



Installation/Operation Manual with Service Replacement Parts



401HT

Undercounter Dishwashers
M4 Series

401HT
High Temperature Wash
Refresh with built-in booster
and Pumped Final Rinse



Issue Date: 10.9.15

Manual P/N 115781 rev. –

For machines beginning with S/N W150350341 and above

3765 Champion Blvd.,
Winston-Salem, NC 27105
(336) 661-1556 Fax: (336) 661-1660
Toll-free: (800) 858-4477

2674 N. Service Road, Jordan Station
Ontario, Canada L0R 1S0
(905) 562-4195 Fax: (905) 562-4618
Toll-free: (800) 263-5798

Printed in the USA


Champion, an Ali Group Company

For future reference, record your dishwasher information in the box below.

Model Number _____	Serial Number _____
Voltage _____ Hertz _____	Phase _____
Service Agent _____	Tel: _____
Parts Distributor _____	Tel: _____

National Service Department

In Canada:
Toll-free: (800) 263-5798
Tel: (905) 562-4195
Fax: (905) 562-4618
email: service@moyerdiebellimited.com

ATTENTION:

The model no., serial no., voltage, Hz and phase are needed to identify your machine and to answer questions.

The machine data plate is located on the lower front panel.

Please have this information ready if you call for service assistance.



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PRODUCT REGISTRATION ONLINE

Connect to the internet and enter the URL below to register your machine.

IN CANADA:

<http://www.championindustries.com/canada/register>



PRODUCT REGISTRATION BY FAX

COMPLETE THIS FORM AND FAX TO:

(336) 661-1660 in the USA

1 (800) 204-0109 in Canada

PRODUCT REGISTRATION CARD

Model

Serial #

Date of Installation: ___/___/___

Company Name: _____

Address: _____

Telephone #: () _____ --- _____

Contact: _____

Installation Company: _____

Address: _____

Telephone #: _____

Contact: _____

FAILURE TO REGISTER YOUR PRODUCT MAY VOID YOUR WARRANTY

IMPORTANT IMPORTANT

Revision History

A revision might be a part number change, a new instruction, or other information that was not available at print time. We reserve the right to make changes to these instructions without notice and without incurring any liability by making the changes. Equipment owners may request a revised manual, at no charge, by calling 1 (800) 858-4477 in the USA or by calling 1 (800) 263-5798 in Canada.

<i>Revision Date</i>	<i>Revised Pages</i>	<i>Serial Number Effectivity</i>	<i>Revision Description</i>
7.9.15	–	W150350341	Released First 401HT Edition

LIMITED WARRANTY

Moyer Diebel. (herein referred to as The Company), 3765 Champion Blvd., Winston-Salem, North Carolina 27105, 2674 N. Service Road, Jordan Station, Canada, LOR 1SO, warrants machines, and parts, as set out below.

Warranty of Machines: The Company warrants all new machines of its manufacture bearing the name "Moyer Diebel" and installed within the United States and Canada 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 The Company, whichever occurs first. [See below for special provisions relating to glasswashers.] Warranty registration must be submitted to Moyer Diebel within ten (10) days after installation either online on the Moyer Diebel website (<http://www.moyerdiebel.com/register/>) in the USA or <http://www.championindustries.com/canada/register> in Canada or by fax on the form provided at the front of this manual. If warranty registration is not returned to The Company within such period, the warranty will expire after one year from the date of shipment. The Company 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, The Company, 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, The Company'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 Moyer Diebel elects to repair, the labor and work to be performed in connection with the warranty shall be done during regular working hours by The Company's authorized service technician. Defective parts become the property of The Company. Use of replacement parts not authorized by The Company will relieve The Company of all further liability in connection with its warranty. In no event will The Company's warranty obligation exceed The Company's charge for the machine. The following are not covered by The Company'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: The Company warrants all new machine parts produced or authorized by The Company 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 The Company will replace the defective part without charge.

DISCLAIMER OF WARRANTIES AND LIMITATIONS OF LIABILITY. THE COMPANY'S WARRANTY IS ONLY TO THE EXTENT REFLECTED ABOVE. THE COMPANY MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED, TO ANY WARRANTY OF MERCHANTABILITY, OR FITNESS OF PURPOSE. MOYER DIEBEL 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 THE COMPANY'S DISHWASHING MACHINES AND THE COMPANY'S PARTS, AND ALL OTHER REMEDIES ARE EXCLUDED, INCLUDING ANY LIABILITY FOR INCIDENTALS OR CONSEQUENTIAL DAMAGES.

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

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Receiving - 401HT

NOTE:

The installation of your dishwasher must be performed by qualified service personnel familiar with food service equipment and must comply with all local health codes.

Problems due to improper installation are not covered by the Limited Warranty.

NOTE:

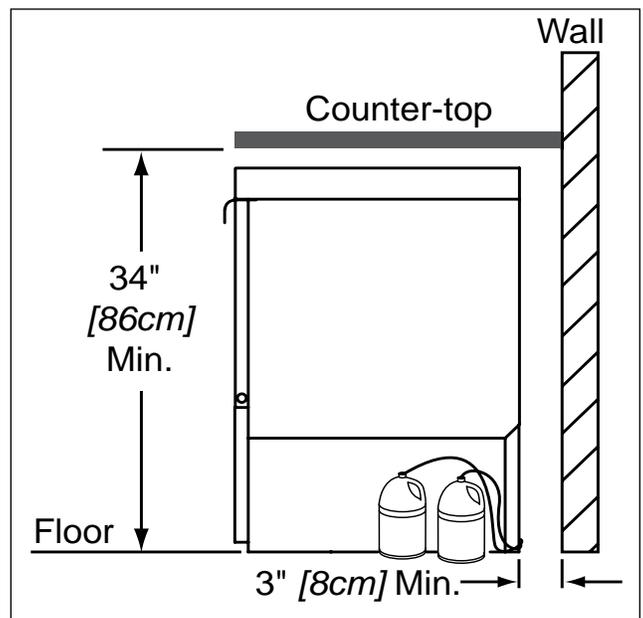
The installation of the dishwasher must comply with all local electrical, plumbing, health and safety codes or in the absence of local codes, installed in accordance with the applicable requirements in the National Electrical Code, NFPA 70, Canadian Electrical Code (CEC), Part 1, CSA C22.1; and the Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, NFPA 96.

Placement - 401HT

CAUTION:

Be careful when lifting and moving the dishwasher to prevent damage to the machine.

1. Inspect the outside of the dishwasher carton for signs of damage.
2. Remove the carton and inspect the dishwasher for damage.
3. Check for any options or accessories that may have shipped with your dishwasher.
4. Compare the installation site utility connections with the dishwasher utility connections and make sure they are the same.
5. The dishwasher can be installed as a free-standing unit or under a counter-top. The typical counter-top height in most locations is 34" [86cm].
6. It is highly recommended that the underside of the counter-top be clad in metal.
7. Under counter installations should provide storage space for the dishwasher chemical supply containers. Do not elevate the containers above the finished floor.
8. Chemical supply containers should be placed as close to the machine as possible and the chemical tubing taped to the back of the machine should be repositioned before permanently placing the machine.
9. Place the dishwasher in its permanent location.
10. The dishwasher has 4 adjustable feet for leveling.
11. Level the dishwasher front-to-back and side-to-side.



Water Connections

VERY IMPORTANT:

Make sure the flexible water supply and drain hoses are not kinked.

Plumbing connections must allow the machine to be pulled out for service and cleaning.

Plumbing connections must comply with national, provincial local plumbing and sanitary codes. Only qualified service personnel familiar with food service equipment should install the machine.

The installing plumber must thoroughly flush the water supply line to remove all debris BEFORE connecting the water supply line to the machine.

CAUTION:

Plumbing connections must be made BEFORE the electrical installation is performed.

Damage to the machine's water heaters will occur if the power is turned on to the machine without an adequate water supply.

ATTENTION:

It is the installing plumber's responsibility to flush the incoming water line to remove debris before connecting to the dishwasher. Failure to do so may void the machine warranty.

1. All models have a 6 ft. flexible hot water fill hose with a 3/4" female garden hose connector.
2. A 1/2" or larger main incoming supply line must be installed to the dishwasher.
3. A 1/2" or larger shut-off valve should be installed in the main water supply, as close to the dishwasher as possible for servicing.

The 401HT with booster has a built-in flow control. The flowing incoming hot water supply pressure must be between 25-95 psi. The hot water supply must provide a minimum of 140°F/60°C, measured at the dishwasher for 40°F/22°C rise booster or 110°F/43°C for 70°F/39°C rise booster.

4. A water hardness of 3 grains/gal (US) [5.3 mg/L] or less is recommended. Excessively hard water may need a water softener or other means of water treatment to prevent lime build-up.

Drain Connections

! VERY IMPORTANT !

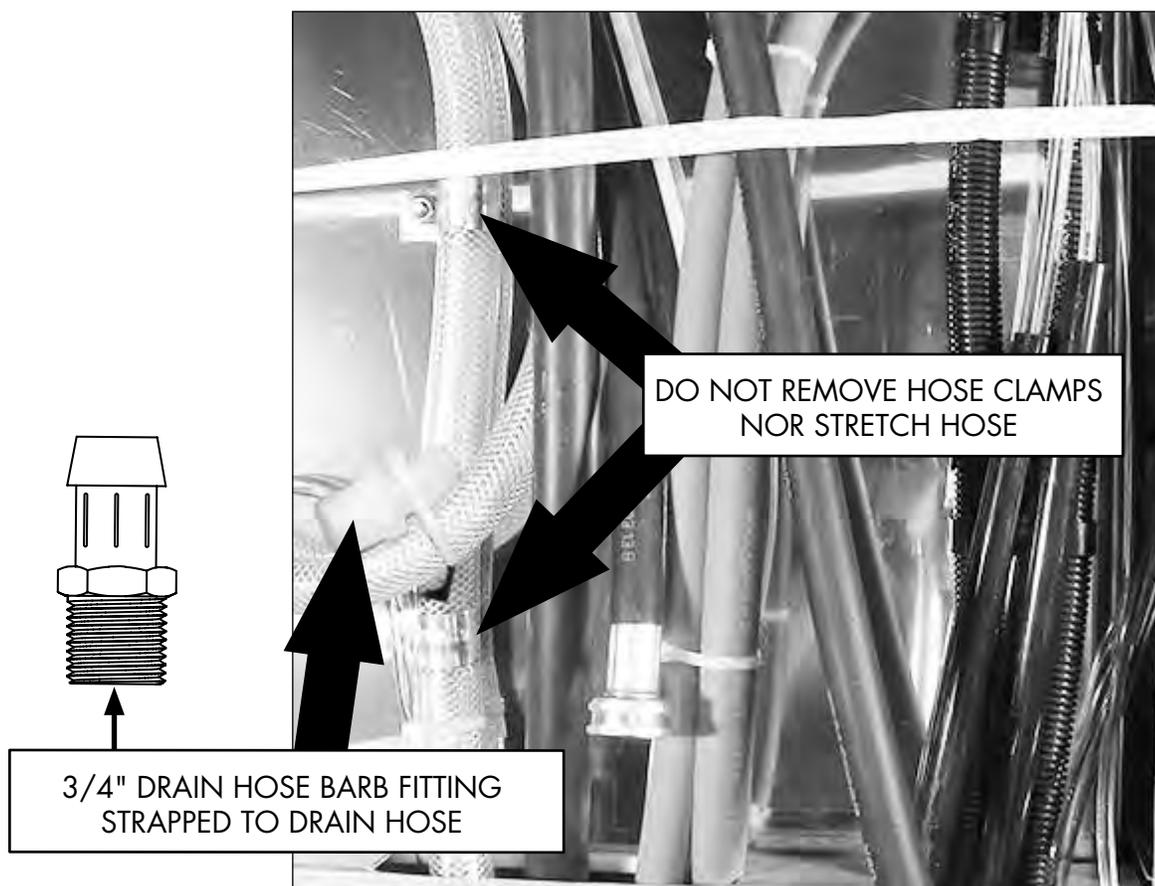
Do not connect the drain hose to a disposer. The dishwasher will not drain correctly.

Refer to the photo below.

1. All models are equipped with a 6 ft., 5/8" I.D. drain hose. The maximum drain height connection must not exceed 3 ft. [1 m] and must be vented to prevent the wash tank from siphoning.
2. The drain hose is located at the rear of the dishwasher, and is secured to the rear of the machine by two clamps to maintain an anti-siphoning loop in the drain hose.
3. A 3/4" hose barb fitting is strapped to the drain hose prior to shipment. The service part number for the hose barb is P/N 0512321.
4. Additional plumbing parts must be supplied by the plumbing installer.
5. The maximum drain flow is 15 US gpm/12.4 imp gpm/60 lpm.

! ATTENTION !

FAILURE TO FOLLOW THE DRAIN CONNECTION INSTRUCTIONS MAY VOID THE WARRANTY.



Drain Connection *(continued)*

DO NOT REMOVE THE CLAMPS HOLDING THE DRAIN HOSE TO THE BACK OF THE DISHWASHER.

DO NOT CONNECT THE DRAIN HOSE TO A DISPOSER.

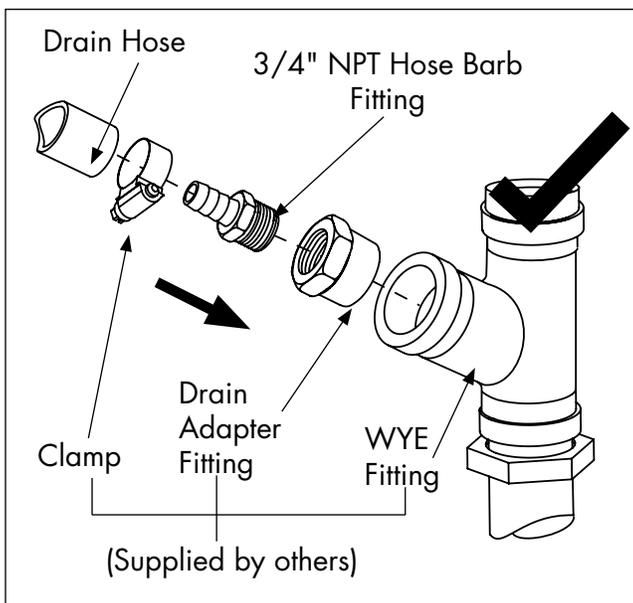
DO NOT REDUCE THE SIZE OF THE DRAIN HOSE CONNECTION NOR USE A DOMESTIC DRAIN FITTING.

DO NOT ADD ADDITIONAL LENGTH TO THE DRAIN HOSE.

DO NOT ALLOW THE DRAIN HOSE TO KINK.

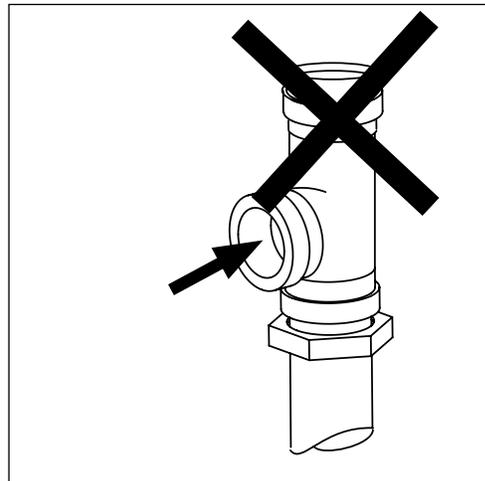
For a Direct Drain Connection:

1. Install the drain hose to an 1-1/2" or larger vented "WYE" drain fitting.
2. CONNECTION TO A "TEE" FITTING WILL PREVENT THE DISHWASHER FROM DRAINING COMPLETELY.



DO

connect the dishwasher flexible drain hose to a vented WYE drain fitting.



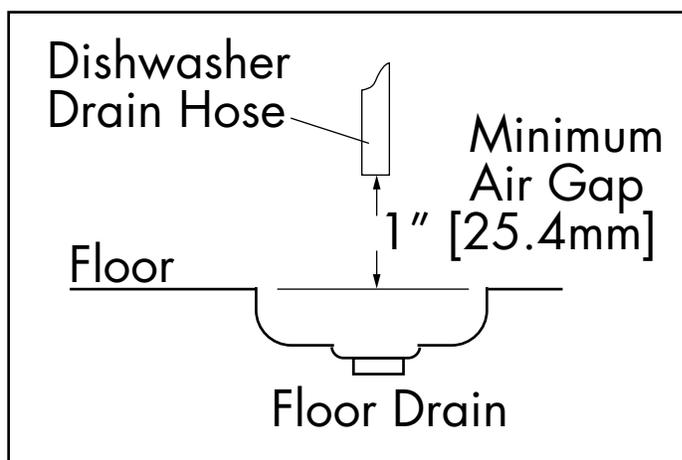
DO NOT

connect the dishwasher flexible drain hose to a TEE drain fitting.

Drain Connection

For an Indirect Drain Connection:

1. A 1" [25.4mm] minimum air gap must be provided between the outlet of the dishwasher drain hose and the flood-level rim of the floor drain, floor sink or any other locally approved drain receptacle. (See illustration below.)



! VERY IMPORTANT !
IMPROPER INSTALLATION OF MACHINE DRAIN HOSE.

Machine drain problems are often the result of improper installation and may not be covered by the limited warranty.

Electrical Connections - 401HT with Built-in Booster 1PH and 3PH Wiring Diagrams

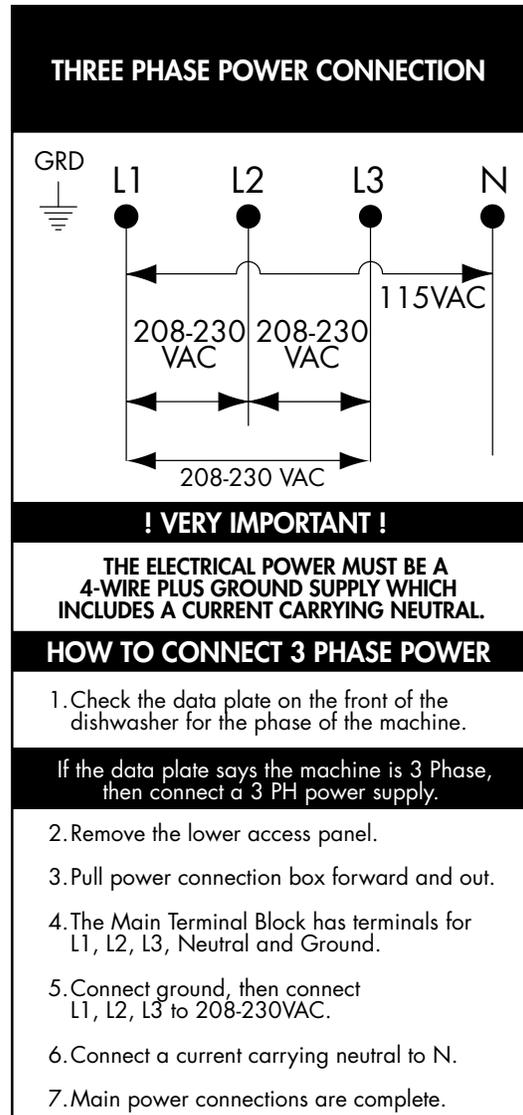


WARNING:

Electrocution or serious injury may result when working on an energized circuit.

Disconnect power at the main breaker or service disconnect switch before working on the circuit.

Lock-out and tag the breaker or service disconnect switch to indicate that work is being performed on the circuit.



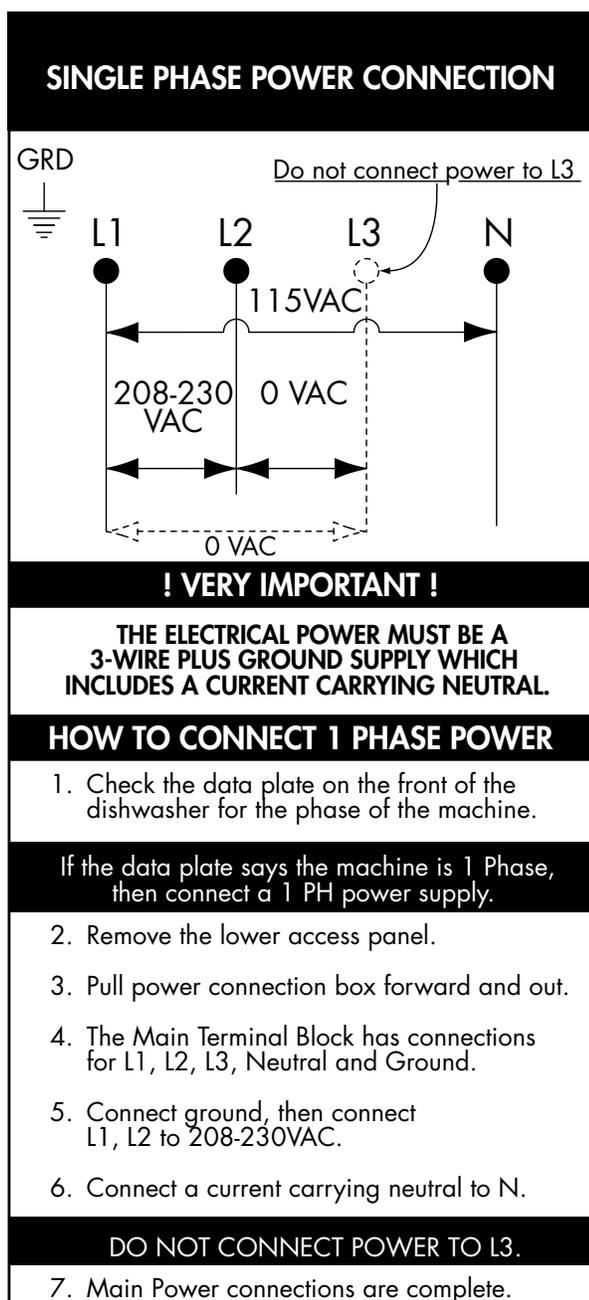
! ATTENTION !

A qualified electrician must connect the main incoming power to the dishwasher in accordance with all local codes and regulations or in the absence of local codes in accordance with the National Electrical Code or the Canadian Electrical Code.

Electrical Connections - 401HT with Built-in Booster 1PH and 3PH Wiring Diagrams

! ATTENTION !

The installation of the dishwasher must comply with all local electrical, plumbing, health, and safety codes or in the absence of local codes, installed in accordance with the applicable requirements in the National Electrical Code, NFPA 70, Canadian Electrical Code (CEC), Part 1, CSA C22.1; and the Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, NFPA 96.



Connecting Incoming Power to the Main Terminal Block for 1PH and 3PH Machines with Boosters



WARNING:

Electrocution or serious injury may result when working on an energized circuit.

Disconnect power at the main breaker or service disconnect switch before working on the circuit.

Lock-out and tag the breaker or service disconnect switch to indicate that work is being performed on the circuit.

! VERY IMPORTANT !
PROVIDE A 3 FEET/1 METER SERVICE LOOP IN THE POWER SUPPLY CABLE TO SERVICE THE DISHWASHER.

! SINGLE PHASE POWER REQUIREMENT !

SINGLE PHASE 401HT

The electrical power must be a 3-wire plus ground supply which includes a current carrying neutral.

! THREE PHASE POWER REQUIREMENT !

THREE PHASE 401HT

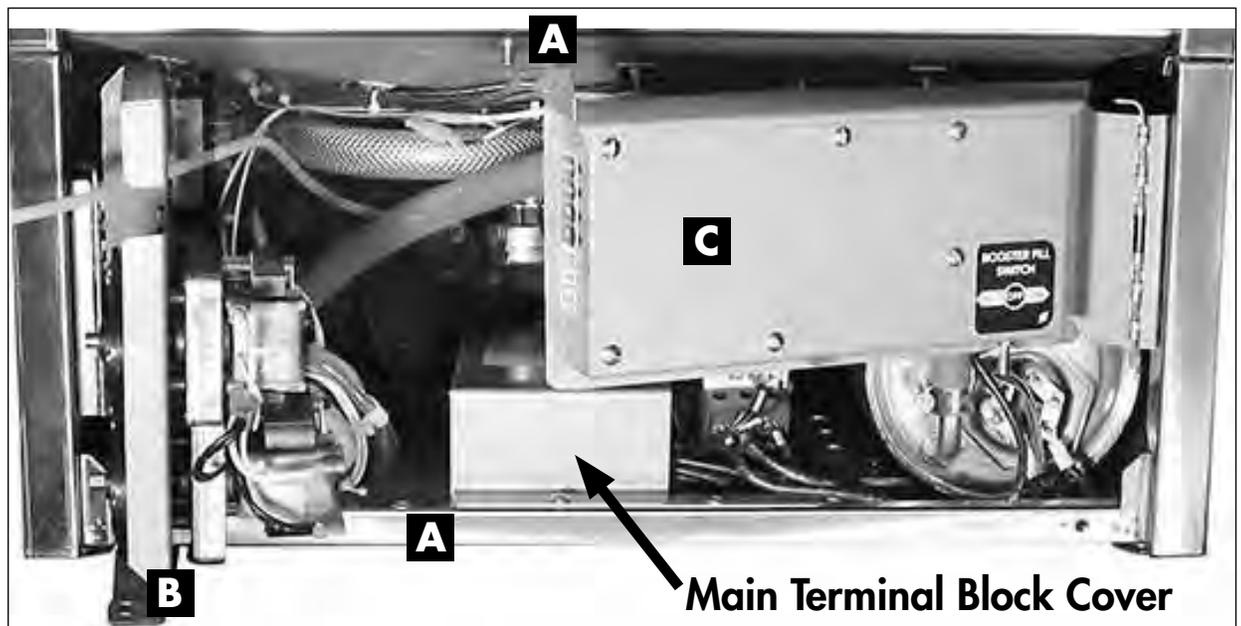
The electrical power must be a 4-wire plus ground supply which includes a current carrying neutral.

Connecting Incoming Power to the Main Terminal Block for 1PH and 3PH Machines with Boosters

Refer to the photo below:

1. Remove the lower front dishwasher panel.
2. Remove the retaining fasteners (A) from the swing-out brackets and swing the chemical pump bracket (B) and the chemical circuit board bracket (C) out of the way as shown.

(continued on next page)

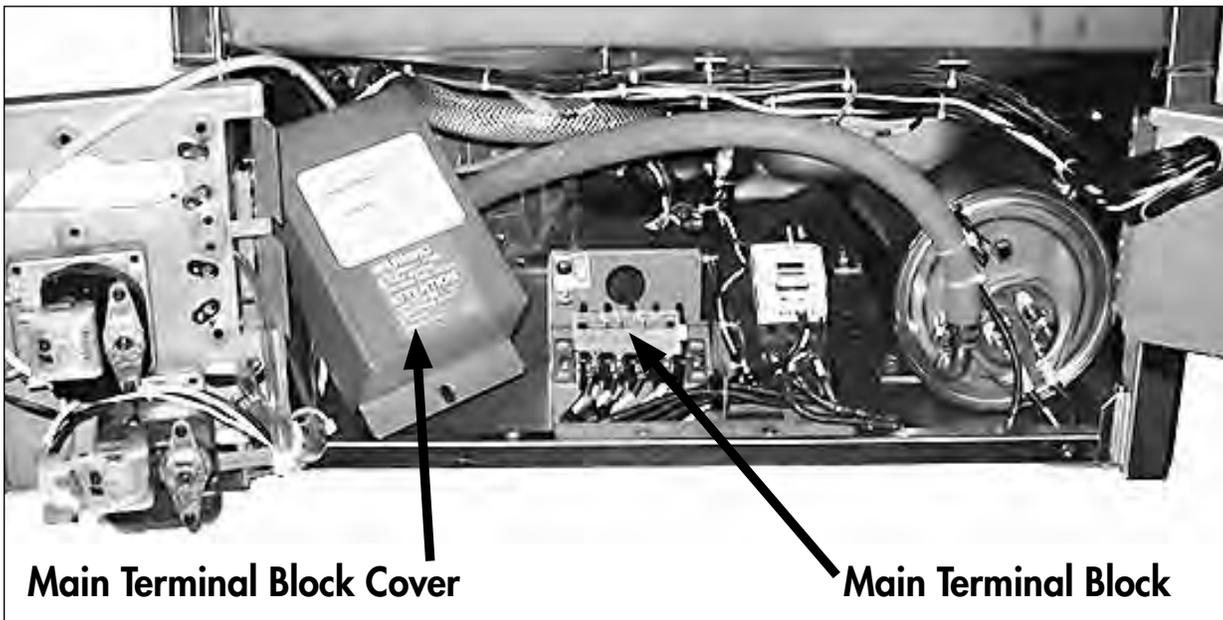


Connecting Incoming Power to the Main Terminal Block for 1PH and 3PH Machines with Boosters

(continued from previous page)

Refer to the photo below:

3. Provide a 3 foot/1 meter service loop in the power supply cable to service the machine
4. Route the power cable from the rear of the machine to the terminal block making sure the cable does not touch the booster tank.
5. Connect the power cable to the terminal block bracket using a suitable strain relief connector.
6. Connect the power wires according to the wiring diagrams on page 3 for either single phase or three phase operation.
7. Swing the chemical pump bracket and the chemical board back into position and secure with the existing fasteners.



Booster Heater Conversion from 1PH to 3 PH Operation

! VERY IMPORTANT !
THE BOOSTER HEATER IS WIRED FOR 1PH OPERATION WHEN SHIPPED.
FOLLOW THE INSTRUCTIONS BELOW TO WIRE THE BOOSTER FOR 3PH.



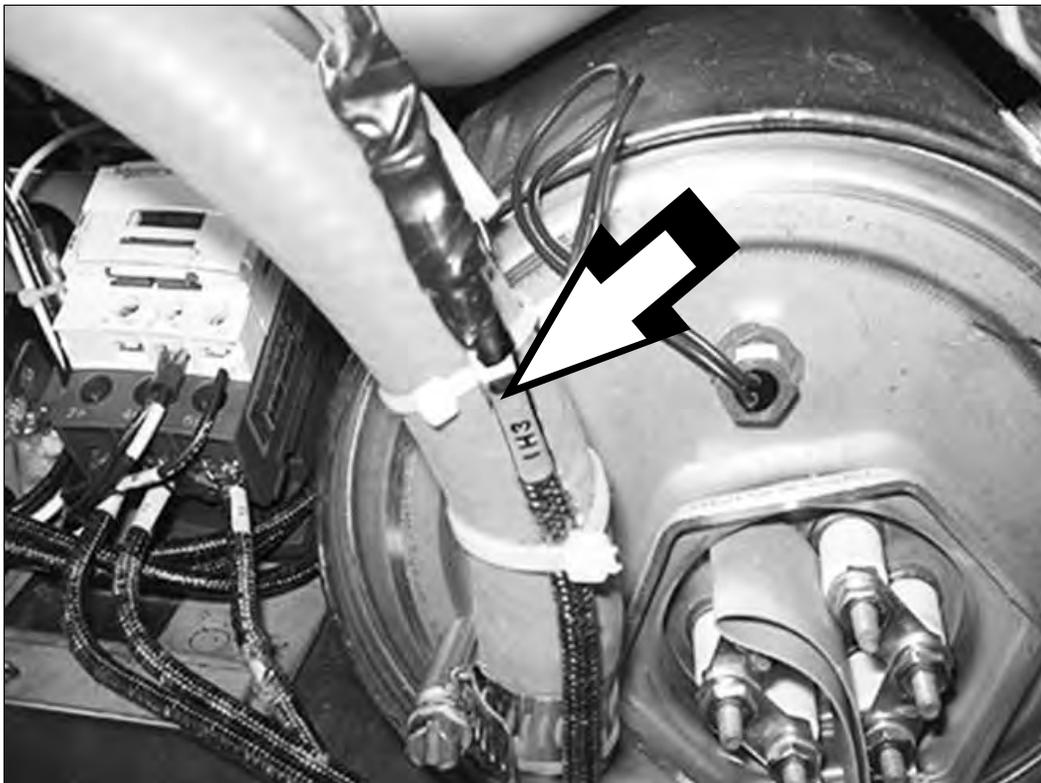
WARNING:

Electrocution or serious injury may result when working on an energized circuit.

Disconnect power at the main breaker or service disconnect switch before working on the circuit.

Lock-out and tag the breaker or service disconnect switch to indicate that work is being performed on the circuit.

1. To convert the booster heater from single phase to three phase operation, locate the booster wire labeled 1H3 that is cable-tied to the booster hose.
2. Remove the shrink insulation from the terminal and connect to the booster heater element as shown in the wiring diagram on page 12.

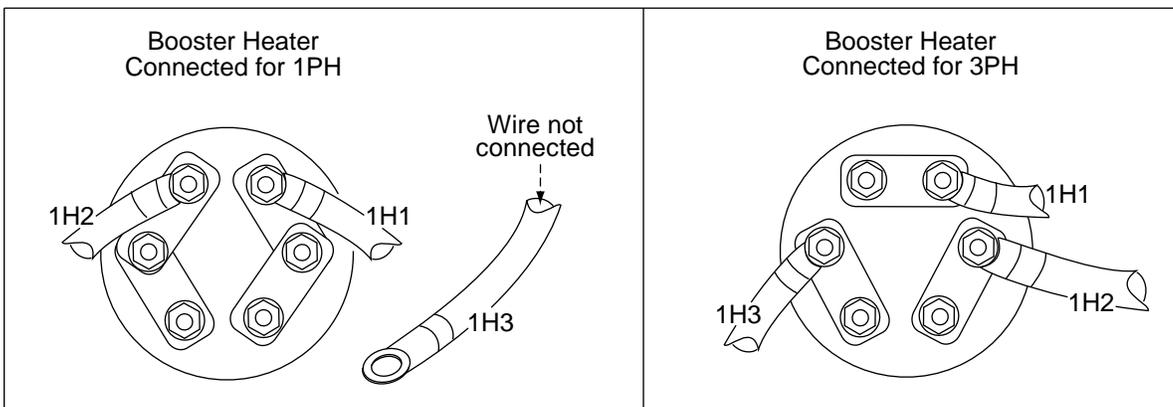


The three phase booster wire (1H3) is cable-tied to the hose adjacent to the booster tank.

Booster Heater Conversion from 1PH to 3 PH Operation (continued)

! VERY IMPORTANT !
THE BOOSTER HEATER IS WIRED FOR 1PH OPERATION WHEN SHIPPED.
FOLLOW THE INSTRUCTIONS BELOW TO WIRE THE BOOSTER FOR 3PH.

3. Disconnect the existing booster heater wires and change the booster heater element jumpers as shown in the illustration below
4. Connect wires 1H1, 1H2, and 1H3 as shown below.



Wiring Diagram - Booster heater element connections shown for 1 phase and 3 phase operation.

Completing the 1PH to 3PH Electrical Conversion

! ATTENTION !
CHANGE THE DATA PLATE ON THE LOWER FRONT PANEL OF THE MACHINE
AFTER THE MACHINE IS WIRED FOR 3PH AND THE BOOSTER HEATER IS CONNECTED
FOR 3PH.

1. The data plate on the dishwasher lower front panel must be changed after the machine is converted from single phase operation to three phase operation.
2. Locate the replacement data plate stowed on the back of the lower front panel.
3. Remove the paper backing from the label and carefully place it over the existing data plate label making sure it covers the label completely.
4. Re-install the lower front panel to complete the conversion.



A three phase data plate is located on the back of the lower front panel.

Booster Fill Switch
(Filling the booster tank for the first time)

! CAUTION !
AVOID PERMANENT DAMAGE TO THE BOOSTER HEATER

**DO NOT TURN THE DISHWASHER POWER SWITCH
ON WHEN FILLING THE BOOSTER FOR THE FIRST TIME.**

**THE BUILT-IN BOOSTER TANK WAS DRAINED BEFORE SHIPMENT AND
MUST BE REFILLED BEFORE OPERATING THE DISHWASHER.**

**THE BOOSTER FILL SWITCH IS LOCATED BEHIND THE LOWER FRONT PANEL ON THE
RIGHT SIDE OF THE MACHINE.**

To refill the booster for the first time:

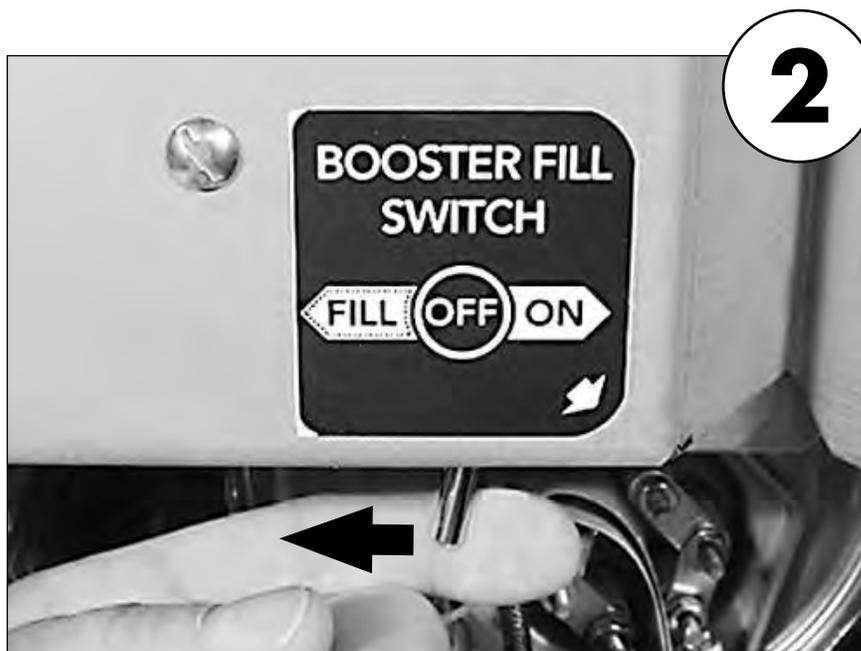
1. Turn the main breaker or disconnect switch to the dishwasher ON.
2. **DO NOT PUSH THE DISHWASHER ON-OFF/DRAIN POWER SWITCH TO THE ON POSITION.**
3. Locate the booster fill switch and note the switch is in the OFF position.

(continued on next page)

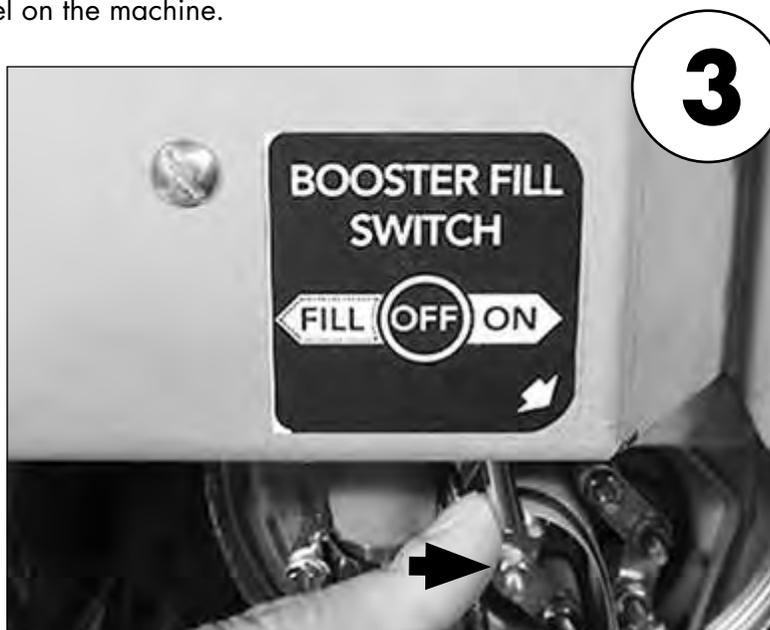


Booster Fill Switch (Filling the booster tank for the first time)

4. PUSH AND HOLD the booster fill switch in the FILL position until water starts filling inside the wash compartment.
5. Release the FILL switch.



6. PUSH the booster fill switch to the ON position and release.
7. The booster fill operation is complete.
8. Replace the lower front panel on the machine.



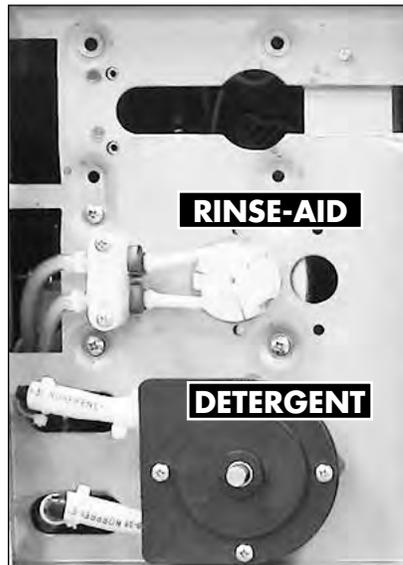
Chemical Connections

! VERY IMPORTANT !
ALWAYS USE A COMMERCIAL-GRADE NON-CHLORINATED DETERGENT.
PLACE THE CHEMICAL SUPPLY CONTAINERS AS CLOSE TO THE MACHINE AS POSSIBLE.
DO NOT ELEVATE THE CHEMICAL CONTAINERS ABOVE THE FINISHED FLOOR.

! VERY IMPORTANT !
Contact a chemical supplier for detergent and rinse-aid chemicals. The chemical supplier must adjust the chemical dispensing pumps for water hardness and food soil types.

Chemical Dispensing Pumps

1. The detergent and rinse-aid pumps are located on the lower left-side of the machine behind the lower-front access panel.
2. Each pump is equipped with 6 feet [1.8 m] of pick-up tubes consisting of supply tubing, stiffener tubes, and strainers.
3. The pick-up tubes are stowed on the back of the machine for shipping.
4. A red label marked DETERGENT and a blue label marked RINSE-AID identify the chemical lines.



The 401HT pumps are located on the left-side behind the lower front panel of the dishwasher.

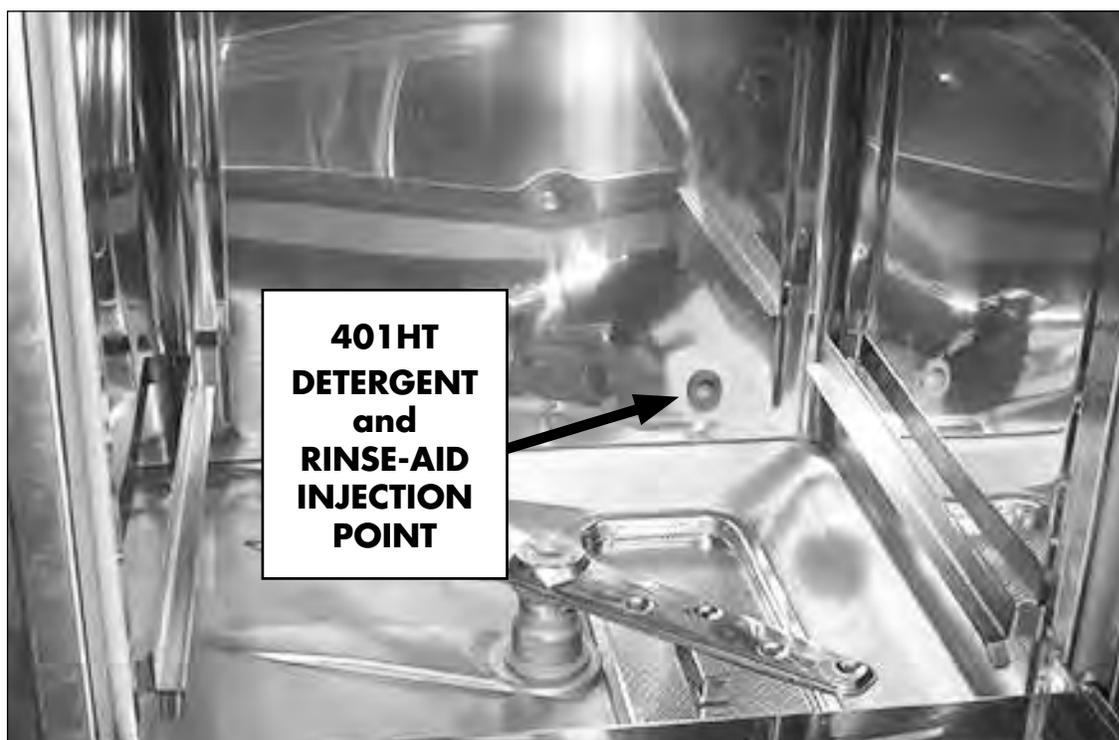
Detergent and Rinse-aid Pumps and Injection Points

! VERY IMPORTANT !

**ALWAYS USE A COMMERCIAL-GRADE NON-CHLORINATED DETERGENT.
PLACE THE CHEMICAL SUPPLY CONTAINERS AS CLOSE TO THE MACHINE AS POSSIBLE.
DO NOT ELEVATE THE CHEMICAL CONTAINERS ABOVE THE FINISHED FLOOR.**

Injection Point Locations

1. For 401HT, the detergent and rinse-aid enter the wash tank compartment through a fitting on back right corner of the wash compartment.



(continued on next page)

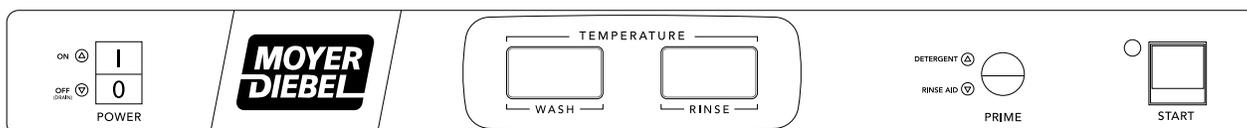
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Detergent and Rinse-aid Pumps and Injection Points

Priming the Dispensing Pumps

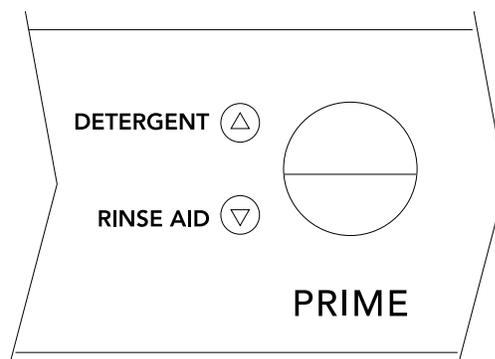
! VERY IMPORTANT !

The chemical dispensing pumps must be primed before operating the dishwasher and whenever the chemical container is changed.



401HT Control Panel

1. The chemical dispensing pump supply lines must be primed before they will pump the chemicals properly.
2. Make sure the chemical containers are full and the correct pick-up tubes are in their containers.
3. Turn the dishwasher power switch ON. The switch will illuminate and the dishwasher will fill with water.
4. Open the dishwasher door, then push and hold the prime push button UP to the DETERGENT position until detergent is observed entering the wash tank compartment through the fitting located on the back right corner of the tank. Release the push button.
5. Push and hold the prime push button DOWN to the Rinse-aid position until you see air bubbles moving through the rinse-aid tubing, then hold the button for another 2 minutes. Release the push button.
6. Close the door to complete the priming operation.



(continued on next page)

Detergent and Rinse-aid Pumps and Injection Points

! ATTENTION !

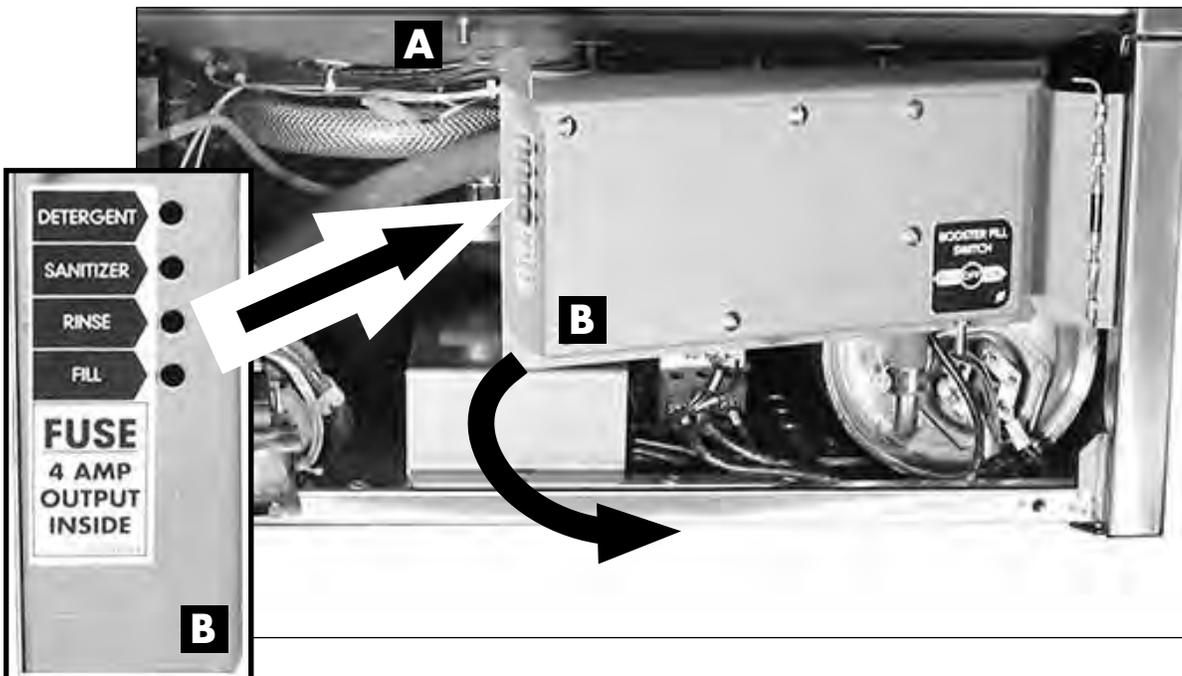
The amount of dispensed chemical is determined by the run time of the dispensing pump.

Refer to the photo below:

1. The chemical dispensing pump run and the tank fill adjustment screws are located on the end of the chemical circuit board swing-out bracket.
2. It is not necessary to swing the bracket out to make adjustments, but if desired, remove the mounting nut (A) and swing the bracket (B) out and to the right.
3. Refer to the next page for adjustment instructions.

! VERY IMPORTANT !

INSPECT & REPLACE THE CHEMICAL DISPENSING PUMP SQUEEZE TUBES EVERY SIX MONTHS.



! VERY IMPORTANT !

Contact a chemical supplier for detergent and rinse-aid chemicals. The chemical supplier must adjust the chemical dispensing pumps for water hardness and food soil types.

Detergent and Rinse-aid Pumps and Injection Points

Refer to the photo below:

To adjust the amount of chemicals dispensed by the pumps:

1. Make sure the chemical containers are full and the pick-up tubes are in their proper containers.
3. Turn the dishwasher power switch ON. The switch will illuminate and the dishwasher will fill with water.
4. Run a normal dishwasher cycle and test detergent and rinse-aid concentrations according to the chemical supplier's instructions.

CAUTION:

Excessive pressure to the potentiometers when adjusting can result in bent or broken adjusting screws.

5. Each dispensing pump has a clearly marked adjustment screw. Turn the screw CW to increase the run time of the dispensing pump and CCW to reduce the run time.

Fill Adjustments

To adjust the tank fill:

1. The fill adjustment screw will provide a small change in the tank water level.
2. If a large adjustment is needed, check the incoming water pressure and make sure the fill hose is not kinked.
3. If the above items are okay then the size of the incoming water supply should be checked. The incoming water supply line must be a minimum of 1/2" or larger.



Operation

Loading Dish Racks

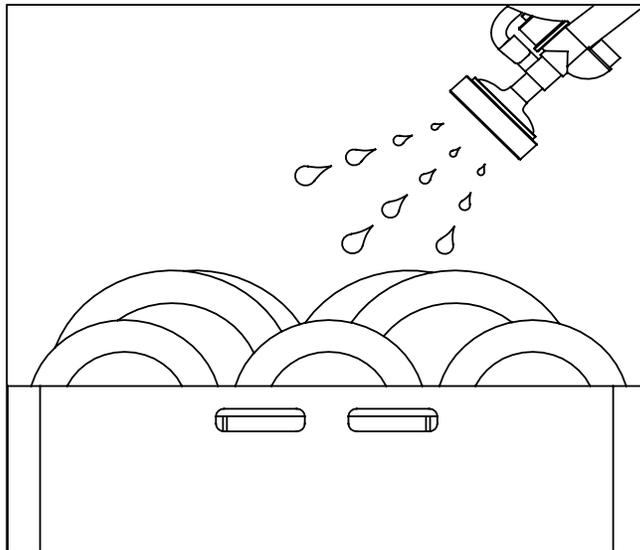
**! VERY IMPORTANT !
DO NOT OVERLOAD THE DISH RACK.
LOAD ONE DISH RACK INTO THE MACHINE AT A TIME.**

1. Prescrape and rinse the wares before loading to remove large food particles.
2. Load soiled wares into the dish rack. Place plates and glasses in a peg rack. Place cups and bowls in a flat bottom rack. Place utensils in a single layer in a flat-bottom rack. Place pots and pans in a flat-bottom rack.

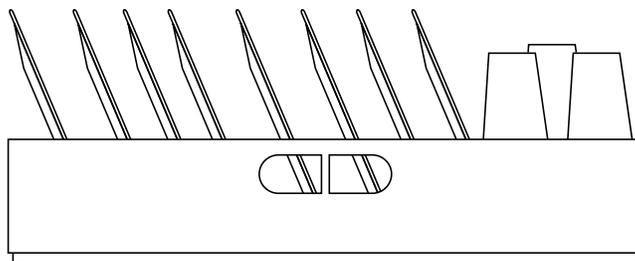
Do not overload the dish rack. Wash one dish rack at a time.

3. Slide one dish rack into the wash compartment making sure that wares do not interfere with the rotating spray arms. Do not wash more than one dish rack at a time.

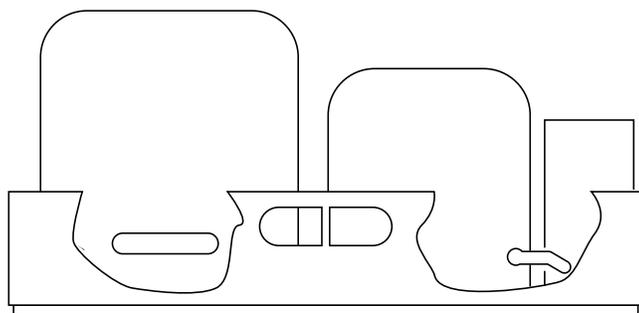
Prescrape and rinse wares before loading into the machine.



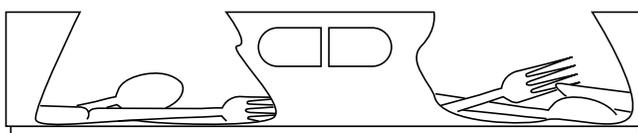
Load plates and glasses in a peg rack.



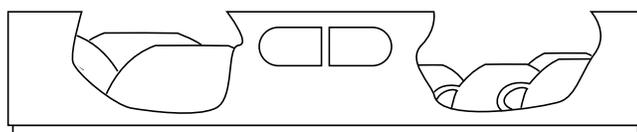
Loading Dish Racks (continued)



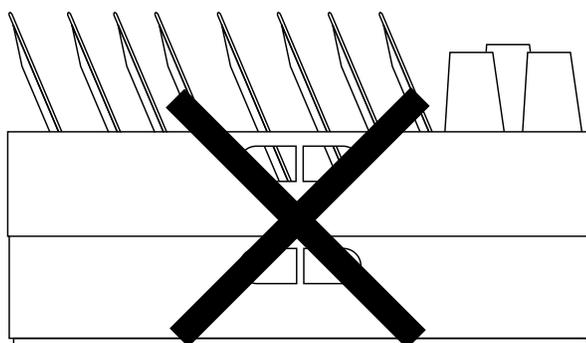
Load pots and pans in a flat-bottom rack.



Load utensils in a single layer in a flat-bottom rack.



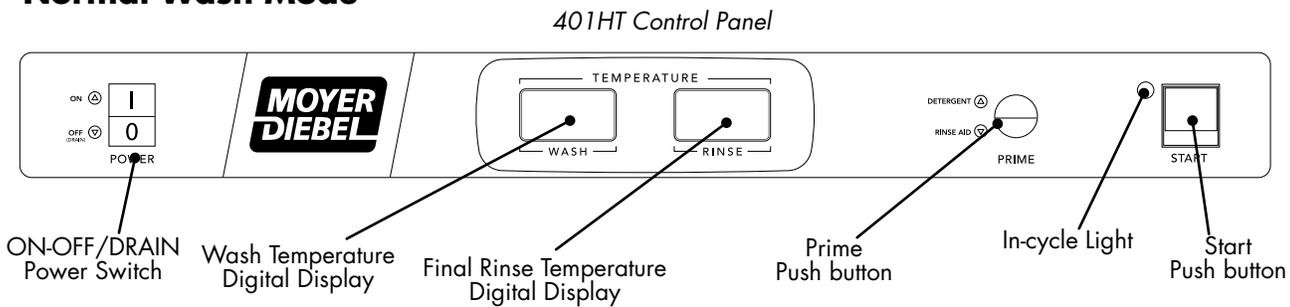
Load cups and bowls in a flat-bottom rack.



**NEVER stack dish racks.
Wash one dish rack at a time.**

Operation

Normal Wash Mode



1. Close the dishwasher front door.
2. Push the dishwasher Power Switch UP to turn the power ON.
3. The power switch will illuminate and the machine will fill with water.
4. Wait until the wash temperature gauge indicates a minimum of 150°F/66°C.

PLACE AN EMPTY DISHRACK IN THE MACHINE AND RUN THE FIRST CYCLE EMPTY TO HEAT THE WASH TANK INTERIOR.

5. Load the dish rack into the machine. Wash one dish rack at a time.
6. Close the door, then press the START BUTTON for 1 second. The green in-cycle light will illuminate and the wash cycle will begin. The total cycle is approximately 141 seconds.
7. Opening the door during a cycle will stop the dishwasher. If the door is open more than 5 seconds the cycle will restart from the beginning, if open less than 5 seconds the cycle will resume where it left off after the door is closed.
8. The final rinse cycle begins at the end of the wash cycle. The machine drains and then refills with fresh water hot water. Check the rinse temperature gauge during the final rinse. It must indicate a minimum of 180-195°F/82-91°C. The final rinse water is retained for the next wash cycle.
9. When the green cycle light goes out, open the door and remove the rack of clean wares.

! ATTENTION !

DOOR LEFT OPEN DURING WASH CYCLE

If the dishwasher door is left open for more than 5 seconds during the normal wash mode, then the dishwasher cycle will reset to the beginning of the normal wash cycle.

! ATTENTION !

RINSE SENTRY MODE WILL EXTEND WASH CYCLE TIME

In the event that the final rinse temperature has not reached 180-195°F/82-91°C after the wash cycle, the rinse sentry will extend the wash cycle time until the booster reaches 180-195°F/82-91°C. If the proper temperature is not reached within 5 minutes, the machine will leave the rinse sentry mode and complete the cycle.

Rinse Sentry Mode

! ATTENTION !
DOOR LEFT OPEN DURING WASH CYCLE

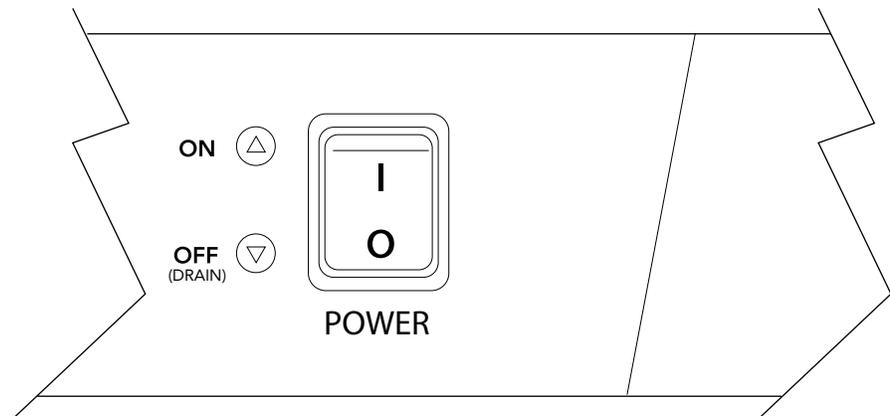
If the dishwasher door is left open for more than 5 seconds during the normal wash mode, then the dishwasher cycle will reset to the beginning of the normal wash cycle.

! ATTENTION !
RINSE SENTRY MODE WILL EXTEND WASH CYCLE TIME

In the event that the final rinse temperature has not reached 180-195°F/82-91°C after the wash cycle, the rinse sentry will extend the wash cycle time until the booster reaches 180-195°F/82-91°C. If the proper temperature is not reached within 5 minutes, the machine will leave the rinse sentry mode and complete the cycle.

Drain Mode

The dishwasher will enter the drain mode whenever the Power Switch is pushed down to the OFF(DRAIN) position.



Place the Power Switch in the OFF/(DRAIN) position

(continued on next page)

Operation

Drain Mode (continued)

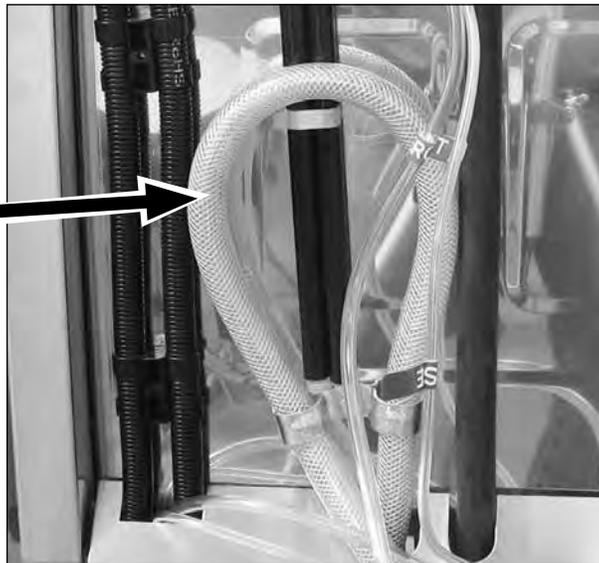
1. Push the illuminated power switch down to the OFF(DRAIN) position. The power switch light will go out.
2. The cycle light will illuminate and the machine will drain.
3. The machine, will flush, perform 3 short drain cycles and then drain completely.
4. The cycle light will go out indicating that the drain cycle is complete. Do not open the door until the light goes out.

! VERY IMPORTANT !

Draining Problems Related To Improper Installation.

Problems with draining are often the result of improper installation. The drain hose is looped and clamped as shown in the photo below and must not be changed.

The drain hose is looped and clamped and must not be changed. Altering the drain hose routing may result in the machine's inability to drain or may cause the machine to siphon the water out of the machine.



Cleaning

! VERY IMPORTANT !
DRAIN AND CLEAN THE DISHWASHER EVERY 2 HOURS OF CONTINUOUS OPERATION, AFTER EACH MEAL PERIOD, AND AT THE END OF THE DAY.

Cleaning the wash tank:

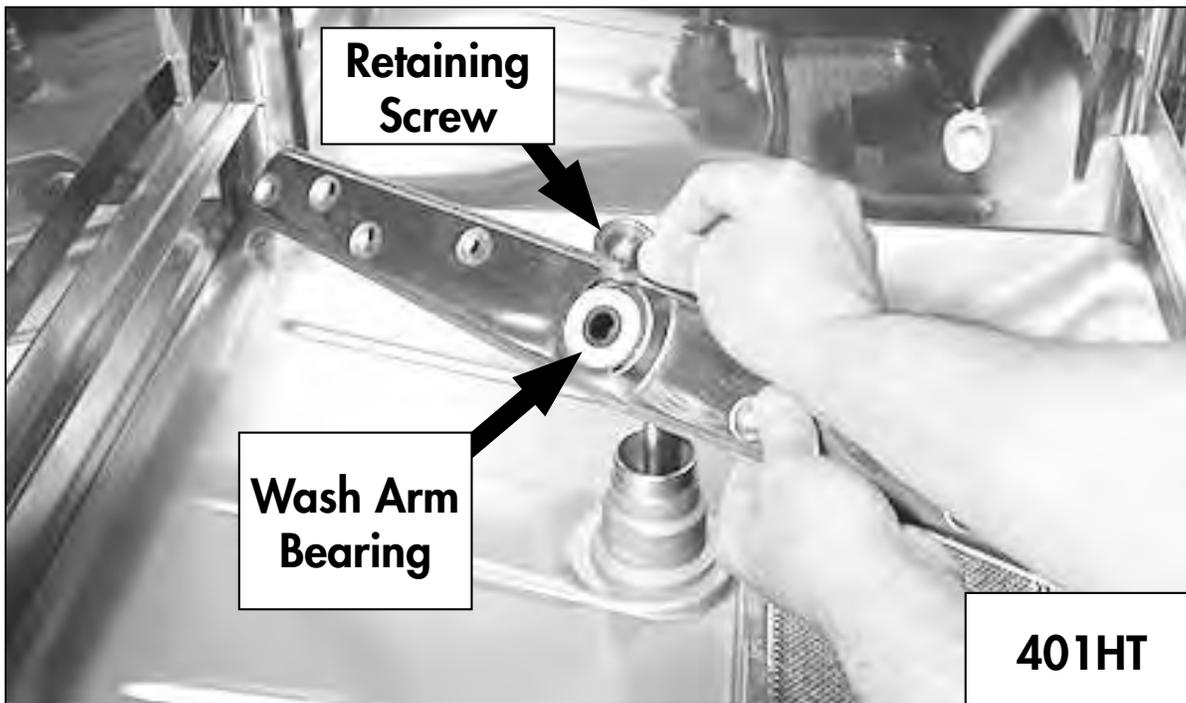
1. Remove the upper and lower spray arms and flush clean in a sink.
2. Remove the scrap screen taking care that debris does not fall off the screen and into the wash tank or sump. Flush the screen clean in a sink. Be sure to back-flush the screen.
3. DO NOT strike the scrap screen on solid surfaces.
4. Check the sump for foreign material.
5. Clean the pump intake strainer in the bottom of the sump.
6. DO NOT scrub the interior with metal scrub pads.
7. Check the sump heating element for lime deposits and gently remove with a scouring pad. DO NOT USE METALLIC SCRUB PADS.
8. Wipe the exterior of the dishwasher with a soft clean cloth and a mild detergent.
9. Leave the door open to aid in overnight drying.

! ATTENTION !
DO NOT USE METALLIC SCRUB PADS TO CLEAN THE MACHINE.
DO NOT SPRAY THE EXTERIOR OF THE MACHINE WITH WATER.

Cleaning

Cleaning the wash arms:

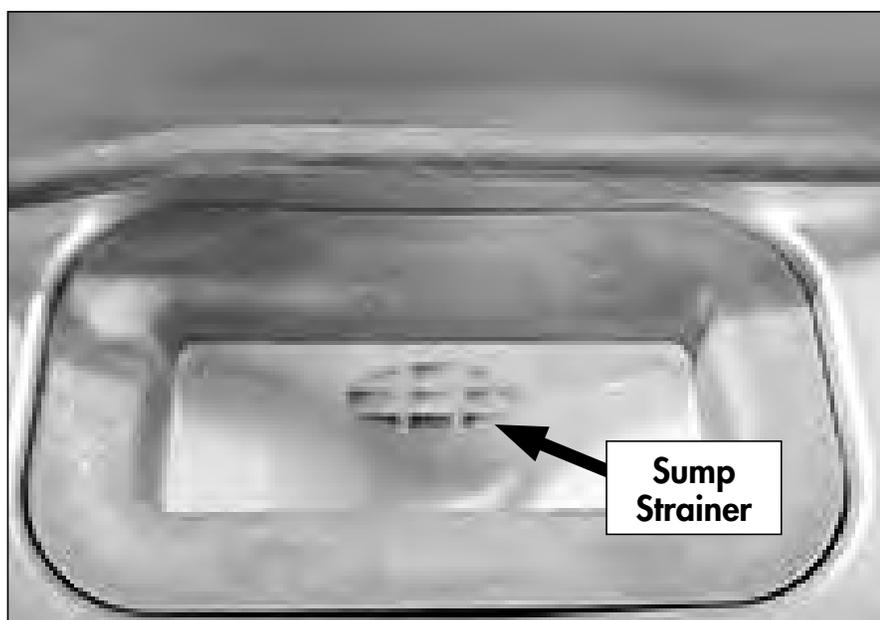
1. Unscrew the retaining screw from the upper and lower interchangeable spray arms.
2. Flush the spray arms clean in a sink. Be sure to flush the wash arm bearings.



Cleaning

Scrap Screen and Sump Strainer

1. Lift the scrap screen straight up and out of the machine to prevent food particles from falling into the tank sump.
2. Flush the scrap screen in a remote sink making sure to back-flush both side of the screen.
3. Wipe the tank sump of water and debris.
4. Carefully inspect the pump intake strainer. This strainer is not removeable but must be thoroughly cleaned before reinstalling the scrap screen.



! ATTENTION !

A CLOGGED OR RESTRICTED SUMP STRAINER WILL PREVENT THE PROPER WASHING, RINSING AND DRAINING OF THE MACHINE.

! ATTENTION !

WIPE THE EXTERIOR OF THE MACHINE WITH A SOFT CLOTH AND MILD DETERGENT. DO NOT SPRAY THE EXTERIOR WITH WATER OR BLEACH.

LEAVE THE DOOR OPEN TO AID IN OVERNIGHT DRYING.

Deliming

DANGER:

Death or serious injury may result when deliming solution is mixed with sodium hypochlorite sanitizing agent. Mixing may cause hazardous gases to form. Deliming solution and other acids must never be mixed with chlorine, iodine, bromine, or fluorine.

CAUTION:

Skin contact with deliming solutions can cause severe irritation and possible chemical burns. Always wear eye protection, rubber gloves and protective clothing when handling chemicals.

Follow the steps below to delime the 401HT:

1. Open the dishwasher door and remove any dish racks.
2. Turn the power switch on the dishwasher to the ON position.
3. Remove the detergent and rinse-aid, and sanitizer chemical supply tubing from their chemical supply containers.
4. Place the tubing in a container of hot water.
5. Press and hold the prime switch UP in the DETERGENT position to flush the detergent from the supply tubing. Release the switch.
6. Press and hold the rinse-aid prime switch UP in the RINSE AID position to flush the rinse-aid from the supply tubing. Release the switch.
7. Turn the dishwasher power switch to OFF/DRAIN to drain the wash tank. The green cycle light will go out in about 2 minutes.
8. **Always wear eye protection, rubber gloves and protective clothing when handling chemicals.**
9. Open the door and carefully add the deliming chemical to the wash tank in accordance with your chemical supplier's instructions. Be careful to avoid splashing.
10. Close the door and press the start button.
11. The green indicator light will illuminate and the machine will run.
12. Check the deliming results and if scale is still present repeat steps 9-11.
13. Push the power switch ON to refill the machine.
14. Run 4 empty cycles to flush any deliming chemicals from the machine.
15. Return chemical supply tubing to their containers and prime the chemical lines.
16. Return the dishwasher to normal operation.

Maintenance

Follow the maintenance schedules below to keep the dishwasher operating most efficiently.

Daily Maintenance

1. Make sure the water supply is on and that the drain is not clogged.
2. Check the temperature gauges and/or displays to ensure they are operating.
3. Make sure the dish racks are in good condition.
4. Check the chemical containers and refill as required.
5. Follow the cleaning procedures provided in the *Cleaning Section*.

Weekly Maintenance

1. Perform Steps 1-5 in the Daily Maintenance.
2. Inspect water lines for leaks.
3. Check for water leaks underneath the dishwasher.
4. Make sure the flexible water fill and drain hoses are not kinked.
5. Make sure that the dishwasher is level.
6. Clean accumulated lime deposits from the wash tank heating element.
7. Inspect the scrap screen and replace it if damaged.
8. Check the spray arms and replace or repair if damaged.

Monthly Maintenance

1. Perform the Daily and Weekly Maintenance listed above.
2. Clean the chemical dispenser pick-up tubing for the chemical dispensing pumps.

To clean the pick-up tubing:

1. Remove the pick-up tubes from their containers.
2. Place each tube in a separate container of hot water.
3. Press and hold the PRIME buttons UP and DOWN until water flows into the wash tank compartment.
4. Return the pick-up tubes to their containers.
5. Run 3 empty dishwasher cycles to flush any chemicals from the dishwasher wash compartment.
6. Return the pick-up tubes to their containers and prime the chemical lines.

NOTE:

There are no lubrication points on the dishwasher.

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Troubleshooting

401HT

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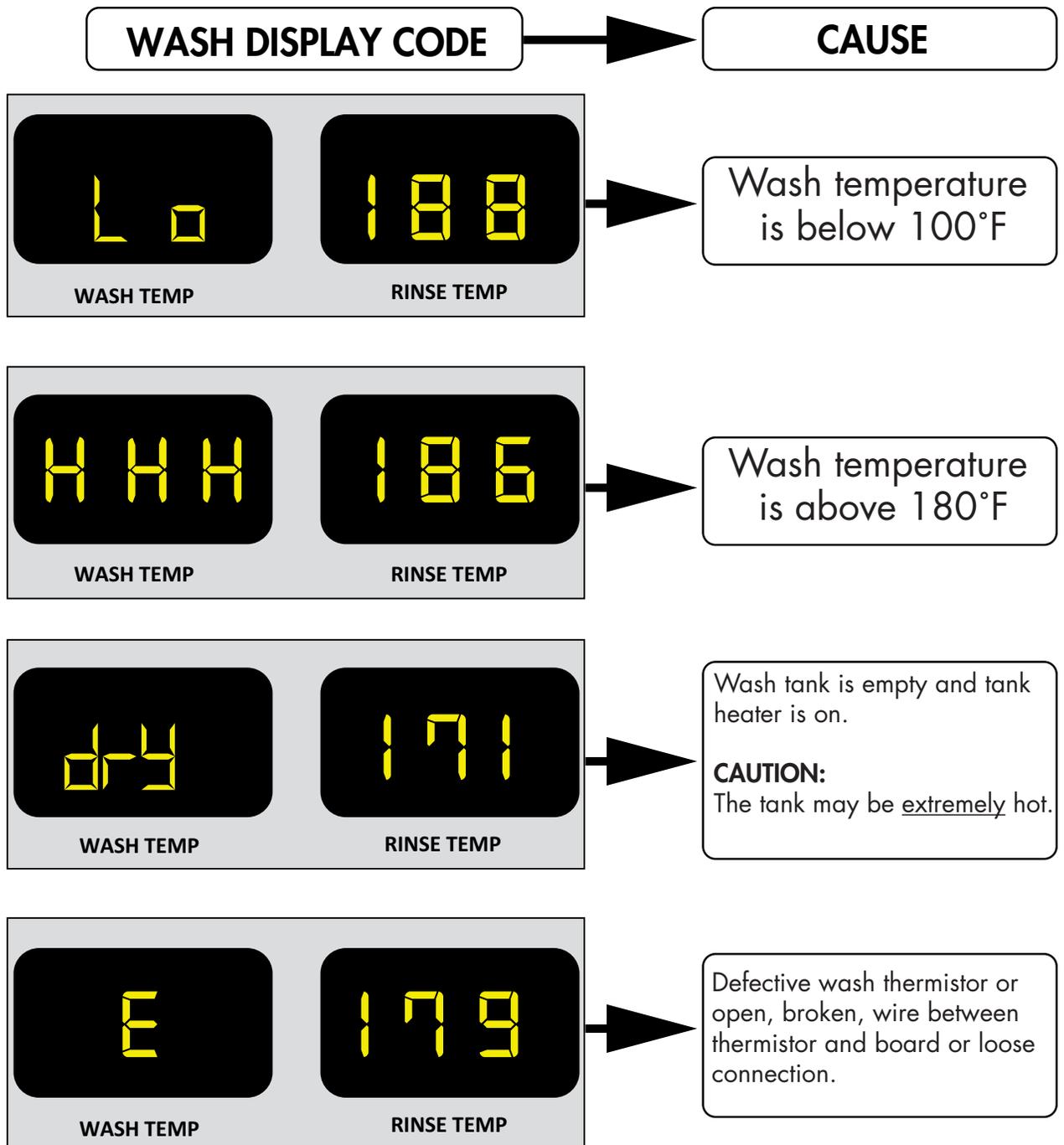
Troubleshooting - 401HT

Condition	Cause	Solution
Dishwasher will not run.	Door not closed. Main power OFF. Dishwasher OFF.	Close door completely. Check breaker on panel. Turn dishwasher power switch ON.
Low or no water.	Main water supply off. Fill hose kinked. Low incoming water pressure. Solenoid valve defective. Solenoid strainer clogged. Circuit board fuse blown.	Open supply valve. Straighten fill hose. Set flowing water pressure to 20-22 PSI. Install repair kit or replace. Clean strainer. Contact service agent.
Chemicals won't feed into dishwasher.	Chemical supply low. Supply tubing damaged. Supply tubing kinked. Pick-up tube clogged. Chemical circuit board fuse blown.	Refill chemical container. Replace tubing. Straighten tubing. Clean/replace tube. Contact service agent.
Low water pressure pumped from wash spray arms.	Clogged scrap screen. Clogged spray arms. Clogged pump intake screen.	Clean scrap screen. Clean spray arms. Inspect sump and clean pump intake screen.
Poor wash results.	Excessively hard water. Water temperature low. Thermistor defective. (See chemicals won't feed above.) (See low or no water above.) Detergent injector defective. Chemical circuit board fuse blown. Wares incorrectly loaded in dishrack. Booster high limit tripped. Wash tank high limit tripped.	Contact chemical supplier. Raise incoming water temperature to 140°F. Replace thermistor. (See chemicals won't feed above.) (See low or no water above.) Replace squeeze tube. Replace injector motor. Clean tubing and pick-up. Contact service agent. Reposition wares or reduce amount of wares in dish racks. Reset or replace high limit. Reset or replace high limit.
Water has drained out of the wash tank while the dishwasher was idle.	Anti-siphon loop in drain hose has been removed. Drain hose clamp is not holding the drain hose in proper position. Building plumbing does not provide correct air vent to prevent siphoning.	Re-route drain hose. DO NOT STRETCH HOSE. Replace/adjust hose clamp making sure goose-neck is maintained. Contact service agent and/or plumber.
Dishwasher stays in wash cycle.	Incoming water supply cold. Rinse Sentry extends wash mode for a maximum time of 5-minutes to allow final rinse water booster temperatures to reach 180°F/ 82°C.	Raise incoming water temperature. Adjust/replace final rinse booster thermistor.

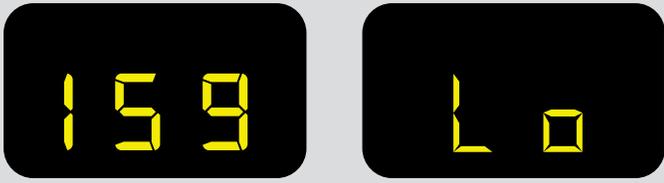
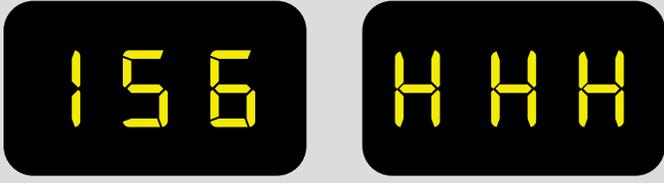
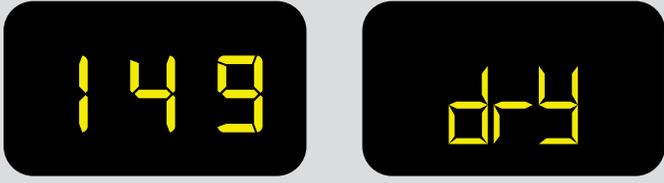
Digital Temperature Display Codes

Display codes that appear in the display windows indicate the operating condition of the machine. Refer to the illustrations below for the meaning of the codes.

Wash Display Codes

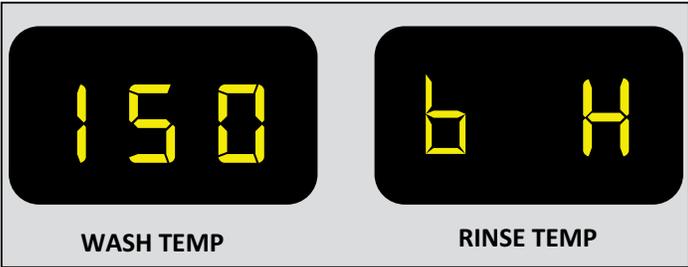
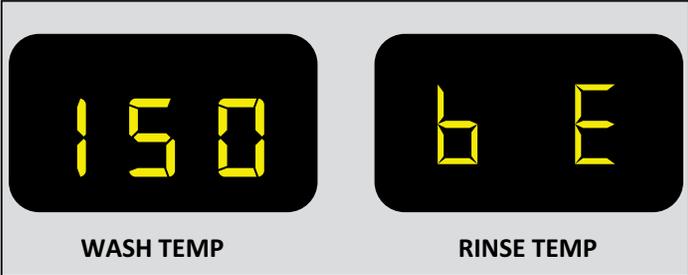
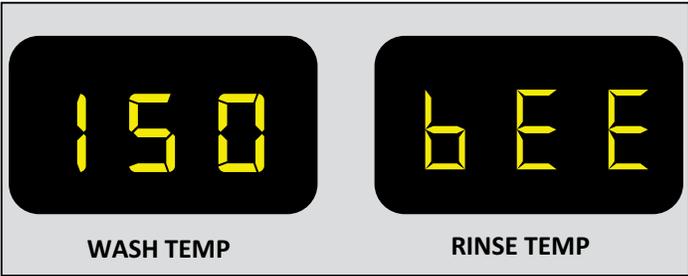


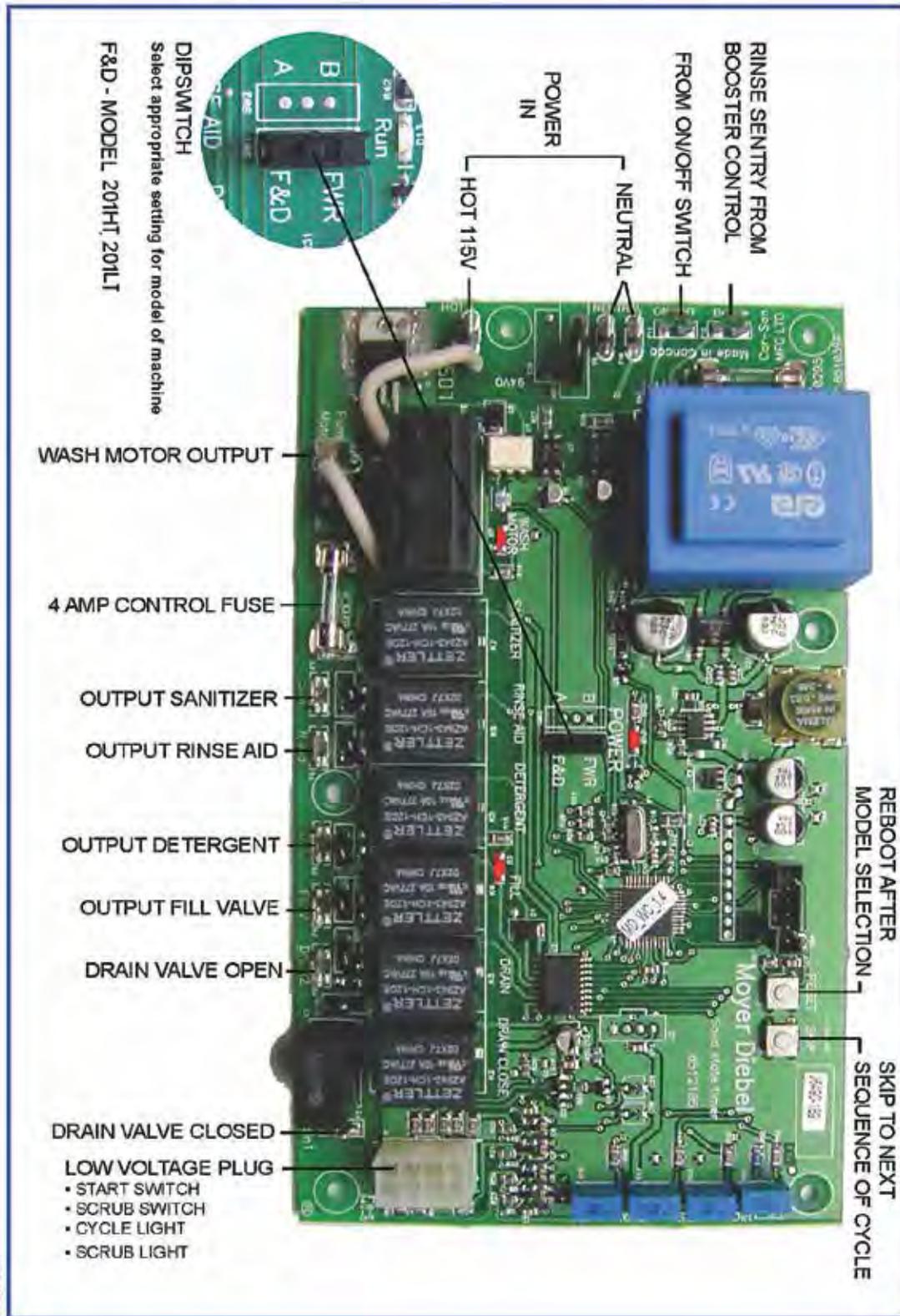
Rinse Display Codes

RINSE DISPLAY CODE	CAUSE
 <p>WASH TEMP RINSE TEMP</p>	Rinse temperature is below 100°F
 <p>WASH TEMP RINSE TEMP</p>	Rinse temperature is above 200°F
 <p>WASH TEMP RINSE TEMP</p>	Booster tank is empty & booster heater is on. CAUTION: Temperature in the booster may be <u>extremely</u> hot
 <p>WASH TEMP RINSE TEMP</p>	Defective rinse thermistor or open, broken, wire between thermistor and board or loose connection.

Booster Display Codes

Error Codes for Booster and Final Rinse Thermistors Only.

DISPLAY CODES	CAUSE
 <p>WASH TEMP: 150 RINSE TEMP: b H</p>	<p>Booster overtemp lockout because booster temperature is greater than 210°F.</p> <p>NOTE: Booster is locked out for 10 minutes before being re-energized.</p>
 <p>WASH TEMP: 150 RINSE TEMP: b E</p>	<p>Booster thermistor is defective or disconnected, broken wires.</p> <p>NOTE: After the thermistor is reconnected, there is a 5 second delay before the display is re-energized.</p>
 <p>WASH TEMP: 150 RINSE TEMP: b E E</p>	<p>Both booster and final rinse display thermistors are defective, unplugged, or open or broken wires between the display and thermistor.</p> <p>NOTE: After a thermistor is reconnected, there is a 5 second delay before the display is re-energized.</p>



Timer Connection Diagram
Solid State Timer P/N 0712105
January 2009

Diagnostic Testing for the Solid State Timer Board, P/N 0712105

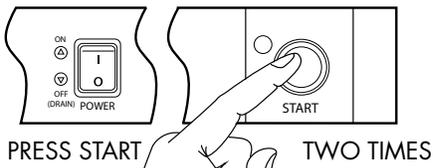
Beginning with S/N W150350341 and above

1

Before testing, Press the dishwasher power switch to OFF/DRAIN and allow the machine to complete the drain cycle.
Check the incoming voltages.

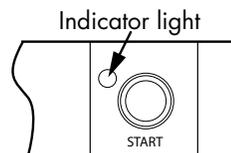
2

With the Power switch in the OFF/DRAIN position, press the START button 2 times.
If the drain valve opens and closes 5 times then the DRAIN VALVE is okay.



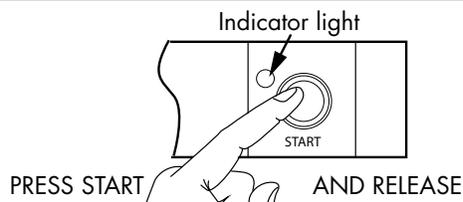
3

Open the door.
If the green cycle indicator light blinks continuously for 10 seconds, then the DOOR SWITCH and the CYCLE LIGHT are okay.



4

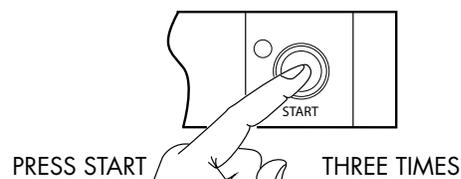
Press and release the START button.
If the green cycle indicator light flashes then the START BUTTON is okay.



5

With the Power switch in the OFF/DRAIN position, press the START button 3 times.
The timer board and the following components are okay if the components run consecutively for a few seconds in the following order:

1. Fill Valve
2. Detergent Pump
3. Rinse-aid Pump
4. Drain Valve opens and then closes
5. Wash Pump
6. Drain Pump or Sanitizer Pump

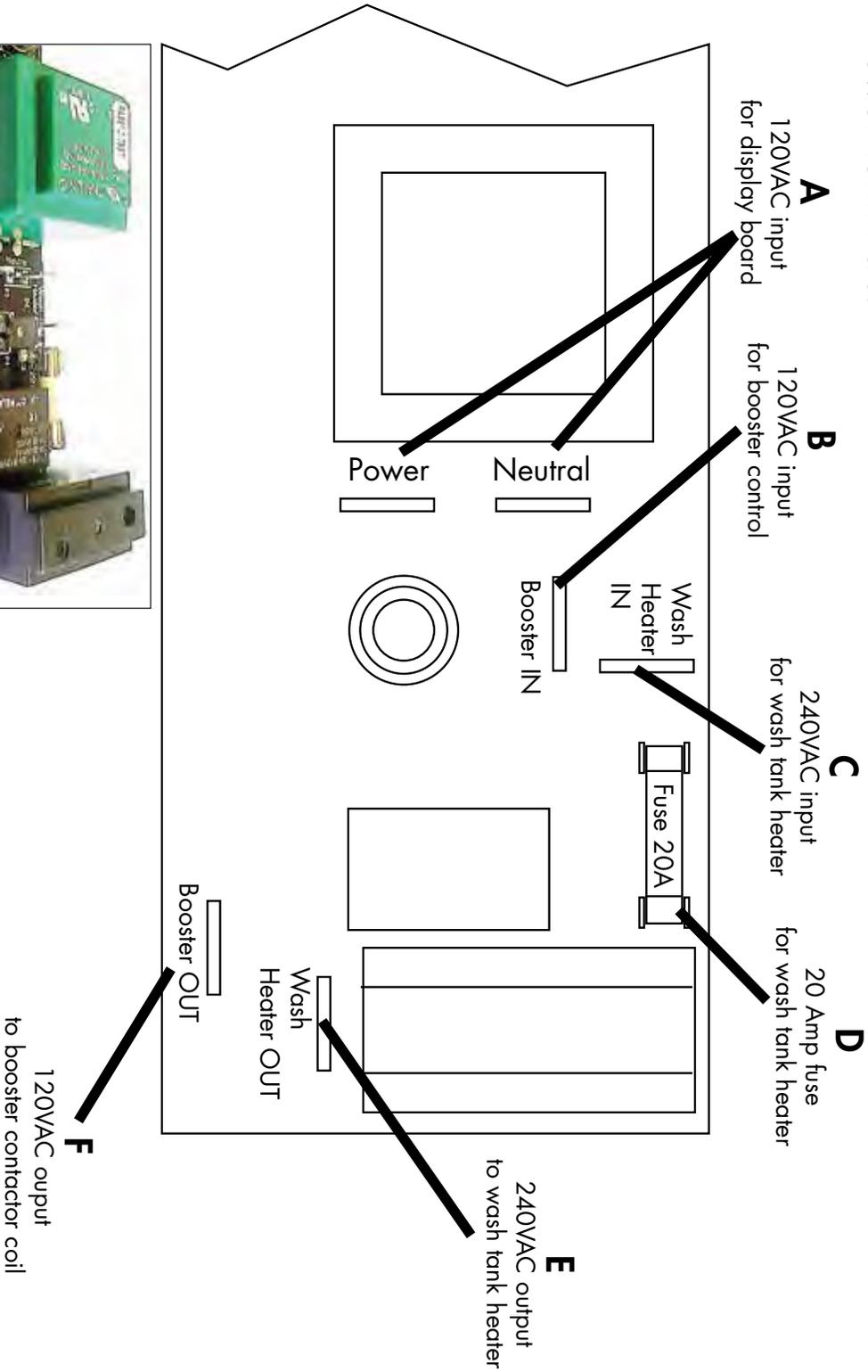


6

Troubleshooting - See below if one or more of the components in Step 5 did not run.

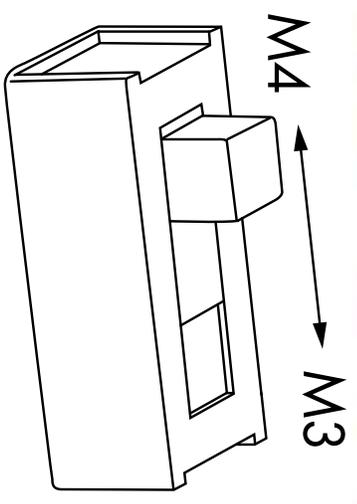
CONDITION	POSSIBLE CAUSE/SOLUTION
A single component in Step 5 does not run.	Check the component that did not run.
Wash pump only component that runs (Except UH330B)	Check timer bd 4A fuse. (All except UH330B)
Wash pump only component that runs (UH330B Only)	Check timer bd 6A fuse. (UH330B Only)
Wash pump only component that won't run. 4A/6A fuse okay.	Check pump/motor - see troubleshooting guide.
None of the components in Step 5 run.	Check neutral wire - see troubleshooting guide.

Undercounter Temperature Display Board — P/N 0512106-1
Power Terminals.



Undercounter Temperature Display Board – P/N 0512106-1

M3 - M4 Model Selector Slide Switch



! ATTENTION – VERY IMPORTANT !
Before installing a new version display board, you must select the model type using the M3 - M4 Switch located at the bottom center of the circuit board.

M3 Setting

Slide the selector switch to the M3 position for machines equipped with thermostats.

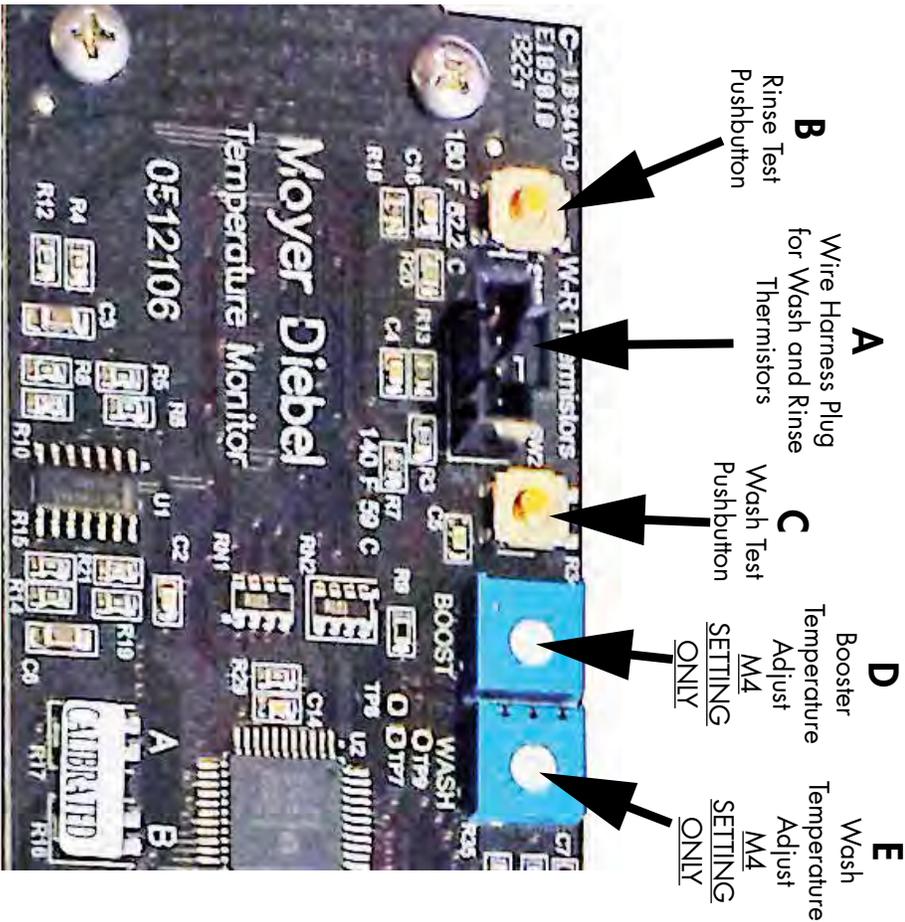
M4 Setting

Slide the selector switch to the M4 position for machines equipped with thermostats only.

NOTE:

The machine will not operate properly if the selector switch is set to the wrong position.

Undercounter Temperature Display Board
P/N 0512106-1



Diagnostics

- A -** When testing the circuit board operation, disconnect the harness from this plug. The wash and rinse displays will display E.
- B -** Push and hold the rinse test pushbutton. A numerical value of 179-180 should appear in the rinse temperature display window indicating the circuit board is operating normally.
- C -** Push and hold the wash test pushbutton for 10 seconds. A numerical value of 140 should appear in the wash temperature display window indicating the circuit board is operating normally.

Temperature Adjustments

When performing diagnostics the values are displayed in °F even if the display is set for °C.

A F/C Slide switch is provided on the board to change the display from the factory default setting of °F to the optional °C.

- D -** Turn clockwise to increase the booster temperature. Full range is 3/4 turns 180-200°F. DO NOT FORCE PAST THE STOPS.
- E -** Turn clockwise to increase the wash temperature. Full range is 3/4 turns 120-160°F. DO NOT FORCE PAST THE STOPS.

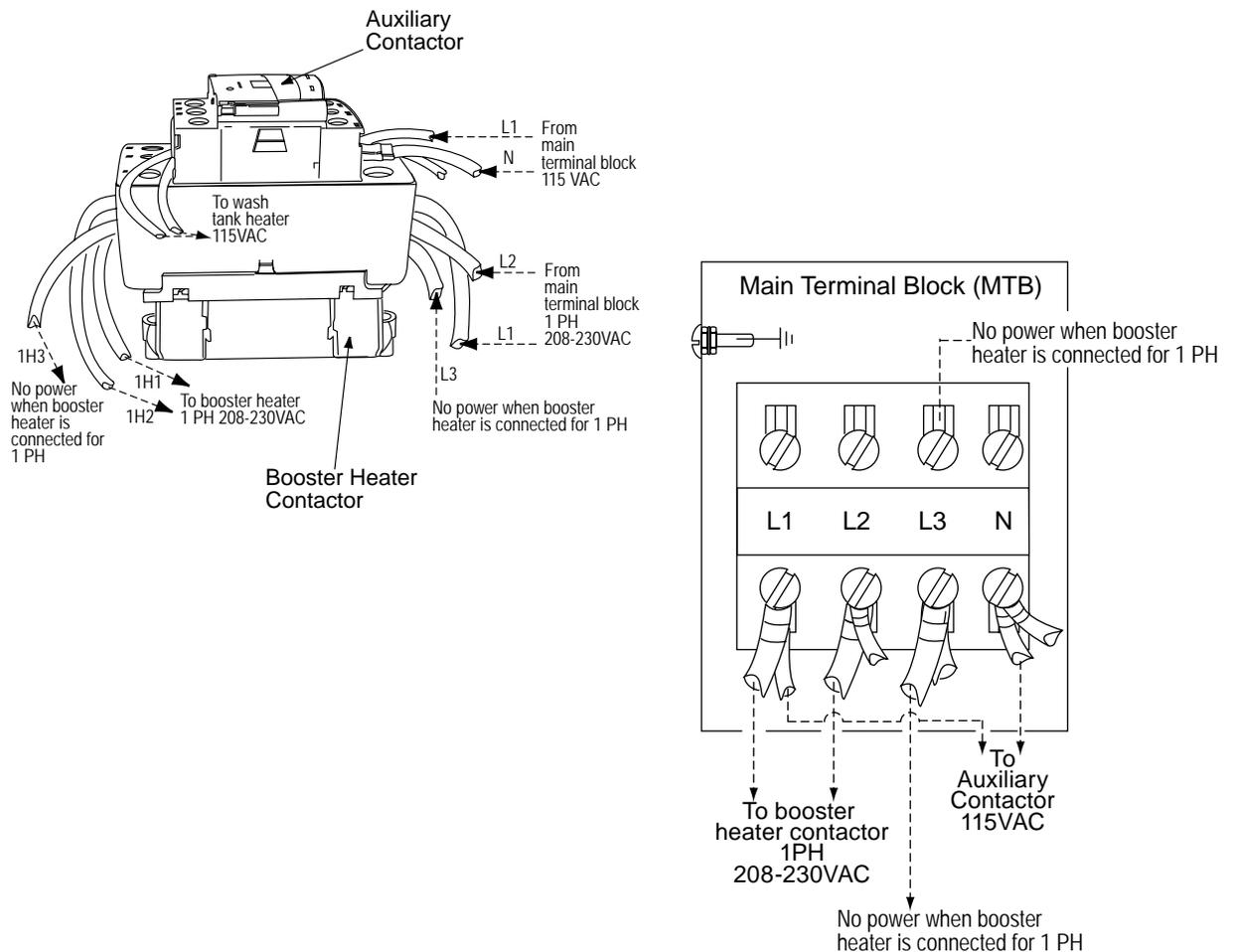
Booster Heater/Wash Tank Heater Interlock Circuit Operation

For Model 401HT, the booster heater/wash tank heater interlock circuit removes power from the wash tank heater whenever the booster heater contactor energizes. The illustration below shows how the booster heater contactor is wired.

The booster heater contactor is located on the center of the base behind the lower front access panel.

Interlock Circuit Operation

1. The dishwasher fills with water when the main power switch on the dishwasher is turned on. The booster heater thermistor calls for heat which energizes the booster heater contactor.
2. The auxiliary contact on the top of the contactor opens and removes power from the wash tank heater.
3. When the booster heater thermistor is satisfied, the booster heater contactor de-energizes and the auxiliary contacts close applying power to the wash tank heater.
4. This operation is repeated whenever the booster thermistor calls for heat.

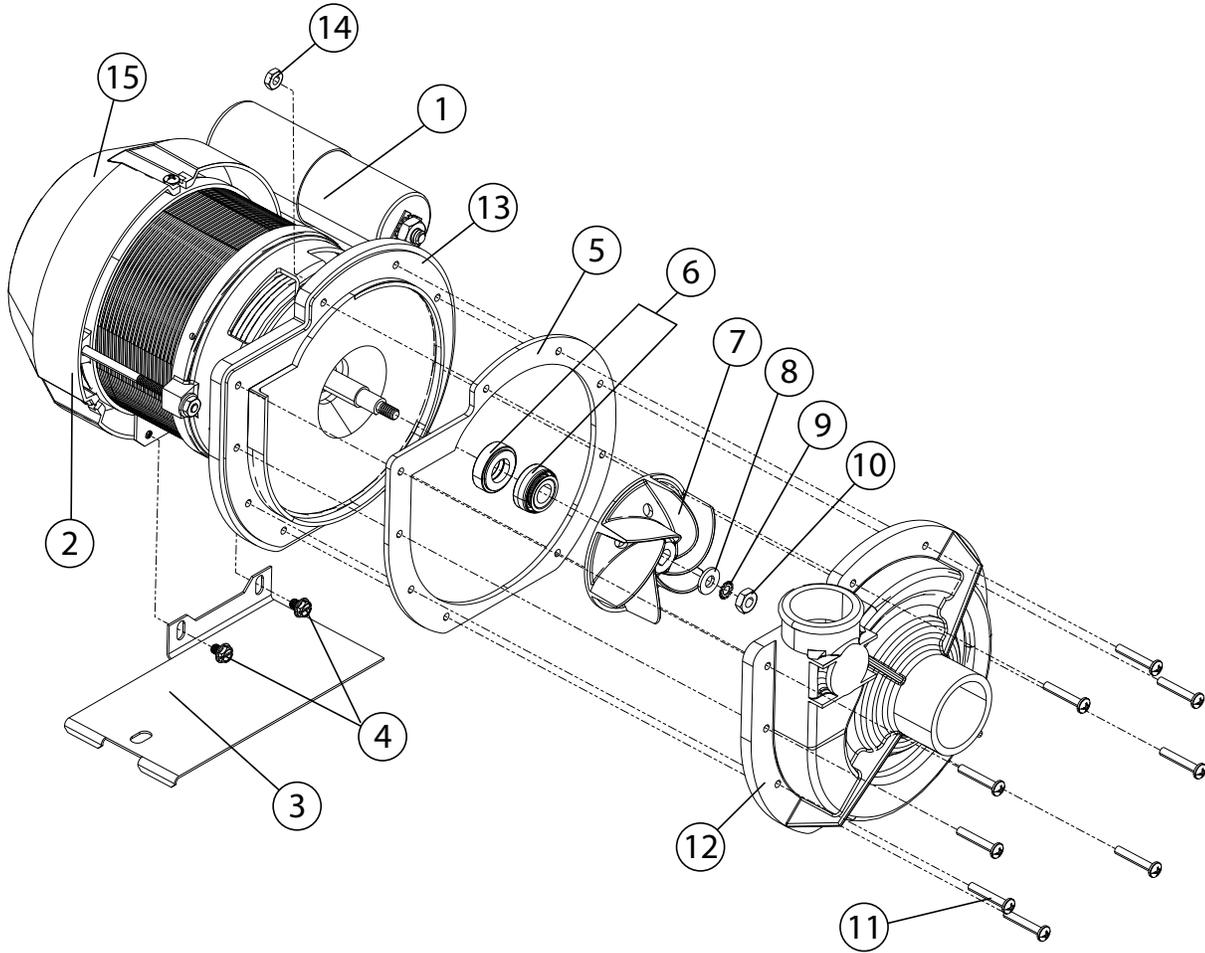


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Service Replacement Parts

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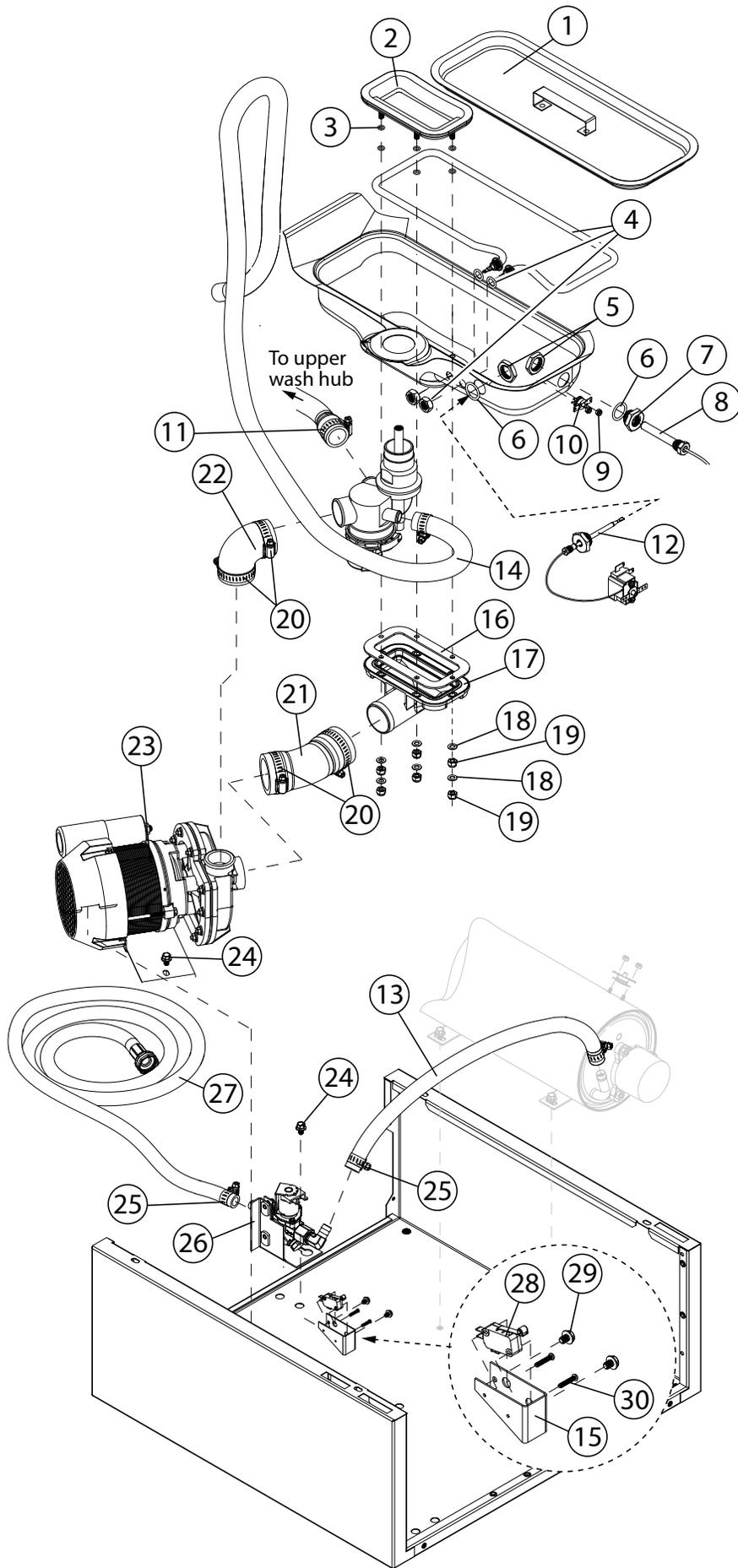
Wash Pump/Motor Assembly - 401HT



Item No.	Part No.	Description	Qty.
1	0512347	CAPACITOR 40 μ F	1
2	0512101	PUMP/MOTOR ASSEMBLY COMPLETE 115VAC/60/1	1
3	0313394	BRACKET, WASH PUMP	1
4	0512185	BOLT, HEX FLANGE 1/4-20 X 3/8" SST	2
5	110285	GASKET	1
6	114139	SEAL	1
7	0512345	IMPELLER	1
8	0501478	WASHER, PLAIN, 17/64"	1
9	106482	WASHER, LOCK, 1/4"	1
10	114144	NUT, M6	1
11	0512340	SCREW, M4, PHIL, PAN HD.	9
12	0512341	VOLUTE, PUMP	1
13	114137	BACKPLATE, PUMP	1
14	107337	NUT, M4	9
15	0513131	COVER, REAR MOTOR FAN	1

NOTE: The pump motor is not sold separately.

Base Assembly - 401HT



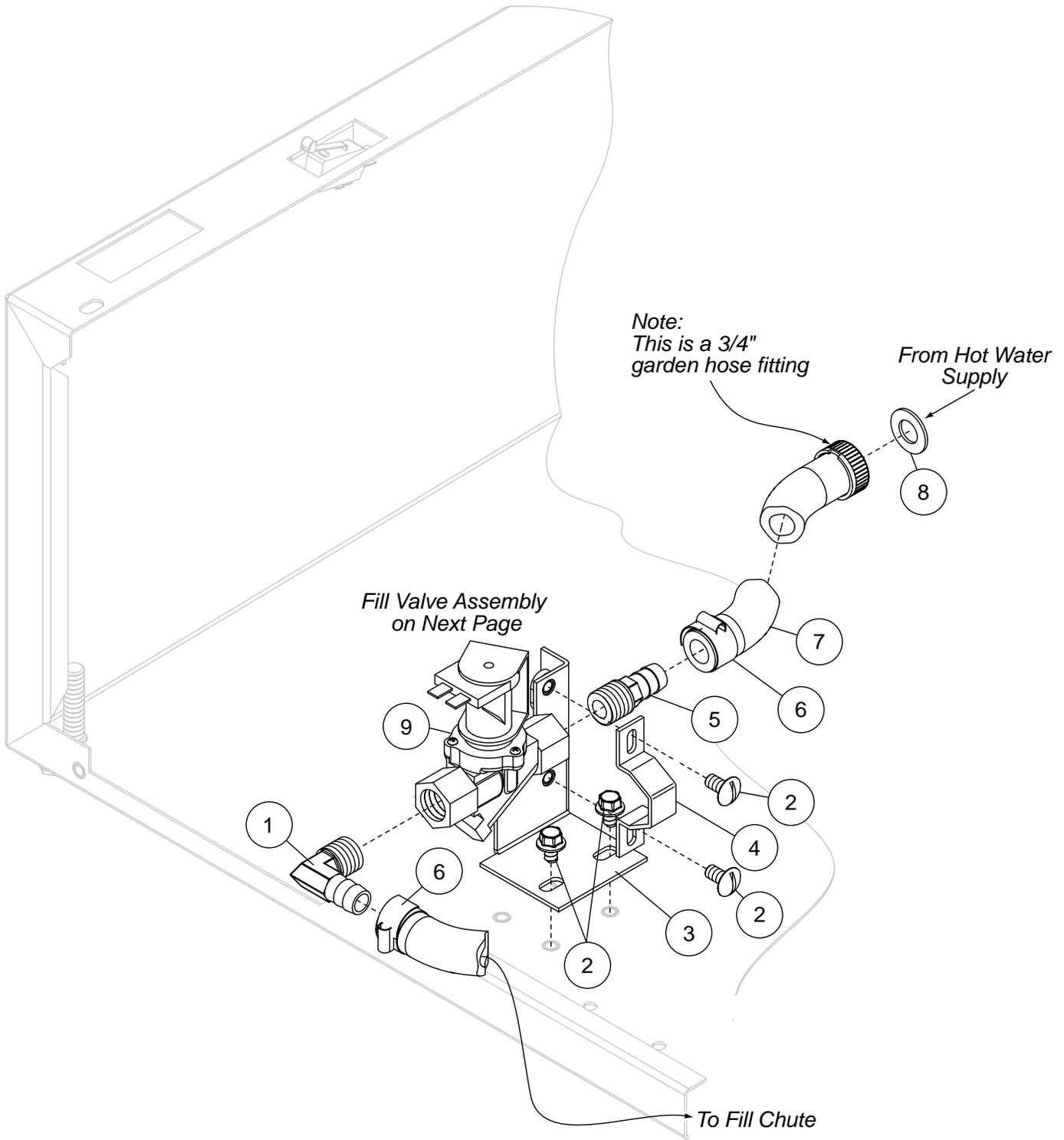
Item No.	Part No.	Description	Qty.
1	0512136	SCREEN, SCRAP ASSY.	1
2	0513324	FLANGE, PUMP SUCTION	1
3	0513677	O-RING	A/R
4	0512426	HEATER, 240V 2kW (401HT)	1
5	401029-1	NUT, LOCK 1/2 INCH NI PLATED	A/R
6	0512099	O-RING	1
7	0508872	ADAPTOR, THERMOMETER	1
8	0512107	THERMOMETER, WASH TANK	1
9	108954	NUT, GRIP 6-32 WITH NYLON INSERT SST	2
10	113604	THERMOSTAT, HI-LIMIT BI-METAL SNAP, 212°F	1
11	0508808	CLAMP, SS GEAR	2
12	0507323	THERMOSTAT, WASH (401LT Only)	1
13	107417	HOSE, 1/2" ID	A/R
14	0509302	HOSE, 5/8" ID X 1" OD X 6" LG.	A/R
15	0313432	BRACKET, DOOR SWITCH	1
16	0513329	GASKET, PUMP SUCTION	1
17	0513325	ELBOW, PUMP SUCTION	1
18	0501476	WASHER	6
19	107967	NUT, 1/4-20 W/NYLON INSERT SST	6
20	0502571	CLAMP, HOSE 1-1/16" - 2"	2
21	0513328	HOSE, PUMP SUCTION	1
22	0512119	HOSE, PUMP DISCHARGE	1
23	0512101	PUMP/MOTOR COMPLETE 115/60/1	1
24	0512185	BOLT, HEX FLANGE 1/4-20 X 3/8" SST	1
25	0512985	CLAMP, HOSE	1
26	0504952	VALVE, FILL 5.0 GPM	1

Base Assembly - 401HT

Item No.	Part No.	Description	Qty.
27	0509526	HOSE, 1/2" X 7 FT. FEM. GARD. ADAPT.	1
28	0501379	SWITCH, 15A	1
29	0512792	SCREW, 10-32 X 1/4" RD. HD. PHILL. SST	2
30	0508752	SCREW, 4-40 X 5/8" RH. HD. PHILL. SST	2

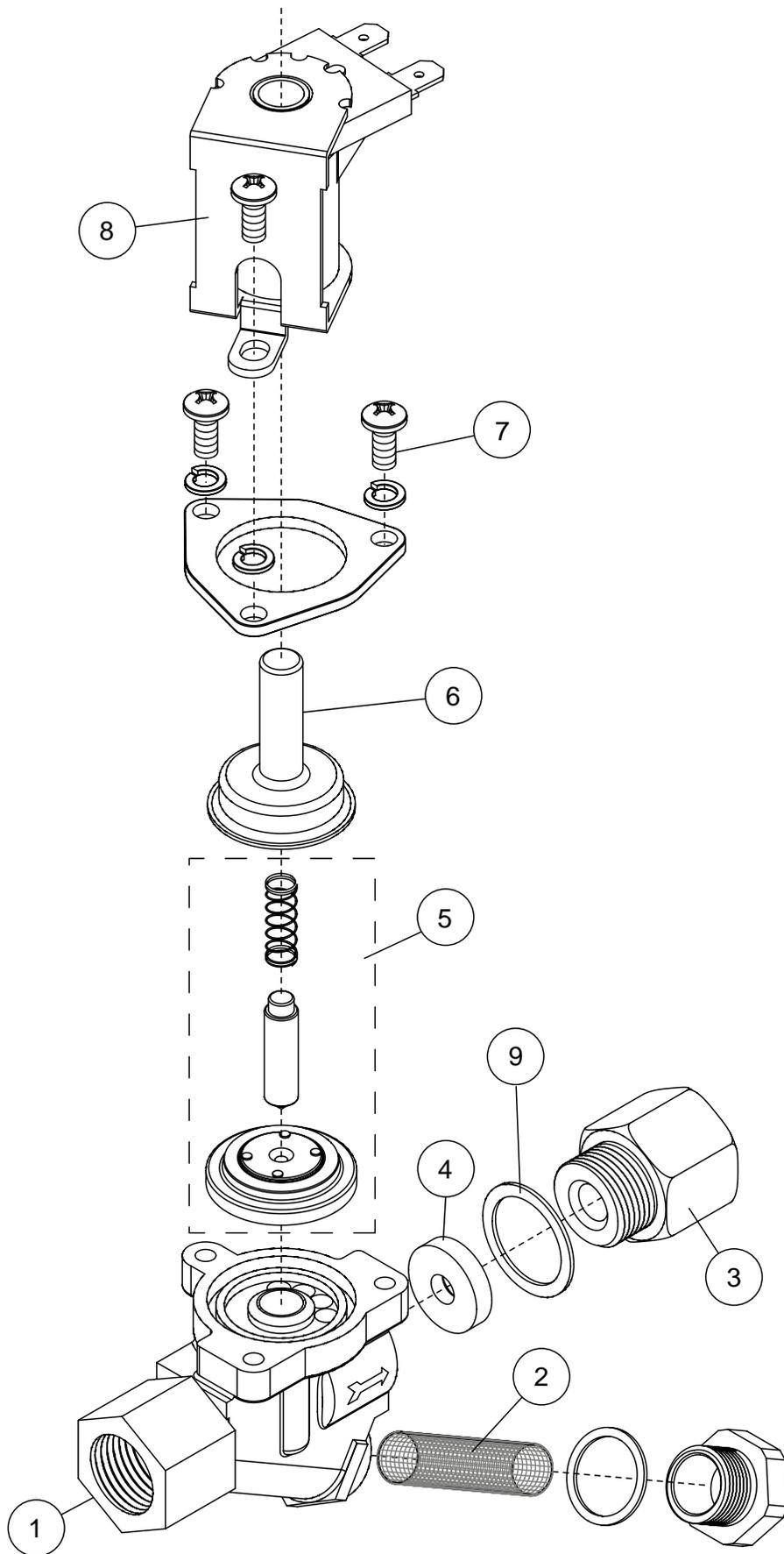
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Fill Piping Assembly - 401HT



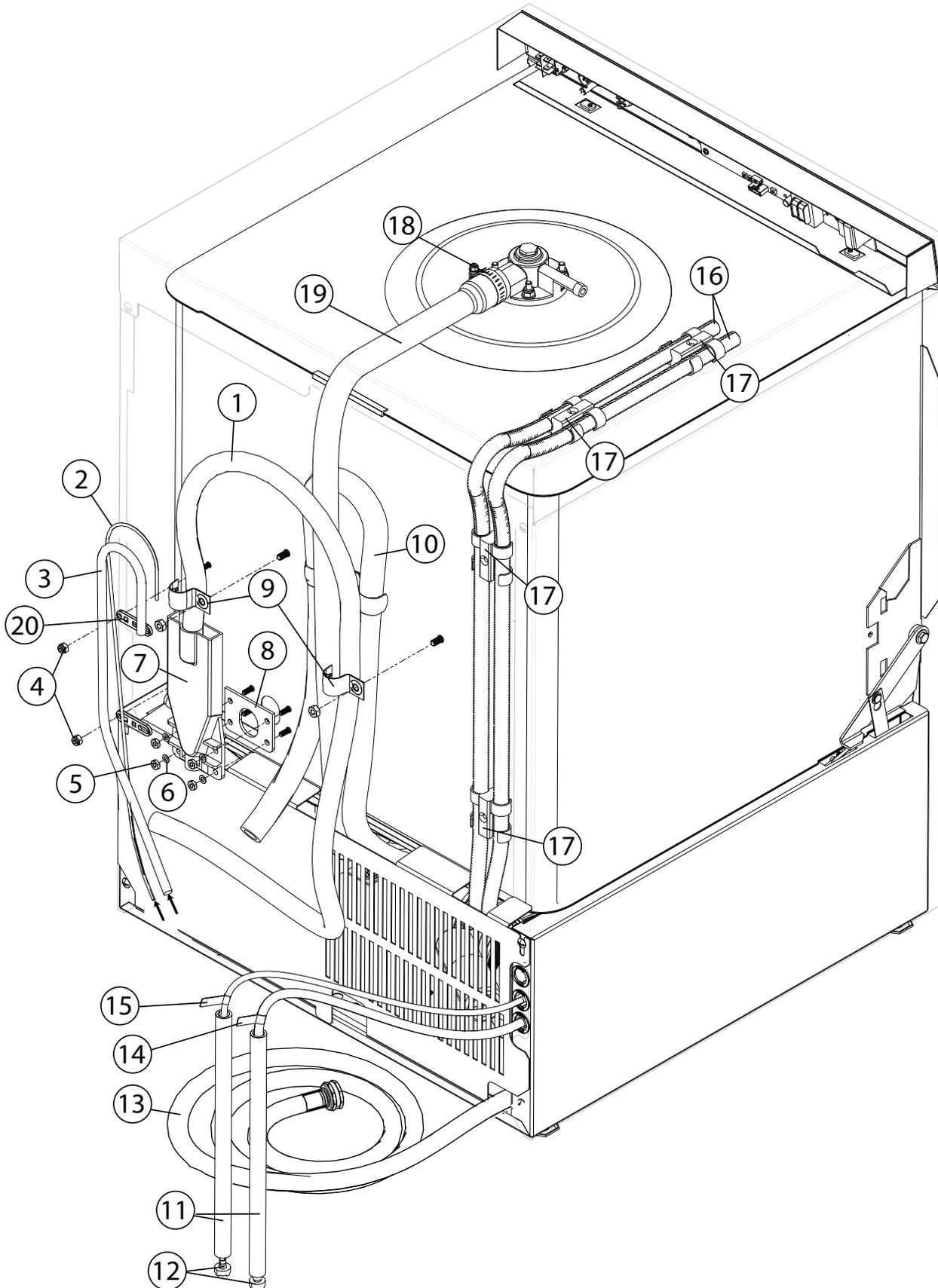
Item No.	Part No.	Description	Qty.
1	0502653	ELBOW, 90° 3/8" MPT X 1/2" HOSE	1
2	0512185	BOLT, HEX FLANGE 1/4-20 X 3/8" SST	4
3	0300065	SUPPORT, VALVE	1
4	0300203	CLAMP, VALVE	1
5	0502618	HOSE BARB, 1/2" X 3/8" MPT	1
6	0512985	CLAMP, HOSE	1
7	0509526	HOSE, 1/2" X 7 FT. FEM. GARD. ADAPT.	1
8	0505320	WASHER, 1" OD GARDEN HOSE	1
9	0504952	VALVE, FILL, 3/8" NPT	1

Fill Solenoid Valve - 401HT

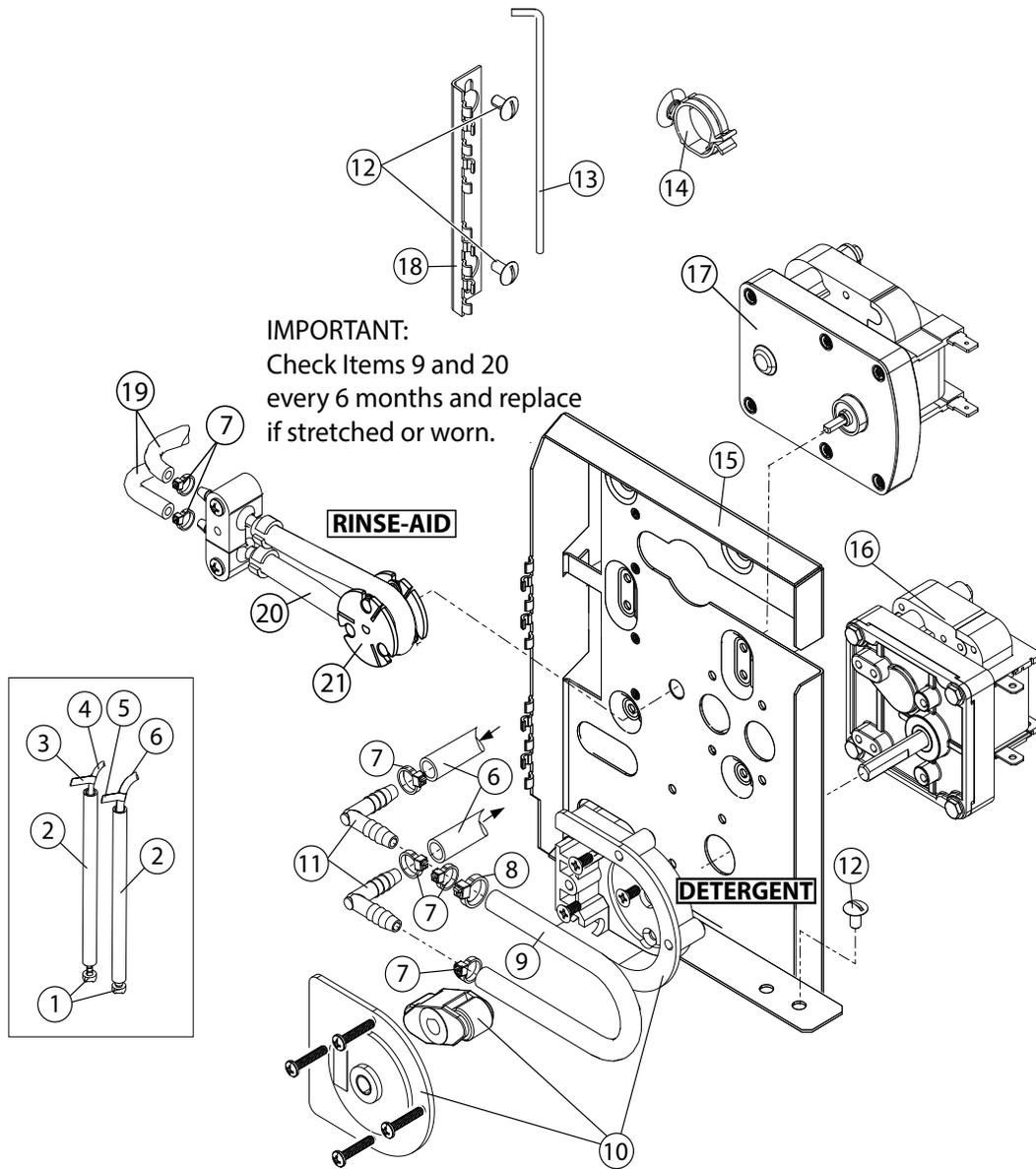


Item No.	Part No.	Description	Qty.
1	0504952	VALVE, FILL 5.0 GPM	1
2	0502803	SCREEN, VALVE STRAINER	1
3	0502804	GASKET, CAP	1
4	0504958	WASHER, FLOW 5.0 GPM	1
5	0502811	KIT, REBUILD	1
6	0505229	GUIDE	1
7	0501406	SCREW, SLOT SS RH 8-32 X 1/2"	3
8	0505235	COIL, 115V 60HZ 10W	1
9	0502807	GASKET, OUTLET (COPPER)	1

Fill Chute Assembly - 401HT

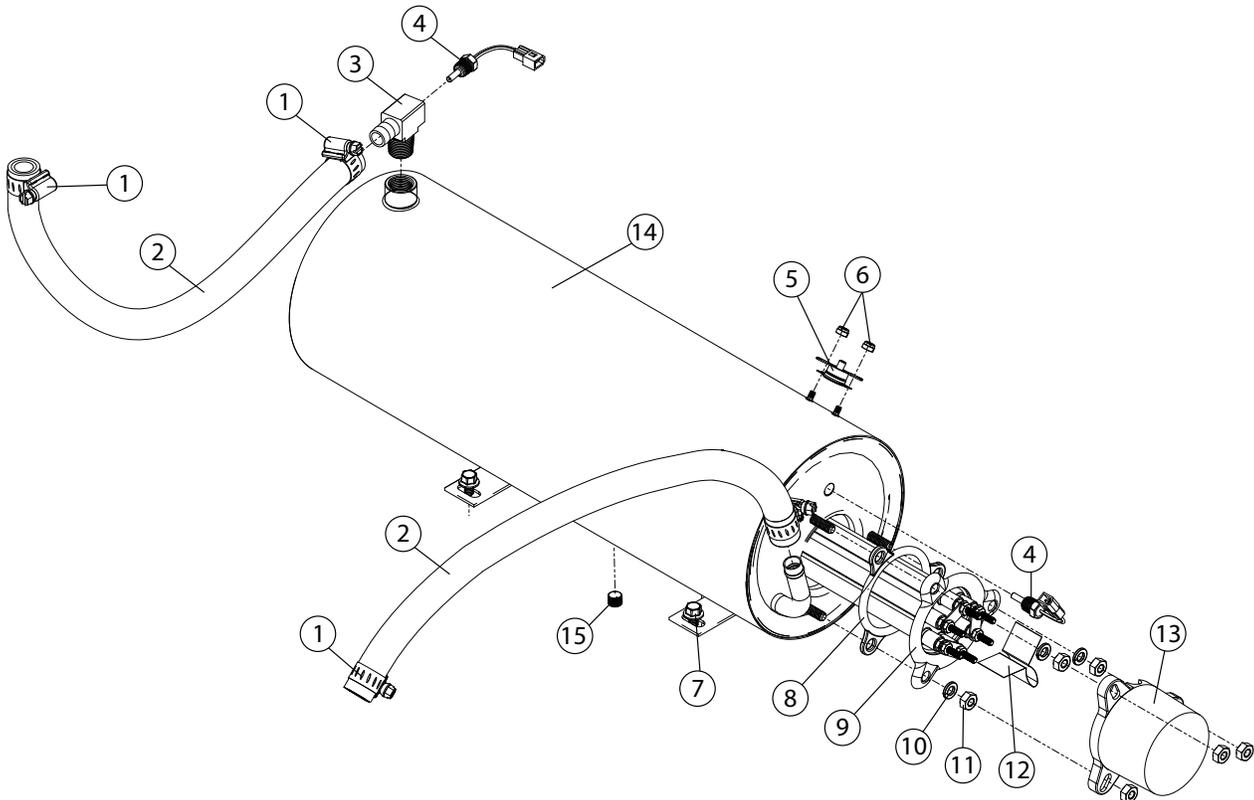


Item No.	Part No.	Description	Qty.
1	107417	HOSE, RUBBER 1/2" ID X .84" OD	A/R
2	0502666	HOSE, 1/8" ID X 1/4" OD PVC	A/R
3	0502667	HOSE, 1/4" ID X 3/8" OD PVC	A/R
4	100194	NUT, GRIP 10-32 W/NYLON INSERT	2
5	0503722	NUT, HEX 10-32 SST	4
6	0507709	WASHER, FLAT #10 SST	4
7	0508867	CHUTE, INLET	1
8	0509048	GASKET, INLET CHUTE	1
9	0308822	CLAMP, EMT 1/2"	1
10	0509302	HOSE, 5/8" ID X 1" OD PVC BRAIDED	A/R
11	0306363	TUBE, STIFFENER	2
12	0501869	STRAINER	2
13	0509526	HOSE, FILL 1/2" X 7 FT. FEM. GARD. ADAPT.	1
14	0503695	LABEL, DETERGENT HOSE	1
15	0505483	LABEL, RINSE-AID HOSE	1
16	0512757	CONDUIT, 1/2"	A/R
—	0512758	CONDUIT, 3/8"	A/R
17	0512369	CLAMP, CONDUIT	4
18	0502571	CLAMP, HOSE GEAR	A/R
19	0512120	HOSE, WASH	1
20	106090	TIE PLATE	2
—	0501518	TIE, NYLON 5-1/2"	2



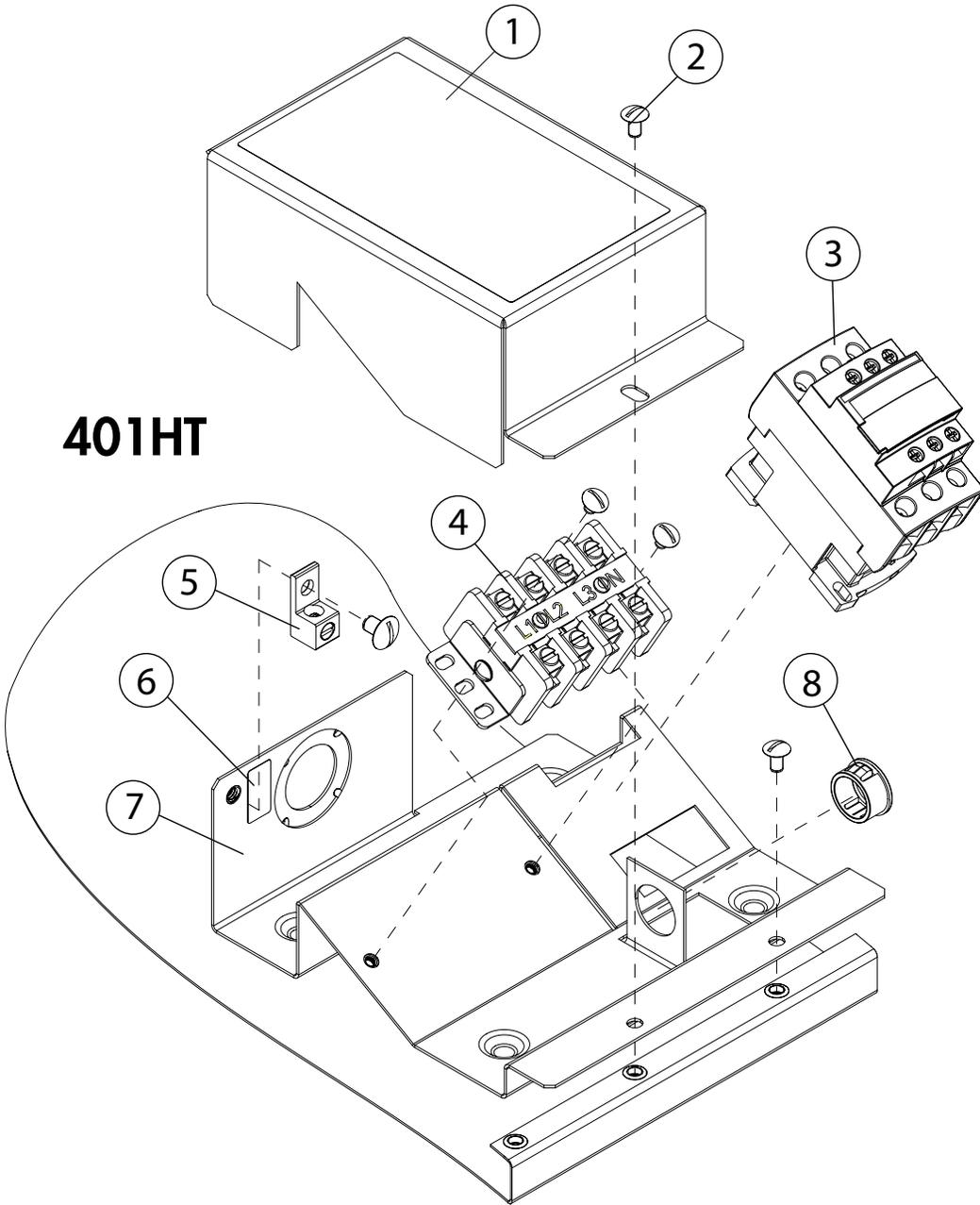
Item No.	Part No.	Description	Qty.
1	0501869	STRAINER	2
2	0306363	TUBE, 3/8" ID X 12" LG. STIFFENER	1
3	0505483	LABEL, RINSE-AID HOSE	1
4	112883-1	TUBING, 1/8" OD X 1/16" ID	A/R
5	0503695	LABEL, DETERGENT HOSE	A/R
6	0502667	HOSE, 1/4" ID X 3/8" OD PVC	A/R
7	0501519	TIE, NYLON 4"	7
8	0512369	CLAMP, HOSE	2
9	114202	TUBE, PUMP 3/16" ID X 3/8" OD X 9" LG.	1
10	114203	PUMP HD KIT, PERISTALIC	2
11	0502644	ELBOW, 1/4" HOSE BARB	2
12	100007	SCREW, 10-32 X 3/8" TRUSS SST	3
13	0313644	PIN, HINGE	1
14	0513645	HOLDER, CABLE	4
15	0313393	BRACKET, CHEMICAL PUMP	1
16	0510870-1	GEARMOTOR, 115/60/1	2
17	0503756	MOTOR, INJECTOR PUMP	1
18	0313431	BRACKET, HINGED PANELS	1
19	0502666	HOSE, 1/8" ID X 1/4" OD PVC	A/R
20	0706635	TUBE, ELEMENT 45 CC	1
21	0707142	ROTOR	1

Booster Assembly - 401HT



Item No.	Part No.	Description	Qty.
1	0512985	CLAMP, SS GEAR-MIN. 1/2"	4
2	107417	HOSE, RUBBER 1/2" ID X .84" OD	A/R
3	0513314	TEE, RINSE	1
4	0513310	THERMISTOR 10 k Ω , 2-WIRE	2
5	110562	THERMOSTAT, HIGH LIMIT 240°F	1
6	108954	NUT, GRIP 6-32 W/NYLON INSERT SST	2
7	0512185	BOLT, HEX FLANGE, 1/4-20 X 3/8" SST	2
8	109985	SEAL, BOOSTER ELEMENT	1
9	111235-1	BOOSTER, ELEMENT 5 KW, 40°F RISE	1
—	111233	BOOSTER, ELEMENT 9 KW, 70°F RISE	1
10	106482	WASHER, LOCK 1/4" SPLIT SST	3
11	100003	NUT, PLAIN 1/4-20 SST	6
12	111885	INSULATOR	1
13	H161123	COVER, ELEMENT	1
14	0713333	TANK, BOOSTER SST	1
15	0508817	PLUG, 1/8"	1
—	0513538	HARNESS, BOOSTER THERMISTOR	2
—	0513537	HARNESS, WIRING (UH130B NOT SHOWN)	1

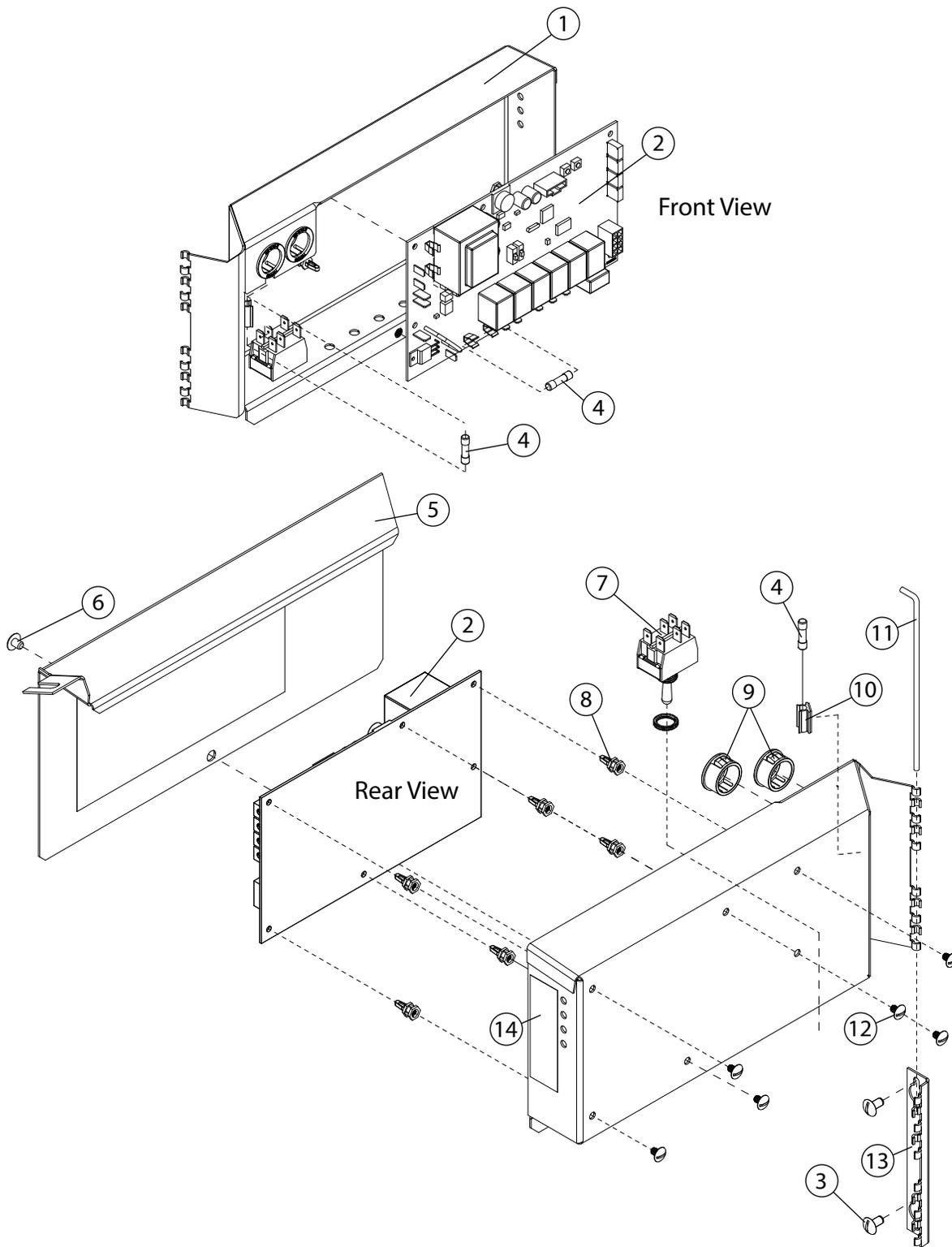
Power Input Block and Cord Assemblies - 401HT



401HT - Power Input Block and Cord Assemblies

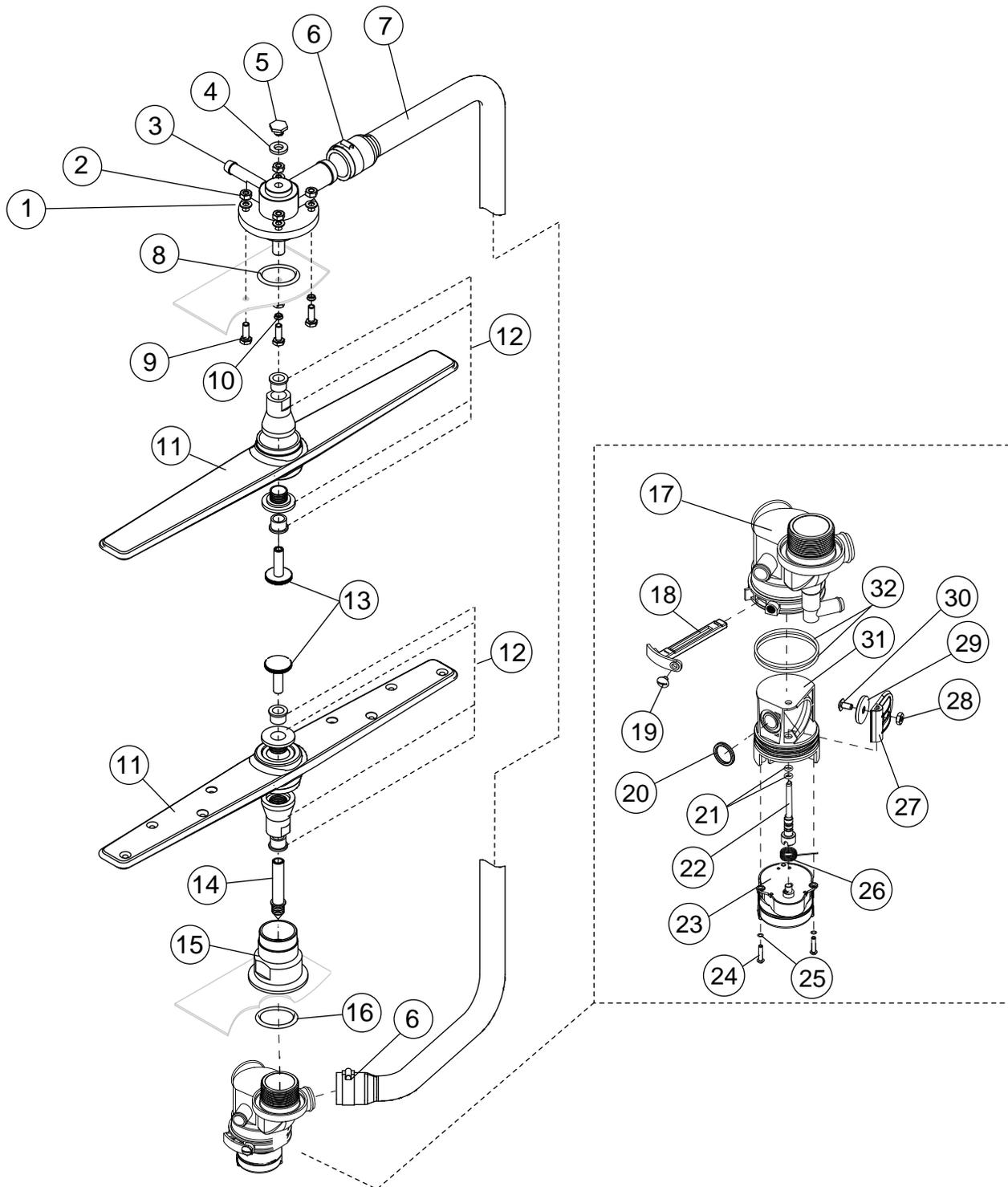
Item No.	Part No.	Description	Qty.
1	0313396	COVER, BOX WIRING	1
2	0501411	SCREW, 10-32 X 1/4", TRUSS HD.	2
3	0512432	CONTACTOR, 3-POLE 120VAC COIL	1
4	0509527	BLOCK, TERMINAL, 4-POLE	1
5	103310	LUG, GROUND	1
6	0503592	LABEL, GROUND	1
7	0313395	BOX, WIRING	1
8	0503574	BUSHING, STRAIN RELIEF, SMALL	A/R
9	201029-1	NUT, LOCK 1/2 INCH NI PLATED	A/R
10	0512099	O-RING	1
11	0507323	THERMOSTAT, WASH	1
12	0503647	RELIEF, STRAIN	1
13	0501450	SCREW, 6-32 X 3/16" NIBS, RH PHIL. SST	2
14	0313410	BRACKET, POWER CORD	1
15	0512185	BOLT, HEX FLANGE, 1/4-20 X 3/8" SST	1

Timer Control Board Assembly - 401HT



Item No.	Part No.	Description	Qty.
1	0313397	BOX, CONTROL BOARD	1
2	0712105	TIMER CKT. BD.	1
3	0501464	SCREW, 10-24 X 3/8; TRUSS HD. SST	2
4	0512373	FUSE, 4A 250V	1
5	0313398	COVER, BOX	1
6	0501411	SCREW, 10-32 X 1/4" SST	1
7	0501373	SWITCH, BOOSTER FILL	1
8	0512973	STANDOFF	6
9	107964	BUSHING, STRAIN RELIEF	2
10	0512781	HOLDER, FUSE	1
11	0313644	PIN, HINGE	1
12	0501408	SCREW, 8-32 X 1/4" TRUSS HD. PHIL. SST	6
13	0313431	BRACKET, HINGED PANELS	1
14	0512243	LABEL, CHEMICAL ADJUST	1

Wash/Rinse Spray Arm and Drain Valve - 401HT



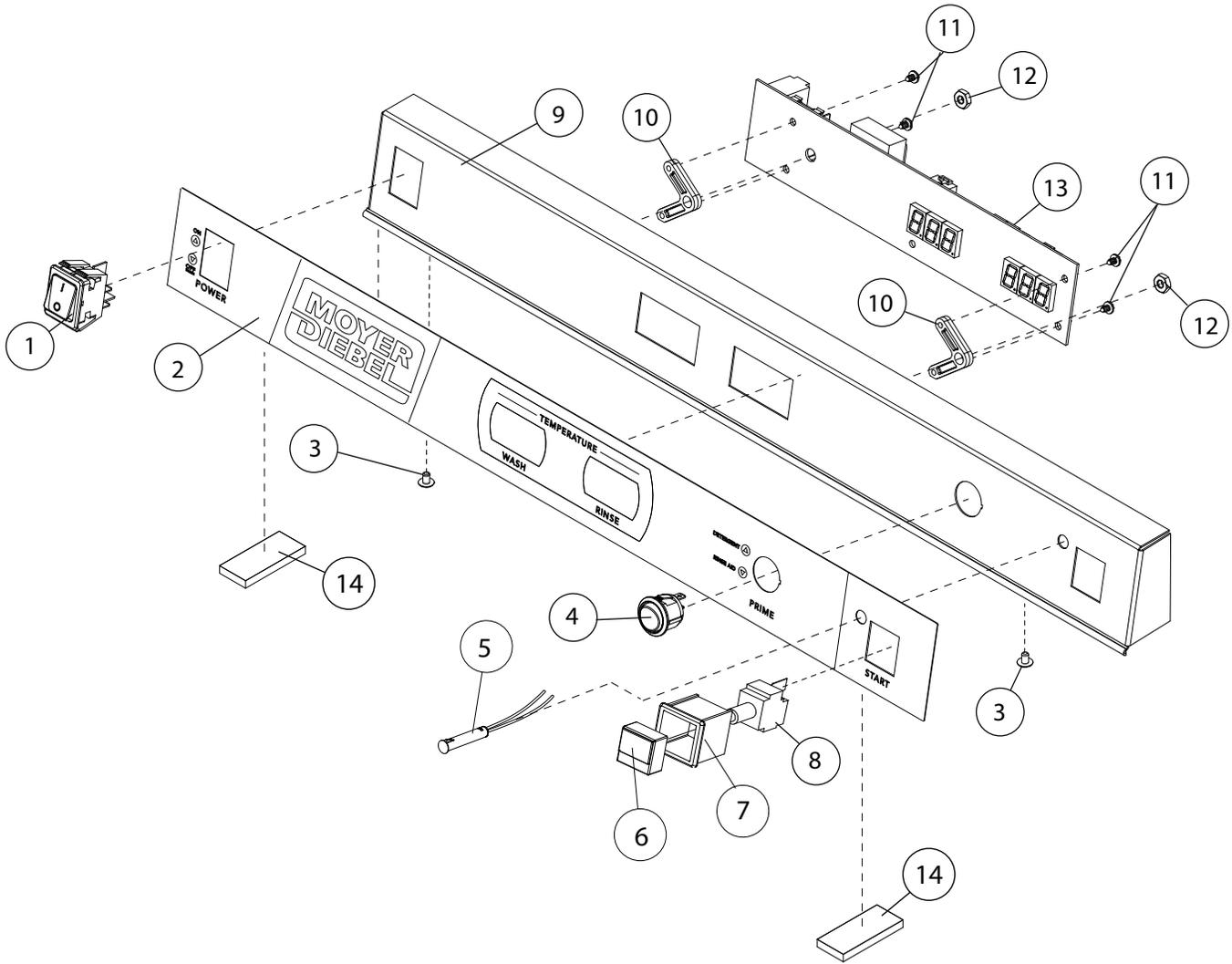
401HT - Wash/Rinse Spray Arm and Drain Valve

Item No.	Part No.	Description	Qty.
1	0501478	WASHER, 17/64" ID X 9/16" OD SST	4
2	107967	NUT, HEX SST 1/4-20 NYLON INSERT	4
3	H35509-1	HUB, UPPER WASH ARM	1
4	107873	WASHER, PACKING	1
5	110215	SCREW, RETAINING	1
6	0502571	CLAMP, HOSE GEAR HOSE 1-1/2" SST	2
7	0512120	HOSE, UPPER WASH ARM	1
8	0512133	O-RING, 2-1/8" OD X 1-3/4" ID X 3/16	1
9	100738	BOLT, 1/4-20 X 1" HEX. HD. SST	4
10	0501481	WASHER, NYLTITE	4
11	H420548	WASH ARM ASSEMBLY <i>(Includes Item 12)</i>	2
12*	0712749	BEARING ASSEMBLY	2
13	0512129	NUT, WASH ARM	2
14	0512125	SHAFT, LOWER	1
15	0512066	HUB, LOWER WASH ARM	1
16	0512133	O-RING, 2-1/8" OD X 1-3/4" ID X 3/16	1
17	0513440	HOUSING, MANIFOLD	1
18	0513443	PIN, RETENTION	1
19	0509439	SCREW, RETENTION PIN 10-32 X 5/16" SST	1
20	0513446	O-RING, QUAD	1
21	0513445	O-RING, PIVOT SHAFT	2
22	0513447	SHAFT, FLAPPER	1
23	0712123	MOTOR, DRAIN VALVE	1
—	0509257	PIN, MOTOR (COMES WITH MOTOR)	1
24	104883	SCREW, MOTOR 6-32 X 3/8" SST	2
25	0501497	WASHER, SPLIT LOCK #8	2
26	0512126	SPRING, TORSION	1
27	0513442	FLAPPER	1
28	100194	NUT, FLAPPER SEAL	1
29	0512127	GASKET, FLAPPER	1
30	0501412	SCREW, FLAPPER SEAL 10-32 X 3/8"	1
31	0513441	BODY, CARTRIDGE DRAIN VALVE	1
32	0513444	O-RING, CARTRIDGE BODY	2
—	0713667	CARTRIDGE ASSEMBLY, COMPLETE INCLUDES ITEMS 18-32	1

* Note:

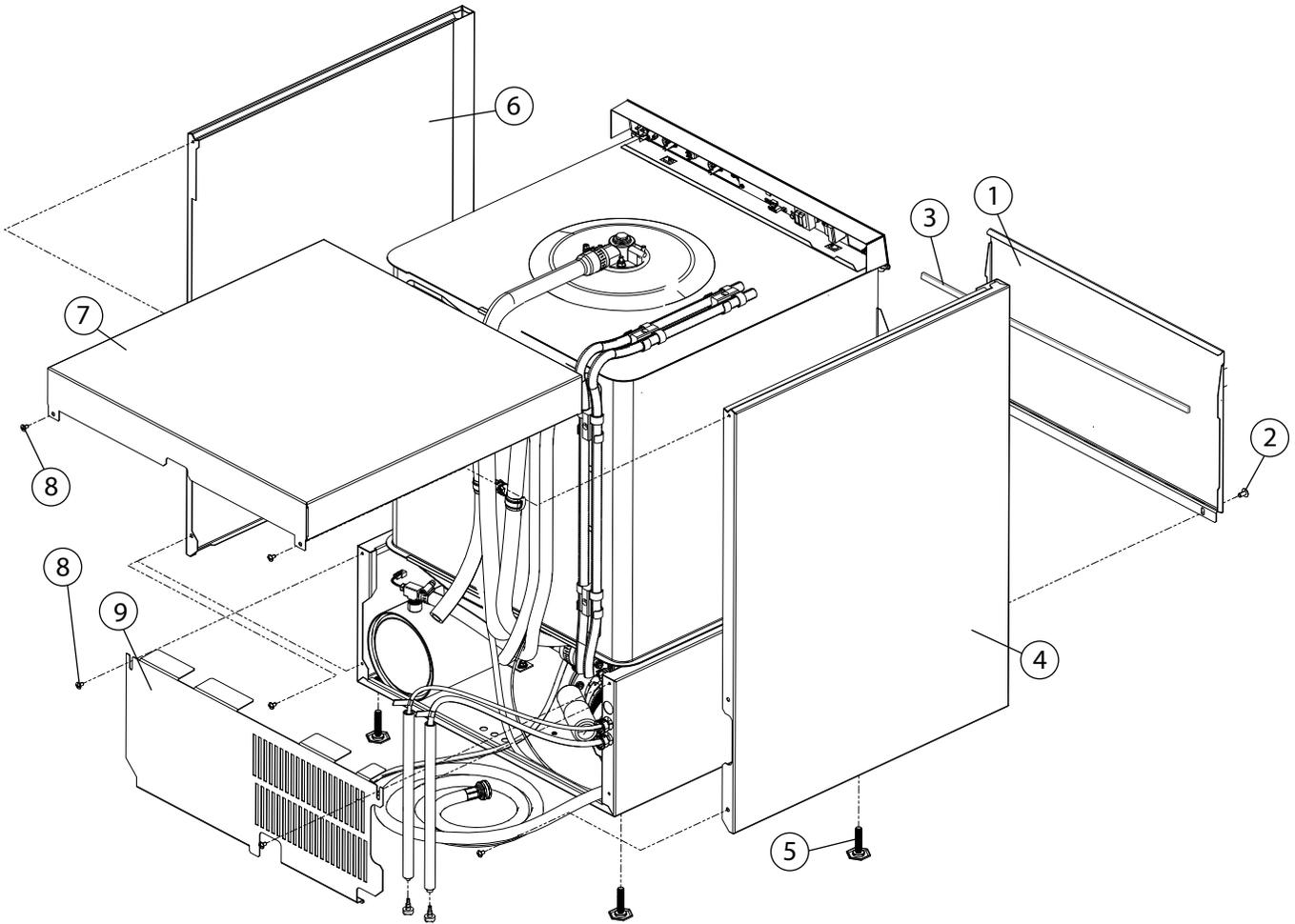
The bearing assembly, P/N 0712749 includes 2 bearings, 1 locknut, and 1 wash arm hub.
The bearings, locknut and hub are not available as separate service replacement parts.

Control Panel - 401HT



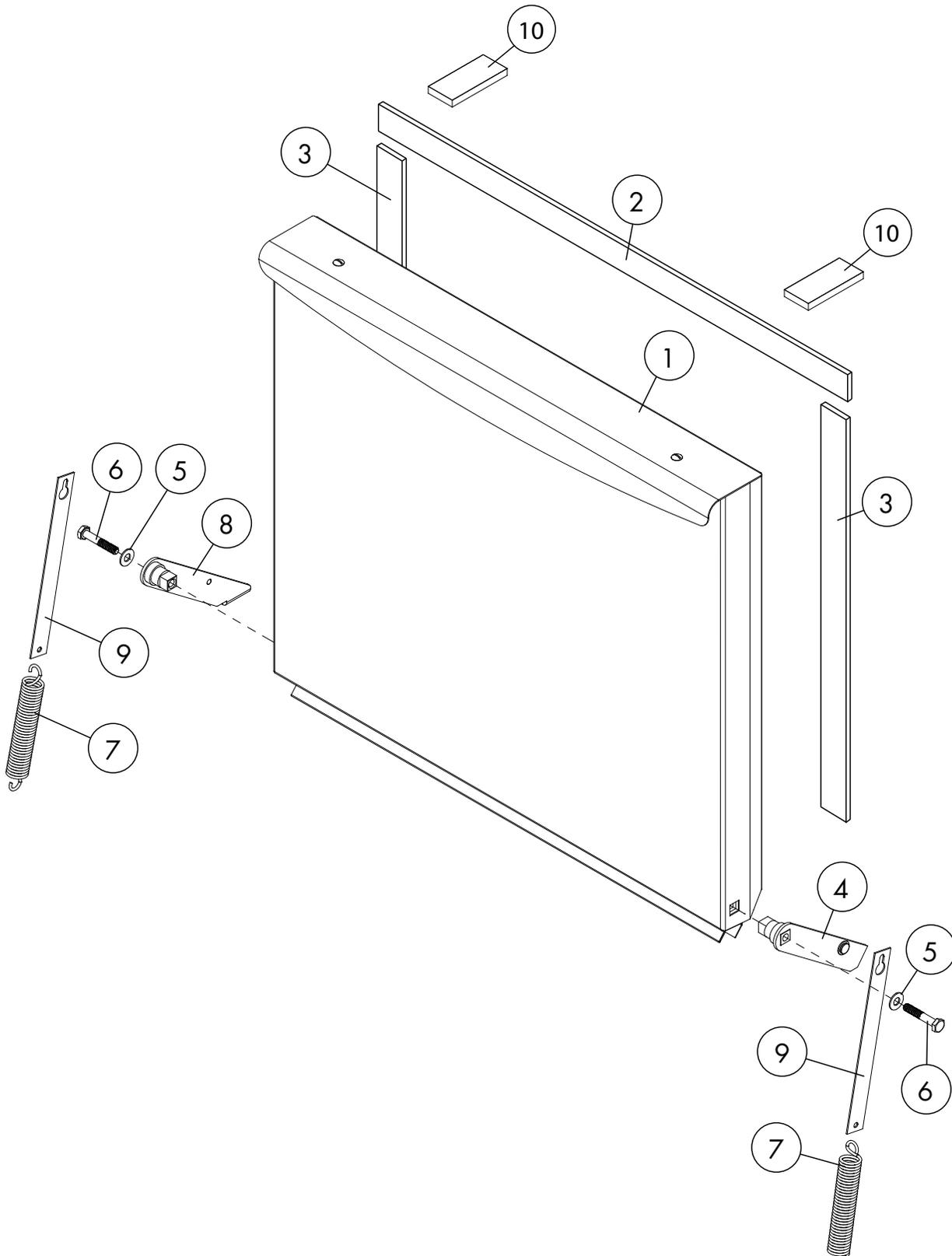
Item No.	Part No.	Description	Qty.
1	0512221	SWITCH, ROCKER DPST 250V NEON	1
2	0513504	LABEL, FACIA	1
3	0501408	SCREW, TRUSS PHIL. SST 8-32 X 1/4"	2
4	0512226	SWITCH, ROCKER RND SPDT MOMENTARY	1
5	0512232	LIGHT, INDICATOR, GREEN	2
6	0512218	SWITCH, PUSH BUTTON, GREEN	1
7	0512217	HOUSING, PUSH BUTTON SWITCH	1
8	0512216	CONTACT, SWITCH MOMENTARY (N.O.)	1
9	0313415	PANEL, FACIA	1
10	0512357	STANDOFF, LED DISPLAY BOARD	2
11	0501563	SCREW, #8 X 3/8"	4
12	0503580	NUT, 10-32	2
13	0512106-1	TEMPERATURE INDICATOR BD., DIGITAL	1
14	0512320	GASKET, STEAM	1
-	0512362	HARNESS, DIGITAL DISPLAY WIRING <i>(Not Shown)</i>	1
-	0513361	HARNESS, COMPLETE MACHINE <i>(Not Shown)</i>	1

Panels - 401HT

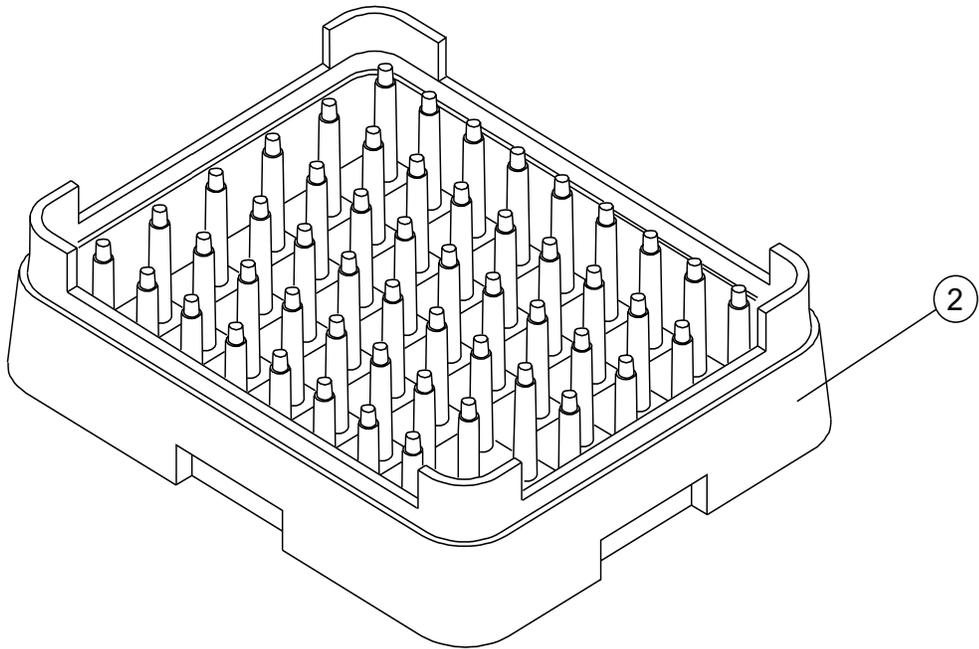
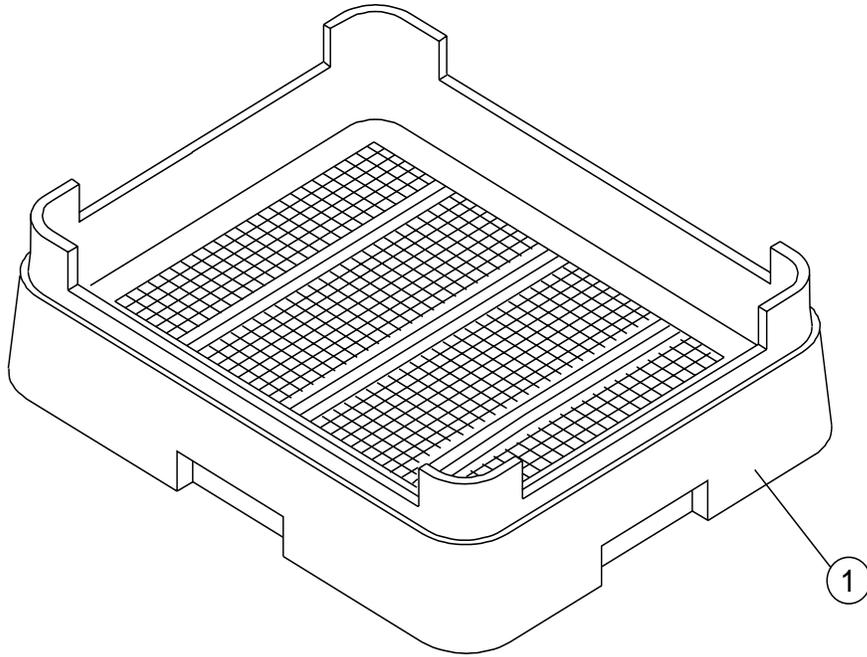


Item No.	Part No.	Description	Qty.
1	0313405	PANEL, FRONT	1
2	100779	SCREW 1/4-20 X 5/8" TRUSS SS PHIL	2
3	0513735	GASKET	1
4	0313403	PANEL, LH SIDE	1
5	0503718	FOOT, ADJUSTING	4
6	0313402	PANEL, RH SIDE	1
7	0313401	PANEL, TOP	1
8	100007	SCREW, TRUSS SLOT SST 10-32 X 3/8"	A/R
9	0313404	PANEL, REAR	1
10	0512299	DIGITAL THERMOMETER	1

Door Assembly - 401HT



Item No.	Part No.	Description	Qty.
1	0713136	DOOR ASSEMBLY	1
2	0513794	GASKET, DOOR TOP	1
3	0513793	GASKET, DOOR SIDE	2
4	0713428	HINGE, RH ASSY	1
5	0310183	WASHER, 9/32" X 5/8" OD SS	1
6	0501422	BOLT, HEX SS 1/4-20 X 1-1/2"	1
7	0513332	SPRING, DOOR	2
8	0713429	HINGE, LH ASSY	1
9	0313430	ARM, DOOR SPRING	2
10	0512320	GASKET, STEAM	2



Item No.	Part No.	Description	Qty.
1	101273	DISH RACK, FLAT-BOTTOM	AR
2	101285	DISH RACK, PEG	AR

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Electrical Schematics and Timing Charts

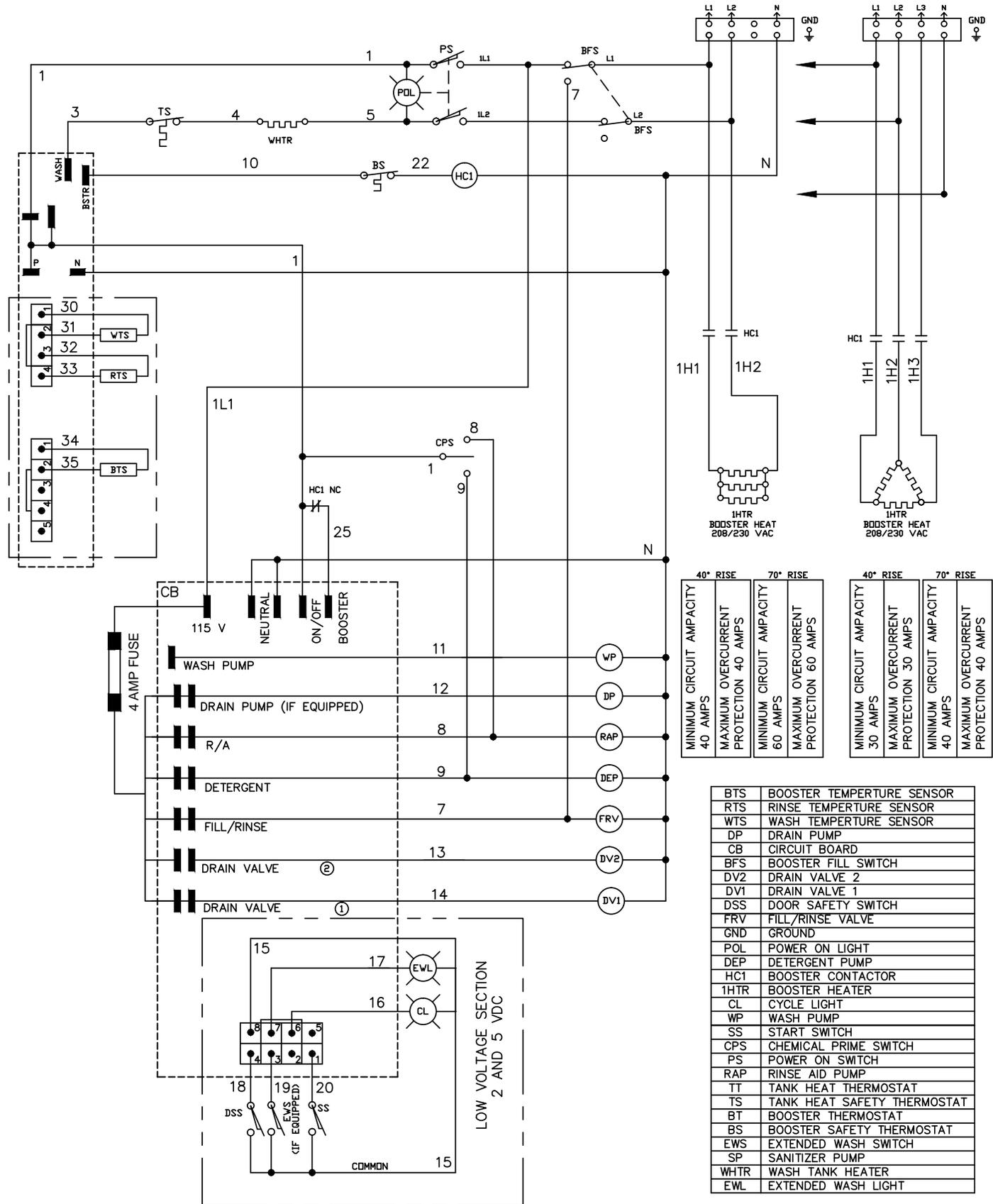
Illustrations	Page
Electrical Schematic - <i>High Temperature Model</i>	78
Timing Chart	79

Electrical Schematic - 401HT

TO CUSTOMERS DISCONNECT SWITCH PER LOCAL ELECTRICAL CODES

SINGLE PHASE
115-208/230V 60HZ

THREE PHASE
208/230V+115V NEUTRAL 60HZ



MINIMUM CIRCUIT AMPACITY 40 AMPS	40° RISE	MINIMUM CIRCUIT AMPACITY 30 AMPS	40° RISE
MAXIMUM OVERCURRENT PROTECTION 40 AMPS	70° RISE	MAXIMUM OVERCURRENT PROTECTION 30 AMPS	70° RISE
MINIMUM CIRCUIT AMPACITY 60 AMPS		MINIMUM CIRCUIT AMPACITY 40 AMPS	
MAXIMUM OVERCURRENT PROTECTION 60 AMPS		MAXIMUM OVERCURRENT PROTECTION 40 AMPS	

BTS	BOOSTER TEMPERATURE SENSOR
RTS	RINSE TEMPERATURE SENSOR
WTS	WASH TEMPERATURE SENSOR
DP	DRAIN PUMP
CB	CIRCUIT BOARD
BFS	BOOSTER FILL SWITCH
DV2	DRAIN VALVE 2
DV1	DRAIN VALVE 1
DSS	DOOR SAFETY SWITCH
FRV	FILL/RINSE VALVE
GND	GROUND
POL	POWER ON LIGHT
DEP	DETERGENT PUMP
HC1	BOOSTER CONTACTOR
1HTR	BOOSTER HEATER
CL	CYCLE LIGHT
WP	WASH PUMP
SS	START SWITCH
CPS	CHEMICAL PRIME SWITCH
PS	POWER ON SWITCH
RAP	RINSE AID PUMP
TT	TANK HEAT THERMOSTAT
TS	TANK HEAT SAFETY THERMOSTAT
BT	BOOSTER THERMOSTAT
BS	BOOSTER SAFETY THERMOSTAT
EWS	EXTENDED WASH SWITCH
SP	SANITIZER PUMP
WHTR	WASH TANK HEATER
EWL	EXTENDED WASH LIGHT

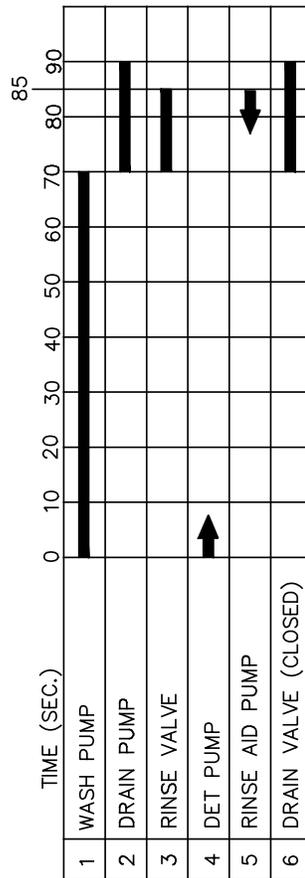
401HT

HIGH TEMP DIGITAL UNDERCOUNTER M4

DIAGRAM STATE
END OF CYCLE
POWER-OFF
DOOR-OPEN

DATE	NUMBER/REV
28-JAN-14	0513371

401HT



TIMING CHART FOR FRESH WATER RINSE
 EXTENDED WASH ADDS 15 MINUTES EXTRA WASHING TIME AT 70 SECS
 SWITCH MAY BE PUSHED ANY TIME FROM 0.5 TO 70 SEC

	MINIMUM	MAXIMUM
1 FILL VALVE	20 SEC.	55 SEC.
2 DET. PUMP	0 SEC.	12 SEC.
3 SAN. PUMP	0 SEC.	20 SEC.
4 RINSE AID PUMP	0 SEC.	10 SEC.

ARROW INDICATES THAT FUNCTION END TIME IS VARIABLE WITH THE ADJUSTMENT POTENTIOMETER

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