

# Champion<sup>®</sup>

The Dishwashing Machine Specialists

For machines beginning with Serial No. G3600

## Technical Manual

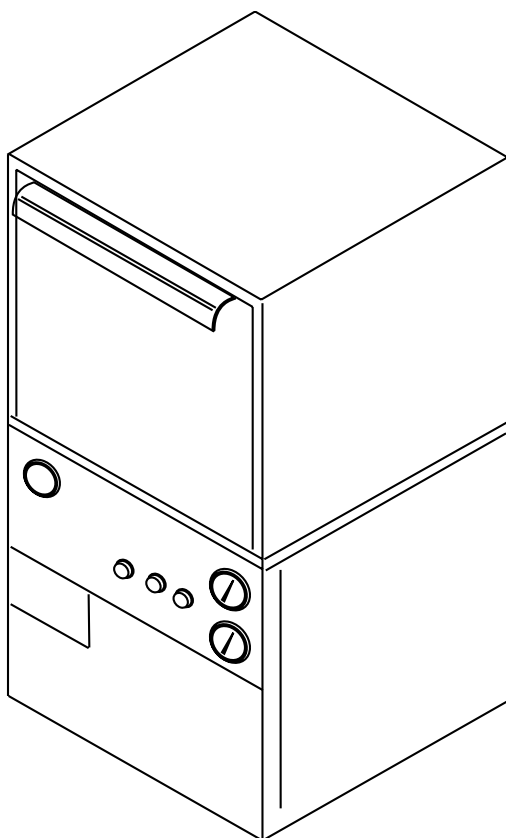
NSN	MODEL	APL/CID	HEAT
7320-01-506-6252	USN-10	Pending	Electric
7320-01-506-6252	USN-10	Pending	Electric
7320-01-506-6255	USN-10	Pending	Steam
7320-01-506-6255	USN-10	Pending	Steam

### Undercounter Dishwasher

**Model**

**USN-10**

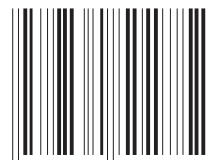
**High Temperature  
with Booster**



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February, 2007

Champion Manual P/N **113191** Rev C

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Champion Industries, Inc.

Complete the information below for quick reference.

Model Number \_\_\_\_\_ Serial Number \_\_\_\_\_

Voltage and Phase \_\_\_\_\_

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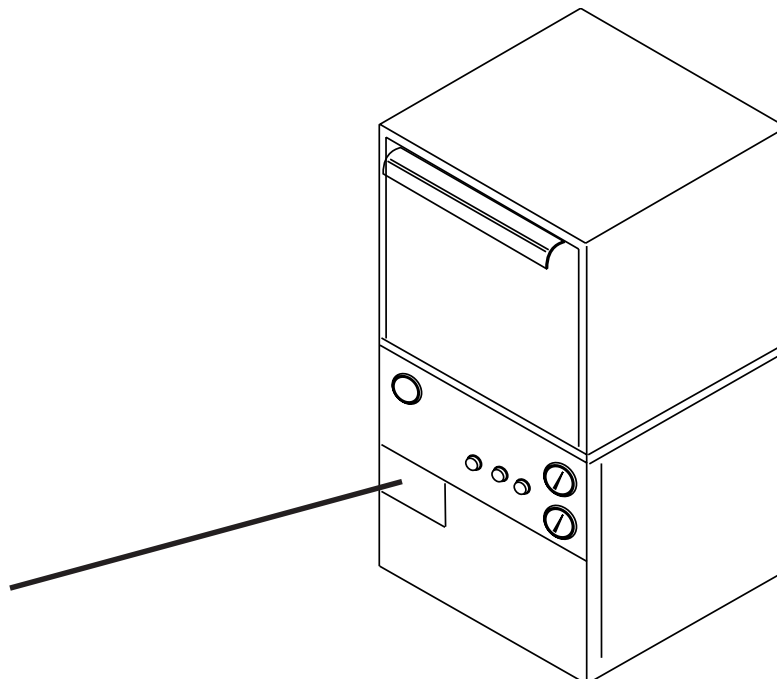
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**Please call for your Authorized- NSU Warranty Start up today!**

Machine Data Plate with  
Model & Serial Number  
located on left front  
corner of the lower panel



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# TECHNICAL PUBLICATION SHEET

# TECHNICAL MANUAL VALIDATION CERTIFICATE

## APPROVAL AND PROCUREMENT RECORD

**TECHNICAL MANUAL  
DEFICIENCY/EVALUATION REPORT (TMDER)  
(Form - NAVSEA 9086/10, REV. 6/85)**

## REVISION RECORD

Revision Date	Revised Pages	Serial Number Effectivity	Comments
3/15/00	All	Proto 1	Issue Manual and replacement parts lists.
12/14/01	58,59,62,63	G3600	Added remote control cabinet and revised electric booster.
12/06/02		U2769	Started with new serial number range.
12/06/02	17, 24, 25		Revised information on operation of dishwasher that does not apply to the earlier models.
12/06/02	46, 47		Revised part numbers-0710027 to 0710227, 0309301 to 0309301-1 and removed parts that are part of weldments and not sold as separate items.
12/06/02	48, 49		Revised part numbers-0510090 to 0710290, 0505042 to 109837, 112164 to 113514, 0501232 to 0710565 and removed parts that are part of weldments and not sold as separate items.
12/06/02	50	U2769	Inserted new overflow & screen.
12/06/02	56, 57	U2769	Inserted new electric tank heat.
12/06/02	58, 59	U2769	Inserted steam tank heat.
12/06/02	61		Revised part numbers-0509698 to 0509699, 0709698 to 0509698, 0509700 to 0309701
12/06/02	67, 66	U2769	Inserted new remote control cabinet.
12/06/02	69		Revised part number 107500 to 107550
12/06/02	74, 75	U2769	Inserted new electric booster.
3/19/03	49-80		Replaced photographs with drawings.
6/30/03	47, 53, 55, 57, 59		Revised 108391 with 113622.
12/7/06	60		Added circuit board settings to page 60.

## SAFETY SUMMARY

### Safety Symbols

- The following symbols appear throughout this manual alerting you to potential hazards. Statements associated with each symbol are printed in *italics*.



#### **WARNING:**

*Warning statements indicate any condition or practice that could result in result in personal injury or possible loss of life.*



#### **CAUTION:**

*Caution statements indicate any condition or practice which, if not strictly observed or remedied, could result in damage to or destruction of the dishwasher.*



#### **NOTE:**

*Note statements indicate any condition or practice which, if observed, will help in the safe completion of a task.*

### General Safety Rules

- The following general safety rules must be observed in addition to the specific cautions and warnings presented in this manual.
- Your Champion dishwasher may be an electric or steam heated machine using hot water to clean and sanitize a variety of wares. Machine surfaces and wares become hot during and immediately following normal operations. Consult your supervisor and wear protective gear as directed to avoid possible injury.
- Your dishwasher contains rotating spray arms.  
Use caution when working around the dishwasher especially when loading or unloading wares.
- Operators must NOT bypass a safety interlock or control to operate the dishwasher.
- The service and maintenance instructions contained in this manual are intended for qualified service personnel. These instructions assume that you are trained in basic electricity and mechanical theory. If you are not a trained technician, then do not attempt to adjust or repair the dishwasher as serious personal injury or damage to the dishwasher may result.



## Warning and Caution Statement Listing

- The following listing gives the page number and text of all the warning and caution statements that appear in this manual.

### Warning Statements

- Pg. 6- The installation of this unit must conform to local codes or, in the absence of local codes, to the National Electrical Code and all National Codes governing plumbing, sanitation, safety and good trade practices.
- Pg. 8- The installation of water supplies must conform to local codes or, in the absence of local code, all National Codes governing plumbing, sanitation, safety and good trade practices.
- Pg. 8- The installation of steam supplies must conform to local codes or, in the absence of local code, all National Codes governing plumbing, sanitation, safety and good trade practices.
- Pg. 10- The installation of drains must conform to local codes or, in the absence of local code, all National Codes governing plumbing, sanitation, safety and good trade practices.
- Pg. 10- The installation of ventilation must conform to local codes or, in the absence of local code, all National Codes governing plumbing, sanitation, safety and good trade practices.
- Pg. 11- The installation of electrical supplies and controls must conform to local codes or, in the absence of local codes, the National Electrical Code and good trade practices.
- Pg. 11- Dangerous voltages are present at the local electrical distribution system.  
Dangerous voltages are present at the dishwasher when it is connected to the local electrical distribution system.
- Pg. 11- When working on the dishwasher, disconnect the electric service and place a red tag at the disconnect switch to indicate work is being done on that circuit.
- Pg. 12- The installation of electrical supplies and controls must conform to local codes or, in the absence of local codes, the National Electrical Code and good trade practices.
- Pg. 12- Dangerous voltages are present at the local electrical distribution system.  
Dangerous voltages are present at the dishwasher when it is connected to the local electrical distribution system.
- Pg. 12- When working on the dishwasher, disconnect the electric service and place a red tag at the disconnect switch to indicate work is being done on that circuit.
- Pg. 19- Dangerous voltages are present at the local electrical distribution system.  
Dangerous voltages are present at the dishwasher when it is connected to the local electrical distribution system.
- Pg. 19- When working on the dishwasher, disconnect the electric service and place a red tag at the disconnect switch to indicate work is being done on that circuit.
- Pg. 20- Perform the following checks before placing the machine into service for normal operation.
- Pg. 20- Never bypass a safety device in order to operate the dishwasher for normal operation.
- Pg. 22- Perform the following checks before placing the machine into service for normal operation.

## **SAFETY SUMMARY (Cont.)**

### **Warning Statements (Cont.)**

- Pg. 22- Never bypass a safety device in order to operate the dishwasher for normal operation.
- Pg. 23- Dishwasher surfaces, dishracks and wares become hot during and immediately after washing operations.  
Wear protective gear per your supervisor's directions.
- Pg. 24- Dishwasher surfaces, dishracks and wares become hot during and immediately after washing operations.  
Wear protective gear per your supervisor's directions.
- Pg. 27- Deliming solutions or other acids must not come in contact with household bleach (sodium hypochlorite) or any chemicals containing chlorine, iodine, bromine, or fluorine.  
Mixing will cause hazardous gases to form.  
Skin contact with deliming solutions can cause severe irritation and possible chemical burns.
- Pg. 27- Consult your chemical supplier for an appropriate deliming solution, protective gear and safety procedures.
- Pg. 28- When working on the dishwasher, disconnect the electric service and place a red tag at the disconnect switch to indicate work is being done on that circuit.
- Pg. 29- When working on the dishwasher, disconnect the electric service and place a red tag at the disconnect switch to indicate work is being done on that circuit..
- Pg. 35- When working on the dishwasher, disconnect the electric service and place a red tag at the disconnect switch to indicate work is being done on that circuit
- Pg. 35- Use Extreme Caution when performing tests on energized circuits.

## SAFETY SUMMARY (Cont.)

### Caution Statements

- Pg. 5- Check piping mounted underneath dishwasher before lifting to avoid damaging the machine.
- Pg. 6- Check piping mounted underneath dishwasher before lifting to avoid damaging the machine.
- Pg. 18- Perform the following checks before placing the machine into service.
- Pg. 26- Do not hose down the exterior of the machine with water.
- Pg. 28- Only qualified service personnel should perform preventive maintenance on the dishwasher.
- Pg. 29- Only qualified service personnel should perform preventive maintenance on the dishwasher.
- Pg. 35- Only qualified service personnel should perform preventive maintenance on the dishwasher.

-

## UNITED STATES NAVY LIMITED WARRANTY

Champion Industries Inc. (herein referred to as Champion), P.O. Box 4149, Winston-Salem, North Carolina 27115, warrants machines, and parts, as set out below.

**Warranty of Machines:** Champion warrants all new machines of its manufacture bearing the name "Champion" and installed within the United States to be free from defects in material and workmanship for a period of one (1) year after the date of installation or fifteen (15) months after the date of shipment by Champion, whichever occurs first. [See below for special provisions relating to glasswashers.] The warranty registration card must be returned to Champion within ten (10) days after installation. If warranty card is not returned to Champion within such period, the warranty will expire after one year from the date of shipment.

Champion will not assume any responsibility for extra costs for installation in any area where there are jurisdictional problems with local trades or unions.

If a defect in workmanship or material is found to exist within the warranty period, Champion, at its election, will either repair or replace the defective machine or accept return of the machine for full credit; provided, however, as to glasswashers, Champion's obligation with respect to labor associated with any repairs shall end (a) 120 days after shipment, or (b) 90 days after installation, whichever occurs first. In the event that Champion elects to repair, the labor and work to be performed in connection with the warranty shall be done during regular working hours by a Champion authorized service technician at a ship's homeport located within the continental United States. Defective parts become the property of Champion. Use of replacement parts not authorized by Champion will relieve Champion of all further liability in connection with its warranty. In no event will Champion's warranty obligation exceed Champion's charge for the machine. The following are not covered by Champion's warranty:

- a. Lighting of gas pilots or burners.
- b. Cleaning of gas lines.
- c. Replacement of fuses or resetting of overload breakers.
- d. Adjustment of thermostats.
- e. Adjustment of clutches.
- f. Opening or closing of utility supply valves or switching of electrical supply current.
- g. Cleaning of valves, strainers, screens, nozzles, or spray pipes.
- h. Performance of regular maintenance and cleaning as outlined in operator's guide.
- i. Damages resulting from water conditions, accidents, alterations, improper use, abuse, tampering, improper installation, or failure to follow maintenance and operation procedures.
- j. Wear on Pulper cutter blocks, pulse vanes, and auger brush.

*Examples of the defects not covered by warranty include, but are not limited to:* (1) Damage to the exterior or interior finish as a result of the above, (2) Use with utility service other than that designated on the rating plate, (3) Improper connection to utility service, (4) Inadequate or excessive water pressure, (5) Corrosion from chemicals dispensed in excess of recommended concentrations, (6) Failure of electrical components due to connection of chemical dispensing equipment installed by others, (7) Leaks or damage resulting from such leaks caused by the installer, including those at machine table connections or by connection of chemical dispensing equipment installed by others, (8) Failure to comply with local building codes, (9) Damage caused by labor dispute.

**Warranty of Parts:** Champion warrants all new machine parts produced or authorized by Champion to be free from defects in material and workmanship for a period of 90 days from date of invoice. If any defect in material and workmanship is found to exist within the warranty period Champion will replace the defective part without charge.

**DISCLAIMER OF WARRANTIES AND LIMITATIONS OF LIABILITY.** CHAMPION'S WARRANTY IS ONLY TO THE EXTENT REFLECTED ABOVE. CHAMPION MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED, TO ANY WARRANTY OF MERCHANTABILITY, OR FITNESS OF PURPOSE. CHAMPION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. THE REMEDIES SET OUT ABOVE ARE THE EXCLUSIVE REMEDIES FOR ANY DEFECTS FOUND TO EXIST IN CHAMPION DISHWASHING MACHINES AND CHAMPION PARTS, AND ALL OTHER REMEDIES ARE EXCLUDED, INCLUDING ANY LIABILITY FOR INCIDENTALS OR CONSEQUENTIAL DAMAGES.

Champion does not authorize any other person, including persons who deal in Champion dishwashing machines to change this warranty or create any other obligation in connection with Champion Dishwashing Machines.

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# PART 1: GENERAL SPECIFICATIONS

## Welcome to Champion...

and thank you for allowing us to take care of your dishwashing needs.

## 1.1 About this Manual

All information, illustrations and specifications contained in this manual are based upon the latest product information available at the time of publication. Champion constantly improves its products and reserves the right to make changes at any time or to change specifications or design without notice and without incurring any obligation.

### Manual Organization

This manual is divided into eight parts:

- Part 1, General Specifications, introduces this manual and the dishwasher in general.
- Part 2, Installation, discusses the installation of the dishwasher and describes the connection of utilities and services.
- Part 3, Operation, discusses theory of operation, operator controls, initial start up and shutdown procedures.
- Part 4, Maintenance and Cleaning, discusses lubrication, preventive maintenance, cleaning and deliming.
- Part 5, discusses basic troubleshooting and service procedures.
- Part 6, discusses replacement parts procurement and provides parts diagrams and parts lists.
- Part 7, contains the dishwasher electrical schematic.
- Part 8, contains special inserts and late breaking information.

## 1.2 Model Numbers

### USN-10

The USN-10 series is a undercounter high temperature (180°F/82°C rinse) sanitizing dishwasher. This model features electric or steam heat with booster.

The USN-10 is as front loading door model.

The USN-10 comes in the following model::

USN-10: 440V/60/3 Electric heat or Steam heat @ 15 PSI flow pressure

### 1.3 Standard Equipment

- Heavy duty 304 stainless steel construction
- Easy open front door loading
- Closed construction with panels for easy service and cleaning
- Flanged feet for deck mounting
- Rotating upper and lower wash spray arms
- Rotating lower and fixed upper rinse spray arms
- 11 inch door clearance
- 18" x 18" foot print, 34-1/4" high
- Water resistant controls
- Easy installation
- Automatic tank fill
- Built-in controls
- Door safety switch
- Low-water tank heat protection
- Easy front access for service
- 1/2 HP drip proof pump/motor assembly
- Steam piping without threaded joints in tanks
- 440V/60/3 power supply
- 120VAC control circuit
- Steam coil or electric tank heat
- Easily removable scrap screens
- Remote mounted control cabinet

### Options and Accessories

- External steam booster heater 70° rise (specified at time of order)
- External electric booster heater 70° rise (specified at time of order)  
(stainless steel, completely interplumbed and interwired)
- Dishracks - dish or open (as specified by model)

## 1.4 Dimensions, Capacities, Ventilation, and Utilities

Dimensions		Capacities	
Height	34-3/8 inches	Wash tank	5.0 gallons
Width	18.0 inches	Gal. per rack	0.8 gal/rack
Length	18.0 inches	Final rinse flow	36.0 gal/hr @ 20 psig
Volume crated	125 cu. ft.		
Shipping weight crated	350 lbs.		
Weight uncrated	200 lbs.		

### Rack Capacity

Based on standard 16" X 16"  
dishracks manually loaded

<b>Rack Capacity (racks/hr)</b>	<b>45</b>
-------------------------------------	-----------

### Cycle Time:

Wash	33
Dwell	5
Rinse	12
Total	50

### Utilities

Hot water: 3/4" NPT 180°F hot water connection, 36 GPM @ 20-22 psig flow pressure

Drain: 1" NPT drain connection @ 15 gal/min maximum flow rate.

Electric: 440/60/3 29.1 Amp Total

Tank heat: 3 KW heater 480/60/3

Booster heat: 20 KW heater 480/60/3

Steam heat: 480/60/3 2 amp for controls

Steam: 1-1/4" NPT steam connection (for machine and booster) @ 15-30 psig flow

Tank heat consumption 10 lbs./hr.

70°R Steam booster consumption 36 lbs./hr.

Condensate: 1/2" NPT machine return to boiler (no back pressure)

## 1.5 Electrical Power Requirements (Steam Heat)

### Machine Full Load Amps

Model No.	Voltage Hz/Ph	Booster Rise (Steam)	Machine Full Load Amps	Power Requirement (125% Service Factor)
USN-10	480/60/3	70° (E)	29.1 Amps	40 Amps
USN-10	480/60/3	70° (S)	1.5 Amps	15Amps

### Operating Currents (480V/60/3 Supply)

#### Steam Heated

Dishwasher  
Control Circuit      1.5 Amps

## PART 2: INSTALLATION

In This Part—

- Unpacking the dishwasher
- Making Utility Connections

### 2.1 Unpack the Dishwasher

**NOTE:**

*The installation of your dishwasher must meet all applicable health and safety codes and conform to good trade practice.*

Your USN-10 was completely assembled, inspected, and thoroughly tested at our factory before shipment to your installation site.

- The dishwasher with booster are shipped on a single pallet.
- The booster is connected to the dishwasher.

Perform the following steps to unpack the dishwasher:

1. Remove protective wrap and hold downs from the pallet.
2. Inspect for any shipping damage. If damage is found, save the packing material and contact the carrier immediately.
3. Check the interior of the dishwasher for the following items stowed inside:
  - 1 set of flanged feet
  - 1 set of dishracks
  - Warranty information packet

**CAUTION:**

*Check piping mounted underneath dishwasher before lifting to avoid damaging the machine.*

## 2.2 Permanent Placement

Perform the following steps to place the dishwasher in its permanent location.

1. Before moving the sections into position, inspect the location site to ensure the electrical, plumbing, and ventilation services are provided in the correct locations. Compare the site connections with the dishwasher to ensure they will match when the machine is set in its permanent location.



**CAUTION:**

*Check piping mounted underneath dishwasher before lifting to avoid damaging the machine.*

2. Lift the dishwasher and replace the adjustable legs with flanged mounting feet provided.
3. Position dishwasher in its permanent location.
4. Level the dishwasher front to back and side to side by turning the adjustable feet. Make sure the load and unload openings align with the table system height.
5. Position the external booster heater at the unload end of the dishwasher. Check alignment of common plumbing connections between booster and dishwasher.
6. Mount control cabinet to location nearest machine (if applicable).
7. Install deck plates and bolt dishwasher and booster to deck per standard procedures.

## 2.3 Connections between the dishwasher and booster (Steam Only)



**WARNING:**

*The installation of this unit must conform to local codes or, in the absence of local codes, to the National Electrical Code and all National Codes governing plumbing, sanitation, safety and good trade practices.*

Connect the plumbing and electrical connections between the dishwasher and booster heater.

1. Connect the 1/2" condensate union from the dishwasher to the booster.
2. Connect the 3/4" steam union from the dishwasher to the booster. .
3. Connect the 3/4" water line from the booster to the top of the dishwasher at the vacuum breaker.
4. Pull the electrical conduit and harness from the junction box located on the lower rear corner of the dishwasher to the booster junction box located on the lower left rear leg of the booster stand.
5. Match the harness wire numbers to the booster junction box wiring.

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## 2.4 Water Connections

Perform the following steps to connect the water supply



### **WARNING:**

*The installation of water supplies must conform to local codes or, in the absence of local code, all National Codes governing plumbing, sanitation, safety and good trade practices.*

1. Connect a 3/4" NPT hot water supply line (140°F minimum) to the water inlet valve located at the booster.
2. Connect a 3/4" NPT hot water line (140°F minimum) to the water inlet valve located at the rear of the dishwasher.

## 2.5 Steam and Condensate Connections (Steam heat only)

Perform the following steps to connect the steam supply and condensate return.



### **WARNING:**

*The installation of steam supplies must conform to local codes or, in the absence of local code, all National Codes governing plumbing, sanitation, safety and good trade practices.*



### **NOTE**

*A manual shut-off valve for steam (supplied by others) should be installed in the supply lines to allow for servicing of the machine. The shut-off valve should be the same size or larger than the supply line.*

1. Connect a steam supply line to the line strainer located at the booster.
2. Connect a steam condensate line to the tee fitting located at the booster. Condensate must be gravity return to the boiler or to a pumping trap.



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## 2.6 Drain Connections

Perform the following steps to connect the drain lines.



**WARNING:**

*The installation of drains must conform to local codes or, in the absence of local code, all National Codes governing plumbing, sanitation, safety and good trade practices.*

1. Connect a 1" NPT drain line to the dishwasher. The machine drain is a level line so connection can be made on either end by relocating the drain plug. The drain line is located underneath the dishwasher.

## 2.7 Ventilation Connections



**WARNING:**

*The installation of ventilation must conform to local codes or, in the absence of local code, all National Codes governing plumbing, sanitation, safety and good trade practices.*

## 2.8 Electrical Connections

Perform the following steps to connect the electrical supply.



**WARNING:**

*The installation of electrical supplies and controls must conform to local codes or, in the absence of local codes, the National Electrical Code and good trade practices.*



**WARNING:**

*Dangerous voltages are present at the local electrical distribution system.  
Dangerous voltages are present at the dishwasher when it is connected to the local electrical distribution system.*



**WARNING:**

*When working on the dishwasher, disconnect the electric service and place a tag at the disconnect switch to indicate work is being done on that circuit.*

1. A qualified electrician must compare the electrical power supply with the machine electrical specifications stamped on the MACHINE ELECTRICAL CONNECTION PLATE located inside the control cabinet before connecting to the incoming service through a fused disconnect switch.
2. Locate the dishwasher main electrical junction box for the machine.  
The box is located either to the left or right of the dishwasher (depending on how the machine was originally ordered from the factory).
3. Controls must be easily accessible to the operator.
4. Install the power supply wires from the local distribution panel to the control cabinet at the incoming power terminal block.
5. Refer to Part 3.3, Start up procedure to test the installation.

## 2.9 Chemical Connections

Perform the following steps to connect the chemical dispensing equipment (supplied by others).



**WARNING:**

*The installation of electrical supplies and controls must conform to local codes or, in the absence of local codes, the National Electrical Code and good trade practices.*



**WARNING:**

*Dangerous voltages are present at the local electrical distribution system.  
Dangerous voltages are present at the dishwasher when it is connected to the local electrical distribution system.*



**WARNING:**

*When working on the dishwasher, disconnect the electric service and place a tag at the disconnect switch to indicate work is being done on that circuit.*

1. Chemical dispensing signal connection points are provided in the control cabinet.
2. The detergent signal is limited to a maximum load of 1 Amp. Signal voltage is 120VAC.
3. The Rinse aid signal is limited to a maximum load of 1 Amp. Signal voltage is 120VAC.
4. Sanitizer is not required for the USN-10 dishwasher.
5. The rinse aid injection point is located in the upper final rinse piping of the dishwasher.
6. The chemical equipment installer must cut a hole in the wash tank for a detergent sensor and a detergent injection point.

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## PART 3: OPERATION

In This Part—

- Theory of operation
- Description of operator controls
- Start up procedure
- Safety and operation checks
- Shutdown procedure
- Operation Summary

### 3.1 Theory of Operation

Dishwashing requires five components to be effective: time, temperature, mechanical action, chemical action and proper procedure. Time allows everything to work. Temperature produced by the heat system is required to heat water in order to penetrate and loosen food soils. Mechanical action produced by the pump system creates water pressure to flush food soils from wares. Chemical action in the form of detergents break down grease and dissolve food particles. Proper procedures in the form of prescrapping, prerinsing, and proper loading maximize dishwasher performance.

The USN-10 series dishwasher consists of a single wash tank. The tank is equipped with its own spray system and a water holding tank. A recirculating pump draws water from the tank and directs the water under pressure through the spray system and on to the dishes.

Wash water is heated in the tank by a steam coil or electric tank heater. The final rinse water for sanitizing is heated in an external steam or electric booster heater.

The final stage of the washing operation occurs during the final rinse cycle. Upper and lower final rinse spray pipes are located in the dishwasher. Final rinse water, heated to a minimum of 180°F, is forced by water line pressure from the final rinse booster heater. Water sprays from the upper and lower final rinse piping on the wares to sanitize them. The wares are removed from the dishwasher and operators stack the wares for the next meal period.

The USN-10 is equipped with several safety features. A door safety switch prevents the unit from running if a door is open. A float switch located in the tank maintains the water level in the unit if the water level falls below a preset level. A high limit thermostat is mounted inside of the tank to protect from overheating.

## 3.2 Description of Operator Controls and Indicators

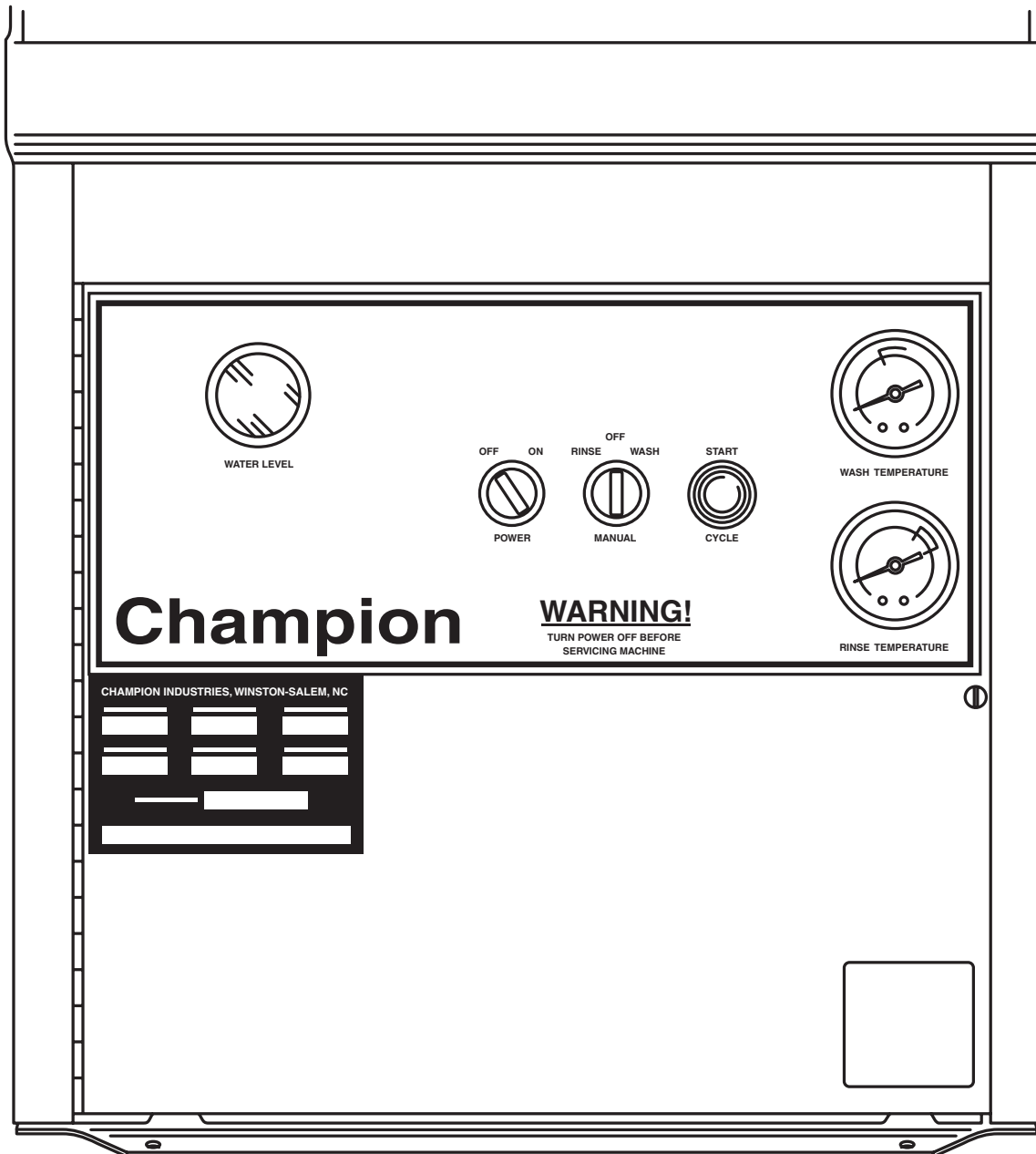
### 3.2.1 Control Cabinet

CONTROL	TYPE	FUNCTION
① On/OFF Switch	Selector	Controls power to the dishwasher. Connects power to tank and booster heat circuits, pump contactors.
② Power ON light	Red pilot	Signals control power connected to unit if ON/OFF selector ON.
③ Start switch	Green Pushbutton	Initial Auto Fill. Starts Pump.
④ Wash /Rinse	Selector Switch	Manual operation of wash and rinse

**Table 3.1**  
**Controls and Indicators**  
**Control Cabinet**

## 3.2 Description of Operator Controls and Indicators (Cont.)

### 3.2.2 Dishwasher



**Figure 3.2**  
**Controls and Indicators**  
**Dishwasher**



CONTROL	TYPE	FUNCTION
① Inlet water valve	Ball valve	Connects incoming water supply for the booster
② Inlet water supply valve	Ball valve	Connects incoming water supply for the tank fills.
③ Inlet water supply valves	Ball valve	Controls manual fill to wash tank
④ Water level	Sight glass gauges	Indicates water level in wash Water line visible in center of glass indicates correct water level in tank.
⑤ Tank water temperature gauges	Scaled thermometer dial	Indicates water temperature in wash and rinse. Wash = 150°F minimum Rinse = 180°F minimum
⑥ Final rinse gauge	0-60 PSI	Indicates final rinse water pressure during the final rinse. 20-22 PSIG minimum flow pressure
⑦ Final rinse gauge	Scaled thermometer dial	Indicates final rinse temperature during the final rinse 180-195°F optimum range

**Table 3.2**  
**Controls and Indicators**  
**Dishwasher**

### 3.3 Start Up Procedure

Perform the following steps to start up the dishwasher for first time operation.



**CAUTION:**

*Perform the following checks before placing the machine into service.*

1. Check the exterior of the machine for any foreign material and remove.
2. Open the door.
3. Check the interior of the machine and remove any foreign material.



**NOTE:**

*To install the upper and lower spray arms:  
Insert the arm into its manifold and install the retaining screw.*

4. Make sure the upper and lower spray arms are secure in the manifold.
5. Remove the scrap screens and make sure the overflow tube is down and the pump intake screen is in place.
6. Replace the scrap screen.
7. Close the door.
9. Check the chemical injection system, (supplied by others), and fill as required.
10. Open the water supply valves. Check for leaks and take corrective action as required.
11. Open the steam supply valves (if applicable). Check for leaks and take corrective action if required.
12. Monitor the water level gauge. Tank is full when the water line reaches the center of the gauge.
13. Check the dishwasher for leaks.
14. Turn the main power on at the breaker panel or fused disconnect switch for the dishwasher.
15. Turn the main power on at the breaker panel or fused disconnect switch for the electric booster heater (if applicable).
16. Turn the power selector switch on the front of the control cabinet to the "ON" position. The red power on light will illuminate.



**NOTE:**

*Allow sufficient time for the tanks to reach proper temperatures.  
Wash tank temperature = 150°F. minimum*

17. Monitor the tank thermometers located on the lower front panel of the dishwasher for the proper temperature reading.
18. Press the GREEN start button on the front of the control cabinet. Pump will start and machine will fill.

19. Check the direction of rotation of the pump motor.  
Proper rotation is CW when viewing the motor from the rear.

**WARNING:**

*Dangerous voltages are present at the local electrical distribution system.  
Dangerous voltages are present at the dishwasher when it is connected to the  
local electrical distribution system.*

**WARNING:**

*When working on the dishwasher, disconnect the electric service and place a tag at the  
disconnect switch to indicate work is being done on that circuit.*

20. If rotation direction is incorrect, reverse wires L1 and L2 on the disconnect switch side of the main electrical connection terminal block located inside the remote control cabinet.
21. Proceed to Part 3.4, Safety and Operation Checks, on next page

### 3.4 Safety and Operation Checks

Refer to Part 3.3, Start up Procedure, on the previous page before performing the steps listed below.

Perform the following steps to check the dishwasher safety devices and to operate the dishwasher for first time.

#### Safety Checks



**WARNING:**

*Perform the following checks before placing the machine into service for normal operation.*



**WARNING:**

*Never bypass a safety device in order to operate the dishwasher for normal operation. Only qualified service technicians are authorized to bypass a safety device for the purpose of troubleshooting and repair.*



**NOTE:**

*Refer to the corresponding repair or adjustment procedure in Part 5, Basic Service, if a safety device fails to function in the manner prescribed below.*

#### Dishwasher Condition

The dishwasher is full of water, steam or electric heat energized, and dishwasher power is on. Temperature gauges indicate proper temperatures.

#### Door Safety Switch Check

1. Slowly open the door approximately 1 inch.  
Dishwasher pump stops.
2. Close wash tank door. Press green start button.  
Pump runs and the machine will fill.

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### 3.4 Safety and Operation Checks (Cont.)

Perform the following steps to check the dishwasher safety devices and to operate the dishwasher for first time.

#### Safety Checks (Cont.)



**WARNING:**

*Perform the following checks before placing the machine into service for normal operation.*



**WARNING:**

*Never bypass a safety device in order to operate the dishwasher for normal operation. Only qualified service technicians are authorized to bypass a safety device for the purpose of troubleshooting and repair.*



**NOTE:**

*Refer to the corresponding repair or adjustment procedure in Part 5, Basic Service, if a safety device fails to function in the manner prescribed below.*

#### Dishwasher Condition

The dishwasher is full of water, steam or electric heat energized, and dishwasher power is on. Temperature gauges indicate proper temperatures. The pump is running.

#### Booster Low Temperature Check

1. Insert rack into the machine to operate the final rinse.
2. Monitor the final rinse temperature gauge located on the top of the dishwasher in the upper final rinse piping. Minimum temperature required is 180°F.
3. Check the steam or electric power supply if temperature drops below 180°F.

## Operation Checks

Refer to Part 3.3, Start up Procedure, on pages 20-21 before performing the steps listed below.

Perform the following steps to check the dishwasher operation for first time.

### Operation Checks

#### Dishwasher Condition

The dishwasher is full of water, steam or electric heat energized, and dishwasher power is on. Temperature gauges indicate proper temperatures. The pump is running.

1. Prescrap and prerinse wares to remove large food particles.  
Hard Baked-on soils may require soaking or scrubbing.
2. Load a dishrack with soiled wares.  
Place dishes edgewise in a peg rack.  
Place cups and bowls upside down in a flat bottom rack.  
Spread silverware evenly in a single layer in a flat bottom rack.
3. Do not overload dishracks.
4. Open the door and slide the rack into the dishwasher.  
Close and latch the door.
5. Monitor the wash temperature gauges.  
Wash tank temperature must maintain 150°F. minimum.
6. Monitor the final rinse temperature gauge as the dishrack begins the final rinse cycle. Minimum temperature required is 180-195 °F.
7. Monitor the final rinse pressure during the final rinse. Minimum final rinse FLOWING pressure must be 20-22 psig. The pressure gauge may indicate a higher rinse pressure after the final rinse water stops flowing. This is a normal condition.



#### **WARNING:**

*Dishwasher surfaces, dishracks and wares become hot during and immediately after washing operations. Wear protective gear per your supervisor's directions.*

8. Adjust chemical dispensing equipment (supplied by others) as required.

## 3.5 Shutdown Procedure

Perform the following steps to shutdown the dishwasher after operation.



**WARNING:**

*Dishwasher surfaces, dishracks and wares become hot during and immediately after washing operations. Wear protective gear per your supervisor's directions.*

1. Turn the power selector switch on the remote control cabinet to OFF.  
The red power light goes out.
2. Turn the power off to the dishwasher at the main service disconnect switch or breaker.
3. Turn the power off to the electric booster (if applicable) at the main service disconnect switch or breaker.
4. Close the steam supply valve (steam heated dishwashers).
5. Remove the upper and lower spray arms.
6. Inspect spray arm.
7. Flush arms with water.
8. Set spray arms aside.
9. Flush interior of machine to remove debris on upper hood surfaces.
10. Remove scrap screen from dishwasher interior.
11. Flush both sides of screen in remote sink to remove accumulated debris.
12. Flush interior of lower tank with fresh water to remove debris.
13. Clean drain screen.
14. Wipe interior of dishwasher including tank bottom.
15. Remove and clean pump intake screen. Replace immediately after cleaning.
16. Remove overflow tube and flush water down drain.
17. Clean float switch assembly and check for free movement.
18. Flush steam coil or electric heater.  
Use a nonferrous scrub pad to remove scale from electric heaters if necessary.
19. Replace overflow tube.
20. Replace scrap screen.
21. Replace spray arm assemblies.
22. Leave door open to aid air drying of dishwasher interior.
23. Turn power off to exhaust vents (if applicable).



### 3.6 Operation Summary

The following summarizes the steps for the normal operation of your dishwasher.

1. Check that spray arms, scrap screen, and door are in place.
2. Check detergent and rinse aid reservoirs are replenished.  
(Dispensing equipment and chemicals supplied by others.)
3. Check that drain is closed.
4. Turn power on to the dishwasher at the main service disconnect switch.
5. Monitor water level gauge.
6. Turn power selector switch at control cabinet to ON.
7. Push Green start button on control cabinet for initial auto fill.
8. Wait for tank water temperatures to reach operating temperature.  
Wash tank temperature = 150°F. minimum.
9. Scrap and prerinse wares. Place in dishracks. Do not overload racks.
10. Press Green start button on control cabinet to start wash cycle. Pump runs.
11. Open door and slide dishrack into dishwasher.
12. Check the final rinse temperature and the final rinse pressure during the final rinse  
(180°-195°F @ 20-22 psig flow pressure).



#### **NOTE:**

*The dishwasher may be stopped by turning the power selector switch on the control cabinet to the OFF position. Press the GREEN start button and all wares inside the dishwasher will be fully washed and rinsed.*

13. Refer to Part 4.2, Cleaning Schedule for daily cleaning instructions.
14. Perform the shutdown procedure described on the preceding page.

## PART 4: CLEANING AND MAINTENANCE

In This Part—

- Introduction
- Daily cleaning schedules
- Deliming schedules
- Preventive maintenance schedules
- Lubrication schedules

### 4.1 Introduction

Cleaning your machine is the best maintenance that you can provide. Components that are not regularly flushed and cleaned do not perform well.

The following schedules are the minimum requirements necessary for the proper performance of your machine. Intervals should be shortened whenever your machine is faced with abnormal working conditions, hard water, or multiple shift operations.

### 4.2 Daily Cleaning Schedules

#### Every 2 Hours or After Each Meal Period

1. Drain the dishwasher.
2. Flush interior with fresh water.
3. Clean scrap screen and pump intake screen.
4. Clean spray arm nozzles.

#### Every 8 Hours or at the End of the Day

1. Drain the machine.
2. Flush interior with fresh water.
3. Clean scrap screen and pump intake screen.
4. Clean spray arms.
5. Clean the final rinse nozzle openings with a paper clip.



#### **CAUTION:**

*Do not hose down the exterior of the machine with water.*

6. Thoroughly clean the exterior of machine with mild soap solution.
7. Reassemble the machine.
8. Leave doors open to aid in drying.

### 4.3 Deliming Schedules

Your dishwasher should be delimed regularly depending on the mineral content of your water. Inspect the machine interior for mineral deposits and use a deliming solution for the best cleaning results.

**WARNING:**

*Deliming solutions or other acids must not come in contact with household bleach (sodium hypochlorite) or any chemicals containing chlorine, iodine, bromine, or fluorine.*

*Mixing will cause hazardous gases to form.*

*Skin contact with deliming solutions can cause severe irritation and possible chemical burns.*

**WARNING:**

*Consult your chemical supplier for an appropriate deliming solution, protective gear and safety procedures.*

## 4.4 Preventive Maintenance Schedules

### Weekly Maintenance Requirements

Perform the following procedures every week.



**CAUTION:**

*Only qualified service personnel should perform preventive maintenance on the dishwasher*

1. Inspect for leaks including all piping, tank seams, and supply connections. Tighten or repair as required.
2. Inspect the front door for proper fit and ease of operation.
3. Check the operation of door safety switch.  
Refer to Part 3.4, Safety and Operation Checks on page 22.



**WARNING:**

*When working on the dishwasher, disconnect the electric service and place a tag at the disconnect switch to indicate work is being done on that circuit.*

4. Turn the power selector switch to OFF at the control cabinet.
5. Drain the dishwasher if required and inspect the float switches and probes in the bottom of the tank. Float switch should move freely. Clean if necessary.
6. Check the spray arms and internal structures for wear or damage.
7. Reassemble the dishwasher.
8. Turn the power selector switch to ON at the control cabinet.
9. Check the operation of the start and stop switches on the control cabinet.
10. Check that the red power indicator works correctly.
11. Return the dishwasher to normal operation.

## Quarterly Maintenance Requirements

Perform the following procedures every four months.



### CAUTION:

*Only qualified service personnel should perform preventive maintenance on the dishwasher.*

1. Perform all the procedures described in the weekly maintenance requirements.
2. Refer to Part 3.4, Safety and Operation Checks, and perform all the checks described in this part.
3. Close all water and steam supplies. Run the dishwasher for 2 minutes to relieve water and steam pressure in the lines.
4. Disassemble the water and steam inlet line strainers and clean as necessary.



### WARNING:

*When working on the dishwasher, disconnect the electric service and place a tag at the disconnect switch to indicate work is being done on that circuit.*

5. Disconnect the power to the dishwasher at the main service disconnect switch. Tag the circuit to indicate work is being performed on that circuit.
6. Open the control cabinet enclosure(s) and check the tightness of all electrical wiring connections.
7. Inspect all wiring for signs of heat damage and replace if necessary.
8. Manually operate the contactors and overloads checking for free movement.
9. Close the control cabinet enclosures.
10. Inspect and tighten all mounting hardware. Replace missing or damaged fasteners with stainless steel replacements.
11. Return the dishwasher to normal operation.

## Annual Maintenance Requirements

The steam booster (if equipped) requires annual cleaning.

Refer to Part 5.3.12, Steam Booster Service, for instructions on steam booster maintenance.

## **4.4 Lubrication Schedules**

### **Weekly Lubrication Requirements**

There are no weekly lubrication requirements.

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## PART 5: BASIC SERVICE

In This Part—

- Introduction
- General troubleshooting
- Component adjustment, repair, and replacement

### 5.1 Introduction

Part 5, Basic Service covers component adjustment, repair and replacement for the major components of your dishwasher. Use the Troubleshooting Guide to identify the operating condition of your machine and follow the suggested solution. Some solutions refer to a **Repair Procedure 5.3.xx**; these solutions should be attempted only by qualified service personnel. Basic Service does not cover all possible repair procedures. If you require additional service support, you may call your local service company at:

See Inside Front Cover for Service Company information

Please have the Model and Serial Number of the machine ready when you call.

### Schematics

Champion places an electrical schematic in the control cabinet of every machine before it is shipped. Schematics are included at the back of this manual as well. Be aware that these schematics include options that may not apply to your machine. Options are enclosed in dashed lines with the words (IF USED) next to them on the schematic. Disregard any options that appear on the schematics which are not a part of your machine.

### Electrical Circuit Tests

Use a clip-on AC current tester to check the motors and electric heaters.  
Use a VOM to test line voltages and the 120VAC control circuit.



#### **NOTE:**

***DO NOT USE CHASSIS GROUND WHEN PERFORMING VOLTAGE CHECKS.***

***Doing so will result in false and inaccurate readings.***

***PERFORM VOLTAGE CHECKS BY READING FROM THE HOT SIDE OF THE LINE AND NEUTRAL (any #2 or white wire).***

### Tools

Most repairs can be made with: Standard set of hand tools, Volt/Ohm Meter (VOM), and Clip-on AC current tester. Special tools necessary to perform a repair are noted in the specific repair procedure.



## 5.2 General Troubleshooting

In the event that your dishwasher does not perform as expected, refer to the troubleshooting guide below. Perform the action suggested in the solution column. Contact a qualified service technician if the solution refers to a **Repair Procedure in Part 5.3**.

Many conditions may be resolved by performing the seven basic checks listed below:

1. All switches are ON
2. Drain valves closed
3. Wash and rinse nozzles are clean
4. Wash and rinse pipe assemblies are installed correctly
5. Scrap screen is properly positioned
6. Thermostat(s) are properly adjusted
7. Detergent and rinse additive dispensers are adequately filled

CONDITION	CAUSE	SOLUTION
Machine will not start	Door not closed .....	Make sure door is fully closed
	Main switch off .....	Check disconnect at main panel Check machine power switch
	Door safety switch faulty .....	Refer to Repair Procedure 5.3.15
	Water level low in tank(s) .....	Check float switch and fill tanks
	Defective float switch .....	Refer to Repair Procedure 5.3.5
	Motor overload tripped .....	Refer to Repair Procedure 5.3.17
	Blown fuse or circuit breaker .....	Refer to Repair Procedure 5.3.16
Low or no water	Main water supply is turned off .....	Turn on main water supply
	Machine not filled initially .....	Close drains/Open manual fill valves
	Tank overflow removed .....	Reinstall overflow tube
	Clogged line strainer .....	Clean strainer screen/replace strainer
	Faulty manual fill valve .....	Replace manual fill valve
Pump motor not running	Motor overload tripped .....	Refer to Repair Procedure 5.3.17
	Defective motor .....	Refer to Repair Procedure 5.3.14
Tank(s) water temperature is low when in use	Incoming water temperature .....	Raise temperature to: 140°F/43-60°C
	at machine too low	
	Defective thermometer .....	Refer to Repair Procedure 5.3.7
	Defective thermostat .....	Refer to Repair Procedure 5.3.8
	Steam supply shut off .....	Turn on steam supply
	Low steam pressure .....	Correct steam pressure is 15-30 PSI
	Defective steam solenoid valve .....	Refer to Repair Procedure 5.3.4
	Defective steam trap .....	Refer to Repair Procedure 5.3.12

## 5.2 General Troubleshooting (Cont.)

CONDITION	CAUSE	SOLUTION
Insufficient pumped spray pressure	Clogged pump intake screen .....	Clean pump intake screen
	Clogged spray pipe .....	Clean spray pipe
	Scrap screen full of debris .....	Must be kept clean and in place
	Low water level in tank .....	Check drain valve(s)
	Pump motor rotation incorrect	Refer to Part 3.3, Start-up Procedure, Steps 19-20, page 19
Insufficient final rinse or no final rinse	Faulty pressure reducing valve .....	Refer to Repair Procedure 5.3.1
	Improper setting on pressure .....	Correct pressure setting is 20-22 PSI
	reducing valve	
	Clogged rinse nozzle and/or pipe .....	Clean pipe/nozzles
	Clogged line strainer .....	Clean screen or replace line strainer
Low final rinse	Defective solenoid valve .....	Refer to Repair Procedure 5.3.4
	Low incoming water .....	Increase incoming water temperature 110°F minimum for 70°rise booster 140°F minimum for 40°rise booster
	Booster steam supply shut off .....	Turn on steam supply
	Booster water supply shut off .....	Turn on water supply
	Rinse nozzle missing	Replace missing part
	Defective final rinse thermostat .....	Refer to Repair Procedure 5.3.10
	Defective thermometer .....	Refer to Repair Procedure 5.3.7
	Low steam pressure .....	Correct steam pressure is 15-30 PSI
	Defective steam solenoid valve .....	Refer to Repair Procedure 5.3.4
Poor washing results	Defective steam trap .....	Refer to Repair Procedure 5.3.12
	Detergent dispenser .....	Contact detergent supplier
	not operating properly	
	Insufficient detergents .....	Contact detergent supplier
	Wash water temperature .....	See condition "Wash Tank
	too low	Water Temperature is low"
	Wash arm clogged .....	Clean
	Improperly scraped dishes .....	Check scraping procedures
	Ware improperly placed in rack .....	Use proper racks. Do not overload racks
	Overflow clogged .....	Check overflow tube
	debris not skimmed from tank(s) .....	
	Wash water not drained at specified ... intervals	Drain tank every two hours or after each meal period.

## 5.3 Component Repair and Replacement

Part 5.3 contains instructions for the adjustment, repair, and replacement of components which may require service due to normal wear and tear. The following procedures should only be performed by qualified service personnel.

**THE FOLLOWING CAUTION AND WARNINGS MUST BE FOLLOWED AT ALL TIMES**



**CAUTION:**

*Only qualified service personnel should perform adjustments and repairs to the dishwasher.*



**WARNING:**

*When repairing a circuit, disconnect the power at the main service disconnect switch and place a tag at the disconnect switch to indicate that work is being performed on the circuit.*



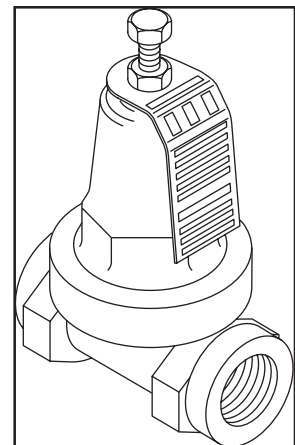
**WARNING:**

*Use Extreme Caution when performing tests on energized circuits.*

### 5.3.1 Pressure Reducing Valve, (PRV), Adjustment

The PRV is located on the 3/4" incoming water supply before the final rinse booster assembly. To adjust the pressure setting on the PRV, loosen the locknut on the adjusting screw in the top of the PRV. Turn the adjusting screw clockwise to increase the pressure setting. Turn the screw counterclockwise to decrease the pressure setting. The USN-10 dishwasher requires a flowing pressure of 20-22 PSI during the final rinse. With the dishwasher in normal operation, place a dishrack in the machine. While final rinse water is flowing, monitor the final rinse pressure gauge located at the top of final rinse piping assembly. Adjust the PRV screw to achieve a flowing pressure of 20-22 PSI.

The PRV does not contain any service replacement parts. If adjustment will not provide the proper flowing pressure, then replace the PRV. To replace the PRV: Turn main water supply to the dishwasher off. Place a rack in the dishwasher to activate the final rinse. This will bleed any water pressure out of the line. Remove the PRV from the piping system. Reinstall using pipe sealing compound. Turn the water supply on, test for leaks, and perform the adjustment described above.



## 5.3 Component Repair and Replacement (Cont.)

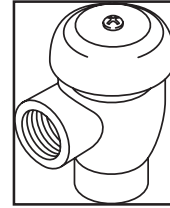
### 5.3.2 Water Line Strainers

There are two of water line strainers on the USN-10 dishwasher. The first strainer is located on the 3/4" main water line to the booster. The second is located on the incoming water line for the tank fill. The line strainer screen may become clogged with debris. To clean the strainer screen: Turn off the main water supply valves.

Open the tank fill manual valves to bleed off pressure. Run a dishrack through the machine to operate the final rinse and bleed off water pressure at the booster.

Turn power off at the dishwasher control cabinet. Remove the locknut at the end of each strainer "Y". Remove the strainer screen and flush clean with water.

Reinstall in reverse order. Turn on water supplies and check for leaks.

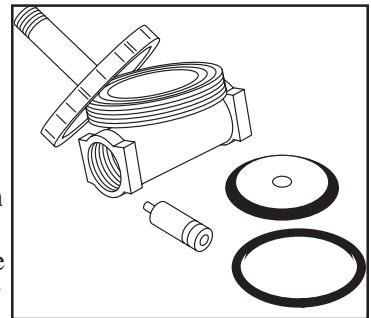


### 5.3.3 Vacuum Breaker Repair

Vacuum Breakers are located at the top of the USN-10 in the 1/2" final rinse water line and each of the 1/2" tank fill lines. They prevent the siphoning of dish-machine water back into the potable water supply. Each vacuum breaker contains a moveable float. To replace the float: Turn off the main water supplies. Turn off the power at the dishwasher control switch. Unscrew the top of the vacuum breaker. Remove the float. Inspect the interior of the vacuum breaker. Remove any mineral deposits and inspect the float seating surfaces for pitting. (If badly pitted, replace the entire vacuum breaker assembly). Install a new float repair kit and reassemble in reverse order. Turn on power and water supplies. Operate the dishwasher and check for leaks.

### 5.3.4 Water Solenoid Valve Repair

A 1/2" water solenoid is located in the final rinse water line at the outlet of the final rinse booster. The valve is controlled by the operation of the final rinse switch assembly which connects 120VAC to the valve coil during a final rinse operation. If the valve fails to operate, first check that 120VAC is supplied to the valve coil. If voltage is not present, then refer to the electrical schematic and troubleshoot the circuit. If voltage is present then the valve may require a rebuild kit or replacement coil. Turn off power at the dishwasher power switch and main disconnect. Turn off main incoming water supply and bleed off any water pressure in the line. Check the coil for continuity with a VOM set at the highest resistance range. If the coil checks good then disassemble the valve by unscrewing the threaded bonnet with a strap or spanner wrench. Remove and inspect the valve piston and diaphragm. Inspect the valve seat for mineral deposits and pitting. (Replace the complete valve assembly if pitting is severe). Reassemble the valve in reverse order. Turn on power and water supplies and check for leaks.



### 5.3.5 Float Switch Replacement

Refer to Fig. 6.4, Fig. 6.5, and Fig. 6.6, Part 6, Replacement Parts, for a detailed drawing of the float switch assembly. The tank contains a float switch assembly which monitors the water level in the tank. When the water level drops below a preset level the ball on the float switch stem drops and opens a reed switch. The control relay associated with the float switch changes state. A set of normally closed contacts open interrupting power to the 120VAC control circuit and the dishwasher stops. If you suspect a defective float switch: Turn power off at the dishwasher control cabinet. Drain the tank and inspect the float.

Make sure the float is clean and moves freely. Identify the float switch wires in the junction box located on the lower corner of the dishwasher front. Disconnect the float switch and connect its associated control wires together. Turn power on and restart the dishwasher. If the dishwasher operates normally, then replace the float. To remove the float assembly: Remove the float switch cover. Remove the 5/16-18 nut on the outside of the tank. The mounting hole is keyed so the float switch will not turn. Remove the float switch assembly from the inside of the tank. Install a replacement in reverse order. Reconnect the float switch wires in the junction box. Turn power on, refill the tank, and test the dishwasher for normal operation.

### 5.3.6 Drain and Overflow Assembly

Refer to Fig. 6.3, Part 6, Replacement Parts, for a detailed drawing of the drain and overflow assembly. Note items 1-4. These parts make up the overflow assembly. The assembly consists of an overflow tube with drain box topped by a hinged cover. The cover tilts up to allow inspection and cleaning. Lift up the hinged cover and inspect the overflow tube if an obstruction is suspected. Item 10 shows the drain screen. This screen should be inspected daily and cleaned. Item 12 illustrates the drain assembly. It consists of soldered copper pipe and if defective must be replaced as a unit. Note the cleanout plug to the left of the drain valve. This plug can be removed to clean possible obstructions from the drain assembly. Item 13 shows the 1-1/2" cleanout plug in the drain trunk line. Remove the plug to inspect and clean the main dishwasher drain line.

### 5.3.7 Thermometer Replacement

Refer to Fig. 6.4, Fig 6.5, and Fig. 6.6, Part 6, Replacement Parts, for a detailed drawing of the thermometer assemblies. The thermometers are mounted to brackets on the front of the dishwasher. Thermometer capillary tubes run from the bottom of the dishwasher to the right and left ends of the tanks. The thermometer bulbs are retained inside the tanks by a 1/2" locknut. The final rinse thermometer bulb mounts directly into the upper final rinse piping at the top of the dishwasher. Tank and final rinse thermometers are factory sealed indicating devices which are accurate within  $\pm 3^{\circ}$  of the intended range of use. The thermometers cannot be calibrated and must be replaced if defective. To replace a thermometer: Drain the machine and turn off all power. Have a helper hold the thermometer bulb from the outside of the machine. Remove the 1/2" locknut from the inside of the tank and pull the thermometer sensor bulb out of the tank. Remove the nuts and retainer from the thermometer bracket. Pull the thermometer out the front of the bracket. Replace the thermometer and reassemble in reverse order. Be sure to apply plumber's putty, (Champion P/N 104889), to seal the thermometer bulb fitting in the tank. Return the dishwasher to normal operation and check the temperature reading.

## 5.3 Component Repair and Replacement (Cont.)

### 5.3.8 Tank Heat Thermostat Adjustment and Replacement

Refer to Fig. 6.4, Fig. 6.5 and Fig. 6.6 , Part 6, Replacement Parts, for a detailed drawing of the thermostat assembly. The tank has a control thermostat mounted on its front in a stainless steel enclosure. The thermostat capillary tube runs to the side of the tank. The thermostat sensor bulb enters the tank and is secured inside the tank with a 1/2" locknut. The thermostat is adjusted by turning a small adjustment screw mounted on the side of the device. The thermostat has an operating range of 110-200°F. Place the machine in normal operation and monitor the thermometer. Wash tank temperature should maintain a minimum of 150°F. Final rinse booster tank temperature should maintain a minimum of 180°F.

Wash Tank Temperature = 150°F minimum

Final Rinse Booster Tank Temperature = 180°F minimum

**To adjust a thermostat:** Turn the adjusting screw incrementally 1/8 to 1/4 of a turn clockwise. Monitor the temperature thermometer after each adjustment until the desired temperature setting is maintained during normal dishwasher operation.

**To replace a thermostat:** Drain the tanks and turn off all power to the dishwasher. Have a helper hold the thermostat sensor bulb from the outside of the machine and remove the 1/2" locknut from the interior of the tank. Pull the bulb and capillary back to the thermostat junction box. Note the wire locations and disconnect the thermostat. Remove two retaining nuts and remove the thermostat assembly. Install a new thermostat in reverse order. Be sure to apply plumber's putty, (Champion P/N 104889), to seal the thermostat bulb fitting in the tank. Return the dishwasher to normal operating condition and adjust the thermostat as described above.

### 5.3.9 Tank Heat High Limit Adjustment and Replacement

Refer to Fig. 6.4, Fig. 6.5 and Fig. 6.6, Part 6, Replacement Parts, for the detailed drawing of the thermostat and high limit assembly. The tank has two types of thermostats. The tank heat thermostat (as described in 5.3.8) and a tank high limit thermostat. The high limit thermostat protects the tank from overheating. The high limit thermostat is located below the tank thermostat and above the element. The high limit is not adjustable. It contains a red pushbutton located in the center. The red button pops out if the temperature exceeds 210°F/99°C. Press the red button to reset the high limit. Determine the cause of the high temperature condition.

**To replace the highlimit:** Drain the tanks and turn off all power to the dishwasher. Have a helper hold the high limit bulb from the inside of the machine and remove the locknut from the interior of the tank. Pull the bulb back to the junction box. Note the wire locations and disconnect the high limit. Install the new high limit in the reverse order, making sure that you apply a plumber's putty (Champion P/N 104889), to seal the high limit fitting in the tank. Return the dishwasher to normal operating condition.

### 5.3.10 Final Rinse (Steam) Thermostat Adjustment and Replacement

Refer to Fig. 6.16, Part 6, Replacement Parts, for a detailed drawing of the steam booster assembly. Note Item 1. This shows the location of the final rinse control thermostat. The thermostat has a range of 105-195°F. However, the operating range for final rinse application is 180-195°F. The thermostat wiring to the normally closed and common contacts. The normally closed contacts open when the thermostat is satisfied.

The final rinse thermostat controls operation of the steam booster solenoid. It senses the outlet temperature of the final rinse water leaving the booster and energizes or deenergizes the steam solenoid as needed to maintain the final rinse temperature within 180-195°F.

### 5.3 Component Repair and Replacement (Cont.)

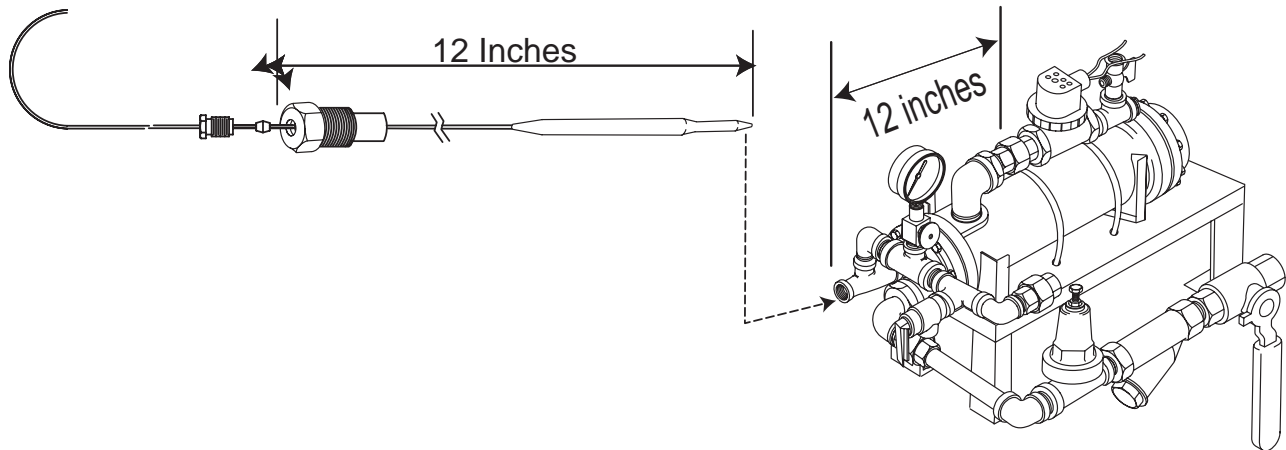
#### 5.3.10 Final Rinse (Steam) Thermostat Adjustment and Replacement (cont)



#### NOTE:

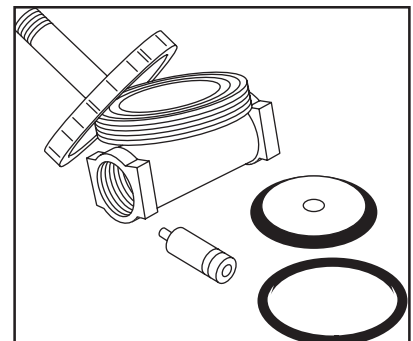
*The final rinse control thermostat serves two functions-first as the final rinse control thermostat and second as the final rinse low temperature cutoff thermostat. When you adjust the final rinse control thermostat, you are also adjusting the final rinse low temperature cutoff thermostat.*

**To replace the final rinse/ cutoff thermostat:** Turn off the water and steam supplies to the booster. Place a rack in the dishwasher to operate the final rinse and bleed off any water pressure from the line. Turn power off to the dishwasher at the dishwasher control. Remove the protective cap from the thermostat body. Note the location of the wires and disconnect. Disconnect the conduit. Remove the thermostat from the booster piping. Install the replacement as shown in the diagram below. Follow instructions as listed on Part 8: Service Bulletins on Page 91. Return the dishwasher to normal operation and perform the adjustment procedures described on the previous page.



#### 5.3.11 Steam Solenoid Valve Repair

The USN-10 dishwasher uses a 3/4" steam solenoid valve on the tank steam supply line. The 3/4" steam valves are identical in appearance to the 3/4" water valves, (See 5.3.4). The steam booster uses a 3/4" steam solenoid valve on the inlet of the booster steam supply line, (See picture to the right)





## 5.3 Component Repair and Replacement (Cont.)

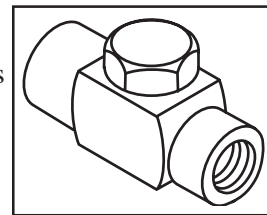
### 5.3.11 Steam Solenoid Valve Repair (Cont.)

The 3/4" valves are controlled by a tank heat thermostat, (See 5.3.8), which connects 120VAC to the valve coil during a call for heat. If the valve fails to operate, first check that 120VAC is supplied to the valve coil. If voltage is not present, then refer to the electrical schematic and troubleshoot the circuit. If voltage is present then the valve may require a rebuild kit or replacement coil. Turn off power at the dishwasher power switch and main disconnect. Turn off main incoming steam supply and bleed off any steam pressure in the line. Check the coil for continuity with a VOM set at the highest resistance range. If the coil checks good then disassemble the valve by unscrewing the threaded bonnet with a strap or spanner wrench. Remove and inspect the valve piston and diaphragm. Inspect the valve seat for mineral deposits and pitting. (Replace the complete valve assembly if pitting is severe). Reassemble the valve in reverse order. Turn on steam and power supplies and check for leaks.

The 3/4" valve is controlled by the final rinse control thermostat, (See 5.3.10), which connects 120VAC to the valve coil during a call for heat. If the valve fails to operate, first check that 120VAC is supplied to the valve coil. If voltage is not present, then refer to the electrical schematic and troubleshoot the circuit. If voltage is present then the valve may require a rebuild kit or replacement coil. Turn off power at the dishwasher power switch and main disconnect. Turn off main incoming steam supply and bleed off any steam pressure in the line. Check the coil for continuity with a VOM set at the highest resistance range. If the coil checks good then disassemble the valve by removing the four bolts in the valve bonnet. Remove and inspect the valve piston and diaphragm. Inspect the valve seat for mineral deposits and pitting. (Replace the complete valve assembly if pitting is severe). Reassemble the valve in reverse order. Turn on steam and power supplies and check for leaks.

### 5.3.12 Steam Trap Repair and Replacement

1/2" NPT thermodynamic steam traps are installed in the condensate lines for the steam booster and tank heat steam coils. All condensate lines for the USN-10 must be gravity drain with no back pressure in order for the steam trap to function correctly.



**To test the operation of a steam trap:** Turn off the steam and water supplies. Turn off the power at the dishwasher control cabinet. Bleed any steam pressure from the lines. Disconnect the condensate return line downstream from the steam trap. Return the dishwasher to normal operation and observe the discharge coming from the steam trap. If you do not observe small amounts of water periodically discharged then the steam trap is most likely defective.

**To clean a steam trap:** Turn off the steam and water supplies. Turn off the power at the dishwasher control cabinet. Bleed any steam pressure from the lines. Remove the large hex cap in the center of the steam trap. Remove the disc and inspect the steam trap orifice below. Clean the orifice with a paper clip or other smooth tool. Reassemble the trap in reverse order.

**To replace a steam trap:** Turn off the steam and water supplies. Turn off the power at the dishwasher control cabinet. Bleed any steam pressure from the lines. Break the union in the condensate line before the steam trap. Remove the trap. Install a replacement trap in reverse order making sure to apply pipe sealant to threads. Return the dishwasher to normal operation and test the trap as described above.



## 5.3 Component Repair and Replacement (Cont.)

### 5.3.13 Steam Booster Service

Refer to Fig. 6.16, Part 6, Replacement Parts, for a detailed drawing of the steam booster assembly. The steam booster consists of three pieces as shown on the next page: the shell casting into which the straight seamless copper tubes are fitted, the rear header, and the flow header with two tappings for tank connections. Headers are bolted to the shell casting and sealed against leaks by heavy gaskets. Where soft water or low percentage of mineral deposits is used, it should only be necessary to clean the heater tubes annually. No acids are needed to clean the heater tubes.



#### NOTE:

*A single spiral, fine wire brush, 3/4" external diameter, (Champion P/N 112806), or comparable is recommended for cleaning the booster heater tubes.*

#### Annual Heater Tube Cleaning

##### Parts Required:

P/N 112357, Gasket (Return header)

P/N 112356, Gasket (Flow header)

##### Special Tools Required:

Torque wrench (30 ft/lbs needed)

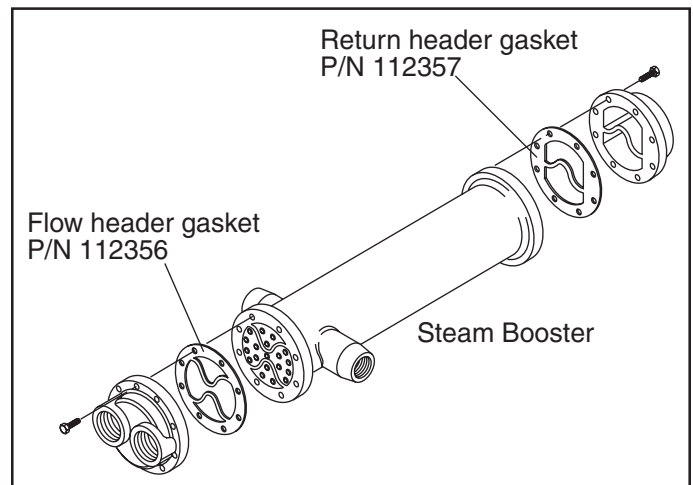
**To clean the heater tubes:** Turn off all power, steam, and water supplies to the booster and dishwasher.

Refer to Fig. 6.16, Part 6, Replacement Parts. Note (Item 1), thermostats.

Remove the thermostat covers, mark and disconnect the wires. Remove the conduit and fittings.

Mark the location of each thermostat before removal, then unscrew each thermostat from its piping. Break the unions, (Item 12) and remove the piping assemblies from the booster header. Remove the eight (8) bolts from each header. Remove the flow and return headers. Inspect the exposed copper tubes and clean as necessary using the cleaning brush (Champion P/N 112806). Clean the headers as required.

Install new header gaskets and reassemble in reverse order.



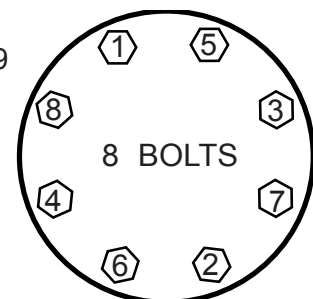
#### **To torque the header bolts:**

Refer to the torque sequence diagram to the right. Torque each bolt in three steps:

- 1) handtight
- 2) 20 ft/lb
- 3) 30 ft/lb

Retorque each bolt to 30 ft/lb after 24 hours.

Bolts = 3/8-16  
SA-449  
Type 1



## 5.3 Component Repair and Replacement (Cont.)

### 5.3.14 Pump Seal Replacement

Refer to Fig. 6.8, Replacement Parts, for a detailed drawing of the pump/motor assembly. Perform the steps listed below to replace a pump seal.

1. Disconnect the power to the machine at the main breaker panel or fuse box.
2. Drain the machine.
3. Remove the front and side panels (if applicable).
4. Remove drain plug on the pump volute and drain the pump.
5. Remove the pump hoses.
6. Disconnect the wires to the motor at the motor junction box.
7. Unbolt motor from machine base and remove the pump/motor assembly.
8. Remove bolts on volute and carefully remove from the pump flange.
9. Remove the impeller retaining bolt and nut from center of impeller.
10. Lock the motor shaft with a wrench or pliers. The back of motor shaft is square.
11. Turn the impeller counterclockwise to remove from shaft (right hand threads).
12. Remove the old seal and discard.
13. Check seal seat in the pump flange and clean thoroughly.
14. Press rubber seal/ceramic portion of seal assembly into the pump flange. Use a water soluble lubricant. Be careful to keep the ceramic clean.
15. Install the rotating part of the seal on the shaft with the graphite surface toward the ceramic. Use a water soluble lubricant on the rubber seal part only (not the graphite).
16. Reinstall impeller, and new flange gaskets. Reinstall bolts. Reinstall drain plug.
17. Reinstall the pump/motor assembly and reconnect the pump hoses.
18. Fill the dishwasher with water.
19. Check motor rotation by bump starting motor.  
Correct motor shaft rotation is clockwise when viewing motor from the rear.
20. Test run and check for leaks.

### 5.3.15 Door Safety Switch

Refer to Fig. 6.1 Replacement parts item numbers 9 and 10. The door safety switch assembly consists of a magnet on the inside wall of the tank and a magnetic reed switch mounted to the bottom of the tank. Studs are welded on the bottom of the tank and nuts hold the switch in place. The magnet is mounted to a bracket that pivots causing a break in the connection with the switch when the door is opened or closed. The magnet is enclosed by a stainless steel housing. The door safety switch prevents the machine from operating when the door is opened during operation.

**To check the door safety switch:** Disconnect the power to the machine at the main breaker panel or fuse box. Inspect the inside of the machine to make sure that the magnet and bracket is in place and secure. Remove the screws on the front panel of the machine. Swing the panel open and look for the switch located to the right side of the panel underneath the edge of the tank. Remove the door switch cover and disconnect the reed switch leads. Make sure that the door is fully closed. Connect the door switch harness wires together. Turn the power on and check to see if the machine runs normally. If machine operates, turn off power and replace the door safety switch. Do not leave the door switch bypassed for any other reason than to test.

**To replace the door safety switch:** Disconnect the power to the machine at the main breaker panel or fuse box. . Note the orientation of the reed switch. Mark the wires and disconnect. Remove the (2) retaining nuts holding the switch. Install the new switch and reassemble in the reverse order. Restore power to the machine and check for proper operation.

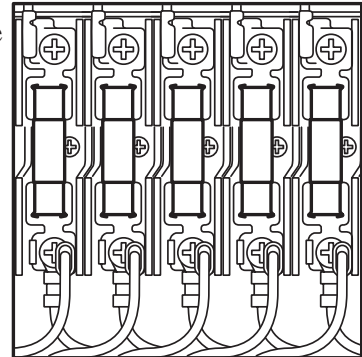
## 5.3 Component Repair and Replacement (Cont)

### 5.3.16 Fuses and Fuse Block Replacement Fuse Blocks—120VAC Control Voltage

The two fuse blocks, located on the center row and to the left side of the control cabinet protect the main control transformer. Each fuse block holds a fuse. The fuses are marked 1FU and 2FU on the electrical schematic.

#### To Replace the fuse:

- Disconnect power to the machine at the main service switch.
- Remove the fuse and replace it.
- Close the fuse block and turn the main power on.
- If the fuse blows again, **DO NOT INCREASE THE FUSE SIZE.**
- **DETERMINE THE CAUSE OF THE OVERLOAD.**



### 5.3.17 Motor Overload Adjustment and Replacement

Motor overloads are located to the left of the fuse blocks inside the control cabinet. Each motor has one overload to protect it from line voltage electrical overloads. In addition, an auxiliary set of switch contacts is built into the overload. The switch contacts disconnect 120VAC power to the motor contactor coils in the event of an overload condition. Refer to Fig. X. If the switch lever is off with the “0” showing then the overload has tripped on an overload.

#### To Reset the Motor Overload:

- Flip the starter switch to the On position.
- Run the dishwasher and test the AMP draw of the motor in question. If the motor checks okay then there may be a wiring problem or the overload may be defective.

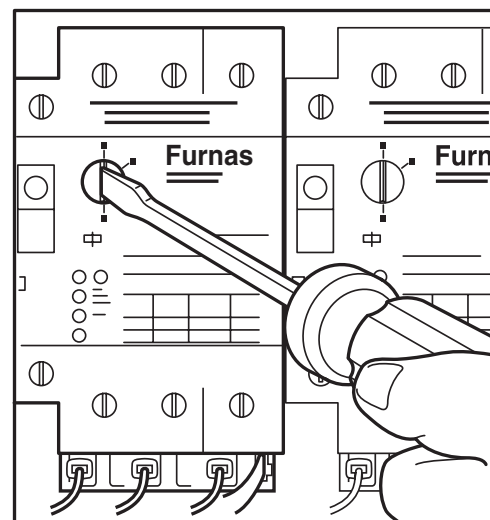
#### To Replace a Motor Overload:

- Disconnect the wires to the overload.
- Release the mounting catch on the front side of the overload, push forward and lift out.
- Snap the new overload into place and reconnect the wires.

#### To adjust the overload setting:

The screwdriver in Fig. 2 is positioned to adjust the motor overload AMP setting.

- Read the FLA motor amps that applies for the machine voltage on the Motor Nameplate.
- Turn the setting to match nameplate FLA.



## 5.3 Component Repair and Replacement (Cont)

### Solid State Circuit Board Jumpers JB-1, JB-2, JB-3

#### Circuit Board Location

The circuit board is located in the lower right corner of the remote control cabinet.

#### Factory Position of Jumpers

All of the jumpers are set in the ON position by the supplier.

**NOTE:**

The service technician must change the jumper settings for proper operation of the machine.

The proper jumper positions are:

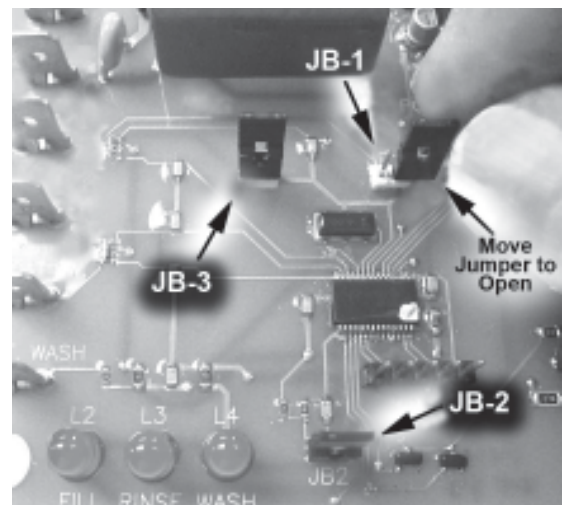
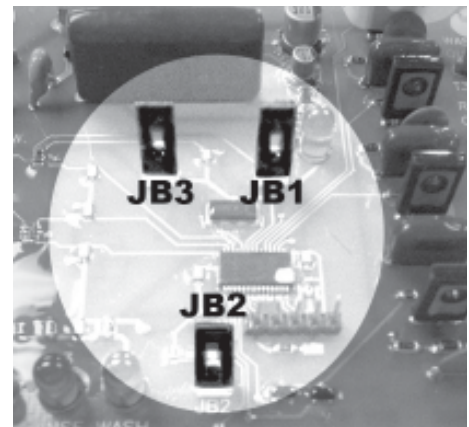
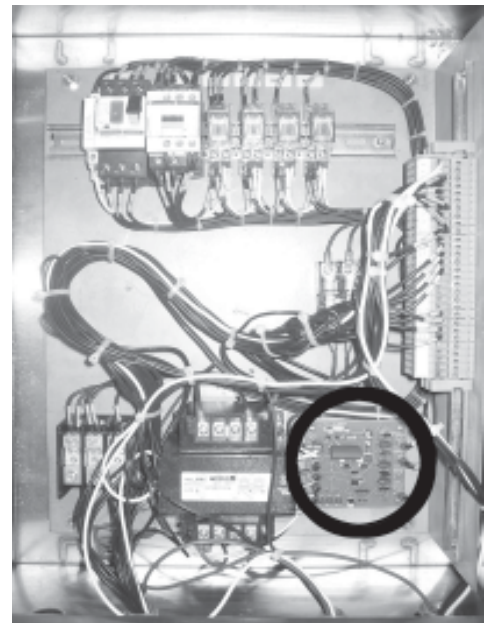
**JB-1 OPEN**

**JB-2 CLOSED**

**JB-3 OPEN**

The photograph on the right shows jumper JB-1 being set to the open position.

The remaining jumpers must be set according to information above.



## PART 6: REPLACEMENT PARTS

In This Part—

- Introduction
- Parts illustrations and replacement parts lists

### 6.1 Introduction

Part 6, Replacement Parts covers parts illustrations and parts lists for the major components of your dishwasher. Parts lists are not provided for permanently assembled, (e.g. welded assemblies), items nor for items unsuited for field replacement.

Parts lists contain the current Champion part number or the abbreviation "Coml" which indicates the part may be available locally or fabricated from raw materials onboard ship. The "Coml" part number is primarily used for common pipe and pipe fittings.

### 6.2 Parts Procurement

All parts are available from:

**The Source**  
**502 Rotary Street**  
**Hampton, VA 23661**

Phone:(757) 825-14001 1-800-497-2144

Fax:(757) 825-1202

website: [www.thesource2000.com](http://www.thesource2000.com)email:

Equipment Info - Darlene Ehrenfried

[denhrenfield@thesource2000.com](mailto:denhrenfield@thesource2000.com)

Parts Info - Jessie Staats

[jstaats@thesource2000.com](mailto:jstaats@thesource2000.com)

Technical Info - Jim Luther

[jluther@thesource2000.com](mailto:jluther@thesource2000.com)

Planning/Estimating - Larry Murphy

[murphy@thesource2000.com](mailto:murphy@thesource2000.com)

U.S.Navy POC - Judy Lowman

[jlowman@thesource2000.com](mailto:jlowman@thesource2000.com)

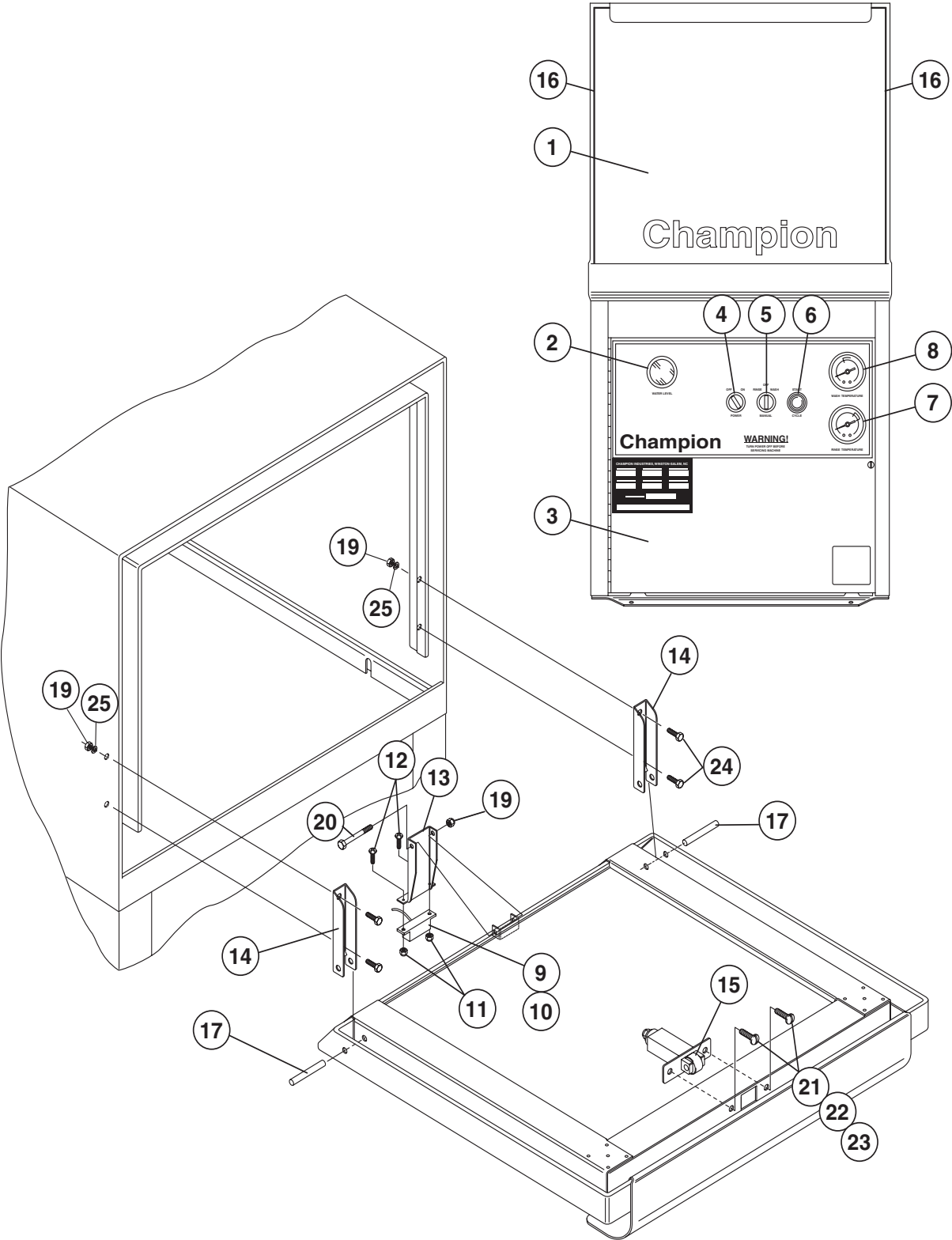
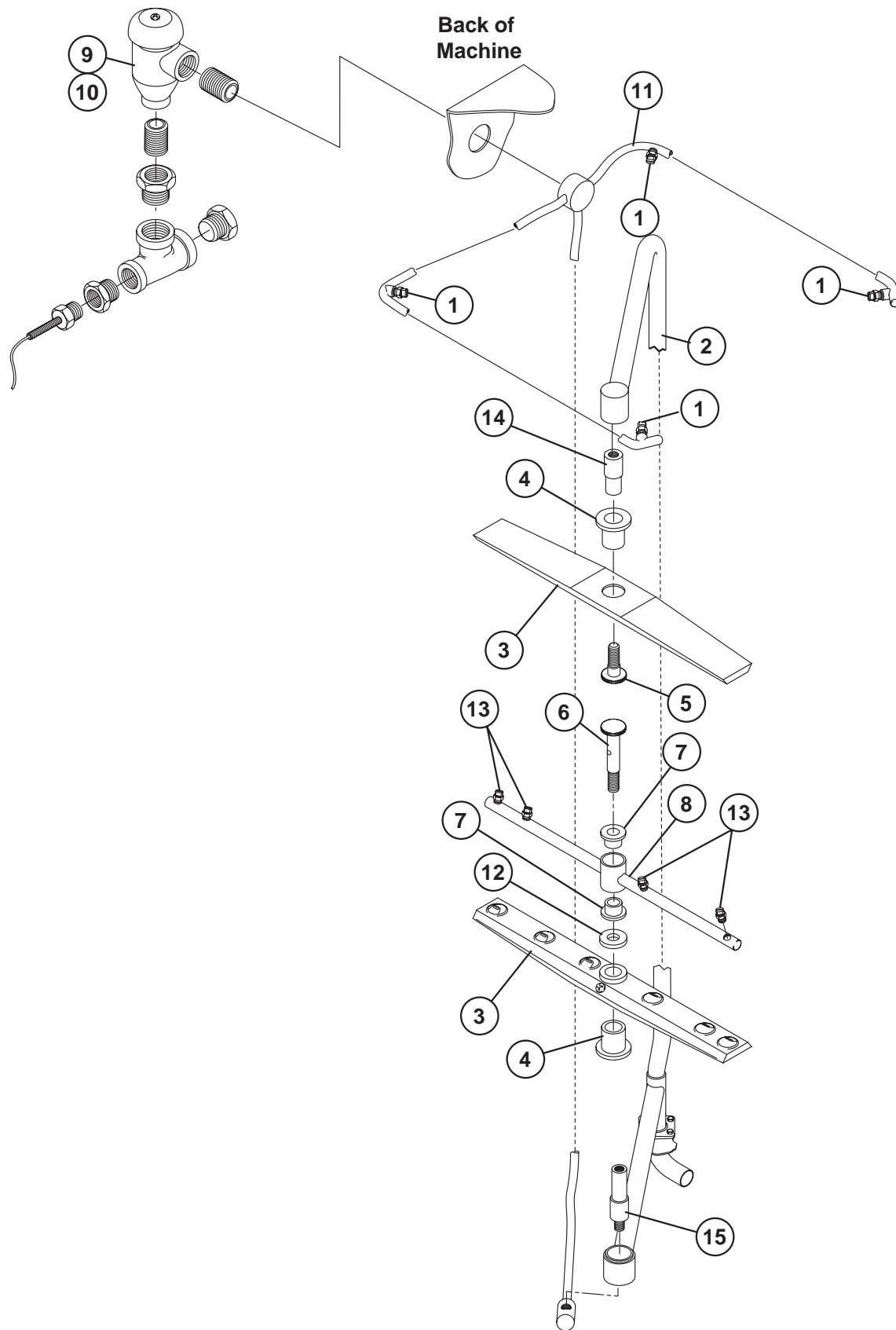


Figure 6.1  
Doors, Gauges, Switches

**DOORS, GAUGES, SWITCHES**

<b>Fig. 6.1</b> <b>Item No.</b>	<b>Part</b> <b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	0710227	Door .....	1
2	200087	Indicator, water level .....	1
3	0709714	Access, door lower .....	1
4	0509764	Switch, selector (Power) .....	1
5	0510287	Switch, selector (Wash, rinse) .....	1
6	0509089	Pushbutton Switch, lighted, (Green) .....	1
7	107440	Thermometer 8 ft. lead .....	1
8	113622	Thermometer 4 ft.gas filled .....	1
9	111026	Magnet, door safety switch .....	1
10	111090	Switch, magnetic reed (Not shown) .....	1
11	104985	Nut (10-32) .....	2
12	0501412	Screw (10-32 x 3/8" Truss hd) .....	2
13	0309301-1	Bracket, switch .....	1
14	0310234	Hinge, Door Support .....	2
15	110233	Catch, door .....	1
16	107893	Shock Absorber .....	2
17	110228	Pin, Door .....	2
18	0309228	Reed Switch Bracket Not Shown) .....	1
19	100003	Nut, Plain 1/4-20 SST .....	5
20	0509251	Thumbscrew 1/4-20 x 2 3/4" SST .....	1
21	0501425	Screw 8-32 x 5/8 Round Head SST .....	2
22	0501497	Washer, Split Lock #8 .....	2
23	107965	Nut, Grip 8-32 w/Nylon Insert .....	2
24	0501419	Bolt, 1/4-20 x 1/2" Hex Head SST .....	4
25	0501501	Lock Washer 1/4 .....	4
--	0709713	Door Assembly (includes 3, 4, 5, 6) .....	A/R



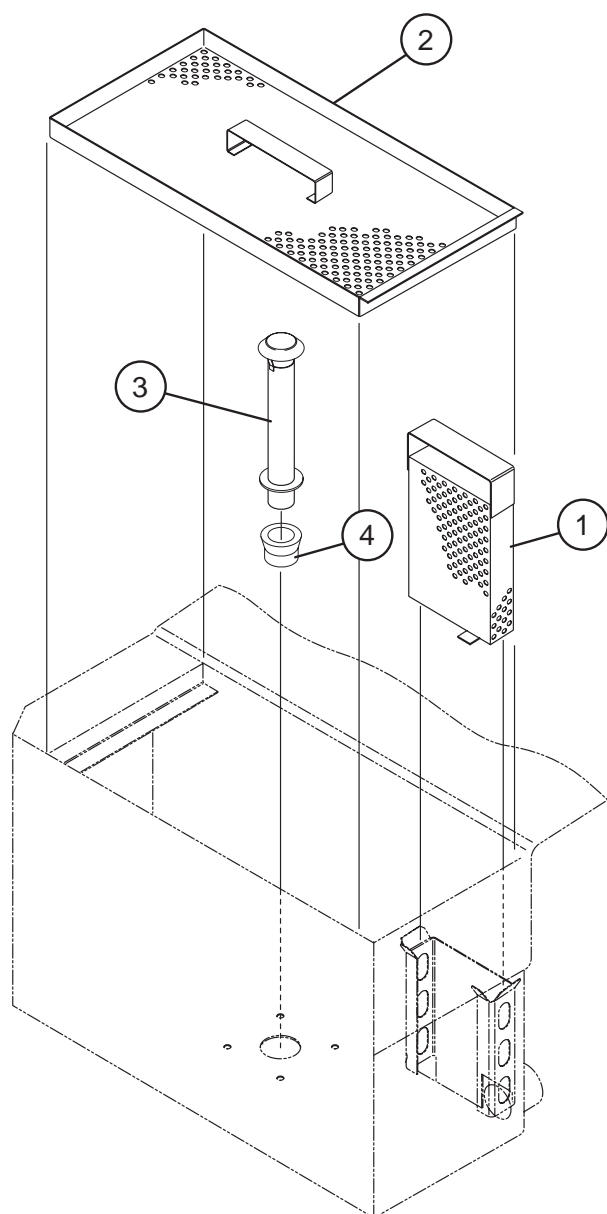


**Figure 6.2 -  
Wash and Rinse Spray System**

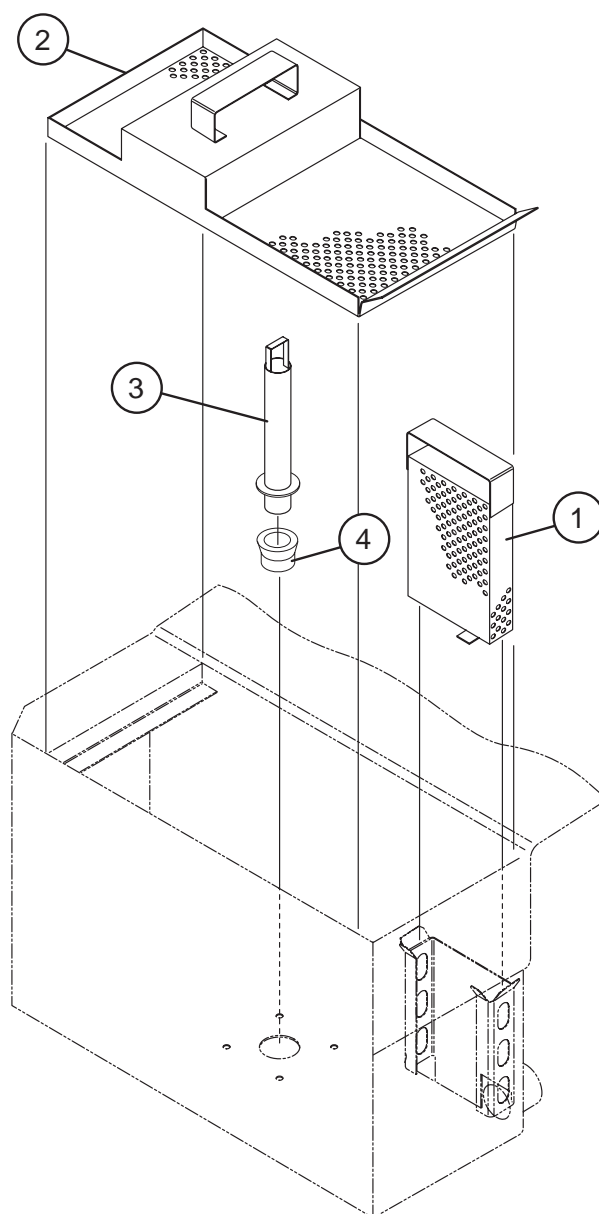


### WASH AND RINSE SPRAY SYSTEM

<b>Fig. 6.2 Item No.</b>	<b>Part No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	180282	Nozzle, Rinse Rigid .....	4
2	0510090	Manifold, Wash Piping .....	1
3	0710087	Wash Arm .....	2
4	0510088	Bearing, Wash Arm .....	2
5	109837	Retainer, Upper Wash Arm .....	1
6	0507443	Spindle, Lower Rinse Arm .....	1
7	113514	Bearing, Rinse Arm .....	2
8	0710247	Rinse Arm .....	1
9	113220	Breaker, Vacuum 1/2" .....	1
10	108349	Kit, Vacuum Repair 1/2" (not shown) .....	1
11	0710565	Manifold, Rinse Piping Assy .....	1
12	0507444	Nut, Rinse arm .....	1
13	104005	Nozzle, Rinse Arm Rotating .....	4
14	0510269	Spindle, Upper Wash .....	1
15	0510268	Spindle, Lower Wash .....	1
—	0710089	Rinse Arm Assy (includes 7,8, and 16) .....	—
—	0710086	Wash Arm Assy complete (Includes items 4-5) .....	—



Prior to S/N U2769



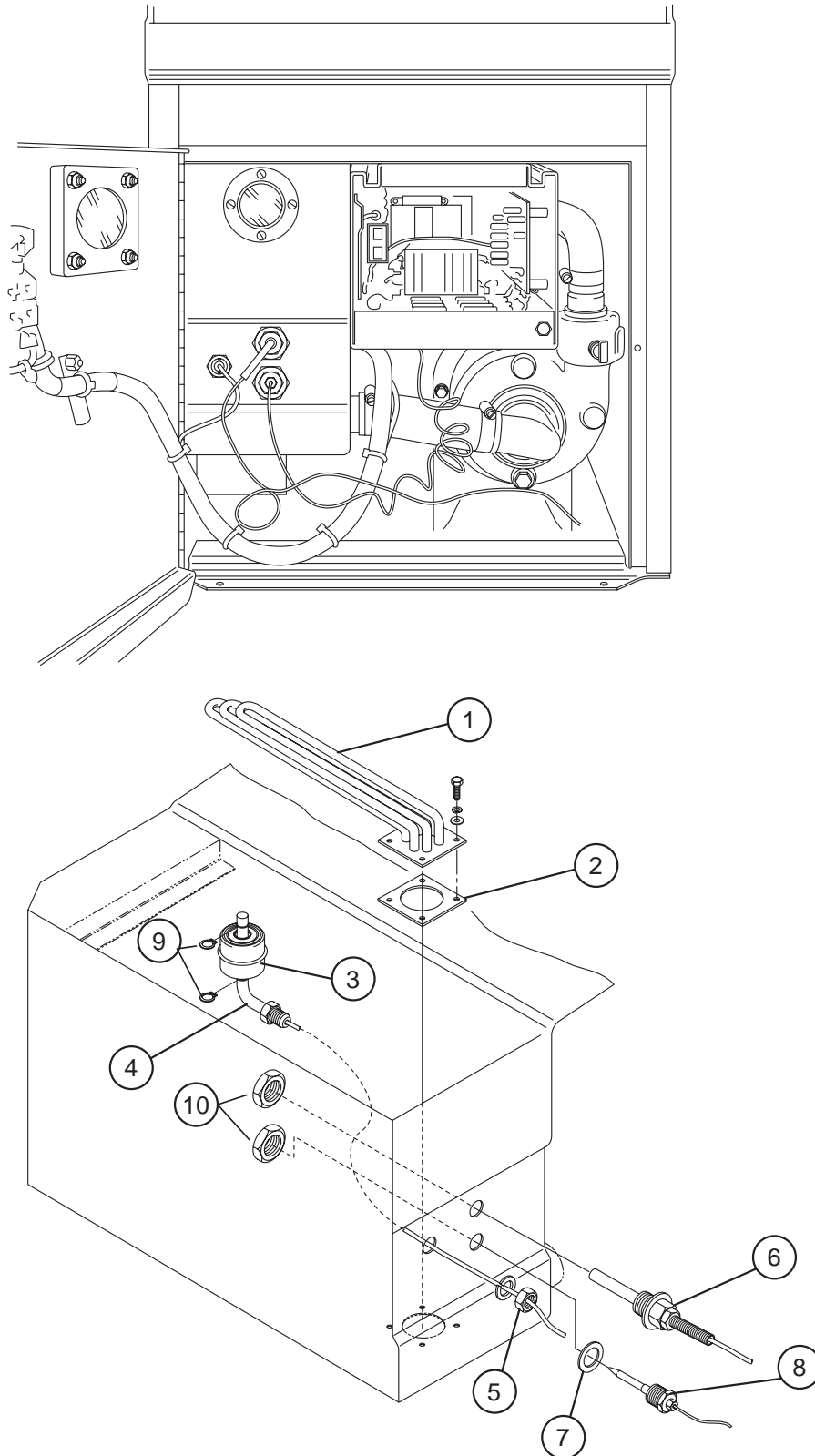
After S/N U2769

**Figure 6.3 -  
Scrap screen, Pump strainer, and Overflow**

**SCRAP SCREEN, PUMP STRAINER, AND OVERFLOW**

<b>Fig. 6.3 Item No.</b>	<b>Part No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	0709731	Screen, pump intake .....	1
2	0709727	Screen, scrap .....	1
3	0710279	Tube, overflow SST .....	1
4	107680	Seat, overflow tube .....	1

**Design Changes were made to items 2 and 3, the part numbers remain the same.**



**Figure 6.4 -  
Electric Tank Heat Assembly Prior to S/N G3599**

## ELECTRIC TANK HEAT ASSEMBLY PRIOR TO S/N G3599

<b>Fig. 6.4</b> <b>Item No.</b>	<b>Part</b> <b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	109755	Heater, 3KW 480V .....	1
2	108345	Gasket, heater .....	1
3	111092	Switch, float .....	1
4	111151	C-clip .....	2
5	104584	Nut, float switch retaining (1/2-13 Hex hd. SST) .....	1
6	113622	Thermometer, 4 ft gas filled .....	1
7	201041	Washer .....	1
8	109069	Thermostat, control .....	1
9	111151	C-clip Float Switch .....	2
10	201029	Nut, Lock 1/2" .....	2

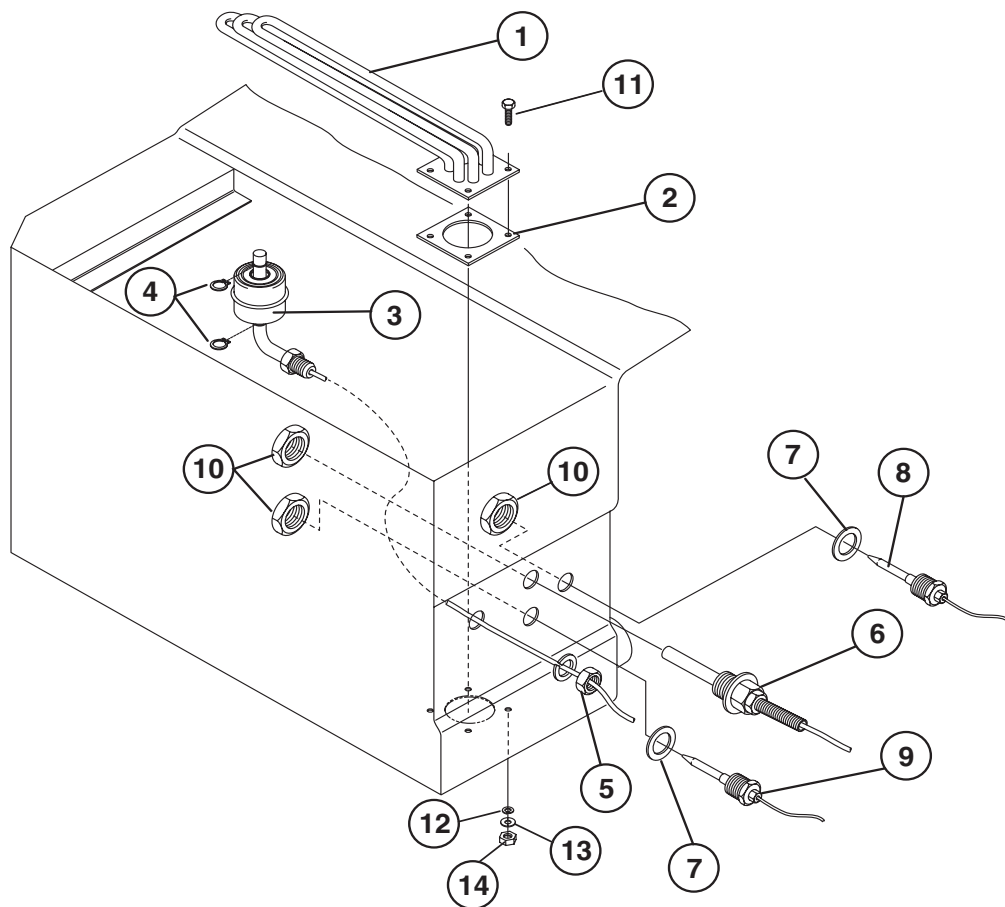
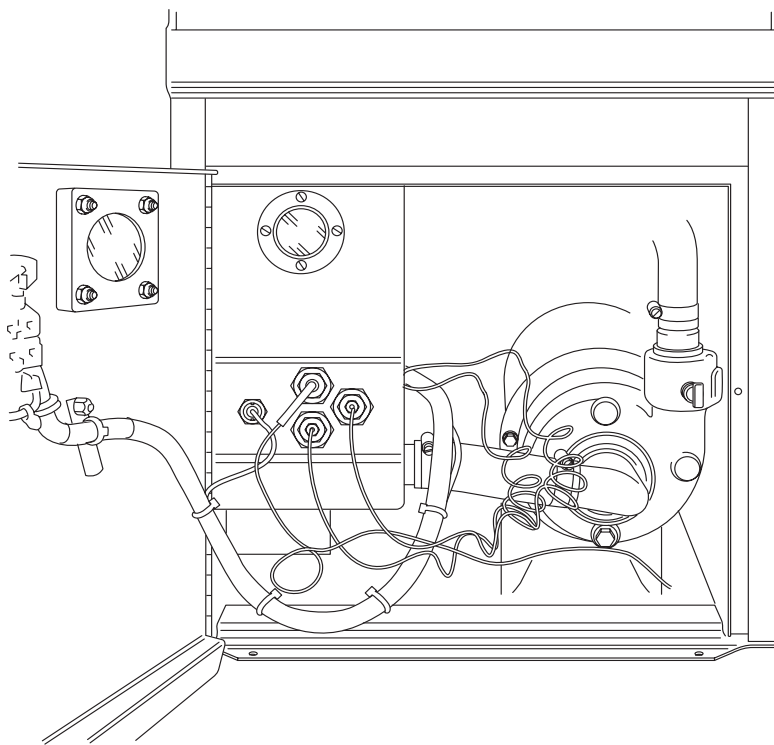
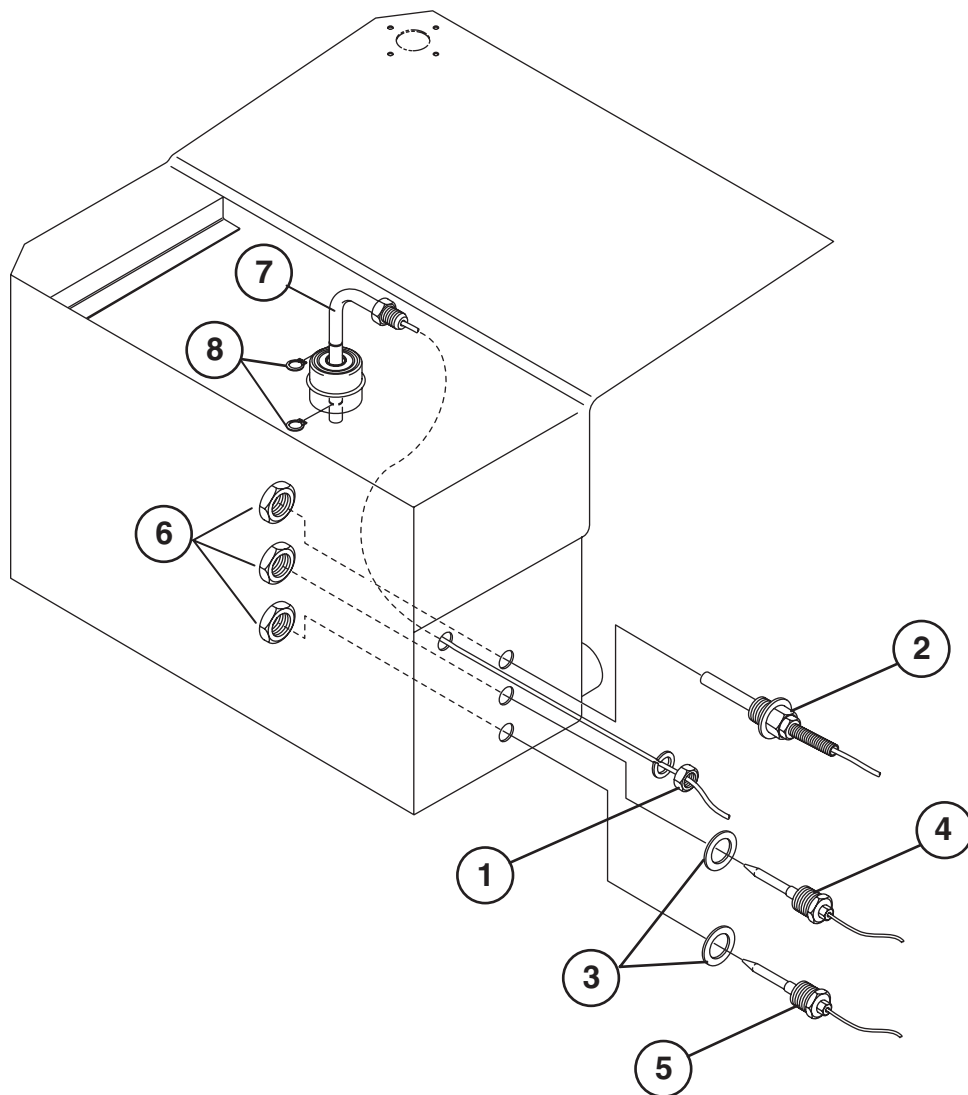


Figure 6.5 -  
Electric Tank Heat Assembly After S/N G3600

## ELECTRIC TANK HEAT ASSEMBLY AFTER S/N G3600

<b>Fig. 6.5</b> <b>Item No.</b>	<b>Part</b> <b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	109755	Heater, 3KW 480V .....	1
2	108345	Gasket, heater .....	1
3	111092	Switch, float .....	1
4	111151	C-clip .....	2
5	104584	Nut, float switch retaining (1/2-13 Hex hd. SST) .....	1
6	113622	Thermometer, 4 ft gas filled .....	1
7	201041	Washer .....	1
8	109069	Thermostat, control .....	1
9	110561	Thermostat, fixed essex .....	1
10	201029	Nut, Lock 1/2" .....	3
11	100740	Bolt, 5/16-18 x1" Hex Head .....	4
12	102376	Washer 5/16 x 3/4 x 1/16 .....	4
13	106013	Washer Lock 5/16 Split .....	4
14	100154	Nut, Plain 5/16-18 SST .....	4

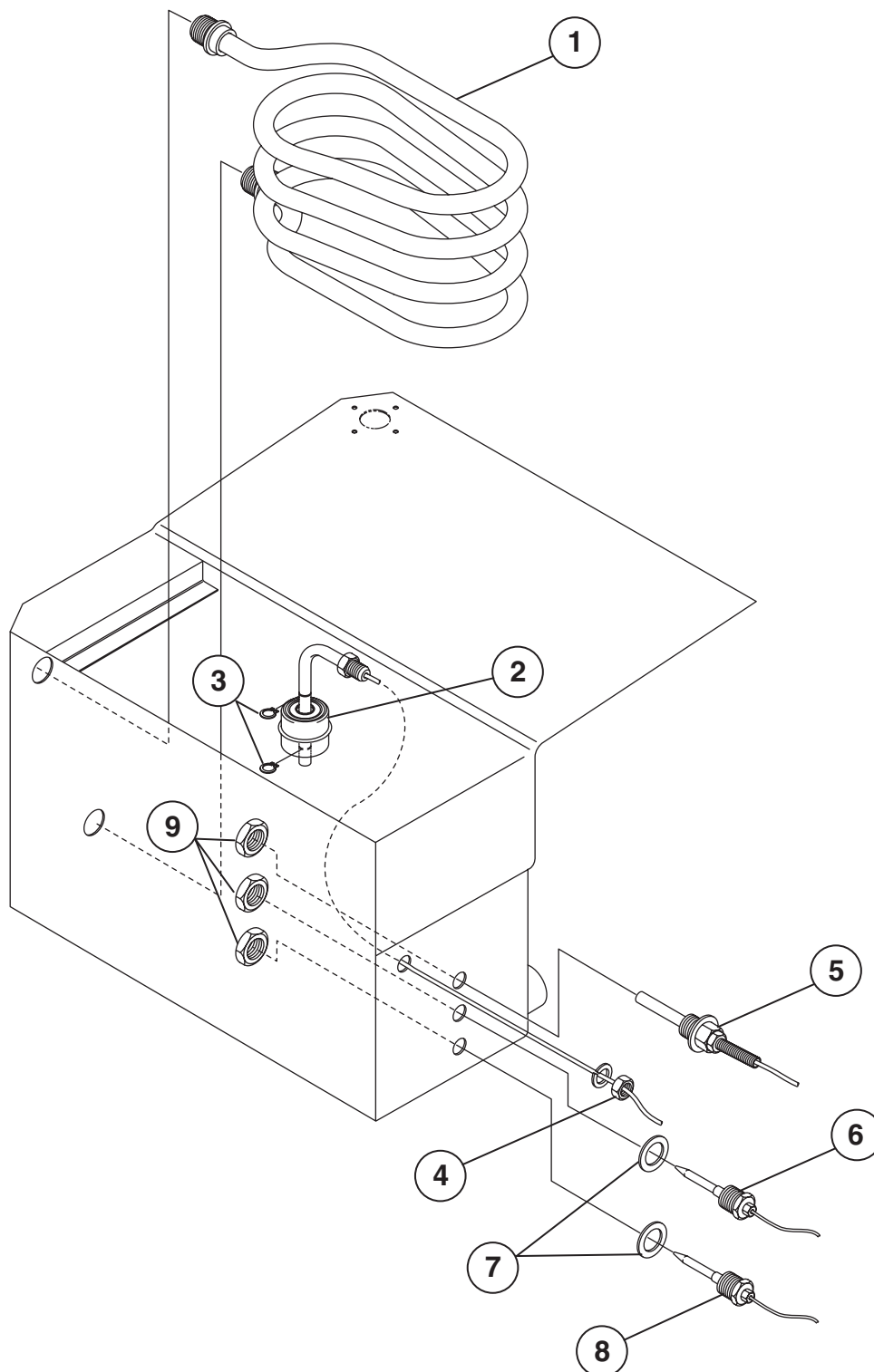


**Figure 6.6 -  
Electric Tank Heat Assembly After S/N U2769**



**ELECTRIC TANK HEAT ASSEMBLY AFTER S/N U2769**

<b>Fig. 6.6</b>	<b>Part</b>	<b>Part Description</b>	<b>Qty.</b>
<b>Item No.</b>	<b>No.</b>		
1	104585	Nut, float switch retaining (1/2-13 Hex hd SST) .....	1
2	113622	Thermometer, 4ft gas filled .....	1
3	201041	Washer .....	2
4	110561	Thermostat, fixed essex .....	1
5	109069	Thermostat w/capillary .....	1
6	201029	Nut, Lock 1/2" .....	3
7	111092	Switvh, Float .....	1
8	111151	C-clip, Float Switch .....	2



**Figure 6.7 -  
Steam Tank Heat Assembly After S/N U2769**

## STEAM TANK HEAT ASSEMBLY AFTER S/N U2769

<b>Fig. 6.7</b> <b>Item No.</b>	<b>Part</b> <b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	0710564	Steam Coil Weldment Assy .....	1
2	111092	Switch, float .....	1
3	111151	C-clip .....	2
4	104584	Nut, float switch retaining (1/2-13 Hex hd. SST) .....	1
5	113622	Thermometer, 4 ft gas filled .....	1
6	110561	Thermostat, fixed essex (Used only on S/N U2793).....	1
7	201041	Washer .....	2
8	109069	Thermostat, control .....	1
9	201029	Nut, Lock 12/" .....	3

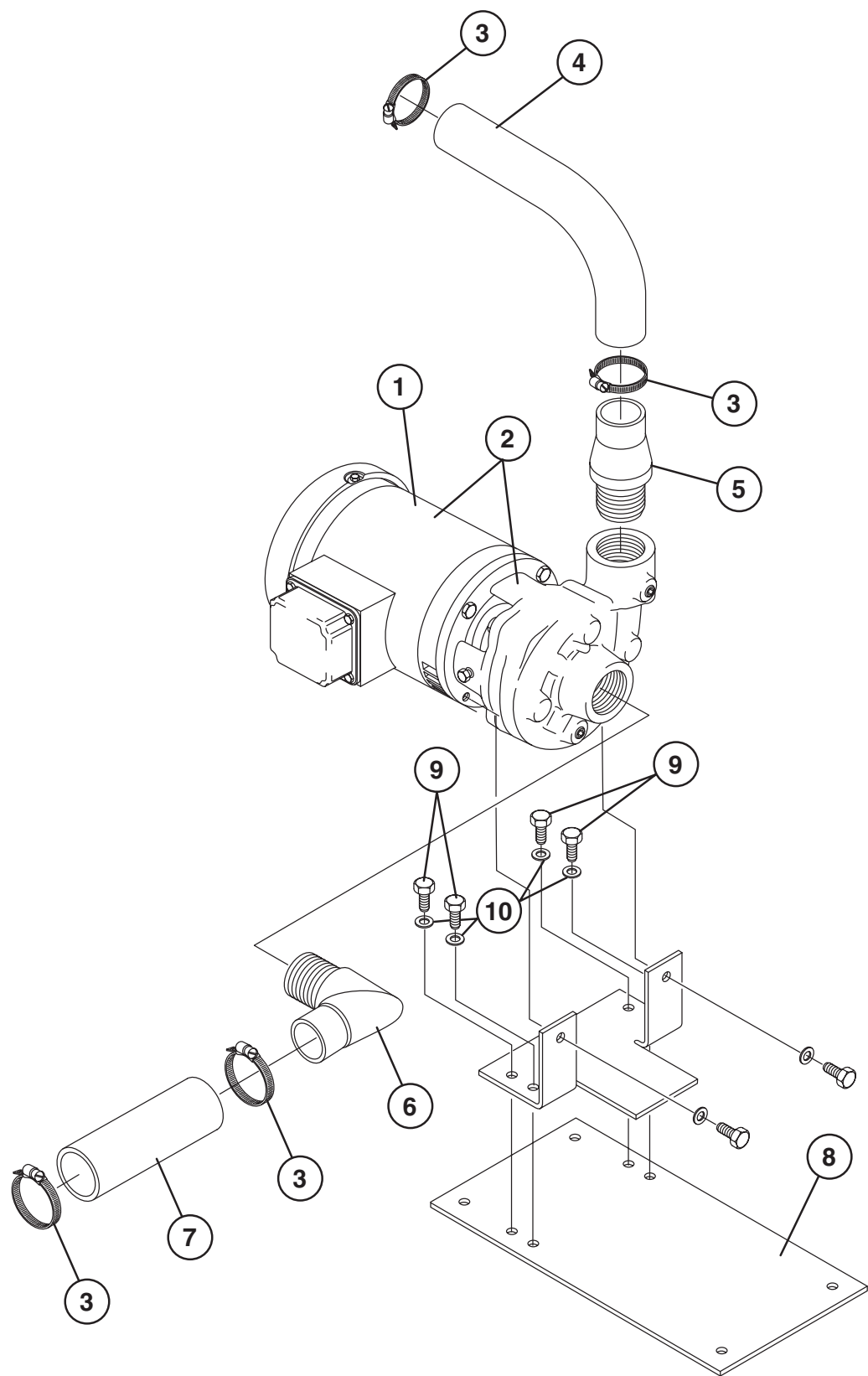
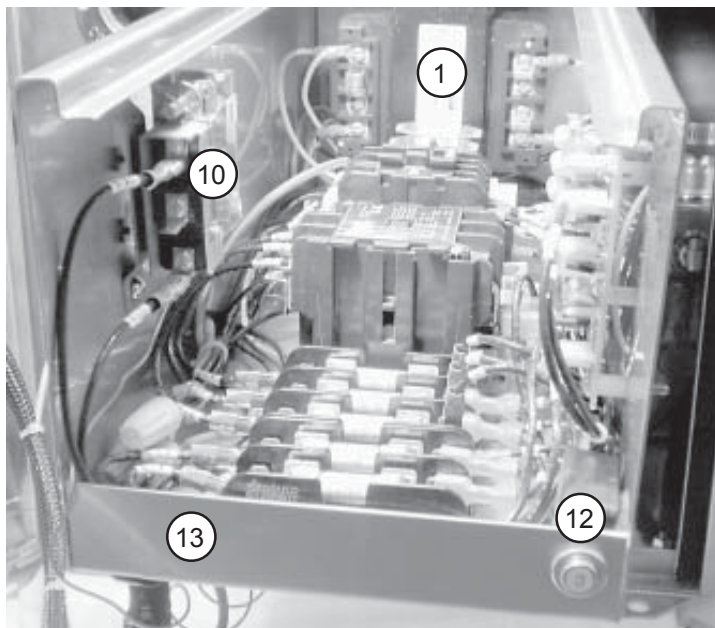
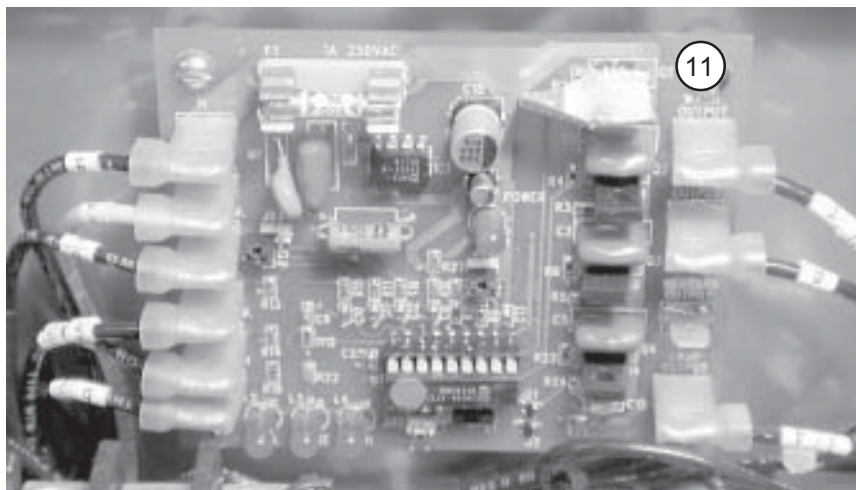
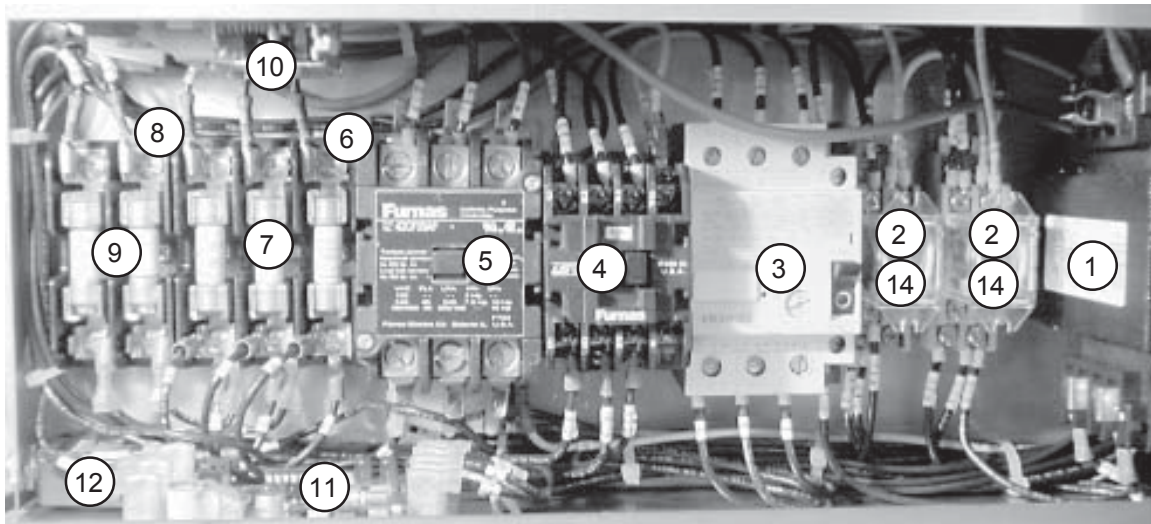


Figure 6.8 -  
Pump and Motor Assembly

## PUMP AND MOTOR ASSEMBLY

<b>Fig. 6.8</b> <b>Item No.</b>	<b>Part</b> <b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	0509699	Motor, pump 1/2 HP .....	1
2	0509698	Pump assembly (Complete) .....	1
—	0510084	Seal, pump .....	1
—	0510085	Impeller, pump .....	1
3	0502563	Clamp, hose .....	3
4	0509703	Hose, pump discharge .....	1
5	0509701	Fitting, pump discharge .....	1
6	0309701	Fitting, pump suction modified .....	1
7	0509702	Hose, pump suction .....	1
8	0309707	Plate, pump mounting .....	1
9	107967	Nut, Grip 1/4-20 .....	4
10	106026	Washer, 1/4 x 5/8 .....	4



**Figure 6.9 -  
Control Cabinet (Prior to S/N G3599)**

**CONTROL CABINET (PRIOR TO S/N G3599)**

<b>Fig. 6.9</b> <b>Item No.</b>	<b>Part</b> <b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	109064	Transformer (208-240/480V: 115VAC).....	1
2	111068	Relay 2PDT 10A 120VAC Coil.....	2
3	111626	Overload, motor 1/2 HP Wash (480V/60/3) .....	1
4	108122	Contactor, 1/2 HP Wash motor (12A 3 pole) .....	1
5	111904	Contactor, booster heater (40A, 3 pole) .....	1
6	106925	Block, fuse (30A, 3 pole) .....	1
7	100906	Fuse, 5A 480V/3.....	3
8	106402	Block, fuse (2 pole) .....	1
9	0508707	Fuse, 1A 480V/3.....	2
10	109069	Thermostat, control .....	1
11	0509706	Circuit Board .....	1
12	108311	Breaker, circuit (3A) .....	1
13	0309745	Box, control .....	1
14	111036	Socket Relay .....	2
15	0508708	Fuse 2.5Amp 600V (Not Shown) .....	2
—	103309	Wire lug, ground (Not shown) .....	1
—	0509705	Harness, wiring .....	1

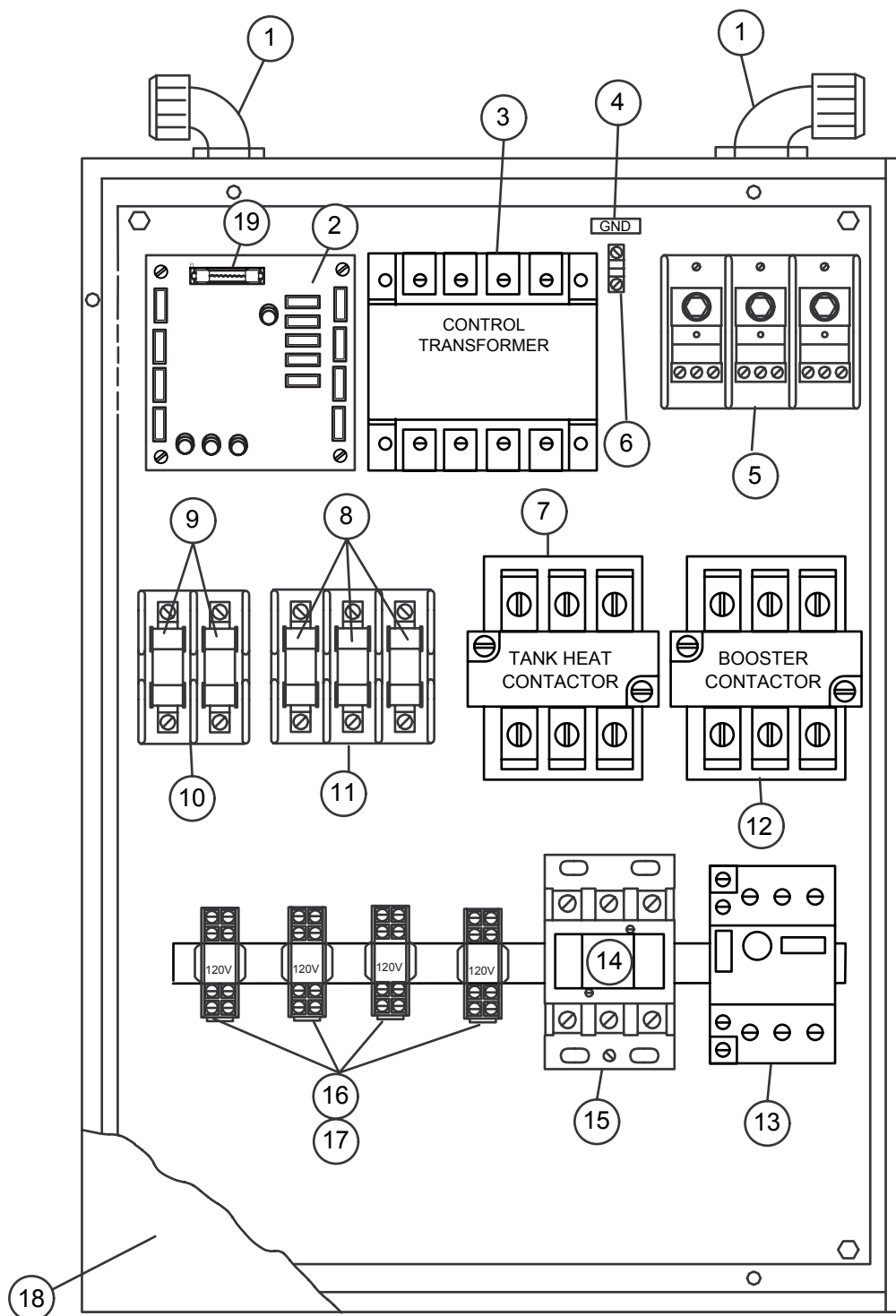


Figure 6.10-  
Control Cabinet (After Serial #G3600)



**CONTROL CABINET (AFTER S/N G3600)**

<b>Fig. 6.10</b>	<b>Part</b>		
<b>Item No.</b>	<b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	110920	Connector, Sealtite 1" x 90 .....	2
2	0509706	Circuit Board (Includes item 19) .....	1
3	109604	Transformer (208-240/480V:115VAC) .....	1
4	104873	Label Ground .....	1
5	111904	Terminal Block .....	1
6	103309	Wire Lug, Ground .....	1
7	111827	Contactor 60 FLA 3P 120 Coil (Tank Heat) .....	1
8	100906	Fuse ATMR-5 600V One Time .....	3
9	112901	Fuse ATDR-1 Time Delay .....	2
10	106402	Block Fuse (2Pole) .....	1
11	106925	Block Fuse (30A, 3 Pole) .....	1
12	111827	Contactor 60FLA 3P 120 Coil (Booster Heat) .....	1
13	111626	Starter, Mtr 1.6-2.4 AMP .....	1
14	108130	Contact Auxiliary TM#LA1-DN11 .....	1
15	108122	Contactor 12A LC1D1210G6 .....	1
16	111068	Relay 120V .....	4
17	111036	Socket Relay .....	4
18	313114	Control Cabinet Weldment .....	1
19	113123	Fuse 1Amp 250V 5 x 20mm .....	1

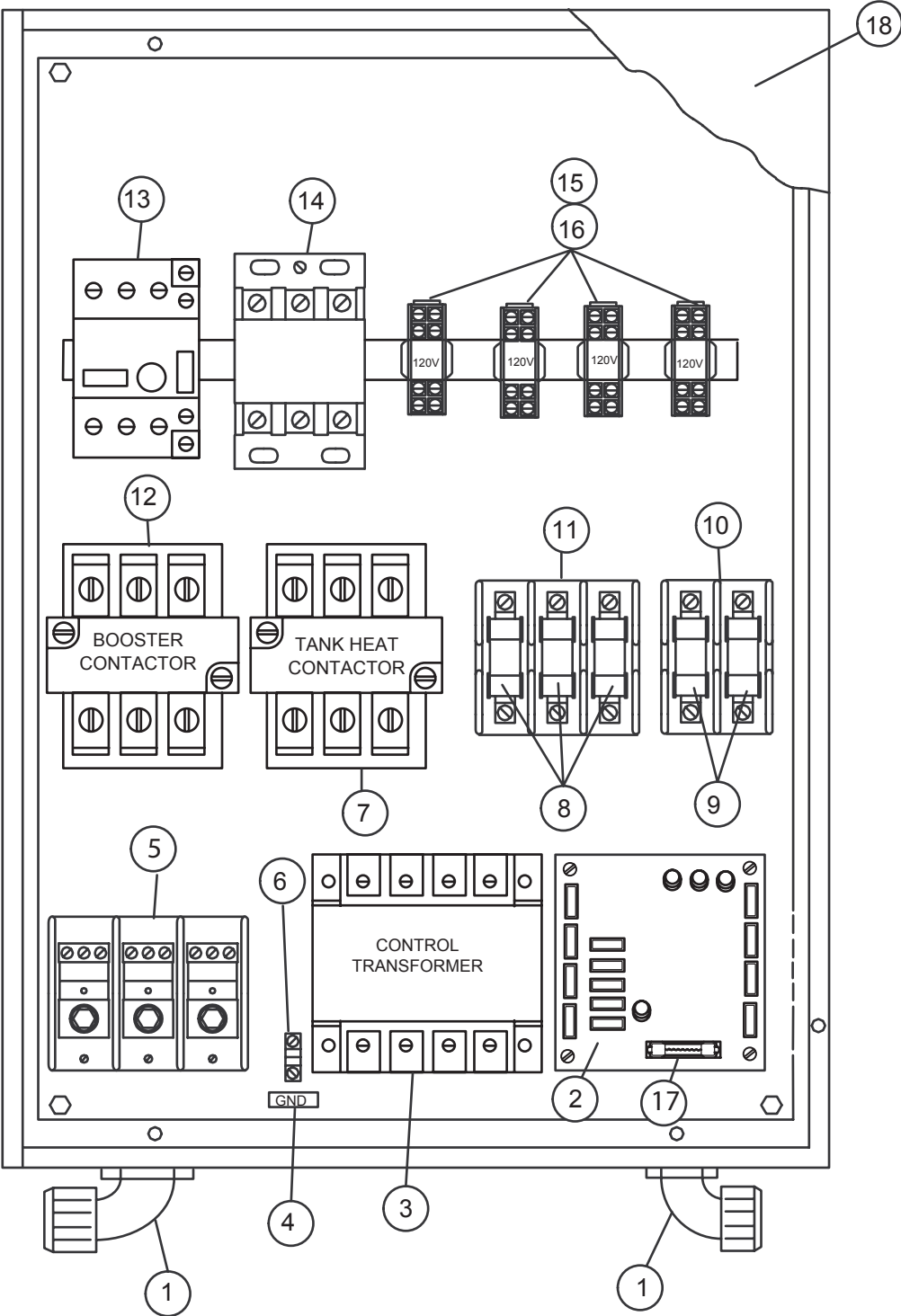
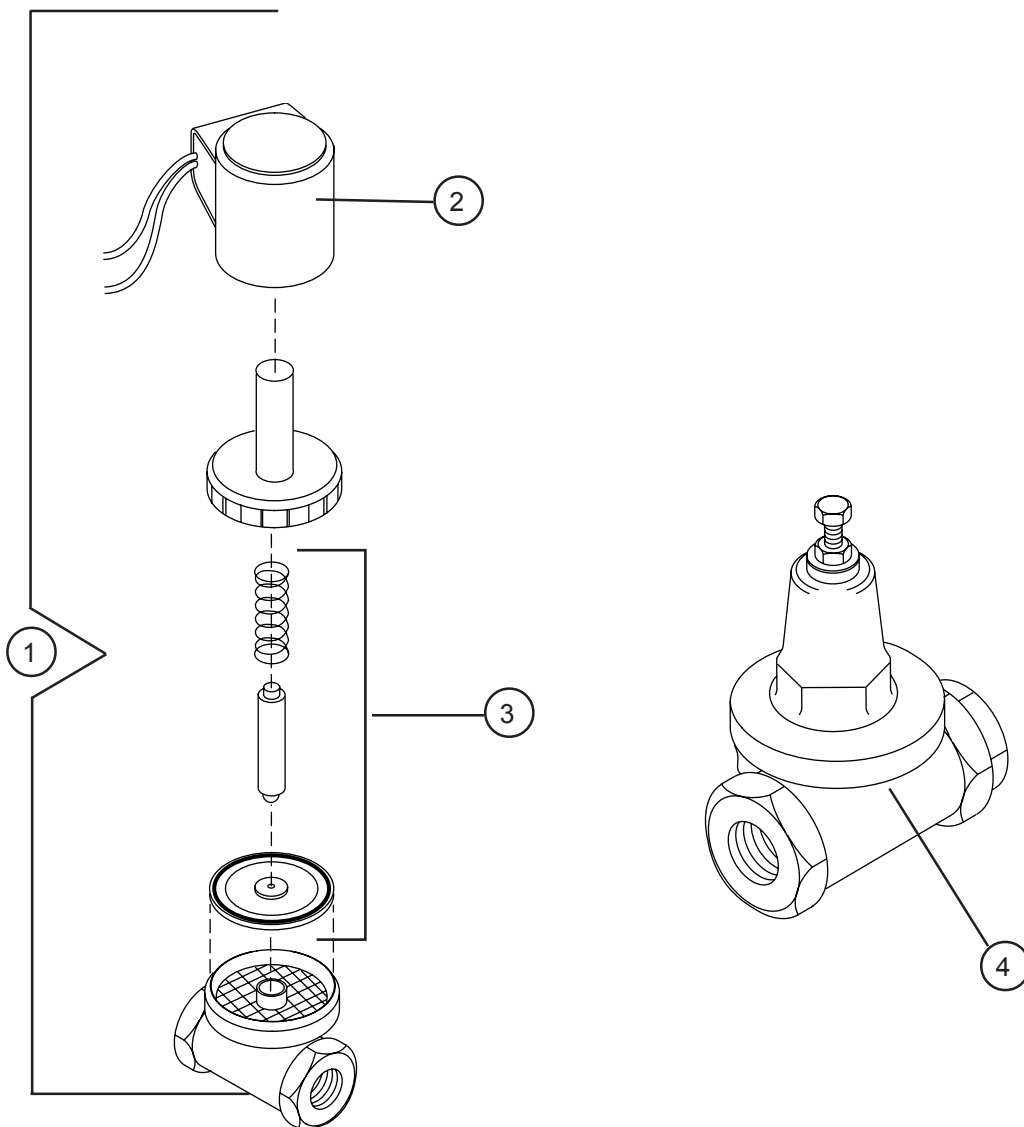


Figure 6.11-  
Control Cabinet (After Serial #U2769)

**CONTROL CABINET (AFTER S/N U2769)**

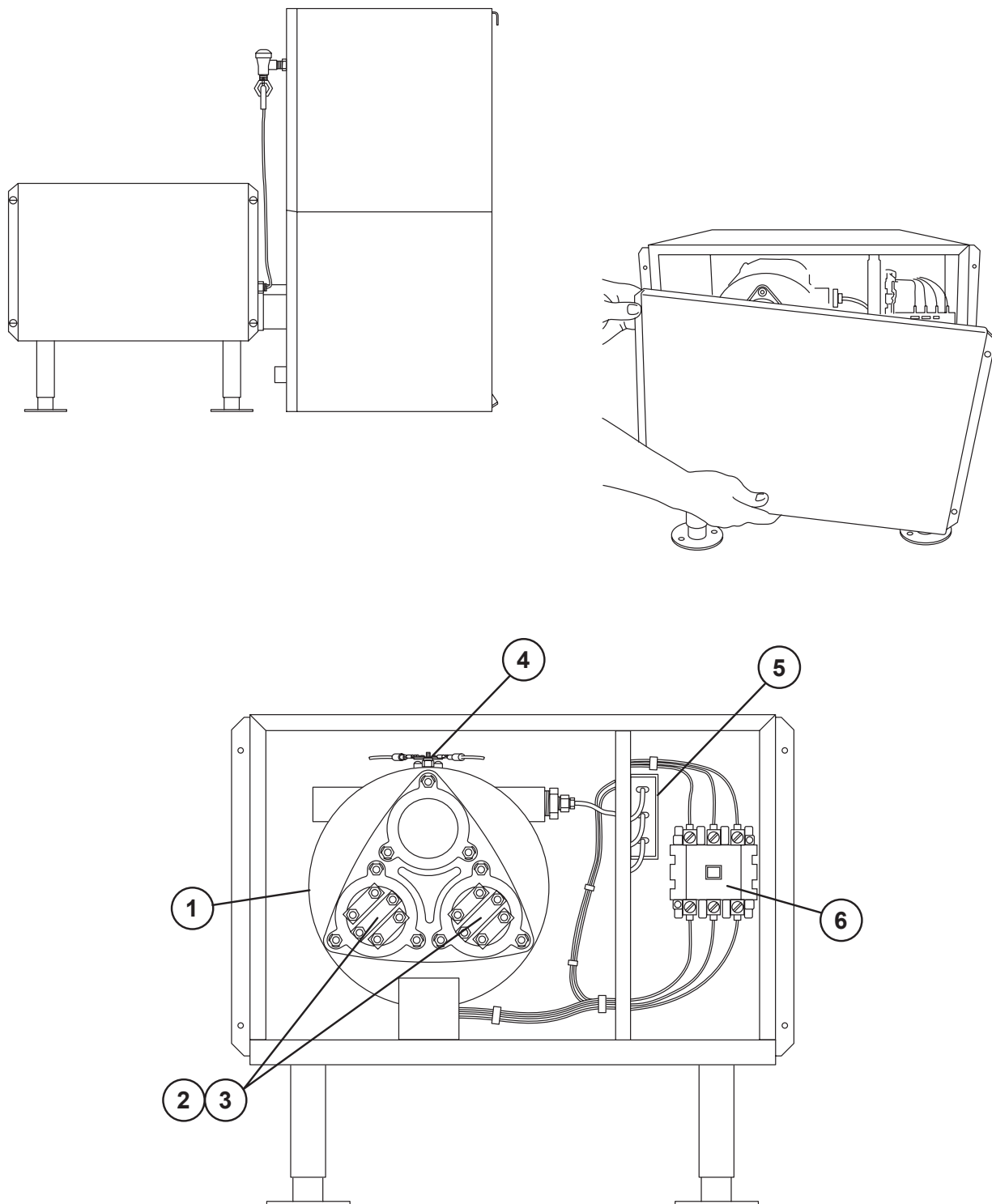
<b>Fig. 611 Item No.</b>	<b>Part No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	110920	Connector, Sealtite 1" x 90 .....	2
2	0509706	Circuit Board (Includes item 17) .....	1
3	109604	Transformer (208-240/480V:115VAC) .....	1
4	104873	Label Ground .....	1
5	111833	Terminal Block .....	1
6	103309	Wire Lug, Ground .....	1
7	111827	Contactor 60 FLA 3P 120 Coil (Tank Heat) .....	1
8	100906	Fuse ATMR-5 600V One Time .....	3
9	112901	Fuse ATDR-1 Time Delay .....	2
10	106402	Block Fuse (2Pole) .....	1
11	106925	Block Fuse (30A, 3 Pole) .....	1
12	111827	Contactor 60FLA 3P 120 Coil (Booster Heat) .....	1
13	111626	Starter, Mtr 1.6-2.4 AMP .....	1
14	108122	Contactor 12A LC1D1210G6 .....	1
15	111068	Relay 120V .....	4
16	111036	Socket Relay .....	4
17	113123	Fuse 1Amp 250V 5 x 20mm .....	1
18	313114	Control Cabinet Weldment .....	1



**Figure 6.12-  
Water Solenoid Valve and PRV**

**WATER SOLENOID VALVE AND PRV**

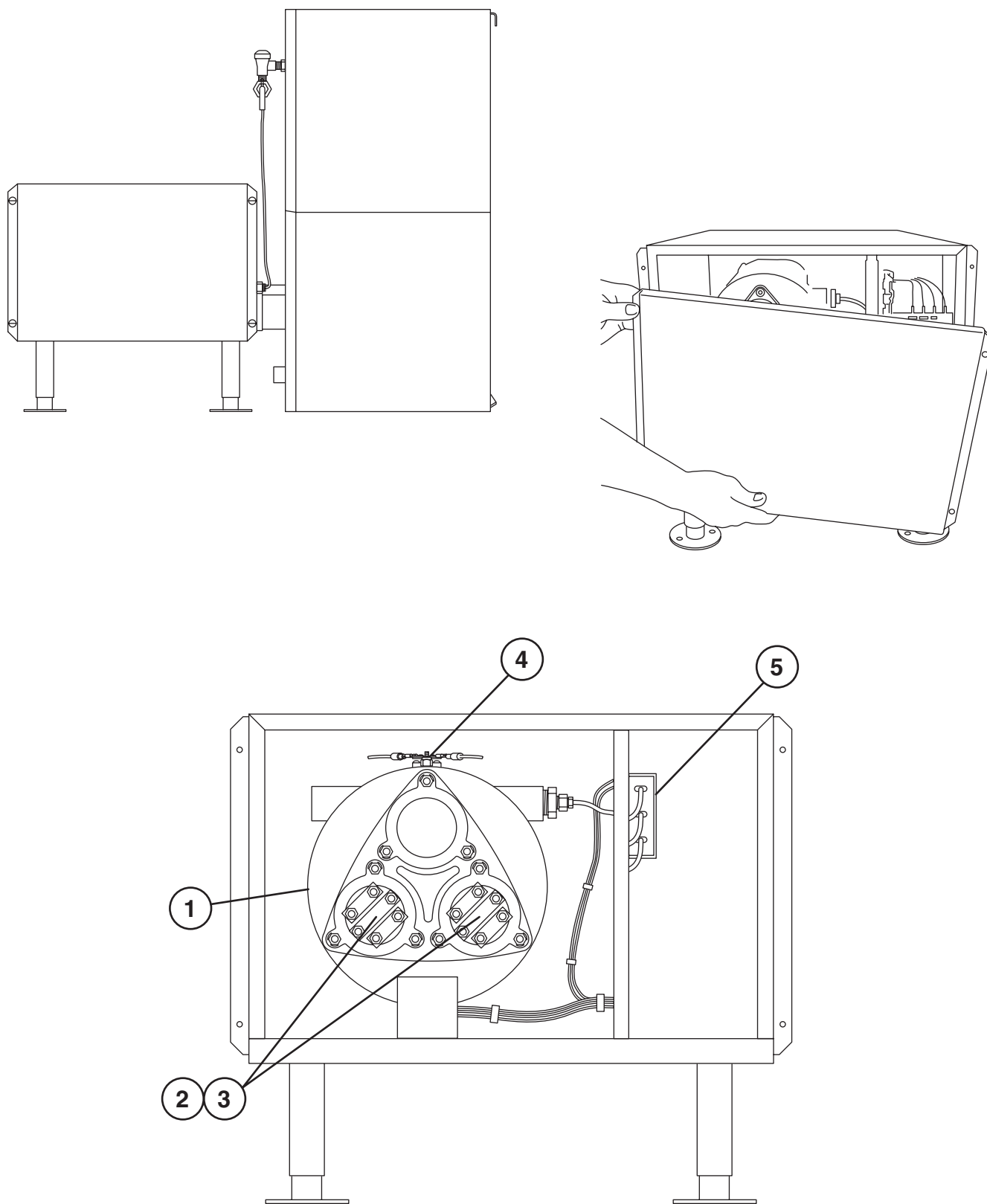
<b>Fig. 6.12 Item No.</b>	<b>Part No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	111437	Valve, solenoid 3/4" NPT .....	1
2	108516	Coil, solenoid valve 120VAC .....	1
3	109903	Kit, repair 3/4" solenoid valve .....	A/R
4	107550	Valve, pressure reducing (PRV) .....	1



**Figure 6.13-**  
**Electric Booster Prior to S/N G3600**

**ELECTRIC BOOSTER PRIOR TO S/N G3600**

<b>Fig. 6.13</b>	<b>Part</b>		
<b>Item No.</b>	<b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	305407	Tank, booster .....	1
2	112593	Element, heater 9KW (440/60/3) .....	2
3	109985	Gasket .....	2
4	110562	Thermostat, high limit .....	1
5	109069	Thermostat, control .....	1
6	111826	Contactor, booster .....	1



**Figure 6.14-  
Electric Booster After S/N G3600**



**ELECTRIC BOOSTER AFTER S/N G3600**

<b>Fig. 6.14</b>	<b>Part</b>		
<b>Item No.</b>	<b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	305407	Tank, booster .....	1
2	112593	Element, heater 9KW (440/60/3) .....	2
3	109985	Gasket .....	2
4	110562	Thermostat, high limit .....	1
5	109069	Thermostat, control .....	1

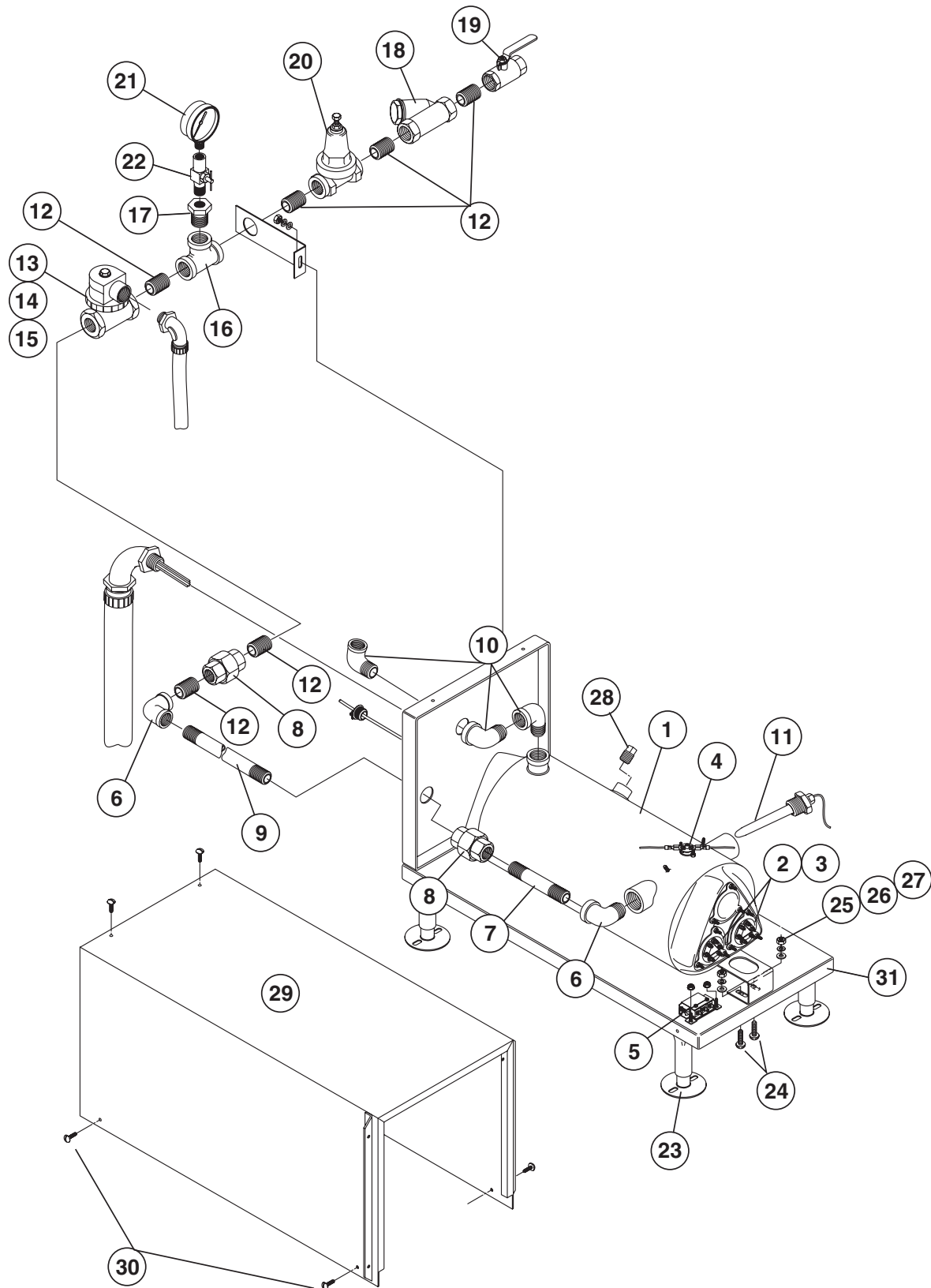


Figure 6.15-  
Electric Booster After S/N U2769

**ELECTRIC BOOSTER AFTER S/N U2769**

<b>Fig. 6.15</b> <b>Item No.</b>	<b>Part No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	305407	Tank, booster .....	1
2	112593	Element, heater 9KW (440/60/3) .....	2
	111234	Element, heater 9KW (480/60/3) (Used on USS Nicholas Only) ..	2
3	109985	Gasket .....	2
4	110562	Thermostat, high limit .....	1
5	109069	Thermostat, control .....	1
6	102442	Elbow, 3/4" x 90° brass .....	2
7	102683	Nipple 3/4" x 4" brass .....	1
8	100571	Union 3/4" brass .....	2
9	102653	Nipple, 3/4" x 13-1/2" brass .....	1
10	102444	Elbow, street 3/4" x 90° brass .....	3
11	100171	Bushing, reducing 3/4" x 1/2" brass .....	1
12	100184	Nipple, 3/4" close brass .....	6
13	111437	Valve, 3/4" HW .....	1
14	108516	Coil, solenoid .....	A/R
15	109903	Repair Kit 3/4" .....	A/R
16	0507463	Tee, 3/4" brass .....	1
17	102403	Bushing, reducing 3/4" x 1/4" brass .....	1
18	110768	Line, strainer 3/4" brass .....	1
19	104828	Valve, ball .....	1
20	107550	Valve, pressure reducing 3/4" .....	1
21	100135	Gauge, pressure .....	1
22			
23	0510563	Flange, foot 6" .....	4
24	100734	Bolt 1/4-20 x 1/2" Hex Head .....	4
25	106026	Washer Flat 1/4 .....	4
26	106482	Washer Lock 1/4" Split .....	4
27	100141	Nut Grip 1/4" .....	4
28	102505	Pipe Plug 3/4" NPT Brass .....	1
29	0710561	Cover, Wrap Weld Assy .....	1
30			
31	0710558	Booster Base, Weld Assy .....	1
32	0310560	Front Panel, Booster (Not Shown) .....	1
33	0310606	Bracket, Plumbing USN10 .....	1

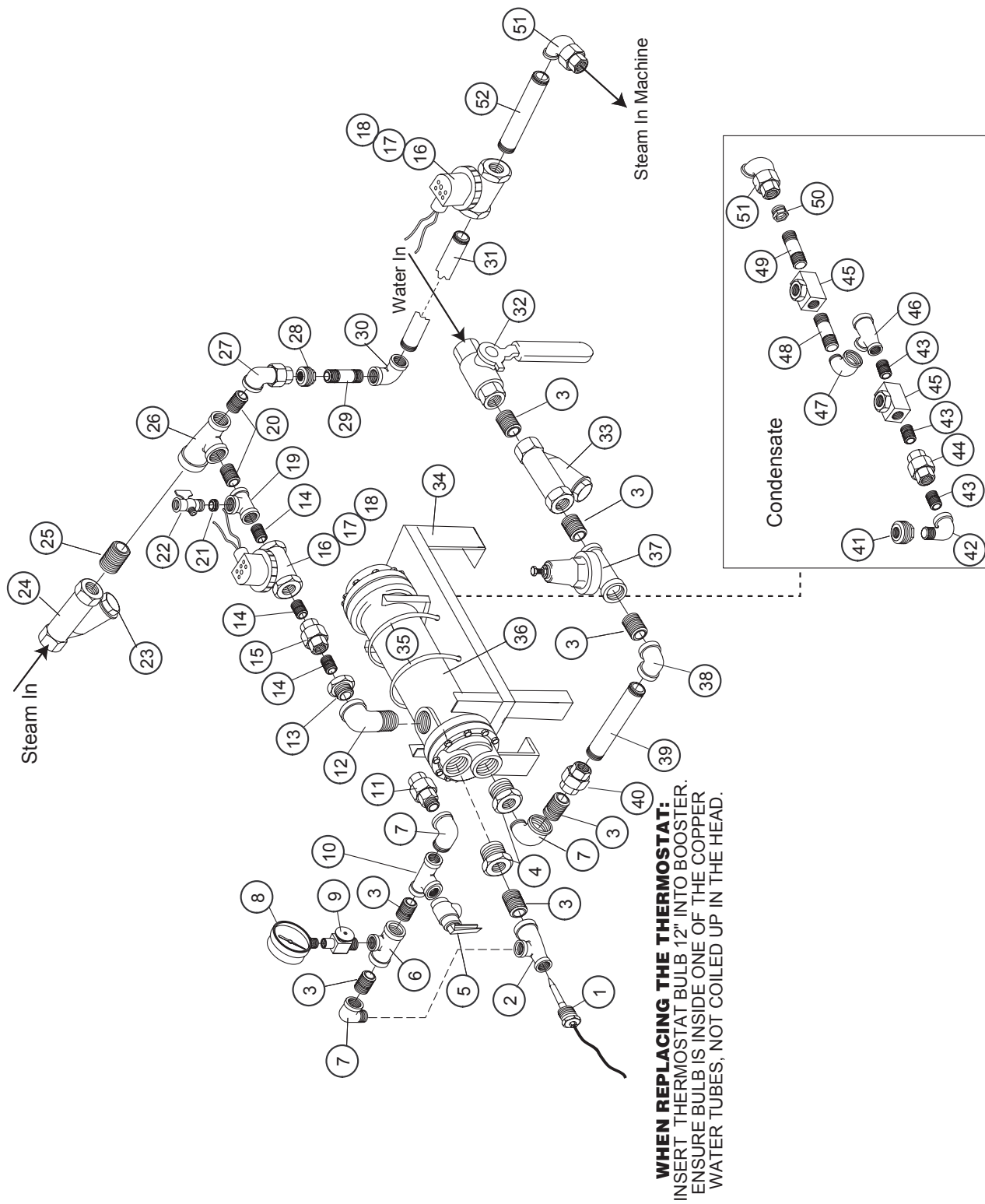


Figure 6.16-  
 No. 180 Steam booster and Steam piping assembly

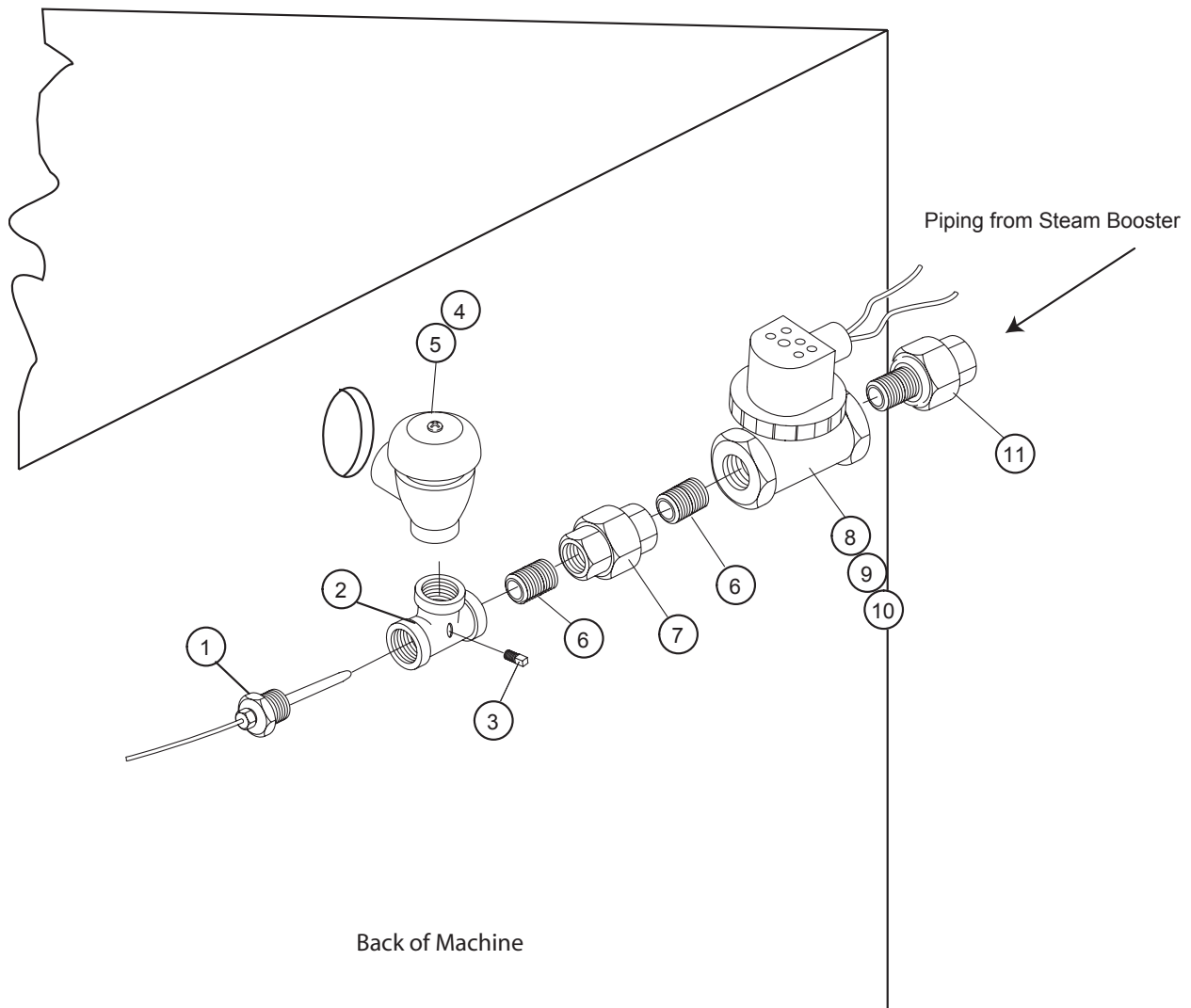
**NO. 180 STEAM BOOSTER AND STEAM PIPING ASSEMBLY**

<b>Fig. 6.16</b>	<b>Part</b>		
<b>Item No.</b>	<b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	109069	Thermostat w/capillary .....	1
---	107922	Box Thermostat (Not Shown) .....	1
---	327480	Bracket, Thermostat (Not Shown) .....	1
2	102525	Tee Reducing 3/4" x 1/2 x 3/4" Brass .....	1
3	100184	Nipple Close /34"NPT Brass .....	7
4	102399	Bushing Reducing 1-1/4" x 3/4" Brass .....	2
5	104649	Relief Valve 3/4" .....	1
6	107418	Tee Reducing 3/4" x 3/4" x 1/4" Brass .....	1
7	102444	Elbow Street 3/4" x 90° .....	3
8	100135	Pressure Gauge 0-60 PSI .....	1
9	112437	Needle Valve 1/4 M X F Brass .....	1
10	102521	Tee 3/4" NPT Brass .....	1
11	107316	Union 3/4"C x 3/4"NPT Male .....	1
12	107500	Elbow Street 1-1/2" x 90° BI .....	1
13	100978	Bushing Reducing 1-1/2" x 3/4" BI .....	1
14	105803	Nipple Close 3/4"NPT BI .....	3
15	105779	Union 3/4"NPT BI .....	1
16	109887	Valve 3/4" Steam .....	2
17	108516	Coil, Valve .....	A/R
18	109903	Repair Kit Steam-Water .....	A/R
19	112346	Tee Reducing 1" x 3/4" x 1/2" BI .....	1
20	105847	Nipple Close 1"NPT BI .....	2
21	102402	Bushing Reducing 1/2" x 1/4" NPT BI .....	1
22	100123	Cock Gauge 1/4" .....	1
23	105749	Plug 3/4" NPT BI .....	1
24	101249	Strainer Line 1-1/2" BI .....	1
25	105881	Nipple Close 1-1/2" NPT BI .....	1
26	105774	Tee Reducing 1-1/2" x 1" x 1"NPT BI .....	1
27	107211	Union Elbow 1" x 90 NPT BI .....	1
28	105705	Bushing Red 1" x 3/4" BI .....	1
29	105817	Nipple 3/4" x 4" BI .....	1
30	105730	Elbow 3/4"NPT x 90 BI .....	1
31	105823	Nipple 3/4" x 5-1/2" BI .....	1
32	104828	Valve Ball 3/4" .....	1
33	110768	Strainer Line 3/4" Brass .....	1
34	325691	Base Booster .....	1
35	112334	U-Bolt 6"ID .....	2
36	112308	Amtrol Steam Booster .....	1
37	107550	Valve Pressure Reducing 3/4" .....	1
38	102442	Elbow 3/4"NPT x 90 Brass .....	1
39	102490	Nipple 3/4" x 3-1/2" Brass .....	1
40	100571	Union 3/4"NPT Brass .....	1
41	112349	Bushing Reducing 1-1/2" x 1/2" BI .....	1
42	100147	Elbow Street 1/2" NPT BI .....	1
43	105782	Nipple Close 1/2"NPT BI .....	3
44	105778	Union 1/2"NPT BI .....	1
45	111380	Steam Trap 1/2"NPT .....	2
46	105762	Tee Reducing 1" x 1/2" x 1/2"NPT BI .....	1

**NO. 180 STEAM BOOSTER AND STEAM PIPING ASSEMBLY**

<b>Fig. 6.16</b>	<b>Part</b>		
<b>Item No.</b>	<b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
47	102288	Elbow 1/2" x 90° BI.....	1
48	105784	Nipple 1/2" x 6' BI .....	1
49	105785	Nipple 1/2" x 2-1/2" BI.....	1
50	103465	Bushing Reducing 3/4" x 1/2" BI .....	1
51	106485	Union Elbow 3/4"NPT x 90° Female BI .....	1
52	105825	Nipple 3/4" x 6' BI .....	1

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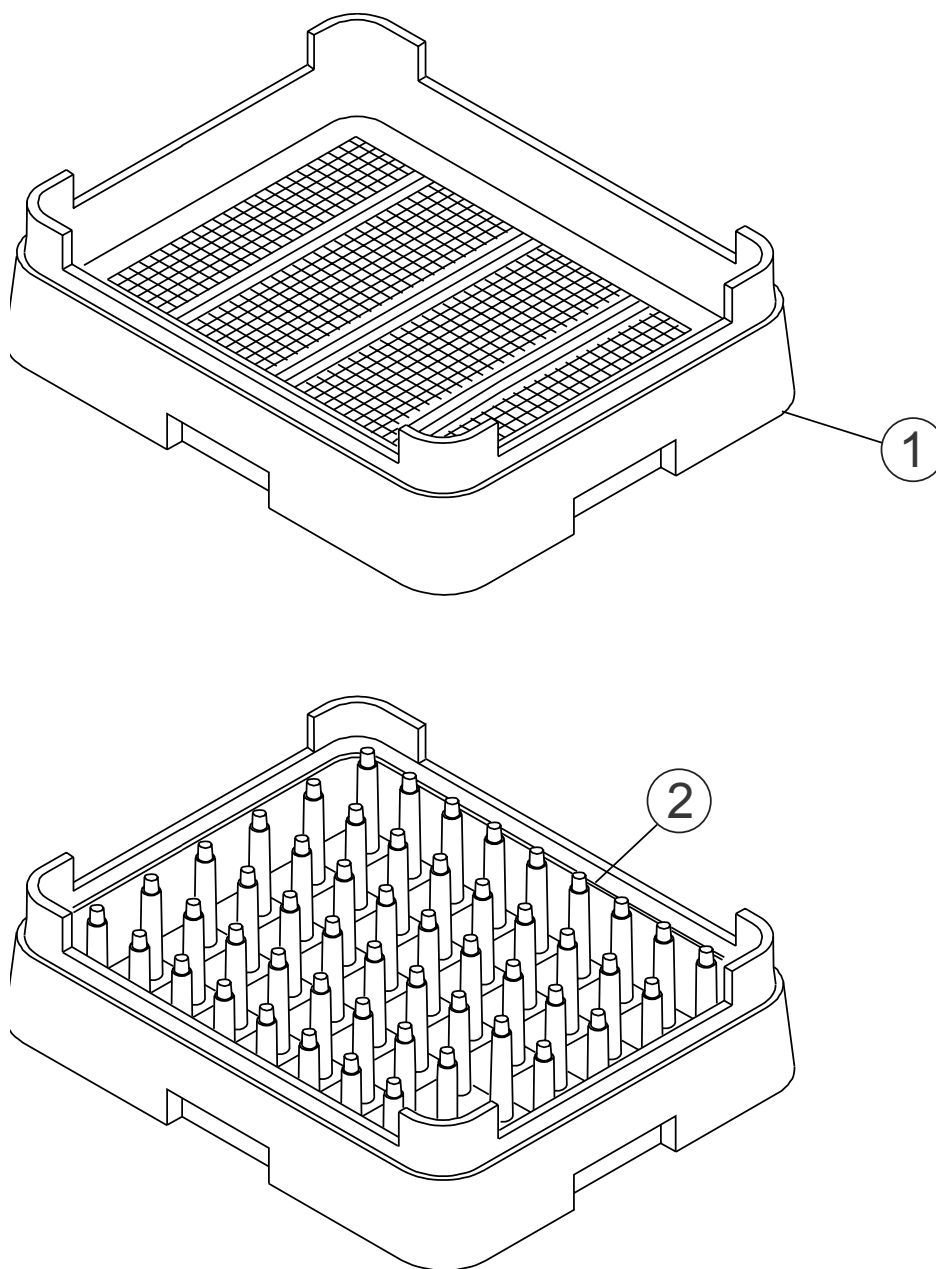


**Figure 6.17-**  
**Tank Piping with Steam Booster**



**TANK PIPING WITH STEAM BOOSTER**

<b>Fig. 6.17 Item No.</b>	<b>Part No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	109069	Thermostat w/Capillary .....	1
2	0309993	Tee, 1/2"FPT c/w 1/8"NPT Tapped .....	1
3	0508709	Plug 1/8" Hex Head (Included in Item 2) .....	1
4	113220	Vacuum Breaker 1/2"Brass .....	1
5	113221	Kit, Vacuum Breaker 1/2" .....	A/R
6	100184	Nipple Close 3/4"NPT Brass .....	2
7	100571	Union 3/4"NPT Brass .....	1
8	111437	Valve 3/4" HW J&E .....	1
9	108516	Coil, Valve .....	A/R
10	109903	Kit, Repair 3/4" Steam-Water .....	A/R
11	107316	Union 3/4"C x 3/4"NPT Male .....	1



**Figure 6.18-  
Dishracks**

**DISHRACKS**

<b>Fig. 6.18</b>	<b>Part</b>		
<b>Item No.</b>	<b>No.</b>	<b>Part Description</b>	<b>Qty.</b>
1	110353	Rack, flat bottom 16" .....	1
2	110352	Rack, peg 16" .....	1

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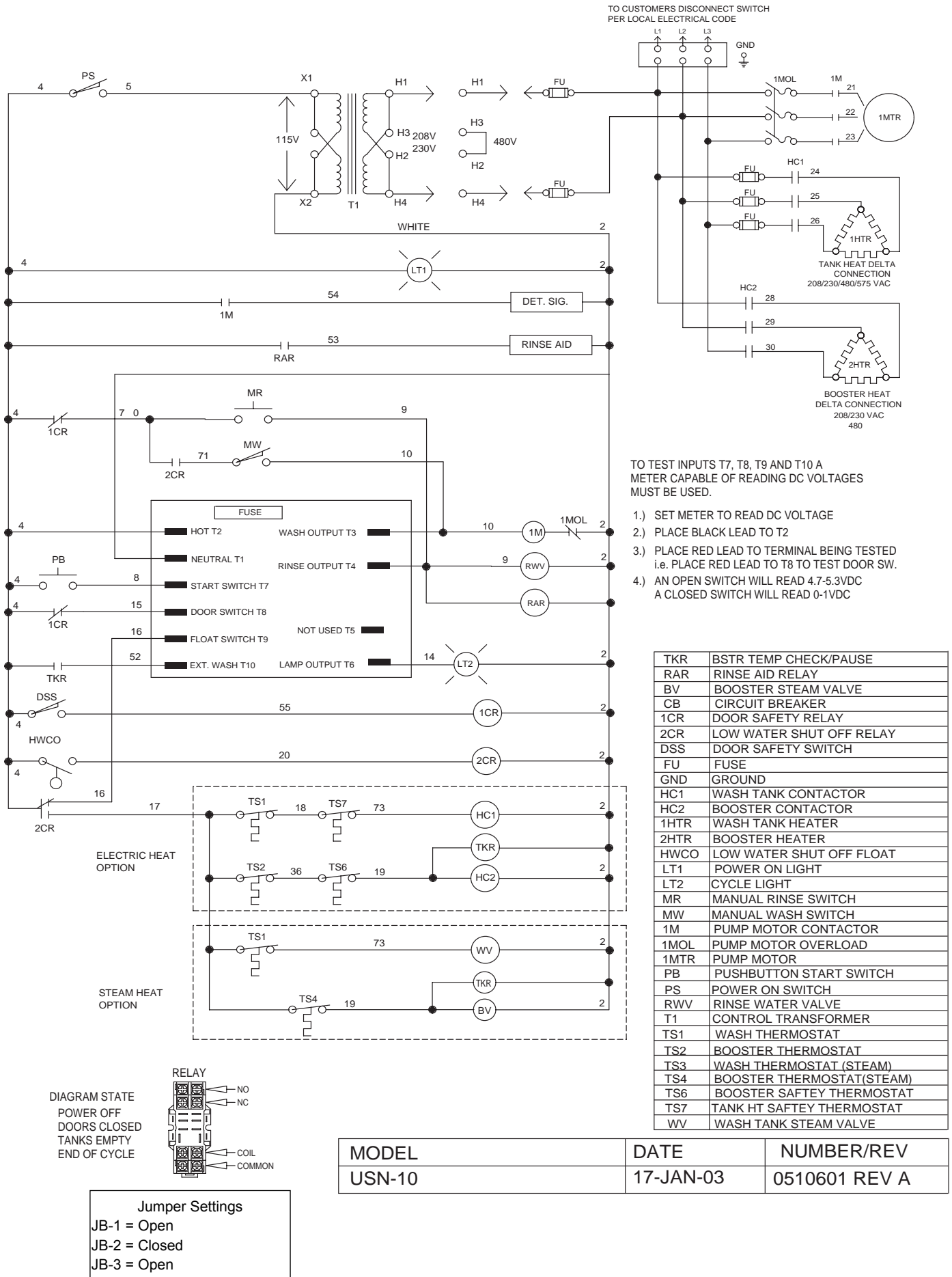
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# **PART 7:**

# **ELECTRICAL SCHEMATICS**

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## **PART 8: SPECIAL INSERTS**

In This Part-

- Service Bulletins

### **8.1 Introduction**

Part 8 Special Inserts contains late breaking service information in the form of Service Bulletins and other printed information that may be useful to you.

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# Champion®

The Dishwashing Machine Specialists

P.O. Box 4146

Winston-Salem, NC 27115

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Tel: 800-858-4477

## SERVICE BULLETIN

Stemco Thermostat Replacement

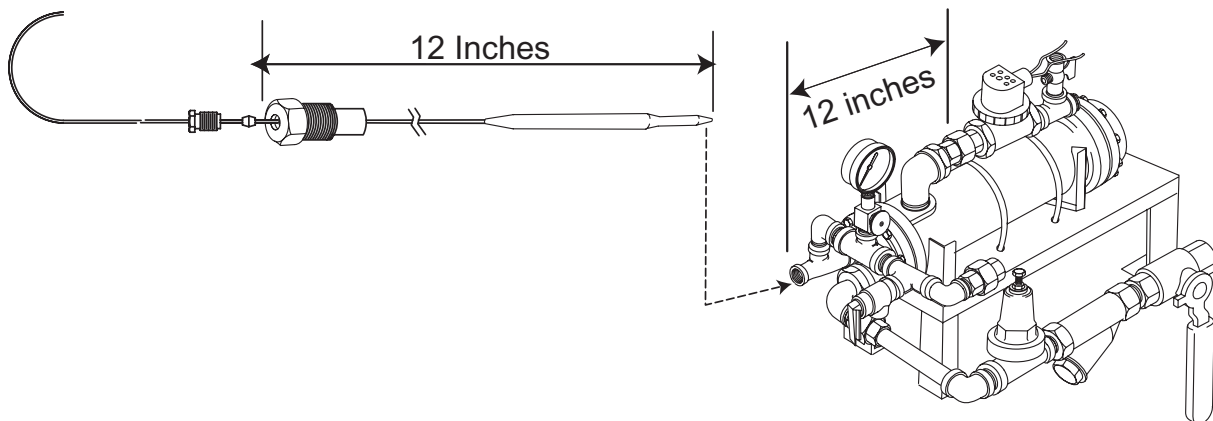
Navy Steam Boosters

Stemco Replaces Fenwall

January 20, 2003

# REPLACING FENWAL THERMOSTAT P/N 100128 WITH STEMCO THERMOSTAT P/N 109069

For all Navy machines that are purchased with steam heated boosters. This notification is for the replacement of the thermostat in those boosters. To ensure that the thermostat is placed properly into the booster tank, please follow the diagram listed below. When replacing the the thermostat use part number 109069.



1. Mark off the measurement of 12 inches from the end of the bulb. This will be at the end of the 1/2" nut that mounts inside of the tee.
2. Insert the thermostat bulb 12 inches into the booster. Ensure that the bulb is inside one of the copper water tubes and not coiled up inside of the head. Place plumbers putty on the 1/2" nut. Tighten down the 1/2" nut inside of the tee.
3. Push the remaining capillary tube to the marking and tighten down the compression nut so as to lock down the furrell on the capillary. The thermostat replacement is now complete.