



Operating Manual

AQ-4000 Series



**READ ALL MATERIAL
PRIOR TO OPERATION**

(7/04)

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AQUA PHASE

AQ-4000 Series Operating Manual

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AQUA PHASE CAUTION NOTICES

In addition to the warnings and cautions provided throughout this manual, please observe the following:

- DO:** **Read this operations manual and follow all instructions.**

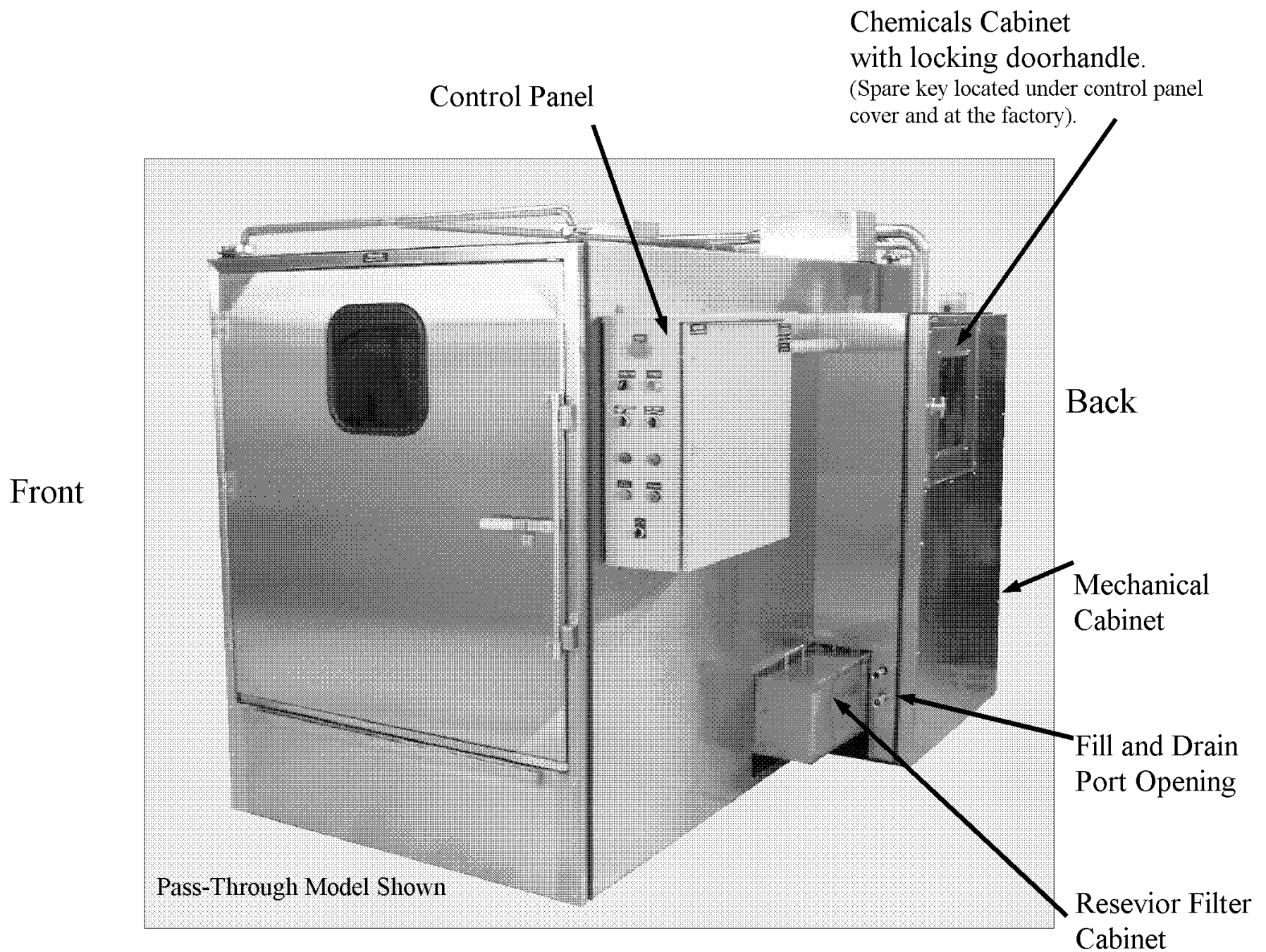
- DO NOT:** Operate the machine without the rear filter and reservoir filter screens in place.
- DO NOT:** Climb into the Wash Chamber.
- DO NOT:** Wash any item with unsealed electrical components.
- DO NOT:** Perform any type of service operation unless the machine is unplugged.
- DO NOT:** Use an extension cord between the wall outlet and the machine.
- DO NOT:** Try to modify the machine in any manner without factory approval.
- DO NOT:** Operate the machine in high foot traffic areas.
- DO NOT:** Use garden hoses for the fill and drain hoses.
- DO NOT:** Operate the machine unless you have been properly trained to run the machine.

- DO:** **Call your dealer, sales representative, or the factory with any questions, need for more information, or to order supplies for your *Aqua Phase Washer*.**

Aqua Phase carries a complete line of supplies and parts and a variety of cleaning, rinse, and disinfectant solutions specifically formulated or chosen to work with your *Aqua Phase* machine. You may order your solutions, supplies, or parts by calling your dealer or *Aqua Phase* at 800-208-9274.

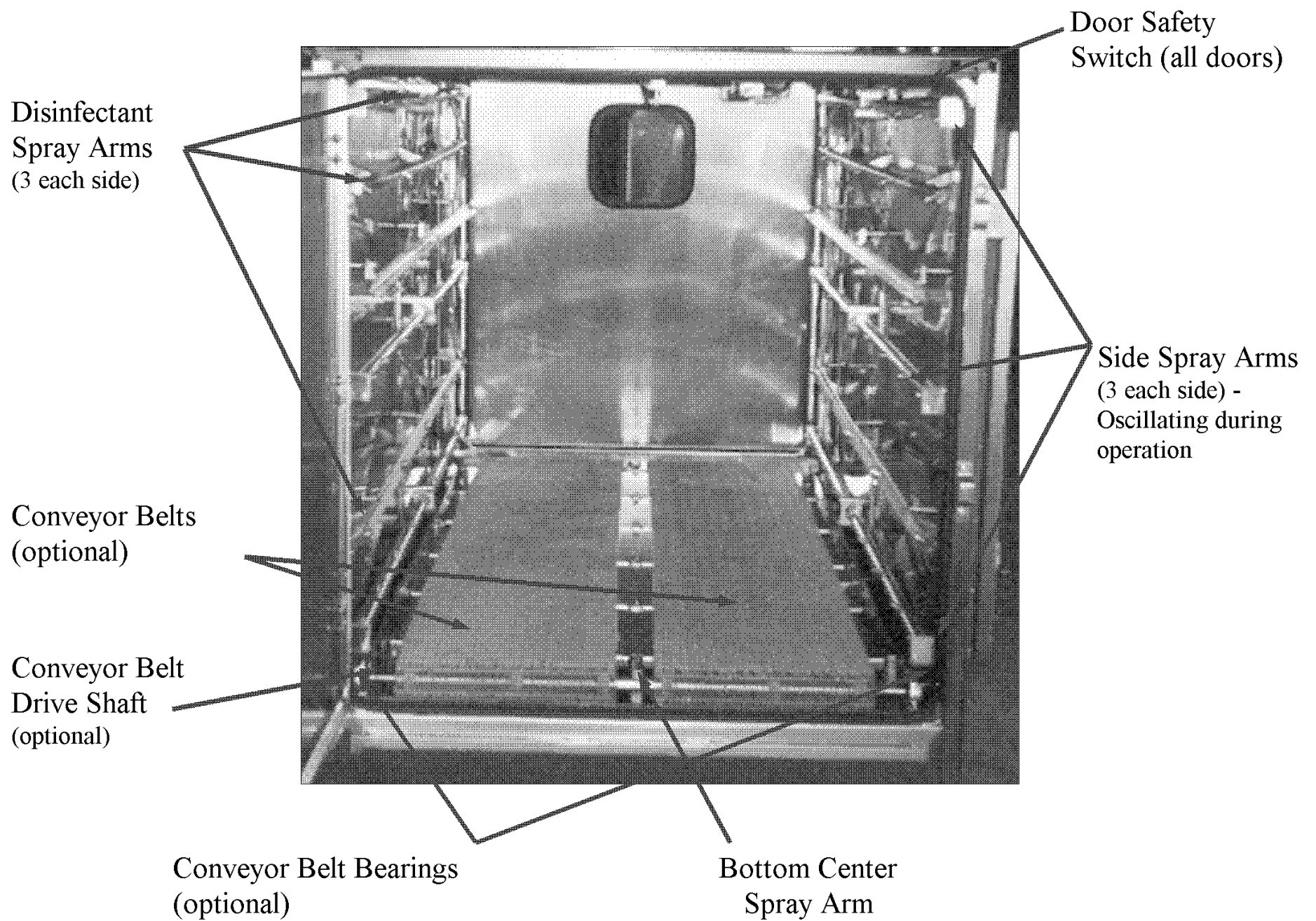
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GENERAL INFORMATION



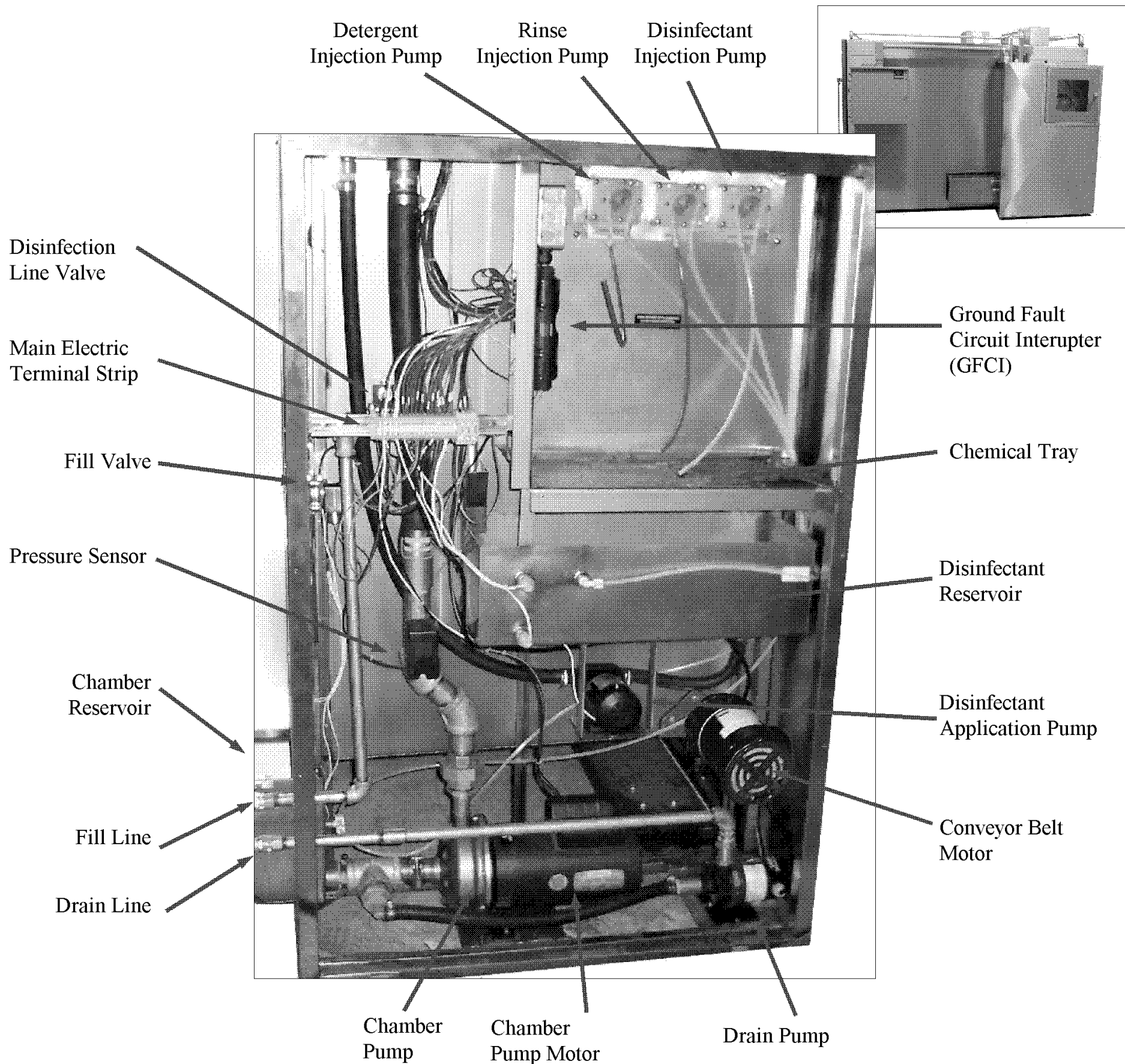
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MAIN INTERIOR COMPONENTS



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MAIN MECHANICAL COMPONENTS (Including Optional Devices)



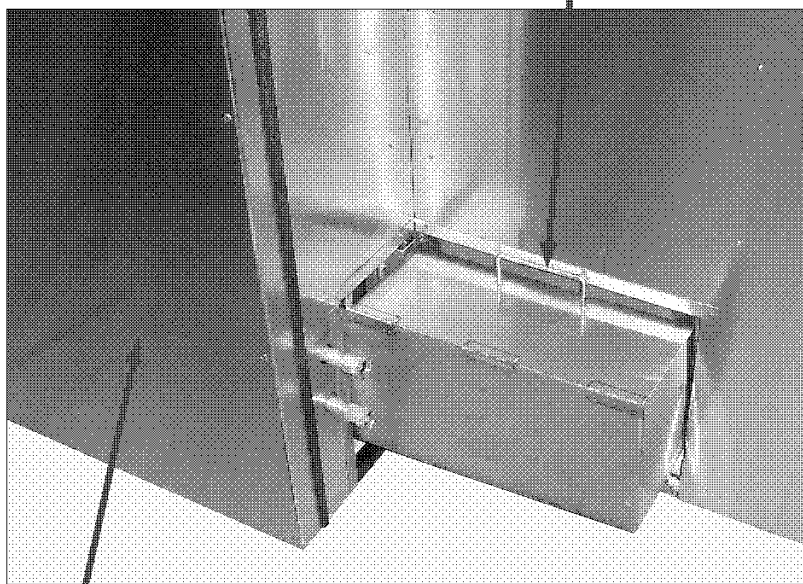
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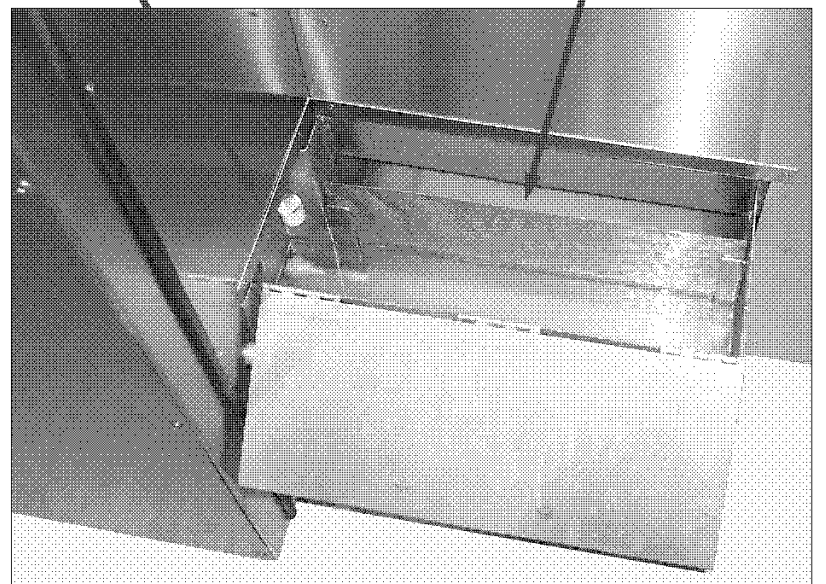
Filter Screen

Filter Screen that needs to be cleaned when low pressure indicator light is blinking on the control panel face.

Reservoir Tank Cabinet
(lid closed)



Reservoir Tank Cabinet
(lid open)



Filter Screen
(removable)

Mechanical Cabinet

FILTER SCREEN

The Filter Screen is located inside the reservoir tank.

If the Filter Screen is clogged so that not enough water can get through to the wash chamber, the “LOW PRESSURE” light will blink to notify you to clean the filter.

If the Filter Screen becomes clogged and prevents water from getting to the pump, the machine will make a “growling” noise in addition to the “LOW PRESSURE” light blinking.

The Filter Screen is located inside the Reservoir Tank Cabinet next to the mechanical cabinet. With proper safety protection, reach into the reservoir, grab the screen, slide the screen back and lift out for cleaning. **REPLACE THE SCREEN IMMEDIATELY AFTER CLEANING.**

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YOUR SUPPLY LIST

You will need to supply the following items for the proper operation of your *Aqua Phase* machine:

- 1) **Two hoses, rated at 150° F or better.**
 - These hoses are used for the filling and draining functions of the machine. Do not use standard garden hoses.
 - **Note:** The longer the hose, the more time it will take for the fill and the drain operations. It is not recommended to use hoses longer than **50 feet** each.
- 2) **A 220 Volt electrical circuit.**
 - For added safety, it is **recommended** to use a ground fault receptacle at the power source where the machine will be plugged in.

IMPORTANT OPERATING INFORMATION

- 1) *Aqua Phase* will perform best with hot water temperatures between 125° F - 140° F.
 - Do not run water to the machine at temperatures greater than 150° F. When water temperatures are below 120° F, water spotting may occur.
- 2) If either the front or rear door of the machine is open, the unit will not operate.
- 3) If the front or rear door is opened in the middle of a wash cycle, the machine will stop.
 - After you close the door(s) and press the “**START**” button, *Aqua Phase* will start the wash cycle from the beginning.
- 4) The “**RUN/DRAIN**” switch needs be set to “**DRAIN**” only when you want to empty the machine of water.
 - Examples for drain use are:
 - a) You are done washing for the day.
 - b) You want to relocate the machine.
- 5) When the “**Low Pressure**” light blinks, the reservoir filter screen located inside the water reservoir adjacent to the mechanical cabinet needs to be cleaned.
- 6) In order to drain the *Aqua Phase* when the Disinfectant Application System feature is installed, the selector switch (located on the control panel at the front of the machine) must be set on “**Clean Only**” or “**Clean & Disinfect**”.

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DESCRIPTION OF THE *AQUA PHASE* WASH SEQUENCE

- After pressing the “**START**” button, the computer will check to see if there is water in the water reservoir. If the reservoir is not full of water, the unit will automatically fill to the appropriate level.
- When the reservoir is full, the pump will start and begin to spray the item being washed.
- The detergent is automatically injected shortly after the wash cycle begins.
- The machine will now be in the wash phase and will continue depending on the wash time you have selected.
- When the wash phase is complete, the dirty wash water will be pumped to the drain.
- Clean, fresh water will then be allowed to fill the reservoir.
- After the reservoir is filled with water, the pump will start and the machine will begin its final rinse phase.
- The rinse agent is automatically injected shortly after the rinse phase begins.
- The rinse cycle will last for approximately 25 seconds.
- When all the lights are off, the wash sequence is complete.

Note:

During normal automatic operation, the rinse water remains in the machine and will be the wash water for the next item placed in the chamber. If you choose, you may drain the rinse water prior to beginning the next wash cycle. To drain the machine manually:

- Set the “**RUN/DRAIN**” switch to “**DRAIN**”.
- Push the “**START**” button. The machine will drain the water.
- Prior to beginning the next wash cycle, set the “**RUN/DRAIN**” switch to “**RUN**”.
- When the next wash cycle is begins, the machine will automatically fill with fresh water for the wash phase.

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CONTROL PANEL SWITCHES AND FUNCTIONS

Switch	Options/Function
“STOP” Button	When pressed, will stop all Aqua Phase wash functions
“START” Button	Must be pressed to start any Aqua Phase wash function
WASH TIME Selector Switch	Allows you to select the length of wash: “3 MIN” = Three minute wash cycle “5 MIN” = Five minute wash cycle “7 MIN” = Seven minute wash cycle
“RUN/DRAIN” Selector Switch	<p>“RUN”: Set to “RUN” to wash an item.</p> <p>“DRAIN”: Set to “DRAIN” to drain the water in the machine. The water should be drained when you are done washing for the day or if you relocate the machine. In order for the “DRAIN” function to work, the Wash Mode switch must be set to “CLEAN & DISINFECT” or “CLEAN ONLY”.</p>
WASH MODE Selector Switch	<p>“CLEAN & DISINFECT”: When this mode is selected, <i>Aqua Phase</i> will perform a complete wash and rinse for the time specified on the WASH TIME Time Selector Switch. It will then automatically apply disinfectant solution.</p> <p>“CLEAN ONLY”: When this mode is selected, <i>Aqua Phase</i> will perform a complete wash and rinse cycle for the length of time specified on the WASH TIME Selector Switch. It will not apply disinfectant.</p> <p>“DISINFECT ONLY”: When this mode is selected, <i>Aqua Phase</i> will apply disinfectant solution only. It will not wash or rinse.</p>

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AQUA PHASE BASIC SET-UP PROCEDURES

If *Aqua Phase* has been transported during freezing weather, allow the machine to warm for 2-4 hours before running.

- 1) Read all *Aqua Phase* instructions and operations material.
- 2) Remove *Aqua Phase* from the pallet.
- 3) Move *Aqua Phase* to location of operation.
- 4) Remove items packed inside of the washer chamber for shipping (optional racks, trays, chemical solutions, and hoses will often be packed inside the wash chamber).
- 5) Connect the fill hose (we supply).
 - Hose connections on the machine are 5/8" national female hose. This size and type of hose connection is identical to garden hose connections.

DO NOT USE GARDEN HOSE.

Only use hose rated for 150° F or more for both the fill and drain hose.

(*AQUA PHASE* can be permanently piped into your water system. Check Local building codes for requirements. Pipe size is 1/2 inch NPT. See fill line examples included with this manual.)

- 6) Connect the drain hose (we supply).

**DRAIN HOSE MUST BE SECURELY FASTENED TO THE DRAIN.
PUMP DISCHARGE PRESSURE MAY CAUSE THE HOSE TO "WHIP".**

(*AQUA PHASE* can be permanently piped into your water system. Check Local building codes for requirements. If piped into drain system, the drain pipe can be run vertically for a maximum of 15 feet. Pipe size is 1/2 inch NPT. See drain line examples included with this manual.)

- 7) After you are certain the fill and the drain connections are secure, slowly turn on your hot water supply.
- 8) Connect *Aqua Phase* to a standard 20 AMP electrical service.
 - Press the reset button located on the GFCI (ground fault circuit interrupter) in the *Aqua Phase* power cord.
 - **Do not** use a power extension cord between your wall outlet and *Aqua Phase*.

(continued on next page)

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AQUA PHASE BASIC SET-UP PROCEDURES (continued)

Warning:

WEAR PROTECTIVE CLOTHING WHEN WORKING WITH ANY CHEMICALS.

Warning:

Consult the material safety data sheets located in the back of this manual and your company's hazardous substance policy before handling any chemicals.

Key to Aqua Phase chemical solution hoses:

- The **RED** hose is for detergent.
 - The **BLUE** hose is for rinse-aid.
 - The **CLEAR** hose is for disinfectant, if installed.
- 9) Place the chemical solutions in the chemical tray (located inside the chemicals cabinet at the side of the machine) at the locations marked “**DETERGENT**” and “**RINSE-AID**”.
- Remove chemical bottle caps and place the appropriate colored hoses in bottle openings (**RED** hose for detergent/ **BLUE** hose for rinse-aid).
 - **Do not** dilute the Detergent or Rinse-Aid solutions.
- 10) If your unit has the Disinfectant Application System feature installed, place your bottle of disinfectant concentrate in the remaining space in the chemical tray (your unit may have a separate tray for the disinfectant solution).
- Insert the **CLEAR** hose into your bottle of disinfectant.
- NOTE:** The disinfection injection rate is preset at the factory for use of a disinfectant that requires a dilution rate of 1 oz. per gallon of water. Contact the factory if adjustment of the injection rate is necessary.
- 11) Set the “**RUN/DRAIN**” switch to “**RUN**”. The “**RUN/DRAIN**” switch is located on the control panel at the front of the machine.
- 12) Close the front and the rear doors.
- 13) Ensure the *Aqua Phase* unit is level.
- 14) Press the “**START**” button. The “**START**” button is located on the control panel at the front of the machine.
- Allow *Aqua Phase* to run a complete cycle before washing anything.

If *Aqua Phase* does not start, see the “**TROUBLESHOOTING: Will not start**” section of this manual or call the factory for assistance.

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DAILY OPERATING PROCEDURES

Recommended start-up procedures:

- 1) Reservoir Screen – check to make certain reservoir screen is clean and in place (the reservoir filter screen is located inside the water reservoir adjacent to the mechanical cabinet).
- 2) Water Reservoir – check to make certain that the water reservoir is free of debris.
- 3) Chemical Solutions – check chemical supply levels.
- 4) Power Supply – plug in *Aqua Phase* and press the reset button located on the GFCI (ground fault circuit interrupter) in the *Aqua Phase* power cord.
- 5) Water Supply – turn on water supply.

Recommended shut-down procedures:

- 1) Drain *Aqua Phase*.
 - Set the “**RUN/DRAIN**” switch to “**DRAIN**”.
 - Press “**START**” button.
 - Run disinfectant cycle only.
- 2) Water Supply – turn off water supply.
- 3) Power Supply – unplug *Aqua Phase*.
- 4) Reservoir Screen – clean reservoir screen (the reservoir filter screen is located inside the water reservoir adjacent to the mechanical cabinet).
- 5) Water Reservoir – check to make certain that the water reservoir is free of debris.
- 6) Chemical Solutions – check chemical supply levels.

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DISINFECTANT APPLICATION SYSTEM (Optional Feature)

WARNING:

Follow all instructions provided by the manufacturer of the disinfectant solution that you choose to use including dwell time, application, removal, and proper handling of the disinfectant.

Your *Aqua Phase* machine may have the Disinfectant Application System feature installed. The Disinfectant Application System allows you to automatically apply a disinfectant solution. Your *Aqua Phase* machine is not, in and of itself, a disinfectant and the machine itself does not disinfect items washed in it. The disinfectant solution that you choose to use with the *Aqua Phase* Disinfectant Application System and the proper use of that disinfectant solution is responsible for the level of disinfection results that you achieve.

Disinfectant Solution:

- The **Disinfectant Application System** is preset at the factory to apply disinfectant at the rate of 1 ounces per gallon of water.
- Your *Aqua Phase* machine uses approximately 4 gallons of water per disinfectant cycle.
- *Aqua Phase* does carry a variety of cleaning, rinse, and disinfectant solutions specifically formulated or chosen to work with your *Aqua Phase* machine. You may order your solutions by calling your dealer or *Aqua Phase* at 800-208-9274.

Disinfection Application System Operating Instructions:

- 1) Be sure that you are using a 1-ounce per gallon disinfectant. If not, see the notes below.
- 2) Place a one (1) gallon container of your disinfectant solution in the chemical tray (located inside the chemicals cabinet at the side of the machine).
 - Your unit may have a separate tray for the disinfectant solution.
 - Insert the **CLEAR** hose into the disinfectant container.
 - Close the chemicals cabinet door.
- 3) At the front of the machine, select the desired WASH MODE (“Clean Only”, “Clean and Disinfect”, or “Disinfect Only”).

Notes:

The **Disinfectant Application System** is preset at the factory to apply disinfectant at the rate of 1 ounces per gallon of water.

If you choose to use a disinfectant that calls for a different dilution rate, *Aqua Phase* can be modified to accommodate that rate. For information on how to accomplish this modification, please call the factory for assistance and review the “Dema” technical information included with this manual.

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AQUA PHASE ADJUSTMENTS & MAINTENANCE

When you first receive your *Aqua Phase* machine:

- 1) If your unit has the wheelchair Wheel Rotation System feature installed, adjust the height of the front and rear wheel brushes if needed.
- 2) If your unit has the Disinfectant Application System feature installed, adjust the disinfection injection rate if necessary.
 - **Note:** The disinfection injection rate is preset at the factory for use of a disinfectant that requires a dilution rate of 1 oz. per gallon of water. Contact the factory if adjustment of the injection rate is necessary.
 - See the “Disinfectant Application System Option” section of this manual for further information.

Weekly: *Always unplug your Aqua Phase before servicing machine.*

- 1) Check the probe sensors and spray nozzles (located inside the wash chamber) for clogging.
 - Clean if necessary.
- 2) Check the power cord for any wear or damage.
 - If the power cord appears to be damaged in any way, do not operate the machine.
 - Replace the power cord prior to operating the machine.
- 3) Check to make certain that the water reservoir is free of debris.
 - Clean if necessary.

Monthly:

- 1) Test and reset the GFCI (ground fault circuit interrupter) in the *Aqua Phase* power cord.
- 2) If your unit has the wheelchair Wheel Rotation System feature installed, adjust the height of the front and rear wheel brushes if needed.
- 3) Use de-liming agent to reduce scale build-up if needed. See “De-Liming Instructions” included with this manual.
- 4) Confirm that front and rear door safety switches are operating properly. If not, replace prior to using machine.

Semi-Annually or as Needed:

- 1) Adjust the tension of the chain running from the drive motor if necessary. Depending on your model and the features installed, you may or may not have a drive motor. Contact the factory if you have any questions.
- 2) Inspect front door gasket for wear or damage. Replace if necessary.

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TROUBLESHOOTING

This section may help you isolate a problem and as a result, eliminate the need to contact technical support, allowing continued productivity. Prior to attempting any suggested servicing procedures, **unplug *Aqua Phase*** from the power source.

***Aqua Phase* will not start**

Possible Causes/Solutions:

- 1) Unit not plugged-in.
 - Connect *Aqua Phase* to a standard 20 AMP electrical service.
 - Press the reset button located on the GFCI (ground fault circuit interrupter) in the *Aqua Phase* power cord.
 - For added safety, it is **recommended** to use a ground fault receptacle at the power source where the machine will be plugged in.
- 2) GFCI in the *Aqua Phase* power cord not reset.
 - Press the reset button located on the GFCI in the *Aqua Phase* power cord.
- 3) Rear door open.
 - Check that the rear door is properly closed.
- 4) Front door open.
 - Check that the front door is properly closed.
- 5) Power supply circuit breaker tripped.
 - Have a qualified individual check that the circuit breaker of the electrical circuit to the machine is operating properly. The circuit breaker should be a 20-amp unit.
- 6) Defective front or rear door safety switch.
 - **Unplug** the machine from the power supply.
 - Call the factory for assistance.
- 7) Defective GFCI (ground fault circuit interrupter).
 - **Unplug** the machine from the power supply.
 - Call the factory for assistance.
- 8) Blown fuse in the control assembly.
 - **Unplug** the machine from the power supply.
 - Remove the control panel cover.
 - Remove the four cap nuts located on the left and right of the control panel cover.
 - Remove only the top two screws from the control panel face.
 - Have an OHM meter available and check the fuses.
 - See “**Fuses**” section of this manual for the fuse numbers to check.
 - Call the factory for assistance.
- 9) Power outage to building. Report outage as appropriate.

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TROUBLESHOOTING (continued)

Aqua Phase will not fill with water

Possible Causes/Solutions:

- 1) No power to the machine.
 - Connect *Aqua Phase* to a standard 20 AMP electrical service.
 - Press the reset button located on the GFCI in the *Aqua Phase* power cord.
- 2) Water supply is not turned on.
 - After you are certain the fill and the drain connections are secure, slowly turn-on your water supply.
- 3) Debris in drain valve - valve will not seal
 - Disassemble drain valve & clean debris (Call factory for assistance)
 - Watch the drain hose while in wash cycle - is water draining as it should be?
- 4) Defective high-level water control probe.
 - **Unplug** the machine from the power supply.
 - Call the factory.
- 5) Fill valve solenoid is damaged or has debris stuck inside it.
 - See “**Valve Inspection Procedures**” located in the *Servicing Procedures Guide* section of this manual
 - Remove the fill hose from the fill line connection at the machine. Check to ensure that the filter/washer is in place and intact. If problem remains, call the factory.

Aqua Phase low pressure indicator light always on

Possible Causes/Solutions:

- 1) Reservoir filter screen not clean.
 - Clean reservoir screen (the reservoir filter screen is located inside the water reservoir adjacent to the mechanical cabinet).
- 2) Chemical valve injector hose or fittings cracked.
 - Replace – you may order replacement parts by calling your dealer or the factory.
- 3) Defective pressure sensor.
 - Replace – you may order replacement parts by calling your dealer or the factory.
- 4) Pump impeller clogged with debris.
 - See “**Pump Impeller Inspection Procedures**” located in the *Servicing Procedures Guide* section of this manual. It is recommended that you contact the factory.

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TROUBLESHOOTING (continued)

Aqua Phase will not stop draining/ draining takes too long

Possible Causes/Solutions:

- 1) Foam in water reservoir area – caused by something on the item washed or use of a foaming detergent or rinse-aid. Foam may affect certain sensors that control the filling and draining of water.
 - Press the “**STOP**” button and wait a few minutes until the foam dissipates.
 - Press the “**START**” button and allow *Aqua Phase* to do a complete cycle.
 - Repeat the preceding steps until *Aqua Phase* starts draining normally.
- 2) Reservoir filter screen not clean.
 - Clean reservoir screen (the reservoir filter screen is located inside the water reservoir adjacent to the mechanical cabinet).
- 3) Excess build-up of hard water deposits on low-level probe.
 - **Unplug** the machine from the power supply.
 - Locate the low-level probe in the water reservoir inside the wash chamber. Depending on your model, the low-level probe may be inside a protective chamber in the reservoir.
 - Run an emery board or fine grade of sandpaper over and around the end of the low-level probe.
- 4) Damaged or defective low-level probe.
 - **Unplug** the machine from the power supply.
 - Inspect the low-level probe for damage, such as a cracked fitting.
 - Replace if damaged – you may order replacement parts by calling your dealer or the factory.
- 5) Level control sensor set too high.
 - Call the factory for assistance.
- 6) Defective level sensor module.
 - **Unplug** the machine from the power supply.
 - Call the factory for assistance.

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TROUBLESHOOTING (continued)

Aqua Phase will not stop filling/water coming out of the front door

Immediately:

- Press the “STOP” button.
- Shut off the water supply.

Possible Causes/Solutions:

- 1) Front door gasket damaged or worn.
 - Inspect front door gasket for wear or damage.
 - Replace if necessary – you may order replacement parts by calling your dealer or the factory.
- 2) Fill valve has debris stuck in it.
 - See “Valve Inspection Procedures” located in the *Servicing Procedures Guide* section of this manual.
 - Remove the fill hose from the fill line connection at the machine. Check to ensure that the filter/washer is in place and intact.
 - If problem remains, call the factory for assistance.
- 3) Excess build-up of hard water deposits on high-level probe.
 - **Unplug** the machine from the power supply.
 - Locate the high-level probe in the water reservoir inside the wash chamber. Depending on your model, the high-level probe may be inside a protective chamber in the reservoir.
 - Run an emery board or fine grade of sandpaper over and around the end of the high-level probe.
- 4) Damaged or defective high-level probe.
 - **Unplug** the machine from the power supply.
 - Inspect the high-level probe for damage, such as a cracked fitting.
 - Replace if damaged – you may order replacement parts by calling your dealer or the factory.
- 5) Level control sensor set too high.
 - Call the factory for assistance.
- 6) Defective level sensor module.
 - **Unplug** the machine from the power supply.
 - Call the factory for assistance

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TROUBLESHOOTING (continued)

Items washed have water spots or cloudy film

Possible Causes/Solutions:

- 1) Water temperature below 130°F.
 - Check the temperature of the water reaching the machine.
 - Drain the machine.
 - Press the “START” button. Allow the machine to fill.
 - As soon as *Aqua Phase* begins to pump, press the “STOP” button.
 - Open the front door, place a thermometer in the water reservoir to check the water temperature. Water temperature should be at or close to 130°F.
 - Note: It is very common for hot water heater temperature dial indicators to be inaccurate.
- 2) Rinse-aid solution container is empty.
 - Check the level of rinse-aid solution, refill if necessary. The chemical solutions are located inside the mechanical cabinet at the rear of the machine.
- 3) Rinse chemical injector hose or fittings cracked or loose.
 - Inspect chemical hoses for cracks and inspect chemical hose fittings for cracks or if loose.
 - Replace if damaged – you may order replacement parts by calling your dealer or the factory.
- 4) Dilution of rinse-aid solution required.
 - Dilute the rinse-aid by 10% with water and see if water spotting persists. Continue to dilute the rinse-aid up to 50% with water in order to correct this problem.

Notes:

The rinse-aid injection rate is preset at the factory for the worst possible water condition expected to be found.

If spotting or clouding is present only on the first item washed, it is possible that you will need to run a “warm-up cycle” with *Aqua Phase*. Run a “three-minute” wash cycle with the wash chamber empty to allow the chamber to be warmed-up prior to commencing normal washing operations.

If problem persists, call the factory for assistance.

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TROUBLESHOOTING (continued)

Items not cleaned properly

Possible Causes/Solutions:

- 1) Detergent solution container is empty.
 - Check the level of detergent, refill if necessary. The chemical solutions are located inside the mechanical cabinet at the rear of the machine.
- 2) Reservoir filter screen not clean.
 - Clean reservoir screen (the reservoir filter screen is located inside the water reservoir adjacent to the mechanical cabinet).
- 3) Rinse chemical injector hose or fittings cracked or loose.
 - Inspect chemical hoses for cracks and inspect chemical hose fittings for cracks or if loose.
 - Replace if damaged – you may order replacement parts by calling your dealer or the factory.
- 4) Spray nozzles clogged.
 - Visually inspect spray nozzles for debris.
 - For spray nozzles that are clogged:
 - Note the position of the spray nozzle's relative spray angle.
 - Remove, clean, and replace the nozzles in their original locations at their original spray angles.
- 5) Longer wash cycle required.
 - Set the wash cycle time to “7 minutes” or to the longest time cycle available.
 - Press the “START” button, and allow *Aqua Phase* to run a complete cycle.
- 6) Water temperature too low.
 - Check the temperature of the water reaching the machine.
 - Drain the machine.
 - Press the “START” button. Allow the machine to fill.
 - As soon as *Aqua Phase* begins to pump, press the “STOP” button.
 - Open the front door, place a thermometer in the water reservoir to check the water temperature. The recommend water temperature is 125 – 140 °F.

NOTE:

If the “**Low Pressure**” indicator light located on the control panel of the machine does not come on and the filters are extremely dirty, the low-pressure sensor may be defective. Call the factory for support.

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TROUBLESHOOTING (continued)

Aqua Phase makes “growling” noise and/or the volume of spray inside the chamber is low

The “growling” noise is caused by air getting into the pump impeller. Growling noise is normally heard at the end of the drain cycle. If you hear it continually, you have one of the following problems.

Possible Causes/Solutions:

- 1) Machine not in level operating position.
 - Ensure that the *Aqua Phase* unit is level.
 - Remove hoses from cleaning solutions before proceeding.
- 2) Foam in water reservoir area – caused by something on the item washed or use of a foaming detergent or rinse-aid. Foam may affect certain sensors that control the filling and draining of water.
 - Press the “STOP” button and wait a few minutes until the foam dissipates.
 - Press the “START” button and allow *Aqua Phase* to do a complete cycle.
 - Repeat the preceding steps until *Aqua Phase* starts draining normally.
- 3) Reservoir filter screen not clean.
 - Clean reservoir screen (the reservoir filter screen is located inside the water reservoir adjacent to the mechanical cabinet).
- 4) High-level probe covered with debris.
 - **Unplug** the machine from the power supply.
 - Locate the high-level probe in the water reservoir inside the wash chamber. Inspect for debris covering the probe, remove debris if present.
- 5) Chemical injector hose or fittings cracked or loose.
 - Inspect chemical hoses for cracks and inspect chemical hose fittings for cracks or if loose.
 - Replace if damaged – you may order replacement parts by calling your dealer or the factory.
- 6) Chemical pump hose cracked.
 - Inspect hoses located inside the chemical pumps for cracks.
 - Replace if damaged – you may order replacement parts by calling your dealer or the factory.
- 7) Drain valve has debris stuck in it.
 - **Unplug** the machine from the power supply.
 - See “Valve Inspection Procedures” located in the *Servicing Procedures Guide* section of this manual.
- 8) Pump impeller clogged with debris.
 - See “Pump Impeller Inspection Procedures” located in the *Servicing Procedures Guide* section of this manual. It is recommended that you contact the factory before attempting to clear debris from the pump impeller.
- 9) Level control sensor set too high.
 - Call the factory for assistance.

AQUA PHASE

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TROUBLESHOOTING (continued)

Water sprays inside chamber while machine is in “DRAIN” mode

Possible Causes/Solutions:

- 1) Main chamber solenoid is stuck open. This is due to the rear filter not being properly reinstalled after cleaning.
 - **Unplug** the machine from the power supply.
 - See “**Valve Inspection Procedures**” located in the *Servicing Procedures Guide* section of this manual.
 - If problem remains, call the factory for assistance.

***Aqua Phase* seems to be using too much detergent or rinse solution**

Possible Causes/Solutions:

- 1) Chemical pump hose cracked.
 - Inspect hoses located inside the chemical pumps for cracks.
 - Replace if damaged – you may order replacement parts by calling your dealer or the factory.
- 2) Chemical pump roller assembly is worn, resulting in the chemical pump hose not being completely pinched.
 - Inspect chemical pump hose roller and determine if chemical pump hose is being fully pinched. If not, replace both the chemical hose and the roller assembly.

***Aqua Phase* has hard water build-up and scale on walls**

As with any cleaning operation using water, it is recommended that soft water be used.

Hard water contains a relatively high level of lime, calcium and iron. Hard water will affect cleaning performance the same as it does your home laundry. After an extended period of time, the inside stainless steel walls of *Aqua Phase* will accumulate a white deposit. If you are experiencing this condition, see the “**De-Liming Instructions**” section of this manual.

AQUA PHASE

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SERVICING PROCEDURES GUIDE

Warning:

Unplug the machine from the power supply before performing any service procedures.

Pump Impeller Inspection Procedures

It is recommended that you contact the factory at 800-208-9274 before attempting to clear debris from the pump impeller. Removing debris from the pump impeller requires disassembly of the pump.

- 1) **Unplug** the machine from the power supply.
- 2) Disconnect the electrical wires at the pump.
- 3) Disconnect the hose going to the inlet of the pump.
- 4) Disconnect the piping at the bushing coming from the pump outlet.
- 5) Remove the two pump mounting bolts from the underside of the machine.
- 6) The pump is composed of two components: the pump head and the pump motor. You do not need to remove the pump head from the pump motor. You do need to take the pump head apart.
- 7) Remove the four bolts holding the pump head together.
- 8) You may need to tap (hit) the pump head assembly to free the two halves.
- 9) Inspect the pump impeller. Check the impeller housing and the inlet elbow for any obstructions, and remove debris if necessary.
- 10) Remove the old pump seal gasket material. Replace the seal using TRV water type gasket seal material.
- 11) Reassemble and reinstall the pump.

Valve Inspection Procedures

These valve inspection procedures can be done while the valve is still piped in. See the technical data sheet related to ASCO valves included with this manual. The technical data sheet provides assembly details.

The **FILL** solenoid valve is located shortly after the Fill hose connection.

The **DRAIN** solenoid valve is located shortly before the Drain hose connection.

The **MAIN CHAMBER** solenoid valve is piped in-line next to the filter(s)

- 1) **Unplug** the machine from the power supply.
- 2) Shut off the water supply.
- 3) Remove the solenoid valve cap.
- 4) Remove the solenoid coil.
- 5) Remove the four bolts from the solenoid top.
- 6) Carefully, pull the solenoid top away from the solenoid body.
- 7) Check for debris.
- 8) Remove the rubber valve diaphragm.
- 9) Check for debris on the valve seat and remove debris if present. Ensure the valve piston is free-moving.
- 10) Reassemble the valve. Be certain to tighten the four bolts in an alternating manner.
- 11) If problem remains, call the factory at 800-208-9274.

AQUA PHASE

AQ-4000 Series Operating Manual

AQUA PHASE DE-LIMING INSTRUCTIONS

Introduction:

Read all instructions before proceeding. The following detailed instructions are for “de-liming” your machine.

Call the factory at 800-208-9274 with any questions regarding these instructions.

As with any cleaning operation using water, it is recommended that soft water be used.

Hard water contains a relatively high level of lime, calcium and iron. Hard water will affect cleaning performance the same as it does your home laundry. After an extended period of time, the inside stainless steel walls of *Aqua Phase* will accumulate a white deposit.

We have specially formulated the **AQ-725 De-liming Solution** to be used weekly, or as needed, to keep your *Aqua Phase* free from mineral build-up. The easy, ready-to-use quart bottles are pre-measured for the proper dilution rate for a single application. Packaged with 12 quarts per case, a routine schedule for de-liming your *Aqua Phase* can be easily maintained.

De-liming instructions:

- 1. Drain *Aqua Phase***
- 2. Remove chemical hoses from the cleaning solution bottles in the back of *Aqua Phase*.**
- 3. Clean the rear filter.**
- 4. Set RUN/DRAIN switch to RUN.**
- 5. Set mode switch to CLEAN ONLY.**
- 6. Set wash time to 7 MIN.**
- 7. Open front door and pour entire contents of this bottle into water reservoir.**
- 8. Press START button.**
- 9. Allow *Aqua Phase* to run for no more than 5 minutes, then press STOP button.**
- 10. Wait 5 minutes, press START and allow *Aqua Phase* to run complete 7 MIN wash cycle.**
- 11. Set wash time to 3 MIN, press START.**
- 12. When cycle is complete:**
 - Clean rear filter.**
 - Clean reservoir filter.**
 - Check and clean spray nozzles if clogged.**

Repeat weekly, or as often as needed, to keep your *Aqua Phase* unit properly de-limed.

DANGER: Causes eye and skin burns. Harmful if swallowed. Contains Hydroxyacetic and Phosphoric Acids.

FIRST AID: In case of eye contact, immediately flush with running water for at least 15 minutes and obtain medical aid. For skin contact, flush with running water. If swallowed, do not induce vomiting. Drink large amounts of water and call a physician immediately.

KEEP OUT OF REACH OF CHILDREN
MIX ONLY WITH WATER - DO NOT USE ON ALUMINUM

AQUA PHASE

AQ-4000 Series Operating Manual

FOR INDUSTRIAL USE ONLY

CONTROLLER (PLC) INFORMATION

PLC= Programmable Logic Controller (Refer to diagram on following page)

The PLC has three banks of lights:

- 1) Operations
- 2) Inputs
- 3) Outputs

The following “**Operation**” status lights will be “on” when the unit is plugged in:

- Power OK
- ready
- run
- batt low

The following “**Input**” status lights will be “on” when the unit is plugged in:

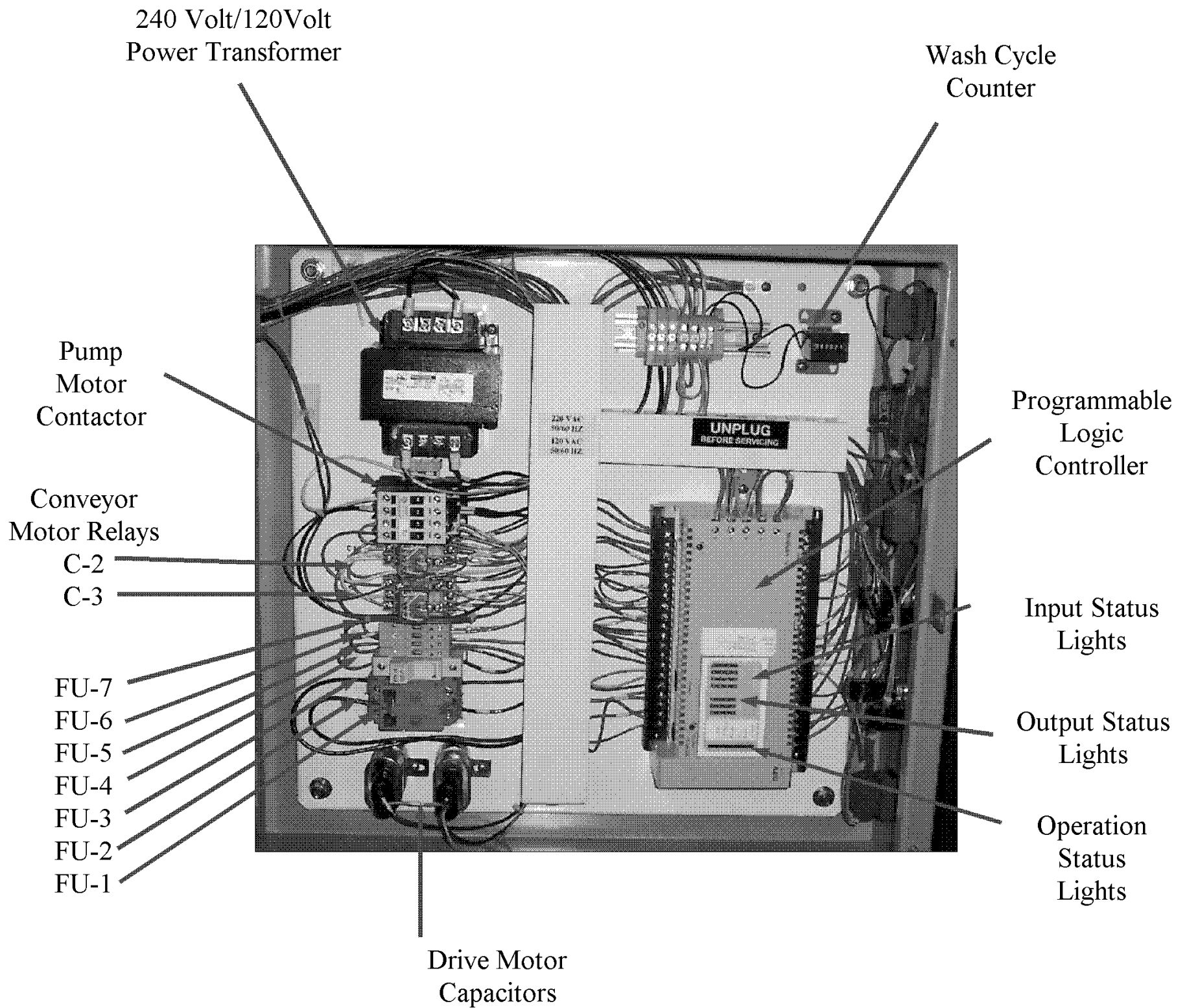
- 2,4,6,10
- In addition, if some water is in the reservoir (above the low-level probe) input 9 will be on.
- If the reservoir is full (above the high-level probe) input 12 will be on.

Input light functions:

Input Light Number	Input Function	When Illuminated
1	Start Button	Only while “ START ” button is pressed.
2	Stop Button	Always on.
3	7 Minute Wash	When selector switch is on “ 7 min ”
4	3 Minute Wash	When selector switch is on “ 3 min ”
5	Drain Switch	When selector switch is on “ DRAIN ”
6	Run Switch	When selector switch is on “ RUN ”
7		
8		
9	Low-Level Probe	When water contacts low-level probe.
10	Door Safety Switch	When front and rear doors are open.
11		
12	High-Level Probe	When water contacts high-level probe

AQUA PHASE Operating Manual

ELECTRONIC LAYOUT



AQUA PHASE

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FUSES

If you suspect a fuse may be blown, unplug the machine before investigating.

Typically, seven fuses are located on *Aqua Phase* (depending on optional features, there may be additional fuses located in the control panel):

Name	Fuse Type	Purpose	Location
FU-1	FRN-R-20	Main System Fuse - 240volt	Control Panel
FU-2	FRN-R-20	Pump Motor	Control Panel
FU-3	FNQ-R5	System Fuse - 120volt	Control Panel
FU-4	GMC 2.5	PLC Inputs/Control Switches	Control Panel
FU-5	GMC 2.5	Level Controls/Limit Switches	Control Panel
FU-6	GMD 1.5	Spray Arm Drive Motors	Control Panel
FU-7 (optional)	GDC-5	Conveyor Motor	Control Panel
FU-8 (optional)	GMD 1.5	Accessories	Control Panel
GFCI	GFCI	Ground Fault Protector	Power Cord End

Effects of a blown fuse(s):

Name	Status	Condition
FU-1	If Blown	System will be dead. No status lights of PLC will be on.
FU-2	If Blown	System will not pump into main wash chamber.
FU-3	If Blown	System will be dead. No status lights of PLC will be on.
FU-4	If Blown	No activity from pressing “ START ” button. No lights on control panel. Certain input lights of PLC will not be on.
FU-5	If Blown	No activity from pressing “ START ” button. Inputs 9 and/or 12 may be on if water is in reservoir.
FU-6	If Blown	System will pump but no sweeping spray action will be heard.
FU-7	If Blown	System will operate, but conveyor floor will not function.
GFCI	If Tripped	System will be dead. No status lights of PLC will be on.

Fuses listed above with the exception of the “GFCI” are located inside the control panel cabinet.

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PERMANENT WATER LINE INSTALLATION

Consult and follow your local building code requirements.

Water Inlet (Fill) Line (see example included with this manual.):

- Water inlet line at the machine is 1/2" national pipe thread (NPT).
- Water inlet line requires a line strainer to protect the Fill solenoid valve from water line sediments.
- A manual shut-off valve should be installed on the water inlet line near the machine.

Water Drain Line (see example included with this manual.):

- Water drain line at the machine is 1/2" NPT.
- Drain line can be run 15 feet vertically.
- A check valve is recommended in the drain line.
- A line size increase is recommended on the drain line at the machine in order to reduce fluid friction and speed the draining. The recommend line size is 3/4" to 1".

AQUA PHASE AQ-4000 Series Operating Manual

AQUA PHASE 4000 LIMITED WARRANTY

Aqua Phase washers are warranted by Mid-State Stainless, Inc. (MSSI) to the original user against defects and workmanship or material under normal use:

- (a) for one year on any pumps, motors, valves, and pressure switches; and
- (b) for one year on automatic controls and control components.
- (c) for five years on the stainless steel wash chamber, pro-rated at 20% per year.
- (d) 90-days on labor for any of the above.

This limited warranty ensues on the day of purchase.

This warranty is valid only if Aqua Phase AQ-240 detergent and AQ-260 rinse-aid are used in the Aqua Phase washer. The use of cleaning and rinse agents other than those listed above without express written consent from Aqua Phase/Mid-State Stainless, Inc. shall void this warranty immediately.

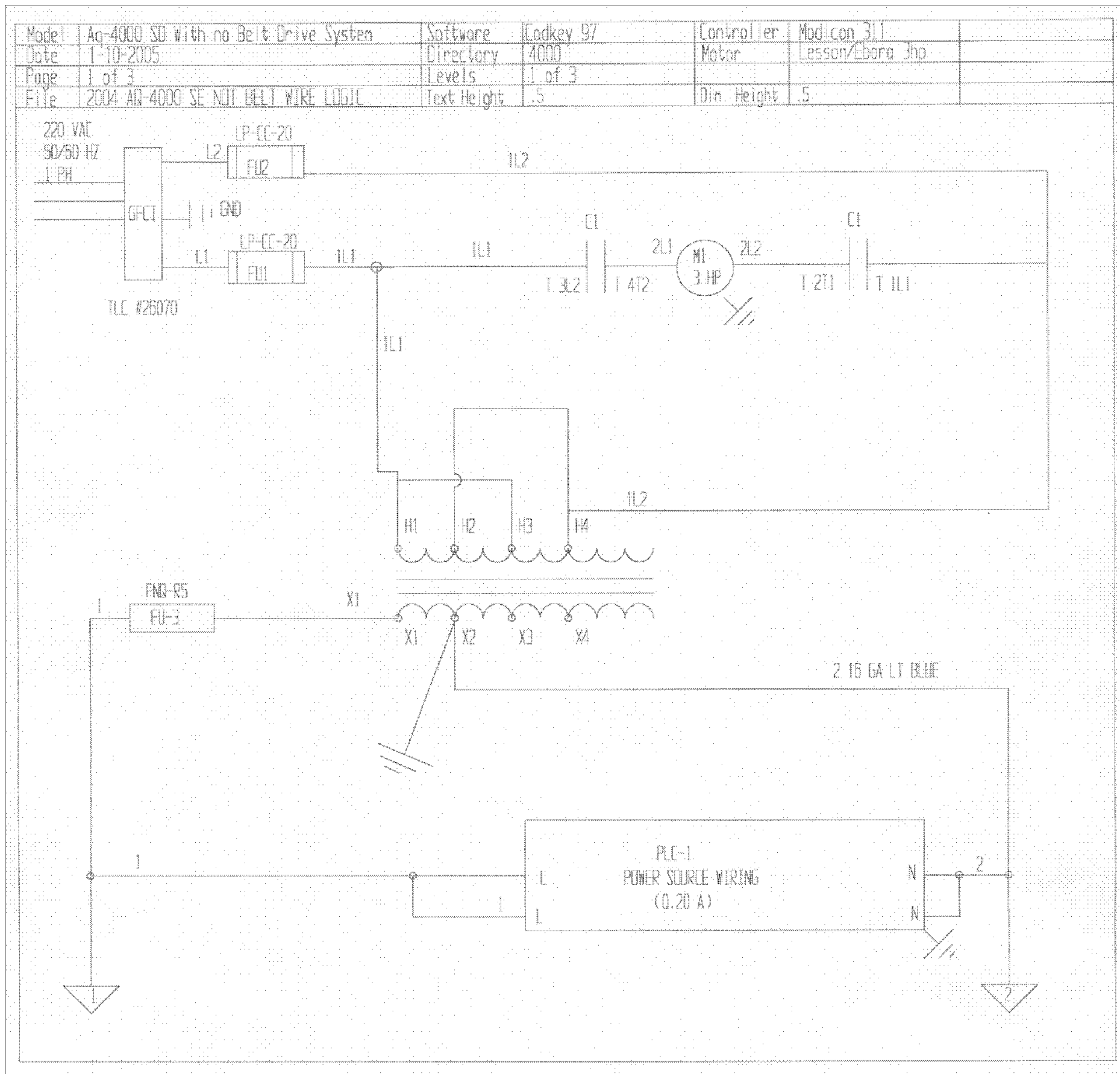
If the Buyer notifies Mid-State of a warranty claim during the appropriate warranty period and the Buyer affords Mid-State a reasonable opportunity to inspect the product, and if the product is in fact found to be defective by reason of latent or inherent defect in material or workmanship and returned to an authorized service location, as Mid-State designates, shipping costs prepaid, then Mid-State will, at Mid-State's election, either repair such product or replace the product F.O.B. Factory. No product shall be returned without Mid-State's prior consent in writing.

Limitation of Liability: Disclaimer of Implied Warranties. The Buyer's sole and exclusive remedy on account of the furnishing of products or services by Mid-State shall be to secure the repair or replacement of the defective products from Mid-State on the terms and subject to the conditions specified above. Mid-State shall have no responsibility for any failure of the products or of related equipment or any loss, damage or injury resulting from: (a) the improper design, manufacture, maintenance or operation of any equipment into which the products are incorporated or in connection with which the products are used; or (b) the use of the products for other than their intended purpose; or use or operation outside the specified environmental conditions; or (c) the failure of the Buyer or any other party to maintain the products properly; or (d) any failure resulting from causes external to the products after delivery; or (e) any failure resulting from modifications to the products other than modifications made by Mid-State. Mid-State shall not in any event be liable for any costs incurred by Buyer, including, without limitation, the cost of any labor expended on any product.

MID-STATE MAKES NO WARRANTIES, OTHER THAN THE LIMITED WARRANTY SPECIFIED ABOVE, OR REPRESENTATIONS, EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCT OR ANY SERVICE, ADVICE, OR CONSULTATION, IF ANY, FURNISHED TO THE BUYER OR ANY OTHER PARTY BY MID-STATE OR ITS REPRESENTATIVE. MID-STATE SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE REMEDIES SET FORTH ABOVE ARE THE ONLY REMEDIES AVAILABLE TO ANY PERSON FOR BREACH OF ANY COVENANT, DUTY OR OBLIGATION ON THE PART OF MID-STATE HEREUNDER. MID-STATE SHALL NOT BE LIABLE FOR ANY LOSS, PERSONAL INJURY OR PROPERTY DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF SUCH PRODUCT, ADVICE OR SERVICE, OR FOR INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES OF ANY DESCRIPTION, WHETHER ANY SUCH CLAIM BE BASED UPON WARRANTY, CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER TORT, OR OTHERWISE.

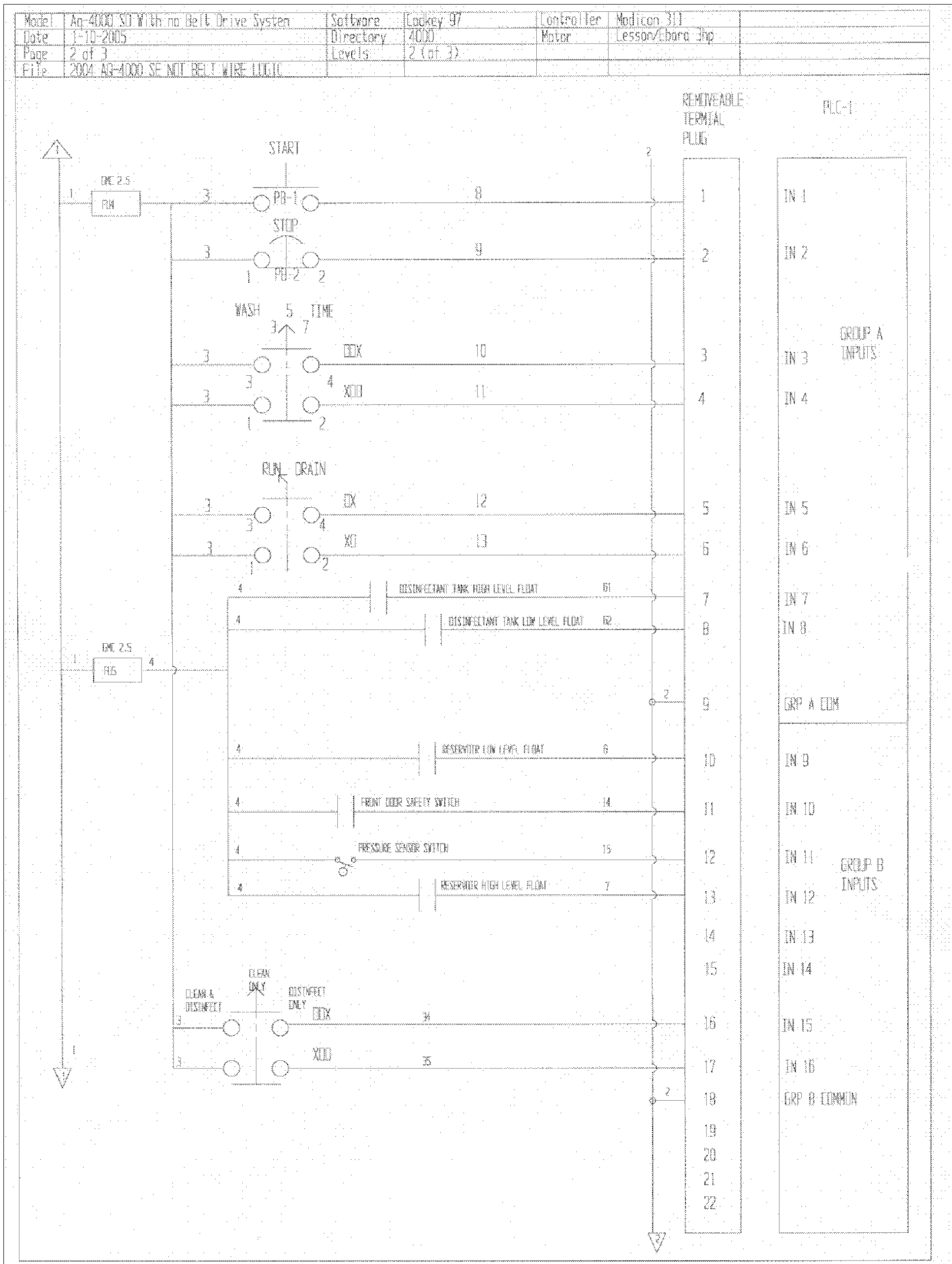
AQUA PHASE Operating Manual

Electrical Diagram Page 1



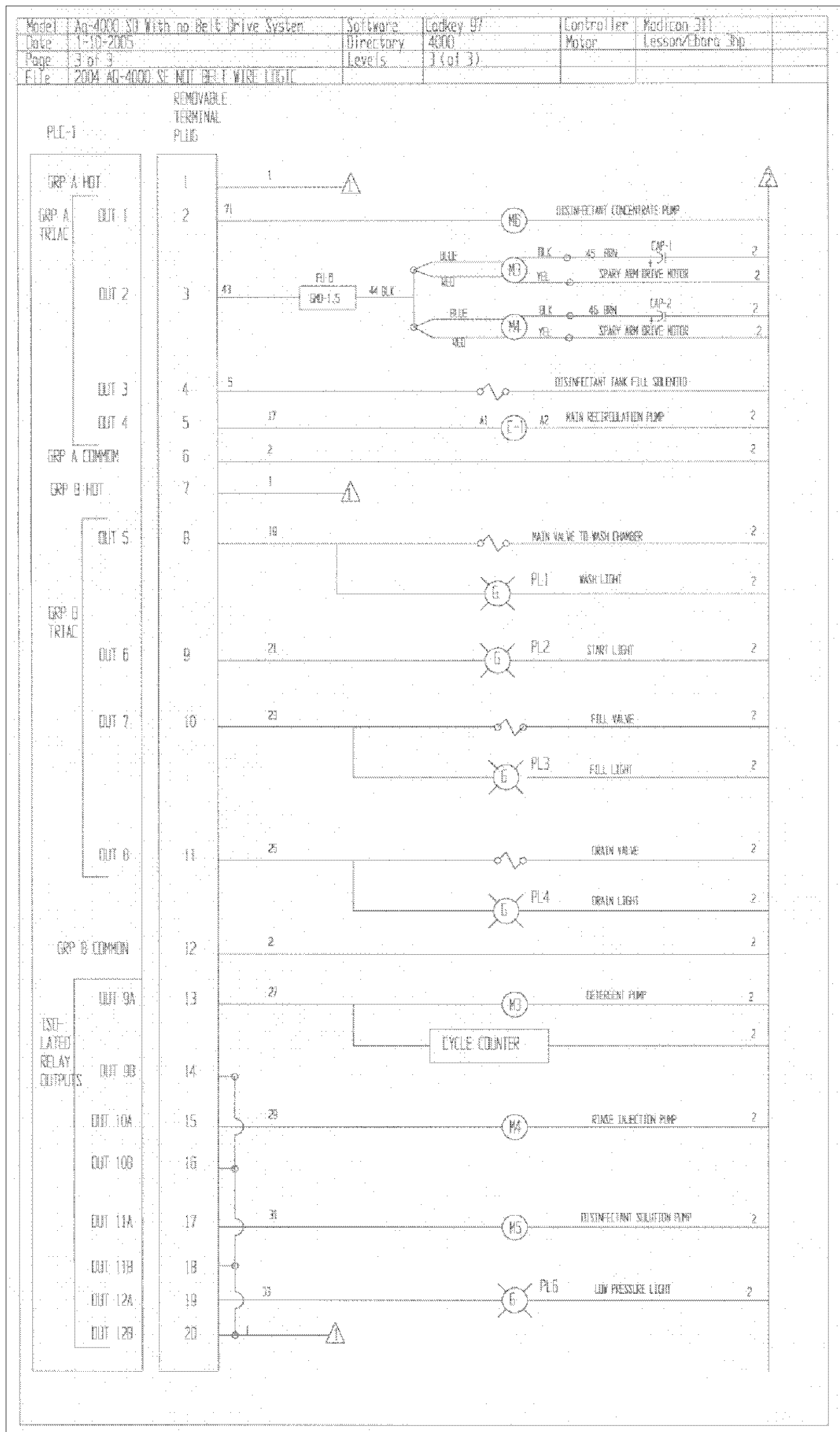
AQUA PHASE Operating Manual

Electrical Diagram Page 2



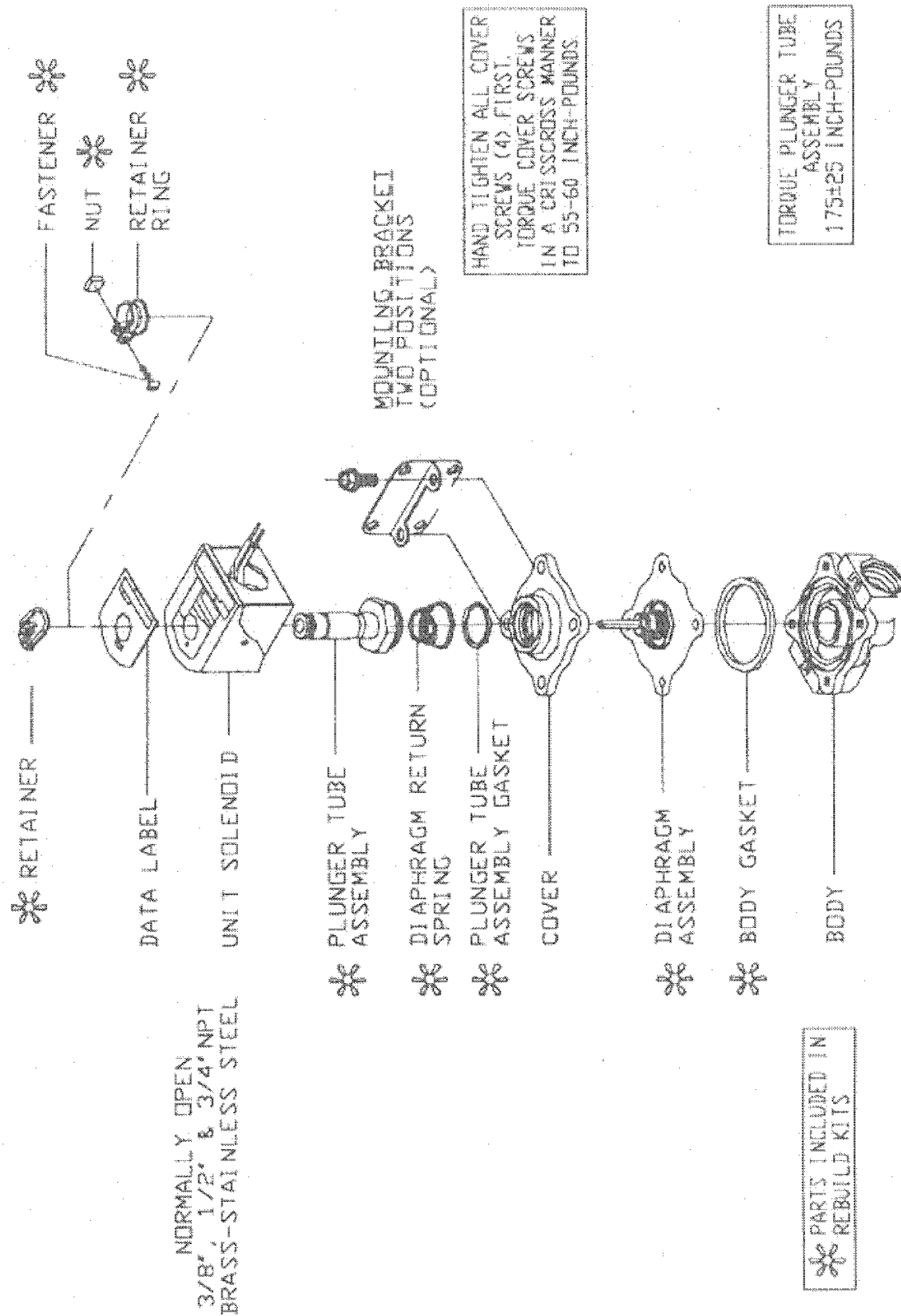
AQUA PHASE Operating Manual

Electrical Diagram Page 3



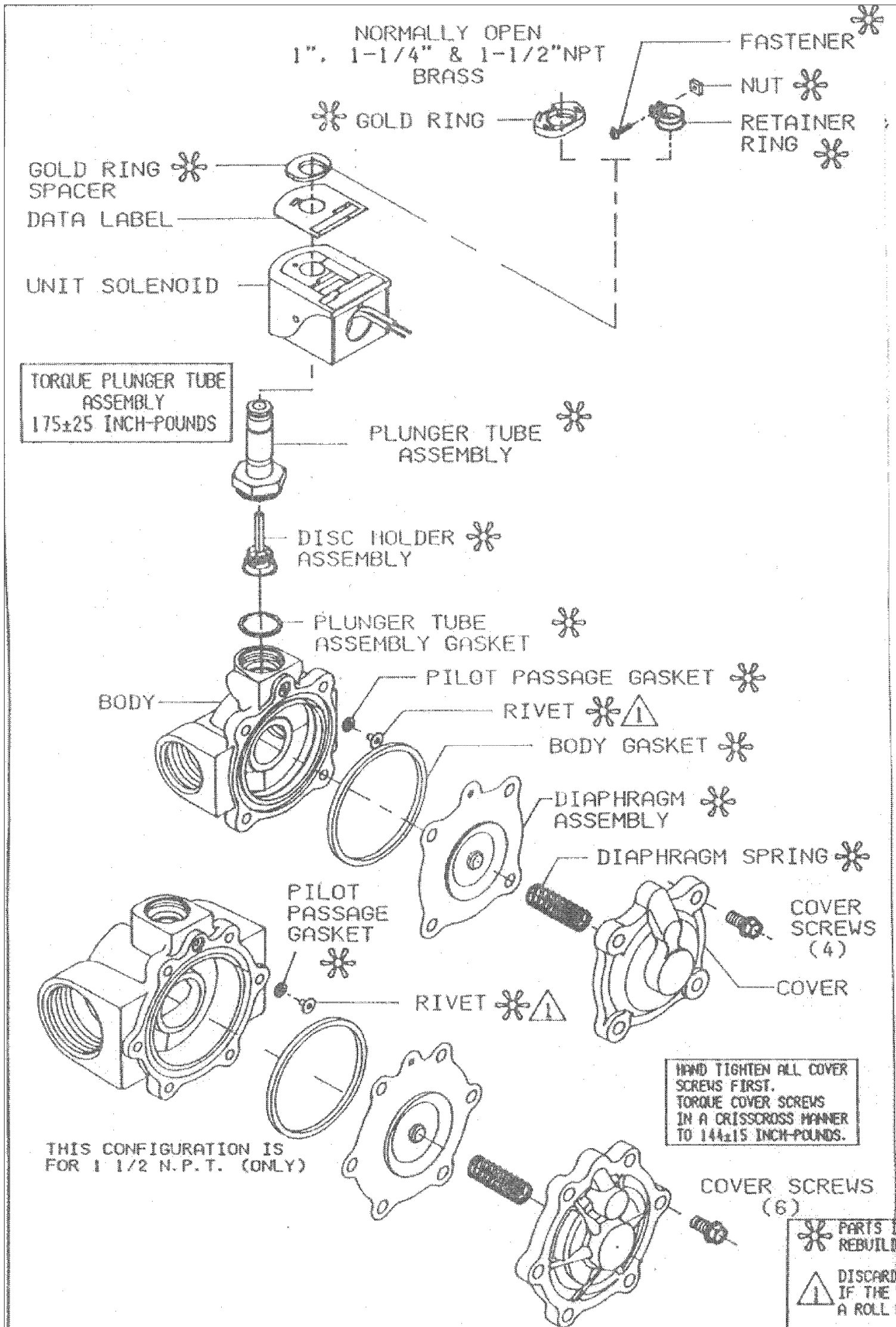
AQUA PHASE Operating Manual

Parker Brand 1/2" Valve - Black Electrical Coil



AQUA PHASE Operating Manual

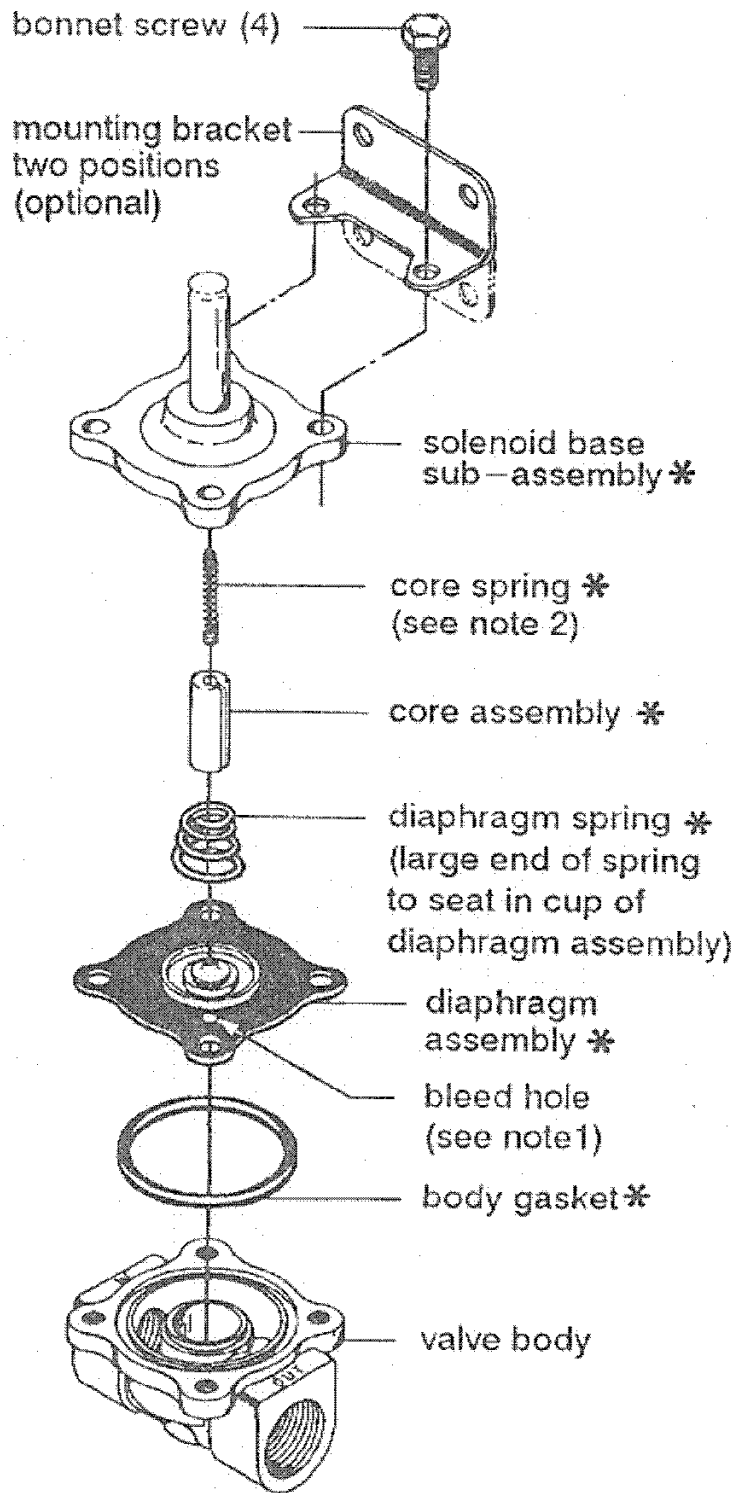
Parker Brand 1" and 1-1/2" Valve - Black Electrical Coil



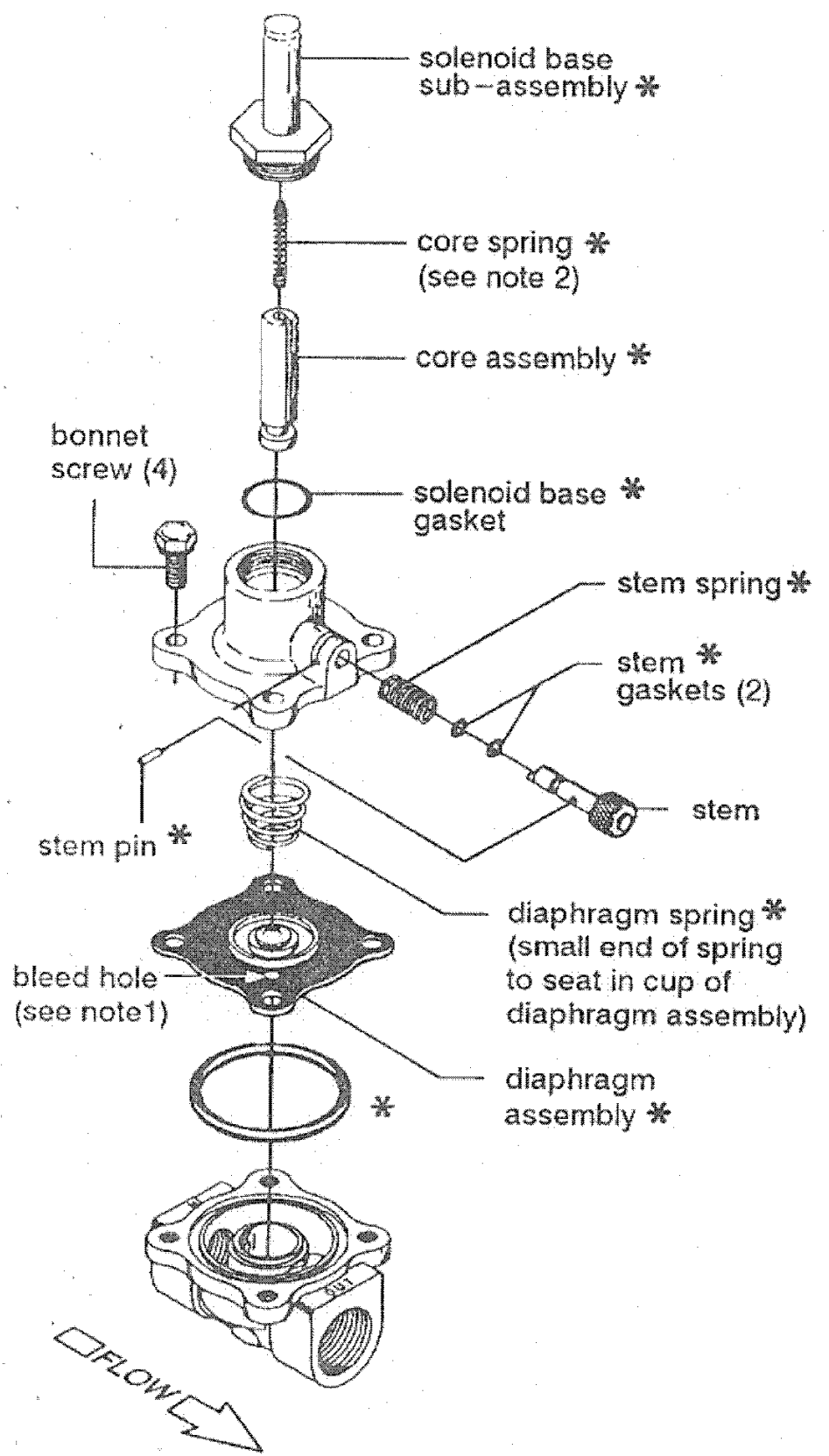
AQUA PHASE Operating Manual

ASCO Brand 1/2" and 1" Valve - Green Electrical Coil

* Indicates Parts Supplied In ASCO Rebuild Kits



AC Construction Standard



AC Construction with Manual Operator

- Note:
1. Locate bleed hole in diaphragm assembly approximately 45° from valve outlet.
 2. Wide end of core spring in core first, closed end protrudes from top of core.

Figure 2. Series 8210 – AC construction without solenoid.

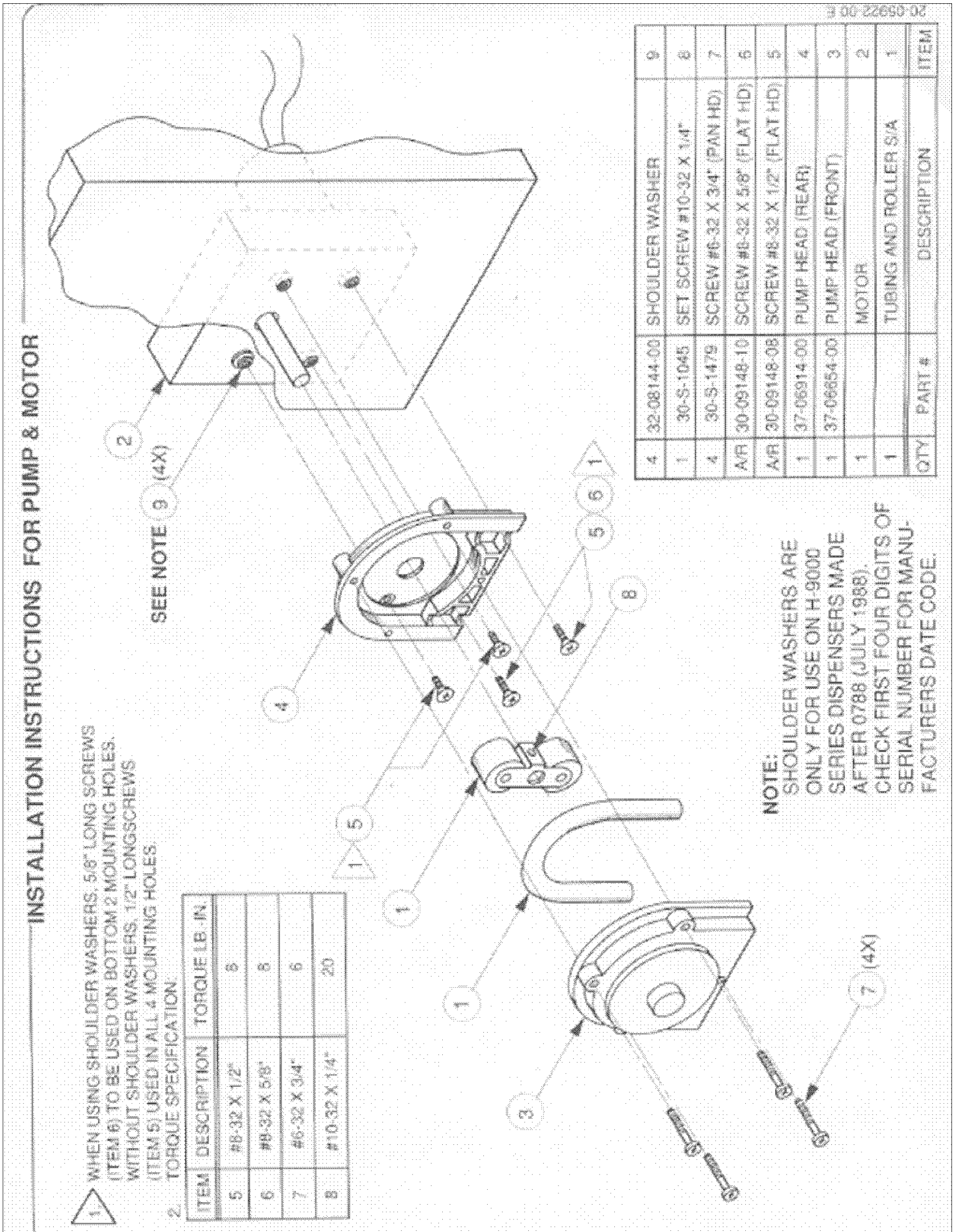
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ASCO Valves

Automatic Switch Co.

AQUA PHASE Operating Manual

Chemical Injection Pump Diagram



AQUA PHASE Operating Manual

Disinfectant Solution Injection Valve Diagram Page 1

DEMA

SINGLE-STAGE INJECTOR MODELS 200-3C, 200C, 201C, 202C, 203C, 204C, 206C, 208C, 2012C

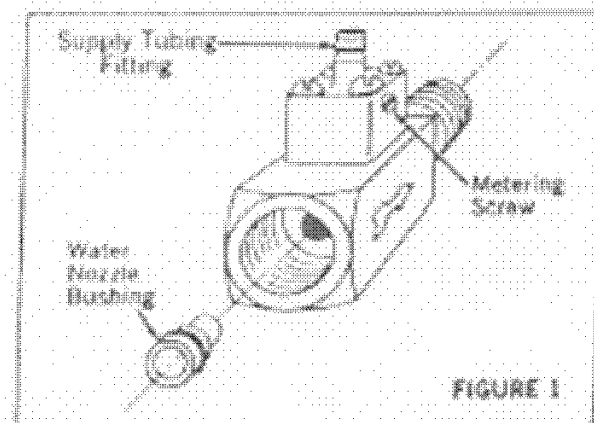
INSTALLATION INSTRUCTIONS

1. PARTS

- A. Injector.
- B. Drum protector disc.
- C. Three brass nozzle bushings.
- D. Plastic Tubing 8' long with foot strainer.
- E. Backup washer (Models 204C & smaller).

2. INSTALLATION

- A. **Selecting the nozzle bushing:**
Find the appropriate APPLICATION under Section 4 and use the tables to select one of the three bushings supplied. Push the bushing into the injector inlet, small end first, as far as it will go. See Fig. 1.
- B. **Backup washer:**
In some applications a flexible hose and shut off gun are used downstream from the injector. When the gun is shut off a momentary back flow can develop and push out the nozzle bushing. To prevent this, place the plastic backup washer behind the nozzle before screwing the injector onto the inlet pipe.
- C. **Placement in the water line:**
The injector may be installed in a horizontal or vertical line and with the knob in any position below, above, or to the side. Water flow must be in the direction of the arrow on the injector body. If the injector pipe size is different from the line size, use pipe bushings or reducers as required. (Injector selection is based on flow, not line size.)
- D. **Connection to chemical supply:**
Drop the end of the tubing with the strainer into the fluid product container. Cut the tubing to any convenient length and slip the open end over the injector fitting. The container may be more than 8 feet below the injector (extra tubing required) but injection capacity will be less. Do not place the container above the injector unless the injector is under pressure when not in use. This will prevent free siphoning.
The metal drum protector disc may be used to cover the container opening and to hold the tubing in place. Twist the disc at the slit for easy application.



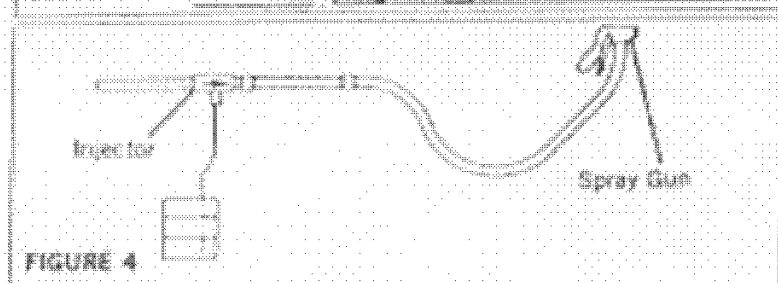
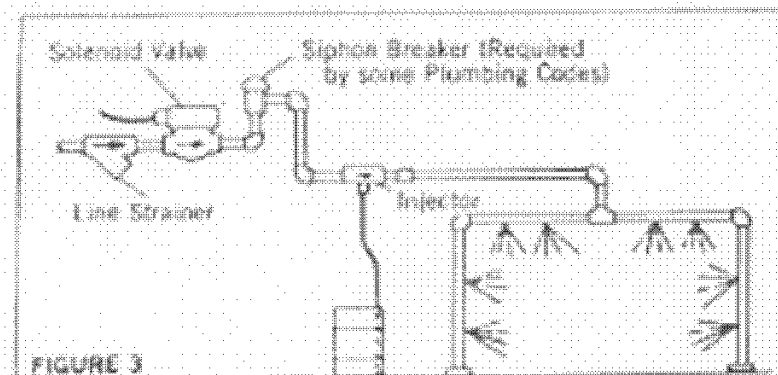
3. CHEMICAL FEED ADJUSTMENT

See FIG. 1 for the location of the metering screw in the knob. The knob may be re-oriented for better accessibility by removing the 4 machine screws and turning it to the new position. Turn the metering screw to the left to increase the injection rate. Five turns provide the maximums shown in Table 1. These figures are with 8 feet of suction tubing, a lift of 4 feet from the fluid container to the injector, and for a maximum water temperature of 140°F. Injectors will operate at reduced injection rates up to 200°F or a lift up to 25 feet. If the chemical is viscous (above 75 cps) the maximum injection rates of injectors up to Model 204C can be as much as doubled by using 1/2" ID tubing. (Dema part 100-12L.) Use a 1" piece of regular tubing over the inlet barb as a bushing.
Optional "T" type metering knob (see parts list on back page). Screw pre-selected metering tip (fixed orifice) into inlet barb before attaching plastic tubing.

4. APPLICATIONS

SPRAYING SYSTEM AT LINE PRESSURE FIGURES 3 AND 4.

Select the nozzle bushing to match your total spray nozzle flow and pressure as shown in Table 1 on page two. Spray nozzle catalog flow ratings are the most convenient method of determining water flow. Once an injector has been matched to a spray nozzle system, it will continue to function regardless of fluctuations in line pressure, as the water flow will also fluctuate in proportion. Therefore, if your line pressure is unknown, it is permissible to use spray nozzle ratings at any pressure for the purpose of selecting an injector. Flow ratings at 40 psi are the basis of the spray nozzle numbering system and are therefore most frequently used. If there are lengthy piping, hose, or other restrictions between the injector and nozzles, these pressure losses must be added to the rated pressure before entering Table 1 (see Table 12).

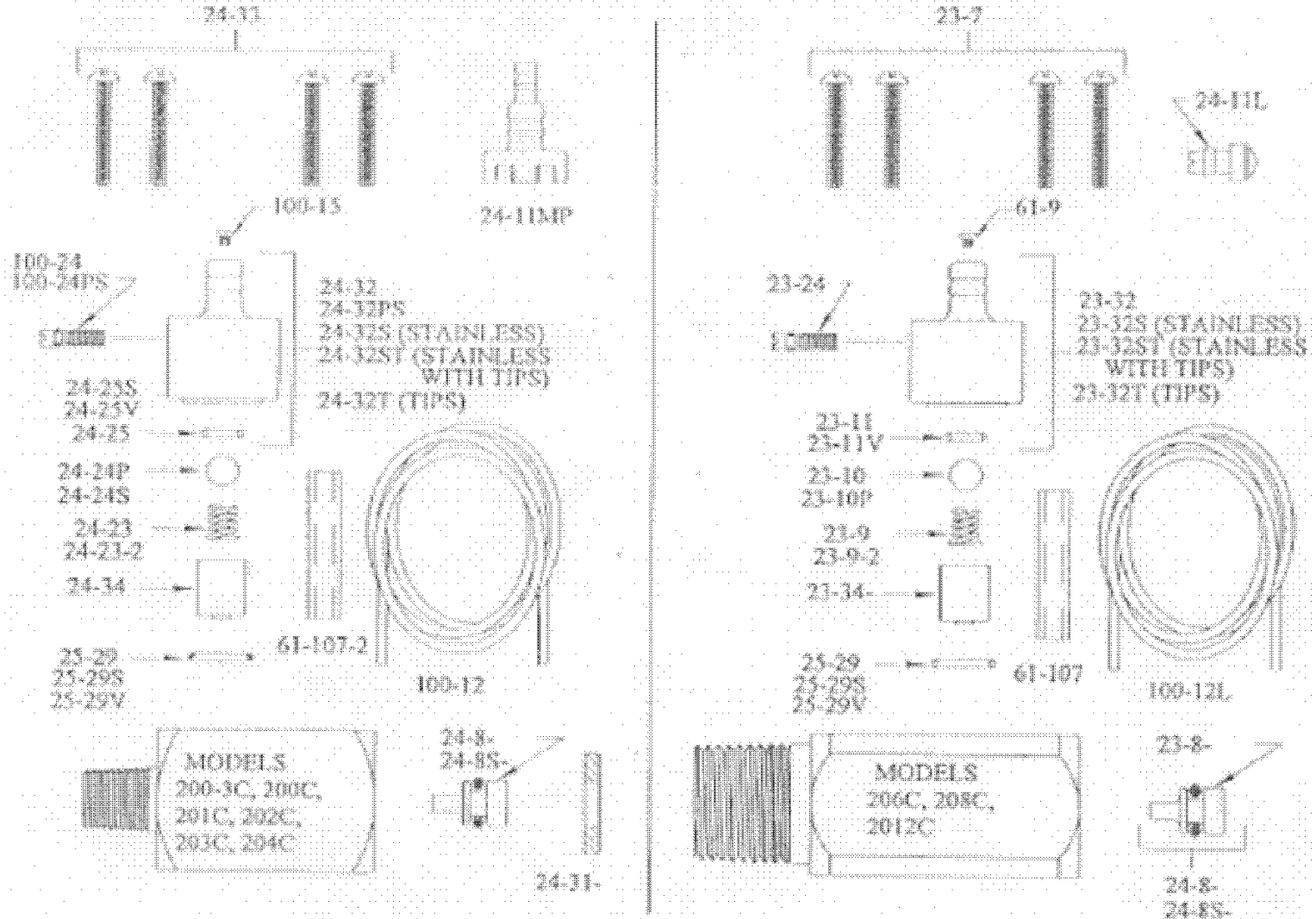


AQUA PHASE Operating Manual

Disinfectant Solution Injection Valve Diagram Page 2

SINGLE-STAGE INJECTORS

MODEL 200-3C, 200C, 201C, 202C, 203C, 204C, 206C, 208C, 2012C
 MODEL #'S MAY ALSO INCLUDE E, P, S, T, AND/OR -2



PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
23-7	SCREW (1" LG. 4 REQ'D)	24-31-	BACK-UP WASHER (SPECIFY MODEL NO.)
23-8	WATER NOZZLE (BRASS) (ADD NUM. STAMPED ON NOZZLE)	24-32	METERING KNOB ASSY.
23-9	CHECK VALVE SPRING (STAINLESS)	24-32PS	METERING KNOB ASSY. (-P INJECTORS)
23-9-2	CHECK VALVE SPRING (HASTELLOY)	24-32S	METERING KNOB ASSY.
23-10	CHECK VALVE BALL (STAINLESS)	24-32ST	METERING KNOB ASSY.
23-10P	CHECK VALVE BALL (TEFLON)	24-32T	METERING KNOB ASSY.
23-11	CHECK VALVE O-RING (EP)	24-33	SCREW #8-32 X 3/8 LG. (4 REQ'D)
23-11V	CHECK VALVE O-RING (VITON)	24-34	CHECK VALVE CORE (SPECIFY MODEL NO.)
23-24	METERING SCREW	24-8S-	WATER NOZZLE & O-RING ASSY. (STAINLESS) ADD NUM. STAMPED ON NOZZLE *
23-32	METERING KNOB ASSY.	25-29	METERING KNOB O-RING (EP)
23-32S	METERING KNOB ASSY.	25-29S	METERING KNOB O-RING (SILICONE)
23-32ST	METERING KNOB ASSY.	25-29V	METERING KNOB O-RING (VITON)
23-32T	METERING KNOB ASSY.	61-9-	METERING TIP (SPECIFY SIZE)
23-34	CHECK VALVE CORE (SPECIFY MODEL NO.)	61-9K	METERING TIP KIT
24-8-	WATER NOZZLE & O-RING ASSY. (BRASS) ADD NUM. STAMPED ON NOZZLE *	61-107	CERAMIC WEIGHTS FOR 3/8" I.D. TUBING FOR 206C, 208C & 2012C
24-11L	FOOT STRAINER	61-107-2	CERAMIC WEIGHTS FOR 3/8" I.D. TUBING FOR 200-3C THRU 204C
24-11MP	FOOT STRAINER	61-9K	METERING TIP KIT
24-23	CHECK VALVE SPRING (STAINLESS)	100-12	VINYL TUBING (3/8" O.D. X 8' LG.)
24-23-2	CHECK VALVE SPRING (HASTELLOY)	100-12L	VINYL TUBING (1/2" O.D. X 8' LG.)
24-24P	CHECK VALVE BALL (TEFLON)	100-15-	METERING TIP (SPECIFY SIZE)
24-24S	CHECK VALVE BALL (STAINLESS)	100-15K	METERING TIP KIT
24-25	CHECK VALVE O-RING (EP)	100-24	METERING SCREW
24-25S	CHECK VALVE O-RING (SILICONE)	100-24PS	METERING SCREW (-P INJECTORS)
24-25V	CHECK VALVE O-RING (VITON)		

* ADD V TO END OF PART # FOR VITON O-RING

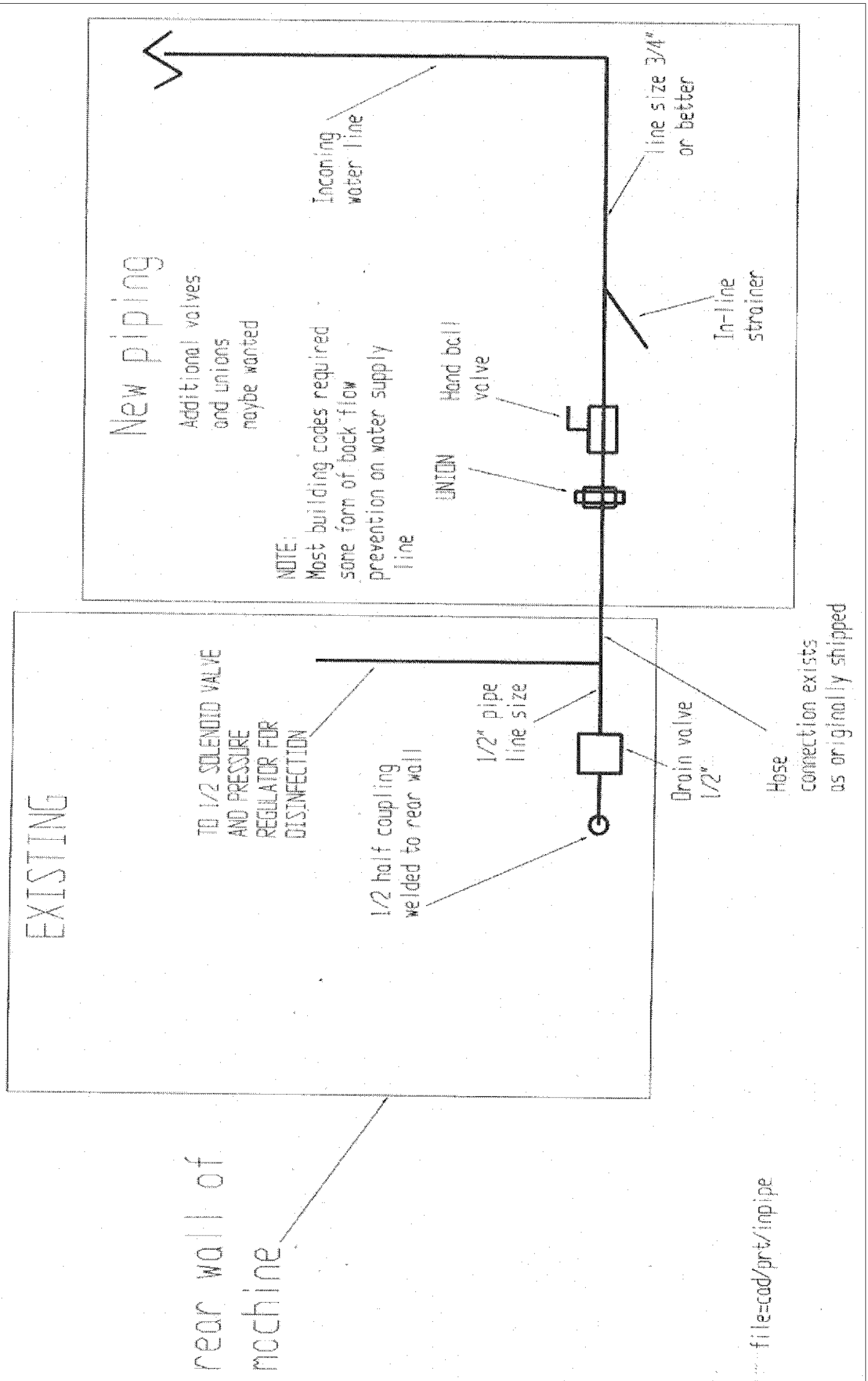
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AQUA PHASE Operating Manual

Fill Line Piping

Aqua Phase
Permanent

Piping example
for fill line



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AQUA PHASE Operating Manual

Drain Line Piping

