

AMSCO Maintenance Manual



SPARKLE II SERIES
Laboratory Glasware & General Purpose Washers
Electric and Steam-powered Models
(3/86) P-757722-091

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SAFETY PRECAUTIONS

The following are personnel (WARNINGS) and equipment (CAUTIONS) safety precautions to be observed when operating or servicing this unit. This is a listing of all safety precautions appearing in the text. Carefully read them before proceeding to use or service the unit. Observance of these safety precautions will minimize the risk of personal injury or the possible use of improper maintenance methods which may damage the unit or render it unsafe. It is important to understand that these precautions are not exhaustive. AMSCO could not possibly know, evaluate and advise maintenance departments of all conceivable ways in which maintenance might be done or the possible hazardous consequences of each way.

The operation and maintenance procedures recommended by AMSCO are described in this manual. Only these recommended maintenance procedures should be followed.

IMPORTANT: AMSCO Descaler will saturate at 18% solution. If granules remain, add more hot water to dissolve them. Follow instructions on the container.

CAUTION: When using AMSCO STAINLESS STEEL CLEANER & POLISH or AMSCO PRY Cleaner, rub in a back-and-forth motion (in the same direction as the surface grain). Do not rub with a rotary or circular motion. Do not use either cleaner on painted surfaces. Follow directions on the containers.

WARNING: BE SURE TO PRESS THE POWER SWITCH OFF AND ALLOW THE WASHER TO COOL BEFORE STARTING ANY MAINTENANCE PROCEDURES.

CAUTION: When recalibrating the prerinse thermostat, do not move the selector stem; turn the adjusting screw only as far as necessary to accomplish desired setting.

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SECTION I

GENERAL INFORMATION

The product literature included in this section contains factual data relating to the principal descriptive and identifying characteristics of Sparkle II Glassware Washers. It describes and illustrates general concepts of the equipment, its purpose, capabilities, limitations, and technical specifications.



AMSCO

SPARKLE II SERIES
Laboratory Glassware & General Purpose Washers
• bottom-hinged door

**TECH
DATA**

SD-98R4

APPLICATION

AMSCO Sparkle II Series Washers automatically pre-rinse, wash and rinse a wide range of glassware and a variety of utensils. There's a model to meet your most difficult washing tasks ... whether in the Laboratory or the Central Service Department.

TYPE AND SIZE

There's a choice of single-door Washers, or double-door Washers for pass-thru operation. And the doors are hinged at the bottom to provide additional loading capabilities. Inside-chamber clearance dimensions are 26" wide x 23" high x 26" deep ... loading height is 36" at midpoint of leg adjustment. Both models are designed to accommodate 20" square loading racks.

DESIGN AND CONSTRUCTION

General. Structural members, base and cabinet are stainless steel. The

The Washer is delivered complete, ready for (but not including) connection to the building utility service lines. Only one electrical service connection is required ... specify 208, 240 or 480 volts, 60 Hz, 3 phase.

Processing Chamber interior includes integral wash-rinse tank; marine light; tracks for materials-handling equipment; height-adjustable, stainless-steel "hold-down" screen; and on Laboratory models, a combination coupling/diverting device for use with the optional glassware manifolds.

The wash-rinse tank holds approximately 10 gallons. It is automatically filled to and maintained at the proper water level. The top of the tank is covered with removable filtering screens. The screen perforations are smaller than the openings of the rotary spray nozzles ... reduces chance of nozzles becoming plugged. A specially designed stainless-steel overflow box conducts excess water to drain, thus skimming off soil.

Pressing a button on the control panel drains the tank for shutdown. Sparkle II Washers feature oversized drain lines that obviate costly drain pumps.

An automatic dispenser injects detergent into the wash water ... in the proper amount at the right time. One gallon of liquid detergent is included.

Chamber Doors are designed for safety, convenience and easy operation.

Each door features a double-strength, black-tinted glass window for observation of articles as they are being cleaned. The door is load bearing and includes tracks to accommodate the loading equipment. Low-heat-conducting handles are standard on all models.

What's more, all of the doors are so designed that a processing cycle won't start unless they are closed. And, if opened during a cycle, operation of the unit will cease immediately. In this case, closing the door will automatically continue the cycle without resetting any of the controls.

Structural Members are welded to and supported by the base. The base also supports the pump (or pumps), piping, valves, and temperature controls. Convenient access to these components is through a full-size, hinged, service access door which serves as the front of the base cabinet.

Recirculating Wash-Rinse Water Spray System consists of stainless-steel, upper and lower, hydraulically rotated spray manifolds. They have high-velocity, V-jet nozzles and machined ports to provide full and efficient water coverage of the load during applicable phases of the cycle. Hand-removable, stainless-steel end caps on the spray manifolds facilitate their easy cleaning.

A centrifugal pump circulates water between the tank and spray system. Interconnecting piping is stainless steel to ensure optimum Washer performance when using strong cleaning agents.

The pump has a capacity of 175 gpm at 50-foot head pressure. It's powered by a 3-hp motor with NEMA drip-proof frame and grease-packed ball bearings. The motor features a magnetic starter and overload protection. The suction side of the pump is protected by a fine-mesh strainer ... with area four times greater than suction intake ... to protect pump from soil particles. The strainer is easily removable for cleaning.

(Continued on next page)



Typical only - some details may vary.

**THE SELECTIONS CHECKED BELOW
APPLY TO THIS EQUIPMENT**

- Model and Type**
☐ Laboratory ☐ General Purpose
☐ Single Door
☐ Double Door (pass-thru)
Wash-Rinse Water Tank Heating
☐ Steam (closed coil) ☐ Electric
Mounting
☐ Free Standing
☐ For Recessing (Single-door type)
☐ For Recessing thru Barrier Wall (Only Double-door type)
Options
☐ Vapor Condenser
☐ Purified Water Rinse System
☐ With Integral Pump
☐ With Integral Pump and Storage Tank (10 gal.)
☐ With Integral Pump and Remote Storage Tank (20 gal.)
☐ Water-temperature Booster (see separate product literature)
☐ Steam ☐ Electric (54 kw)
☐ Materials Handling Accessories (see separate product literature)
☐ Sparkle Jet Detergent
 qty: _____ Gal(s). (P-757292-091)

Item No. _____
 Location(s) _____

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Noncirculating Rinse Water Spray System. A stationary spray manifold is above the load and a hydraulically rotated spray manifold below ... for maximum protection against residual contamination from soil-laden wash water. All parts of this system in contact with the rinse water are of high-quality, corrosion-inhibiting stainless steel.

During the first hot (tap-water) rinse, this system operates simultaneously with the recirculating spray system; then, only the non-circulating system (top and bottom) operates for the intermediate hot (tap-water) rinse. Finally, the non-circulating system operates again to rinse the articles with either hot tap water or Purified Water.

This repetitive rinsing by combination of the two systems provides unparalleled glassware and utensil cleansing.

Optional Equipment for Purified Water. If your Purified Water supply pressure is less than 25 psig, your Washer will require our optional, all-stainless-steel pump which includes a close-coupled, 1-hp drive motor.

Optional, stainless-steel, 10- or 20-gallon storage tanks (complete with water-level controls) and optional pump described above should be ordered if your Purified Water supply is less than 15 gallons per minute. The 10-gallon tank is mounted atop the Washer; the 20-gallon unit comes ready for wall mounting adjacent to the Washer ... this tank is for use when ceiling heights restrict you from using the Washer-mounted tank.

Coupler/Diverter Device for Laboratory Models. This unique, dual-purpose device couples to any one of the many materials-handling manifolds* available and diverts cleansing waters through it and the manifold to the inside surfaces of bottles, flasks, etc. This ... along with the simultaneous washing and rinsing of the outer surfaces by operation of the upper and lower spray system ... ensures total and superior cleansing.

All optional manifolds are of the integral dolly type for easy handling and positive alignment with the header. The operator unmistakably couples the manifold by merely turning a lever beneath the control panel. And it's not necessary to remove or adjust any part of the other spray systems. For operator convenience, pass-thru models have levers at both ends.

Tank Heating System automatically maintains the recirculating

*See separate product literature for selection.

wash and rinse water at 180 F (factory set, but easily adjustable). You may choose either a steam- or electrically powered system. Either system is so designed that the wash and rinse timers operate automatically in conjunction with the water temperature. The timers advance only if the water temperature is above the set value.

A steam-powered tank heating system includes a stainless-steel steam coil immersed in the wash-rinse tank. An electrically powered system includes renewable, stainless-steel-sheathed, immersion heaters with low water protection.

An optional water-temperature booster (either steam or electrically powered) is available to supply properly heated water to the wash-rinse tank. Constant availability of 180 F (or higher) water is recommended in order to wash, and rinse/sanitize at reduced cycle times. Ask for separate product literature.

Venting. The Washer has an 8" diameter, cast nickel-bronze cuff at the top ready for connection to your building vent system. Or you may specify our optional condenser which will automatically rid the chamber of most steam vapor as it is produced during operation of the Washer.

AUTOMATIC CONTROL

The main operating control panel is conveniently at eye level adjacent to the Washer door. The unloading end of the double-door Washer also includes "IN USE" and "UNLOAD" indicator lights.

Adjustable controls are pre-programmed for optimum cleansing efficiency. All that's required is to select the type of prerinse desired (hot or tempered) and the wash time ... and then press the "START" button. No further attention is required until a signal light indicates completion of the following cycle sequence.

- Tank fills with tap water at selected temperature to prerinse articles. (This step is omitted if rinse water remains from previous cycle.)
- Load is prerinsed with (circulated) water for preprogrammed time; tanks drains.
- Tank refills with hot tap water (water is automatically heated if required), and detergent is injected; water circulates to wash load; tank then drains.
- Tank refills with hot tap water (water is automatically heated if required); water circulates to rinse

load for first 60 seconds of pre-programmed fresh water rinse; tank drains.

- Load is rinsed with hot tap water for remainder of fresh water rinse ... first 55 seconds is with drain open.
- Finally, load is rinsed with Purified Water (if available) or again with hot tap water for pre-programmed time. (Note: Water from final rinse may be held for next load prerinse or it may be drained merely by pushing button on control panel.)

The control is also manually operable by a single selector to extend or bypass any of the cleansing phases.

Instrumentation. Except for the motor starters, control components are in a drawer-like cabinet with splash-proof panel. The motor starters are in the service compartment at the bottom of the Washer, protected from water damage. Interwiring of controls is done at our factory.

- **Automatic Controls** include push buttons, that glow when actuated, to (1) drain the tank and (2) energize the unit. In addition, there is a wash timer (0 to 15 minutes); START button; cycle-phase indicating lights; and selector for hot or tempered prerinse water ... this latter setting is controlled from an adjustable thermostat in the service compartment. A water-temperature gauge is in full view above the panel.

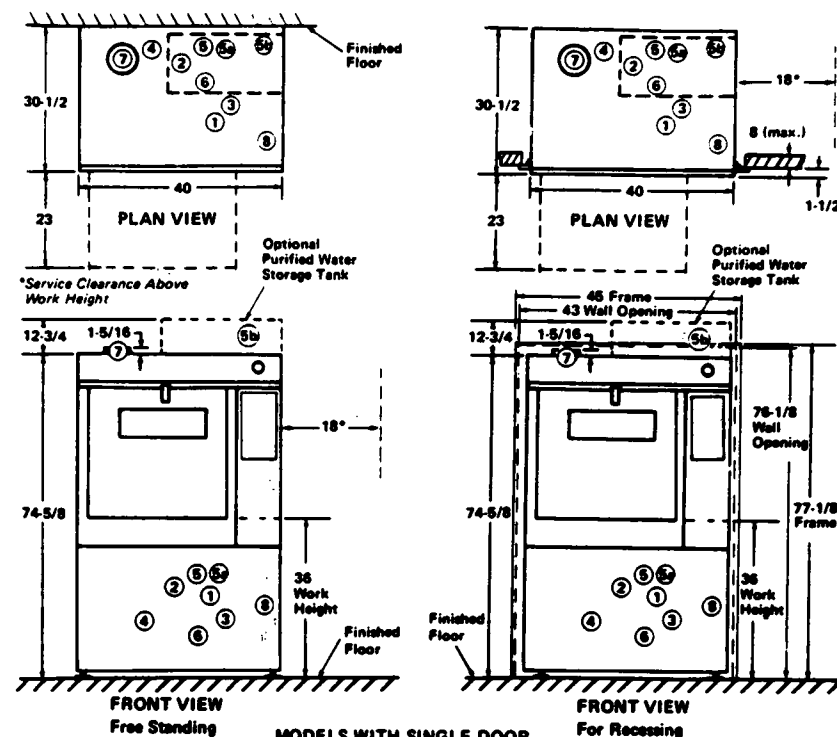
- **Manual Controls** are behind a hinged door within the main control panel. They include MANUAL-AUTOMATIC selector; low-water indicating light; and eight-position, cycle-phase selector. Adjustable timers for each of the various automatic rinse phases are also located here. The cycle-phase indicating lights operate during manual as well as automatic cycles.

MOUNTING

The Washer is available as a cabinet-enclosed, freestanding unit or for recessing. Units may be recessed either completely (single-door models) or through a barrier wall (double-door models). Stainless-steel wall flange and trim panels are included; two flanges, for a model mounted through a barrier wall.

MATERIALS HANDLING ACCESSORIES

See separate product literature for details.



DIMENSIONS ARE INCHES - DRAWING IS NOT TO SCALE

- ① HOT WATER - 1 NPT, 140 to 180 F (35 to 80 psig) - Connect to Water-temperature Booster if furnished, see Note 2.
- ② COLD WATER - 1/2 NPT (35 to 80 psig)
- ③ STEAM - 3/4 NPT (20 to 80 psig) - Not required if electric tank heaters are specified.
- ④ STEAM RETURN - 1/2 NPT - Not required if electric tank heaters are specified.
- ⑤ PURIFIED WATER (Distilled or Deionized) - 3/4 IPS (or equivalent), 12-15 gpm volume at 25 psig. ⑤a Location of ⑤ when optional stainless-steel pump is furnished. ⑤b Location of ⑤ when optional stainless-steel pump and storage tank are furnished. Also see Note 3.
- ⑥ DRAIN - 2 NPT
- ⑦ VENT - 8 ID, 8-3/8 OD (350 CFM at 1/4" SP) - Not required if optional condenser is specified
- ⑧ TERMINAL BOX:

Steam-heated Units - 208 (200) or 240 Volt, 15 Amp or 480 Volt, 10 Amp, 60 Hz, 3 Phase

Electrically Heated Units - 208 (200) Volt, 68 Amp, 240 Volt, 62 Amp or 480 Volt, 31 Amp, 60 Hz, 3 Phase (Listed amperage includes pumps and heaters. See Note 2 if electric Water-temperature Booster is furnished.)

NOTES:

1. Pipe sizes shown indicate utility service terminals. Building service lines to and from the equipment should be increased one pipe size to ensure optimum equipment performance.
2. See separate product literature if water-temperature booster is specified. Interconnecting piping between Washer and booster is not by AMSCO.
3. If 20-gallon wall-mounted Storage Tank is required for the Washer, request separate roughing-in prints from your local AMSCO Regional Office as there would be special installation requirements.
4. A floor drain should be provided in the vicinity of the Washer.
5. Consumption Rates (Approx.): Water - 45 gal./cycle, 15 gpm flow rate. Steam - 25 lbs./cycle, 250 lbu/hr (using 140 F water.) Purified Water - 6 gal./cycle, 12-15 gpm flow rate. Electric: Wash Pump - 2.2 kw; Options: PW Rinse Pump - 0.75 kw, Electric Tank Heaters - 20 kw and Electric Water-temperature Booster - 54 kw.
6. Sensible Heat Loss: Approx. 10,000 BTU/HR.

... CHECK LOCAL CODES ...

This print is for guidance when planning space and utility services. Actual installation prints may be obtained from any AMSCO office or representative.

SECTION 2

OPERATING INSTRUCTIONS

2-1. GENERAL

The following instructions are intended to guide servicemen: (1) when instructing operators in techniques that will ensure optimum equipment performance; and (2) when verifying the validity of operator complaints. If the Washer is not operating properly refer to Section 5, TROUBLESHOOTING. For capabilities of the equipment, refer to Section 1, GENERAL INFORMATION.

Figure 2-2, page 2-5 shows the Washer controls and operating components in their approximate locations.

2-2. BEFORE OPERATING THIS EQUIPMENT

1. Position building supply disconnect switch (circuit breaker) at ON. Be sure building water and steam (if applicable) valves are open.

2. Open the chamber door and then actuate the Power switch. The chamber light will automatically come on if a vertically raised door; if a bottom hinged door, actuate the chamber Light Switch.

3. Be sure that wash and rinse spray pipes, nozzles, refuse screens, and pump intake filter are clean. If tank contains water, press Drain switch. If cleaning is necessary, refer to PREVENTIVE MAINTENANCE (Paragraph 4-3).

4. Replace filter screen; be sure it is firmly inserted in pump suction pipe. Position refuse screens on top of tank. Check revolving spray arms; be sure they rotate freely.

5. Check (optional) manifold coupler diverter handle; be sure it is positioned away from chamber.

6. Open front access panel; be sure prerinse thermostat is set for desired water temperature. If

a steam-powered model, open Washer steam supply valve.

7. Check detergent supply; replenish if necessary. Close access panel.

NOTE: We recommend Sparkle-Jet Detergent ... it is specially formulated for one-step cleaning and rinsing. (Sparkle-jet is available from your local AMSCO representative.)

8. Open secondary control panel and set timers as follows:

- Prerinse – 30 seconds
- Fresh rinse – 2 minutes
- Purified rinse – 12 seconds

9. The Washer is now ready for operation. Be sure Cycle Knob is OFF.

2-3. OPERATING THE EQUIPMENT

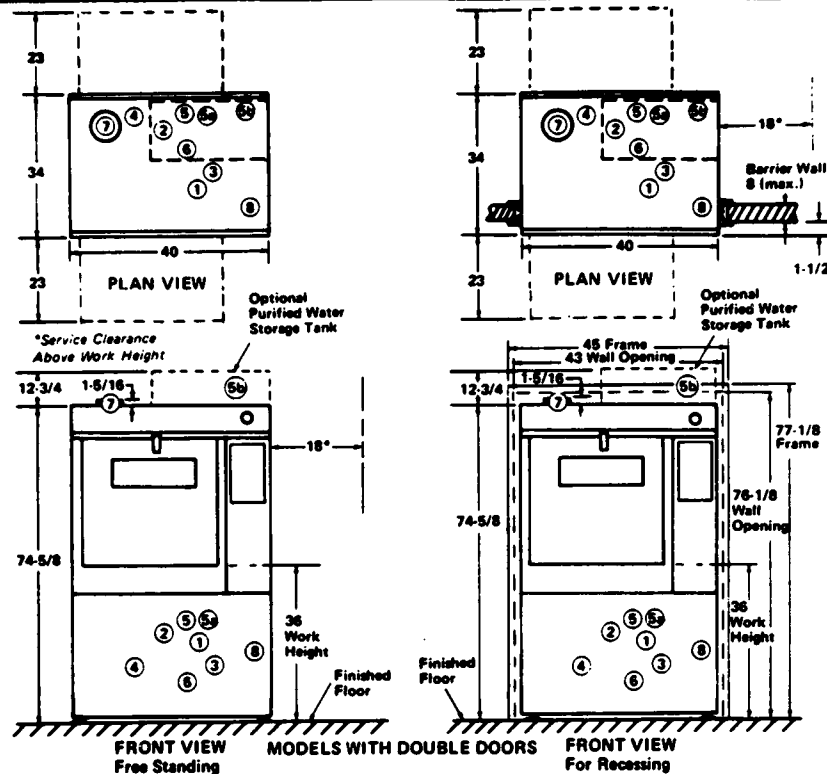
Automatic Operation ...

1. Position Mode Selector switch at AUTO.

2. Remove gross soil from items to be processed; load them into or onto proper rack or dolly ... see descriptions in Paragraph 2-4. So arrange items that all surfaces will receive maximum spray coverage.

3. If an acid prerinse solution is desired, place additive on chamber refuse screens (Fig. 2-1).

4. Check position of chamber hold-down screen assembly (Fig. 2-1). If necessary, pull entire hold-down assembly forward until it clears side supports; then locate it in a notch that will accommodate height of load to be processed.



DIMENSIONS ARE INCHES – DRAWING IS NOT TO SCALE

- ① HOT WATER – 1 NPT, 140 to 180 F (35 to 80 psig) – Connect to Water-temperature Booster if furnished, see Note 2.
- ② COLD WATER – 1/2 NPT (35 to 80 psig)
- ③ STEAM – 3/4 NPT (20 to 80 psig) – Not required if electric tank heaters are specified.
- ④ STEAM RETURN – 1/2 NPT – Not required if electric tank heaters are specified.
- ⑤ PURIFIED WATER (Distilled or Deionized) – 3/4 IPS (or equivalent), 12-15 gpm volume at 25 psig. ⑤ Location of ⑤ when optional stainless-steel pump is furnished. ⑤ Location of ⑤ when optional stainless-steel pump and storage tank are furnished. Also see Note 3.
- ⑥ DRAIN – 2 NPT
- ⑦ VENT – 3 ID, 8-3/8 OD (350 CFM at 1/4" SP) – Not required if optional condenser is specified
- ⑧ TERMINAL BOX.

Steam-heated Units – 208 (200) or 240 Volt, 15 Amp or 480 Volt, 10 Amp, 60 Hz, 3 Phase

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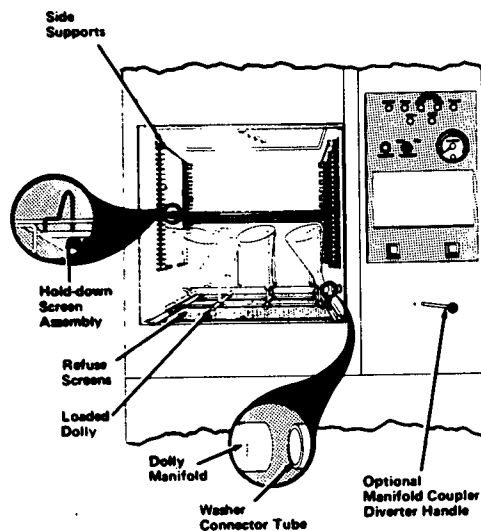
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2. See separate product literature if water-temperature booster is specified. Interconnecting piping between Washer and booster is not by AMSCO.
3. If 20-gallon wall-mounted Storage Tank is required for the Washer, request separate roughing-in prints from your local AMSCO Regional Office as there would be special installation requirements.
4. A floor drain should be provided in the vicinity of the Washer.
5. Consumption Rates (Approx.): Water – 45 gal./cycle, 15 gpm flow rate. Steam – 25 lbs/cycle, 250 lbs/hr (using 140 F water.) Purified Water – 6 gal./cycle, 12-15 gpm flow rate. Electric: Wash Pump – 2.2 kw; Options: PW Rinse Pump – 0.75 kw. Electric Tank Heaters – 20 kw and Electric Water-temperature Booster – 54 kw.
6. Sensible Heat Loss: Approx. 10,000 BTU/HR.

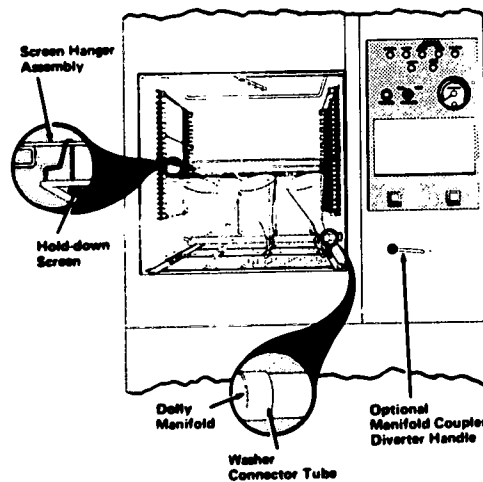
... CHECK LOCAL CODES ...

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a. Manifold Coupler Disengaged.



b. Manifold Coupler Engaged.

Figure 2-1. CHAMBER LOADING.

5. Position loaded rack or manifold dolly in center of chamber. Do not place more than one rack at a time in chamber.

6. If (optional) manifold coupler is to be used, align manifold dolly opening with Washer connector tube (Fig. 2-1). Rotate diverter handle toward chamber far enough to be sure tube and manifold are properly aligned; then continue rotating handle until it stops.

7. Be sure hold-down screen assembly is in notch directly above load (see step 4). Then, while holding hanger assembly with one hand, pull forward on screen with other hand (Fig. 2-1). Allow screen to come to rest on top of load. (Note: Weight of screen will prevent items from "bouncing" while being processed.)

8. Close chamber door(s). Chamber light on a vertically raised door model should go off (unless Light switch on secondary control panel has been pressed). The Ready light should come on (both models). If Ready light fails to come on, check to be sure door(s) is closed and that controls have been properly set (see Paragraph 2-2, BEFORE OPERATING THIS EQUIPMENT).

9. Select desired wash time. This should be 3 minutes for light soil; 5 minutes for medium soil; 8 minutes (minimum) for heavy soil.

Position Prerinse selector at "HOT" for non-protein or greasy soils . . . at "TEMPERED" for protein soils.

10. Be sure Mode Selector switch is at AUTO. Press Start button; cycle-phase indicating lights should glow in sequence as cycle progresses. If desired, cycle progress may also be followed by observing rotation of cycle knob on secondary control panel. The following is the cycle sequence (also see Flow Diagram, Fig. 5-1):

- **PRERINSE** – Tank fills with hot or tempered (hot and cold mixed) tap water, as selected. (This step is omitted if rinse water remains from previous cycle.) Pump then circulates water for preset period; tank drains.

- **WASH** – Tank refills with hot tap water through spray system. Detergent-laden water is injected directly into tank. Pump circulates water to wash load. Thermostatically controlled system heats water if required. Timer will not advance unless water is proper temperature (170-180 F). Tank drains at end of wash time.
- **POWER RINSE** – Tank refills with tap water, automatically heated, as required. Pump circulates water for (factory-set) 20 seconds during which fresh water is also admitted to "skim-off" particulate matter.
- **FRESH RINSE** – Load is rinsed with hot tap water for the preset period. Drain valve opens for first 55 seconds to flush tank. Valve then closes for remainder of period to accumulate a full tank of water for prerinse phase of next cycle.
- **PURIFIED RINSE** – Load is rinsed with purified water (if installation is so equipped). Otherwise it will be rinsed again with hot tap water for preset period.
- **OFF** – Cycle-complete indicating light (also auxilliary panel UNLOAD light, if a pass-thru model) comes on. Washer is ready for unloading.

11. Open chamber door. If manifold coupler was used, rotate handle (Fig. 2-1) away from chamber and momentarily allow manifold to drain. Raise hold-down screen by pushing it toward back of Washer: remove rack or dolly from chamber. (To prevent formation of condensate within items, unload spindle-type dollies immediately upon their removal from chamber. Place items in a compartment-type-rack, if they are to be processed in a Glassware Dryer.)

NOTE: Water in tank may be saved for preinse phase of next cycle, or it may be removed by actuating the Drain switch. Drain will remain open until power is turned off or chamber door is closed.

Manual Operation . . .

1. Position Mode Selector Switch at **MANUAL**.
2. Remove gross soil from the items to be cleaned. Load items into or on proper rack or dolly ... see descriptions in Paragraph 2-4. So arrange items that all surfaces will receive maximum spray coverage.
3. If an acid prerinse solution is desired, place additive on chamber refuse screens (Fig. 2-1).
4. Check position of chamber hold-down screen assembly (Fig. 2-1). If necessary pull entire hold-down assembly forward until it clears side supports; then locate it in a notch that will accommodate height of load to be processed.
5. Position loaded rack or manifold dolly in center of chamber. Do not place more than one rack at a time in chamber.
6. If (optional) manifold coupler is to be used, align manifold dolly opening with Washer connector tube (Fig. 2-1). Rotate diverter handle toward chamber far enough to be sure tube and manifold are properly aligned then continue rotating handle until it stops.

7. Be sure hold-down screen assembly is in notch directly above load (see step 4). Then, while holding hanger assembly with one hand, pull forward on screen with other hand (Fig. 2-1). Allow screen to come to rest on top of load. (Note: Weight of screen will prevent items from "bouncing" while being processed.)

8. Close chamber door(s). Open door on secondary control panel and be sure Mode Selector switch is at **MANUAL**. Position Cycle Knob as follows:

NOTE: Cycle knob may be moved in either direction (to skip or repeat a phase) while operating in manual mode; however, once a drain setting is established, allow tank to empty before advancing knob. This will avoid an inadequate supply of water to the pump and, hence erratic results. Timing for each phase is at option of operator.

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- **PRERINSE** – Wait until tank fills (if empty); then time prerinse period.
- **DRAIN** – Do not proceed until **LOW WATER** indicating light comes on.
- **WASH** – Wait until tank fills with detergent-laden, hot tap water at proper temperature; then time washing period.
- **DRAIN** – Do not proceed until **LOW WATER** indicating light comes on.
- **POWER RINSE** – Wait until tank fills; then time this phase. (Fresh water will be admitted continuously during rinse phase.)
- **FRESH RINSE** – Time this phase. Drain will automatically open during first 55 seconds to flush tank, then it will close automatically to accumulate a full tank of water for prerinse phase of next cycle.
- **(OPTIONAL) PURIFIED RINSE** – Time this phase. Do not let supply of purified water run out.
- **OFF** – Cycle is complete; Washer is ready for unloading.

9. Open chamber door. If manifold coupler was used, rotate handle away from chamber and momentarily allow manifold to drain. Raise hold-down screen by pushing it toward back of Washer; remove rack or dolly from chamber. (To prevent formation of condensate within items, unload spindle-type dollies immediately upon their removal from chamber. Place items in a compartment-type rack, if they are to be processed in a Glassware Dryer.)

NOTE: Water in tank may be saved for prerinse phase of next cycle, or it may be removed by actuating Drain switch. Drain will remain open until power is turned off or chamber door is closed.

At the end of each work day . . .

1. With power on, actuate Drain switch.
2. Close steam supply valve, if so equipped.
3. Clean Washer . . . see Daily Preventive Maintenance instructions, Paragraph 4-3. Do not turn off Power switch or building disconnect switch until cleaning procedure is completed.

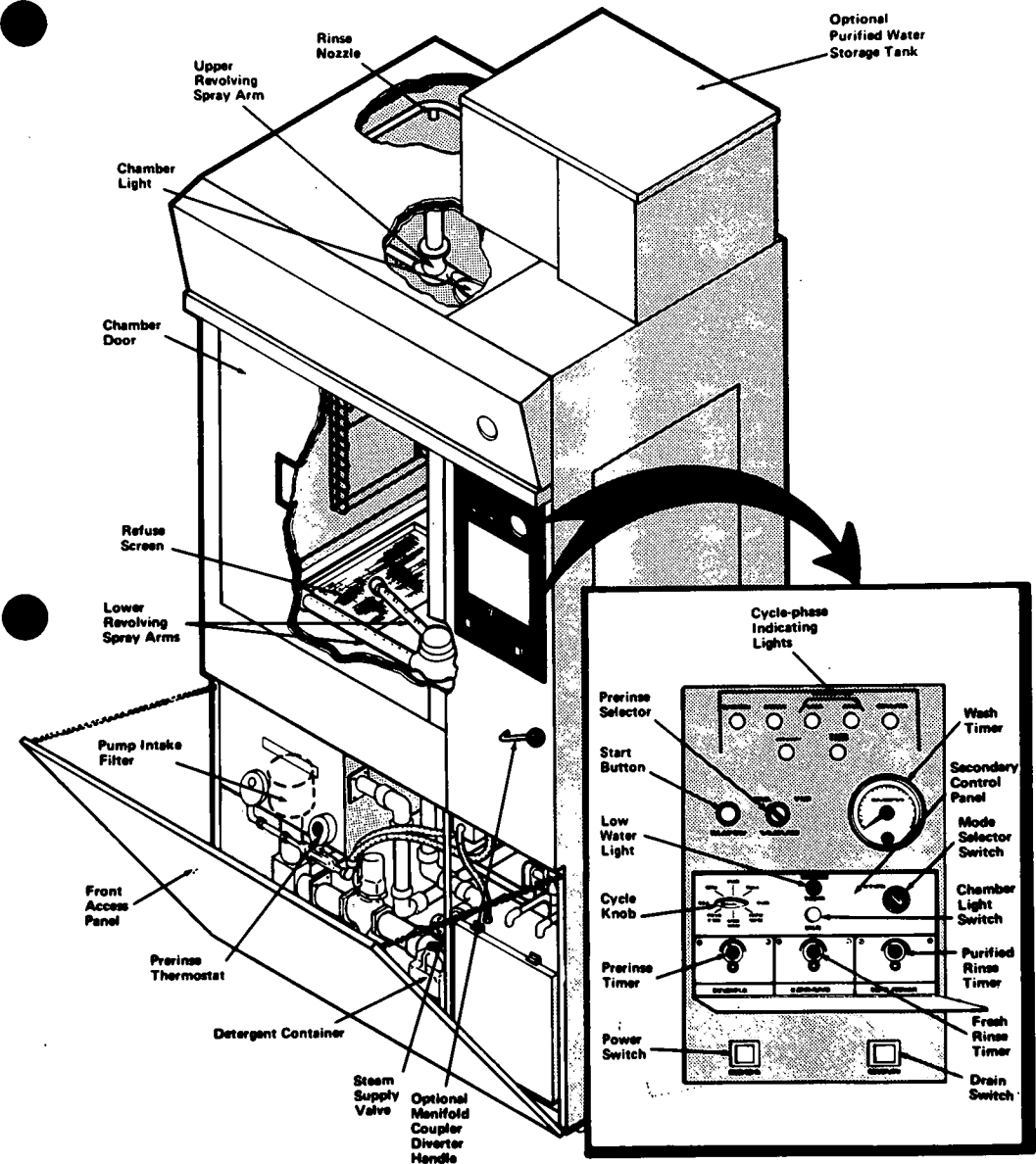
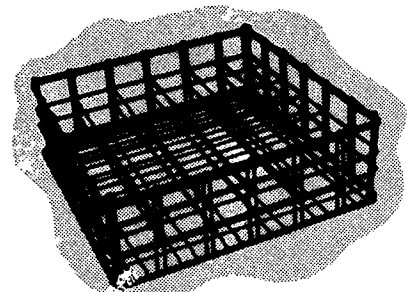


Figure 2-2. COMPONENT LOCATIONS.

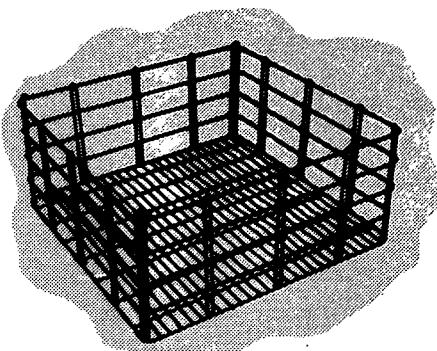
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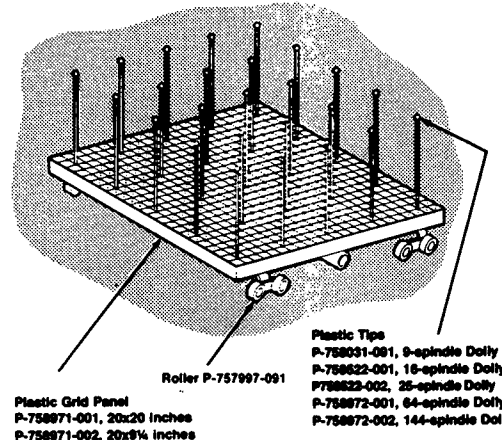
2-4. MATERIAL HANDLING ACCESSORIES



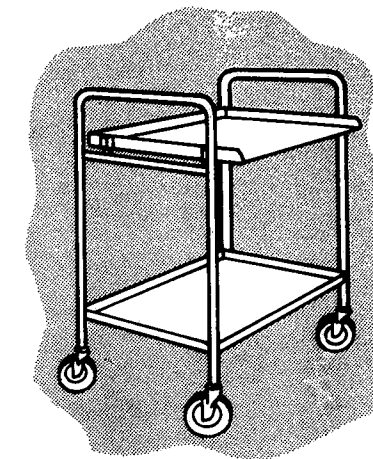
COMPARTMENT RACK — Accommodates AMSCO Square-Pak flasks, small Erlenmeyer flasks and various small cylinders. Load items with bottoms up.



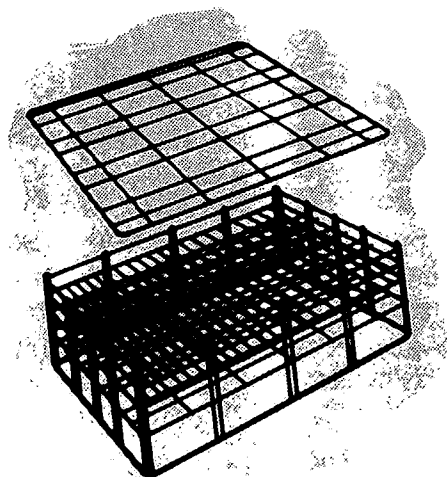
GENERAL PURPOSE RACK — Accommodates beakers, jars, utensils, test tube baskets, and other glass containers. Load items with bottoms up.



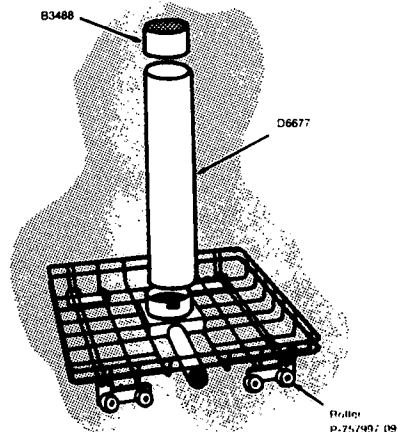
SPINDLE DOLLY — Accommodates miscellaneous narrow neck flasks, bottles, graduated cylinders, and volumetric flasks.



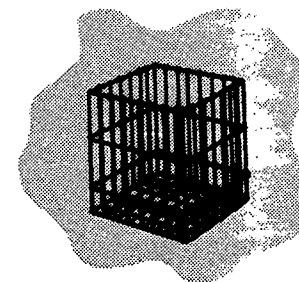
TRANSFER CARRIAGE — For loading, unloading and transporting dollies and racks of glassware, etc.



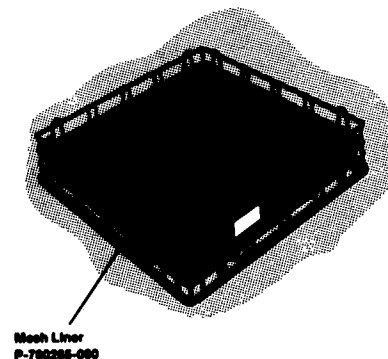
PETRI DISH RACK — Especially designed for washing petri dishes. Includes its own hold-down cover. Load all dishes in same direction, bottom-up.



PIPET DOLLY — Remove holder from dolly. If a flooded system (shown), load pipets in holder and insert hold-down screen over them. If a pressure system, load pipets on insert and place insert in holder. Replace holder on dolly.



TEST TUBE BASKET — Accommodates standard test tubes, vials, small bottles, and other glassware. Load items bottom-up. Insert cover and place basket in general purpose rack or dolly.



FLATWARE RACK — Accommodates various types of flatware. Mesh liner prevents items from slipping through open framework.

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SECTION 3

PRINCIPLES OF OPERATION

3-1. GENERAL

The functions of the control are performed by a Ledex rotary solenoid selector switch consisting of 4 decks, each containing eight positions. Each switch terminal has a two digit number. The first digit is the deck number, the second digit is the position number. The Number 1 position is always the common input terminal on any deck. In the OFF position the only terminal hot, other than the inputs, is Terminal 45.

When power is applied to the unit, the power light is on. This light is part of the power switch.

With the door(s) open, the marine light should turn on. The marine light can also be operated by the manual light switch with the doors closed.

With the doors open, the manual drain circuit has power applied to it. The only time the manual drain is enabled is when the doors are open. Pressing the manual drain switch pulls in R8 and closes R8A and B. Switch R8A provides a holding circuit on R8 and the drain light. Switch R8B closes and energizes the drain valve. Closing the door will remove power from the circuit.

Whenever power is applied to the circuit, V9 is energized. This is an optional condensing water valve. If the unit has electric heat, R11 is also used.

The control circuit is operated by 120 VAC. All pump motors are 3Ø AC.

3-2. DESCRIPTION OF COMPONENT FUNCTIONS

OFF POSITION

With the door(s) closed, power is applied to Wire No. 7. This feeds power to:

- The N.O. contact of PT1 switch.
- The cam switch added to the rotary switch which will energize the ready light.
- The lower tank floats: high and low.
- LR3 A; N.C. (to low water light).
- R7 and R4A
- LR3B and LR3A
- Terminals 31 and 41 of the rotary selector switch.

The float switches control LR3 relay. The high float will cause all B contacts to close. The low float will cause all A contacts to close. As drawn, the tank is empty and all A contacts should be closed. This places power

on the low water light and terminal 21 of the rotary selector switch.

With the rotary selector switch in the OFF position, terminal 41 connects to terminal 45 supplying power to the START switch.

CYCLE START

Pressing START switch applies power to Wire No. 21 which travels up the page to one contact of the manual-auto switch which will be closed in the auto position. This in turn applies power to PT switch No. 1 which runs the pulse timer. Motor switch PT1 picks up and keeps the PT motor running. After 90° of rotation, PT SW2 drops and powers the rectifier and switch solenoid. The selector switch advances to prewash position. Due to the action of the cam switch, the READY light goes out and the IN-USE light comes on. The PT SW2 picks up again as PT motor continues to run. Pulse timer, PT1, drops and PT motor stops.

PREWASH

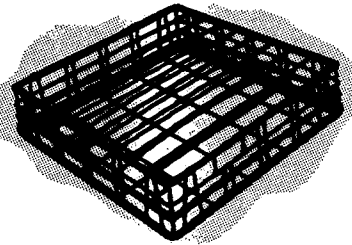
Terminals 28, 38 and 44 are hot. (Tank is empty so LR3B is open and no power goes to terminal 11.)

Terminal 28 applies power to the prerinse tempering switch. In the HOT position of the tempering switch, SW1A is closed and energizes the rinse valve V2. The tank fills by this means. If the tempering switch is in the WARM position, terminal 28 does nothing and terminal 38 takes over. Terminal 38 will energize relay R2 no matter what position the tempering switch is in. SW1B will be closed in the WARM position, applying power to R2A which will be closed, powering the prerinse thermostat. This will alternately energize V1 (cold water valve) and V2 (rinse valve) to maintain the desired temperature of rinse water.

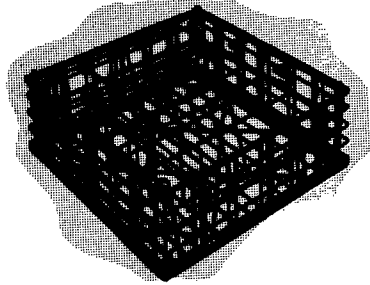
When the lower tank fills, the high float closes and energizes the B side of LR3 and all B contacts close. A contacts open. Terminal 28 goes dead and 18 becomes hot.

When terminal 18 becomes hot T1 timer motor starts.

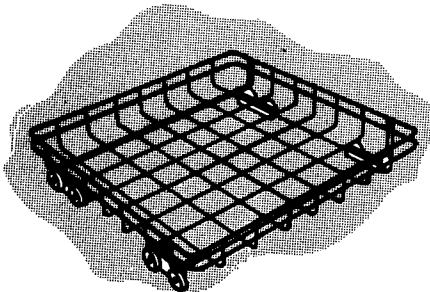
Terminal 44 supplies power to the prerinse light and T1 clutch. Also through R2A to T1A and via T1A N.C. to LR3B which is closed and starts the wash pump by pulling in P7 coil. T1 is set for some value between 0 and 5 minutes.



TRAY RACK — Accommodates nine shallow trays. Place trays upright between spacers.



UTENSIL RACK — Accommodates three bedpans and three urinals or three hand basins and three emesis basins. Insert utensils vertically in rack. Invert urinals.



GENERAL PURPOSE DOLLY — For use with any of the previously mentioned racks or test tube baskets.

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When T1 times out, T1A picks up and supplies power to PT1 switch and runs the pulse timer. The selector switch moves to the next position.

DRAIN

Terminals 17, 37 and 43 become hot. Terminal 17 has no function. Terminal 37 keeps the prerinse light and T1 clutch energized. Terminal 43 energizes V7, the drain valve. The lower tank will drain and when empty, LR3A will be energized by the low float. LR3 A contacts close and B contacts open. Terminal 17 loses power and 27 energizes. The low water light comes on. Terminal 27 feeds power to the pulse timer which energizes the rotary switch rectifier and coil, advancing the machine to the next step.

WASH

Terminal 26, 36 and 42 are hot. Tank is empty, low water light is on. Terminal 26 energizes V2 (the rinse valve) filling the tank. Terminal 36 powers T2A switch common. Terminal 42 powers LR3 B which is open with an empty tank. R5B N.C. The wash light comes on via R5B N.C. and T2 clutch pulls in. If electric heat is supplied, R11 will be energized, shutting off power to V9, the condensing valve.

The tank fills and the high float transfers LR3 to the B side. Low water light goes out. Terminal 26 loses power and terminal 16 is energized. Power is applied to LR3 B via terminal 36 and T2A and the wash pump starts via P7. Terminal 16 powers several things. T7 is energized and, via T7A, the detergent valve opens. Via the manual-auto switch, power is sent to the 155° thermostat. When the water hits 155°, this thermostat closes and energizes T2 motor, starting the wash timer. Power from terminal 42 powers the 160° thermostat via LR3B and provides heat to the water in the wash tank. After T2 times out (0 to 15 min.), T2A provides power to PT switch 1 to advance the control.

DRAIN

Terminal 15, 35 and 41 are hot. Terminal 41 is common and can be ignored. Terminal 35 maintains power to T2 clutch and the wash light and also to the heat circuit.

Terminal 15 energizes the drain valve V7. When the tank empties the low float sets LR3 to the A side. terminal 15 loses power and 25 is energized. Terminal 25 sends power to PT1 switch which runs the pulse timer and advances the control to the REST position.

POWER RECIRCULATED RINSE

Terminals 24, 34 and 48 are hot. Terminal 34 powers V2 and fills the tank. Terminal 48 lights the fresh rinse light, pulls in R5 and powers T4 clutch. Contacts R5B provide power to LR3B in the heat circuit and LR3B will close when the tank fills. Terminal 24 has no function.

When the tank is full, the high float transfers LR3 to the B side. Terminal 24 loses power and 14 is energized. Terminal 14 applies power to the manual-auto switch which powers T4 motor. The power REC rinse light comes on and power is applied to R5A which is closed and powers T4A. Switch T4A N.C. powers LR3B which pulls in P7 and starts the wash pump. After T4 times out (0-5 min.), T4A picks up and powers PT1 to advance the control.

FRESH RINSE

Terminals 13, 33 and 47 will be hot. Terminals 13 and 23 have no function. Terminal 33 powers V2, the rinse valve. Terminal 47 places power on T3B, T5 clutch and motor. R6 fresh light, R5 and T3 clutch and T3 motor.

With R6 pulled in, R6B will be closed and the drain valve will be open until T5 times out (55 secs.). The tank heat stays on. After T3, the fresh rinse timer (0-5 min.), times out, T3B closes and powers PT1 causing the control to advance to the next step.

PURE RINSE

Terminals 12, 32 and 46 are hot. Terminal 12 does nothing. Terminal 46 lights the pure water light. Terminal 32 powers R7A and T6A switch, T6 clutch, T6 motor via T6B, and V3 pure water valve. If supplied, P8 will be pulled in and the rinse pump will run. When T6 times out, T6A picks up and places power on R7 via the manual-auto switch.

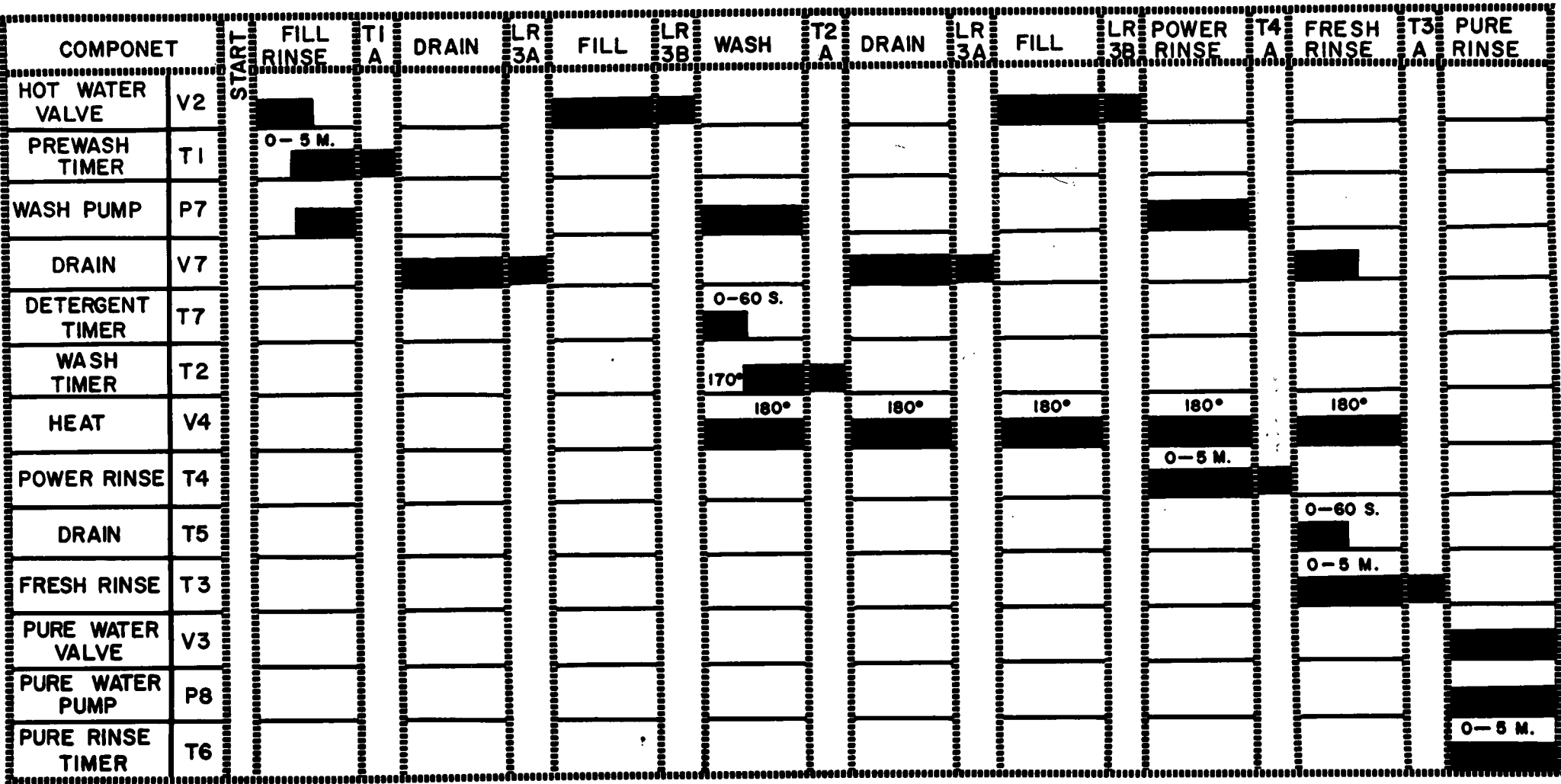
Switch R7A closes to provide power to PT1 and advance the control to the OFF position. Switch R7B closes and pulls in R4. Switch R4A closes and holds R4 in, lighting the CYCLE COMPLETE light. Switch R4B keeps the READY light off.

Opening the door on the chamber will reset the control back to the READY position.

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Figure 3-1. CYCLE GRAPH.



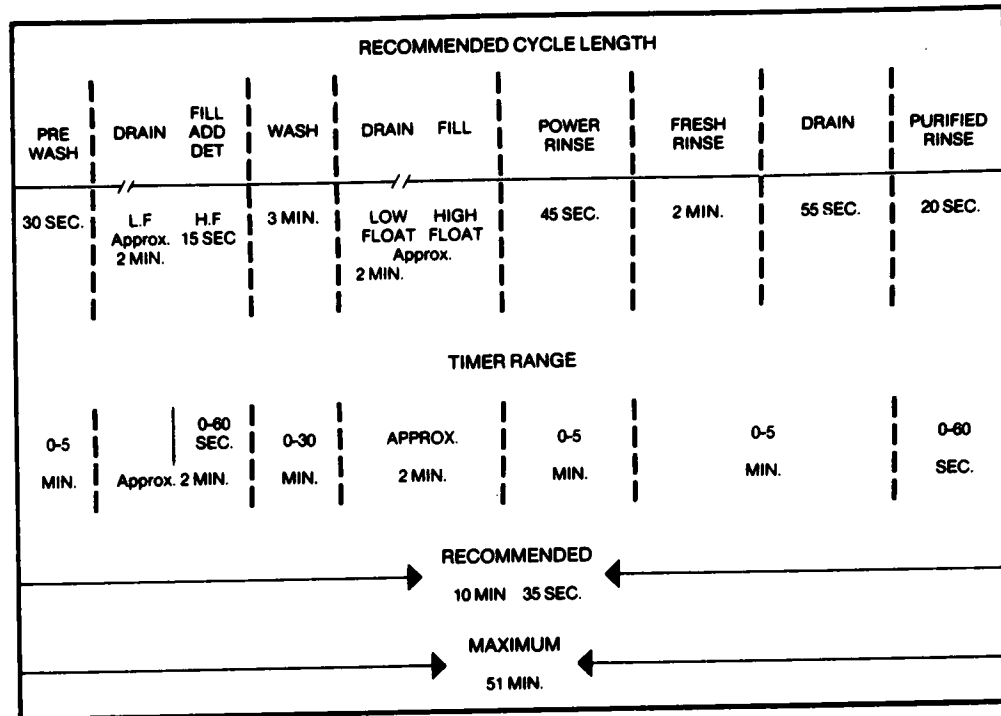


Figure 3-2. CYCLE SEQUENCE TIME CHART.

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SECTION 4

INSPECTION AND MAINTENANCE

4-1. GENERAL

Maintenance described in Paragraphs 4-2 and 4-3 should be performed periodically. Frequency, unless otherwise indicated, is determined by usage of equipment. Should a problem occur with Washer, or should it not operate as described in Paragraph 4-2, refer to Paragraph 4-4, TROUBLE-SHOOTING.

4-2. PERFORMANCE VERIFICATION

1. Check installation requirements against specifications in Section 1. Be sure ventilation is adequate for proper operation and maintenance.

NOTE: The pipe sizes shown on the specifications are of the terminal outlets. Building lines to and from the equipment should be increased one pipe size to ensure optimum performance.

2. Inspect Washer exterior for damage or misaligned parts.

3. Check chamber door(s) for ease of movement, proper closure and adequate seal.

4. Inspect Washer interior for damage or misaligned parts and for overall cleanliness. Also, be sure that all spray pipes and nozzles are properly positioned.

5. Remove side access panel. Examine electrical components for defects, loose wires and improper connections.

6. Refer to Section 2 (Paragraphs 2-2 and 2-3). Using an empty rack, run several (manual and then automatic) test cycles to verify Washer performance. Be sure cycles are as described in Section 2 and on Figure 5-1, Flow Diagram. Also check the following items:

a. Be sure tank fills as described in step 9 (automatic) and step 7 (manual).

b. Open side and bottom access panels and check plumbing assemblies. Be sure there are no leaks.

c. Be sure pump rotation matches direction of arrow on pump housing. If rotation is incorrect, make necessary corrections in 3-phase wiring at building disconnect switch (circuit breaker).

d. Check (optional) manifold coupler for ease of movement and proper seal.

e. Observe prerinse- and wash-water temperature readings (prerinse, as desired; wash 170-180 F). After they have stabilized, adjust tank thermostat settings, if required. Be sure that rinse-water is at desired temperature.

NOTE: Wash timer will advance during a cycle only when water temperature is at thermostat setting; water spray, however, is continuous.

f. Be sure instrumentation is operating properly.

g. If a water-temperature booster is used, check its installation against specifications in Section 1. Also, be sure rinse water pressure is sufficient (20 psig, minimum) and at correct temperature (180 F). Check pressure by gauge in rinse-water piping. Observe pressure throughout a rinse cycle.

NOTE: Water to booster (steam or electric) must be maintained at 140 F, minimum. If it is not, booster will be unable to produce 180 F water during sustained usage. The booster should be installed within six feet of the washer. A greater distance could result in an excessive temperature drop.

7. Inspect material handling accessories (see Section 2, Paragraph 2-4) for damage or misaligned parts. Be sure plastic tubing and caps are in place on spindles. Replace "O" rings in dolly connectors, if necessary.

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4-3. PREVENTIVE MAINTENANCE

Daily

NOTE: In addition to the following procedure, proper daily preventive maintenance should also include a check of temperature readings. Then, if necessary, temperature settings should be adjusted for proper temperatures to ensure optimum cleaning results. If usage dictates, Washer should be cleaned more often than prescribed.

1. Actuate Light switch on secondary control panel. (Note: Power switch and building disconnect switch should remain on until cleaning procedure is completed.)

2. Open chamber door(s). Leave door(s) partially open during shutdown to air Washer interior.

3. Clean work tables, if Washer is so equipped.

4. Remove and clean refuse screens and pump intake filter. Replace pump intake filter after cleaning. Do not replace refuse screens until after tank is cleaned (Step 6).

5. Inspect spray nozzles. If plugged, carefully clean nozzle openings with a 3/32" diameter wire or knife blade, as applicable. Remove end caps and turn Washer on briefly to rinse soil from spray pipes. Replace end caps. To remove hard-water deposits, soak nozzles in a solution of *AMSCO Descaler* (1 cup to 1 quart of hot water). Do not pound on spray pipes or nozzles to loosen scale.

IMPORTANT: *Descaler* will saturate at 18% solution. If granules remain, add more hot water to dissolve them. Follow directions on container.

6. Rinse tank and interior of Washer with clean water. Remove hard-water deposits by filling tank with fresh water, adding two cups of *AMSCO Descaler* and operating machine through several cycles to allow solution to circulate. Do not use abrasive cleaners, wire brushes or steel wool on Washer surfaces. When interior is clean, drain tank and flush it with clean water.

7. Replace refuse screens.

8. Inspect spindle dollies (if furnished) for damage, missing or plugged nozzles: replace as necessary. If plugged, carefully clear the nozzle openings with a 3/32" diameter wire or knife blade, as applicable.

9. Turn off light switch. Turn off building disconnect switch.

Weekly

1. Inspect control instruments and lights for malfunction or breakage ... repair or replace, as necessary.

2. Remove knurled retaining screw, lift lower spray pipes from rotary hub and remove end caps from wash-spray pipes. Thoroughly clean interior of pipes with a solution of *AMSCO Descaler* (1 cup to 1 quart of water); use brush provided. Replace end caps, spray pipe and retaining screw. Repeat above procedure for upper wash-spray pipes.

3. Clean Washer exterior with *AMSCO STAINLESS STEEL CLEANER & POLISH*; use *AMSCO Pry* cleaner to remove stubborn stains.

CAUTION: When using *AMSCO STAINLESS STEEL CLEANER & POLISH* or *AMSCO Pry Cleaner*, rub in a back-and-forth motion (in the same direction as the surface grain). Do not rub with a rotary or circular motion. Do not use either cleaner on painted surfaces. Follow directions on containers.

Monthly

1. Wash and (optional) rinse pumps: check for leaks; replace shaft seal, if necessary.

Quarterly

1. Check for drain valve seepage (e.g., tank water level drops 2" or more in 15 minutes); disassemble and clean valve, if required.

2. Shut off incoming water (steam too, if applicable). Disassemble and clean strainer. Disassemble and clean steam traps.

3. Check solenoid valves: disassemble and clean if sluggish or leaking.

SECTION 5
TROUBLESHOOTING

5-1. TROUBLESHOOTING

1. Use procedures in Section 2 to verify trouble symptoms.

2. After a symptom has been verified, refer to Table 5-1. From table, select example that is most appropriate to your problem. Follow recommended correction.

3. Use Flow Diagram (Fig. 5-1) and Electrical Schematic (Fig. 5-2) as aids in locating and understanding operation of Washer.

4. Refer to Section 6, COMPONENT REPAIR AND REPLACEMENT.

TABLES 5-1. TROUBLESHOOTING CHART

PROBLEM	CORRECTION
1. Washer will not operate	<p>a. Check electrical service to Washer; restore, if necessary</p> <p>b. Make certain door(s), is so closed that safety switch makes contact; repair or replace safety switch if necessary</p> <p>c. Check the (3-amp) fuse in motor control junction box; replace, if necessary</p> <p>d. Electrically Heated Units – make certain water in tank is at proper level; fill, if necessary. Be sure low-water cutoff switch is operable</p> <p>e. Check timers, start switch and other electrical components; tighten loose wires or replace faulty items, as necessary</p> <p>f. Be sure wash water pump is operational; refer to item 2</p>

TABLE 5-1. (Continued)

PROBLEM	CORRECTION
2. Wash or (optional) rinse water pump will not operate	a. Check electrical service to Washer; restore, if necessary b. Check starter overload switch in motor control junction box; reset, if necessary c. Check the three (10- or 15-amp) fuses in motor control junction box; replace, if necessary d. Clean wash pump intake filter e. Be sure supply line to (optional) rinse water pump is clear f. Check pump motor; repair or replace, as necessary g. Make sure tank is at proper height for wash pump
3. Cycle starts but all phases are not completed	a. Be sure wash water is at proper temperature (see item 7) if pump operates but wash timer does not advance b. Check starter overload switch(es) in motor control junction box; reset, if necessary c. Set timers to 0 and then reset for desired times; replace faulty timers d. Check motor running currents for overload; correct, if necessary. Replace overload relay (or relay heater) if relay repeatedly trips while motor is consuming normal current
4. Water temperature is not lowered when tempered prerinse is selected	a. Be sure building cold-water supply valve to Washer is fully open b. Check operation of cold-water-fill solenoid valve; clean, repair or replace, as necessary c. Clean cold-water supply line strainer
5. Circulating sprays are weak or sporadic	a. Make certain tank is filling properly (see item 8) b. Clean refuse screens, spray pipes and nozzles

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TABLE 5-1. (Continued)

PROBLEM	CORRECTION
5. Continued	c. Be sure pump rotation is correct; reverse L1 and L3 connections, if necessary d. Check motor running currents for overload; correct, if necessary. Replace overload relay or relay heater if relay repeatedly trips while motor is consuming normal current e. Clean pump intake filter f. Check impeller; replace, if worn. Realign if not keyed to shaft g. Check pump seals and castings for leaks; repair or replace, as necessary h. Check operation of tank-drain solenoid valve; repair or replace, as necessary
6. Fresh rinse water pressure is insufficient	a. Fully open building water supply valve b. Check building hot water flow pressure (should be 35 to 80 psig at Washer connection when rinse water is being used; 45 psig minimum at [optional] Booster connection) c. Clean spray pipes and nozzles d. Clean supply line and (optional booster) pressure-reducing-valve strainers e. Check operation of rinse-water solenoid valve and vacuum breaker; clean, repair or replace, as necessary
7. Wash-water temperature is not correct (170 to 180 F)	Steam-heated Units: a. Be sure steam supply valve is fully open and that building pressure is 20 psig minimum b. Check thermostat; adjust, repair or replace, as necessary c. Clean steam-supply-line strainer

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TABLE 5-1. (Continued)

PROBLEM	CORRECTION
7. Continued	<p>d. Check operation of steam solenoid valve and condensate trap; clean, repair or replace, as necessary</p> <p>Electrically Heated Units:</p> <p>a. Make certain water in tank is at proper level (see item 8)</p> <p>b. Check thermostat; adjust, repair or replace, as necessary</p> <p>c. Check low-water cutoff switch: reset, repair or replace, as necessary</p> <p>d. Check heater contactor; repair or replace, as necessary</p> <p>e. Check heater operation; repair or replace, as necessary</p>
8. Tank does not fill or maintain level	<p>a. Be sure valve in building water to Washer is fully open</p> <p>b. Check operation of tank-drain solenoid valve: repair or replace, as necessary</p> <p>c. Check operation of hot-water-fill solenoid valves: repair or replace, as necessary</p> <p>d. Check for and repair leaks in the tank or overflow system</p> <p>e. Clean hot-water supply line strainer</p>
9. Fresh rinse water is not recommended temperature	<p>a. Check building hot water temperature and flow pressure (should be 140 F, 45 psig minimum if booster is used; 180 F, 35 psig minimum if booster is not used)</p> <p>b. If a steam-heated booster is used, check the following:</p> <p>1) Check building supply (should be 20 to 80 psig); correct, if necessary. Be sure control switch is on</p>

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C-1

TABLE 5-1. (Continued)

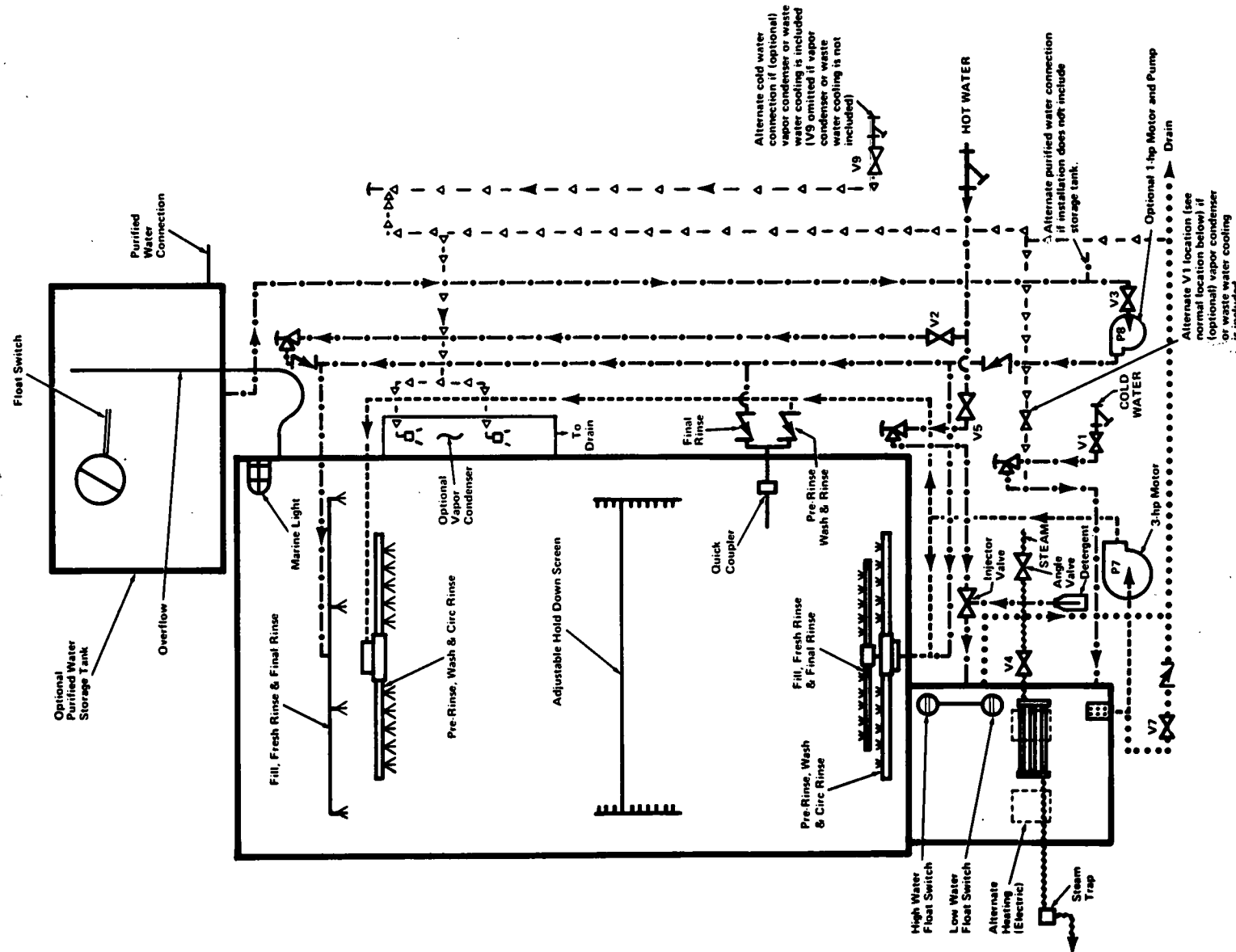
PROBLEM	CORRECTION
9. Continued	<p>2) Clean steam line strainer</p> <p>3) Check thermostat; adjust, repair or replace, as necessary</p> <p>4) Check operation of steam solenoid valve and condensate trap; clean, repair or replace, as necessary</p> <p>c. If an electrically heated booster is used, check the following:</p> <p>1) Check building supply; be sure control switch is on</p> <p>2) Check thermostat; adjust, repair or replace, as necessary</p> <p>3) Check electrical contactor and elements: repair or replace, as necessary. Reset low-water cutoff switch, if necessary</p>
10. Items are not clean or are spotted at end of cycle	<p>a. Be sure gross soil is removed from items prior to loading racks</p> <p>b. Be sure items are properly positioned in racks and that racks are not overloaded</p> <p>c. Be sure cycle wash and rinse times (depending on soil conditions) were sufficient</p> <p>d. Check wash and rinse temperatures: correct, if necessary</p> <p>e. Be sure detergent solution is maintained at proper strength and that a suitable detergent is used</p> <p>f. Clean the wash and rinse spray nozzles. Be sure they are properly positioned</p> <p>g. Check the (optional) purified water rinse system: repair or replace defective items. Be sure pump is operable and that it actuates when the Purified Water Rinse Light comes on</p>

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LEGEND

CYCLE DESCRIPTION

PHASE	OPEN VALVES
1. Pre-rinse (Hot or tempered)	Hot water fill (V2) Cold water fill (V1) as required.
2. Drain	Drain (V7)
3. Wash	Hot water fill (V2) Detergent Injector (V5)
4. Drain	Drain (V7)
5. Powered Rinse	Hot water fill (V2)
6. Fresh Water Rinse	Hot water fill (V2) for purging effect (continuous) Drain (V7) for flush (times)
7. Purified Rinse	Purified water feed to pump (V3)

SYMBOLS





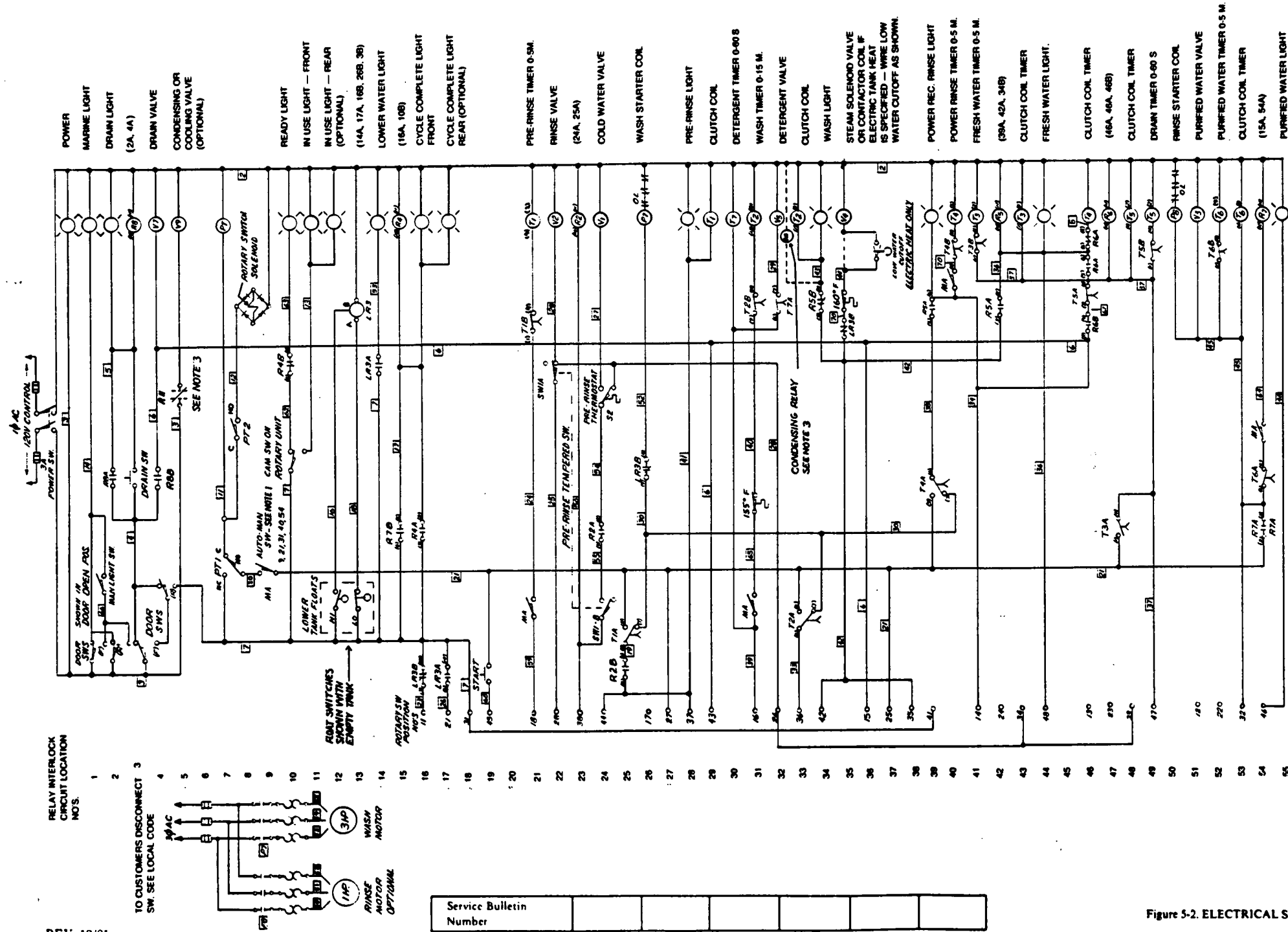
	
STRAINER	SOLENOID VALVE
	
VACUUM BREAKER	CHECK VALVE

Figure S-1. FLOW DIAGRAM AND CYCLE DESCRIPTION.



NOTES:

1. ALL AUTO-MAN SWITCHES ARE OPEN IN MAN POSITION AS SHOWN & CLOSED IN AUTO POSITION.
2. REMOVE CLUTCH COIL WIRE FROM TERMINAL #1 ON TIMERS #1 & 4 ONLY.
3. R11 USED WITH CONDENSING VALVE WITH ELECTRIC HEAT ONLY. IF R11 NOT USED, WIRE NO. 3 IS WIRED DIRECTLY TO V8.

Figure 5-2. ELECTRICAL SCHEMATIC.

SECTION 6

COMPONENT REPAIR AND REPLACEMENT

WARNING: BE SURE TO PRESS THE POWER SWITCH OFF AND ALLOW THE WASHER TO COOL BEFORE STARTING ANY OF THE FOLLOWING PROCEDURES.

6-1. GENERAL

This section includes instructions for the adjustment, disassembly, repair, and replacement of selected components.

6-2. MANIFOLD COUPLER DIVERTER

Seal Replacement

1. Shut off water to Washer.
2. Remove side access panel.
3. Disassemble handle coupling from diverter camshaft (Fig. 6-1).

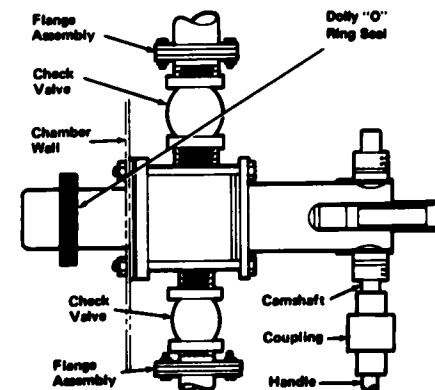


Figure 6-1. MANIFOLD COUPLER DIVERTER ASSEMBLY.

4. Disassemble diverter wash and rinse water lines at flange assemblies directly behind check valves.

5. Remove the four bolts which secure diverter assembly to washing chamber wall. Carefully remove diverter assembly from washer.

6. Slide out rear body assembly with plunger and camshaft in place (Fig. 6-2). Remove seals and "O" ring from front body assembly.

7. Carefully pull plunger and camshaft assembly from rear body. Remove plunger seal.

8. Clean all parts. Be sure to remove scale and hard-water deposits from seal and "O" ring grooves.

9. Install new seals and "O" ring on plunger and in front body assembly.

10. Carefully push plunger and camshaft assembly into rear body assembly.

11. Slide rear body assembly into front body assembly.

12. Secure diverter assembly to washer chamber wall with the four bolts removed in step 5.

13. Reassemble diverter wash and rinse water lines.

14. Reassemble handle coupling to diverter camshaft.

15. Attach side access panel and turn on water to washer.

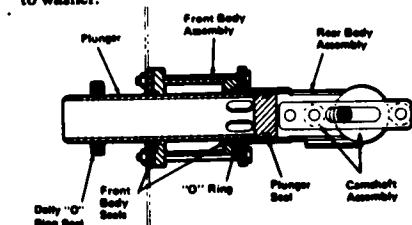


Figure 6-2. DIVERTER ASSEMBLY CROSS SECTION.

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Testing

2. Energize and de-energize coil. Observe valve operation for proper opening and closing. Disassemble valve, inspect and clean internal components or replace valve, as required. Check valve pressure: be sure it is within the range specified on nameplate.

Recalibration (Fig. 6-3)

-
- A black and white line drawing of a hand-cranked generator. A hand is shown turning a handle on top. The device has a cylindrical body with a base. Labels with leader lines point to various parts: 'Selector Knob' points to a knob on the top handle; 'Stem' points to the vertical shaft below the knob; 'Stop Pin' points to a pin on the top surface; 'Cover Nut' points to a nut on the side of the top cover; 'Dial' points to a scale on the side of the top cover; 'Cover Plate' points to the bottom cover of the main body; and 'Junction Box' points to a box on the bottom of the main body.

Figure 6-3. PRERINSE THERMOSTAT RECALIBRATION.

6. Connect incoming leads to switch terminals. Replace parts removed in step 2. Be sure stop pin on cover plate is opposite adjusting screw and that knob setscrew is tightened on flat part of stem.

Temperature Adjustment (Fig. 6-5)

-

Figure 6-4. PRERINSE THERMOSTAT SWITCH REPLACEMENT.

Diagram illustrating the back of the control panel showing the internal switch mechanism. Labels include:

- Switch No. 2
- Switch No. 1
- Adjusting Screw "A"
- Adjusting Screw "B"
- Cover Screw (2)

Figure 6-5. WASH-WATER THERMOSTAT ADJUSTMENT.

- 3. Replace cover.**

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6-7. TIMERS

- Eagle Catalog No. 191-06-A6. It has a pointer-knob style of adjustment, a 10-amp rating and operates on 120 volts AC.

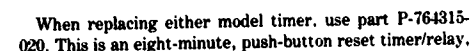


Diagram illustrating the components of a manifold assembly, including:

- Casing
- Casing Flange Gasket P-750000-001
- Base Plate
- Manifold Coil Assembly
- Manifold Gaskets
- Manifold Locking Rings
- Manifold Holding Nut

- Figure 6-7. BOOSTER ASSEMBLY, Steam-heated (Optional).**
P-758251-091

3. Remove casing from base plate. Be careful not to damage gasket.
4. Clean and inspect exterior of steam coils; replace coil manifold assembly, if necessary.
5. Reattach base plate to casing. Secure with manifold locking rings and holding nuts.
6. Turn on electric power, water and steam to booster.

Disassembly (Fig. 6-7)

1. Shut off electrical power, water and steam to booster.
2. Disconnect coil assembly piping at base plate.
3. Remove nuts which secure base plate and casing.
4. Remove casing from base plate. Be careful not to damage gasket.
5. Remove manifold holding nuts. Coil assembly may now be removed from base plate.
6. Reassemble parts in reverse order.
7. Replace coil manifold assembly and secure to base plate with manifold holding nuts. Be sure gaskets are properly positioned between manifold collars and base plate.
8. Reattach base plate to case. Be careful not to damage gasket. Secure in position with nuts removed in step 3.
9. Reconnect coil assembly piping at base plate.
10. Turn on electric power, water and steam to booster.

6-8. ELECTRIC HEATERS

The following parts are required when replacing electric tank heaters:

Description	Part #	Qty.
Heaters	Refer to Fig. 7-8	As Req.
Spacer Washers	P-764315-312	6
Twine	P-764315-313	8 Feet
Sylastic Primer	P-413091-001	1 Pint
Primer Instruction	W-413653-000	1
Sylastic Cement	P-431178-001	4 Tubes
Instruction Sheet	W-764315-314	1
Locknut	P-764315-185	1

Follow instruction sheet, part W-764315-314, when installing new heaters in tank.

SECTION 7

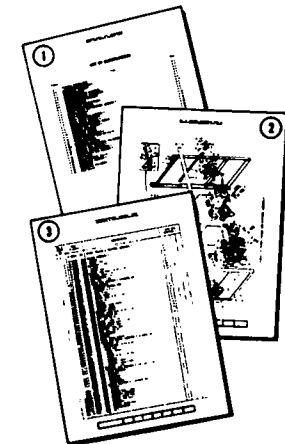
ILLUSTRATED PARTS BREAKDOWN

The following pages contain an illustrated breakdown of selected parts for Sparkle II Washers. To order replacement parts, use part numbers or descriptions provided on subsequent parts lists. Numbers, descriptions and quantities of parts listed are those required for a single Washer. Each indentation in the description represents the assembly level (see example below). The UNITS PER ASSEMBLY is specific for given top assembly. Include on your order the model, unit and serial numbers of the equipment. Also, where applicable, include component manufacturer and nameplate data.

The illustrations do not carry index numbers to components which have little or no replacement frequency, nor to commercial hardware. Such are illustrated, however, merely to aid in various assembly and disassembly procedures covered in this manual. Such parts should either be ordered from AMSCO (by description), or procured locally as the situation dictates. When ordering by description include figure and index number of assembly on which the part is located.

HOW TO USE THE ILLUSTRATED PARTS BREAKDOWN

- 1 Determine function and application of part required. Turn to the List of Illustrations and select most appropriate title. Note illustration page number.
- 2 Turn to page indicated and locate desired part on illustration.
- 3 From illustration, obtain index number assigned to part desired. Refer to accompanying description for specific information regarding the part.



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DEFINITION OF INDENTATIONS:

No indentation –
Top assembly

No indentation –
part of top
assembly

One indentation –
(1st subassembly)
Part of above
item with no
indentation

CONTROL ASSEMBLIES, Over 250 Volt Supply (without Rinse Pump)

CONTROL PANEL ASSEMBLY

• RELAY (Spring)

• RELAY Strip (Curtis Track)

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Sparkle II Glassware Washers

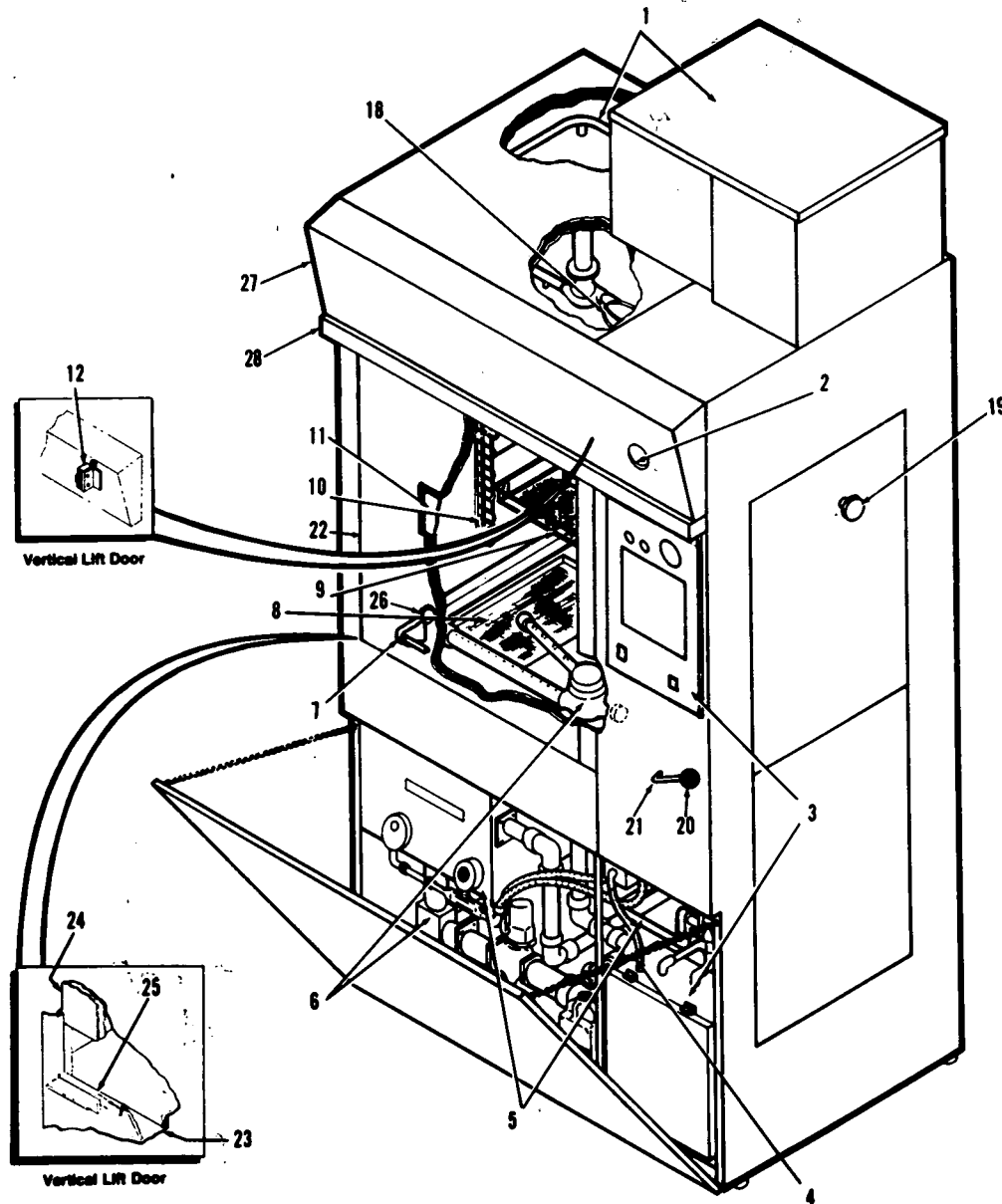


Figure 7-1. MAIN ASSEMBLY.

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Sparkle II Glassware Washers

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY			
7-1-		MAIN ASSEMBLY, Single Vertical Lift Door	.	.	.	.
		MAIN ASSEMBLY, Double Vertical Lift Door	.	.	.	.
		MAIN ASSEMBLY, Single Bottom Hinged Door	.	.	.	.
		MAIN ASSEMBLY, Double Bottom Hinged Door	.	.	.	.
1		RINSE PIPING AND STORAGE TANK ASSEMBLY — See Figure 7-6	1	1	1	1
2	P-754484-091	THERMOMETER	1	1	1	1
3		ELECTRICAL CONTROL ASSEMBLIES — See Figure 7-2	1	1	1	1
4		HEATING SYSTEMS, Wash Water — See Figure 7-8	1	1	1	1
5		WATER INLET AND HIGH-LOW PROBE ASSEMBLY — See Figure 7-7	1	1	1	1
6		REVOLVING SPRAYS AND PUMP ASSEMBLY — See Figure 7-5	1	1	1	1
7	P-764317-766	HANDLE ASSEMBLY, Vertical Lift Door	1	2	2	2
8	P-754469-091	SCREEN, Refuse C4664	2	2	2	2
9		SCREEN, Hold-down D6812	1	1	1	1
10		GUIDE, Hold-down Screen C4523	2	2	2	2
11	P-757845-002	TEMPERED GLASS, Window (8"x18", 1/4" thick)	1	2		
	P-757845-003	TEMPERED GLASS, Window (7 1/2"x19", 1/4" thick)			1	2
12	P-454185-091	SWITCH, Safety	1	2	1	2
13		NOT USED				
14		NOT USED				
15		NOT USED				
16		NOT USED				
17		NOT USED				
18	P-754457-091	LIGHT, Marine (Killark Assembly)	1	1	1	1
	P-763632-001	• BOX, Splice (For Killark Assembly Only) — Not Shown	1	1	1	1
	P-763632-002	• FIXTURE, Cap (For Killark Assembly Only) — Not Shown	1	1	1	1
	P-761681-001	• GLOBE, Glass — Not Shown	1	1	1	1
	P-763632-004	• PROTECTOR, Globe (For Killark Assembly Only) — Not Shown	1	1	1	1
	P-758325-091	• LAMP, Safety	1	1	1	1
19	P-758039-091	LATCH	1	1	1	1
20	P-754470-091	KNOB, 1 1/4" diameter	1	1	1	1
21	P-758027-091	HANDLE, Manifold Coupler Diverter	1	1	1	1
22	P-758795-091	GASKET, Door (Not Shown)			1	2
23		BAFFLE	1	2	1	1
24	P-764315-294	BUTTON, Teflon Sliding	2	4		
25	P-762236-001	GASKET, Door Baffle	1	2	1	1
	P-754466-091	NEGATOR ASSEMBLY, Vertical Door Lift — Now Shown	2	4		
	P-754458-091	NEGATOR, Spring — Not Shown	2	4		
26	P-757997-091	ROLLER, Teflon (Tray)	4	4	4	4
27		VALANCE (C4651)	1	1	1	1
28		FRONT CHANNEL ASSEMBLY (C4652)	1	1	1	1
29	P-758486-091	KIT, Door Gasket (Not Shown)	A/R	A/R	A/R	A/R
IMPORTANT: USE PART NUMBERS GIVEN ABOVE WHEN ORDERING REPLACEMENT PARTS. IF PART NUMBERS ARE NOT GIVEN, USE DESCRIPTIONS GIVEN ABOVE. INCLUDE ON YOUR ORDER, THE WASHER MODEL, UNIT AND SERIAL NUMBERS, WHERE APPLICABLE. ALSO INCLUDE COMPONENT MANUFACTURER AND NAMEPLATE DATA.						

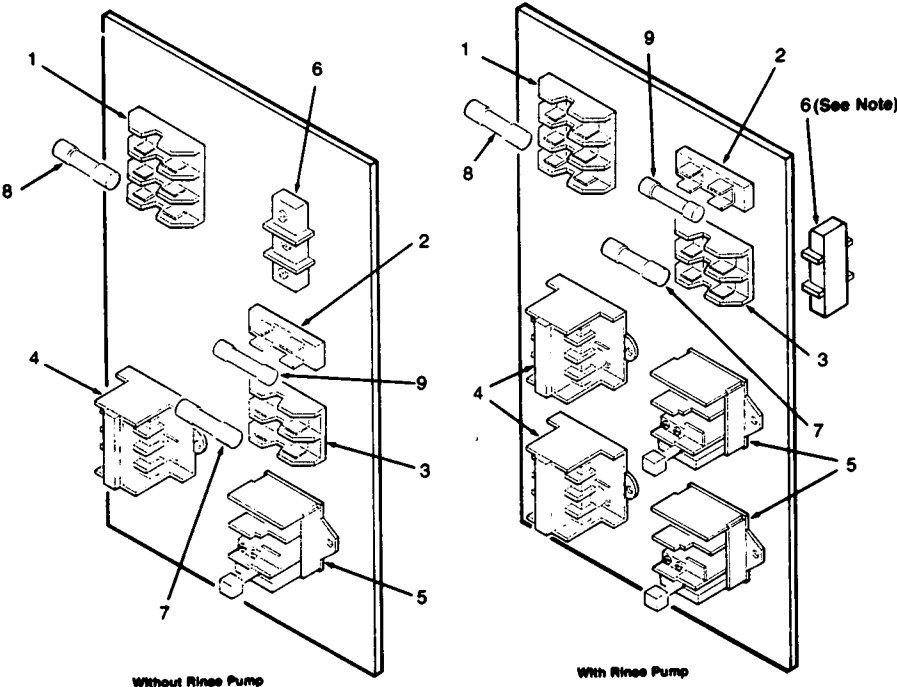
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Note: Item 6 is mounted on right side of control box.

Figure 7-3. MOTOR CONTROL CENTER — Electrically Heated Model.

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FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY			
7-3-		MOTOR CONTROL CENTER, Electric Heat, Under 250 V, With Rinse Pump.....	*			
		MOTOR CONTROL CENTER, Electric Heat, Over 250 V, With Rinse Pump.....	*			
		MOTOR CONTROL CENTER, Electric Heat, Under 250 V, Without Rinse Pump.....		*		
		MOTOR CONTROL CENTER, Electric Heat, Over 250 V, Without Rinse Pump.....			*	
1	P-757858-091	FUSE BLOCK, 3 Pole	1		1	
		FUSE BLOCK, 3 Pole (BUSS 4439).....		1		1
2		FUSE BLOCK, 1 Pole (BUSS)	1	1	1	1
3	P-758038-091	FUSE BLOCK, 2 Pole.....	1	1	1	1
4	P-757991-091	CONTACTOR	2	2	1	1
5	P-758008-091	RELAY, Overload	2	2	1	1
6	P-758345-091	TERMINAL BLOCK	1	1	1	1
7	P-758034-091	FUSE, 250 Volt, 3 amp	2	2	2	2
8	P-758035-091	FUSE, 250 Volt, 15 amp	3		3	
9	P-758284-001	FUSE, 600 Volt, 5 amp (Champ A100906)	1	1	1	1
IMPORTANT: USE PART NUMBERS GIVEN ABOVE WHEN ORDERING REPLACEMENT PARTS. IF PART NUMBERS ARE NOT GIVEN, USE DESCRIPTIONS GIVEN ABOVE. INCLUDE ON YOUR ORDER, THE WASHER MODEL, UNIT AND SERIAL NUMBERS, WHERE APPLICABLE. ALSO INCLUDE COMPONENT MANUFACTURER AND NAMEPLATE DATA.						

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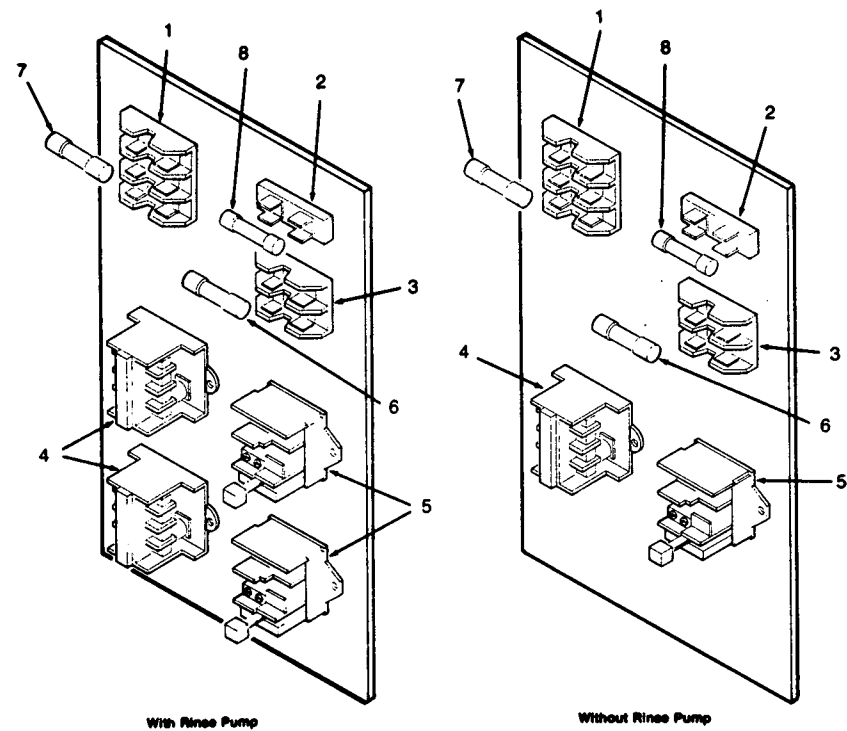


Figure 7-4. MOTOR CONTROL CENTER - Steam-Heated Model.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY			
7-4		MOTOR CONTROL CENTER, Steam Heat, Under 250 V, With Rinse Pump	*			
		MOTOR CONTROL CENTER, Steam Heat, Over 250 V, With Rinse Pump		*		
		MOTOR CONTROL CENTER, Steam Heat, Under 250 V, Without Rinse Pump			*	
		MOTOR CONTROL CENTER, Steam Heat, Over 250 V, Without Rinse Pump				*
	1	P-757858-091 FUSE BLOCK, 3 Pole	1		1	
		FUSE BLOCK, 3 Pole (BUSS 4439)		1		1
	2	P-757991-091 FUSE BLOCK, 1 Pole (BUSS 4439)	1	1	1	1
	3	P-758038-091 FUSE BLOCK, 2 Pole	1	1	1	1
	4	P-757991-091 CONTACTOR	2	2	1	1
	5	P-758008-091 RELAY, Overload	2	2	1	1
	6	P-758034-091 FUSE, 250 Volt, 3 amp	2	2	2	2
	7	P-758035-091 FUSE, 250 Volt, 15 amp	3		3	
		P-758037-091 FUSE, 460 Volt, 10 amp		3		3
	8	P-758984-001 FUSE, 600 Volt, 5 amp	1	1	1	1
IMPORTANT: USE PART NUMBERS GIVEN ABOVE WHEN ORDERING REPLACEMENT PARTS. IF PART NUMBERS ARE NOT GIVEN, USE DESCRIPTIONS GIVEN ABOVE. INCLUDE ON YOUR ORDER, THE WASHER MODEL, UNIT AND SERIAL NUMBERS, WHERE APPLICABLE. ALSO INCLUDE COMPONENT MANUFACTURER AND NAMEPLATE DATA.						

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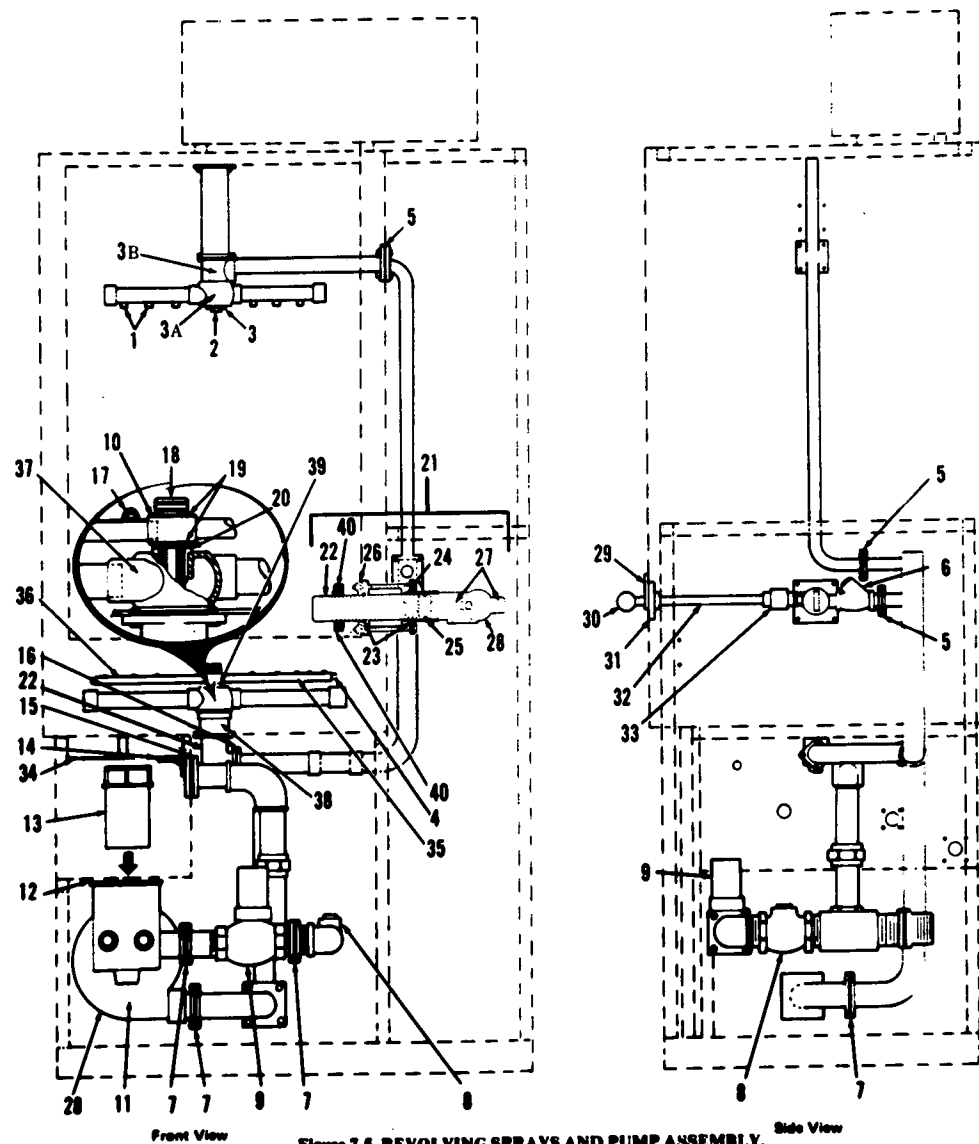


Figure 7-5. REVOLVING SPRAYS AND PUMP ASSEMBLY.

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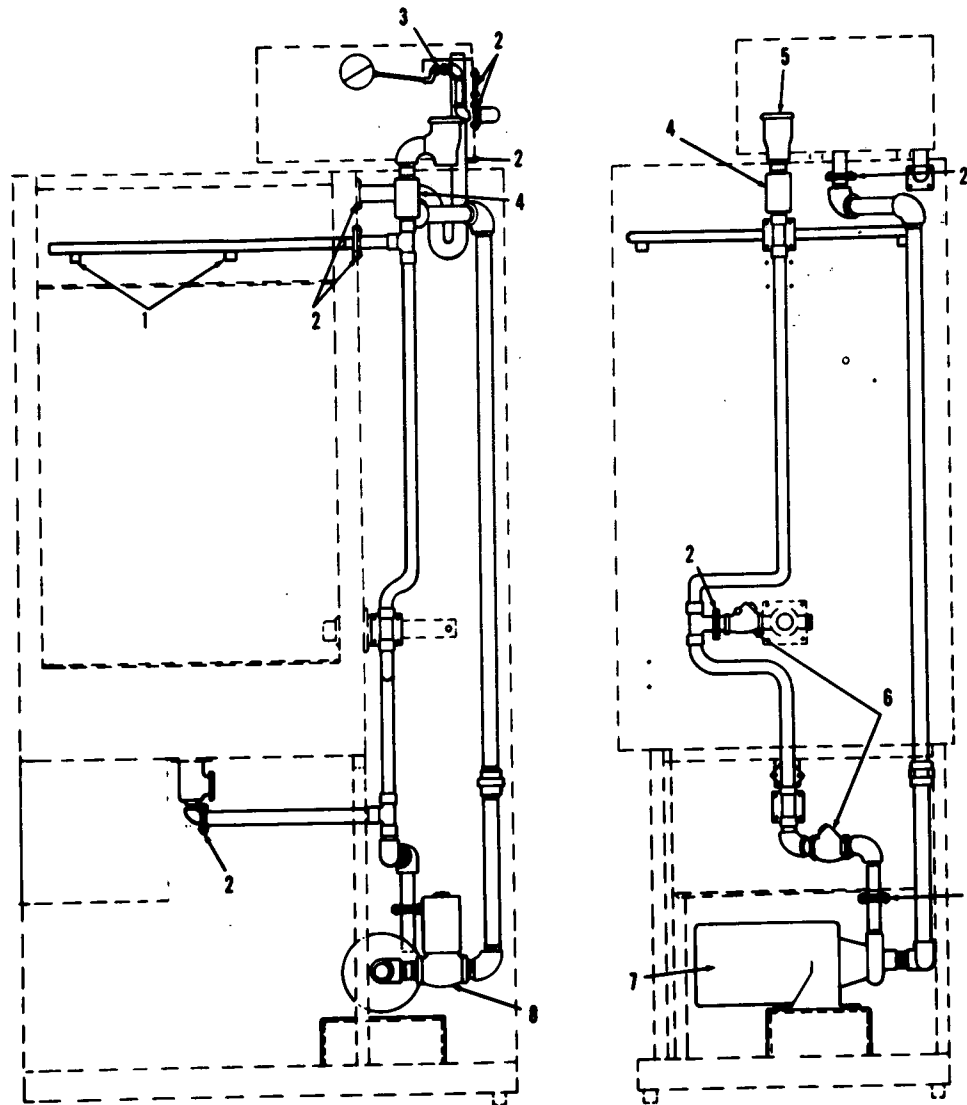
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FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-5		REVOLVING SPRAYS AND PUMP ASSEMBLY	
		WASH ASSEMBLY, Upper	1
1	P-754480-091	• NOZZLE	6
2	P-754477-001	• KNOB, Knurled	1
3	P-757867-008	• BEARING	1
3A	P-754479-091	• SPRAY MANIFOLD, Upper Wash (C4324-1)	1
3B	P-754467-091	• MANIFOLD, Upper Adapter (C4560-2)	1
4	P-752300-061	PLUG, Pipe, S/S, 1/8 NPT	2
5	P-757869-091	GASKET (2-1/4" x 2-1/4", 1/4" thick)	4
6	P-51770-091	VALVE, Swing Check (1")	1
7	P-758018-091	GASKET (3-1/4" x 3-1/4", 1/4" thick, 2-7/16" dia.)	5
8	P-757987-091	VALVE, Swing Check (2")	1
9	P-757985-091	VALVE, Drain Line Solenoid (2")	1
	P-758778-091	• COIL	1
	P-758728-091	• PISTON ASSEMBLY	1
10	P-754475-091	MANIFOLD-REVOLVING-RINSE, Lower	1
11	P-758033-091	PUMP & MOTOR ASSY. 3 HP. (208/240 V)	1
	P-626977-699	PUMP KIT (New Replacement)	A/R
	P-759473-001	• SEAL, Mechanical	1
12	P-758020-091	GASKET (4-1/2" x 4-1/2", 1/4" thick)	1
13	P-755715-378	STRAINER ASSEMBLY	1
14		COVER PLATE, Overflow	1
15	P-754462-091	GASKET (3" x 3", 1/4" thick)	2
16	P-757979-091	GASKET (2" x 2", 1/4" thick)	1
		WASH AND RINSE ASSEMBLY, Lower	1
17	P-150474-230	• NOZZLE	12
18	P-754477-001	• KNOB, Knurled	1
19	P-757867-002	• BEARING	2
20	P-757867-001	• BEARING	1
21		MANIFOLD COUPLER DIVERTER	1
22	P-754473-091	ADAPTER-LOWER (Wash-Rinse)	1
23	P-758016-091	• SEAL, Plunger Outer	2
24	P-758021-091	• "O" RING	1
25	P-758022-091	• SEAL, Plunger Inner	1
26	P-758017-091	• GASKET (3-1/2" x 3-1/2", 1/4" thick)	1
27	P-757998-061	• ROLLER	2
28	P-764321-070	IMPELLER, 1-1/2 x 5 HK, 3 HP.	1
	P-758015-091	• BEARING, Camshaft - Not Shown	2
29	P-758029-001	PLATE, Face (OPEN-CLOSED)	1
	P-758029-002	PLATE, Face (CLOSED-OPEN)	A/R
30	P-754470-091	KNOB, Handle	A/R
31	P-758028-091	BEARING ASSEMBLY, Flanged	A/R
32	P-758027-091	HANDLE	A/R
33	P-758026-091	COUPLING, Handle	A/R
34	P-754469-091	REFUSE SCREEN	2
35	P-764315-448	RINSE SPRAY ARM, Lower B3558-1	1
36	P-764315-449	RINSE SPRAY ARM, Lower B3558-2	1
37	P-754475-091	WASH MANIFOLD, Lower A4673	1
38	P-754467-091	WASH ADAPTER, Lower C4560-G2	1
39		BOTTOM RINSE SPRAY ASSEMBLY C4853 (Includes Spray Arms, Hub, Cap, Nozzle, etc.)	1
40	P-754497-091	SEAL, Dolly "O" Ring	1
IMPORTANT: USE PART NUMBERS GIVEN ABOVE WHEN ORDERING REPLACEMENT PARTS. IF PART NUMBERS ARE NOT GIVEN, USE DESCRIPTIONS GIVEN ABOVE. INCLUDE ON YOUR ORDER, THE WASHER MODEL, UNIT AND SERIAL NUMBERS. WHERE APPLICABLE, ALSO INCLUDE COMPONENT MANUFACTURER AND NAMEPLATE DATA.			

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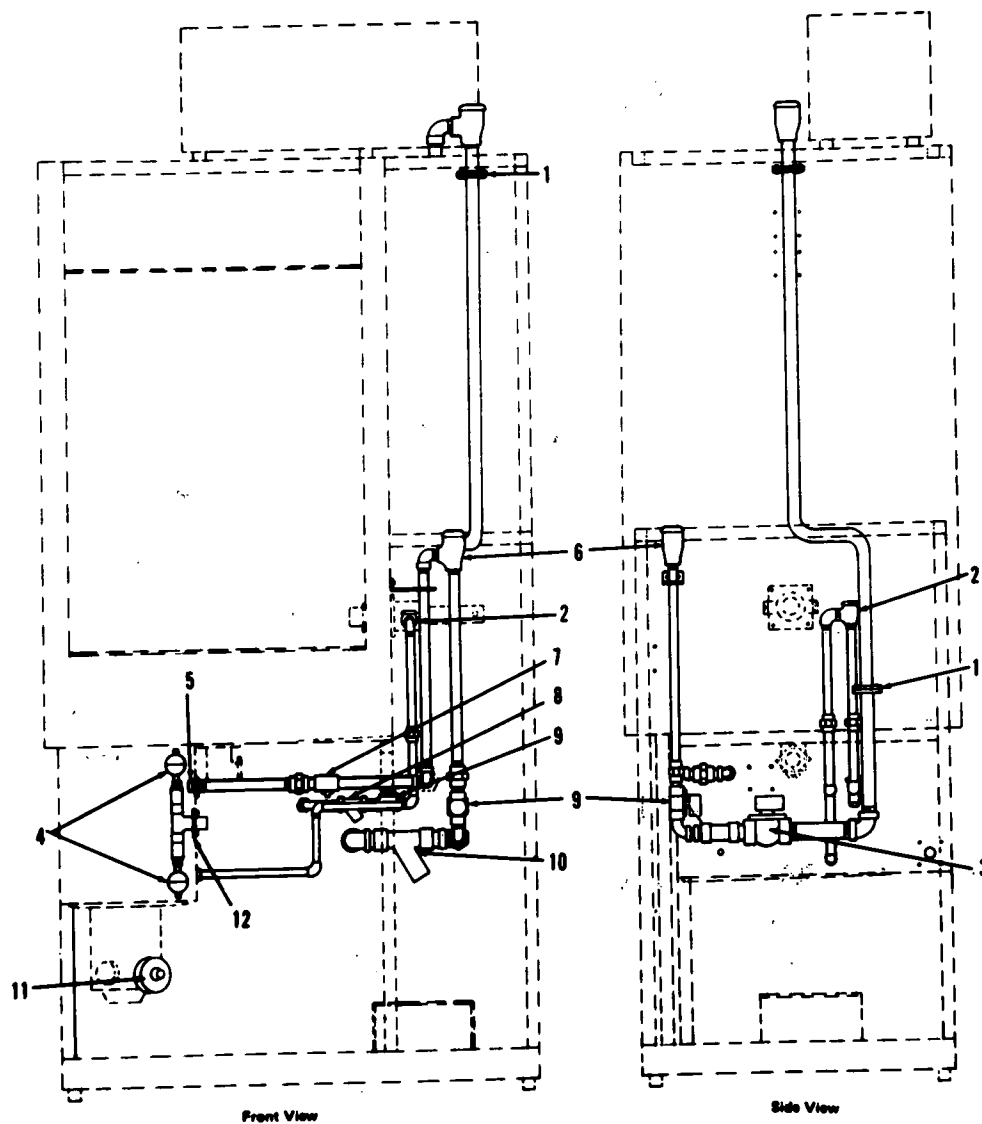
Front View

Figure 7-6. RINSE PIPING AND OPTIONAL STORAGE TANK ASSEMBLY.

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Front View

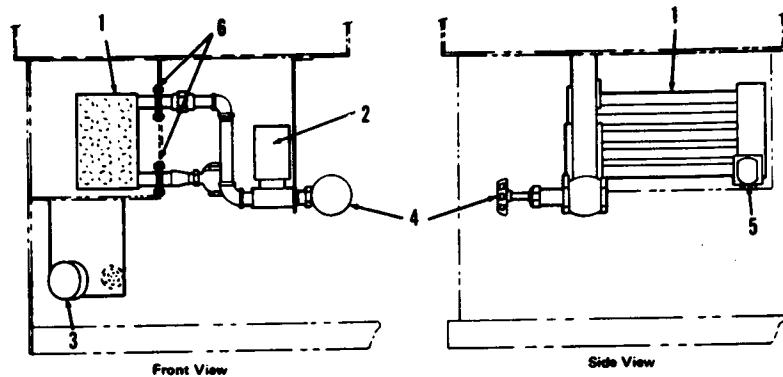
Side View

Figure 7-7. WATER INLET AND HIGH-LOW PROBE ASSEMBLY.

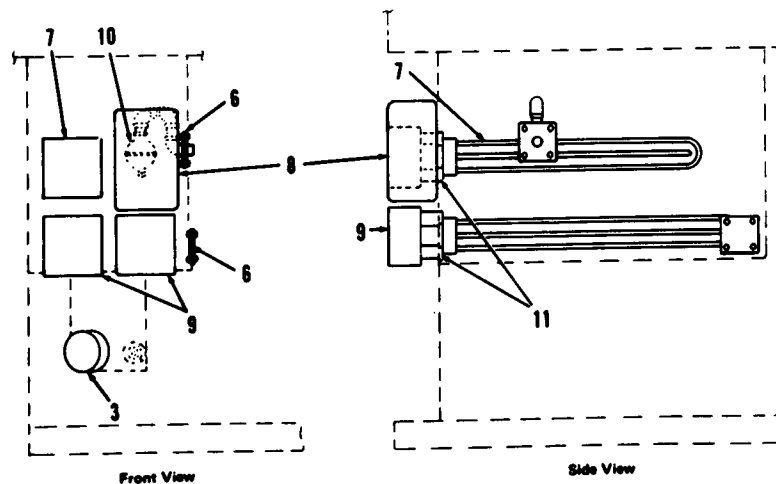
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FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY			
7-7.		WATER INLET AND HIGH-LOW PROBE ASSEMBLY	*			
1	P-757869-091	GASKET (2 1/4" x 2 1/2", 1/4" thick)	3			
2	P-757980-091	VACUUM BREAKER, Cold-water Inlet (1/4")	1			
	P-752775-091	• SPARE PARTS KIT	A/R			
3	P-757992-091	VALVE, Solenoid, Hot-water Inlet (1")	1			
	P-764076-002	• COIL	1			
	P-758235-091	• SPARE PARTS KIT	A/R			
4	P-756215-002	FLOAT SWITCH, Tank Water Level	2			
5	P-754493-091	NOZZLE, Cap (1/2" Pipe)	1			
6	P-118025-051	VACUUM BREAKER, Detergent Injector Line (1/2")	1			
	P-752775-091	• SPARE PARTS KIT	A/R			
7	P-118041-091	INJECTOR VALVE, Detergent	1			
	P-761695-001	• TUBE, Plastic Detergent (Not Shown) 3/8" I.D.	1			
	P-761695-002	• TUBE, Plastic, Detergent (Not Shown) 1/2" I.D.	A/R			
8	P-757994-002	STRAINER, Cold-water Inlet (1/4")	1			
9	P-757993-001	VALVE, Solenoid, Cold-water Inlet and Detergent Line, 1/2" NPT, 110 Volt, 50/60 Hz	2			
	P-758624-091	• REPAIR KIT	A/R			
+	P-757993-002	VALVE, Solenoid, Cold-water Inlet and Detergent Line, 1/2" NPT, 208 Volt, 60 Hz	2			
	P-758624-091	• REPAIR KIT	A/R			
+	P-757993-003	VALVE, Solenoid, Cold-water Inlet and Detergent Line, 1/2" NPT, 240 Volt, 60 Hz	2			
	P-758624-091	• REPAIR KIT	A/R			
10	P-758254-091	STRAINER, Hot-water Inlet (1")	1			
11	P-754691-091	THERMOSTAT, Prerinse	1			
12	P-757869-091	GASKET	1			
<p>*NOTE: Repair Kit, P-758624-091, does not include coil.</p> <p>IMPORTANT: USE PART NUMBERS GIVEN ABOVE WHEN ORDERING REPLACEMENT PARTS. IF PART NUMBERS ARE NOT GIVEN, USE DESCRIPTIONS GIVEN ABOVE. INCLUDE ON YOUR ORDER, THE WASHER MODEL, UNIT AND SERIAL NUMBERS. WHERE APPLICABLE, ALSO INCLUDE COMPONENT MANUFACTURER AND NAMEPLATE DATA.</p>						

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STEAM HEAT



ELECTRIC HEAT

Figure 7-8. HEATING SYSTEMS, Wash Water.

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FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY		
7-8		HEATING SYSTEM, Closed Steam Coil	1		
		HEATING SYSTEM, Electric	1		
1	P-757983-091	STEAM COIL ASSEMBLY	1		
2	P-757984-001	VALVE, Solenoid, 120 Volts (¾")	1		
	P-757984-002	VALVE, Solenoid, 208 Volts (¾")	1		
	P-757984-004	VALVE, Solenoid, 240 Volts (¾")	1		
	P-762147-001	• REPAIR KIT	A/R		
	P-762147-002	• COIL KIT (120 Volt, 60 Hz)	A/R		
	P-762147-003	• COIL KIT (208 Volt, 60 Hz)	A/R		
	P-762147-004	• COIL KIT (240 Volt, 60 Hz)	A/R		
3	P-757986-091	THERMOSTAT, Wash Water	1	1	
4	P-45763-091	VALVE, Angle (¾")	1		
5	P-757882-091	TRAP, Steam (½")	1		
	P-759519-001	• REPAIR KIT, Element	A/R		
6	P-757869-091	GASKET (2½" x 2½", ½" thick)	2		
7	P-757989-091	HEATER, 5 KW (208 Volt, 3 phase)	1†		
7	P-757989-002	HEATER, 5 KW (120 Volt, single phase)	1†		
	P-757989-003	HEATER, 5 KW (208 Volt, single phase)	1†		
	P-757989-004	HEATER, 5 KW (240 Volt, 3 phase)	1†		
	P-757989-005	HEATER, 5 KW (480 Volt, 3 phase)	1†		
8	P-757990-091	CONTACTOR	1		
9	P-757988-091	HEATER, 7.5 KW (208 Volt, 3 phase)	2‡		
	P-757988-002	HEATER, 7.5 KW (240 Volt, 3 phase)	2‡		
	P-757988-003	HEATER, 7.5 KW (480 Volt, 3 phase)	2‡		
10	P-764317-615	FLOAT SWITCH, Low-water Cutoff	1		
11	P-764315-185	LOCKNUT, 2" NPT	3		
†NOTE 1: Refer to voltage in description for appropriate 5 kw Heater. There is only one 5 KW heater in unit.					
‡NOTE 2: Refer to voltage in description for appropriate 7.5 KW Heater. There are only two 7.5 KW heaters in unit.					
IMPORTANT: SEE PARAGRAPH 6-8 WHEN REPLACING HEATERS. USE PART NUMBERS GIVEN ABOVE WHEN ORDERING REPLACEMENT PARTS. INCLUDE ON YOUR ORDER, THE WASHER MODEL, UNIT AND SERIAL NUMBERS. WHERE APPLICABLE, ALSO INCLUDE COMPONENT MANUFACTURER AND NAMEPLATE DATA.					

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Sparkle II Glassware Washers

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-9-		DOOR ASSEMBLY, Bottom Hinged (D6632)	X
1		SPACER (B-3527-4)	1
2		SCREW, 6-32 x 1 Lg.	2
3	P-454185-091	SWITCH (Unimax 211BA138H-5)	1
4		BRACKET, Lock Plate and Switch Mtg. (B-3527-1)	1
5	P-758024-091	SPRING (ASC E0240-037-1120-S)	1
6	P-758009-091	BEARING, Handle (A-4435)	2
7	P-758023-091	HANDLE (Jamestown Bronze 451528)	1
8		NUT, Hex, Grip 1/4-20	5
9		SCREW, Fd. Hd., 1/4-20 x 1/2	5
10		NUT, Hex, 10-32	1
11		PLATE, Handle Latch (A-4433)	1
12	P-758025-091	ARM, Spring Extension (A-4436)	1
13		SCREW, Rd. Hd., 10-32 x 1/2	1
14		SCREW, Rd. Hd., 1/4-20 x 1/2	2
15		SCREW, Rd. Hd., 10-32	1
16		HINGE (B-3574)	1
17		ACCESS PLATE, Door (C-4865)	1

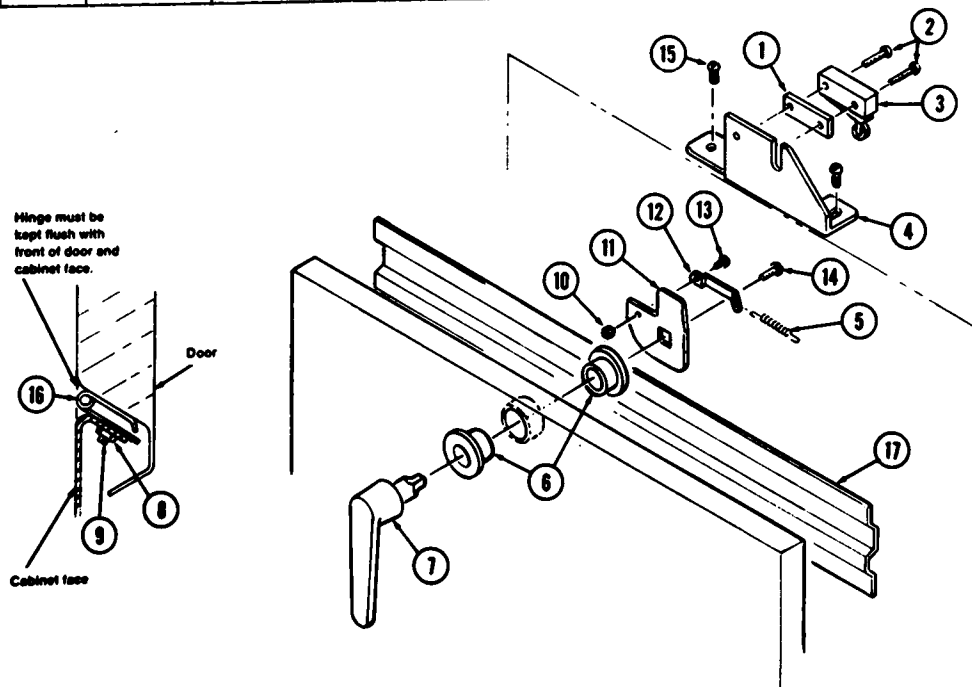


Figure 7-9. DOOR ASSEMBLY, BOTTOM HINGED.

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Sparkle II Glassware Washers

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-10-	P-758486-091	DOOR GASKET KIT – BOTTOM HINGED DOOR	X
1		GASKET (Jarrow CV-1410 x 26 In. Lg.)	1
2		GASKET (Jarrow CV-1401 x 26 In. Lg.)	2
3		ANGLE, Curtain (A-3161)	A/R
4		NUT, Hex, Lock #6-32 x 1/2	13
	W758485	FIELD INSTRUCTIONS	

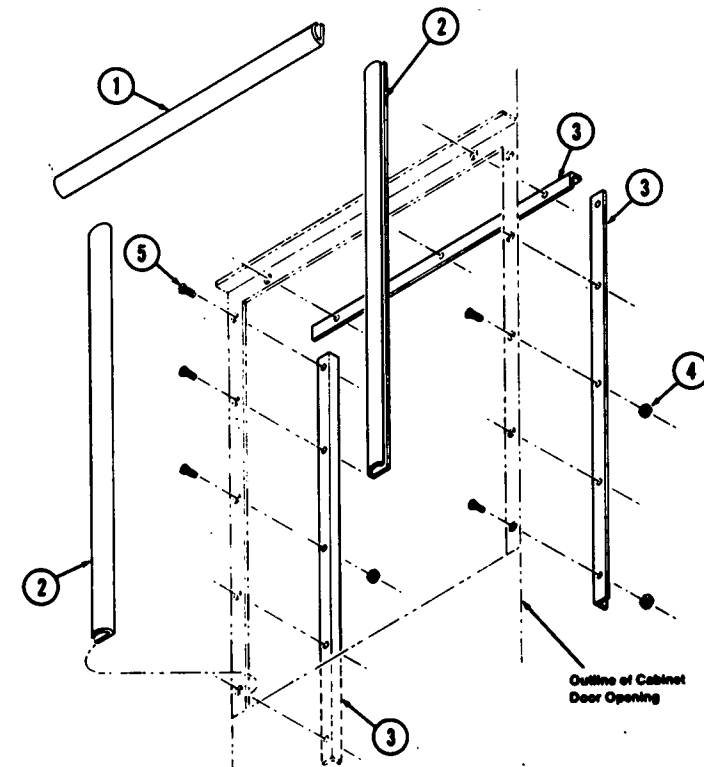


Figure 7-10. DOOR GASKET KIT.

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FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY		
		COUNTER BALANCE — BOTTOM HINGED DOOR	X		
1		BRACKET (B-3542-1)	2		
2		SCREW, Rd. Hd., 1/4-20 x 1/2	6		
3		BRACKET (B-3543-1)	1		
4		SPRING (250, 102)	1		
5		ROD, 1/2 x 11" Bar Stock (A-4144)	2		
6		BEARING, Rulon, 1/2 I.D., 3/4 O.D., w/Flange	4		
7		MOUNT, Swivel (A-4446)	2		
8		NUT, Hex, Gripco 1/4-20	6		
9		LINK, Counter Balance (C-4895-2)	1		
10		BRACKET (B-3543-2)	1		
11		WASHER, 9/16 I.D., 1-1/2 O.D., 1/8 Thk.	2		
12		NUT, Hex, 1/2-13	2		
13		LINK, Counter Balance (C-4895-1)	1		

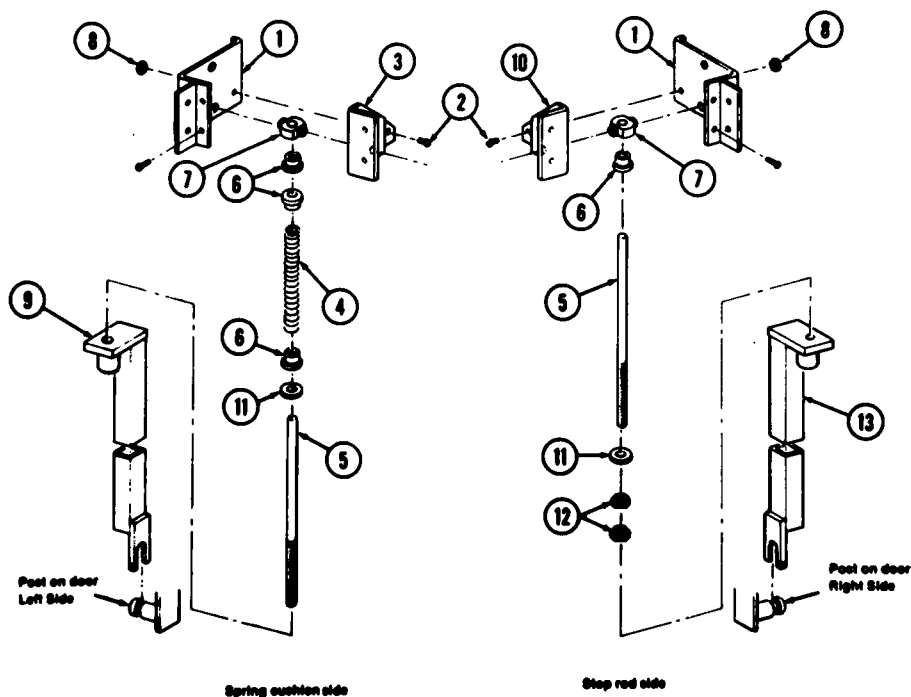


Figure 7-11. COUNTER BALANCE — BOTTOM HINGED DOOR

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**AMSCO
SERVICE**

SPARKLE 11 SERIES

LABORATORY GLASSWARE & GENERAL PURPOSE WASHERS

ELECTRIC AND STEAM-POWERED MODELS P-757722-002

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