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INSTRUCTION MANUAL
ADAMATION CA-SERIES
DISHWASHING MACHINE
JANUARY 1, 1991 TO PRESENT MACHINES

ADAMATION, INC.
87 Adams Street
P.O. Box 37
Newton, MA 02195
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WARRANTY

Adamation Inc. warrants each Adamation dishwashing system and/or conveyor system to be free from defects in material and workmanship under "normal use and service" which does not include normal wear of parts. Within a period of 12 months from date of installation or 3000 operating hours of the system, or eighteen (18) months from the date of shipment from factory, whichever comes first, Adamation Inc. will repair or replace any parts including labor, which in Adamation Inc.'s sole judgement, are defective in material or workmanship.

Adamation shall have a reasonable time to make such repairs and/or replacements and all labor is to be performed during regular working hours. All overtime premiums will be billed to the customer.

The warranty labor required is an integral part of the sale of the system and as such will not apply if the system is not operated and maintained in strict accordance with the instructions in the proper Adamation manual.

In addition, this guarantee specifically does not cover:

A. Improper plumbing connections by others.
B. Improper electrical connections by others.
C. Malfunction caused by improper cleaning or from overloading.
D. Damage caused by unreasonable neglect and carelessness in operation.
E. Inadequate or excessive water and/or steam pressure.
F. Failures due to deposits resulting from water conditions, detergents, or improper cleaning.
G. Improper cleaning of drain valves, line strainers, pumps, screens, and all wash and/or rinse nozzles.
H. Improper installation or malfunction of chemical dispensing equipment.

Certain specialized equipment not manufactured by Adamation is, at times, supplied by Adamation but is warranted and serviced only by the local representative of the particular manufacturer. The following or similar equipment falls into this category:

1. Boilers
2. Gas Powered Boosters
3. Electric Powered Boosters
4. Disposers

Guarantee service may be obtained by contacting the National Service Department, 87 Adams Street, Newton, MA 02195 U.S.A. - toll free number 800-225-3075.
617-244-7500
FAX: 617-244-4609

MANUFACTURERS DISHMACHINE AND CONVEYOR SYSTEM WARRANTY AND LIMITATION OF LIABILITY #2

In lieu of Adamation's standard equipment warranty, and upon your request, Adamation will supply parts at no cost for warranty work to be performed by your personnel at no cost to Adamation. Initially a starter kit of special tools will be shipped. Subsequent parts will be sent as required and their cost deducted from the total amount reserved to cover parts in lieu of warranty which is approximately 2% of the equipment cost. This system is a cost effective method of supplying you with repair parts only as required by your specific needs to extend the coverage period.

Warranty parts shipment can only be obtained by contacting the National Service Department, 87 Adams Street, Newton, MA 02195 - Toll Free Number 800-225-3075. Warranty parts are normally shipped prepaid via next day air service. Request for shipment before 4:00 P.M. E.S.T. will normally be received by you the following morning.

The Adamation Service "Hot Line" is available to discuss any service problem at 1-800-225-3075 from 8:00 A.M. to 5:00 P.M. E.S.T. After working hours service personnel is available by calling 617-244-7500 which will connect you with an answering service and "beeper" network.

This warranty is in lieu of all other warranties, express or implied and includes without limitation any implied warranty of merchantability or fitness for a particular purpose or any other obligation or liability on the part of Adamation whether in contract, strict liability, tort or otherwise.

In no event will Adamation be liable for loss of use of facilities or other property and such things as-but not limited to-additional labor costs, loss of revenue or anticipated profits and other damages of any kind whether direct, indirect, incidental or consequential.

Replacement parts are guaranteed for ninety days or the remainder of the basic dishwasher and conveyor guarantee, whichever is longer.

This warranty does not apply if the system is started up without an Adamation representative present.

This warranty is applicable only for the initial place of installation. Any change of the original installation terminates this warranty.

Adamation'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.

This warranty is in lieu of all other warranties, express or implied and includes without limitation any implied warranty of merchantability or fitness for a particular purpose or any other obligation or liability on the part of Adamation whether in contract, strict liability, tort or otherwise.

In no event will Adamation be liable for loss of use of facilities or other property and such things as-but not limited to-additional labor costs, loss of revenue or anticipated profits and other damages of any kind whether direct, indirect, incidental or consequential.

SECTION 1 - INTRODUCTION

This instruction manual contains general information, installation, operation, principles of operation, trouble-shooting and maintenance information for Adamation CA-CSL Series dishwashing machines. Also included is a parts list in which each replaceable part is identified and shown in an accompanying exploded view. A considerable number of options and accessories are available with each CA-Series machine. These are described in this manual and parts lists and exploded views are provided for each.

BASIC CA-CSL SERIES DISHWASHING MACHINE

The Basic CA-CSL series Adamation dishwashing machine consists of an oval shaped rack conveyor table upon which an endless conveyor train, carrying dishracks, is automatically driven through a series of enclosed cabinets in which wash and rinse functions are performed on soiled dishware. An outline drawing of the basic CA-Series dishwasher, identifying the major sections of the machine, is shown in Diagram 1, Page 7.

The manner in which this machine operates to perform its dishwashing function is described briefly below. This description applies only to the basic CA-Series dishwashing machine. Various modifications and options which convert the basic CA-Series machine to other (CA-1, CA-2, CA-3, CA-4, CSL-3 and CSL-1390) models are described throughout this manual.

Soiled tableware is placed in the dishracks at the loading station. Heavy food soil (garbage) is deposited directly onto the conveyor table (or into an optional garbage trough or garbage spiral.) The rack conveyor carries the loaded dishracks into and through the cabinets where the following functions are performed:

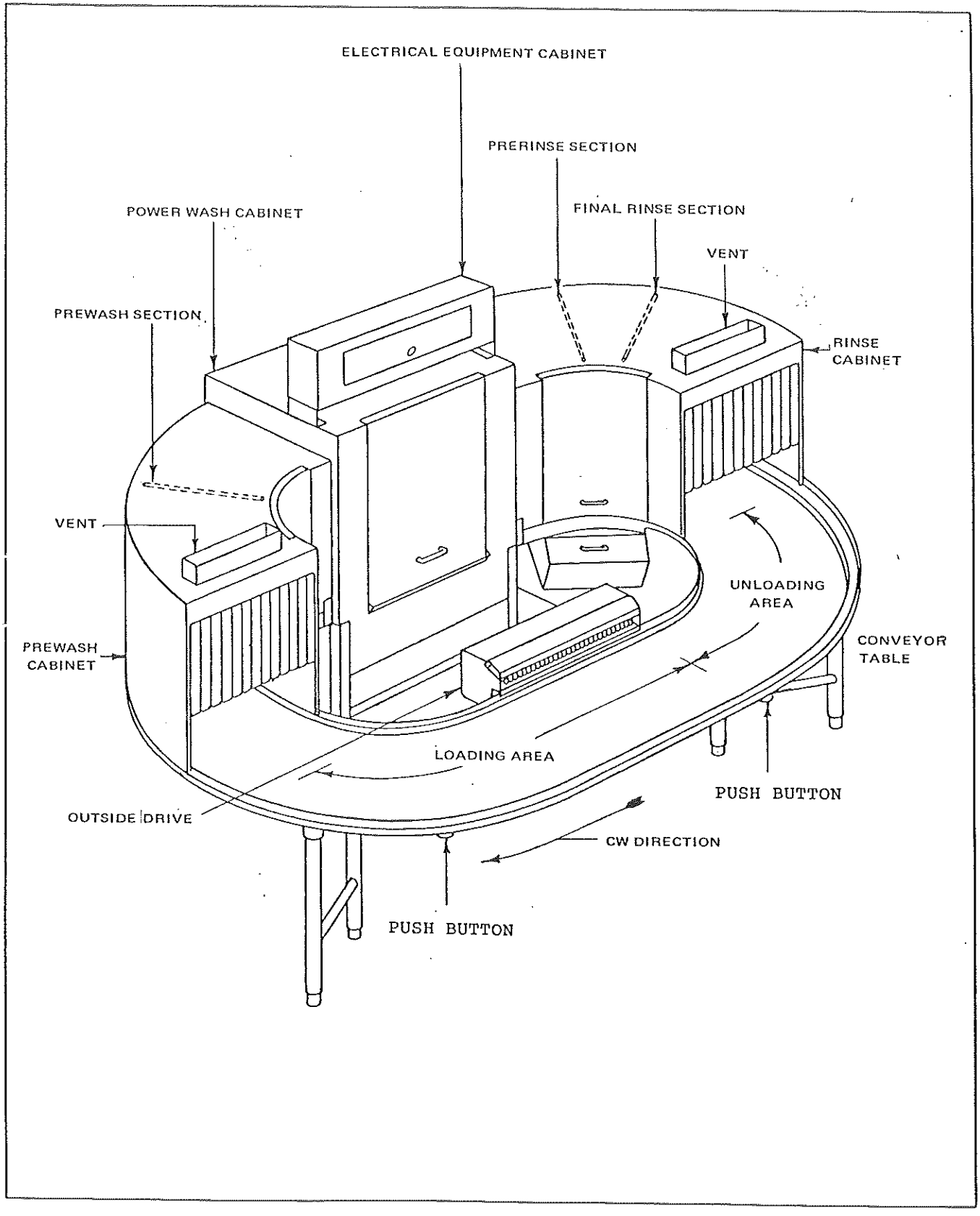
1. PREWASH HOOD AND SINK

Tableware is sprayed with tempered hot water at 110 degree F. The water temperature is maintained at a level which will remove the remaining surface food soil and liquids from the tableware surfaces without baking the soil onto the tableware. One perforated deep well food soil basket outside the prewash cabinet retains all larger pieces of food soil and garbage. The prewash water drains through the perforated baskets into a prewash sink where it is then recirculated.

When the garbage is deposited directly onto the rack conveyor table (and no optional garbage container is used) squeegees attached beneath some of the dollies of the rack conveyor train either sweep this garbage into the deep-well food soil basket of the prewash Hommel Pot sink located outside the conveyor table or the two standard deepwell baskets located in the prewash sink.

2. POWER WASH CABINET

Tableware passing through the power wash cabinet is subjected to a high volume spray of 140 to 150 degrees F. water, with detergent added. The wash water is retained in a heated tank beneath the cabinet and recirculated. A one and one-half gallon make-up supply freshens the cleaning water. Here, all remaining food soil, grease and soluble material is removed from the dishware.



CA SERIES DISHWASHING MACHINE
DIAGRAM 1

3. POWER RINSE CABINET (OPTIONAL)

Same as above 160° to 170° F. No detergent added.

4. PRERINSE (OPTIONAL ON 14" SINKS)

After the tableware leaves the power wash cabinet, it passes through a hot water spray which removes all of the detergent and wash water from the surfaces of the dishes.

5. FINAL RINSE

The dishracks now pass between spray arms which subject the surfaces of the tableware to 180 degree to 195 degree F. water at a flow pressure of 20 PSI maximum, 17 PSI minimum. Provision is made for the installation of a rinse additive injector if the user so desires.

The high temperature of the final rinse water performs the final cleaning function, sanitizes the tableware and preheats it for rapid air drying. Steam exhaust vents at the exit end of the final rinse cabinet are adjusted so as to prevent steam from escaping from the cabinet.

The dishrack emerges from the final rinse cabinet through a spray curtain and into the room atmosphere. The tableware is unloaded from the dishrack within a few feet from the exit end of the final rinse cabinet. If a rinse additive is used in the final rinse water, dishes will dry in room atmosphere in about 20 seconds; without a rinse additive it may require as long as one minute.

NOTE

This is not the only, or necessarily the primary, reason for using a rinse additive. Consult a rinse additive vendor for the full advantages.

RACK ROTATION

In Diagram 1, the rack conveyor is shown operating in a clockwise direction (when viewed from above) and the wash and rinse cabinets are installed from left to right. The CA-Series machines can be supplied with either clockwise or counterclockwise rack conveyor rotation. In most cases, the information contained in this manual applies to either. If differences are significant, an explanation will be included. In parts lists and exploded views, where alternate parts are required for clockwise or counterclockwise rotation, these are so identified and different part numbers are assigned.

CABINET DOOR LOCATIONS

Normally CA-Series dishwashing machines are supplied with cabinet doors which open on the inboard side of the cabinets, as shown in Diagram 1. Machines may be supplied with cabinet doors on the outboard (rear) side of the cabinets at the customer's request. This has no effect on the information contained in this manual.

HOOD DIMENSIONS

The standard CA-Series dishwashing machine cabinets are designed to accept a normal sized serving tray (14" x 18") placed vertically in the dishrack.

CA-SERIES OPTIONS

Almost every user of an Adamation dishwashing machine will have some special need or particular specification which will require modifications or additions to the basic machine configuration described above and shown on Diagram 1. For this reason, most dishwasher installations will differ in some respect from the descriptions given in this manual. These changes always entail additions or minor modifications to the basic configuration or to its functions and do not invalidate the information given in this manual. Look towards the back of this manual for specific information concerning the options on your particular dishmachine.

SECTION 2 - INSTALLATION

GENERAL

At the time of order, the Adamation engineering department prepares a floor plan drawing and an elevation and plan drawing for each dishwashing machine installation. The floor plan drawing, based upon the physical layout of the building (or room) in which the machine is to be installed, shows the location of the machine, the location of all required service connections, significant dimensions and tolerances and all other information needed to locate the machine so as to meet the user's requirements. The elevation and plan drawing is an orthographic projection of the dishwashing machine to be installed. This drawing shows all service connections, all machine dimensions and other information required to properly interface the dishwashing machine with the layout (floor plan drawing) of the user's installation. These two drawings, together with warranty information, a copy of the factory packing list and the customer's copy of the instruction manual are enclosed in a service information envelope which is supplied to the user by an Adamation representative prior to delivery of the machine. If the particular installation requires options or accessories which are wired to the machine (boosters, disposers, etc), the service installation envelope will also contain a special wiring diagram showing the connections to these options and accessories.

Since each dishwashing machine, due to individual use requirements, nearly always differs in some respect from all other machines, the drawings and other materials contained in the service information envelope apply only to the machine for which it is delivered. This service information envelope must be retained and controlled by a responsible person at the user's establishment; loss or disposal of its contents may result in serious installation delay of the machine.

FLOOR PLAN VERIFICATION

The service information envelope contains a floor plan drawing of the machine installation at the user's location. This drawing must be thoroughly checked against the site and verified as to the dimensions and clearances, location of walls, doors and the like. Any discrepancies should be immediately reported to the Adamation sales representative. Also, the buyer should immediately report any anticipated building changes which might affect either the installation or the efficient operation of the machine.

UTILITY REQUIREMENTS

When the dishwashing machine was ordered, the buyer was provided with an Adamation survey report describing the exact utility requirements (electricity, rinse hot water, steam, wash tank hot water, etc.). Before the installation supervisor arrives, all utility ratings must be checked and verified. The machine can be assembled and installed in a very short time (if necessary), but it cannot be operated unless the incoming utilities meet the requirements of the machine and of the National Sanitation Foundation.

DAMAGE INSPECTION

Immediately upon arrival, all shipping containers received should be checked against the bill of lading. Report any missing containers to the carrier and also to the Adamation production control group (immediately by phone). At this time, all containers received should also be inspected visually for external evidence of damage in transit. If any container shows such evidence, notify the carrier and have his representative present when the container is opened. Transit damage claims must be made to the carrier, not to Adamation. Notify the Adamation production control group of any damaged equipment received. In most cases, the larger sections of the machine are shipped uncrated. Small parts are packed together in one or more shipping cartons. Where the larger parts of the machine are attached to skids for shipment, do not twist or bend the machine sections when removing the straps and other hardware which secure the machine to the skid, or while separating the machine from the skid.

If any of the cartons which contain the smaller parts arrive damaged to the extent that parts may be missing, immediately request a complete listing of all parts shipped in that container from the Adamation production control group. Notify Adamation and the carrier of any missing parts.

UNPACKING

Except in the case of cartons or containers damaged in transit, as described above, do not open or uncrate any of the shipping containers prior to the arrival of the Adamation installation supervisor at the site. He will inspect all parts as they are unpacked and check the shipment for completeness. If containers are opened before the installation supervisor arrives, Adamation cannot accept responsibility for missing parts.

ASSEMBLY

Prior to shipment, each Adamation dishwashing machine is completely assembled and tested at the factory. It is then disassembled to the extent necessary for shipment and delivered to the installation site. Unpacking and reassembly of the machine is always done under the supervision of an Adamation representative. He will check the contents of the shipping containers against the packing list (in the service information envelope) and immediately report any deficiencies to the home office. Detailed procedures for the assembly of each CA-Series machine are provided to all Adamation service personnel; the user must never attempt to assemble the machine prior to the arrival of the Adamation service representative. (See Warranty).

INSTALLATION

For each installation, the Adamation engineering department prepares a floor plan drawing and an elevation and plan drawing. These drawings show the location of all utility connections in the dishroom to the machine and the required rating of each input. The specific requirements for each installation will vary depending upon the type of heater used in the power wash tank and whether accessory equipments (disposer, steam booster, etc.) are installed with the machine. The utility connections described here are for a basic CA dishwashing machine and for standard accessory equipments.

ELECTRICAL CONNECTIONS

Each machine is manufactured to operate on the customers specified electrical service. A power disconnect switch or similar device in the incoming line must be installed by the customer in the dishroom and be readily accessible at the machine. Ampere rating for incoming power will depend on the individual machine configuration (See elevation and plan drawing for this requirement). Incoming electrical connections are made in a splice box located on the back of the electrical control cabinet. Do not apply power to the machine prior to the final checkout.

HOT WATER CONNECTION

Hot water must be supplied to the machine at a temperature and flow rate which assures that the water at the manifold of the final rinse tank will be no less than 180 degrees F nor more than 195 degrees F at a minimum flow pressure of 17 PSI. Minimum hot water requirements (without options and accessories) are 6.9-8.4 gallons-per-minute CA-CA1, 4.8-6.3 gallons-per-minute CA2-CA4. The incoming hot water line is connected to the hot water harness located above the power wash cabinet behind the electrical control cabinet. The harness is equipped with a 3/4-inch female pipe thread.

COLD WATER CONNECTION

Cold water must be supplied at a flow pressure of no less than 17 PSI. Minimum requirements, without accessories, is 4.8 gallons-per-minute. The incoming cold water line is connected to the cold water solenoid valve located behind the final rinse sink. The valve is equipped with a 3/4-inch female pipe thread.

DRAIN CONNECTIONS

The drain pipe, which runs the length of the machine below the cabinets, can be connected to the buildings drain at either end. Both fittings are equipped with a 2-inch female pipe thread. Install the plug provided into the end not used. A grease trap must be installed between the machine drain and the buildings drain system (check local codes for the type of grease trap to be installed). If a right angle turn is required in the drain line between the machine drain and the grease trap, use a tee connection with a threaded plug to facilitate cleaning.

INSTALLATION CHECK-OUT

After the dishwashing machine is completely assembled and all required service connections are made, the machine must be given a thorough and complete check-out before

it is put into operation. This check-out consists basically of testing each operational function of the machine separately (as far as possible) before placing everything in operation simultaneously. Before making this checkout, the personnel involved must be thoroughly familiar with the operating procedures in Section 3 and with the function of each control.

CAUTION

Since the equipment check-out may entail repeating certain procedures, there are two important precautions which must always be observed: (1) Never run any pump without water in its pumping circuit and (2) for machines which have electric tank heaters, be certain that the power wash tank is full of water whenever the heaters are on.

INITIAL CONTROL SETTINGS

1. All manual overload breakers in the electrical control cabinet should be in the off position.
2. The selector switch should be in the off position.
3. The buildings power should be turned off.
4. Both the hot and cold water fill valves should be closed.
5. Both the wash tank and rinse tank drain valves should be closed.
6. The drive worm should be disengaged.

FILL AND CHECK THE TANKS

1. Using the power wash fill valve, fill the wash tank to the top of the overflow standpipe. (Remove the scrap screen to observe this water level.) Run a few more gallons into the tank to check that the standpipe drains properly. Turn off the fill valve and check that the water level remains at the top of the standpipe. If it does not, the drain valve is jammed, not completely closed or the standpipe gasket may be leaking.

2. Using the final rinse fill valve, fill the final rinse tank to the top of the overflow system. Close the door while filling the tank and then turn off the fill valve and remove the scrap screen and baffle plate (if the machine is so equipped) to check that water level remains at the top of the overflow system. If it does not, the overflow system is not operating correctly. If the front tank does not maintain its water level, then the valve may be jammed or not closed properly. Close the door and run a few more gallons into the tank to assure that the standpipe drains properly. Replace the baffle plate and the scrap screen if the machine is so equipped.

3. Close and secure all the cabinet doors.

CONTROL CIRCUIT CHECK

1. Turn on the building's power source.
2. Place the selector switch to the manual position. The contacts of the magnetic contactor in the cabinet should close with an audible click. If not, momentarily push start station button located at work station. All other manual overload breakers should remain off.
3. Place the selector switch to the automatic position.

4. At the control stations on the conveyor table, depress each low voltage push button one at a time. Each time a low voltage push button is depressed, there should be an audible click from the contacts of the magnetic contactor in the electrical control cabinet. (This may take two people.)
5. Return the selector switch to the off position.

POWER WASH PUMP MOTOR CHECK

1. In the electrical control cabinet, place the power wash pumps manual overload breaker to the on position.

CAUTION:

Be sure the wash tank is filled with water. (See Section 2, Fill and Check The Tanks, Number 1, Page 12.) Operating the pump when the tank is dry will damage the pump seal.

2. Place the selector switch to the manual position. The power wash pump should operate.
3. Check the direction of rotation of the pump motor. To do this, check the end of the motor shaft that projects through the motor housing. An arrow stenciled on the motor end plate shows the correct shaft rotation. If the pump is rotating in the wrong direction, perform steps 4 through 9; otherwise proceed to step 10.
4. Place the selector switch to the off position.
5. Place the power wash pump manual overload breaker to the off position.
6. Turn off the building's power source to the machine.
7. Interchange any two of the three L1, L2 and L3 incoming power connections to the Adamation control panel.
8. Turn on the building's power supply to the machine and place the power wash pump manual overload breaker to the on position.
9. Place the selector switch to the manual position and recheck the motor rotation. It should now be correct.

NOTE:

All CA-Series dishwashing machines have accessories also using 3 phase motors. If such accessories are included in the machine installation, and all connections were made correctly, these motors will now be rotating correctly. They should, however, be checked at this time. If necessary, interchange phases at the individual motor manual overload breakers.

10. Place the selector switch to the off position.
11. Place the power wash pump manual overload breaker to the off position.

CONVEYOR DRIVE CHECK

1. Close the hot water shut-off valve.
2. Place the conveyor drive manual overload breaker to the on position.
3. Place the selector switch to the manual position. The drive worm should now start to rotate in a downward direction.

4. Lower the drive cabinet into the operating position, thus engaging the drive worm with the worm followers located on the dollies. The conveyor train will now start to move. Latch the drive cabinet to the operating position (down). It should not vibrate or rock. If it does, see Section 6, Worm/Drive Block Alignment, Page 56, for adjustment.
5. Mark one dolly for identification and allow the conveyor train to operate through several complete revolutions. Watch each dolly as it is driven along the drive worm and check the following:

A. All worm followers on the dollies should engage and disengage the drive worm freely.
B. The worm followers must not hang up on the drive cabinet while either entering or leaving the drive area.
C. All the worm followers must have good engagement with the drive worm for the full length of the worm. The teeth on the worm followers should engage the drive worm to a depth of approximately 1/2 - 5/8 inch through its length. If not, see Section 6, Worm/Drive Block Alignment, Page 56.
6. Place the conveyor drive manual overload breaker and selector switch to the off position.
7. Open the hot water shut-off valve.

FINAL RINSE, PRERINSE AND PREWASH SPRAY CHECK

WARNING:

Never attempt to check the spray patterns in the cabinets by opening the cabinet doors while the machine is operating. This will not only throw water out of the machine, but in the case of prerinse and final rinse water, will subject the observer to a spray of water at scalding temperatures. To check the spray patterns, lift or separate the spray curtains on the prewash and final rinse cabinets.

1. Close all cabinet doors securely.
2. Place the conveyor drive prerinse pump and prewash pump manual overload breakers to the on position one at a time.
3. Place the selector switch to the on position. Hot water will now flow through the final rinse and prerinse spray arms and tempered hot water will be pumped through the spray arms of the prewash cabinet.
4. If the machine is equipped with door safety switches - machine will not operate if doors are open.

NOTE:

The conveyor drive will also operate, moving the conveyor train through the dishmachine.

4. In each cabinet, check to see that all nozzles in the top and bottom spray arms are discharging equal amounts of water. Any nozzle producing less water than the others is probably plugged. Turn off the machine by putting the selector switch to the off position and remove the plugged nozzle and clean it.
5. Check that all spray arms are producing a vertical spray pattern. The correct spray pattern can be viewed from the ends of the spray arms. While it is not possible to observe the spray patterns from this position while checking them through the spray curtains, it is still possible to detect a misaligned spray pattern.
6. If the spray pattern is obviously tilted, the entire spray arm must be rotated so as to produce a vertical pattern. To do this, proceed as follows:

A. Place the selector switch to the off position.
B. Rotate the spray arm to the correct position.
C. Recheck the spray pattern.

7. Close and secure all the cabinet doors.
8. Place the selector switch to the off position.
9. Place the conveyor drive, prerinse pump and prewash pump manual overload breakers to the off position.

PREWASH COLD WATER CHECK

1. Place the selector switch to the on position.
2. Visually check through the lower access door to be sure that cold water is spraying out of the two high pressure prewash spray arms.

NOTE:

5. Place the selector switch to the off position and the prewash pumps manual overload breaker to the off position.
6. Replace all parts previously removed. Close and secure the cabinet door.

POWER WASH, POWER RINSE AND POWER SCRAPPER TANK MAKE-UP WATER CHECK

1. Place all manual overload breakers to the off position.
2. Open the cabinet doors.
3. Place the selector switch to the manual (on) position.
4. Check that the hot water (180 degree F) is flowing into the tank from the pipe located inside the cabinet at the top.

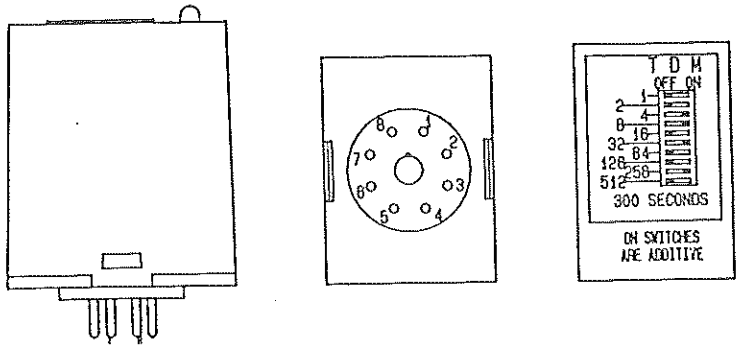
NOTE:

The rate of flow of make-up water is controlled by the wash tank make-up adjustment valve. Initially, this valve is set for a maximum flow of 1-1/2 gallons-per-minute. The easiest way to obtain this setting is with a one-gallon container and a watch with a second hand. The rate can be decreased later to meet the operating conditions of the machine.

5. Place the selector switch to the off position and the conveyor drives manual overload breaker to the off position.
6. Close and secure the cabinet doors.

AUTOMATIC OPERATION/TIMER ADJUSTMENT

The timer is located on the control circuit panel in the electrical equipment cabinet. For access to the timer, remove the cabinet front. The timer can be set for any interval of automatic operation from 15-600 seconds. It is pre-set at the factory for 180 seconds. To set the timer, simply move the dial to the desired setting (See Diagram 2). To check the timer setting and operation of the automatic control circuit, proceed as follows:



1. Place the selector switch to the automatic position.
2. At a control station at the conveyor table, depress a low voltage push button. The rack conveyor will start and operate for the period of time for which the timer was adjusted and then stop automatically.
3. Restart the machine with a low voltage push button. While the machine is operating, again depress the button. The machine should stop.

NOTE:

The primary purpose of the automatic operation is to prevent empty racks from going through the machine. By so doing this, hot water, detergent and rinse solution are conserved. The best setting for any particular installation will depend upon the local conditions such as the number of dishroom personnel, the procedure for loading the machine and the like. Usually the best timer setting is one which brings three dish racks up to the loading station at once. The machine then stops and is not restarted until all three racks are fully loaded. A low voltage push button is then depressed and the three full racks move to the prewash cabinet and three empty racks replace them at the loading station.

4. Place the selector switch to the off position.
5. Replace the cabinet front on the electrical control cabinet.

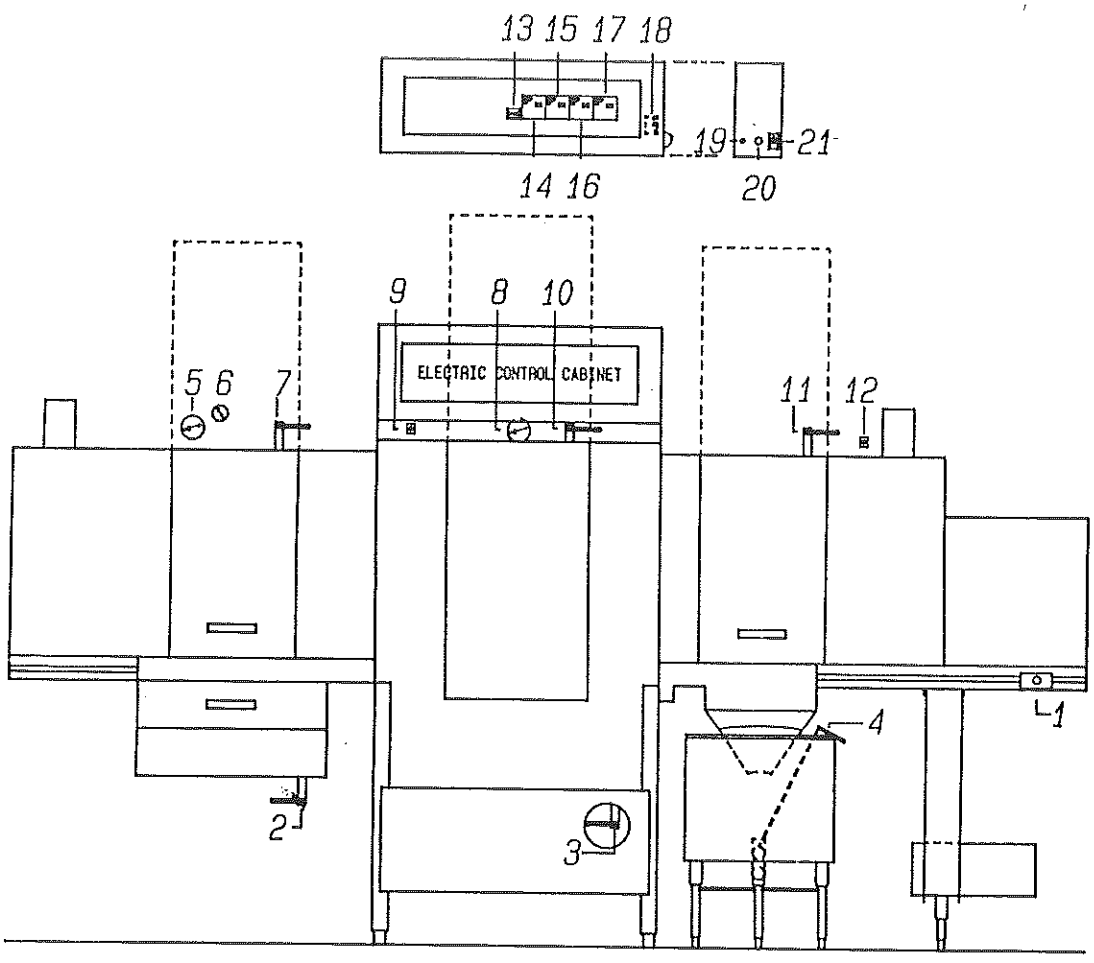
The timer is available directly from Adamation. To order a replacement, consult Adamation. (Adamation Part Number 55-7900-156).

SECTION 3 - OPERATION

OPERATING CONTROLS AND INDICATORS

All of the controls and indicators required to fill, start and operate the dishwashing machine are listed below, together with a short functional description of each. Diagram 3 shows the physical location of each control and indicator. All electrical controls are plainly marked either on the machine or on the control itself.

1. Control Station Start/Stop Buttons - depressing the low voltage push buttons (located at the edge of the rack conveyor table) starts the machine when the selector switch is in the automatic position. The machine runs for the pre-set time (see timer adjustment above) and then stops automatically. Depressing a low voltage push button a second time during the cycle will also stop the machine. The buttons will also work in the manual position, but not time out.
2. Rinse Tank Drain Valve - used to drain the smaller (front) section of the final rinse tank after operation.
3. Wash Tank Drain Valve - used to drain the power wash tank after operation.
4. Prewash Tank Drain Valve - used to drain the prewash tank after operation.
5. Final Rinse Temperature Gauge - displays the temperature of the final rinse water just prior to entering the upper spray arm.
6. Final Rinse Pressure Gauge - displays the flow pressure of the final rinse water just prior to entering the upper spray arm.
7. Final Rinse Fill Valve - is used to fill the final rinse tank with 180 degree F. water prior to starting the machine. This valve remains closed during normal operation. (Note: In case of a final rinse solenoid valve failure, this valve should be left open.
8. Power Wash Temperature Gauge - displays the temperature of the wash water passing through the upper power wash manifold, just prior to entering the spray arms. It only indicates when the power wash tank pump is operating.


13 15 17 18
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ELECTRIC CONTROL CABINET
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FIGURE 7-4

9. Wash Tank Make-Up Adjustment Valve - controls the flow rate of make-up water to the power wash tank while the machine is operating. This valve is normally set for one and one-half gallons-per-minute.
10. Power Wash Fill Valve - is used to fill the 22.5 gallon CA power wash tank or the 44 gallon super wash/super rinse tank with 110-140 degree F. hot water prior to starting the machine. This valve remains closed during normal operation.
11. Prewash Sink Fill Valve - is used to fill the prewash sink with water prior to starting the machine. This valve remains closed during normal operation.
12. Cold Water Flow Adjustment Valve - controls the flow rate of the cold water to the prewash tank while the machine is operating. This valve is normally set for 4.8 gallons-per-minute.
13. Elapse Timer - measures the amount of time the machine has been used in hours and tenths.
14. Power Wash Pump Manual Overload Breaker - provides short circuit protection and power disconnect service for the power wash pump motor.
15. Prerinse Pump Manual Overload Breaker - provides short circuit protection and power disconnect service for the prerinse pump motor circuit.
16. Prewash Pump Manual Overload Breaker - provides short circuit protection and power disconnect service for the prewash pump motor.
17. Conveyor Drive Manual Overload Breaker - provides short circuit protection and power disconnect service for the rack conveyor drive motor.
18. Timer Adjustment - may be set for any time interval from 1 second to 1023 seconds. When the selector switch is in the automatic position, this setting determines the length of time the machine will run after a control station low voltage push button is depressed. The machine stops automatically at the end of the time cycle.
19. Control Circuit Manual Overload Breaker - provides short circuit protection for the 24 volt control circuit.
20. Pilot Light - indicates when the machine and tank heat is in operation. When lit, the machine is on.
21. Selector Switch Manual/Off/Automatic - This is the main operating switch of the dishwashing machine. In the manual position, the machine runs continuously until a low voltage push button is depressed. In the off position, all pump motors and the rack conveyor drive motor are stopped and the hot and cold water circuits are closed. In the automatic position, the machine will start only when one of the low voltage push buttons at a conveyor table control station is depressed.

Main (building) power disconnect device - provides power disconnect and short circuit protection in incoming 3 phase electrical service. This device normally remains on except during maintenance or extended shutdown. (See note).

NOTE:

This switch is not supplied. It should be installed by the user in the dishroom in conformance with local electrical codes.

NOTE:

This section does not contain operating instructions for major equipment and accessories not manufactured or serviced by Adamation, such as garbage disposers, water boilers, hot water boosters and the like.

PRIOR TO FILLING

After each complete shutdown, before filling the dishwashing machine, check the following:

1. Inspect the machine for cleanliness, both inside and out, including all parts which were removed for cleaning when the machine was shut down.
2. Both the hot and cold water shut-off valves to the machine must be fully opened.
3. All the manual overload breakers in the electrical control cabinet must be in the on position.
4. The selector switch must be in the off position.
5. The buildings power source in the incoming electrical service line must be on.

FILL PROCEDURE

Adamation, Inc. recommends that after each period of heavy use (normally after each meal) the machine should be shut down, drained and cleaned thoroughly. The procedure which follows is based upon prior complete shutdown and cleaning, as described in Section 3, Shutdown Procedure and Cleaning, Page 23 and 24.

1. Close all lever drain valves.
2. Insert the Hommel Pot Basket in the exterior Hommel Pot of the prewash (if the machine is so equipped).
3. Insert the two deep well food soil baskets in the prewash sink (if the machine is so equipped).
4. Insert the 4"x4" pump inlet screens in the pump inlet hole(s) in the final rinse tank, if the machine is so equipped.
5. Insert the food soil screen on the lower (front) runners of the final rinse tank.
6. Insert the three food soil screens in the power wash tank/five in the super wash tank.
7. Install all eight spray arms (4 upper and 4 lower), into the upper and lower manifolds of the power wash cabinet, 8 upper and 8 lower in the super wash. Insert each spray arm firmly, twist slightly and twist the arm to lock in the correct position.
8. Using the final rinse fill valve, fill the final rinse tanks to the top of the overflow system. The tank level can be checked by closing the fill valve and observing the water level. However, this is not a critical operation and if the fill valve is opened fully for about two minutes, the tanks will be adequately filled.
9. Using the power wash tank fill valve, fill the power wash tank to a level of one inch below the scrap screens. Open the cabinet door while the tank is filling and remove one scrap screen to check the level.
10. Fill the detergent dispenser and rinse additive injector in conformance with the detergent manufacturer's instructions.
11. In the electrical control cabinet, place all manual overload breakers in the on position.
12. Use the handle on top of the drive cabinet to lower the assembly and engage the drive worm with the worm followers on the dollies. Move the conveyor train slightly by hand if necessary.

OPERATING PROCEDURES

The CA-Series dishwashing machine has two modes of operation, manual and automatic. During manual operation, the machine runs continuously. During automatic operation, the machine is started manually at the conveyor table and runs for a preset time.

MANUAL OPERATION

To start the machine, place the selector switch to the manual position. The machine will continue to run until a low voltage push button control switch is depressed and the switch is returned to the off position. This mode of operation is used for emergencies and for servicing the machine, or upon explicit instructions from the establishment's food service manager.

AUTOMATIC OPERATION

1. Place the selector switch to the automatic position.
2. To start the machine, depress one of the low voltage push buttons located around the edge and under the lip of the rack conveyor table. The machine will run for a period of time determined by the timer setting in the electrical control cabinet. It will then stop automatically.
3. To restart the machine after it has stopped automatically, again depress a low voltage push button. This is the normal mode of operation and should always be used unless otherwise directed by the food service manager.

NOTE:

The machine can also be stopped at any time during the manual operating cycle by depressing one of the low voltage push buttons.

WASH PROCEDURES-MODE OF OPERATION

Manual operation, during which the machine operates continuously, should be used only under the following circumstances:

1. During emergencies; such as when the automatic mode is inoperative.
2. By an authorized service man during a service call.
3. Upon explicit instructions from the food service manager, whose directive is based upon his judgement of the operational requirements.

At all other times the normal mode of operation is automatic. The purpose of the automatic mode of operation is to prevent empty racks from going through the machine; thus conserving hot water, detergent and rinse additive.

PERSONNEL DUTIES-LOADING

The CA-Series dishwashing machine provides considerable flexibility with regard to the number and type of personnel who may be assigned to loading the machine. Loading requires no special skills and a minimum of training. It can be performed by dishroom personnel, waitresses or busboys, depending on the normal procedures of the food service establishment.

The dishes do not have to be sorted before loading and garbage can be emptied directly onto the conveyor table, a garbage trough or into an optional garbage receptacle. The waitress or busboy can load soiled dishes directly into the dish racks from a busbox or tray as the person enters the dishroom from the dining area. Where it is customary to bring soiled tableware into the dishroom in larger quantities, or during peak load periods, it is usually necessary to assign the loading operation to one or more permanently stationed dish handlers. Regardless of the personnel assigned to it, the loading procedures are essentially the same.

When the machine is loaded directly from the trays, each tray may be placed on the tray rail at the loading station and engaged under the conveyor table edge to prevent tipping. The dishroom personnel now has both hands free for loading. Tableware brought to the machine in large quantities is usually loaded directly from the container or mobile cart in which it arrives. The following are a few simple loading rules and recommendations which will contribute to obtaining maximum efficiency from the machine and its operating personnel:

1. Before placing each dish into a rack, empty all heavy food soil (garbage) onto the conveyor table between the racks or into an accessory garbage receptacle. Be sure that all large pieces of garbage that might not go through the spaces in the rack are removed from dishes before racking. It is not necessary to scrape garbage from the dishes.
2. Load larger dishes and trays at the trailing end of the rack so they will not cover the smaller dishes. Load the rack starting at the inboard edge (farthest from operator) to facilitate complete filling of the rack.
3. Ensure the separation of all dishes. Never nest dishes together in one compartment.
4. Invert all hollow dishes, such as bowls and casseroles.
5. When dishware is separated by the waitresses, pre-rack all glasses and cups in separate compartment racks on the overshelf. When dishware is random loaded, the overshelf is utilized to rack the clean cups and glasses after completing the washing process.
6. Whether the glasses and cups are preracked or random loaded directly onto the conveyor racks, empty all the liquids and food soil pieces onto the conveyor table or into an accessory garbage receptacle.
7. When preracking, as soon as each glass or cup rack is filled, remove it from the overshelf and exchange it for an empty dish rack on the rack conveyor.

NOTE:

Although Adamation dishracks are designed so that a loaded rack may be fitted on top of an empty one (piggy backed), and thus carried through the wash and rinse cabinets, this does not always produce the best dishwashing results, especially in the case of glassware, cups, and silverware. To obtain better results, remove an empty dishrack from one of the dollies and insert the full dishrack in its place. The empty dishrack can now be placed on the overshelf for refilling with cups and/or glassware.

8. Where piggy-back silverware containers are provided, place silverware, after depositing any large pieces of food soil onto the conveyor, into the container compartments with handles down. Do not put more than 12 to 15 pieces of silverware into each compartment. Be sure the pieces fan out. Do not permit the nesting of like pieces.
9. When piggy-back containers are not provided, silverware is usually washed on a flat rack. Be sure the pieces are spread out so as not to cover each other. Flat racks may be preloaded and carried through the machine on an empty conveyor rack. However, it is recommended they be placed directly on dollies.
10. The average size dish tray will fit into the conveyor racks and can be sent through the machine. These trays should be placed in the racks facing the operator.

NOTE:

Do not permit the loading of trays at right angles to the direction of travel. This will cause carryover of the wash water to the rinse stage. Do not permit loading of oversized pieces which project outside of the dishrack. This will cause the machine to jam.

11. During automatic operation, when all of the racks at the loading station are filled, depress a low voltage push button at one of the control stations at the rack-conveyor table. This will start the machine, move the full racks towards the prewash cabinet and bring the empty racks up to the loading station.

PERSONNEL-UNLOADING

The unloading station is at the extreme clean dish end of the conveyor table. Unloading is normally a one person job. As clean dishes and other tableware are removed from the conveyor racks, they are sorted by type and stacked onto mobile carts or onto shelving. An air drying space of 24" or more is necessary to ensure proper air drying prior to unloading. Compartment racks containing glasses and cups are removed as units from the rack conveyor dollies and sent to the tableware storage section for unloading after which the empty racks are returned to the dishwashing machine.

It is recommended that a soak sink be installed near the clean dish removal station. Occasionally, in the case of some egg and casserole dishes, one trip through the machine does not remove all of the food soil. The clean dish operator should inspect the dishes as they are removed from the racks. Any dishes retaining food soil should be placed in the soak sink for 5 to 15 minutes and then given another trip through the machine.

Piggy-back racks of silver should be lifted from the dollies, shaken vigorously (to remove excess water droplets which may cause staining) and then emptied onto a sorting table. Silverware should then be picked up by handlers for sorting into proper containers.

SHUTDOWN PROCEDURE

After the dishwashing machine has been used for several hours under normally heavy dishloads, it should be shut down, drained and given a thorough cleaning. In most eating establishments, this would usually be after each mealtime. Before shutting the machine down be sure all racks are empty. This includes any racks on the overshelf. Then proceed as follows:

1. Place the mode selector switch to the off position.
2. In the electrical control cabinet, there is no need to place all manual overload breakers to the off position.
3. For machines with open or closed steam tank heaters, the steam supply will be shut off automatically when the mode switch is placed in the off position.
4. Use the handle (red lever) on top of the drive cabinet to disengage the drive worm from the dollies or optional black knob located under overshelf.
5. Open all the cabinet doors and latch them in the open position.

6. Open both the power wash tank and final rinse tanks lever drain valves. Leave the valves open.

NOTE:

The following steps require the removal of several pieces from the machine for sink cleaning. These pieces can be placed in empty dish racks as they are removed. The racks can then be used to carry them to and from the wash sink for hand washing.

7. Remove all the food soil screens from the power wash tank. Deposit any loose food soil in the garbage container and set the screens aside for cleaning.
8. Remove the deep well food soil baskets from the prewash sink. Set these aside for cleaning.

CAUTION:

Never empty the food soil screens or baskets by tapping them on the rim of a garbage container. This may bend their edges, in which case they will not fit properly.

9. Remove any loose food soil from the prewash sink, power wash tank and final rinse tank. Deposit the food soil into the garbage container.
10. Remove the pump inlet screens from pump inlet hole in the final rinse tank. Set them aside for cleaning.
11. Remove all eight spray arms (4 upper and 4 lower) from the manifolds in the power wash cabinet. Set these aside for cleaning. (8 Upper and 8 Lower) super wash cabinet.
12. Remove the scrap screen from the hommel pot if the machine is so equipped. The dishwasher is now ready to be cleaned.

CLEANING

The most important maintenance operation on a dishwashing machine is a thorough and complete overall cleaning after each period of heavy use. (This is normally after each meal.) A clean machine not only assures that dishes, glassware, and silverware will be properly washed and rinsed, but it is a major contributing factor to long, trouble free operation of the machine.

To clean the dishwashing machine properly, the following steps must be performed. A hot water sink and a hose supplying hot water at 120 degrees F are required.

1. Remove the dishracks from the conveyor train. If some racks were used to hold pieces set aside for cleaning, remove these first.
2. Flush down the conveyor table with a hot water hose. Wipe off any remaining food soil. Move the conveyor train by hand in the normal direction of travel for access to the entire table. The squeegees on the dollies will help clean the table surface. Be sure to clean the dolly wheel tracks.

CAUTION:

Do not spray the drive cabinet. Wipe it clean by hand.

3. Move the conveyor train by hand in the normal direction of travel to position the empty dollies (from which the racks were removed in step 1 above) inside the cabinets.
4. Thoroughly rinse out the interior of all the cabinets, including the tanks. Scrub off any build-up of grease, food soil or detergent. Be sure to flush all residue into the tanks and down the drains.
5. At the pot cleaning sink, clean all scrap screens, pump inlet screens, the two deep-well food soil baskets, the final rinse tank baffle plate and the final rinse tank overflow standpipe. Use 120° F water and scrub with a cleaning agent as required to remove all traces of food soil, grease and detergent. Rinse thoroughly.

CAUTION:

All parts removed from the machine for cleaning must be hand cleaned at a sink. Do not attempt to clean them by sending them through the machine.

6. At the cleaning sink, using the brush supplied for this purpose (or equivalent), clean the eight spray arms from the power wash tank. Removing the caps from the ends of the spray arms will help in the cleaning process. Be sure the nozzles are clean and completely open. Rinse them thoroughly and replace the caps finger tight.
7. Replace the racks in the dollies. The pieces cleaned at the sink should be placed in the racks to dry and remain there until the machine is ready to be filled and operated.
8. Clean the exterior surfaces around the base and beneath the machine.
9. Leave all the cabinet doors open to allow the cabinet interiors to dry until ready for re-use.

EMERGENCY OPERATION

The dishwashing machine is designed to perform as a completely integrated machine. For maximum effectiveness, all of its operational functions must be in good working order. However, in the case of some malfunctions, the machine can be kept in operation temporarily while awaiting repair services. Emergency measures which may be employed in these cases are described below.

NOTE:

Before attempting to operate the machine on an emergency basis, carefully check the troubleshooting guide given in Section 5, Trouble Shooting, Page 38. Contact the Adamation Service Department immediately for malfunctions which cannot be readily corrected. The procedures below are strictly temporary measures and should be employed only when it is absolutely necessary to keep the machine in service for a limited time.

EMERGENCY OPERATING PROCEDURES

1. The conveyor drive fails to operate - First, shut off the manual overload breaker for the drive. Second, disengage the drive worm from the dollies. Third, propel the conveyor train by hand in its normal direction of travel.
2. The machine operates when the selector switch is in the manual position, but not in the automatic position. Use the manual position. To start and stop the machine, station a person at the selector switch.

3. The hot water solenoid valve fails in the closed position. (IE: There is no final rinse water.) - Open the final rinse fill valve to obtain the final rinse water. The make-up water will continue to be supplied to the power wash tank (approximately 1.5 gallons-per-minute).
4. The cold water solenoid valve fails to operate - Open the prewash fill valve to obtain water. Shut off valve at end of work period.
5. The circulating prewash pump fails to operate - Place the prewash pump's manual overload breaker in the off position.
6. The prerinse pump fails to operate - Operate the machine without the prerinse function.
7. The hot water solenoid valve fails in the open position - The machine will operate normally except that the hot water will not turn off automatically when the machine is stopped. To conserve hot water and rinse additive, station a person at the house hot water shut-off valve and operate it manually as required.

CONVEYOR JAMMING

If the conveyor stops or slows noticeably while the machine is running, or if it fails to start and the drive motor is running, stop the machine immediately. The most likely cause of trouble is a jammed conveyor or drive mechanism. The drive mechanism has a clutch which will slip when anything jams or blocks the conveyor or becomes lodged in the drive mechanism. This is a protective device which prevents damage to the machine and the utensils being washed.

Conveyor jams are generally caused by some part of a utensil being washed projecting from a rack and becoming lodged against some part of the machine. Oversized trays are also sometimes responsible. A rack improperly seated on a dolly can also cause jamming. Another frequent cause is a cloth or towel which has been dropped on the table and has become bound between a dolly wheel and the wheel track.

When the conveyor jams, do not under any circumstances attempt to pry the jam loose. This can distort the dollies and connecting links and result in other serious damage. Stop the machine and proceed as follows:

1. Disengage the drive worm. (Raise the red handle and tilt the drive cabinet away from the conveyor.)

CAUTION:

Always turn the selector switch from the manual or automatic position to the off position before opening the doors or servicing the drive to prevent accidental starting of the machine.

2. Locate the source of the jam and move the conveyor train backwards by hand to relieve any pressure. Remove the jammed article.
3. Align the drive mechanism with the worm followers and lower the cabinet to engage the dollies and latch it in place.
4. Start the machine and resume operation.

SECTION 4 - PRINCIPLES OF OPERATION

GENERAL

The basic CA-Series dishwashing machine consists of an endless rack conveyor train which automatically carries dishracks from a loading station through four stages of washing and rinsing functions and then to an unloading station (see Diagram 1). Because the individual requirements of each eating establishment generally differ in some degree from others, in many cases the machine will contain functional stages or auxiliary equipment which are not considered a part of the basic CA-Series machine. These may include a power scrapper, a power rinse stage, a split rinse function, a longer or differently shaped rack conveyor or a tray conveyor and any one of several auxiliary water heating devices or garbage handling equipment.

In this section, the principles of operation of the basic CA-Series machine are first described. Additional functional stages and auxiliary equipment are discussed separately in Section 7, Illustrated Parts List.

WHAT HAPPENS WHEN A DISH GOES THROUGH THE MACHINE?

The selector switch is in the automatic position, which is the normal mode of operation for the dishwashing machine (see Section 3, Operation, Automatic Operation, Page 21.) Empty dishracks have been moved up to the loading station and are being filled with soiled tableware. Loading personnel deposit all heavy food soil (garbage) onto the conveyor table (or a garbage spiral or trough if the machine is so equipped) before racking the tableware. When the dishracks at the loading station have been filled with soiled tableware, the operator depresses one of the low voltage push buttons at a control station on the rack conveyor table. All functional stages of the machine now start to operate and the conveyor train moves, carrying the soiled dishes to the prewash cabinet.

As the soiled tableware moves into and through the prewash cabinet, it is subjected to a continuous spray of circulated soapy warm water from two spray arms mounted above conveyor train. Third lower arm is optional. This warm water removes any loose food soil from the tableware. The water temperature is maintained at no more than 120 degrees F. so as not to bake food soil particles onto the tableware. No detergent is used (or required) for this stage.

The circulated prewash water normally flows to drain unless the machine is equipped with an optional transfer pump to the trough. After it performs its function, the used water drains through the two perforated deep well food soil baskets into a deep well sink. The two deep well food soil baskets collect all large pieces of food soil which have been washed from the tableware. Machine may also be equipped with optional exterior Hommel Pot basket.

The deep well food soil baskets also collect all of the heavy food soil which has been deposited on the surface of the rack conveyor table by persons loading the dishracks. Squeegees on the underside of some of the dollies in the conveyor train sweep the surface of the table, thus moving any pieces of food soil into the prewash cabinet and into the deep well food soil baskets.

After the tableware passes through the prewash stage it enters the power wash cabinet. Here it is subjected to a large volume of water at 150 degrees F. Detergent is used to remove all remaining food soil and any grease or oily residue from the tableware.

As the dishrack passes through the power wash cabinet, spray arms above and below the rack direct a spray of wash water at a rate of 255 gallons-per-minute on all surfaces of the tableware. This wash water is continuously recirculated in the power wash cabinet. Perforated food soil trays below the rack conveyor collect any pieces of food soil washed from the tableware.

The wash water temperature, pressure and volume together with the time that each piece of tableware must be subjected to the wash spray are stringent standards of the National Sanitation Foundation. Every Adamation dishwashing machine is designed and constructed to meet or exceed these requirements.

The tableware now moves into the prerinse stage. Spray arms above and below the dishrack direct a spray of hot water on all surfaces of the tableware. The prerinse spray removes all detergent and all residual dishwater from the tableware. The prerinse water temperature is approximately 170 degrees F. Drying additives used in the final rinse are recirculated.

The dishrack now enters the final rinse stage. Here, spray arms above and below the dishrack direct a spray of water at 180 degrees F. and at a flow pressure of 17 PSI (minimum), over all surfaces of the tableware. This spray of high temperature water sanitizes the tableware and preheats it for rapid air drying when it leaves the final rinse cabinet. The volume, temperature and pressure of the final rinse water are also specified by the National Sanitation Foundation.

The machine is equipped with a fitting for injecting a rinse agent into the final rinse water. Rinse agents alter the chemical composition of the water to make it flow better and easier. Rinse agents are sometimes called drying agents or drying additives because their use causes the rinse water to drain off of the tableware faster, and in so doing, reduces the time required for air drying.

After the dishrack leaves the final rinse cabinet, it is carried by the conveyor train to the unloading station.

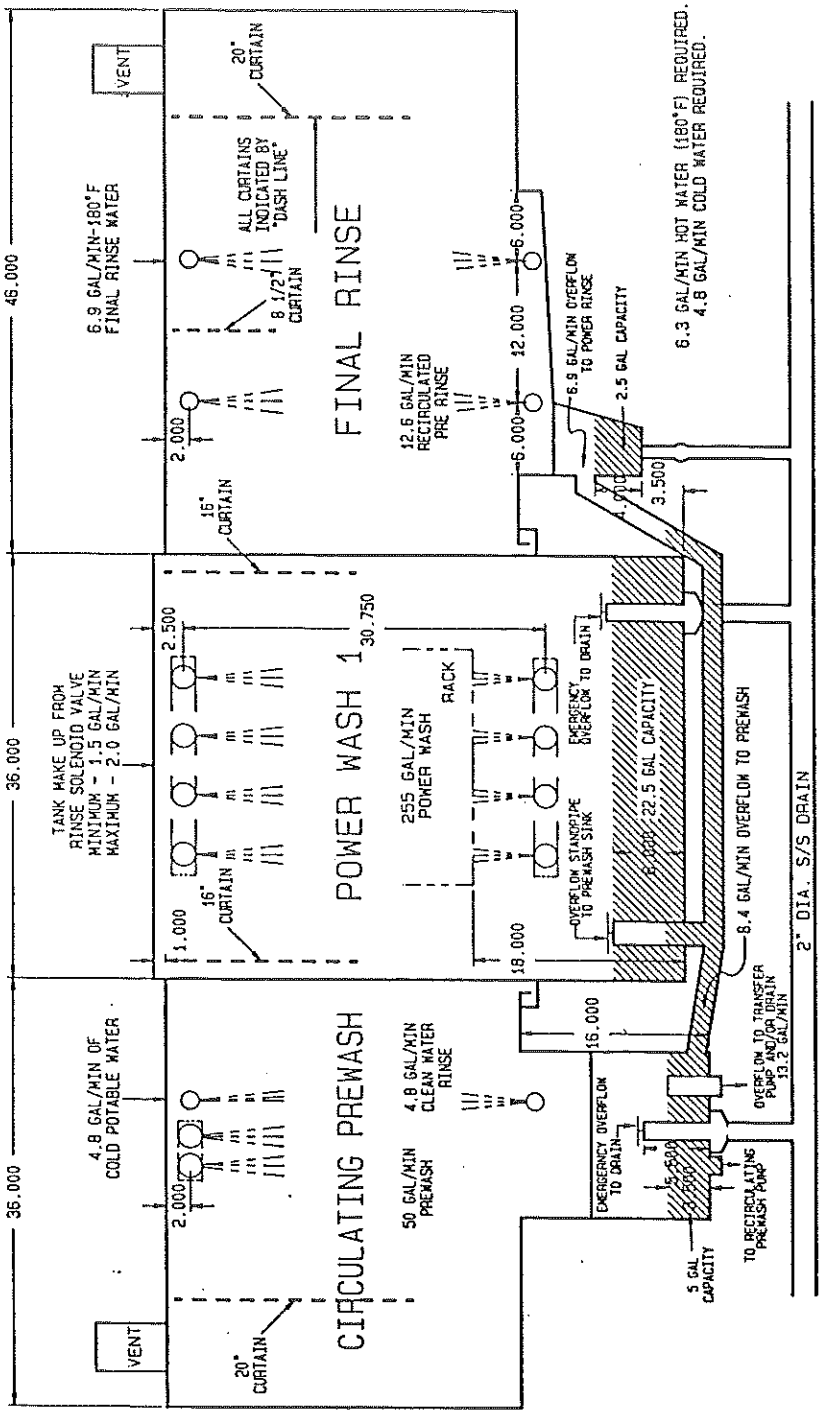
The preceding paragraphs have described what occurs at each functional stage of the dishwashing operation as tableware is carried through the basic CA-Series machine. The following subsections (plumbing circuits, electrical circuits and conveyor system) describe how the circuits and systems operate to perform the dishwashing function of the machine.

PLUMBING CIRCUITS

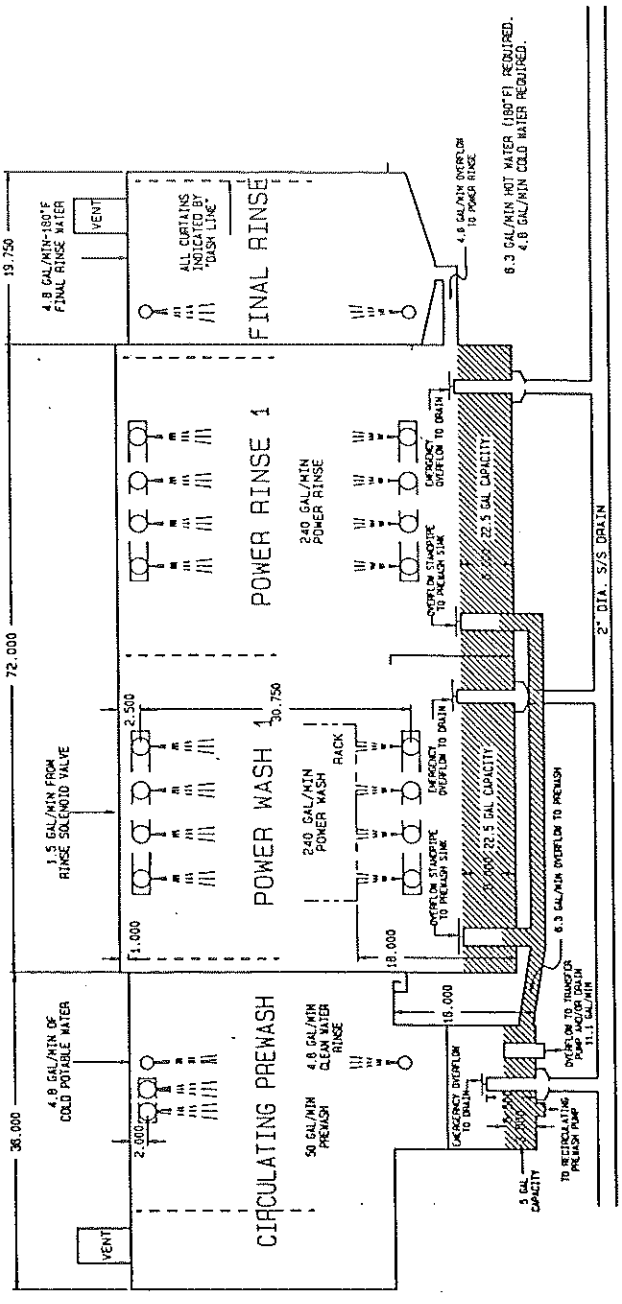
The plumbing circuits consist of the piping, valves (solenoid and hand operated), syphon breakers, line strainers, flow adjustments and pumps required to provide water at the correct volume, pressure and temperature for the prewash, power wash, prerinse and final rinse functions of the machine and to provide drainage for used and overflow water. A simplified diagram of these circuits is shown in Figure 7-8A.

NOTE:

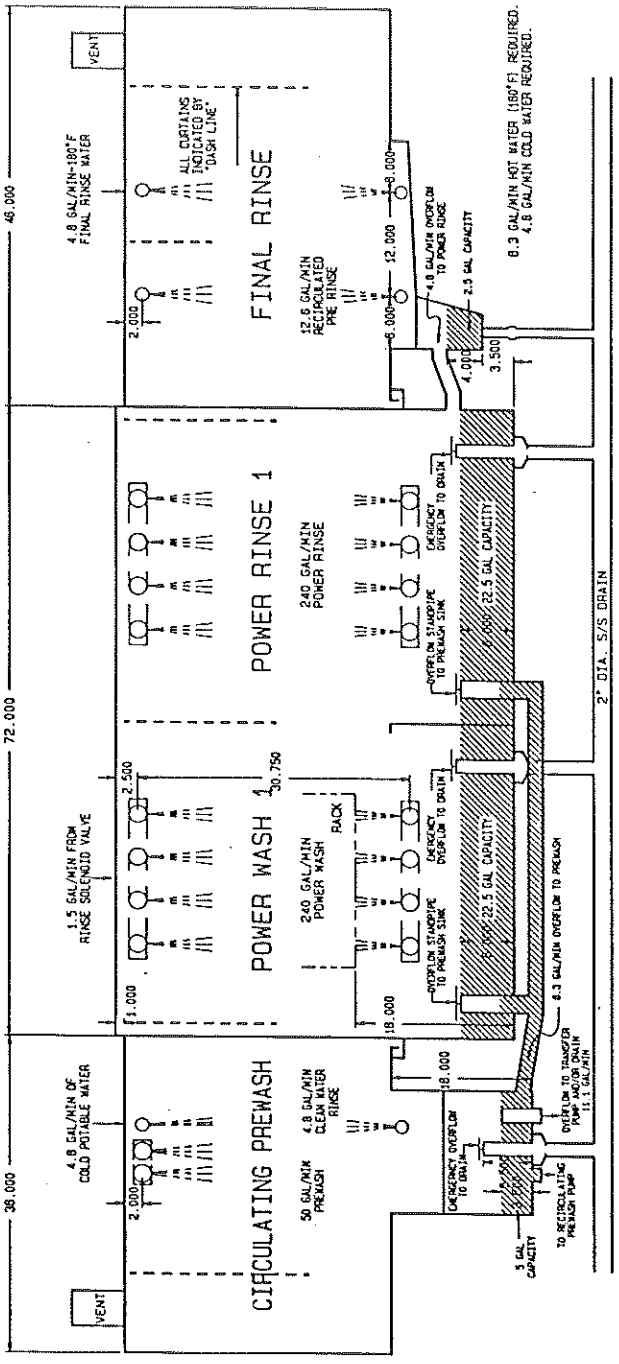
Figures 7-8A and 7-8B are strictly schematic diagrams and are not intended to show the actual configuration of the plumbing circuits. All plumbing connections and components are shown in the correct relationship with each other. However, the diagrams do not necessarily show their actual locations or position within the machine. For example, in the diagram, wash and spray arms are shown (for clarity) at right angles to their actual positions above the tanks. For actual location and configuration of plumbing parts and components, see the exploded diagram in Section 7, Illustrated Parts List, Figure 7-9A.



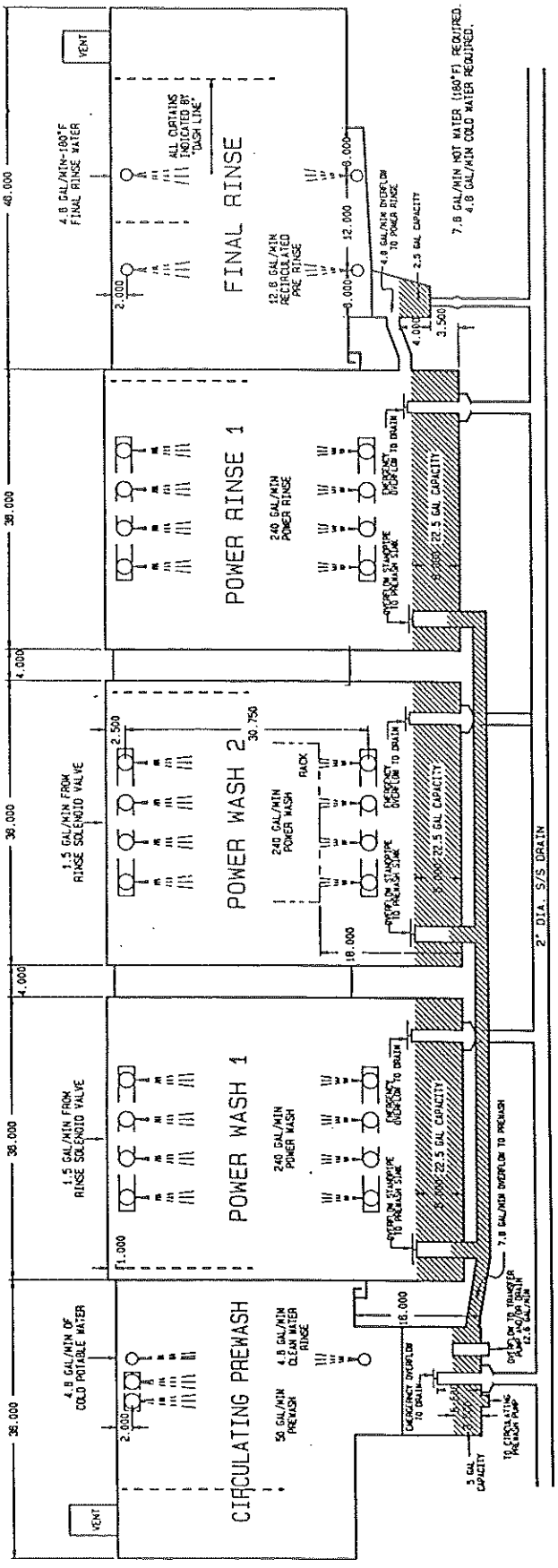
SCHEMATIC DIAGRAM OF WATER FLOW FOR CA-1
ADAMATION DISHMACHINE



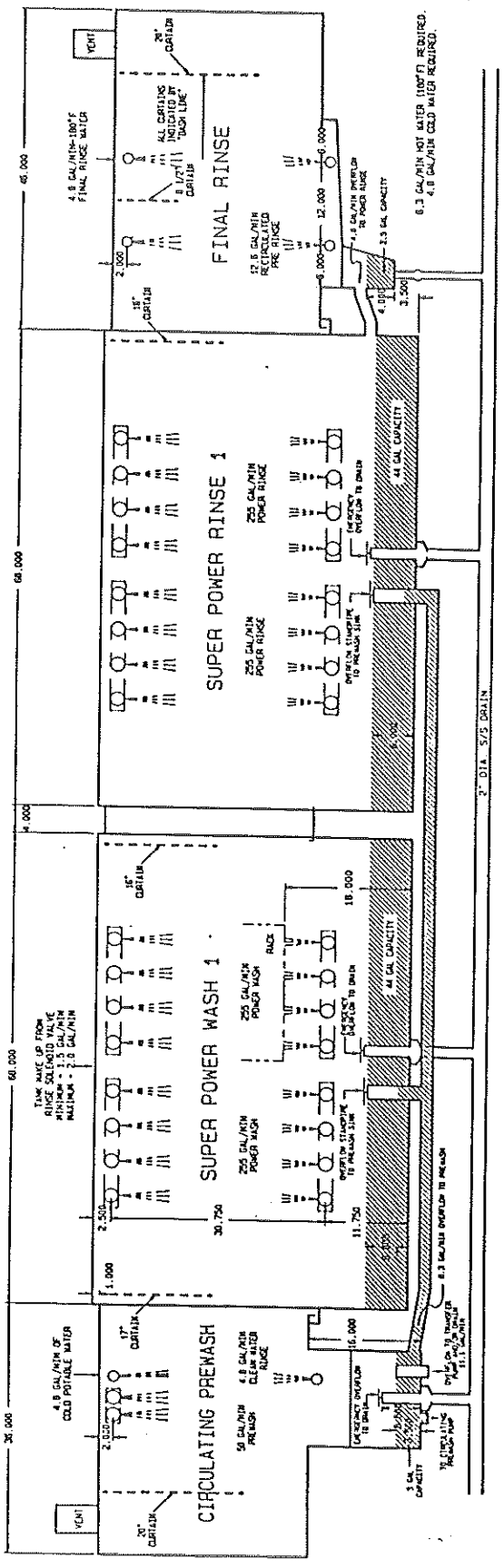
SCHEMATIC DIAGRAM OF WATER FLOW FOR CSL 1390 W/NO PRERINSE
ADAMATION DISHMACHINE



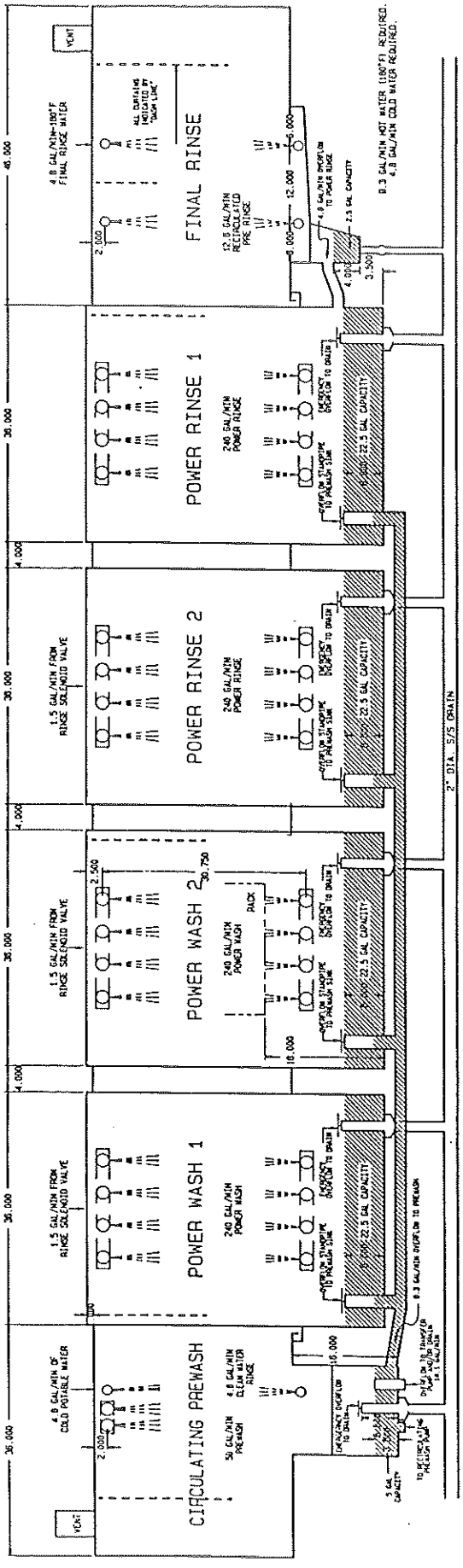
SCHEMATIC DIAGRAM OF WATER FLOW FOR CSL 1390
ADAMATION DISHMACHINE



SCHEMATIC DIAGRAM OF WATER FLOW FOR CA-3
ADAMATION DISHMACHINE



SCHEMATIC DIAGRAM OF WATER FLOW FOR SUPER CA-4
ADAMATION DISHMACHINE



SCHEMATIC DIAGRAM OF WATER FLOW FOR CA-4
ADAMATION DISHMACHINE

The hot and cold water connections are made by the user. These valves are equipped for 3/4" input connections. The hot water must be supplied at no less than 180 degrees and no more than 195 degrees F., at a flow pressure of 17 to 20 PSI, as measured at a manifold test point (tee connection) upstream from the hot water solenoid valve. The cold water flow pressure should be no less than 17 PSI. The two shut off valves are kept open at all times except during maintenance of the plumbing lines, fixtures or during a prolonged shutdown.

Both the hot and cold water lines are equipped with solenoid valves which are operated by the electrical control circuits of the machine. These are two position valves (open or closed) which open only when the machine is in operation (the selector switch is either in the manual or the automatic position). Each solenoid valve is protected from foreign particles by a line strainer at its input connection.

HOT WATER LINES

The hot water solenoid valve is bypassed by a secondary hot water line (solenoid bypass) which is connected to two hand operated valves which are used, prior to the machine's operation, to fill the rinse tank and the power wash tank. The final rinse fill valve is connected between the incoming hot water line and the final rinse manifold. The power wash fill valve is connected to the line which supplies the hot water to the power wash cabinet. When both tanks are filled to the level of their overflow standpipes (2½ gallons in the rinse tank, 24 gallons in the power wash tank) the fill valves are closed and remain so while the machine is in operation. (In the event that the hot water solenoid valve becomes defective and fails to open, the final rinse fill valve can be used to supply hot water to the rinse cabinet and make-up water for the power wash cabinet on an emergency basis.) The solenoid by-pass line also contains a fitting which may be used to supply the hot water for a detergent dispenser which is not supplied with the machine.

During operation (the hot water solenoid valve is open) one branch of the hot water circuit supplies 4.8-6.9 (depending on model) gallons-per-minute of 180 degrees F. water to the final rinse spray arms. A syphon breaker in the line protects against any reverse flow and a tee connection is provided for injecting the rinse solution in the final rinse water. (This rinse injection device is not supplied with the machine). The spray arms and nozzles of the final rinse section are so designed that, when the correct flow pressure (17 PSI. minimum) is maintained at the hot water manifold of the machine, the required 4.8-6.9 (depending on model) gallons-per-minute of final rinse water will flow through the line. The temperature of the final rinse water is shown on a temperature gauge installed at the final rinse manifold, thus providing true water temperature immediately prior to its entry into the final rinse spray arms. A fitting is also provided at the manifold for installation of a pressure gauge.

A second branch of the hot water circuit supplies make-up water to the power wash tank while the machine is operating. This make-up water replaces the wash water that is normally lost from the power wash section during operation. The make-up water enters the power wash cabinet through a flow restrictor. An adjustable valve in the make-up water line regulates the volume of make-up water supplied.

NOTE:

National Sanitation Foundation regulations permit this make-up water to be supplied at a maximum rate of 1½ gallons-per-minute. In most cases, the volume required will be considerably lower. This depends upon local conditions, but the requirement will normally not exceed 1 gallon-per-minute.

COLD WATER LINE

The cold water circuit operates only when the machine is in operation (i.e. the cold water solenoid valve is open). It supplies approximately 2 gallons-per-minute to the prewash tank. An adjustable valve in the line regulates the volume entering the tank. A syphon breaker protects against any backflow into the main water line.

RECOVERY AND RECIRCULATION

NOTE:

The following paragraphs apply only to machines manufactured after January 1, 1991. Machines before that date are equipped with an overflow system requiring baffles and rear mounting standpipes in the final rinse.

All of the hot water used for the prerinse/power wash and prewash functions of the machine is obtained by recovering and reusing the 180 degrees F. final rinse water. It is first reused for the prerinse function where its temperature is reduced through normal heat loss. It is then used again for the prewash function. Its temperature is reduced from (140 degrees to 110 degrees F.) by tempering it with a prewash cold water high pressure spray.

As previously described, the final rinse spray arms located above and below the conveyor deliver a rinse spray of 4.8-6.9 (depending on model) gallons-per-minute at 180 degrees F. The rinse tank, below the conveyor, has one section. The baffle plate directs all of the used final rinse water into the smaller (front) section of the tank. This section holds 2-1/2 gallons of water and its outlet is connected through a strainer to a centrifugal pump. This prerinse pump (12.6 gallons-per-minute) pumps the used final rinse water through a riser and into the spray arms of the prerinse section, above and below the conveyor, where, after performing the prerinse function it is returned to the smaller section of the rinse tank.

The rinse tank is constructed so that the smaller section overflows into the prewash tank or power rinse tank if so equipped.

POWER WASH PLUMBING

During operation the dishwater is being continuously recirculated within the power wash cabinet, except for the make-up water which is supplied to replenish normal losses. The power wash plumbing, therefore, is integral to that section of the machine and is self-contained within it. The power wash tank is filled with 24 gallons of 180 degrees F. water prior to starting the machine (see Section 4, Principles of Operation, Hot Water Lines, Page 29). During operation, this water is maintained at 160 degrees F. by means of a heater in the wash tank and flows through the pump suction screen in the bottom of the tank into the 255 gallon-per-minute pump. The water is pumped upward through a riser pipe assembly and two manifolds into eight stationary wash arms, four above and four below the conveyor. After performing the power wash function, the water returns to the wash tank. Optional super wash tanks have eight arms above eight below.

The wash arms are individually removable and each wash arm terminates with a 3/4" hand removable cap. A sensing probe in the upper section of the manifold is connected to an external temperature gauge for indicating the temperature of the wash water immediately prior to entering the upper spray arms. The capacity of the power wash tank is maintained at 24 gallons by the make-up water supplied during operation and by an overflow standpipe in the tank. An outlet drain in the bottom of the tank is connected to a hand-operated drain valve and is used for emptying the tank. Both drains are connected to the main machine drain.

DRAIN CIRCUITS

All drain tanks are connected to a common stainless steel drain pipe which is below and extends the length of the cabinets. The machine drain consists of a 2" pipe which can be connected at either end to the buildings drain. The other end is then fitted with a plug. Hand operated valves are installed in the drain lines from the power wash tank and the smaller section of the rinse tank. The rinse tank overflow standpipe is removed from the tank to drain the larger section of the rinse tank, if the machine is so equipped.

PUMPS

The plumbing circuits contain three pumps; one for circulating the used final rinse water through the prerinse section, one for circulating the prewash water and one for circulating the wash water within the power wash cabinet. The prerinse and prewash pumps are identical. Both have a capacity of 12.5 gallons-per-minute and both are driven by an integrally mounted 3/4 HP, 3-phase, multi-voltage motors. Both pumps are fitted with mechanical packless seals. The power wash pump has a capacity of 255 gallons-per-minute and is driven by an integrally mounted 3 HP, 3-phase, multi-voltage motor. It has a non-clogging impeller and is fitted with a mechanical packless seal.

ELECTRICAL CIRCUITS

The electrical circuits of the dishwashing machine supply and control the power to energize all motors, to activate the solenoid operated valves and to operate the electrical immersion water heaters installed in the power wash tank, or the hot water tank circulator, if the machine is so equipped. Provision is also made for the installation of additional circuit elements for equipment options and for accessories such as a garbage disposer or a spiral garbage conveyor. A typical schematic diagram showing all normal power connections for the basic CA-Series dishwashing machine is given in the Master Electrical Diagram that has been supplied with your machine.

The dishwashing machine operates from 200/208/240/480 volt, 3-phase, 3-wire, 60/50-cycle electrical service. However, all voltage references throughout this section are 220 volts, since this is the rating of the machine. The power requirements (in amperes) for each installation will depend on the type of wash tank heater supplied with the machine and whether optional or accessory equipment is installed. Incoming electrical power is connected to the machine on a junction bus bar at the left rear inside of the electrical control cabinet. A disconnect switch must be installed by the user in the incoming line and should be located within sight of the machine. All electrical components of the control and power distribution circuits are contained in the electrical control cabinet. Phase identification is shown in the Master Electrical Diagram that has been supplied with your machine.

NOTE:

The machine can be designed to operate on most 50/60 Hz voltages. Information on these machines can be obtained directly from the Adamation factory.

POWER DISTRIBUTION CIRCUITS

As shown in the Master Electrical Diagram, 220-volt, 3-phase incoming power is applied to the input terminals of a three-pole magnetic contactor. (When the electric wash tank heaters are supplied with the machine, the 220-volt, 3-phase incoming line is also connected directly to the two 3-pole manual overload breakers in the heater circuits.) The magnetic contactor is operated by a coil which requires 24-volt power taken from the low voltage control circuit. This coil is operated by the dishwashing machine control circuit which is connected directly to the incoming power circuit through the mode switch. When the coil of the magnetic contactor is energized, its contacts close and power is supplied to all pumps, motors, the conveyor drive motor, the solenoid valves and to options and accessories if the machine is so equipped.

All circuits on the load side of the magnetic contactor contain hand operated manual overload breakers. These manual overload breakers can be used as on/off switches and provide short circuit protection. They also provide overcurrent and overheating protection for the motors.

The hot and cold water solenoid valves are energized through the magnetic contactor to the manual overload breaker bus bars. When all manual overload breakers are in the on position, the dishwashing machine is ready for full operation in either the manual or automatic mode.

If the dishwashing machine is equipped with electric hot water heaters in the power wash tank, the power for these heaters is not controlled by the magnetic contactor. The heaters are wired directly into the incoming 3-phase line through two 3-pole manual overload breakers. The selector switch does cut off the control circuit power to the electric tank heaters. The manual overload breakers provide short circuit protection and are energized by the on/off/auto mode switch. This arrangement enables the heaters to remain in operation and maintain the wash water temperature at the required 160 degrees F. temperature when the machine is being operated intermittently.

CAUTION:

The electric hot water heaters must never be turned on, or left on, unless the power wash tank is filled with water. If the machine remains off for 20 minutes, and the power wash tank heaters are not turned off, check the water level of the power wash tank and fill the tank to the overflow standpipe level if required. Heaters are protected by low water cutoff switch and water should only be added if low water indicator light is on.

When the machine is equipped with a circulating hot water loop in the power wash tank (and a remote hot water boiler) a separate single-phase circuit is provided to operate the circulator in the tank hot water heater plumbing circuit. This circuit is normally connected directly to the two load terminals of the control circuit manual overload breaker, which then acts as an on/off switch for the circulator motor. This arrangement also bypasses the dishwasher control circuit and maintains the power wash dishwater at the required 160 degrees F. temperature for extended shutdown periods.

CONTROL CIRCUIT

The control circuit starts and stops the dishwashing machine by energizing and de-energizing the coil of the magnetic contactor (see Section 4, Principles of Operation, Power Distribution Circuits, Page 39). When the control circuit mode switch is closed, the connections supply single-phase 24-volt power to the control circuit.

CONTROL CIRCUIT COMPONENTS

The control circuit is shown schematically in the Master Electrical Diagram. It contains the main operating switch for the dishwashing machine (selector switch) and the electrical circuit elements required to start and stop the machine during timed automatic and manual operation. These consist of low voltage push buttons, a latching relay and a timer. A brief description of each follows:

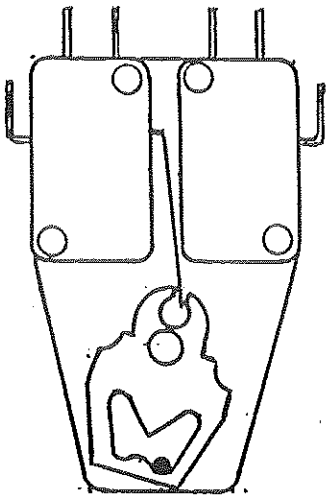
1. Selector Switch - The selector switch is a double-pole, double-throw, three-position switch (manual/off/automatic). When the switch is in the manual position, the machine will operate continuously when a low voltage push button is depressed. When the switch is in the off position, the machine will not start. When the switch is in the automatic position, the machine will not start until a low voltage push button control station at the conveyor table is depressed. It will then operate for a limited time, depending upon the setting of the timer. It can also be stopped at any time during the operating cycle by depressing a push button. After each operating cycle, the machine will not restart until a push button is again depressed.

2. Latching Relay - The latching relay is an electrically operated double-pole, double-throw switching device which is wired into the control circuits as two single-pole, single-throw, synchronously operated switches. (See Diagram 4 and 5). The switching contacts of the relay are transferred from one set of output contacts to the other each time a 24-volt pulse appears across the relay coil. Thus, if the switching contacts are in the open position (machine off), a 24-volt pulse will switch them to the closed position (machine on). They will remain in the closed position (machine on) until the coil receives another 24-volt pulse, which will return them to the open position (machine off).

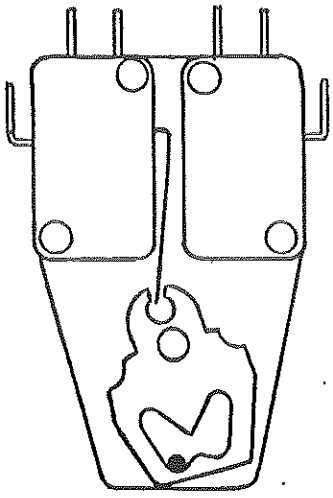
3. Timer - The machine is equipped with a solid state 24-volt timer. The timing dial can be set for any interval of operation from 1 second to 1023 seconds. When power is applied, the timer is activated for a period of time which is determined by the timer setting. At the end of the preset timed interval, a momentary 24-volt pulse crosses the coil of the latching relay and causes it to transfer its contacts to the open (machine off) position. The timer then automatically resets itself to its starting position by returning the internal contacts to their normally closed position. (See Diagram 2 - Automatic Operation/Timer Adjustment).

CONTROL CIRCUIT CONNECTIONS

The control circuit timer is mounted in a quick disconnect socket. The control circuit relay is mounted to an easily disconnected terminal strip.

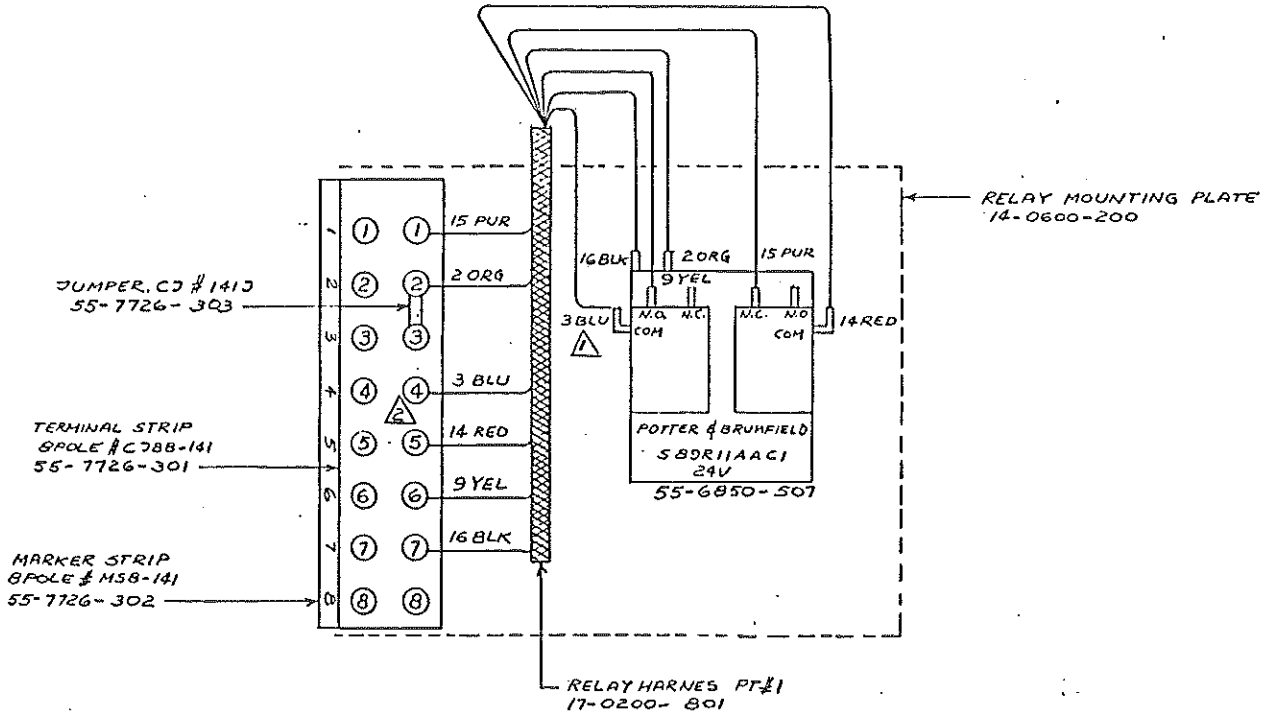


MACHINE OFF

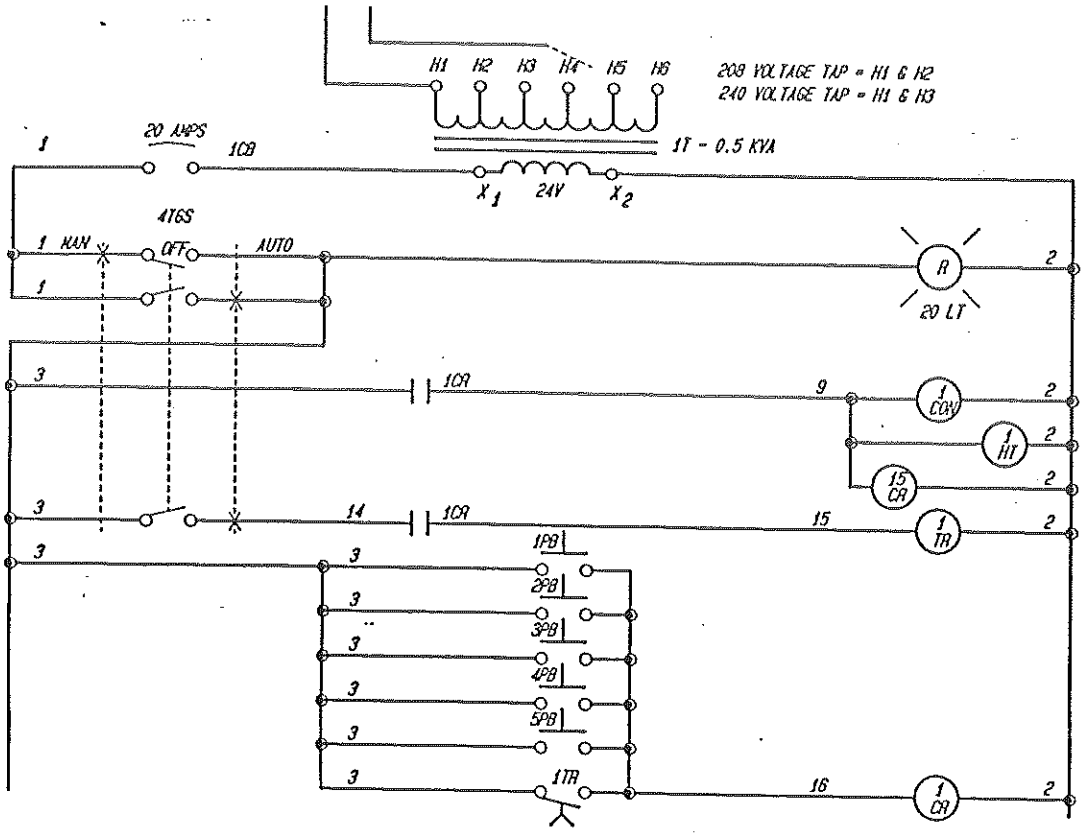


MACHINE ON

LATCHING RELAY
DIAGRAM 4



LATCHING RELAY-WIRING DIAGRAM
DIAGRAM 5



24 VOLT TRANSFORMER - POWER SOURCE

SYSTEM CONTROL CIRCUIT

STOP/START SWITCH

STOP/START SWITCH

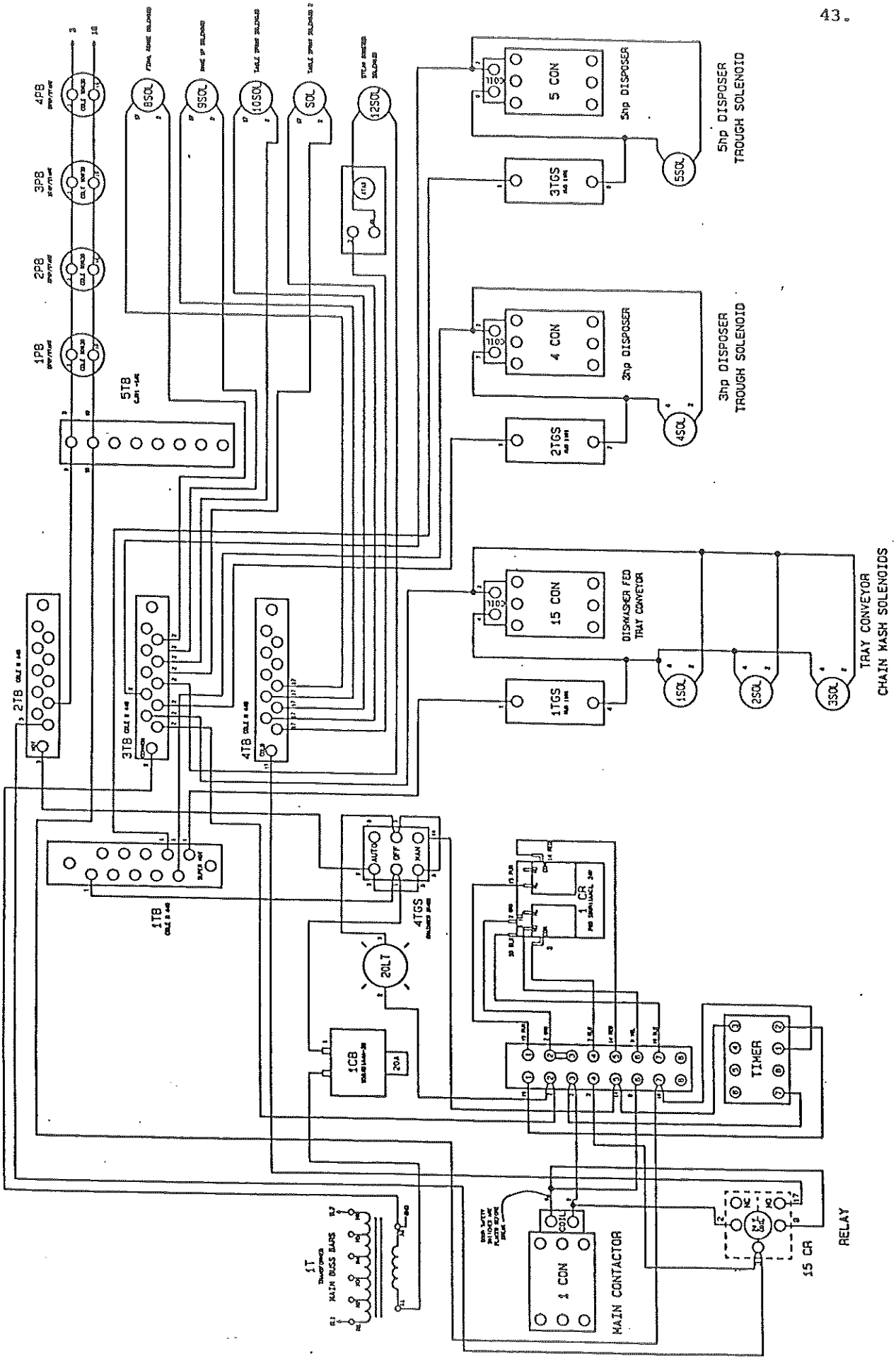
STOP/START SWITCH - KNEE, UNIVERSAL

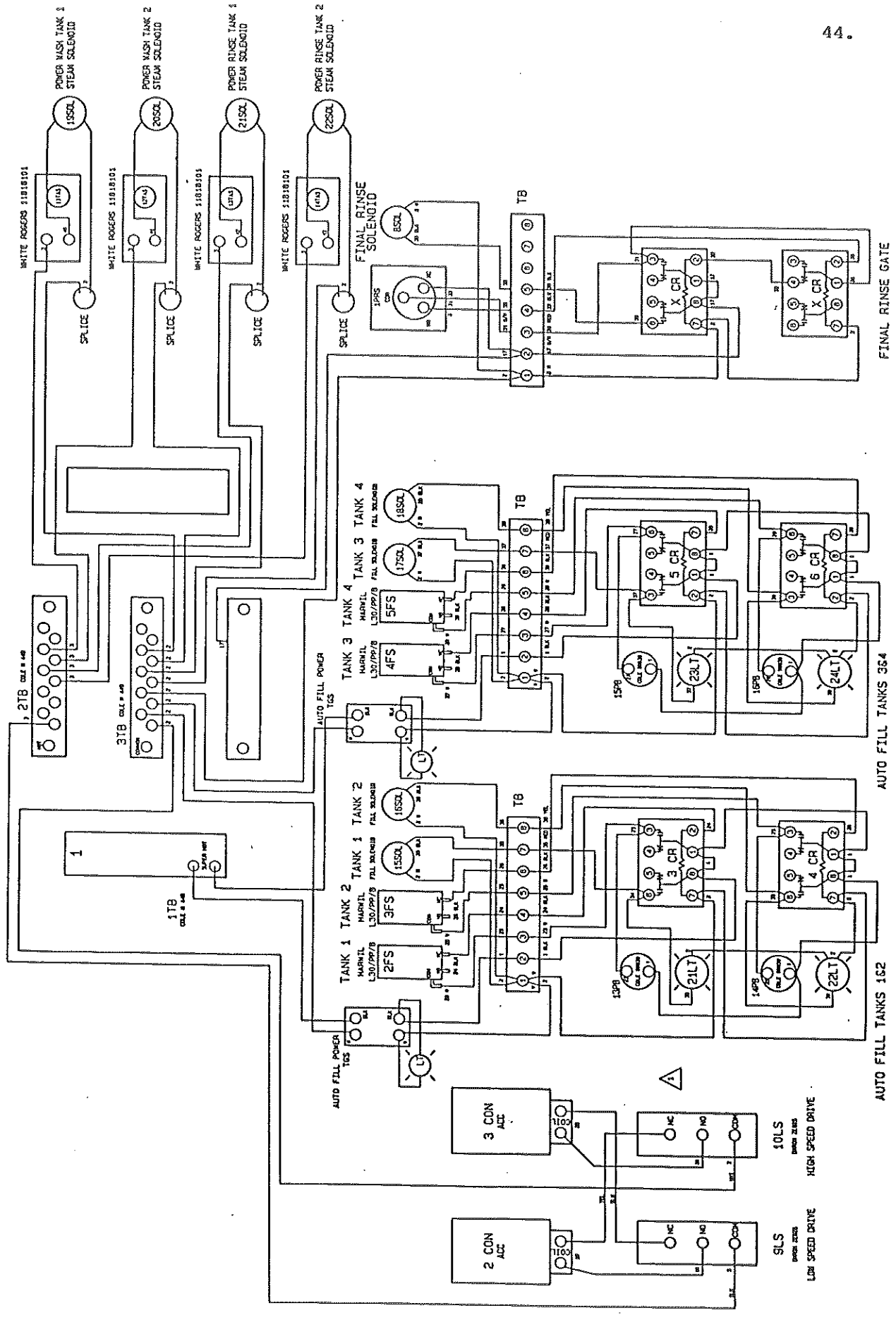
STOP/START SWITCH - KNEE, UNIVERSAL

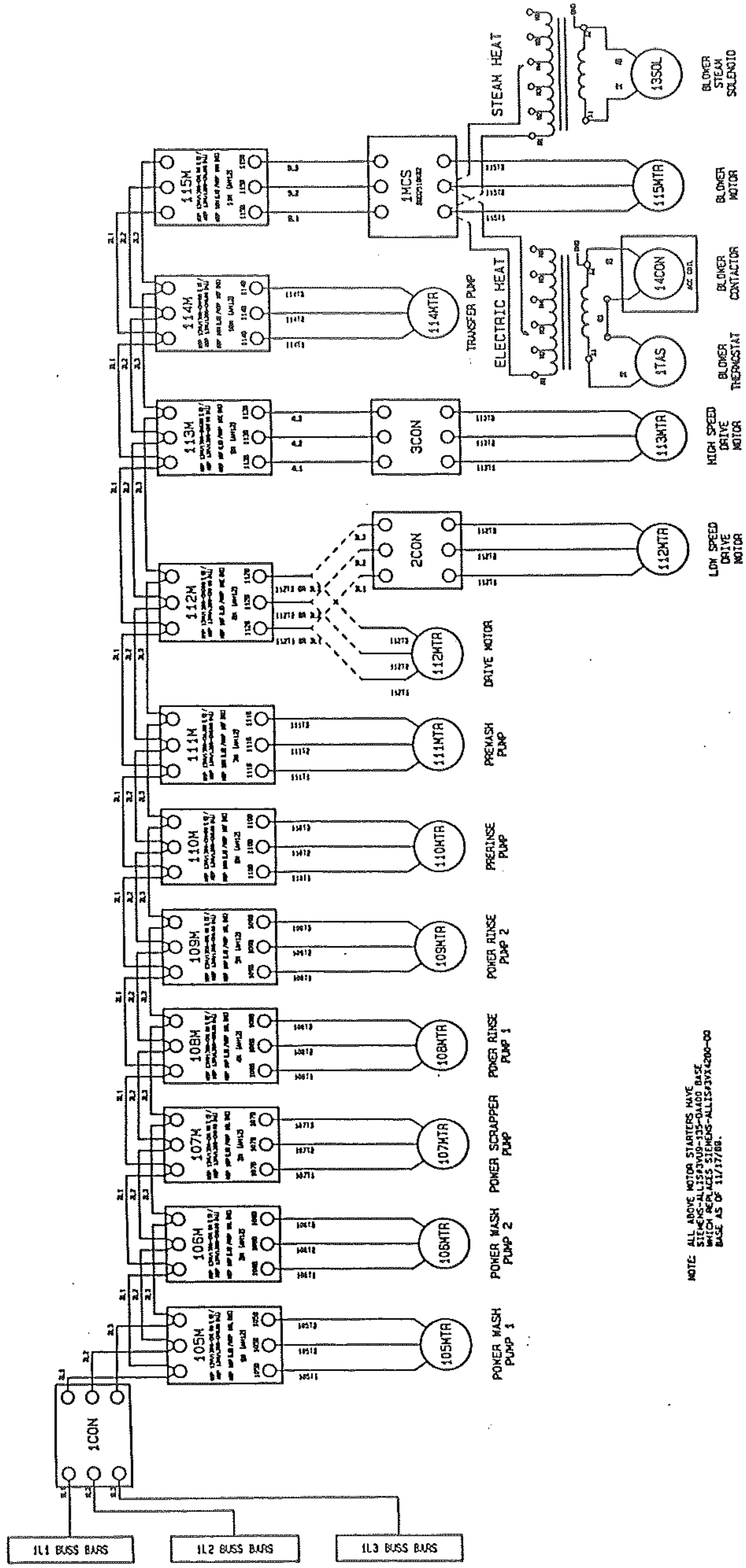
STOP/START SWITCH - KNEE, UNIVERSAL

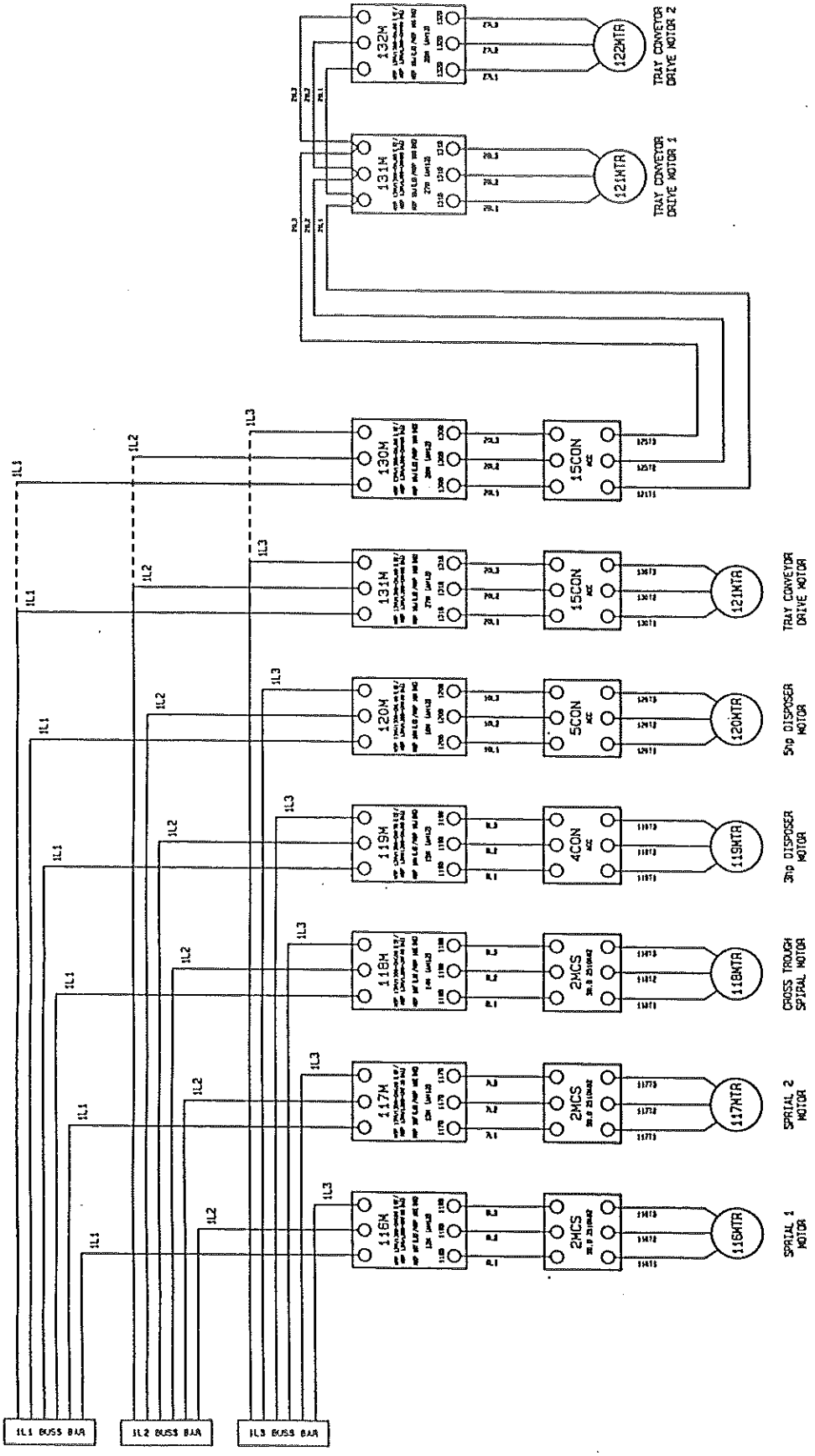
TIMER CONTROL

LOW VOLTAGE PUSH BUTTON-ELECTRICAL DIAGRAM
DIAGRAM 6

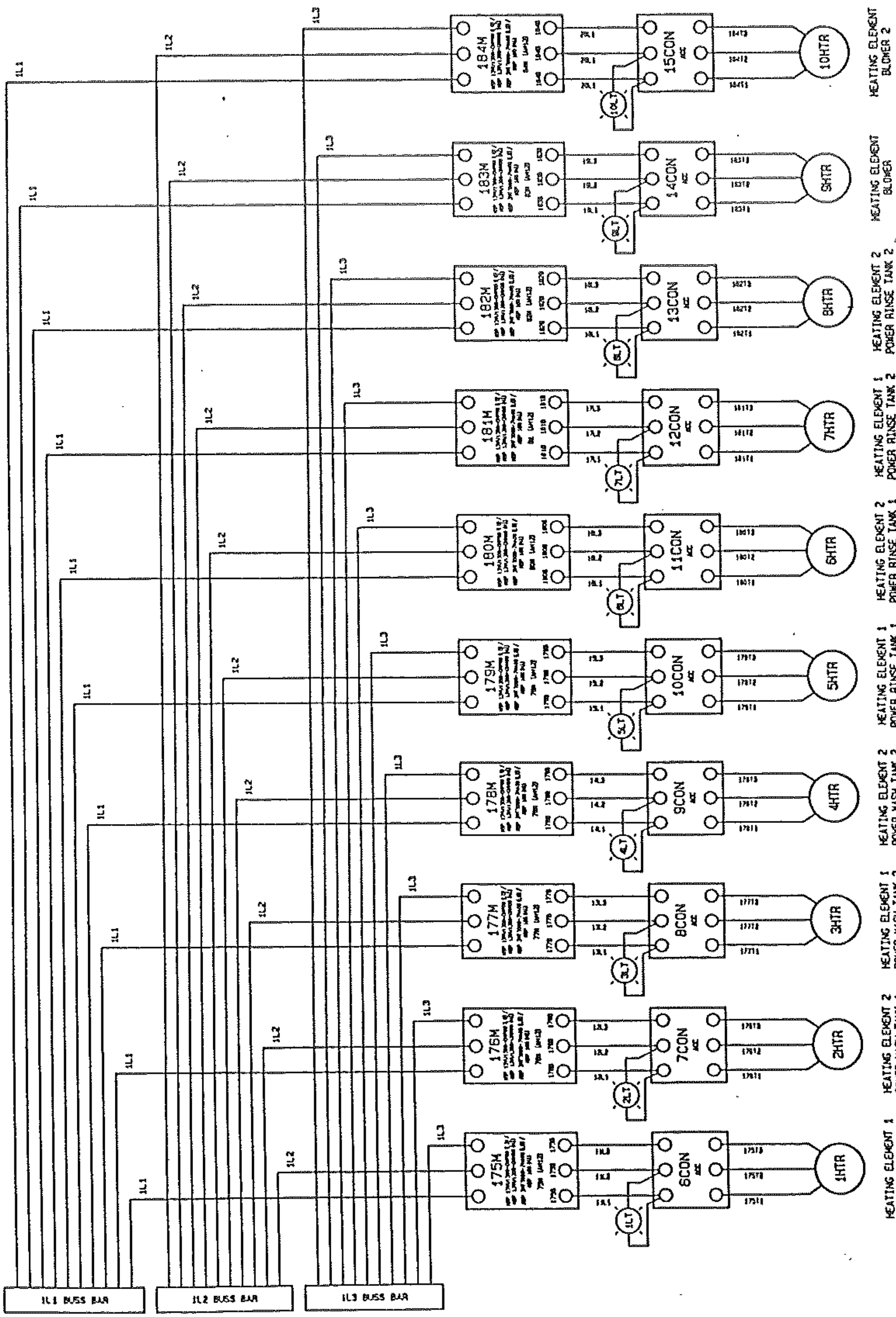

4PB
3PB
2PB
1PB
8SOL
9SOL
10SOL
5SOL
12SOL
5TB
5 CON
5hp DISPOSER
3TGS
5SOL
5hp DISPOSER TROUGH SOLENOID
4 CON
3hp DISPOSER
2TGS
4SOL
3hp DISPOSER TROUGH SOLENOID
2TB
3TB
4TB
15 CON
DISHWASHER FED TRAY CONVEYOR
1TGS
1SOL
2SOL
3SOL
TRAY CONVEYOR CHAIN WASH SOLENOIDS
1TB
AUTO
OFF
MAN
4TGS
20LT
1CB
20A
1 CR
TIMER
1T
MAIN BUSS BARS
1 CON
COIL
MAIN CONTACTOR
15 CR
RELAY


POWER WASH TANK 1 STEAM SOLENOID
POWER WASH TANK 2 STEAM SOLENOID
POWER RINSE TANK 1 STEAM SOLENOID
POWER RINSE TANK 2 STEAM SOLENOID
WHITE ROGERS 11B1B101
SPLICE
FINAL RINSE SOLENOID
TB
FINAL RINSE GATE
X CR
2TB
3TB
1TB
TANK 4
TANK 3
TANK 2
TANK 1
MARVEL
L30/PP/B
FILL SOLENOID
5FS
4FS
3FS
2FS
AUTO FILL POWER
TGS
5 CR
6 CR
3 CR
4 CR
23LT
24LT
21LT
22LT
AUTO FILL TANKS 3&4
AUTO FILL TANKS 1&2
3 CON
ACC
2 CON
10LS
9LS
HIGH SPEED DRIVE
LOW SPEED DRIVE
NC
NO
COM

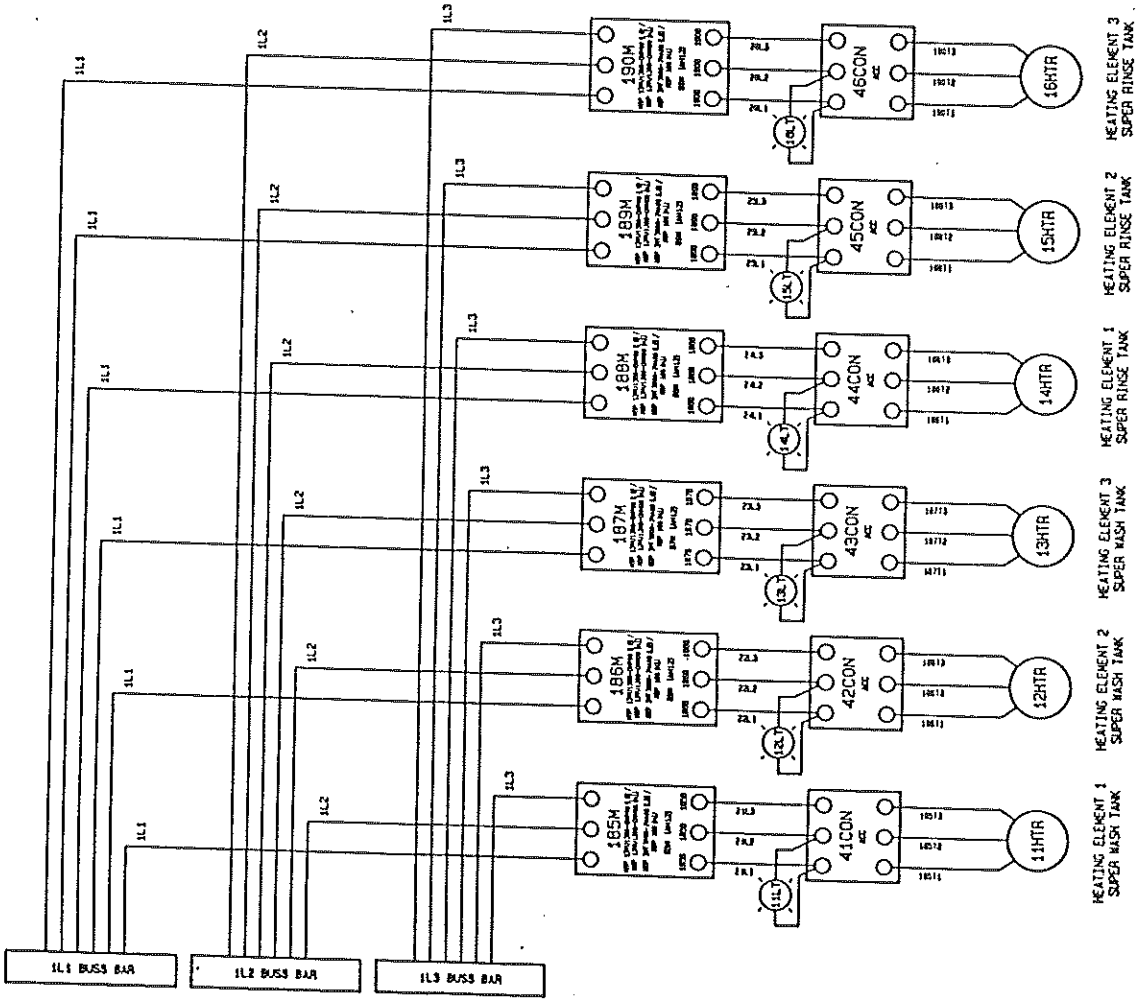

1L1 BUSS BARS
1L2 BUSS BARS
1L3 BUSS BARS
1CON
105M
106M
107M
108M
109M
110M
111M
112M
113M
114M
115M
1MCS
2CON
3CON
105MTR
POWER WASH PUMP 1
106MTR
POWER WASH PUMP 2
107MTR
POWER SCRAPPER PUMP
108MTR
POWER RINSE PUMP 1
109MTR
POWER RINSE PUMP 2
110MTR
PRERINSE PUMP
111MTR
PREWASH PUMP
112MTR
DRIVE MOTOR
112MTR
LOW SPEED DRIVE MOTOR
113MTR
HIGH SPEED DRIVE MOTOR
114MTR
TRANSFER PUMP
115MTR
BLOWER MOTOR
ELECTRIC HEAT
1TAS
BLOWER THERMOSTAT
14CON
BLOWER CONTACTOR
STEAM HEAT
13SOL
BLOWER STEAM SOLENOID
NOTE: ALL ABOVE MOTOR STARTERS HAVE SIEMENS-ALLIS#3VU9-135-0AA00 BASE WHICH REPLACES SIEMENS-ALLIS#3VX4200-00 BASE AS OF 11/17/89.

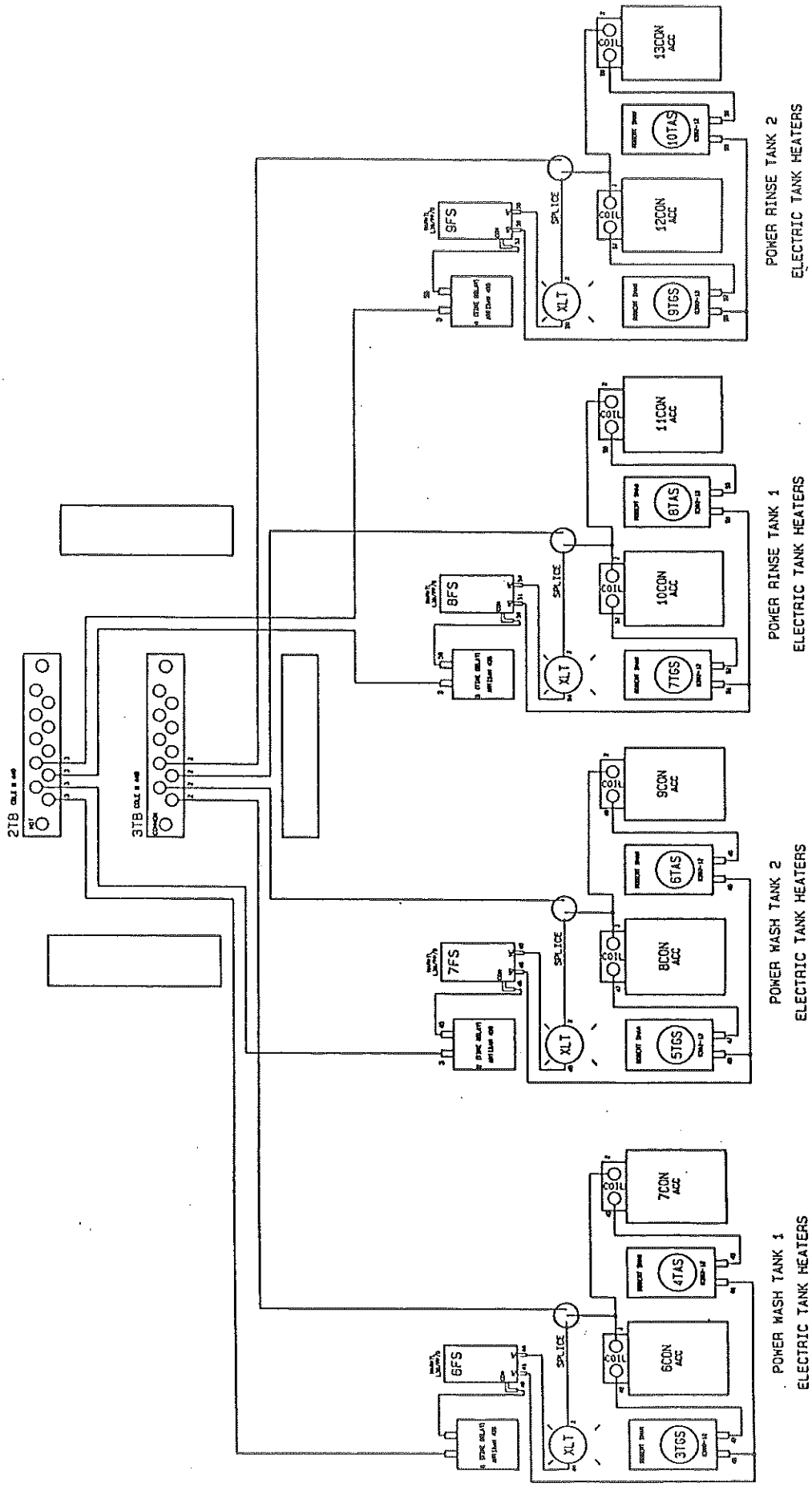


NOTE: ALL ABOVE MOTOR STARTERS HAVE SIEMENS-ALLIS#3VG8-135-0AA00 BASE. WHICH REPLACES SIEMENS-ALLIS#3VK4200-00 BASE AS OF 11/17/88.



NOTE: ALL ABOVE MOTOR STARTERS HAVE
SEIMENS-ALLIS#3VU9-135-0AA00 BASE
WHICH REPLACES SEIMENS-ALLIS#3VX4200-00 DX1)
AND #3VX5307-5AA0C(L0) BASE AS OF 11/17/88.


1L1 BUSS BAR
1L2 BUSS BAR
1L3 BUSS BAR
185M
186M
187M
188M
189M
190M
41CON
42CON
43CON
44CON
45CON
46CON
11HTR
12HTR
13HTR
14HTR
15HTR
16HTR
HEATING ELEMENT 1 SUPER WASH TANK
HEATING ELEMENT 2 SUPER WASH TANK
HEATING ELEMENT 3 SUPER WASH TANK
HEATING ELEMENT 1 SUPER RINSE TANK
HEATING ELEMENT 2 SUPER RINSE TANK
HEATING ELEMENT 3 SUPER RINSE TANK
NOTE: ALL ABOVE MOTOR STARTERS HAVE SIEMENS-ALLIS#3VW9-135-0AA00 BASE WHICH REPLACES SIEMENS-ALLIS#3VX4200-00 (N1) AND #3VX9307-5AA0C 4.01 BASE AS OF 11/17/86.


2TB
3TB
6FS
XLT
SPLICE
3TGS
6CON ACC
4TAS
7CON ACC
POWER WASH TANK 1
ELECTRIC TANK HEATERS
7FS
5TGS
8CON ACC
6TAS
9CON ACC
POWER WASH TANK 2
ELECTRIC TANK HEATERS
8FS
7TGS
10CON ACC
8TAS
11CON ACC
POWER RINSE TANK 1
ELECTRIC TANK HEATERS
9FS
9TGS
12CON ACC
10TAS
13CON ACC
POWER RINSE TANK 2
ELECTRIC TANK HEATERS

MANUAL OPERATION

When the selector switch is placed in the manual operation, the timer components are bypassed and the machine operates continuously.

AUTOMATIC OPERATION

When the selector switch is placed in the automatic position, the machine will only operate when it is energized by a low voltage push button. The neutral side of the incoming 24-volt, single-phase line, is permanently connected to the latching relay and to one connection of the timer motor. At this point the machine is not operating and all of the components are in the open (machine off) position.

A low voltage push button at one of the control stations at the conveyor table is depressed and the following sequence of events occur. (A simplified electrical diagram showing the low voltage push button system is shown in Diagram 6.)

1. The low voltage push button closes momentarily. This places a short 24-volt pulse across the coil terminals of the latching relay.
2. The latching relay switching contacts throw from the normally-off to the normally-on position, closing the circuits.
3. 24-volts is placed across the coil of the magnetic contactor. The machine starts to operate.
4. The latching relay applies 24-volts to the timer through the normally closed contacts of the timer switch. The timer starts to operate.
5. The timer operates a preset time, transferring its common connection from the normally closed to the normally open position.
6. A 24-volt pulse appears across the coil terminals of the latching relay and transfers its switching contacts back to the normally off position.
7. The 24-volt power is removed from the line, the coil of the magnetic contactor is de-energized and the machine stops.
8. The 24-volt power is removed from the timer which resets itself to its original position. The timer switch returns to the normally closed position.
9. The machine will then remain stopped until a low voltage push button is again depressed or the selector switch is placed in the manual position.

CONVEYOR SYSTEM

The conveyor system consists of a horizontal table on which a train of dollies is driven by a conveyor drive mechanism. The purpose of the conveyor system is to carry the dishracks automatically from the loading station through the prewash, power wash, prerinse and final rinse cabinets to the unloading station and thence back to the loading station (see Diagram 1). When the machine is operating, the conveyor system carries the dishracks through the cabinets at a rate which assures that all tableware will be cleaned and rinsed in accordance with National Sanitation Foundation standards.

CONVEYOR TABLE

The conveyor table is a horizontal, stainless steel, oval, watertight table which is supported by vertical cross-braced leg assemblies. The table is so formed that the dolly tracks are an integral part of the table. Outside of the cabinets, the space between the tracks is a flat, watertight recessed surface which is pitched slightly toward the prewash cabinet so that all liquids spilled upon it will drain into the prewash sink (or disposer or hommel pot if the machine is so equipped.)

The conveyor table does not extend through the power wash cabinet. The dolly tracks through the power wash cabinet consist of two stainless steel angles which carry the conveyor train through the cabinet between the upper and lower power wash spray arms.

CONVEYOR TRAIN

The conveyor train consists of a number of interconnected dollies which are driven continuously around the oval track of the conveyor table. (See Section 7, Illustrated Parts List, Figure 7-2). The dollies are connected to each other by means of connecting links which maintain the correct spacing between the dollies. Each dolly is fitted with four stainless steel, self-cleaning, ball-bearing, conical wheels which engage the track angles in the sides of the conveyor table above the horizontal surface of the table. The clearance between the underside of the dollies and the horizontal surface of the table is such that heavy food soil (garbage) can be deposited (between the dollies) directly upon the horizontal surface of the conveyor table and between the dolly tracks without interfering with the operation of the conveyor train. A certain number of dollies in the conveyor train are equipped with squeegees which sweep the recessed flat surface of the conveyor table between the tracks, thus moving all accumulated food soil to the deep food soil baskets in the prewash sink (or to the disposer or hommel pot if the machine is so equipped).

The dollies are designed to hold 20" X 20" combination (combo) dishracks, special racks for oversized trays and other types of dishracks.

CONVEYOR DRIVE

The CA-Series dishwashing machines is equipped with one type of conveyor drive, the drive mechanism. (See Section 7, Illustrated Parts List, Figure 7-3). This outside drive mechanism propels the conveyor train by means of a rotating worm which engages successive worm followers which are mounted on the dollies.

OUTSIDE DRIVE

The outside drive mechanism is contained within a drive cabinet which is mounted on the inboard side along a straight section of the conveyor table. The mechanism consists of a gear motor, a clutch, a sprocket driven drive chain and a drive worm. (See Figure 7-3).

Outside drive dollies are equipped with two worm followers which are mounted on the side of the dolly frame which faces the inboard side of the conveyor table oval. The outside drive cabinet is so aligned that the drive worm engages the worm followers on the dollies for its entire length. As each dolly moves up to the outside drive cabinet, its leading worm follower will engage the rotating drive worm. The lagging worm follower of the preceding dolly will still be engaged. The rotation of the worm drives the dollies and thus the entire conveyor train around the oval track. By the time the lagging worm follower of the preceding dolly has moved past the worm, the lagging worm follower of the next dolly will have become engaged. Thus, two worm followers will always be driven along the worm at all times.

For correct operation, the teeth of all worm followers must engage the worm to a depth of approximately one-half inch into the worm channel through the full length of travel of the worm. Too deep an engagement will cause excessive friction and wear. This means that the dollies must travel along a plane that is parallel with the center line of the worm.

The entire drive mechanism pivots on a hinge pin. A handle mounted on top of the drive cabinet can be released to tilt the cabinet away from the conveyor train, thus disengaging the drive worm from the dolly worm followers. This handle also locks the cabinet into its operating position (down). A clutch in the outside drive is strictly a protective device. It is initially factory adjusted to slip when the conveyor train becomes jammed or encounters excessive interference.

SECTION 5 - TROUBLE SHOOTING

GENERAL

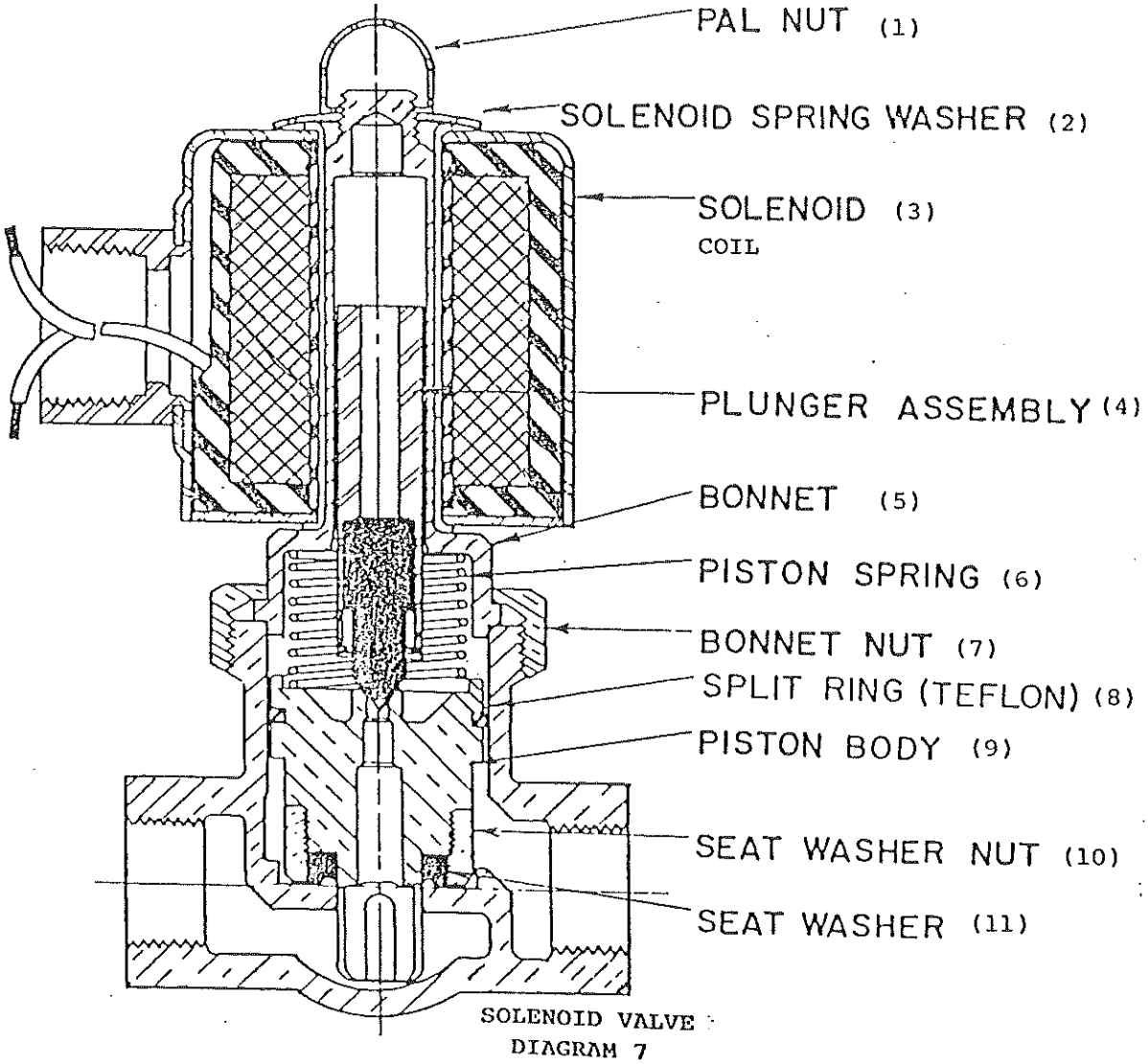
The information in this section is intended to assist both the operator of the machine and qualified service personnel to locate the general source of a problem. Many times it will result in an immediate repair by the operator. If the problem cannot be readily corrected, the operator should immediately contact the Adamation Service Department or the nearest Adamation Sales Office. Before following any of the procedures given in this section, the operator should be thoroughly familiar with the operating instructions and the function of all controls which are given in Section 3, Operation, Page 17.

THE POWER WASH TANK WILL NOT FILL WITH WATER

1. Check to be sure that the house hot water shut-off valve is open.
2. Check to be sure that the wash tanks lever drain valve is closed. (See Figure 7-5)
3. Check to be sure that the fill valve is open.

THE FINAL RINSE TANK WILL NOT FILL WITH WATER

1. Check to be sure that the house hot water shut-off valve is open.
2. Check to be sure that the rinse tanks lever drain valve is closed.



SOLENOID VALVE
DIAGRAM 7

THERE IS NO FINAL RINSE WATER WHEN THE MACHINE IS ON

1. Check to be sure that the hot water shut-off valve is open.
2. Check the hot water solenoid valve. If it is faulty, replace it. (Adamation Part No. 55-7300-446. (See Diagram 7)

NOTE:

If the solenoid fails in the closed position the machine can be operated on an emergency basis by using the final rinse fill valve.

3. Check the 24-volt contact points on the main solenoid relay. If it is defective, it must be replaced. Part No. 55-6850-507

THE FINAL RINSE WATER TEMPERATURE IS BELOW 180 DEGREES FAHRENHEIT

1. Check the water temperature of the input water to the hot water shut-off valve to see if it is below 180 degrees F. If it is, increase the input water temperature.
2. Check to be sure that the thermometer is working correctly. If it is not, replace it. (Adamation Part No. 70-2475-007).

THE DISHMACHINE WILL NOT START

1. Check the power input to the machine to be sure that it is working.
2. Check the incoming power line for a blown fuse.
3. Check to be sure that all the manual overload breakers in the electrical control cabinet are on. (Be sure that all the tanks are filled with water).
4. Check the mode selector switch. It should either be in the manual or automatic position. If the machine still does not start, check the switch for defects.
5. If the 24-volt low voltage circuit breaker continues to shut off, call a service person.

THE LOW VOLTAGE PUSH BUTTONS WILL NOT START THE MACHINE WHEN THE SELECTOR SWITCH IS ON AUTOMATIC (THE MACHINE DOES START IN THE MANUAL MODE)

1. There is a malfunction in the push button system. Call a service person.
2. There is a malfunction in the control circuits.

NOTE:

The machine can be operated in the manual mode until it is repaired without doing any damage. If system failed when ratchet relay was in off position, relay must be manually rocked to on position by service technician. Machine may then be shut off by placing mode switch in off position at appropriate time.

A MOTOR OR PUMP FAILS TO START

1. Check to be sure that the related manual overload breaker in the electrical control cabinet is in the on position. If it is off, turn the breaker on after it has cooled down.

NOTE:

If the conveyor drive or any part of the drive system fails, the conveyor can be pushed by hand on an emergency basis until the necessary repairs can be made.

2. Check the incoming power line for a blown fuse.

THE CONVEYOR TRAIN STOPS OR FAILS TO START WHILE THE DRIVE MOTOR IS RUNNING

1. Check to be sure that the conveyor or drive chain is not jammed.
2. Check the clutch for defects.
3. Check to be sure that the drive chain is not broken.
4. Check to be sure that the worm followers on the dollies are being properly engaged by the drive worm. (Make sure that the latch on the drive worm is operating correctly in the down position).
5. If machine equipped with more than one drive, check to see unused drive is totally disengaged.

THE POWER WASH WATER TEMPERATURE IS LESS THAN 140 DEGREES FARENHEIT

A. FOR STEAM HEATED POWER WASH TANKS:

1. Check to be sure that the house steam valve is open.
2. Check to be sure that the return valve is open (closed steam only).
3. Check to be sure that the thermostat setting is not set too low.
4. Check to be sure that the steam pressure is not too low.

B. FOR ELECTRICALLY HEATED WASH TANKS:

1. Check to be sure that the related manual overload breaker located in the electrical control cabinet is in the on position.
2. Check to be sure that the thermostat controlled relay(s) on the heater are open and set correctly.
3. Check to be sure that the heater is not faulty.
4. If the low water cut off light is on, check the water level in the tank.

C. FOR BOTH STEAM AND ELECTRICALLY HEATED WASH TANKS:

1. Check the thermometer for defects.
2. Check the spray arms in the prewash cabinet to be sure they are positioned correctly.
3. Check the steam exhaust vents on the prewash cabinet and/or the final rinse cabinet to be sure they are not open too far.
4. Check to be sure that the prewash and/or final rinse spray curtains are not hanging on the outboard side of the vent opening(s).

THE POWER WASH TANK IS LOSING WATER

1. Check to be sure that the wash tanks lever drain valve is closed. (Figure 7-5)
2. Check to be sure that the spray arms are properly in place. If they are not, they are probably shoving water out of the cabinet. Also check to make sure that all spray arm caps are on.
3. Check to be sure that the make-up water is entering the tank. If not, open the wash tank make-up adjustment valve.
4. Check to see how objects with large flat surfaces (such as trays) are being loaded. These items should be loaded in the rack parallel to the conveyors direction of travel and spaced one rackfull every fourth or fifth dolly.

THE FINAL RINSE TANK IS LOSING WATER

1. Check to make sure that the rinse tanks lever drain valve is closed. (Figure 7-4)
2. Check to make sure that the rinse water pressure is adequate.
3. Check to make sure that all the prerinse spray arm nozzles are in place properly. (If they are not, they are probably throwing water out of the cabinet).

THE POWER WASH/POWER RINSE TANK OVERFLOWS AT THE DOOR OPENING

1. Check the scrap screens for debris. If they are full, clean them and then replace them.
2. Check both overflow standpipes for clogs. If clogged, clear the obstruction and put the standpipe back in place.
3. Check to be sure that the drain line is not clogged. If it is clogged, clean it out.

THERE IS NO PREWASH SPRAY OR THE SPRAY IS INADEQUATE

1. Check to see if the circulating prewash pump is operating. If not, check to be sure that the related manual overload breaker located in the electrical control cabinet is in the on position.
2. Check the prewash pump inlet to be sure that it is not clogged.
3. Check the prewash spray arms to be sure that they are not clogged. If they are, remove the end caps from the arms and place the arms back into their original position inside the machine. Close the door and operate the machine normally for one or two minutes. Then stop the machine and replace the end caps. If the arms are still clogged, call a service person.
4. Check that sink or Hommel Pot drain is not open.

THE FINAL RINSE TANK OVERFLOWS AT THE DOOR OPENING

1. Check the scrap screen for debris. If it is full, clean it and then replace it.
2. Check the overflows for clogs. If clogged, clear the obstruction. (See Figure 7-4)
3. Check to be sure that the drain line is not clogged. If it is clogged, clean it out.

THE PREWASH TANK OVERFLOWS AT THE DOORS OPENING

1. Check to be sure that the drain screen or overflow is not clogged. If it is clogged, clean it out.
2. Check the deep well food soil baskets for debris. If they are full, empty and then clean the baskets.
3. On machines equipped with optional Hommel Pot check discharge chute is not blocked with debris.

THERE IS NO PRERINSE SPRAY OR THE SPRAY IS INADEQUATE

1. Check to see if the prerinse pump is operating. If not, check to be sure that the related manual overload breaker located in the electrical control cabinet is in the on position.

2. Check the pump inlet screen in the rinse tank to be sure that it is not clogged. It is located in the front section of the final rinse tank.
3. Check the prerinse spray arms to be sure that they are not clogged. If they are, remove the end caps from the arms and place the arms back into their original position inside the machine. Close the door and operate the machine normally for five to ten seconds. Then stop the machine and replace the end caps. If the arms are still clogged, call a service person.
4. Check to be sure the rinse tank drain valve is closed.
5. Check to see if the rinse tanks drain valve is leaking. If it is, it must be replaced. (Figure 7-4)

THERE IS NO POWER WASH/POWER RINSE SPRAY OR THE SPRAY IS INADEQUATE

1. Check to see if the power wash/rinse pump is operating. If not, check to be sure that the related manual overload breaker located in the electrical control cabinet is in the on position.
2. Check the pump inlet screen to be sure that it is not clogged. It is located on the bottom of the tank.
3. Check the power wash spray arms to be sure that they are not clogged. If they are, remove the end caps from the arms and place the arms back into their original position inside the machine. Close the door and operate the machine normally for five or ten seconds. Then stop the machine and replace the end caps. If the arms are still clogged, call a service person.
4. If there is no water in the wash/rinse tank refer to Section 5, Trouble Shooting, The Power Wash Tank Is Losing Water, Page 55.

THE CONVEYOR TRAIN WILL NOT RUN

1. The conveyor manual breaker switch is off. Turn the switch on.
2. There is a foreign object jamming the train. Remove the object.
3. The clutch is slipping. Call a service person.
4. The low voltage control circuit breaker is off. Push the re-set button.
5. Other. Call a service person.

ELECTRICAL FAULT ISOLATION

The first step toward correcting an electrical failure is to isolate the fault to a single electrical circuit or component. In most cases the nature of the failure and its effect upon the operation of the dishwashing machine will be sufficient to isolate it to one or more circuit elements. This section is provided as a guide for isolating electrical faults to circuits or components.

ELECTRICAL TROUBLE SHOOTING PROCEDURES

All electrical trouble shooting procedures which follow require access to components and terminals within the electrical control cabinet. Before starting any trouble shooting procedures, remove the cabinet front and the manual overload breaker molding from the cabinet. (Refer to Figure 7-14, Pages 41-48.

WARNING

Use extreme care when working on components inside the electrical control cabinet. When power is supplied to the dishwashing machine all exposed terminals in the cabinet carry 200 to 480 volts.

Before performing the trouble shooting procedures in this section, the serviceperson must be completely familiar with the function of all controls as described in Section 3 and with the Principles of Operation as described in Section 4. Except where otherwise indicated, all operating controls (including manual overload breakers) must be in the off position before starting any trouble shooting procedure.

ELECTRICAL INSPECTION

The first step in any electrical trouble shooting procedure is a thorough physical inspection of all wiring connections. If after a thorough inspection the electrical problem has not been solved, continue reading until you find the correct heading for your particular problem.

THE MACHINE WILL NOT OPERATE IN EITHER THE MANUAL OR THE AUTOMATIC MODE

1. Check to be sure that the incoming power is on.
2. Check to be sure that the 24V control circuits breaker is on.
3. Check the magnetic contactors.
4. Check to be sure that the selector switch is on.
5. Check the wiring.

THE MACHINE OPERATES IN THE MANUAL MODE BUT NOT IN THE AUTOMATIC MODE

1. Check to be sure that the 24V control circuits breaker is on, pushed in.
2. Check the low voltage push button system.
3. Check the wiring.

THE MACHINE OPERATES IN THE AUTOMATIC MODE BUT NOT IN THE MANUAL MODE

1. Check to be sure that the selector switch is properly positioned.
2. Check the wiring.
3. Check low voltage push button system.

THE MACHINE OPERATES IN THE AUTOMATIC MODE BUT DOES NOT STOP AUTOMATICALLY

1. Check the timer.
2. Check the latching relay.

NOTE:

To determine which element is at fault, start the machine in the automatic mode and then depress a low voltage push button while the machine is running. If the machine stops, the fault is in the timer. If the machine continues to run, the fault is in the latching relay or in the control circuit wiring.

THE POWER WASH PUMP MOTOR HUMS, BUT DOES NOT TURN

1. Check the incoming power supply.
2. Reset the manual overload breaker.

NOTE:

This is usually the result of a blown fuse or a burned out contact in one phase of the three-phase line.

THE POWER WASH PUMP FAILS TO OPERATE YET ALL OTHER PUMPS AND THE CONVEYOR DRIVE ARE OPERATING

1. Check the power wash pump motor.
2. Check the power wash pumps manual overload breaker.
3. Check the wiring.

THE PRERINSE PUMP FAILS TO OPERATE YET ALL OTHER PUMPS AND THE CONVEYOR ARE OPERATING

1. Check the prerinse pump motor.
2. Check the prerinse pump manual overload breaker.
3. Check the wiring.

THE PREWASH PUMP FAILS TO OPERATE YET ALL OTHER PUMPS AND THE CONVEYOR ARE OPERATING

1. Check the prewash pump motor.
2. Check the prewash pump manual overload breaker.
3. Check the wiring.

THE COLD WATER SOLENOID VALVE FAILS TO OPERATE

1. Check the solenoid valve (coil).
2. Check the wiring.
3. Check to make sure the incoming cold water is on.

THE CONVEYOR DRIVE MOTOR FAILS TO OPERATE YET ALL OTHER PUMPS ARE OPERATING

1. Check the conveyor drive motor.
2. Check the conveyor drive manual overload breaker.
3. Check the wiring.

THE HOT WATER SOLENOID VALVE FAILS TO OPERATE

1. Check the solenoid valve (coil).
2. Check the wiring.
3. Check to make sure the incoming hot water is on.

WARNING:

Before checking connections and wiring be absolutely sure that input power is removed from the machine, that the selector switch is in the off position and that all manual overload breakers are in the off position.

Check all wiring connections by hand to assure that both ends of all connection points are firmly and tightly secured. Use a screwdriver to tighten the connection points if necessary. Visually inspect all the connection points for evidence of rust, corrosion or other high interference material. If there appears to be the slightest evidence of this condition, separate the leads from the connection points and clean them both with fine sandpaper (0000 is recommended). Be sure that all the terminal connections are clean (shiny), that they fit together tightly and securely and that no contaminating material (food particles, moisture, dirt or dust, etc.) is present around or between the terminal connections.

TROUBLE SHOOTING SEQUENCE

Electrical trouble shooting procedures in this section are arranged, as nearly as possible, to follow the normal sequence of electrical events through the dishwashing machine.

In most cases, the correct operation of any single electrical component will depend upon its inputs, which in turn depend upon the correct operation of the preceding component or the wiring and connections between the two.

Section 5, Trouble Shooting, Electrical Fault Isolation, Page 56 isolates the electrical problems to a single electrical component or to a group of components. Using the information in this section, it should not be necessary to perform all component trouble shooting procedures, but to check only that component (or group of components) suspected of being at fault. To use a simple example: if the machine operates in the automatic mode but not in the manual mode, then the incoming power, the control circuits manual overload breaker and the magnetic contactor cannot be faulty (otherwise the machine would not operate at all). The fault almost always has to be in the selector switch or in the wiring between the selector switch and the magnetic contactor. In this case, it is not necessary to check out any other components. The service person, using this section and the wiring and schematic diagrams, will recognize many other similar (but somewhat more complicated) situations.

INCOMING POWER

Before trouble shooting any of the electrical parts or assemblies of the dishwashing machine, always verify that the power is being supplied to the machine and that the power input is at the correct rating for the machine. This is normally 60-cycle, 3 phase, 3 wire, at 208 to 480 volts. The current requirements (amperes) will vary depending upon the type of wash tank heaters installed and whether auxiliary equipment is wired into the electrical circuits.

NOTE:

Each installation must have a main disconnect switch or other similar device installed between the building's power source and the dishwashing machine. Check that this switch is closed and that no fuses are blown. In cases where the entire machine fails to operate, or where the machine only operates partially (the power wash pump motor hums, some single phase motors operate and some do not, one solenoid valve operates and the other does not) the trouble can often be traced to a fault in the incoming power lines.

If the electrical elements in the power line to the machine are in good working condition (including splices between the building's power source and the machine) and it appears that the machine is not being supplied with power at the proper rating, proceed as follows:

1. Check that all manual overload breakers in the electrical control cabinet are off.
2. Turn on the building's power to the machine.
3. Using an A-C voltmeter, measure the phase-to-phase voltage across all three line terminal of the magnetic contactor. Each line must read 208 to 480 volts. If not, the wiring between the building's power source and the magnetic contactor is defective. If the voltage at the line terminals of the magnetic contactor is correct and the machine will not operate, the fault lies within the electrical circuits of the dishwashing machine.

CONTROL CIRCUIT OVERLOAD BREAKER

The only malfunction which could result from a defective control circuit overload breaker is total inoperability; i.e. the machine will not operate in either the manual or automatic mode. To check the control circuit overload breaker proceed as follows:

1. Turn on the building's power to the machine.
2. Push the control circuit overload breaker into the on position. All other manual overload breakers should be off.
3. Measure the voltage across the two line terminals of the 24 volt control circuit overload breaker. The meter should read 24 volts. If not, check the wiring between the overload breaker and the transformer.
4. Measure the voltage across the ground and the load terminals of the control circuit overload breaker. The meter should read 24 volts. If not, the overload breaker is defective and must be replaced.

MAGNETIC CONTACTOR

A defective magnetic contactor can be the cause of the following malfunctions:

1. The dishwashing machine will not operate in either the manual or automatic mode.
2. The machine operates only partially (IE: the power wash pump motor hums). If this occurs and 208 to 480 volt power is present at all three line terminals of the magnetic contactor (as measured in Section 5, Trouble Shooting, Incoming Power, Page 59, Step 3). The fault is usually a burned out set of contacts in one circuit in the magnetic contactor or defective wiring between one of the contactor load terminals and a overload breaker bus bar.

Before checking the magnetic contactor for a complete operational failure of the machine, be sure to check the incoming power as described in Section 5, Trouble Shooting, Incoming Power, Page 59 and the control circuit overload breaker as described in Section 5, Trouble Shooting, Control Circuit Overload Breaker, Page 47. Then proceed as follows:

1. Place the control circuit overload breaker into the on position. All other manual overload breakers should be in the off position. The contactor should energize.
2. With an A-C voltmeter, measure the phase-to-phase voltage across all three load terminals of the magnetic contactor. The meter should read 208 to 480 volts. The fault could be an open coil or burned out contacts.

NOTE:

If the voltage is present at two of the three load terminals, the fault is most likely burned out contacts in the open phase. However, it is also possible for all three sets of contacts to burn out simultaneously.

3. Place the control circuit overload breaker in the off position. Turn off the building's power to the machine.
4. Check the magnetic contactors by removing the nameplate and examining them visually.

5. To check the coil, remove the two leads. Measure the D-C resistance between the terminals from which the leads were removed. The meter should read approximately 1000 ohms. If the coil resistance is substantially above or below this figure (plus or minus 20 percent), the coil is defective and must be replaced.
6. Replace the leads, if necessary.

THE SELECTOR SWITCH

A defective selector switch may be the cause of failure of the machine to operate in both the manual and automatic modes, or failure to operate in one mode only. To check the selector switch, proceed as follows:

1. Check that all manual overload breakers are in the off position.
2. Turn off the building's power to the machine.
3. Connect an ohmmeter between the middle terminal and either one of the outer terminals.
4. Operate the ohmmeter switch to obtain a reading of zero ohms on the meter when the switch is in either the manual or automatic position. If a zero reading cannot be obtained, the switch is defective. A zero reading will be obtained in only one switch position, not both, if the switch is not faulty.
5. Move one ohmmeter lead from the outer terminal used in Step 4 to another outer terminal.
6. Repeat Step 5. A zero reading should now be obtained for an alternate switch position. If not, the switch is defective and must be replaced.

NOTE:

If the machine still fails to operate in both the manual and automatic mode and the incoming power, the control circuit overload breaker, the magnetic contactor and the selector switch are all in good operating condition, the trouble lies in the cabling within the control circuit or between the control circuit and the magnetic contactor. (See Section 5, Trouble Shooting, Control Circuit Wiring, Page 63).

8. Remove the ohmmeter and replace all six leads on the selector switch terminals.

THE LOW VOLTAGE PUSH BUTTON

A defective low voltage push button will prevent the machine from starting in the automatic mode of operation (See Diagram 6). Before checking the button itself, carefully check the terminals, boots and all connectors between the push buttons and the low voltage terminal strip.

POSSIBLE LOW VOLTAGE PUSH BUTTON SYSTEM PROBLEMS

1. If a button is stuck or defective, check the connectors.
2. If certain buttons do not work, check the continuity between the terminals of each button. The buttons are normally open.

THE LATCHING RELAY

A defective latching relay can result in the machine failing to start when the selector switch is in the automatic or manual position or failing to stop when the machine is running in the automatic mode. Before checking for a faulty latching relay, be certain that the selector switch and the low voltage push buttons are all operating properly. First check the relay coil as follows:

1. Check that the building's power to the machine is off and that all manual overload breakers are in the off position.
2. Disconnect the coil leads from the latching relay assembly terminal strip. (Both leads are black.)
3. Using an ohmmeter, measure the D-C resistance between the two leads removed in Step 2. (Both black leads.) The meter should read 900 ohms, plus or minus 20 percent. If not, the coil is defective and the entire latching relay must be replaced.
4. If the coil is not defective, replace the coil leads and check the contacts of the relay as described in the following paragraphs.

The latching relay has two stable positions. When the machine is in the automatic or manual mode of operation, the contacts which supply power to the magnetic contactor and timer are closed and the dishwashing machine operates ("machine on"). In the second position, both sets of contacts are open, ("machine off") and the machine stops. To check the contacts of the relay, proceed as follows:

1. Separate the connectors between the control circuit harness and the magnetic contactor.
2. Manually place the latching plate of the relay in the "machine on" position.
3. Using an ohmmeter, measure the D-C resistance between the relay terminal strip. In both cases the resistance must be zero ohms. If not, the relay is defective and must be replaced.
4. Manually place the latching plate of the relay in the "machine off" position. Repeat Step 3. In both cases the meter must read infinity, otherwise the relay is defective.
5. With machine on if small indexing lever on relay is stuck in up position instead of dead center middle, check for shorted push button switch.

NOTE:

Before replacing a relay, carefully check the wiring connections between the relay terminal strip and the relay connector pins. Also check the permanent jumper of the relay terminal strip.

5. Reconnect the cable removed in Step 1.

THE TIMER

A defective timer will result in the machine not stopping automatically when in the automatic mode of operation. If the machine fails to stop automatically, but can be stopped by pushing a low voltage push button at a conveyor control station, the fault is in a defective or loose timer socket or in its wiring. When this occurs, stop the machine with a low voltage push button and place the selector switch in the off position. Remove the cabinet front from the electrical control cabinet and proceed as follows:

WARNING:

Use extreme care while working on the timer in the electrical control cabinet. Many terminals carry 24 volts.

1. Turn on the building's power to the machine and place the control circuit overload breaker and conveyor drive manual overload breaker to the on position. All other manual overload breakers should be off.
2. Turn off the hot water shutoff valve.
3. Depress one of the low voltage push buttons at a conveyor control station. The conveyor should start. If the conveyor does not shut off after the preset time, the timer is defective.
4. Remove the timer from the socket. The low voltage push buttons should now start and stop the machine when it is in the automatic mode.
5. The timer is a sealed unit and must be replaced as such if it is found to be defective. (Adamation Part Number 55-7900-156).

NOTE:

In rare cases, due to vibration, dust, dirt or some other contaminating material getting into the timer socket, the timer may not operate. This is unusual but it can occur. If the timer stops once in a very great while it is not significant, except as a nuisance situation. If the timer stops twice in sequence, it nearly always indicates a faulty timer socket.

THE CONTROL CIRCUIT WIRING

All of the electrical elements of the control circuit (selector switch, low voltage push buttons, latching relay and timer) are connected to each other (and to the power control circuits of the machine) through a harness. This cable harness is connected, through mating connectors, to a harness which is connected to the control circuit manual overload breaker and magnetic contactor. If all of the electrical elements in the control circuit are operating correctly (and the incoming power, control circuit manual overload breaker and magnetic contactor have been checked as described above) and the machine still fails to operate in either the manual or automatic mode (or both), the fault probably lies in the harness wiring.

The control circuit harness can be disconnected from its mating harness to the power circuits by disconnecting the spade clips. The inputs to the control circuits are identified at the terminal strip connection. The Master Electrical Diagram is a wiring diagram which shows all terminals at this connection and all interconnections within the control circuits. All numbered terminals are identified and all leads are color coded. Harness connections within the control circuits can be easily removed. Using an ohmmeter, it is a simple matter to verify wiring continuity between the connections shown on the Master Electrical Wiring Diagram. This is usually best done by stages. Do not remove all harness connections prior to starting, but only the ones required for each continuity check. As each lead is replaced, check it for evidence of corrosion and clean it if necessary. Be sure that all leads are firmly and tightly attached so as to provide good electrical connections.

Wiring connections between the other half of the connector, the control circuit overload breaker and magnetic contactor can be similarly checked for continuity by using the wiring connections shown in The Master Electrical Diagram.

THE MANUAL OVERLOAD BREAKERS

If a manual overload breaker trips and continues to trip after being reset, first check whether the breaker itself is defective. To do this, remove the load from the breaker, place the breaker in the on position and apply power to the circuit. If the manual overload breaker trips with no load connected to it or will not reset it is defective and must be replaced.

If it has been determined that the manual overload breaker is not defective and it trips and continues to trip after being reset, the fault is probably a short circuit on the load side of the manual overload breaker or a bound up pump motor combination. Check for bare, crossed or loose wiring and check all pumps for binding. If the wiring is not defective and the motor turns freely, the fault is usually in the manual overload breaker and must then be replaced. A single phase condition will also cause the breaker to trip. Check all three high voltage feeds to machine.

If any motor fails to operate and the associated manual overload breaker does not trip, check the voltage at the motor. If the voltage is 208 to 480 volts on all phases, the fault is in the motor. If not, the fault is on associated manual overload breaker which must be replaced.

NOTE:

All electric pump motors contain external thermal overload devices. When a motor stops, the cause may be an overheated motor. In this case, the overload device must be normally reset when the motor cools down. If the motor again stops, investigate the cause of the overheating. Check the ventilating openings (breathers) of the motor. The fault may also not be in the motor itself but in some local environmental condition, such as the proximity of the motor to a source of excessive heat, (i.e. steam pipes).

SECTION 6 - MAINTENANCE

GENERAL

This section contains both preventive and corrective maintenance information. Preventive maintenance may be performed by qualified full time maintenance personnel at the establishment in which the dishwashing machine is installed. However, corrective maintenance must be performed only by Adamation trained service personnel. Personnel should never attempt to make repairs or replacements to the machine. In order to perform its task properly, the dishwashing machine depends upon the correct operating relationship of all of its parts and assemblies. These must be kept in good working order and if service is required, it must always be performed by Adamation trained personnel who fully understand the overall machine.

Before attempting to perform any of the procedures given in this section, maintenance personnel must be thoroughly familiar with the operating procedures given in Section 3 and the Principles of Operation in Section 4. Operating instructions will not be repeated in this section unless operation for maintenance purposes differs from the procedures given in Section 3.

SERVICE CONTRACTS

Adamation service contracts are available within a radius of 75 miles of Adamation owned offices. If a service contract is desired, or for complete information as to its scope, the machine owner should contact the sales representative from whom the machine was purchased. Services provided in the current contract will be explained by the salesperson or the Adamation service representative.

PREVENTIVE MAINTENANCE

The single most important preventive maintenance operation on the dishwasher is the cleaning procedure after each period of heavy use described in Section 3 Operation, Cleaning, Page 25. Additional preventive maintenance operations are given in this section. In establishments such as Universities, Hospitals, large hotels and military installations, which employ full time maintenance personnel, the tasks described below can be assigned to them. For other installations, tasks requiring mechanical or electrical experience should be performed only by Adamation trained service personnel.

This section sets forth certain minimum preventive maintenance procedures which must be performed periodically to assure continued trouble free operation of the dishwashing machine. A considerable amount of costly and time consuming machine servicing can be avoided by adhering to an effective preventive maintenance schedule. This schedule is contained in the following paragraphs.

DAILY

1. Cleaning - All the external parts of the machine and the area around it. Wipe all the grime or other soil from the motors, pumps, etc. (Do not use water to clean the motors). Clean beneath the cabinets and the conveyor table.

NOTE:

The conditions under which most dishwashing machines are used (high humidity, large amounts of water being used, food soil, garbage, other types of food waste products being handled in the vicinity of the machine and the like) make cleanliness in and around the machine a very essential part of its operational capability. This is important!

WEEKLY

1. Electrical Inspection - With all incoming power removed from the machine (and all manual overload breakers off) inspect all the exposed wiring for chafing, insulation damage or other visible defects. Check all the accessible wiring connections for tightness. Look for signs of corrosion at the cable and the wiring connections. Check the motor pump combination assemblies for both wiring and for mechanical tightness.
2. Plumbing Inspection - Place the entire machine in operation. Inspect all the pumps, valves (both hand and solenoid operated), water connections (unions tee's, etc.) and piping into the tanks and cabinets for signs of leakage.
3. Cleaning The Spray Arms - Remove the end caps from the spray arms in the prewash cabinet. Close the cabinet door and operate the machine normally for five to ten seconds. Stop the machine and replace the end caps (finger tight--do not use a wrench). Repeat the procedure for the prerinse and the final rinse arms.

NOTE:

If the nozzles in the spray arms appear to be clogged or defective, call a service person. Do not attempt to perform preventive maintenance operations on the nozzles.

4. Grease Trap - If the house plumbing system is equipped with a grease trap, inspect and clean the trap.

MONTHLY

1. Motor Ventilating Openings - Clean thoroughly. (Clogged motor ventilating openings-breathers-will not only contribute to reduced motor life, but in certain cases, can be the cause of nuisance type machine service calls.)
2. Drive Chain - Lubricate the drive chain with light machine oil. For access, remove the chain guard (Item No. 7-Figure 7-3).
3. Line Strainers - First be sure that both shut-off valves are closed and that the water lines are drained. Then remove the strainer screens and clean or replace them as required.
4. Grease flange bearings on tray conveyors and outside drive.

NOTE:

The frequency which line strainers must be cleaned or replaced depends upon the mineral content of the local water. Start doing it monthly, then vary the time interval based on experience.

SEMI-ANNUALLY - EVERY SIX MONTHS

1. Power Wash Pump Lubrication - All pumps have permanently sealed bearings.

YEARLY

Gear Reducer (Tray Conveyor) - Drain the reducer completely and then refill it. Fill it only to the oil plug level. Overfilling it reduces the life of the gear reducer. Be sure that the air hole in the fill plug is open.

DELIMING

Inspect the cabinet interiors and tanks periodically for accumulation of lime deposits. When this occurs, the owner or operator should have a representative of his detergent supplier delime the machine. The frequency of deliming depends upon the mineral content of the water supplied to the machine.

REPAIR AND REPLACEMENT

In the event that the dishwashing machine or any of its functional parts fails to operate, and the fault cannot be corrected by following the trouble shooting instructions in Section 5, the owner or operator should immediately contact the nearest Adamation office for repair service.

NOTE:

Accessories such as garbage disposers, hot water boosters, water boilers and the like may be supplied and installed with the dishwashing machine. Except for steam powered hot water boosters, service on major accessories not manufactured by Adamation must be performed by trained representatives of the original manufacturer.

Section 7 of this manual contains a listing of all replaceable parts and associated exploded views of the entire dishwasher and its accessories. In most cases, disassembly procedures will be obvious to a trained service person from the exploded views. In this section disassembly and assembly instructions will be given only when the procedure is not readily apparent to a trained service person by referring to the applicable exploded view in Section 7.

SPECIAL TOOLS

The following special tools may be purchased to facilitate servicing of Adamation machines.

1. A seal installation (1" wash seal) - Adamation part No. 17-1301-400.
2. A pump seal extractor (1") - Adamation Part No. 17-1300-500.
3. An inside heater nut wrench - Adamation Part No. 19-1200-300.
4. A Disposer Unjamming Wrench, 2, 3 and 5 H.P. - Adamation Part No. 19-1200-102 7-1/2-10 H.P. - Adamation Part No. 19-1200-400 (supplied with machine when equipped with a disposer).

POWER PUMP SYSTEM (SEE FIGURE 7-7)

An exploded view of the power pump system is shown in Figure 7-7, Illustrated Parts List, Page 78. All pump parts are replaceable and it can be disassembled as shown in the exploded view.

The part most likely to require replacement in this system is the shaft seal (24) which can be replaced without removing the pump and motor assembly from the machine or breaking any plumbing connections. When the seal is replaced, also replace the "O" Ring (35). Drain the power wash tank and the pump casing and proceed as follows (the number shown in parenthesis after each part name is the index number for that part shown in Figure 7-7).

1. Remove the eight hex head screws (25) and remove the pump impeller cover (33) from the pump housing (26).
2. Remove the hex head screw (12), the stainless steel impeller screw washer (34) and the impeller gasket (32) from the end of the impeller shaft.
3. Pull the impeller (31) off of the impeller shaft. The key (23) may come off the shaft with the impeller. If it does not, remove it.

NOTE:

If the impeller does not pull off easily, use a wheel puller. In this case, replace the hex head screw (12) in the impeller shaft (without replacing the washers (34 and 32) to protect the internal screw threads in the impeller shaft. Remove the impeller (31).

4. Slide the "O" Ring (35) off of the shaft and discard it.
5. Lubricate the shaft with light machine oil.
6. Using the pump seal extractor (Adamation Part No. 17-1300-500), pull the shaft seal (24) off of the shaft. Place the ends of the extractor legs against the seal, squeeze the legs together so that the ends are inside the lips of the metal seal casing, push inward to depress the seal and then let the extractor arms spring outward to engage the lips of the seal casing. Withdraw the seal.
7. Clean the shaft, inspect it and thoroughly clean the shaft seal cavity. Oil the shaft and the shaft seal cavity with a light machine oil.
8. Lubricate the new shaft seal and the rubber base inside and out with a light machine oil.
9. Slide the new shaft seal on the shaft so that the internal rubber ring is toward the impeller (31). Slide the shaft seal all the way in. Be sure that the bottom of the seal goes all the way into the pump cavity and is seated properly. Tap the seal lightly around the perimeter of its metal casing to insure proper seating. This is best done with a special piece of plastic tubing. (Adamation Part No. 17-1301-400). Do not use metal! Observe the proper seating of the seal through the pump inlet.
10. Install the new "O" Ring.
11. Replace the key (23) on the impeller shaft, cover the motor shaft with anti-seize high temperature. Replace the impeller (31), the impeller gasket (32), the stainless steel impeller screw washer (34) and the hex head screw (12), in that order.
12. Check the impeller (31) for freedom of rotation. The impeller sleeve is designed so that when the shaft seal is properly seated and the impeller is fully tightened, the seal will be collapsed to the proper position and the impeller will rotate freely. If it does not rotate freely, recheck the seal for proper seating.
13. Replace the end plate (33).

POWER WASH/POWER RINSE PUMP MOTOR

The power wash pump motor bearings are replaceable. Otherwise, a faulty motor should be replaced as a unit.

To remove the motor, disassemble the power wash pump as shown in Figure 7-7. (It may be necessary to break the pump plumbing connections.) Then remove the motor from the pump intake housing (16) and from the mounting plate. To replace the bearings, disassemble the motor as shown in Figure 7-7. When reassembling the pump and motor assembly, a new shaft seal (24) and a new "O" Ring (35) should be installed as described in Section 6, Maintenance, Power Pump System, Page 54.

PRERINSE AND PREWASH PUMP AND MOTOR COMBINATION

These are identical assemblies which are shown exploded in Figures 7-6. All of the systems parts are replaceable and can be removed by breaking the two plumbing connections to the pump casing, removing the entire assembly from its mounting and disassembling the system as shown in the exploded view. The pump must also be disassembled to separate the motor and the pump if it needs to be replaced. Otherwise, a faulty motor should be replaced as a unit.

SOLENOID VALVES

All solenoid valves (hot water and steam) are identical. An exploded view is shown in Diagram 7. All parts are not replaceable but the valve can be disassembled for cleaning as shown in the exploded view. When replacing a defective coil, it is not necessary to disassemble the entire valve. Simply remove the pal nut (1) and solenoid spring washer (2)and the entire solenoid coil assembly (3) can be removed from the plunger assembly (4). When replacing the coil be sure to make the electrical connections for 24 volt use as shown on the electrical data plate supplied with the new coil.

HAND OPERATED VALVES

The several types of hand operated ball valves are shown exploded views in the various plumbing assemblies where they are used. Individual parts are not replaceable. Handles may be purchased individually.

PLUMBING ASSEMBLIES

All of the pipe fittings, connectors, risers, manifolds, spray arms, nozzles and associated plumbing hardware which provide water connections to the various cabinets and drain connections from the tanks are separately replaceable. For disassembly and replacement of any part of this type, refer to the applicable exploded view in Section 7 and its associated parts list.

GASKETS

All piping, risers, thermostat tubes and the like which pass through the cabinet walls or the tanks are gasketed to prevent leakage. Whenever the seal is broken during repair operations, or when there is evidence of leakage, the gasket must be replaced. Never reinstall a used gasket. All gaskets are shown in the applicable exploded views in Section 7, and their removal and replacement is obvious. When replacing a gasket, clean all the metal surfaces thoroughly and use a sealing compound.

DRIVE MECHANISM

An exploded view of the entire drive mechanism is shown in Figure 7-3. All parts shown are replaceable and the mechanism can be disassembled and repaired to the extent shown on the exploded view. The gear motor is not repairable and must be replaced as a unit.

WORM/DRIVE BLOCK ALIGNMENT

After making repairs or replacements to the drive mechanism, it may be necessary to readjust the drive cabinet so that the drive worm engages the worm followers on the dollies correctly. For correct operation, three important tolerances must be maintained:

1. The worm followers on the dollies should clear the leading and trailing edges of the drive cabinet by approximately one-half of an inch.
2. The teeth of the worm followers should engage the worm, through its entire length, to a depth of approximately 1/2" - 5/16".
3. All worm followers must engage the worm freely and smoothly when the drive cabinet is latched in its operating position (locked down) and the cabinet must be firmly (locked down) secured in this position.

NOTE:

The worm followers teeth must never bottom on the hub of the drive worm and must never hang up on the leading or trailing edges of the drive cabinet. When all three conditions above are met, the worm followers (and dollies to which they are attached) will travel parallel to the center axis of the drive worm.

To adjust the position of the drive worm (12 or 13, Figure 7-3), with respect to the worm followers (3 or 4, Figure 7-2) on the dollies, loosen the six mounting bolts on the underside of the conveyor table. The slotted holes in the mounting bracket permit the entire drive cabinet (and thus the worm) to be moved toward or away from the conveyor table, and to be skewed somewhat to obtain parallelism between the worm and the worm followers. When the worm is correctly aligned, retighten the six mounting bolts securely.

If it is not possible to obtain the correct engagement of the drive worm and worm followers using the above method, the drive cabinet may be tilted up or down. Since the cabinet pivots on the mounting bracket, adjusting its tilt will move the drive worm toward or away from the worm followers. Before changing the tilt position of the cabinet, loosen the two hex nuts (40) and lockwashers (41) in the cabinet latching linkage and adjust the round headed screw (39) up or down as required to extend the length of the latching linkage somewhat. Now readjust the latch assembly by loosening the nut (43) and removing screw (42). Turn the latch rod (10) counterclockwise to tighten and clockwise to loosen the latch assembly. Place the screw (42) and test the latch before replacing the nut (43). When adjusted properly, the latch will seat firmly with no vibration or rocking. Once adjusted properly, replace the nut (43).

NOTE:

The principal reason for the two adjusting screws (3a) is to obtain parallelism between the drive worm and the worm followers. However, since the position of these screws does affect the tilt of the cabinet, they can also be used to a limited extent to determine the depth of engagement between the drive worm and the worm followers.

DRIVE CHAIN ADJUSTMENT

To tighten or loosen the drive chain (21-22, Figure 7-3) slightly loosen the six hex head mounting screws (47-50) which secure the gear motor and drive assembly to the inside of the cabinet (3). The slotted mounting holes in the motor and bearing mounting plate (4) permit the gear motor (19 and 30) and the drive clutch (15) to be adjusted for the proper drive chain (21-22) tension. Check the tension by rotating the chain through the full 360 degrees on the larger sprocket. The proper tension between the two sprockets is achieved when 1/4"-3/8" is in the chain (21-22).

CAUTION:

After making any adjustments which affect the position of the clutch sprocket (23) or the worm sprocket (20), and before operating the drive mechanism, be sure that the clutch sprocket and the worm sprocket are lined up perfectly with each other and that the clutch sprocket is not cocked or skewed. Both of the sprockets and the drive chain must rotate in the same vertical plane. Imperfect alignment will cause rapid wear of the sprocket teeth.

DRIVE CLUTCH ADJUSTMENT

The drive clutch (15, Figure 7-3) is strictly a protective device which was adjusted when the machine was manufactured so as to slip when any obstruction slowed or stopped the conveyor train, thus preventing possible damage to the dollies, connecting links and/or the drive mechanism. Except after repairs to the clutch itself, or after

replacing the gear motor (in which case the clutch must be removed), it is unlikely that the clutch slippage is due to improper tension. After any other repairs to the drive mechanism, if the clutch slips, look for the trouble elsewhere. Never replace the clutch until it has been positively established that it is set too lightly. Note that the clutch is non adjustable and set at the factory. To check the drive clutch tension, proceed as follows:

1. Station a person at a curved outside edge of the conveyor table. (Not on a straight section).
2. Engage the drive mechanism and start the conveyor. The correct clutch tension is when the conveyor train moves freely but the person at the table can stop it (causing the clutch to slip) by exerting "comfortable" hand pressure against a dolly as it travels around the curved section of the track.

DOLLIES

An exploded view of a dolly assembly is shown in Figure 7-2. All of the parts shown can be replaced and the dolly can be disassembled to the extent shown. All dollies have two worm followers mounted on the side.

In addition to replacing those removable parts, the dolly frame and some of the parts can be straightened if they become bent or out of square. Bent connecting links can also be straightened.

LOW VOLTAGE PUSH BUTTONS AND WIRES

All low voltage push buttons and wires are replaceable. Additionally a broken switch or connector can be repaired temporarily by cutting the wire so that both ends can then be joined by a temporary butt splice.

CAUTION:

Cut off all incoming power to the machine before removing the cabinet front and manual overload breaker molding. When these panels are removed, the line connections to the magnetic contactor are exposed. These connections carry 208 to 480 volts. There is no switch on the dishwashing machine to break this circuit. It must be turned off at the building's incoming power service to the dishwashing machine.

MAGNETIC CONTACTOR

On the Master Electrical Diagram an exploded view of the electrical control cabinet shows the location of the magnetic contactor. To obtain access to it remove the cabinet front and the manual overload breaker molding.

The magnetic contactor can be repaired to the extent of replacing the coil. Otherwise, it should be replaced as a unit. To replace the contacts, proceed as follows:

1. Remove the nameplate.
2. Remove and discard the old contacts, both the movable and stationary parts. Note the location of all the parts removed.
3. Install the new contacts. Always install complete new contacts on all poles.
4. Replace the nameplate.

To replace the coil, it is necessary to remove the magnetic contactor from the manual overload breaker panel. Proceed as follows:

1. Disconnect all the wires from the contactor. Tag each wire for correct replacement.
2. Remove the contactor from the manual overload breaker panel.
3. Remove the four screws which secure the base to the contactor body. (Note, some machines use two screws and four clips).
4. Swing the base aside.
5. Remove the coil and the armature assembly.
6. Remove the springs and install a new coil. Replace the pins.
7. Reassemble the magnetic contactor.
8. Reinstall and make the proper electrical connections.

MANUAL OVERLOAD BREAKERS

Your Master Electrical Wiring Diagram shows the location of all manual overload breakers in the electrical control cabinet. Some of the manual overload breakers shown will be installed only in machines with electric tank heaters, and machines which have accessory equipment such as disposers. Those identified by the conveyor drive, power wash, prerinse and prewash are common to all CA-Series dishwashing machines currently made.

Manual overload breakers are not repairable. When replacing a defective manual overload breaker, be certain that the replacement has the same heater rating as the one being replaced. Manual overload breakers are protective devices only in the sense that they provide short circuit, single phase and overload or overheating protection. The electrical circuits of the dishwashing machine have been designed so that each breaker offers maximum single phase and short circuit protection for the components in its circuit. The correct heating rating for each manual overload breaker is adjustable and noted on the master electrical drawing.

All of the manual overload breakers are mounted in the same manner. These breakers have three input wiring connections. They are mounted directly to a contactor or a 3 phase bus bar. The only wiring connections are from the output of the breaker to the load. The connections are to the electrical control cabinet.

The control circuit manual overload breaker is connected to a wiring harness. These connections must be removed for replacement. Remove the defective breaker and replace it with a new unit of the same rating.

CONTROL CIRCUIT

Access to the control circuit can be obtained by removing the cabinet front from the electrical control cabinet.

An exploded view of the control circuit is given in your Master Electrical Wiring Diagram. It can be disassembled to the extent shown. The latching relay and the selector switch are non-repairable. The timer can be repaired only to the extent of replacing its socket.

SECTION 7 - ILLUSTRATED PARTS LIST

GENERAL

This section contains a complete listing of all replaceable parts of the basic CA-Series dishwashing machine and the accessory equipment which is used with the machine. For the purpose of parts identifications, the basic CA-Series machine is broken down into functional assemblies. Each assembly is shown in an exploded view which is keyed to the accompanying parts list. Exploded views are also provided for most of the accessory equipment parts lists.

Each parts list contains the Adamation part number, a description of each part, and the number of times the part is used in the assembly shown in the accompanying exploded view. When a part or subassembly is purchased by Adamation and used without modification, the name and part number of the original manufacturer is also given in the description column.

Orders for replacement parts should be addressed to:

Adamation, Inc.
National Service Department
87 Adams Street
Newton, MA 02195
U.S.A.

The order should contain the Adamation part number(s), the part description(s), the quantity required and the model and serial number of the machine (from the machine nameplate) for which the part(s) are/is being ordered. Note that "NPN" means that no Adamation part number has been assigned.

INDEX:

MOTOR	hp	"E" NO.	208 VOLTS		480 VOLTS	
			AMPS	MSP# - RANGE	AMPS	MSP#-RANGE
SINGLE WORM DRIVE	0.25	E0020	1.2	3VU1300-0MG00 1.0/ 1.6	0.6	3VU1300-0MF00 0.6/ 1.0
LOW SPEED DRIVE	0.25	E6000	1.2	3VU1300-0MG00 1.0/ 1.6	0.6	3VU1300-0MF00 0.6/ 1.0
HIGH SPEED DRIVE	0.25	E0060	1.2	3VU1300-0MG00 1.0/ 1.6	0.6	3VU1300-0MF00 0.6/ 1.0
CIRC. PRE RINSE (OLD)	0.50	E0640	1.9	3VU1300-0MH00 1.6/ 2.4	0.9	3VU1300-0MF00 0.6/ 1.0
CIRC. PRE RINSE	0.75	E0640	2.1	3VU1300-0MH00 1.6/ 2.4	1.2	3VU1300-0MG00 1.0/ 1.6
CIRC. PRE RINSE (OLD)	0.50	E0680	1.9	3VU1300-0MH00 1.6/ 2.4	0.9	3VU1300-0MF00 0.6/ 1.0
CIRC. PRE RINSE	0.75	E0680	2.1	3VU1300-0MH00 1.6/ 2.4	1.2	3VU1300-0MG00 1.0/ 1.6
CIRC. PRE WASH	1.00	E0340	3.2	3VU1300-0MJ00 2.4/ 4.0	1.4	3VU1300-0MG00 1.0/ 1.6
CIRC. PRE WASH-3 ARMS	1.50	E0340	4.5	3VU1300-0MK00 4.0/ 6.0	2.1	3VU1300-0MH00 1.6/ 2.4
PREWASH TRANSFER (OLD)	0.50	E0320	1.9	3VU1300-0MH00 1.6/ 2.4	0.9	3VU1300-0MF00 0.6/ 1.0
PREWASH TRANSFER	0.75	E0320	2.1	3VU1300-0MH00 1.6/ 2.4	1.2	3VU1300-0MG00 1.0/ 1.6
PREWASH GARBAGE (OLD)	1.50	E4060	5.3	3VU1300-0MK00 4.0/ 6.0	2.5	3VU1300-0MJ00 2.4/ 4.0
PREWASH (SUPER DUMP)	1.50	E4060	5.3	3VU1300-0MK00 4.0/ 6.0	2.5	3VU1300-0MJ00 2.4/ 4.0
POWER SCRAPPER PUMP	3.00	E0440	9.9	3VU1300-0ML00 6.0/10.0	4.9	3VU1300-0MK00 4.0/ 6.0
POWER WASH #1	3.00	E0400	9.9	3VU1300-0ML00 6.0/10.0	4.9	3VU1300-0MK00 4.0/ 6.0
POWER WASH #2	3.00	E0420	9.9	3VU1300-0ML00 6.0/10.0	4.9	3VU1300-0MK00 4.0/ 6.0
POWER RINSE #1	3.00	E0460	9.9	3VU1300-0ML00 6.0/10.0	4.9	3VU1300-0MK00 4.0/ 6.0
POWER RINSE #2	3.00	E0480	9.9	3VU1300-0ML00 6.0/10.0	4.9	3VU1300-0MK00 4.0/ 6.0
BLOWER MOTOR #1	3.00	E1400	7.8	3VU1300-0ML00 6.0/10.0	3.9	3VU1300-0MJ00 2.4/ 4.0
BLOWER MOTOR #2	3.00	E1401	7.8	3VU1300-0ML00 6.0/10.0	3.9	3VU1300-0MJ00 2.4/ 4.0
CROSS TROUGH (4")	0.25	E2040	1.2	3VU1300-0MG00 1.0/ 1.6	0.6	3VU1300-0MF00 0.6/ 1.0
CROSS TROUGH (6")	0.25	E2060	1.2	3VU1300-0MG00 1.0/ 1.6	0.6	3VU1300-0MF00 0.6/ 1.0
GARBAGE TROUGH #1	0.25	E2020	1.2	3VU1300-0MG00 1.0/ 1.6	0.6	3VU1300-0MF00 0.6/ 1.0
GARBAGE TROUGH #2	0.25	E2140	1.2	3VU1300-0MG00 1.0/ 1.6	0.6	3VU1300-0MF00 0.6/ 1.0
GARBAGE DISPOSER #1	3.00	E2640	7.4	3VU1300-0ML00 6.0/10.0	3.7	3VU1300-0MJ00 2.4/ 4.0
GARBAGE DISPOSER #2	3.00	E2641	7.4	3VU1300-0ML00 6.0/10.0	3.7	3VU1300-0MJ00 2.4/ 4.0
GARBAGE DISPOSER #1	5.00	E2660	8.4	3VU1300-0ML00 6.0/10.0	4.2	3VU1300-0MK00 4.0/ 6.0
GARBAGE DISPOSER #2	5.00	E2661	8.4	3VU1300-0ML00 6.0/10.0	4.2	3VU1300-0MK00 4.0/ 6.0
CONVEYOR DRIVE#1 (OLD)	0.75	E2960	2.1	3VU1300-0MH00 1.6/ 2.4	1.2	3VU1300-0MG00 1.0/ 1.6
CONVEYOR DRIVE #1	0.50	E2960	3.4	3VU1300-0MJ00 2.4/ 4.0	1.7	3VU1300-0MH00 1.6/ 2.4
CONVEYOR DRIVE#2 (OLD)	0.75	E2961	2.1	3VU1300-0MH00 1.6/ 2.4	1.2	3VU1300-0MG00 1.0/ 1.6
CONVEYOR DRIVE #2	0.50	E2961	3.4	3VU1300-0MJ00 2.4/ 4.0	1.7	3VU1300-0MH00 1.6/ 2.4
DRIVE 1 OF MULTI (OLD)	0.75	E5080	2.1	3VU1300-0MH00 1.6/ 2.4	1.2	3VU1300-0MG00 1.0/ 1.6
DRIVE 1 OF MULTI	0.50	E5080	3.4	3VU1300-0MJ00 2.4/ 4.0	1.7	3VU1300-0MH00 1.6/ 2.4
DRIVE 2 OF MULTI (OLD)	0.75	E5081	2.1	3VU1300-0MH00 1.6/ 2.4	1.2	3VU1300-0MG00 1.0/ 1.6
DRIVE 2 OF MULTI	0.50	E5081	3.4	3VU1300-0MJ00 2.4/ 4.0	1.7	3VU1300-0MH00 1.6/ 2.4
1st AUX. DR. #1 (OLD)	0.75	E3000	2.1	3VU1300-0MH00 1.6/ 2.4	1.2	3VU1300-0MG00 1.0/ 1.6
1st AUX. DR. #1 MULTI	0.50	E3000	3.4	3VU1300-0MJ00 2.4/ 4.0	1.7	3VU1300-0MH00 1.6/ 2.4

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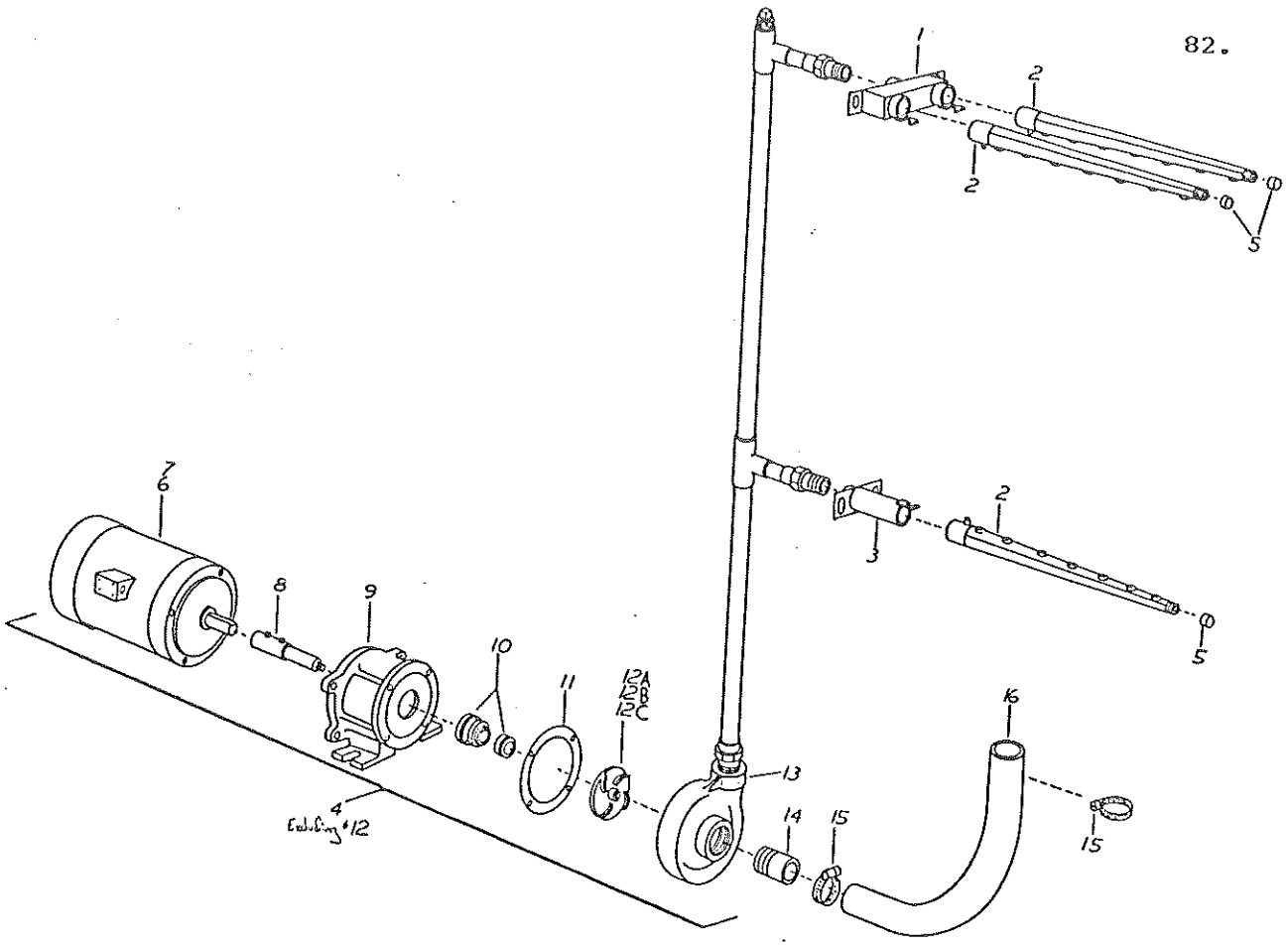
MOTOR	hp	"E" NO.	208 VOLTS		480 VOLTS	
			AMPS	MSP# - RANGE	AMPS	MSP#-RANGE
1st AUX. DR. #2 (OLD)	0.75	E3001	2.1	3VU1300-0HH00 1.6/ 2.4	1.2	3VU1300-0HG00 1.0/ 1.6
1st AUX. DR. #2 MULTI	0.50	E3001	3.4	3VU1300-0HJ00 2.4/ 4.0	1.7	3VU1300-0HH00 1.6/ 2.4
2nd AUX. DR. #1 (OLD)	0.75	E5100	2.1	3VU1300-0HH00 1.6/ 2.4	1.2	3VU1300-0HG00 1.0/ 1.6
2nd AUX. DR. #1 MULTI	0.50	E5100	3.4	3VU1300-0HJ00 2.4/ 4.0	1.7	3VU1300-0HH00 1.6/ 2.4
2nd AUX. DR. #2 (OLD)	0.75	E5101	2.1	3VU1300-0HH00 1.6/ 2.4	1.2	3VU1300-0HG00 1.0/ 1.6
2nd AUX. DR. #2 MULTI	0.50	E5101	3.4	3VU1300-0HJ00 2.4/ 4.0	1.7	3VU1300-0HH00 1.6/ 2.4
DUCTLSS VENT SYSTEM#1	0.33	E5040	1.2	3VU1300-0HG00 1.0/ 1.6	0.6	3VU1300-0HF00 0.6/ 1.0
DUCTLSS VENT SYSTEM#2	0.33	E5041	1.2	3VU1300-0HG00 1.0/ 1.6	0.6	3VU1300-0HF00 0.6/ 1.0
POWER WASH #1 ELM. #1	7.9kW	E0960	21.8	3VU1300-0HP00 16.0/25.0		
POWER WASH #1 ELM. #2	7.9kW	E0960	21.8	3VU1300-0HP00 16.0/25.0		
POWER WASH #1 ELM. #1	7.9kW	E4600			11.9	3VU1300-0HH00 10.0/16.0
POWER WASH #1 ELM. #2	7.9kW	E4600			11.9	3VU1300-0HH00 10.0/16.0
POWER WASH #2 ELM. #1	7.9kW	E4620	21.8	3VU1300-0HP00 16.0/25.0		
POWER WASH #2 ELM. #2	7.9kW	E4620	21.8	3VU1300-0HP00 16.0/25.0		
POWER WASH #2 ELM. #1	7.9kW	E4640			11.9	3VU1300-0HH00 10.0/16.0
POWER WASH #2 ELM. #2	7.9kW	E4640			11.9	3VU1300-0HH00 10.0/16.0
POWER RINSE #1 ELM #1	7.9kW	E4660	21.8	3VU1300-0HP00 16.0/25.0		
POWER RINSE #1 ELM #2	7.9kW	E4660	21.8	3VU1300-0HP00 16.0/25.0		
POWER RINSE #1 ELM #1	7.9kW	E4680			11.9	3VU1300-0HH00 10.0/16.0
POWER RINSE #1 ELM #2	7.9kW	E4680			11.9	3VU1300-0HH00 10.0/16.0
POWER RINSE #2 ELM #1	7.9kW	E4700	21.8	3VU1300-0HP00 16.0/25.0		
POWER RINSE #2 ELM #2	7.9kW	E4700	21.8	3VU1300-0HP00 16.0/25.0		
POWER RINSE #2 ELM #1	7.9kW	E4720			11.9	3VU1300-0HH00 10.0/16.0
POWER RINSE #2 ELM #2	7.9kW	E4720			11.9	3VU1300-0HH00 10.0/16.0
SUPER WASH ELM. #1	7.9kW	E60100	21.8	3VU1300-0HP00 16.0/25.0		
SUPER WASH ELM. #2	7.9kW	E60100	21.8	3VU1300-0HP00 16.0/25.0		
SUPER WASH ELM. #3	7.9kW	E60100	21.8	3VU1300-0HP00 16.0/25.0		
SUPER WASH ELM. #1	7.9kW	E60120			11.9	3VU1300-0HH00 10.0/16.0
SUPER WASH ELM. #2	7.9kW	E60120			11.9	3VU1300-0HH00 10.0/16.0
SUPER WASH ELM. #3	7.9kW	E60120			11.9	3VU1300-0HH00 10.0/16.0
SUPER RINSE ELM. #1	7.9kW	E60140	21.8	3VU1300-0HP00 16.0/25.0		
SUPER RINSE ELM. #2	7.9kW	E60140	21.8	3VU1300-0HP00 16.0/25.0		
SUPER RINSE ELM. #3	7.9kW	E60140	21.8	3VU1300-0HP00 16.0/25.0		
SUPER RINSE ELM. #1	7.9kW	E60160			11.9	3VU1300-0HH00 10.0/16.0
SUPER RINSE ELM. #2	7.9kW	E60160			11.9	3VU1300-0HH00 10.0/16.0
SUPER RINSE ELM. #3	7.9kW	E60160			11.9	3VU1300-0HH00 10.0/16.0
BLOWER HEAT #1	7.9kW	E1440	21.8	3VU1300-0HP00 16.0/25.0	11.9	3VU1300-0HH00 10.0/16.0
BLOWER HEAT #2	7.9kW	E1441	21.8	3VU1300-0HP00 16.0/25.0	11.9	3VU1300-0HH00 10.0/16.0

REV. 01/23/91

			208 VOLTS		480 VOLTS	
MOTOR	hp	"E" NO.	AMPS	MSP# - RANGE	AMPS	MSP#-RANGE
PULPER SHRED#1 (OLD)	7.50	E6600	20.0	3VU1300-0MP00 16.0/25.0	10.0	3VU1300-0ML00 6.0/10.0
PULPER SHREDDER #1	10.00	E6600	28.3*	3VU1300-0MP00 16.0/25.0	12.3	3VU1300-0MH00 10.0/16.0
PULPER SHRED#2 (OLD)	7.50	E6601	20.0	3VU1300-0MP00 16.0/25.0	10.0	3VU1300-0ML00 6.0/10.0
PULPER SHREDDER #2	10.00	E6601	28.3*	3VU1300-0MP00 16.0/25.0	12.3	3VU1300-0MH00 10.0/16.0
PULPER RECIRC. #1	3.00	E6600	9.9	3VU1300-0ML00 6.0/10.0	4.9	3VU1300-0MK00 4.0/ 6.0
PULPER RECIRC. #2	3.00	E6601	9.9	3VU1300-0ML00 6.0/10.0	4.9	3VU1300-0MK00 4.0/ 6.0
PULPER DEWATER. #1	0.75	E6600	3.2	3VU1300-1MJ00 2.4/ 4.0	1.6	3VU1300-1MH00 1.6/ 2.4
PULPER DEWATER#1 (OLD)	1.00	E6600	3.2	3VU1300-1MJ00 2.4/ 4.0	1.4	3VU1300-1MG00 1.0/ 1.6
PULPER DEWATER. #2	0.75	E6600	3.2	3VU1300-1MJ00 2.4/ 4.0	1.6	3VU1300-1MH00 1.6/ 2.4
PULPER DEWATER#2 (OLD)	1.00	E6601	3.2	3VU1300-1MJ00 2.4/ 4.0	1.4	3VU1300-1MG00 1.0/ 1.6
PULPER TRANSFER1 (OLD)	0.50	E6600	1.9	3VU1300-0MH00 1.6/ 2.4	0.9	3VU1300-0MF00 0.6/ 1.0
PULPER TRANSFER #1	0.75	E6600	2.1	3VU1300-0MH00 1.6/ 2.4	1.2	3VU1300-0MG00 1.0/ 1.6
PULPER TRANSFER2 (OLD)	0.50	E6600	1.9	3VU1300-0MH00 1.6/ 2.4	0.9	3VU1300-0MF00 0.6/ 1.0
PULPER TRANSFER #2	0.75	E6600	2.1	3VU1300-0MH00 1.6/ 2.4	1.2	3VU1300-0MG00 1.0/ 1.6

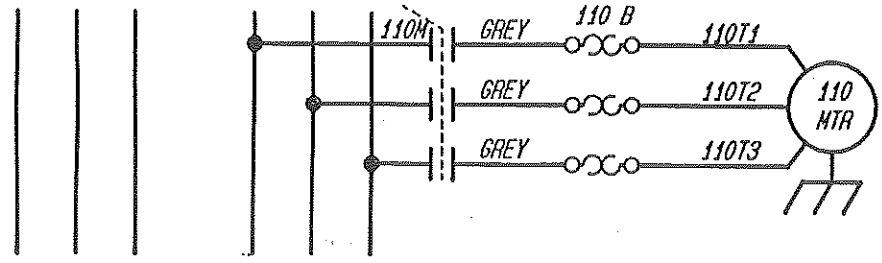


CIRCULATING PREWASH SYSTEM
FIGURE 7-1

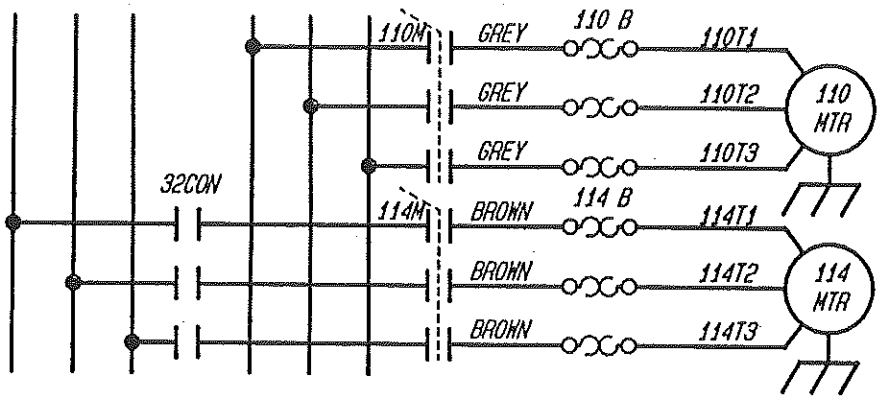
ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----CIRCULATING PREWASH SYSTEM	QNTY PER ASSMLY
1	32-0651-200	MANAFOLD, WASH ARM, UPPER-DOUBLE	1
2	22-0604-100	WASH ARM, EQUI-FLOW, WITHOUT CAP	3
3	22-0644-303	SOCKET, SINGLE, WASH ARM	1
4	55-6301-075	KIT, PRICE PUMP-WITHOUT IMPLELLER (#12)	1
5	75-0830-606	CAP, 3/4", PLATTED	3
6	55-5012-014	MOTOR, 1 H.P., SC FRAME, (HIGH/LOW VOLTAGE*) 3PH 3450 R.P.M. (TYPE J56C FRAME) T.E.F.C.	1
7	55-5014-010	MOTOR, 1-1/2 hp., (HIGH/LOW VOLTAGE*) 3PH, PRICE PUMP, T.E.F.C.	1
8	55-6301-906	SHAFT, MOTOR	1
9	N.P.N.	BASE, PUMP SEAL HOUSING	1
10	55-6301-305	SEAL, PRICE PUMP, #447	1
11	55-6301-605	GASKET, PRICE PUMP	1
12A	55-6301-110	IMPELLER, PRICE PUMP, 60HZ, 1/2 H.P., 3-3/4" DIA.	1
12B	55-6301-111	IMPELLER, PRICE PUMP, 50HZ, 1/2 H.P., 4-1/2" DIA.	1
12D	55-6301-112	IMPELLER, PRICE PUMP, 60HZ, 1-1/2 H.P. (60HZ, 3PH) 4-3/8" DIA.	1
13	N.P.N.	HOUSING, IMPELLER, PRICE PUMP	1
14	19-4301-900	NIPPLE, HOSE ADAPTER, 1-5/8", BLACK	1
15	70-1000-528	CLAMP, HOSE, STAINLESS STEEL, #24	2
16	65-7112-080	HOSE, SUPER FLEX, 1-5/8" O.D., PER FOOT	2-1/2 FT.

* CUSTOMER TO VERIFY VOLTAGE AND HERTZ

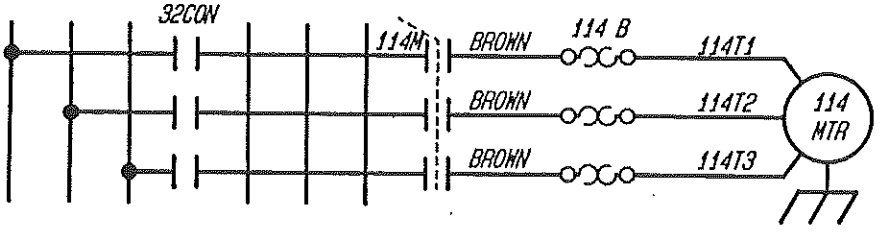


CIRCULATING PREWASH PUMP MOTOR-3 ARMS 1-1/2 H.P.

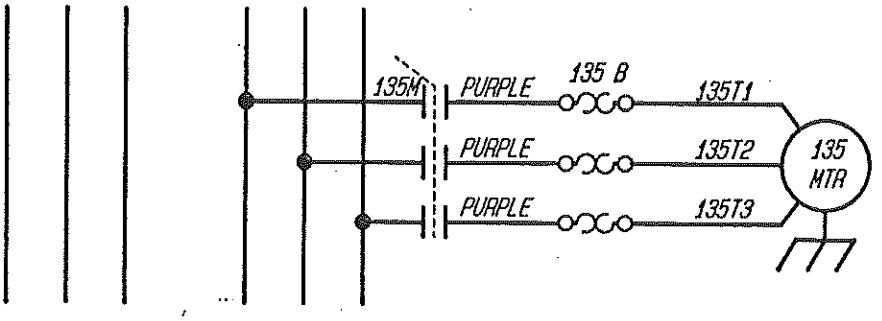


CIRCULATING PREWASH PUMP MOTOR-3 ARMS 1-1/2 H.P.

PREWASH TRANSFER PUMP - 3/4 H.P.

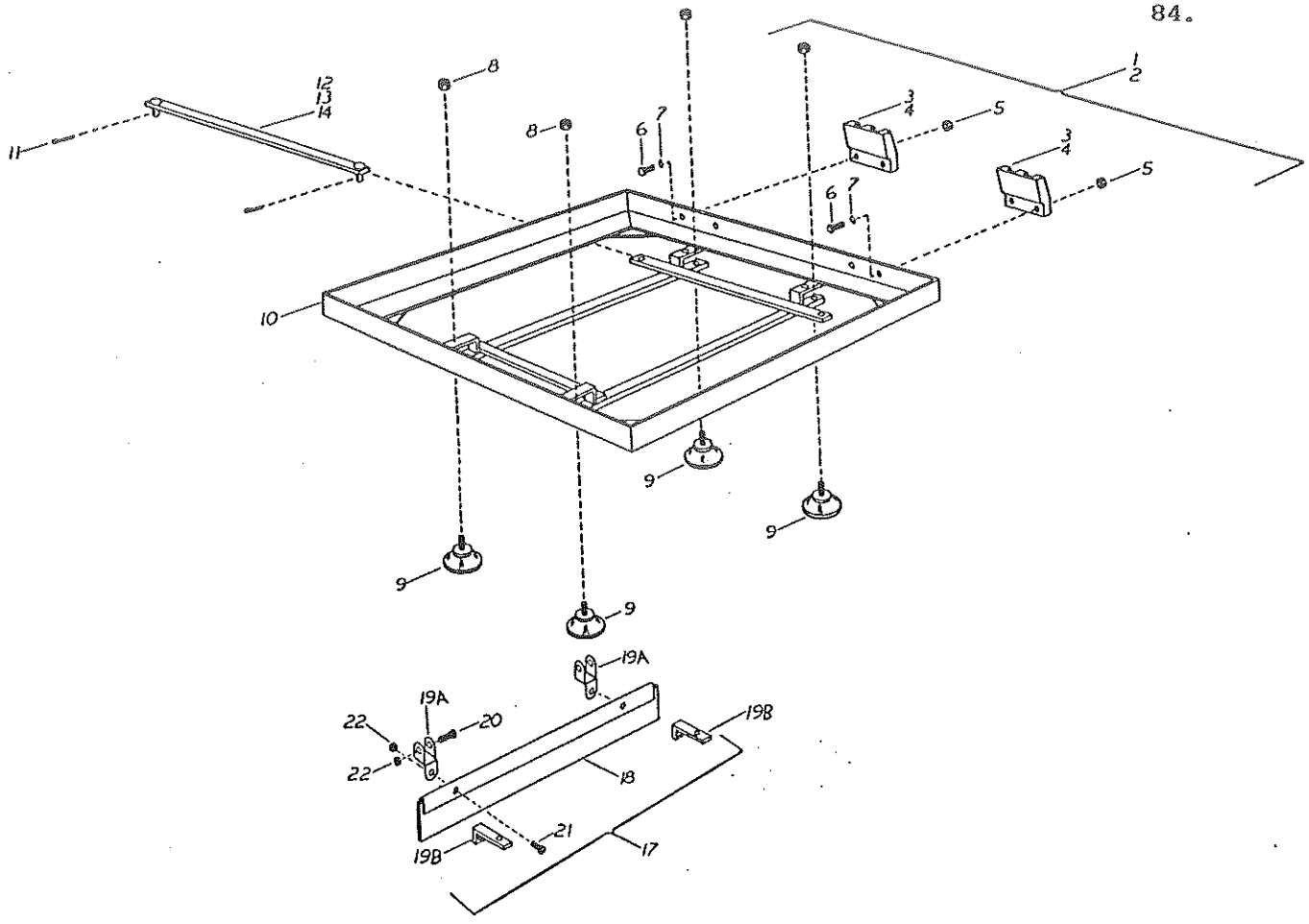


PREWASH TRANSFER PUMP - 3/4 H.P.



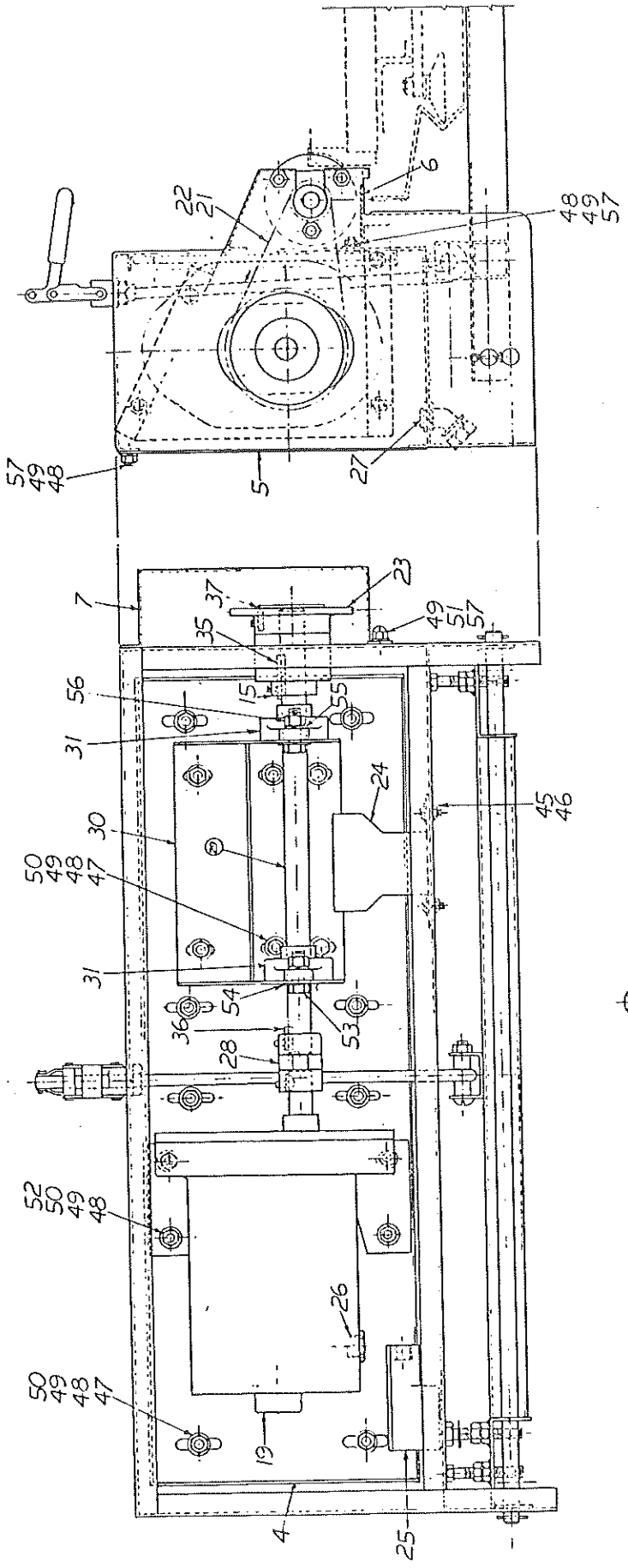
CIRCULATING FINAL RINSE PUMP - 3/4 H.P.

PREWASH COLD WATER TEMPERING SOLENOID



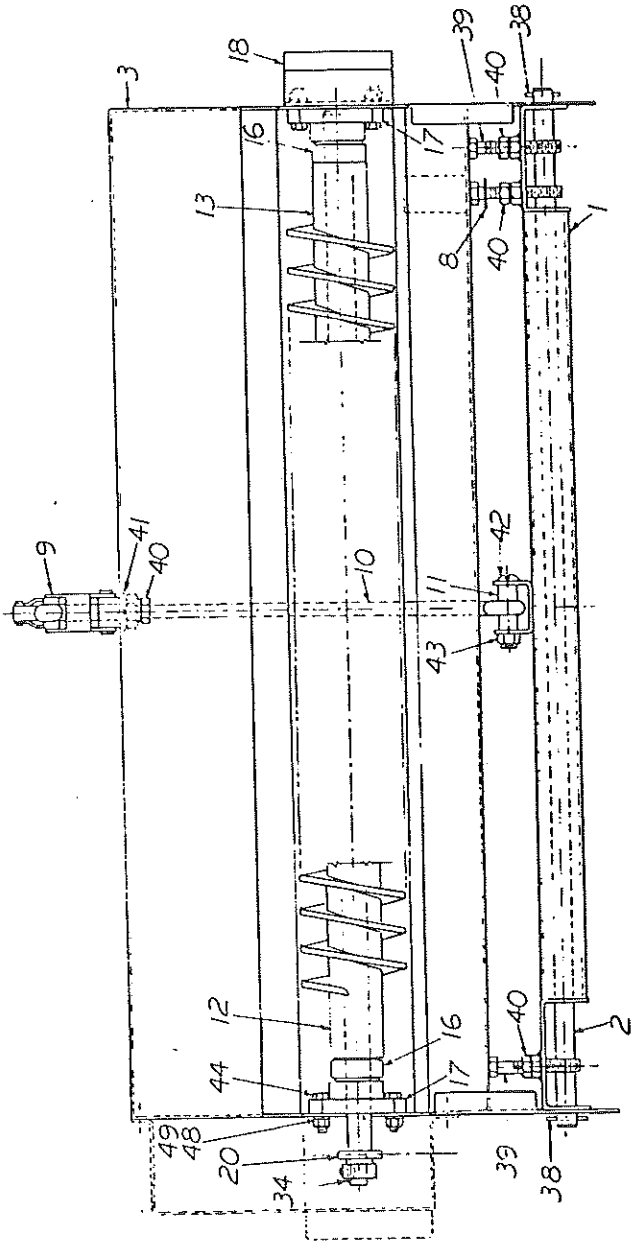
CONVEYOR DOLLY
FIGURE 7-2

INDEX NO.	PART NUMBER	PARTS LIST-----CONVEYOR DOLLY	QNTY PER ASSMLY
1	32-0353-900	DOLLY ASSY., 20" X 20", W/BLOCKS, CLOCKWISE, W/WHEELS	1
2	32-0356-600	DOLLY ASSY., 20" X 20", W/BLOCKS, COUNTERCLOCKWISE, W/WHEELS	1
3	21-0210-001	FOLLOWER BLOCK, WORM, CLOCKWISE	2
4	21-0210-002	FOLLOWER BLOCK, WORM, COUNTERCLOCKWISE	2
5	10-1901-420	NUT, FLEXNUTS, S/S, 1/4-20	2
6	10-1105-420	SCREW, HEX HEAD, S/S, 1/4-20 X 5/8" LONG	2
7	10-1801-420	WASHERS, LOCK, S/S, 1/4" DIA.	2
8	10-1904-524	NUT, HEXNUT, S/S, 5/16-24, JAM	4
9	22-0377-000	WHEEL, DOLLY	4
10	32-3356-780	CARRIAGE, DOLLY, 20" X 20" WITHOUT FOLLOWERS	1
11	10-8106-116	PIN, COTTER, S/S, 5/16" X 3/4"	2
12	22-0313-705	LINKAGE, CONNECTING, 12" LONG	AS REQ'D
12	22-3310-791	LINKAGE, CONNECTING, 12" LONG, CLOSE COUPLED (ACCUMULATOR)	AS REQ'D
13	22-0313-708	LINKAGE, CONNECTING, 13" LONG	AS REQ'D
14	22-0313-710	LINKAGE, CONNECTING, 14" LONG	AS REQ'D
17	22-0411-800	SQUEEGEE ASSY. (20" X 20" DOLLY)	1
18	22-0411-806	SQUEEGEE, WITHOUT BRACKETS	1
19A	11-0943-500	BRACKET, SQUEEGEE, 16 GAUGE	2
19B	11-0414-500	BRACKET, SQUEEGEE, ANGLE (BOOMERANG APPLICATION ONLY)	0
20	10-1008-832	SCREW, PAN HEAD, S/S, 8/32-1"	2
21	10-1006-832	SCREW, PAN HEAD, S/S, 8/32-3/4"	2
22	10-1901-832	NUTS, FLEX NUTS, S/S, 8/32 DIA.	2



GEARMOTOR SPROCKET SELECTION

CONVEYOR SPEED F.P.M.	WORM R.P.M.	GEARMOTOR R.P.M.	MOTOR VOLTAGE	NO. OF TEETH MOTOR SPROCKET	SPROCKET BORE SIZE
4.75	57	30	230V-60CY	19	3/4"-1964
6	72	30	230V-60CY	24	3/4"-1961
8	96	30	230V-60CY	32	3/4"-300
10	120	30	230V-60CY	40	3/4"-1933
12	144	60	230V-60CY	24	3/4"-1961
12.5	150	60	230V-60CY	25	
15	180	60	230V-60CY	30	
20	240	60	230V-60CY	40	
6.5	100	15	230V-60CY	10	3/4"-1964

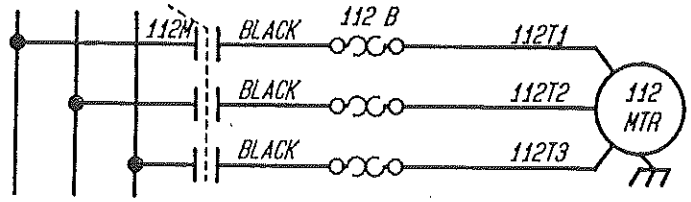


DRIVE MECHANISM
FIGURE 7-3

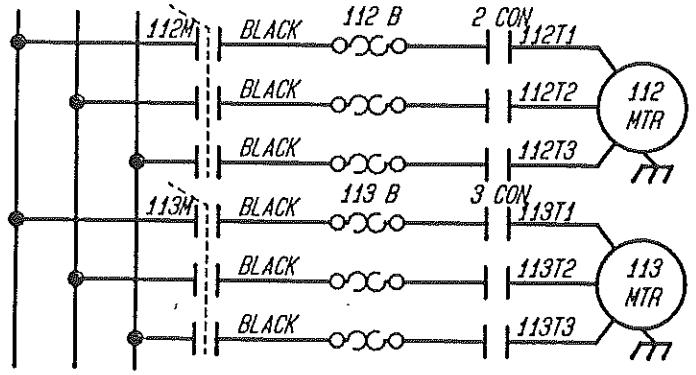
INDEX NO.	PART NUMBER	PARTS LIST------OUTSIDE DRIVE MECHANISM	QNTY PER ASSMLY
1	32-0241-400	BRACKET, MOUNTING, S/S, DRIVE	1
2	11-0209-100	HINGE, ROD, S/S, OUTSIDE DRIVE	1
3	32-0244-900	CABINET, DRIVE, S/S	1
4	31-0219-202	MOUNTING, MOTOR AND BEARING	1
5	31-0219-203	COVER, REAR, S/S	1
6	31-0219-204	DRIP PAN, WORM, S/S	1
7	31-0219-201	CHAIN GUARD, S/S	1
8	12-0243-502	SWITCH, ACTUATOR (DUAL DRIVES)	1
9	19-2300-600	CLAMP, DESTORO, OUTSIDE DRIVE (DRILLED)	1
10	11-0217-602	LATCH, ROD, S/S, W/JACK SHAFT	1
11	19-2500-300	TUBING, 1/2" O.D., LATCH, S/S, OUTSIDE DRIVE	1-3/16"LG.
12	22-0243-300	WORM, CLOCKWISE, OUTSIDE DRIVE	1
13	22-0243-400	WORM, COUNTERCLOCKWISE, OUTSIDE DRIVE	1
15	N.P.N.	CLUTCH, HELLAND TT2X 3/4" W/BUSHING & O-RING & W/O SPROCKET	1
16	70-0480-053	BEARING, THRUST, 3/4", OUTSIDE DRIVE	2
17	19-2500-100	BEARING, FLANGE, 3/4" BORE, OUTSIDE DRIVE	2
18	11-0211-400	GUIDE, WORM, FOLLOWERS, S/S	1
19	55-5004-034	MOTOR, V.W., 1/4 HP, (HIGH/LOW VOLTAGE*) 30 RPM	1
20	19-3102-600	SPROCKET, #35, LOT, 1/2" BORE, (OSD WORM)	1
21	70-0900-035	CHAIN, BLACK, #35, PER INCH	36
22	70-0905-135	LINK, CONNECTING, #35, BLACK	1
23	N.P.N.	SPROCKET, #35	1
24	55-1050-310	CONTACTOR, 40A, ROWAN, 220V COIL	1
25	55-7400-160	SWITCH, LIMIT, OMRON, #ZEQ2S (FOR DUAL DRIVES)	1
26	55-2816-004	NIPPLE, CHASE, 1/2"	1
27	55-2003-302	CONNECTOR, SEALTITE, 1/2", 45 DEGREES	1
28	70-0800-001	COUPLING, JAW TYPE, 3/4", LOVE JOY #L100 W/URATHENE INSERT	1
29	11-0219-100	SHAFT, JACK, OUTSIDE DRIVE	1
30	31-0219-205	BEARING SUPPORT	1
31	70-0455-207	FLANGE, BEARING, 2 HOLE, FB260X, 3/4"	2
34	70-4050-020	KEY, WOODRUFF, #5, 1/8" X 5/8" FOR 10 TOOTH SPROCKET	1
35	19-2100-204	KEY, 3/16" X 3/16" X 1-1/2" LONG	1
36	19-2100-204	KEY, 3/16" X 3/16" X 1-1/2" LONG	1
37	19-2100-701	KEY, 3/8" X 3/8" X 5/8" LONG	1
38	10-8108-118	PIN, COTTER, 1/8" X 1", S/S	2
39	10-1220-518	SCREW, ROUND, 5/16-18 X 2-1/2" LONG	2
40	10-1900-518	NUT, HEX, 5/16, S/S	4
41	10-2801-110	WASHERS, LOCK, PLATED, 3/4"	1
42	10-1216-316	SCREW, ROUND, 3/8-16 X 2" LONG	1
43	10-2903-316	NUT, ELASTIC STOP, 3/8, S/S	1
44	10-1108-420	SCREW, HEX, 1/4-20 X 1" LONG, S/S	6
45	10-1900-832	NUT, HEX, 8/32, S/S	2
46	10-1003-832	SCREW, PAN, 8-32 X 3/8" LONG	2
47	60-7500-002	STUD, 1/4-20 X 1/2" LONG	14
48	10-1900-420	NUT, HEX, 1/4-20, S/S	34
49	10-1801-420	WASHERS, LOCK, 1/4", S/S	38
50	10-1800-420	WASHERS, FLAT, 1/4", S/S	18
51	10-1906-420	NUT, ACRON, 1/4", S/S	4
52	60-7500-003	STUD, 1/4-20 X 3/8-16 X 1" LONG	4

* CUSTOMER TO VERIFY VOLTAGE AND HERTZ

INDEX NO.	PART NUMBER	PARTS LIST-----OUTSIDE DRIVE MECHANISM	QNTY PER ASSMLY
53	10-1110-316	SREW, HEX, 3/8-16 X 1-1/4" LONG, S/S	4
54	10-1800-316	WASHERS, FLAT, 3/8", S/S	4
55	10-1801-316	WASHERS, LOCK, 3/8", S/S	4
56	10-1900-316	NUT, HEX, 3/8-16, S/S	4
57	60-7500-001	STUD, 1/4-20 X 3/8" LONG	14
	41-0216-700	UNDER SHELF LATCH ASSEMBLY (NOT SHOWN)	1
	70-1050-200	CLUTCH, HELLAND TT2X 3/4" W/BUSHING & O-RING (SET AT 150 LBS.)	
	70-1050-201	CLUTCH, HELLAND TT2X 3/4" W/BUSHING & O-RING (SET AT 180 LBS.)	
	70-1050-202	CLUTCH, HELLAND TT2X 3/4" W/BUSHING & O-RING (SET AT 200 LBS.)	
	70-1050-203	CLUTCH, HELLAND TT2X 3/4" W/BUSHING & O-RING (SET AT 250 LBS.)	
	70-1050-204	CLUTCH, HELLAND TT2X 3/4" W/BUSHING & O-RING (SET AT 300 LBS.)	
	70-1050-205	CLUTCH, HELLAND TT2X 3/4" W/BUSHING & O-RING (SET AT 350 LBS.)	
	19-3106-100	SPROCKET, #35, 24T, 6 & 12 FPM, HELLAND CLUTCH (OSD)	
	19-3106-200	SPROCKET, #35, 32T, 8 & 16 FPM, HELLAND CLUTCH (OSD)	
	19-3106-300	SPROCKET, #35, 40T, 10 FPM, HELLAND CLUTCH (OSD)	
	19-3106-400	SPROCKET, #35, 19T, 4.5 FPM, HELLAND CLUTCH (OSD)	

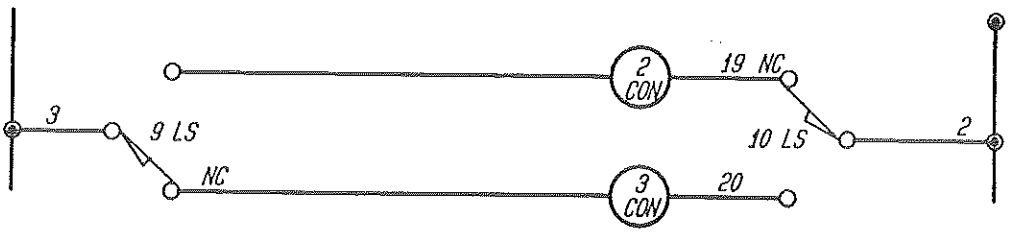


SINGLE WORM DRIVE MOTOR - 1/4 H.P.

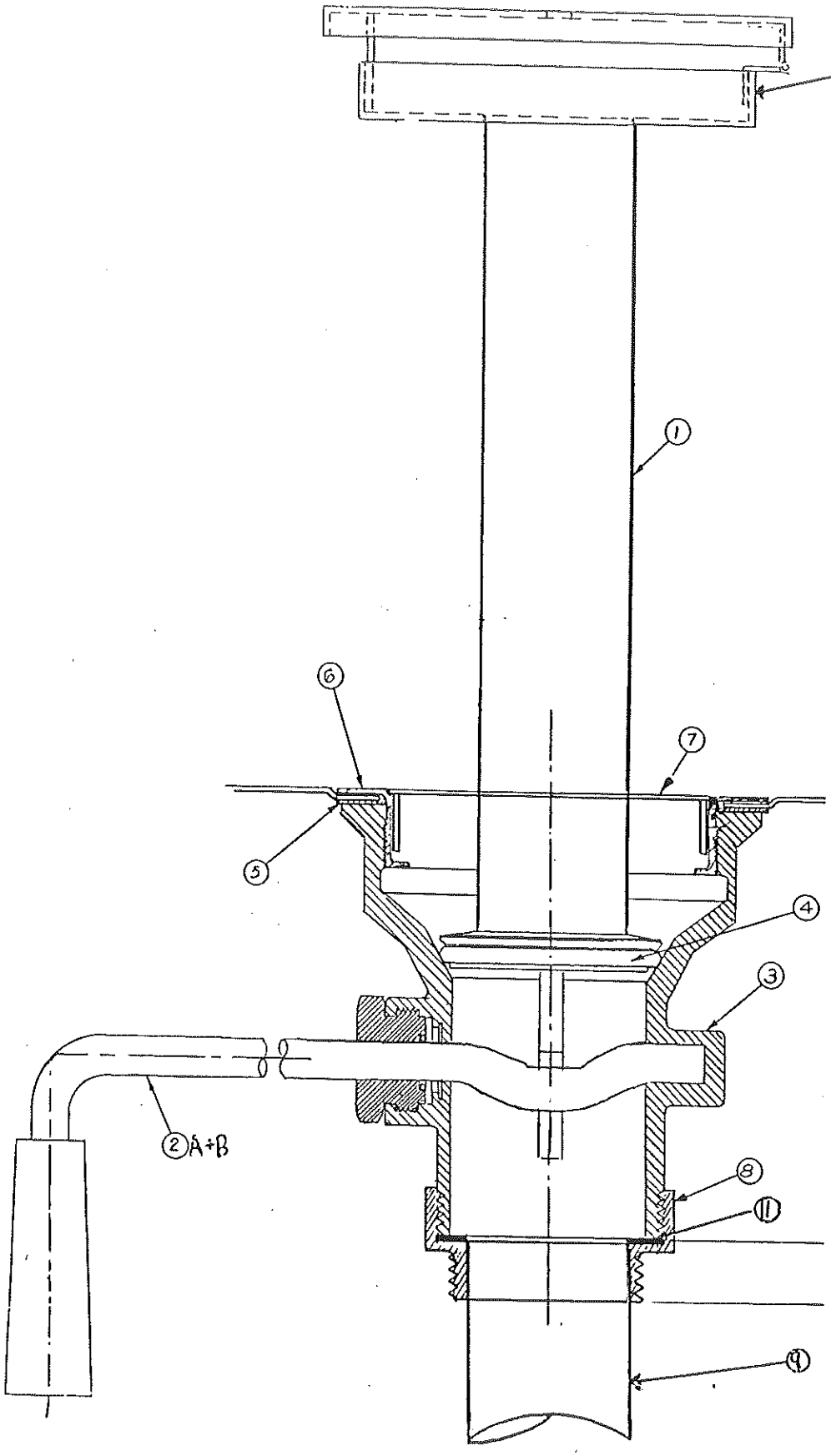


LOW SPEED WORM DRIVE MOTOR - 1/4 H.P.

HIGH SPEED WORM DRIVE MOTOR - 1/4 H.P.



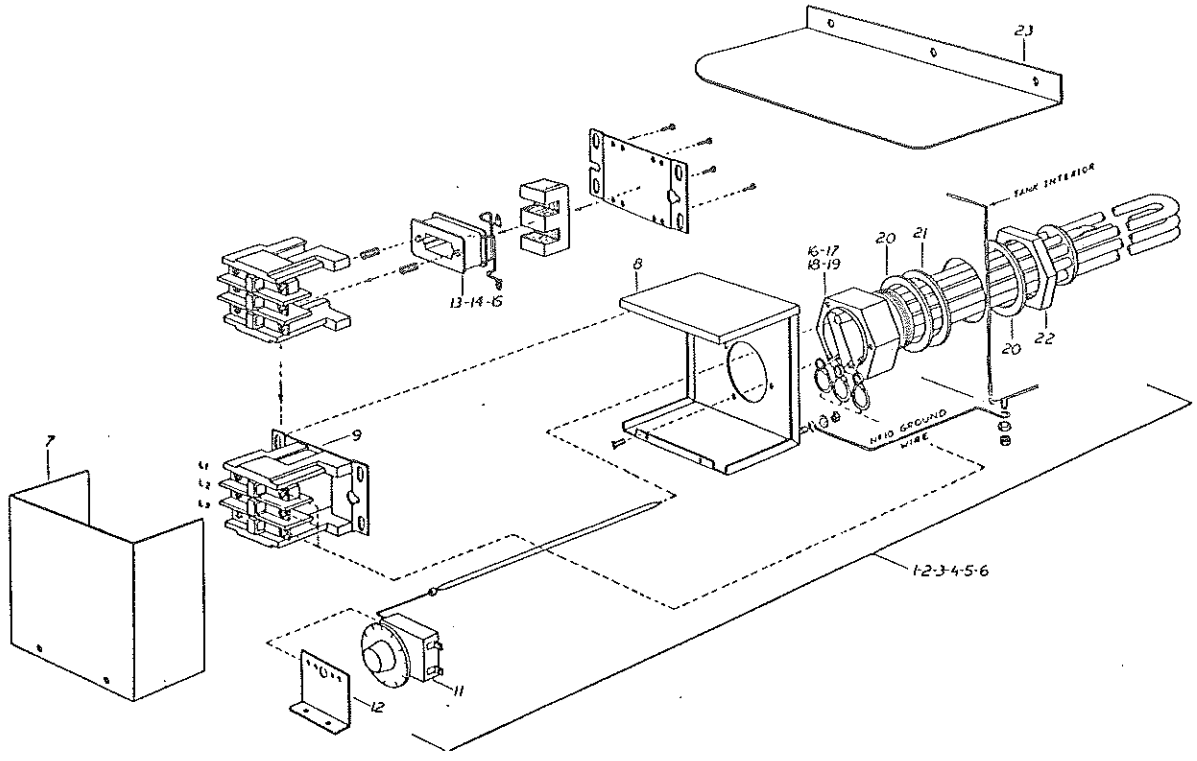
DUAL SPEED DRIVE



LEVER DRAIN ASSEMBLY WITH STANDPIPE
FIGURE 7-4

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----LEVER DRAIN ASSEMBLY WITH STAND PIPE	QNTY PER ASSMLY
1	75-1476-006	PIPE, STAND, KLIEN	1
2A	75-1476-003	HANDLE, LEVEL ACTION, SHORT(10-1/4"), DRAIN, S/S	1
2B	75-1476-008	HANDLE, LEVER ACTION, LONG(15-1/4"), DRAIN, S/S	1
3	75-1476-004	VALVE, BODY, KLEIN LEVER	1
4	70-1476-001	RING, "O", ROTARY DRAIN VALVE	1
5	70-1476-002	GASKET, WASTE DRAIN, STANDARD KLEIN	1
6	N.P.N.	RING, LOCK, (PART OF 75-1476-003 OR 75-1476-008)	1
7	75-1476-002	STRAINER, LEVER ACTION, VALVE, KLEIN #7200, S/S	1
8	75-0751-350	BUSHING, REDUCER, KLEIN, 2" X 1-1/2"	1
9	75-1450-016	TAIL PIECE, ROUGH BRASS, 1/1/2" X 6" W/FLANGE	1
10	32-0651-300	STAND PIPE, TOP	1
11	70-1476-003	GASKET, DRAIN ADAPTER, KLIEN	1
12	32-0629-600	LEVER DRAIN ASSEMBLY - COMPLETE KIT (PER CABINET)	1



ELECTRIC HEATER

FIGURE 7-5

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----ELECTRIC HEATER	QNTY PER ASSMLY
1	55-2859-751	HEATER, ASSEMBLY, 7.9 KW, 480V W/480V CONTROL	1
2	55-2859-752	HEATER, ASSEMBLY, 7.9 KW, 480V W/220V CONTROL	1
3	55-2859-753	HEATER, ASSEMBLY, 7.9 KW, 480V W/ 24V CONTROL	1
4	55-2859-702	HEATER, ASSEMBLY, 7.9 KW, 208/220V W/24V CONTROL	1
5	55-2859-703	HEATER, ASSEMBLY, 7.9 KW, 208/220V W/220V CONTROL	1
7	25-0409-355	KIT, HEATER BOX, W/ HARDWARE AND CLIPS, S/S	1
8	25-0409-355	KIT, HEATER BOX, W/ HARDWARE AND CLIPS, S/S	1
9	55-1050-323	CONTACTOR, 40 AMPS, 24V, ROWAN/AH	1
11	55-2860-922	THERMOSTAT, W/ DIAL, 60-250 DEGREES	1
12	11-0938-600	BRACKET, THERMOSTAT, ELECTRIC HEATER, S/S	1
13	55-1051-030	COIL, CONTACTOR, 208/240V	1
14	55-1051-031	COIL, CONTACTOR, 440/480V	1
15	55-1051-039	COIL, CONTACTOR, 24V	1
16	55-2860-770	ELEMENT, HEATER, TANK, 7.9 KW, 240V	1
17	55-2860-772	ELEMENT, HEATER, TANK, 7.9 KW, 480V	1
20	19-1500-900	WASHER, FLAT, ELECTRIC HEATER, S/S	2
21	19-4201-700	GASKET, ELECTRIC HEATER, 2-3/8" I.D. X 3-1/4" O.D	1
22	60-5502-016	NUT, LOCK, 2", GALVINIZED	1
23	45-0411-600	COVER, HEATER, ELECTRIC, CSL 1390 CABINET	1
23	45-0411-700	COVER, HEATER, ELECTRIC, SUPER TANK CABINET	1
23	45-0411-800	COVER, HEATER, ELECTRIC, CA CABINET	1

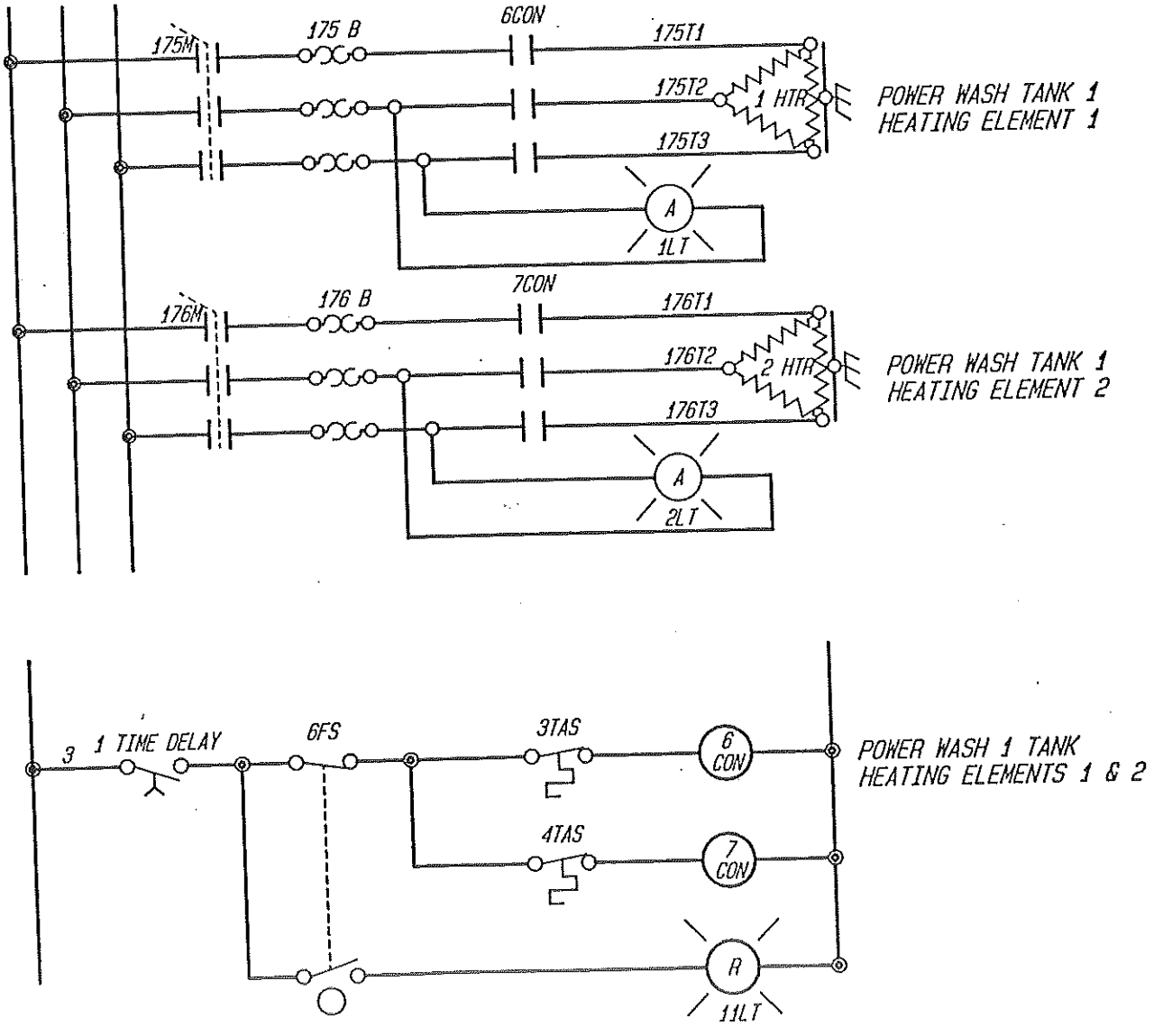
CLEANING

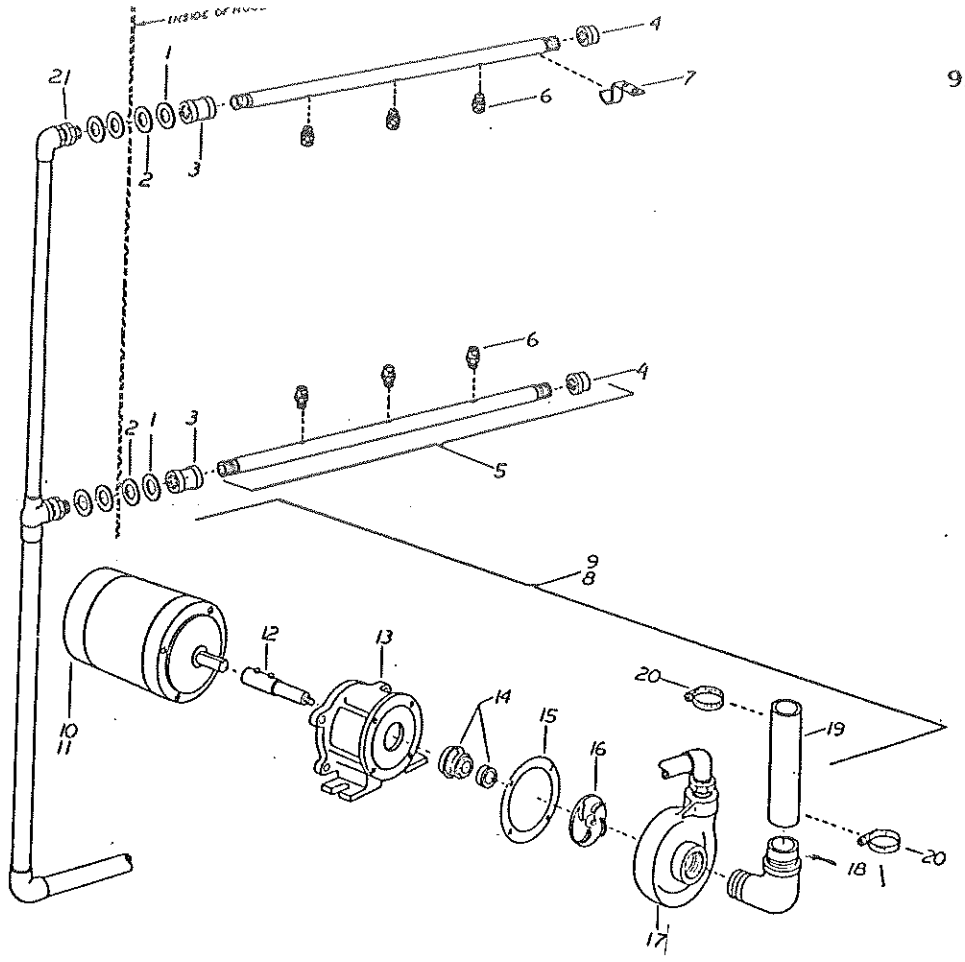
Cleaning of the electrical tank heaters is simply performed by draining the tank of water and wiping the area with a mild soap and water solution. Once washed, the area should be thoroughly rinsed with water.

ILLUSTRATED PARTS LIST

An exploded view of the electric tank heater is shown. All parts shown are replaceable. When ordering, the order should contain the Adamation part number, part description and quantity required.

ELECTRICAL DIAGRAM



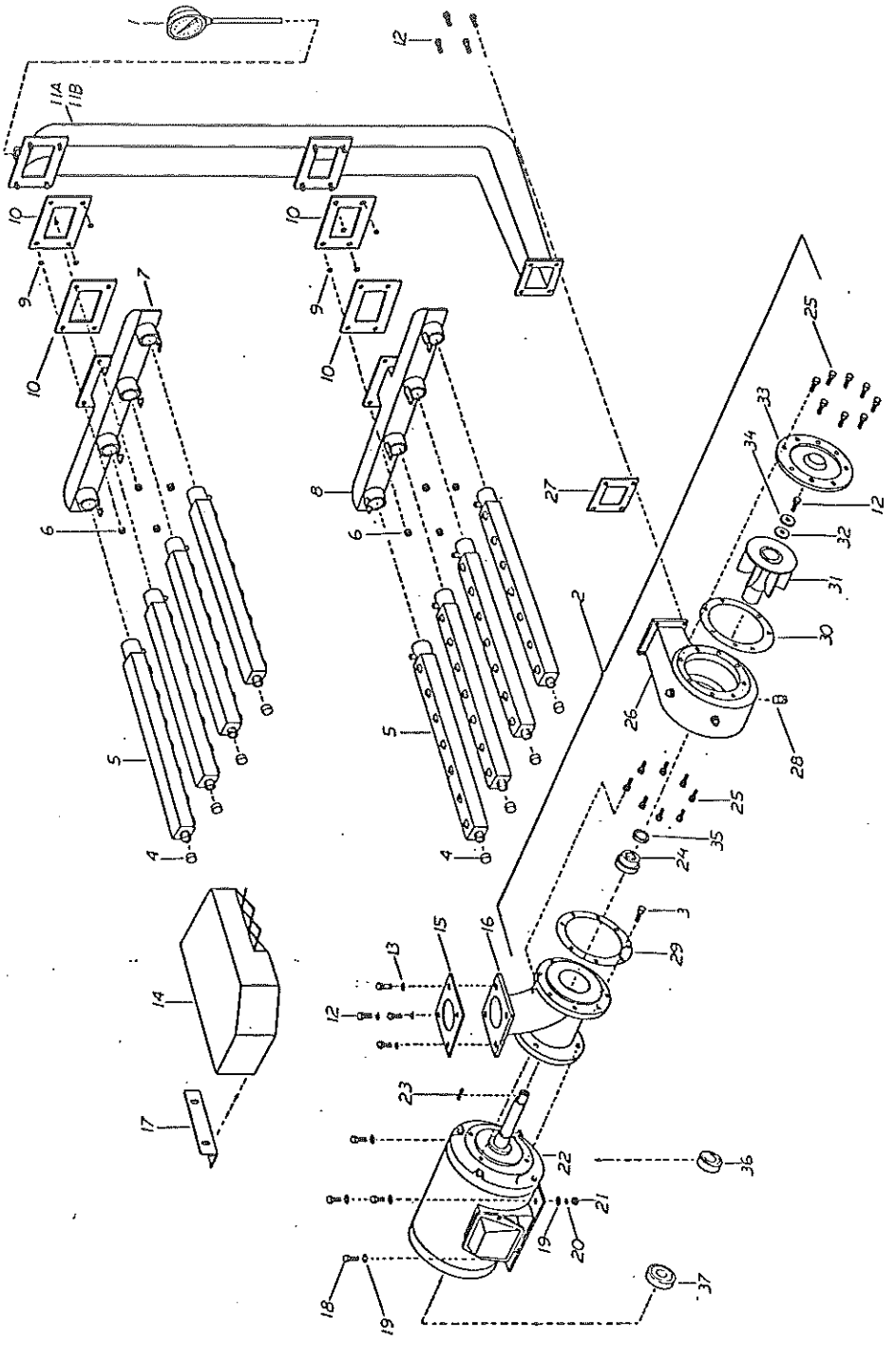


ILLUSTRATED PARTS LIST

FIGURE 7-6

INDEX NO.	PART NUMBER	PARTS LIST-----TRANSFER AND PRERINSE SYSTEM	QNTY PER ASSMLY
1	19-1500-200	WASHER, 7/8" I.D. X 1-1/2" O.D., S/S	4
2	19-4200-500	GASKET, 7/8" I.D. X 1-1/2" O.D., FIBER	4
3	75-1141-007	COUPLING, REDUCING 3/4" TO 1/2", BRASS	2
4	75-0830-606	CAP, PLATED, 3/4" NPT	2
5	22-0603-800	PIPE ASSY, PRERINSE, W/3 NOZZLES, THREADED	2
6	75-5400-700	NOZZLE, V--SET, 65-30, 1/8" BRASS	6
7	12-0412-300	SUPPORT, (PREWASH AND RINSE ARMS)	1
9	55-6300-014	PUMP, 1/2 HP, PRICE, (HIGH/LOW VOLTAGE*), 3PH, T.E.N.V.	1
9A	55-6300-015	PUMP, 3/4 HP, TRANSFER, (HIGH/LOW VOLTAGE*), 3PH, T.E.F.C.	1
10	55-5008-015	MOTOR, 1/2 HP, (HIGH/LOW VOLTAGE*) 3PH, T.E.N.V.	1
11	55-5010-015	MOTOR, 3/4 HP, TRANSFER, (HIGH/LOW VOLTAGE*) 3PH, T.E.F.C.	1
12	55-6301-906	SHAFT, PUMP, PRICE	1
13	N.P.N.	BASE, PUMP SEAL HOUSING	1
14	55-6301-305	SEAL, PUMP, PRICE, #447	1
15	55-6301-605	GASKET, PUMP, PRICE	1
16	55-6301-110	IMPELLER, PUMP, PRICE, 60HZ, 1/2 HP, 3-3/4" DIA.	1
17	N.P.N.	HOUSING AND DISCHARGE, IMPLELLER	1
18	19-4301-900	NIPPLE, HOSE ADAPTER, 1-5/8", BLACK	1
19	65-7112-080	HOSE, SUPER FLEX, 1-5/8" O.D., PER FOOT	1
20	70-1000-528	CLAMP, HOSE, #24H, S/S	2ft
21	75-5151-004	NIPPLE, HEX, 1/2", BRASS	2
			1

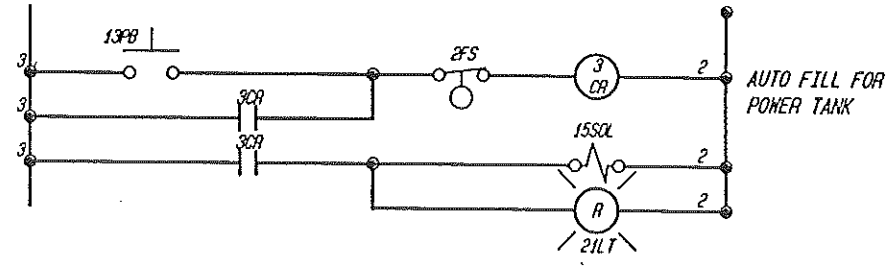
* CUSTOMER TO VERIFY VOLTAGE AND HERTZ



POWER PUMP SYSTEM
FIGURE 7-7

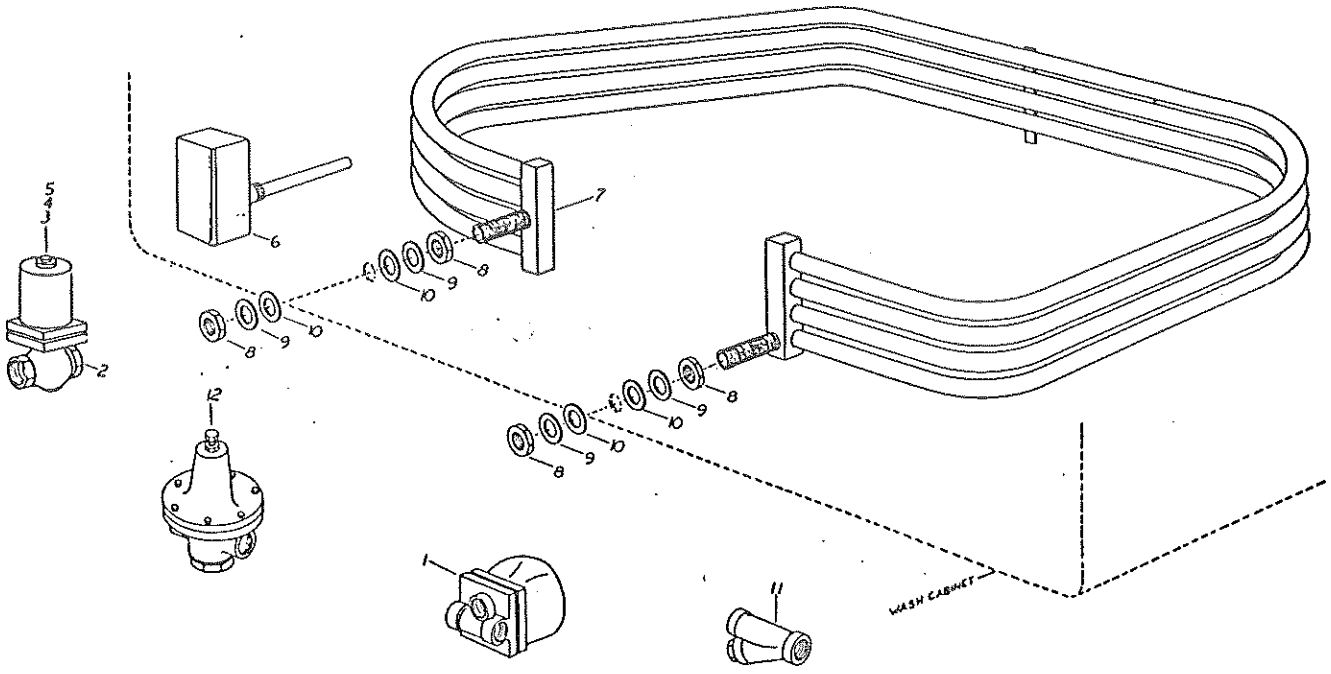
INDEX NO.	PART NUMBER	PARTS LIST-----POWER PUMP SYSTEM	QNTY PER ASSMLY
1	70-2475-007	THERMOMETER, FINAL RINSE, 20-240 DEGREES	1
1A	70-2475-010	THERMOMETER, FINAL RINSE, LARGE(5"), 20-240 DEGREES	1
2	32-0500-602	PUMP, WASH, ASSY, 3 HP, CLOCKWISE, T.E.F.C.	1
2A	32-0500-101	PUMP, WASH, ASSY, 3 HP, COUNTERCLOCKWISE, T.E.F.C.	1
4	75-0830-606	CAP, 3/4", PLATED	8
5	42-0655-700	ARM, WASH, SQUARE, HIGH PRESSURE, WITH OUT CAP	8
6	10-1106-518	SCREW, HEX, 5/16-18 X 3/4" LONG, S/S	8
7	32-0614-700	MANIFOLD, UPPER, 20 X 20 (BEFORE 10-1-90)	1
7A	42-0654-300	MANIFOLD, UPPER (AFTER 10-1-90)	1
8	32-0614-800	MANIFOLD, LOWER, 20 X 20 (BEFORE 10-1-90)	1
8A	42-0657-600	MANIFOLD, LOWER (AFTER 10-1-90)	1
9	75-7050-529	"O" RING, MANIFOLD TO RISER, 1/4" I.D.X 1/16" (PER MANIFOLD)	8
10	19-4200-700	GASKET, NEOPRENE, MANIFOLD, UPPER/LOWER	4
11	32-0605-400	RISER PIPE, STANDARD HIGH HOOD	1
12	10-5116-316	SCREW, HEX, 3/8-16 X 2" LONG (NYLON)	9
13	10-1800-316	WASHER, FLAT, 3/8", S/S	4
14	42-0655-900	RESTRICTOR, PUMP SUCTION, BOX AND SCREEN, S/S	1
15	19-4200-100	GASKET, PUMP INTAKE, NEOPRENE	1
16	31-0500-200	HOUSING, PUMP INTAKE, 3 HP (SEAL HOUSING)	1
17	70-2380-050	FITTING, GREASE	2
18	10-1110-518	SCREW, HEX, 5/16-18 X 1-1/4" LONG	4
19	10-1800-518	WASHER, FLAT, 5/16", S/S	8
20	10-1801-518	WASHER, LOCK, 5/16", S/S	4
21	10-1900-518	NUT, HEX, 5/16-18, S/S	4
22	55-5016-035	MOTOR, WASH PUMP, 3 HP, (HIGH/LOW VOLTAGE*), 3PH, O.P.D.	1
22A	55-5016-037	MOTOR, WASH PUMP, 3 HP, (HIGH/LOW VOLTAGE*), 3PH, T.E.F.C.	1
23	19-2100-206	KEY, 3/16" X 3/16" X 2" LONG, S/S	1
24	75-7050-202	SEAL, WASH PUMP, 1" DIA. (INCLUDES "O" RING-INDEX#35)	1
25	10-1106-420	SCREW, HEX, 1/4-20 X 3/4" LONG, S/S	16
26	31-0500-100	PUMP HOUSING, DISCHARGE, 3HP (IMPELLER)	1
27	19-4200-900	GASKET, PUMP, DISCHARGE	1
28	75-0750-070	BUSHING, 3/8" X 1/2", BLACK	1
29/30	19-4204-100	INSPECTION PLATE, GASKET, 3HP, PUMP	2
31	32-0505-400	IMPELLER, WASH PUMP, 3 HP, S/S, W/ BLACK PLATE	1
32	19-4201-100	GASKET, 3/8" I.D.X 1-3/8" O.D. (IMPELLER)	1
33	21-0501-000	COVER, 3 HP, PUMP IMPELLER	1
34	19-1500-300	WASHER, IMPELLER SCREW, S/S	1
35	75-7050-520	RING, "O", PUMP, SEAL	1
36	42-0654-307	RESTRICTOR, LOWER MANIFOLD, S/S	1

* CUSTOMER TO VERIFY VOLTAGE AND HERTZ



POWER WASH 1 PUMP MOTOR - 3 H.P.

POWER RINSE 1 PUMP MOTOR - 3 H.P.

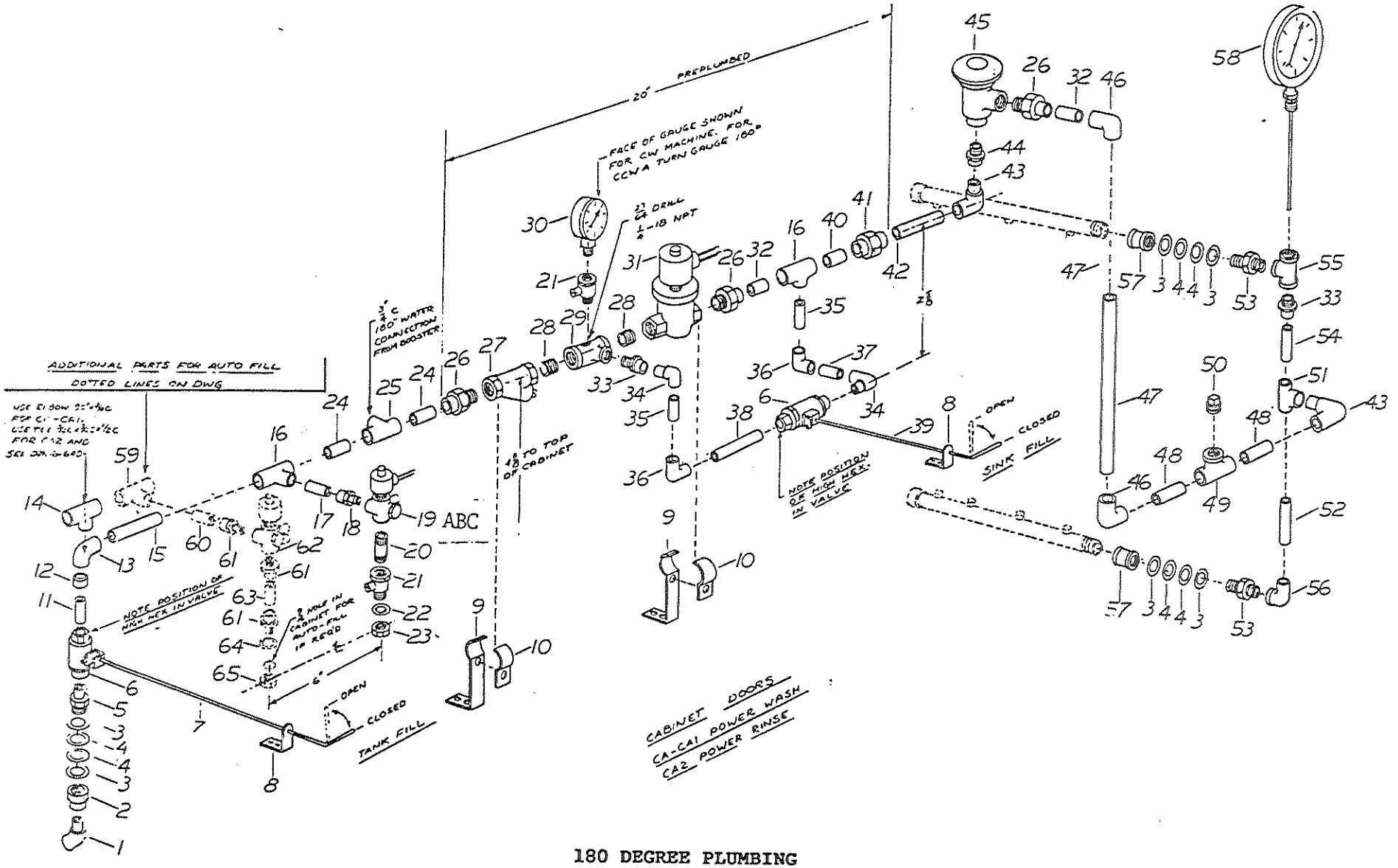


CLOSED STEAM SYSTEM

FIGURE 7-8

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----CLOSED STEAM HEAT	QNTY PER ASSMLY
1	75-7800-002	TRAP, STEAM, 3/4", BUCKET	1
1A	75-7800-010	TRAP, STEAM, 1", BUCKET	1
2	55-7300-428	SOLENOID, STEAM, FOR 3/4, 24V, 50/60HZ, SPECIFY VOLTAGE	1
2A	55-7300-429	SOLENOID, STEAM, FOR 1", 24V, 50/60HZ, SPECIFY VOLTAGE	1
3	55-7301-357	COIL, HAYS, 24V (FOR SOLENOID)	1
4	55-7301-358	COIL, HAYS, 208/480 VOLTS (FOR SOLENOID)	1
5	55-7301-359	COIL, HAYS, 480 VOLTS (FOR SOLENOID)	1
6	55-7750-050	THERMOSTAT, W/R, 4", #11B18-101	1
7	32-0710-800	COIL, STEAM & HOT WATER, 1" NIPPLE	4
8	60-5502-107	NUT, LOCK, 1", S/S	4
9	19-1500-100	WASHER, 1-1/16" I.D. X 2" O.D., S/S	4
10	19-4201-000	GASKET, 1-1/16" I.D. X 1 3/4" O.D., FIBER	1
11	75-7500-051	STRAINER, Y, 3/4", WATTS, BLACK	1
11A	75-7500-101	STRAINER, Y, 1", WATTS, BLACK	1
12	75-6875-040	REGULATOR, 3/4", 152A, 3-15 PSI	1
12A	75-6875-070	REGULATOR, 1", 152A, 3-15 PSI	1



180 DEGREE PLUMBING
MACHINES BEFORE AUGUST 1984
FIGURE 7-9A

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----180 DEGREE PLUMBING	QNTY PER ASSMLY
1	75-1712-004	ELBOW, STREET, 1/2"C 45 DEGREES, COPPER	1
2	75-0026-015	ADAPTER, 1/2" F X 1/2" C, BRASS	1
3	19-1500-200	WASHER, 7/8" I.D. X 1-1/2" O.D., S/S	6
4	19-4200-500	GASKET, 7/8" I.D. X 1-1/2" O.D., FIBER	6
5	75-0026-017	ADAPTER, STREET, 1/2" C 1/2" M	1
6	75-8515-001	VALVE, BALL, 1/2" X 1/2" C (FILL)	2
7	32-0645-701	HANDLE, FILL VALVE ASSY, W/BRACKET (POWER WASH)	1
8	31-0620-402	BOOT, HANDLE LEVER, FILL VALVE (WASH CABINET FR FILL)	2
9	21-0805-103	BRACKET, SUPPORT	2
10	21-0808-105	CLAMP, SUPPORT	2
11	65-4922-004	TUBING, 1/2" DIA., TYPE L, COPPER, PER FOOT	1-1/2"
12	75-0752-130	BUSHING, FLUSH, 3/4" X 1/2 C	1
13	75-1602-062	ELBOW, 3/4" C, 90 DEGREE, COPPER	1
14	75-7602-150	TEE, 3/4" C X 3/4" C X 1/2" C, COPPER	1
15	65-4922-006	TUBING, 3/4", TYPE L, COPPER, PER FOOT	13-1/4"
16	75-7602-150	TEE, 3/4" C X 3/4" C X 1/2" C, COPPER	2
17	65-4922-004	TUBING, 1/2", TYPE L, COPPER, PER FOOT	SPECIFY
18	75-0026-010	ADAPTER, 1/2" C X 1/4" M	1
19	75-0825-002	CAP, 1/4", BLACK IRON	1
20	65-4922-004	TUBING, 1/2", TYPE L, COPPER, PER FOOT	SPECIFY
21	75-8520-020	VALVE, 1/4" F X M (BOOSTER), BRASS	2
22	10-1800-113	WASHERS, FLAT, 1/2", S/S	1
23	60-5502-102	NUT, LOCK, HEX, 1/4" IPS, S/S	1
24	65-4922-006	TUBING, 3/4", TYPE L, COPPER, PER FOOT	SPECIFY
25	75-7602-160	TEE, 3/4" C X 3/4" C X 3/4" C , COPPER	1
26	75-8201-100	UNION, 3/4" C X M, BRASS	3
27	75-7500-530	STRAINER, 3/4", WATTS #27, BRASS	1
28	75-5131-006	NIPPLE, CLOSE, 3/4", BRASS	2
29	75-7601-270	TEE, 3/4" F X 3/4" F X 1/2" F, BRASS	1
30	70-2470-610	GAUGE, PRESSURE, 2", 0-60 P.S.I., PLASTIC	1
31	55-7300-446	SOLENOID, 3/4", WATER, 24V, 50/60HZ, HAYS	1
32	65-4922-006	TUBING, 3/4", TYPE L, COPPER, PER FOOT	1-1/2"
33	75-0026-016	ADAPTER, 1/2" C X M, BRASS	2
34	75-1702-004	ELBOW, STREET, 1/2" C, 90 DEGREE, COPPER	2
35	65-4922-004	TUBING, 1/2", TYPE L, COPPER, PER FOOT	1-5/8"
36	75-1602-042	ELBOW, 1/2" C, 90 DEGREE, COPPER	2
37	65-4922-004	TUBING, 1/2", TYPE L, COPPER, PER FOOT	1-1/2"
38	65-4922-004	TUBING, 1/2", TYPE L, COPPER, PER FOOT	5-5/8"
39	32-0645-702	HANDLE ASSY, FILL VALVE, W/BRACKET, FINAL RINSE	1
40	65-4922-006	TUBING, 3/4", TYPE L, COPPER, PER FOOT	SPECIFY
41	75-8202-006	UNION, 3/4", COPPER	1
42	65-4922-006	TUBING, 3/4", TYPE L, COPPER, PER FOOT	13-1/2"
43	75-1702-006	ELBOW, STREET, 3/4", 90 DEGREES, COPPER	2
44	75-0026-041	ADAPTER, 3/4" C X M, COPPER	1
45	75-7550-225	SYPHON BREAKER, 3/4", SLOAN, CHROME	1
46	75-1602-062	ELBOW, 3/4" C, 90 DEGREE, COPPER	2
47	65-4922-006	TUBING, 3/4", TYPE L, COPPER, PER FOOT	SPECIFY

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----180 DEGREE PLUMBING	QNTY PER ASSMLY
48	65-4922-006	TUBING, 3/4", TYPE L, COPPER, PER FOOT	SPECIFY
49	75-7601-190	TEE, 3/4" C X 3/4" C X 1/2" F, BRASS	1
50	75-6201-004	PLUG, 1/2", BRASS	1
51	75-7602-080	TEE, 1/2" C X 1/2" C X 3/4" C, COPPER	1
52	65-4922-004	TUBING, 1/2", TYPE L, COPPER, PER FOOT	SPECIFY
53	75-5151-004	NIPPLE, HEX, 1/2", BRASS	2
54	65-4922-004	TUBING, 1/2", TYPE L, COPPER, PER FOOT	SPECIFY
55	75-7601-160	TEE, 1/2" F X 1/2" F X 1/2" F, BRASS	1
56	75-1601-040	ELBOW, 1/2" X 1/2" C X F 1", 90 DEGREES, BRASS	1
57	75-1101-004	COUPLING, 1/2", BRASS	2
58	70-2475-007	THERMOMETER, FINAL RINSE, 20-240 DEGREES	1
58A	70-2475-010	THERMOMETER, FINAL RINSE (LARGE 5"), 20-240 DEGREES	1
59	75-7602-150	TEE, 3/4" C X 3/4 C X 1/2 C, COPPER	1
60	65-4922-004	TUBING, 1/2", TYPE L, COPPER, PER FOOT	SPECIFY
61	75-0026-010	ADAPTER, 1/2" C X 1/4" M	3
62	55-7300-210	SOLENOID, VALVE, 1/4", 24V, 50/60HZ, HAYS, 2 GPM (CABINET MAKE-UP)	1
63	65-4922-004	TUBING, 1/2", TYPE L, COPPER, PER FOOT	SPECIFY
64	10-1800-113	WASHERS, FLAT, 1/2", S/S	1
65	60-5502-102	LOCKNUT, HEX, 1/4" IPS, S/S	1

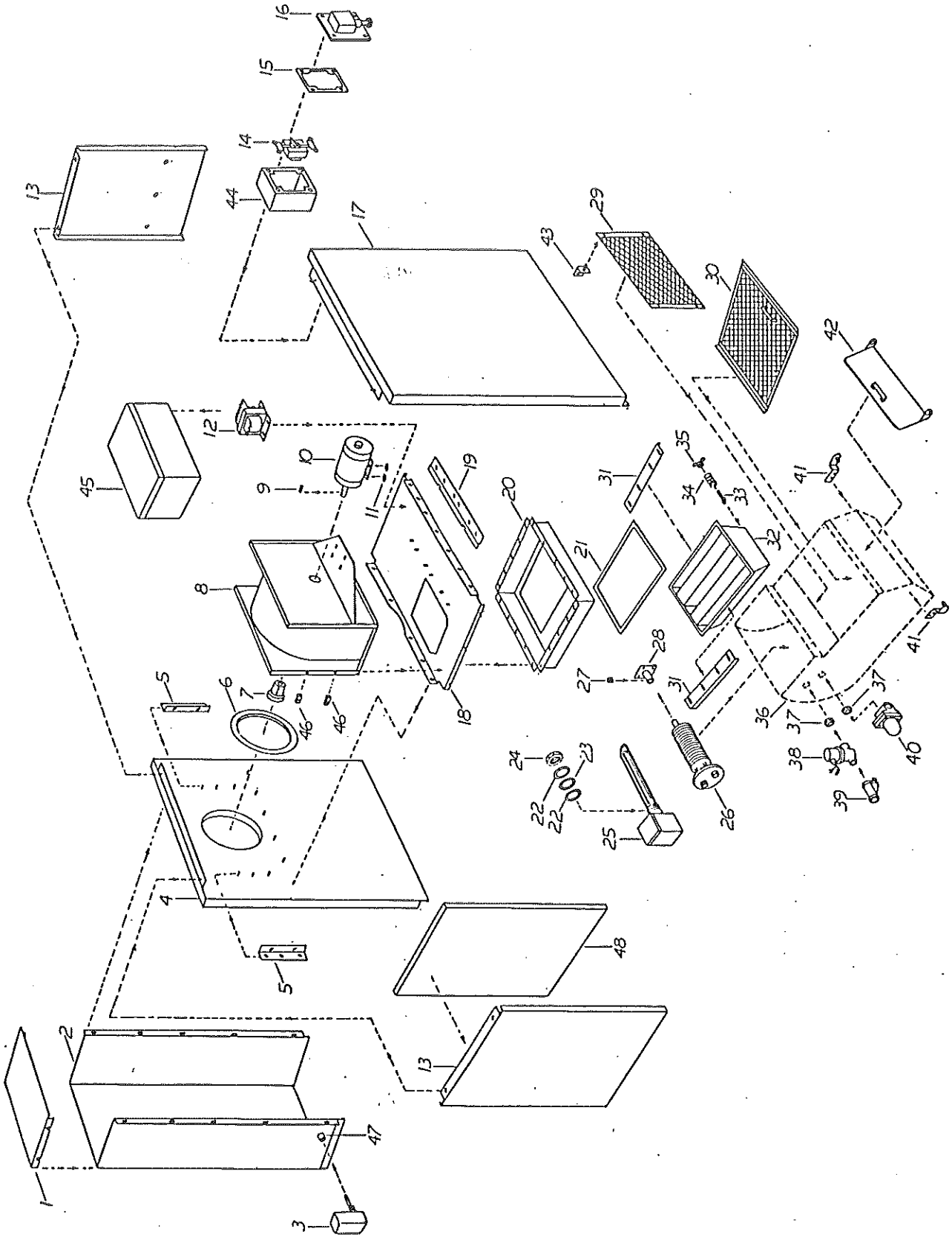
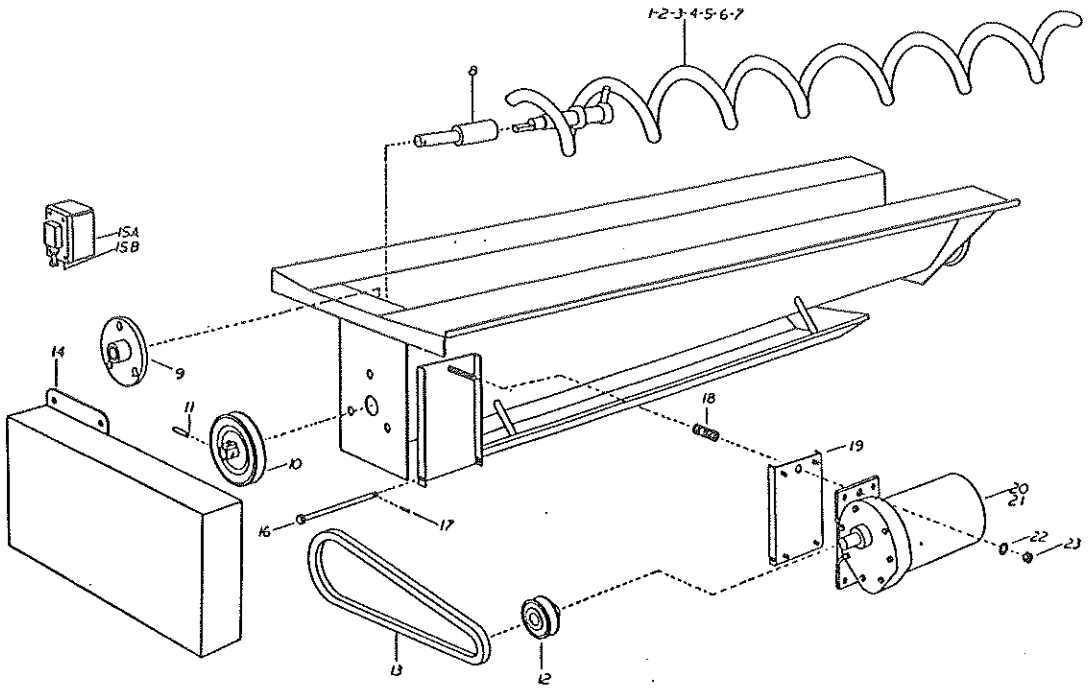


FIGURE 7-10

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----BLOWER	QNTY PER ASSMLY
1	98-5000-021	DUCT COVER, S/S (PART OF BLOWER CABINET AND SINK KIT)	1
2	98-5000-021	BLOWER DUCT, S/S (PART OF BLOWER CABINET AND SINK KIT)	1
3	55-7750-050	THERMOSTAT, WHITE ROGERS #11B18-101	1
4	98-5000-021	SIDE COVER, S/S (PART OF BLOWER CABINET AND SINK KIT)	1
5	98-5000-021	BLOWER CLAMP, S/S (PART OF BLOWER CABINET AND SINK KIT)	2
6	65-7109-010	GASKET, "U" CHANNEL	1
7	N.P.N.	BUSHING, TAPER LOCK (INTERGRAL PART OF MOTOR)	1
8	55-0555-005	BLOWER, CHICAGO, WITH 12 1/4" WHEEL	1
9	19-2100-204	KEY, 3/16" X 3/16" X 1-3/8" LONG	1
10	55-5016-022	MOTOR, BLOWER, 3 HP, #TR126 (HIGH/LOW VOLTAGE*)	1
11	N.P.N.	SHIMS, MOTOR ALLIGNMENT, S/S	AS REQ'D
12	55-7950-323	TRANSFORMER, ACME, #TA1-8132	1
13	98-5000-021	PANEL, END, S/S (PART OF BLOWER CABINET AND SINK KIT)	2
14	55-7400-605	SWITCH, S/D-CLASS 2150	1
15	N.P.N.	GASKET, SWITCH (SEE ITEM 16)	1
16	55-1100-011	COVER, SWITCH, KILLARK, W/GASKET	1
17	98-5000-021	SIDE COVER, S/S (PART OF BLOWER CABINET AND SINK KIT)	1
18	98-5000-021	BASE, FAN, S/S (PART OF BLOWER CABINET AND SINK KIT)	1
19	98-5000-021	CLAMP, BLOWER, S/S (PART OF BLOWER CABINET AND SINK KIT)	1
20	98-5000-021	PLENUM CHAMBER, S/S (PART OF BLOWER CABINET AND SINK KIT)	1
21	22-1606-501	GASKET, STRIP, 3/4" X 1-1/4", SPONGE RUBBER	1
22	19-1500-900	WASHER, FLAT, S/S (FOR ELECTRIC HEAT OPTION ONLY)	2
23	19-4201-700	GASKET, 2-3/8"I.D. X 3-1/4"O.D (FOR ELECTRIC HEAT OPTION ONLY)	1
24	60-5502-016	NUT, LOCK, 2", GALVINIZED (FOR ELECTRIC HEAT OPTION ONLY)	1
25A	55-2860-770	ELEMENT, ELECTRIC, 7.9 KW, 240V (FOR ELECTRIC HEAT OPTION ONLY)	1
25B	55-2860-772	ELEMENT, ELECTRIC, 7.9 KW, 480V (FOR ELECTRIC HEAT OPTION ONLY)	1
26	32-0975-000	COIL, STEAM, BLOWER, ASSEMBLY (FOR STEAM HEAT OPTION ONLY)	1
27	32-0975-000	SCREW, #10-32, 3/8" LONG (PART OF 32-0975-000)	1
28	32-0975-000	SUPPORT, STEAM COIL (PART OF 32-0975-000)	1
29	32-0976-001	SCREEN, BLOWER, INTERNAL, PLASTISOL COATED	1
30	42-0982-800	SCREEN, SCRAP, BLOWER, S/S	1
31	98-5000-021	SUPPORT, FOR NOZZLE ENCLOSURE, S/S (PART OF BLOWER KIT)	2
32	98-5000-021	NOZZLE, ENCLOURE, S/S (PART OF BLOWER CABINET AND SINK KIT)	1
33	10-1012-420	SCREW, MODIFIED, 1/4-20 X 1-1/2" LONG (WASHER-10-1800-420)	9
34	70-7400-022	SPRING, 1/2" O.D. X 1/2" LG. X 1/16" WIRE	9
35	10-1905-420	NUT, WING, 1/4-20, S/S	9
36	98-5000-021	SINK, BLOWER (PART OF BLOWER CABINET AND SINK KIT)	1
37	60-5502-209	NUT, LOCK, 1-1/4" NPT, BRASS (FOR STEAM OPTION ONLY)	2
38	55-7300-428	VALVE, SOLENOID, 3/4", 24V (FOR STEAM OPTION ONLY)	1
39	75-7500-050	STRAINER, "Y", 3/4" N.P.T. (FOR STEAM OPTION ONLY)	1
40	75-7800-002	TRAP, STEAM, #T41, 3/4" (FOR STEAM OPTION ONLY)	1
41	32-0439-600	HINGE, COVER, BLOWER, S/S	2
42	98-5000-021	COVER, SINK, BLOWER, S/S (PART OF BLOWER CABINET AND SINK KIT)	1
43	32-0976-002	SUPPORT ANGLE, SCREEN, S/S	4
44	55-0600-046	BOX, ELECTRICAL, BELL, 270L 2" X 4"	1
45	55-0600-805	BOX, ELECTRICAL, BELL, 6" X 4"	1
46	70-1000-212	NUT, 5/16-18, TINNERMAN	4
47	75-1130-004	COUPLING, HALF, 1/2" FEMALE, S/S	1
48	70-7109-101	INSTALLATION, 2" THERMAX (PER SQ. FT)	AS REQ'D

* CUSTOMER TO VERIFY VOLTAGE AND HERTZ



SPIRAL CONVEYOR
PARALELL MOUNTED

FIGURE 7-11

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----SPIRAL TROUGHS W/ TRAY REST SECTION	QNTY PER ASSMLY
1	42-0992-803	SPIRAL, ASSEMBLY, 8 FT, 6" DIA.	1
2	42-0992-802	SPIRAL, ASSEMBLY, 6 FT, 6" DIA.	1
3	42-0992-801	SPIRAL, ASSEMBLY, 4 FT, 6" DIA.	1
8	12-0906-700	SHAFT, SPIRAL, HANGING, S/S	1
9	22-0930-800	FLANGE, SPIRAL, CAST ALUMINUM	1
10	70-6301-130	PULLY, V, 4" DIA.X 1/2" BORE, ALUMINUM	1
11	10-7108-316	PIN, ROLL, 3/16" X 1" LNG, S/S	1
12	70-6301-046	PULLY, V, 2" DIA.X 3/4" BORE, ALUMINUM	1
13	70-0500-524	BELT, V, 24" (INSIDE DRIVE)	1
14	31-0907-603	COVER, SPIRAL BELT, RIGHT HAND	1
15A	55-0600-046	BOX, BELL, 270 L, 2" X 4", ALUMINUM	1
15B	55-1100-011	COVER, WITH GASKET, 2" X 4" KILLARK (PUSH/PULL TYPE SWITCH)	1
16	N.P.N.	PIN, PIVOT, SPIRAL (PART OF MOTOR PLATE)	1
17	10-8108-116	PIN, COTTER, 1/16" X 1" LONG, S/S	1
18	70-7400-081	SPRING, 2" X 1" X 1/8" WIRE (PART OF MOTOR PLATE)	1
19	31-0942-802	BRACKET, MOUNTING, MOTOR	1
20	55-5004-034	MOTOR, VW, 1/4 HP, 30 RPM, 3PH, (HIGH/LOW VOLTAGE*)	1
22	10-1800-518	WASHER, FLAT, 5/16", S/S	1
23	10-1906-518	NUT, ELASTIC STOP, 5/16-18, S/S	1

* CUSTOMER TO VERIFY VOLTAGE AND HERTZ

GARBAGE TROUGH/S...TRAY REST TYPE...HANGING SPIRAL ID: 1960, 1980, 2000 + 2020

DESCRIPTION

The garbage trough, equipped with a powered polyvinyl spiral, provides a dumping receptacle for large volumes of food soil in the loading area. The trough is mounted in the loading area and formed to fit under the straightaway table with a standard 1" undercut for tray edges to be placed under. As trays enter, they are "hooked" under the edge of the conveyor table and food soil is scrapped directly into the trough. Here, the powered spiral conveys the food soil to the garbage treating device while the liquids drain through the base of the perforated trough directly to the drain. This drainage system assures that only solid food soil is conveyed to the garbage treating device.

TROUBLE SHOOTING

The Spiral Is Not Operating

A. Check to be sure that the manual overload breaker (mounted in the electrical control panel) is "ON". Also check to be sure that the start/stop switch located on spiral is on.
B. Check to be sure that the V belt is not frayed and/or broken. (Item No. 13)
C. Check to be sure that the spiral is not jammed in the trough. (Item No. 1-7)

HOW TO REMOVE THE POLYVINYL SPIRAL

To remove the spiral, simply grasp it, lift up and slide it out of the end where it is attached. To replace, simply slide the spiral back into the slot.

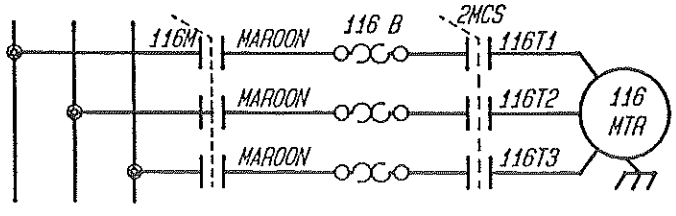
CLEANING

Cleaning of the garbage trough first requires that the spiral be removed and cleaned separately. Then, the trough and surrounding area should be wiped with a mild soap and water solution. Once washed, the area should be thoroughly rinsed with water.

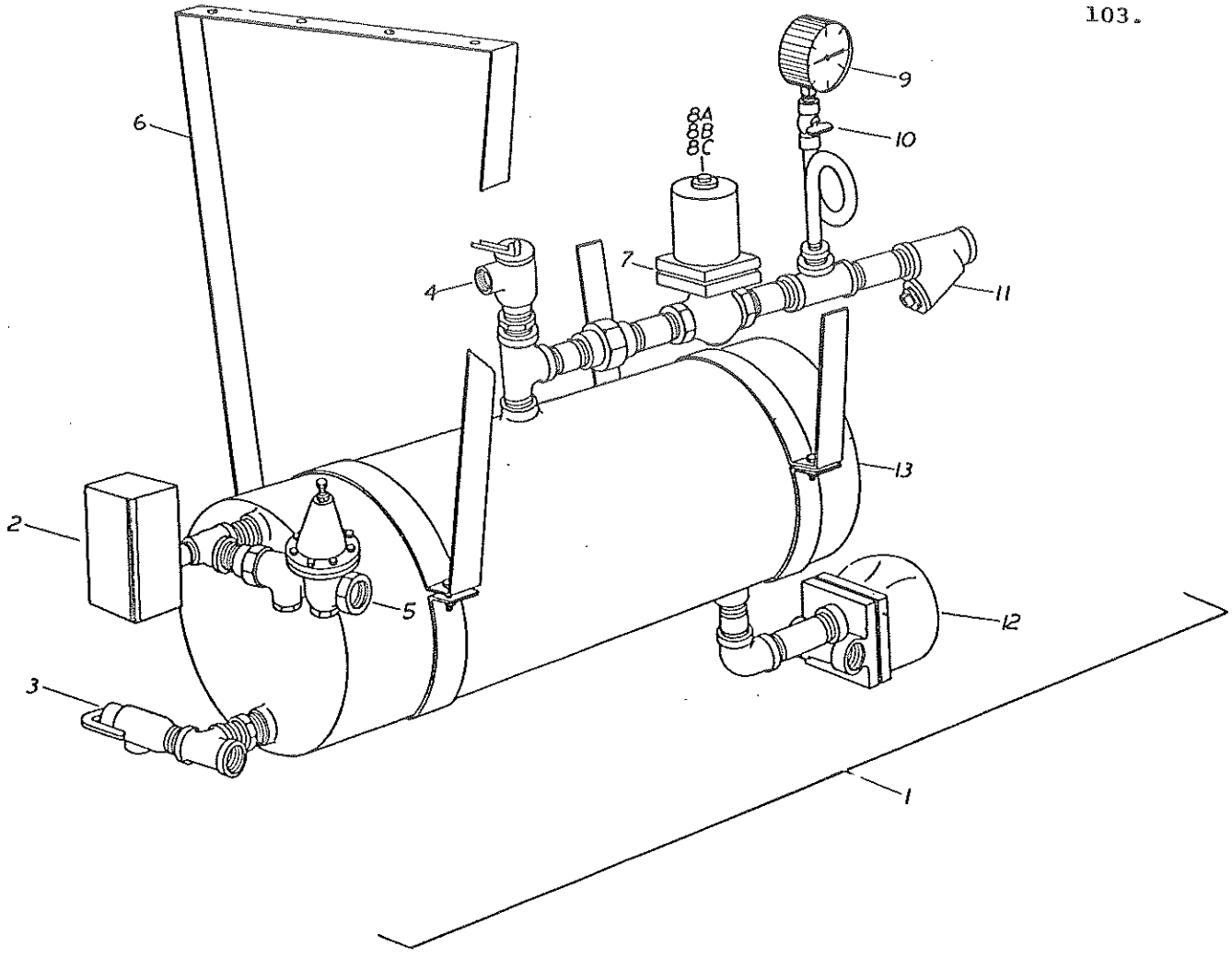
ILLUSTRATED PARTS LIST

An exploded view of the garbage trough spiral is shown on the back. All parts shown are replaceable. When ordering, the order should contain the Adamation part number, the part description and the quantity required.

ELECTRICAL DIAGRAM



GARBAGE TROUGH - SPIRAL 1 - HANGING - 1/4 H.P.



STEAM HOT WATER BOOSTER

FIGURE 7-12

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----STEAM HOT WATER BOOSTER	QNTY PER ASSMLY
1	32-0710-400	BOOSTER, ASSEMBLY, 24V	1
2	55-7750-050	THERMOSTAT, 4" PROBE, WHITE-ROGERS	1
3	75-8526-015	VALVE, RELIEF, #3L X 3/4", WATTS	1
4	75-8526-051	VALVE, RELIEF, 3/4", 15#	1
5	75-6876-140	REGULATOR, WATER, PRESSURE-REDUCING, 3/4"F	1
6	22-0710-900	LEG, ASSEMBLY, BOOSTER (TABLE MOUNT)	1
7	55-7300-429	SOLENOID, VALVE, 1", STEAM, HAYS (SPECIFY VOLTAGE)	1
8A	55-7301-357	COIL, 24V FOR SOLENOID, HAYS	1
8B	55-7301-358	COIL, 208/240V FOR SOLENOID, HAYS	1
8C	55-7301-359	COIL, 480V FOR SOLENOID, HAYS	1
9	70-2470-610	GAUGE, PRESSURE, 0 TO 60 PSI, 2", PLASTIC	1
10	75-8520-010	VALVE, PETCOCK, 1/4" F X F	1
11	75-7500-101	STRAINER, Y, 1", BLACK	1
12	75-7800-010	TRAP, STEAM, BUCKET, 1"	1
13	22-0710-600	HEAT EXCHANGE, PLASTISOL, W/O LEGS	1

BOOSTER...STEAM HOT WATER... ID: 1080

DESCRIPTION

The vinyl coated steam water temperature booster is an automatically controlled heat exchanger system that increases the building hot water supply. It is capable of economically heating water from 50 degrees F. to 180 degrees F. in a matter of minutes. The booster is either floor mounted or suspended directly under the conveyor table and plumbed to the rinse line for use in the Final Rinse Tank.

CONNECTIONS

In order for the booster to work, steam must be supplied at no less than 5 PSI and no more than 15 PSI.

Three steam connections are made by others and all are 1" female pipe thread connections. These connections are made at the bucket trap (Item No. 12), the line strainer (Item No. 11) and the water regulator (Item No. 5).

TROUBLE SHOOTING

The Water Temperature Is Too Low Or Fluctuates Greatly.

A. Check the steam pressure at the house supply. (5 PSI to 15 PSI is normally required.)
B. While the dishmachine is running, the water flow pressure to the dishmachine should be 20 PSI. (The water regulator is located on the end of the steam booster gauge on top of the final rinse manifold.)
C. To adjust the thermostat (Item No. 9) on the booster, set it to its highest setting (190-200° F). This thermostat is used for a high limit cutoff and is not actually the final rinse temperature control.
D. To increase the steam pressure, turn the hex head bolt located on top of the steam regulator clockwise. To reduce the steam pressure, turn the hex head bolt counterclockwise. A minimum of 30 seconds will be required between adjustments to allow the pressure to adjust to the new setting.
E. If after doing the above the temperature does not change, check both the solenoid valve (Item No. 7) and/or the thermostat (Item No. 9) for defects.
F. Check to make sure that the steam condensate trap (Item No. 12) is functioning properly. To do this, simply break the union at the trap and allow the condensate to flow on the floor. If the final rinse temperature increases, the blockage is in either the house condensate return or the trap is defective.

The Water Temperature Is Too High (Above 195 Degrees F.).

A. Check the steam pressure supplied by the house steam system. (It should be about 15 PSI) (Refer to letter D. above)
B. Check to make sure that the thermostat is not defective. (Item No. 9)
C. Check to make sure the solenoid valve is not defective. (Item No. 7)

CLEANING

Cleaning of the booster is simply performed by wiping the outside with a mild soap and water solution and then polished with lemon oil.

ILLUSTRATED PARTS LIST

An exploded view of the steam water temperature booster is shown. All parts shown are replaceable. When ordering, the order should contain the Adamation part number, the part description and the quantity required.

ELECTRICAL DIAGRAM

STEAM HOT WATER BOOSTER SOLENOID

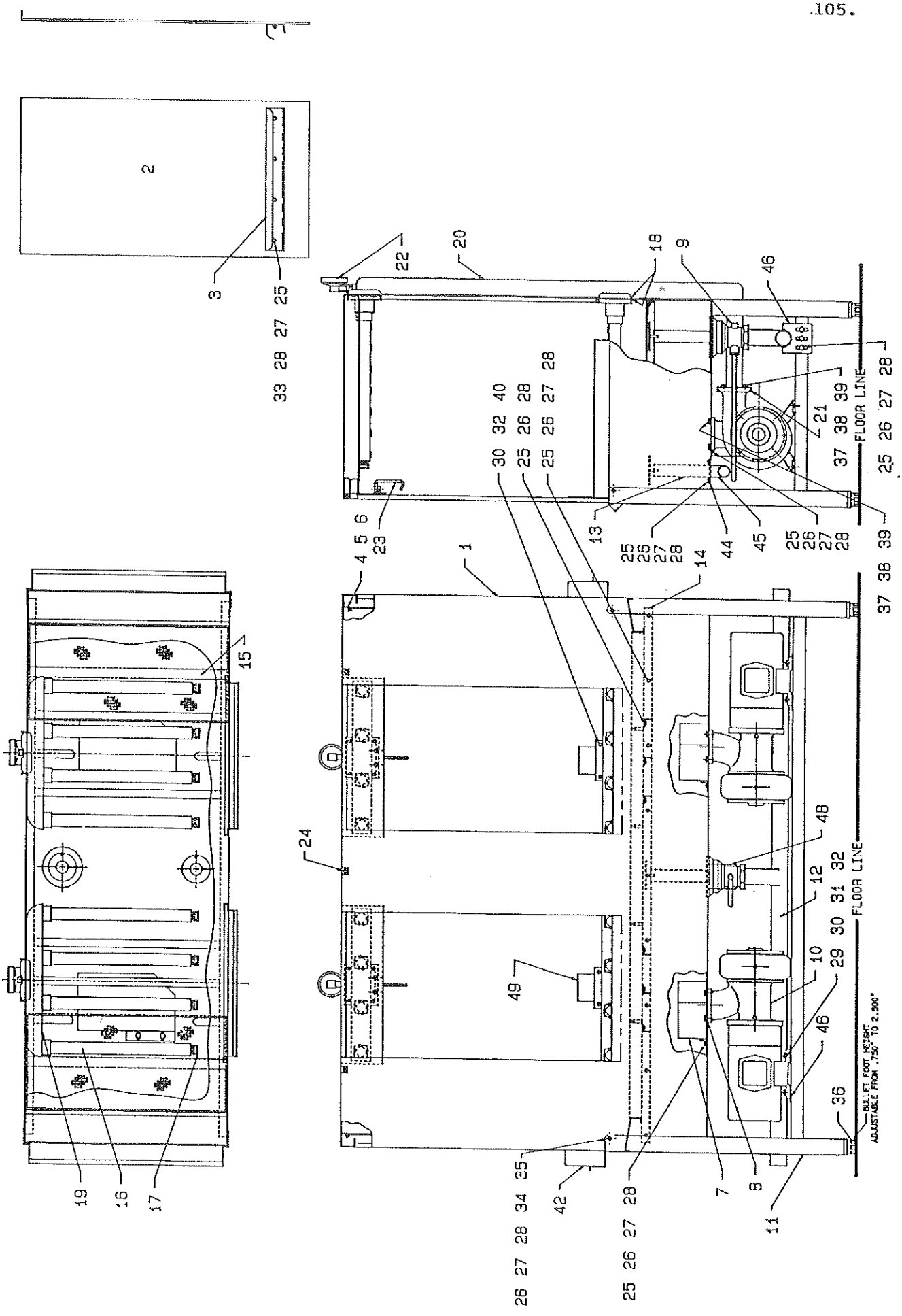


Figure 7-13

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----SUPER WASH/RINSE CABINETS	QNTY PER ASSMLY
1	98-5000-003	CABINET, SUPER WASH/RINSE	1
2	42-0442-700	DOOR, ALL DISHMACHINE CABINETS	2
3	11-0424-000	HANDLE, DOOR, CABINET, S/S, PLASTISOL COATED	2
4	70-1150-005	CURTAIN, 16" LONG X 23-1/2" WIDE, NYLON	2
5	11-0421-900	ROD, CURTAIN, .313 D, 24-5/8" WIDE	2
6	11-0413-501	HOOK, CURTAIN	4
7	42-0655-900	RESTRICTOR, PUMP INTAKE	2
8	19-4200-100	GASKET, PUMP INTAKE, 4" X 4", RED RUBBER	2
9	32-0629-600	DRAIN, ASSEMBLY	2
10A	32-0500-602	PUMP, ASSY, 60HZ*, 3PH, LEFT HAND, CLOCKWISE, T.E.F.C.	1
10	32-0500-101	PUMP, ASSY, 60HZ*, 3PH, RIGHT HAND, CCW, T.E.F.C.	1
11	32-0821-655	KIT, BASE ASSEMBLY, SUPER CABINET	1
12	42-0655-300	DRAIN, MAIN, 2" DIA.	1
13	32-0651-301	DRAIN, STANDPIPE, OVERFLOW, 2"	1
14	41-0137-200	ANGLE SUPPORT, SCRAP SCREENS	2
15	42-0440-300	SCREEN, SCRAP, S/S	5
16	42-0655-700	ARM, WASH, HIGH PRESSURE	16
17	75-0830-606	CAP, WASH ARM, 3/4", NICKEL PLATED	16
18	19-4200-700	GASKET, RISER TO MANIFOLD, 4" X 5", RED RUBBER	8
19A	42-0657-600	MANIFOLD, LOWER, WASH/RINSE CABINET	2
19	42-0654-300	MANIFOLD, UPPER, WASH/RINSE CABINET	2
20	32-0624-100	RISER PIPE ASSEMBLY	2
21	19-4200-900	GASKET, PUMP TO RISER, 3-1/2" X 3-1/2", RED RUBBER	2
22	70-2475-007	THERMOMETER, 3" , 40 TO 240 DEGREES	2
22A	70-2475-010	THERMOMETER, 5", 40 TO 240 DEGREES (OPTIONAL)	2
23	22-0126-407	ASSEMBLY, DOOR HOOK, S/S	2
24	21-0354-304	SUPPORT RIB, CABINET, S/S (PART OF CABINET ASSY)	3
25	60-7500-003	STUD, 1/4-20 X .375 LONG, S/S	40
26	10-1900-420	NUT, HEX, 1/4-20, FINISHED	40
27	10-1800-420	WASHER, FLAT, 1/4" DIA., S/S	60
28	10-1801-420	WASHER, LOCK, 1/4" DIA., S/S	60
29	10-1108-518	SCREW, HEX, MACHINE CAP, 5/16-18 X 1" LONG, S/S	8
30	10-1900-518	NUT, FINISHED, HEX, 5/16-18	8
31	10-1800-518	WASHER, FLAT, 5/16", S/S	16
32	10-1801-518	WASHER, MDM SPLIT, 5/16" DIA. S/S	16
33	10-1906-420	NUT, ACORN, HI CROWN, 1/4-20, S/S	12
34	10-1004-420	SCREW, PAN, 1/4-20 X 1/2", S/S	4
35	60-8850-156	WASHER, 1/4", NYLITE, #25W	4
36	70-2300-100	FOOT, BULLET, 2" X 2", ADJUSTABLE, S/S	4
37	10-1108-316	SCREW, HEX, 3/8-16" X 1", S/S	16
38	10-1900-316	NUT, HEX, 3/8-16", S/S	12
39	10-1800-316	WASHER, FLAT, 3/8" DIA., S/S	16
40	10-1801-316	WASHER, MDM SPLIT, 3/8" DIA., S/S	16
41	31-0425-100	PANEL, MOTOR, SUPER CABINET, S/S (NOT SHOWN)	1
42	21-0120-400	CAN, CABINET, ASSEMBLY, S/S (PART OF CABINET ASSEMBLY)	2
43	98-5000-003	SUPPORT, MOTORS, S/S (PART OF CABINET ASSEMBLY)	1
44	19-4201-500	GASKET, OVERFLOW, 3" X 3" X 1/8", RED RUBBER	1
45	22-0650-001	TEE, OVERFLOW, S/S	1
46	22-0984-500	SUPPORT, MAIN DRAIN, S/S	2
47	10-1905-420	NUT, WING, 1/4-20, S/S	12
48	11-0128-900	SUPPORT, HANDLE, DRAIN	1
49	42-0654-307	RESTRICTOR PLATE, LOWER MANIFOLD	2
50	75-7050-529	"O" RING, MANIFOLD TO RISER, 1/4" I.D. X 1/16"	32
51	11-0117-800	BRACKET, DOOR HOOK	2
52	60-5502-258	FLANGES, DRAIN ASSEMBLY ("O" RINGS 75-7050-526)	1 SET

* CUSTOMER TO VERIFY VOLTAGE AND HERTZ (OTHER THAN 60HZ) FOR SPECIAL IMPELLER

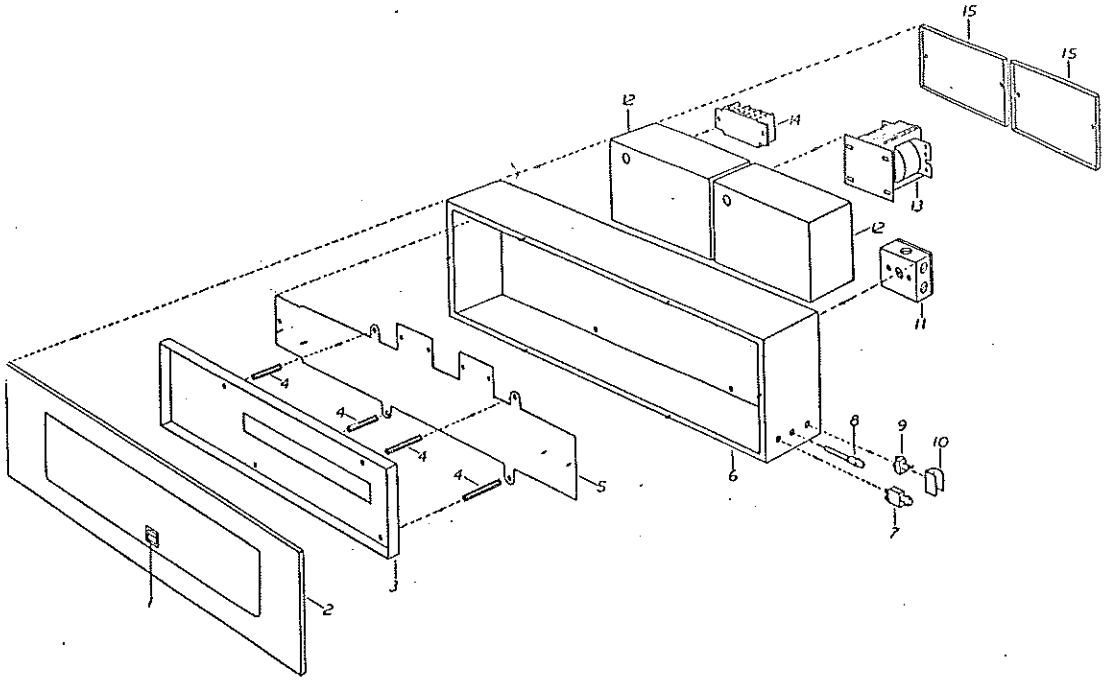


FIGURE 7-14A

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----ELECTRICAL CONTROL PANEL	QNTY PER ASSMLY
1	70-4450-022	LATCH, ELECTRICAL PANEL, BRUSHED CHROME	1
2	98-0005-009	COVER, ELECTRICAL BOX, FRONT (PART OF ELEC. CABINET KIT)	1
3	98-0005-009	MOULDING, CIRCUIT BREAKER (PART OF ELEC. CABINET KIT)	1
4	14-0527-000	SUPPORT, MOULDING, TYP 4	4
5	98-0005-009	MOUNTING PLATE, CIRCUIT BREAKER (PART OF ELEC. CABINET KIT)	1
6	98-0005-009	CABINET, ELECTRICAL (PART OF ELEC. CABINET KIT)	1
7	55-0970-003	BREAKER, CIRCUIT, T/W 20 AMPS	1
8	55-2860-802	LIGHT, PILOT, RED, 28V	1
9	55-7400-304	SWITCH, TOGGLE, DPDT, GRAINGER #2X469	1
10	98-0005-009	SWITCH GUARD (PART OF ELEC. CABINET KIT)	1
11	55-0600-045	BOX, BELL, 4" X 4", #276-5S2L	1
12	98-0005-009	HOUSING, DISCONNECT/TRANSFORMER (PART OF ELEC. CABINET KIT)	2
13	55-7950-324	TRANSFORMER, 220/240/277/480, 24V, 500VA, ACME	1
14	55-7726-106	TERMINAL BLOCK, UNDERWRITERS	1
15	98-0005-009	COVER, DISCONNECT/TRANSFORMER BOXES (PART OF ELEC. CABINET KIT)	2
16	55-1100-025	COVER, BELL BOX, 4" X 4"	1

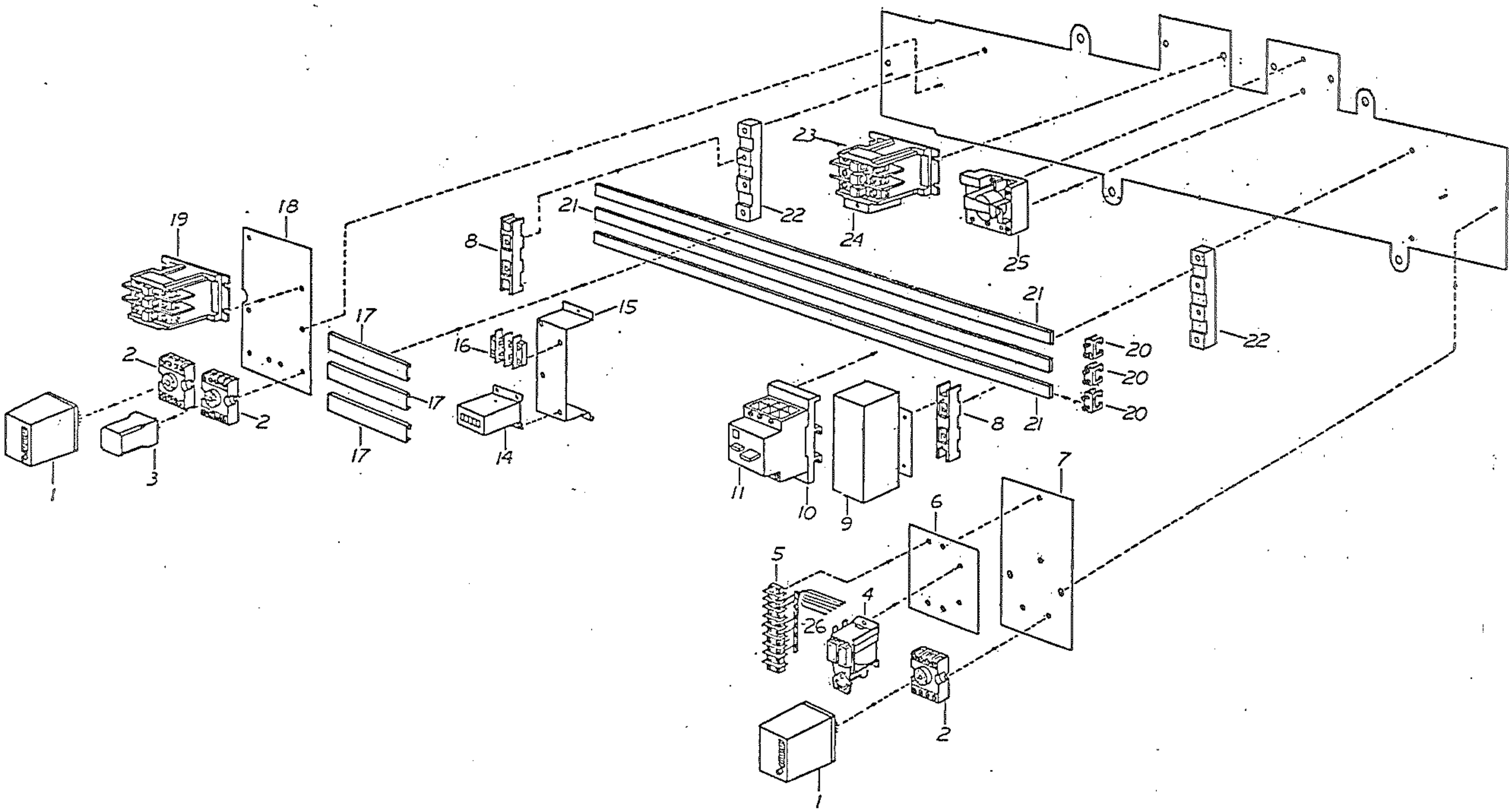


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Figure 7-14B

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----ELECTRICAL COMPONENTS	QNTY PER ASSMLY
1	55-7900-156	TIMER RELAY, PLUG IN, 24V (1 FOR TRANSFER PUMP OPTION)	2
2	55-7000-006	SOCKET, 8 PIN, PLUG IN (2 FOR TRANSFER PUMP OPTION)	3
3	55-6850-602	CONTROL RELAY, PLUG IN, 24V (1 FOR TRANSFER PUMP OPTION)	1
4	55-6850-507	RELAY, RATCHET, 24V, 50/60HZ (SEE ITEM 26)	1
5	55-7726-301	TERMINAL BLOCK, 8 PIN, CJ #8-141-8 (SEE ITEM 26)	1
6	14-0600-200	BASE PLATE, RELAY ASSEMBLY (SEE ITEM 26)	1
7	98-0005-009	MOUNTING PLATE, RELAY ASSEMBLY (PART OF ELEC. CABINET KIT)	1
8	55-7382-353	SUPPORT, BUSS BAR, S/A #8JH4124	2
9	55-7382-354	COVER, TERMINAL BUSS BAR, S/A #3VX4280-2S	1
10	55-7382-451	ADAPTER, STARTER, 3VU9-135-0AA00, FOR 3VU1300 SERIES	AS REQ'D
10A	55-7352-351	ADAPTER, STARTER, FOR 3VE3000-2PA00	AS REQ'D
11	55-7381-751	STARTER, .6 TO 1.0, 3VU1300-0MF00	AS REQ'D
11	55-7381-752	STARTER, 1.0 TO 1.6, 3VU1300-0MG00	AS REQ'D
11	55-7381-753	STARTER, 1.6 TO 2.4, 3VU1300-0MH00	AS REQ'D
11	55-7381-754	STARTER, 2.4 TO 4.0, 3VU1300-0MJ00	AS REQ'D
11	55-7381-755	STARTER, 4.0 TO 6.0, 3VU1300-M0K00	AS REQ'D
11	55-7381-756	STARTER, 6.0 TO 10.0, 3VU1300-0ML00	AS REQ'D
11	55-7381-757	STARTER, 10.0 TO 16.0, 3VU1300-0MM00	AS REQ'D
11	55-7381-758	STARTER, 16.0 TO 25.0, 3VU1300-0MP00	AS REQ'D
11	55-7382-672	STARTER, 22.0 TO 32.0, 3VE3000-2PA00	AS REQ'D
12	14-0528-600	SPACER, SIDE MOUNT, 2" X 4"	2
13	98-0005-009	MOULDING, INSIDE CABINET (PART OF ELEC. CABINET KIT)	1
14	55-7901-101	HOUR METER, 24V AC	1
15	25-0411-400	BRACKET, PANEL, ELAPSED TIMER METER	1
16	55-7726-305	BLOCK, TERMINAL, 2 POSTION, #CJ2-141-2	1
17	55-7382-356	COVER, BUSS BAR, S/A #MSPC	3
18	98-0005-009	MOUNTING PLATE (FOR TRANSFER PUMP OPTION)	1
19	55-1050-323	CONTACTOR, 20AMP, 24V (FOR TRANSFER PUMP OPTION)	1
20	55-7382-355	TERMINAL, BUSS, S/A #8JH4124	3
21	14-0528-500	BUSS BAR, STD PANEL, COPPER	3
23	55-1050-324	CONTACTOR, 40AMP, 24V, W/AUXILARY CONTACTS	1
25	55-6850-507	RELAY, RATCHET, PB, 24V, 50/60HZ, #S89R11AAC1	1
26	17-0200-801	HARNESS - RELAY ASSEMBLY (ITEM 4, 5, 6, AND 26 PART #25-0615-000)	1

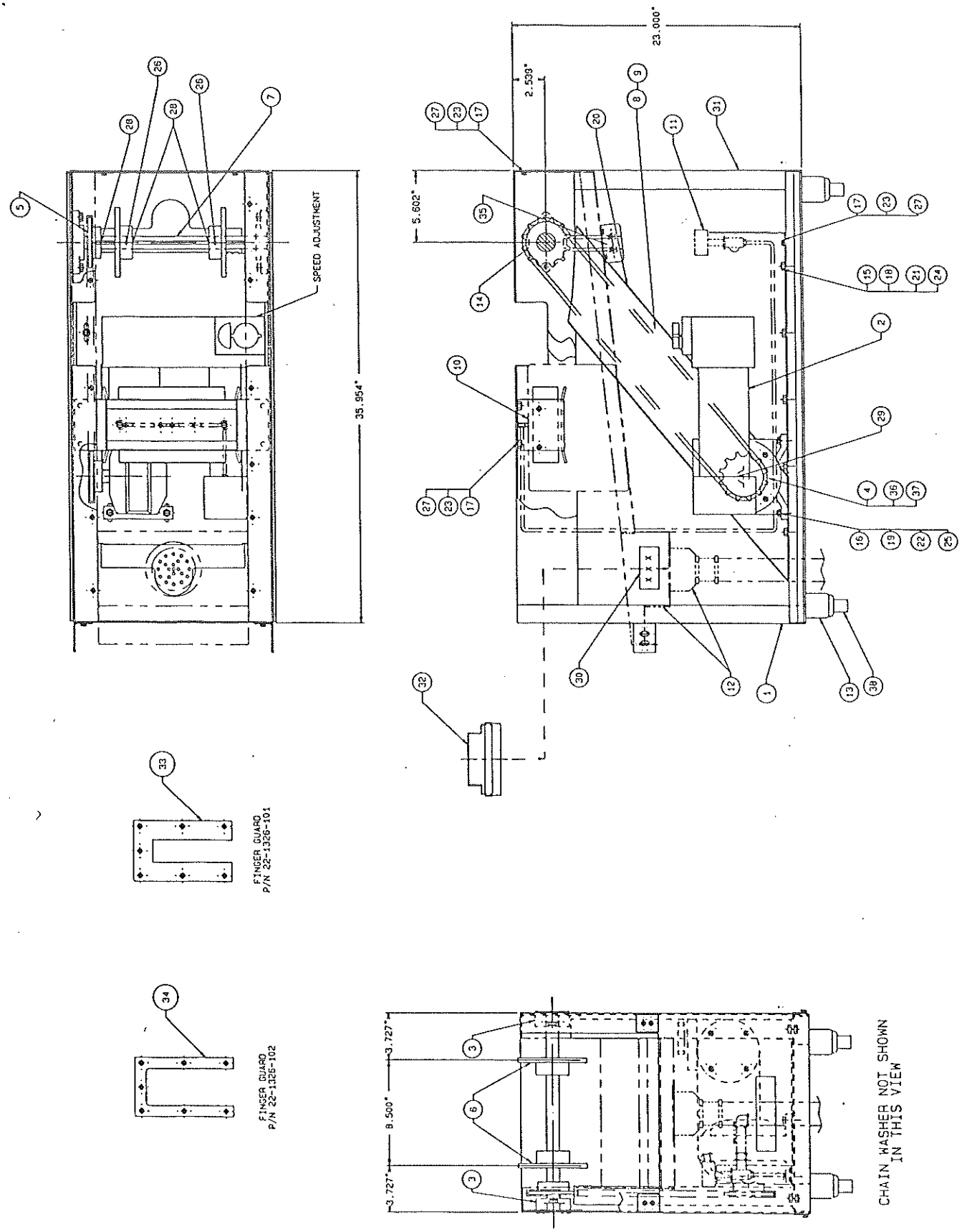

SPEED ADJUSTMENT
35.954"
23.000"
2.539"
5.602"
FINGER GUARD
P/N 22-1326-101
FINGER GUARD
P/N 22-1326-102
3.727"
8.500"
3.727"
CHAIN WASHER NOT SHOWN
IN THIS VIEW

FIGURE 7-15

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----CONVEYOR DRIVE CABINET	QNTY PER ASSMLY
1	98-5000-041	CABINET, DRIVE, CONVEYOR	1
2	70-6900-061	MOTOR, REEVES, 1/2 HP, 40/1, 3PH (HIGH/LOW VOLTAGE*)	1
3	70-0455-208	BEARING, MCGILL, 2 HOLE FLANGE	2
4	70-7428-919	SPROCKET, #41A19	1
5	70-7438-219	SPROCKET, 41B19 X 1", W/SET SCREW AND KEY	1
6A	19-3104-000	SPROCKET, RED, FOR FLEXVEYOR CONVEYOR, 8 TEETH, PLASTIC	2
6B	19-3104-100	SPROCKET, BLUE, FOR ADAMSVEYOR CONVEYOR, 12 TEETH, PLASTIC	2
7	11-1321-000	SHAFT, DRIVE, CONVEYOR, 15-1/4" LONG, S/S	1
8	70-0905-455	CHAIN, #41, S/S	1
9	70-0905-141	LINK, CONNECTING, #41	1
10	98-0008-001	KIT, CHAIN WASHER	1
11	N.P.N.	PLUMBING, CHAIN WASH	1
12	42-1357-600	DRAIN, DRIP PAN, S/S	1
13	32-1330-108	LEG, DRIVE, CONVEYOR, 5 1/2" LONG, S/S	4
14	42-1357-114	SUPPORT, BEARING, S/S	2
15	10-1112-518	SCREW, HEX, 1/4-20 X 1-1/2", S/S	10
16	10-1106-316	SCREW, HEX, 3/8-16 X 3/4" LONG, S/S	4
17	10-1900-420	NUT, HEX, 1/4-20, S/S	8
18	10-1900-518	NUT, HEX, 5/16-18, S/S	10
19	10-1900-316	NUT, HEX, 3/8-16, S/S	4
20	32-1338-000	GUARD, CHAIN, CONVEYOR, LEFT HAND, S/S (SHOWN)	1
20A	32-1338-100	GUARD, CHAIN, CONVEYOR, RIGHT HAND, S/S (NOT SHOWN)	1
21	10-1800-518	WASHER, FLAT, 5/16", S/S	20
22	10-1800-316	WASHER, FLAT, 3/8", S/S	4
23	10-1801-420	WASHER, LOCK, 1/4", S/S	8
24	10-1801-518	WASHER, LOCK, 5/16", S/S	10
25	10-1801-316	WASHER, LOCK, 3/8", S/S	4
26	10-1104-420	SCREW, SET, 1/4-20 X 1/2", S/S	2
27	60-7500-002	STUD, 1/4-20 X 3/8", S/S	8
28	19-2100-104	KEY, 1/4" X 1/4" X 1-1/2", CRS	3
29	19-2100-204	KEY, 3/16" X 3/16" X 1-1/2", CRS	1
30	17-0812-000	LABEL (STATES ADJUST SPEED WHILE RUNNING) DWG ED8-120A	1
31	N.P.N.	LABEL (STATES CW OR CCW FOR CHAIN WASH)	1
32	21-0426-100	SCREEN, SCRAP, CABINET, CONVEYOR, S/S	1
33	22-1326-101	GUARD, FINGER, CONVEYOR, POLY.	2
34	22-1326-102	RETAINER, FINGER GUARD, S/S	2
35	N.P.N.	BRACKET, GREASE FITTINGS, S/S	1
36	70-1050-017	TORQUE TAMER, 25" X 3/4", ST.	1
37	70-1051-006	BUSHING, TORQUE TAMER, 25" X 3/4"	1
38	70-2300-070	FOOT, BULLET, ADJUSTABLE, 1-5/8", RND, S/S	4
39	32-1329-401	DOOR PANEL, LEFT HAND, CONVEYOR CABINET, S/S	1
40	32-1329-402	DOOR PANEL, RIGHT HAND, CONVEYOR CABINET, S/S	1

* CUSTOMER TO VERIFY VOLTAGE AND HERTZ

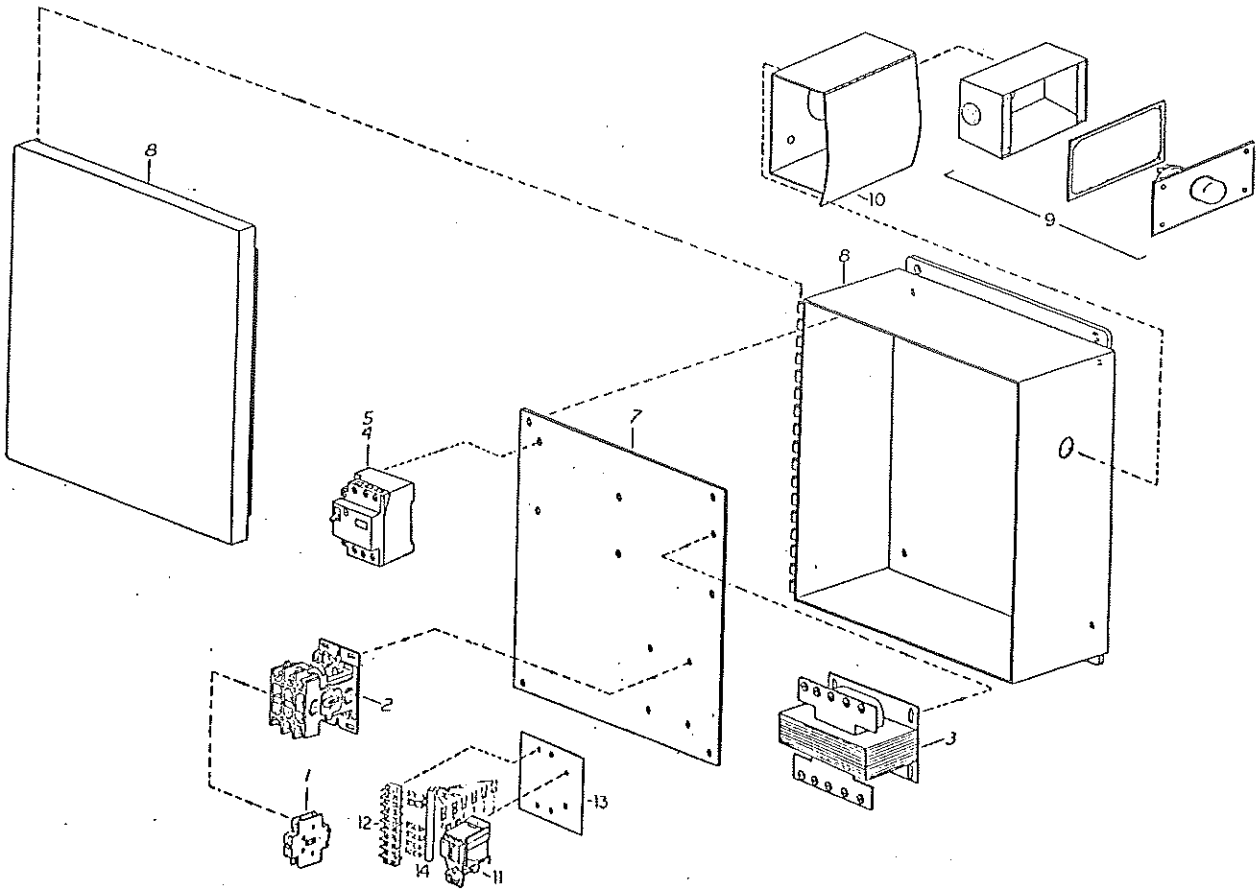


FIGURE 7-16

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----CONVEYOR ELECTRIC CONTROL CABINET	QNTY PER ASSMLY
1	55-1051-272	SWITCH, AUXILARY, NO/NC, TL. MC. #2200EB5	1
2	55-1050-324	CONTACTOR, MAGNETIC, W/AUXILARY, 24V	1
3	55-7950-321	TRANSFORMER, ACME, #TA1-81323	1
4	55-7382-451	ADAPTER, 3VU1300 S/A #3VU9-135-0AA00	1
5	55-7381-754	STARTER, S/A #3VU1300-0MJ00, 2.4/4.0, FOR 208-240V	1
5	55-7381-753	STARTER, S/A #3VU1300-0MH00, 1.6/2.4, FOR 440-480V	1
7	55-0600-651	BACK PANEL, WATER TIGHT BOX, 12" X 14" BOX	1
8	55-0600-900	BOX, WATER TIGHT, CLAMP COVER W/HINGE, 12" X 14"	1
9	38-0215-457	KNEE SWITCH, W/BUTTON, COMPLETE ASSY.	1
10	25-0411-301	BRACKET, SUPPORT, KNEE SWITCH, S/S	1
	55-0600-046	BOX, BELL, 270L 2" X 4", ALLUMINUM (SEE ITEM 9)	1
	55-0970-002	BREAKER, CRCT., T/W 5.0 AMPS (NOT SHOWN)	1
11	55-6850-507	RELAY, RATCHET, 24V, 50/60HZ (SEE ITEM 14)	1
12	55-7726-301	TERMINAL BLOCK, 8 PIN, CJ#8-141-8 (SEE ITEM 14)	1
13	14-0600-200	BASE PLATE, RELAY ASSEMBLY, S/S (SEE ITEM 14)	1
14	17-0200-801	HARNESS, WIRE (RELAY ASSY ITEMS 11, 12, 13, 14 - 25-0615-000)	1

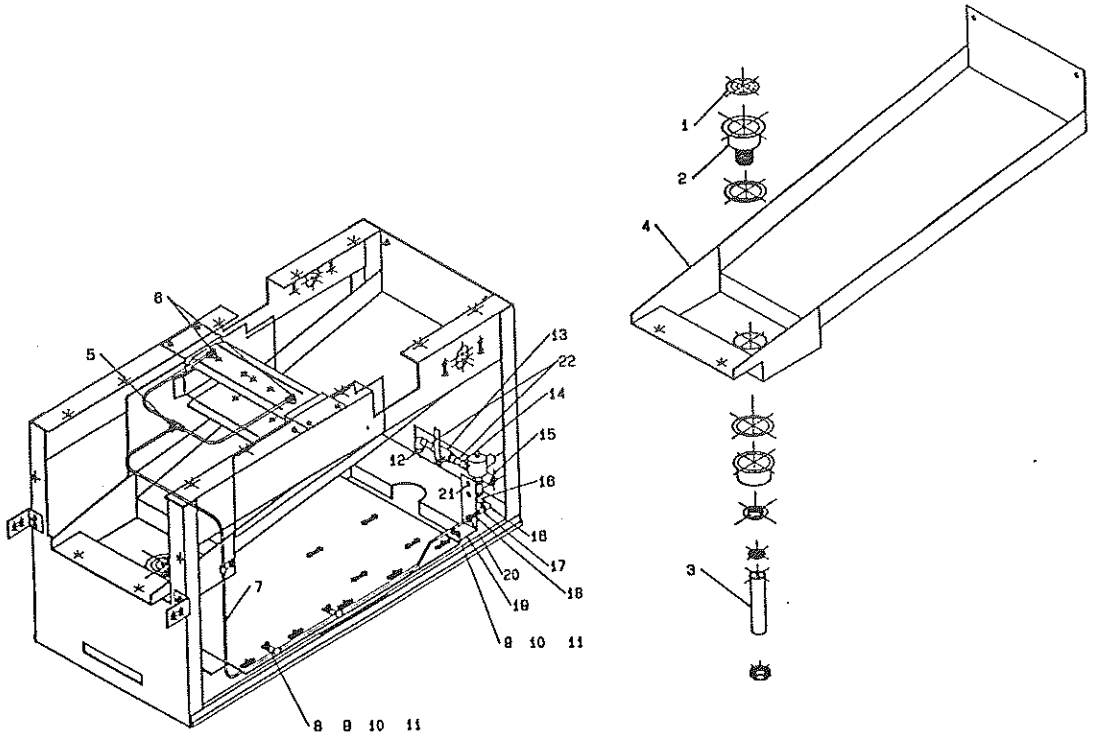


Figure 7-17

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----CONVEYOR PLUMBING ASSEMBLY	QNTY PER ASSMLY
1	75-1476-002	SCREEN, #D100X14-ROTARY DRAIN, S/S	1
2	75-1450-014	STRAINER, BASKET, 1-1/2" NPT, S/S	1
3	75-1450-016	TAIL PIECE, WITH FLANGE, 1-1/2" X 6", BRASS	1
4	42-1357-600	PAN, DRIP, WITH SINK, CONVEYOR, S/S	1
5	75-1075-071	FITTING, TEE, COMPRESSION, 1/4" O.D., BRASS	1
6	75-1075-050	FITTING, STRAIGHT, COMPRESSION, 1/8" NPT X 1/4", BRASS	2
7	65-4922-902	TUBING, 1/4" O.D./FT, COPPER (AS NEEDED)	3
8	11-0816-802	CLIP, BELDON WIRE, 3 WIRE, S/S	3
9	10-1900-420	NUT, HEX, 1/4-20, S/S	5
10	10-1801-420	WASHER, LOCK, 1/4-20, S/S	5
11	60-7500-001	STUD, 1/4-20 X 3/8", S/S	5
12	75-1601-040	ELBOW, 1/2"C X 1/2"F X 90°, BRASS	1
13	75-8515-001	VALVE, BALL, WATTS, 1/2"C X C, BRASS	1
14	75-0026-010	ADAPTER, 1/2" C X 1/4" M, BRASS	1
15	55-7300-151	VALVE, SOLENOID, HAYS, 1/4", 24V, BRASS	1
16	75-1600-002	ELBOW, 1/4" NPT X 90°, BLACK MLLBL.	2
17	75-8520-020	VALVE, BALL, TEST COCK, WATTS, #TC2, BRASS	1
18	75-8504-561	VALVE, CHECK, 1/4" NPT AB-5, BRASS	1
19	14-0619-001	BRACKET, VALVE, CONVEYOR, S/S	1
20	75-1075-057	FITTING, COMPRESSION, 1/4"M X 1/4" TUBING	1
21	10-1004-024	SCREW, PAN, #10-32 X 1/2", S/S	2
22	65-4922-004	TUBING, 1/2" O.D., COPPER (AS NEEDED)	2

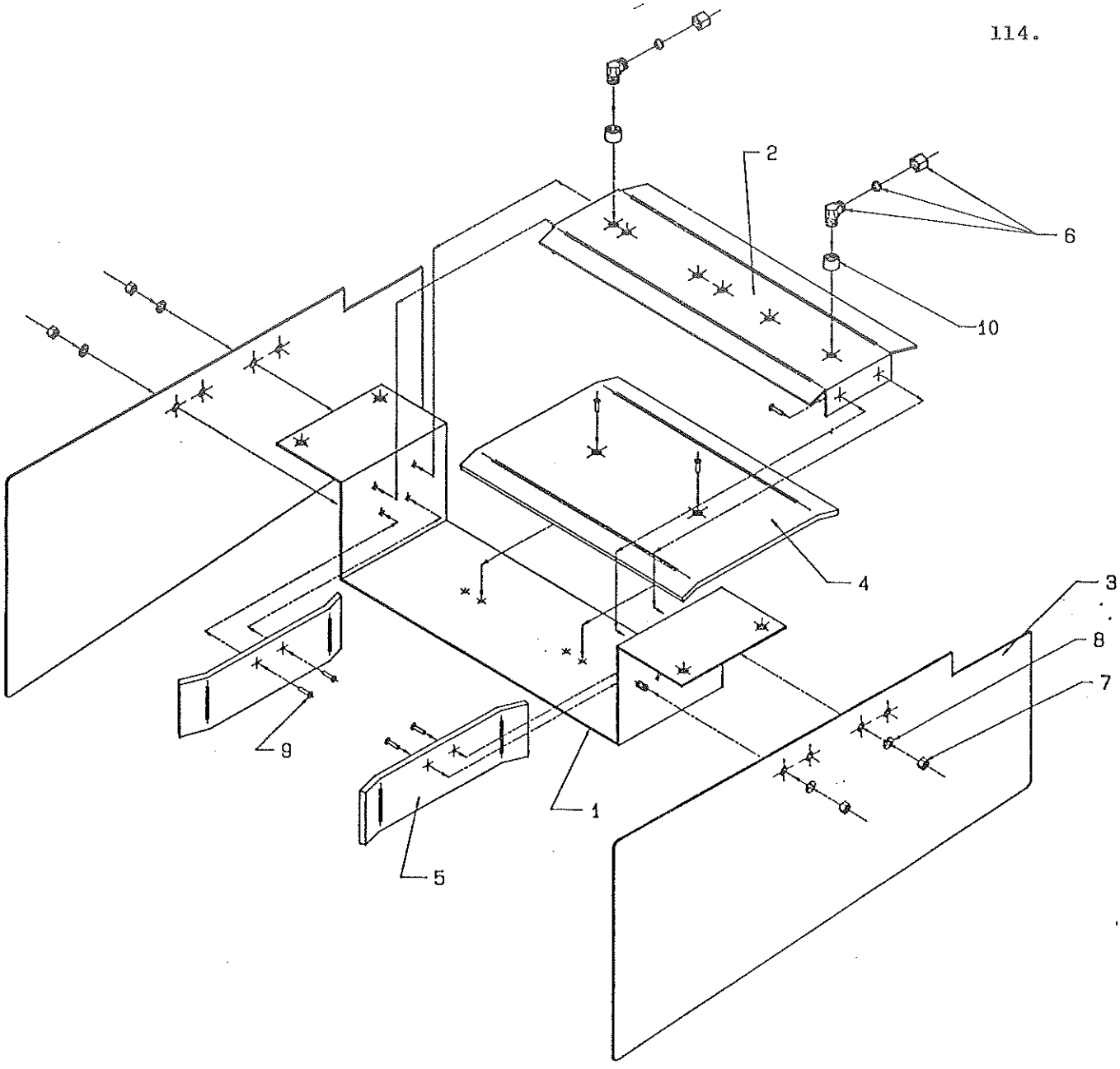
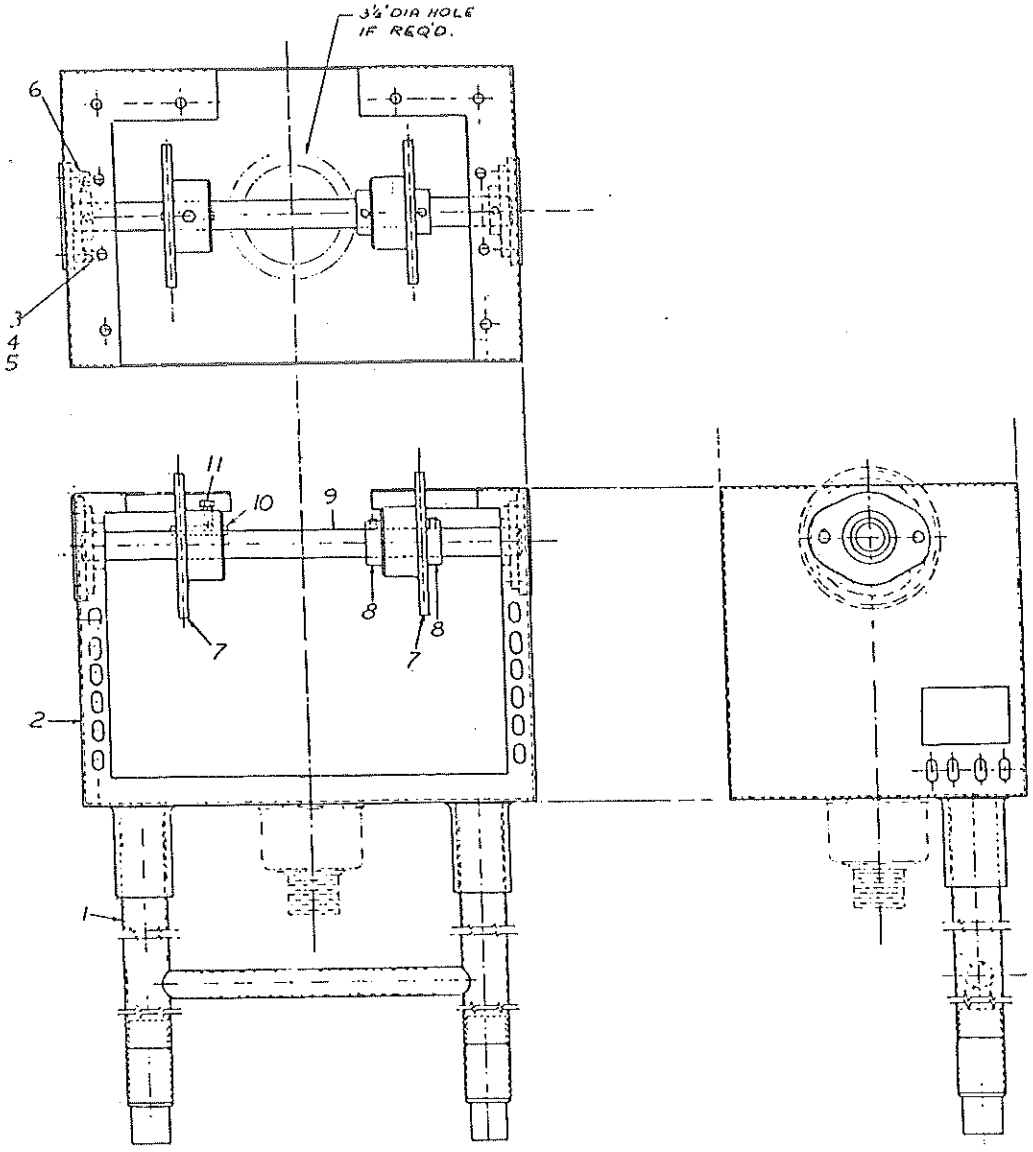


Figure 7-18

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----CHAIN WASHER ASSEMBLY	QNTY PER ASSMLY
1	98-0008-002	KIT-CHAIN WASHER, FRAME, S/S	1
2	N.P.N.	KIT-CHAIN WASHER, TOP, S/S (PART OF ITEM 1)	1
3	N.P.N.	KIT-CHAIN WASHER, BAFFLE, S/S (PART OF ITEM 1)	2
4	11-1315-600	BASE, CHAIN RETURN, PACTINE HMW, 6" X 8" X 3/16"	1
5	N.P.N.	SIDE GUIDE, CHAIN RETURN, PACTINE HMW, 2"X 4"X 3/16" (SEE ITEM 4)	2
6	75-1075-001	FITTING, COMPRESSION, 1/4" X 1/8" X 90° ELBOW	2
7	10-1900-420	NUT, HEX, 1/4-20, S/S	4
8	10-1801-420	WASHER, LOCK, 1/4", S/S	4
9	60-6950-052	RIVIT, POP, 1/8" X 3/8" LONG, S/S	10
10	75-1130-001	COUPLING, 1/8"F X 1/2" LONG, S/S	2



TAIL FRAME ASSEMBLY

FIGURE 7-19

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----CONVEYOR TAIL FRAME	QNTY PER ASSMLY
1	32-1330-104	LEG ASSEMBLY, 1-5/8" TUBING, CONVEYOR	1
2	98-5000-041	TAIL FRAME SUB ASSEMBLY, CONVEYOR	1
3	10-1109-316	SCREW, HEX, 3/8-16" X 1", S/S	4
4	10-1900-316	NUT, HEX, 3/8-16, S/S	4
5	10-1801-316	WASHER, LOCK, 3/8", S/S	4
6	10-1800-316	WASHER, FLAT, 3/8", S/S	4
7A	19-3104-100	SPROCKET, FOR ADAMSVEYOR CONVEYOR, BLUE, 12T, PLASTIC	2
7B	19-3104-000	SPROCKET, FOR FLEXVEYOR CONVEYOR, RED, 8T, PLASTIC (NOT SHOWN)	2
8	70-1075-011	COLLAR, SHAFT, 1" W/BOLT, CONVEYOR	1
9	11-1321-000	SHAFT, 1", W/SET SCREW, 15-1/4", S/S	1
10	19-2100-104	KEY, 1/4" X 1/4" X 1-1/2" LONG, CRS	1
11	10-1106-420	SCREW, HEX, 1/4-20 X 3/4, S/S	2

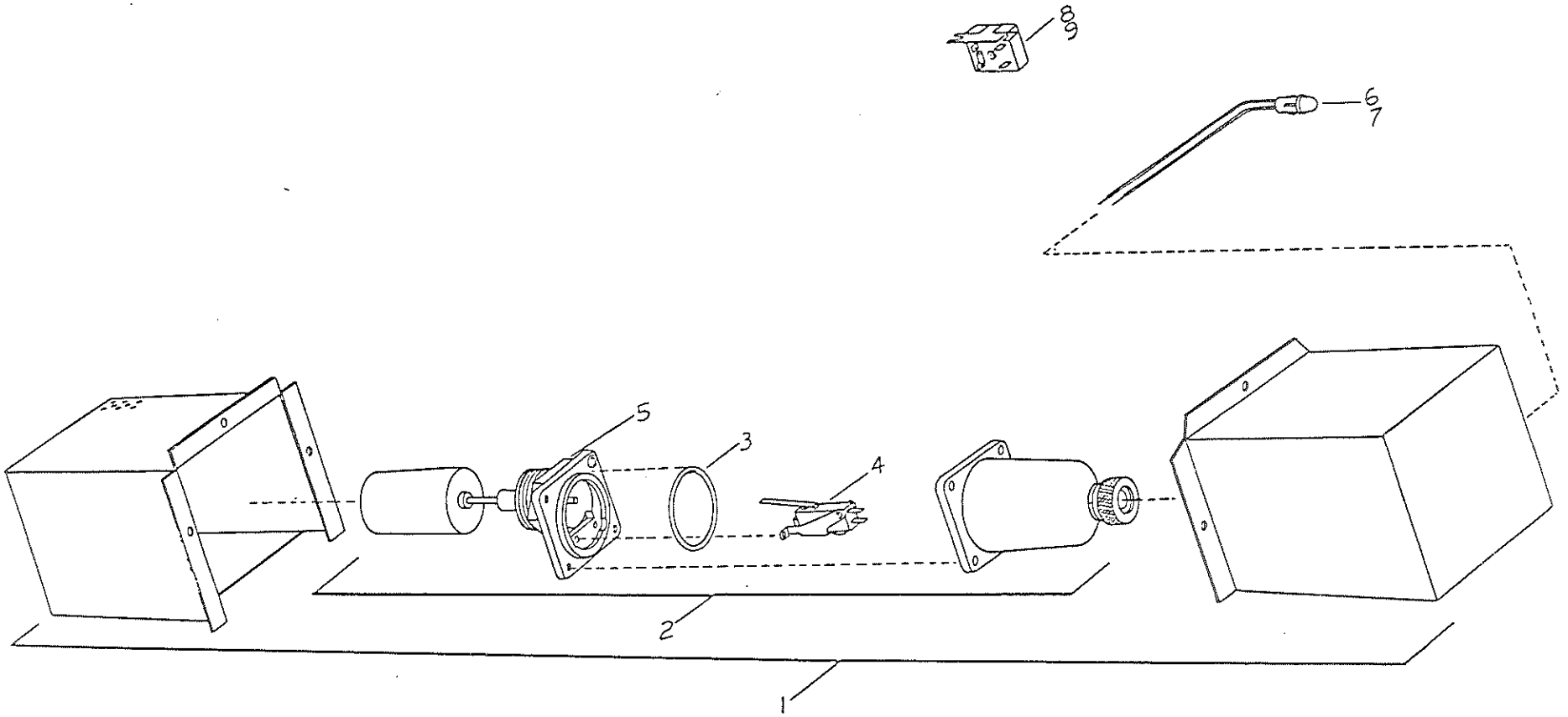
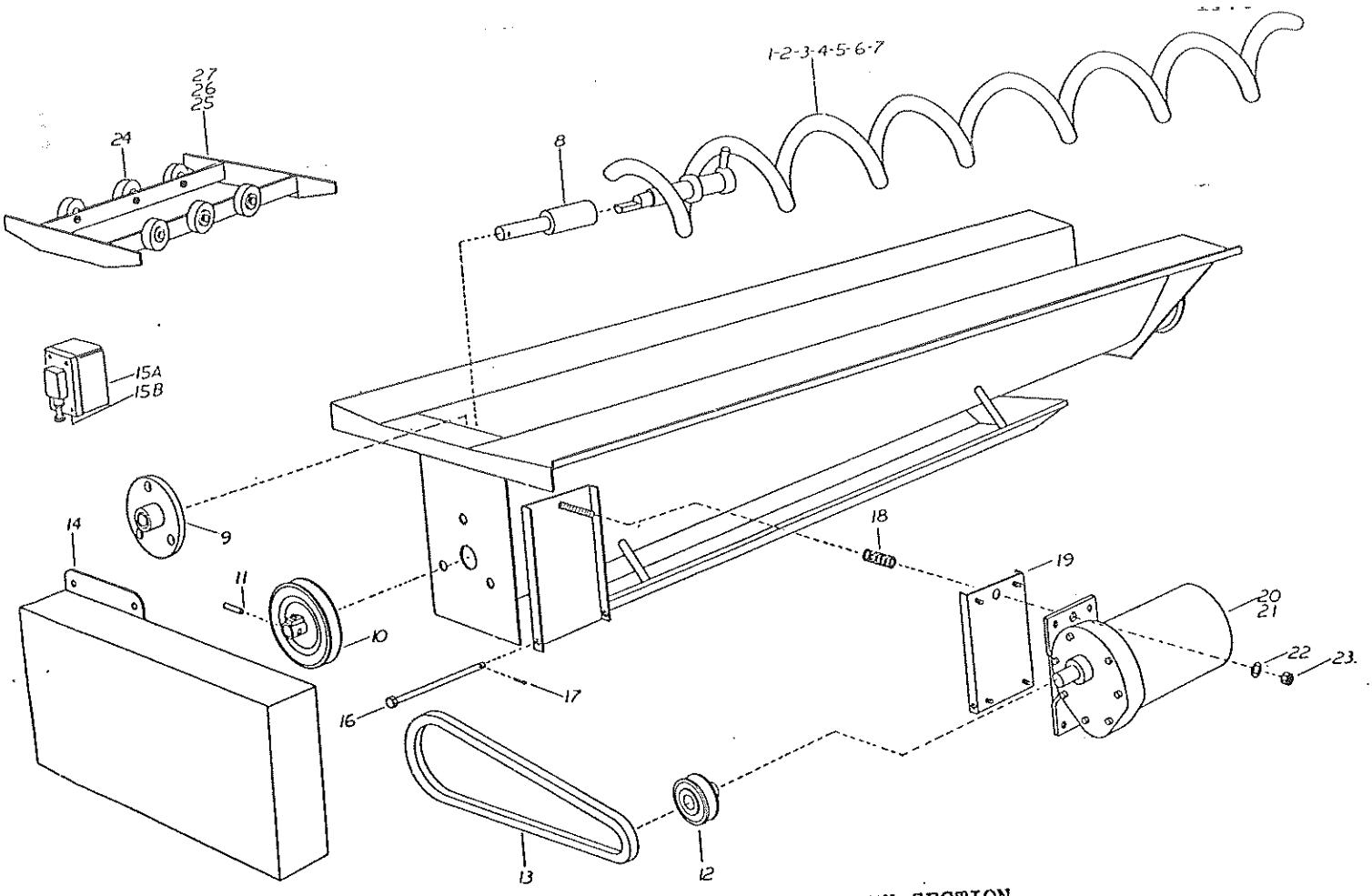


FIGURE 7-20

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----LOW WATER CUT-OFF	QNTY PER ASSMLY
1	35-0410-755	KIT, LOW WATER CUT-OFF (FLOAT TYPE)	1
2	55-7400-755	SWITCH, WATER LEVEL, HARTWELL (ALSO ORDER FLOAT 60-5502-157)	1
3	N.P.N.	GASKET, "O" RING	1
4	55-7400-177	SWITCH, HARTWELL, #10399-22	1
5	60-5502-157	NUT, LOCK, 1", S/S	1
6	55-2860-801	LIGHT, PILOT, 220V, AMBER	1
7	55-2860-802	LIGHT, PILOT, 24 VOLT, RED	1
8	55-7900-700	TIMER, UNIVERSAL, ARTISON, 24 VOLT	1
9	55-7900-603	TIMER, SYRACUSE, 230V, 3 SEC	1



SPIRAL CONVEYOR WITH GRAVITY SECTION
PARALELL MOUNTED

FIGURE 7-22

ILLUSTRATED PARTS LIST

INDEX NO.	PART NUMBER	PARTS LIST-----SPIRAL TROUGHS W/ GRAVITY SECTION	QNTY PER ASSMLY
			1
1	42-0992-803	SPIRAL, ASSEMBLY, 8 FT, 6" DIA.	1
2	42-0992-802	SPIRAL, ASSEMBLY, 6 FT, 6" DIA.	1
3	42-0992-801	SPIRAL, ASSEMBLY, 4 FT, 6" DIA.	1
8	12-0906-700	SHAFT, SPIRAL, HANGING, S/S	1
9	22-0930-800	FLANGE, SPIRAL, CAST ALUMINUM	1
10	70-6301-130	PULLY, V, 4" DIA.X 1/2" BORE, ALUMINUM	1
11	10-7108-316	PIN, ROLL, 3/16" X 1" LNG, S/S	1
12	70-6301-046	PULLY, V, 2" DIA.X 3/4" BORE, ALUMINUM	1
13	70-0500-524	BELT, V, 24" (INSIDE DRIVE)	1
14	31-0907-603	COVER, SPIRAL BELT, RIGHT HAND	1
15A	55-0600-046	BOX, BELL, 270 L, 2" X 4", ALUMINUM	1
15B	55-1100-011	COVER, WITH GASKET, 2" X 4" KILLARK (PUSH/PULL TYPE SWITCH)	1
16	N.P.N.	PIN, PIVOT, SPIRAL (PART OF MOTOR PLATE)	1
17	10-8108-116	PIN, COTTER, 1/16" X 1" LONG, S/S	1
18	70-7400-081	SPRING, 2" X 1" X 1/8" WIRE (PART OF MOTOR PLATE)	1
19	31-0942-802	BRACKET, MOUNTING, MOTOR	1
20	55-5004-034	MOTOR, 1/4 HP, 30 RPM, 3PH, VW	1
22	10-1800-518	WASHER, FLAT, 5/16", S/S	1
23	10-1906-518	NUT, ELASTIC STOP, 5/16-18, S/S	SPECIFY
24	70-8875-301	WHEEL, BLACK, GRAVITY, PLASTIC	SPECIFY
25	98-5000-051	GRAVITY SECTION, 18", W/WHEELS	SPECIFY
26	98-5000-052	GRAVITY SECTION, 12", W/WHEELS	SPECIFY
27	98-5000-053	GRAVITY SECTION, 6", W/WHEELS	SPECIFY

GARBAGE TROUGH-GRAVITYVEYOR-SPIRAL ID: 2080, 2100, 2120, 2140

DESCRIPTION

The garbage trough gravityveyor is a combination of two of Adamation's products, both the garbage trough and the gravity conveyor. The garbage trough, equipped with a powered vinyl spiral, provides a dumping receptacle for large volumes of food soil in the loading area. The gravity conveyor, which consists of two parallel rows of roller wheels that lift out for easy cleaning, allow trays to roll along and accumulate at the end of the conveyor. From the trays, the food soil is scrapped directly into the trough and the powered spiral conveys the food soil to the garbage receptacle while the liquids drain through the base of the perforated trough directly to the drain. This drainage system ensures that only solid food soil is conveyed to the garbage receptacle.

TROUBLE SHOOTING

The Trays Are Not Rolling Along The Gravityveyor.

A. Check to be sure that the gravityveyor sections are in the correct position.
B. Check to be sure that the gravityveyor wheels are clean and free of food soil.

The Spiral Is Not Operating.

A. Check to be sure that the on/off switch of the spiral is on.
B. Check to be sure that the manual overload breaker (mounted in the electrical control panel) is "ON".
C. Check to be sure that the V belt is not frayed and/or broken. (Item No. 13)
D. Check to be sure that the spiral is not jammed in the trough. (Item No. 1-7)

HOW TO REMOVE THE POLYVINYL SPIRAL

To remove the spiral, first lift out the gravityveyor wheel sections. Then simply grasp the spiral, lift up and slide it out of the end where it is attached. To replace the spiral, simply slide it back into the slot and return the gravityveyor wheel sections to their normal positions.

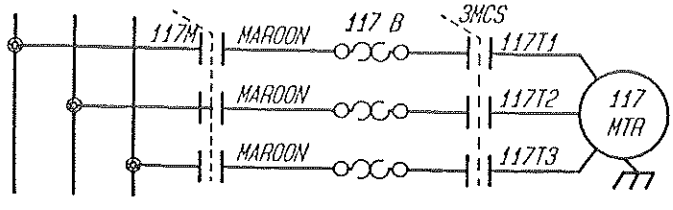
CLEANING

Cleaning of the garbage trough first requires that the gravityveyor sections be removed and cleaned separately. Next, the spiral should be removed and cleaned separately and then the trough and surrounding area should be wiped with a mild soap and water solution. Once washed, the area should be thoroughly rinsed with water.

ILLUSTRATED PARTS LIST

An exploded view of the garbage trough spiral is shown. All parts shown are replaceable. When ordering, the order should contain the Adamation part number, the part description and the quantity required.

ELECTRICAL DIAGRAM



GARBAGE TROUGH - SPIRAL 2 - HANGING - 1/4 H.P.