



*Warewashing Systems*

# INSTALLATION, OPERATION, AND SERVICE MANUAL



**AVENGER® HT-E UNDERCOUNTER DISHMACHINE**

Avenger® HT-E Manual • Rev R • 07610-004-04-18 • Issued: 01-01-14 • Revised: 10-05-16

# AVENGER® HT-E



# **MANUFACTURER'S WARRANTY**

## **ONE YEAR LIMITED PARTS AND LABOR WARRANTY**

**ALL NEW JACKSON DISHWASHERS ARE WARRANTED TO THE ORIGINAL PURCHASER TO BE FREE FROM DEFECTS IN MATERIAL OR WORKMANSHIP, UNDER NORMAL USE AND OPERATION FOR A PERIOD OF (1) ONE YEAR FROM DATE OF PURCHASE, BUT IN NO EVENT TO EXCEED (18) EIGHTEEN MONTHS FROM DATE OF SHIPMENT FROM THE FACTORY.**

Jackson WWS agrees under this warranty to repair or replace, at its discretion, any original part which fails under normal use due to faulty material or workmanship during the warranty period, providing the equipment has been unaltered, and has been properly installed, maintained, and operated in accordance with the applicable factory instruction manual and failure is reported to an authorized service agency within the warranty period. This includes the use of factory-specified genuine replacement parts, purchased directly from a Jackson-authorized parts distributor or service agency. Use of generic replacement parts may create a hazard and void warranty certification.

The labor to repair or replace such failed part will be paid by Jackson WWS, within the continental United States, Hawaii, and Canada, during the warranty period provided a Jackson WWS authorized service agency, or those having prior authorization from the factory, performs the service. Any repair work by persons other than a Jackson WWS authorized service agency is the sole responsibility of the customer. Labor coverage is limited to regular hourly rates; overtime premiums and emergency service charges will not be paid by Jackson WWS.

Accessory components not installed by the factory carry a (1) one year parts warranty only. Accessory components such as table limit switches, pre-rinse units, etc. that are shipped with the unit and installed at the site are included. Labor to repair or replace these components is not covered by Jackson WWS.

This warranty is void if failure is a direct result from shipping, handling, fire, water, accident, misuse, acts of God, attempted repair by unauthorized persons, improper installation, if serial number has been removed or altered, or if unit is used for a purpose other than originally intended.

### **TRAVEL LIMITATIONS**

Jackson WWS limits warranty travel time to (2) two hours and mileage to (100) one-hundred miles. Jackson WWS will not pay for travel time and mileage that exceeds this, or any additional fees—such as those for air or boat travel—without prior authorization.

### **WARRANTY REGISTRATION**

To register your product, go to [www.jacksonwws.com](http://www.jacksonwws.com) or call 1-888-800-5672. Failure to register your product will void the warranty.

### **REPLACEMENT PARTS WARRANTY**

Jackson replacement parts are warranted for a period of (90) ninety days from date of installation or (180) one-hundred-eighty days from the date of shipment from the factory, whichever occurs first.

### **PRODUCT CHANGES AND UPDATES**

Jackson WWS reserves the right to make changes in the design and specification of any equipment as engineering or necessity requires.

THIS IS THE ENTIRE AND ONLY WARRANTY OF JACKSON WWS. JACKSON'S LIABILITY ON ANY CLAIM OF ANY KIND, INCLUDING NEGLIGENCE, WITH RESPECT TO THE GOODS OR SERVICES COVERED HEREUNDER, SHALL IN NO CASE EXCEED THE PRICE OF THE GOODS OR SERVICES OR PART THEREOF WHICH GIVES RISE TO THE CLAIM.

THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING FOR FITNESS OR MERCHANTABILITY, THAT ARE NOT SET FORTH HEREIN, OR THAT EXTEND BEYOND THE DURATION HEREOF. UNDER NO CIRCUMSTANCES WILL JACKSON WWS BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECT OR CONSEQUENTIAL, OR FOR DAMAGES IN THE NATURE OF PENALTIES, ARISING OUT OF THE USE OR INABILITY TO USE ANY OF ITS PRODUCTS.

### **ITEMS NOT COVERED**

THIS WARRANTY DOES NOT COVER CLEANING OR DELIMING OF THE UNIT OR ANY COMPONENT SUCH AS, BUT NOT LIMITED TO, WASH ARMS, RINSE ARMS, OR STRAINERS AT ANYTIME. NOR DOES IT COVER ADJUSTMENTS SUCH AS, BUT NOT LIMITED TO, TIMER CAMS, THERMOSTATS, OR DOORS BEYOND (30) THIRTY DAYS FROM THE DATE OF INSTALLATION. IN ADDITION, THE WARRANTY WILL ONLY COVER REPLACEMENT WEAR ITEMS SUCH AS CURTAINS, DRAIN BALLS, DOOR GUIDES, OR GASKETS DURING THE FIRST (30) THIRTY DAYS AFTER INSTALLATION. ALSO, NOT COVERED ARE CONDITIONS CAUSED BY THE USE OF INCORRECT (NON-COMMERICAL) GRADE DETERGENTS, INCORRECT WATER TEMPERATURE OR PRESSURE, OR HARD WATER CONDITIONS.

# REVISION HISTORY

Revision Letter	Revision Date	Made by	Applicable ECNs	Details
A	04-17-13	RLC	ECR 8259	Release to Production.
B	02-20-14	MHH	QOF NDB 229	Updated control, wash and strainer assemblies. Updated schematic.
C	06-27-14	MHH	8301	Updated Schematic.
D	07-02-14	RC	QOF-NDB-266	Removed Ventilation Requirements.
E	07-30-14	KAP	QOF 386	Updated Schematic.
F	10-14-14	KAP	ECR-8318	pg. 28. Added: 480 V Heater Gasket P/N - 05330-004-13-19, 480 V Heater P/N - 04540-004-12-29. pg. 31-32 Added: 480 V Control Box and Legend. pg. 40 Added: 480 V Units P/N - 05330-011-47-79, 480 V Units P/N - 05700-004-13-25, 480V P/N - 04540-004-13-30. pg. 41 Added: 480 V Units P/N - 06105-004-07-54.
G	02-04-15	KAP	N/A	Updated water pressure info on pgs. 4 and 5.
H	02-13-15	KAP	N/A	Updated PLC screens on pgs. 14, 16, 18, 21, and 22.
J	03-11-15	KAP	N/A	Updated Drawings on pg's. 35, 36, 41, 43, 46. Changed item #18 description on pg. 42. Added VAC breaker Repair kit P/N on pg. 43. Added wash arm assembly on pg. 40. Corrected P/N for item #5 and #6 on pg. 31. Added lower float switch on pg. 29. Updated description for item # 10 on pg. 39. Updated description for item # 1 & 2 on pg. 35. Updated 208/230 schematic on pg. 51.
K	04-01-15	KAP	N/A	Updated P/N for item #6 on pg 31.
L	04-15-15	KAP	ECR - 8328	Updated transducer and harness P/N pgs. 42 and 44. Updated 208/230 V and 480 V Electrical Diagrams pgs. 51 and 52.
M	05-18-15	KAP	N/A	Updated P/N for item #6 on pg. 36. Updated P/N for item #19 on pg. 36. Included door spring in drawing on pg. 36. Updated float switches pgs. 17 and 30. Updated item #4 P/N on pg. 37. Updated Door Spring Assembly pg 36 and 37.
N	06-10-15	KAP	N/A	Added 2 wire door switch cable pg. 27.
	07-09-15	KAP	N/A	Updated plumbing inlet on pgs. 1, 26, 29, and 42. Added left shroud P/N on pg. 36. Added item #11 ribbon to PLC harness to control kick panel on pg. 31. Added note regarding hose length on pg. 49.
P	09-22-15	KAP	N/A	Updated Kick Panel Control on pg. 31. Updated 208 V Control Box on pg. 32 and 33.
Q	12-07-15	JH	ECR-8365	Added callout/P/N for two scrap baskets, item #25 on pg. 38. Changed top view on pg. 43 to show offset rinse hub (item #8) and p-clip (item #9). Added view of chemical port and warning to pg. 7. Changed views on pg. 44 to show new transducer location and added a view for the optional pressure regulator. Changed views on pg. 1 to show updated dimensions and added a top view. Changed 208 and 480 schematics to latest revision.

## REVISION HISTORY

Revision Letter	Revision Date	Made by	Applicable ECNs	Details
R	10-05-16	JH	N/A	<p>Added pictures and steps to the Operating Instructions section.</p> <p>Added 480 V Drain Pump to pg. 28.</p> <p>Added Tub Gasket to view (pg. 38) and parts list (pg. 39).</p> <p>Added P/N for item #2 on pg. 41.</p> <p>Added P/N for item #9 on pg. 41.</p> <p>Added P/N for item #15 on pg. 41.</p> <p>Added P/N for item #18 on pg. 41.</p> <p>Added P/N for item #18b on pg. 41.</p> <p>Added P/N for item #8 on pg. 43.</p> <p>Added a Rinse Arm Bearing Kit to pg. 45.</p> <p>Added P/N for item #3 on pg. 51.</p> <p>Added P/N for item #4 on pg. 51.</p> <p>Corrected P/N for item #5 on pg. 28.</p> <p>Corrected P/N for item #4 on pg. 32.</p> <p>Corrected P/N for item #5 on pg. 32.</p> <p>Corrected P/Ns for items #3 and #4 on pg. 34.</p> <p>Corrected P/N for item #14 on pg. 36.</p> <p>Corrected P/Ns for items #2 and #5 on pg. 37.</p> <p>Corrected P/N for item #6 on pg. 41.</p> <p>Corrected P/N for item #16 on pg. 47.</p> <p>Corrected P/N for item #9 on pg. 53.</p> <p>Removed the LT-E from the manual.</p>

## SYMBOLS



- risk of injury to personnel.



- risk of damage to equipment.



- risk of electrical shock.



- reference data plate.



- caustic chemicals.



- ground wire.



- lockout electrical power.

**NOTICE** - important note.

## ABBREVIATIONS & ACRONYMS

**ANSI** - American National Standards Institute

**GHT** - Garden Hose Thread

**GPM** - Gallons per Minute

**GPG** - Grains per Gallon

**HP** - Horse Power

**Hz** - Hertz

**ID** - Inside Diameter

**kW** - Kilowatts

**NFPA** - National Fire Protection Association

**NPT** - National Pipe Thread

**OD** - Outside Diameter

**PRV** - Pressure Regulating Valve

**PSI** - Pounds per Square Inch

**V** - Volts



## AVENGER HT-E

Undercounter dishmachine; high-temperature, hot-water sanitizing, with a booster tank and detergent and rinse-aid chemical feeder pumps.

Model: \_\_\_\_\_

Serial No.: \_\_\_\_\_

Installation Date: \_\_\_\_\_

Service Rep. Name: \_\_\_\_\_

Phone Number: \_\_\_\_\_

The manufacturer provides technical support for all of the dishmachines detailed in this manual. We strongly recommend that you refer to this manual before making a call to our technical support staff. Please have this manual with you when you call so that our staff can refer you, if necessary, to the proper page. Technical support is not available on holidays. Contact technical support toll free at 1-888-800-5672.

Technical support is available for service personnel only.

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## SCHEMATICS

208/230 V, 50/60 HZ, 1-Phase .....	50
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**LEGEND:**

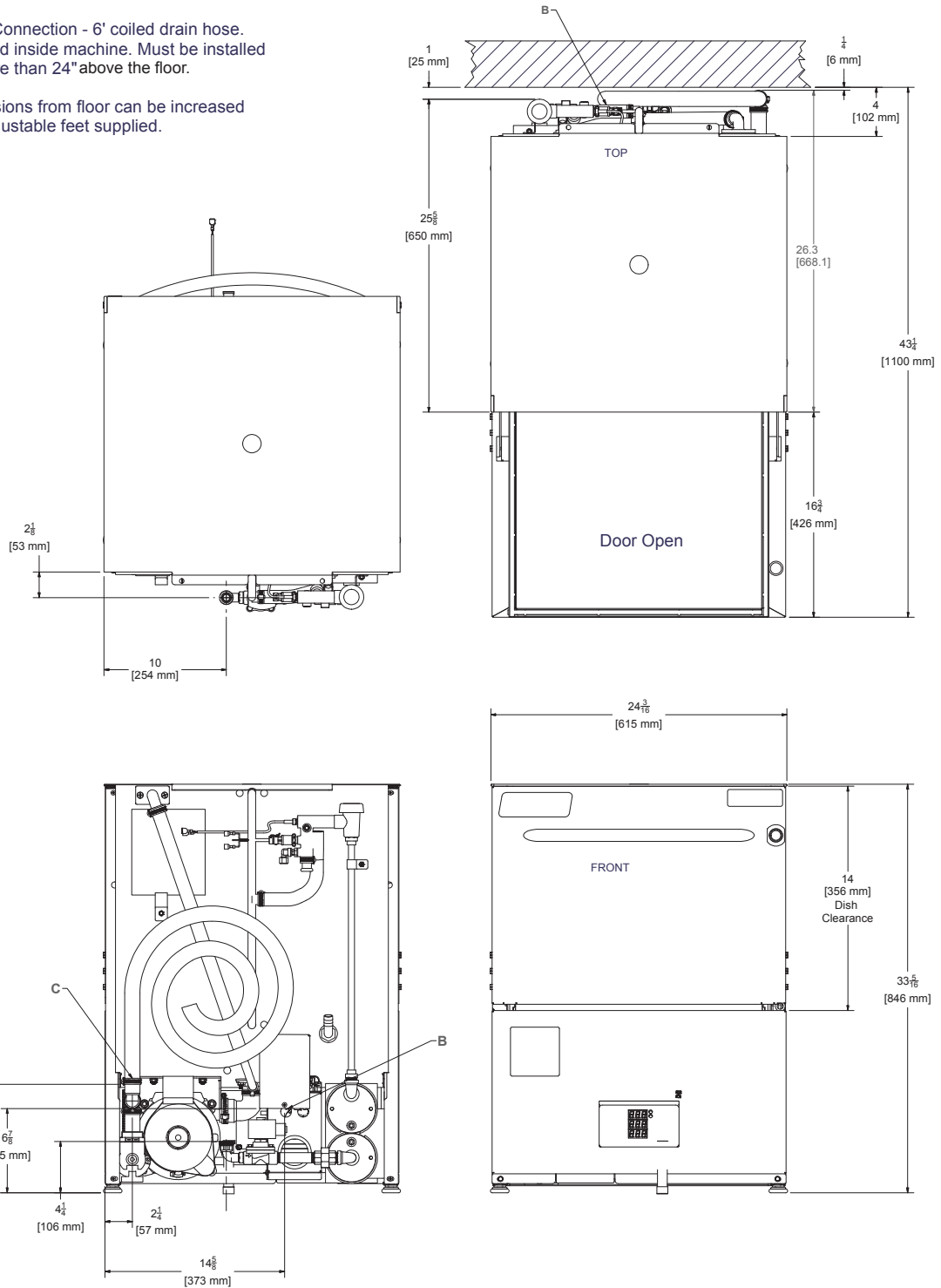
A- Water Inlet - 3/4" Male Garden Hose Thread (M-GHT)  
(Connect to a true 1/2" ID water line)

\*Note: Water inlet dimensions for units  
supplied with a PRV will be \*8 1/8, \*\*10 1/2

B- Electrical Connection

C- Drain Connection - 6' coiled drain hose.  
Shipped inside machine. Must be installed  
no more than 24" above the floor.

All dimensions from floor can be increased  
1" with adjustable feet supplied.



**AVENGER HT-E**

**Operating Capacity:**

Racks per Hour	26
Dishes per Hour	468
Glasses per Hour	936

**Tank Capacity (Gallons):**

Wash Tank	3
Rinse Tank	2.12

**Electrical Loads (as applicable):**

Wash Motor HP	0.75
Wash Heater KW	4
Rinse Heater KW	4



**NOTE:** Always refer to the machine data plate for specific electrical and water requirements. The material provided on this page is for reference only and is subject to change without notice.

**Water Temperatures (Fahrenheit):**

Minimum Wash Temperature	155
Minimum Rinse Temperature	180
Minimum Incoming Water Temperature	110

**Other Water Requirements:**

Water Flow Pressure (PSI)	10
Flow Rate Minimum (GPM)	5.16
Water Line Size (NPT)	1/2"
Drain Line Size (NPT)	1" ID
	1 3/8" OD

**NOTICE**



All electrical ratings provided in this manual are for reference only. Always refer to the machine data plate to get exact electrical information for this machine. All electrical work performed on machines should be done in accordance with applicable local, state, territorial, and national codes. Work should only be performed by qualified electricians and authorized service agents.

Note that all electrical wiring used must be rated, at a minimum, for 212°F (100°C) and that only copper conductors must be used.

Where applicable, heating element amperage draws have been adjusted for the assumed input voltage. The manufacturer assumes incoming voltages will be either 208 or 230 volts. Some heating elements used in the machines are rated for other voltages, such as 240 volts. Always verify the amperage draw of the machine in operation when sizing circuit protection.

If the dishmachine is equipped with the optional rinse heater, note that the rinse heater might have its own electrical connection and therefore require a separate service. Amperage loads for motors and heaters are indicated on the machine data plate.

The electrical configurations are as follows:

**Available Electrical Characteristics:**

- 208 V, 60 Hz, Single-phase
- 230 V, 60 Hz, Single-phase
- 480 V, 60 Hz, Three-phase

*Imbalanced wild leg  
goes to L3.*

**Available Wash Tank Heaters:**

- 14 kW

**Available Rinse Tank Heaters:**

- 2 kW for top tank
- 2 kW for bottom tank

**AVENGER HT-E  
Electrical Characteristics**

<b>VOLTS</b>	208	230	480
<b>PHASE</b>	1	1	3
<b>FREQ</b>	60	60	60
<b>WASH MOTOR AMPS</b>	5.0 A	5.0 A	1.3A
<b>DRAIN PUMP</b>	0.6 A	0.6 A	1.0A
<b>WASH HEATER AMPS</b>	15.9 A	17.4 A	5.0A
<b>RINSE HEATER AMPS</b>	15.9 A	17.4 A	5.0A
<b>TOTAL LOAD</b>	36.8 A	39.8 A	11.3A

**VISUAL INSPECTION**

*Do not throw away container if damage is evident!*

Before installing the unit, check packaging and machine for damage. Damaged packaging might be an indication of damage to the machine. If there is any type of damage to both packaging and unit, do not throw away the packaging. The dishmachine has been inspected at the factory before shipping and is expected to arrive in new, undamaged condition. However, rough handling by carriers or others might result in damage to the unit while in transit. If this occurs, do not return the unit to the manufacturer. Instead, contact the carrier and ask them to send a representative to the site to inspect the damage and request that an inspection report be completed.

Contact the carrier within 48 hours of receiving the machine as well as the dealer that sold you the unit.

**UNPACKING THE MACHINE**

The machine should be unboxed and removed from the pallet before installing. Open the front door and remove all of the materials from inside. Once unpacked, verify there are no missing parts. If a part is missing, contact the manufacturer immediately.

**LEVEL THE DISHMACHINE**

The dishmachine is designed to operate while level. This is important to prevent any damage to the machine during operation and to ensure the best possible results. The unit comes equipped with adjustable bullet feet which can be turned using a pair of pliers. Verify the unit is level from front-to-back and side-to-side before making any electrical or plumbing connections.

**PLUMBING THE DISHMACHINE**

*The plumber must flush the incoming water line!*

All plumbing connections must be made to adhere to local, state, territorial, and national codes. The installing plumber is responsible for ensuring the incoming water lines are flushed of debris before connecting to the machine. Note that chips and materials from cutting processes can become lodged in the solenoid valves and prevent them from opening or closing. Any valves that are found to be fouled or defective because of foreign matter left in the water line, and any subsequent damage, are not the responsibility of the manufacturer.

*A water hardness test must be performed.*

A water hardness test must be performed to determine if the HTS-11 (scale prevention and corrosion control) needs to be installed. A hardness test kit can be found on the warning tag that is attached to the incoming plumbing connection on the back of the machine. If water hardness is higher than 5 GPG, the HTS-11 will need to be installed. Please contact the manufacturer to purchase the HTS-11.

**WATER SUPPLY CONNECTIONS:  
WATER HARDNESS GREATER THAN 5 GPG**

If water hardness tests at greater than 5 GPG, install the HTS-11 into the water line (1/2" ID pipe size minimum) before the dishwasher's incoming water connection point using copper pipe. Observe proper inlet/outlet water directions. Flow directions are molded into the top of the head. It is recommended that a water shut-off valve be installed before installing the HTS-11 to allow access for service. Plumb from the HTS-11 outlet to the incoming water connection point using copper pipe (or order the 1/2" ID flexible hose kit offered by manufacturer). The water supply must be capable of a minimum of 10 PSI "flow" pressure at the recommended temperature indicated on the data plate. See "Shock Absorber" section.

**WATER SUPPLY CONNECTION:  
WATER HARDNESS OF 5 GPG OR LESS**

If water hardness tests at 5 GPG or less, install the water supply line (1/2" ID pipe size minimum) to the dishwasher's incoming water connection point using copper pipe (or order the 1/2" ID flexible hose kit offered by the manufacturer). It is recommended that a water shut-off valve be installed in the water line between the main supply and the machine to allow access for service. The water supply line must be capable of a minimum of 10 PSI "flow" pressure at the recommended temperature indicated on the data plate.

**PRESSURE REGULATOR**

The manufacturer has an optional water pressure regulator to accommodate areas where water pressure fluctuates or is higher than the recommended pressure. Take care not to confuse static pressure with flow pressure: static pressure is line pressure in a "no flow" condition (all valves and services are closed); flow pressure is the pressure in the fill line when the valve is opened during the cycle.

*Take care not to confuse static pressure with flow pressure!*

**SHOCK ABSORBER**

It is suggested that a shock absorber (not supplied) be installed on the incoming water line. This prevents water hammer (hydraulic shock)—induced by the solenoid valve as it operates—from causing damage to the equipment.

**CONNECTING THE DRAIN LINE**

The dishwasher has a pumped (pressure) drain capable of pumping waste water to a height of 24" above the floor to the kitchen's drain system. Each dishwasher is supplied with a drain hose. When installed, it will extend from the rear side of the machine. There must be an air-gap between the machine drain line and the floor sink or drain. If a grease trap is required by code, it should have a flow capacity of 12 GPM.

**PLUMBING CHECK**

After installing the incoming fill line and the drain line, slowly turn on the water supply to the machine. Check for any leaks and repair as required. All leaks must be repaired before operating the machine.

## ELECTRICAL POWER CONNECTIONS



*Disconnect electrical power supplies and tag out in accordance with appropriate procedures and codes at the disconnect switch to indicate the circuit is being serviced.*

Electrical and grounding conductors must comply with the applicable portions of the National Electric Code ANSI/NFPA 70 (latest edition) and/or other electrical codes.

The data plate is located at the left front side of the dishmachine. Refer to the data plate for machine operating requirements, machine voltage, total amperage, and serial number.

Remove the back panel to install the incoming power lines. This will require removing the screw at the bottom of the back panel with a phillips screwdriver. Remove the back panel and set aside. Install 3/4" conduit into the pre-punched holes in the back of the control box. Route power wires and connect to power block and grounding lug. Install the service wires (L1 and L2) to the appropriate terminals as they are marked on the terminal block. Install the grounding wire into the lug provided. It is recommended that "DE-OX" or another similar anti-oxidation agent be used on all power connections.

## VOLTAGE CHECK



Ensure that the power button is in the off position and apply power to dishmachine. Check the incoming power at the terminal block and ensure it corresponds with the voltage listed on the data plate. If not, contact a qualified service agency to examine the problem. Do not run dishmachine if voltage is too high or too low. Shut off the service breaker and advise all proper personnel of the location of the breaker and any problems. Replace the control box cover and tighten-down the screws.

## SURROUNDING AREA

This is a commercial dishmachine and reaches temperatures that can exceed those generated by a residential machine. Therefore, any surrounding countertops, cabinets, flooring material, and subfloor material must be designed and/or selected with these higher temperatures in mind.

**NOTE:** Any damage to surrounding area that is caused by heat and/or moisture to materials that are not recommended for higher temperatures will not be covered under warranty or by the manufacturer.

## TEMPERATURE SETPOINTS

The temperature setpoints on this unit have been set at the factory. They should only be adjusted by an authorized service agent.

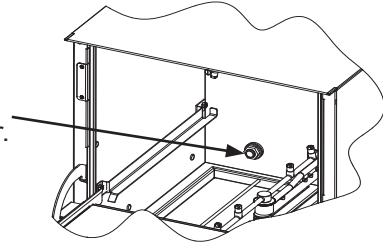
## CHEMICAL FEEDER EQUIPMENT

This equipment is not recommended for use with deionized water or other aggressive fluids. Use of deionized water or other aggressive fluids will result in corrosion and failure of materials/components and will void the manufacturer's warranty.

**WARNING:** Chlorine-based sanitizers can be detrimental to this machine if the chemical solution is too strong. See a chemical supplier to ensure the dispenser is set-up correctly.

The bottom of the chemical container cannot be located any higher than 8" from the floor. If the unit is equipped with the 6" or 18" table stand, the highest position will be 14" or 26" respectively from the floor.

**CAUTION:** Chemical tube must not extend past port into wash chamber.



## TO PREPARE CHEMICAL FEEDER PUMPS FOR OPERATION

This dishmachine is supplied with detergent and rinse-aid chemical feeder pumps.

Locate the open ends of the chemical tubes with the tube stiffeners and place each one in the appropriate container.

A. Red Tubing = Detergent    B. Blue Tubing = Rinse-aid

## PRIMING CHEMICAL FEEDER PUMPS



**WARNING:** Some of the chemicals used in dishwashing may cause chemical burns if they come in contact with skin. Wear protective gear when handling these chemicals. If any skin comes in contact with these chemicals, immediately follow the instructions provided with the chemicals for treatment.

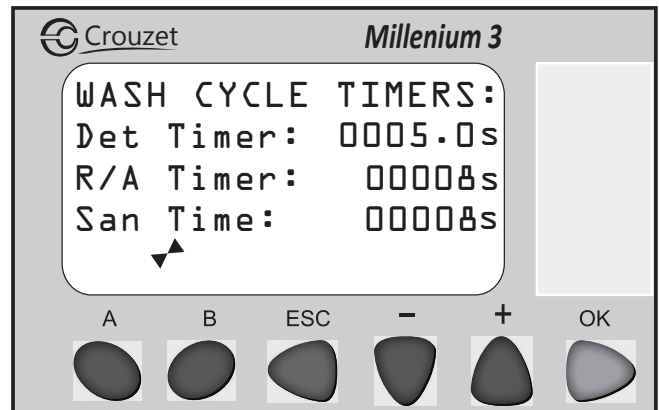
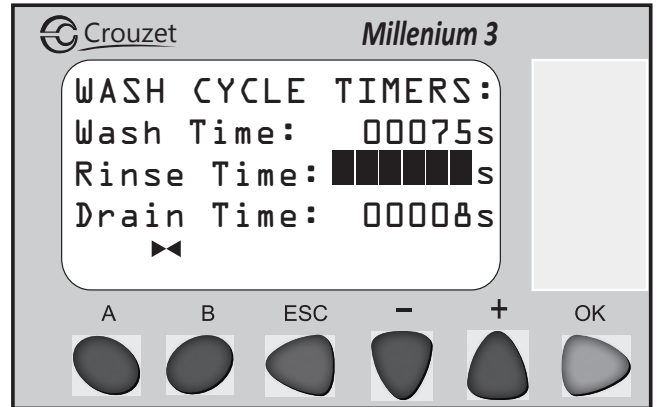
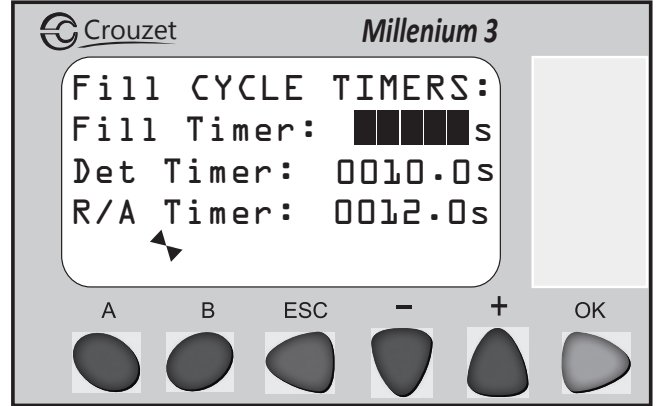
Chemical feeder pumps need priming when the machine is first installed or if the chemical lines have been removed and air is allowed to enter. **CAUTION!** Water must be in the sump and wash tank before dispensing chemicals. Sanitizer in concentration is caustic and might cause damage without dilution.

1. Verify that the proper chemical tube stiffener inlet is in the proper container.
2. Use the prime buttons located on the control panel at the bottom of the unit to prime each pump. The buttons are clearly marked as to which chemical feeder pump they prime.
3. To prime the pumps, press the button until the chemical can be observed entering the wash tank.
4. Detergent is dispensed as required during the wash cycle by the timer. The amount of detergent may need to be increased or decreased depending upon water quality and type of detergent.
5. Rinse additive is dispensed as required into the final rinse. The amount of rinse additive may need to be adjusted depending upon water hardness and results.
6. Please refer to "Programming Instructions for Chemical Feeder Pumps" on the next page for instructions on adjusting the chemical feeder pumps on the Programmable Logic Controller (PLC).

**CHEMICAL FEEDER PUMP PROGRAMMING (INSTALLATION TECHNICIAN ONLY)**

The chemical feeder pump timers are located on screens 3, 4, and 5. To access the programming mode follow the process detailed below.

1. Press "A" to cycle through screens until reaching the "Fill Cycle Timers" screen (#3).
2. Press "+" or "-" to highlight the timer in need of adjustment and press "OK" to enter edit mode for that timer.
3. Press "+" or "-" to make needed adjustments and press "OK" to confirm.
4. Press "A" and continue to the "Wash Cycle Timers" screen (#4). Follow steps 2 and 3 to confirm any adjustments.
5. Press "A" and continue to the "Wash Cycle Timers" screen (#5). Follow steps 2 and 3 to confirm any adjustments.
6. Press "A" and "B" simultaneously to return to the home screen (#1). Run the machine through several cycles to verify changes.





**DETERGENT CONTROL**

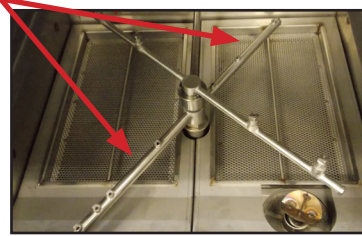
Detergent usage and water hardness are two factors that contribute greatly to how efficiently this dishmachine will operate. Using detergent in the proper amount can become a source of substantial savings. A qualified water treatment specialist can determine what is needed for maximum efficiency from the detergent.

1. Hard water greatly affects the performance of the dishmachine, causing the amount of detergent required for washing to increase. If the machine is installed in an area with hard water, the manufacturer recommends the installation of water treatment equipment.
2. Deposited solids from hard water can cause spotting that will not be removed with a drying agent. Treated water will reduce this occurrence.
3. Treated water might not be suitable for use in other areas of operation and it might be necessary to install a water treatment unit for the water going to the dish-machine only. Discuss this option with a qualified water treatment specialist.
4. Dishmachine operators should be properly trained on how much detergent is to be used per cycle. Meet with a water treatment specialist and detergent vendor to discuss a complete training program for operators.
5. Certain dishmachine models require that chemicals be provided for proper operation and sanitization. Some models might require the installation of third-party chemical feeders to introduce those chemicals to the machine. The manufacturer does not recommend or endorse any brand name of chemicals or chemical dispensing equipment. Contact a chemical supplier for questions.
6. Some dishmachines come equipped with integral solid detergent dispensers. These dispensers are designed to accommodate detergents in a certain-sized container. If applicable, relate this to a chemical supplier upon first contacting them.
7. Water temperature is an important factor in ensuring that the dishmachine functions properly, and the machine's data plate details what the minimum temperatures must be for the incoming water supply, the wash tank, and the rinse tank. If minimum requirements are not met, there is a possibility that dishes will not be clean or sanitized.
8. Instruct dishmachine operators to observe the required temperatures and to report when they fall below the minimum allowed. A loss of temperature can indicate a larger problem.

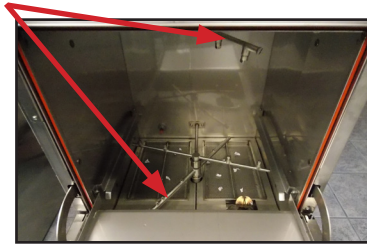


**PREPARATION** Before operating the unit, verify the following:

1. Strainers are in place and clean.



2. Wash and rinse arms are screwed securely into place and end-caps are tight.

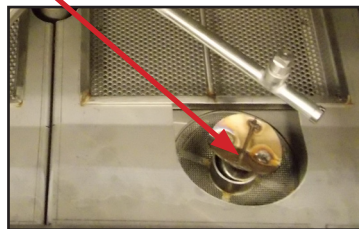


3. Wash and rinse arms rotate freely.
4. Chemical levels are correct.

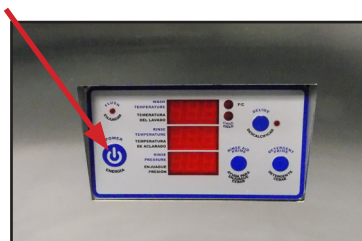
**POWER UP** To energize the unit, turn on the power at the service breaker. The voltage should have been previously verified as correct. If not, the voltage must be verified before energizing the unit.

## FILLING THE WASH TUB

1. Verify the standpipe is installed correctly (seated vertically in the center of the wash sump).



2. Close the door.
3. Press the "Power" button.



4. The unit will automatically begin the fill cycle.
5. Once the wash tub is filled, the unit is ready for operation.
6. Wait for wash temperature to reach at least 155 °F before operating the unit.

## WARE PREPARATION

Proper ware preparation will help ensure good results and fewer re-washes. If not done properly, ware might not come out clean and the efficiency of the dishmachine will be reduced. Putting unscrapped dishes into the machine affects its performance, so scraps should always be removed from ware before being loaded into a rack. Pre-rinsing and pre-soaking are good ideas, especially for silverware and casserole dishes.

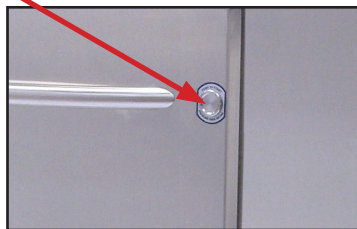
Place cups and glasses upside-down in racks so they don't hold water during the cycle. The dishmachine sanitizes as well as cleans. To do this, ware must be properly prepared before being placed in the machine.

## WASHING A RACK OF WARE

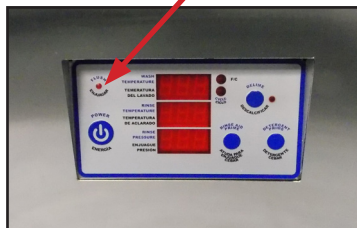
1. Open the door completely.
2. Slide the rack into the unit.



3. Close the door.
4. Press the "Push to Start" button and the unit will begin the wash cycle.



5. After the cycle light turns off, the cycle is complete.
6. When the flush light is on (steady, not flashing), it is recommended that tank water be drained and refilled.



## OPERATIONAL INSPECTION

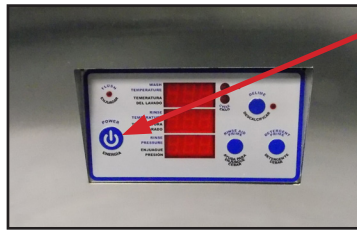
Based on use, the strainers might become clogged with soil and debris as the workday progresses. Operators should regularly inspect the strainers to ensure they have not become clogged. Clogged strainers will reduce the washing capability of the machine. Instruct operators to clean out the strainers at regular intervals or as required by workload.

## SHUTDOWN AND CLEANING

1. Open the door and remove the standpipe.



2. Close the door and turn the unit off by pushing the "Power" button.



3. The drain pump will activate and empty the unit of water.
4. When draining stops, remove and clean the strainers and strainer frame and set aside.

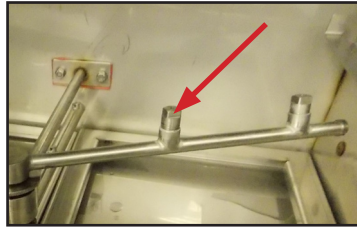


5. Unscrew the wash and rinse arms from their manifolds.

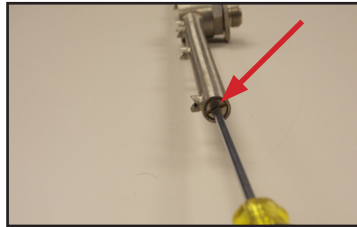


## SHUTDOWN AND CLEANING

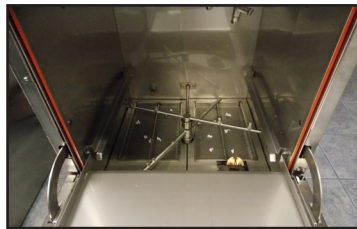
6. Verify the nozzles and arms are free from obstruction. If clogged, remove end-caps, clean nozzles with a brush, and flush with fresh water.



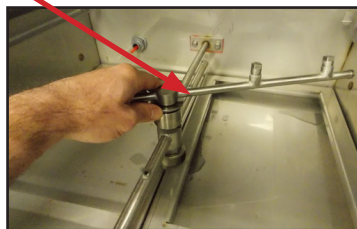
7. Replace end-caps and ensure they have been tightened.



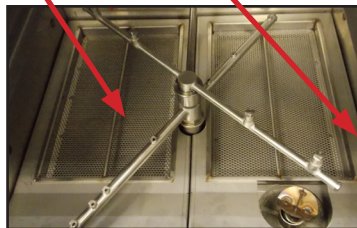
8. Spray or wipe out interior of machine.



9. Replace wash and rinse arms.



10. Replace the strainers and strainer frame and ensure they are laying flat.



11. Use stainless steel polish to clean and protect outside of dishmachine.

**PREVENTATIVE MAINTENANCE**

The manufacturer of this dishmachine highly recommends that any maintenance and repairs not specifically discussed in this manual should be performed by qualified service personnel only. Performing maintenance on the dishmachine may void a warranty.

By following the operating and cleaning instructions in this manual, users should get the most efficient results from the dishmachine. As a reminder, here are some steps to ensure that the dishmachine is used properly:



1. Ensure that the water temperatures match those listed on the machine data plate (on the front-left of machine).
2. Remove as much soil as possible from ware before loading into racks.
3. Ensure that strainers are in place, laying flat in tub, and free of soil and debris before operating the machine. To clean strainers, wipe them out with a rag and rinse under a faucet. For stubborn debris, a toothpick can be used. Do not beat strainers on waste cans; once bent, they will not work properly.
4. If hard water is present, install an HTS-11 into the water line connecting to the dishmachine (see "Plumbing the Dishmachine" section).
5. Ensure that all wash and rinse arms are secure in the machine before operating.
6. Ensure that the standpipe is seated before operating.
7. Do not overfill racks.
8. Ensure that glasses are placed upside-down in the rack.
9. Ensure that all chemicals being injected into machine have been verified at the correct concentrations.
10. Clean the machine at the end of every workday (see "Shutdown and Cleaning" section).
11. Always contact a qualified service agency whenever a serious problem arises.
12. Follow all safety procedures, whether listed in this manual or put forth by local, state, or national codes/regulations.

**DELIMING**

In order to maintain the dishmachine at its optimum performance level, lime and corrosion deposits must be removed. The frequency for deliming will be based on water conditions. A deliming solution is available from your chemical supplier. Read and follow all instructions on the label.

To delime the dishmachine:


***NOTE: If this machine is equipped with an HTS-11 scale prevention and corrosion control device and lime is becoming a frequent problem, the cartridge needs to be replaced. To order a replacement cartridge, call the manufacturer.***

1. Verify standpipe is in place, turn the unit on and allow it to complete a fill cycle.
2. Verify water level. If low, switch the unit off then immediately back on (this will start a second fill cycle).
3. Open the door and verify water level is above standpipe. Add deliming solution per the chemical supplier's recommendation.
4. Close the door and push the delime button on the front of the control panel.
5. Run the machine for the period of time recommended by the chemical supplier.
6. Press the delime button again and the pump will stop.
7. Open the door and remove the standpipe.
8. Press the power button to drain the machine and turn the unit off.
9. Wait five minutes, then inspect the inside of the machine. If the machine is not delimed, run again.
10. When clean, drain and refill the machine (Steps 1 and 2).
11. Run in delime mode for 10 minutes to remove residual deliming solution.
12. Drain and refill the machine.






**WARNING:** Inspection, testing, and repair of electrical equipment should only be performed by qualified service personnel. Certain procedures in this section require electrical tests or measurements while power is applied to the machine. Exercise extreme caution at all times. If test points are not easily accessible, disconnect power, attach test equipment, and reapply power to test. When replacing electrical parts, disconnect power at circuit breaker.

PROBLEM	POSSIBLE CAUSE	REMEDY
Water overflow from bottom of door.	<ol style="list-style-type: none"> <li>1. Clogged drain.</li> <li>2. Machine not level.</li> <li>3. Excessive inlet pressure.</li> <li>4. Detergent foaming.</li> <li>5. Wash or rinse arm end-cap missing.</li> <li>6. Top float failure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove obstruction.</li> <li>2. Level machine or increase height to the front.</li> <li>3. Install pressure regulating valve or adjust if one is present. Ensure flow meets data plate specification.</li> <li>4. Reduce detergent quantity.</li> <li>5. Replace.</li> <li>6. Verify inputs on I/O (diagnostics) screen.</li> </ol> 
Wash motor doesn't operate on delime wash.	<ol style="list-style-type: none"> <li>1. Loose or broken wires.</li> <li>2. Defective manual wash switch.</li> <li>3. Defective motor starting relay.</li> <li>4. Machine in FAULT mode and locked out.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reconnect or replace wires in motor.</li> <li>2. Verify delime switch triggers input on PLC. If not, check wiring/replace membrane.</li> <li>3. Replace.</li> <li>4. Review fault screen for active faults.</li> </ol>
Motor operates in delime mode but not in automatic.	<ol style="list-style-type: none"> <li>1. Defective start switch</li> <li>2. Defective circuit in manual wash switch.</li> <li>3. Loose or broken wires.</li> </ol>	<ol style="list-style-type: none"> <li>1a. Check fault screens to verify no faults would prevent the machine from running a cycle</li> <li>1b. Verify start button triggers input on PLC. If not, check wiring/replace membrane.</li> <li>2. Replace switch.</li> <li>3. Tighten and/or replace.</li> </ol>
Little or no water coming through the rinse assemblies.	<ol style="list-style-type: none"> <li>1. Limed-up rinse heads or piping.</li> <li>2. Low water pressure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Delime rinse heads.</li> <li>2. Increase pipe size to machine. Adjust pressure regulating valve.</li> </ol>

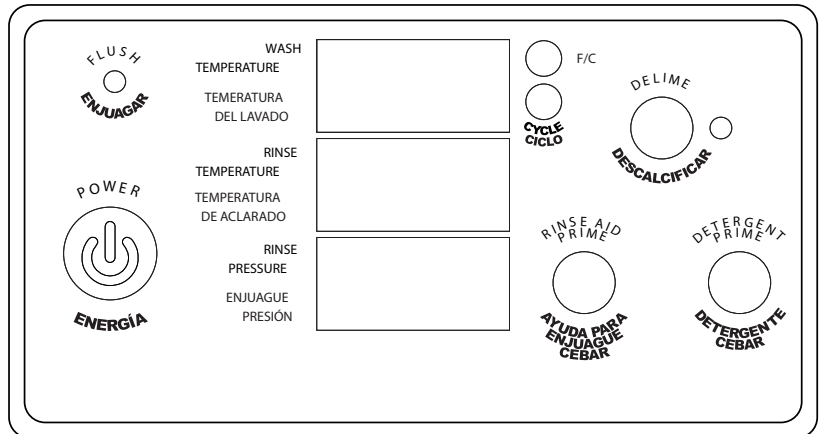


**WARNING:** Inspection, testing, and repair of electrical equipment should only be performed by qualified service personnel. Certain procedures in this section require electrical tests or measurements while power is applied to the machine. Exercise extreme caution at all times. If test points are not easily accessible, disconnect power, attach test equipment, and reapply power to test. When replacing electrical parts, disconnect power at circuit breaker.

PROBLEM	POSSIBLE CAUSE	REMEDY
Rinse water runs continuously with breaker turned off.	<ol style="list-style-type: none"> <li>1. Defective plunger in solenoid valve.</li> <li>2. Defective diaphragm in solenoid valve.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace plunger.</li> <li>2. Replace diaphragm.</li> </ol>
Wash temperature not within range.	<ol style="list-style-type: none"> <li>1. Water level low.</li> <li>2. RTD setpoint too slow.</li> <li>3. Defective RTD.</li> <li>4. Wash heater defective.</li> <li>5. Defective heater contactor R1.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check water level. If low, run new fill cycle.</li> <li>2. Check fault screen.</li> <li>3. Replace RTD.</li> <li>4. Replace heater element.</li> <li>5. Replace contactor.</li> </ol>
Rinse temperature not within range.	<ol style="list-style-type: none"> <li>1. RTD is defective.</li> <li>2. Incoming rinse water does not meet minimum criteria indicated machine data plate.</li> <li>3. Rinse heaters damaged.</li> <li>4. Setpoint screens set low.</li> </ol> 	<ol style="list-style-type: none"> <li>1. Replace if necessary.</li> <li>2. Adjust as required.</li> <li>3. Check amperages. Replace if necessary.</li> <li>4. Adjust rinse tank setpoint.</li> </ol>
Machine doesn't drain when power button is pressed.	<ol style="list-style-type: none"> <li>1. Drain clogged.</li> <li>2. Standpipe not removed before draining.</li> <li>3. Defective drain valve.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove obstruction.</li> <li>2. Remove standpipe and run drain cycle again.</li> <li>3. Replace.</li> </ol>
No indication of pressure.	<ol style="list-style-type: none"> <li>1. Water turned off.</li> <li>2. Transducer disconnected.</li> <li>3. Pressure transducer defective.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn water on.</li> <li>2. Verify wiring.</li> <li>3. Replace pressure transducer.</li> </ol>



## AVENGER HT-E DISPLAY



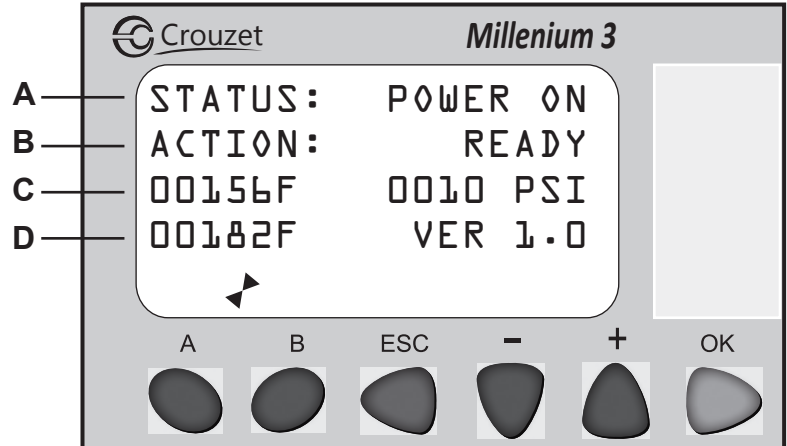
**FLUSH CYCLE** The "Flush" light will activate after the unit has completed a predetermined number of cycles. When this light activates it is recommended that the user complete a flush cycle as detailed in the steps below.

1. Open the machine door.
2. Remove the standpipe and set aside.
3. Close the door.
4. Press the power button.
  - When the power button is pressed the machine will start draining.
5. Once the drain cycle is complete, open the door and verify that the wash tank is empty.
  - If the wash tank is not empty, close the door and press the power button twice to start a second drain cycle.
6. When the machine is fully drained, reinstall the standpipe, close the door and press the power button.
  - Once the fill cycle is complete, the machine will be ready for regular use.

**FAULT INDICATION** If the machine sees a fault\*, the delime and "Flush" light will start to flash. Faults will generally clear through completion of a drain or wash cycle, but some faults indicate a serious issue in the dishwasher and may require additional support.

\*See PLC Troubleshooting section for more information on faults.

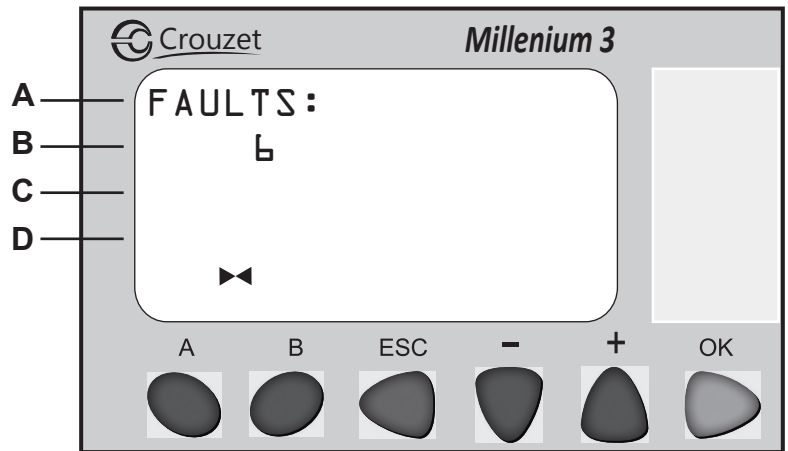
**SCREEN 1: HOME** The Avenger HT-E comes equipped with a PLC programmed to make troubleshooting and diagnostics more user-friendly. The following pages detail each screen associated with the Avenger HT-E PLC display.



The home screen will be displayed when the machine is powered on and is intended to show the technician the status of the machine, any faults that might be present, and the wash and rinse temperatures.

1. Line A shows the status of the machine: Power On, Power Off, or Delime.
2. Line B shows the action of the machine and will show one of the following options:
  - Fill: The machine is in the initial fill cycle.
  - Ready: The machine has completed the initial fill cycle and is ready to wash.
  - Wash: The machine is in the wash cycle.
  - Rinse: The machine is in the rinse cycle.
  - Drain: The machine has been turned off and is draining.
3. Line C will display the wash tank temperature and rinse line pressure.
  - If a fault is present, “!!FAULT!!” will replace the rinse line pressure.
  - If “!!FAULT!!” is displayed, the operator should continue to screen #2 to identify the issue.
4. Line D will display the current software version loaded onto the PLC.
5. Pressing “A” and “B” simultaneously will return user to screen #1.
6. Pressing “A” will proceed to the next screen.
7. Pressing “B” will return to the previous screen.

**SCREEN 2: FAULTS** The “Faults” screen will be displayed when the operator has pressed “A” or “B” to cycle through screens and is intended to show the technician any faults that have occurred.



Line C will show any fault observed from previous cycles. The faults will be identified as 1 through 6 and are detailed below (multiple faults can be active at the same time):

Fault 1: Indicates the horizontal float switch did not close during the initial fill.

- Open the door and check the water level. If low, turn machine off then back on to start an additional fill cycle.

Fault 2\*: Indicates the vertical float switch has activated and the machine is overfilled.

- To clear this fault, verify the water level and remove the standpipe.
- Attempt to drain the machine by cycling power on then off.
- If the machine is not overfilled, manually trigger the float switch and verify status of input on PLC.

Fault 3: Indicates the horizontal float switch opened for more than five seconds.

- Allow cycle to complete to determine if Fault 3 clears.
- If not, open the door and verify the standpipe is fully seated, strainers are in place, and water level is low.



Fault 4: Indicates SaniSure™ was active for the maximum wash cycle time.

- Verify incoming water meets minimum temperature and pressure on the data plate.
- Adjustment of rinse tank differential setpoint might be needed (see screen #7).

Fault 5: Indicates Fault 4 has been activated for five consecutive cycles.

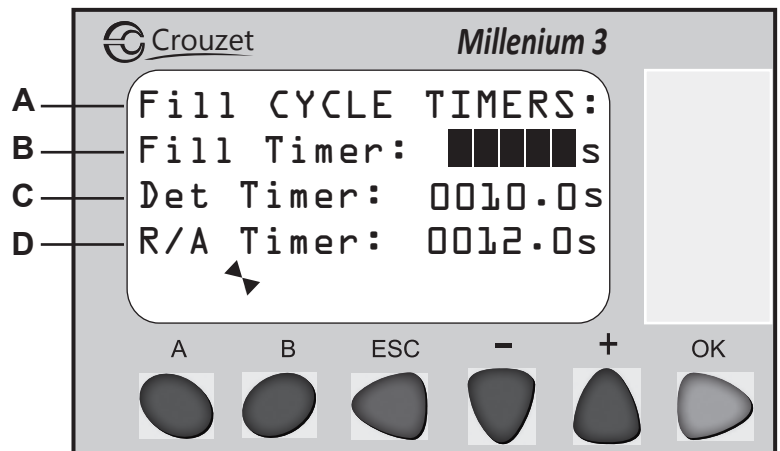
- If Fault 5 is active, contact technical service for assistance.

Fault 6: Indicates the drain cycle has completed and the horizontal float switch is still active.

- Verify standpipe is removed before turning the machine off.
- Verify water level. If high and standpipe is removed, verify there are no clogs in the drain line.

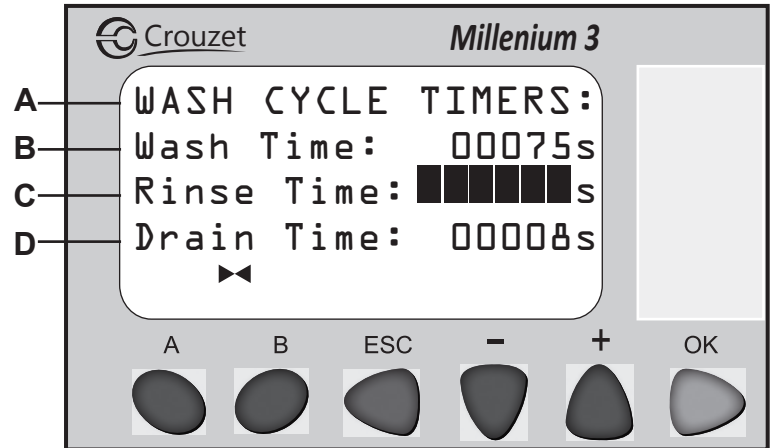
*\* Faults 2 and 5 will prevent the unit from cycling.*

**SCREEN 3: FILL CYCLE TIMERS** The “Fill Cycle Timers” screen allows the user to edit the fill, detergent, and rinse-aid timers for the initial fill cycle.



1. Line B displays the fill time.
  - Press + or - to highlight line B.
  - Press OK to enter highlight mode.
  - Press + or - to make any adjustments needed.
    - \* **Fill Time: 5 to 20 seconds.**
  - Press OK to confirm adjustments.
  
2. Line C shows the detergent time.
  - Press + or - to highlight line C.
  - Press “OK” to enter highlight mode.
  - Press + or - to make any adjustments needed.
    - \* **Detergent Time: 5 to 10 seconds.**
  - Press “OK” to confirm adjustments.
  
3. Line D displays the rinse aid time.
  - Press + or - to highlight line D.
  - Press OK to enter highlight mode.
  - Press + or - to make any adjustments needed.
    - \* **Rinse-aid Time: 0 to 12 seconds.**
  - Press OK to confirm adjustments.

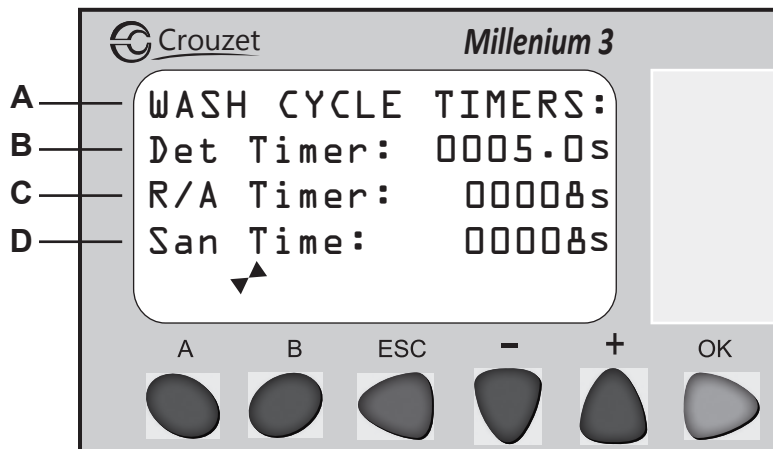
**SCREEN 4: WASH CYCLE TIMERS 1** Screen 4 is the first “Wash Cycle Timers” screen and allows the user to edit the wash, rinse, and drain timers for the initial wash cycle.



1. Line B shows the wash time.
  - Press + or - to highlight line B.
  - Press OK to enter highlight mode.
  - Press + or - to make any adjustments needed.
    - \* **Wash Time: 75 to 268 seconds.**
  - Press OK to confirm adjustments.
2. Line C shows the rinse time.
  - Press + or - to highlight line C.
  - Press OK to enter highlight mode.
  - Press + or - to make any adjustments needed.
    - \* **Rinse Time: 8.5 to 13 seconds.**
  - Press OK to confirm adjustments.
3. Line D shows the drain time.
  - Press + or - to highlight line D.
  - Press OK to enter highlight mode.
  - Press + or - to make any adjustments needed.
    - \* **Drain Time: 8 to 15 seconds.**
  - Press OK to confirm adjustments.

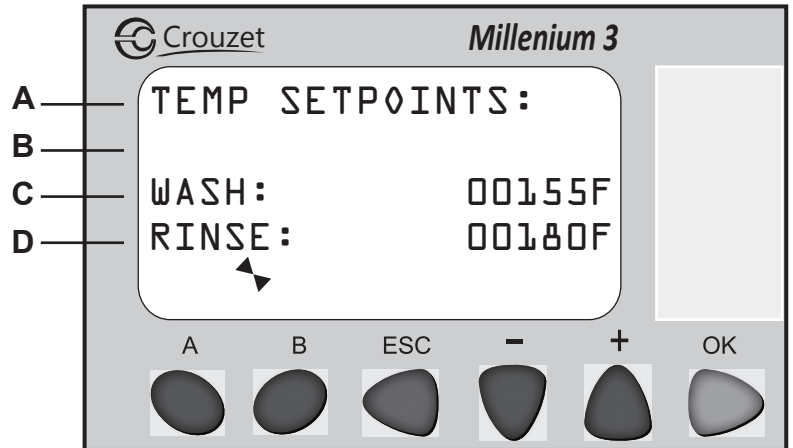
**SCREEN 5:  
WASH CYCLE  
TIMERS 2**

Screen 5 is the second "Wash Cycle Timers" screen and allows the user to edit the detergent and rinse-aid timers for the initial wash cycle.



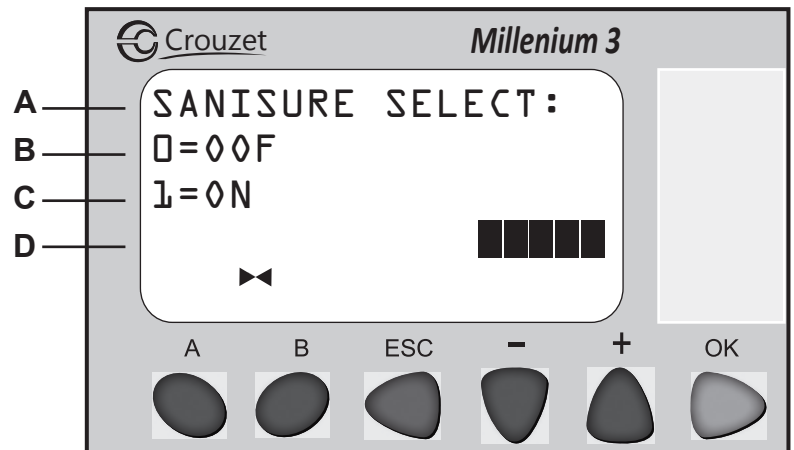
1. Line B shows the detergent time.
  - Press + or - to highlight line B.
  - Press OK to enter highlight mode.
  - Press + or - to make any adjustments needed.
    - \* **Detergent Time: 5 to 10 seconds.**
  - Press OK to confirm adjustments.
  
2. Line C shows the rinse-aid time.
  - Press + or - to highlight line C.
  - Press OK to enter highlight mode.
  - Press + or - to make any adjustments needed.
    - \* **Rinse Aid Time: 8 to 12 seconds.**
  - Press OK to confirm adjustments.

**SCREEN 6: TEMPERATURE SETPOINTS** Screen 6 is the "Temperature Setpoints" screen and allows the user to edit the wash tank, top rinse tank, and bottom rinse tank temperatures.



1. Line C shows the wash tank temperature.
  - Press + or - to highlight line C.
  - Press OK to enter highlight mode.
  - Press + or - to make any adjustments needed.
    - \* **Wash Tank Temperature: 155 °F to 175 °F (68 °C to 79 °C).**
  - Press OK to confirm adjustments.
  
2. Line D shows the rinse tank temperature.
  - Press + or - to highlight line D.
  - Press OK to enter highlight mode.
  - Press + or - to make any adjustments needed.
    - \* **Rinse Tank Temperature: 170 °F to 190 °F (77 °C to 88 °C).**
  - Press OK to confirm adjustments.

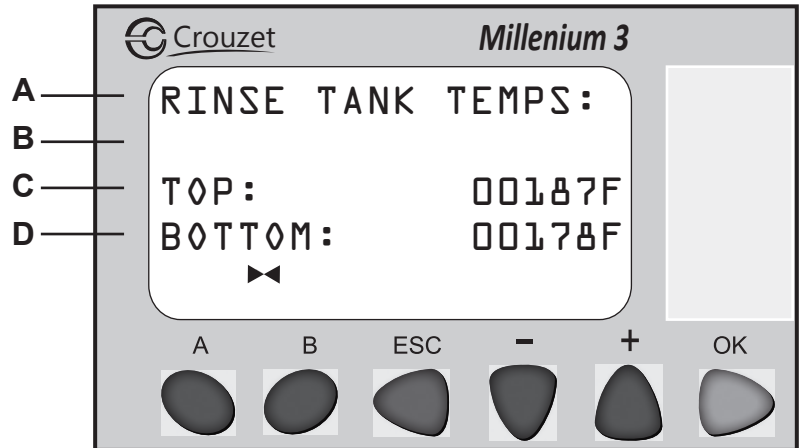
**SCREEN 7: SANISURE SELECT** The "SaniSure Select" screen allows the user to turn SaniSure™ on or off. SaniSure™ ensures the rinse temperatures are high enough to achieve sanitization.



1. Line B shows the off option.
  - Press + or - to highlight line B.
  - Press OK to turn SaniSure™ off and reset Fault 5.
2. Line C shows the on option.
  - Press + or - to highlight line C.
  - Press OK to turn SaniSure™ on.
3. Line D will display the SaniSure™ status.

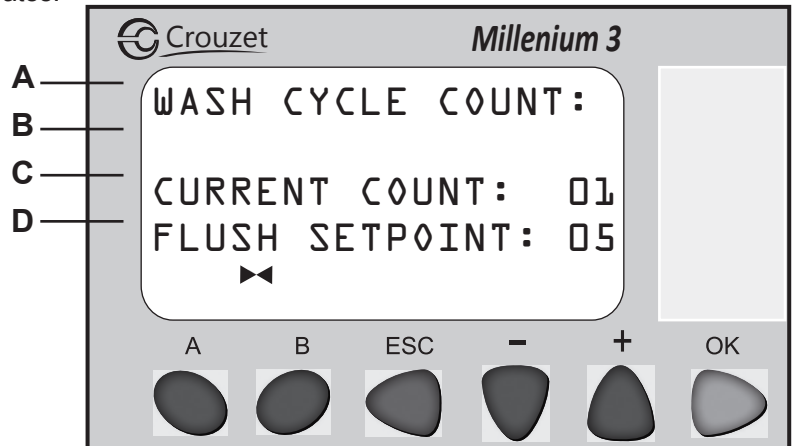


**SCREEN 8: RINSE TANK TEMPERATURES** The "Rinse Tank Temperatures" screen allows the user to see the temperature readings in the top and bottom rinse tanks.



1. Line C shows the current temperature reading of the top booster tank.
2. Line D shows the current temperature reading of the bottom booster tank.

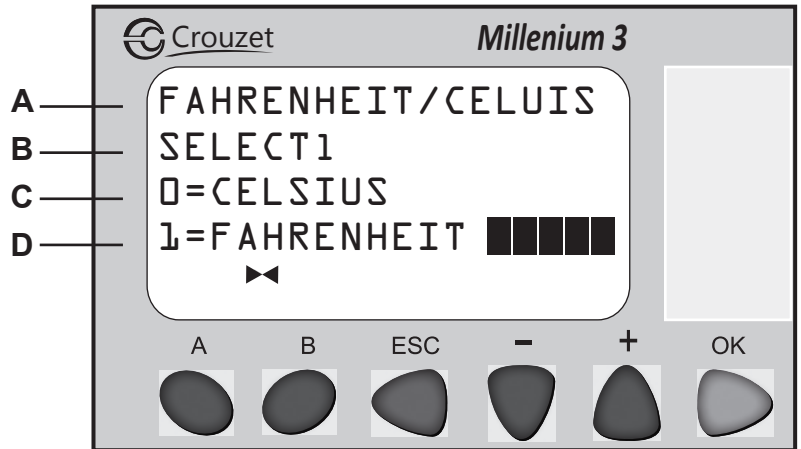
**SCREEN 9: WASH CYCLE COUNT** The "Wash Cycle Count" screen allows the user to see the number of cycles since the last complete tub drain and edit the number of cycles that perform before the "flush" light activates.



1. Line C displays the number of cycles since the last "flush" or complete tub drain.
2. Line D shows the number of cycles that perform before the "flush" light activates.
  - Press + or - to highlight line D.
  - Press OK to enter highlight mode.
  - Press + or - to make any adjustments needed.
    - \* **Flush Setpoint: 5 to 30**
  - Press OK to confirm adjustments.
  - When flush light is activated, user should remove the standpipe and drain the tub.

**SCREEN 10:  
TEMPERATURE  
SELECT**

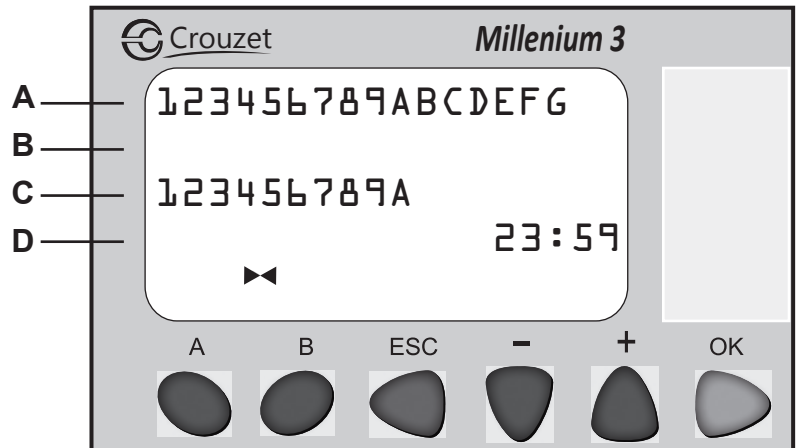
The temperature select screen allows the user to select how temperatures are read, either in Celsius or Fahrenheit.



1. Line C shows the Celsius option.
  - Press + or - to highlight line C.
  - Press OK to allow display to read temperatures in Celsius.
2. Line D shows the Fahrenheit option.
  - Press + or - to highlight line D.
  - Press OK to allow display to read temperatures in Fahrenheit.

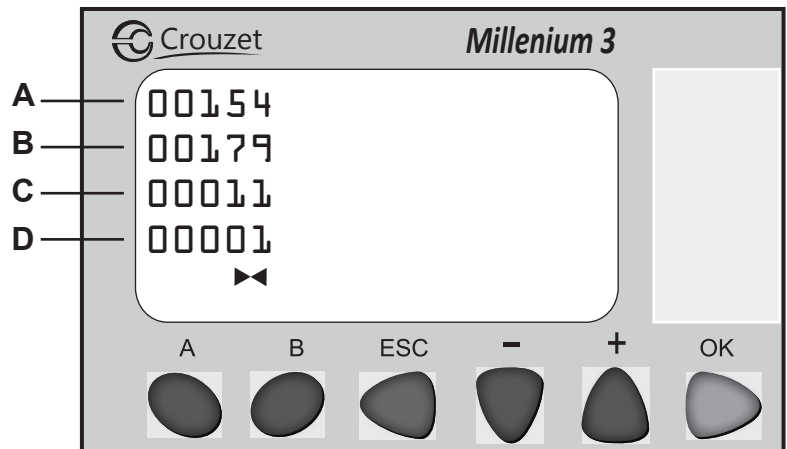
**SCREEN 11:  
INPUT/OUTPUT**

The input/output screen shows inputs and outputs that are active.



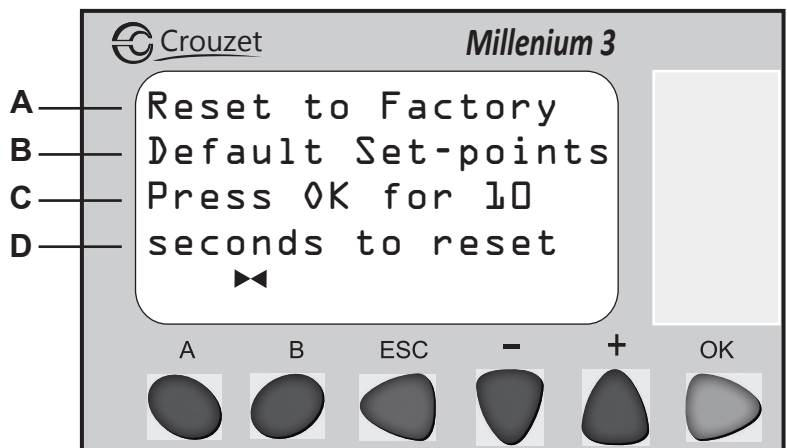
1. Line A (inputs) will highlight when the connected component sends a signal to the PLC. Multiple inputs can be highlighted at the same time.
2. Line C (outputs) will highlight when the PLC closes specific relays. Multiple outputs can be highlighted at the same time.

**SCREEN 12:** Screen 13 shows the wash, rinse injector, pressure and temperature readings.  
**WASH,  
 RINSE INJECTOR,  
 PRESSURE AND  
 TEMPERATURE  
 READINGS**

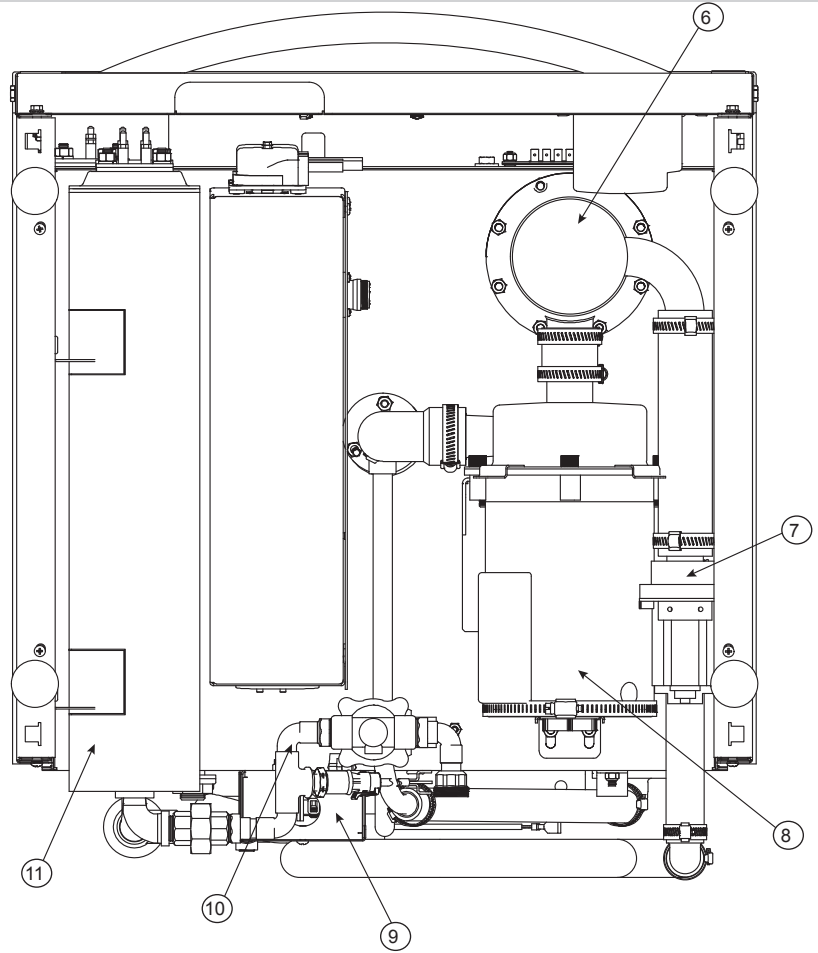
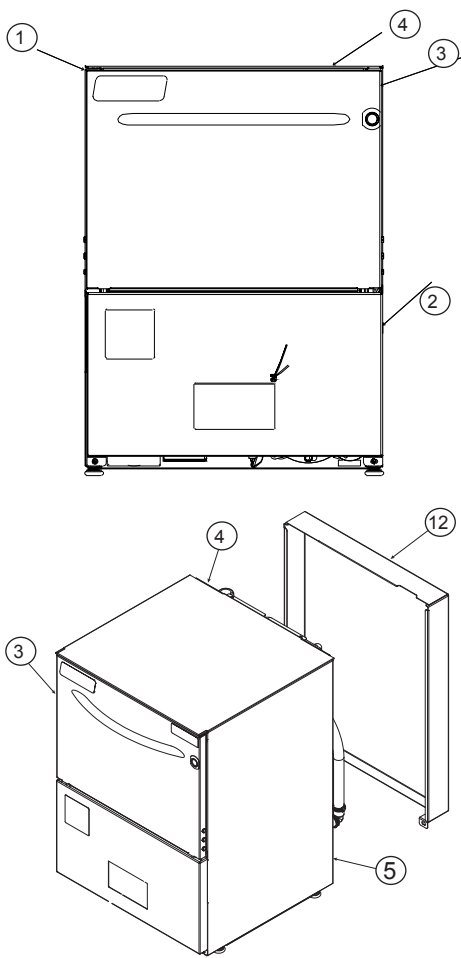


1. Line A shows a reading of the wash RTD.
2. Line B shows a reading of the rinse injector RTD.
3. Line C shows a reading from the pressure transducer.
4. Line D shows if temperature is displaying in Celsius (0) or Fahrenheit (1).

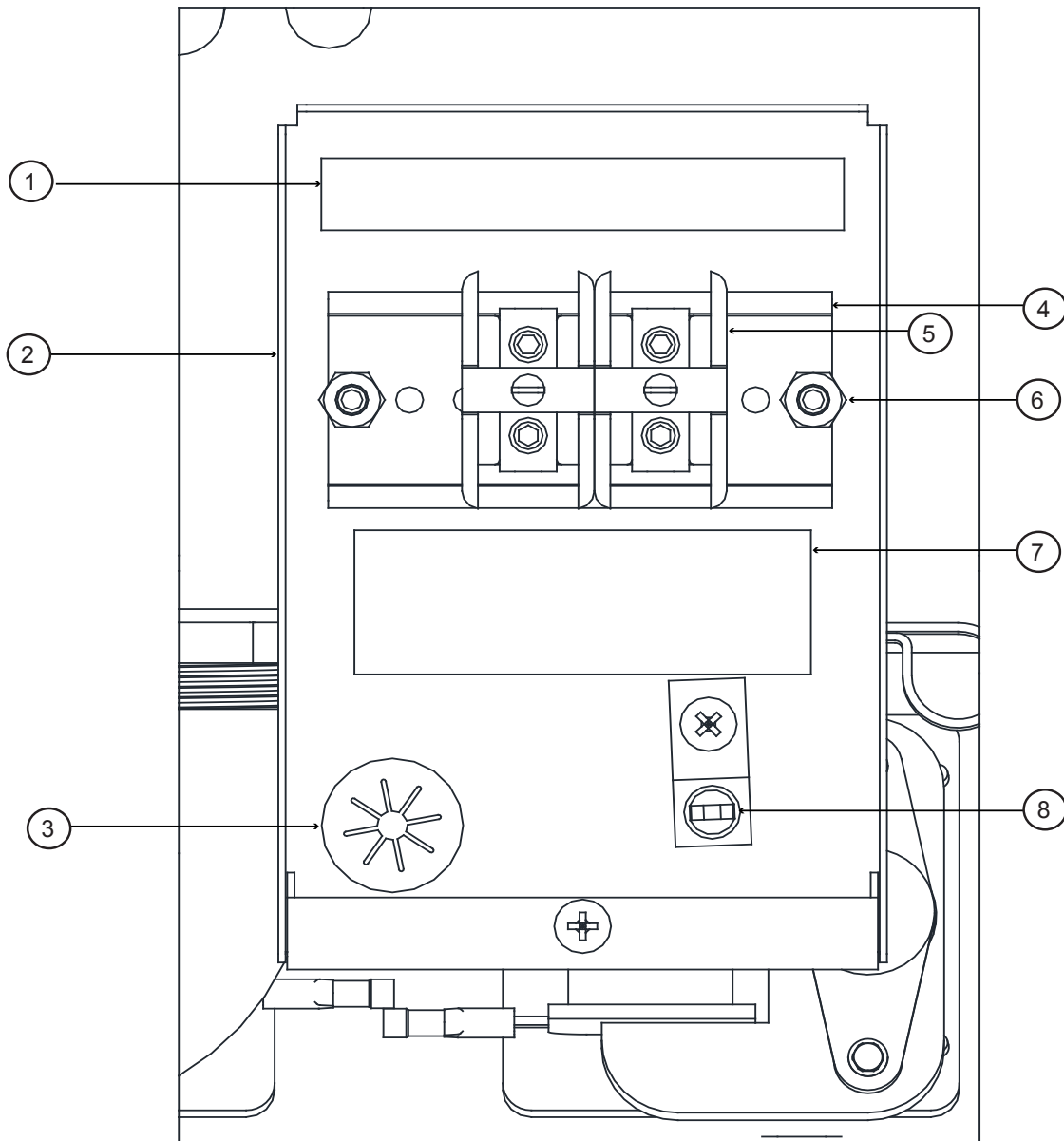
**SCREEN 13:** The "Reset to Factory" screen allows the user to reset the machine to factory default settings.  
**RESET TO FACTORY**



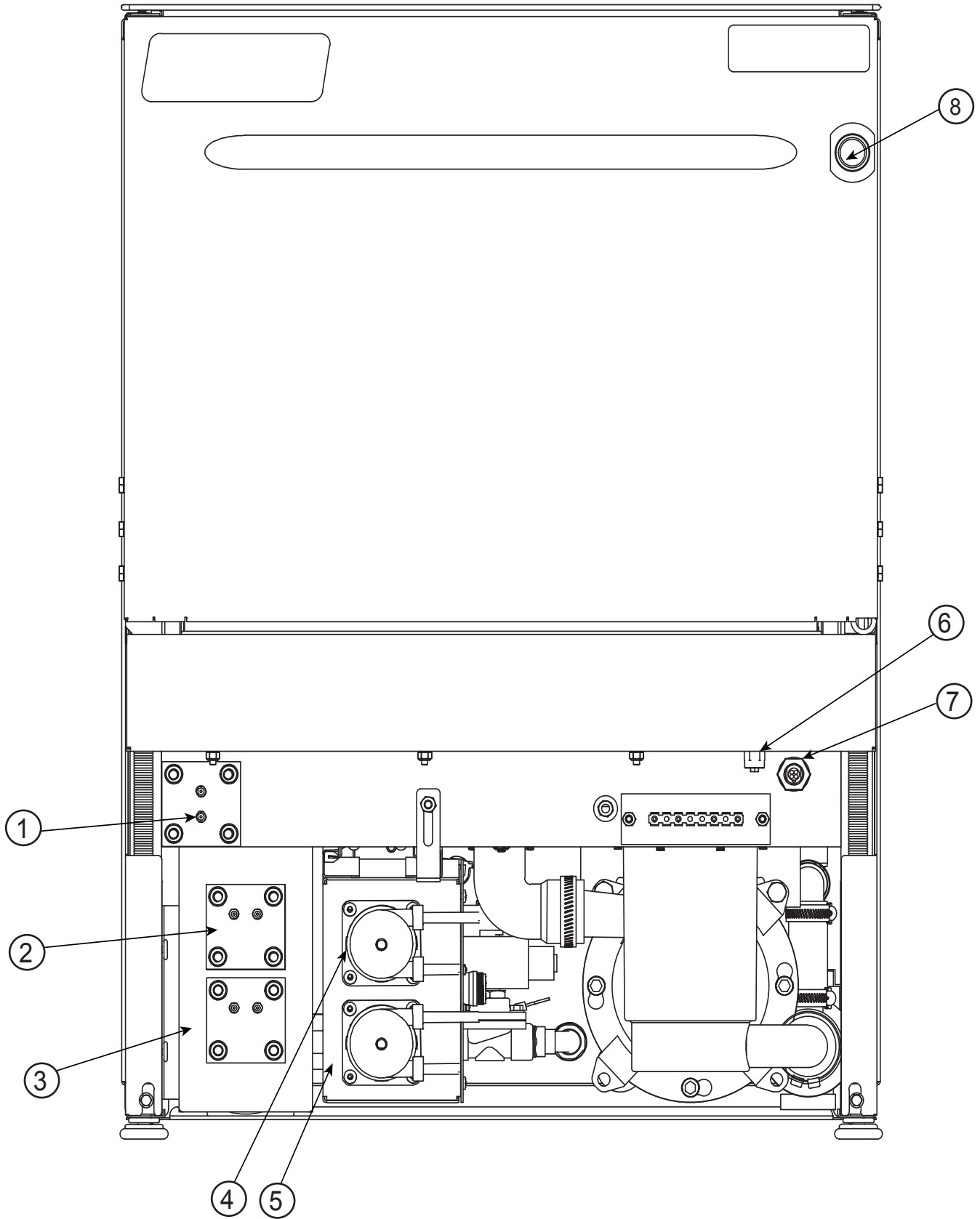
1. Press OK for 10 seconds on screen 13 to reset timer to default settings.



ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Left Shroud	05700-003-37-04
2	1	Kick Panel Assembly	05700-004-05-62
3	1	Door Assembly	05700-004-04-21
4	1	Shroud Top	05700-003-37-06
5	1	Shroud Right	05700-003-37-05
6	1	Sump	05700-004-02-94
7	1	Drain Pump - 208 V	04730-003-91-41
		Drain Pump - 480 V	04730-004-18-40
8	1	Wash Motor Assembly - 208 V	05700-004-04-04
		Wash Motor Assembly - 480 V	05700-004-19-74
9	1	Terminal Block Box Cover	05700-003-27-70
10	1	Inlet Plumbing - 208 V	05700-004-09-03
		Inlet Plumbing - 480 V	05700-004-11-43
11	1	Booster Assembly	05700-004-01-15
12	1	Rear Dress Panel (Optional)	05700-004-23-52



ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Power Connection Decal	09905-011-47-35
2	1	Terminal Block Box	05700-003-27-69
	1	Terminal Box Cover (not shown)	05700-003-27-70
3	1	Strain Relief	05975-003-37-56
4	1	Terminal Block Track	05700-000-43-60
5	2	Terminal Block	05940-500-02-19
6	2	10-24 Lock Nut	05310-373-01-00
7	1	Copper Conductors Decal	09905-011-62-72
8	1	Ground Lug	05940-200-76-00

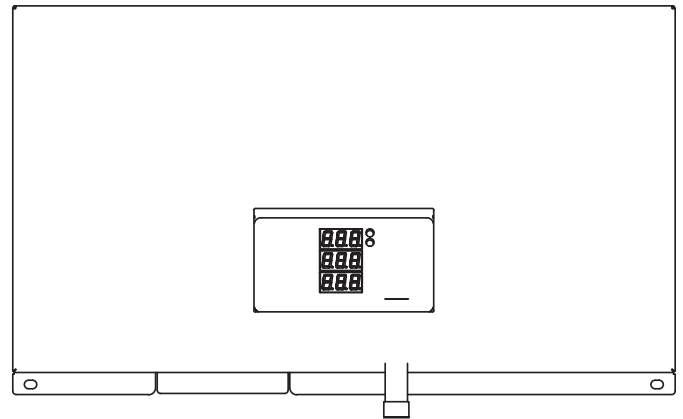


ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Wash Heater, 4 kW	04540-003-99-44
		**480 V Heater	04540-004-12-29
2	3	Heater Gasket	05330-011-61-34
	1	**480 V Heater Gasket	05330-004-13-19
3	1	Rinse Booster (see Rinse Tank Assembly)	05700-004-01-15
4	1	Chemical Pump w/Squeeze Tube	04320-004-10-39
5	1	Control Box	05700-004-11-31
6	1	Vertical Float Switch	05930-011-48-98
7	1	Horizontal Float Switch	06680-004-05-50
8	1	Start Button	05930-004-04-22

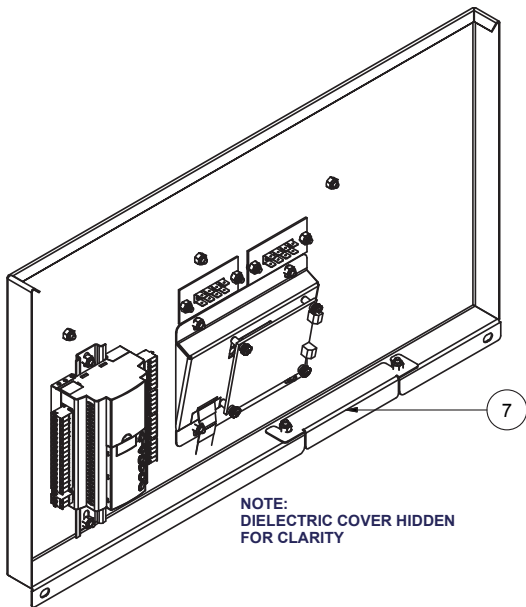
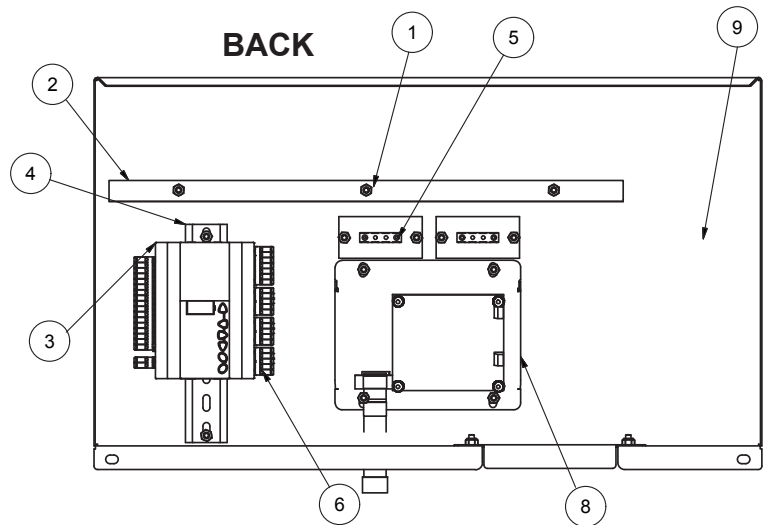
\*\* Models with 480 V Control Box

**Control Panel Complete Assembly  
05700-004-05-62**

**FRONT**



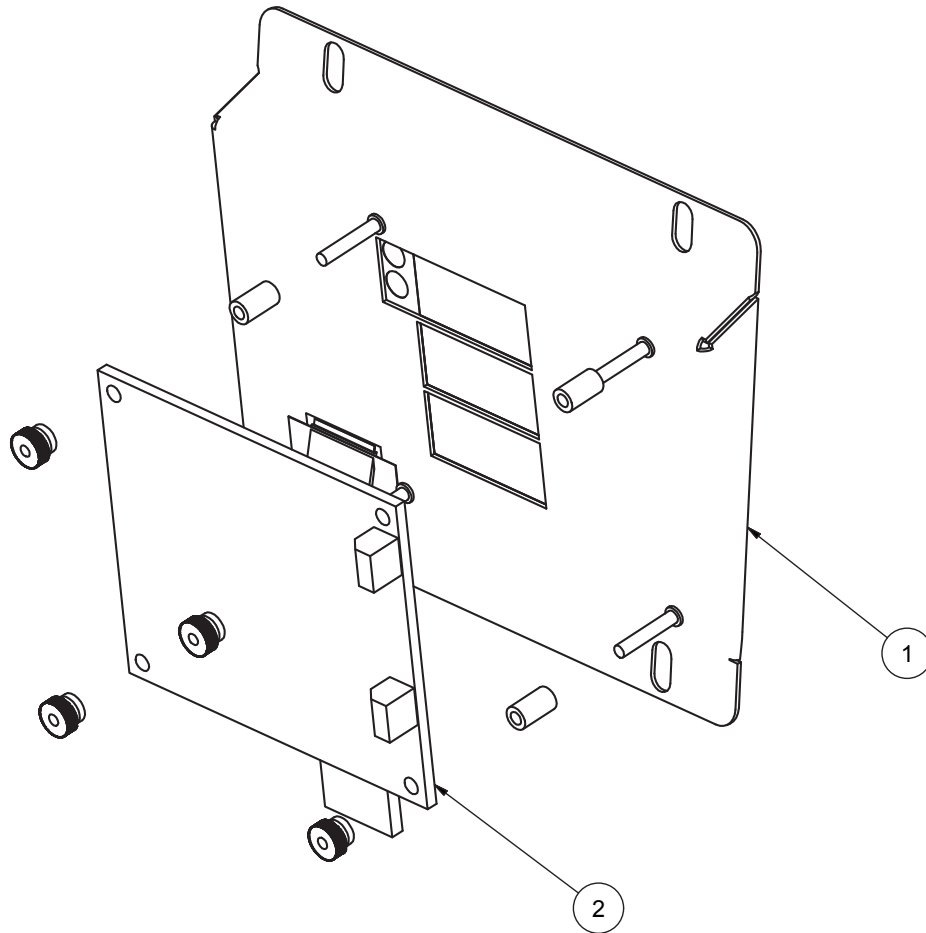
**BACK**



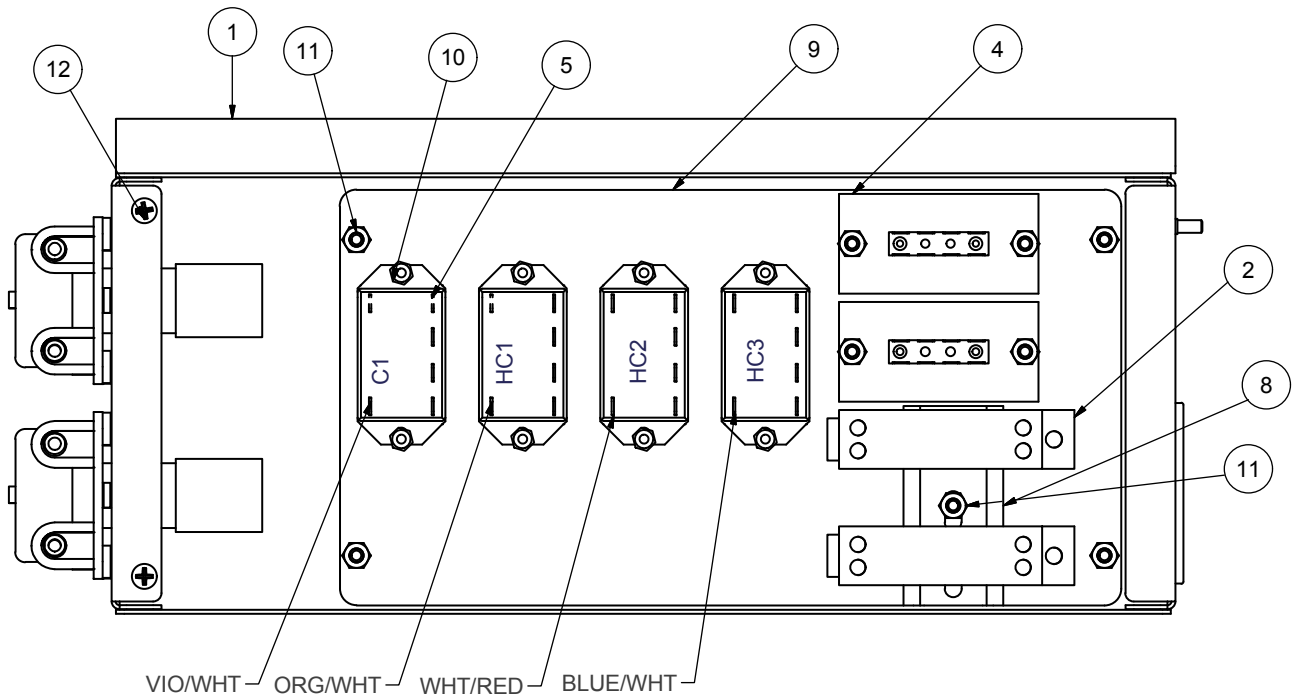
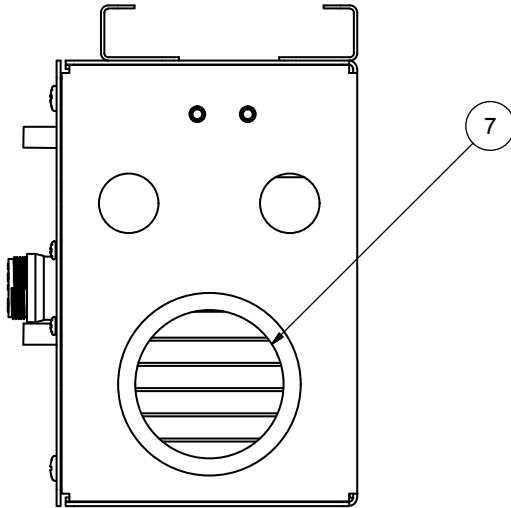
NOTE:  
DIELECTRIC COVER HIDDEN  
FOR CLARITY

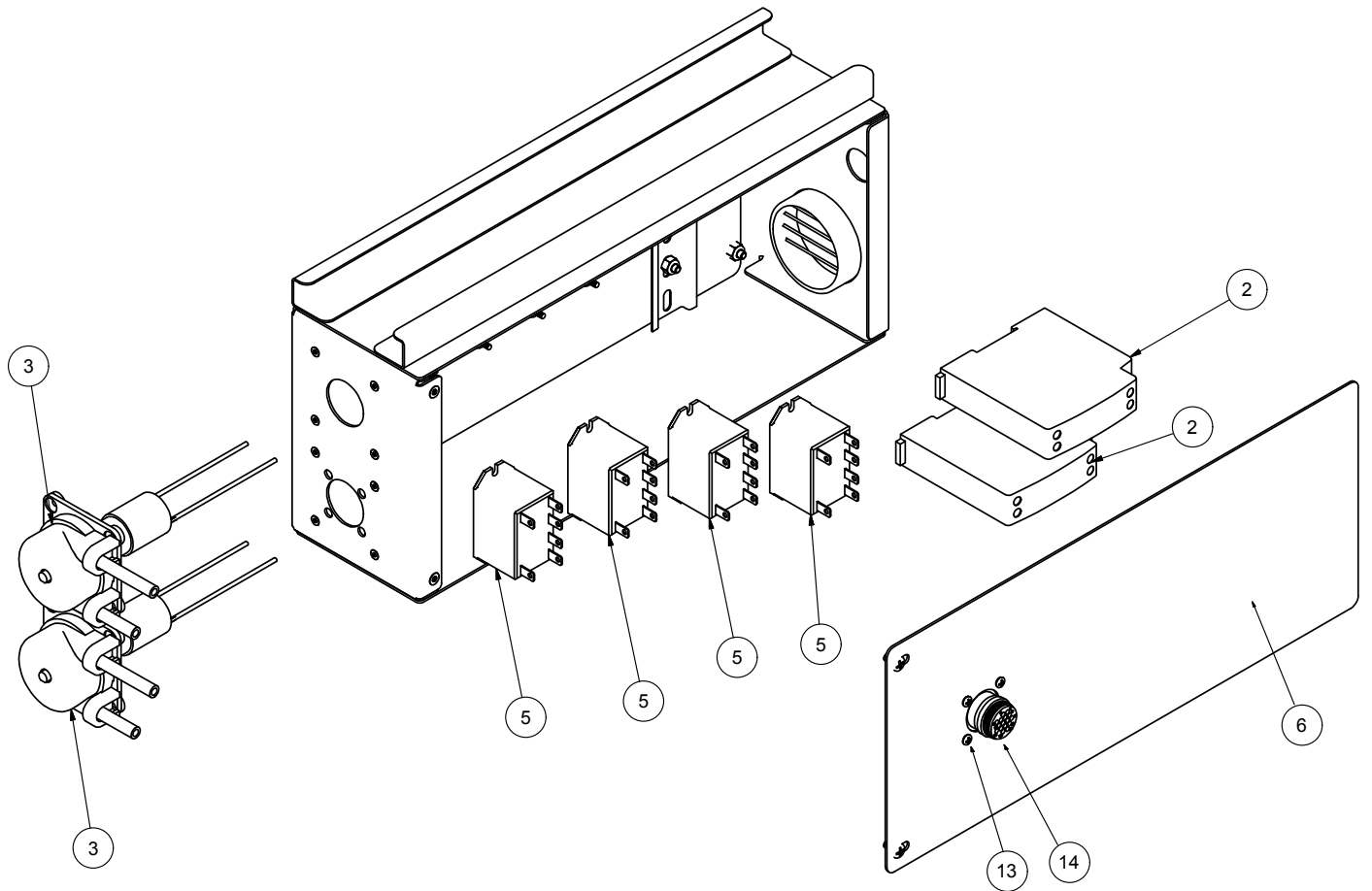
ITEM	QTY	DESCRIPTION	PART NUMBER
1	16	Lock Nut 10-24 S/S Hex w/ Nylon Insert	05310-373-01-00
2	1	Dielectric Cover	05700-004-06-12
3	1	PLC Controller	05700-004-17-68
4	1	Din Rail	05700-021-94-96
5	2	Terminal Board, 4 POS	05940-021-94-85
6	1	Terminals, 88970317 M3 MA SET XD26 RBT	05700-004-05-08
7	1	Access Panel Cover	05700-004-11-27
8	1	Control Panel, Switch/Temp/Display	05700-004-27-00
9	1	Kick Panel Weldment	05700-004-04-28
10	1	Harness Switch to PLC (Not Shown)	05999-004-10-49



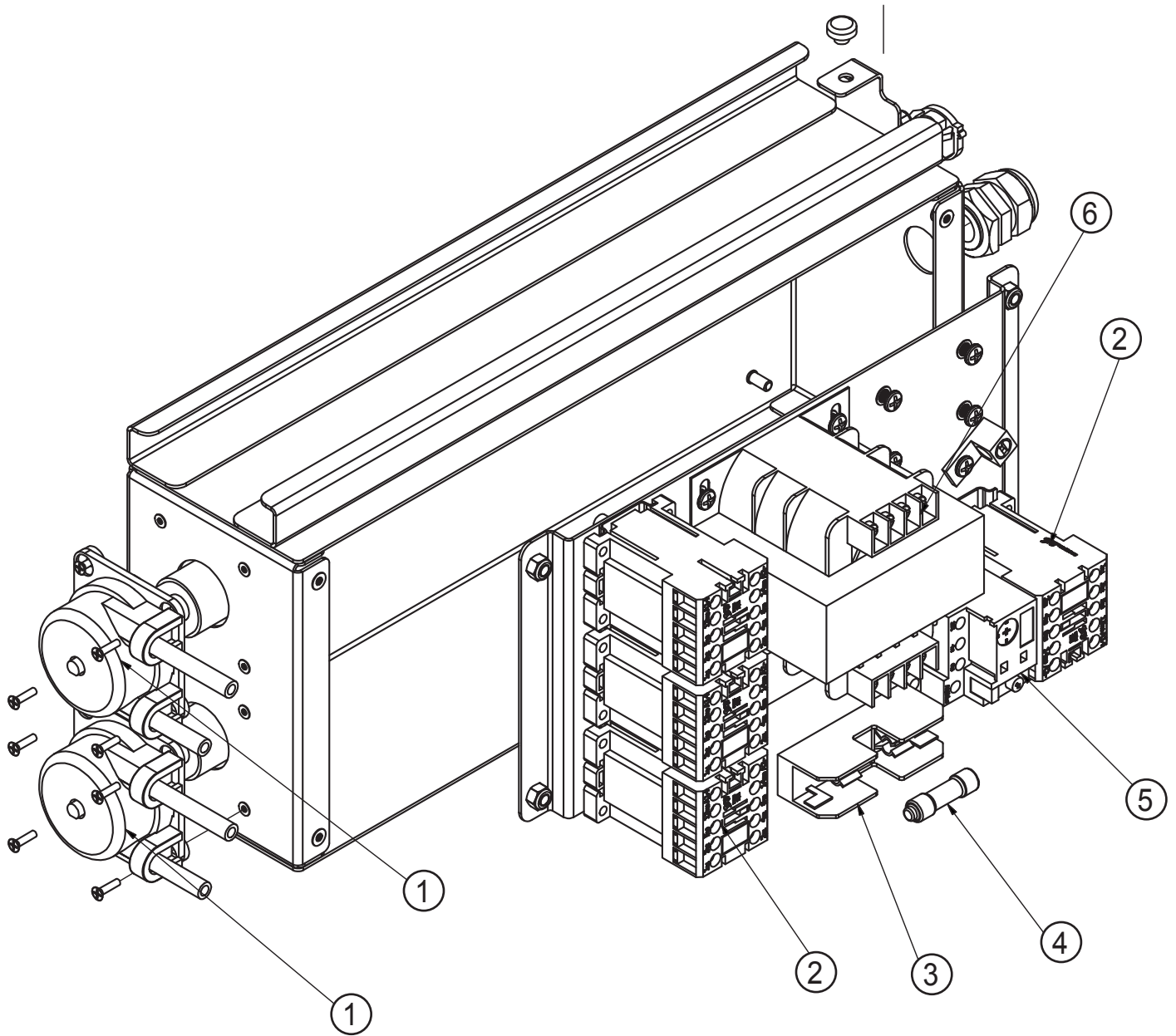


ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Control Panel, Membrane Switch Assembly	05700-004-00-10
2	1	Control Panel, Display Board Sub-parts	05700-004-26-99

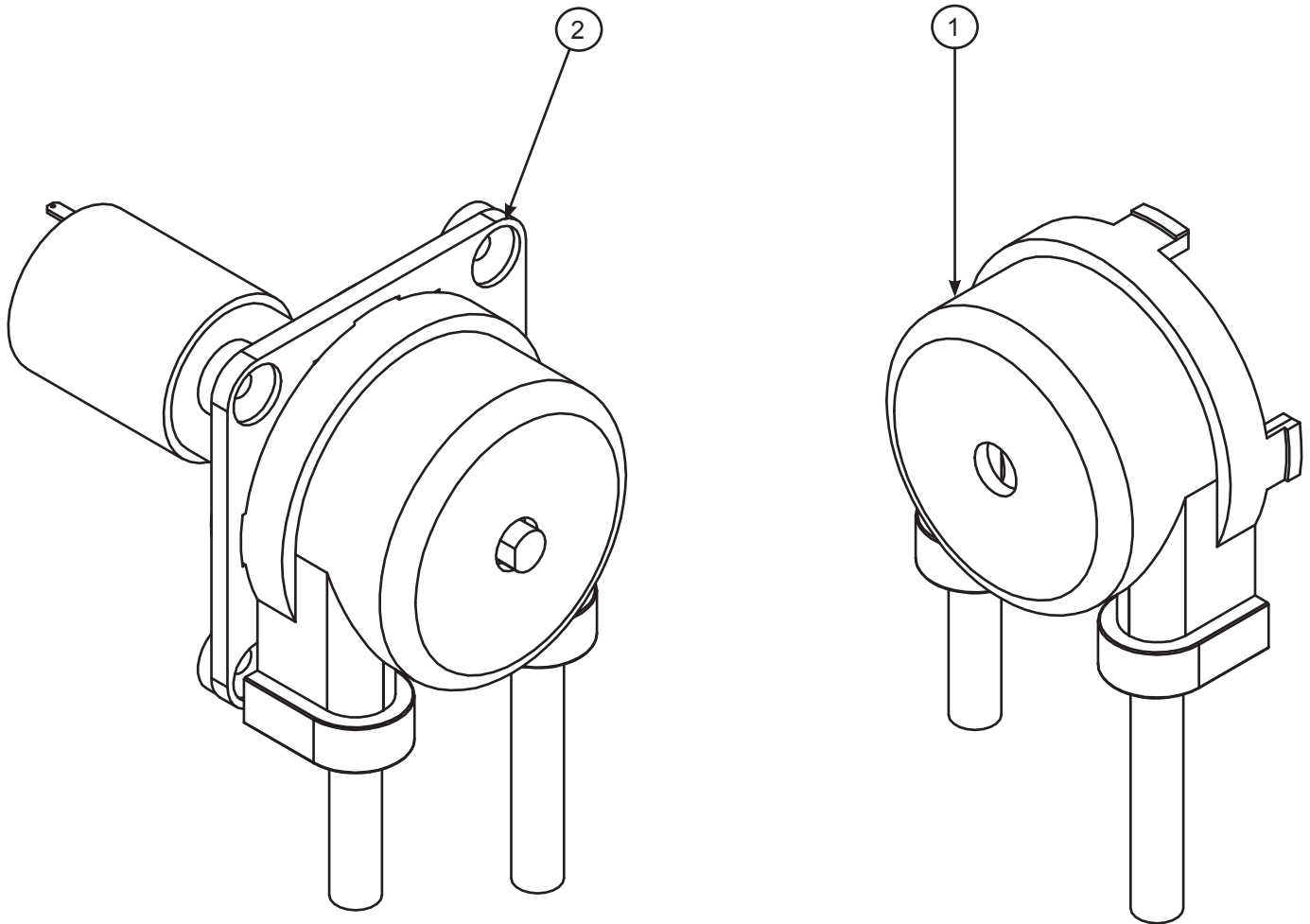




ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Control Box	05700-004-11-32
2	2	Power Supply, 100-240 VAC, 12 VDC, 1.2 A, 15 Watt	05950-004-11-16
3	2	Peri-pump, 36 RPM, 24 VDC	04320-004-09-56
4	2	Terminal Board	05940-021-94-85
5	4	Relay	05945-004-10-48
6	1	Control Box Cover	05700-004-11-39
7	1	Plug, 2.6" Louvered	05975-003-77-39
8	1	Din Rail, 3" Long	05700-011-84-65
9	1	Panel	05700-004-24-44
10	8	Lock Nut 6-32 Hex w/ Nylon Insert	05310-373-03-00
11	9	Lock Nut 10-24 S/S Hex w/ Nylon Insert	05310-373-01-00
12	2	Screw, 10-32 x 3/8" Phillips Pan Head	05305-173-26-00
13	4	Screw, 3/8" Pan Head	05305-171-02-00
14	1	Connector	05935-004-03-49

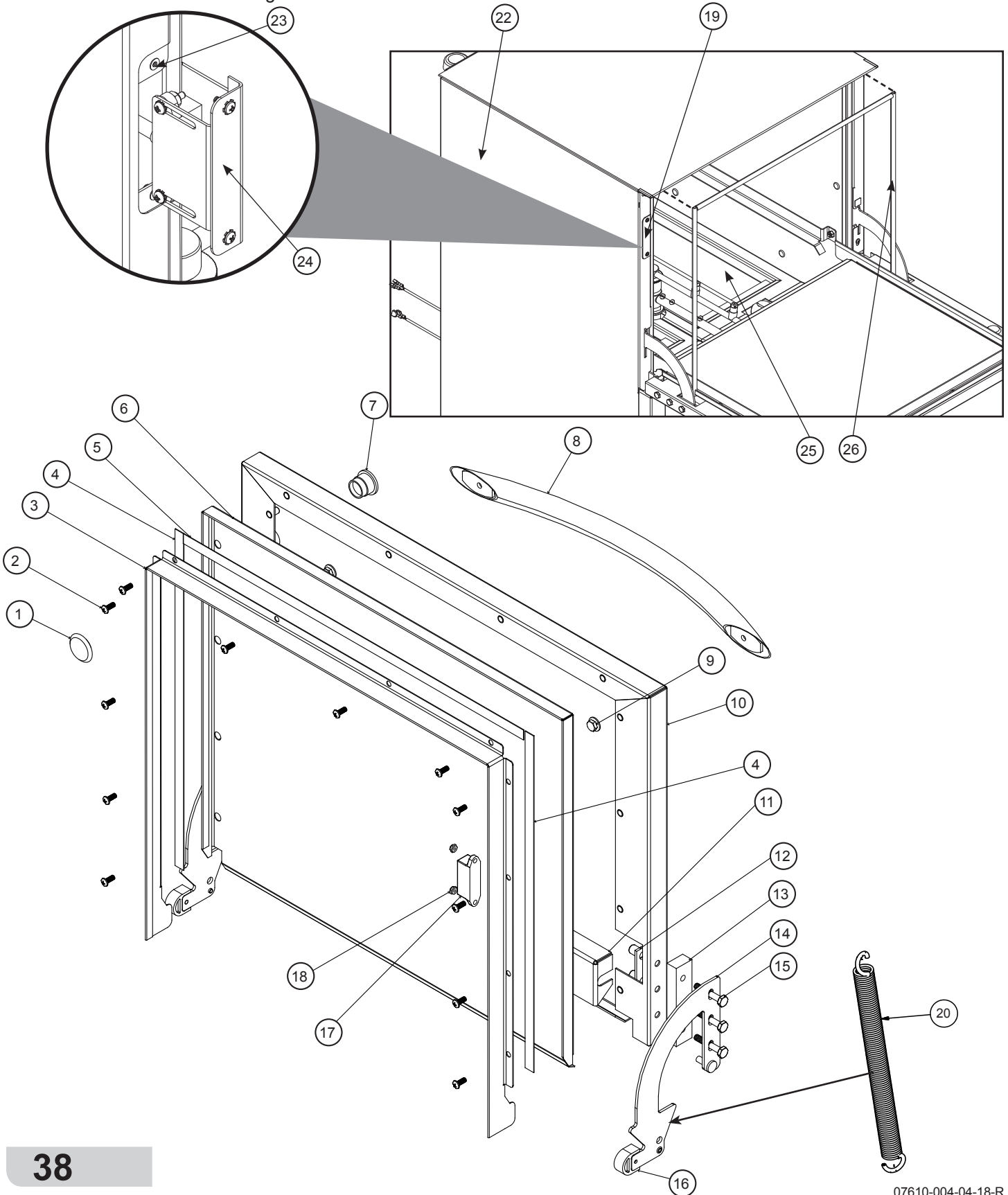


ITEM	QTY	DESCRIPTION	PART NUMBER
1	2	Peri-pump, 36 RPM, 24 VDC	04320-004-09-56
2	4	Contactors, 24 VDC, 460 V Max, 5 HP	05945-111-60-07
3	1	Fuse Holder	05920-011-72-89
4	1	Fuse, 1/2 A, FNQ-R-1/2 Bussman	05920-011-72-88
5	1	Overload, 10=14 A, 600 VAC Max, 5 HP	05945-111-60-08
6	1	Transformer 150 VA, 50/80 Hz	05950-011-50-70



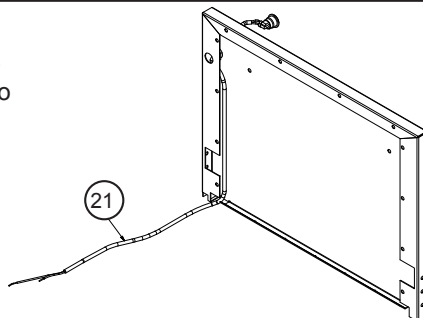
ITEM	QTY	DESCRIPTION	PART NUMBER
1	2	Chemical Pump w/Squeeze Tube	04320-004-10-39
2	2	Chemical Pump Complete Assembly w/Motor	04320-004-09-56

Door Reed Switch Enlarged

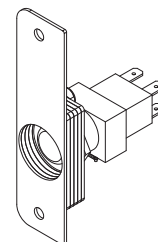


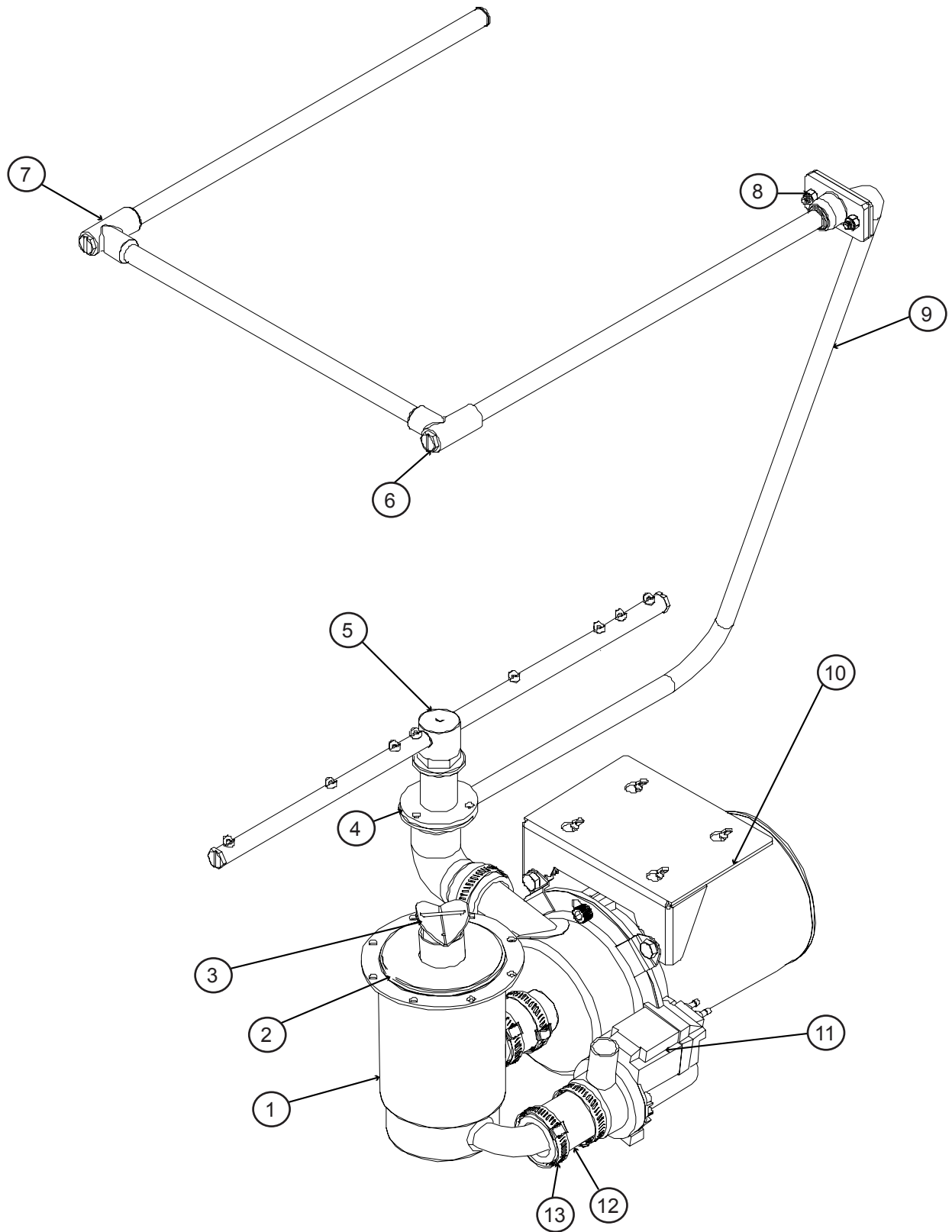
ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Flush Mount Plug	05975-004-04-36
2	12	10-32 x 1/2" Phillips Pan Head Screw	05305-173-12-00
3	1	Door Channel Seal	05700-003-55-49
4	2	Left and Right Door Gasket	05330-003-58-36
5	1	Top Door Gasket	05330-003-58-35
6	1	Inner Door	05700-003-33-21
7	1	Start Button	05930-004-04-22
8	1	Door Handle	05700-003-26-62
9	2	1/4-20 x 3/8" Hex Head Bolt	05305-274-20-00
10	1	Outer Door Weldment	05700-003-33-37
11	1	Door Baffle	05700-003-33-38
12	2	Retaining Plate	05700-011-44-37
13	2	Hinge Spacer	05700-003-33-42
14	1	Left Hinge Weldment	05700-003-32-71
15	6	1/4-20 x 1 1/2" Hex Head Screw	05305-173-23-00
16	2	Door Hinge Stop	05700-003-32-55
17	1	Door Magnet	05930-002-88-42
18	2	6/32" Locknut	05310-373-03-00
	1	Right Hinge Weldment (not shown)	05700-003-32-72
	2	10-32 x 1/4" Screw (not shown)	05305-173-01-00
	2	Washer (not shown)	05311-174-01-00
19	1	Door Reed Switch	05930-003-31-44
20	2	Door Spring Assembly	05700-003-32-85
21	1	2 Wire AVG Door Switch Cable	05700-004-08-26
22	1	Left Shroud	05700-003-37-04
23	1	Switch Mount Plate	05700-003-33-54
24	1	Door Switch and Bracket Assembly	05700-003-32-21
25	2	Scrap Basket	05700-004-09-43
26	1*	Tub Gasket	05330-004-14-08

\*Gasket will be received as one 5 1/2' piece and must be cut into three cut-to-fit pieces.



Complete Switch Mount Assembly  
06401-004-47-76



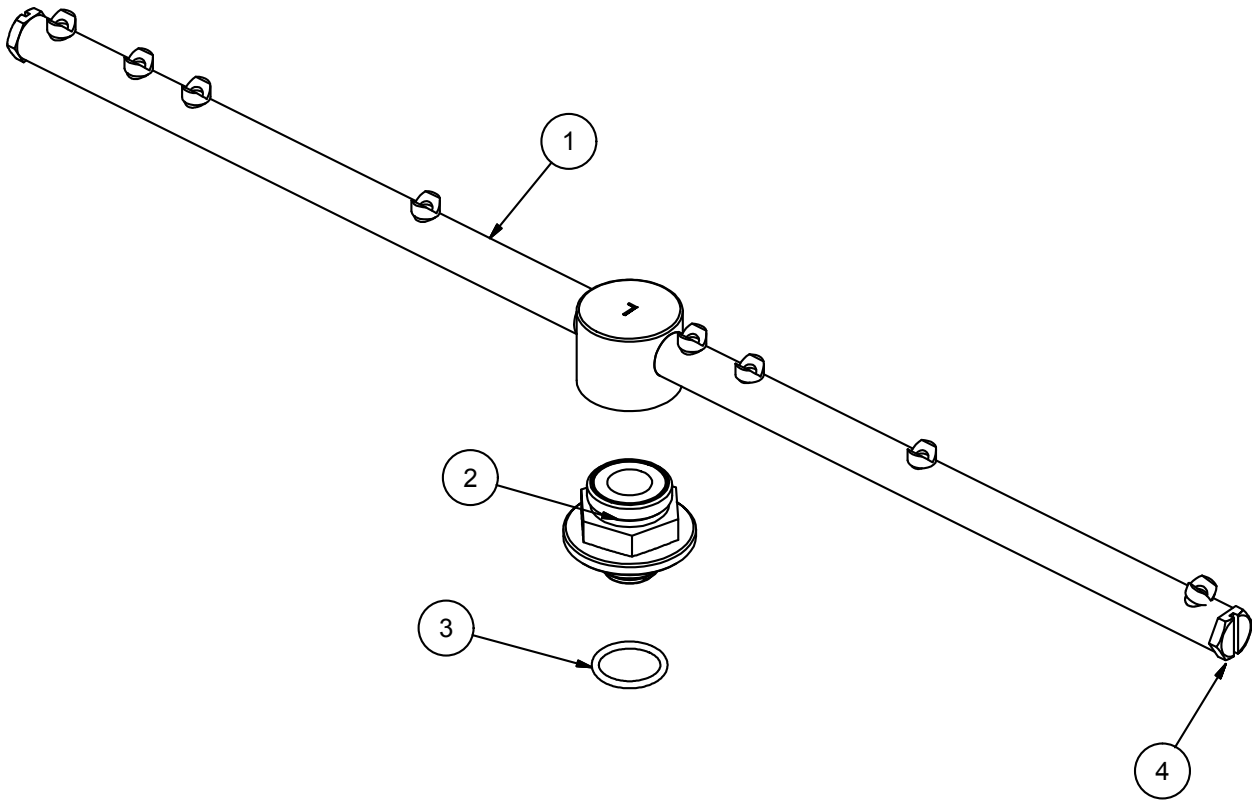




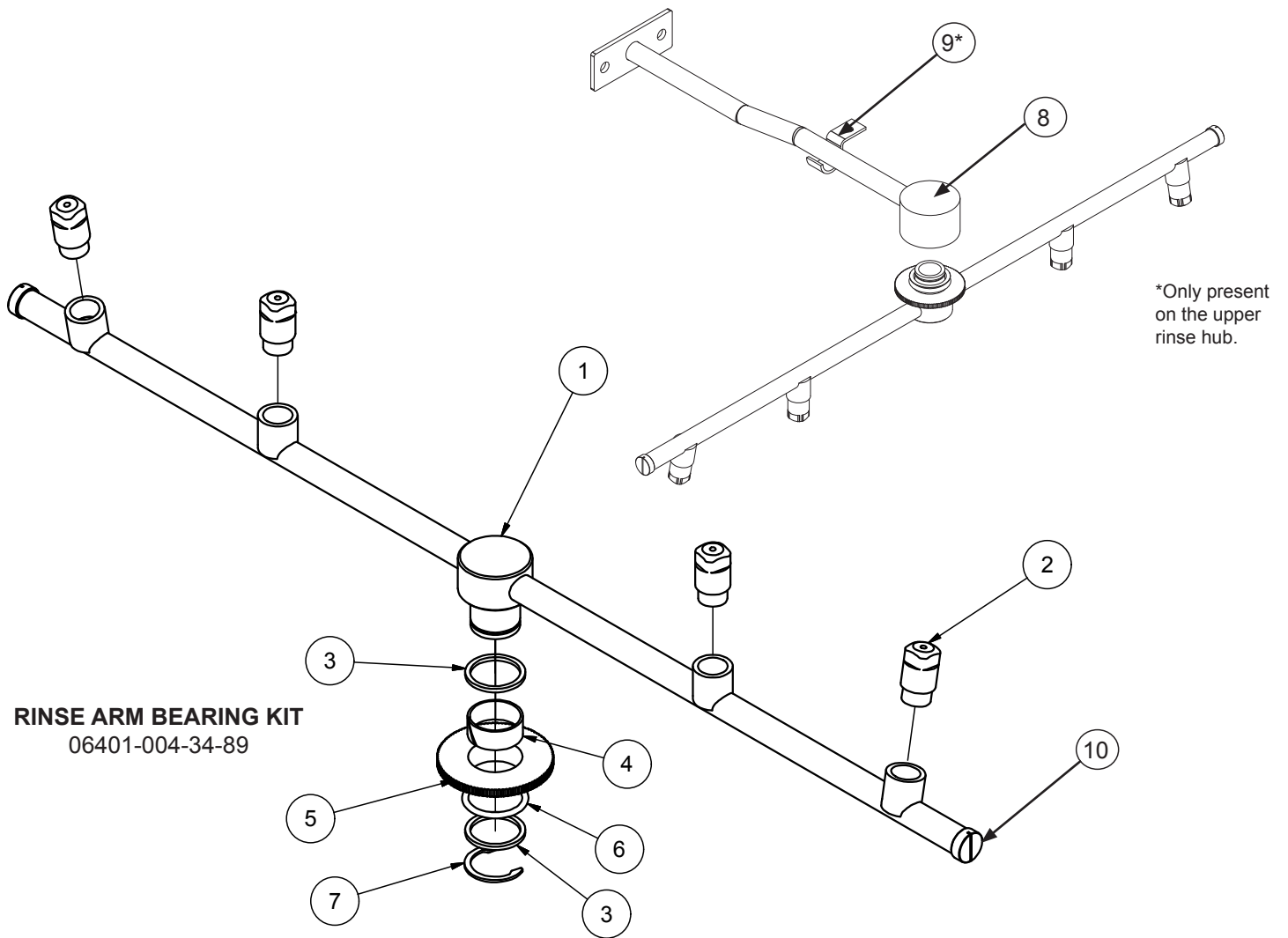
# WASH & DRAIN MOTOR ASSEMBLY

## PARTS

ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Sump	05700-004-02-94
2	1	Sump Strainer	05700-004-03-73
3	1	Stand Pipe	05700-004-04-40
4	1	Manifold Gasket	05330-002-34-77
5	2	Wash Arm Assembly	05700-021-39-23
6	4	Wash Arm End-cap	05700-011-35-92
7	1	Wash Halo	05700-004-03-22
8	39	Locknut, 1/4-20 Hex w/Nylon Insert	05310-374-01-00
9	1	Wash Manifold	05700-004-08-96
10	1	Pump Assembly w/Mounting Bracket and Hoses	05700-004-04-04
11	1	Drain Pump	04730-003-91-41
12	1	Drain Hose	05700-004-08-21
13	3	Clamp, Reg. Range 1 1/16" to 2"	04730-719-18-00



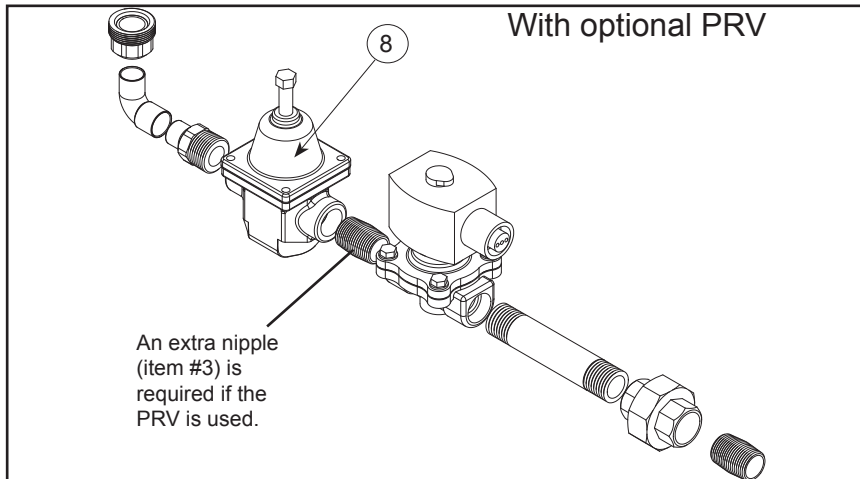
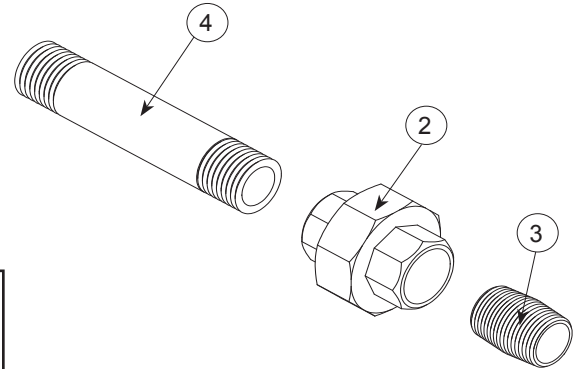
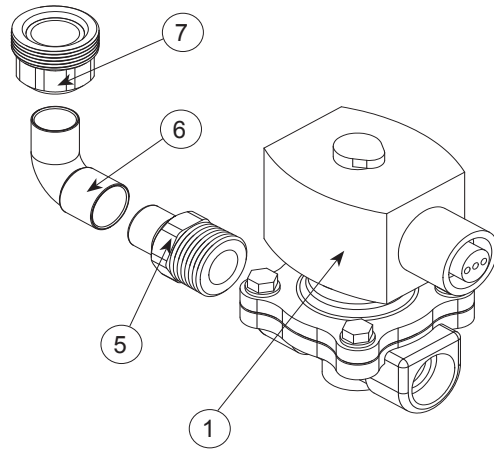
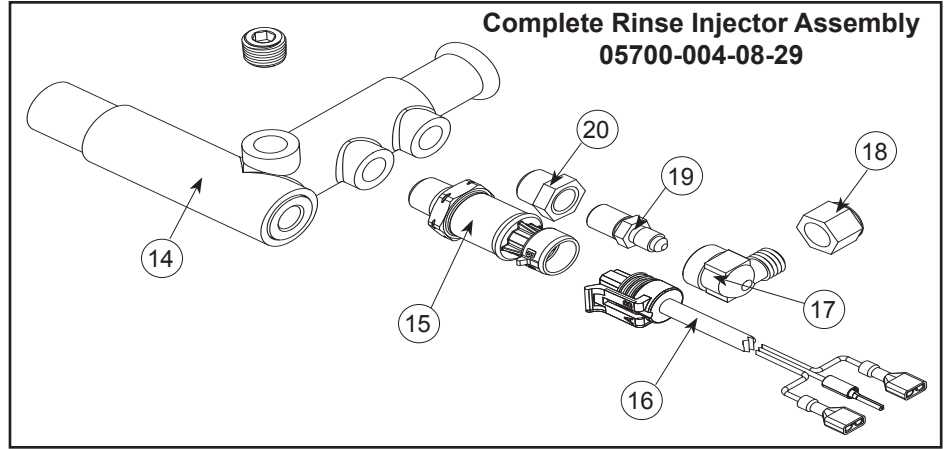
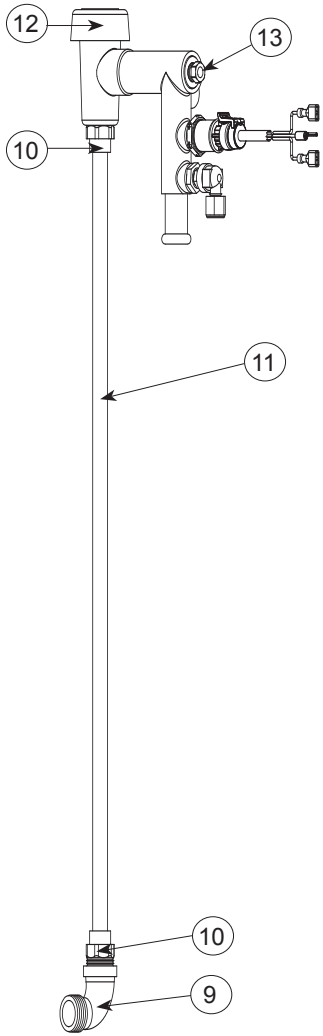
ITEM	QTY	DESCRIPTION	PART NUMBER
		Complete Wash Arm Assembly	05700-021-39-23
1	1	Wash Arm	05700-021-46-58
2	1	Bearing, Assembly	05700-021-35-97
3	1	O-Ring	05330-002-60-69
4	2	Wash Arm End-cap	05700-011-35-92



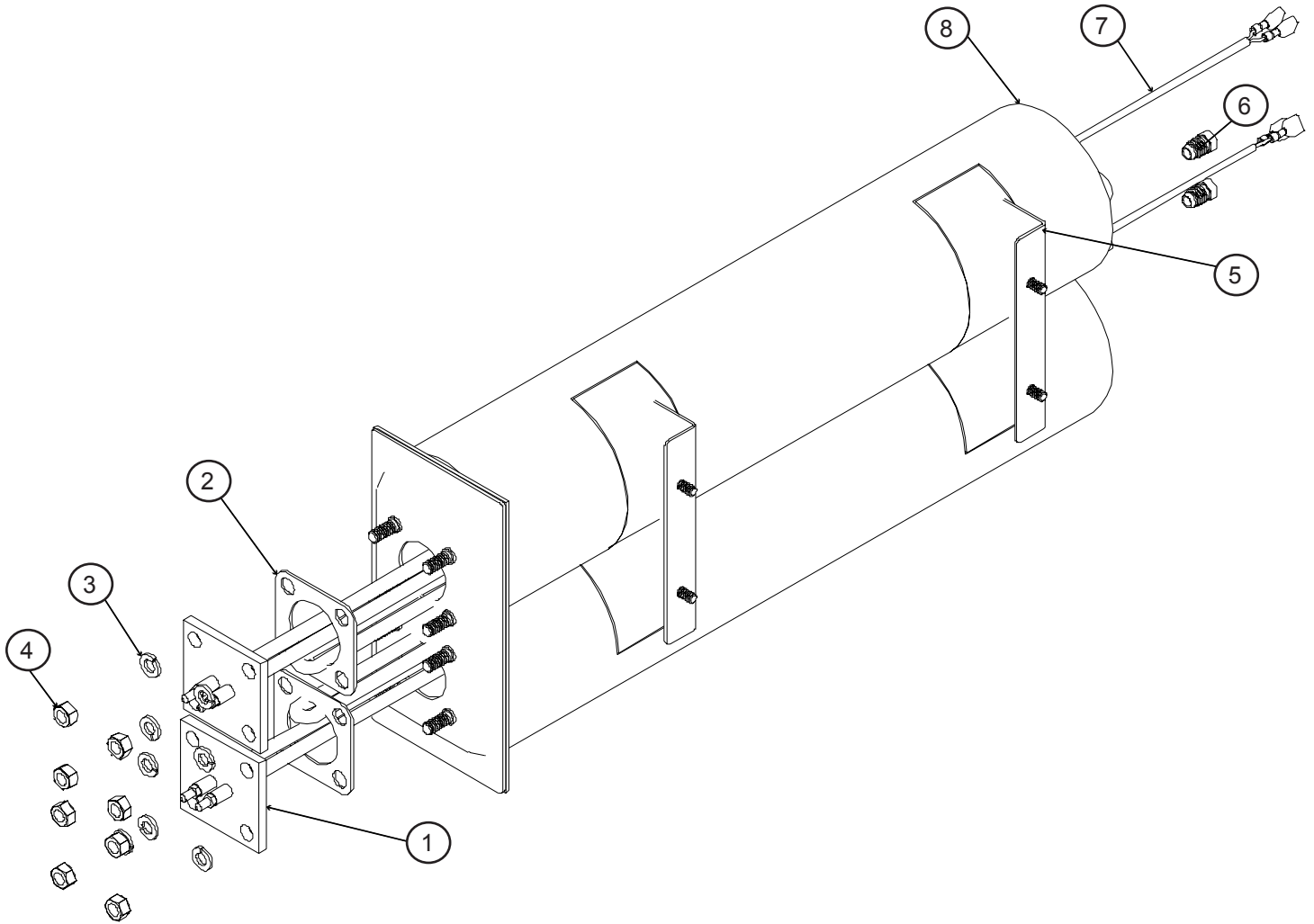
**RINSE ARM BEARING KIT**  
06401-004-34-89

\*Only present on the upper rinse hub.

ITEM	QTY	DESCRIPTION	PART NUMBER
	2	Complete Rinse Arm Assembly	05700-004-01-56
1	2	Rinse Arm	05700-004-05-23
2	8	Nozzle	04730-004-01-07
3	2	Washer, Rinse Arm	05330-011-42-10
4	2	Bearing, Rinse Arm	03120-004-12-13
5	2	Bushing, Rinse Head	05700-021-33-84
6	2	O-ring, Silicon	05330-002-60-69
7	2	Retaining Ring, Rinse Head Bushing	05340-112-01-11
8	2	Rinse Hub	05700-004-03-77
9*	1	Pipe Clamp 5/8"	05700-000-35-06
10	4	Rinse Arm End-cap	04730-111-60-41

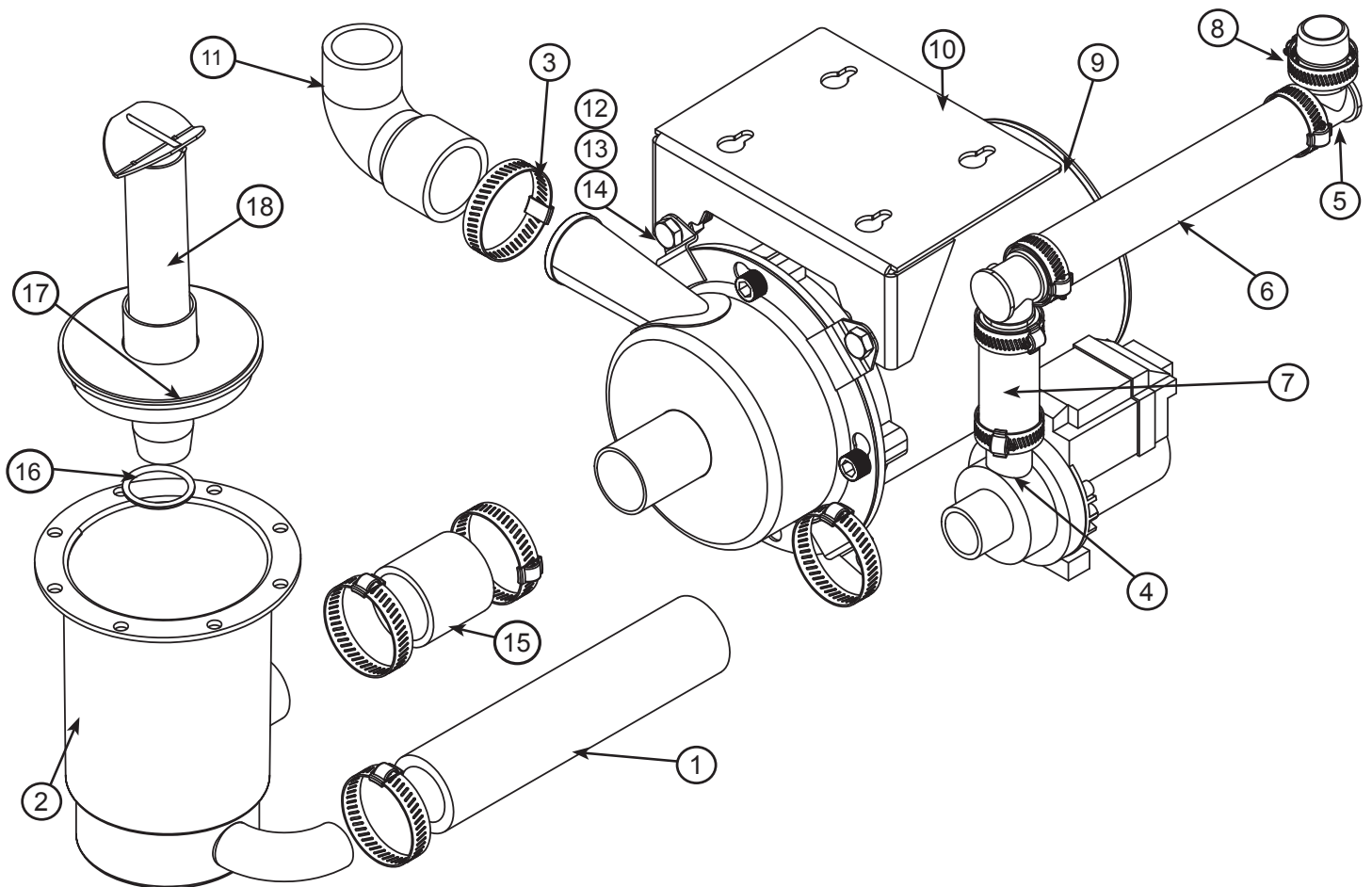


ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Valve, 1/2"	04810-003-71-56
2	1	Union, 1/2" x 1/2" Brass	04730-003-62-44
3	1	Nipple, 1/2" Close Brass	04730-207-15-00
4	1	Nipple, 1/2" x 4" NPT Brass	04730-207-04-00
5	1	Adapter, 1/2" Fitting, Male	04730-011-59-53
6	1	Elbow, 1/2" S. CU to FTG	04730-406-31-01
7	1	Hose Adapter	04720-004-24-68
8	1	PRV, 1/2" (Optional)	04820-004-09-37
9	1	Elbow, 90 Degree 1/2" Street Brass	04730-206-08-00
10	2	Adapter, Male (CU to MSPS)	04730-401-03-01
11	1	Copper Tube, 1/2" x 19.5" Long	05700-011-59-84
12	1	Vacuum Breaker, 1/2" Brass	04820-003-06-13
13	1	Fitting, 1/4" Brass Nut/Sleeve	05310-924-02-05
14	1	Rinse Injector	05700-004-08-28
15	1	Pressure Transducer	05945-004-17-01
16	1	Harness, Pressure Transducer	05999-004-21-58
17	1	Fitting, Outlet Elbow	04820-111-51-18
18	1	Nut, Tube 1/8" PP	04730-011-59-45
19	1	Check Valve	04820-111-51-14
20	1	Bushing, 1/4" x 1/8"	04730-003-05-61



ITEM	QTY	DESCRIPTION	PART NUMBER
1	2	Booster Heater, 2 kW	04540-003-98-38
	1	** 480 V Unit Booster Heater	04540-004-13-30
2	2	Heater Gasket	05330-011-61-34
	1	** 480 V Heater Gasket	05330-011-47-79
3	8	Lockwasher, Split 5/16" S/S	05311-275-01-00
4	8	Nut, Hex 5/16"-18 S/S	05310-275-01-00
5	1	Booster	05700-004-04-16
	1	** 480 V Booster	05700-004-13-25
6	2	Fitting, 1/4", Brass Nut/Sleeve	05310-924-02-05
7	2	Temperature Probe	06680-002-16-80
8	2	Insulation, Booster Tank Wrap	05700-004-09-57

\*\* Models with 480 V Control Box





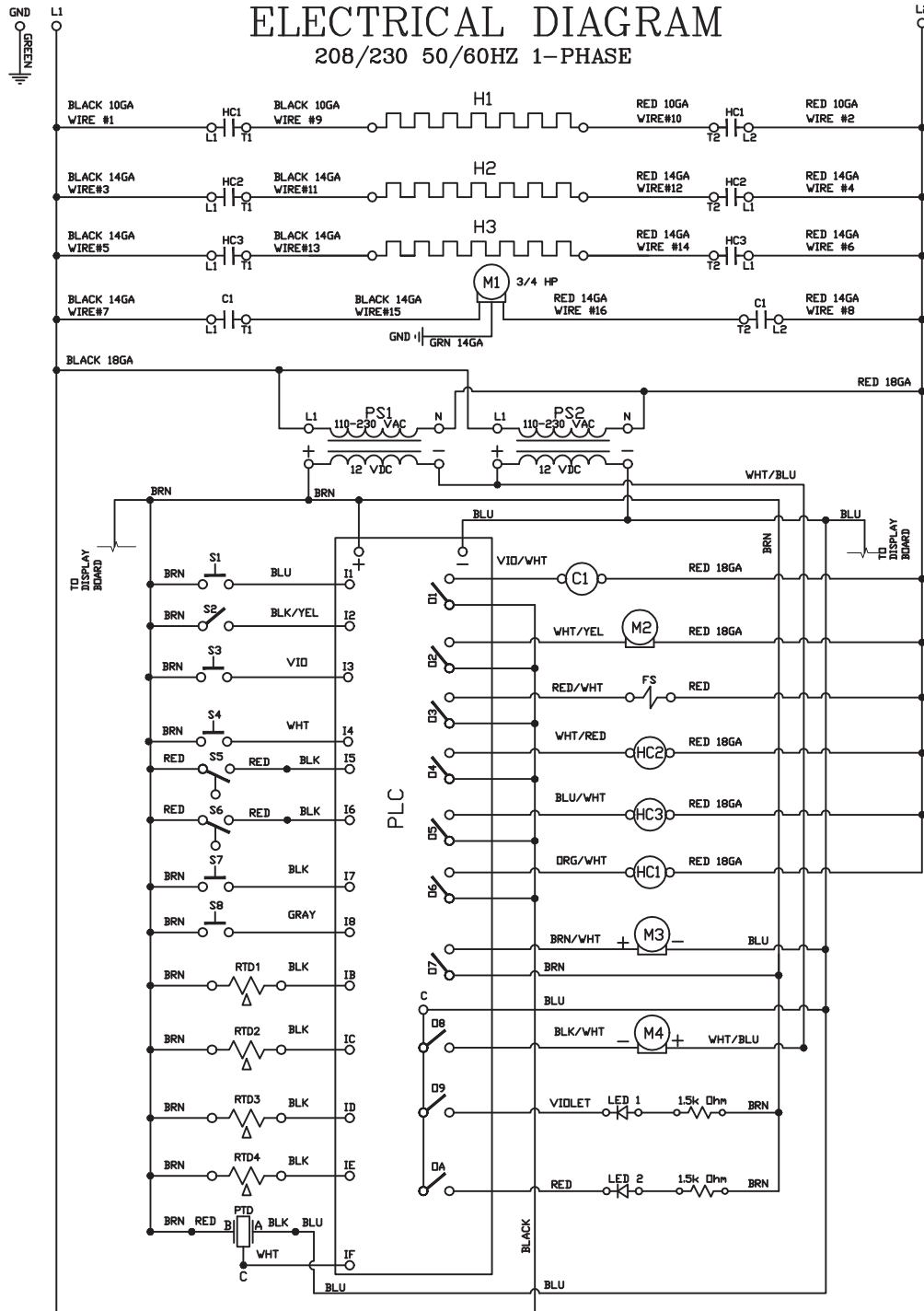
ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Hose 1 1/4" x 8"	05700-004-08-21
2	1	Sump	05700-004-02-94
3	2	Clamp, 1 1/16" to 2"	04730-719-18-00
4	1	Drain Pump	04730-003-91-41
5	2	Elbow, Hose Barb Drain	04720-004-20-12
6	1	Drain Hose, 8"	04720-111-39-73
7	1	Drain Hose, 3"	04720-111-39-73
8	5	Clamp, 13/16" to 1 1/2"	04730-719-06-09
9	1	Wash Pump	06105-004-24-79
	1	** 480 V Wash Pump	06105-004-07-54
10	1	Motor Mount Brace	05700-004-01-64
11	1	Elbow, Pump to Wash Manifold	04720-004-02-73
12	2	Lockwasher, 3/8"	05311-276-01-00
13	2	Nut, Hex 3/8-16 x 1 Long	05310-276-01-00
14	2	Bolt, Hex 3/8-16 x 1 Long	05305-276-03-00
15	1	Bottom Wash Dishcharge Hose	05700-001-22-92
16	1	O-ring, Viton	05330-400-05-00
17	1	Sump Strainer	05700-004-03-73
18	1	Standpipe	05700-004-04-40

\*\* Models with 480 V Control Box

**NOTE:** Items 6 and 7 are the same part made from raw hose material that is cut to order. When ordering, please specify the length that is needed.

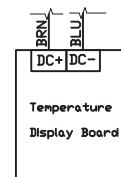
# AVENGERHT-E ELECTRICAL DIAGRAM

208/230 50/60HZ 1-PHASE

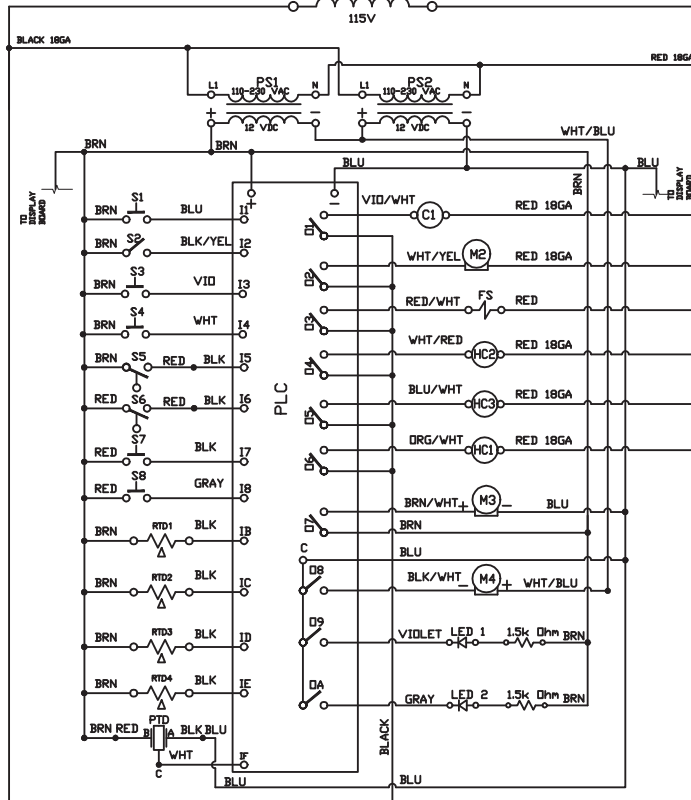
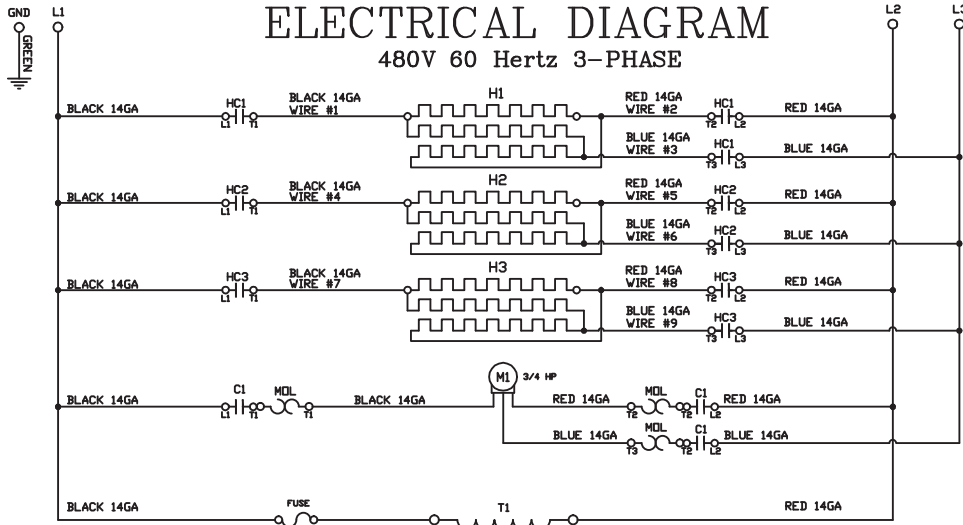


LEGEND

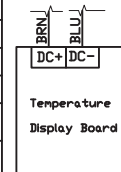
GND	GROUND	S1	POWER SWITCH	PS2	POWER SUPPLY	C1	WASH MOTOR CONTACTOR
H1	WASH HEATER	S2	DOOR SAFETY SWITCH	RTD1	WASH REGULATING THERMOSTAT	LED 1	FLUSH INDICATOR LED
H2	RINSE HEATER TOP	S3	CYCLE SWITCH	RTD2	TOP RINSE TANK THERMOSTAT	LED 2	DELIME INDICATOR LED
H3	RINSE HEATER BOTTOM	S4	DELIME SWITCH	RTD3	LOWER RINSE TANK THERMOSTAT		
M1	WASH MOTOR	S5	HORIZONTAL FLOAT SWITCH	RTD4	TEMPERATURE GAUGE		
M2	DRAIN MOTOR	S6	VERTICAL FLOAT SWITCH	FS	RINSE/FILL SOLENOID		
M3	DETERGENT MOTOR	S7	RINSE AID PRIME SWITCH	HC1	WASH HEATER CONTACTOR		
M4	RINSE AID MOTOR	S8	DETERGENT PRIME SWITCH	HC2	TOP RINSE HEATER CONTACTOR		
PTD	PRESSURE TRANSDUCER	PS1	POWER SUPPLY	HC3	LOWER RINSE HEATER CONTACTOR		



## AVENGERHT-E ELECTRICAL DIAGRAM 480V 60 Hertz 3-PHASE



LEGEND							
C1	WASH MOTOR CONTACTOR	LED2	DELIME INDICATOR LED	RTD 3	LOWER RINSE TANK THERMSTAT	T1	TRANSFORMER
FS	FILL SOLENOID	M1	WASH MOTOR	RTD 4	TEMPERATURE GAUGE		
GND	GROUND	M2	DRAIN MOTOR	S1	POWER SWITCH		
H1	WASH HEATER	M3	DETERGENT MOTOR	S2	DOOR SAFETY SWITCH		
H2	RINSE HEATER TOP	M4	RINSE AID MOTOR	S3	CYCLE SWITCH		
H3	RINSE HEATER BOTTM	PS1	POWER SUPPLY	S4	DELIME SWITCH		
HC1	WASH HEATER CONTACTOR	PS2	POWER SUPPLY	S5	HORIZONTAL FLDAT		
HC2	TOP RINSE HEATER CONTACTOR	PTD	PRESSURE TRANSDUCER	S6	VERTICAL FLDAT		
HC3	BOTTOM RINSE HEATER CONTACTOR	RTD 1	WASH REGULATION THERMSTAT	S7	DETERGENT PRIME SWITCH		
LED 1	FLUSH INDICATOR LED	RTD 2	TOP RINSE TANK THERMSTAT	S8	RINSE AID PRIME SWITCH		





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