 hp RPM: 10,000 (maximum) Amperage: 5 Shipping Weight: 46 lbs.

2 Operation Instructions

2.1 SAFETY ALERT



It is important that you read and understand the safety instructions before operating the mixer! If you have not already done so, turn to the front of this manual and read Sections A, B, and C before proceeding.

2.2 Preparation

Before use, the spindle shaft and machine parts should be washed, rinsed, sanitized and air dried. The external surfaces of the machine, including the splash shields and machine front, should be wiped clean and then wiped with a sanitizing solution. Follow the procedures in Cleaning and Sanitizing, Section 4.

2.3 Operation



CAUTION

DO NOT touch or get too close to moving parts. Clothing, jewelry, hair or other body parts may become caught in the machine and result in serious personal injury.

1. The *Arctic Swirl* Mixer should only be used for the blending of soft serve ice cream, or similar products, with liquid flavorings or pre-crushed solid ingredients. It is NEVER to be used to grind or crush the solid ingredients before or during blending.

2. The temperature of the ice cream product should be 18 to 20°F (-7.8 to -6.7°C).

Important:

Do not use metallic mixing containers or collars for preparation of the frozen product or when sanitizing.

3. The *Arctic Swirl* Mixer is designed to blend 30 to 35 (16 oz.) servings an hour with an average of 40 to 45 seconds blending time.

4. To operate, set the desired speed for product preparation and move the toggle switch for either "ON" or "CONTINUOUS RUN" operation, as required. The normal position for mixing is 70 percent full "ON". Mark the desired setting for the product for repeated use (refer to Control Panel Identification and Operating Instructions, Section 3).

3 Control Panel Identification and Operating Instructions

3.1 Selector Switch

This three-position toggle switch has a center "OFF" position with top and bottom power positions. (See figure 1 for location of controls.)

1. The top position, "ON", is continuous run. Power is provided to the drive motor continually and the spindle shaft will spin. **DO NOT ALLOW MIXER TO OPERATE AT HIGH SPEED UNDER NO LOAD, OR AT LOW SPEED UNDER LOAD.**

2. "OFF" is the center position. Power is provided to the switch only. The drive motor will not run. If any work is to be done within the cabinet, **THE POWER CORD MUST BE DISCONNECTED FROM THE WALL OUTLET.**

3. The bottom position, "JOG", is momentary run. Power is supplied to the drive motor and the spindle shaft will spin as long as the switch is held in this position. This is a spring-loaded position. "ON" is the machine's normal operating position.

3.2 Speed Control

This control adjusts the speed of the drive motor and spindle shaft. The machine is normally operated at a specific setting for the desired product. A lower speed is normally used when washing or rinsing the shaft with water.

The lower speed helps prevent the water from splashing out of the cup. As a reference point for spindle shaft speed, remember that when the control dial is at zero (0), the spindle shaft should be turning slowly.

3

Control Panel Identification and Operating Instructions - continued

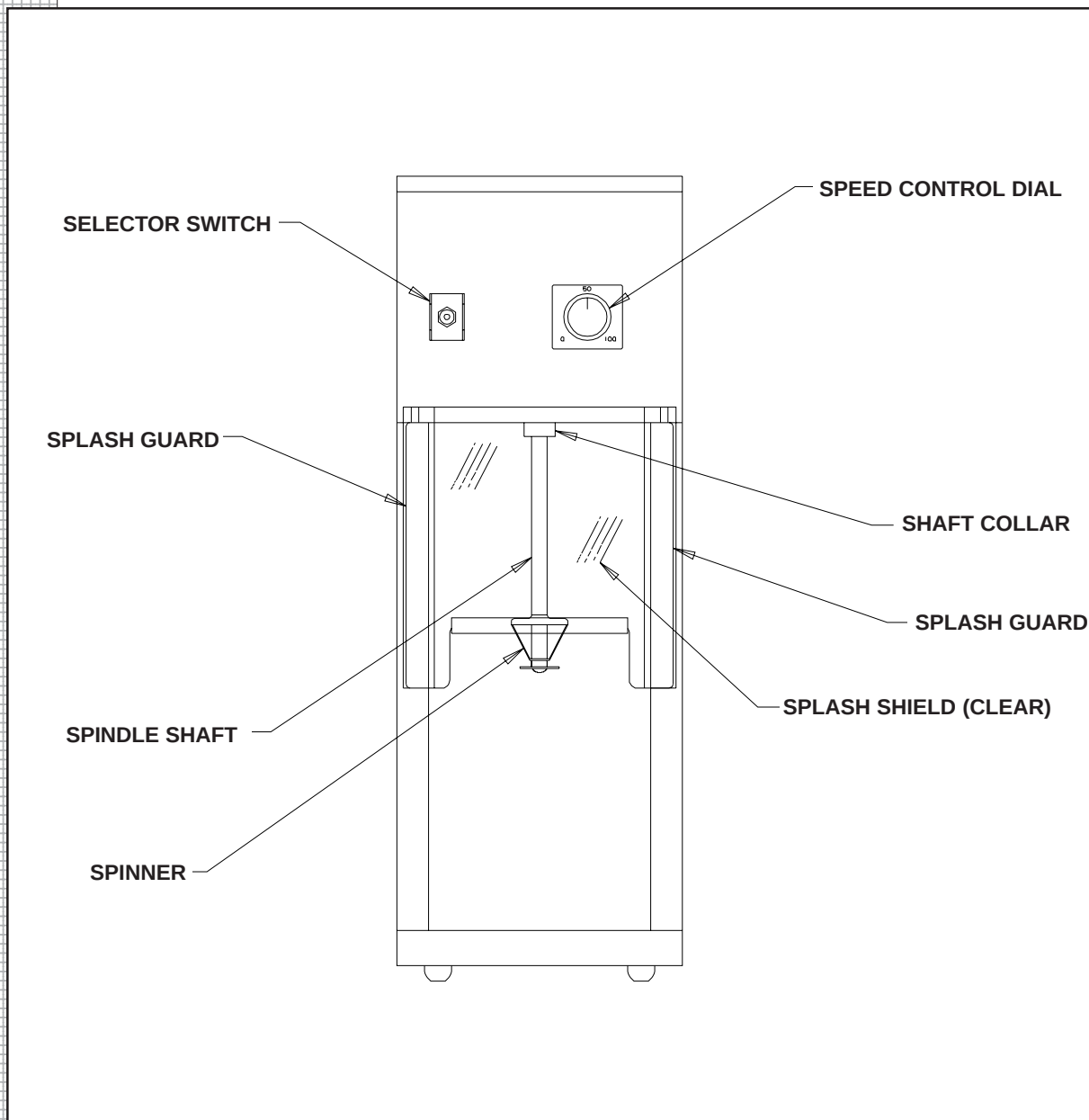


Figure 1. "Arctic Swirl" Machine Controls

4 Cleaning and Sanitizing

The spindle shaft, agitator (exposed turning portion) and splash guards must be washed, rinsed, sanitized, air dried, and prepared for use at the end of each day of operation.

The operator should have clean hands and refrain from coughing or sneezing on parts to avoid contamination. Do not allow any of the *Arctic Swirl* mixer parts to come into contact with objects that have not been sanitized.

When cleaning or sanitizing the spindle shaft and agitator, use a lower speed setting than used for blending to prevent water or sanitizing solution from splashing out of the cup.

Important:

Never place a towel or any other material on the shaft to clean it when it is placed in the "ON" or "JOG" position. If the material becomes caught, it will damage the machine.

Important:

Do not allow water above the collar on the top portion of the Arctic Swirl shaft. Water in this area may damage the machine.



CAUTION

To avoid injury, never place a towel or any other material on the rotating shaft to clean it. Unplug unit before cleaning.



CAUTION

Rotating metal shaft. To avoid injury, use only paper or plastic mixing containers. Contact between shaft and metal containers or malt collars can cause shaft to wear and break.

4.1 Daily Cleaning

1. Fill a paper cup or shake cup $\frac{3}{4}$ full with a solution of warm soapy water (100°F or 37.8°C) and hold it under the spindle.

2. To clean, operate the spindle at a setting of 20-30 on the speed control dial.

3. Stop the spindle operation and use a small brush to clean areas around the agitator.

4. Rinse with clean water.

4.2 Daily Sanitizing

1. In a clean container, prepare one quart (1 liter) of sanitizing solution. Solution should be Stera-Sheen, or an equivalent, with 100 parts per million (PPM) available chlorine and be mixed according to manufacturer's instructions. If you have questions about the advisability of using a specific sanitizer solution, contact Electro Freeze Service Department.

2. Fill a paper cup or shake cup $\frac{3}{4}$ full of sanitizer and hold it under the spindle to sanitize.

3. Operate the spindle in this solution at a setting of between 20-30 on the speed control dial. This operation should be performed for at least one minute to allow the sanitizer to neutralize and destroy contaminants on the shaft and agitator.

4. The entire mixing shaft should be washed with sanitizer, but do not allow the sanitizer to get above the collar on the top portion of the *Arctic Swirl* machine shaft.

4.3 Recommendations

The external surfaces of the machine, including the shields, should be wiped to remove splashes or spills. Follow the evening cleaning with a sanitizer wipe-down and allow to air-dry.

5 Periodic Maintenance



CAUTION

For the following steps, power to the machine must be "OFF" for safety. Unplug power cord before proceeding. Failure to disconnect power source may cause electrical shock.

5.1 Safety Precautions

Take all safety precautions when performing maintenance work to protect against injury or death. Disconnect power cord except for the short period of time required to check proper operation. Do not leave shield or safety panels off when maintenance is completed or interrupted.

5.2 Pulley Alignment and Belt Tension

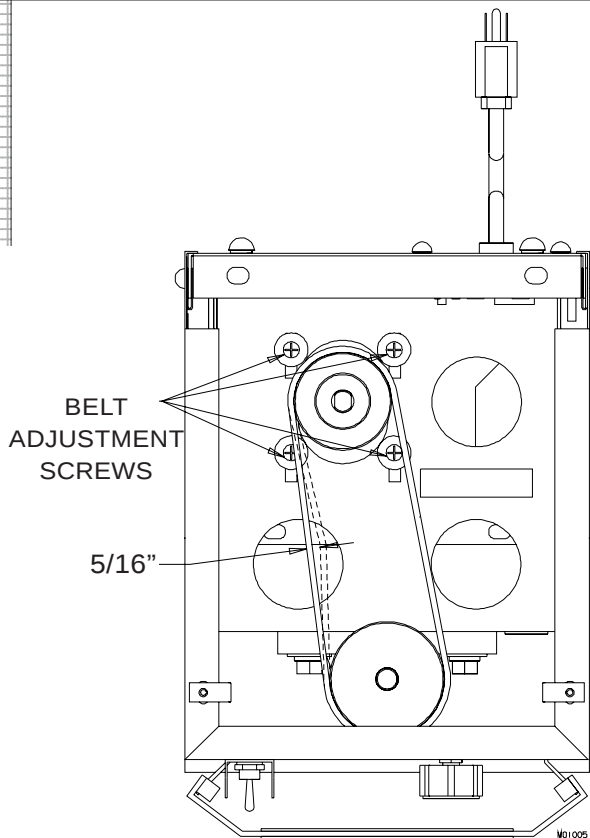


Figure 2. Location of Belt Adjustment Screws

Inspect the belt tension and condition four times per year by performing the following:

1. Remove top panel.
2. Depress belt with your finger at the midpoint between the pulleys (see figure 2). When adjusted properly, the belts should depress 5/16" with approximately five pounds of pressure.
3. Adjust to the proper tension by resetting the four adjustment screws (see figure 2) holding the motor housing in place.
4. Tighten the screws equally to avoid misalignment. **DO NOT OVERTIGHTEN THE BELT.** Overtightening will cause excessive belt wear and heat on both the spindle shaft and drive motor bearings. Check alignment by using a straight edge across the face of the pulleys. Make the necessary adjustments if out of alignment.

5.3 Periodic Maintenance Schedule

In order to maintain the continued safety and performance built into this unit, it is important to follow the installation and maintenance instructions outlined in this manual. ALWAYS UNPLUG THE MACHINE BEFORE SERVICING OR CLEANING.



CAUTION

This machine has HOT surfaces. Place the unit in a well-ventilated location. Do not touch the cabinet top, rear or side surfaces during or just after operation.

5.3.1 Daily

Wash, rinse, sanitize and air dry all parts of the machine that come into contact with mix or product.

5.3.2 Weekly

Inspect all parts for wear, replacement or adjustment.

Carefully inspect the mixing shaft for signs of wear on a weekly basis. The following illustrations (figure 3) depict the areas that require examination. **If the mixing shaft has any sign of wear, it should be taken out of service until a replacement part can be installed.**

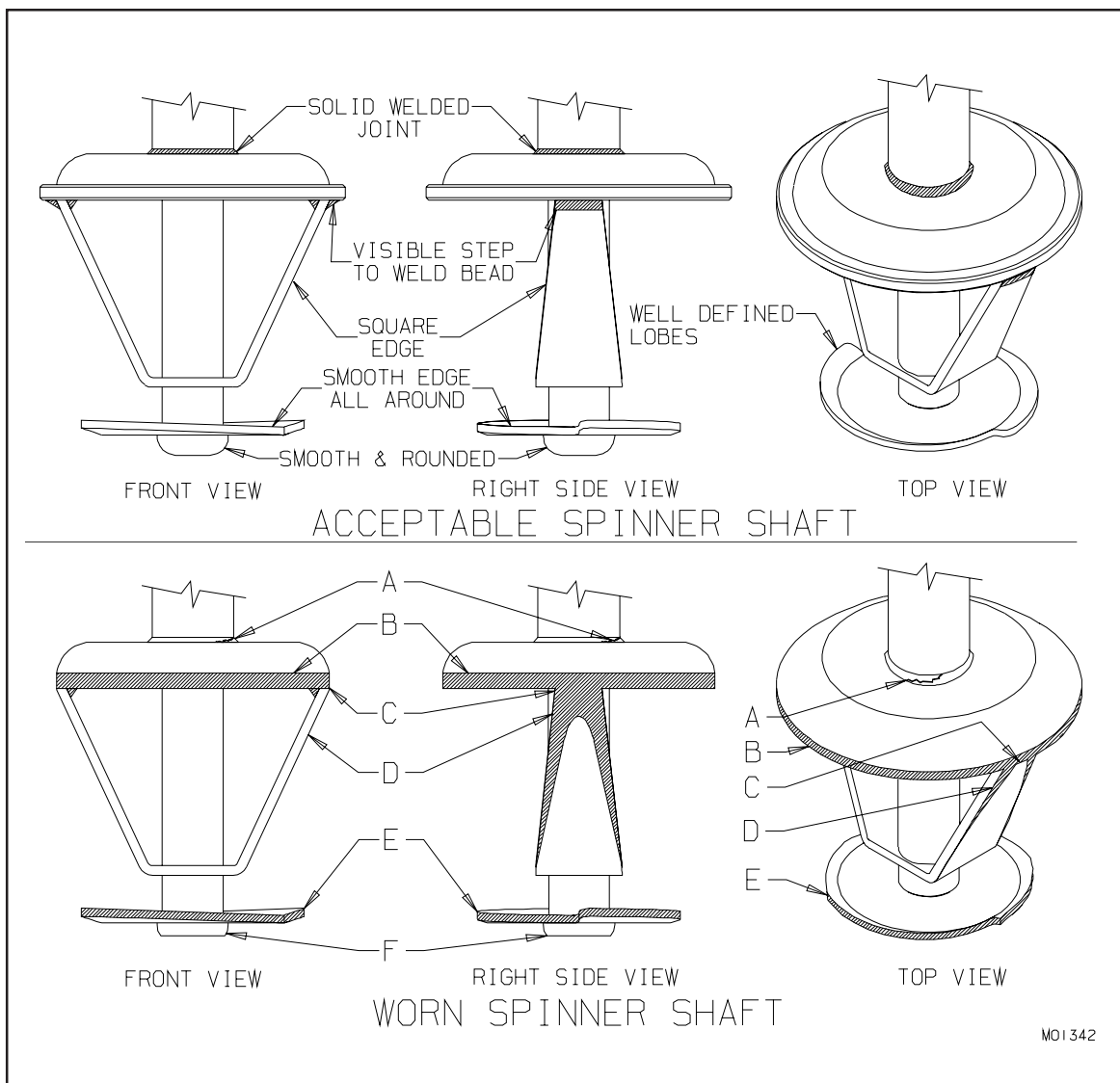
Please remember that the Arctic Swirl® mixer was designed to blend soft serve ice cream (or similar products) with liquid flavorings or pre-crushed solid ingredients. Do not use it to grind or crush the solid mixing ingredients!



CAUTION

Rotating metal shaft. To avoid injury, use only paper or plastic mixing containers. Contact between shaft and metal containers or malt collars can cause shaft to wear and break.

5.3.2 Weekly - continued



Point A	Inspect weld joint for signs of cracking. Cup should be solidly bonded to shaft with no sign of cracking or looseness.
Point B	Inspect edge for excessive wear. Edge should be smooth and have step to welded area for blade .
Point C	Inspect weld for signs of cracking or wear. Worn away step to welded blade indicates worn part. No part of the weld should have wear. There must be a step from weld to outside edge of cup
Point D	Inspect edge for wear. A sharpened edge with a thinning of entire surface indicates excessive wear.
Point E	Inspect for tightness to shaft and edge for galling or roughness. Worn away lobes or a bent or loose disk should be replaced.
Point F	Inspect button for wear. A ground away flattened surface that appears to be near flush to bottom of disk is a sign of a worn part..

Figure 3. Inspection of Mixing Shaft

5.3.3 Monthly

1. Make sure power switch is "OFF".
2. UNPLUG THE MACHINE.
3. Remove the top panel and inspect for belt wear and tension, splattered mix, and any unusual condition.



CAUTION
Do not touch or get too close to moving parts. Clothing, jewelry, hair, or other body parts may become caught in the machine and result in serious personal injury.

4. With the top panel off, plug in and then start the machine with caution.

5. Listen for unusual rhythms, squeaks, overtones or sounds not common to normal operation. Smell for unusual odors that may indicate a problem, such as spoiled mix, hot motor, or electrical arcing.

6. Turn power switch to "OFF", unplug the machine and reinstall top panel.

5.3.4 Quarterly

1. Inspect drive motor brushes for wear and replacement.
2. Inspect drive belts and adjust or replace in accordance with paragraph 5-2.

6 Parts Replacement

NOTE: If any parts are replaced during the warranty period, it will be necessary to return the defective part to the supplier for possible credit.

NOTE: Refer to Figure 4 at the end of this section for illustration of parts and their corresponding item numbers included in parentheses in the following paragraphs.



CAUTION

For the following steps, power to the machine must be “OFF” for safety. Unplug power cord before proceeding. Failure to disconnect power source may cause electrical shock.

6.1 Spindle Shaft Replacement

1. Disconnect power cord (27) from the wall and remove splash shield (4).

2. Remove the four screws (2) holding top cover (1). Remove cover.

3. Loosen setscrews on slinger collar (17) and slide down spindle shaft (18).

4. Remove the four screws (2) holding the lower slot cover (35). Remove cover.

5. Remove the four screws (2) holding the motor cover assembly (32) in place. Slide the motor cover forward to access the wiring. Note the wire routing — wires must not touch sharp edges or moving parts during reassembly. Disconnect the toggle switch (40) wires and potentiometer (41) wires at speed control board (42). Note the wire connection locations for reassembly. Remove cover.

6. If necessary, remove the four screws (28) holding the splash shields (29).

7. Loosen the four screws (9) holding the drive motor (31) in place and remove belt (7).

Important:

When heating parts to loosen Loctite adhesive, protect the bearings from heat. Excessive heat will destroy the bearings.

NOTE: The drive and driven pulleys are assembled to their respective shafts using Loctite Type RC/680 adhesive. Loctite adhesive is also used in the assembly of the spindle shaft to the upper and lower bearings. It will be necessary to apply heat to loosen the Loctite adhesive.

8. Loosen the two setscrews on the driven pulley (8) installed onto shaft (18). Apply heat to the hub and remove pulley.

9. Loosen the two set screws on each of the collars for the upper and lower bearings (19). Apply heat to the hub of the bearing. Using a rubber hammer, tap the shaft (18) down through the lower part of the base (23). After the shaft is out of the top bearing (19), tilt the shaft to clear the base and remove it from the lower bearing (19).

— continued

6.1 Spindle Shaft Replacement - continued

NOTE: Replace bearings if damaged by heat.

NOTE: You **MUST** reapply Loctite to the shaft, pulley, and bearings according to the manufacturer's recommendations when you reassemble these parts.

10. Slide the new shaft up through the lower bearing and the upper bearing. Visually align the shaft and tighten the bearing housing. Install the pulley.

11. Reverse the above steps to reassemble. Make sure there is proper belt tension of 5/16 inch (refer to paragraph 5-2). Ensure toggle switch (40)

and potentiometer wires (41) loop away from moving parts when reinstalling motor cover assembly. Wires must not touch the louvers in the motor cover assembly (32).

NOTE: If you are experiencing difficulty aligning the mixer shaft, call the Electro Freeze Service Department for assistance.

12. Check for shaft vibration by operating the mixer, slowly turning the speed control from low to high. If the shaft is vibrating, adjust for proper alignment.

6.2 Top Bearing Replacement

1. Repeat steps 1 through 9 of the Spindle Shaft Replacement, paragraph 6-1.

2. Replace the top bearing (19) and two screws (14) and washers (15, 16).

3. Reverse the above steps to reassemble. (You **MUST** clean parts thoroughly before reassembly and application of Loctite — You **MUST** reapply Loctite RC/680® adhesive to the shaft, pulley, and bearings according to the manufacturer's recommendations.)

6.3 Bottom Bearing Replacement

1. Repeat steps 1 through 9 of the Spindle Shaft Replacement, paragraph 6-1.

2. Replace the bottom bearing (19), two screws (14) and washers (15, 16).

3. Reverse the above steps to reassemble. (You **MUST** reapply Loctite RC/680 adhesive to the shaft, pulley, and bearings according to the manufacturer's recommendations.)

6.4 Belt Replacement

1. Repeat steps 1 through 7 of the Spindle Shaft Replacement, para. 6-1.
2. Replace with new belt (7).
3. Slide motor (31) to the rear for proper belt tension of 5/16 inch. (See para. 5-2, Pulley Alignment and Belt Tension.)
4. Reverse the above steps to reassemble.

6.5 Motor Replacement

1. Repeat steps 1 through 7 of the Spindle Shaft Replacement, paragraph 6-1.
2. Loosen the two set screws holding the motor pulley (8) in place. Apply heat to the hub, remove the pulley and set aside.
3. Disconnect the black (A-) and white (A+) wires from the speed control. Note the terminal locations for reassembly of new motor.
4. Remove the four mounting screws (22) on the rear panel of the machine holding the motor weldment support assembly (6) and support legs (45) in place. Remove motor (31) and motor support (6, 45) as an assembly from the blender base assembly (24). Move the assembly to a work bench and remove the old motor.
5. Install the new motor (31) with the four mounting screws (9) and washers(10,11).
6. Reverse the above steps to reassemble. Refer to Wiring Diagram, Section 9, to connect wires. (You **MUST** reapply Loctite RC/680 adhesive to the shaft and pulley according to the manufacturer's recommendations.)

6.6 Motor Brush Replacement

1. Repeat steps 1 through 5 of the Spindle Shaft Replacement, para. 6-1.
2. Remove the green ground wire from the support (45). Disconnect the motor wires from the speed control.
3. Remove the four mounting screws (22) on the rear panel of the machine holding the motor weldment support assembly (6) and support legs (45) in place. Move the assembly to a workbench.
4. Use a screwdriver to remove two caps (black plastic, near bottom of motor) holding the carbon brushes. Replace the brushes and end caps.
5. Reverse the above steps to reassemble.

6.7 Speed Control Replacement (Electronic Circuit Board)

1. Repeat steps 1 through 5 of the Spindle Shaft Replacement, paragraph 6-1.

2. Holding the new speed control (42) next to the old one, REMOVE ONE WIRE AT A TIME from the old control and connect to the new control. (If necessary, refer to Wiring Diagram, Section 9.)

3. Remove three screws (13) holding the old control to the base (24). Remove the old control (42).

4. Install new control (42) and secure with three screws (13).

5. Reverse the above steps to reassemble.

NOTE: It may be necessary to calibrate the new speed control to get the proper speed at the various speed dial settings. For instructions, call the H.C. Duke & Son, Inc. Service Department.

6.8 Potentiometer Replacement (part of speed control unit)

1. Repeat steps 1 through 5 of the Spindle Shaft Replacement, paragraph 6-1.

2. Loosen the two set screws and nut holding the knob (38) and potentiometer (41) to the front of the blender and remove knob and the old potentiometer (41).

3. Install new potentiometer (41) and knob (38) into front panel of blender and secure with nut and two set screws.

4. Reverse the above steps to reassemble.

6.9 Three-Position Toggle Switch Replacement (Selector Switch)

1. Repeat steps 1 through 5 of the Spindle Shaft Replacement, paragraph 6-1.

2. Hold the new toggle switch (40) next to the old toggle switch. Disconnect the three wires from terminals of old switch and connect to the new switch in the same order. (Refer to Wiring Diagram, Section 9 of this manual.)

3. Remove nut on front panel of blender that holds the toggle switch shaft. Remove switch shield (44) from front of blender and remove the old switch.

4. Install the new switch and switch shield in place and secure with the shaft nut.

5. Reverse the above steps to reassemble.

6.10 Fuse Replacement



CAUTION

To avoid electrical shock or contact with moving parts, make sure all switches are in the "OFF" position and that the main power supply is disconnected.

Replace only with Slo-Blow Buss type MDA10 (115v units) MDA5 (220v units). Replace with Duke original replacement parts only:

150845 - Fuse 10A (115v)

150846 - Fuse 5A (220v)

1. Disconnect blender from power source.
2. With blender in normal upright position, remove 4 phillips head screws in top cover (2) and remove cover.
3. Remove 4 screws in motor cover (2) and 4 screws in the slot cover (2) underneath the motor cover.
4. Remove slot cover and gently pull motor cover forward so it rests on both stainless steel splash guard (29).
5. Attached to the inside of the blender base is the electronic speed control board (42). Use a small straight blade screwdriver to pry out the closest end of the fuse and remove the fuse by hand.
6. Test each fuse and replace if needed.
7. Reassemble making sure wires are routed away from sharp edges and moving shaft.
8. Test operation. If unit fails to operate or blows another fuse, discontinue use and seek an authorized repairman.

7

Troubleshooting Tables

PROBLEM	PROBABLE CAUSE	REMEDY
Mixer will not operate.	1. Machine not plugged in.	1. Plug blender in wall socket.
	2. Wall circuit breaker off.	2. Reset circuit breaker.
	3. Switch "OFF".	3. Turn to "JOG" or "ON" position.
	4. Speed control potentiometer defective.	4. Contact your Electro Freeze distributor for service.
	5. Speed control defective.	5. Contact your Electro Freeze distributor for service.
	6. Drive belt loose or broken.	6. Contact your Electro Freeze distributor for service.
	7. Drive motor brushes worn.	7. Contact your Electro Freeze distributor for service.
	8. Drive motor defective.	8. Contact your Electro Freeze distributor for service.
	9. Switch defective.	9. Contact your Electro Freeze distributor for service.
	10. Loose or broken wire.	10. Contact your Electro Freeze distributor for service.
	11. Spindle shaft bearings binding.	11. Contact your Electro Freeze distributor for service.
	12. Foot switch defective.	12. Contact your Electro Freeze distributor for service.
Spindle shaft speeds are erratic.	1. Speed control defective.	1. Contact your Electro Freeze distributor for service.
	2. Drive belt worn or loose.	2. Contact your Electro Freeze distributor for service.
	3. Drive motor brushes worn.	3. Contact your Electro Freeze distributor for service.
	4. Drive motor defective.	4. Contact your Electro Freeze distributor for service.
	5. Loose pulleys.	5. Contact your Electro Freeze distributor for service.
	6. Spindle shaft bearings binding.	6. Contact your Electro Freeze distributor for service.
	7. Speed control potentiometer defective.	7. Contact your Electro Freeze distributor for service.
Mixing time too long.	1. Speed set too low.	1. Turn speed to higher setting.
	2. Product too cold.	2. Check soft serve for 18°F temperature.
	3. Overrun too low.	3. Check soft serve overrun.
	4. Drive belt worn or loose.	4. Contact your Electro Freeze distributor for service.

7 Troubleshooting Tables - continued

PROBLEM	PROBABLE CAUSE	REMEDY
Drive motor operates, but spindle shaft does not turn.	1. Loose or broken drive belt.	1. Contact your Electro Freeze distributor for service.
Unit runs continuously in the "OFF" position.	1. Toggle switch is defective. 2. Foot switch defective.	1. Contact your Electro Freeze distributor for service. 2. Contact your Electro Freeze distributor for service.
Unit operates only in "ON" position or only in "JOG" position, but not in both.	1. Toggle switch is defective.	1. Contact your Electro Freeze distributor for service.
Rubber-like odor coming from cabinet. *	1. Drive belt worn or loose. 2. Soft serve product too cold putting extra strain on drive belt. 3. Overrun too low putting extra strain on drive belt.	1. Contact your Electro Freeze distributor for service. 2. Check soft serve for 18°F temperature. 3. Check soft serve overrun.
* Because the motor runs hot, some odor is expected during the first few days of operation.		
Machine runs at same speed with any speed setting.	1. Speed control defective. 2. Potentiometer (speed dial) defective.	1. Contact your Electro Freeze distributor for service. 2. Contact your Electro Freeze distributor for service.

7 Troubleshooting Tables - continued

PROBLEM	PROBABLE CAUSE	REMEDY
Machine making loud noises.	1. Loose panels or sheet metal parts.	1. Locate and tighten screws.
	2. Pulleys rubbing against top cover.	2. Contact your Electro Freeze distributor for service.
	3. Spindle shaft hitting lower cover plate or cabinet parts.	3. Contact your Electro Freeze distributor for service.
	4. Motor bearings binding or worn.	4. Contact your Electro Freeze distributor for service.
	5. Spindle shaft bearings binding or worn.	5. Contact your Electro Freeze distributor for service.
	6. Spindle shaft bent or out of alignment.	6. Contact your Electro Freeze distributor for service.
	7. Drive belt worn or loose.	7. Contact your Electro Freeze distributor for service.
	8. Set screws on pulleys or bearings loose.	8. Contact your Electro Freeze distributor for service.
Drive motor will not start, hums intermittently	1. Defective motor.	1. Contact your Electro Freeze distributor for service.
	2. Low line voltage.	2. Ask power company to increase voltage to not less than 10% below nameplate rating or install a transformer. Check for inadequate wire sizes.
	3. Speed control set too low.	3. Set to proper level.

8

Illustrated Parts List

Use the *Arctic Swirl Machine* illustration, figure 4 below, in conjunction with the parts list given on the following two pages to identify the part you wish to order. The number enclosed in a circle in the illustration below corresponds to the part name and number on the parts list. You will also need to provide the serial number of your machine when you order parts.

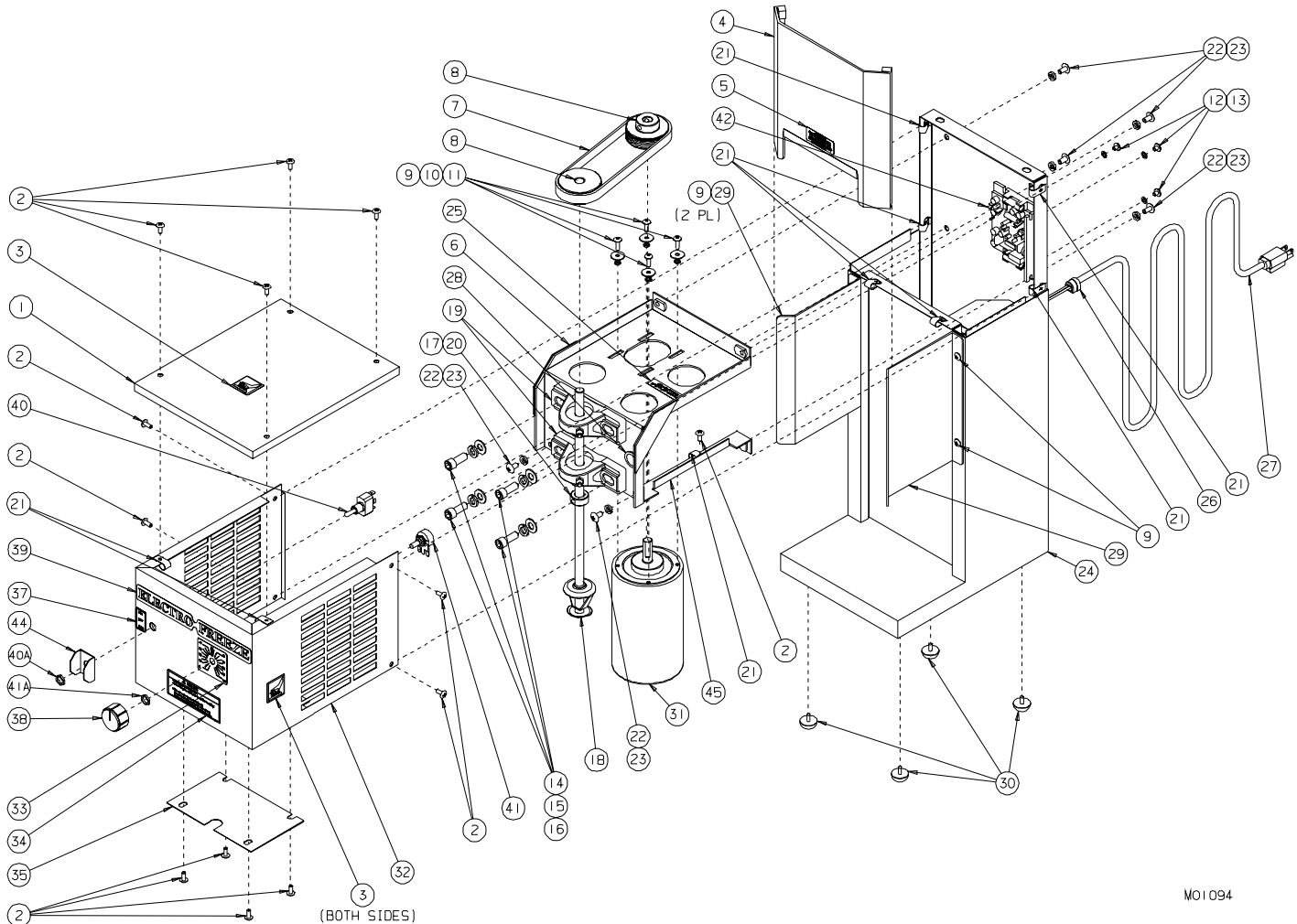


Figure 4. Arctic Swirl Mix Machine Assembly (Sheet 1 of 3)

8 Illustrated Parts List - continued

NOTE: Part number 117281 Carton - Assy. Blender is required for return shipment of the blender.

Item Reference Number	Part Number	Description
1	116583	Cover - Assembly Top
2	160076	Screw - TRPM #10 - 24 x 1/2 SST
3	165424	Decal - Warning Hot Surfaces
4	196005-01	Guard - Splash (Plastic)
5	165131	Decal - Front Guard Warning
6	116571	Support - Assembly Motor & Bearing
7	153138	Belt - Poly V
8	138940	Sheave (Pulley) - 6 Groove J Section (2.35" Dia.)
9	160026	Screw - TRPM #10 - 32 x 5/8 SST
10	160137	Washer - Flat #10 x 3/4 ZN
11	160140	Washer - Lock #10 ZN
12	160149	Washer - Int. Tooth #10 SST
13	160088	Screw - TRPM #10 - 32x1/4 ZN
14	160013	Screw - HXHC 3/8 - 16x1 ZN
15	160132	Washer - Flat 3/8 ZN
16	160143	Washer - Lock 3/8 ZN
17	159363	Collar - Slinger
18	118151	Shaft - Assembly Spindle Replacment w/bearings
19	153019	Bearing - Pillow Block 1/2"
20	160056	Screw - SK Set 1/4 - 20x1/4 ZN
21	159132	Nut - Speed #10 - 24 SST
22	160048	Screw - TRPM 1/4 - 20x1/2 SST
23	160139	Washer - Lock 1/4 SST
24	116579	Base - Assembly Blender
25	165182	Decal - Fuse Slo Blow 10A (120v)
25A	165182-01	Decal - Fuse Slo Blow 5A (220v)(not shown)
26	150782	Bushing - Strain Relief
27	150583	Cord - w/ Plug 6 ft.

Figure 4. Arctic Swirl Mix Machine Assembly (Sheet 2 of 3)

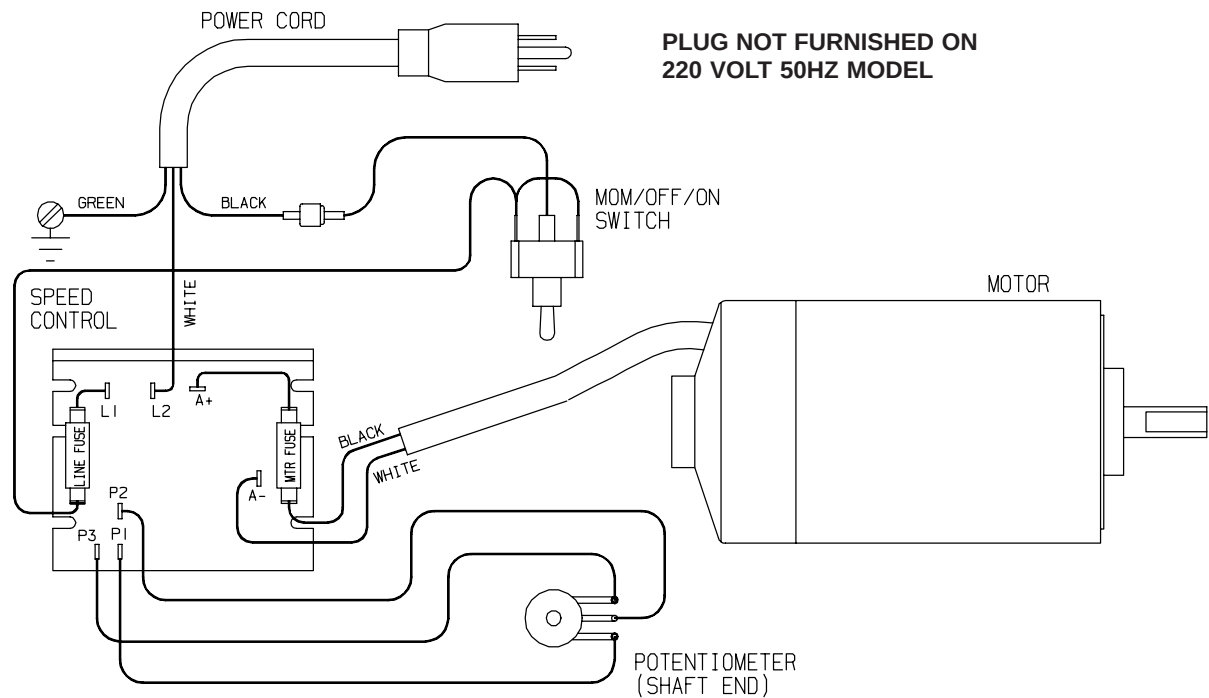
8

Illustrated Parts List - continued

Item Reference Number	Part Number	Description
28	150777	Bushing - Snap 11/16 ID
29	136860	Guard - Splash
30	199031	Bumper - Rubber
31	151093	Motor - 3/4 HP (120 Volt/ 60 HZ)
31A	151097	Motor - 3/4 HP (230 Volt/50-60 HZ)(not shown)
31B	150878	Set - Motor Brush (120 and 230 Volt) (not shown)
32	116578	Cover - Assembly Motor
33	165179	Plate - 0-100 Dial
34	165430	Decal - Blender Shaft Caution
35	138572	Cover - Slot
36	----	Not used
37	165010	Decal - Switch
38	162605	Knob - RD Dial
39	165100	Nameplate - Electro Freeze
40	150429	Switch - Toggle MOM/OFF/ON SPDT
40A	160459	Nut - Face Chamf. 15/32-32 NI (not shown)
41	114982	Potentiometer-Assy. 5K
41A	160458	Nut - Face Chamf. Hex 3/82-32 NEI (not shown)
42	116938	Kit - Motor Speed Control with Potentiometer (120 Volt/60 HZ)
42A	150845	Fuse - 10a 120v Slow-Blow (not shown)
43	116939	Kit - Motor Speed Control with Potentiometer (230 Volt/50-60 HZ)
43A	150846	Fuse - 5A 220 V Slow-Blow (not shown)
44	137896	Shield - Switch
45	116573	Leg - Assembly Support RH
45A	119139	Leg - Assembly Support LH (not shown)

Figure 4. Arctic Swirl Mix Machine Assembly (Sheet 3 of 3)

9 **Wiring Diagram**



10 **Suggested Spare Parts Inventory**

Part Number	Description	Quantity Recommended for Each Machine
153138	Belt - Drive	1
150429	Switch - Toggle	1
150878	Motor Brushes (set of 2)	1
199031	Bumper - Rubber (feet)	4
150845 or 150846	Fuse - 10 Amp Slo-Blow (120v) or Fuse - 5 Amp Slo-Blow (220v)	2

[illegible]

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