Expect Service

Radiation Products Design Inc

INSTRUCTIONS

RPD INFORMATION

Address	5218 Barthel Industrial Drive Albertville, MN 55301
Website	www.RPDinc.com
Email	sales@rpdinc.com
Phone	763-497-2071 or 800-497-2071
Fax	763-497-2295

RPD PRODUCT INFORMATION

Item Number	**Digital Thermoplastic Water Bath**
278-120	120 VAC, 1480 Watt, 12 Amps 15 Amp Receptacle Required Fuse: 15 Amp, 250VAC, Fast Acting, 5mm x 20mm
278-240	200/240 VAC, 2081/2518 Watt, 10.5 Amps 15 Amp Receptacle Required Fuse: 15 Amp, 250VAC, Fast Acting, 5mm x 20mm

All Digital Thermoplastic Water Bath's are single phase units, 50/60 Hz.

CERTIFICATION

Radiation Products Design Inc, as the manufacturer, certifies that all components used to manufacture the Digital Thermoplastic Water Bath have UL listed approved parts. This includes the temperature control, relay – triac, heating element, bi-metal disc thermostat, switch, fuse and holder, and wiring. The units are grounded to the inside container and outside shell and then connected to a hospital grade three prong cord.

The units are tested as follows:

- The resistances of the heating element are verified and values are recorded.
- Total current draw is checked and recorded.
- Leakage current is taken to UL specification in four modes with all values being recorded. Radiation Products Design's maximum leakage current never exceeds 100 uAmp.

This product is not ISO certified or UL listed.

INTRODUCTION

The Digital Thermoplastic Water Bath has a spacious interior to accommodate radiation therapy thermoplastic masks, hip molds and splinting sheets up to 21" x 25" (53 cm x 63 cm). The insulated stainless steel lid is functionally designed to open completely with just one hand, leaving the other hand free. Or, the rod hinge can be removed so the cover can be completely removed and placed on a shelf under the unit. This will allow the unit to sit on a counter with over the counter cabinets. The rugged design makes it universally ideal for clinical use. It features polished stainless steel housing, an insulated stainless steel cover and a side mounted, easy to view control panel.

The EZ-Zone® Digital Proportional-Integral-Derivative (PID) Temperature Controller has two digital readouts, water temperature (in red) and set point (in green). It can maintain water at controlled temperatures between 100°F to 190°F (38°C to 88°C). The heating element provides even water temperatures throughout the entire unit.

An 8' (2.4 m) AC Cord with grounded hospital grade plug is standard. The units are constructed with a bottom drain for easy water removal and cleaning. Included is a 5' (1.5 m) vinyl drain

hose that attaches to the side drain hose barb fitting and ball valve.

All units need special plugs and receptacles depending on the country. The temperature displayed is set to Fahrenheit at the factory; however, this can be changed to Celsius by the end user. All units are single phase, 50/60 Hz.

Item 278-120 and 278-240 also includes

- Perforated Stainless Steel Tray
- Tray Lift Cable
- Netting, Plastic Liner for Perforated Stainless Steel Tray Mesh Liner Nylon
- Push-in Pins Ribbed Push-in Pin

Item	Receptacle	Approximate Minutes to Reach 175°F in 2" Water
278-120	1480 W, 120 VAC, 12 Amps	60
278-240	2081 W, 200 VAC, 10.4 Amps	41
	2169 W, 208 VAC, 10.4 Amps	37
	2300 W, 220 VAC, 10.5 Amps	35
	2409 W, 230 VAC, 10.5 Amps	30
	2518 W, 240 VAC, 10.5 Amps	27

FEATURES

- Lift Up Drain Tray for Easy Removal of Thermoplastic
- Water Temperature Stability ± 2°
- Microprocessor PID Temperature Control
- “J” Thermocouple
- Open Thermocouple Sensor Will Shut Unit Down
- Temperature Displayed in Fahrenheit or Celsius
- Easy View Side Panel Controls
- Control Panel is Removable by a qualified service engineer
- Timer with Three Second Bell Ring
- Cover is Cool to the Touch
- Hinged or Removable Cover
- Exterior Stays Cool Even After Hours of Operation
- Heating Elements will not Burn Out if Thermoplastic Water Bath Accidentally Runs Dry
- Over Temperature Bi-Metal Disc Thermostat
- Large Drain and Hose
- Easy to Clean
- Stainless Steel Corrosion-Resistant Interior and Exterior

SAFETY INSTRUCTIONS

- Read all safety and operating instructions before operating the unit.
- Place the unit on a secure counter, table or large cart.
- Power Source. Refer to Item Number and Description.
- This unit should be operated only from the type of power source indicated on the identification label. If you are not sure of the type of power supplied to your building, consult your Engineering department or local power company.
- Plug the unit into a properly grounded outlet having a ground fault circuit interrupter either in the receptacle or in the immediate power line. In some cases a dedicated line may be preferred.
- DO NOT position the equipment so that it is difficult to

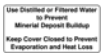
operate the power switch.

- Power Cord Protection: Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, pay particular attention so that the unit is placed within a convenient distance from electrical receptacles.
- If this equipment is used in a manner NOT specified by the manufacture, the protection provided by the equipment may be impaired.
- Check the water level every morning and fill as necessary.

SAFETY SYMBOLS

Hot Surface

Drain Valve


Distilled or Filtered Water

Ground

FAHRENHEIT OR CELSIUS

On the EZ-Zone® Digital Temperature Controller press the GREEN button marked ↻. "F" or "C" should appear on the screen. Press the down arrow to change the Thermoplastic Water Bath to "F" for Fahrenheit or "C" for Celsius. Keep pressing the down arrow until your selection appears on the screen. Press the button marked ∞ to set the Thermoplastic Water Bath to "F" for Fahrenheit or "C" for Celsius.

OPERATION INSTRUCTIONS

Place the unit on a secure counter, table or large cart. Check that the cover opens all the way.

Before filling with distilled or filtered water, make sure the side ball valve is in a closed position.

Fill the unit with as much distilled or filtered water as required, or a minimum of 2" (5.08 cm).

Standard Bath: 120VAC 1480 Watts set at 175°F operating

temperature - temperature will be reached in approximately 60 minutes with 2" (5.08 cm) of room temperature distilled water and the cover closed. **DO NOT** use less than 2" (5.08 cm) of distilled water. Indentations on the inside wall of the Thermoplastic Water Bath indicates 2" (5.08 cm), 3" (7.62 cm) and 4" (10.16 cm) depths. **Check water level every morning and fill as necessary.** Plug the unit into a properly grounded outlet having a ground fault circuit interrupter either in the receptacle or somewhere in the immediate power line.

Turn Power Switch on.

A tapered front control panel houses the EZ-Zone® Digital Temperature Controller (PID) and all control electronics. The control panel is removable for easy repair or replacement by a qualified service engineer. The EZ-Zone® Digital Temperature Controller can adjust the water temperature set point from 100 to 190°F (38°C to 88°C) by pressing the up arrow to increase temperature and pressing the down arrow to decrease temperature. On the screen the set point is displayed in GREEN and the current water temperature is displayed in RED.

Controlling the power to the heater is done with a heavy duty triac with Zero Crossover Switching to prevent noise from being induced into other equipment thru the AC Line.

An adjustable mechanical 15 minute timer with bell can be used as a reminder to remove material from the Thermoplastic Water Bath.

Converting Hinged Cover to Removable Cover: Remove the clip from the end of the hinge rod and slide the rod out. Remove the two small cables to the lift tray.

NOTE: It is recommended to use distilled water to reduce the build-up of mineral deposits and dirt in the Thermoplastic Water Bath. Filtered water that removes minerals will also work.

REMOVING WATER

Cool the Thermoplastic Water Bath and slip the clear tubing over the hose barb fitting on the side drain spout, open the ball valve and drain the water into a bucket, sink, or drain.

CLEANING

At high (elevated) temperatures, it can be surprising the amount of minerals and dirt that precipitate out of water. Use a Lime-A-Way type product to remove solid calcium and mineral buildup. After the mineral deposits are removed finish cleaning with a thin solution of cleanser, such as Bon-Ami, and water, and a low abrasion plastic scouring pad. Do not use a metal scouring pad as it is too abrasive and will leave carbon metal deposits on the stainless steel which will rust. Polish with a good quality stainless steel polish or obtain a stainless steel polish from RPDinc, see ACCESSORIES. Again, the use of distilled (de-ionized) water or filtered water will reduce the amount of cleaning necessary.

DO NOT use bleach or iodine based products to clean the Thermoplastic Water Bath as such products can quickly corrode the stainless steel Thermoplastic Water Bath resulting in pin holes and leaking water.

STERILIZING

The high heat levels of the Thermoplastic Water Bath, which approximate 175°F or higher, effectively sterilize the unit. You may also use a hard surface cleaner and disinfectant to clean and disinfect or alcohol for maximum disinfection.

DO NOT use bleach or iodine based products to sterilize the Thermoplastic Water Bath as such products can quickly corrode the stainless steel Thermoplastic Water Bath resulting in pin holes and leaking water.

CHANGE THE FUSE

Turn the power switch off and unplug the Thermoplastic Water Bath before starting. Locate the fuse holders on the back of the digital temperature controller control panel. Depress the fuse holder caps with the use of a standard screwdriver or fingers and rotate counterclockwise approximately 90° or until the cap becomes loose. Remove the fuse holder cap, remove the blown fuse, and replace with a 15 Amp, 250VAC, Fast Acting type fuse, 5mm x 20mm (S500R Buss Fast Acting).

After the new fuse is installed, re-install the fuse holder cap by depressing and rotating clockwise, approximately 90°. Ensure

that the fuse holder caps are secured. Plug the unit back into a power outlet. Turn the power switch on. Allow the water to warm up to the operating temperature before use.

QUALIFIED SERVICE PERSONNEL/BIOMEDICAL ENGINEER CAN REMOVE CONTROL PANEL FOR SERVICE

Turn the power switch off and unplug the Thermoplastic Water Bath before starting. The control panel is on the right side of the Thermoplastic Water Bath and houses the temperature controller, triac, fuses, line cord and timer. To remove the control panel, remove four Philips screws around the outside edge. The housing can be pulled out over the studs and laid down on its side. Unplug the white heater plug by pressing down on the latch and pull out. Unplug the black thermocouple plug by pulling out. Remove the ground lead from the exterior side stud with an 11/32" (9 mm) wrench. Return the electronic control panel to RPDinc for service.

The temperature controller can be removed from the front by pressing the tabs outward on two sides releasing the control and allowing it to slide out. The temperature control has a small LED indicator light on the right side that flashes or is on steady when unit is heating. This causes the triac LED indicator light to be on at the same time that heater power is applied.

REPAIRS

Call RPDinc if any problem occurs. All repairs must be arranged in advance by contacting RPDinc directly for a return merchandise authorization number (RMA).

The side mounted control panel houses all electronic controls, which a Qualified Service Personnel/Biomedical Engineer can remove. See Control Panel Removal. Only, in extreme cases will the complete unit need to be returned for service.

If the entire unit needs to be returned contact RPDinc directly, and we will make arrangements and send you a carton for returning the unit to our factory. When the unit is received by RPDinc, if warranty doesn't apply an estimate of repairs will be made and you will be contacted.

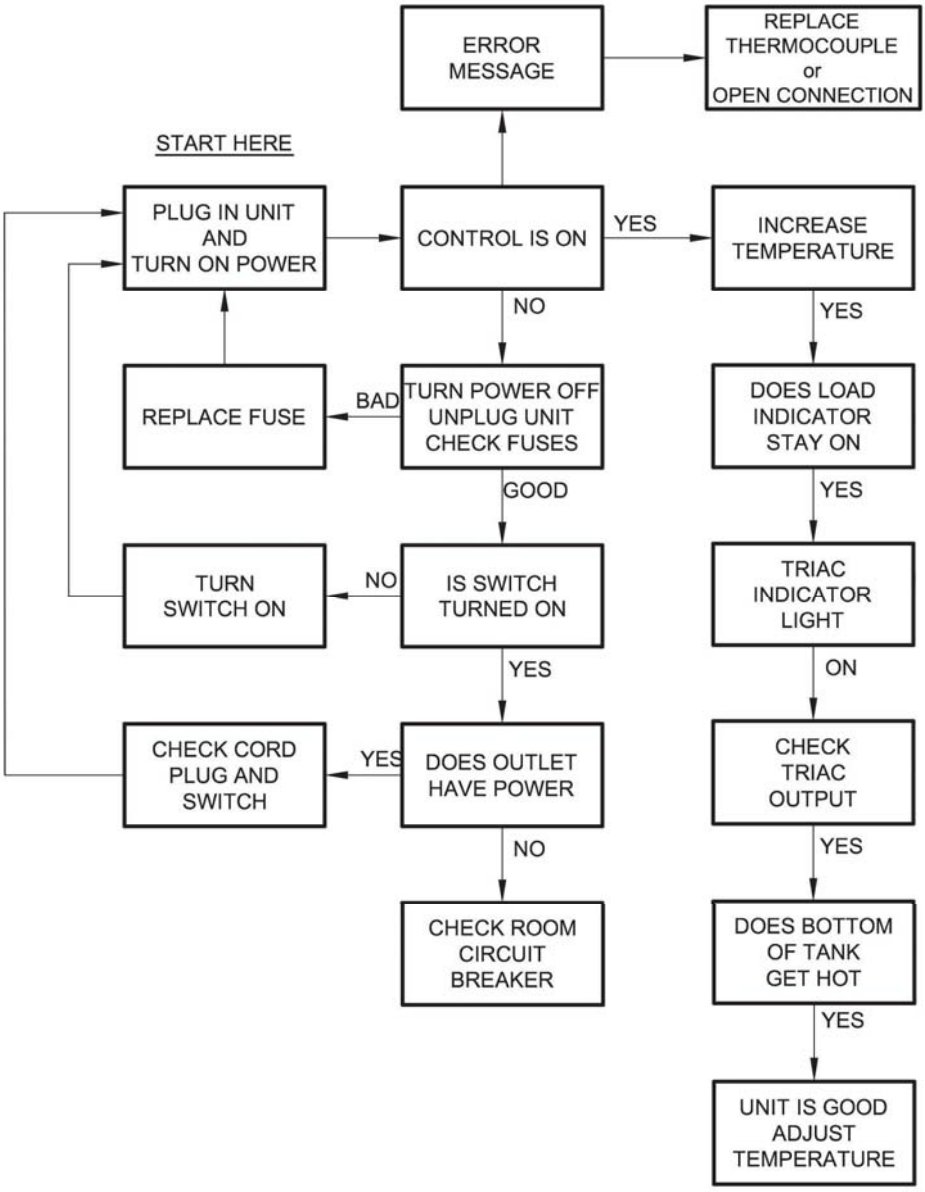
SPECIFICATIONS

Water Temperature Range: 100 to 190°F (37° to 88°C)
Temperature Accuracy: ±2°
High Limit Temperature: 190°F or 88°C
Temperature Controller Type: PID
Thermocouple: J
Mechanical Timer: Up to15 Minutes with a 3 Second Bell Ring
Power Source: Refer to Item Number and Description
Line Frequency: 50-60 HZ
Wattage: 1480 Watts, 120VAC or 2081/2518 Watts, 200/240VAC
Electronic Switching: Triac with Zero Crossover Switching
On/Off Switch: 20 Amp, Waterproof
Fused: Two Fuses for AC Lines
Power Cord: 8' (2.4 m) 3 Wire, 300 Volt, SJT, with Hospital Grade Plug
Over Temperature: 213°F Bi-Metal Disc Thermostat
Drain: Ball Valve with Hose Barb
Drain Hose: 3/8" ID x 5' (1 cm x 1.5 m)
Digital Thermoplastic Water Bath
- **Insulated Cover:** Lift Up or Removable, Stainless Steel
- **Clearance with Cover Open:** 35" W x 31" D x 32" H (89 x 79 x 81.3 cm)
- **Interior Dimension:** 25" L x 21" W x 5" D (63 x 53 x 12 cm)
- **Interior Material:** Stainless Steel
- **Depth Markings Inside:** 2", 3" and 4" (5, 7.6, and 10 cm) Indentations
- **Exterior Dimensions:** 35" L x 25" W x 8.5" D (89 x 64 x 22 cm)
- **Exterior Material:** Stainless Steel
- **Water:** Use Distilled or Filtered water to Prevent Mineral Deposits from Forming In Thermoplastic Water Bath

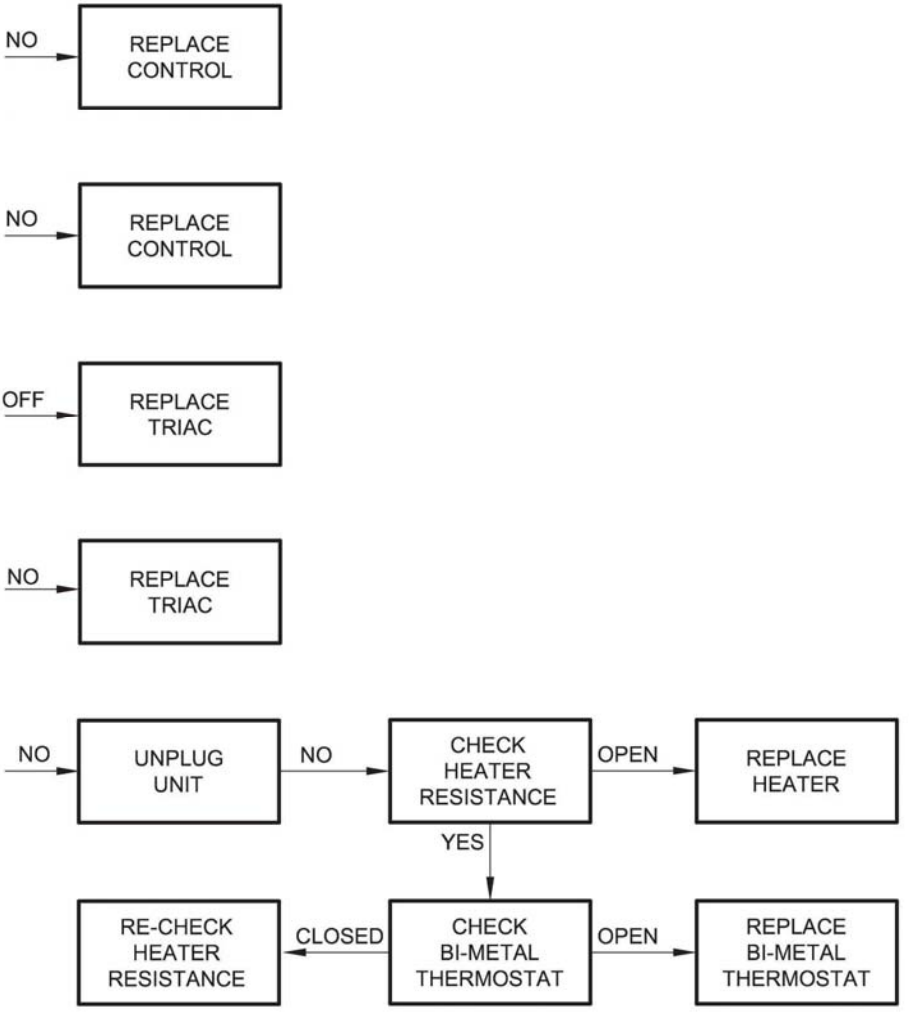
Environmental Conditions
- **Altitude Limits:** 2000 Meters
- **Ambient Temperature Range:** 0-40°C
- **Relative Humidity Range:** 75%

Pollution Degree: 2
Weight: 58 lb (26.1 kg)
INDOOR USE ONLY

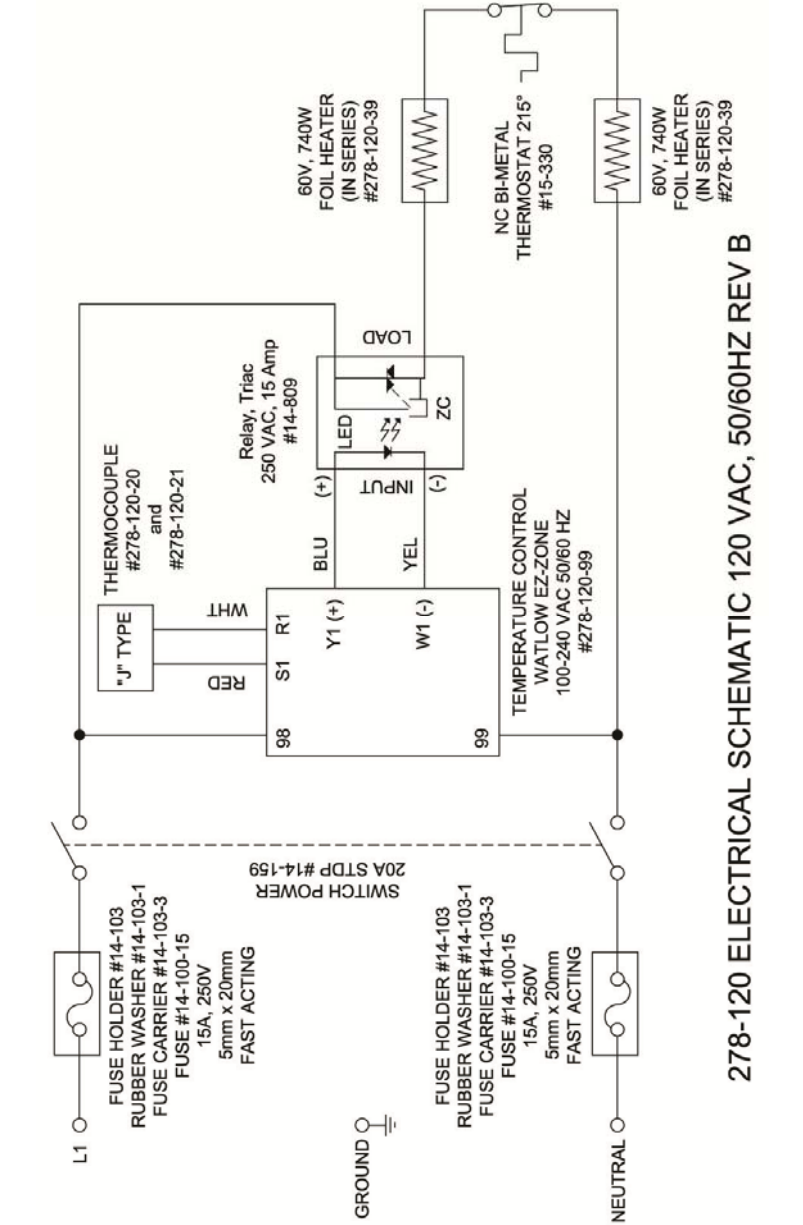
TROUBLESHOOTING FLOWCHART



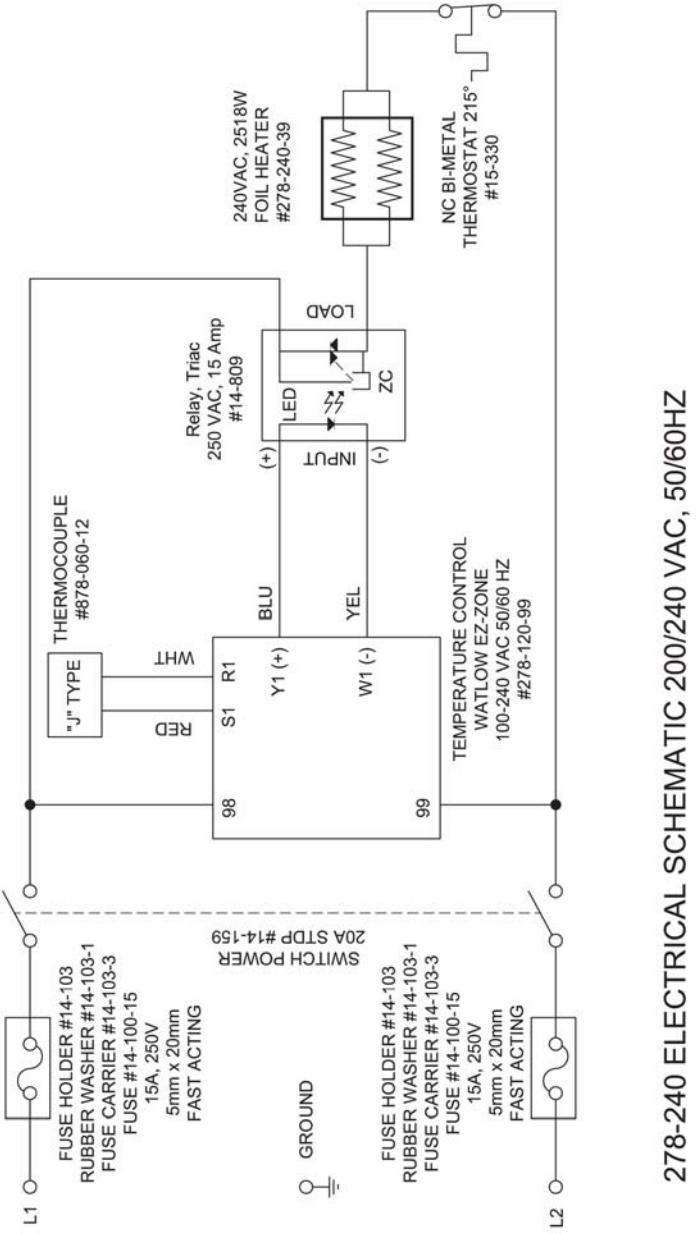
TROUBLESHOOTING FLOWCHART



ELECTRICAL SCHEMATIC



ELECTRICAL SCHEMATIC



278-240 ELECTRICAL SCHEMATIC 200/240 VAC, 50/60HZ

REV. A 11/12/13

REPAIR PARTS LISTING

Item #	Description
278-130-01	Control Box
278-308	Tray Lift Cable
278-310	Mesh Liner for Perforated Stainless Steel Tray
278-311	Mesh Liner Retainer Pin, Ribbed Push-in Pin
278-120-99	Temperature Control, EZ-ZONE, Programmed
878-060-12	Thermocouple Type"J" Patch Assembly
14-809	Relay, Triac, 250 VAC, 15 Amp.
15-330	Thermostat Selco SES-L213H
14-159	Switch, Rocker, Waterproof, 20amp Cherry KGC3ANB1BBD
14-103	Fuseholder, Touchproof (Interpower 80910030)
14-103-3	Fuse Carrier International (Interpower 80910310)
14-103-1	Rubber Washer
14-100-15	Fuse, 15 Amp, 250V, 5mm x 20mm, S500-R Buss Fast Act
10-408	Handle, Pull, Boteco 224-139
17-054	Valve Miniature Chrome Plated Brass Ball Valves
15-103	Bell Ringer, 15 Min.
278-120-48	Drain Hose PVC 3/8" ID x 5 Foot
41-027	Leveling Pad, 1/4" -20 x 1.5" Elastomer, VE-700

ACCESSORIES

Item #	Description
640-040	BKF Cleanser and Polish for Stainless Steel, 12 oz
640-044	Liquid Cleaning Polish Conditioner for Stainless Steel, 16 oz
640-048	LIME-A-WAY, Lime, Calcium and Rust Remover, 16 oz
878-160	Scotch-Brite Cleaning Pads, 10/Pkg

End of Document