

# OWNER'S MANUAL

**BLAKESLEE**

Division of Blako Inc.

## RACK TYPE DISHWASHER



†

## **I.R.S. INTEGRATED RECIRCULATING SYSTEM DESIGN**

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Date of Installation \_\_\_\_\_

Serial No. \_\_\_\_\_ Model No. \_\_\_\_\_

### **Limited Warranty**

Your new Blakeslee dishwashing machine is warranted for one year from date of installation shown above against defective materials and workmanship. If any defects are found within the warranty period; parts, and labor involved with their replacement will be covered free of charge. Service must be performed by a Blakeslee authorized service agency. All labor to be performed during regular working hours. Overtime premium will be charged to the customer. All warranty parts are shipped by surface transportation. If other means of transportation is requested the customer is required to pay the premium. This warranty does not apply to damages resulting from errors in installation on the part of other contractors, nor does it apply to machines which have been subject to accident, misuse, or abuse. It is understood that Blakeslee's warranty obligation with respect to machines located outside of the United States or located in the state of Alaska is limited to the furnishing of replacement parts only. In the state of Hawaii, repair labor is provided free of charge; travel time and expenses paid by the customer. On the island of Oahu, repair labor, travel time and expenses are provided free of charge. This is the entire and only warranty of Blakeslee. We neither assume nor authorize anyone else to assume for us any other obligation or liability in connection with Blakeslee Machines.

- In no case can this warranty exceed eighteen (18) months from the date of shipment from our plant at Chicago, Illinois

### **Items NOT Covered Under Warranty**

#### **1. Lighting of Gas Pilots.**

At the time of installation the gas pilots and burners should be adjusted. Continued failures of pilot lights would indicate dirty gas lines, improper original adjustment or intermittent drafts blowing out the flume.

#### **2. Replacing Fuses or resetting Overloads.**

Replacing a blown fuse or resetting an open overload breaker is a very simple procedure and is the owner's responsibility. If the machine continues to blow fuses or open the overload breaker, contact your nearest authorized Blakeslee Service Center.

#### **3. Adjusting Tank Heats.**

Heat adjustments are covered in The Owners Manual and must be adjusted depending upon desired results.

#### **4. Proper Loading of Dishes.**

It is important that the machine owner's personnel observe the instructions outlined in The Owners Manual.

#### **5. Cleaning Drain Valves.**

Foreign articles lodged in the drain valve seat should be removed as a part of the normal daily cleaning.

#### **6. Cleaning Rinse or Wash Nozzles and Line Strainers.**

Keeping a dishwasher clean and removing obstructions from the nozzles and line strainers will be a periodic function of the machine owner's personnel. The cleaning periods will vary depending upon impurities in the water supply and cleanliness of the washing operation.

#### **7. Final Rinse Water.**

Most frequent of all complaints in any dishwashing machine is that of poor final rinse. It is the responsibility of the owner to provide 180 to 195 degree (plus) water at 15-25 lb. flow pressure through clean unobstructed water lines. If the machine has a factory equipped final rinse water booster, the owner must supply the booster with a minimum of 140 degree temperature water.

#### **8. Electric Boosters and Garbage Disposals.**

Although these units may have been purchased with the machine, they are warranted by the individual manufacturer. Consult the nearest factory authorized representatives for these particular items.

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## Introduction

### GENERAL.

The Blakeslee rack type dishwashing machine is available in Many models. Each model is developed from one or more of the five basic modules (or tanks) shown in figure A. The P tank (24" wide) which is the smallest is used only as a PRE-WASH tank and is always fitted to another tank as shown in figure B. The other four tanks are identified by their width. Any E, L, or M module can be a complete dishwasher in itself, or can be used as a pre-wash, wash or power-rinse tank in a multi-tank unit (see figure C)

Dishwasher indicates that a single E tank (36" long) is the complete dishwasher. The Model R-EE Dishwasher consists of two E tanks, one of which is a wash tank and the other a power-rinse tank. When a pre-wash is desired, the P tank is added and the model becomes the R-PEE Dishwasher. If a larger capacity dishwasher is desired, a C, E, L, or M tank can be used as the pre-wash in a three tank machine. When adding the third tank to an R-EE machine, it becomes a Model R-EEE Dishwasher.

### EXPLANATION OF MODEL DESIGNATION.

The Blakeslee Model designation indicates which tank, or tanks, are used to build a particular machine. A Model R-E

### DIRECTION OF RACK TRAVEL.

When your order was placed, you specified the direction of rack travel. If the dishes enter the machine on the left, we refer to the machine as having L to R feed. Similarly, if the dishes enter on the right, the machine has R to L feed. The Illustrations included in this manual are of machines with L to R feed, unless otherwise noted.

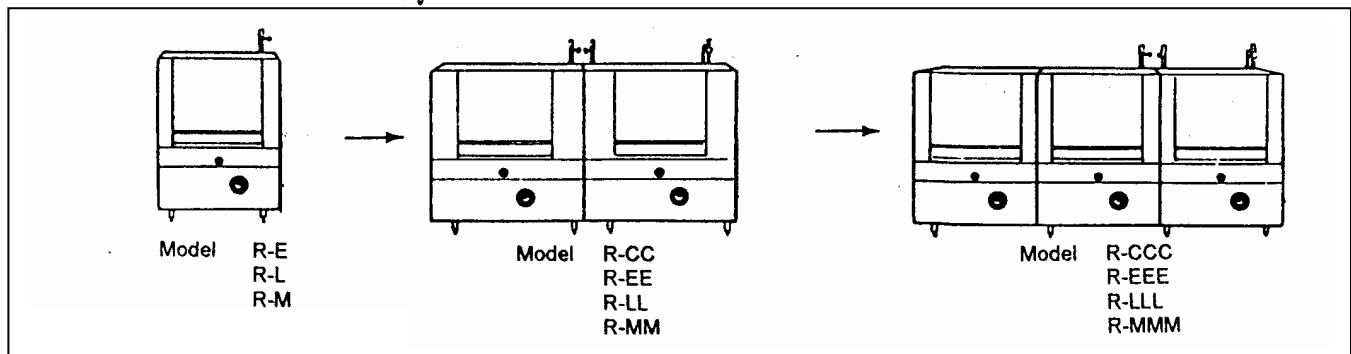
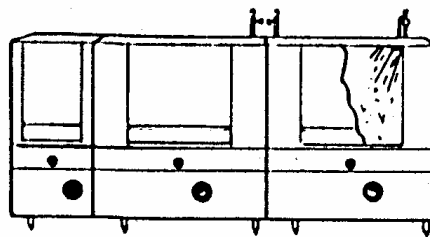
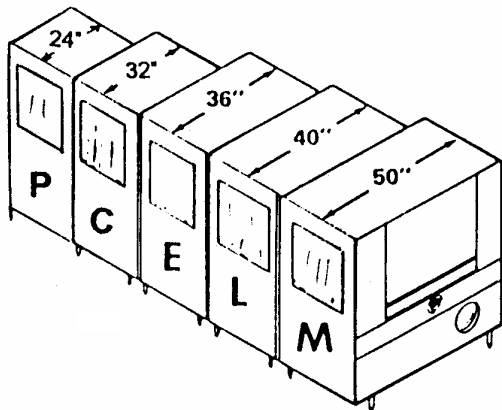
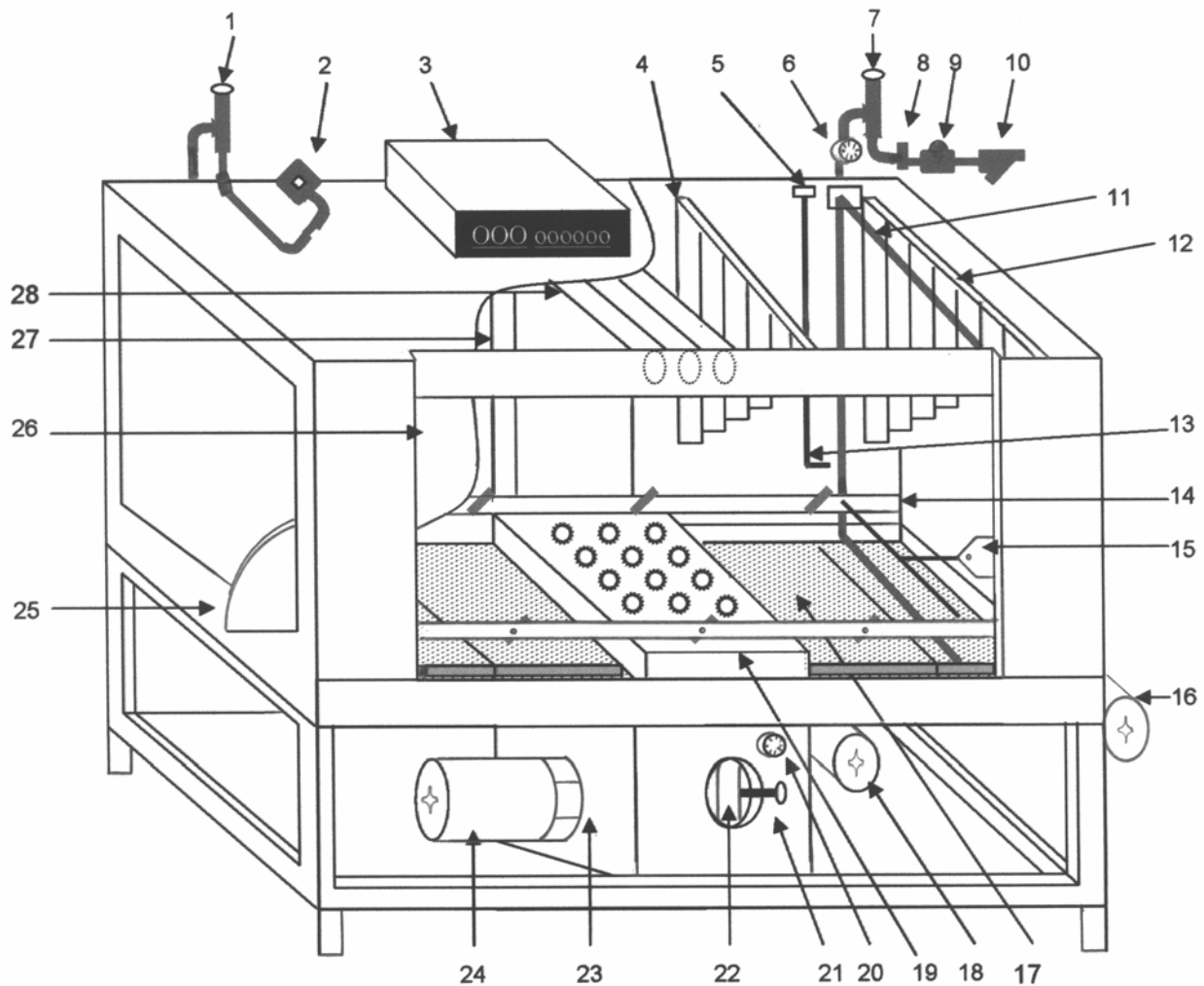


FIGURE C. Dishwashing Machine Model Designations



**FIGURE 1. Principle Parts of a Typical Single Tank Dishwashing Machine**

- |                               |                                |                        |
|-------------------------------|--------------------------------|------------------------|
| 1. Fill Line Vacuum Breaker   | 10. Strainer                   | 19. Lower Spray Box    |
| 2. Solenoid Valve             | 11. Final Rinse Spray Pipe     | 20. Sump Thermometer   |
| 3. Control Panel              | 12. Curtain                    | 21. Drain Valve Handle |
| 4. Short Curtain              | 13. Final Rinse Actuator Lever | 22. Drain Standpipe    |
| 5. Final Rinse Micro Switch   | 14. Conveyor Track             | 23. Pump (Inside Sump) |
| 6. Final Rinse Thermometer    | 15. Conveyor Drive Reducer     | 24. Pump Motor         |
| 7. Final Rinse Vacuum Breaker | 16. Conveyor Drive Motor       | 25. Splash Guard       |
| 8. Petcock                    | 17. Scrap Tray                 | 26. Access Door        |
| 9. Final Rinse Solenoid Valve | 18. Fill Pump                  | 27. Riser Weldment     |
|                               |                                | 28. Upper Spray Tubes  |

## Section I Description

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### 1-1.STANDARDS

Standards are set for all dishwashing machines by the National Sanitation Foundation (NSF). The NSF determines the formula for the gallons of hot detergent water needed for washing, as well as the gallons of 180 F-195 F clear fresh water final rinse required. Other NSF requirements are temperatures of water (see table at the end of this section) and the speed the ware travels through the dishwashing machine. All Blakeslee machines meet or exceed these standards and have the NSF seal, as well as UL, CSA and ASSE approval.

### 1-2. GENERAL DESCRIPTION.

To familiarize you with your Blakeslee rack type dishwashing machine, paragraphs 1-3 through 1-8 describe briefly features of the machine and how it works. Individual machine controls and gauges are discussed in the remaining paragraphs of this section. The sequence of operation for specific models is discussed in paragraphs 2-11 through 2-16.

#### 1-3. Single Tank Dishwashing Machine.

Figure 1 identifies the principle parts of a typical single tank dishwashing machine. The machine shown has L to R feed. The stainless steel tank is supported on a sturdy base and has adjustable legs. All interior parts are of stainless steel construction to resist effects of present day detergents and cleaning chemicals. Curtains (13, figure 1) and a splash guard (24) at the entrance and exit prevent excessive splashing in the work room. A short curtain (4) separates the washing and rinsing areas on models without power-rinse tanks. All curtains are easily removed for thorough cleaning. The large access door (25) lifts to allow quick cleaning and inspection of the dishwasher. The scrap trays (17) slide out easily through the access door area. The control panel (3) centralizes motor, pump, and heating unit controls. Electrically heated machines come standard with a separate power connection for the heater elements, a common connection is optional.

#### 1-4. Multi-Tank Dishwashing Machine.

Since the Blakeslee dishwashing machines are developed from the module concept, the multi-tank machine includes all of the features outlined in the preceding paragraph for the single tank machine.

The primary advantages of a multi-tank dishwashing machine are the increased economy and capacity. The inclusion of a pre-wash tank increases economy by reusing overflow detergent wash water, thereby reducing detergent cost. The power rinse saves water by pre-rinsing the dishes with water accumulated from the fresh water rinse, thereby reducing the amount of fresh final rinse water needed to cleanse the already pre-rinsed dishes. Capacity is increased by the addition of a full sized pre-wash or power rinse tank since conveyor speeds are then faster for multi tank dishwashers. (Note: Capacities are determined by the National Sanitation Foundation.)

#### 1-5 Wash Cycle.

Washing dishes requires two basic operations: first, the washing second, the rinsing. This paragraph describes the path of the wash water from the time it enters the machine through the complete wash cycle.

This unit has automatic tank fill & water level control. When the power switch is turned on, fresh water enters the dishwashing machine at the fill valve (2, figure 1) at the top of the machine. The water passes through the vacuum breaker (1) to internal piping. The vacuum breaker is a safety device designed to prevent contaminated water from the dishwashing machine being siphoned back into the fresh water supply lines if water supply pressure fails. The internal piping directs the water into the tank. When the tank is filled to the proper level, and detergent added, a float switch stops the fill, and turns on the tank heat. The tank heat is controlled by a thermostat. The sump thermometer (19) indicates the wash water temperature.

The wash cycle begins when the water is heated and the pump is manually started. The pump (23) directs the wash water through the riser weldment (26) at the rear of the machine. Upper spray arms and a lower spray box are attached to the vertical riser. Nozzles on each spray arm, and spray box direct wash water at the dishes. Scrap trays (17) on either side of the lower spray box prevents dislodged food particles falling into the tank. The water returns to the tank where it is ready to start the wash cycle again. A hollow standpipe (21) permits overflow water to flow down the drain.

#### 1-6 Final Rinse Cycle.

The final rinse water must always be fresh and hot (within a range of 180 F to 195 F). Hot rinse water enters the dishwashing machine at the strainer (10) and final rinse solenoid valve (9). The water travels through the vacuum breaker (7) and comes in contact with the final rinse thermometer (6). This thermometer indicates the temperature of the water entering the spray pipes (5). The spray pipes contain small nozzle sizes and positioned for application of an even spray across the conveyor. Final rinse water is never allowed to run continuously. Controlling the final rinse solenoid is an actuator lever (12) which is located on the conveyor track. As the dish rack travels along the track, the rack moves the lever to actuate the switch (11).

#### 1-7.Quick Start.

Quick Start utilizes the 180° water from the final rinse as an additional source to fill the tanks. On multi-tank machines Quick Start uses fresh water from the rinse tank that normally overflows down the drain to replenish the wash tank, as necessary, during the wash cycle. Quick Start benefits you with a shorter start-up time by decreasing the time necessary for the water to come up to temperature, and decreases operating cost by reducing water consumption. See paragraph 2-1.

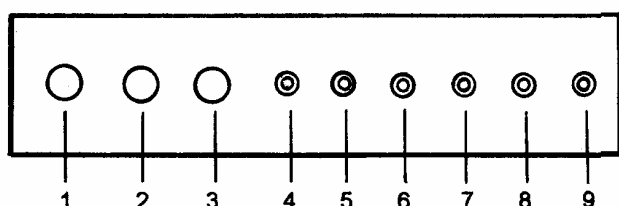
### 1-8. Conveyor Drive Mechanism.

The dish racks are propelled through the dishwasher on the conveyor tracks (14). These tracks contain pawls of a ratchet design which push in one direction only and therefore slide freely under the rack on the return stroke of the conveyor track. The racks are designed with a ladder along the center, and outer edge of the rack base. It is recommended that the Blakeslee type racks (shown in figure 6) be used. The ladder is engaged by the pawls. The tracks are driven by a motor (16) Through the gear reducer (15) and linkage.

### 1-9. EXPLANATION OF CONTROLS.

#### 1-10. Control Panel.

The control panel (figure 2) contains the motor switches, and indicator lights. These controls are used as follows:



**FIGURE 2. Control Panel**

1. Power on/off switch
2. Pumps & Conveyor start switch \*
3. Pumps & Conveyor stop switch \*
4. Power on indicator light
5. Fill indicator light
6. Heat indicator light
7. Conveyor indicator light
8. Pumps indicator light
9. Rinse indicator light

\* No switches with Energy Saving Control option (ESC)

a. All Blakeslee rack conveyor dishwashers are Equipped with a door safety switch. The large inspection door must be closed and the switch lever extended to actuate the switch before any power can reach the control panel.

b. The power on/off selector switch provides electrical power to the control panel. (1 figure 2)

c. The START and STOP pushbutton switches(2 and 3, Figure 2) are the panel controls for the conveyor and pumps electrical circuit. The START switch (2) is pressed to start the pumps and conveyor drive motors, and to provide electrical power to the final rinse limit switch and solenoid valve when needed. Pressing the STOP switch (3) disconnects power from the conveyor and pumps electrical circuit and stops the conveyor and pump motors. NOTE: The START and STOP switches are not included on machines equipped with the Energy Saving Control option. The conveyor starts when the

rack hits an actuator at the entrance of the machine. The conveyor is timed to stop automatically.

#### d. Indicator Lights.

(4) **Power light** – Controlled by the ON/OFF selector switch. Light is on when switch is on.

(5) **Fill light** – Controlled by the level control float switch. Light is on when tank is filling.

(6) **Heat light** – Controlled by the heat control element. The heat control element supplied in your machine depends on the tank heat choice: steam, gas or electric. The element may be a solenoid valve (steam heater), a gas control (gas heater), or contactor for heating elements (electric heater). Placing the selector switch (1) in the ON position starts up the heating components and thermostat providing the water level float switch is energized. With the switch in the OFF position, power is disconnected from the circuit. The **light** is on when the heat control is operational.

(7 & 8) **Conveyor & Pump lights** – Controlled by conveyor and pump motor circuits. The lights are on when the conveyor & pump circuits are operational.

(9) **Rinse light** – Controlled by final rinse solenoid valve. The light is on during the final rinse.

#### 1-11. Final Rinse Micro Switch and Solenoid Valve.

The final rinse micro switch (11, Figure 1) is actuated when the rack trips the actuator lever (12 Figure 1) as it progresses through the dishwasher. When the switch is actuated, the solenoid valve (9 Figure 1) is activated, permitting hot rinse water to enter the dishwashing machine at the solenoid valve.

#### 1-12. Drain Valve.

Each tank of the dishwashing machine is equipped with a drain valve (20, figure 1). The drain valve handle is turned clockwise ½ turn for the full closed position. This valve must be closed when the tank is filled and must remain closed while the dishwasher is operated. To empty the tank, the drain valve is turned counter-clockwise ½ turn to the open position. Each drain valve is equipped with a strainer. The strainer requires frequent cleaning, as outlined in paragraph 3-3.

STYLE PART NO.	I	II
	W-3-18656	W-3-18639
R-E R-L R-M	WASH TANK	
R-PE R-PL R-PM	PREWASH TANK	WASH TANK
R-CC R-EE R-LL R-MM	WASH TANK RINSE TANK	
R-PEE R-PCC R-PLL R-PMM	PREWASH TANK RINSE TANK	WASH TANK
R-CCC R-EEE R-LLL R-MMM	PREWASH TANK RINSE TANK	WASH TANK

### 1-13. Standpipe.

A hollow stainless steel drain standpipe (21, figure 1) fits into the drain valve seat in each tank. The standpipe is sealed by a rubber drain plug which fits over the standpipe and is secured by two stainless steel retaining rings. There are two standpipe styles; the configuration used in a particular tank is determined by the dishwashing machine model as shown in figure 4. The standpipe must be removed when cleaning the drain strainer. It is important that the correct standpipe is installed in each tank.

For tanks equipped with standpipe style I, the length of the standpipe determines the water level in the tank in which it is mounted. When the water reaches the top of the standpipe, it spills into the hollow standpipe and flows through to the drain. This also permits overflow water to skim heavy soil, etc, that floats on top of the wash water, and carry it down the drain.

On standpipe style II, the top of the standpipe is capped. These standpipes are used in wash tanks of machines which include a pre-wash tank. This capped standpipe prevents the excess water to drain. Instead, the excess water flows over the cut out portion of the baffle (in the tank common to both the wash and pre-wash tanks) into the pre-wash tank, as indicated in figure 5. The pre-wash tank is equipped with the style I standpipe.

### 1-14. Heaters.

A. ELECTRIC. The electric heating system is controlled by the ON/OFF switch (6, figure 2) and is monitored with a thermostat. This heating system includes a contactor. The contactor is located toward the rear of the machine on the right side (as viewed when facing the access door). Some machines are equipped with optional common connection electric heat junction box. A separate power supply, properly fused, must be connected to the contactor of each heated tank.

After the switch is turned ON, no other control of the system is required by the operator. The HEAT indicator light (6) will glow when the heat circuit is on, providing all tanks are filled with water.

B. STEAM INJECTOR. This heating system is automatically controlled with a thermostat and solenoid valve. Steam enters a strainer, passes through the solenoid valve and a check valve and enters the steam water heaters in the tank. The solenoid valve is actuated by the control panel ON/OFF switch (1, figure 2) and is monitored with a thermostat. After the switch is turned ON, no other control of the system is required by the operator. The HEAT indicator light (6) will glow when the heat circuit is on.

C. STEAM COIL. The steam coil heating system is automatically controlled with a thermostat and solenoid valve. Steam enters a strainer, passes through the solenoid valve and enters the steam coil in the tank where heat transfers to the tank water. A steam trap at the coil exit connects to the condensate drain. The solenoid valve is actuated by the control panel ON/OFF switch (1, figure 2) and is monitored with a thermostat. After the switch is turned ON no other control of the system is required by the operator. The HEAT indicator light (6) will glow when the Heat circuit is on.

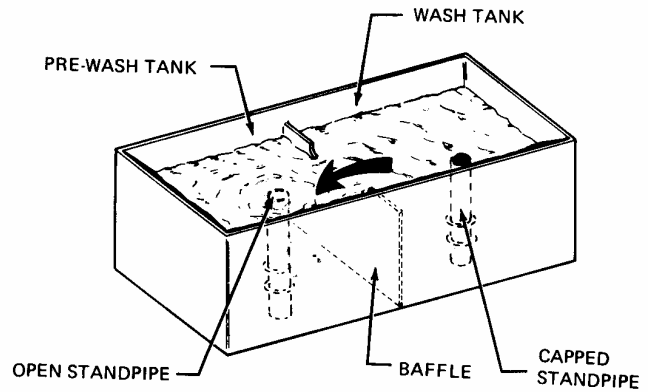
D. GAS. The gas heating system includes a gas control valve and a separate low water cut-off float switch. Gas enters the valve and is directed to the mixer heads on the burners. Two burners are arranged along the bottom rear of the tank. Burner orifice sizes are set at the factory and usually require no further adjustments; larger or smaller orifices for certain special gas B.T.U. outputs are available. Safety devices include a gas flue, safety pilot and built-in pressure regulator (natural gas only). Gas will not flow through the gas control valve unless the pilot light is lit, and there is water in the tank. Therefore, the operator must check periodically that the pilot light has not gone out, and relight it when necessary (refer to paragraph 2 – 6) The gas control is actuated by the control panel ON/OFF switch (1 figure 2) and is monitored with a thermostat. The HEAT indicator light (6) will glow when the heat circuit is on, providing all tanks are filled with water.

**1-15. Line Strainers.**

A. FINAL RINSE SYSTEM. The final rinse system includes a strainer (10, figure 1) to protect the solenoid valve (9, figure 1) from dirt. A good preventive maintenance program must include periodic cleaning of the strainer screen (refer to paragraph 3-5).

B. STEAM INJECTOR HEATING SYSTEM. This system includes a solenoid valve protected with a strainer. Periodic cleaning of the strainer is recommended (refer to paragraph 3-5). The strainer is located at the steam inlet side of the solenoid valve.

C. STEAM COIL HEATING SYSTEM. This system includes a solenoid valve protected with a strainer. Periodic cleaning of the strainer is recommended (refer to paragraph 3-5). The strainer is located at the steam inlet side of the solenoid valve.



**FIGURE 5.**

Baffle between Wash and Pre-Wash Tanks only

**1-16. GAUGES**

**1-17. Sump Thermometer.**

Each tank of the dishwashing machine is equipped with a sump thermometer (19, figure 1). This thermometer indicates the temperature of the water in the tank. NSF requirements for water temperatures are indicated in the table at the end of this section. After the dishwashing machine is filled with water and the heating unit is turned on, the sump thermometer should be observed periodically to assure that the proper temperatures are being maintained.

**1-18. Water Temperature Chart.**

TYPE OF MACHINE	OPERATION	NSF MINIMUM TEMPERATURE
SINGLE TANK	Wash	160 F
	Final Rinse	180 F - 195 F
SINGLE TANK W/PREWASH	Prewash	110 F - 140 F
	Wash & Rinse	160 F
	Final Rinse	180 F - 195 F
2 TANK	Wash	150 F
	Power Rinse	160 F
	Final Rinse	180 F – 195 F
2 TANK W/PREWASH	Prewash	110 F – 140 F
	Wash	150 F
	Power Rinse	160 F
	Final Rinse	180 F
3 TANK	Prewash	110 F – 140 F
	Wash	150 F
	Power Rinse	160 F
	Final Rinse	180 F – 195 F

**1-19. Final Rinse Thermometer.**

The final rinse thermometer (6, figure 1) is located above the last tank of the dishwashing machine. This thermometer indicates the temperature of the final rinse water entering the machine. An NSF requirement for final rinse water is 180 F – 195 F. Heating the final rinse to 180 F is generally accomplished with a booster heater. This heater was either purchased with the dishwashing machine, or was part of the regular kitchen equipment. The heat from the final rinse water assures sanitation and assists in heating the ware for rapid drying. During dishwashing operation, the final rinse thermometer should be observed periodically to assure that proper temperature is being maintained.

**1-20. Final Rinse Pressure Gauge. (OPTIONAL)**

Properly heated final rinse water under pressure between 15 to 25 psi (Flow pressure) will effectively rinse away detergent. The optional gauge is used to monitor this flow pressure. Flow pressure is the indicated water pressure with all final rinse valves open and the final rinse in operation.

**1-21- Final Rinse Pressure Gauge Petcock.**

The final rinse system is equipped with a ¼- inch N.P.T. petcock (8, figure 1). This device is used by detergent representatives & health inspectors in conjunction with test equipment. Be sure petcock is closed (valve lever horizontal) before removing plug to install equipment.

## Section II Operation

### 2-1. PREPARING MACHINE FOR OPERATION.

Perform the following steps to insure proper dishwasher operation.

1. Check that clean scrap trays are in position on either side of lower spray boxes. Be sure a curtain is in position at the dishwasher entrance, between the wash and rinse areas of tanks, and at the dishwasher exit.
2. Close tank drain valves and access doors.
3. Put correct amount of detergent in detergent dispenser box. Observe the recommendations of the detergent manufacture.
4. Be sure the door safety switch is pulled out so the inspection door cannot be opened.
5. Turn the ON/OFF switch in the control panel (1, figure 2) **on**. The dishwashing machine will begin filling. The **fill** indicator light should come on. Multi tank machines fill using the rinse tank fill and the final rinse. Water is pumped from the rinse tank to fill the wash tank. See Quick Start paragraph 1-8. Quick start is optional on single tank machines.
6. The machine will automatically stop filling when the water reaches its proper level. At this point the **heat** indicator light should come on.
7. Observe sump thermometers; minimum operating temperatures are indicated on the thermometers, and in the table at the end of Section I.
8. Press the start switch on the control panel.  
**NOTE:** Machines with energy save option do not have the start switch.

The dishwasher is now ready for loading. (Paragraph 2-2).

### 2-2. LOADING MACHINE.

#### 2-3. Racks.

A minimum of six racks are included with your dishwasher as standard equipment. Two types of racks are furnished: the multi-purpose rack and the combination rack. There are more holes in the bottom of the combination rack than in the multi-purpose rack. The multi-purpose rack is used for washing plates, saucers, trays (14 x 18 inch maximum) and any ware except silverware. The combination rack is used for washing silverware and small ware such as cups, bowls and glasses.

An important feature of the rack supplied is the design of the "feed" ladder. This ladder is at the bottom of the rack (see figure 6). The ladder engages the pawls on the conveyor tracks. By making the ladder "steps" perfectly vertical, personnel loading the racks need not be concerned with a front or back, of the rack.

Also, the rack can be used in either an L to R (left to right) feed dishwasher or in an R to L (right to left) feed dishwasher.

When additional or replacement racks are needed, we recommend Multi-Purpose Rack Part No. W-0-16428 and Combination Rack Part No. W-0-16429.

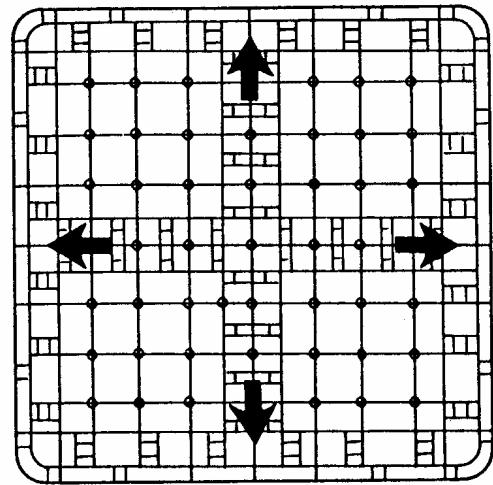
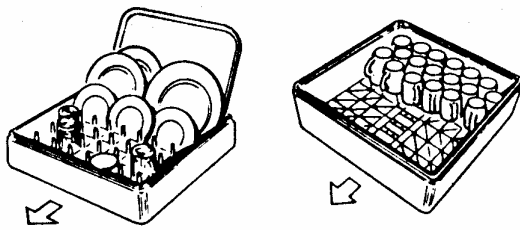


FIGURE 6. Rack Ladder

### 2-4. OPERATING THE DISHWASHER.

Observe the following instructions to obtain maximum performance from the dishwashing machine. Also refer to paragraph 2-7 for helpful suggestions.

1. Whenever possible, instruct bus boys or wait staff to stack the soiled dishes according to sizes as they are brought to the soiled dish table.
2. Remove by hand, rubber scraper, or pre-washing as much food particles left on the dishes as possible. This will reduce pollution of water, insure the cleanest possible wash water and lower detergent costs.
3. Rack dishes in appropriate rack as indicated in figure 7. When placing silverware in combination rack; you should be able to see many holes in the bottom of the rack after it is loaded.
4. Push the rack of soiled dishes into the machine far enough so that the conveyor track will engage the rack and convey it through the dishwasher.
5. Scrape and rack more dishes and "feed" the racks of soiled ware to the machine as fast as it will take them.



MULTI-PURPOSE RACK  
PART NO. W-0-16428

COMBINATION RACK  
PART NO. W-0-16429

**FIGURE 7. Proper Loading of Racks**

6. Clean ware must be taken out of the racks and the empty racks removed from the clean dish table and returned to the soiled dish table for reloading. Do not let dish racks pile up on the clean dish table until they hit the end of the dish table as this subjects the conveyor to unnecessary strain. Let the washed and rinsed dishes remain in the racks for a minute or so until they have had a chance to drain and self dry. If the dishes are removed from the racks too soon, they will not be dry.

7. Continually check wash and rinse temperatures. **NOTE:** For machines equipped with gas heating units, a decreasing temperature may be caused by the pilot light going out. Check that the pilot light is lit; when necessary; relight as outlined in paragraph 2-6.

8. Be sure enough detergent is being added to the wash water to keep it at an effective strength if an automatic dispenser is not being used.

9. Repeat steps 2 through 8 until all dishes have been washed.

10. Stop dishwasher (paragraph 2-5) and perform the daily cleaning (paragraph 3-1).

**2-5. STOPPING MACHINE AFTER OPERATION.**

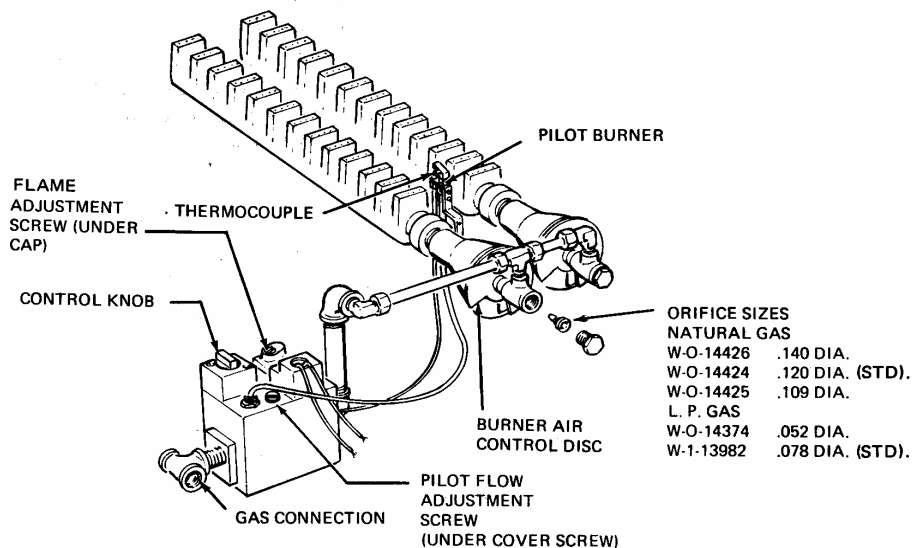
To stop the dishwasher, observe the following.

1. Press the STOP button. (None with ESC)
2. Turn the ON/OFF switch to the OFF position.
3. Open drain valve.
4. Clean machine (paragraph 3-1)

**2-6 GAS PILOT LIGHT INSTRUCTIONS.**

The pilot burner is accessible from the right side of the machine. Figure 8 shows the gas heat unit and identifies the pilot burner and pilot lighting button. Use a fireplace match, or a long piece of rolled – up paper, to light the pilot burner as follows;

1. Slightly depress control knob if at PILOT position and turn clockwise to OFF. Wait 5 minutes for all unburned gas to vent. REMEMBER that LP gas does not vent upward naturally.
2. Turn the control knob to PILOT, depress it completely, and light the pilot burner. The knob must be held down about one minute before the pilot burner will stay lit after releasing the knob.
3. Turn the knob to ON. Gas burners should ignite. If not, repeat above sequence.



**FIGURE 8. Gas Heat Unit**

## 2-7. HELPFUL HINTS.

### 2-8. Loading Precautions.

The dishwashing machine is built for washing dishes and other tableware only, not for pots and pans. The rack type machine is designed to accomplish the cleaning with the ware contained in racks. Do not attempt to load the machine with an item that is not placed in a rack. The multi-purpose rack can accommodate tray sizes up to 14 x 18 inches maximum. Options are available for larger trays or items which will not fit in the rack.

### 2.9 Dish handling Techniques.

**MAINTAIN ORDERLY DISH TABLE.** Instruct your bus boys or waitresses to arrange the soiled ware on the soiled dish table in an orderly fashion as the ware is brought to the table. There should be regular places for depositing napkins, silver, glasses, cups, etc. In many instances, silver, cups, and glasses can be placed directly in the combination racks by the bus boys, or waitresses. It is easier to rack the dishes if they are organized into stacks of 8- inch plates, 10- inch plates, etc. Dishes of the same type and size should be placed in one rack whenever possible. Fill one rack with cups, one with glasses, one with soup bowls, plates and regular ware and one with miscellaneous items such as butter dishes, creamers etc. An orderly soiled dish table will increase the efficiency of the dishwashing machine operator and will minimize dish and glass breakage. And the opposite is also true; disorganized piles of miscellaneous dishes will decrease efficiency and increase breakage.

**SCRAPE DISHES.** Do a good job of removing leftover food from the dishes. Scrape dishes by hand, with a rubber scrapper, or by pre-washing before placing them in the dish racks. Doing this job "right" helps you maintain cleaner water.

**LOAD RACKS PROPERLY.** Dishes and all "flat" china should be stacked in the multi-purpose racks so that they lean back with the face of the soiled surface of the dish exposed to the upper spray.

Glasses, cups, bowls and other "deep" dishes should be placed face down in the combination racks. Remember, whenever possible it is a good practice to have your bus boys or waitresses place cups, glasses and bowls directly in the combination rack. Do not overcrowd or overload the racks as the wash and rinse waters must reach all surfaces to obtain clean ware.

### 2-10 Detergents.

Detergents should be used according to the detergent manufacturer's recommendations. Their representative knows the capabilities of their detergents and can determine the proper treatment of your water for proper use with their product. The wash water must be kept at an effective strength to obtain good washing results. Use a good detergent. Never use a foaming soap or soap flakes. Ask your local detergent man for his help and heed his advice.

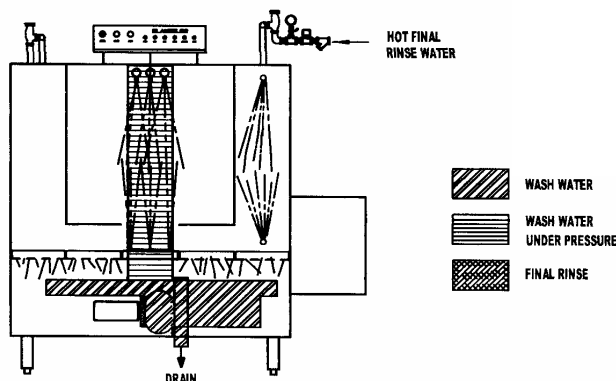
### 2-11. BRIEF DESCRIPTION OF SEQUENCE OF OPERATION.

The sequence of operation for various dishwasher models is described in paragraph 2-12 through 2-16 and represented in figures 9 through 13. Many of the parts referred to in these descriptions are shown in figure 1 of this manual.

### 2-12 Single Tank Dishwashing Machine. (See Fig. 9)

**WASH CYCLE.** The pump directs the wash water through the riser weldment at the rear of the machine to upper spray arms and to a lower spray box. Nozzles on the spray arms, and spray box direct the wash water at the dishes. Trays on either side of the lower spray box prevent dislodged food particles falling into the tank. The water returns to the tank, where it is ready to start the wash cycle again. The hollow standpipe permits overflow water to flow down the drain and acts as a surface skimmer.

**FINAL RINSE CYCLE.** Hot final rinse water enters the machine at the strainers and solenoid valve. The water travels through the vacuum breaker and enters the spray pipes. Nozzles on the spray pipes direct the rinse water at the dishes.



**FIGURE 9. Single Tank Water Distribution**

**2-13. Single tank with P-Module Pre-Wash (See Fig.10).**

**PRE-WASH CYCLE.** The pre-wash tank is filled with overflow water from the wash tank. The pre-wash water is pumped through the riser weldment at the rear of the machine where it enters an upper spray arm. (a lower spray arm is available as optional equipment) Nozzles on the spray arm direct the pre-wash water at the dishes. A scrap tray below the conveyor track prevents dislodged food particles falling into the tank. The water returns to the tank, where it is ready to start the pre-wash cycle again. The hollow standpipe permits overflow water to flow down the drain.

**WASH CYCLE.** The pump directs the wash water through the vertical riser at the rear of the machine to upper spray pipes, and to a lower spray box. Nozzles on the spray arms and spray box direct the wash water at the dishes. Scrap trays on either side of the lower spray box prevent dislodged food particles falling into the tank. The water returns to the tank, where it is ready to start the wash cycle again. The capped standpipe prevents the overflow water flowing down the drain. Instead, the water is forced to overflow into the pre-wash tank.

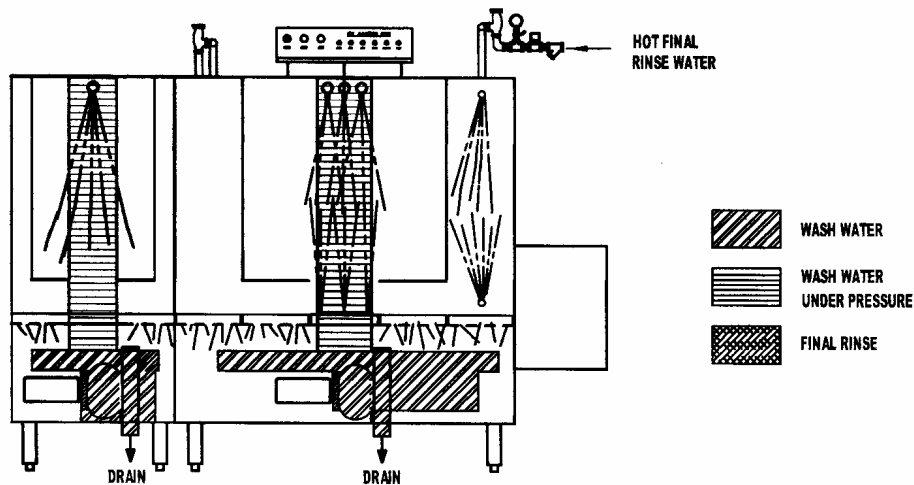
**FINAL RINSE CYCLE.** The final rinse cycle for this machine is identical to the final rinse cycle described in paragraph 2-12.

**2-14. Two Tank Dishwashing Machine (See Fig. 11).**

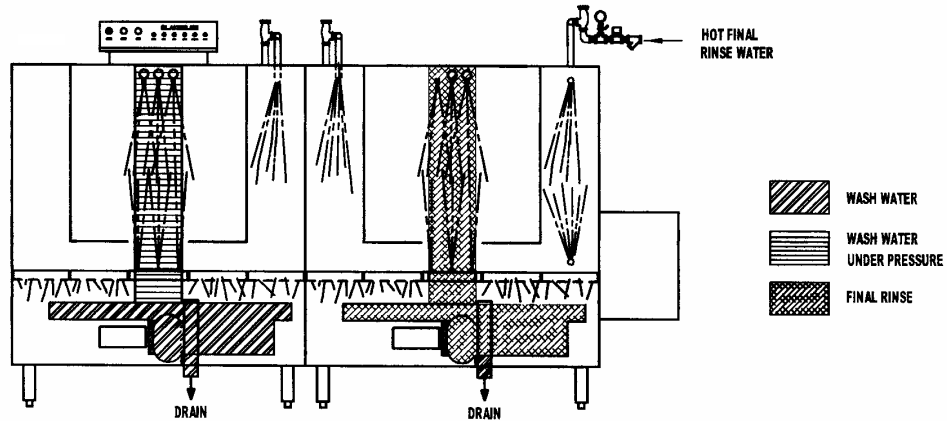
**WASH CYCLE.** The pump directs the wash water through the riser pipe at the rear of the machine to upper spray pipes and to a lower spray box. Nozzles on each spray arm and spray box direct the wash water at the dishes. Scrap trays on either side of the lower spray box prevent dislodged food particles falling into the tank. The water returns to the tank, where it is ready to start the wash cycle again. The hollow standpipe permits overflow water to flow down the drain.

**POWER RINSE CYCLE.** The pump directs the rinse water through the riser weldment at the rear of the machine to upper spray arms and a lower spray box. Nozzles on each spray arm and spray box direct the rinse water at the dishes. Scrap trays on either side of the lower spray box prevent dislodged food particles falling into the tank. The water returns to the tank, where it is ready to start the rinse again. The hollow standpipe permits overflow water to flow down the drain. The rinse water is replenished with used final rinse water.

**FINAL RINSE CYCLE.** Hot final rinse water enters the machine at the strainer and solenoid valve. The water travels through the vacuum breaker and enters the spray pipes. Nozzles on the spray pipes direct the rinse water at the dishes. The used final rinse water falls into the power rinse tank.



**FIGURE 10. Single Tank with P – Module Pre-wash Water Distribution Diagram**



**FIGURE 11. Two Tank Water Distribution Diagram**

**2-15. Two Tank with P-Module Pre-Wash (See Fig.12).**

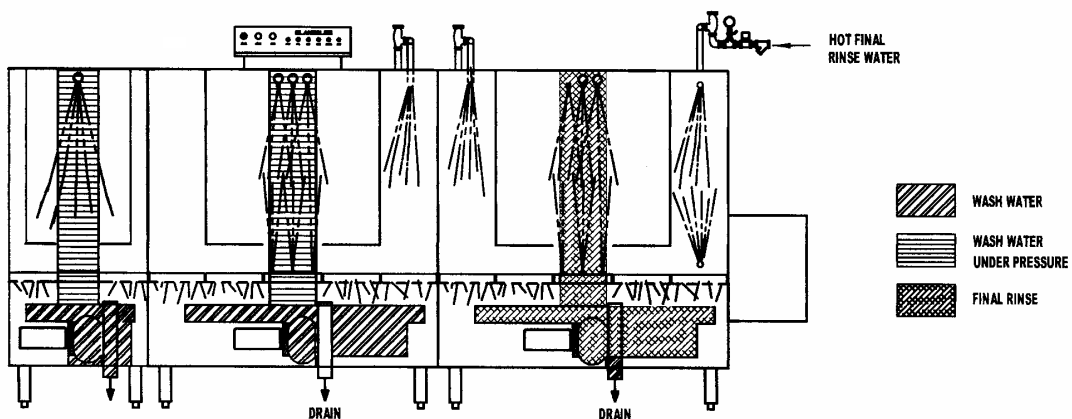
**PRE-WASH CYCLE.** The pre-wash cycle for this machine is identical to the pre-wash cycle described in paragraph 2-13.

**WASH CYCLE.** The pump directs the wash water through the riser weldment at the rear of the machine to upper spray arms and a lower spray box. Nozzles on each spray arm and spray box direct the wash water at the dishes. Scrap trays on either side of the lower spray box prevent food particles falling into the tank. The water returns to the

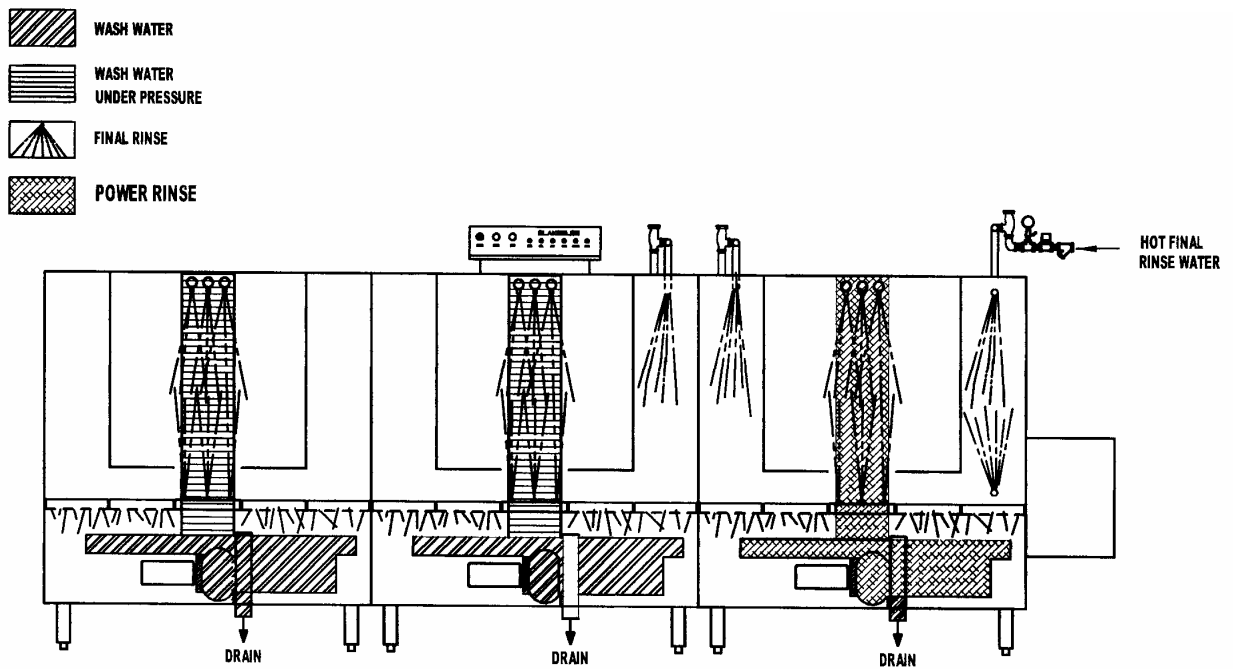
tank, where it is ready to start the wash cycle again. The capped standpipe prevents the overflow water flowing down the drain. Instead, the water is forced to overflow into the pre-wash tank.

**POWER RINSE CYCLE.** The power rinse cycle for this machine is identical to the power rinse cycle described in paragraph 2-14.

**FINAL RINSE CYCLE.** The final rinse cycle for this machine is identical to the final rinse cycle described in paragraph 2-14.



**FIGURE 12. Two Tank with P – Module Pre-wash Water Distribution Diagram**



**FIGURE 13. Three Tank Water Distribution Diagram**

**2-16. Three Tank Dishwashing Machine (See Fig. 13).**

**PRE-WASH CYCLE.** The pre-wash tank is supplied with overflow water from the wash tank. The pre-wash water is pumped through the riser pipe at the rear of the machine where it enters upper spray pipes and lower spray box. Nozzles on each spray pipe and spray box direct the pre-wash water at the dishes. Scrap trays on either side of the lower spray box prevent dislodged food particles falling into the tank. The water returns to the tank, where it is ready to start the pre-wash cycle again.

The hollow standpipe permits overflow water to flow down the drain.

**WASH CYCLE.** The wash cycle for this machine is identical to the wash cycle described in paragraph 2-15.

**POWER RINSE CYCLE.** The power rinse cycle for this machine is identical to the power rinse cycle described in paragraph 2-14.

**FINAL RINSE CYCLE.** The final rinse cycle for this machine is identical to the final rinse cycle described in paragraph 2-14.

## Section III Cleaning of Machine

### 3-1. DAILY CLEANING

After each meal period and at the end of each day, the dishwashing machine should be stopped and the following cleaning procedures performed. A hose attached to a faucet in the hot water supply line makes the cleaning of your machine and dish tables much quicker and easier. The hose can be stored neatly coiled on a hook beneath the dish tables.

1. Stop the dishwashing machine as outlined in paragraph 2-5. Check that heaters are off, tanks are drained, and drain valves are open.
2. Wash down dish tables with a detergent and rinse with fresh water. Be sure to leave scrap trays in the machine during this operation.
3. Remove curtains and scrub them in a sink. The curtains can be installed in the dishwasher to dry, but it is best to hang them elsewhere. The dishwashing machine will dry and air out better without the curtains in place.
4. Remove scrap trays and empty them into a sink. Flush the trays with a hose or clean them with a scrub brush. When emptying the trays, do not knock them on disposal cans; knocking the trays will bend them out of shape and they will not fit properly in the dishwasher.

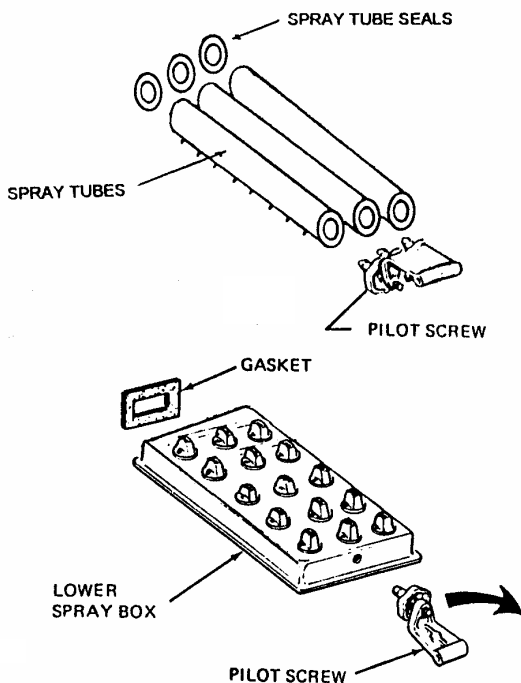


FIGURE 14. Spray Box Mounting

5. Check and clean the spray box/tubes as necessary. To remove them refer to figure 14 and loosen the pilot screws retaining the spray box/tubes. Slide the spray box and tubes out of the machine. Check the gasket and seals for signs of wear (paragraph 4-6). Dislodge anything stuck in the nozzles by pushing the material back and into the box or tube. Was the spray box or tube, flushing the materials out of the inlet hole.

6. Hose and scrub the inside of the dishwashing machine.
7. Clean the drain screen as outlined in paragraph 3-3.
8. Install the clean spray box and tubes in position in the machine (refer to figure 14). Be sure to position the upper spray tubes with the nozzles pointing down. When installing the tubes and spray box, tighten pilot screw finger tight only; do not apply excessive pressure.
9. Leave access doors open and leave scrap trays and curtains on the dish table until preparing the machine for operation. This allows the dishwashing machine to dry and the operator will know that the machine has been thoroughly cleaned.
10. Clean and fill detergent dispenser.

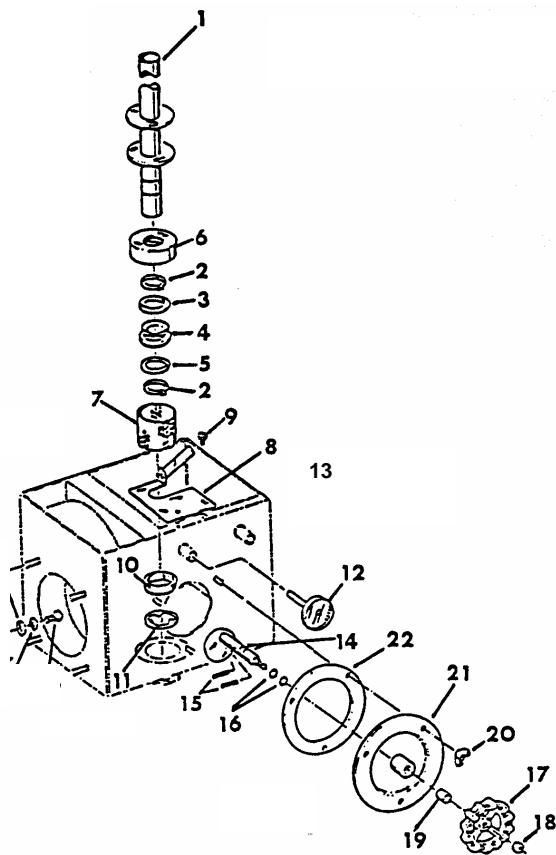
### 3-2. PERODIC CLEANING.

The frequency with witch the following cleaning procedures should be performed depends on the hours of dishwasher operation and the condition of the water in your area. When intervals are specified (once a week, once a month, etc.) they are recommended minimum intervals and should be performed at least as often as specified.

### 3-3. Drain Screen

The drain valve for each tank of the dishwashing machine is equipped with a cylindrical stainless steel screen (6, figure 15). When this strainer is clogged with food particles, the tank does not drain as quickly as it should. Thorough prescraping of the ware will minimize screen clogging. Cleaning of the screen should be performed after a daily cleaning. Clean the screen in each tank as follows:

1. Check that the heater is off and the tank is drained. Position the drain valve in the closed position.
2. Remove the 3 wing nuts (20, figure 15) and pull the drain case door (21) from the drain case. A gasket (22) between the case and the door acts as a seal to prevent leakage. If it is necessary to pry the door from the case, be careful to avoid damaging the gasket.



**FIGURE 15. Standpipe and Drain Valve Shaft**

- |                         |                            |
|-------------------------|----------------------------|
| 1. Stand Pipe           | 12. Thermometer            |
| 2. Retaining Ring       | 13. Cam Shaft Assy.(14-18) |
| 3. Washer               | 14. Cam Shaft              |
| 4. Drain Plug           | 15. Stop Pin               |
| 5. Washer               | 16. O-Ring                 |
| 6. Screen               | 17. Knob                   |
| 7. Screen retainer      | 18. Hex Nut                |
| 8. Stand Pipe Guide     | 19. Spacer                 |
| 9. Hex Head Mach. Screw | 20. Wing Nut               |
| 10. Drain Seat          | 21. Door                   |
| 11. Cam Shaft Assy.     | 22. Door gasket            |

**CAUTION:** The tank must be empty of water before removing the drain case door. When drain case contains hot water and the door is removed, the hot water will exit at the door hole and could cause serious injury. If drain strainer is completely clogged, manually remove water with a container through the access door from top of tank. Or to gain access the screen to unclog it, lift standpipe by pulling it up, turning drain valve handle at the same time.

3. Lift drain standpipe (1) straight up to gain access to the strainer

4. Lift the strainer straight up off of the drain valve seat (10) and clean it in a sink with a brush A bent or deformed screen should be replaced with a new one.

5. Clean drain case interior and flush the drain valve with clear water.

6. Install clean screen (6) on drain valve seat (10).

7. Lower the standpipe (1) into the drain valve seat. Do not drop standpipe into position.

8. Be sure door gasket is in place on drain case, (22). With the drain valve knob in closed position (white arc at the bottom), install the door on the case, locating the cam on the knob shaft between the two collars on the standpipe. The three mounting holes in the gasket and door are not spaced equally and therefore the gasket and door holes must be matched to the case studs

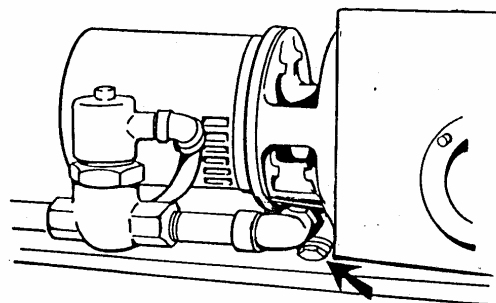
9. Assemble the three wing nuts (20) on the case studs, applying equal pressure to the wing nuts until they are snug; do not tighten these nuts with a wrench.

### 3-4. Low Water Cut-Off Float.

For proper operation of the low water cut-off system, the float in each tank must be free of detergent scum and lime deposits. Daily cleaning and deliming will keep the float reasonably clean. **CAUTION:** Do not use steel wool cleaning pads.

### 3-5. Line Strainers

Every dishwashing machine is equipped with a strainer in the final rinse system (12, figure1). In addition, each steam heated machine (steam injector or steam coil) is also equipped with a strainer at the steam inlet. The following instructions apply to all of the strainers.



**FIGURE 15 A. Steam Injector Line Strainer**

Once a month, clean the strainer as follows. Unscrew the brass cap and remove the strainer screen. Brush the screen or flush out dirt with fresh water. Install the screen and attach the brass cap securely. A worn screen should be replaced with a new one.

## Section IV Preventive Maintenance and Minor Repair

### 4.1 PREVENTATIVE MAINTENANCE.

A good preventive maintenance program ensures that the dishwashing machine is kept in good operating condition and lessens the chances of break-down. Preventive maintenance means making systematic inspections and adjustments at regular intervals. These procedures should be performed as soon as the need becomes apparent or at the specified intervals. More frequent inspections and adjustments should be if experience indicates that shorter intervals are required due to operating conditions. In addition to the periodic cleaning procedures of Section III, the inspections and adjustments of paragraph 4-2 through 4-16

### 4-2. LUBRICATION.

The pump and drive motors contain ball bearings and do not require lubrication. The conveyor gear reducer must be lubricated or checked as described in the following paragraphs. CAUTION: When applying lubricant, secure or lock main power in the OFF position. Power must be off to the machine during lubrication procedures to avoid accidental conveyor operation which could result in physical harm to maintenance personnel.

### 4-3. Conveyor Drive Gear Reducer.

Once a month check gear reducer oil level. The oil plug and oil drain plug are located on the gear reducer as shown in (figure 17). The oil level should never be higher than the upper plug. To add oil, remove the air vent and fill screw (figure 17) and add oil through the vent hole. Use a high quality compounded worm gear oil, Mobil Extra Hecla Super or a comparable oil recommended by your lubricant supplier. Install the air vent and fill screw. After the first 100 hours of operation, and then after every 2500 hours of operation or every 6 months, change oil. Place a suitable container beneath the oil drain plug. Remove plug and allow oil to drain from the gear reducer. Install drain plug and fill reducer with fresh oil until the oil starts to come out of the oil level plug. Install level plug.

### 4- 4. V-BELT TENSION ADJUSTMENT

The conveyor drive gear reducer is driven by a notched V-belt from the drive motor. The average belt will stretch after a period of time. After the first 50 hours of operation, and then periodically as experience indicates, check the v-belt tension. Figure 18 indicates the proper tension; belt deflection is  $\frac{1}{2}$  inch when a 3-pound force is applied.

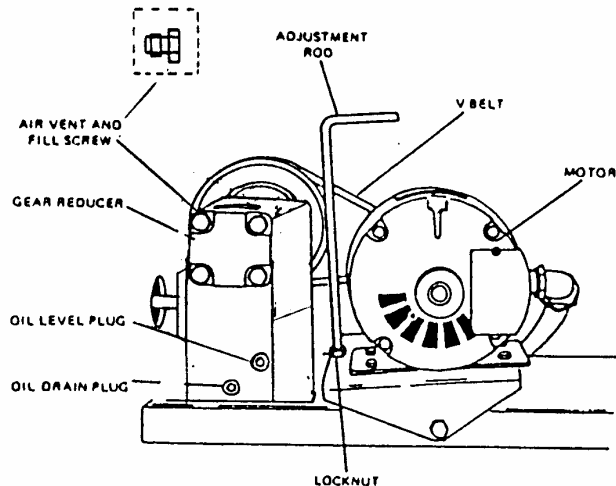


FIGURE 17. Conveyor Drive Gear Reducer and Motor

To adjust the tension, loosen the locknut see figure 18) to permit turning the adjustment rod. Turn the rod clockwise to tighten the belt; turn counterclockwise to loosen the belt. Tighten the locknut after turning the rod to maintain the proper tension.

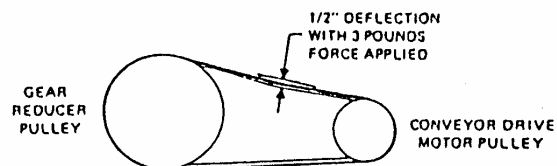


FIGURE 18. Conveyor Drive Belt Tension

### 4-5. PREVENTING LEAKAGE.

The spray box gaskets and standpipe drain plug are subject to wear, which results in leakage. The following paragraphs contain replacement instructions for these and similar items. Part numbers for replacement parts are listed in Section VI of this manual. For servicing of other leaks, contact your local Blakeslee service agency.

### 4-6. Spray Box Gaskets

Poor washing results occur when the spray box/tube gaskets or seals are worn and leaking. When the spray box/tube is removed for cleaning, check the gasket and seals (see figure 14) for signs of wear. If they are worn or out of shape, replace with new ones. To minimize gasket wear, when installing the spray box and tubes after cleaning, do not apply excessive pressure to the pilot screw.

#### 4-7. Stand Pipe Drain Plug

When cleaning the drain strainer (paragraph 3-3), check the stand pipe drain plug (4, figure 15) for signs of wear. If the plug is nicked or badly grooved, replace with a new one. NOTE: Before installing new drain plug, apply a light film of silicon sealant to the entire exterior circumference of the plug groove.

#### 4-8. Drain Cleanout Door Gasket

When leakage occurs around the drain case door, the problem may be a worn drain cleanout door gasket. However, first be sure the door was properly installed (paragraph 3-3, steps 8 and 9). When the drain strainer is cleaned, check the gasket for signs of wear. If gasket is worn, replace with a new one.

#### 4-9 Impeller Guard

This unique device consists of a guard housing encircling the pump intake and positioned  $\frac{3}{4}$ " from sump wall, providing a circular opening that is larger than the opening of the pump intake, thus creating no restrictions for water flow. Inside the circular guard housing there is a guard disk of smaller dimension which allows additional passage of water flow with minimum restrictions. The location of guard housing and disc is such that there is no straight entrance into the impeller

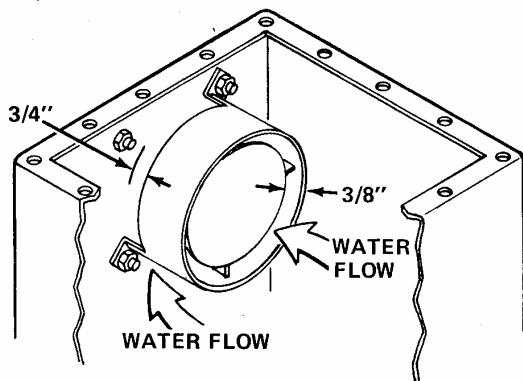


Figure 19. Impeller Guard Installed in Sump

#### 4-10. MINOR REPAIR

The following repair procedures are adjustments or replacements to be performed only when necessary, not on a periodic basis. Part numbers for replacement parts are listed in Section VI of this manual.

#### 4-11. Flame Adjustments for Gas-Heated Tanks.

After the dishwashing machine is installed and gas connections are made, the pilot and burner should be adjusted to obtain desired tank temperatures. Refer to paragraph 2-6 for pilot lighting instructions.

**PILOT FLAME ADJUSTMENT.** The pilot flame should envelope  $\frac{3}{8}$  to  $\frac{1}{2}$  inch of the top of the thermocouple. Remove the cover screw to gain access to the pilot flow adjustment screw; see figure 8. Turn the adjustment screw clockwise to decrease pilot flame; turn counterclockwise to increase pilot flame. Be sure to replace cover screw after adjustment to prevent possible gas leakage.

**BURNER FLAME ADJUSTMENT.** The burner flame must only touch the tank. On natural gas machines, minor burner adjustment can be made by adjusting the pressure regulator of the gas valve; on L.P. gas machines, the customer's gas pressure regulator can be changed for minor adjustment. Each burner is equipped with an orifice spud (See figure 8). If a proper flame cannot be obtained by making minor adjustments, the orifice spud size must be changed. Contact your local Blakeslee agency for assistance, or to order the appropriate size spud.

#### 4-12. Thermostat Settings

An adjustable thermostat is furnished for each heated tank of the dishwashing machine. A typical thermostat is shown in figure 19. The thermostat is adjusted by turning the adjusting screw with a screwdriver; turn clockwise to increase tank water temperature and counterclockwise to decrease the temperature. Some adjusting screws are mounted on a temperature scale. However, setting the screw at a specific temperature on the scale does not necessarily mean the sump thermometer will register that same temperature, since the thermostat temperature sensing element and thermometer are not mounted together. The thermometer indication is the temperature to observe; the adjusting screw temperature scale is a reference setting. Thermometer settings are an owner responsibility and are not covered under warranty

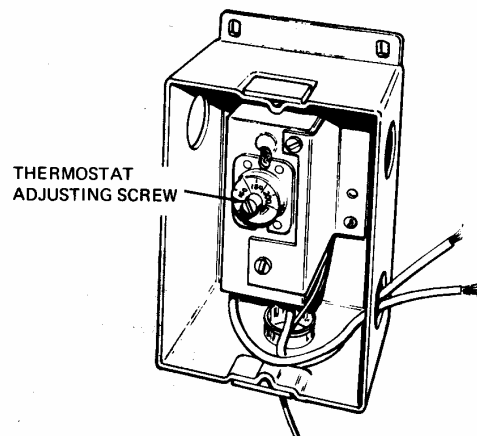


FIGURE 19. Thermostat Adjustment

#### 4-13. Control Box Fuse

The control panel fuse is a 3.2 ampere Slo-Blo fuse, located as shown in figure 19. With the main power turned off, open the control box cover and inspect the fuse. If fuse is suspected to be blown, replace with a new one of the same capacity. Fuse is held in position with spring clamps.

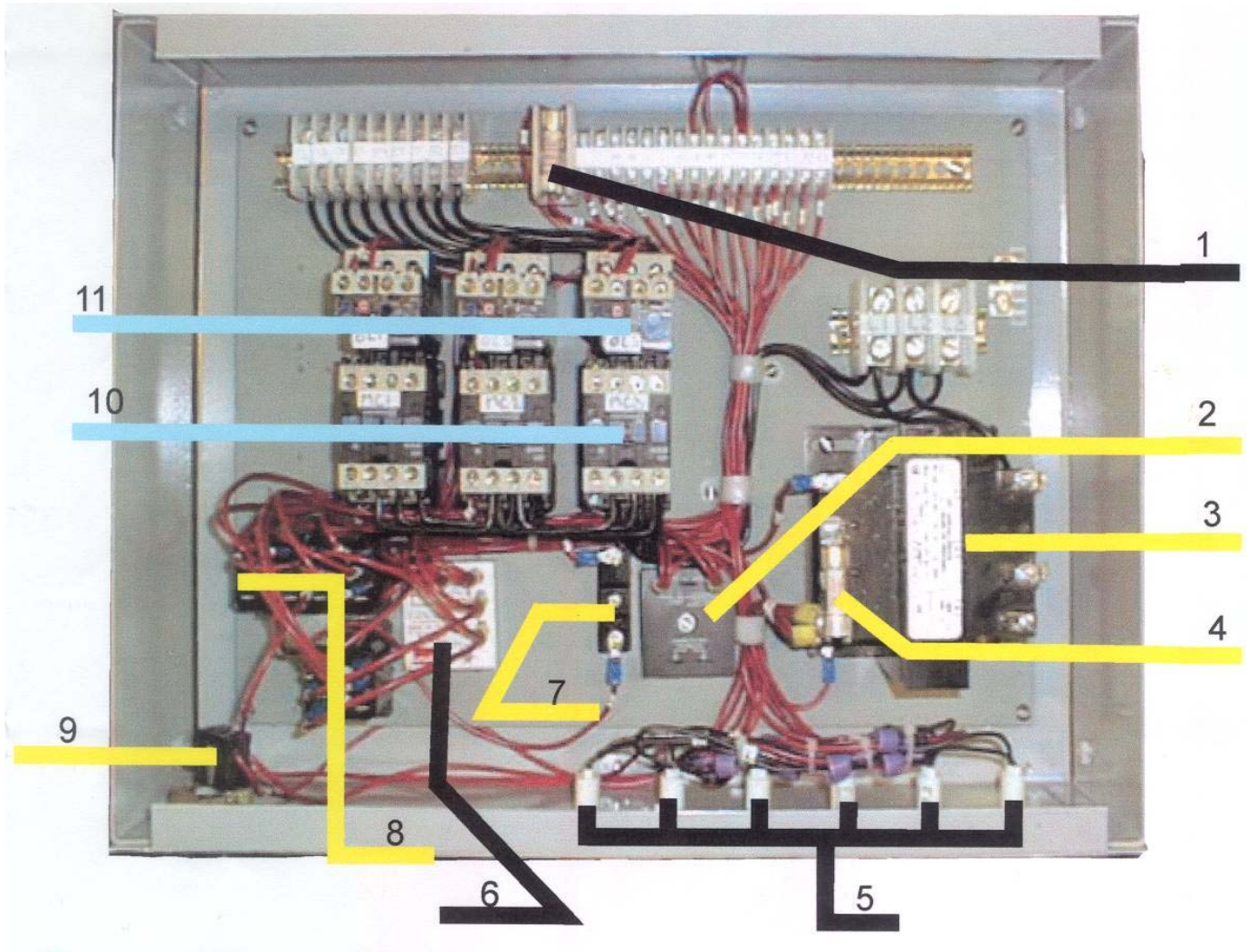
NOTE: Simple problems like blown fuses are not covered under warranty. However if the machine continues to blow fuses, call your local Blakeslee Service Agency

#### 4-14. Motor Overload Relay

Each motor in the dishwashing machine is protected thermal overload relays. These relays will automatically reset when the relay has cooled down.

When the motor thermal overload relay trips, it is necessary to check for the reason. For example, if one or all of the conveyor motor relays opened, a jammed conveyor may have been the cause. Once the jam is released and the relay has reset, the conveyor should operate. Similarly, the pump motor overload relays may be tripped due to a foreign object caught in the pump impeller. Removing the object should remedy the situation. However, if the same relay opens again shortly after operation is resumed, the cause has not been found and corrected. Do not continue resetting the relay; call your local Blakeslee Service Agency for assistance.

NOTE: Resetting motor overloads is not covered under warranty.



**FIGURE 19. Typical Control Box Internal Components**

- |    |                              |     |                             |
|----|------------------------------|-----|-----------------------------|
| 1. | Fuse 3.2 Amp. Slow Blow      | 7.  | Door Safety Switch          |
| 2. | Timer 5 Minute               | 8.  | Relays - 3                  |
| 3. | Transformer, Output 115 Volt | 9.  | On/Off Switch Contact Block |
| 4. | Fuse 3.2 Amp. Slow Blow      | 10. | Contactors - 3              |
| 5. | Indicator Light, Total of 6  | 11. | Overload Relays - 3         |
| 6. | Timer, Fill                  |     |                             |

#### 4-15. TROUBLE SHOOTING.

Trouble shooting procedures are listed in the following table. Each trouble is followed by a list of possible causes and suggested procedures to correct the cause. In general, the procedures should be performed in the order in which they are listed.

Trouble	Possible Cause	Corrective Procedure
Machine will not start	Main power supply off	Turn on main power supply
	Fuse blown – main supply	Replace fuse or fuses
	Fuse blown – control panel	Replace fuse
	Improper power supplied to machine	Check incoming line voltage
	Tanks not completely filled with water	Fill all tanks with water
Tanks do not heat up	NOTE: Electrically heated machines have separate supply line voltage feed to heating element contactors and should have a separate circuit breaker.	
	Power supply turned off	Check circuit breaker
	Low water float not satisfied	Make sure tank is full of water
	Thermostats set at improper temperature	Check thermostats and adjust
	Gas not turned on	Check gas line valve – turn on
	Pilot light not lit	Light pilot light
	Steam not turned on	Check steam supply (boiler) to assure it is operational
	Low steam pressure	Boost boiler pressure up to 15-25 lb. flow pressure
Clogged steam line strainers	Check all steam line strainers and clean	
Conveyor wont run	Power not on	Turn on conveyor start switch
	“V” belts slip	Adjust “V” belt tension (1/2” deflection of belt)
	Is “V” belt broken	Replace “V” belt
	Conveyor overload relay tripped	Will reset automatically after cooling – check for jam
	Conveyor safety micro switch is not released	Release jam that is tripping switch
Racks will not pass through machine	Pawls sticking in down position	Check all pawls to assure they are moving freely
	Racks not in correctly	Check racks for proper alignment to conveyor tracks
	Improper racks being used	Replace type of rack being used. Check with your local Blakeslee Representative
	Unload table too high	Level machine and table so that table is not higher than dishwasher
Poor final rinse	Water not turned on	Check to assure rinse water supply is turned on
	Line strainer dirty and clogged	Remove line strainer screens and clean
	Low water pressure	Check incoming water pressure and adjust to 15-25 lb. flow pressure
	Conveyor not turned on	Push conveyor start button

Trouble	Possible Cause	Corrective Action
Poor Final Rinse	Rinse micro switch not working	Check rinse actuator lever to assure it is activating the rinse micro switch - adjust
	Rinse temperature low	Adjust hot water booster
	Excessively hard water	Install water treatment equipment
	Rinse nozzles clogged	Remove rinse nozzles, clean and reassemble
Final rinse temperature low	Booster not turned on	Check circuit breaker for electrically heated boosters
	Thermostats set improperly	Adjust thermostats as needed
	Excessive water pressure	Reduce water pressure to 15-25 lb. flow pressure
	Steam pressure low	Boost up steam pressure at boiler
	Steam line strainer clogged	Remove line strainer screen, clean and reassemble
Electrical & steam heated boosters do not maintain 180° temperature at final rinse	140° water not being fed to booster	Increase incoming water temperature to 140° to inlet side of booster
Tanks not holding water	Drains are not closed properly	Check drain handles to assure drains are in closed position
	Plugs on standpipes worn	Refer to paragraph 4-7
	Standpipes in wrong tanks	Refer to paragraph 1-12 and figure 4
	Standpipes not positioned properly on drain can shaft	Remove cleanout cover and replace assuring the drain cam shaft is located between the two collars on the standpipe
Poor washing results	Pump(s) not running	Press pump start button
	Pump(s) running backwards	Check arrow on pump motor. Consult Blakeslee technical support for assistance if necessary
	Spray box/tube nozzles clogged	Remove spray box/tubes, clean & reinstall
	Spray box/tubes seals leaking	Remove Gaskets/seals, if worn or out of shape, replace
	Upper spray tube in upside down	Remove spray tube & replace correctly
	Tank temperature low	Check thermostats and adjust if necessary
	Detergent dispenser empty	Fill Dispenser
	Detergent dispenser inoperative	Contact detergent representative
	Dish poorly scrapped	Remove all heavy soil before putting into machine
	Dirty wash water	Drain tanks and refill
Tanks foaming	Poor pre-scraping of ware	Scrape ware before putting into machine
	Tank water excessively dirty	Drain tanks and refill
	Excessive amount of detergent being used	Contact detergent representative for assistance

## Section V Use of Additional Equipment

### 5-1. GENERAL

Extra equipment for the rack dishwashing machine, available from Blakeslee, includes hot water boosters, and hoods. This section contains information regarding proper use and maintenance of this equipment.

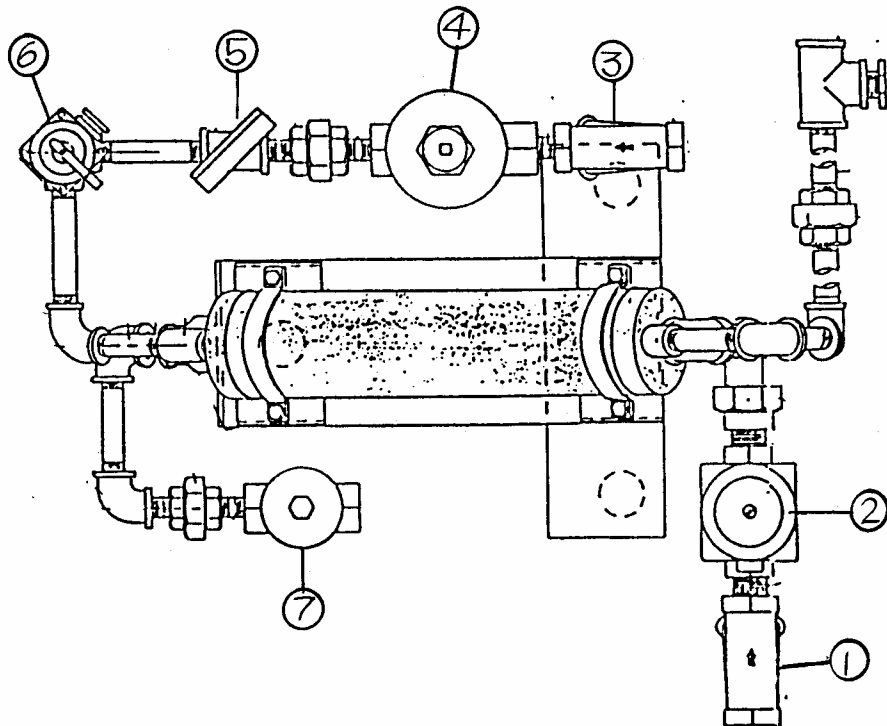
### 5-2. HOT WATER BOOSTER.

The hot water booster is used to raise the final rinse water temperature recommended by the National Sanitation Foundation and required by many health departments. To attain this temperature, the water supply to the booster must be maintained at 140° F. The booster is supported on a sturdy floor stand with adjustable legs for installation

Underneath the dish table. A choice of either a steam or an electric heater is offered. If the supply temperature of the water is lower than 140° F, an oversized booster must be used. In some cases, it is necessary to connect 2 boosters in series. The machine capacity ratings are based on a 50° temperature rise.

### 5-3. STEAM HOT WATER BOOSTER.

The S2 Heat Exchanger is used on all single and multi-tank systems.



**FIGURE 21. Steam Hot Water Booster**

- |                         |                          |
|-------------------------|--------------------------|
| 1. Steam Inlet Strainer | 5. Pressure Gauge        |
| 2. Solenoid Valve       | 6. Pressure Relief Valve |
| 3. Strainer             | 7. Steam Trap            |
| 4. Pressure Regulator   |                          |

#### 5-4. Controls

**STEAM LINES.** The steam inlet is equipped with a line strainer (1, figure 21) and solenoid valve (2); the solenoid valve is controlled by an electric thermostat. A steam trap (7) on the steam outlet assures efficient heating. Periodic cleaning of the strainer is recommended. No operator control of this system is required.

**HOT WATER INLET LINE.** The inlet piping contains a line strainer (3), pressure regulator (4), pressure gauge (5), and pressure relief valve (6). Periodic cleaning of the line strainer is recommended. The pressure regulator is adjustable (paragraph 5-6). The pressure gauge indicates the flow pressure of the final rinse water when the final rinse is in operation. The gauge should be observed periodically to assure good final rinse action. Good final rinse results are obtained when the flow pressure is between 15 and 25 P.S.I.

**HOT WATER OUTLET LINE.** The thermostat sensing bulb is in the hot water outlet line. See paragraph 5-6 for adjustment

#### 5-5. Cleaning.

**Line strainers.** The water outlet and steam line strainers protect the solenoid valves from dirt. Every month, clean the strainers as described in paragraph 3-5. Be sure water and steam supplies are turned off and pipes are cool.

Lime deposits if lime deposits are a problem in your area, every 9 to 12 months de-lime the booster heat exchanger. Remove the heat exchanger and submerge it in a tub of deliming solution. Follow the instructions of the deliming product manufacturer for mixing the solution and for length of time of soaking; 48 to 60 hours of soaking time is generally required. After soaking, be sure to wash and rinse the heat exchanger thoroughly before installing it on the booster. You can contact your local Blakeslee agency for loaner booster information; loaner boosters are available for a small weekly fee plus freight charge. Boosters can also be returned to the Blakeslee factory for thorough deliming.

#### 5-6. Adjustments.

**THERMOSTAT.** Observe the instructions of paragraph 4-12 for adjusting the thermostat settings.

**PRESSURE REGULATOR.** If the final rinse flow pressure is not between 15 and 25 psi, adjust the pressure regulator (4, figure 21) observe the following. Loosen the ½" lock nut. Start the conveyor and activate the final rinse. With the final rinse water flowing through the pressure regulator, now adjust to the correct pressure. After the proper pressure is attained, hold the ½" square head screw in place and tighten the lock nut. To increase the flow pressure, turn the screw clockwise. Turning the screw counterclockwise will decrease the pressure.

#### 5-7. Installation.

Position the booster so that the pressure gauge can be observed by machine operator. Use the adjustable feet on the booster to level the unit.

**BOOSTER LOCATION.** Booster location with respect to the steam supply, hot water supply and dishwashing machine is important for efficient booster operation. Position the booster as close to these items as possible. If the booster is positioned 20 feet or more from the dishwasher, though the final rinse water is 180° F when it leaves the booster, the exposed piping through which the water travels will cool the water. The same situation applies to the booster hot water supply. Similarly, when steam is carried over a long distance through an exposed pipe, a pressure loss and temperature loss results. The booster cannot operate efficiently with long distances of exposed piping. If the booster is located a great distance from the dishwasher, it is recommended that an optional final rinse low temperature control be installed in the dishwasher.

**BOOSTER TO DISHWASHER CONNECTIONS.** Final rinse piping is ¾ inch NPT. Connect wires of steam solenoid (2, Figure 21) to the control panel terminals (as noted in wiring diagram). Protect the wires with a ½ inch conduit.

**SUPPLY AND CONDENSATE CONNECTIONS.** When connecting the hot water and steam inlet piping, include a shut-off valve at each inlet. The water piping you connect must be a minimum of ¾ inch. The steam pipe must be a minimum of 1 ½ inch. Pipe size must be increased on runs over 50 ft.

The hot water inlet tee is ¾ inch NPT. The steam inlet strainer is 1 inch NPT. We suggest supply pipes be wrapped with insulation material. The condensate return is ½ inch NPT.

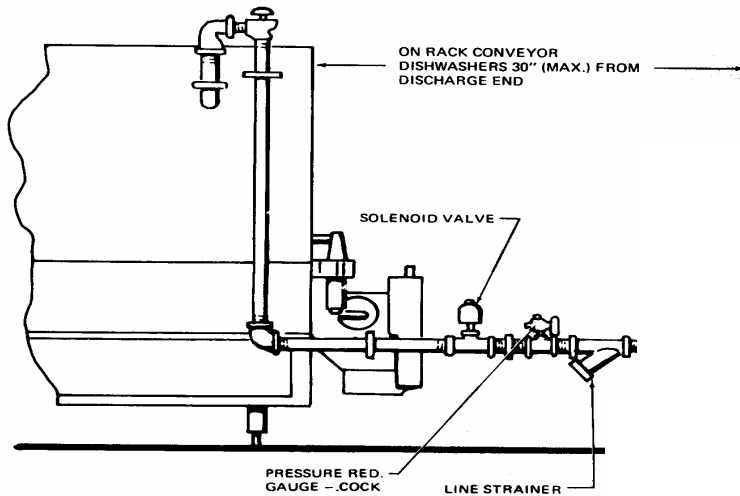
**NOTE:** Your condensate return line must always be pitched down. For condensate return lines that are level or going uphill, a condensate return pump must be used.

**SUPPLY PRESSURE AND TEMPERATURE REQUIREMENTS.** Booster output (180° F water) is measured in gallons per minute (gpm). The output requirement for a particular machine is the sum of the final rinse water (in gpm) plus make up water (in gpm); makeup water requirement is approximately 2 gpm. To obtain a desired output, inlet water temperature and steam supply pressure must correspond as indicated in the booster chart (page 22). For example, the S2 booster is capable of providing 10 gpm (600 gph) of 191° F final rinse water when the inlet water temperature is 140° F and the flowing steam supply is 5 pounds. If the inlet water temperature is 120°F to provide 10 gpm of water at 191° F the steam flow pressure would have to rise to 11 pounds. The booster chart is included to assist you in making sure adequate supply conditions are available for effective booster operation.

S2 Heat Exchanger				
1" Conn.	¾" Conn.	Water Temperature		
Steam	Water Flow	100° F IN	120° F IN	140° F IN
PSIG	GPM	OUT° F	OUT° F	OUT° F
5	4	200	205	209
	5	195	200	205
	6	190	195	201
	7	186	192	199
	8	181	188	195
	9	178	185	193
	10	175	183	191
10	4	209		
	5	203	209	
	6	198	204	210
	7	193	200	207
	8	189	196	203
	9	185	192	200
	10	181	189	198
15	5	211		
	6	205	211	
	7	200	206	
	8	195	202	209
	9	190	198	206
	10	187	195	203

Final Rinse Rate of Consumption  
Rated in GPH

	Single Tank & Single Tank with Pre-Wash	All Multi Tank Dishwashers (Includes maximum of 2 gallons per minute make-up water)
@15 Lbs. Flow Pressure	245	176
@20 Lbs. Flow Pressure	282	288
@25 Lbs. Flow Pressure	324	318



\*Boosters shipped separately with all piping and electrical wiring (from electric thermostat to electric control panel) furnished as shown, for one simple connection only to dishwashing machine. (Due to heavy weight machine mounting of booster not recommended).

FIGURE 22. Typical R to L Steam Booster Installation

## 5-8. ELECTRIC HOT WATER BOOSTER

The electric hot water booster uses electric heating elements to heat the final rinse water. The unit is controlled by a thermostat. When installing, make provisions for future service especially access to front cover assembly. Whenever possible, connect the machine using pipe unions.

### 5-9. Controls.

**HOT WATER INLET LINE.** The inlet piping includes a pressure regulator, pressure-temperature gauge, and a relief valve. The pressure relief valve is preset and requires no further adjustment. The pressure-temperature gauge should be observed periodically during final rinse operation. If the temperature indication is below 140°F, the hot water source may not be hot enough for the booster to be effective; the temperature of the hot water entering the booster may have to be raised to 140°F. (NOTE: Refer to electric hot water boosters water temperature recovery table and to dishwasher water consumption table, Section 5-7). Similarly, the hot water supply pressure must be maintained between 15 and 25 psi. The pressure regulator is adjustable (paragraph 5-11). It may be that the booster is too small and a larger booster should be installed.

**HOT WATER OUTLET LINE.** The outlet piping connects to a strainer, gauge cock and solenoid valve shown in figure 23. Periodic cleaning of the strainer is recommended. The gauge cock is provided for use as described in paragraph 1-19. The thermostat is adjustable (paragraph 5-11).

### 5-10. Cleaning.

**Line Strainer.** The water outlet line strainer protects the solenoid valve from dirt. Every month, clean the strainer as described in paragraph 3-5. Be sure water supply is turned off and pipes are cool.

### 5-11. Adjustments.

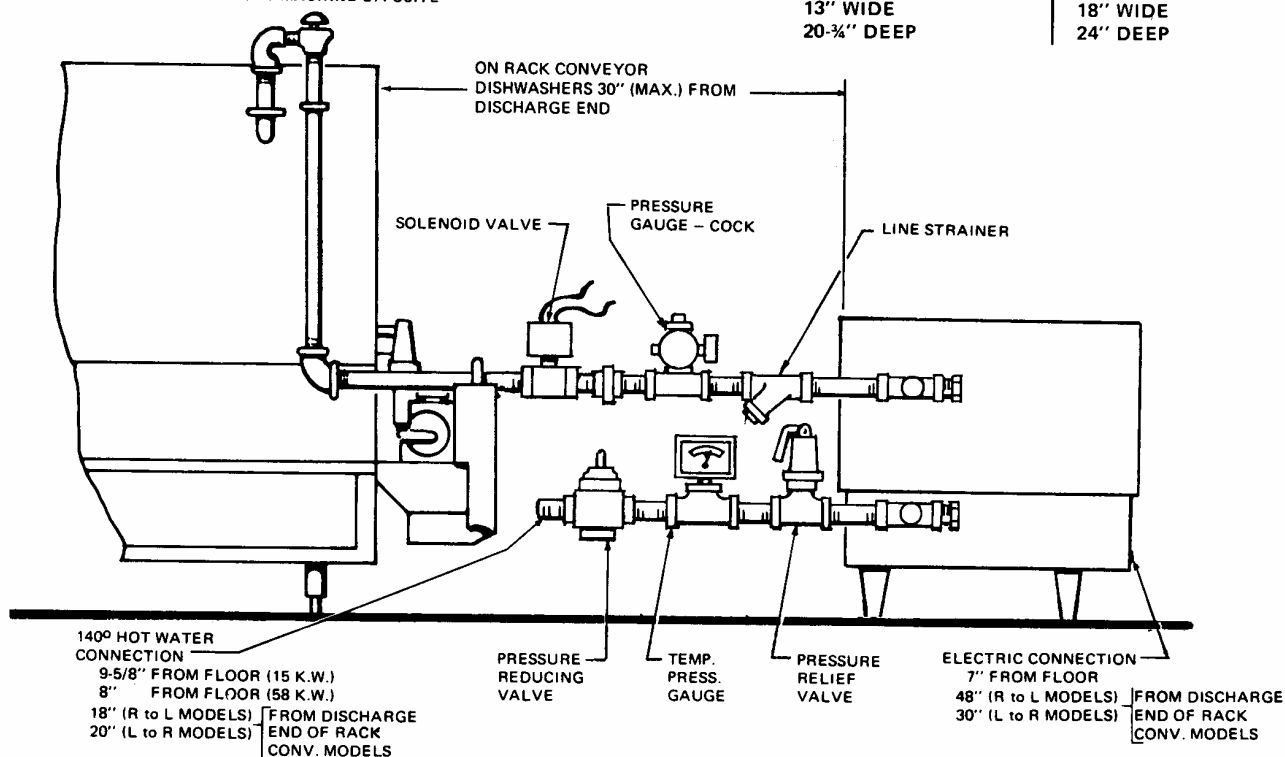
**THERMOSTAT.** The thermostat is pre-set at factory and needs no further adjustment.

**PRESSURE REGULATOR.** If the hot water supply flow pressure is not between 15 and 25 psi, adjust the pressure regulator observing the following. Same as steam booster adjustment (5-6). To increase the flow pressure, turn the screw clockwise. Turning the screw counterclockwise will decrease the flow pressure.

## ELECTRIC BOOSTERS\*

NOTE: Dimensions "from floor" or  $\pm 1"$  (due to adjustable legs).

REAR VIEW OF RIGHT TO LEFT MACHINE SHOWN  
LEFT TO RIGHT MACHINE OPPOSITE



\*Boosters shipped separately with all piping and electrical wiring (from electric thermostat to electric control panel) furnished as shown, for one simple connection only to dishwashing machine. (Due to heavy weight machine mounting of booster not recommended).

FIGURE 23. Typical R to L Electric Booster Installation

## 5-12 Installation.

Use the adjustable legs on the booster to level the unit. Figure 23 indicated dimensions for the plumbing connections.

**BOOSTER LOCATION.** Booster location with respect to the hot water supply and dishwashing machine is important for efficient booster operation. Position the booster as close to these items as possible. If the booster is positioned 20 feet or more from the dishwasher, though the final rinse water is 180° F when it leaves the booster, the exposed piping through which the water travels will cool the water. The same situation applies to the booster hot water supply. The booster cannot operate effectively with long distances of exposed piping.

**PIPING CONNECTIONS.** The controls described in paragraph 5-9 are shipped as separate items. Figure 23 indicates the proper sequence for connecting these items. Use ¾ inch NPT size pipe fittings and pipe. Include a shut-off valve at the hot water inlet as indicated in the figure. We recommend the hot water supply be wrapped with insulation material.

**ELECTRICAL CONNECTIONS.** Connect wires of water solenoid to the control panel terminals (as noted in wiring diagram). Connect the booster to a properly rated power supply.

## 5-13. END HOODS.

### 5-14. Description

The end hoods are attached to the inlet and exit of the dishwashing machine to exhaust the steam from the dishwashing machine area. Exhausting the steam reduces the humidity in the washing department which contributes to more efficient working conditions and quick self-drying of dishes. Each hood must be connected to a ventilating duct; vent opening on the hood is 4 x 16 inches.

A damper in the hood is adjustable to control the exhaust volume. To adjust the damper, loosen the stop nut on the side of the hood and turn the damper rod; tighten the stop nut to lock the damper in position. The best damper position will vary according to the size of the dishwashing room and machine. Allow majority of steam to escape without loss of water temperature in tanks.

**NOTE:** If damper is open too much heat will be lost from the tank.

### 5-15. Cleaning.

When daily cleaning is performed, use a damp cloth to wipe the condensate baffle clean.

## 5-16. Installation.

The installation drawing for the dishwashing machine indicates the dimensions for locating the exhaust vents. (Sealant is provided to connect the hood to the tanks).

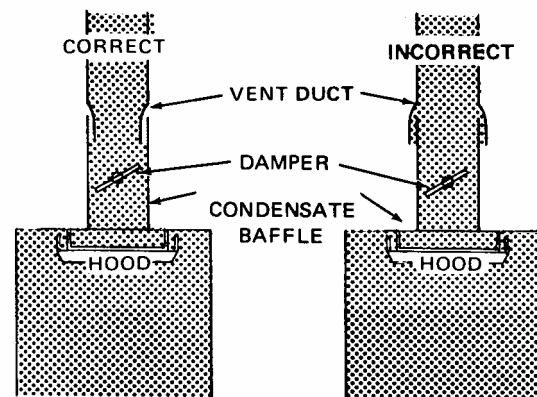


FIGURE 24. End Hoods

## 5-17. Side Loader & Power Unloader.

These options used individually or in conjunction are great for saving labor and affords great space savings in a dish room layout. They may be installed on either end of the dishwasher as dictated by the layout.

**SIDE LOADER.** When a rack is pushed into the side loader, a continuation of the conveyor that runs through the dishwashing machine picks it up and conveys it into and through the dishwasher and out onto the clean dish table. Figure 25.

**POWER UNLOADER.** The power unloader is powered by a ¼ hp motor that drives rollers to extract the racks at a right angle to the dishwasher. A continuation of the conveyor that runs through the dishwashing machine pushes the rack onto the unloader; the unloader rolls the rack onto the clean dish table. Figure 26.

The racks for both options must incorporate four-way strips as supplied with the Blakeslee Rack Conveyor Type Dishwasher.

## 5-18. Installation.

Both options are shipped attached to the machine making for minimal installation procedures.

**SIDE LOADER.** Level left to right and front to back using the adjustable legs. Check seals and plumbing for leaks.

**POWER UNLOADER.** Level left to right and front to back using the adjustable legs. Check seals and plumbing for leaks. Insure that clean dish table edge is not above the level of the unloader.

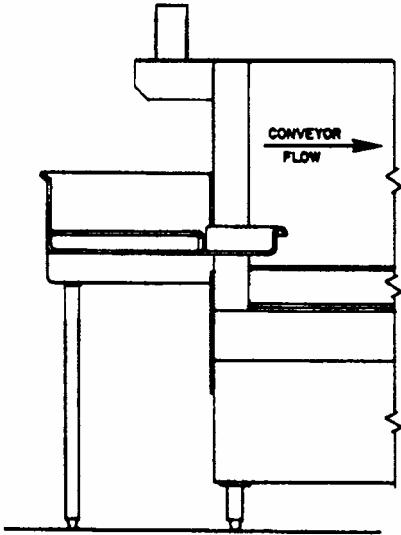


FIGURE 25. Side Loader

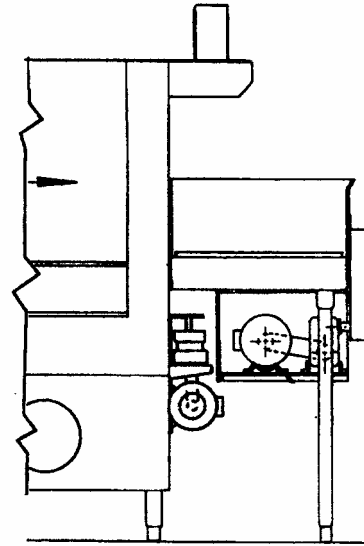


FIGURE 26. Power Unloader

## Section VI Parts List

### 6-1. GENERAL.

The following parts list is arranged alphabetically by part name. To expedite delivery, order parts by name and number listed in this parts list.

All orders must include the Serial Number of the dishwashing machine (stamped on the face of the control panel). Place your order with your local Blakeslee agency.

### 6-2. REPAIR KITS.

Repair kits are available for the vacuum breakers. Several brands of manufacturer's vacuum breakers are used

Size & Manufacture	Part Number
½" Cash ACME	73633
¾" Cash ACME	73634
½" Consolidated Brass	14835
¾" Consolidated Brass	14836
½ & ¾" Febco	12351
½" Sloan	12356
¾" Sloan	12357

Part Name	Part Number	Quantity
Drain Seat	18644	1 per tank
Fuse	15790	
Gasket, Sump Door	14797	1 per tank
Gasket, Spray Box	76131	1 per tank
Nozzle, Final Rinse Pipe:		
Upper & lower single tank	20430	8
Upper & lower, low temp	97185	8
Upper, Multi-tank	20920	4
Lower, multi-tank	20430	4
Rack:		
Combination	16429	As required
Multi-purpose	16428	As required
Seal, Spray Tube	76131	3 per tank
Screen, Drain Seat	18642	1 per tank
Screen, Strainer:	13385	1 per strainer
V-Belt	10986	1

## Section VII Installation

### 7-1. GENERAL INSTRUCTIONS.

Upon receipt of this machine, make an inspection for evidence of damage in shipment. Carefully remove all crating, packing, and protective coverings and inspect the entire machine for damage. Report any damage found to the shipping firm immediately.

A box of loose parts contains the curtains, splash guards and the final rinse solenoid valve.

This section contains installation instructions for the dishwashing machine only. Installation instructions for additional equipment are included in Section V.

### 7-2. SERVICE CONNECTIONS.

A catalog specification sheet for your dishwashing machine model is supplied as a separate item. This drawing indicates specific dimensions, locates the plumbing and electrical connection points on the machine, and specifies the fitting sizes. The various plumbing connections are tagged with a designation, such as, HOT WATER, STEAM, etc., to save time and reduce errors. The designation specifies which service connection the plumbing requires.

When making service connections, do not place pipe or conduit through, or in the way of, enclosure panels (front, back or ends). Place all supply lines beneath the machine. When this is not possible, make arrangements for holes in enclosure panels. Instructions regarding specific service connections are included in paragraphs 7-4 through 7-9.

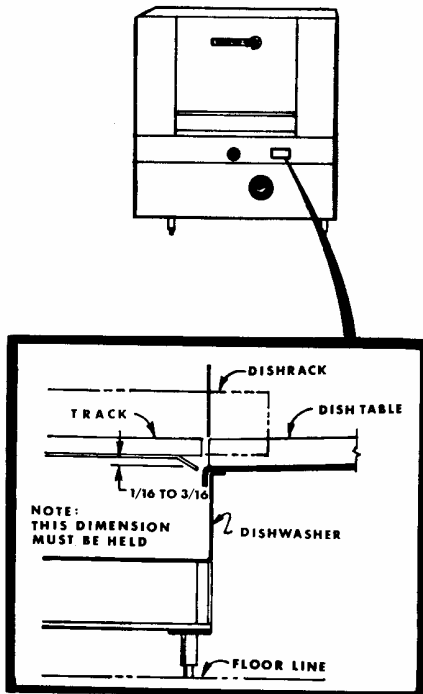


FIGURE 27.

Leveling Dimensions for Dishwasher and Dish Table

### 7-3. LEVELING THE DISHWASHING MACHINE

The dishwashing machine must be set on a flat, firm floor. The machine must be level to maintain alignment of machine parts. Use the adjustable legs on the dishwasher to level the machine: maximum adjustment is 1½ inches.

For proper final rinse operation, it is important to align the machine exit height and the dish table height as shown in figures 3 and 27.

NOTE: Final rinse switch adjustment due to improper installation of dish table is not covered under warranty.

After leveling the machine, secure a splash guard (16, figure 1) at each side, toward the front, of the dishwasher with two screws.

### 7-4. WATER CONNECTIONS.

#### 7-5. Piping Instructions.

The water piping you connect must be the same size as the piping connections on the dishwashing machine (3/4-inch NPT); (Final rinse line & 1/2" NPT fill line) do not reduce pipe sizes. If the supply source is more than 50 feet from the machine, an increase of at least one-size larger pipe is recommended. We suggest all supply pipes to the machine be wrapped with insulation material.

Connect the final rinse solenoid valve (10, figure 1), with the gauge cock (11) and strainer (12), between the dishwashing machine final rinse piping and the final rinse water supply. Final rinse water enters the strainer, then passes through the gauge cock and solenoid valve to the dishwashing machine final rinse piping.

Connect the drain to sewer connections according to local code.

#### 7-6. Water Supply Pressure.

**WATER FILL SYSTEM.** There is one water fill system for the dishwashing machine wash tank and one for a power-rinse tank. Ordinary water supply pressure (up to 70 psi) will cause no problem. If your water supply line pressure is greater than 70 psi, we recommend the installation of an adjustable pressure reducing valve in the line.

**FINAL RINSE SYSTEM.** Final rinse flow pressure must be maintained between 15 and 25 psi for proper operation. Make sure you obtain the correct final rinse flow pressure; this pressure is the indicated pressure on a pressure gauge with all final rinse system valves open and water flowing. If the flow pressure is less than 15 psi, a booster pump is required. If the flow pressure is more than 25 psi, an adjustable water pressure reducing valve must be installed in the supply line. An adequate supply of 180°F final rinse water must be provided.

NOTE: Failure to maintain proper water pressures will cause poor final rinse results or over-spray.

## 7-7. ELECTRICAL CONNECTIONS.

Incoming power for the control panel is connected to the terminals shown in figure 19. After water connections are made and control panel is connected, check for proper pump rotation as follows. (1) Fill the tank(s) to proper level; (2) Press low water cut-off RESET button and hold for a minimum of 3 seconds; (3) Press PUMPS START switch and immediately press PUMPS STOP switch. The pump motor shaft must rotate in the direction of the arrow shown on the pump casing. For three-phase power, interchange any two of the three power lead-in wires to reverse rotation. For single phase power, change connections on start wiring of the motor to reverse rotation.

**CAUTION:** Tanks must contain water when pump is operated to avoid damaging the pump seal. Do not try to defeat low water cut-off protection.

Dishwashing machines with electric heaters have a separate contactor for each tank heater. These contactors must be connected individually to a supply line of proper capacity, not through the control panel. This supply line must be fused independently. A disconnect switch for the electric heat is required.

## 7-8. STEAM CONNECTIONS.

Steam supply flow pressure must be maintained at 20 psi. Steam pipe sizes must be equal to, or larger than, the pipe size furnished with the machine minimum of 1½" for C1 booster, 2" for C2 booster.

Connect the steam condensate (return) line of the dishwashing machine to the return pipe system of the steam supply. If the return condensate line is raised above its present level,

the heat exchanger will become waterlogged and a condensate return pump must be used.

## 7-9. GAS CONNECTIONS.

The gas connections must be the final service connections since the gas heating system depends on electricity to open the gas control valve and the heater must not be turned on without water in the tank. After the gas connections are made, the pilot and burner are adjusted to obtain desired tank temperatures. Light the pilot as described in paragraph 2-6.

### 7-10. Pilot Flame Adjustment.

The pilot flame should envelop 3/8 to 1/2 inch of the tip of the thermocouple. Remove the cover screw to gain access to the pilot flow adjustment screw; see figure 8. Turn the adjustment screw clockwise to decrease pilot flame; turn counterclockwise to increase pilot flame. Be sure to replace cover screw after adjustment to prevent possible gas leakage.

### 7-11. Burner Flame Adjustment.

The burner flame must only touch the tank, a proper burner flame just "licks" the tank. On natural gas machines, minor burner adjustment can be made by adjusting the pressure regulator of the gas valve; on L.P. gas machines, the customer's gas pressure regulator can be changed for minor adjustment. Each burner is equipped with an orifice spud (see figure 8). If a proper flame cannot be obtained by making minor adjustments, the orifice spud size must be changed. Contact your local Blakeslee agency for assistance, or to order the appropriate size spud.

## 7-12. GAS VENTS.

Gas heated machines are furnished with flues. These do not have to be connected to any vent.

## PARTS & SERVICE

USA

**Blakeslee Authorized Parts & service Distributors and Preferred Service Agents** are the focal point for service and are responsible for all warranty/repair work and for maintaining a complete stock of replacement parts.

They have factory-trained servicemen and are kept informed by the factory on the latest servicing procedures.

To receive service and/or parts, call the Blakeslee Distributor nearest you. If you happen to be in an area not covered by a distributor, phone the Blakeslee Service Department in Chicago at 708-656-0660 for the name and location of one of over 300 strategically-located Blakeslee Authorized Service Agencies, which is nearest you.

### ALABAMA

Jones McLeod Appliance Co.  
1616 Seventh Ave. North  
Birmingham, AL 35203  
205-251-0159

### ARIZONA

Byassee Equipment  
1939 E. Washington  
Phoenix, AZ 85034  
602-252-0402

### ARKANSAS

Bromley Parts & Service  
10th & Ringo Street  
Little Rock, AR 72202  
501-374-0281

### CALIFORNIA

Acme Pacific Repairs, Inc.  
1347 Fulton Place  
Fremont, CA 94539  
510-252-2070

Barker's Food Machinery Ser.  
5367 Second Street  
Irwindale, CA 91706  
626-960-9390

Chapman Appliance Service  
1784 San Diego Ave.  
San Diego, CA 92126  
619-298-7106

Sterling Service  
644 W. Hawthorn Street  
Irwindale, CA  
818-243-1234

### COLORADO

Metro Appliance Service  
1640 S. Broadway  
Denver, CO 80210  
303-778-1126

### CONNECTICUT

A-Tech Service, Inc.  
161 Sanrico Drive  
Manchester, CT 06040  
860-649-6627

### DISTRICT OF COLUMBIA

Electric Motor Repair  
700 East 25<sup>th</sup> Street  
Baltimore, MD 21218  
410-467-8080

### FLORIDA

Commercial Appliance Service  
8416 Laurel Fair Circle  
Tampa, FL 33610  
813-663-0313

Dade Restaurant Repair  
2001 W. 27<sup>th</sup> Street  
Hialeah, FL 33010  
305-887-0783

GCS  
3373 Northwest 168<sup>th</sup> Street  
Miami, FL 33056  
305-623-7001

30

### FLORIDA (Cont.)

Nass Service Co. Inc.  
1108 S. Woods Ave.  
Orlando, FL 32805  
407-425-2681

### GEORGIA

TWC  
5080 Highlands Pkwy S. A150  
Smyrna, GA 20082  
770-438-9797

### HAWAII

Commercial Appliance  
Parts & Service Co.  
1623 Democratic St.  
Honolulu, HI 96819  
808-841-4545

### IDAHO

Boise Appliance  
1503 Main Street  
Boise, ID 83702  
208-343-0102

### ILLINOIS

Eichenauer Food Equipment  
130 S. Oakland Ave.  
Decatur, IL 62522  
217-429-4229

General Parts Inc  
248 James Street  
Bensenville, IL 60106  
630-595-3300

Rescor  
5344 East Ave.  
Countryside, IL 60525  
708-352-3155

### INDIANA

GCS  
5310 East 25<sup>th</sup> Street  
Indianapolis, IN 46218  
317-545-9655

### IOWA

Goodwin-Tucker  
2900 Delaware Ave  
Des Moines, IA 50137  
515-262-9308

### KANSAS

General Parts, Inc.  
1101 E. 13<sup>th</sup> Street  
Kansas City, MO 64101  
816-421-5400

### KENTUCKY

GCS  
4204 S. Brook Street  
Louisville, KY 40214  
502-367-1788

GCS  
533 A Codell Drive  
Lexington, KY  
859-269-7484

### LOUISIANA

Chandler's Parts & Service  
11656 Darryl Drive  
Baton Rouge, LA 70815  
225-272-6620

### MARYLAND

Electric Motor Repair CO.  
700 East 25<sup>th</sup> Street  
Baltimore, MD 21218  
410-467-8080

### MASSACHUSETTS

Ace Service Co. Inc.  
95 Hampton Ave.  
Needham (Boston), MA 02194  
617-449-4220

### MICHIGAN

E & G Appliance Service Co.  
1435 Lawndale Ave.  
Detroit, MI 48209  
313-842-2252

Midwest Food Equipment Serv.  
3055 Dixie  
Grandville, MI 49418  
616-261-2000

### MINNESOTA

GCS  
2854 Louisiana Ave. North  
Minneapolis, MN 55427  
763-546-4221

### MISSISSIPPI

Camp Service & Parts Inc.  
328 B Oakdale Street  
Jackson MS 39201  
601-353-9700

### MISSOURI

Kaemmerlen Parts & Service  
2728 Locust Street  
St. Louis, MO 63105  
314-535-2222

### NEBRASKA

Goodwin-Tucker Group  
7535 D Street  
Omaha, NE 68124  
402-397-2880

### NEVADA

Burney's Commercial Service  
4480 Aldebaran Ave.  
Las Vegas, NV 89103  
702-736-0006

### NEW MEXICO

R & B Service  
4412 Towner N.E.  
Albuquerque, NM 87110  
505-889-4090

### NEW YORK

Acme American Repairs Inc.  
99 Scott Ave.  
Brooklyn, NY 112237  
718-456-6544

Duffys Rest. Equip. Service  
3138 Oneida Street  
Sauquoit (Utica), NY 13456  
315/737-9401

### NORTH CAROLINA

Authorized Appliance Service  
1020 Tuckaseegee Road  
Charlotte, NC 28208  
704/377-4501

### OHIO

Akron Restaurant Equipment  
1169 W. Waterloo Road  
Akron, OH 44314  
330/753-6635

Commercial Parts & Service  
6940 Plainfield Road  
Cincinnati, OH 45236  
513-984-1900

Electrical Appliance Repair  
5805 Valley Belt Road  
Cleveland, OH 44131  
216-459-8700

### OKLAHOMA

Krueger Electric Service Inc.  
100 N.E. 24<sup>th</sup> Street  
Oklahoma City, OK 73105  
405-528-8883

### OREGON

Ron's Service Inc.  
16364 S.W. 72<sup>nd</sup> Ave.  
Portland, OR 97224  
503-624-0890

### PENNSYLVANIA

American Kitchen Mach. Corp.  
204 Quarry Street  
Philadelphia, PA 19106  
215-627-7760

### GCS

210 Vista Park Dr.  
Pittsburg, PA 15205  
412-787-1970

K & D Parts  
1833-41 N. Cameron Street  
Harrisburg, PA 17103  
717-236-9039

### SOUTH CAROLINA

Whaley Foodservice Repairs  
2544D Morningside Dr.  
West Columbia, SC 29169  
803-926-5252

### TENNESSEE

A-Tech Inc  
424 Sixth Avenue South  
Nashville, TN 37203  
615-255-2002

FESCO  
1209 S. Watkins  
Chattanooga, TN 37404  
423-624-3381

### GCS

3717 Cherry Road  
Memphis, TN 38118  
901-366-4587

### TEXAS

Commercial Kitchen Repair  
1377 N. Bravos  
San Antonio, TX 78207  
210-735-2811

Kenco Service  
26 Lyerly – Suite 1  
Houston, TX 77022  
713-691-2935

Stove Parts Supply Co.  
2120 Solana  
Fort Worth, TX 76117  
817-831-0381

### UTAH

LaMonicas Restaurant  
Equipment Service  
6182 South Stratler  
Murray, UT 84107  
801-263-3221

### VERMONT

Authorized Appliance  
74<sup>th</sup> River Street  
Rutland, VT 05701  
802-775-5588

### VIRGINIA

Daubers Inc.  
7645 Dynatech Court  
Springfield, VA 22153  
703-866-3600

### WASHINGTON

Walsh Equipment Repair  
1519 128<sup>th</sup> Place N.E.  
Bellevue, WA 98005  
425-462-1645

### WEST VIRGINIA

Authorized Factory Service  
Edens Fork Exit I 77  
Charleston, WV 53186  
304-344-8225

### WISCONSIN

General Parts Inc.  
W223 N. 735 Saratoga Dr.  
Waukesha, WI 53186  
262-650-6666

**ALBERTA**

Great West Comm. Kit. Rep.  
5664 Burleigh Cresc. S.E.  
Calgary, AB T2H 1Z8  
Tel: 403-276-7832

L.D.I. Technical Services  
4 – 3600 21<sup>st</sup> St. N.E.  
Calgary, AB T2E 6V6  
Tel: 403-299-9591

North Star Repair  
11518 119<sup>th</sup> Street  
Edmonton, AB T5G 2X7  
Tel: 780-453-6213

Robertshaw Refrigeration  
P.O. Box 840  
Cold Lake, AB T9M 1P2  
Tel: 780-594-3488

Re-Nu Mechanical Ltd.  
1710 Bay F – 31<sup>st</sup> St. N.  
Lethbridge, AB T1H 5H1  
Tel: 403-327-7368

Medicine Hat Refrigeration  
666 17<sup>th</sup> Street S.W.  
Medicine Hat, AB T1A 4X7

Satellite Mechanical Ltd.  
#1 – 5571 45<sup>th</sup> Street  
Red Deer, AB T4N 1L2  
Tel: 403-343-6122

**BRITISH COLUMBIA**

Key Food Equip. Services  
180 – 3700 North Fraser  
Burnaby, BC V5J 5H4  
Tel: 604-433-4484

Marsh & Sons Ventures  
10411 – 95<sup>th</sup> Avenue  
Fort St. John, BC V1J 5Z4  
Tel: 250-787-9733

J.D. Appliance Repairs  
1965 Moss Cr.  
Kelowna, BC V1Y 9L3  
Tel: 250-860-5057

Jemco Food Equip. Service  
7431 Industrial Road  
Lantzville, BC V0R 2H0  
Tel: 250-390-3244

Sheridan Appliances  
764 Chaparral Place  
Kamloops, BC V2C 5W4  
Tel: 250-314-1722

Mark's Rest. Services  
515 Dupplin Road, #3  
Victoria, BC V8Z 1C2  
Tel: 250-475-6275

Key Food Services  
2740 Bridge St., #105  
Victoria, BC V8T 5C5  
Tel: 250-920-4888

Triumph Food Equip. Service  
4671 Slocan Street  
Vancouver, BC V5R 1Z8  
Tel: 604-454-9326

**MANITOBA**

Grand Valley Mechanical  
360 Park Avenue E.,  
Brandon, MB R7A 6N2  
Tel: 204-728-3898

Commercial Kitchen Equip.  
731 Wall Street  
Winnipeg, MB R3G 2T6  
Tel: 204-586-8273

Res Tech Service Ltd.  
593 Sherburne Street  
Winnipeg, MB R3G 2K8  
Tel: 204-228-5399

**NEW BRUNSWICK**

D & L Electric  
83 Sister Green Road  
Campbellton, NB E3N 3Y5  
Tel: 506-753-5076

Electrical & Refrigeration Serv.  
88 Beaverbrook Street  
Moncton, NB E1C 8H7  
Tel: 506-857-2232

EMR  
122 Driscoll Avenue  
Moncton, NB E1E 3R8  
Tel: 506-855-4228

I Line Electric Ltd.  
280 Dalton Avenue  
Miramichi, NB E1V 3N9  
Tel: 506-622-2214

Fundy Gas & Electric  
45 Glen Road  
Saint John, NB E2H 2C9

**NEWFOUNDLAND**

Bob's Electric  
14 Cooks Avenue  
Cornerbrook, NF A2H 1P1  
Tel: 709-634-7588

Domestic Service Centre  
27 McCurdy Drive, P.O. Box 83  
Gander, NF A1V 1W5  
Tel: 709-256-7738

Harold Snow & Son Ltd.  
451 Kenmount Road  
St-John's, NF A1B 3P9  
Tel: 709-754-0330

**NOVA SCOTIA**

Jerome Cameron  
R.R. #5, Salt Springs  
Antigonish, NS B2G 2L3  
Tel: 902-863-4528

Harry Rhyno Refrigeration  
233 North Street  
Bridgewater, Lun. Co. NS  
B4A 2V7  
Tel: 902-543-4737

Walker's Electric  
2608 Windsor Street  
Halifax, NS B3K 5C8  
Tel: 902-454-0291

**NOVA SCOTIA Continued**

Buddens Appliance Service  
164 Nichols Avenue  
Kentville, NS B4N 2H6  
Tel: 902-678-7895

J.R. Mahoney Ltd.  
1810 Kings Road  
Sydney, NS B1L 1C5  
Tel: 902-564-8775

Syd Tech Appliances  
Box 1907  
Sydney, NS B1P 6W4  
Tel: 902-561-0156

Fundy Appliance Service  
Truro, NS B2N 5B3  
Tel: 902-897-0479

**ONTARIO**

OFS Restaurant Appl. Serv.  
16 Lennox Dr., R.R. #2  
Barrie, ON L4M 4S4  
Tel: 705-728-5289

ChemMark  
52 Highway 17, P.O. Box 371  
Chalk River, ON K0J 1J0  
Tel: 613-584-2988

Kitchenworks Rest. Equip. Sup  
R.R. #5, 823974 Massie Rd.  
Chatsworth, ON N0H 1G0  
Tel: 519-794-3633

G.R. Garrity  
39 Regal Road  
Guelph, ON N1K 1B6  
Tel: 519-836-1090

Barbers Rest. Eq. & Repairs  
927 Barton Street E.  
Hamilton, ON L8L 3C4  
Tel: 905-527-2525

J.I.K.S. Ind. Kitchen Serv.  
42 Groff Place, #4  
Kitchener, ON N2E 2L6  
Tel: 519-748-5361

R.G. Henderson & Son Ltd.  
660A Justus Drive  
Kingston, ON K7M 4H4  
Tel: 613-384-1718

A-1 Plumbing & Heating  
P.O. Box 414  
Ilderton, ON N0M 2A0  
Tel: 519-455-6559

Action Rest. & Serv. Equip.  
151 Bentley Street, #9  
Markham, ON L3R 3L1  
Tel: 905-475-1499

Stell Mechanical  
25 Iron Street  
Etobicoke, ON M9W 5E3  
Tel: 905-569-8270

Repco Restaurant Equip.  
9208 Lundy's Lane  
Niagara Falls, ON L2E 6S4  
Tel: 905-358-9071

**ONTARIO Continued**

Blanchfield Comm. Kit. Serv.  
770 Industrial Ave., Unit 13  
Ottawa, ON K1G 4H3  
Tel: 613-737-6632

McNabb Appliances  
370 Burnham Street  
Peterborough, ON K9H 1T6  
Tel: 705-743-5350

Erlmar Plumbing Ltd.  
795 Batory Avenue  
Pickering, ON L1W 2W5  
Tel: 905-420-5252

Sure-Fix Food Equip. Serv.  
52 Vine Street S.  
St. Catharines' ON L2R 3X8  
Tel: 905-685-0480

W.J. Barnes & Son  
116 Talford Street  
Sarnia, ON N7T 7J2  
Tel: 519-332-1770

Sault Rapid Repair  
1496 Wellington St. E.  
Sault Ste. Marie, ON P6A 2R1  
Tel: 705-759-3311

Tisdale Plumbing & Heating  
40 Golden Avenue  
South Porcupine, ON P0N 1H0  
Tel: 705-235-4045

Sudbury Rapid Service  
23 Main Street  
Chelmsford, ON P0M 1L0  
Tel: 705-671-6477

Jemm Service  
1211 Ford Street  
Thunder Bay, ON P3A 4R8  
Tel: 807-623-7851

R.G. Henderson & Son Ltd.  
100 Thorncliff Park Dr.  
Toronto, ON M4H 1G9  
Tel: 416-423-4357

**P.E.I.**

Waites Enterprises  
626 South Drive  
Summerside, PEI C1N 3Z7  
Tel: 902-436-7509

**QUEBEC**

Choquette CKS  
8487 19<sup>th</sup> Avenue  
Montreal, QC H1Z 4J2  
Tel: 514-723-5000

L. Chasse Inc.  
448 Richelieu  
Pointe au Pic, QC G5M 1C9  
Tel: 418-723-9100

Majella Vaillancourt  
82 St. Cyrille  
Riviere de Loup, QC G5R 2G8  
Tel: 418-862-2503

**QUEBEC**

Electro Ref. Service Ent.  
161 Pere Divet  
Sept-Iles, QC G4R 3P8  
Tel: 418-962-9186

Kitchen Equipment Services  
893 King Street W.  
Sherbrooke, QC J1H 1R9  
Tel: 819-821-2153

Choquette CKS  
900 Pierre Bertrand, #220  
Ville Vanier, QC G1M 3K2  
Tel: 418-681-3944

**SASKATCHEWAN**

Comfort Mechanical  
1355 11<sup>th</sup> Avenue  
Regina, SK S4P 0G8  
Tel: 306-352-0544

Northcote Sales & Serv. Co.  
1327 Hamilton Street  
Regina, SK S4R 2B6  
Tel: 306-525-1979

Evan's Restaurant Serv.  
410 Lauriston Street  
Saskatoon, SK S7K 0R5  
Tel: 306-653-2772

**YUKON**

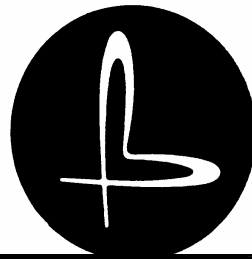
Oscar's Electric  
310 Alexander St.  
Whitehorse, YK Y1A 2L6  
Tel: 867-667-2330

Yukon Appliance Sales & Serv.  
9041 Quartz Road  
White Horse, YK Y1A 4Z5  
Tel: 867-668-4844

**Puerto Rico**

Gas Repair Equipment  
7 St. N.E. #322 Puerto Nuevo  
San Juan, PR 00920  
787-749-8044

# RACK TYPE DISHWASHER



**BLAKESLEE**

**BLAKESLEE**

Revised 11/2005