CHEMICAL SANITIZING UPRIGHT DOOR DISHMACHINE

Manufactured in the United States by:

Jackson
An Ecolab Company

INSTALLATION & OPERATION MANUAL

FOR ECOLAB MODELS:

OMEGA CS

ECOLAB®

March 15, 2006
P/N 7610-003-19-63 (Revision A)
Previously 7610-002-22-57 (Revision C)

www.ecolab.com

REVISION	REVISION DATE	MADE BY	APPLICABLE ECN	DETAILS
A	03-15-06	MAW	7721	Made changes per Ecolab request. Previous revision was 7610-002-22-57 (Re vision C).

NOMENCLATURE FOR THE MODELS COVERED IN THIS MANUAL

OMEGA CS

Omega CS - Chemical sanitizing, electrically-heated dishmachine

Model:_____

Serial No.:_____

Installation Date:_____

Service Rep. Name:_____

Phone No.:_____

TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE
I.	**SPECIFICATION INFORMATION**	
	Specifications	2
	Dimensions	3
	Table Dimensions	4
II.	**INSTALLATION & OPERATION INSTRUCTIONS**	
	Installation Instructions	6
	Operation Instructions	8
	Programming Instructions	11
	Programming Chart	13
	Detergent Dispensing	14
III.	**PREVENTATIVE MAINTENANCE**	
	Preventative Maintenance	16
IV.	**TROUBLESHOOTING SECTION**	
	Troubleshooting Guide	18
	Common Problems	19
V.	**SERVICE PROCEDURES**	
	Rinse Solenoid Valve Repair Parts Kit	22
	Vacuum Breaker Repair Parts Kit	26
VI.	**PARTS SECTION**	
	Standard Parts	29
	Chemical Feeder Pump Assembly	32
	Solenoid Valve Assembly	33
	Vacuum Breaker Assembly	34
	Upper Control Box Assembly	35
	Lower Control Box Assembly	37
	Detergent Dispenser Assembly	39
	Detergent Strainer Assembly	40
	Hood Assembly & Associated Parts	41
	Cantilever Arm/Door Assemblies	42
	Tub & Frame Assemblies	44
	Pump & Motor Assembly	45
	Incoming Plumbing Assembly	46
	Wash Manifold/ Wash Arm Assemblies	47
	Inner Tub Components	48
	Paddle Switch Assembly	49
VII.	**ELECTRICAL SCHEMATICS**	
	120 Volt, 50-60 Hertz, Single Phase	51

SECTION 1:
SPECIFICATION INFORMATION

SECTION 1: SPECIFICATION INFORMATION

SPECIFICATIONS for OMEGA CS

PERFORMANCE/CAPABILITIES	
OPERATING CAPACITY (RACKS/HOUR)	
RACKS PER HOUR (NSF RATED)	46
DISHES PER HOUR	1150
GLASSES PER HOUR	1150

OPERATING CYCLE (SECONDS)	
LIGHT CYCLE	
WASH TIME	42
RINSE TIME	15
TOTAL CYCLE TIME	72
NORMAL CYCLE	
WASH TIME	48
RINSE TIME	25
TOTAL CYCLE TIME	90
HEAVY CYCLE	
WASH TIME	118
RINSE TIME	15
TOTAL CYCLE TIME	150
SUPER HEAVY CYCLE	
WASH TIME	208
RINSE TIME	15
TOTAL CYCLE TIME	240

TANK CAPACITY (GALLONS)	
WASH TANK (MINIMUM)	1.2

WASH PUMP CAPACITY	
GALLONS PER MINUTE	61

TEMPERATURES	
WASH---°F (MINIMUM)	120
WASH---°F (RECOMMENDED)	140
RINSE---°F (MINIMUM)	120
RINSE---°F (RECOMMENDED)	140

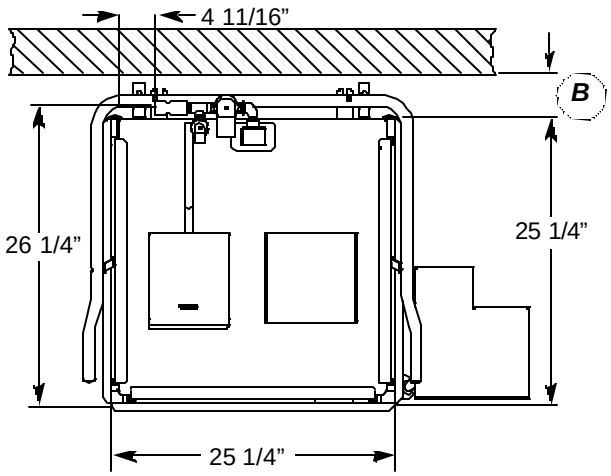
ELECTRICAL REQUIREMENTS		
WASH PUMP MOTOR HORSEPOWER		3/4
VOLTS	PHASE	AMPS
115	1	7.4

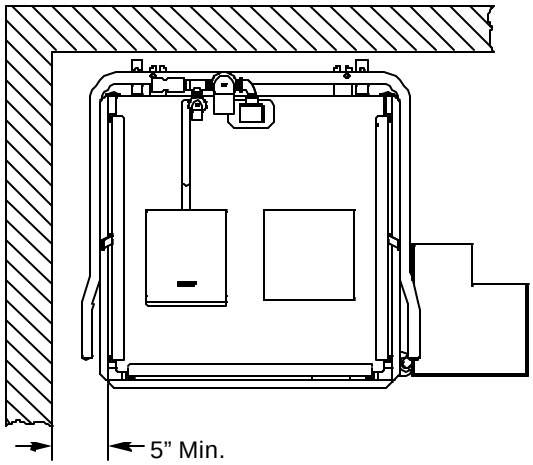
WATER REQUIREMENTS	
INLET TEMPERATURE (Minimum)	120°F
INLET TEMPERATURE (Recommended)	140°F
GALLONS PER HOUR	68
WATER LINE SIZE I.P.S. (Minimum)	1/2”
DRAIN LINE SIZE I.P.S. (Minimum)	2”
FLOW PRESSURE P.S.I.	20 ± 5
MINIMUM CHLORINE REQUIRED (PPM)	50

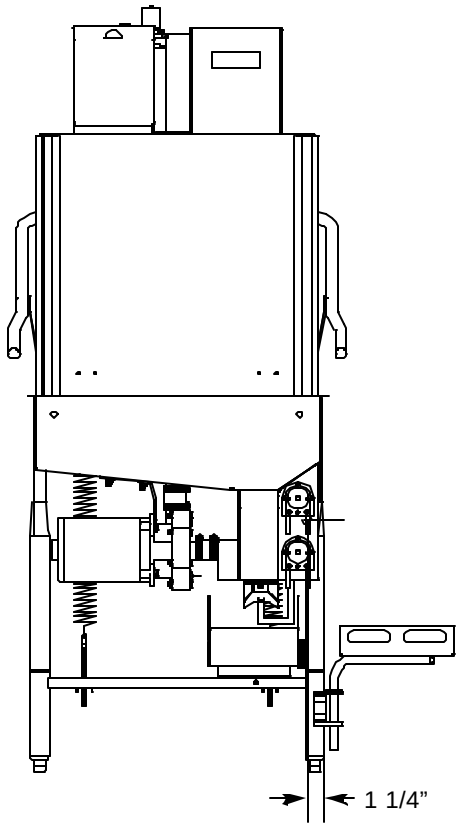
FRAME DIMENSIONS	
WIDTH	25 1/4”
DEPTH	25 1/4”
HEIGHT	66 1/4”
STANDARD TABLE HEIGHT	34”
MAXIMUM CLEARANCE	19”

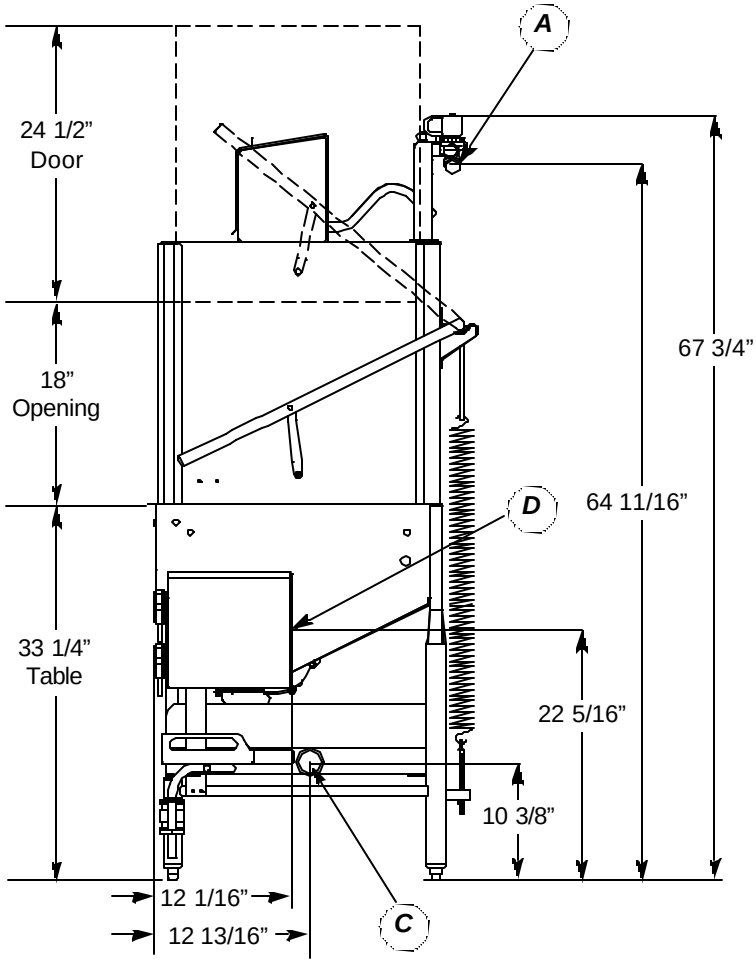
NOTE: Always refer to the machine data plate for specific electrical and water requirements. The material provided on this page is for reference only and may be subject to change without notice.

DIMENSIONS









LEGEND

A **- WATER INLET (1/2” IPS)**

B **- STANDARD CLEARANCE BETWEEN MACHINE AND WALL (WITH DISHTABLE) IS 4”.**

C **- DRAIN (2” IPS)**

D **- ELECTRICAL CONNECTION POINT**

NOTE: All vertical dimensions are +/- 1/2” due to adjustable feet.

TABLE DIMENSIONS

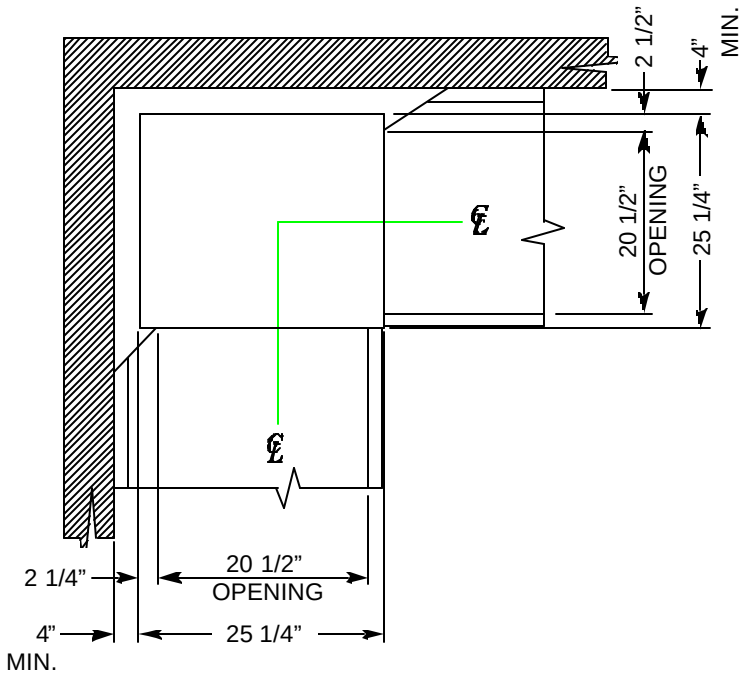


TABLE DIMENSIONS
CORNER INSTALLATION

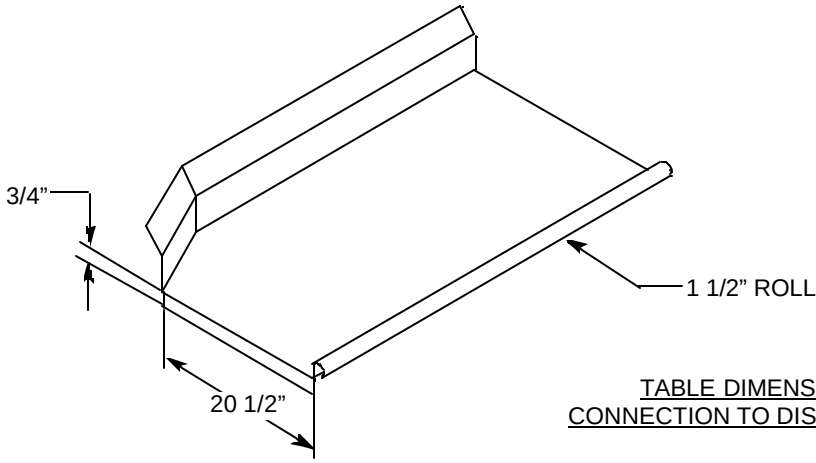


TABLE DIMENSIONS
CONNECTION TO DISHMACHINE

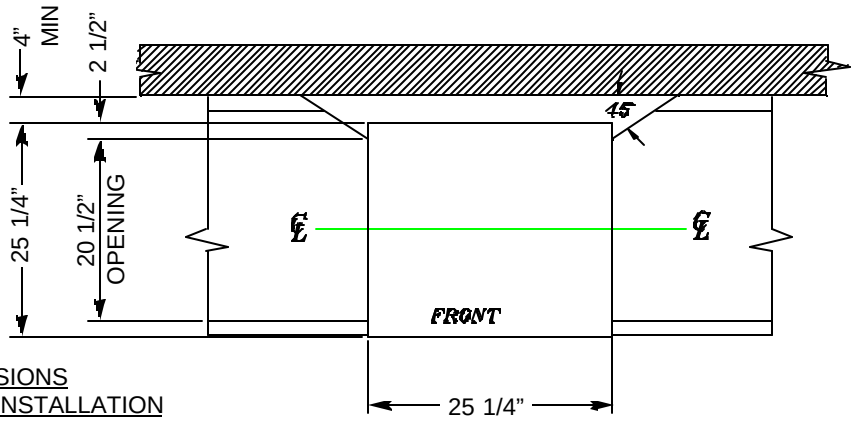


TABLE DIMENSIONS
STRAIGHT THROUGH INSTALLATION

SECTION 2: INSTALLATION/OPERATION INSTRUCTIONS

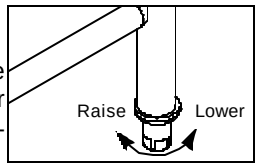
SECTION 2: INSTALLATION/OPERATION INSTRUCTIONS

INSTALLATION INSTRUCTIONS

VISUAL INSPECTION: Before installing the unit, check the container and machine for damage. A damaged container indicates that there may be some damage to the machine. If there is damage to both the container and machine, do not throw away the container. The dishmachine has been inspected and packed at the factory and is expected to arrive to you in new, undamaged condition. However, rough handling by carriers or others may damage the unit while in transit. If this situation occurs, do not return the unit to Ecolab; contact the carrier and ask them to inspect the damage to the unit and to complete an inspection report. You must contact the carrier within 48 hours of receiving the machine. Also, contact your Ecolab representative.

UNPACKING THE DISHMACHINE: Remove the machine from the container, and inspect for missing parts. If an item is missing, contact your Ecolab representative immediately to report the missing item.

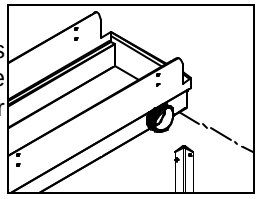
LEVEL THE DISHMACHINE: Ensure that the unit is level from side to side and from front to back before making any connections. The unit comes with adjustable bullet feet, which can be turned using a pair of pliers or by hand if the unit can be raised safely. Failure to level the dishmachine may cause premature wear or decrease washing performance.



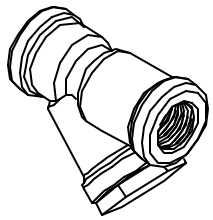
Frame with Adjustable Foot

PLUMBING THE DISHMACHINE: All plumbing connections must comply with all applicable local, state, and national plumbing codes. The plumber is responsible for flushing the incoming water line prior to connecting it to remove all foreign debris that may get trapped in the valves or cause an obstruction. Any valves that are fouled by matter left in the water line and the expenses resulting are not the responsibility of the manufacturer.

CONNECTING THE DRAIN LINE: The OMEGA CS drain requires a minimum of 2" NPT piping that is pitched at least 1/4" per foot. There must also be an air gap between the machine drain line and the floor sink or drain. If a grease trap is required by code, it should have a flow capacity of 5 gallons per minute.


Drain Connection

WATER SUPPLY CONNECTION: Read the section entitled "PLUMBING THE DISHMACHINE" above before proceeding. Install the water supply line (1/2" pipe size minimum) to the dishmachine line strainer using copper pipe. It is recommended that a water shut-off valve be installed between the main supply and the machine to allow access for service. The water supply line must be capable of 20±5 PSI "flow" pressure at the recommended temperature indicated on the data plate.


Y-Strainer

In areas where the water pressure fluctuates or is greater than the recommended pressure, it is suggested that a water pressure regulator be installed. The OMEGA CS does not come with a water pressure regulator as standard equipment. Please notify your Ecolab representative if you have any questions.

Do not confuse static pressure with flow pressure. Static pressure is the line pressure in a "no flow" condition (all valves and services are closed). Flow pressure is the pressure in the fill line when the fill valve is opened during the cycle.

It is also recommended that a shock absorber (not supplied with the OMEGA CS) be installed in the incoming water line. This prevents line hammer (hydraulic shock), induced by the solenoid valve, from causing damage to the equipment.

PLUMBING CHECK: Slowly turn on the water supply to the machine after connecting the incoming fill line and the drain line. Check for leaks and repair as required. Leaks must be repaired prior to placing the machine in operation.

SECTION 2: INSTALLATION/OPERATION INSTRUCTIONS

ELECTRICAL INSTALLATION INSTRUCTIONS

ELECTRICAL POWER CONNECTION: Electrical and grounding connections must comply with the applicable portions of the National Electrical Code ANSI/NFPA 70 (latest edition) and/or other electrical codes.

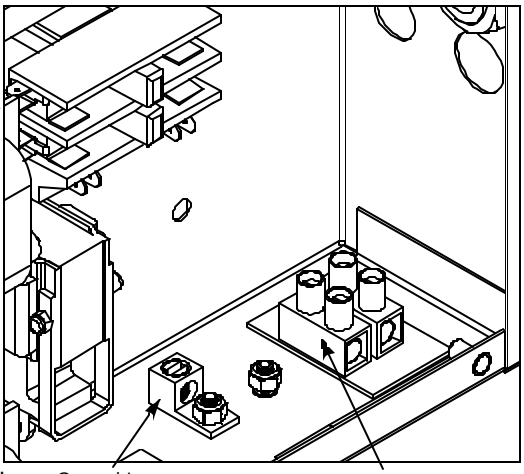
Disconnect electrical power supply and place a tag at the disconnect switch to indicate that you are working on the circuit.

The dishmachine data plate is located on the right side front of the machine. Refer to the data plate for machine voltage, total amperage load and serial number.

To install the incoming power lines, open the control box by removing the control box lid. Install 3/4" conduit into the pre-punched holes in the back of the control box. Route power wires and connect to power block and grounding lug. Install the service wires (L1 & N) to the appropriate terminals as they are marked on the terminal block. Install the grounding wire into the lug provided.

It is recommended that "DE-OX" or another similar anti-oxidation agent be used on all power connections.

VOLTAGE CHECK: Ensure that the power switch is in the OFF position and apply power to the dishmachine. Check the incoming power at the terminal block and ensure it corresponds to the voltage listed on the data plate. If not, contact a qualified service agency to examine the problem. Do not run the dishmachine if the voltage is too high or low. Shut off the service breaker and mark it as being for the dishmachine. Advise all personnel of any problems and of the location of the service breaker. Replace the control box cover and tighten the screws.



Electrical Connection

OPERATING INSTRUCTIONS

OPERATIONAL START-UP & CHECK: Before proceeding with start-up, verify the following:

1. Open the doors and verify that the sump strainer is correctly installed in the sump.

2. Verify that the drain stopper is in position.

3. Check that the plugs are securely screwed into the ends of all wash arms.

4. Check that the wash arms are securely screwed into the stationary bases and that they rotate freely.

5. Check the levels in all chemical containers and replace if necessary.

INITIAL START-UP PROCEDURE:

1. Turn on dishmachine.
   a) Close doors, push ON/OFF button located on the keypad once, and allow machine to fill automatically.

2. Adust dishmachine FILL level
   a) Close door and start cycle.
   b) Open door to check water level **at the start of the rinse cycle.**
   c) The water FILL level should be at or slightly below the top of the sump.
   d) Adjust FILL time in the PROG DRAIN/FILL menu.

NOTE: It is important to check the water level at the beginning of the rinse cycle since the detergent water is added to the end of the rinse cycle.

3. Adjust dishmachine DRAIN time.
   a) Observe drain area when machine is draining. Allow enough time for the machine to completely drain before the flush begins.
   b) Adjust the DRAIN time in the PROG DRAIN/FILL menu.

4. Adjust dishmachine FLUSH time
   a) The FLUSH will rinse out the detergent residue in the wash tank before the rinse begins. 2 to 4 seconds is normal.
   b) Adjust the FLUSH time in the PROG DRAIN/FILL menu.

5. Load chemicals and prime pumps.

6. Measure and adjust chemical amount.

7. Check all water and drain fittings for leaks.

8. Install wall charts and instruct machine operators on proper cleaning and operation.

GENERAL OPERATION SEQUENCE:

CAUTION: Water must be in the wash tank sump while the wash pump is running in order to avoid damage to the pump seal.

Close the machine's doors. Turn the machine on by pressing the red ON/OFF button on the keypad. The machine will fill automatically with water to the level preset at the factory (FILLING will be indicated on the display). The minimum water level should be just at the top of the wash tank sump. To adjust the water level, see programming instructions.

NOTE: It is important to check the water level at the **beginning of the rinse sequence** (just after the completion of the fill sequence) because additional water from the solid detergent dispenser is added at the end of each rinse sequence. The water level must be adjusted before the additional water is added at the end of the rinse sequence.

After the initial fill is complete, the display will indicate START DELAY, while a dose of detergent is fed into the wash sump for

the first cycle.

OPEN DOOR will be displayed. Open the doors and insert a soiled rack of dishes. The display will indicate CLOSE DOOR. Close the doors to begin the wash cycle.

When the doors are closed, the wash cycle will begin. During the first five seconds of the wash cycle, SELECT CYCLE will be displayed on the first line of the display. The second line of the display will indicate which cycle has been selected (the NORMAL cycle is the default cycle). Select the desired cycle during this five-second period by pressing the appropriate blue button on the keypad (NORMAL, LIGHT, HEAVY or SUPER HEAVY).

During the wash cycle, WASHING and the time remaining will be displayed on the first line of the display. The wash cycle selected and the temperature of the water in the wash tank will be displayed on the second line of the display.

At the completion of the wash cycle, the machine will drain the wash water, and refill the sump with fresh water for the rinse cycle. The display will indicate DRAINING, FLUSH, and FILLING and the time remaining for each sequence.

During the rinse cycle, RINSING and the time remaining will be displayed on the first line of the display. The wash cycle selected and the temperature of the water in the wash tank will be displayed on the second line of the display.

The completion of the rinse is the end of the cycle and the display indicates OPEN DOOR. Open the doors, remove the clean dishes, load a rack of dirty dishes, and close the door to begin the next cycle. If the door is opened and closed before the detergent dispenser has completed the closing of the wash tank for the next cycle, START DELAY and the time remaining before the cycle can begin will be displayed. The wash cycle will automatically begin at the end of the START DELAY.

If the doors are opened any time during a cycle, PAUSE will be displayed. The cycle will restart from the beginning of the wash cycle when the doors are closed again.

The cycle counter will only increment when cycles are fully completed. To display the number of cycles completed, ensure that the machine is idle (between cycles), press the red CYCLE COUNT button on the keypad.

SHUT DOWN AND CLEANING: To turn off the machine, press the red ON/OFF button. The machine will automatically drain (TURNING OFF will be displayed) and then turn off (OFF will be displayed).

Remove, clean and reinstall the upper and lower wash arms.

Remove, clean and reinstall the sump strainer.

Remove, clean and reinstall the accumulator strainer.

PRIMING THE CHEMICAL DISPENSING PUMPS: To prime the peristaltic pumps that dispense the rinse aid and sanitizer chemicals, press and hold the green RINSE AID PRIME or SANITIZER PRIME buttons on the keypad. The machine must be idle (between cycles) for these prime buttons to be active.

SOLID DETERGENT DISPENSER: The OMEGA CS uses a solid detergent which is dispensed from the detergent reservoir on top of the machine. To dispense the detergent, the reservoir fills to a specific level and soaks the detergent block for a specific amount of time to dissolve the detergent. A second addition of water at the end of the rinse cycle raised the water level high enough in the reservoir, so that the detergent solution siphons to the wash tank.

The detergent concentration is controlled by two parameters, both of which can be accessed in the programming mode in the OMEGA CS: 1) the water level in the detergent reservoir, which is adjustable as the DETERGENT SOAK LEVEL, 2) the length of time the detergent block is allowed to soak, which is adjustable as DETERGENT SOAK TIME.

The total amount of water required to raise the water level in the reservoir high enough to create a siphon effect is controlled by the TOTAL DISPENSER FILL TIME (see programming instructions).

Note: When the dishmachine is running, the detergent solution being prepared in the reservoir is for the following cycle. The

detergent solution will automatically siphon to the wash tank at the end of the rinse cycle when OPEN DOOR is displayed. If the dishmachine door is opened and closed to start a new cycle before the machine has time to complete this process, START DELAY will appear on the display and the machine will pause momentarily until the detergent solution has had time to siphon into the wash tank.

DETERGENT DISPENSER FLUSH: The green DET(ERGENT) FLUSH button on the keypad manually turns on the solenoid water valve that controls the flow of water to the detergent dispenser. This feature is useful when the detergent dispenser must be cleaned by first removing dried detergent buildup, and then flushing the dispenser with water by depressing the DET(ERGENT) FLUSH button.

The detergent dispenser flush can also be used to “reset” the detergent dispenser if the detergent dispensing function becomes out of sequence with the normal wash cycle. Press and hold the green DET(ERGENT) FLUSH button on the keypad for approximately 20 seconds in order to create a siphon effect which will cause the entire contents of the reservoir to be emptied into the wash tank.

DELIMING OPERATIONS: The OMEGA CS machine has a pre-programmed delime sequence which will lead the operator through the steps required to properly delime the machine.

To begin, the machine must be OFF. Press and hold the green DELIME button on the keypad. The machine will automatically fill with fresh water (FILLING will be indicated on the display). The display will then indicate to OPEN DOOR - ADD LIME-A-AWAY (delime chemical agent). Open the doors and add the delime chemical agent. The display will indicate CLOSE DOOR START DELIME. When the doors are closed, the wash pump will turn on to circulate the delime agent throughout the machine. At any time, the doors can be opened in order to inspect the inside of the machine. The wash pump will restart when the doors are closed. The display will indicate PRESS DELIME TO STOP CYCLE. When the green DELIME button on the keypad is pressed, the water in the sump will be drained (DRAINING is displayed). The sump will then be filled with fresh water (FILLING is displayed), and the wash pump will be turned on in order to rinse the inside of the machine (RINSING is displayed). At the completion of this rinse cycle, the sump will again be drained (FINAL DRAIN is displayed), and the machine turned off.

SECTION 2: INSTALLATION/OPERATION INSTRUCTIONS

PROGRAMMING INSTRUCTIONS (ECOLAB REPRESENTATIVES ONLY)

To access the programming mode, the machine must be ON, and idle (between cycles). Press and hold the P (PROGRAM) button on the keypad. The display will prompt to ENTER CODE. At this prompt, enter the keys corresponding to the access code. Once in the programming mode, the P (PROGRAM) button is used to scroll between the programming categories, the E (ENTER) button is used to select a program section or parameter. To change the value of a parameter, use the SUPER HEAVY button to decrease the value of a parameter, and the HEAVY button to increase the value of the parameter. To confirm a change to a programmable value, press the E (ENTER) button. To abort or escape out of a change, press the P (PROGRAM) button.

Once in the programming mode, if there have been no keypad inputs for approximately 45 seconds, the system will automatically exit out of the programming mode.

All time adjustments are in minutes and seconds. See flow chart.

The following parameters can be adjusted in the programming mode:

1. In the PROG(RAM) DRAIN/FILL section:
   a) FILL TIME - Length of fill/rinse cycles. The minimum water level should be just at the top of the wash tank sump.
   b) FLUSH TIME - Time of overlap between drain and fill times.
   c) DRAIN TIME - Time that drain is open after the wash cycle.

2. In the PROG(RAM) CHEMICAL section:
   a) DETERGENT SOAK LEVEL - Time during the wash cycle that water is added to the detergent reservoir. This adjustment controls the water height when the detergent solution is soaking - increasing/decreasing this value will increase/decrease detergent concentration.
   b) RINSE AID - Rinse aid pump run time which controls the amount of rinse aid dispensed. The rinse aid concentration can be individually set for each of the four cycles (NORMAL, LIGHT, HEAVY, and SUPER HEAVY).
   c) Sanitizer - Sanitizer pump time that controls the amount of sanitizer dispensed. The sanitizer concentration can be individually set for each of the four cycles (NORMAL, LIGHT, HEAVY, and SUPER HEAVY).

3. In the SYSTEM section:
   a) DETERGENT SOAK TIME - Time that the solid detergent block will be soaking during the current cycle. The selection options are LONG and SHORT.
   b) TOTAL DISP(ENSER) FILL TIME - This is the total time that the detergent dispenser water fill valve must be opened in order to cause the detergent dispenser tank to be siphoned (with the detergent block basket installed in the detergent dispenser tank). This time is dependent only on the incoming water pressure, and does not effect the concentration of the detergent in the wash water.

The factory setting for this time should be acceptable for most installations. If an adjustment is required, the following procedure will determine the proper value for this setting.

With the machine ON but idle and with no detergent blocks in the dispenser, press and hold the DETERGENT FLUSH button and observe the detergent drain line (the curved piece of tubing on the back of the reservoir)and record the time required for the water to begin to siphon from the reservoir to the wash tank.

The Omega CS is pre-programmed to have four active wash cycle programs (NORMAL, LIGHT, HEAVY, SUPER HEAVY). The NORMAL cycle is the default cycle. At the completion of a cycle, the controller selects the NORMAL cycle to be run as the next cycle. The operator has the option to override this default cycle by pressing the appropriate cycle type button on the keypad. This can be done while the machine is idle between cycles, or during the first five seconds after the doors have been closed to start a cycle. In the SYSTEM section of the programming mode, the default cycle type can be changed. Also, the LIGHT, HEAVY, AND SUPER HEAVY cycles can be made inactive, which prevents the operator from selecting them. Note: The NORMAL cycle is always active.

   c) DEFAULT CYCLE - Press the SUPER HEAVY buttons to scroll through the four cycle types until the desired default cycle is indicated.
   d) ACTIVE/INACTIVE - For the LIGHT, HEAVY AND SUPER HEAVY cycles, press the SUPER HEAVY or HEAVY buttons to indicate whether each cycle is to be made ACTIVE or INACTIVE.
   e) DISPLAY IN FAHRENHEIT or CELSIUS - Selects the unit of measurement for water temperature display. The selection options are FAHRENHEIT and CELSIUS.

4. The ENGINEERING section is used when trouble-shooting problems with the machine. In the ENGINEERING section:

a) TOTAL WASH CYCLES - This counter accumulates the total number of cycles which them machine has been run. It is a total of all four wash types, and it cannot be reset.

b) OMEGA CS REVISION - This indicates the software revision level.

c) WASH TANK TEMP - Displays the current temperature measured by the wash tank temperature probe.

d) PRESS ENTER TO:

i) RUN PUMP - Press and hold the E(ENTER) button to run the pump motor. Release the E(ENTER) button to stop the pump.

ii) OPEN DRAIN - Press and hold the E(ENTER) button to energize (open) the drain solenoid. Release the E(ENTER) button to de-energize the solenoid.

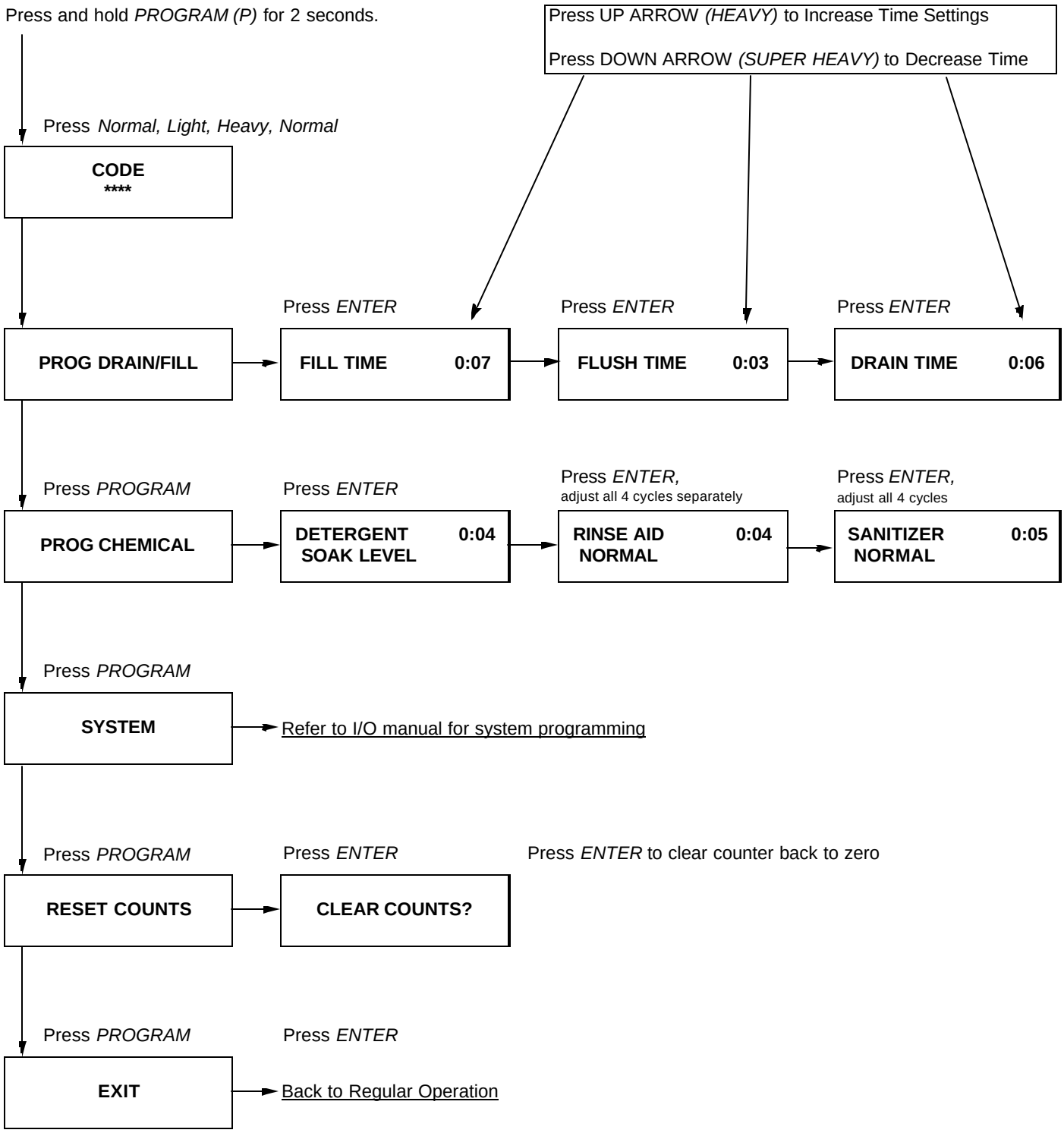
iii) OPEN FILL - Press and hold the E(ENTER) button to energize (open) the fill water valve solenoid. Release the E(ENTER) button to de-energize the solenoid.

5. RESET COUNTS - The system will prompt CLEAR COUNTS? E(YES) or P(NO) to confirm that the cycle counter is to be reset. Press the E (ENTER) button on the keypad to reset the counter or press the P (PROGRAM) button to exit without resetting the counter.

6. EXIT - Press the E (ENTER) button on the keypad to exit the programming mode.

PROGRAMMING CHART FOR THE OMEGA CS

Short Version



DETERGENT DISPENSING

The detergent dispenser is unique in that the solid detergent block is soaked in water for a short period of time rather than being sprayed upon via a spray nozzle. The detergent block soaks for most of the dishmachine cycle. At the end of the cycle, the detergent solution is discharged into the dishmachine for the next cycle.

Detergent Dispensing Sequence of Events

1. The water level in the dispenser is raised to a pre-set level (DETERGENT SOAK LEVEL).

a) The dispenser solenoid valve opens for the pre-set number of seconds as programmed in for the DETERGENT SOAK LEVEL. The first addition of water occurs during the wash cycle. The DETERGENT SOAK LEVEL primarily determines the amount of detergent that is dispensed each cycle.

2. The block soaks until the end of the rinse cycle.

3. **At the end of the cycle, the detergent solution is discharged into the dishmachine.**

a) The dispenser solenoid valve opens for a second addition of water to the dispenser. The water level in the dispenser is raised high enough to cause the entire contents to siphon out of the dispenser.

4. **The wash tank is now charged with detergent and ready for the next cycle.**

NOTE: Unlike most systems, the detergent is fed into the dishmachine at the end of the cycle.
Keep this in mind when titrating the wash water: after making changes to the DETERGENT SOAK LEVEL, it will take two (2) wash cycles to see the effects of the changes. Thus, wait two cycles before titrating the wash water.

HEAVY and SUPER HEAVY Cycles

For the HEAVY and SUPER HEAVY cycles, an extra shot of detergent is added to the dishmachine. At the start of a HEAVY or SUPER HEAVY cycle, the detergent dispenser will completely fill and drain, thus providing additional detergent for the heavier loads.
The dispenser will operate normally after that as explained in steps 1-4 above.

This extra boost of detergent will also occur on the first cycle when the dishmachine is first turned on.

TOTAL DISPENSER FILL TIME

In the SYSTEM programming menu, there is an option to adjust the TOTAL DISPENSER FILL TIME. This is the total time that the dispenser is allowed to fill. The first addition of water and the second addition of water will together equal the TOTAL DISPENSER FILL TIME:

1st Addition + 2nd Addition = TOTAL DISPENSER FILL TIME

The DETERGENT SOAK LEVEL and the TOTAL DISPENSER FILL TIME are adjustable in the program menu. The 2nd addition of water is calculated by the software and is adjusted accordingly to the above formula. The TOTAL DISPENSER FILL TIME need only be adjusted in cases of extremely low water pressure, or high water pressure. If the house water pressure is very low, the TOTAL DISPENSER FILL TIME will need to be increased so that enough water is added to cause the dispenser to siphon each cycle. If the house water pressure is high, the TOTAL DISPENSER FILL TIME can be reduced to conserve on water.

NOTE: Always have a detergent block in the dispenser when adjusting the TOTAL DISPENSER FILL TIME.

DETERGENT SOAK TIME (LONG, SHORT)

The DETERGENT SOAK TIME in the programming menu does not normally need to be adjusted. It is used only to fine-tune the titrations when the DETERGENT SOAK LEVEL does not provide the desired titrations. The LONG soak time will achieve higher titrations than the SHORT soak time. The DETERGENT SOAK TIME should be set at LONG for nearly all situations.

SECTION 3:
PREVENTATIVE MAINTENANCE

SECTION 3: PREVENTATIVE MAINTENANCE

PREVENTATIVE MAINTENANCE

The dishmachines covered in this manual are designed to operate with a minimum of interaction with the operator. However, this does not mean that some items will not wear out in time.

There are many things that operators can do to prevent catastrophic damage to the dishmachine. One of the major causes of component failure has to do with prescrapping procedures. A dishmachine is not a garbage disposal; any large pieces of material that are put into the machine shall remain in the machine until they are either broken up (after spreading out on your ware!) or physically removed. Strainers are installed to help catch debris, but they do no good if they are clogged. Have operators regularly inspect the pan strainers to ensure (1) that they are free of soil and debris and (2) they are laying flat in the tub.

When cleaning out strainers, do NOT beat them on waste cans. The strainers are made of metal and can be forgiving; but once severe damage is done, it is next to impossible for the strainer to work in the way it was designed to. Wipe out strainers with a rag and rinse under a faucet if necessary. For stubborn debris, a toothpick should be able to dislodge any obstructions from the perforations. Always ensure that strainers are placed back in the machine before operation and that they lay flat in the tub.

You may wish to contact your Ecolab representative in order to learn more about how your water hardness will effect the performance of your machine. Hard water makes dishmachines work harder and decreases efficiency.

Again, it is important to remind operators that trying to perform corrective maintenance on the dishmachine could lead to larger problems or even cause harm to the operator. If a problem is discovered; secure the dishmachine using proper shut down procedures as listed in this manual and contact your Ecolab representative.

Some problems, however, may having nothing to do with the machine itself and no amount of preventative maintanence is going to help. A common problem has to do with temperatures being too low. Verify that the water temperatures coming to your dishmachine match the requirements listed on the machine data plate. There can be a variety of reasons why your water temperature could be too low and you should discuss it with your Ecolab representative to determine what can be done.

By following the operating and cleaning instructions in this manual, you should get the most efficient results from your machine. As a reminder, here are some steps to take to ensure that you are using the dishmachine the way it was designed to work:

1. Ensure that the water temperatures match those listed on the machine data plate.
2. Ensure that all strainers are in place before operating the machine.
3. Ensure that all wash and/or rinse arms are secure in the machine before operating.
4. Ensure that drains are closed/sealed before operating.
5. Remove as much soil from dishes by hand as possible before loading into racks.
6. Do not overfill racks.
7. Ensure that glasses are placed upside down in the rack.
8. Ensure that all chemicals being injected to machine have been verified as being at the correct concentrations.
9. Clean out the machine at the end of every workday as per the instructions in the manual.
10. Always contact your Ecolab representative whenever a serious problem arises.
11. Follow all safety procedures, whether listed in this manual or put forth by local, state or national codes/regulations.

SECTION 4:
TROUBLESHOOTING

SECTION 4: TROUBLESHOOTING

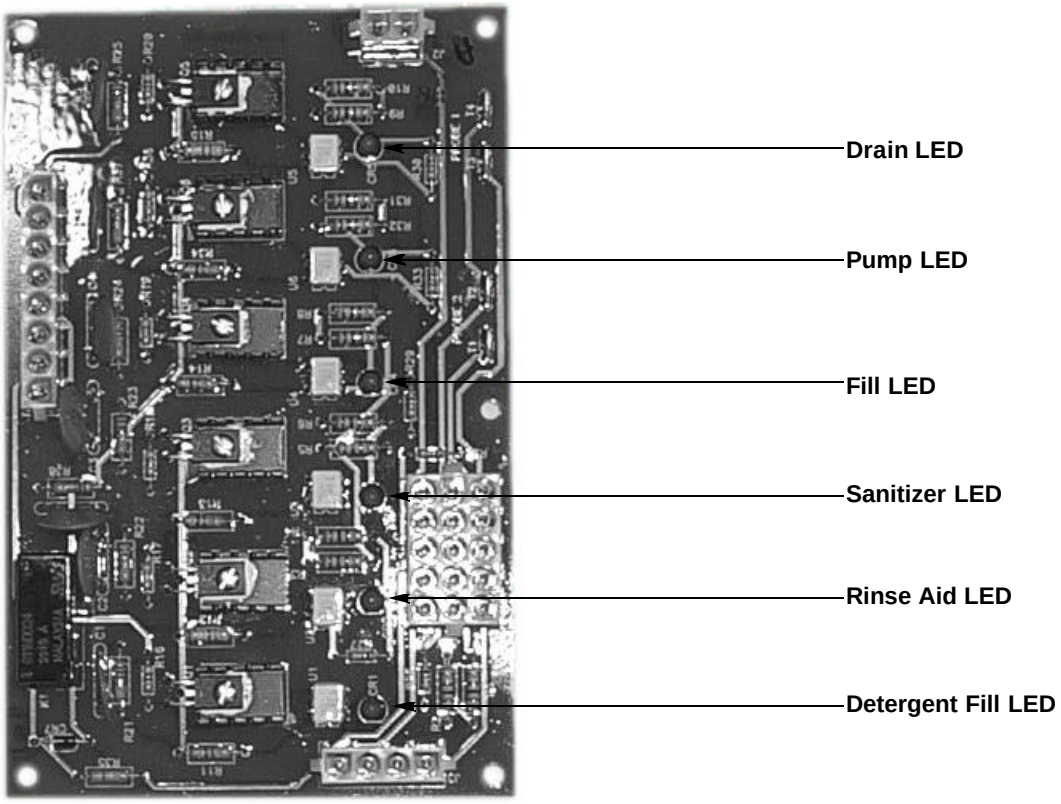
TROUBLESHOOTING GUIDE - OMEGA CS

The OMEGA CS dishmachine uses a microprocessor-based electronic controller to control function of the machine. The microprocessor is pre-programmed at the factory to run a machine that is installed in a typical application. A LCD display is used to indicate the status of the machine.

The electronic controller board with LCD display controls all timing functions. The controller board is connected to the interface board. It sends signals to the interface board to turn components on and off. The remaining electrical control components in the machine are connected to the interface board.

To aid in troubleshooting, the interface board contains six red LED (light emitting diodes). These diodes are illuminated whenever the output signal to the corresponding control item is ON.

The interface board contains six triacs, which are essentially electronic relays. Use a multimeter to verify that the interface board output is supplying voltage to a control item (solenoid valve, peristaltic pump, motor contactor, etc.). During any troubleshooting, it is critical to remember that a 120 volt signal will always be measured at the outputs of the interface board (pins 1 through 8 on connector J4) if the corresponding load (solenoid valve, peristaltic pump, motor contactor, etc.) is not connected to the output. To avoid false readings, the control item that is being tested must be connected to the interface board output.



SECTION 4: TROUBLESHOOTING

COMMON PROBLEMS

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

Problem: Dishmachine will not run. No voltage at terminal block terminal marked L1 and N. LCD display is blank.

1. Service disconnect switch off or faulty. Turn disconnect switch on.
2. Branch circuit breaker tripped/fuse blown. Reset or replace
3. Loose or broken connection to dishmachine.Tighten or replace connections.

Problem: Machine will not fill, other functions work.

1. Y-strainer plugged. Clean strainer.
2. Water valve(s) turned off. Turn on water valves.
3. Faulty solenoid valve diaphragm. Replace diaphragm, clean foreign material out of valve body and orifices.
4. Faulty solenoid coil. If coil has voltage but no continuity, replace coil (continuity is measured across coil connectors with wires removed.)

Problem: Machine fills continuously even with no power applied to machine.

1. Solenoid valve dirty or faulty. Clean valve, replace diaphragm.

Problem: Machine fills continuously, only when power is on.

1. Faulty fill solenoid valve (stuck in on position.) Repair/replace valve.

Problem: Wash motor does not run, other functions work, motor runs only when wash relay is manually pushed down.

1. Loose wire connections to motor or contactor. Tighten wires.

Problem: Wash motor does not run, other functions work, motor runs only when wash relay is manually pushed down.

1. Faulty wash relay. Check voltage at relay coil between ORANGE/BLACK and WHITE wires. If you read 120 volts, coil is faulty. Replace wash relay.

Problem: Wash motor does not run even when wash relay is manually depressed; other functions work.

1. Loose wire connections to motor or from contactors. Tighten wires.
2. Mechanical binding in pump. If motor has correct incoming voltage, and its overload is tripping, repair or replace pump.
3. Faulty wash motor. If motor has correct incoming voltage, and pump is okay, replace motor.
4. Faulty wash relay. With wash relay pushed in, check voltage between T1 and L1 of relay. If 120 volts replace open relay.
5. High or low voltage problem. Check voltage at motor and at power terminal block. Compare to electrical voltage specifications.

Problem: Wash motor runs continuously.

1. Wash relay welded closed. Turn machine off. If wash relay doesn't release, replace contactor.

Problem: Machine runs with door open. Display does not indicate "close" door when door is open.

1. Door switch shorted. With machine off, open doors, and with both wires to door switch unplugged, measure continuity between wires on switch. If there is continuity, replace switch.
2. Faulty wash relay. (Wash relay welded closed). Turn machine off, if wash relay doesn't release, replace contactor.

Problem: Low wash water pressure.

1. Water level is too low. Increase fill time on cam timer and/or; decrease drain time or; increase incoming water pressure.
2. Pump strainer clogged. Clean strainer.

SECTION 4: TROUBLESHOOTING

COMMON PROBLEMS

Problem: Low wash water pressure.

1. Wash arms clogged. Clean arms and jets.
2. Obstruction in pump housing or wash manifold. Disassemble and clear.
3. Pump impeller worn or broken. Replace pump.

Problem: Machine keeps tripping service breaker.

1. Power supply shorted to ground. Check for loose wires or burned connections.
2. Pump impeller jammed. Clean impeller.
3. Wash pump motor faulty. Check motor voltage and amp load, if amperage draw is over 12 amps, replace motor.

Problem: Machine will not drain.

1. Loose wire connection. Tighten wires to drain solenoid.
2. Drain hole obstructed. Clear obstructions.
3. Not enough time to drain. Adjust drain time (see programming instructions).
4. Drain rod bent or binding. Repair drain parts.
5. Drain solenoid defective. Check for voltage at solenoid valve during cycle. Replace if voltage is present, and solenoid does not operate.

Problem: Machine will not hold water.

1. Faulty drain ball. Replace ball.
2. Obstructed drain hole. Clear obstruction.
3. Drain rod bent or binding. Repair drain mechanism parts.

Problem: Display indicates WASH PROBE ERROR between cycles and OPEN on lower right hand of display during wash and rinse sequences.

1. Open wire on temperature probe. Make sure temperature probe wires are connected to the terminals marked T1 and T2 for Probe 2 on the interface board. Check for loose or damaged wires on temperature probe and at T1 and T2 connections on interface board.

Problem: Display indicates WASH PROBE ERROR between cycles and SHORT on lower right hand corner of display during wash and rinse sequences.

1. Electrical short on temperature probe wires or connections. Check temperature probe wires for pinching, etc. which would cause electrical short between the wires.

Problem: Display indicates LOW on lower right hand corner of display during wash and rinse sequences.

1. Temperature of wash and/or rinse water is below 100°F. Check heat source for incoming water. Incoming water must be 120°F minimum and 140°F is recommended.

Problem: START DELAY is indicated on the display.

1. The detergent and water solution from the current has not completely emptied into the wash tub before the start of the next cycle. Allow the detergent dispensing cycle to complete at the end of the rinse sequence. The next cycle will start automatically when this is completed.

Problem: Detergent concentration is too low or too high.

1. DETERGENT SOAK TIME and/or DETERGENT SOAK LEVEL are not correctly set. Adjust these parameters to the correct level (see programming instructions.)
2. No detergent in dispenser. Add detergent blocks to dispenser basket.

SECTION 5:
SERVICE PROCEDURES

RINSE SOLENOID VALVE REPAIR PARTS KIT

These dishmachines are equipped with electrical solenoid valves to allow for automatic fill and rinse. These valves are designed to specific tolerances and design aspects that must be met in order to function properly.

Ecolab offers repair kits for replacing some of the wear items associated with solenoid valves which will allow you to save money in that replacement of these parts can take place *without* removing the solenoid valve from the plumbing assembly.

The instructions provided here are for maintenance personnel only. Unauthorized persons should not attempt any of the steps contained in these instructions.

Warning: many of the instructions and steps within this document require the use of tools. Only authorized personnel should ever perform any maintenance procedure on the dishmachine!

PREPARATION

1. Power must be secured to the unit at the service breaker. Tag or lock out the service breaker to prevent accidental or unauthorized energizing of the machine.

2. Ensure that incoming water to the machine is secured either by use of a shut-off valve or disconnecting the incoming water line.

TOOLS REQUIRED

The following tools will be needed to perform this maintenance evolution:

1. Small flathead screwdriver
2. Medium flathead screwdriver
2. Needle nose pliers
3. 5/16” nutdriver
4. Channel locks
5. 12” pipe wrench

TIME REQUIRED

It is estimated that it will take (1) person twenty minutes to perform this task, not including all of the items indicated in the section entitled “PREPARATION”.

IMPORTANT NOTES

1. Read these instructions thoroughly before attempting this maintenance evolution. Become familiar with the parts and what actions need to be taken. This will save time in the long run!

2. The procedures demonstrated in this manual are shown being performed on an ES-4400 rack conveyor dishmachine. The actual maintenance steps, however, apply to any Parker style solenoid valve found on a Ecolab dishmachine.

STEPS

1. Remove the top screw with the 5/16” nutdriver. Remove the screw and the data plate and set to the side.



Removing the top screw

2. With the top screw and data plate removed, grasp the solenoid coil and gently pull up. The coil should slide up, allowing you to remove it from the valve bonnet. If you are wanting to replace the coil, continue on with Step 3. If you are wanting to replace some of the internal components of the valve, proceed to step 12.



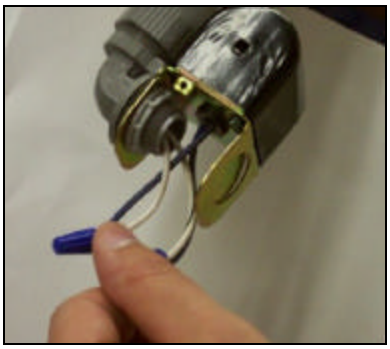
Removing the coil

3. **NOTE:** Replacing the solenoid coil requires working with the wiring of your machine. It is important that all wiring maintenance be performed by qualified personnel. Always verify the wiring steps presented in this instruction with the schematic that shipped with the unit. A current schematic can also be found in the unit’s installation manual. Before beginning any step that involves working with wiring, ensure that the steps located in the section entitled “Preparation” have been performed. Power must be secured to the machine at the service breaker. Failure to do so could result in severe injury to maintenance personnel.



Prying open the coil wire cover

4. When replacing the coil, ensure that when removing the coil wire cover that care is taken not to damage the wires inside. Using the medium flathead screwdriver, gently use it to open the cover enough to where it could be pulled off.



Straightening the wires

5. Once the coil wire cover has been removed and set to the side, take the internal wires and pull them out straight.



Removing the wire nuts

6. Remove the wire nuts from the wires and separate them.



Loosening the conduit nut

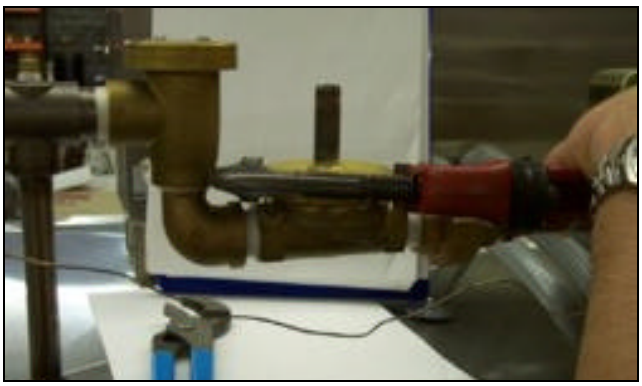
7. Using a pair of channel locks, gently loosen the conduit retaining ring for the conduit nut. Once it is loosened, use your fingers to unscrew and remove it.

8. Pull the conduit away and discard the bad coil. Take the new coil and attach the conduit, reinstall & tighten the conduit nut, and pull the wires through so that you will be able to wire the valve back up.

9. Reconnect the wires from the conduit to the wires from the solenoid as they had been connected previously. Ensure that the wire nuts are on tight.

10. Slide the coil wire cover back on, taking care not to damage the wires.

11. If you are done performing maintenance on the valve, continue on to step 23. Otherwise, please go on to step 12.L



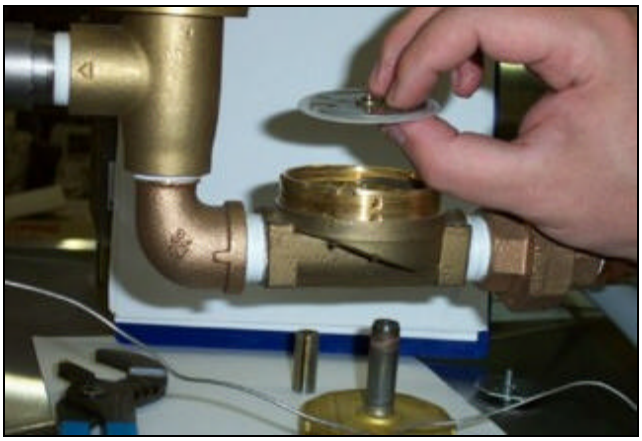
Loosening the valve bonnet

12. To remove the valve bonnet, grasp it with the jaws of the pipe wrench and turn to the left. **Note:** on some models you may have to remove the valve in order to perform this and any further steps. Be careful not to damage the plumbing assembly. Only use the pipe wrench enough to where you can spin the valve bonnet off with your hand.



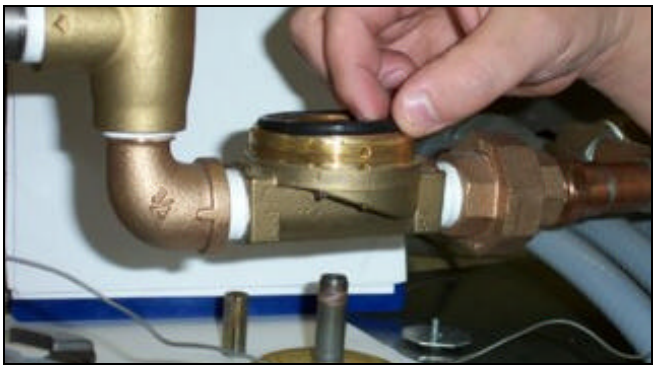
Removing the valve bonnet

13. Slowly remove the valve bonnet. **Note:** The spring for the plunger is located directly under the bonnet and may come free if you are not careful. Remove the plunger, spring and valve bonnet and place to the side.



Removing the diaphragm

17. Remove the diaphragm retainer and then the diaphragm itself. Many problems associated with a solenoid valve can be traced to a clogged pilot port in the diaphragm.

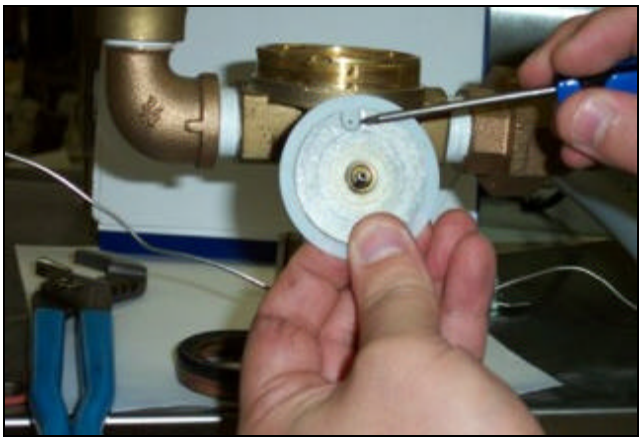


Removing the O-ring

14. Remove the O-ring and inspect it. If it has any tears or cuts or excessive flat spaces, it should be replaced.

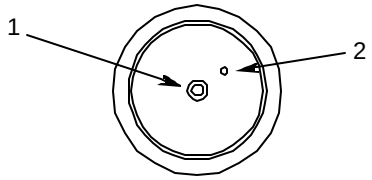
15. Examine the threads for the valve bonnet. Check them for scoring or signs of damage. Take a cloth and clean them out to remove any foreign particles that might get lodged in the threads and cause a leak. Severely damage threads should not be repaired; instead it is recommended that the entire valve should be replaced. These instructions do not provide information on replacing the solenoid valve.

16. **Note:** Even though an O-ring may not appear damaged, it is a good idea to go ahead and replace it if you have a new one. This will help ensure that your valve remains leak-free in the future!



Pointing out the extension hole

18. As indicated in the photo above, the extension hole can become clogged. If it is difficult to clean out, you can use a heated straight pin to push through the hole. The center hole, the pilot port, must also be clear. If the diaphragm is torn or bent in any way, it must be replaced.

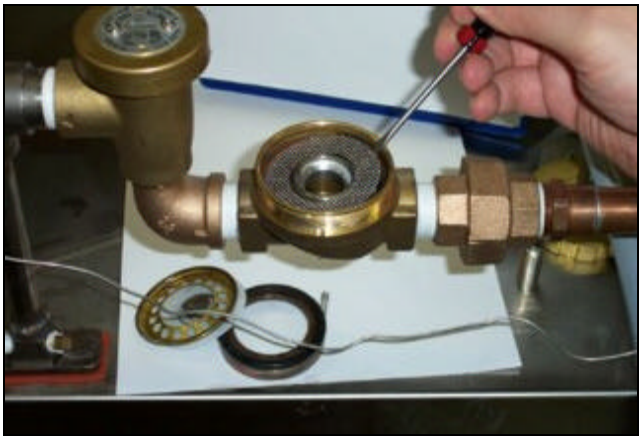


Diaphragm showing (1) pilot port and (2) extension hole



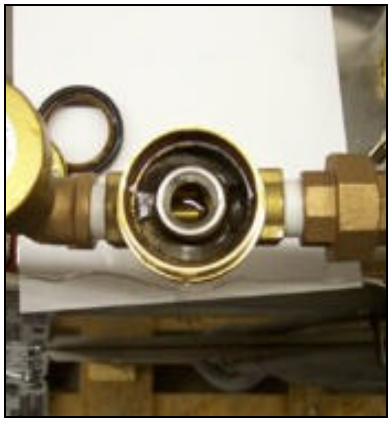
Removing the screen retainer

19. Using the small flathead screwdriver, lift out the screen retainer. Verify that the holes in it are free of clogs and debris.



Removing the mesh strainer screen

20. Again using the small flathead screwdriver, carefully remove the mesh screen from inside the valve body. The screen should be taken and rinsed out to remove any debris fouling it.



View inside the solenoid valve body

21. With the mesh screen removed, look down into the valve and verify it is not clogged. Remove any foreign objects from the valve body that would obstruct flow.

22. Reassemble the valve, reversing the steps needed to take it apart. Replace defective replacement parts with new parts from ordered kits. Ensure that components are sufficiently tightened to prevent leakage.

AFTER MAINTENANCE ACTIONS

Reconnect the incoming water (if disconnected) and turn on. Then restore power to the unit. Run the unit for at least 10 minutes to ensure there are no leaks. If any problems arise please contact your Ecolab representative.

SPECIAL PARTS

Repair kit includes: Plunger, Spring, O-ring, and Diaphragm.

1/2” Repair Kit
Ecolab No.: 85283489
Mfg. No.: N/A

3/4” Repair Kit
Ecolab No.: 85283406
Mfg. No.: N/A

110/240 Volt Coil & Housing Only
Ecolab No.: 85289411
Mfg. No.: N/A

1/2” 110/240 Volt Solenoid Valve Complete Assembly
Ecolab No.: 96580683
Mfg. No.: N/A

3/4” 110/240 Volt Solenoid Valve Complete Assembly
Ecolab No.: 85260511
Mfg. No.: N/A

These dishmachines are equipped with vacuum breakers to serve as back-flow prevention devices. ASSE requirements specify what type of back-flow prevention is necessary on dishmachines. Vacuum breakers, unlike air gaps, have certain parts that have specific tolerances and design aspects that must be met in order to function properly.

Ecolab offers repair kits for replacing some of the wear items associated with vacuum breakers which will allow you to save money in that replacement of these parts can take place *without* removing the vacuum breaker from the plumbing assembly.

The instructions provided here are for maintenance personnel only. Unauthorized persons should not attempt any of the steps contained in these instructions.

Warning: many of the instructions and steps within this document require the use of tools. Only authorized personnel should ever perform any maintenance procedure on the dishmachine!

PREPARATION

1. Power must be secured to the unit at the service breaker. Tag or lock out the service breaker to prevent accidental or unauthorized energizing of the machine.

2. Ensure that incoming water to the machine is secured either by use of a shut-off valve or disconnecting the incoming water line.

TOOLS REQUIRED

The following tools will be needed to perform this maintenance evolution:

1. Small flathead screwdriver
2. Needle nose pliers

TIME REQUIRED

It is estimated that it will take (1) person twenty minutes to perform this task, not including all of the items indicated in the section entitled “PREPARATION”.

IMPORTANT NOTES

1. Read these instructions thoroughly before attempting this maintenance evolution. Become familiar with the parts and what actions need to be taken. This will save time in the long run!

STEPS

1. **Note:** These instructions only apply to vacuum breakers (1/2” NPT and 3/4” NPT) as pictured below. The repair kits indicated in these instructions will only work on those style of back-flow preventers. If you have a machine with a different style of vacuum breaker, contact your Ecolab representative about replacement components.



Vacuum breaker

2. **Note:** Even though the photos in these instructions show a vacuum breaker that has been removed from the plumbing assembly, these maintenance steps could be performed with it installed so long as the requirements in the section entitled “PREPARATION” have been met.

3. Remove the top cap by gripping firmly and turning to the left. The cap should come off after a few turns.



Removing the cap

4. Set the cap to the side.

5. Using the needle nose pliers, gently lift out the plunger and set to the side. Examine the brass seating surface inside the vacuum breaker. The plunger is required to sit flat on this surface so it must be free of defects, imperfections and the like. If there is debris, remove it. If it is chipped or cracked then the vacuum breaker must be replaced. Failure to do so may result in the vacuum breaker not working according to its design and could result in damage to the dishmachine.



Removing the plunger

6. Your repair kit comes with a new plunger. Examine the old one and ensure that the mating surface is not damaged or cut. Also inspect the rubber seal on the top of the plunger to ensure it is in good condition and not torn.



Examining the seal ring on the plunger



Examining the plunger seating surface

7. If any of these conditions are present, replace the old plunger with the new one from your kit. Verify that the new plunger is also free from defects. If it is not, contact your Ecolab representative immediately.

8. The plunger should drop into the vacuum breaker and seat. Ensure it is not flipped upside down (the orange seal ring should be up towards the top of the vacuum breaker).

9. Pick up the cap and examine it. With a soft towel, remove any grit, grime or debris that may have gotten caught in the threads of both the cap retainer or the vacuum breaker body. There is an O-ring that should be present on the cap retainer as well. Regardless of the condition of the plunger, this O-ring should be replaced once the cap is removed. Using a small flathead screwdriver, remove the old O-ring.



Replacing the O-ring

10. With the new O-ring in place, screw the cap back on the vacuum breaker body. The cap needs to only be hand tight (snug).

AFTER MAINTENANCE ACTIONS

1. Reconnect the incoming water (if disconnected) and turn on. Then restore power to the unit. Run the unit for at least 10 minutes to ensure there are no leaks. If any problems arise please contact your Ecolab representative.

SPECIAL PARTS

To order the kit with components and instructions:

Components of 1/2” Repair Kit
Ecolab No.: 85284156
Mfg. No.: 06401-003-06-23

Components of 3/4” Repair Kit
Ecolab No.: 85284164
Mfg. No.: 06401-003-06-24

SECTION 6:
PARTS SECTION

HARDWARE- Stainless Steel

Ecolab No.	Description	Jackson No.
96023832	SCREW 4-40X1/4"	05305-002-32-38
96584354	SCREW 4-40X3/8"	N/A
88120365	SCREW 4-40X1/2"	N/A
96570478	SCREW 4-40X3/4"	N/A
96028436	SCREW 4-40 X 1"	N/A
88125554	SCREW 6-32X3/8"	N/A
88120068	SCREW 6-32X1/2"	N/A
96025010	SCREW 6-32X3/4"	05305-011-37-05
96032883	SCREW 6-32X1-1/2"	N/A
88120639	SCREW 8-32X3/8"	05305-172-02-00
88123740	SCREW 8-32X1/2"	05305-172-07-00
88120175	SCREW 8-32X5/8"	N/A
88122254	SCREW 8-32X3/4"	05305-172-06-00
88120878	SCREW 10-32X3/8"	05305-173-12-00
88120142	SCREW 10-32X1/2"	N/A
88120217	SCREW 10-32X3/4"	05305-011-62-17
88120282	SCREW 10-32X1"	N/A
88120936	SCREW 10-32X1-1/2"	N/A
88120753	SCREW 10-24X3/8"	05305-173-03-00
88120746	SCREW 10-24X1/2"	N/A
88120191	SCREW 10-24X3/4"	N/A
88120019	SCREW 10-24X1"	N/A
88120000	SCREW 10-24X6"	N/A
88220007	SCREW SOCKET 1/4-20X3/8"	N/A
88020433	SCREW 1/4-20X1/2"	05305-274-02-00
88000013	SCREW 1/4-20X5/8"	05305-274-24-00
88020458	SCREW 1/4-20X3/4"	05305-274-04-00
88030069	SCREW 1/4-20X1-1/2"	05305-274-23-00
88000104	SCREW 1/4-20X2-1/2"	05305-274-13-00
88021027	SCREW 3/8-16X3/4"	05306-011-71-60
88021050	SCREW 3/8-16X1-1/4"	05305-276-10-00
88926002	SCREW SOCKET 3/8-16X1-1/2"	N/A
88021076	SCREW 3/8-16X1-3/4"	05306-011-36-94
88420047	NUT HEX 4-40	N/A
88420062	NUT HEX 6-32	N/A
88420070	NUT HEX 8-32	N/A
88420088	NUT HEX 10-32	N/A
88420120	NUT HEX 10-24	N/A
88420104	NUT HEX 1/4-20	05310-274-01-00
88422043	NUT HEX 5/16-18	05310-275-01-00
88422068	NUT HEX 3/8-16	05310-276-01-00
88429121	NUT LOCK 4-40	N/A
88460050	NUT LOCK 6-32	05310-373-03-00
88429105	NUT LOCK 8-32	05310-272-02-00
88460068	NUT LOCK 10-32	05310-373-02-00
88429063	NUT LOCK 10-24	05310-373-01-00

88429113	NUT LOCK 1/4-20	05310-374-01-00
88419056	NUT LOCK 5/16-18	N/A
88419007	NUT LOCK 3/8-16	05310-011-72-55
88520000	WASHER FLAT 1/4	05311-002-78-93
880530597	WASHER FLAT 5/16	05311-175-01-00
880530605	WASHER FLAT 3/8	05311-176-01-00
88521059	WASHER LOCK #8	05311-272-01-00
88521075	WASHER LOCK #10	N/A
88521083	WASHER LOCK 1/4	05311-274-01-00
88521117	WASHER LOCK 5/16	05311-275-01-00
88521109	WASHER LOCK 3/8	05311-276-01-00
88520069	WASHER LOCK 1/2	05311-011-71-93
88500000	WASHER BEV 3/8 SQUARE	05311-011-35-36
88900733	PIN COTTER 1/16X1/2"	05315-011-68-56
96027495	PIN COTTER 3/32X3/4"	05315-207-01-00
88900501	PIN COTTER 1/8X3/4"	05315-011-60-09
88930581	PIN COTTER 1/8X1-1/2"	05315-002-05-86
88920087	PIN COTTER 3/16X1-3/4"	N/A

HARDWARE MISC.

83109041	CABLE TIE 7"	05975-602-05-16
83109199	CABLE TIE 15" 100PK	N/A
83109025	CABLE TIE W/SCREW HOLE	N/A
89990121	GREASE SILICONE 3OZ TUBE	N/A
89992176	SILICONE CAULK WHITE 3OZ TUBE	N/A
89991996	TEFLON TAPE ROLL	N/A
83109125	ELECTRICAL TAPE	N/A
96022447	ENDCAP, DOOR HANDLE	05340-011-35-00
96552336	DOOR GUIDE, PLASTIC, 23 1/2” Long	05700-111-33-59

ELECTRICAL

83300541	CONDUIT 1/2"	05975-111-46-57
83312017	NUT, CONDUIT 1/2"	N/A
83311506	CONNECTOR, CONDUIT 1/2"	05975-011-45-13
83311753	ELBOW, 90DEG, CONDUIT 1/2"	05975-111-01-00
83311852	ELBOW 45DEG, CONDUIT 1/2"	05975-011-45-23
83115003	PLUG, PLASTIC 1/2"	N/A
96540067	PLUG, METAL 1/2"	N/A
83199570	PLUG, RUBBER 1/2"	N/A
83116814	PLUG, METAL 1-1/2"	N/A
87301412	HANGER, CONDUIT METAL	N/A
96203153	TERMINAL FEMALE 1/4" W/PIGGY BACK	N/A
83100002	TERMINAL FEMALE 1/4" 14-8GA	N/A
83102269	TERMINAL FEMALE 1/4" 16-14GA	N/A
83102244	TERMINAL FEMALE 1/4" 22-18GA	N/A
83101022	CONNECTOR BUTT SPLICE 16-14GA	N/A
83101014	CONNECTOR BUTT SPLICE 22-18GA	N/A
83102152	TERMINAL SPADE #8HOLE 16-14GA	N/A
83102129	TERMINAL SPADE #8HOLE 22-16GA	N/A
96570221	TERMINAL SPADE #10HOLE 14-16GA	N/A

96032271	TERMINAL SPADE .25HOLE 12-10GA	N/A
96032701	TERMINAL SPADE .25HOLE 16-14GA	N/A
83100073	TERMINAL EYELET #8HOLE 16-14GA	N/A
83100339	TERMINAL EYELET #10HOLE 16-14GA	N/A
83101113	WIRE NUT 18-12GA	N/A
83101089	WIRE NUT 14-10GA CRIMP	N/A

PLUMBING

89009138	THERMOMETER, SCREW-IN, ES2000/4000	06685-111-35-30
96021316	THERMOMETER, 96"LEAD, CONVEYOR	06685-111-68-49
85390193	GAUGE PRESSURE 0-30PSI, BOTTOM MOUNT	06685-011-64-29
96582086	GAUGE PRESSURE 0-100PSI, BOTTOM MOUNT	06685-111-88-34
85390417	GAUGE PRESSURE 0-100PSI, BACK MOUNT	06685-011-48-32
96022421	WASH ARM PRESSURE TEST KIT	N/A
85230191	NEEDLE VALVE, 1/4" PIPE	N/A
85250587	VALVE BALL 1/2"PIPE	N/A
85200269	VALVE GLOBE 1/2"PIPE	04820-100-15-00
85250595	VALVE BALL 3/4"PIPE	N/A
85221018	REGULATOR WATER 1/4"PIPE, 180F	04820-011-69-05
85220077	REGULATOR WATER 1/2"PIPE, 140F	04820-100-04-07
85220010	REGULATOR WATER 3/4"PIPE, 180F	04820-100-01-06
85284214	REPAIR KIT 3/4" WATER REGULATOR	N/A
96027024	STRAINER Y 1/2" PIPE	04730-217-01-10
85300325	STRAINER Y 3/4" PIPE	04730-717-02-06
85300301	SCREEN, COARSE 3/4”	N/A
85300333	SCREEN, FINE 3/4”	N/A

TUBING

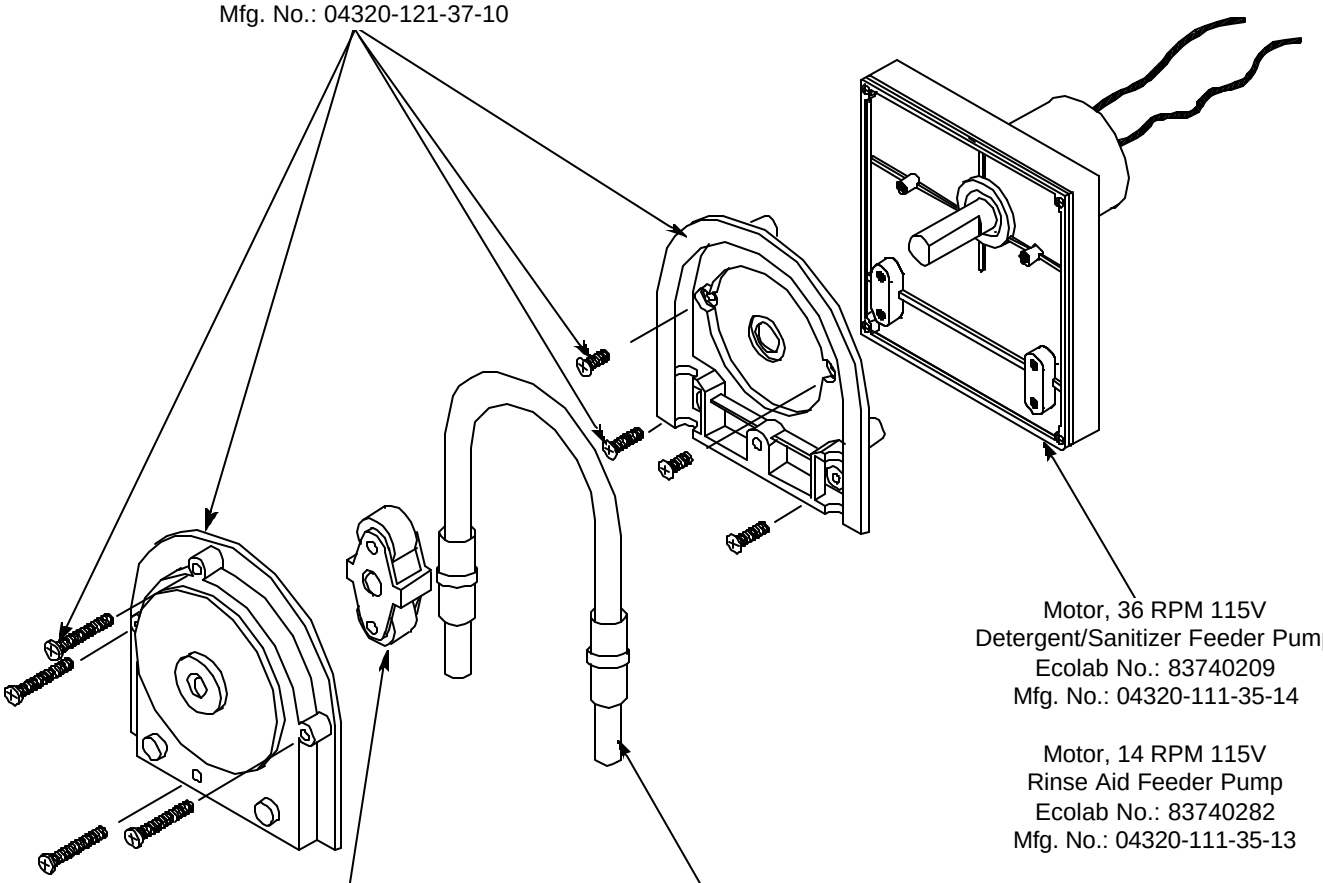
85015105	TUBING 1/4" CLEAR	05700-011-37-12
85015097	TUBING 1/4" RED	05700-011-37-14
85015089	TUBING 1/4" BLUE	05700-011-37-16
92661024	COPPER TUBE 1/4" 50 FT	N/A
92661016	COPPER TUBE 3/8" 25 FT	N/A
92661032	COPPER TUBE 1/2" 50 FT	N/A

TUBING MISC.

92630000	WASH TANK CONNECTOR, 45DEG 1/2" HOSE	04730-002-69-80
92002008	WASH TANK CONNECTOR, 18DEG 5/8" HOSE	04820-111-51-14
92002019	WASH TANK CONNECTOR, 45DEG 5/8" HOSE	04730-011-45-21
96581475	CHECK VALVE, ELBOW, RINSE LINE	N/A
92171271	RINSE INJECTOR CHECK VALVE KIT	N/A
96572573	PICK-UP TUBE STIFFENER	05700-002-66-49
87301149	CLAMP, HOSE 7/32-5/8"	05700-000-35-06
87301131	CLAMP, HOSE 5/16-7/8"	04730-011-36-05
96020078	CLAMP, HOSE 11/16-1.5"	N/A
87301362	CLAMP, HOSE 7/8-2.75"	04730-719-01-37
87301503	CLAMP, HOSE 4.75-6.5"	04730-011-34-90

SECTION 6: PARTS SECTION

CHEMICAL FEEDER PUMP ASSEMBLY



Squeeze Tube Lubricant
Ecolab No.: 89990121

Housing Kit (Red roller)
Ecolab No.: 96562871
Mfg. No.: 04320-121-37-10

Motor, 36 RPM 115V
Detergent/Sanitizer Feeder Pump
Ecolab No.: 83740209
Mfg. No.: 04320-111-35-14

Motor, 14 RPM 115V
Rinse Aid Feeder Pump
Ecolab No.: 83740282
Mfg. No.: 04320-111-35-13

Motor, 36 RPM 240V
Detergent/Sanitizer Feeder Pump
Ecolab No.: 96029293
Mfg. No.: 04320-111-47-47

Motor, 14 RPM 240V
Rinse Aid Feeder Pump
Ecolab No.: 96029897
Mfg. No.: 04320-111-47-46

Motor, 14 RPM 24V
Rinse Aid Feeder Pump
Ecolab No.: 96030317
Mfg. No.: 04320-011-63-33

Roller, Red (Detergent/Sanitizer)
Ecolab No.: 96037924
Mfg. No.: 04320-111-36-70

Roller, White (Rinse Aid)
Ecolab No.: 84800041
Mfg. No.: 04320-002-82-28

Roller, Black
Ecolab No.: 96029533
Mfg. No.: 04320-111-65-27

Squeeze Tube, Detergent/Sanitizer
(Use with the red roller.)
Ecolab No.: 96562673
Mfg. No.: 05700-111-35-29

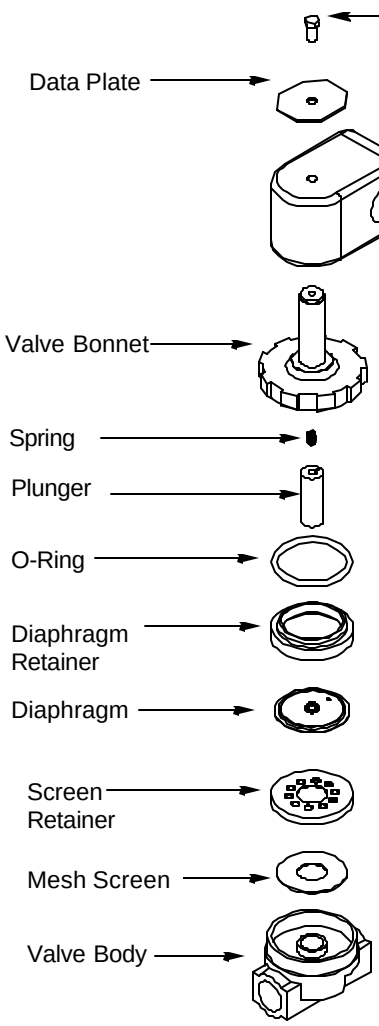
Clear Squeeze Tube, Rinse Aid
(Use with the white roller.)
Ecolab No.: 85017119
Mfg. No.: 05700-011-76-41

Tube, Small 7/32”
(Use with the black roller.)
Ecolab No.: 85016079
Mfg. No.: 05700-011-65-21

1/4” Sight Tube	Ecolab No.: 92001017	Mfg. No.: N/A
3/8” Sight Tube	Ecolab No.: 96569496	Mfg. No.: 05700-111-35-33

SECTION 6: PARTS SECTION

SOLENOID VALVE REPAIR PARTS KITS



Repair kit includes: Plunger, Spring, O-ring, and Diaphragm.

1/2" Repair Kit
Ecolab No.: 85283489
Mfg. No.: N/A

3/4" Repair Kit
Ecolab No.: 85283406
Mfg. No.: N/A

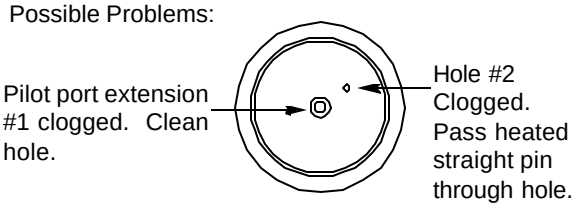
1/2" 110/240 Volt Solenoid Valve
Complete Assembly
Ecolab No.: 96580683
Mfg. No.: 04810-100-12-18

3/4" 110/240 Volt Solenoid Valve
Complete Assembly
Ecolab No.: 85260511
Mfg. No.: 04810-100-53-00

TO DISASSEMBLE - These valves may be taken apart by unscrewing the bonnet and the enclosing tube assembly from the valve body assembly. After unscrewing, carefully lift off the bonnet and enclosing tube assembly. Don't drop the plunger. The o-ring seal and diaphragm cartridge can now be lifted out. Be careful not to damage the machined faces while the valve is apart.

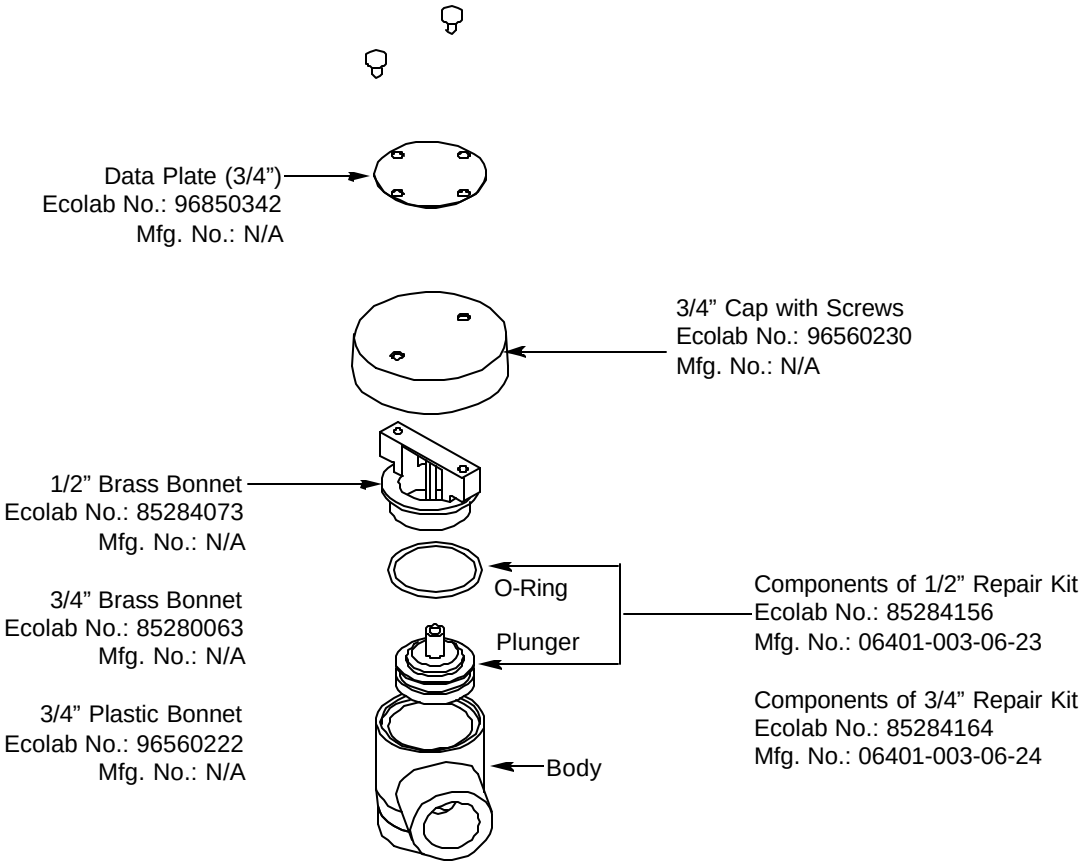
TO REASSEMBLE - Place the diaphragm cartridge in the body with the pilot port extension UP. Hold the plunger with the synthetic seat against the pilot port. Make sure the o-ring is in place, then lower the bonnet and enclosing tube assembly over the plunger. Screw the bonnet assembly snugly down on the body assembly.

Possible Problems:



SECTION 6: PARTS SECTION

VACUUM BREAKER REPAIR PARTS KITS



1/2" Complete Vacuum Breaker Assembly
Ecolab No.: 85242543
Mfg. No.: 04820-003-06-13

3/4" Complete Vacuum Breaker Assembly
Ecolab No.: 85242626
Mfg. No.: 04820-002-53-77

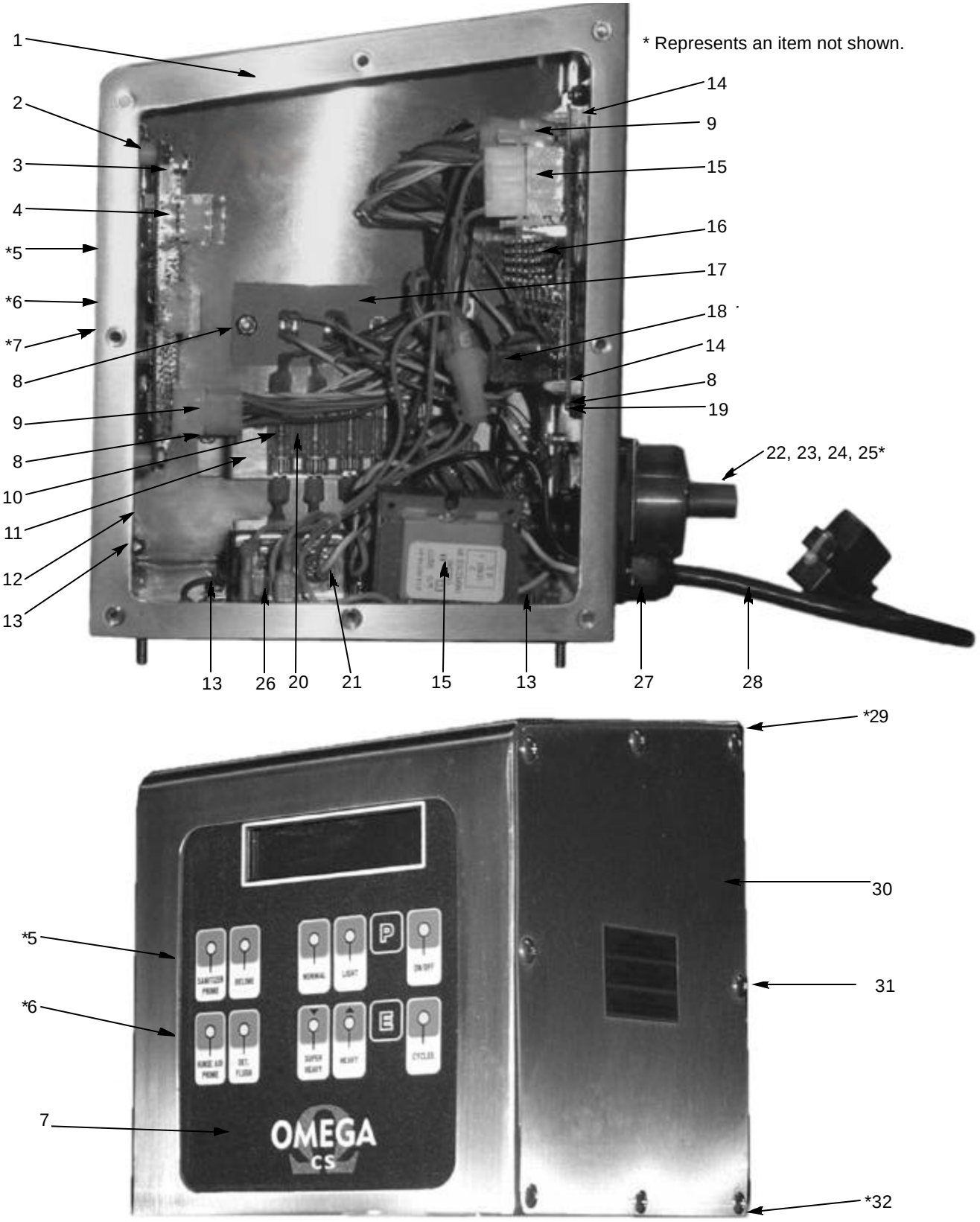
1/4" Complete Vacuum Breaker Assembly
Ecolab No.: 85242501
Mfg. No.: 04810-011-51-62

1/4" Complete Vacuum Breaker Assembly
Bottom Inlet & Outlet
Ecolab No.: 85242000
Mfg. No.: 04810-002-74-72

3/8" Complete Vacuum Breaker Assembly
Ecolab No.: 85242527
Mfg. No.: 04820-002-75-73

SECTION 6: PARTS SECTION

UPPER CONTROL BOX ASSEMBLY



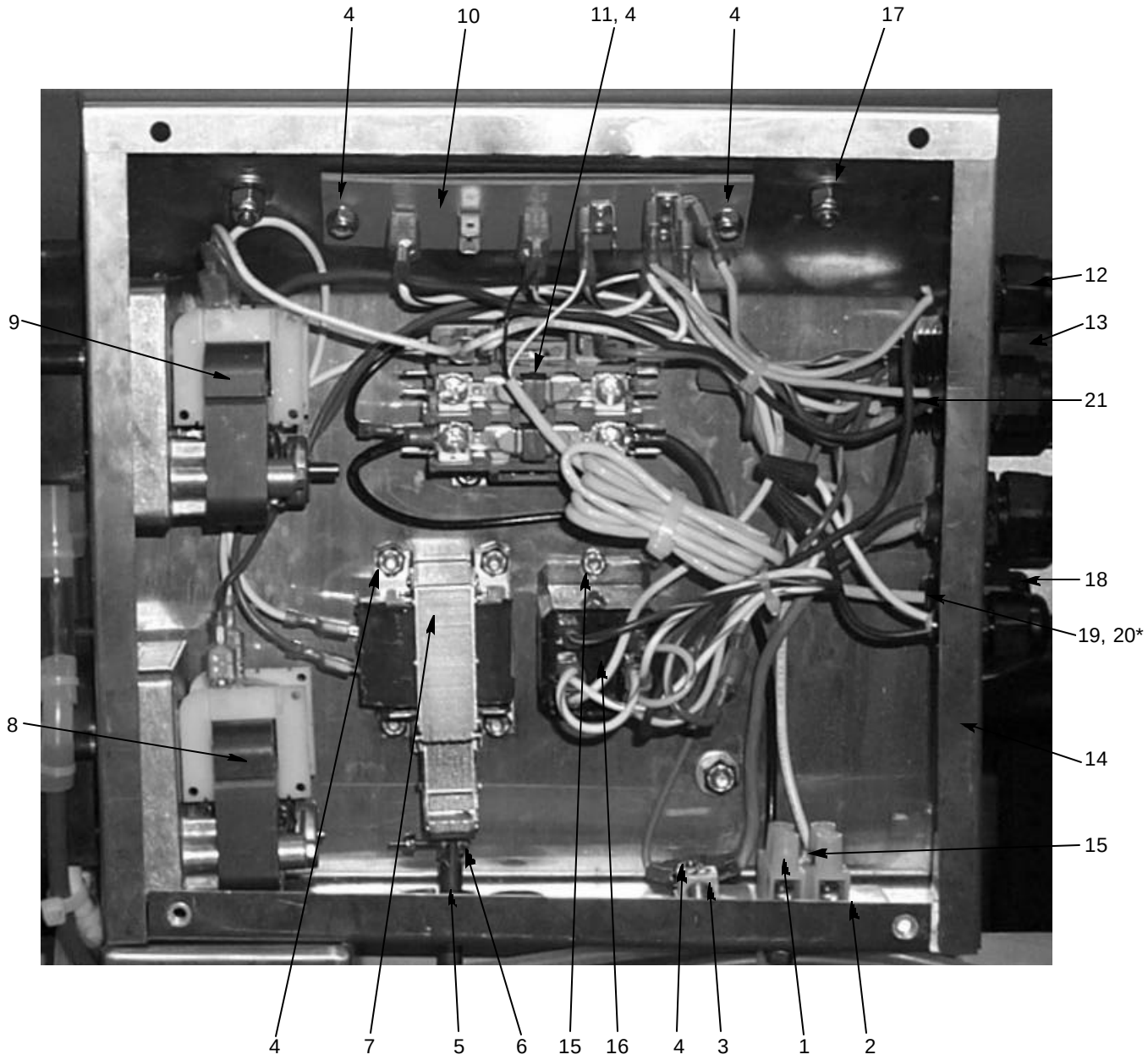
ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Box, Upper Control Weldment	N/A	05700-002-55-35
2	4	Spacer, Plastic	96028511	05940-002-21-73
3	4	Nut, 6-32 Keps Stainless	96028329	05310-002-24-29
4	1	Board, PC Control	96028659	06680-002-16-82
5*	1	Gasket, Top Control Box	96038088	05330-002-29-16
6*	1	Keypad (Located Behind Front Key Pad Decal)	96028287	05945-002-16-79
7	1	Decal, Key Pad	96028303	09905-002-22-05
8	7	Locknut, 10-24 S/S Hex w/Nylon Insert	88429063	05310-373-01-00
9	1	Harness, 15 Wire	96028451	05700-002-16-76
10	6	Fuse, 1.5 AMP Fast Blow 3AG	96039086	05920-002-44-12
10	1	Fuse, .3 AMP Fast Blow 3AG	96042379	05920-002-42-15
11	1	Bracket, Fuse Strip Assembly	96039078	05700-002-42-60
12	1	Keypad Mounting Plate	96038104	05700-002-32-85
13	14	Locknut, 6-32 S/S Hex w/Nylon Insert	88460050	05310-373-03-00
14	4	Circuit Board Holder	96028337	05940-002-21-87
15	1	Transformer, 115v To 24v	96028386	05950-002-16-78
16	1	Board, PC Interface	96028642	06680-002-16-81
17	1	Terminal Strip	96021134	05940-002-78-97
18	1	Cable Assembly	96028360	05700-002-16-77
19	1	Panel, Inner	96028279	05700-002-21-71
20	1	Holder, 6 Pole Fuse	96039300	05920-002-42-13
21	1	Filter, RFI	96028378	05910-002-20-37
22	1	Fan, Inlet Weldment	96039466	05700-002-47-07
23	1	Fan	96039423	05999-002-47-12
24	4	Screw, 6-32 x 1 1/4” Long, Phillips Pan Head	N/A	05305-002-47-13
25*	1	Hose, Siphon 5/8" X 37"	96028105	05700-002-24-33
26	1	Rectifier	96039433	05945-002-47-43
27	1	Fitting, Liquid Tight	83311217	05975-011-49-03
28	1	Reed Switch	96039102	05930-002-36-80
29	1	Gasket, Control Box Cover	96038161	05330-002-21-35
30	1	Cover, Electrical Control Box Side	96028790	05700-002-21-47
31	8	Screw, 10-32 x 3/8"	88120878	05305-173-12-00
32*	1	Gasket, Control Box Base	96027982	05330-002-21-44
33*	1	Harness, Wire	N/A	05700-002-54-27

* Represents an item not shown.

To order the complete Control Head, use the following numbers:
Ecolab No.: 96038690
Mfg. No: 05700-002-55-33

SECTION 6: PARTS SECTION

LOWER CONTROL BOX ASSEMBLY

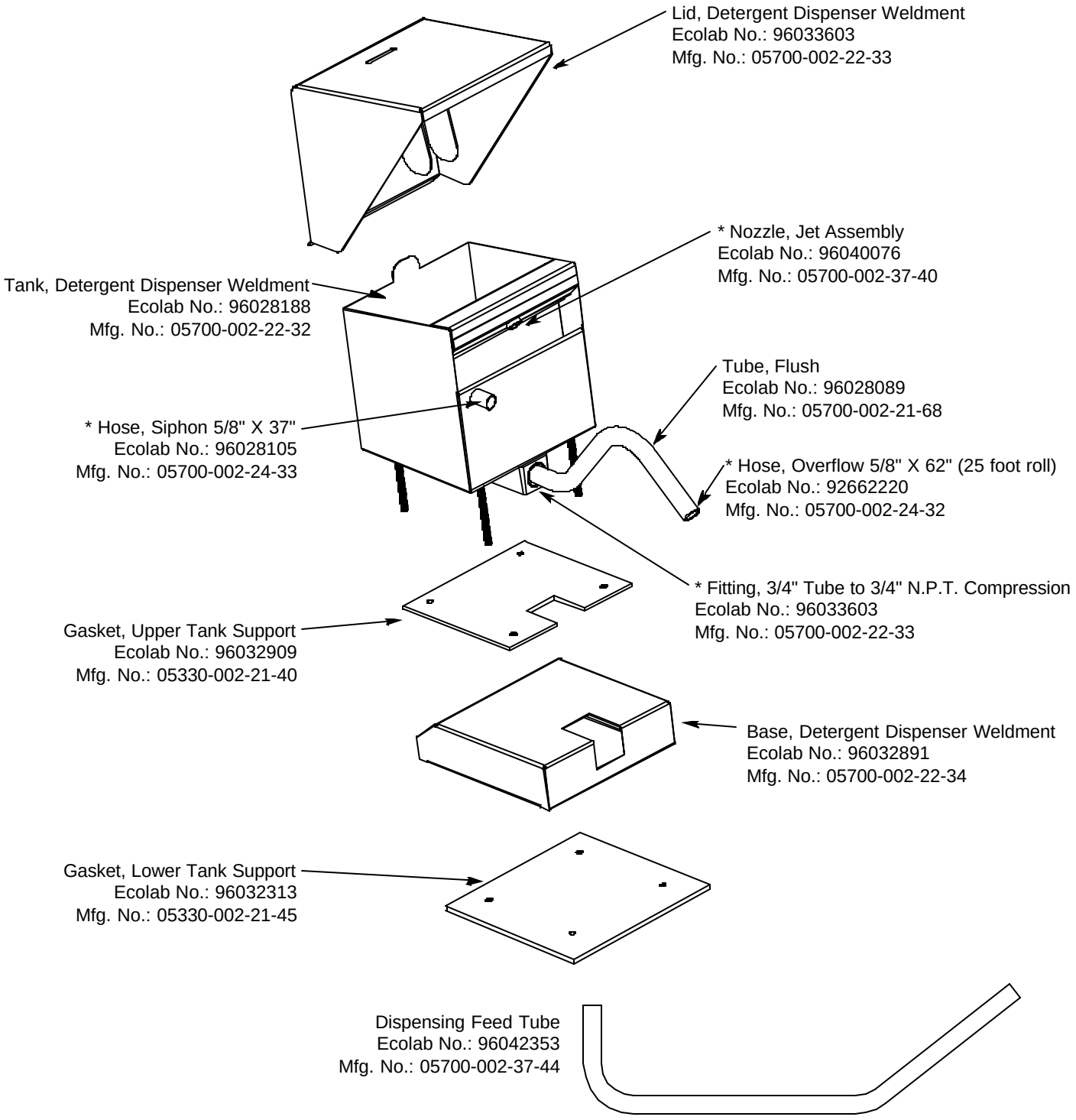


ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Terminal Block, 2 pole	96025119	05940-500-09-61
2	1	Terminal Block Spacer	96025127	05700-011-40-05
3	1	Ground Lug	83118000	05940-200-76-00
4	7	Locknut, 10-24 w/Nylon Insert	88429063	05310-373-01-00
5	1	Drain Link Assembly	96028683	05700-002-38-23
6	1	Pin, Cotter 1 5/8” Long	96035241	05315-002-47-40
7	1	Drain Solenoid	83999078	04810-200-11-00
8	1	Chemical Feeder Pump Motor, 14 RPM	83740282	04320-111-35-13
9	1	Chemical Feeder Pump Motor, 36 RPM	83740209	04320-111-35-14
10	1	Terminal Strip	96021134	05700-002-78-97
11	1	Motor Contactor	83008250	05945-109-05-69
12	4	Fitting, Liquid Tight .231 x .394	83311217	05975-011-49-03
13	1	Fitting, Liquid Tight Straight Thru 1.375	96038187	05975-002-30-67
13	1	Nut, 1” NPT Locking Heyco	N/A	05975-002-35-55
14	1	Lower Control Box Weldment	N/A	05700-002-22-27
15	3	Locknut, 6-32 S/S Hex w/Nylon Insert	88460050	05310-373-03-00
16	1	Relay	96582895	05945-111-35-19
17	3	Locknut, 1/4"-20 S/S Hex w/Nylon Insert	88429113	05310-374-01-00
18	1	Fitting, Liquid Tight .25 x .546	96039110	05975-011-65-51
19	1	Probe, Temperature	96038120	06680-002-16-80
20*	1	Fitting, 1/4” Imperial Brass	96024344	05310-924-02-05
21	1	Switch, Reed	96039102	05930-002-36-80
22*	1	Connector, 1/2” x 90 Deg. Metal	83311753	05975-111-01-00
23*	1	Cover, Lower Control Box	96040522	05700-002-15-52
24*	4	Screw, 10-32 x 3/8" Phillips Truss Head	88120878	05305-173-12-00

* Represents an item not shown.

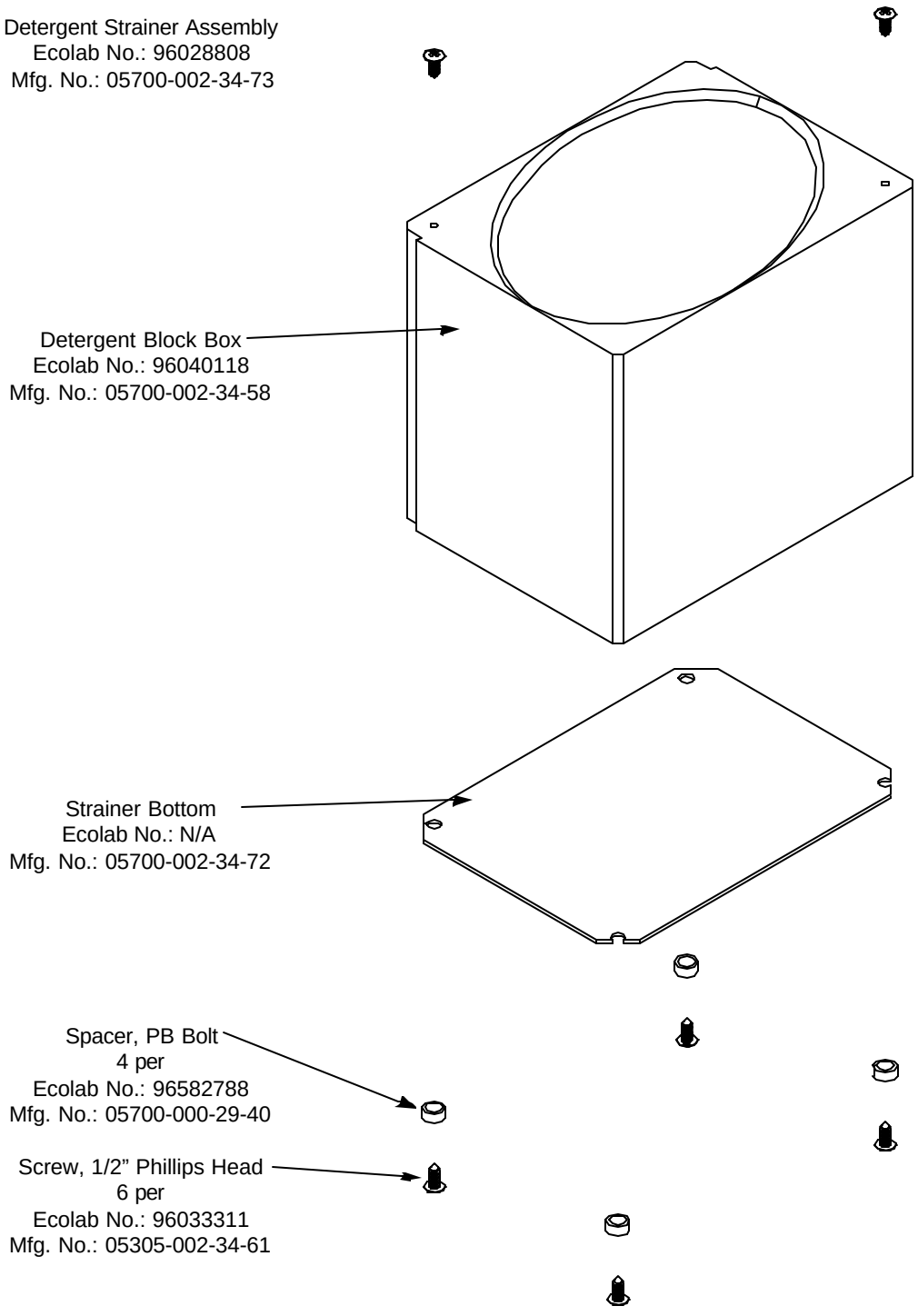
DETERGENT DISPENSER ASSEMBLY

* Represents an item not shown.



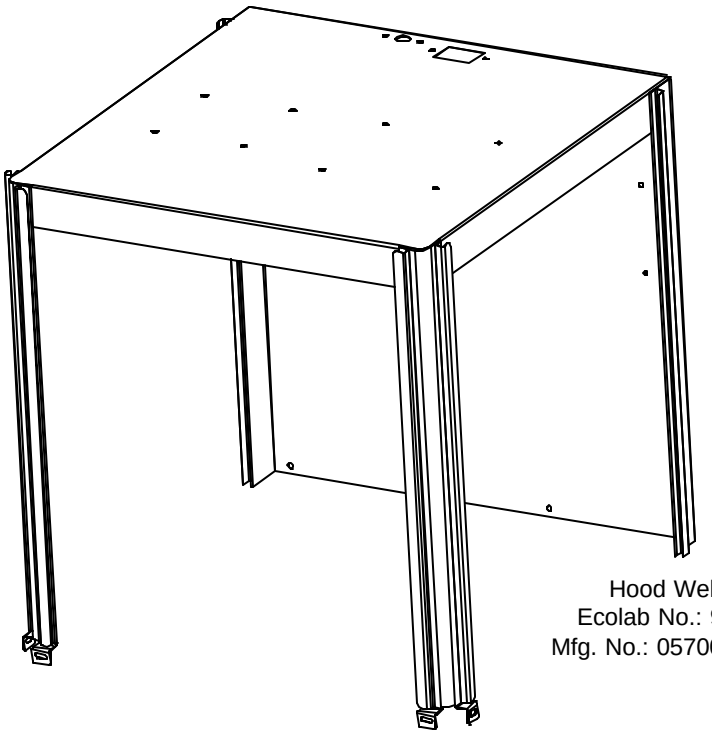
SECTION 6: PARTS SECTION

DETERGENT STRAINER ASSEMBLY

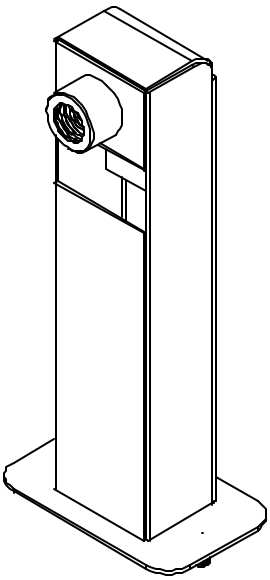


SECTION 6: PARTS SECTION

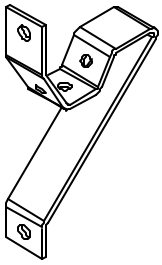
HOOD ASSEMBLY & ASSOCIATED PARTS



Hood Weldment
Ecolab No.: 96028824
Mfg. No.: 05700-002-22-24

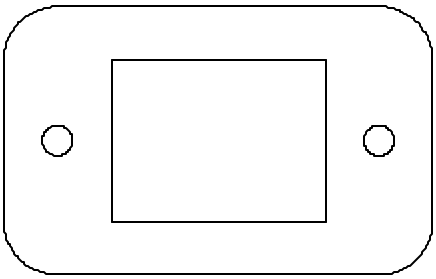


Air Gap Weldment
Ecolab No.: 96028063
Mfg. No.: 05700-002-12-91

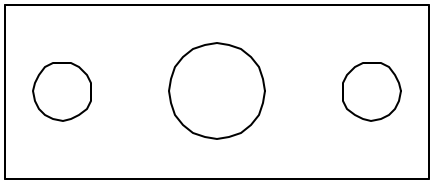


Cantilever Arm Support Bracket
Ecolab No.: 96581244
Mfg. No.: 05700-031-88-00

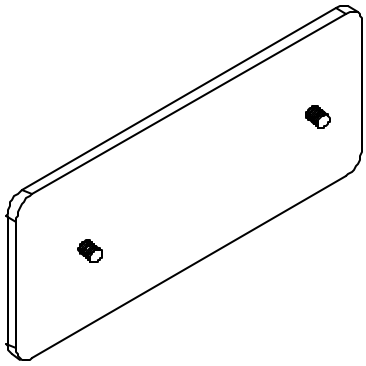
Wear Button, 1/2" Dia.
3 per Bracket
Ecolab No.: 96027743
Mfg. No.: 05700-011-88-01



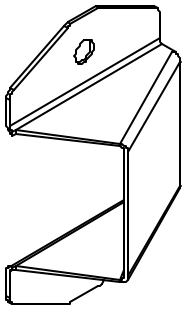
Air Gap Base Gasket
Ecolab No.: 96027925
Mfg. No.: 05330-002-14-48



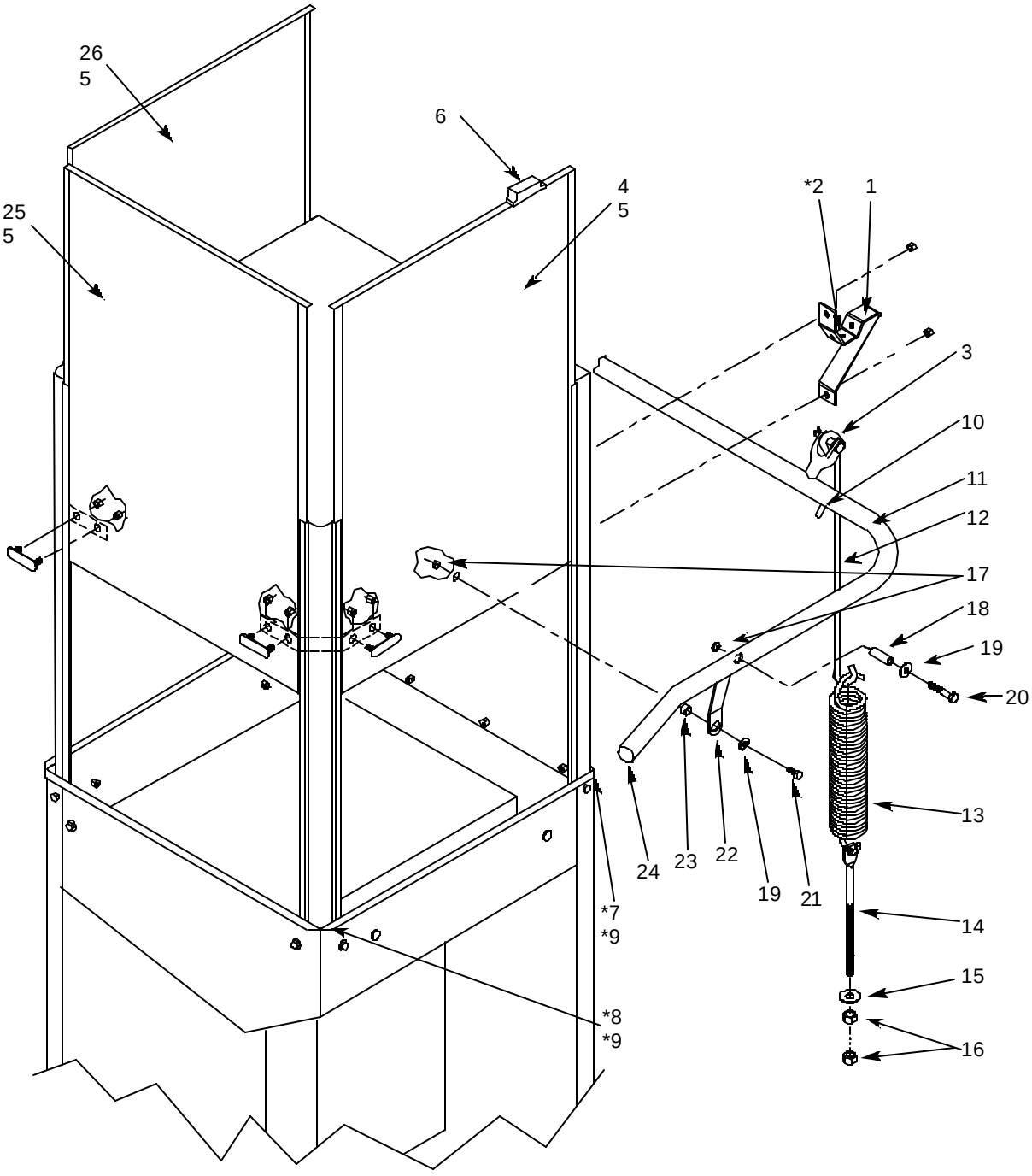
Gasket, Rinse Plumbing
Ecolab No.: 96020482
Mfg. No.: 05330-111-42-81

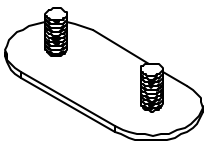


Cover Plate Weldment
Ecolab No.: 96038526
Mfg. No.: 05700-002-32-50



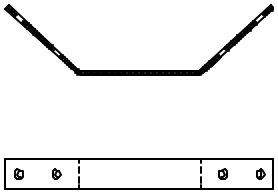
Air Gap Shield
Ecolab No.: 96028139
Mfg. No.: 05700-002-13-35





Door Connecting Plate
Ecolab No.: 96027933
Mfg. No.: 05700-002-20-78

Door Connecting Bracket
Ecolab No.: 96582820
Mfg. No.: 05700-021-33-39

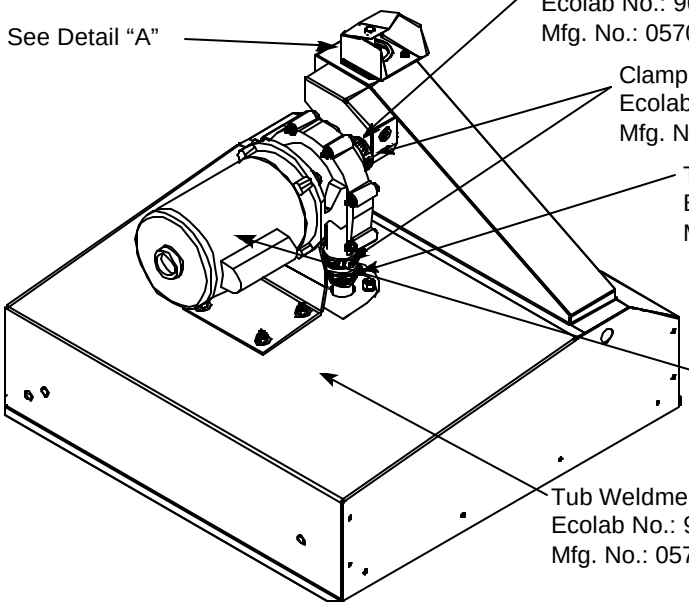


ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	2	Bracket, Cantilever Arm Support	96581244	05700-031-88-00
2	6	Wear Button, 1/2" Dia. UHMW	96027743	05700-011-88-01
3	2	Yoke Assembly	96586615	05700-000-75-77
4	1	Door, Right Side Weldment	96028756	05700-002-22-25
5	6	Door Guides	96552336	05700-111-33-59
6	1	Reed Switch	96027990	05930-111-51-22
7*	2	Plug, Rear Corner	96040043	05700-002-25-01
8*	2	Plug, Front Corner	96040050	05700-002-25-00
9*	2	Screw, #10 x 3/4” Long Pan Sheet Metal	N/A	05700-002-49-94
10	1	Spring Pin, 1/4” Dia. x 1 1/8” Long	96039185	05315-407-06-00
11	1	Arm, Cantilever	96028071	05700-002-15-64
12	2	Rod, Spring	96584313	05700-002-10-52
13	2	Spring, Cantilever	96581285	05340-109-02-00
14	2	Bolt, Hanger Eye 3/8"-16	96582762	05306-956-05-00
15	2	Washer, Impeller	96581376	05311-176-02-00
16	4	Nut, 3/8”-16 S/S Hex	88422068	05310-276-01-00
16	4	Locknut, 1/4”-20 S/S Hex w/Nylon Insert	88429113	05310-374-01-00
17	2	Locknut, 1/4”-20 S/S Hex w/Nylon Insert, Low Profile	96026455	05310-374-02-00
18	1	Spacer	96582788	05700-000-29-40
19	2	Washer, 1/4" ID S/S	88530589	05311-174-01-00
20	1	Screw, 1/4”-20 x 1 1/2" Slot Truss Head	N/A	05305-002-22-82
21	1	Screw, 1/4”-20 x 1/2" Slot Truss Head	N/A	05305-002-22-81
22	1	Cantilever Arm Connector	96582754	05700-011-90-99
23	1	Sleeve	96582770	05700-000-85-69
24	2	Plug, Cantilever Arm	96022447	05340-011-35-00
25	1	Door, Front	96028766	05700-002-20-09
26*	1	Door, Left Side	96028741	05700-002-20-08

* Represents an item not shown.

SECTION 6: PARTS SECTION

TUB & FRAME ASSEMBLIES



See Detail “A”

Tube, Suction Connector
Ecolab No.: 96028246
Mfg. No.: 05700-002-20-79

Clamp, 5/16” to 2 1/4”
Ecolab No.: 87301362
Mfg. No.: 04730-719-01-37

Tube, Discharge Connector
Ecolab No.: 96028253
Mfg. No.: 05700-011-70-34

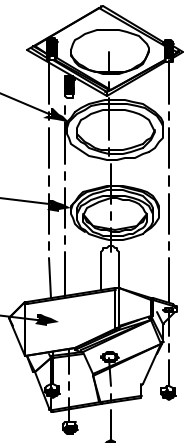
See motor & pump assembly page

Tub Weldment
Ecolab No.: 96027941
Mfg. No.: 05700-002-15-67

* Fitting, Bulk Head to 1/2" Hose Barb, S/S
Ecolab No.: 92002008
Mfg. No.: 04730-011-45-21

* Plug, Bulk Head w\Hole
Ecolab No.: 96024336
Mfg. No.: 05700-011-61-37

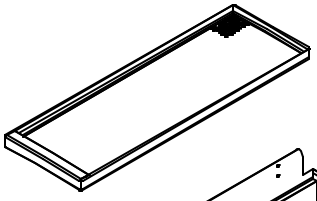
DETAIL “A”



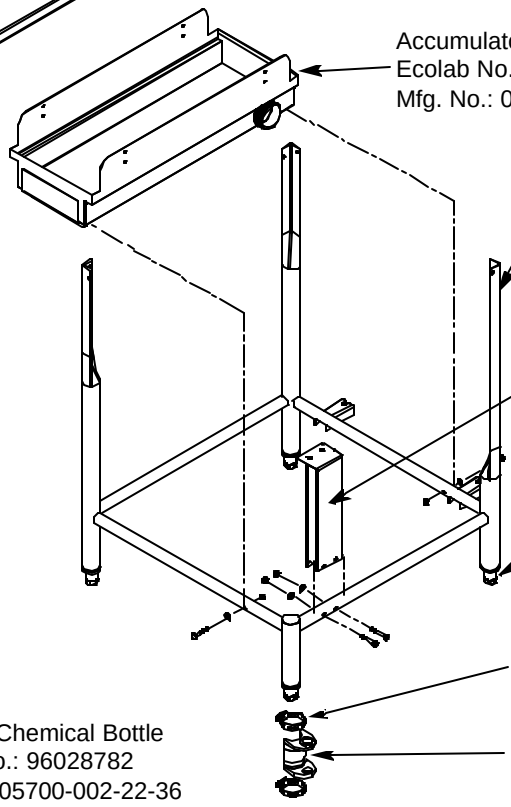
Drain Seat Gasket
Ecolab No.: 96582903
Mfg. No.: 05700-111-34-52

Drain Seat Insert
Ecolab No.: 96582929
Mfg. No.: 05700-021-34-38

Spillway Weldment
Ecolab No.: 96583000
Mfg. No.: 05700-031-37-86



Strainer, Accumulator Weldment
Ecolab No.: 96028725
Mfg. No.: 05700-002-20-45



Accumulator Weldment
Ecolab No.: 96028717
Mfg. No.: 05700-002-19-05

Frame Weldment
Ecolab No.: 96028949
Mfg. No.: 05700-002-29-15

Brace, Frame Weldment
Ecolab No.: 96582091
Mfg. No.: 05700-002-29-03

Bullet Feet
Ecolab No.: 96552666
Mfg. No.: 05340-108-01-03

Clamp, 1 5/16” to 2 1/4”
Ecolab No.: 87301362
Mfg. No.: 04730-719-01-37

Casting, Bottle Holder
Ecolab No.: 96580527
Mfg. No.: 09515-031-59-73

* Holder, Chemical Bottle
Ecolab No.: 96028782
Mfg. No.: 05700-002-22-36

Drain Link Assembly
Ecolab No.: 96028683
Mfg. No.: 05700-002-38-23

Drain Link Connector
Ecolab No.: 96028261
Mfg. No.: 05700-002-38-10

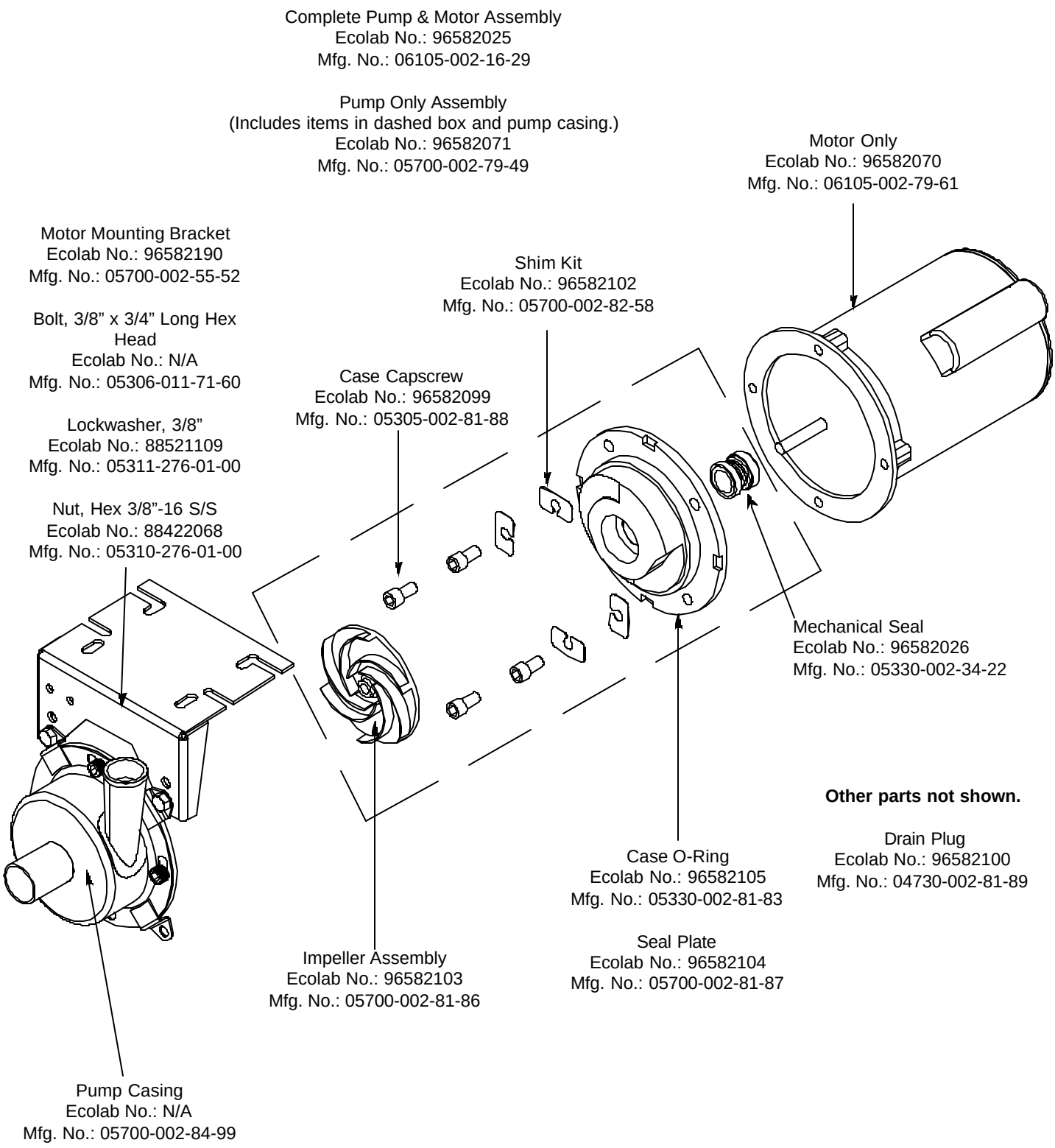
Nut, 5/16”-18 Hex
Ecolab No.: 88422043
Mfg. No.: 05310-275-01-00

Drain Link
Ecolab No.: N/A
Mfg. No.: 05700-002-17-48

* Represents an item not shown.

SECTION 6: PARTS SECTION

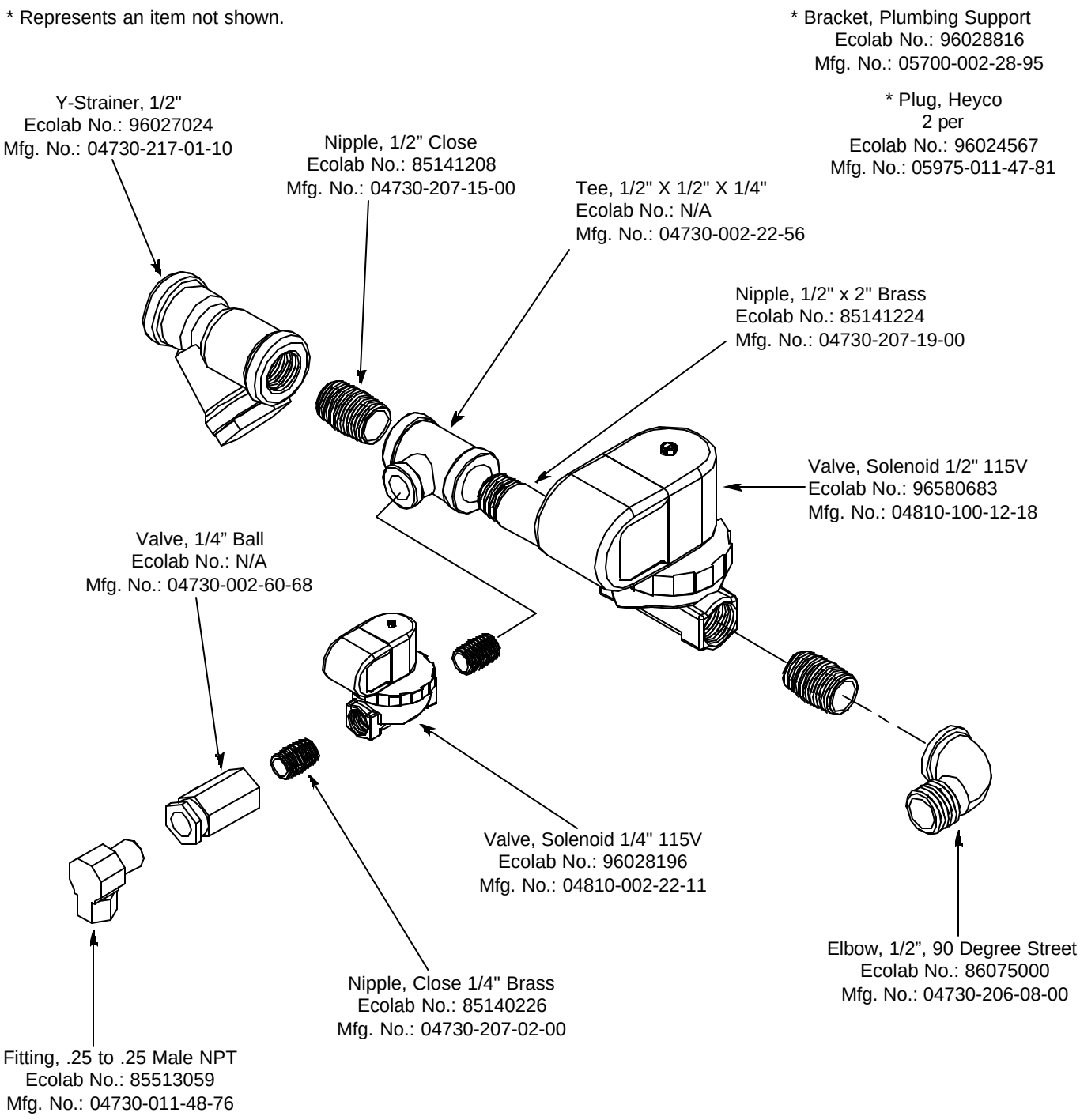
MOTOR & PUMP ASSEMBLY



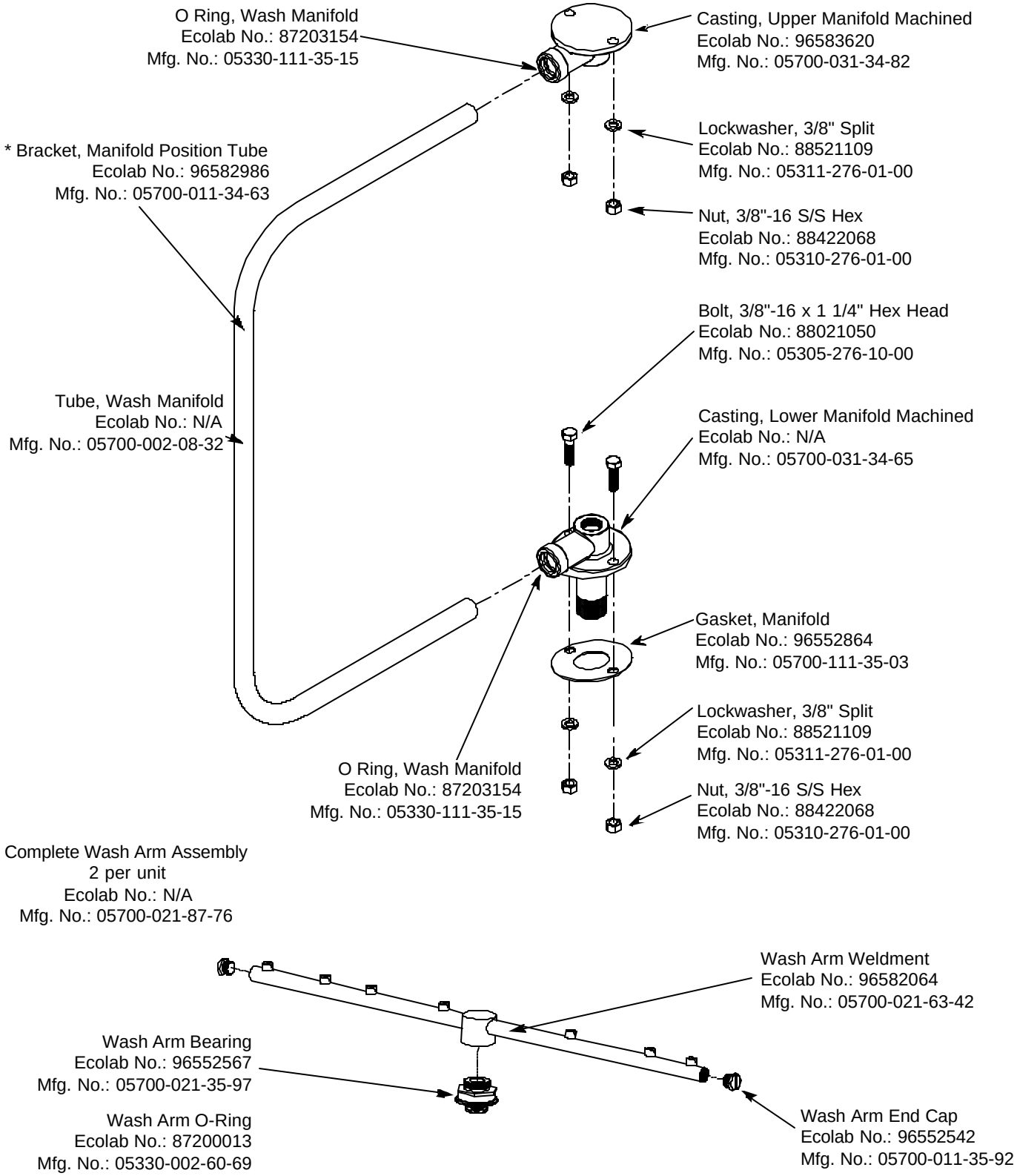
SECTION 6: PARTS SECTION

INCOMING PLUMBING ASSEMBLY

* Represents an item not shown.



WASH MANIFOLD/WASH ARM ASSEMBLY

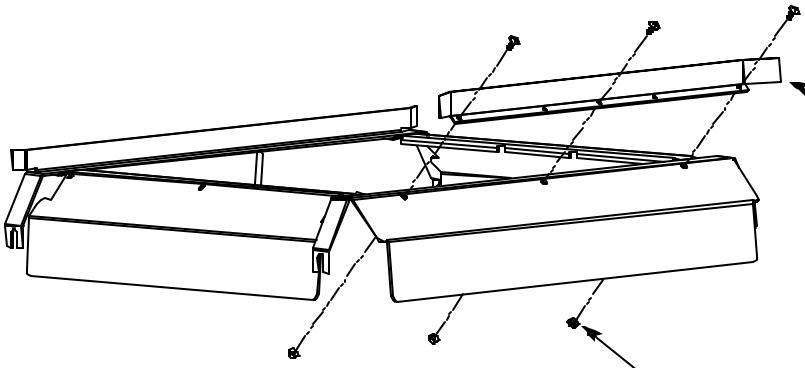


* Represents an item not shown.

SECTION 6: PARTS SECTION

INNER TUB COMPONENTS

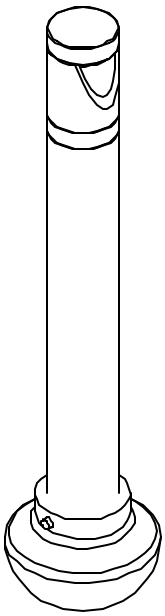
Rack Assembly
Ecolab No.: 96028147
Mfg. No.: 05700-002-01-01



Screw, 10-24 x 1/2" Long
Ecolab No.: 88120746
Mfg. No.: 05305-173-18-00

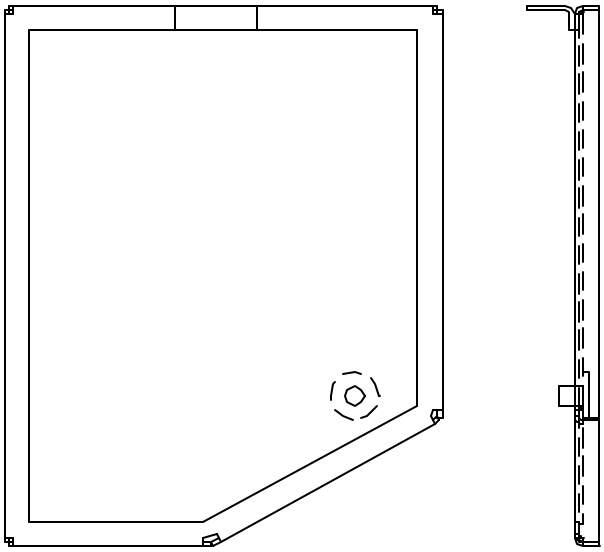
Rack Guide
Ecolab No.: 96558655
Mfg. No.: 05700-001-28-19

Locknut, 10-24 with Nylon Insert
Ecolab No.: 88429063
Mfg. No.: 05310-373-01-00



Drain Stopper Weldment
Ecolab No.: 96028691
Mfg. No.: 05700-002-08-44

Drain Stopper
Ecolab No.: 96557475
Mfg. No.: 05700-121-35-54



Sump Strainer Weldment
Ecolab No.: 96028709
Mfg. No.: 05700-002-11-63

SECTION 6: PARTS SECTION

PADDLE SWITCH ASSEMBLY

* Represents an item not shown.

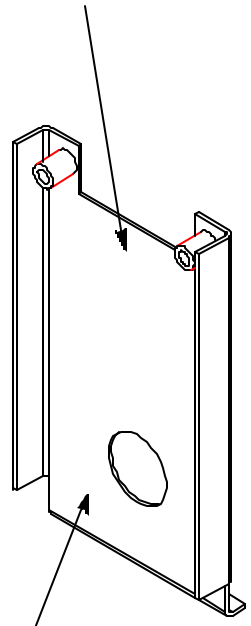
* Reed Switch
Ecolab No.: 96039102
Mfg. No.: 05930-002-36-80

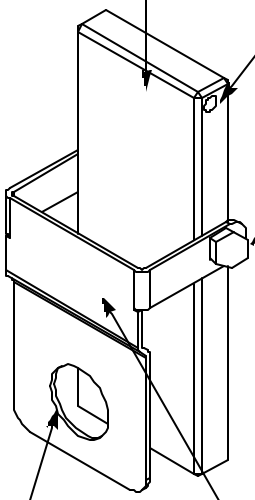
* Screw, 8-32 x 1/2" Binder PH HD
Ecolab No.: 88123740
Mfg. No.: 05305-172-07-00

* Lockwasher, 8-32 External Tooth S/S
Ecolab No.: 96038013
Mfg. No.: 05311-272-03-00

Paddle Switch
Ecolab No.: 96035399
Mfg. No.: 05700-002-34-32

Magnet, 3/16” x 1” Bar
Ecolab No.: 87020630
Mfg. No.: 05930-002-70-17





Bolt, 1/4”-20 x 2 1/2” Hex Head
Ecolab No.: 88000104
Mfg. No.: 05306-011-83-52

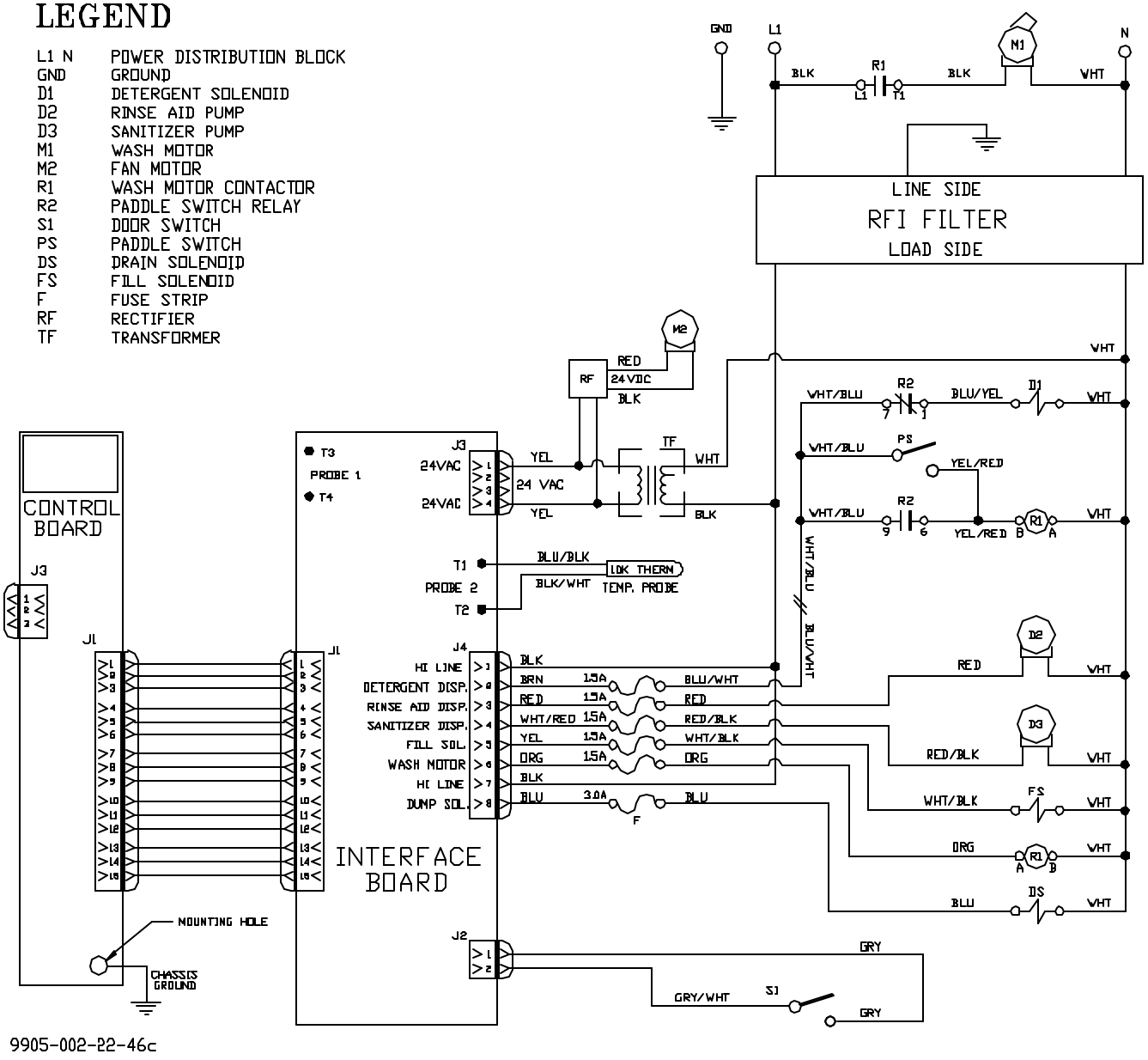
Locknut, 1/4”-20 S/S Hex Head
Ecolab No.: 88429113
Mfg. No.: 05310-374-01-00

* Fitting, Bulkhead to 1/2" Hose Barb
Ecolab No.: 92630000
Mfg. No.: 04730-002-69-80

Bracket, Pivot
Ecolab No.: 96038039
Mfg. No.: 05700-002-34-31

Bracket, Paddle Switch Weldment
Ecolab No.: 96038021
Mfg. No.: 05700-002-34-62

SECTION 7:
ELECTRICAL SCHEMATICS


LEGEND
L1 N POWER DISTRIBUTION BLOCK
GND GROUND
D1 DETERGENT SOLENOID
D2 RINSE AID PUMP
D3 SANITIZER PUMP
M1 WASH MOTOR
M2 FAN MOTOR
R1 WASH MOTOR CONTACTOR
R2 PADDLE SWITCH RELAY
S1 DOOR SWITCH
PS PADDLE SWITCH
DS DRAIN SOLENOID
FS FILL SOLENOID
F FUSE STRIP
RF RECTIFIER
TF TRANSFORMER
LINE SIDE
RFI FILTER
LOAD SIDE
CONTROL BOARD
INTERFACE BOARD
PROBE 1
PROBE 2
TEMP. PROBE
24 VAC
24VDC
MOUNTING HOLE
CHASSIS GROUND
9905-002-22-46c