ES SERIES DOOR TYPE, CHEMICAL SANITIZING,
SINGLE AND DUAL RACK DISHMACHINES

Manufactured in the United States by:

Jackson

INSTALLATION & OPERATION MANUAL

FOR ECOLAB MODELS:

ES-2000

ES-2000-CS

ES-2000HH

ES-2000HHV

ES-2000-V

ES-2000XSP

ES-2000XSP-PH

ES-4000

ES-4000XSP

ES-4000CDL

ES-4000CDR

ECOLAB®

December 5, 2007
P/N 7610-011-35-10 (Revision O)

www.ecolab.com

REVISION/ PAGE	REVISION DATE	MADE BY	APPLICABLE ECN	DETAILS
I	03-16-04	MAW	N/A, 6935	Added both chemical feeder pump rollers. Added Ecolab #96582747. Converted to the new layout. Added Viton Pump Seal 5330-002-87-16
J	04-26-04	MAW	N/A	Added Ecolab numbers.
K	08-31-04	MAW	N/A	Added ES-2000HH and ES-2000HHV
L	04-13-05	MAW	7228 7107	Added schematic for CD units. Changed reed switch to 05930-002-36-80 removed switch box weldments. Added common parts pages. Seperated vacuum breaker and solenoid parts into two pages. Moved vacuum breaker, solenoid and chemical feeder pump to common parts section. Changed numbers per Ecolab request.
M	05-09-05	MAW	N/A	Change numbers on pages 33, 34, 61, 66, 67 & 69 per Ecolab request
N	04-13-06	MAW	7555, 7518 7406, 7415 7260, 7553	Change ES-2000-V Right Side Door from 05700-002-38-34 to 05700-003-13-02. Remove Cotter Pin 05315-011-60-09 and add Hair Pin 05315-002-15-39. Add Control Box Bracket 05700-002-90-37 for ES-2000HH. Add new conduit, drip through tube & 1/4" red, white and blue chemical tubes for the ES-2000HH. Remove Drip Shield 05700-031-34-80, add Drip trough 05700-031-82-56. Add false panel kit option. Added ES-2000-V frame 05700-002-97-85. Added ES-2000-V Accumulator 05700-002-19-05. Added Pump & Motor Assembly page for ES-2000-CS. Made changes per Ecolab requests.
O	10-29-07	MAW	N/A	Added dimensions on CDL/CDR for handle to table. Added numbers for: hood support repair kits, microswitch replacement kit, cap & brass bonet kit, 1/4" component repair kit, dual strap kit, flat gasket. Removed one gasket from drain solenoid assemblies. Updated part numbers per Ecolab requests.
68	12-05-07	MAW	N/A	Changed drawing and numbers for ES-4000 left door.

NOMENCLATURE FOR THE MODELS COVERED IN THIS MANUAL

ECOLAB®

ES-2000-V

ES = Door type, Chemical Sanitizing

2000 = Single rack dishmachine
4000 = Dual rack dishmachine

CS = Omega design
CDL = Corner model with left hand entry
CDR = Corner model with right hand entry
HH = Higher Hood
HHV = Higher Hood with Vapor Vent
PH = 31” Wide
V = Vapor Vent
XSP = Solid detergent dispensing system

Model:_____

Serial No.:_____

Installation Date:_____

Service Rep. Name:_____

Phone No.:_____

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SECTION 1:
SPECIFICATION INFORMATION

SECTION 1: SPECIFICATION INFORMATION

ES-2000 SERIES SPECIFICATIONS

PERFORMANCE/CAPABILITIES

OPERATING CAPACITY (ES-2000's) (RACKS/HOUR)

RACKS PER HOUR	40
RACKS PER HOUR (OPTION)	48
DISHES PER HOUR	1000
GLASSES PER HOUR	1000

OPERATING CAPACITY (ES-2000HH) (RACKS/HOUR)

RACKS PER HOUR	40
DISHES PER HOUR	1000
GLASSES PER HOUR	1000

OPERATING CAPACITY (ES-2000HHV) (RACKS/HOUR)

RACK PER HOUR	30
DISHES PER HOUR	750
GLASSES PER HOUR	750

OPERATING CAPACITY (ES-2000-V) (RACKS/HOUR)

RACK PER HOUR	30
DISHES PER HOUR	750
GLASSES PER HOUR	750

OPERATING CYCLE (ES-2000's) (SECONDS)

WASH TIME	40
RINSE TIME	15
TOTAL CYCLE TIME	90
TOTAL CYCLE TIME (OPTION)	72

OPERATING CYCLE (ES-2000HH) (SECONDS)

WASH TIME	44
RINSE TIME	25
TOTAL CYCLE TIME	90

OPERATING CYCLE (ES-2000HHV) (SECONDS)

WASH TIME	44
RINSE TIME	25
TOTAL CYCLE TIME	120

* Total time extended by 30 seconds.

OPERATING CYCLE (ES-2000-V) (SECONDS)

WASH TIME	40
RINSE TIME	15
TOTAL CYCLE TIME	120

*Total time extended by 30 seconds.

TUB CAPACITY (GALLONS)

WASH TUB (MINIMUM) (ES-2000's)	1.7
WASH TUB (MINIMUM) (ES-2000-CS)	1.2

WASH PUMP CAPACITY

GALLONS PER MINUTE	61

TEMPERATURES

WASH---°F (MINIMUM)	120
WASH---°F (MINIMUM) (ES-2000HH/HHV ONLY)	130
WASH---°F (RECOMMENDED)	140
RINSE---°F (MINIMUM)	120
RINSE---°F (MINIMUM) (ES-2000HH/HHV ONLY)	130
RINSE---°F (RECOMMENDED)	140

ELECTRICAL REQUIREMENTS

WASH PUMP MOTOR HORSEPOWER	3/4

NOTE: Typical Electrical Circuit is based upon (1) 125% of the full amperage load of the machine and (2) typical fixed-trip circuit breaker sizes as listed in the NEC 2002 Edition. Local codes may require more stringent protection than what is displayed here. Always verify with your electrical service contractor that your circuit protection is adequate and meets all applicable national and local codes. These numbers are provided in this manual simply for reference and may change without notice at any given time.

	VOLTS	HERTZ	PHASE	TOTAL AMPS	TYPICAL ELECTRICAL CIRCUIT
ES-2000's	115	60	1	12.0	15 AMP

WATER REQUIREMENTS

INLET TEMPERATURE (MINIMUM)	120°F
INLET TEMPERATURE (RECOMMENDED)	140°F
INLET TEMPERATURE ES-2000HH MODELS (RECOMMENDED)	130°F
GALLONS PER HOUR	68
WATER LINE SIZE NPT (MINIMUM)	3/4"
DRAIN LINE SIZE NPT (MINIMUM)	2"
FLOW PRESSURE P.S.I.	20 ±5
MINIMUM CHLORINE REQUIRED (PPM)	50

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.

SECTION 1: SPECIFICATION INFORMATION

ES-4000 SERIES SPECIFICATIONS

PERFORMANCE/CAPABILITIES

OPERATING CAPACITY (RACKS/HOUR)

RACKS PER HOUR	80
RACKS PER HOUR (OPTION)	96
DISHES PER HOUR	2000
GLASSES PER HOUR	2000

OPERATING CYCLE (SECONDS)

WASH TIME	35
RINSE TIME	20
TOTAL CYCLE TIME	90
TOTAL CYCLE TIME (OPTION)	72

TUB CAPACITY (GALLONS)

WASH TUB (MINIMUM)	3.1

WASH PUMP CAPACITY

GALLONS PER MINUTE	61

TEMPERATURES

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

ELECTRICAL REQUIREMENTS

(2) WASH PUMP MOTOR HORSEPOWER	3/4 ea.

NOTE: Typical Electrical Circuit is based upon (1) 125% of the full amperage load of the machine and (2) typical fixed-trip circuit breaker sizes as listed in the NEC 2002 Edition. Local codes may require more stringent protection than what is displayed here. Always verify with your electrical service contractor that your circuit protection is adequate and meets all applicable national and local codes. These numbers are provided in this manual simply for reference and may change without notice at any given time.

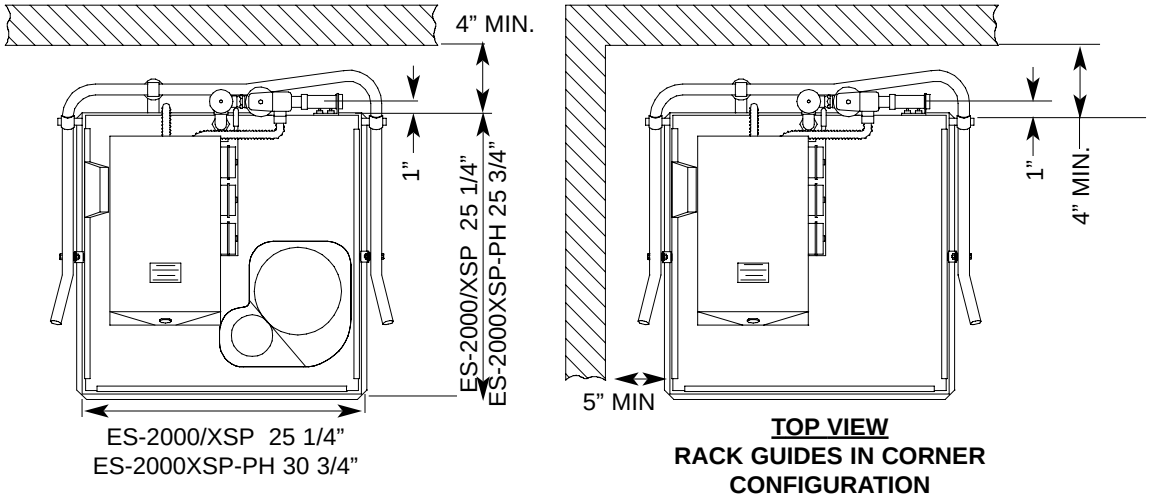
	VOLTS	HERTZ	PHASE	TOTAL AMPS	TYPICAL ELECTRICAL CIRCUIT
ES-4000's	115	60	1	23.0	30 AMP

WATER REQUIREMENTS

INLET TEMPERATURE (Minimum)	120°F
INLET TEMPERATURE (Recommended)	140°F
GALLONS PER HOUR	160
WATER LINE SIZE NPT (Minimum)	3/4"
DRAIN LINE SIZE NPT (Minimum)	2"
FLOW PRESSURE P.S.I.	20 ±5
MINIMUM CHLORINE REQUIRED (PPM)	50

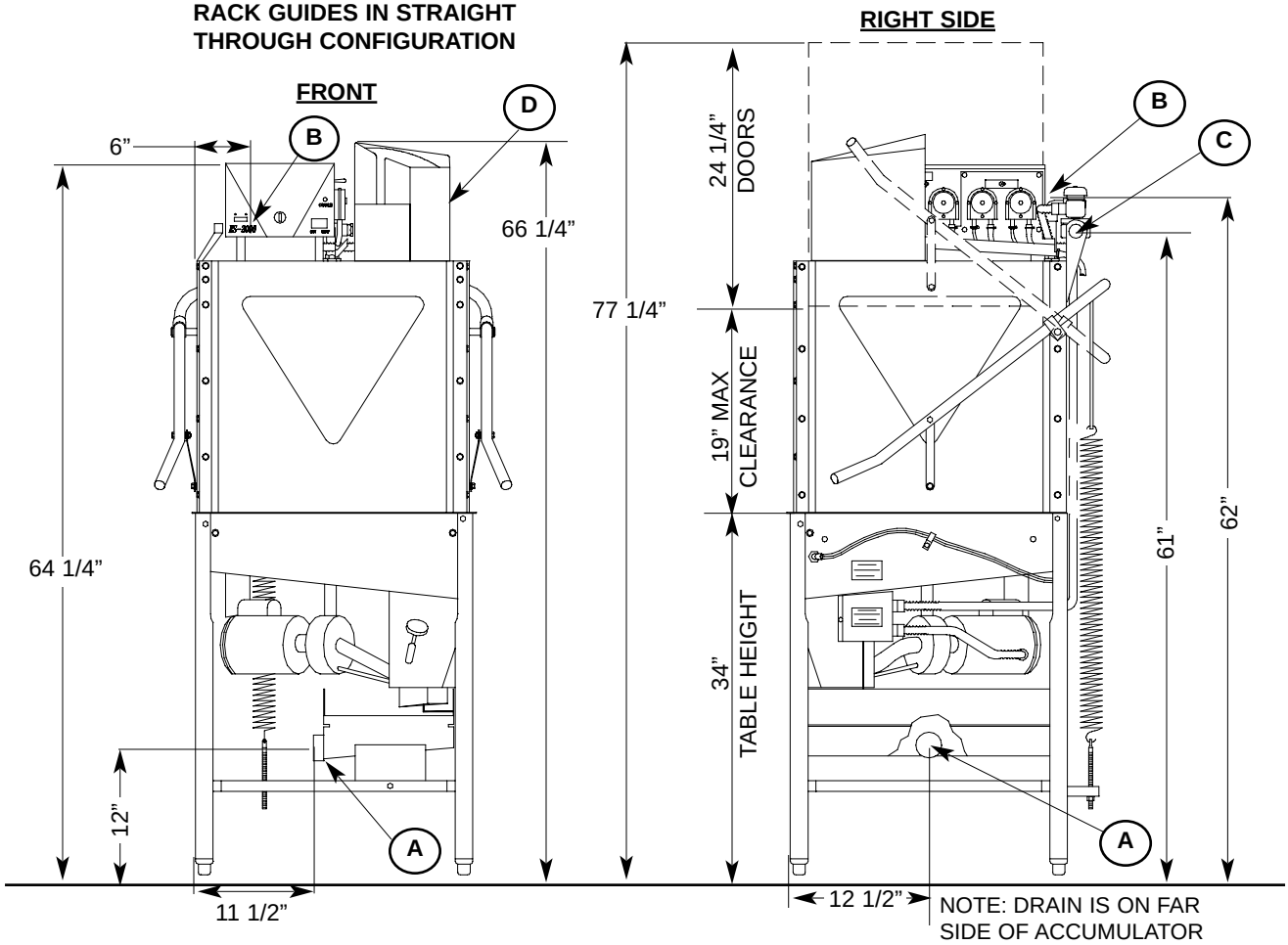
NOTE: Always refer to the machine data plate for specific electrical and water requirements. The material provided on this page is for reference only and may be subject to change without notice.

DIMENSIONS ES-2000/ES-2000XSP-PH



TOP VIEW
RACK GUIDES IN STRAIGHT THROUGH CONFIGURATION

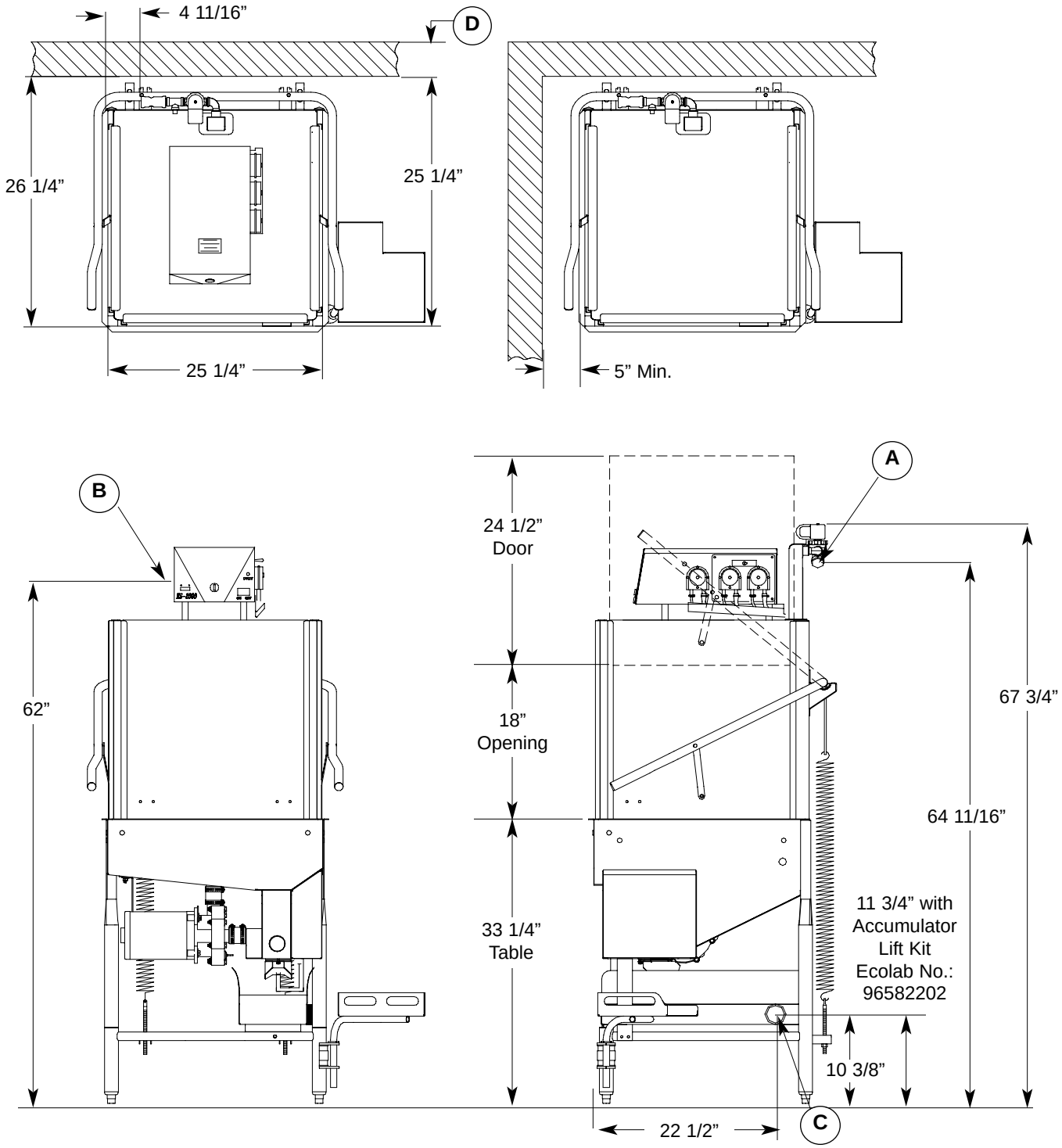
TOP VIEW
RACK GUIDES IN CORNER CONFIGURATION



A- DRAIN CONNECTION 2" NPT
B- ELECTRICAL CONNECTION 3/4" CONDUIT
C- WATER INLET 3/4" NPT
D- XSP DISPENSER

ALL DIMENSION FROM FLOOR ARE ADJUSTABLE +/- 1/2" DUE TO BULLET FEET.

DIMENSIONS ES-2000-CS



LEGEND

A - WATER INLET (1/2”NPT)

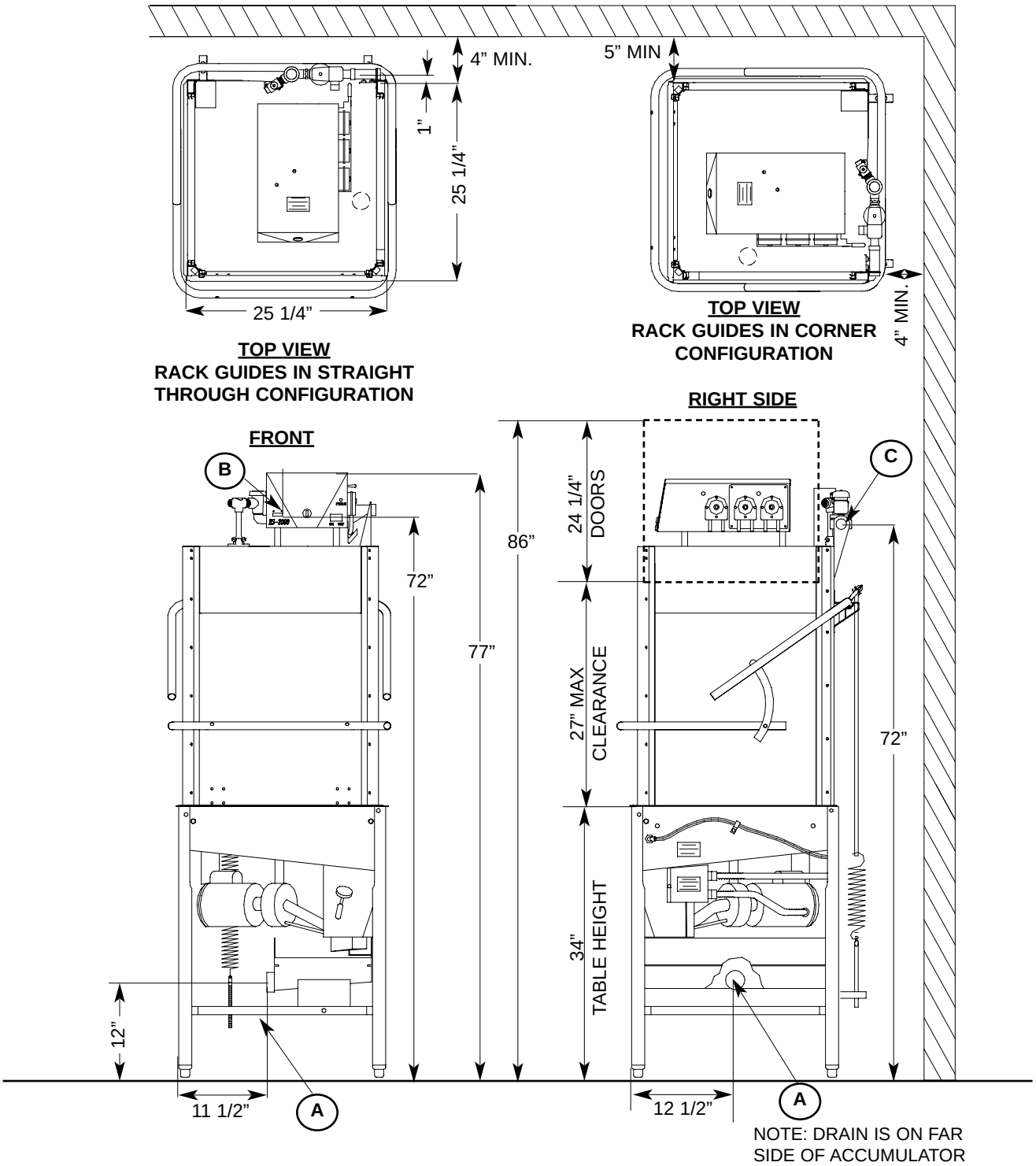
B - ELECTRICAL CONNECTION POINT

C - DRAIN (2” NPT)

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

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

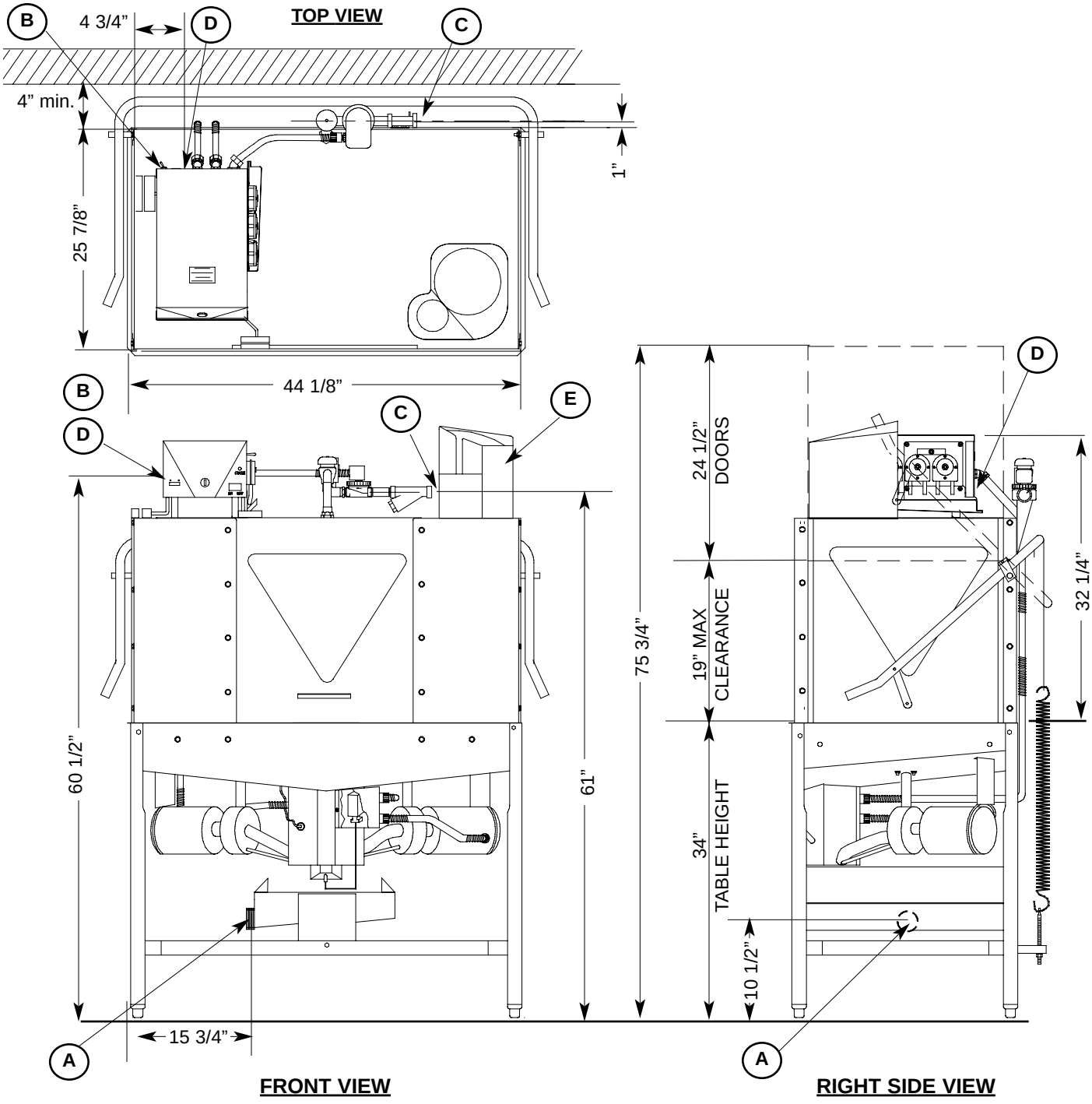
DIMENSIONS ES-2000HH



A- DRAIN CONNECTION 2” NPT
B- ELECTRICAL CONNECTION 3/4” CONDUIT
C- WATER INLET 3/4” NPT

ALL DIMENSION FROM FLOOR ARE ADJUSTABLE +/- 1/2” DUE TO BULLET FEET.

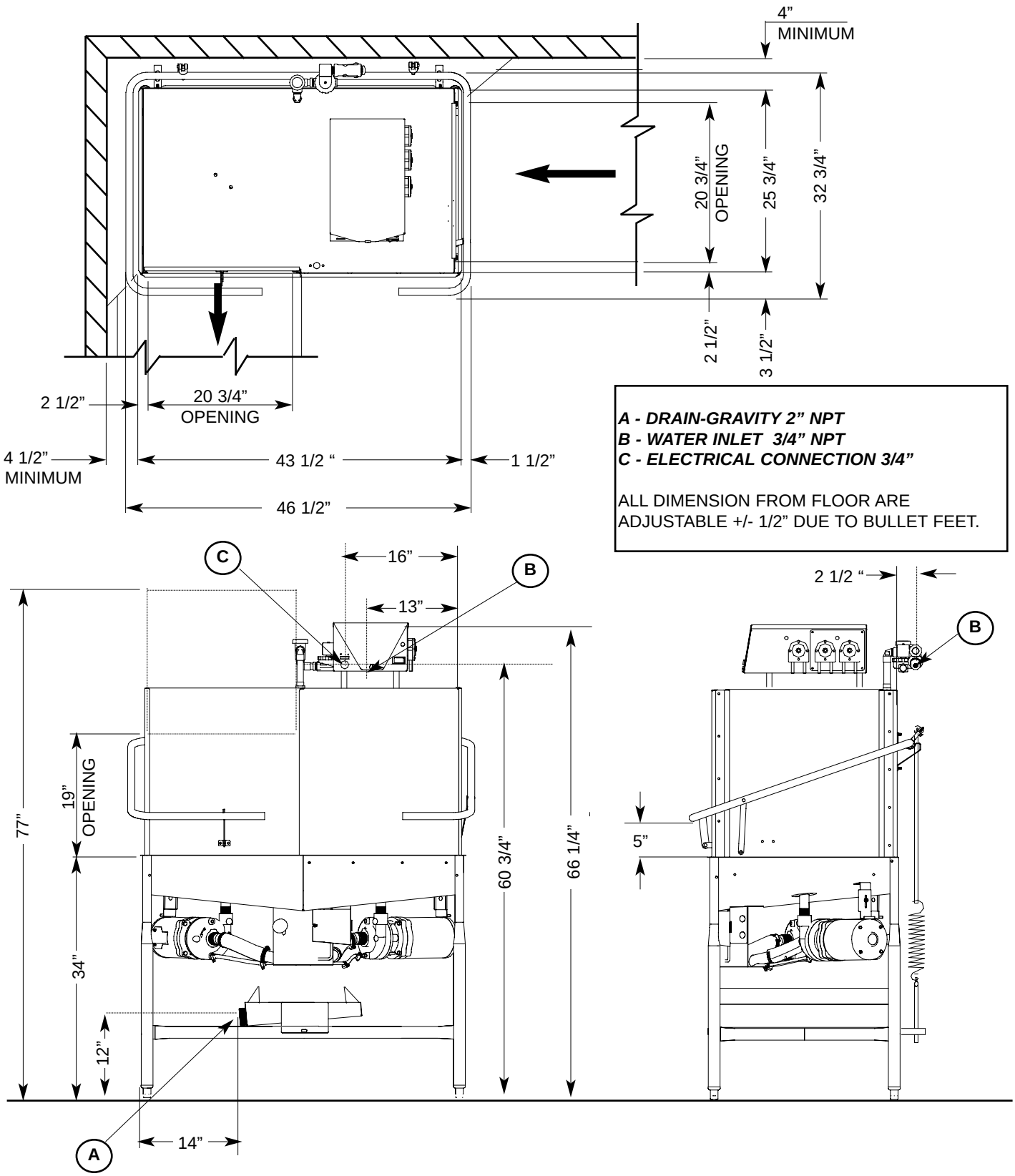
DIMENSIONS ES-4000/ES-4000XSP



A - DRAIN CONNECTION - 2" NPT
B - ELECTRICAL CONNECTION
C - WATER INLET - 3/4" NPT
D - SERVICE DISCONNECT SWITCH
E - XSP DISPENSER

ALL DIMENSION FROM FLOOR ARE ADJUSTABLE +/- 1/2" DUE TO BULLET FEET.

DIMENSIONS ES-4000CDL



DIMENSIONS ES-4000CDR

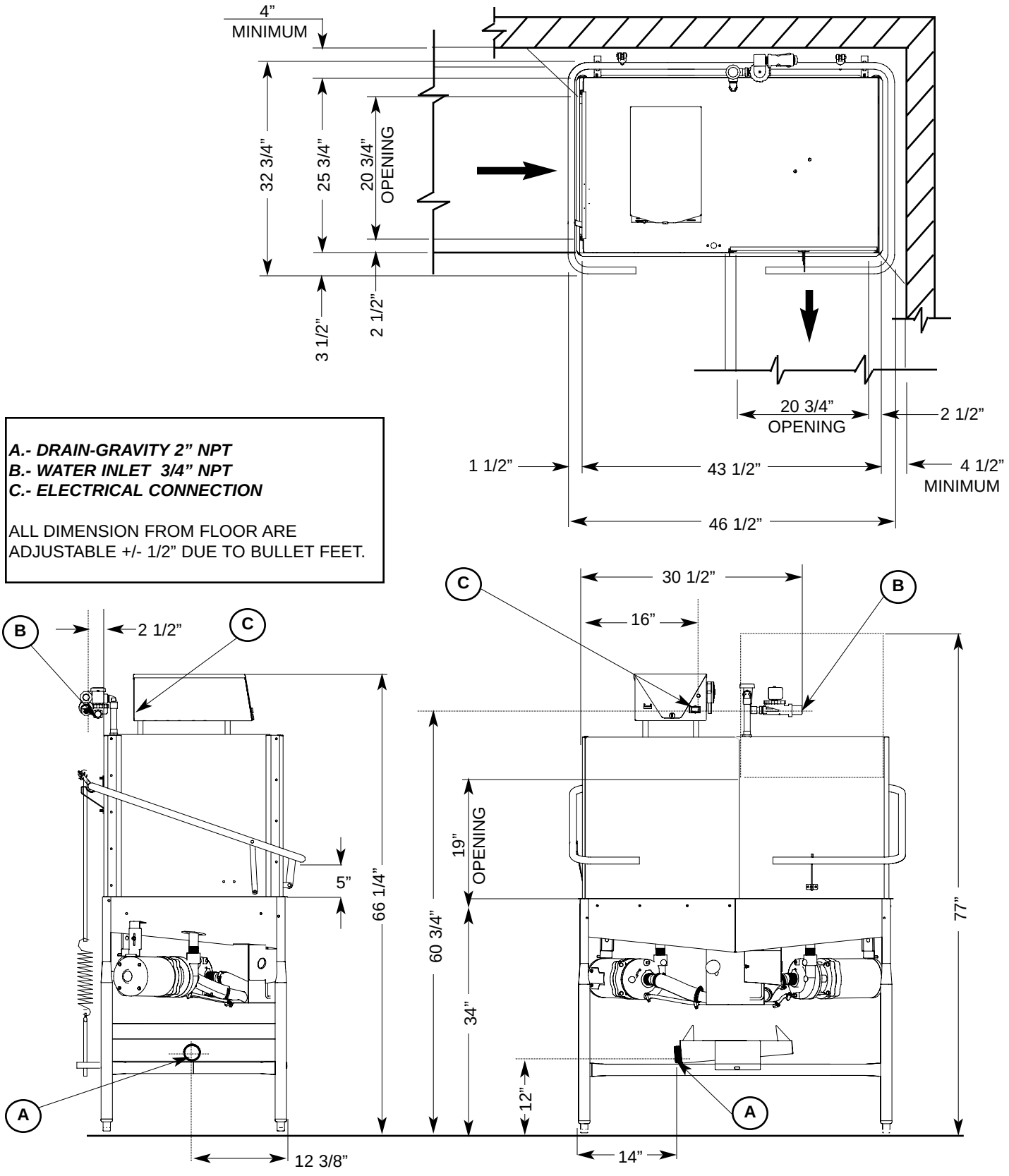


TABLE DIMENSIONS

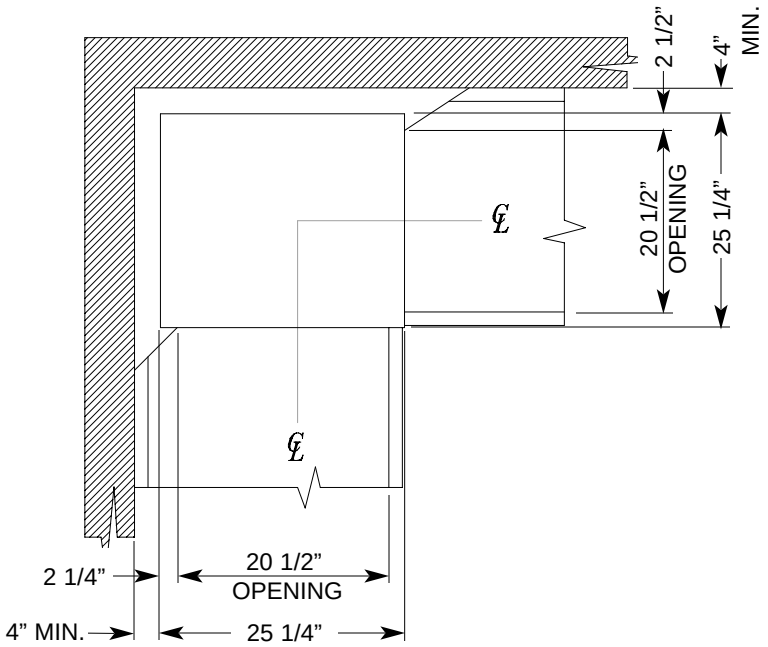


TABLE DIMENSIONS
CORNER INSTALLATION

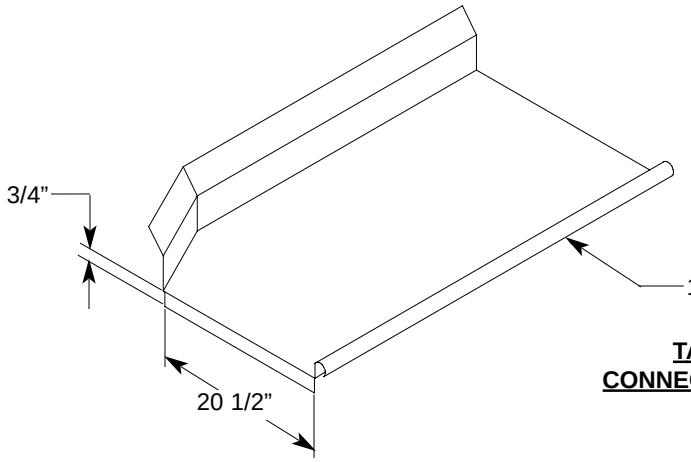


TABLE DIMENSIONS
CONNECTION TO DISHMACHINE

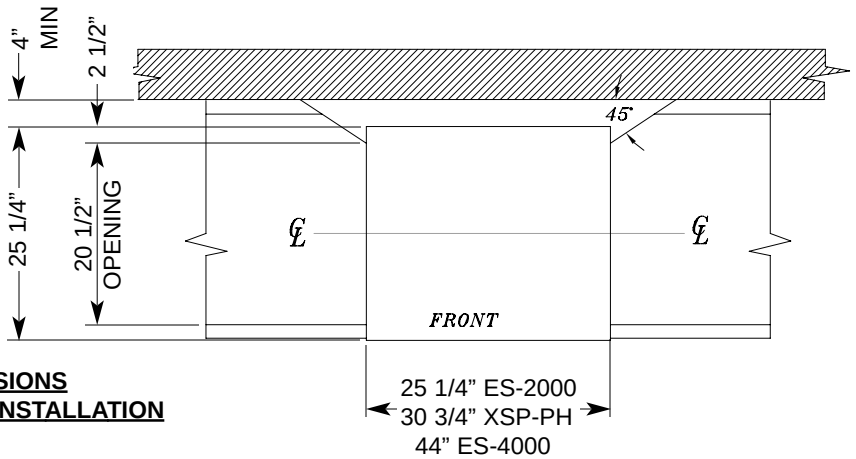


TABLE DIMENSIONS
STRAIGHT THROUGH INSTALLATION

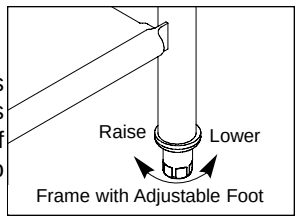
SECTION 2:
INSTALLATION/OPERATION INSTRUCTIONS

SECTION 2: INSTALLATION/OPERATION INSTRUCTIONS

INSTALLATION INSTRUCTIONS

VISUAL INSPECTION: Before installing the unit, check the container and machine for damage. A damaged container is an indicator 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 result in there being damage to the unit while in transit. If such a situation occurs, do not return the unit to Ecolab; instead, contact the carrier and ask them to send a representative to the site 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.

UNPACKING THE DISHMACHINE: Once the machine has been removed from the container, ensure that there are no missing parts from the machine. This may not be obvious at first. If it is discovered that an item is missing, contact Ecolab immediately to have the missing item shipped to you.



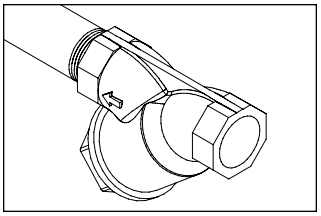
Frame with Adjustable Foot

LEVEL THE DISHMACHINE: The dishmachine is designed to operate while being level. This is important to prevent any damage to the machine during operation and to ensure the best results when washing ware. The unit comes with adjustable bullet feet, which can be turned using a pair of channel locks or by hand if the unit can be raised safely. Ensure that the unit is level from side to side and from front to back before making any connections.

PLUMBING THE DISHMACHINE: All plumbing connections must comply with all applicable local, state, and national plumbing codes. The plumber is responsible for ensuring that the incoming water line is thoroughly flushed prior to connecting it to any component of the dishmachine. It is necessary to remove all foreign debris from the water line that may potentially get trapped in the valves or cause an obstruction.

CONNECTING THE DRAIN LINE: The drains for the ES-2000/ES-4000 dishmachines are gravity discharge. All piping from the 2" MNPT connection on the waste accumulator must be pitched (1/4" per foot) to the floor or sink drain. All piping from the machine to the drain must be a minimum 2" NPT and shall not be reduced. 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.

WATER SUPPLY CONNECTION: Ensure that you have read the section entitled "PLUMBING THE DISHMACHINE" above before proceeding. Install the water supply line (3/4" pipe size minimum) to the dishmachine line strainer using copper pipe. It is recommended that a water shut-off valve be installed in the water line between the main supply and the machine to allow access for service. The water supply line is to be capable of 20 ± 5 PSI "flow" pressure at the recommended temperature indicated on the data plate.


Incoming Plumbing Connection

NOTE: The optional Vapor Vent system must be connected to the COLD water line.

In areas where the water pressure fluctuates or is greater than the recommended pressure, it is suggested that a water pressure regulator be installed.

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) be installed in the incoming water line. This prevents line hammer (hydraulic shock), induced by the solenoid valve as it operates, from causing damage to the equipment.

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

SECTION 2: INSTALLATION/OPERATION INSTRUCTIONS

ELECTRICAL INSTALLATION INSTRUCTIONS

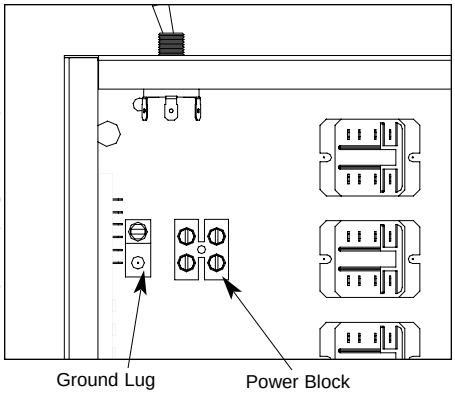
ELECTRICAL POWER CONNECTION: Electrical and grounding connections must comply with the applicable portions of the National Electrical Code ANSI/NFPA 70 (latest edition) and/or other electrical codes.

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 and to the front of the machine. Refer to the data plate for machine operating requirements, machine voltage, total amperage load and serial number.

To install the incoming power lines, unlock the control box. 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 & L2) to the appropriate terminals as they are marked on the terminal block. Install the grounding wire into the lug provided.

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



VOLTAGE CHECK: Ensure that the power 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 too low. Shut off the service breaker and mark it as being for the dishmachine. Advise all proper personnel of any problems and of the location of the service breaker. Replace the control box cover and tighten down the screws.

OPERATING INSTRUCTIONS

PREPARATION: Before proceeding with start-up verify the following:

A. Sump strainer is in place.

B. Drain stopper is installed.

C. Check that the wash arms are securely screwed into the stationary bases and rotate freely. Also check that the end plugs are securely screwed into the ends of all wash arms.

POWER UP: To energize electrically, proceed as follows:

A. Turn on electrical power supply at the circuit breaker.

B. Check voltage at incoming terminals L1& L2. The voltage measured at these points should match data plate voltage.

C. If voltages are in required range, close the control box cover.

TO FILL WASH TUB: To Fill Wash Tub depress the “On/Off/Fill” rocker switch to the “Fill” position and hold until you see water draining out from the bottom of the machine. Open door for 3 seconds and close, this will start machine cycle. Allow machine to complete one cycle, and then check for proper water level.

Note: Water must be in the sump while the machine is running to avoid running the pump dry and causing damage to the pump seal.

If the water level is not at the level noted above it will require adjustment. Check to ensure that the recommended water pressure is being supplied to the machine (20 ±5 PSI is required). If the water pressure is correct then the fill valve cam will need adjustment. Use the following steps to adjust the cam.

A. Turn power off at the machine circuit breaker.

B. Open control box cover

C. Locate the timer fill valve cam (Cam 4 from the timer motor)

D. Locate the spanner wrench taped to the electrical panel. The spanner wrench is used to adjust the cam.

E. To increase the water level, open the notch of the adjustable cam. To decrease the water level, close the notch. Care must be taken that the set point does not extend into the home position of the timer. Do not move the side of the cam that starts the fill; this will change the sequence of cycle operation.

F. With the door closed turn the power circuit breaker on. Open and close the door to run a cycle, then check the water level. Adjust as necessary then close the control box cover.

Refer to page 21 for adjustment to the cam timer.

NOTE: The machine must run a complete cycle to drain and fill. If the machine is not allowed to drain, the water will build up inside the tub. After the initial fill, the rinse water for the current cycle will become the wash water for the next cycle.

The dishmachine is now ready to proceed with the washing of dishes.

VAPOR VENT OPTION: If the dishmachine is fitted with the optional vapor vent system, it will be shipped from the factory with the vent option installed. Run several cycles to confirm that the vapor vent is functioning properly. At the end of the venting sequence, there should be only a small amount of vapor released from the machine when the door interlock retracts and the machine doors are opened.

WARNING: Certain materials, including silver, silver plate, aluminum and pewter, are attacked by sodium hypochlorite sanitizers (bleach).

PREPARING DISHES: Preparation of the ware will help ensure good results and less re-washes. If not done properly the dishes will not be clean and will reduce the efficiency of the dishmachine.

The following steps should be followed to ensure good results:

A. Remove all scraps and gross soil into a garbage can.
B. Separate and pre-soak silverware.
C. Separate and pre-soak the egg and casserole dishes.
D. Scrape all ware with a brush or spatula.
E. Flush cups, bowls and glasses with running water.
F. Prewash dishware by soaking or spraying with a pre-rinse hose.
G. Place dishes and cups in dish rack. Cups should be upside down (so they don't hold water).
H. Place glasses and flatware in their respective racks. Scatter flatware loosely in rack. Glasses should be placed upside down in a properly sized rack. For optimal results, flatware should be washed twice, the first being horizontal, the second in a special rack to hold flatware vertical.

DAILY MACHINE PREPARATION: Before proceeding with start-up, verify the following:

A. Open door and verify that the sump strainer is in place in the sump.
B. Verify that the drain stopper is in position.
C. Check that the plugs are securely screwed into the ends of all wash arms.
D. Check that the wash arms are securely screwed into the stationary bases and rotate freely.
E. Check levels in all chemical containers and replace if empty.
F. For initial fill, close doors then depress the "OFF/ON/FILL" rocker switch to the "FILL" position.

WASHING A RACK OF WARE:

A. Open doors, place a full rack into the machine, and close doors. Unit will start automatically.
B. After cycle is completed open doors and remove rack.
C. Place another full rack into the dishmachine, and close doors.
D. Dishmachine will repeat cycle.

SHUT DOWN AND CLEANING:

A. At the end of mealtime, move the "OFF/ON/FILL" switch to the "OFF" position.
B. Open doors and manually remove drain stopper to drain the unit.
C. Remove and clean upper and lower wash arms.
D. Remove and clean the sump strainer.

TO PREPARE PUMPS FOR OPERATION

The ES-2000/ES-4000 dishmachines are supplied with detergent, rinse additive and sanitizer dispensing chemical feeder pumps. Locate the open ends of the chemical tubes with the tube stiffeners and place each one in the appropriate container.

A. Red Tubing = Detergent

B. Blue Tubing = Rinse Aid

C. White Tubing = Sanitizer

PRIMING PERISTALTIC PUMPS

Peristaltic pumps need priming when the machine is first installed or if for some reason the chemical lines have been removed and air has been allowed to enter.

CAUTION: Water must be in the sump and wash tank prior to the dispensing of chemicals. Sanitizer in concentration is detrimental to the metal of the dishmachine and may cause damage without dilution.

1. Verify that the proper chemical tube stiffener inlet is in the proper container.

2. Use the toggle switches on the right side of control box to prime each pump. There are two (2) switches mounted by the chemical feeder pumps. One will prime the sanitizer pump only, and the second will prime either the detergent or rinse aid pump, depending upon which way it is depressed.

3. To prime the pumps, hold the switch in the momentary position until chemical can be observed entering the sump.

4. Detergent is dispensed as required during the wash cycle by the cam timer. The amount of detergent may need to be increased or decreased depending on water quality and type of detergent. It is adjusted by changing Cam 6 on the cam timer.

5. Rinse additive is dispensed as required into the final rinse. The amount of rinse aid may need to be adjusted depending on water hardness and results. It can be changed by changing Cam 7 on the cam timer.

6. Sanitizer, either chlorine or iodine, is dispensed into the final rinse. The amount of sanitizer may need to be adjusted depending on the concentration and type of sanitizer used. It is adjusted by changing Cam 5 on the cam timer.

WARNING: Some of the chemicals used in dishwashing may cause chemical burns if they come on contact with your skin. Wear appropriate protective gear when handling these chemicals. If you do come in contact with these chemicals flush the area with fresh water.

SECTION 2: INSTALLATION/OPERATION INSTRUCTIONS

XSP DISPENSER PREPARATION

Machines that are equipped with the XSP package have a unique feature over other Ecolab models such as the ES-2000 or ES-4000: the XSP machines use solid, rather than liquid detergent and rinse aid products (all machines use liquid sanitizing agents). The solid product dispensing system is self-contained on top of all XSP units.

Operation of any dishmachine with the XSP dispenser is covered under the operational instructions found in this manual. The solid detergent is automatically dispensed during the wash cycle. The machine will then dump the wash water, flush the tank, and then should refill the tank with fresh water during the rinse cycle. The sanitizer and solid rinse aid are automatically dispensed during the rinse cycle.

Optimum dispensing control of the solid products has been achieved with this solid dispensing system. The detergent reservoir has an indexing pedestal that keeps the product at a constant distance from the nozzle. The detergent pedestal is the major reason why dispensing is very consistent from cycle to cycle. Another important feature which adds to the consistency of the dispensing is the pressure regulators. Two dispenser pressure regulators are an integral part of the system. By closely regulating the feed water pressure to the products, uniform dispensing rates are achieved.

The solid detergent is available in 2 x 9 lb cases. the solid rinse aid is available in 3 x 0.75 lb cases. Both products have been custom formulated for the unique operating characteristics of the XSP machine and dispensing system.

Dishmachines equipped with the XSP dispenser will have an overall height approximately 4-1/4” above the height of the control box, which is normally 66-1/4”. Machine width and table height are unaffected by the addition of the system.

The operating parameters and capacities of machines equipped with an XSP dispenser are not affected by the addition of the system.

There are no special instructions for installing a unit equipped with an XSP dispenser.

NOTE: DETERGENT SAFETY SWITCH MUST BE DEPRESSED FOR THE DISHMACHINE TO RUN!! (Refer to Figure 1 below)

1. Remove the screw cap on the detergent capsule.
2. Invert the capsule holding on to the molded handle and place the detergent onto the pedestal.
3. Remove the snap lid on the rinse additive container and let the product fall onto the stainless steel screen in the Rinse Additive Cylinder.



CHEMICAL SET-UP

NOTE: THE SANITIZER CHEMICAL FEEDER PUMP REQUIRES PRIMING WHEN THE MACHINE IS FIRST INSTALLED OR WHEN AIR ENTERS THE SANITIZER AGENT LINE. SANITIZER PUMPS ARE NORMALLY LOCATED ON THE LOWER HALF OF THE MACHINE AND THE PRIME SWITCH WILL BE NEARBY.

NOTE: WATER MUST BE IN THE SUMP AND WASH TANK PRIOR TO DISPENSING CHEMICALS. SANITIZER IN ORIGINAL CONCENTRATION IS CAUSTIC AND MAY CAUSE DAMAGE TO THE WASH TANK AND/OR SUMP WITHOUT DILUTION.

DISPENSER SET-UP:

The following dispenser settings should be used as a starting point:

Dishmachine	Detergent Titration	Product Feed Water Pressure	Detergent Feed Time	Rinse-Aid Feed Time	Sanitizer Feed Time
ES-2000XSP(PH)	10 drops *	20 PSI	4 seconds	4 seconds	6 seconds
ES-4000XSP	10 drops *	20 PSI	6 seconds	6 seconds	11 seconds

* -Titrate 1

NOTE: These settings are only STARTING POINTS.

This system will require adjustment to meet the conditions of water temperature and softness at each account. If the water temperature is 160°F or greater, it will require fewer seconds of feed time to get the same solid product usage.

EXAMPLE: If the feed water temperature is 170°F the detergent and rinse aid feed times should be set to approximately 1 to 2 seconds. Please refer to the adjustment guidelines below as starting points to optimize the dispenser's performance.

WATER PRESSURE SET-UP:

1. Adjust the primary water pressure regulator so that the pressure gauge reads approximately 20 PSI flow pressure while the detergent is feeding. If the account's flow pressure is less than 20 PSI, turn the adjustment knob on the regulator clockwise until the pressure gauge indicates the maximum flow available.

SANITIZER FEED SET-UP:

1. Set the sanitizer feed to six seconds for the ES-2000XSP(PH) or eleven seconds for the ES-4000XSP. Adjust the sanitizer cam timer so that the sanitizer pump begins feeding immediately after the rinse cycle starts (when pump motor starts).

2. Prime the sanitizer pump using the prime switch.

3. Run a complete cycle on the dishmachine.

4. Titrate the rinse water using the chlorine titration test kit. Chlorine titration should be between 50 and 100 ppm. Adjust the cam timer if the chlorine level is not correct.

DETERGENT SET-UP

1. Set the detergent feed time to four seconds for ES-2000XSP(PH), or six seconds for the ES-4000XSP. Adjust the detergent cam timer so that the four or six second detergent spray begins immediately after the wash cycle starts.

2. Set the flush time (Detergent Flush cam) to 10 seconds. The flush must begin after the detergent feed spray and must end at least five seconds before the machine drain opens.

3. Titrate wash water at the end of the wash cycle.

NOTE: Titration is a must. DO NOT neglect this step!

TITRATION PROCEDURES

1. Fill the titration vial to the 5 ml mark with wash solution.

2. Add 5 drops of Indicator P.

3. Titrate dropwise with Titrate 1 until the pink solution turns clear.

4. Add additional 1 or 2 drops of Indicator P to make sure of the endpoint (Chlorine sanitizer can bleach out the Indicator P and cause premature endpoint). Continue titrating with Titrate 1 until the pink color is gone.

RINSE AID FEED SET-UP

1. Set rinse aid feed time to four seconds for the ES-2000XSP(PH) or six seconds for the ES-4000XSP. If the account has very hot water temperature (160°F or greater), use one or two seconds as a starting point instead of the normal four to six seconds. Adjust the rinse aid cam timer so that the rinse aid spray begins immediately after the machine finishes filling with water.

2. Perform a sheeting test. Run a load with a set of glassware and a set of flatware.

NOTE: A new rinse aid capsule needs to be "wetted" before running a sheeting test. To wet the solid rinse aid, run four or five cycles on the dishmachine. If the dishware does not sheet, try the following things in the order given below:

a) Adjust the rinse aid feed time.

b) Adjust the feed water pressure.

NOTE: If the pressure is changed, the detergent titration will need to be rechecked.

c) Examine the rinse aid spray pattern. If necessary, clean and/or replace the spray nozzle.

3. Periodically, the consumption rate of the rinse aid product needs to be checked. After a minimum of two weeks, calculate the number of racks washed per rinse aid capsule used. Do this by recording the count and taking inventory at each service call. If the rinse aid usage is high (racks per capsule are low) and the dishware results are good (no spots), decrease the rinse aid feed time. refer to the rinse aid consumption table below:

RINSE CONSUMPTION GUIDELINES

WATER HARDNESS

Food Soil	Soft (0 - 4 gpg)	Medium (4 - 8 gpg)	Hard (8 - 12 gpg)	Very Hard (12 - 16 gpg)
Light	1400	1000	800	700
Medium	1200	900	600	500
Heavy	1000	600	400	300

(Racks per Capsule)

CAM TIMER OPERATION (ES-2000/ES-4000)

The ES-2000/ES-4000 cam timer is a 1 minute, 30 second, 8-cam timer that controls the operation of the dishmachine. The following is a description of the set points for each cam and the function of each switch. NOTE: The ES-2000-V has an additional time circuit which adds 30 seconds to the end of the cycle.

CAM 1: Cam 1 is a cut cam with a single notch and serves as the cycle/reset control.

FUNCTION: When the machine is in the operation mode the notch is the home position. The machine will remain idle until the door is opened, then cam 1 moves to the start position and holds until the door is closed. The closing of the door will start the next cycle. The cam will rotate a complete cycle, and return to the home position and hold.

CAM 2: Cam 2 is a cut cam and provides the wash cycle timing.

FUNCTION: The wash cam works off the normally open contacts of Cam 2. This requires the switch be held closed by the cam. It will close and energize the wash pump 2 seconds after the cycle switch is activated. The pump will operate through the wash cycle (40 seconds) then shut down for the dwell period (20 seconds). As the cam rotates it energizes the pump for the rinse cycle (25 seconds). When cam 1 reaches it's home position it will de-energize cam 2, shutting down the wash pump.

NOTE: The last 6 cams are adjustable. The following instructions will require that the timer position have the cams to the front and the motor to the left.

CAM 3: Cam 3 is an adjustable cam and controls the drain solenoid.

FUNCTION: The drain solenoid works off the normally closed contacts of cam 3. When the cycle is initiated, the micro switch will be held open until it is allowed to drop into the notch of the cam. This energizes the drain solenoid which drains the machine. After a 12 second delay the cam reverses the micro switch, de-energizing the drain solenoid. This cam may require adjusting due to varying water pressure. The drain solenoid must remain open long enough to remove whatever water the fill valve solenoid allows in the machine.

SETTINGS: The right side of cam 3 must be set to pick up the switch arm just before the wash/rinse cycle cam switch drops. It will hold the drain solenoid open to drain all the water in the tank from the unit during the dwell period. Any adjustment made to the drain should be made to the left side of cam 3. The cam must be moved back into the wash time until all of the water is drained from the machine.

CAM 4: Cam 4 is an adjustable cam and controls the fill valve and therefore the rinse cycle.

FUNCTION: The fill valve cam works off the normally closed contacts of cam 4. This requires the switch to be held open by the cam and allowed to drop into the notch to operate the fill valve. This energizes the fill solenoid which opens to fill the machine with fresh water. After a 10 second delay, the cam reverses the micro switch, de-energizing the fill solenoid. The fill cam may require adjustment due to varying water pressure. The fill solenoid must remain open a sufficient length of time to fill the machine to the correct level.

SETTINGS: The right side of cam 4 must be set to allow the switch arm to drop 2 seconds before the drain solenoid is de-energized which flushes the detergent residue from the unit. It will hold the fill solenoid open until the cam switch arm is raised. At that time the fill solenoid is de-energized, shutting off the incoming water. The tub will be filled to the correct level to rinse the rack. Any adjustment made to the timing of the fill solenoid should be made with the left side of cam 4. To increase the water level, open the notch of the cam and for decreasing the level of the notch should be closed.

CAM 5: Cam 5 is an adjustable cam and controls the sanitizer pump.

FUNCTION: The sanitizer pump cam works off the normally closed contacts of cam 5. This requires the switch arm to be held open by the cam and allowed to drop into the notch to operate the pump. The time that the sanitizer pump will remain energized must be determined in the field to suit the chemical used and water conditions.

SETTINGS: The left side of cam 5 must be set to allow the switch arm to drop in past the starting point of the fill cam and after the drain solenoid has closed. The adjustment for sanitizer volume must be made with the right side of the cam. To increase the volume the notch should be increased or to decrease the amount of sanitizer the notch should be closed slightly in increments until the correct level is reached.

CAM TIMER OPERATION (ES-2000/ES-4000) (CONTINUED)

CAM 6: Cam 6 is an adjustable can and controls the detergent pump.

FUNCTION: The detergent pump cam works off the normally closed contacts of cam 6. This requires the switch arm to be held open by the cam and allowed to drop into the notch to operate the pump. The time that the detergent pump will remain energized must be determined in the field to suit the chemical used and water conditions.

SETTINGS: The left side of cam 6 must be set to drop in past the starting point of the wash pump cam. The adjustment for detergent volume must be made with the right side of the cam. To increase the volume, the notch should be increased or to decrease the amount of detergent the notch should be closed slightly in increments until the correct level is reached.

CAM 7: Cam 7 is an adjustable cam and controls the rinse aid pump.

FUNCTION: The rinse aid pump cam works off the normally closed contacts of cam 7. This requires the switch arm to be held open by the cam and allowed to drop into the notch to operate the pump. The time that the rinse aid pump will remain energized must be determined in the field to suit the chemical used and water conditions.

SETTINGS: The left side of cam 7 must be set to drop in past the starting point of the fill cam and after the drain solenoid has closed. The adjustment for rinse aid volume must be made with the right side of the cam. To increase the volume the notch should be increased or to decrease the amount of detergent the notch should be closed slightly in increments until the correct level is reached.

CAM 8: Cam 8 is an adjustable cam and is not used.

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 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

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 re-apply power to test. When replacing electrical parts, disconnect power at source circuit breaker.

Problem: Dishmachine will not run with power switch in the "ON" position unless the cam timer is moved off of the "home" position.

1. The door switch is shorted out. With the door open, check for the voltage between the ORANGE/WHITE door switch wire and neutral. If it reads 120 volts, replace the shorted door switch.
2. Faulty control relay. With the door open, check for voltage between connections #9 and #3 on control relay. If it reads 120 volts, replace the control relay.
3. Faulty "cycle reset" cam microswitch. Replace the switch.

Problem: Dishmachine will not cycle with power switch in the "ON" position, works only in Delime Mode.

1. Faulty "cycle reset" cam microswitch. Rotate the cams manually off of the "home" position. Check the voltage between the ORANGE and BLACK/WHITE wires on the cycle reset switch. If it reads 120 volts, then the switch is open and should be replaced.
2. Faulty cam timer motor. If the cam timer is not rotating, check the voltage to the motor. If voltage is present when the door is closed, replace the timer motor.
3. Faulty control relay. Check the voltage across relay contacts #9 and #6. If 120 volts when the doors is closed, replace the relay.
4. Faulty NORMAL/DELIME switch. In the "NORMAL" position, check the voltage between the WHITE/BLACK and WHITE/RED wires to the NORMAL/DELIME switch. If it reads 120 volts, replace the switch.

Problem: Dishmachine will not run. The wash pump motor will run if the wash motor relay is depressed manually.

1. Open side door switch. With the door closed, measure the voltage between the BLUE and WHITE/BLACK wires on the door switch. If it reads 120 volts, replace the switch.
2. Faulty side door safety switch relay. Measure the voltage between the black wires on terminals #6 and #9 of the relay. If you measure 120 volts, replace the relay; or measure between the WHITE/BLACK wire on terminal 4 and the ORANGE/WHITE wire on terminal 7 of the relay. If you read 120 volts, replace the relay.

Problem: Dishmachine will not run with the power switch in the "ON" position or in the Delime Mode.

1. Faulty door switch. With the door closed, check for voltage between the WHITE/BLACK and ORANGE/WHITE wires to the door switch. If it reads 120 volts, replace the open switch or reposition the magnet or magnet bracket.
2. Faulty OFF/ON/FILL switch. With the switch in the "ON" position, check the voltage between the BLACK and WHITE/BLACK wires on the switch. If it reads 120 volts, replace the switch.
3. Faulty NORMAL/DELIME switch. In the "NORMAL" position, check the voltage between the WHITE/BLACK and WHITE/RED wires to the NORMAL/DELIME switch. If it reads 120 volts, replace the switch; or in the "DELIME" position, check the voltage between the two BLACK/ORANGE wires leading to the NORMAL/DELIME switch (not the BLACK/ORANGE jumper). If it reads 120 volts, replace the switch.

Problem: Dishmachine cycles continuously.

1. "Cycle reset" switch is loose. Reposition the switch assembly, bend the metal lever if necessary.
2. Faulty "cycle reset" switch. Measure between the BLACK/YELLOW and ORANGE wires on the "cycle reset" switch while the timer is rotating. As the switch lever drops into the "home" position, you should measure 120 volts. If not, replace the switch.
3. Dishmachine is in Delime Mode. Put the NORMAL/DELIME switch in the "NORMAL" position.

SECTION 4: TROUBLESHOOTING

COMMON PROBLEMS

Problem: Dishmachine will not fill, though other functions work.

1. Y-strainer on incoming water line plugged or clogged. Remove strainer and clean out.
2. Water supply valve(s) turned off. Turn the valve(s) on.
3. Faulty solenoid valve diaphragm. Replace diaphragm, clean foreign material out of valve body and orifices.
4. Faulty solenoid coil. If the coil has voltage, but no continuity, replace the coil (continuity is measured across coil connectors with wires removed).
5. Faulty fill microswitch. During fill, measure the voltage between the ORANGE and WHITE/GREEN wires. If it reads 120 volts, adjust or replace the switch.

Problem: Dishmachine fills continuously, even without power applied to the machine.

1. Solenoid valve dirty or faulty. Clean valve or replace faulty parts as required.

Problem: Dishmachine fills continuously, only when power is supplied to the machine.

1. Faulty fill microswitch. Repair or replace switch as necessary.
2. Cam timer stalled in fill position. If the cam timer is not rotating, check the voltage to the timer motor. If it measures as 120 volts when the door is closed, replace the timer motor.
3. Shorted ON/FILL-OFF/DRAIN switch. Check the voltage between the BLACK and WHITE/GREEN connections on the ON/FILL - OFF/DRAIN switch in the “ON” position. If it does not read 120 volts, replace the switch.

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

1. Loose wire connection to microswitch, relay, or contactor. Tighten wires as required.
2. Faulty wash cam microswitch. During a wash cycle, check the voltage between the ORANGE and BLACK/ORANGE wires on the wash microswitch. If it reads 120 volts, the switch is open and should be replaced.
3. Faulty NORMAL/DELIME switch. During the wash cycle, check the voltage between the two BLACK/ORANGE wires (not the jumper). If it reads 120 volts, replace the NORMAL/DELIME switch.
4. Faulty control relay. Check the voltage across relay contacts #7 and #4. If it measures 120 volts during the wash cycle, replace the relay.
5. Faulty wash relay. Check the voltage at the relay coil between the ORANGE/BLACK and WHITE wires. If you read 120 volts, then the coil is faulty. Replace the wash relay.

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

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

Problem: Wash motor runs continuously.

1. NORMAL/DELIME switch is in “DELIME” position. Place the switch in the “NORMAL” position.
2. Wash relay welded closed. Turn the machine off. If the wash relay doesn’t release, replace contactor.
3. Cam timer stalled in the wash or rinse cycle. If the cam timer is not rotating, check the voltage to the timer motor. If there is no voltage when the door is closed, check the wires and/or replace the timer motor.
4. Wash motor microswitch is faulty. Tighten the connections, ensuring that the switch makes contact, replace if necessary.

SECTION 4: TROUBLESHOOTING

COMMON PROBLEMS

Problem: Dishmachine runs with the door open.

1. The door switch may be shorted out. With the machine off, open the doors, and with both wires to the door switch unplugged, measure the continuity between the wires on the switch. If there is continuity, replace the switch.
2. Faulty wash relay. Turn the machine off. If the wash relay does not release, replace it.
3. Faulty control relay. With the power off, remove the WHITE/RED and BLACK/YELLOW wires form the control relay terminals #9 and #6. Measure the continuity between the terminals. If there is continuity, replace the relay.

Problem: Low wash water pressure.

1. Water level is too low. Increase the fill time, or decrease the drain time, and verify that incoming water pressure is 20 ± 5 PSI.
2. Sump strainer clogged. Clean and re-install.
3. Obstruction in either the wash pump housing or the wash manifold. Disassemble and clear obstruction.
4. Clogged wash arm nozzles. Remove the wash arms, clean the nozzles, then re-install.

Problem: Dishmachine keeps tripping the service breaker.

1. The power supply may be shorting to ground. Check for loose wires or burned connections.
2. Faulty door switch or detergent safety switch. Check for a loose or wet connection at the switch and wire connectors. Bypass the switch to verify that it is indeed the problem. Replace the switch if necessary.
3. Pump impeller jammed. Clear the impeller.
4. Wash motor faulty. Check the motor voltage and amperage draw. If amperage draw is over 12 amps, replace the motor.

Problem: Dishmachine will not drain.

1. Loose wire connection. Verify that all wire connections are tight.
2. Drain hole may be obstructed. Remove the obstruction.
3. Not enough time for unit to drain. Adjust the drain cam on the timer.
4. Drain rod bent or binding. Repair the rod, or replace as necessary.
5. Faulty drain microswitch on the cam timer. With the power off and the drain cam in the “home” position, remove the WHITE/YELLOW wire from the microswitch. Measure the continuity between the ORANGE wire on the microswitch and the tab that the WHITE/YELLOW wire was connected to. If there is no continuity, replace the switch.

Problem: Dishmachine will not hold water.

1. Faulty drain ball. Replace as necessary.
2. Drain hole may be obstructed. Remove the obstruction.
3. Drain rod bent or binding. Repair the rod, or replace as necessary.

Problem: Sanitizer pump runs continuously.

1. Shorted prime switch. If there is not 120 volts between the GREY and WHITE/RED wires to the prime switch, replace it.
2. Shorted sanitizer microswitch on the cam timer. If there is not 120 volts between the ORANGE and GREY wires on the sanitizer microswitch when the switch is out of the “home” position, replace the switch.

Problem: Sanitizer pump does not run during the cycle, but does run when primed.

1. Loose or broken wire. Verify that all wires are whole and that their connections are tight.
2. Faulty sanitizer microswitch on the cam timer. With the sanitizer cam in the “home” position, measure the voltage between the ORANGE and GREY wires on the microswitch. If it reads 120 volts, replace the microswitch.

Problem: Prime switch does not activate the sanitizer pump.

1. Faulty prime switch. With the prime switch in the prime position, check for voltage between the GREY and the WHITE/RED wires to the prime switch. If it reads 120 volts, replace the switch.
2. Faulty delime switch. With the delime switch in the DELIME position, check for voltage between the WHITE/BLACK and

WHITE/RED wires to the delime switch. If it reads 120 volts, replace the switch.

Problem: Sanitizer pump doesn't run during the cycle or through the prime switch.

1. Loose sanitizer pump motor wire. Verify and tighten connections to the motor.
2. Faulty sanitizer pump motor. If you read 120 volts at the sanitizer motor terminals during the sanitizer feed cycle, replace motor.

Problem: Detergent not feeding, rinse aid feeds correctly.

1. Misadjusted cam. Adjust the detergent cam on the timer.
2. Faulty detergent microswitch on the cam timer. With the detergent cam in the "home" position, measure voltage between ORANGE and GREY/WHITE wires. If it reads 120 volts, replace the microswitch.

Problem: Rinse aid not feeding, detergent feeds correctly.

1. Misadjusted cam. Adjust the rinse aid cam on the timer.
2. Faulty rinse aid microswitch on the cam timer. With the rinse aid cam in the "home" position, measure the voltage between the ORANGE and ORANGE/YELLOW wires. If it reads 120 volts, replace the microswitch.

SECTION 4: TROUBLESHOOTING

XSP COMMON PROBLEMS

XSP UNITS ONLY!

Problem: ES-2000XSP/ES-2000XSP-PH Machine will not run. Wash motor will run if wash relay is depressed manually (nothing else works).

1. Open detergent safety switch. With door closed and detergent capsule in place, measure for voltage between the WHITE/BLACK and ORANGE/BLUE wires at the safety switch. If it reads 115 volts, replace switch.
2. Faulty dispenser safety switch relay. Measure between the WHITE wire on terminal 4 and the WHITE wire on terminal 7 of the dispenser safety switch relay. If it reads 115 volts, replace relay.

Problem: ES-4000XSP/ES-4000XSP-PH Machine will not run. Wash motor will run if wash relay is depressed manually (nothing else works).

1. Open side door switch. With door closed, measure voltage between the BLUE wire and WHITE/BLACK wire on the door switch. If it reads 115 volts, replace switch.
2. Faulty side door safety switch relay. Measure between the BLACK wires on terminals 6 and 9 of the relay. If it reads 115 volts, replace relay. Measure between the WHITE/BLACK wire on terminal 4 and ORANGE/WHITE wire on terminal 7 of the relay. If it reads 115 volts, replace relay.

Problem: Solid product feeds continuously (Detergent or Rinse Aid).

1. Faulty solenoid valve. Replace diaphragm, clean valve.
2. Faulty detergent or rinse aid microswitch. Replace appropriate microswitch.

Problem: Excessive solid product consumption.

1. Cam timer not adjusted. Shorten dispense time on cam timer.
2. Feed water pressure too high. Reduce pressure at primary and secondary regulators.
3. Machine wash tank filled too high. Adjust fill cam time to reduce fill height. Water level in tank should be near the lower ring marking on the drain stopper.
4. Extremely high source water temperature. If over 170°F, turn down the water heater.

Problem: Detergent reservoir plugging frequently.

1. Dispenser flush time too low. Increase the flush time on the cam timer (cam 8).
2. Hard water is depositing scale in dispenser. Increase the amount of detergent to tie up water hardness. Install water softener in account.

Problem: 1/4” water distribution manifold leaks.

1. Tubing not secured properly. Pull out on tubing to seal connection. The internal o-ring seals the tube when tubing is pulled out away from the manifold.
2. Internal o-ring or red plastic sleeve is damaged. Replace manifold.
3. End of tubing not cut square. Remove tubing and recut the tube to make a clean, square end.

SECTION 5:
SERVICE PROCEDURES

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.

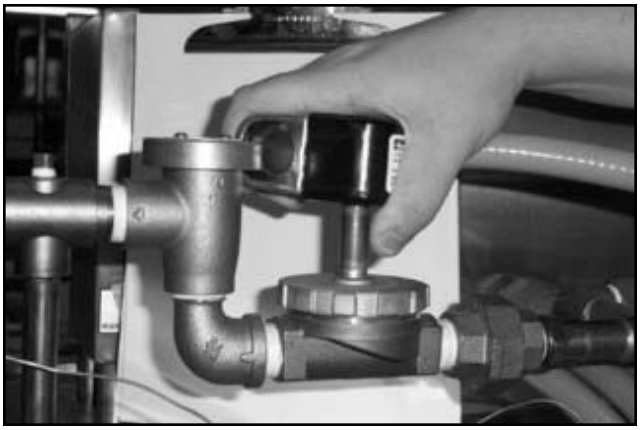
STEPS

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.



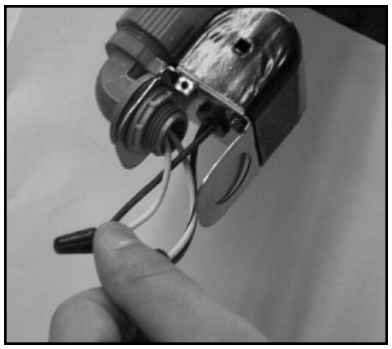
Removing the coil

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

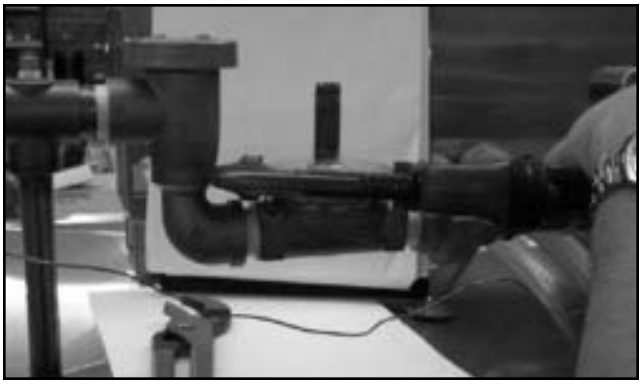
7. Using a pair of channel locks, gently loosen the conduit retaining ring for the conduit nut. Once it is loosened, use your fingers to unscrew and remove it.

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



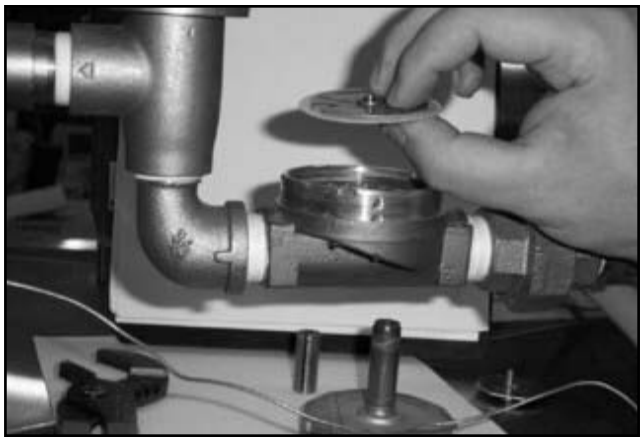
Loosening the valve bonnet

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.



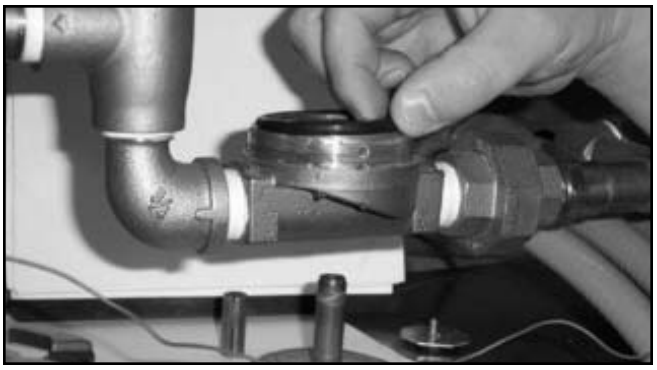
Removing the valve bonnet

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.

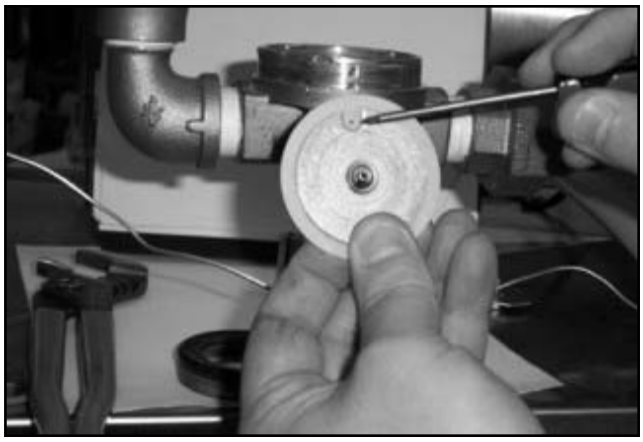


Removing the O-ring

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

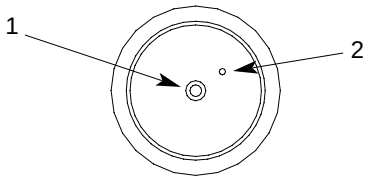
15. Examine the threads for the valve bonnet. Check them for scoring or signs of damage. Take a cloth and clean them out to remove any foreign particles that might get lodged in the threads and cause a leak. Severely damage threads should not be repaired; instead it is recommended that the entire valve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

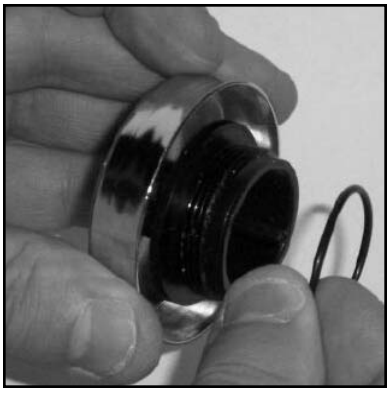


Examining the plunger seating surface

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
88530597	WASHER FLAT 5/16	05311-175-01-00
88530605	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
96035241	HAIR PIN	05315-002-15-39

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

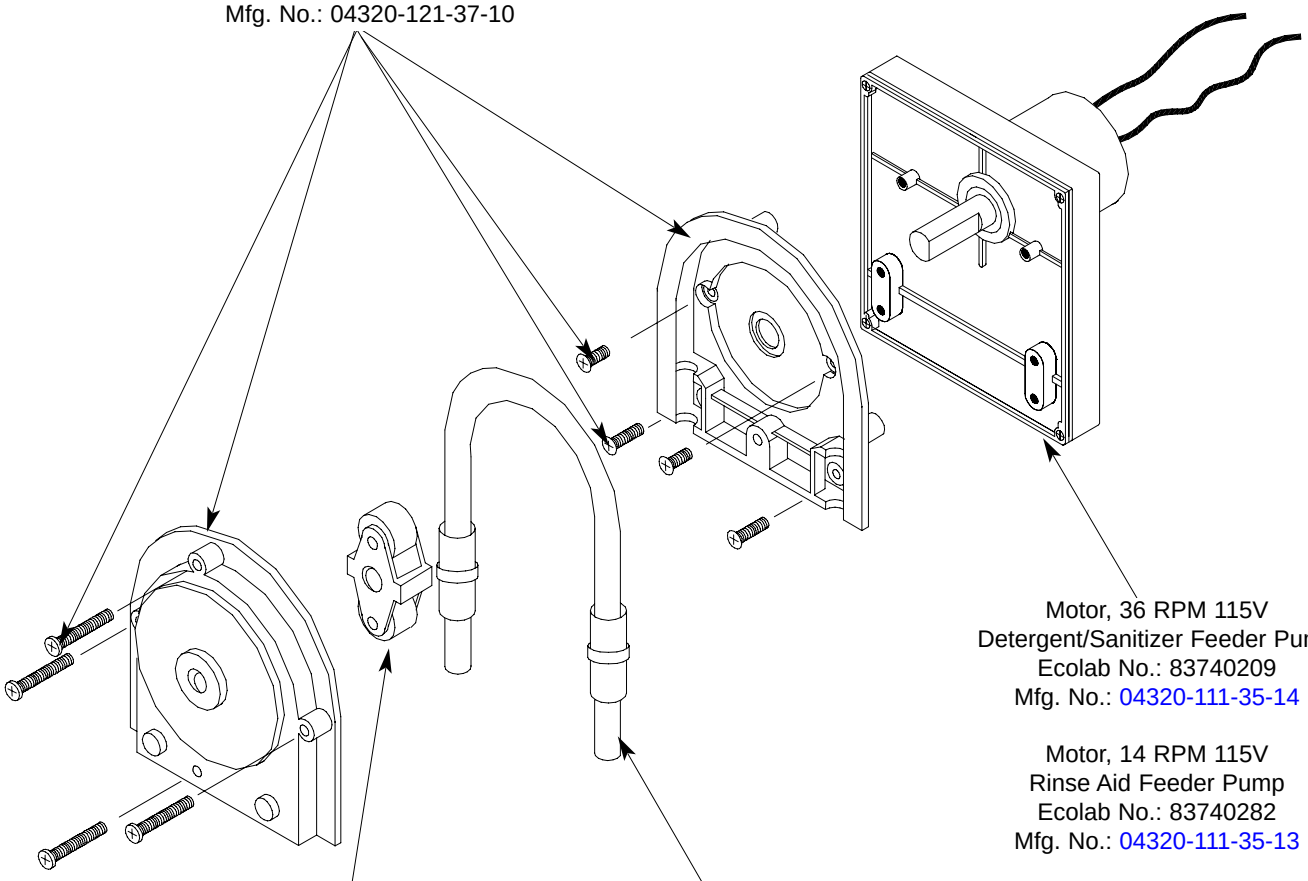
85015105	TUBING 1/4" CLEAR	05700-011-37-12
85015097	TUBING 1/4" RED	05700-011-37-14
85015089	TUBING 1/4" BLUE	05700-011-37-16
92661024	COPPER TUBE 1/4" 50 FT	N/A
92661016	COPPER TUBE 3/8" 25 FT	N/A
92661032	COPPER TUBE 1/2" 50 FT	N/A

TUBING MISC.

92630000	WASH TANK CONNECTOR, 45DEG 1/2" HOSE	04730-002-69-80
92002008	WASH TANK CONNECTOR, 18DEG 5/8" HOSE	04730-011-45-21
92630000	WASH TANK CONNECTOR, 45DEG 5/8" HOSE	04730-011-45-21
92180538	CHECK VALVE, ELBOW, RINSE LINE	04820-111-51-14
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

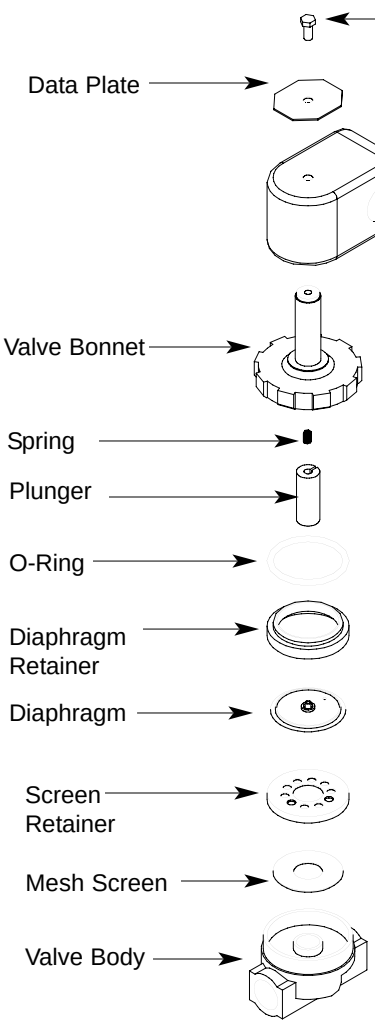
Clear Squeeze Tube, Rinse Aid
(Use with the white roller.)
Ecolab No.: 85017119
Mfg. No.: 05700-011-76-41

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 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

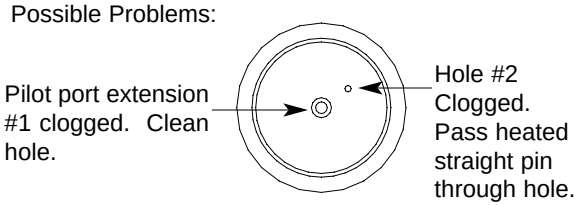
1/2” 110/240 Volt Solenoid Valve
Complete Assembly
Ecolab No.: 96580683
Mfg. No.: 04810-100-12-18

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

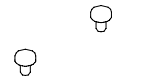
TO DISASSEMBLE - These valves may be taken apart by unscrewing the bonnet and the enclosing tube assembly from the valve body assembly. After unscrewing, carefully lift off the bonnet and enclosing tube assembly. Don’t drop the plunger. The o-ring seal and diaphragm cartridge can now be lifted out. Be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

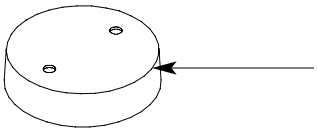
Possible Problems:



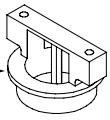
VACUUM BREAKER REPAIR PARTS KITS



Data Plate (3/4”)
Ecolab No.: 96850342
Mfg. No.: N/A



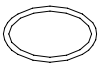
3/4” Cap with Screws
Ecolab No.: 96560230
Mfg. No.: N/A



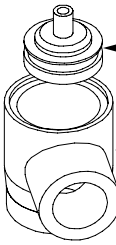
1/2” Brass Bonnet
Ecolab No.: 85284073
Mfg. No.: N/A

3/4” Brass Bonnet
Ecolab No.: 85280063
Mfg. No.: N/A

3/4” Plastic Bonnet
Ecolab No.: 96560222
Mfg. No.: N/A



O-Ring



Plunger

Body

Components of 1/4" Repair Kit
Ecolab No.: 85280071
Mfg. No.: N/A

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

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.: 4810-002-74-72

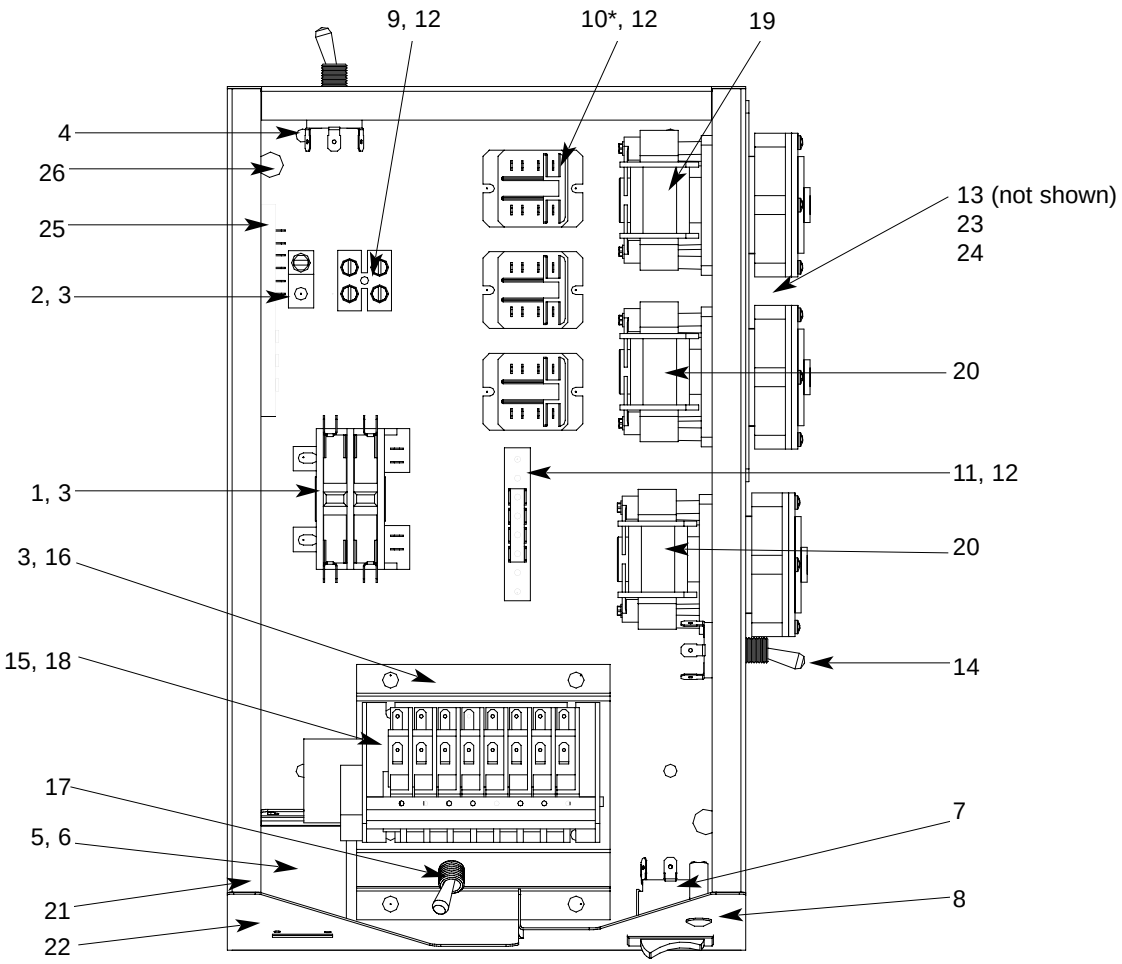
3/8” Complete Vacuum Breaker Assembly
Ecolab No.: 85242527
Mfg. No.: 04820-002-75-73

1/2" Repair Kit with Cap and Brass Bonnet.
Ecolab No.: 92001478
Mfg. No.: N/A

3/4" Repair Kit with Cap and Brass Bonnet.
Ecolab No.: 92001460
Mfg. No.: N/A

SECTION 6: PARTS SECTION

CONTROL BOX ASSEMBLY



Kit, Replacement Electrical Box with Decal
Ecolab No.: N/A
Mfg. No.: 06401-031-36-82

Microswitch, Replacement
Ecolab No.: 96584990
Mfg. No.: 05940-011-48-27

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Contactor, Motor	83008250	05945-109-05-69
2	1	Ground Lug	83118000	05940-200-76-00
3	7	Locknut, 10-24, S/S, Hex, with Nylon Insert	88429063	05310-373-01-00
4	1	Switch, ES-2000	83020701	05930-111-35-26
4	1	Switch, ES-4000	96582096	05930-011-48-21
5	1	Cycle Counter, 115V	83650044	05990-111-35-38
6	4	Screw, 4-40 x 1/4” Phillips Pan Head	96023832	05305-002-32-38
7	1	Power Switch, 2 Pole, 115V	83020461	05930-111-38-79
8	1	Light, Red, 115V	83630392	05945-504-07-18
9	1	Terminal Block	96025119	05940-500-09-61

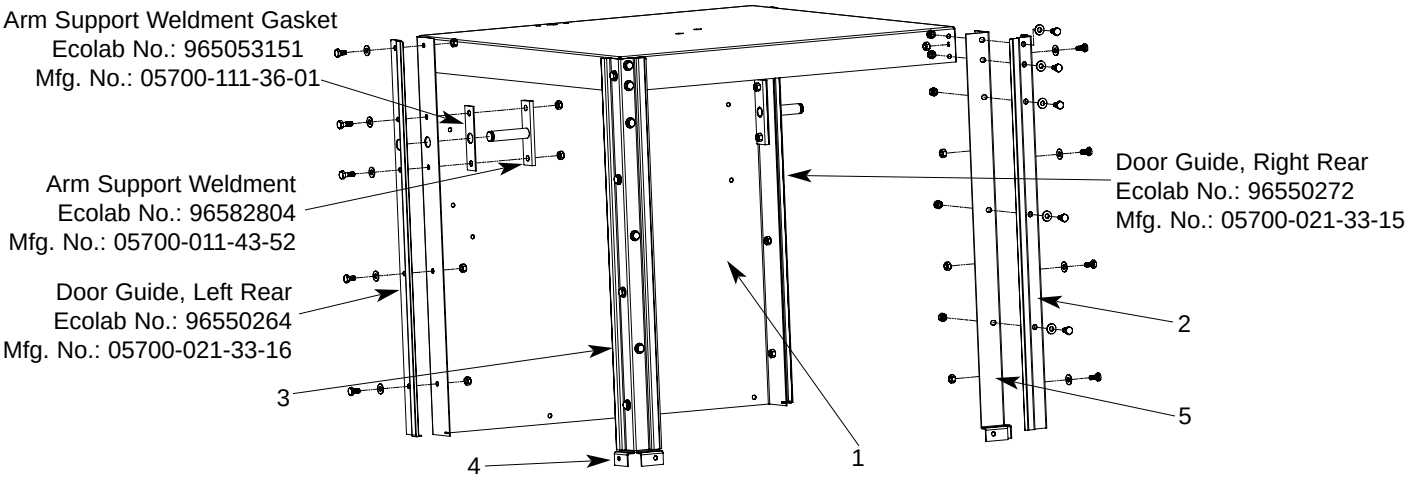
ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
	1	Terminal Block Spacer	96025127	05700-011-40-05
10	1	Control Relay (ES-2000)	96582895	05945-111-35-19
10	1	Control Relay (ES-2000-V Only)	96021159	05945-111-72-51
10*	3	Control Relay (ES-4000 Shown)	96582895	05945-111-35-19
11	1	Terminal Board	96584693	05940-021-94-85
12	9	Locknut, 6-32, S/S, Hex, with Nylon Insert	88460050	05310-373-03-00
13	1	Sanitizer Pump Prime Switch	83020164	05930-111-38-21
14	1	Detergent/Rinse Aid Pump Prime Switch	83020271	05930-011-35-27
15	1	Timer, 8 Cam	83010785	05945-111-35-32
16	1	Timer Mounting Bracket Assembly	96030408	05700-031-37-84
	1	Decal, Cam Timer	96584594	09905-011-37-21
		Decal, Delime/Normal	96850300	09905-011-34-96
17	1	Switch, Delime/Normal	83020149	05930-301-21-18
18	4	Screw, 6-32 x 3/8", Pan Head	88125497	05305-002-25-91
19	1	Chemical Feeder Pump Motor, 14 RPM, 115V	83740282	04320-111-35-13
20	2	Chemical Feeder Pump Motor, 36 RPM, 115V	83740209	04320-111-35-14
21	1	Control Box Weldment (ES-2000)	96584818	05700-031-67-69
21	1	Control Box Weldment (ES-4000)	96583646	05700-002-50-77
22	1	Decal, Control Box (ES-2000)	96558630	09905-021-34-92
22	1	Decal, Control Box (ES-4000)	96558648	09905-021-46-14
23	1	Shield, Drip	96031454	05700-031-82-56
24	1	Mounting Plate, Chemical Feeder Pump	84800341	05700-021-33-70
25	1	Timer, Interlock (ES-2000HHV only)	N/A	05945-002-34-29
26a	1	Switch, Reed (With Black Cable)	96027990	05930-002-36-80
26b	1	Switch, Reed (With Red Wire Leads)	96582054	05930-111-41-70
26c	1	Switch, Reed (With Yellow Wire Leads)	96024203	05930-011-47-50

Other parts not shown:

QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
4	Leg, Control Box	96584263	05700-011-33-71
2	Control Box Mounting Bracket (ES-2000-HH)	N/A	05700-002-90-37
4	Screw, 1/4"-20 x 2-3/4" Hex Head	N/A	05305-274-13-00
2	Cotter Pin, 3/32" x 3/4" Long	96027495	05315-207-01-00
1	Decal, Warning - Disconnect Power	96039821	09905-100-75-93
1	Cover, Control Box	96580584	05700-021-33-73
1	Grommet, 1/2" OD x 3/8" ID	96030341	05325-011-46-73
3	Stiffener, Tube, 17-3/8" Long	96572573	05700-002-66-49
1	Decal, DET/RINSE Prime	96583448	09905-011-34-95
1	Decal, Sanitizer Prime	96583455	09905-011-34-98
1	Decal, Power Connections	96028402	09905-011-47-64
1	Decal, Copper Conductors	96021365	09905-011-47-35
1	Switch Box, Side Weldment (for old style machines)	96584214	05700-021-46-86

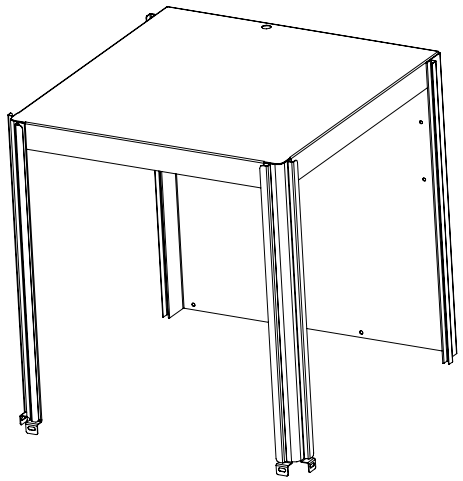
SECTION 6: PARTS SECTION

HOOD ASSEMBLIES ES-2000



ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Hood Weldment (ES-2000)	96581962	05700-031-37-57
1	1	Hood Weldment (ES-2000 27”)	N/A	05700-031-42-44
1	1	Hood Weldment (ES-2000XSP)	N/A	05700-002-72-56
1	1	Hood Weldment (ES-2000XSP-PH)	N/A	05700-031-62-84
2	1	Double Door Guide, Right Front (ES-2000, XSP, PH)	96550173	05700-021-33-19
2	1	Double Door Guide, Right Front (ES-2000 27”)	N/A	05700-031-42-50
3	1	Double Door Guide, Left Front (ES-2000, XSP, PH)	96550181	05700-021-33-20
3	1	Double Door Guide, Left Front (ES-2000 27”)	N/A	05700-031-42-49
4	1	Hood Support, Left Front (ES-2000, XSP, PH)	96580444	05700-021-33-18
4	1	Hood Support, Left Front (ES-2000 27”)	N/A	05700-031-42-51
5	1	Hood Support, Right Front (ES-2000, XSP, PH)	96550330	05700-021-33-17
5	1	Hood Support, Right Front (ES-2000 27”)	N/A	05700-031-42-52

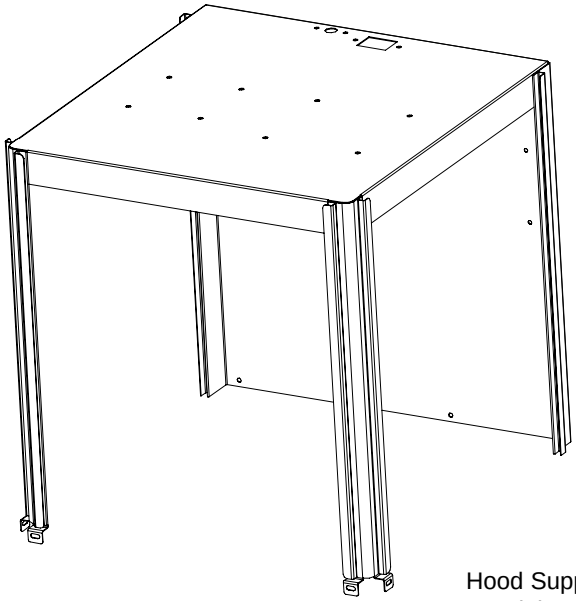
Hood support repair kit.
Ecolab No.: 96041520
Mfg. No.: N/A



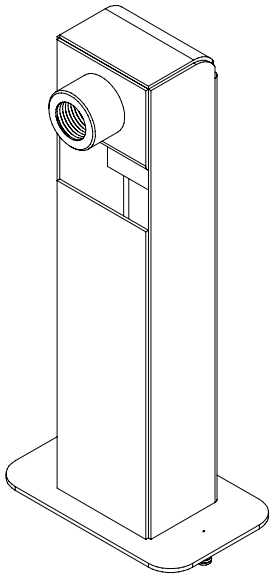
ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Hood, Single Piece Weldment (ES-2000)	N/A	05700-002-60-51
1	1	Hood, Single Piece Weldment (ES-2000 27”)	N/A	05700-002-83-09
1	1	Hood, Single Piece Weldment (ES-2000-V)	N/A	05700-002-65-39
1	1	Hood, Single Piece Weldment (ES-2000XSP)	N/A	05700-002-60-56
	2	Hood Support	N/A	05700-003-04-71
	4	Hood Block Spacer	96628102	05700-002-81-02

SECTION 6: PARTS SECTION

HOOD ASSEMBLY & ASSOCIATED PARTS ES-2000-CS

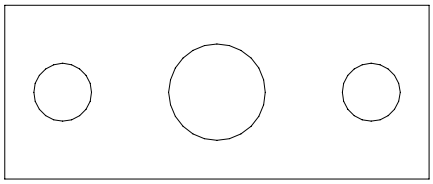


Hood Weldment
Ecolab No.: 96028824
Mfg. No.: 05700-002-22-24

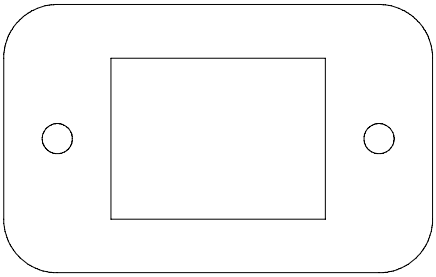


Air Gap Weldment
Ecolab No.: 96028063
Mfg. No.: 05700-002-12-91

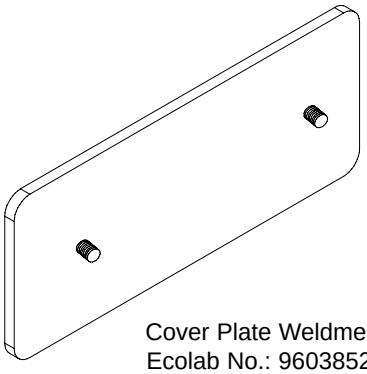
Hood Support Repair Kit
Ecolab No.: 96041520
Mfg. No.: N/A



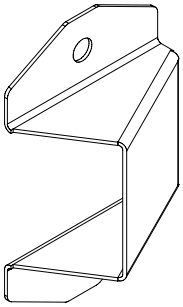
Gasket, Rinse Plumbing
Ecolab No.: 96020482
Mfg. No.: 5330-111-42-81



Air Gap Base Gasket
Ecolab No.: 96027925
Mfg. No.: 5330-002-14-48



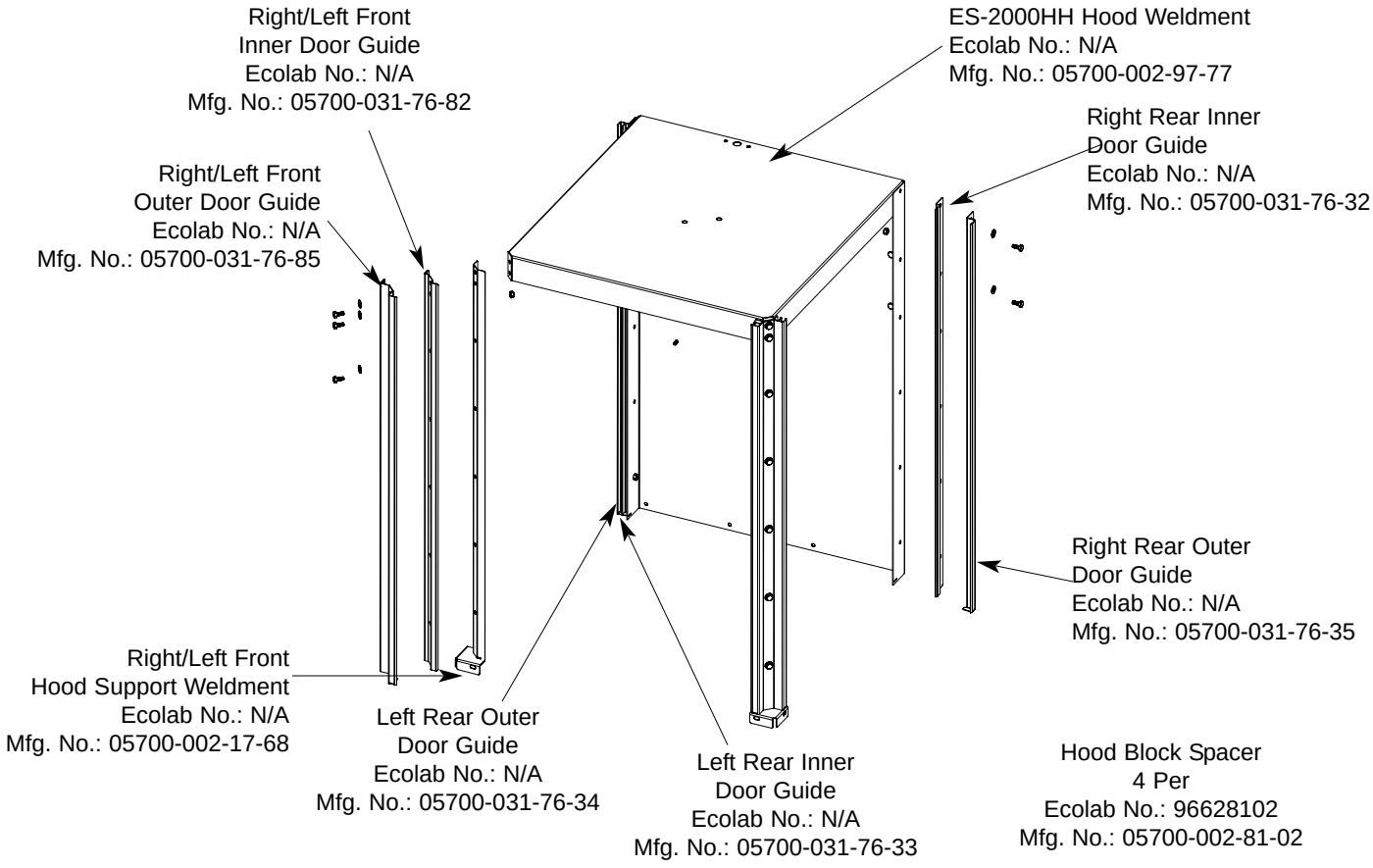
Cover Plate Weldment
Ecolab No.: 96038526
Mfg. No.: 05700-002-32-50

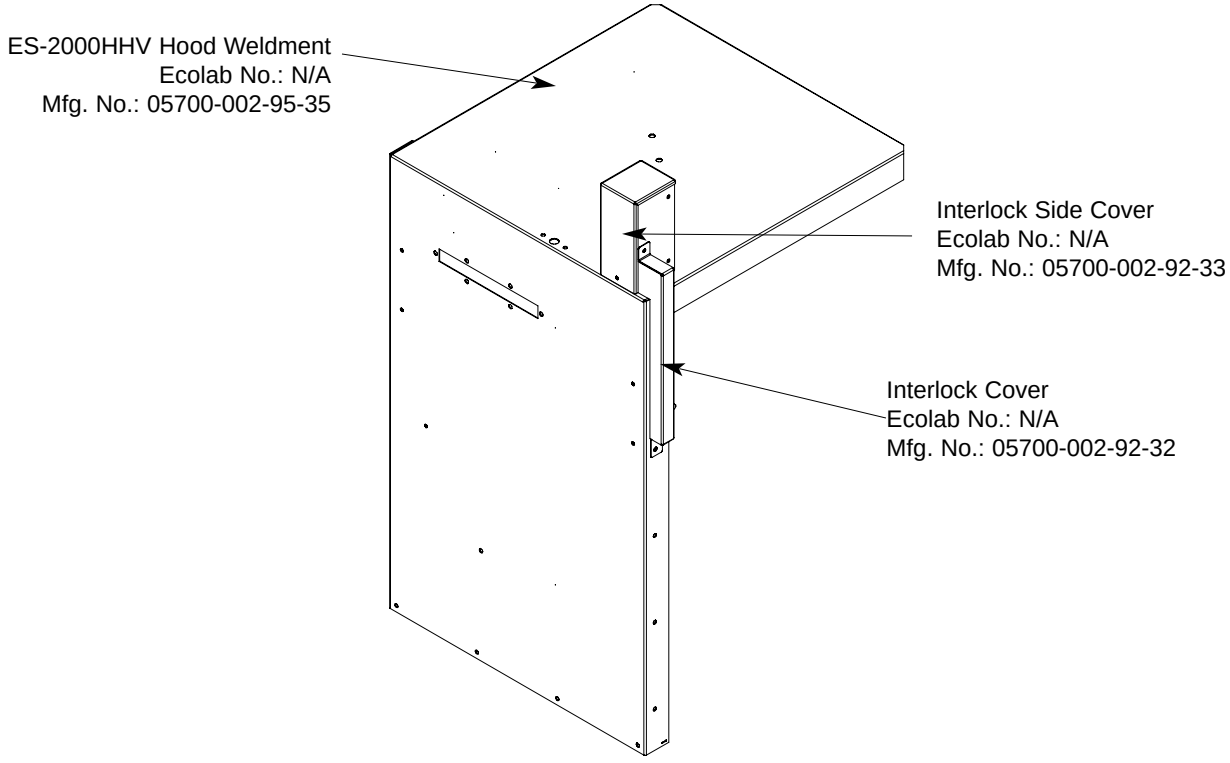


Air Gap Shield
Ecolab No.: 96028139
Mfg. No.: 05700-002-13-35

SECTION 6: PARTS SECTION

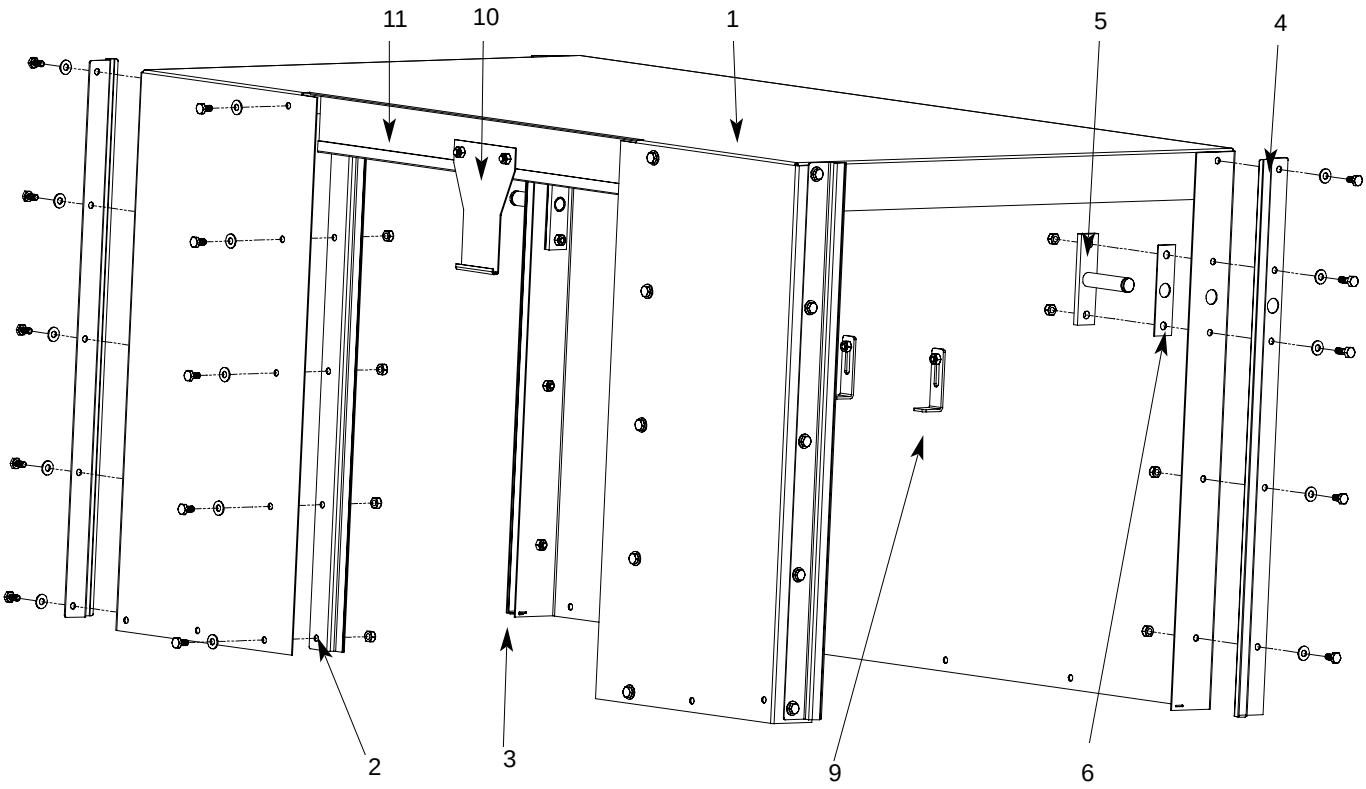
ES-2000HH SERIES HOOD ASSEMBLIES





SECTION 6: PARTS SECTION

HOOD ASSEMBLY ES-4000

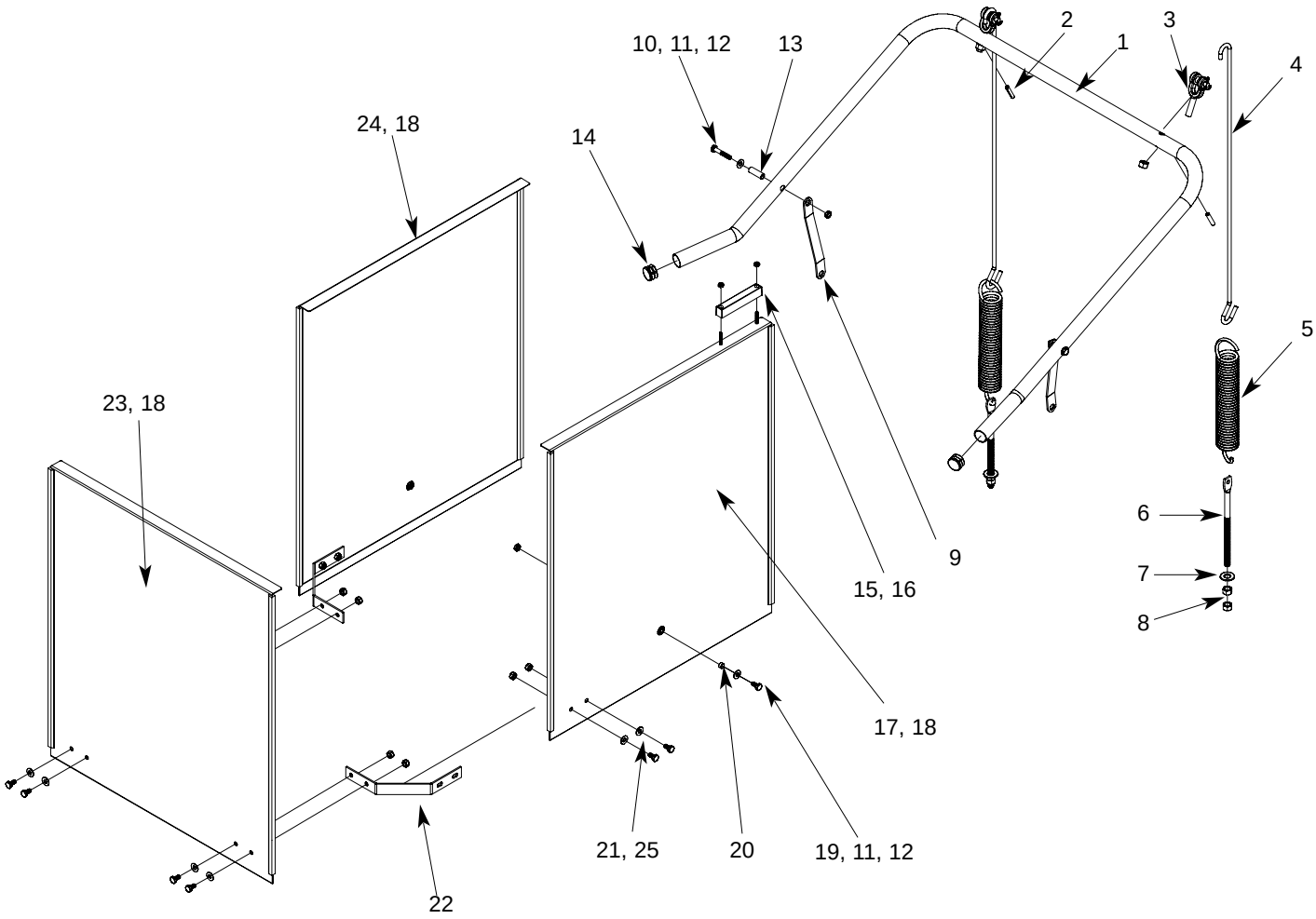


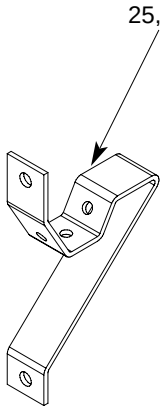
OLD STYLE: If your unit uses items 5 and 6, it is the old style hood weldment. Items 3 thru 6 are used only with the old style Hood Weldment. The hood will have the proper mounting holes in the rear door guides and in the hood itself.

NEW STYLE: If your unit does not use items 5 and 6, then it is the new style hood weldment. Items 12 thru 15 are used only with the new style Hood Weldment. The hood will have two places on the back of the hood to attach the cantilever support bracket assembly.

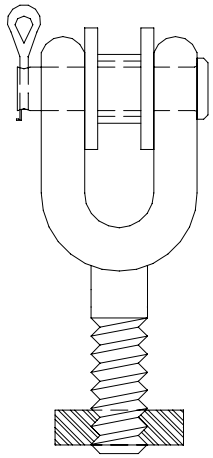
ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Hood Weldment, ES-4000 Old Style	96550389	05700-041-45-37
1	1	Hood Weldment, ES-4000 New Style	N/A	05700-002-60-60
1	1	Hood Weldment (ES-4000XSP) New Style	N/A	05700-002-60-62
2	4	Door Guide, ES-4000	96583570	05700-021-44-94
3	1	Door Guide, Left Rear	96550264	05700-021-33-16
4	1	Door Guide, Right Rear	96550272	05700-021-33-15
5	2	Arm Support Weldment	96582804	05700-011-43-52
6	2	Arm Support Weldment Gasket	96553151	05700-111-36-01
7*	1	Front Door Stop (Not Shown)	N/A	05700-021-60-27
8*	1	Stiffener, Hood Support (Not Shown)	96585609	05700-002-47-39
9	2	Manifold L-Bracket	96582986	05700-011-34-63
10	1	Door Catch	96580998	05700-011-46-50
11	1	Hood Stiffener	96585609	05700-002-08-24
12	1	Door Guide, Left Rear, New Style	96030457	05700-021-84-71
13	1	Door Guide, Right Rear, New Style	96030432	05700-021-84-70

CANTILEVER ARM (DOUBLE BRACKET MOUNT)





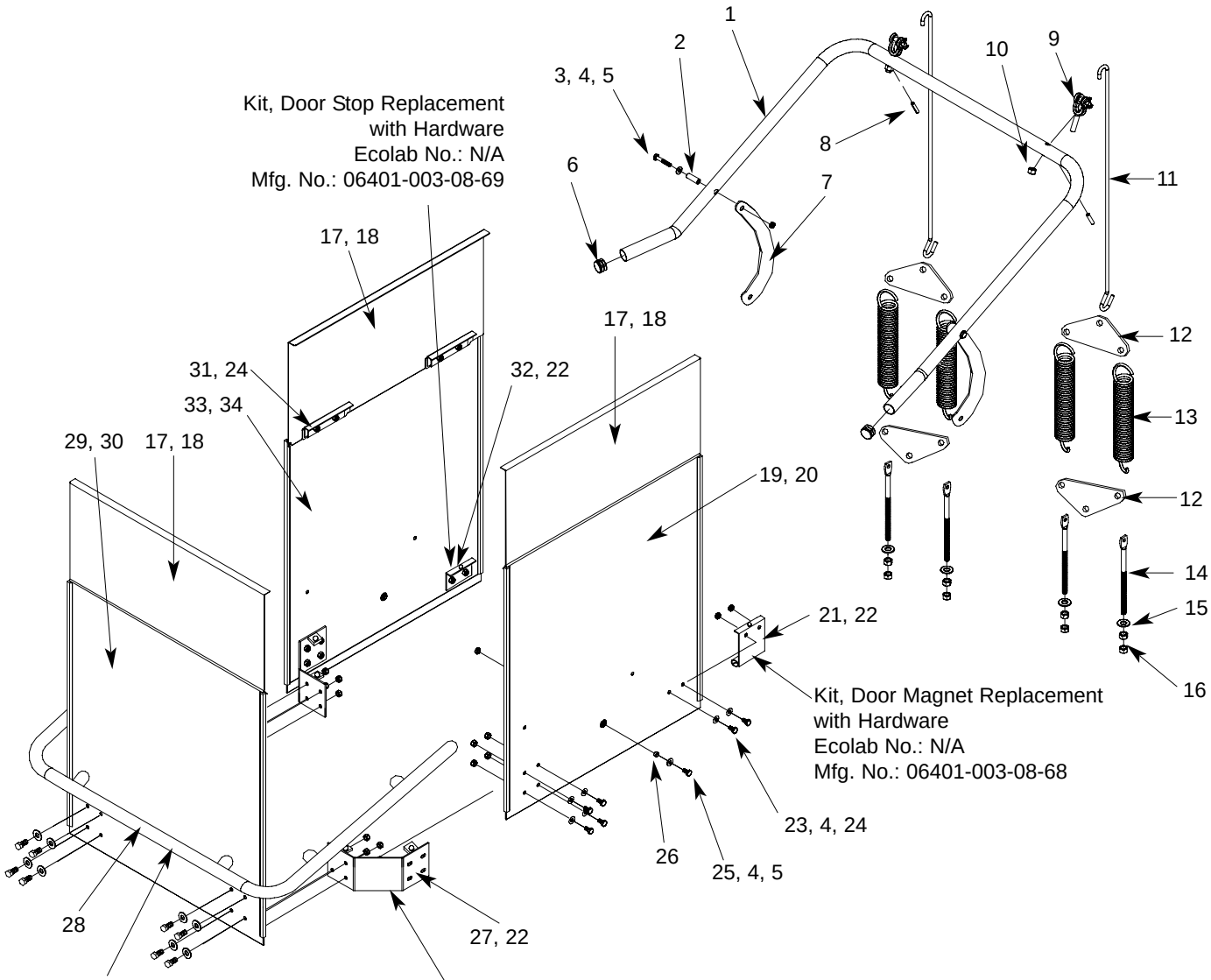
Detail of Yoke Assembly



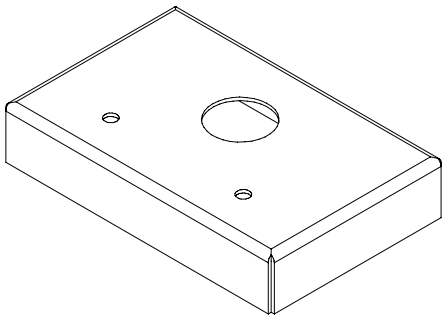
CANTILEVER ARM (DOUBLE BRACKET MOUNT) (CONTINUED)

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Arm, Cantilever ES-2000/ES-2000-CS	96581277	05700-031-50-67
1	1	Arm, Cantilever ES-2000 27”	N/A	05700-002-83-10
1	1	Arm, Cantilever ES-2000XSP-PH	96584552	05700-031-64-82
1	1	Arm, Cantilever ES-4000	96626065	05700-002-60-65
2	1	Spring Pin, 1/4” Dia. x 1 1/8” Long	96039185	05315-407-06-00
3	2	Yoke Assembly	96586615	05700-000-75-77
4	2	Rod, Spring (ES-2000-CS)	96584313	05700-001-28-18
12	2	Rod, Spring (ES-2000/ES-2000XSP-PH)	96582022	05700-002-29-38
12	2	Rod, Spring (ES-4000)	96584313	05700-001-28-18
5	2	Spring, Cantilever	96581285	05340-109-02-00
6	2	Bolt, Hanger Eye 3/8"-16	96582762	05306-956-05-00
7	2	Washer, Impeller 3/8” I.D. x 7/8” O.D.	96581376	05311-176-02-00
8	4	Nut, 3/8”-16 S/S Hex	88422068	05310-276-01-00
9	2	Cantilever Arm Connector	96582754	05700-011-90-99
10	2	Screw, 1/4"-20 x 1 1/2" Long S/S	88030069	05305-274-23-00
11	2	Washer, 1/4" ID S/S	88530589	05311-174-01-00
12	2	Locknut, 1/4”-20 S/S Hex with Nylon Insert, Low Profile	96026455	05310-374-02-00
13	2	Sleeve, Cantilever Arm	96582770	05700-000-85-69
14	2	Plug, Cantilever Arm	96022447	05340-011-35-00
15	1	Magnet, Reed Switch	96025200	05930-111-51-68
16	2	Locknut, 8-32 S/S Hex with Nylon Insert	88429105	05310-272-02-00
17**	1	Right Door Weldment with Studs (ES-2000-CS ONLY)	96028756	05700-002-22-25
18	6	Door, Guides	96552336	05700-111-33-59
19	2	Screw, 1/4"-20 x 1/2" Long S/S	88020433	05305-274-02-00
20	2	Spacer, PB Bolt	96582788	05700-000-29-40
21	4	Locknut, 1/4”-20 S/S Hex with Nylon Insert	88429113	05310-374-01-00
22	2	Door Connector Bracket	96582820	05700-021-33-39
23**	1	Door Only, Front (ES-2000-CS ONLY)	96028766	05700-002-20-09
24**	1	Door Only, Left Side (ES-2000-CS ONLY)	96028741	05700-002-20-08
25	2	Cantilever Arm Support Bracket	96581244	09515-003-15-64
26	6	Wear Button	96027743	05700-011-88-01

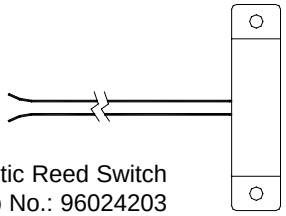
** Please refer to the pages entitled ES-2000 & ES-4000 for their door assemblies.


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25, 4, 5
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27, 22
Kit, Door Stop Replacement
with Hardware
Ecolab No.: N/A
Mfg. No.: 06401-003-08-69
Kit, Door Magnet Replacement
with Hardware
Ecolab No.: N/A
Mfg. No.: 06401-003-08-68
Kit, Front Door Handle Replacement
with Hardware
Ecolab No.: N/A
Mfg. No.: 06401-003-08-67
Kit, Door Connector Replacement
with Hardware
Ecolab No.: N/A
Mfg. No.: 06401-003-08-75

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Cantilever Arm	N/A	05700-031-92-44
2	2	Sleeve, Cantilever Arm	96582770	05700-000-85-69
3	2	Screw, 1/4"-20 x 1 1/2" Long Hex Head	88030069	05305-274-23-00
4	4	Washer, 1/4" ID S/S	88530589	05311-174-01-00
5	4	Locknut, 1/4"-20 S/S Low Profile with Nylon Insert	96026455	05310-374-02-00
6	4	Plug, Cantilever	96022447	05340-011-35-00
7	2	Connecting Link	N/A	05700-021-92-45
8	2	Spring Pin, 1/4" x 1 1/8" Long	96039185	05315-407-06-00
9	2	Yoke Assembly	96586615	05700-000-75-77
10	2	Nut, 3/8"-16 S/S Hex Locking	96581384	05310-256-04-00
11	2	Rod, Spring Connecting	N/A	05700-002-00-91
12	4	Plate, Spring Multiplier	N/A	05700-002-00-88
13	4	Spring, Cantilever Door	96552526	05340-111-35-22
14	4	Bolt, Cantilever Hanger Eye 3/8"-16	96582762	05306-956-05-00
15	4	Washer, Impeller	96581376	05311-176-02-00
16	8	Nut, 3/8"-16 S/S Hex	88422068	05310-276-01-00
*	3	Door, Upper Assemblies	N/A	05700-002-01-30
17	3	Door, Upper Weldment	N/A	05700-002-29-59
18	6	Glide, Upper Door	N/A	05700-002-00-83
*	1	Door, Lower, Right Assembly	N/A	05700-002-01-33
19	1	Door, Lower, Right	N/A	05700-031-76-80
20	2	Glide, Lower Door	N/A	05700-002-23-64
21	1	Door Stop Magnet Assembly	N/A	05700-002-25-08
*	1	Door Stop Magnet Weldment	N/A	05700-002-01-27
*	1	Magnet	96020656	05930-111-69-25
*	2	End Cap	96024021	05700-011-60-92
22	6	Wear Button	96027743	05700-011-88-01
23	20	Screw, 1/4"-20 x 5/8"	88000013	05305-274-24-00
24	20	Locknut, 1/4"-20 S/S Hex with Nylon Insert	88429113	05310-374-01-00
25	2	Screw, 1/4"-20 x 1/2" Long Hex Head	88020433	05305-274-02-00
26	2	Spacer, PB Bolt	96582788	05700-000-29-40
27	2	Bracket, Door Connector	N/A	05700-001-99-39
28	1	Handle, Front Door Weldment	N/A	05700-002-00-90
*	1	Door, Lower, Front Assembly	N/A	05700-002-01-31
29	1	Door, Lower, Front	N/A	05700-031-76-77
30	2	Glide, Lower Door	N/A	05700-002-23-64
31	6	Door Stop Weldment	N/A	05700-002-29-60
32	1	Door Stop	N/A	05700-002-00-84
*	1	Door, Lower, Left Assembly	N/A	05700-002-01-32
33	1	Door, Lower, Left	N/A	05700-031-76-79
34	2	Glide, Lower Door	N/A	05700-002-23-64
35*	2	Cantilever Arm Support Bracket	96581244	09515-003-15-64
36*	6	Wear Button	96027743	05700-011-88-01



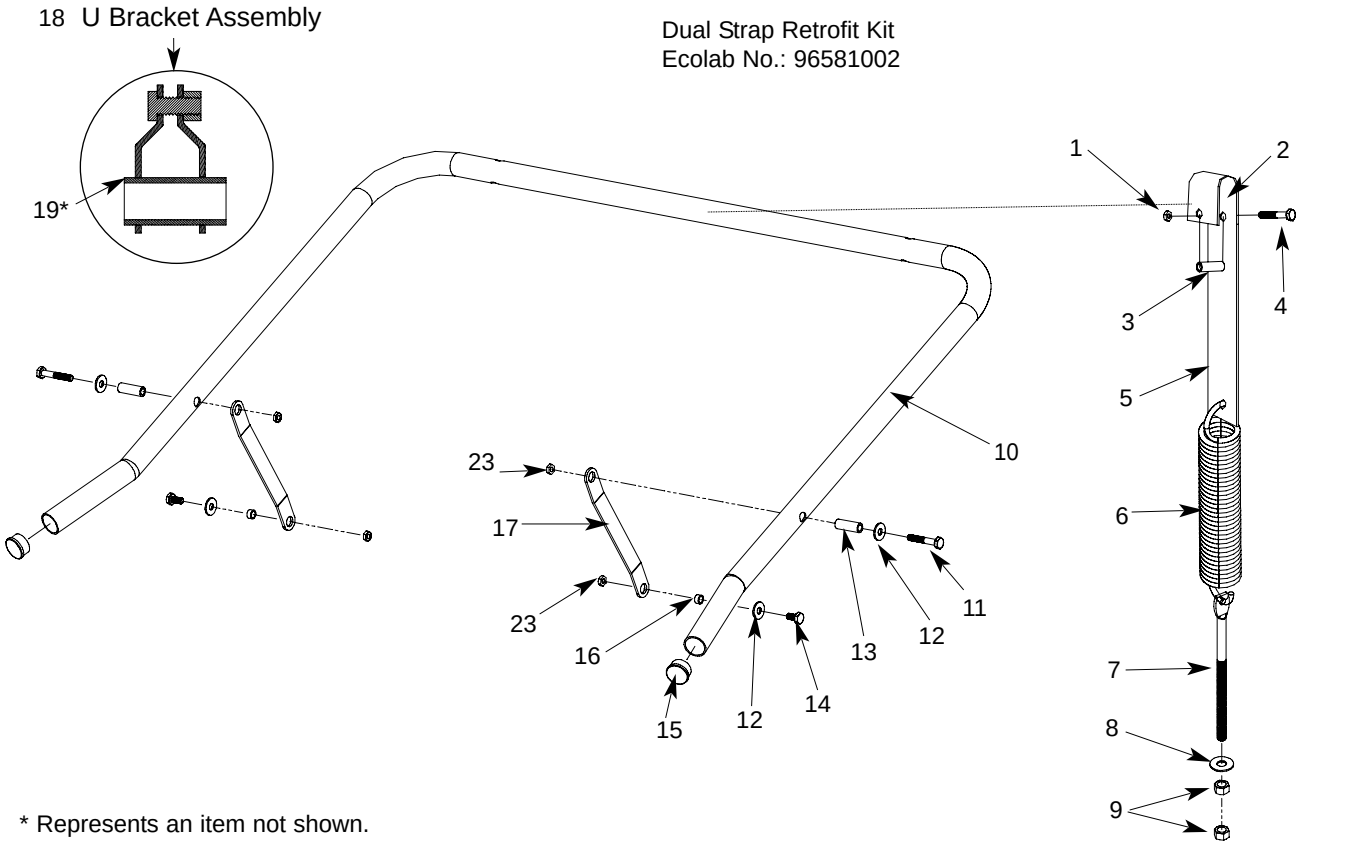
Switch Box, Door Weldment
Ecolab No.: N/A
Mfg. No.: 05700-002-12-45



Magnetic Reed Switch
Ecolab No.: 96024203
Mfg. No.: 05930-011-47-50

SECTION 6: PARTS SECTION

CANTILEVER ARM ASSEMBLY (SINGLE BRACKET MOUNT)



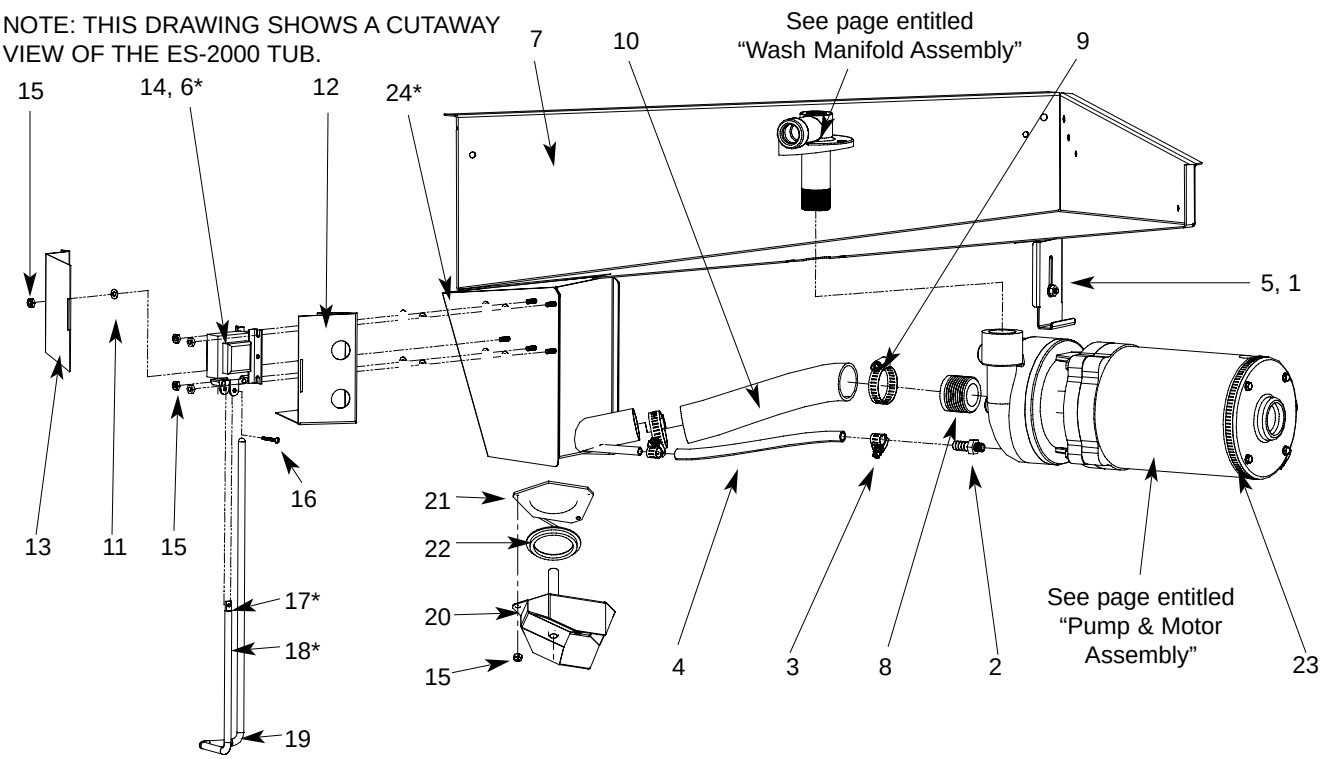
* Represents an item not shown.

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Hex Nut, 1/4”-20 with Nylon Insert	88429113	05310-374-01-00
2	1	Wear Strip, UHMW	96582945	05700-011-34-50
3	1	Sleeve	96584891	05700-000-01-53
4	1	Bolt, 1/4”-20 x 1-3/4”, S/S	88322052	05305-274-01-00
5	1	Link, Spring to Cantilever Arm	96582846	05700-021-34-49
6	1	Cantilever Spring	96552526	05340-111-35-22
7	1	Cantilever Eye Bolt, ES-2000	96582762	05305-956-05-00
7	1	Cantilever Eye Bolt, ES-4000	96558705	05700-011-45-99
8	1	Washer, Impeller	96581376	05311-176-02-00
9	2	Nut, 3/8”-16, Hex, S/S	88422068	05310-276-01-00
10	1	Cantilever Arm, ES-2000	96582879	05700-031-34-35
10	1	Cantilever Arm, ES-2000 27”	N/A	05700-031-42-38
10	1	Cantilever Arm, ES-4000	96584297	05700-031-45-38
11	2	Hex Head Bolt, 1/4”-20 x 1-1/2”, S/S	88020433	05305-274-23-00
12	4	Washer, Flat, 1/4”, S/S	88530589	05311-174-01-00
13	2	Cantilever Arm Sleeve	96582770	05700-000-85-69
14	2	Hex Head Bolt, 1/4”-20 x 1/2”, S/S	88322078	05305-274-02-00
15	2	Endcap, Cantilever Arm	96022447	05340-011-35-00
16	2	Bolt Spacer	96582788	05700-000-29-40
17	2	Cantilever Arm Lever	96582754	05700-011-90-99
18	2	U-Bracket Assembly	96582838	N/A
19*	2	Retaining Ring	96582812	05340-011-33-62

SECTION 6: PARTS SECTION

TUB ASSEMBLY ES-2000

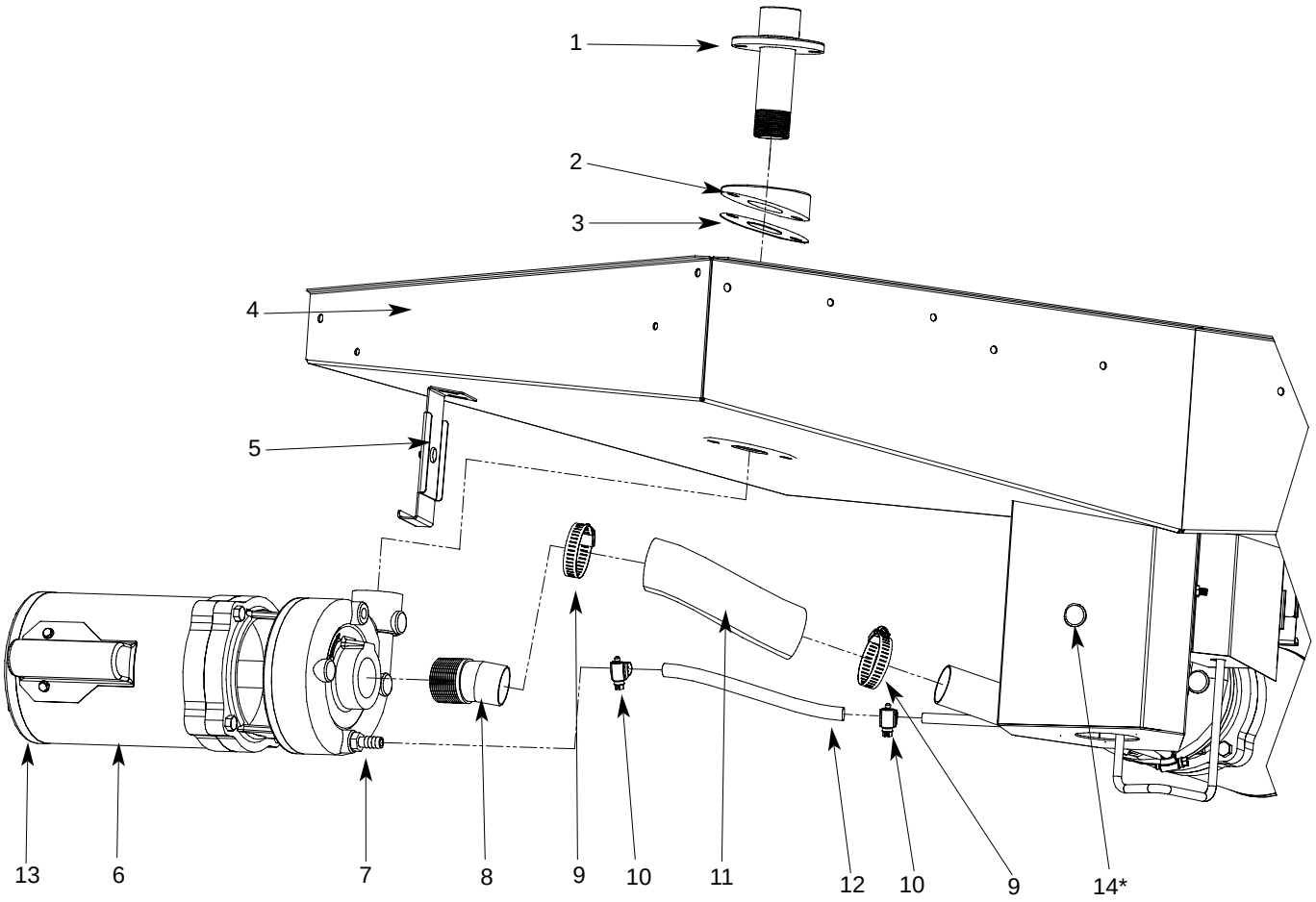
NOTE: THIS DRAWING SHOWS A CUTAWAY VIEW OF THE ES-2000 TUB.



ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	2	Locknut, 1/4"-20 with Nylon Insert	88429113	05310-374-01-00
2	1	Fitting, 3/8" Barbed x 1/8" Male NPT	85196004	04730-111-35-02
3	2	Hose Clamp, Mini, 7/16" - 25/32"	87301131	04730-011-36-05
4	1	Hose, Clear PVC, 3/8" ID x 5/8" OD, 8" Long	96550439	05700-111-33-53
5	1	Pump Support Bracket Assembly	96042775	05700-021-66-48
6	1	Solenoid Stop (Not shown)	96570189	05700-000-66-40
7	1	Wash Tub Weldment, ES-2000	96580436	05700-041-36-75
7	1	Wash Tub Weldment, S-2000-HH	N/A	06401-241-36-75
7	1	Wash Tub Weldment, ES-2000XSP-PH	N/A	05700-002-50-75
7	1	Wash Tub Weldment, ES-2000 27"	96026067	05700-041-42-39
8	1	Pump Inlet Nipple	96580923	05700-021-33-50
9	2	Hose Clamp, 1-5/16" - 2-1/4"	87301362	04730-719-01-37
10	1	Hose, Clear Reinforced PVC, 8" Long	96583018	05700-111-33-52
11	1	Washer, 1/4"-20 ID, Flat	88530589	05311-174-01-00
12	1	Drain Solenoid Box	96581954	05700-021-37-53
13	1	Drain Solenoid Box Cover	96580634	05700-031-33-27
14	1	Drain Solenoid	83999078	04810-200-11-00
15	8	Locknut, 10-24 with Nylon Insert	88429063	05310-373-01-00
16	1	Hair Pin, 1/2" to 3/4"	96035241	05315-002-15-39
*	1	Drain Link Assembly	N/A	05700-002-38-20
17	1	Nut, Hex, 5/16"-18	88422043	05310-275-01-00
18	1	Drain Link Connector	96028261	05700-002-38-10
19	1	Drain Solenoid Link	96582994	05700-031-34-45
20	1	Spillway Weldment	96583000	05700-031-37-86
21	1	Spillway Gasket	96582903	05700-111-34-52
22	1	Drain Seat Insert	96582929	05700-021-34-38
23	1	Clamp, 5 5/8" - 6"	87301503	04730-011-34-90
24	1	Thermometer, Screw-In Type (Not shown)	89009138	06685-111-35-30

SECTION 6: PARTS SECTION

TUB ASSEMBLY (LEFT FRONT VIEW) ES-4000

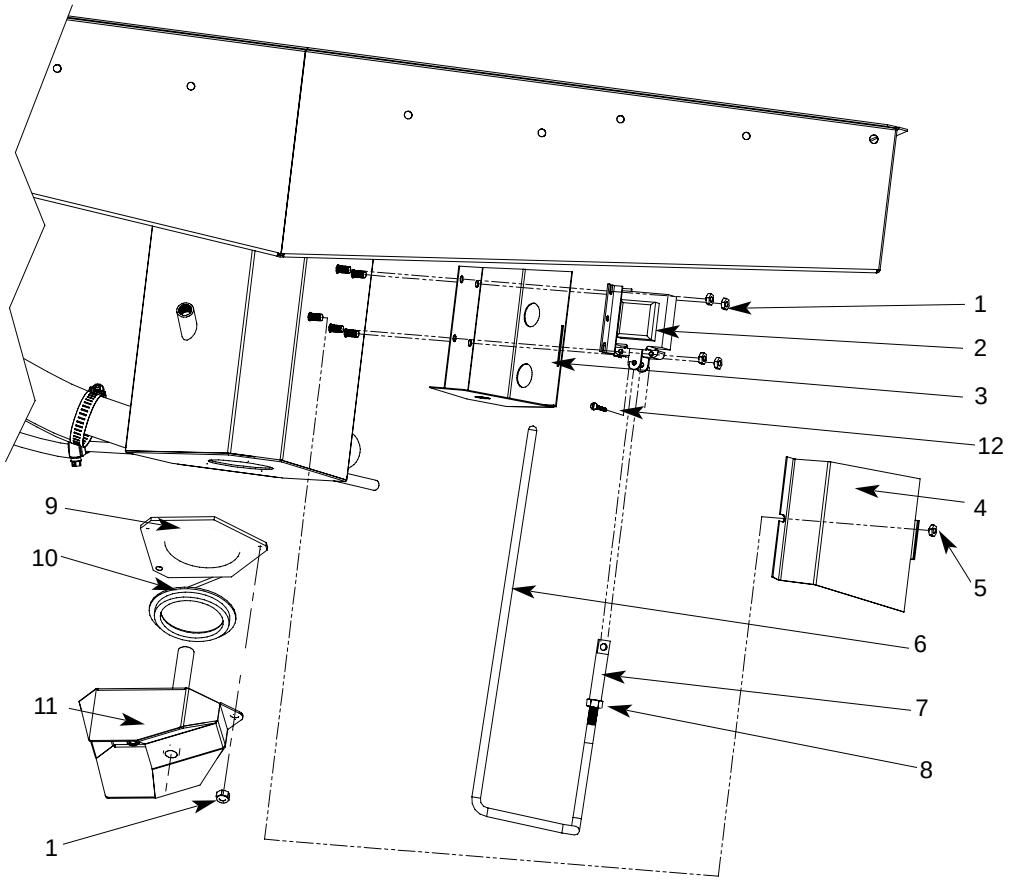


* Represents an item not shown.

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	2	Lower Wash Manifold Weldment	96583596	05700-031-46-00
2	2	Casting, Manifold Wedge	96583497	09515-011-46-61
3	4	Manifold Gasket	96552864	05700-111-35-03
4	1	Wash Tub Weldment	96583331	05700-041-45-24
5	2	Pump Support Bracket Assembly	96042775	05700-021-66-48
6	2	Wash Motor	83710418	06105-121-35-18
7	2	Fitting, 3/8” Barbed x 1/8” Male NPT	85196004	04730-111-35-02
8	2	Pump Inlet Nipple	96581202	05700-021-46-84
9	4	Hose Clamp, Regular, 1-5/16” - 2-1/4”	87301362	04730-719-01-37
10	4	Hose Clamp, Mini, 7/16” - 25/32”	87301131	04730-011-36-05
11	2	Hose, 3/8” ID x 8” Long	96550439	05700-111-33-53
12	2	Hose, 1-1/2” ID x 8” Long	96583018	05700-111-33-52
13	2	Hose Clamp, Regular, 5-5/8” - 6”	87301503	04730-011-34-90
14*	1	Thermometer, Screw-In Type	89009138	06685-111-35-30

SECTION 6: PARTS SECTION

TUB ASSEMBLY (RIGHT FRONT VIEW) ES-4000



ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	7	Locknut, 10-24 S/S Hex with Nylon Insert	88429063	05310-373-01-00
2	1	Drain Solenoid	83999078	04810-200-11-00
3	1	Drain Solenoid Box	96581954	05700-021-37-53
4	1	Drain Solenoid Box Cover	96580634	05700-031-33-27
5	1	Locknut, 1/4”-20 S/S Hex with Nylon Insert	88429113	05310-374-01-00
*	1	Drain Link Assembly	N/A	05700-002-38-21
6	1	Drain Link	96580188	05700-031-46-52
7	1	Drain Link Connector	96028261	05700-002-38-10
8	1	Hex Nut, 5/16”-18	88422043	05310-275-01-00
9	1	Spillway Gasket	96582903	05700-111-34-52
10	1	Drain Seat Insert (Stainless Ring)	96582929	05700-021-34-38
11	1	Spillway Weldment	96583000	05700-031-37-86
12	1	Hair Pin, 1/2” to 3/4”	96035241	05315-002-15-39

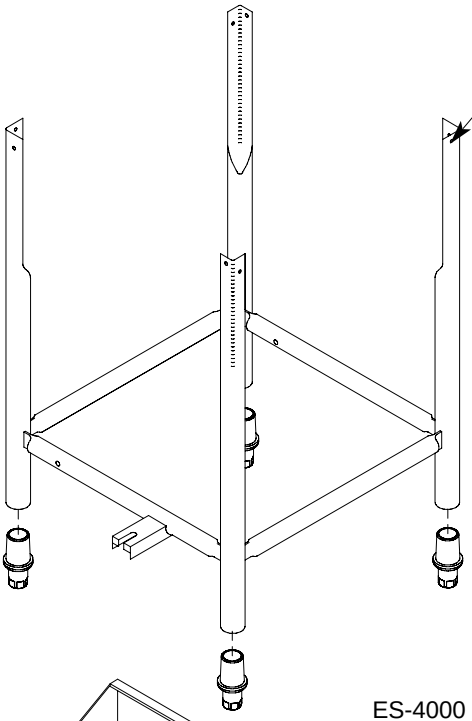
SECTION 6: PARTS SECTION

ES-2000 & ES-4000 FRAME & ACCUMULATOR ASSEMBLIES

ES-2000XSP-PH Frame Weldment
Double Bracket
Ecolab No.: N/A
Mfg. No.: 05700-002-23-31

ES-2000XSP-PH
Casting, Bottle Holder
Ecolab No.: 96580527
Mfg. No.: 09515-031-59-73

ES-2000XSP-PH
Bottle Holder Assembly Weldment
Ecolab No.: N/A
Mfg. No.: 05700-021-49-31



ES-2000 Frame Weldment
Ecolab No.: 96550595
Mfg. No.: 05700-021-36-71

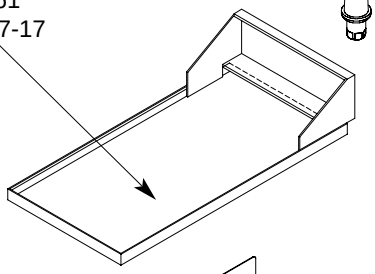
ES-2000/ES-2000HH Frame Weldment
Double Bracket
Ecolab No.: 96034715
Mfg. No.: 05700-002-60-41

ES-2000-V Frame Weldment
Double Bracket
Ecolab No.: N/A
Mfg. No.: 05700-002-97-85

ES-2000 27” Frame Weldment
Ecolab No.: 96039409
Mfg. No.: 05700-021-42-31

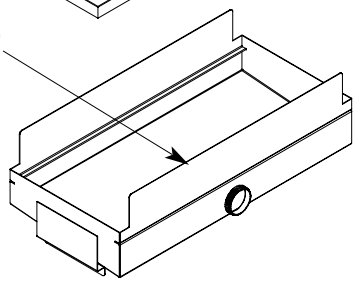
ES-2000 27” Frame Weldment
Double Bracket
Ecolab No.: N/A
Mfg. No.: 05700-002-88-06

Accumulator Strainer
ES-2000 & ES-4000
Ecolab No.: 96582861
Mfg. No.: 05700-021-47-17

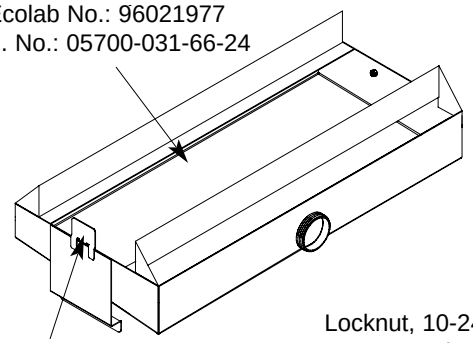


ES-2000 Accumulator
Weldment
Ecolab No.: 96580600
Mfg. No.: 05700-031-62-90

ES-2000-V Accumulator
Weldment
Ecolab No.: 96580600
Mfg. No.: 05700-002-19-05



ES-4000 Accumulator Weldment
Ecolab No.: 96021977
Mfg. No.: 05700-031-66-24

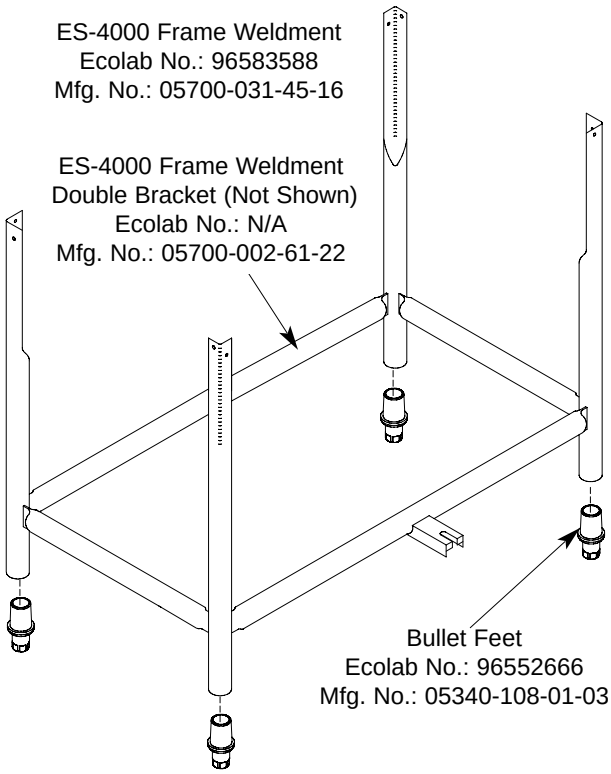


ES-4000 Accumulator Stop Clip
Ecolab No.: N/A
Mfg. No.: 05700-011-49-11

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

ES-4000 Frame Weldment
Ecolab No.: 96583588
Mfg. No.: 05700-031-45-16

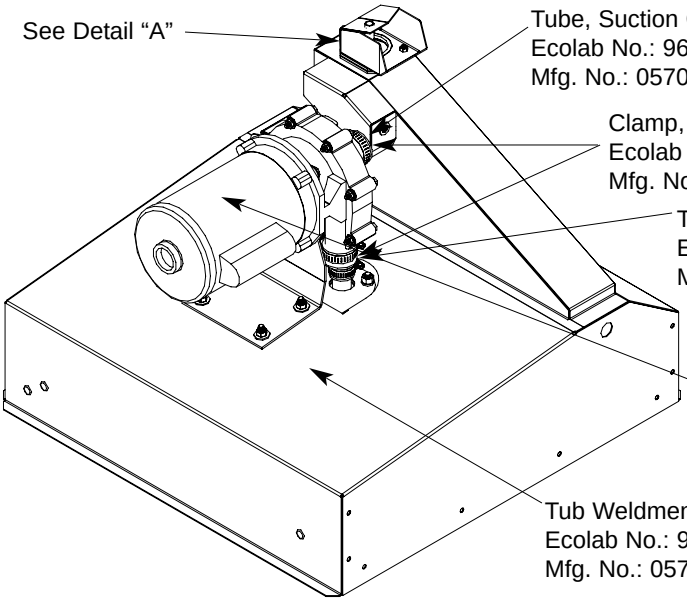
ES-4000 Frame Weldment
Double Bracket (Not Shown)
Ecolab No.: N/A
Mfg. No.: 05700-002-61-22



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

SECTION 6: PARTS SECTION

TUB & FRAME ASSEMBLIES ES-2000-CS



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

Refer to Motor & Pump Assembly Page

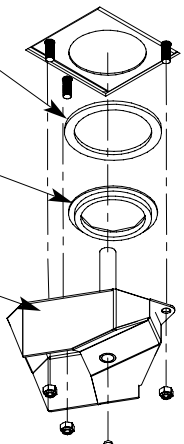
Tub Weldment
Ecolab No.: 96027941
Mfg. No.: 05700-002-15-67

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

*Fitting, Bulkhead Thermometer
Ecolab No.: 96582178
Mfg. No.: 05700-002-86-83

*Thermometer, Screw-In Type
Ecolab No.: 89009138
Mfg. No.: 06685-111-35-30

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

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

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

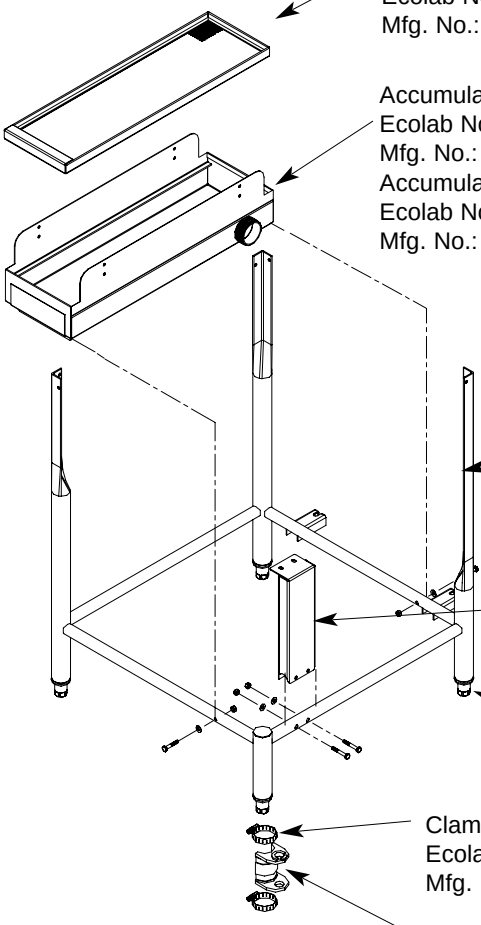
Nut, 5/16”-18 Hex
Ecolab No.: 88422043
Mfg. No.: 05310-275-01-00

Drain Solenoid
Ecolab No.: 83999078
Mfg. No.: 04810-200-11-00

Plate, Lower Control Box Front Weldment
Ecolab No.: 96582179
Mfg. No.: 05700-002-86-92

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

Accumulator Weldment
Ecolab No.: 96028717
Mfg. No.: 05700-002-19-05
Accumulator Lift Kit
Ecolab No.: 96582202
Mfg. No.: N/A



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

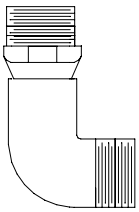
* Holder, Chemical Bottle
Ecolab No.: 96580535
Mfg. No.: 05700-002-75-63

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

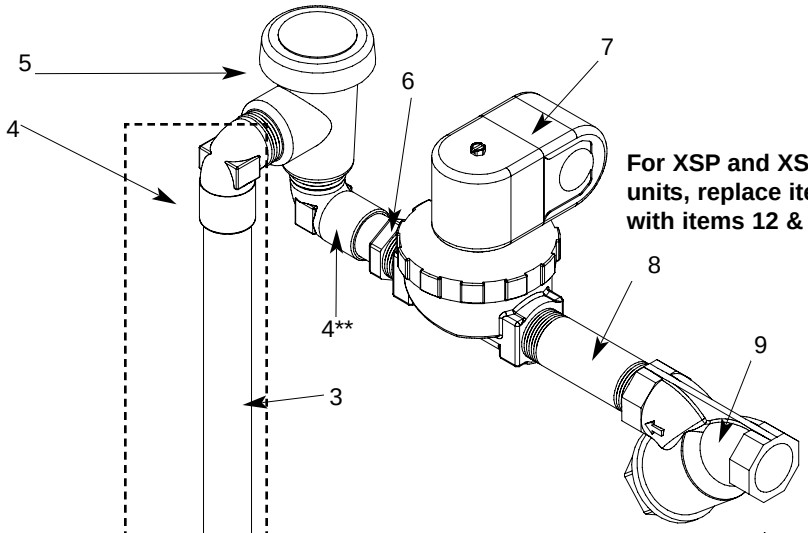
* Represents an item not shown.

SECTION 6: PARTS SECTION

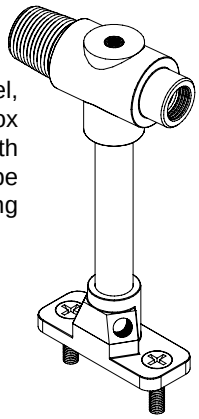
INCOMING PLUMBING ASSEMBLY ES-2000 & ES-4000 SERIES



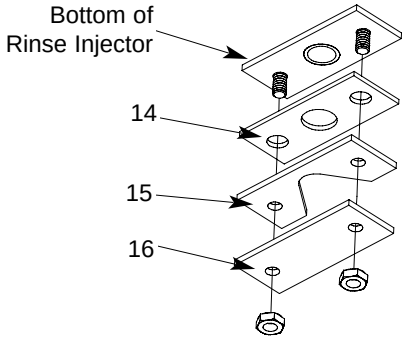
4** NOTE: Depending on how old your ES-4000 unit may be, the soldered piece above may be turned in this configuration. Overall, this will make the plumbing shorter in length and connection point shorter in height.



For XSP and XSP-PH units, replace item 8 with items 12 & 13.



For the ES-2000HHV model, the components inside the box to the right are replaced with this rinse injector and may be ordered using the following numbers :
Ecolab No.: N/A
Mfg. No.: 005700-002-95-09



For the ES-2000HHV model, the brass nut inside the box to the left is replaced with the above parts which connect to the bottom of the rinse injector.

* Represents an item not shown.

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	3/4” NPT Bulkhead Locknut	86545050	04730-208-04-00
2	1	3/4” Male NPT x Female Slip Adapter	86185030	04730-401-11-01
3	1	3/4” x 6” Copper Tube	Buy Locally	05700-011-37-55
3	1	3/4” x 9” Copper Tube (ES-2000V)	Buy Locally	05700-000-75-61
4	2	3/4” NPT x 90° Elbow	86055092	04730-406-42-01
5	1	3/4” Vacuum Breaker	85242626	04820-002-53-77
6	1	3/4” Male NPT x Male Slip Adapter	86185048	04730-401-10-01
7	1	3/4” Solenoid Valve	85260511	04810-100-53-00
8	1	3/4” NPT x 3” Nipple	85141638	04730-011-38-29
9	1	3/4” NPT Y-Strainer	85300325	04730-717-02-06
10*	1	Bracket, Incoming Plumbing Support	96582937	05700-021-34-02
11*	1	Diverter End Cap, ES-4000	96582172	05700-021-45-32
12*	1	Tee, 3/4” x 3/4” x 1/4”	86100120	04730-211-04-00
13*	2	Close Nipple, 3/4”	85141604	04730-207-34-00
14	1	Gasket	96020482	05330-111-42-81
15	1	Deflector Plate	N/A	05700-002-62-49
16	1	Rinse Plumbing Plate	N/A	05700-011-82-86

SECTION 6: PARTS SECTION

ES-2000-CS INCOMING PLUMBING ASSEMBLY & MISC. PARTS

Y-Strainer, 1/2"
Ecolab No.: 96027024
Mfg. No.: 04730-217-01-10

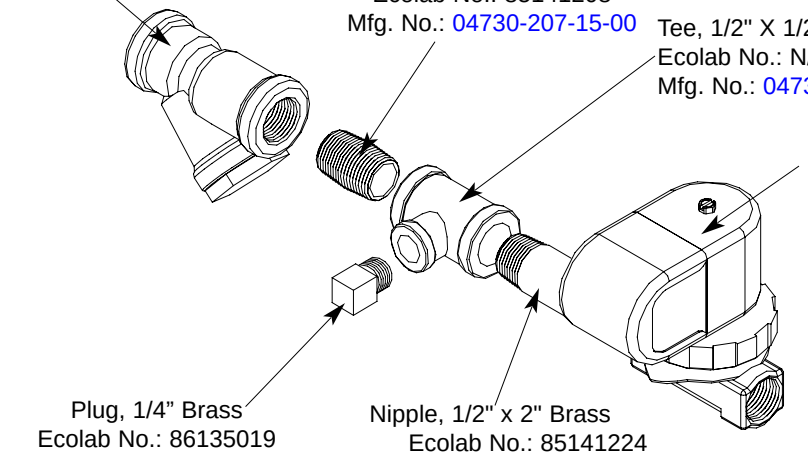
Nipple, 1/2" Close
2 Per
Ecolab No.: 85141208
Mfg. No.: 04730-207-15-00

Tee, 1/2" X 1/2" X 1/4"
Ecolab No.: N/A
Mfg. No.: 04730-002-22-56

Bracket, Plumbing Support
(Not Shown)
Ecolab No.: 96028816
Mfg. No.: 05700-002-28-95

Valve, Solenoid 1/2" 115V
Ecolab No.: 96580683
Mfg. No.: 04810-100-12-18

Plug, Heyco
2 per (Not Shown)
Ecolab No.: 96024567
Mfg. No.: 05975-011-47-81

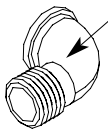


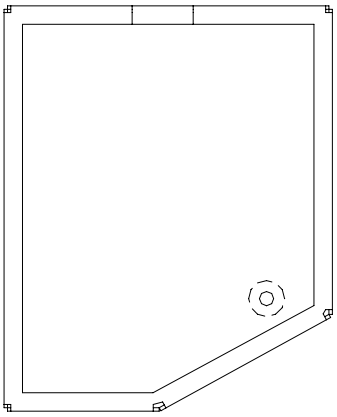
Plug, 1/4" Brass
Ecolab No.: 86135019
Mfg. No.: 04730-209-01-00

Nipple, 1/2" x 2" Brass
Ecolab No.: 85141224
Mfg. No.: 04730-207-19-00



Elbow, 1/2", 90° Street
Ecolab No.: 86075000
Mfg. No.: 04730-206-08-00



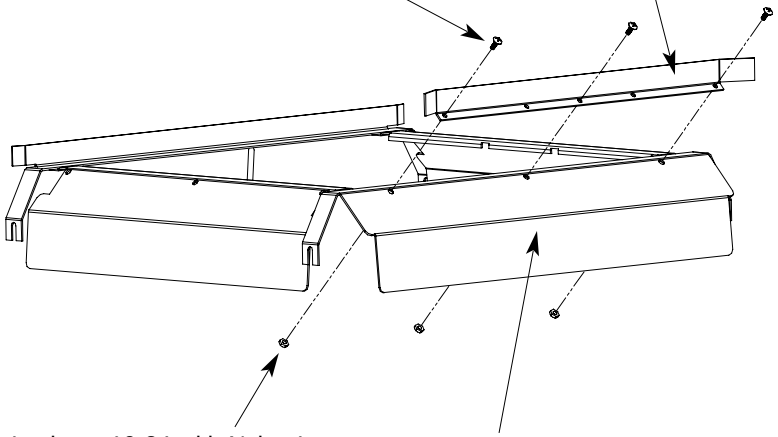


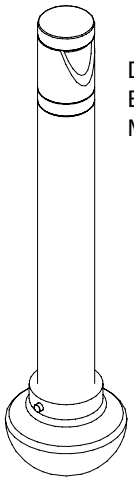
Sump Strainer Weldment
Ecolab No.: 96028709
Mfg. No.: 05700-002-11-63

Complete Rack Assembly
Ecolab No.: N/A
Mfg. No.: 05700-002-01-00

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





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

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

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

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

WASH MANIFOLD ASSEMBLY ES-2000 & ES-4000

Kit, Upper Wash Manifold, with Hardware
ES-2000 & ES-2000HH
Ecolab No.: N/A
Mfg. No.: 06401-003-08-23

Complete Manifold Assembly
(1 for ES-2000 and 2 for ES-4000)

Kit, Lower Wash Manifold, with Hardware
ES-2000 & ES-2000HH Only
Ecolab No.: N/A
Mfg. No.: 06401-003-08-24

Bolt, 3/8”-16 x 7/8”, Hex Head, S/S
2 per assembly
Ecolab No.: 96034111
Mfg. No.: 05306-011-36-95

Casting, Upper Wash Manifold
Ecolab No.: 96583620
Mfg. No.: 05700-031-34-82

O-Ring
Ecolab No.: 87203154
Mfg. No.: 05330-111-35-15

3/8” Lockwasher
2 per assembly
Ecolab No.: 88521109
Mfg. No.: 05311-276-01-00

3/8” Hex Nut, S/S
2 per assembly
Ecolab No.: 88422068
Mfg. No.: 05310-276-01-00

Wedge, Manifold Casting
(Used on the ES-4000 units only)
Ecolab No.: 96583497
Mfg. No.: 09515-011-46-61

Bolt, 3/8”-16 x 2-1/4” Long (ES-4000)
Ecolab No.: 88031109
Mfg. No.: 05306-011-95-12

Bolt, 3/8”-16 x 1-3/4” Long (ES-2000)
Ecolab No.: 88021076
Mfg. No.: 05306-011-36-94

Bolt, 3/8”-16 x 1-3/4” Long (ES-4000)
Ecolab No.: 88021076
Mfg. No.: 05306-011-36-94

Bolt, 3/8”-16 x 1-1/4” Long (ES-2000)
Ecolab No.: 88021050
Mfg. No.: 05305-276-10-00

Weldment, Lower Wash Manifold
(ES-2000 & ES-2000HH)
Ecolab No.: 96582705
Mfg. No.: 05700-031-34-65

Weldment, Lower Wash Manifold (ES-2000-CS)
Ecolab No.: N/A
Mfg. No.: 05700-002-20-84

Weldment, Lower Wash Manifold (ES-4000)
Ecolab No.: 96583596
Mfg. No.: 05700-031-46-00

Gasket, Wash Manifold
1 per ES-2000 Assembly
2 per ES-4000 Assembly
Ecolab No.: 96552864
Mfg. No.: 05700-111-35-03

Washer, 3/8”, Bevel, Square
2 per assembly
Ecolab No.: 88500000
Mfg. No.: 05311-011-35-36

Manifold Tube Ecolab No.: 96550338 Mfg. No.: 05700-031-34-59	Manifold Tube (ES-2000HH Only) Ecolab No.: N/A Mfg. No.: 05700-002-92-55
Manifold Tube (ES-2000-CS Only) Ecolab No.: N/A Mfg. No.: 05700-002-08-32	Manifold Positioning Tube Bracket Ecolab No.: 96582986 Mfg. No.: 05700-011-34-63

3/8” Lockwasher 4 per assembly Ecolab No.: 88521109 Mfg. No.: 05311-276-01-00	3/8” Hex Nut, S/S 4 per assembly Ecolab No.: 88422068 Mfg. No.: 05310-276-01-00

Wash Arm Bearing
1 per Wash Arm
Ecolab No.: 96552567
Mfg. No.: 05700-021-35-97

Wash Arm O-Ring
1 per Wash Arm
Ecolab No.: 87200013
Mfg. No.: 05330-002-60-69

Wash Arm Weldment, ES-2000
2 per unit
Ecolab No.: 96582064
Mfg. No.: 05700-021-63-42

Wash Arm Weldment, ES-4000
4 per unit
Ecolab No.: 96581194
Mfg. No.: 05700-021-50-96

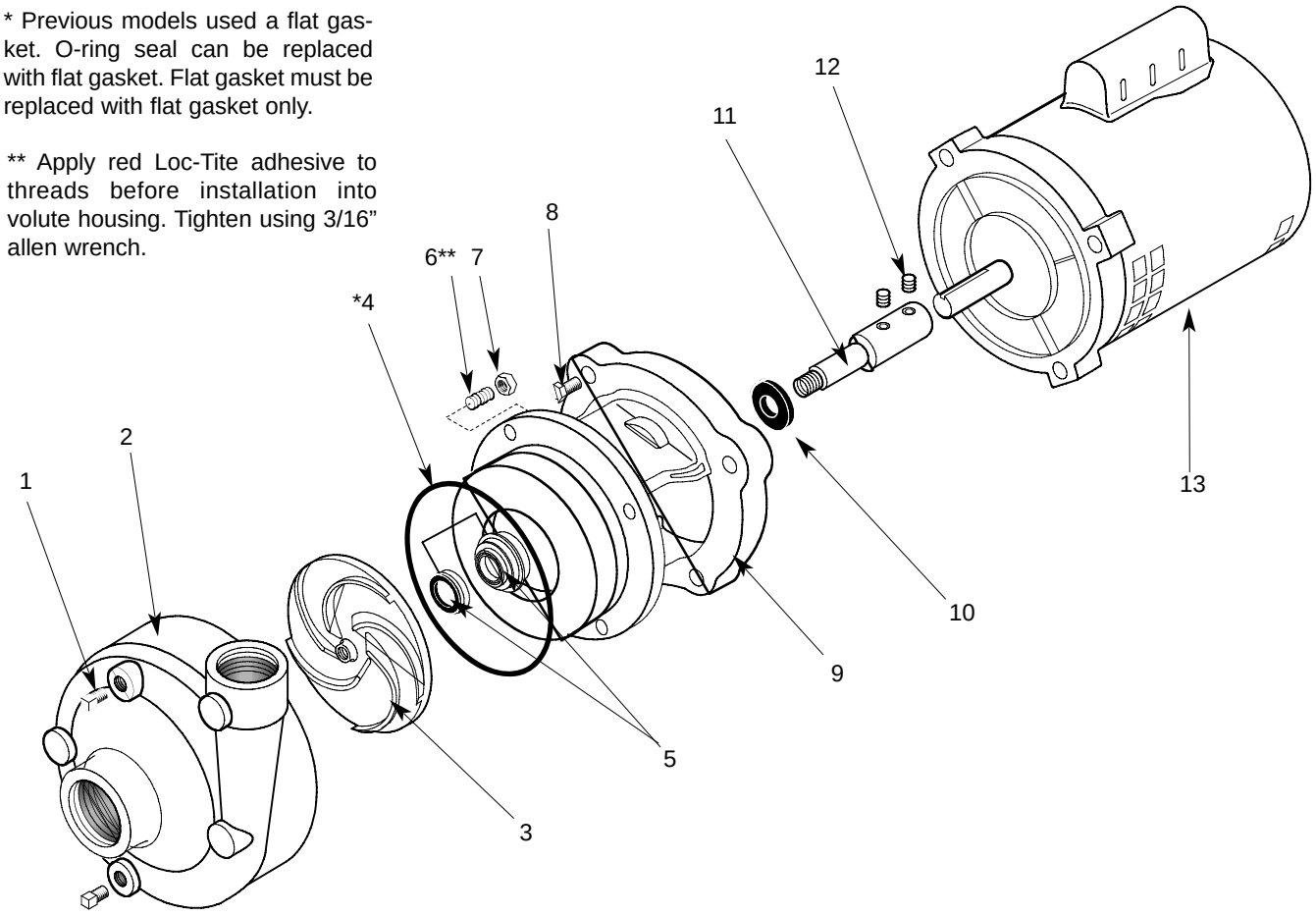
Wash Arm End Cap
2 per Wash Arm
Ecolab No.: 96552542
Mfg. No.: 05700-011-35-92

SECTION 6: PARTS SECTION

PUMP & MOTOR ASSEMBLY

* Previous models used a flat gasket. O-ring seal can be replaced with flat gasket. Flat gasket must be replaced with flat gasket only.

** Apply red Loc-Tite adhesive to threads before installation into volute housing. Tighten using 3/16" allen wrench.



ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	2	Pipe Plug, 1/4" NPT, Brass	86135019	04730-209-01-00
2	1	Volute (only available as an assembly, see item 15)	N/A	N/A
3	1	Impeller, Stainless	96557780	05700-002-06-19
4	1	O-ring, Housing Seal	87203900	N/A
4b.	1	Gasket (Flat)	84805944	05330-011-95-18
5	1	Pump Seal	84804723	05330-002-87-16
6	4	Stud, Socket Head 3/8"-16 x 1 1/2"	88926002	N/A
7	4	Nut, Hex, 3/8"-16 S/S	88422068	N/A
8	4	Cap Screw, 3/8"-16 x 1-1/4", S/S	88021050	N/A
9	1	Bracket, Motor to Pump	96583810	N/A
10	1	Slinger, Pump Shaft	96031059	N/A
11	1	Shaft Adapter/Connector	96562764	N/A
12	2	Allen Head Setscrew, 1/4"-20 x 1/4"	88220007	N/A
13	1	Pump Motor	83710418	06105-121-35-18
14	1	Pump Assembly (Items 1-12)	96562715	N/A

Complete Pump & Motor Assembly
Ecolab No.: 96582025
Mfg. No.: 06105-002-16-29

Pump Only Assembly
(Includes items in dashed box and pump casing.)
Ecolab No.: 96582071
Mfg. No.: 05700-002-79-49

Motor Only
Ecolab No.: 96582070
Mfg. No.: 06105-002-79-61

Motor Mounting Bracket
Ecolab No.: 96582190
Mfg. No.: 05700-002-55-52

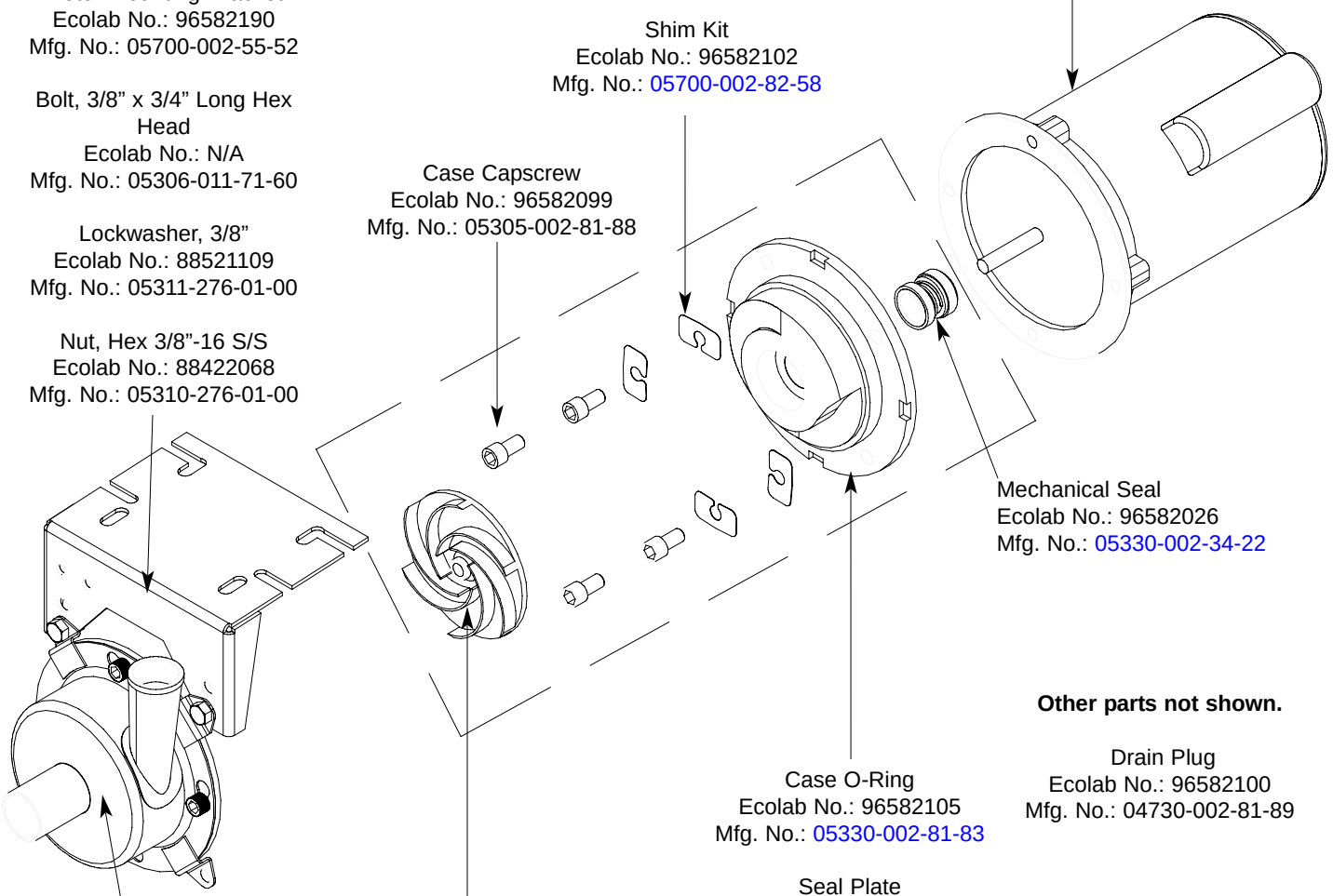
Bolt, 3/8" x 3/4" Long Hex Head
Ecolab No.: N/A
Mfg. No.: 05306-011-71-60

Lockwasher, 3/8"
Ecolab No.: 88521109
Mfg. No.: 05311-276-01-00

Nut, Hex 3/8"-16 S/S
Ecolab No.: 88422068
Mfg. No.: 05310-276-01-00

Shim Kit
Ecolab No.: 96582102
Mfg. No.: 05700-002-82-58

Case Capscrew
Ecolab No.: 96582099
Mfg. No.: 05305-002-81-88



Mechanical Seal
Ecolab No.: 96582026
Mfg. No.: 05330-002-34-22

Other parts not shown.

Drain Plug
Ecolab No.: 96582100
Mfg. No.: 04730-002-81-89

Case O-Ring
Ecolab No.: 96582105
Mfg. No.: 05330-002-81-83

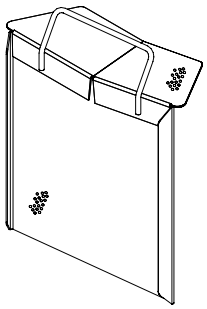
Seal Plate
Ecolab No.: 96582104
Mfg. No.: 05700-002-81-87

Impeller Assembly
Ecolab No.: 96582103
Mfg. No.: 05700-002-81-86

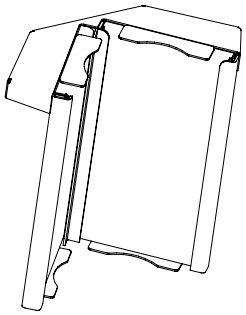
Pump Casing
Ecolab No.: N/A
Mfg. No.: 05700-002-84-99

SECTION 6: PARTS SECTION

MISCELLANEOUS PARTS ES-2000 & ES-4000

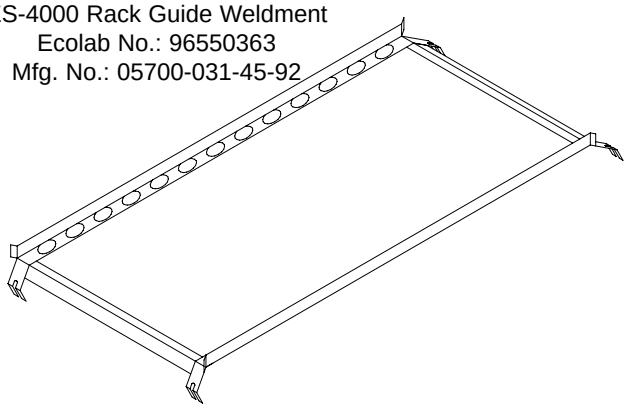


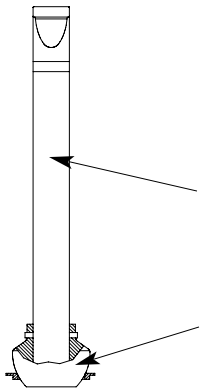
ES-4000
Intake Pump Strainer Weldment
Ecolab No.: 96580170
Mfg. No.: 05700-031-45-26



ES-4000 Retrofit Kit
Sump Strainer Assembly
Ecolab No.: N/A
Mfg. No.: 05700-002-79-46

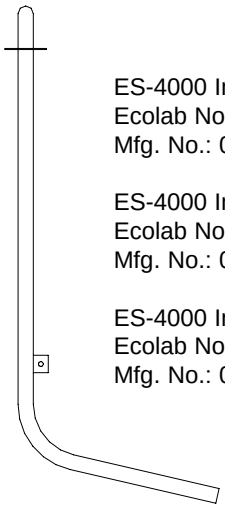
ES-4000 Rack Guide Weldment
Ecolab No.: 96550363
Mfg. No.: 05700-031-45-92





Stand Pipe Weldment
Ecolab No.: 96582747
Mfg. No.: 05700-021-33-29

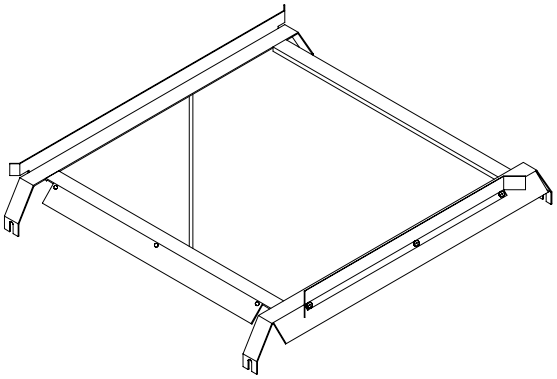
Stand Pipe Stopper
Ecolab No.: 96557475
Mfg. No.: 05700-121-35-54



ES-4000 Injection Tube Weldment
Ecolab No.: 96550371
Mfg. No.: 05700-031-46-78

ES-4000 Injection Tube Gasket
Ecolab No.: 96562954
Mfg. No.: 05700-011-45-36

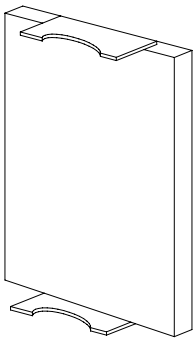
ES-4000 Injection Tube Bushing
Ecolab No.: 96033063
Mfg. No.: 05975-002-47-54



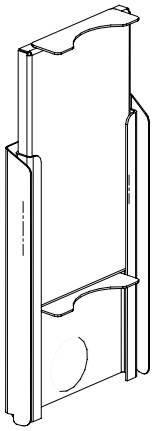
ES-2000 & HH Series Rack Guide Assembly
Ecolab No.: 96582887
Mfg. No.: 05700-031-36-76

ES-2000 27” Rack Guide Assembly
Ecolab No.: 96583885
Mfg. No.: 05700-031-42-36

ES-2000XSP-PH, 31” Rack Guide Assembly
Ecolab No.: N/A
Mfg. No.: 05700-002-13-55



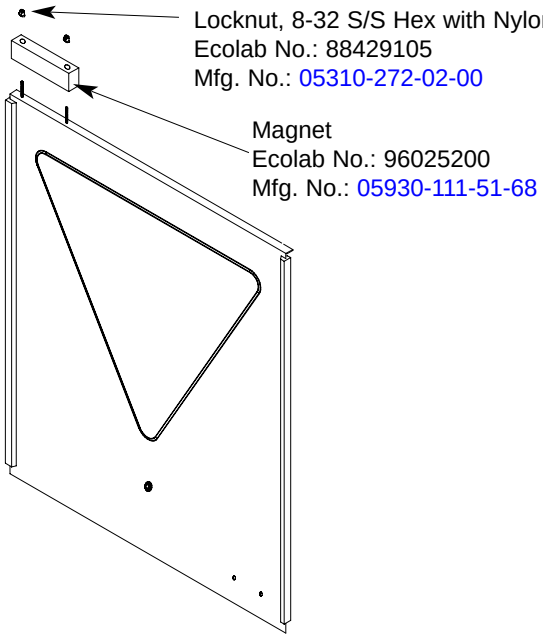
ES-2000 Intake Pump
Strainer Weldment
Ecolab No.: 96582029
Mfg. No.: 05700-002-60-50



ES-2000 Intake Strainer
Retrofit Kit
Ecolab No.: 96582853
Mfg. No.: 05700-002-56-45

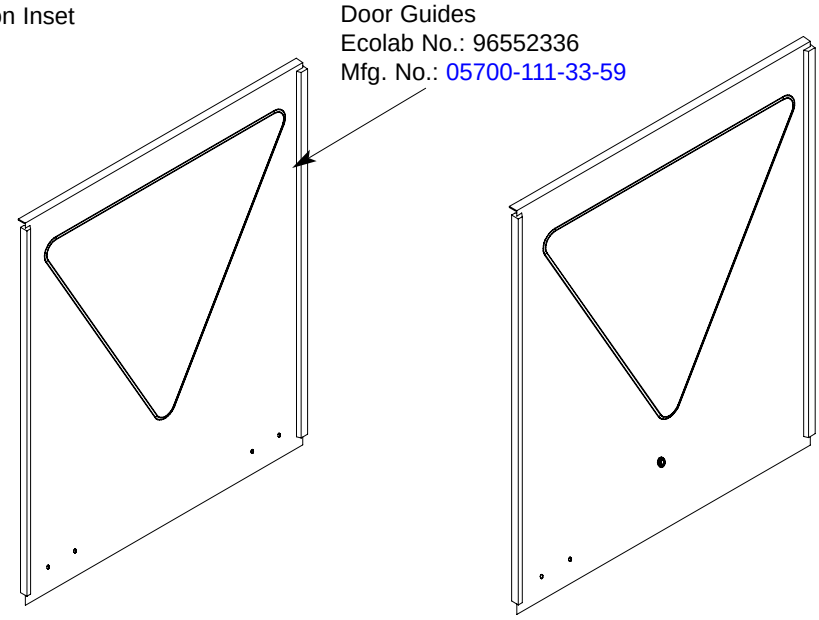
SECTION 6: PARTS SECTION

ES-2000 SERIES DOOR ASSEMBLIES



ES-2000 & ES-2000 27”
Left Door Weldment
Ecolab No.: 96041108
Mfg. No.: 05700-002-38-36

ES-2000XSP-PH
Left Door Weldment
Ecolab No.: 96583786
Mfg. No.: 05700-031-84-73

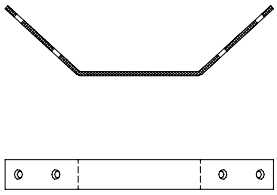


ES-2000 & 27” Front Door
Ecolab No.: 96582713
Mfg. No.: 05700-002-38-38

ES-2000XSP-PH Front Door
Ecolab No.: N/A
Mfg. No.: 05700-011-69-79

ES-2000 & ES-2000 27”
Right Door
Ecolab No.: 96582739
Mfg. No.: 05700-002-38-33

ES-2000XSP-PH
Right Door
Ecolab No.: 96583935
Mfg. No.: 05700-031-62-86

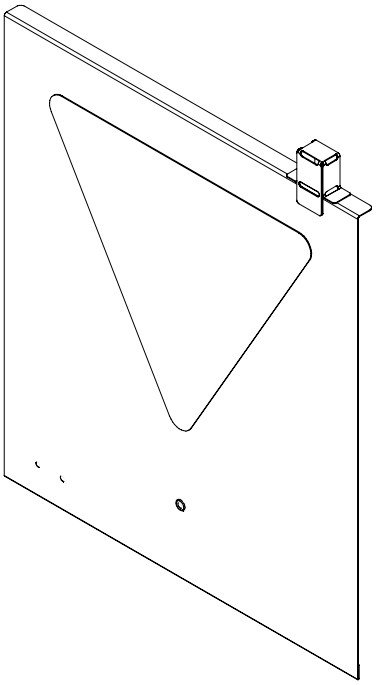


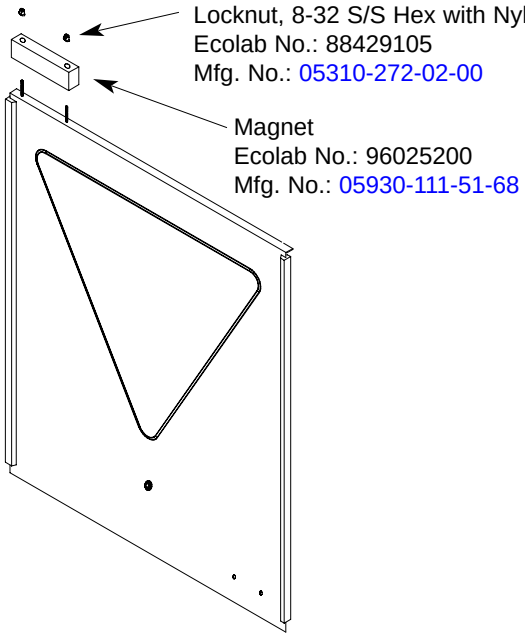
Door Connector Bracket
Ecolab No.: 96582820
Mfg. No.: 05700-021-33-39



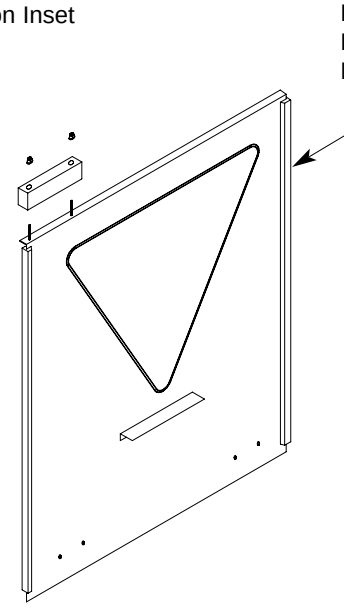
ES-2000 Optional Front Door Handle
(Service Only)
Ecolab No.: 96041132
Mfg. No.: 05700-002-51-56

ES-2000-V
Right Door
Ecolab No.: 9658-xxxx
Mfg. No.: 05700-003-13-01

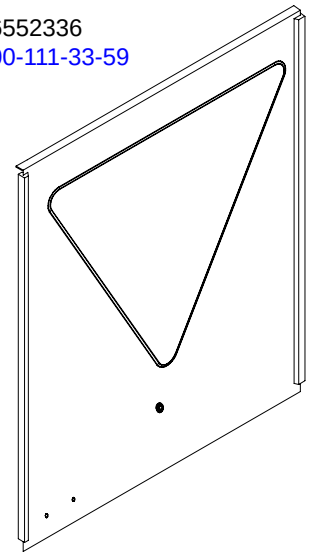




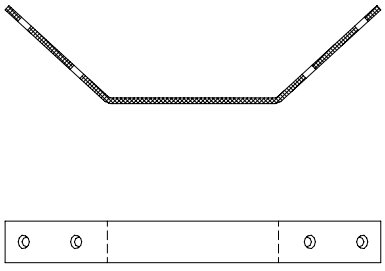
Left Door Weldment
Ecolab No.: 96041108
Mfg. No.: 05700-002-38-36



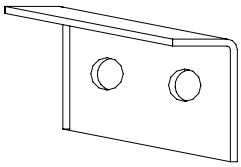
Front Door Weldment
Ecolab No.: 96583604
Mfg. No.: 05700-002-38-40



Right Door
Ecolab No.: 96582739
Mfg. No.: 05700-002-38-33



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



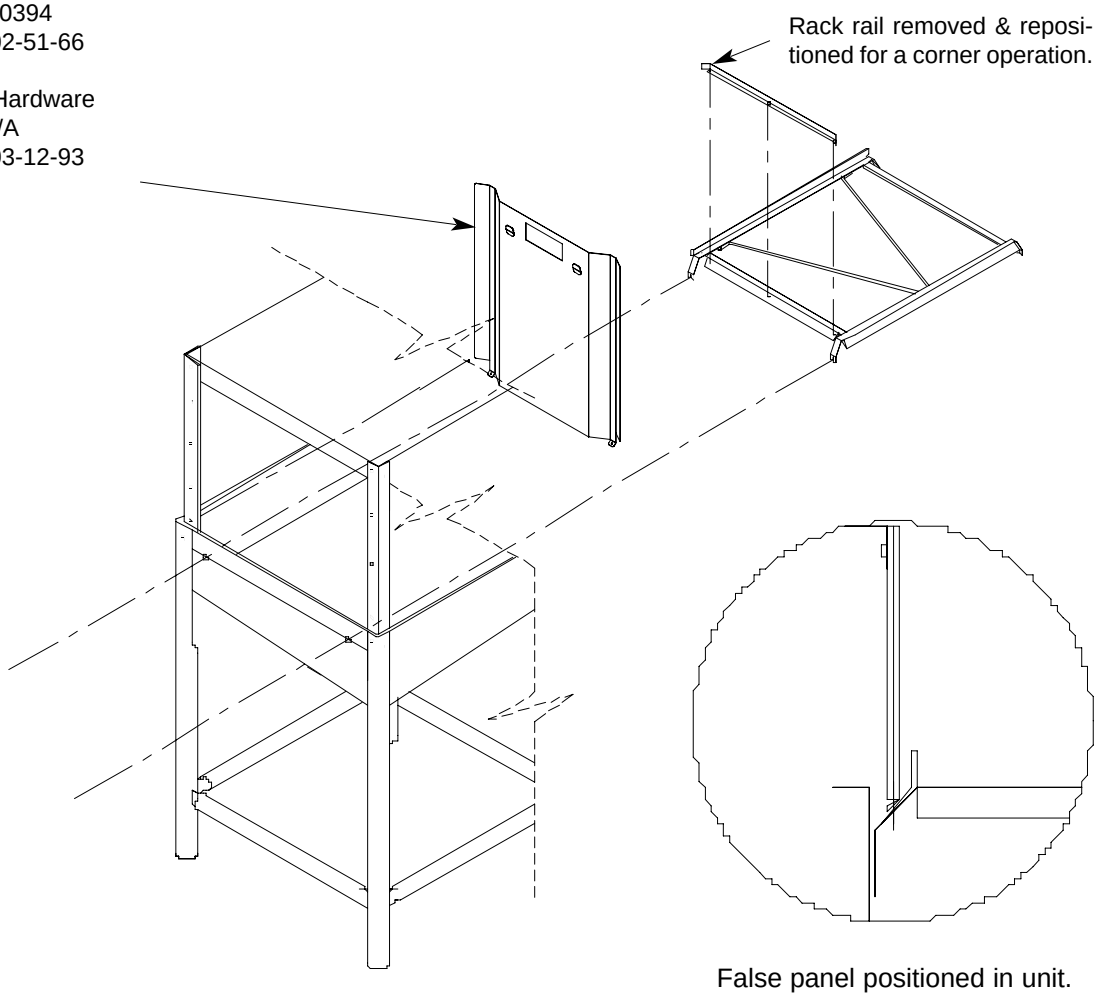
ES-4000 Door Stop
Ecolab No.: 96558671
Mfg. No.: 05700-011-46-30

SECTION 6: PARTS SECTION

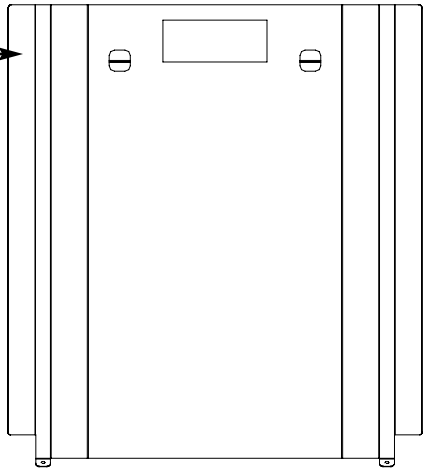
FALSE PANEL INSTALLATION

False Panel Weldment
Ecolab No.: 96580394
Mfg. No.: 005700-002-51-66

False Panel Kit with Hardware
Ecolab No.: N/A
Mfg. No.: 005700-003-12-93



False panel positioned in unit.

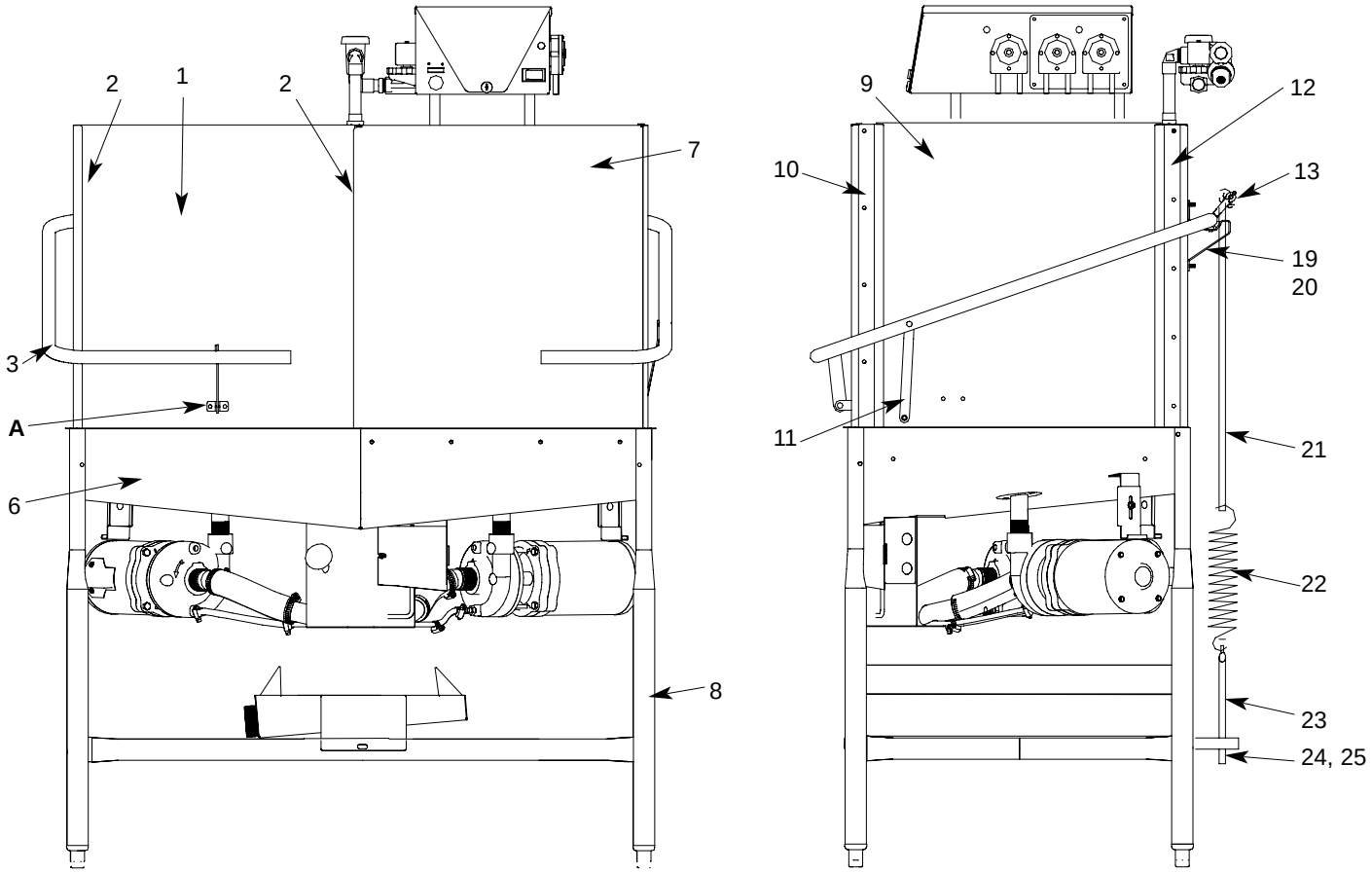


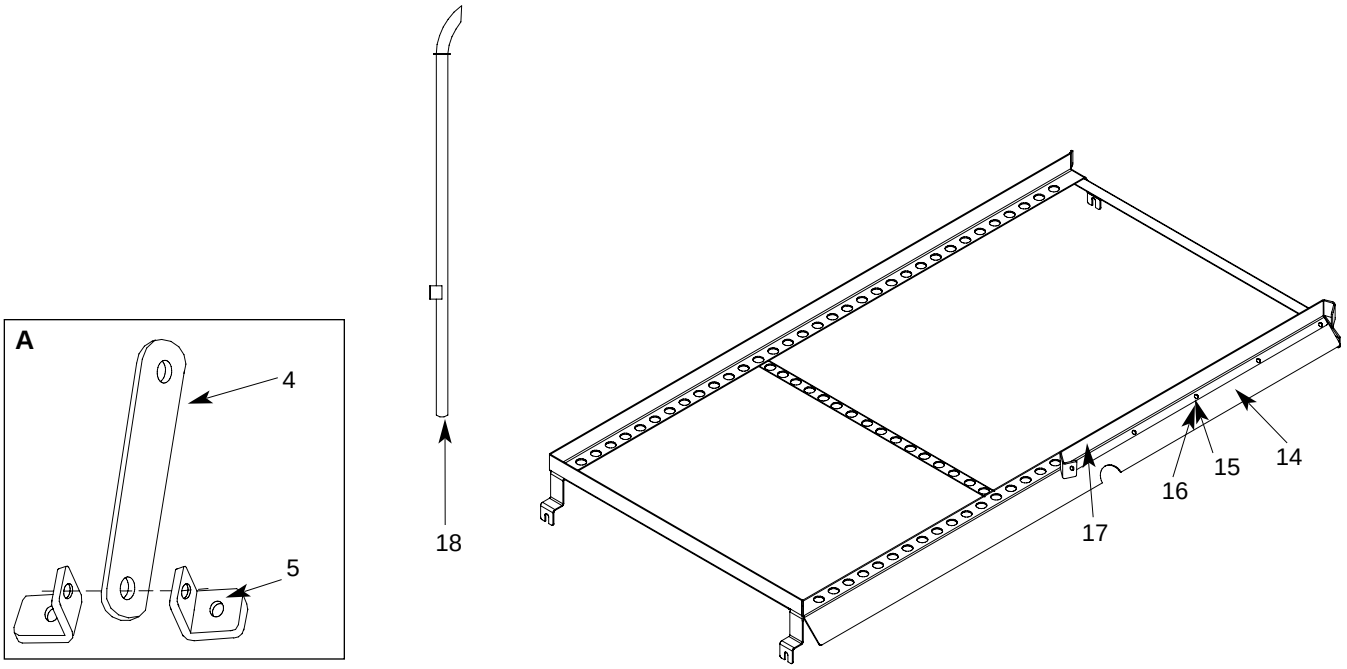
Bottom of side panel.

1. Loosen the rack assembly from the unit.
2. False panel will mount to the rack; inside the dishmachine.
3. Position panel in unit on side to be closed.
4. Hold panel against side of dishmachine and push up.
5. Panel will clip inside the unit under the edge of the hood.
6. Holes in false panel willl ine up with rack assembly holes.
7. Re-install screws for rack assembly which will secure false panel to unit.
8. Re-assemble the rack track in an “L” shape for a corner operation.

SECTION 6: PARTS SECTION

ES-4000CDL ASSEMBLY OPTIONS

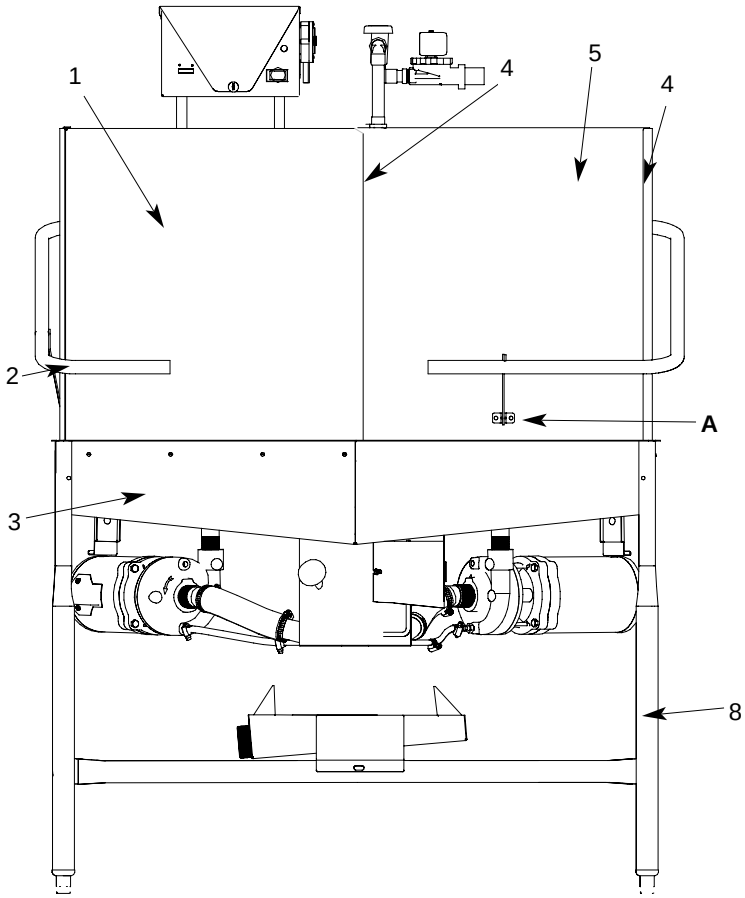


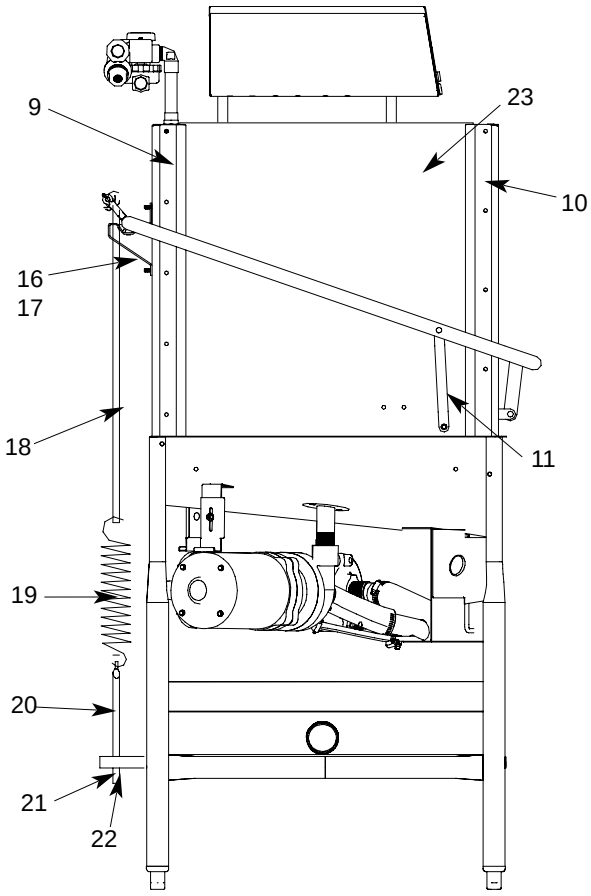


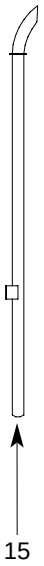
ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Front Door Assembly	N/A	05700-003-02-57
	1	Front Door	N/A	05700-003-02-56
	2	Door Glide, UHMW (Not Shown)	96552336	05700-111-33-59
2	2	Inner Door Guide (Not Shown)	N/A	05700-002-07-21
3	1	Cantilever Arm Assembly	96032438	05700-002-07-69
	1	Cantilever Arm Weldment	96041090	05700-002-09-14
	2	Plug	96022447	05340-011-35-00
	2	Spring Pin, 1/4” Dia. x 1-1/8” Long	96039185	05315-407-06-00
4	1	Hinge, Bracket	96033618	05700-002-07-39
5	2	Front Door Bracket	96033030	05700-002-07-37
6	1	Tub Weldment	96041041	05700-002-07-73
7	1	Hood Weldment	96041023	05700-002-07-71
8	1	Frame Weldment	N/A	05700-002-07-51
9	1	Right Door Assembly	N/A	05700-003-02-45
	1	Right Door Weldment	N/A	05700-003-02-44
	2	Door Glide, UHMW	96552336	05700-111-33-59
	1	Magnet, Reed Switch	96025200	05930-111-51-68
	2	Locknut, 8-32 Hex with Nylon Insert	88429105	05310-272-02-00
10	1	Front Door Guide	96583570	05700-021-44-94
11	1	Bracket, Side Door Connecting	96033626	05700-002-07-33
12	1	Right Rear Door Guide	96030432	05700-021-84-70
13		Yoke Assembly	96586615	05700-000-75-77
		Rack Rail Assembly	96041017	05700-002-08-64
14	1	Rack Rail Weldment	N/A	05700-002-07-65
15	3	Locknut, 10-24 with Nylon Insert	88429063	05310-373-01-00
16	3	Screw, 10-24 x 1/2” Long S/S	88120746	05305-173-18-00
17	1	Guard, Front Track	N/A	05700-002-07-44
18	1	Chemical Feed Tube Weldment	96041066	05700-002-08-14
	1	Gasket, Chemical Feeding Tube	96562954	05700-011-45-36
	1	Bushing, 3/4” Hole, Snap	96033063	05975-002-47-54
19	2	Bracket, Cantilever Support	96581244	05700-031-88-00
20	6	Wear Button	96027743	05700-011-88-01
21	2	Spring Rod	96584313	05700-001-28-18
22	2	Spring	96581285	05340-109-02-00
23	2	Bolt, Hanger Eye	96582762	05306-956-05-00
24	2	Washer, Impeller	96581376	05311-176-02-00
25	4	Nut, Hex, 3/8”-16, S/S	88422068	05310-276-01-00
	1	Hood Support Bracket Service Kit	96629227	06401-002-92-27

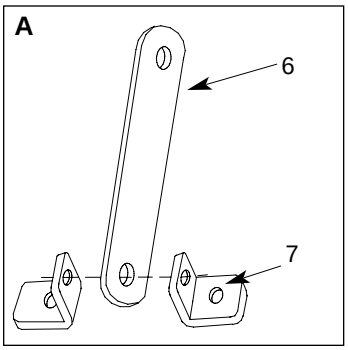
SECTION 6: PARTS SECTION

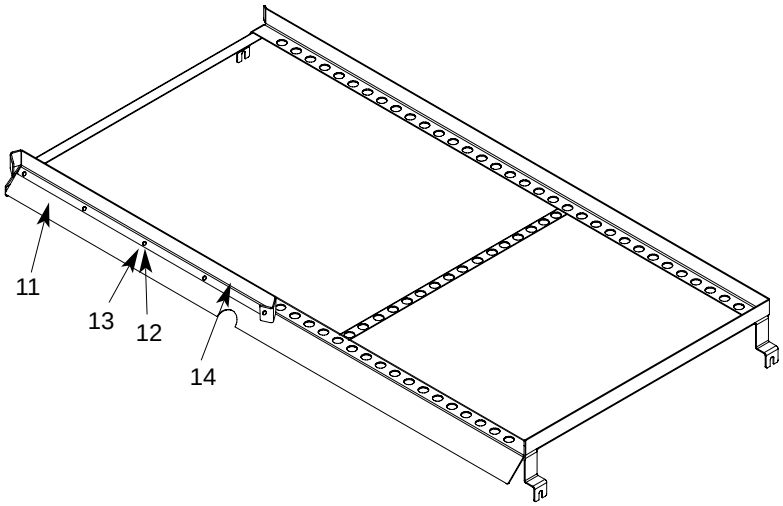
ES-4000CDR ASSEMBLY OPTIONS





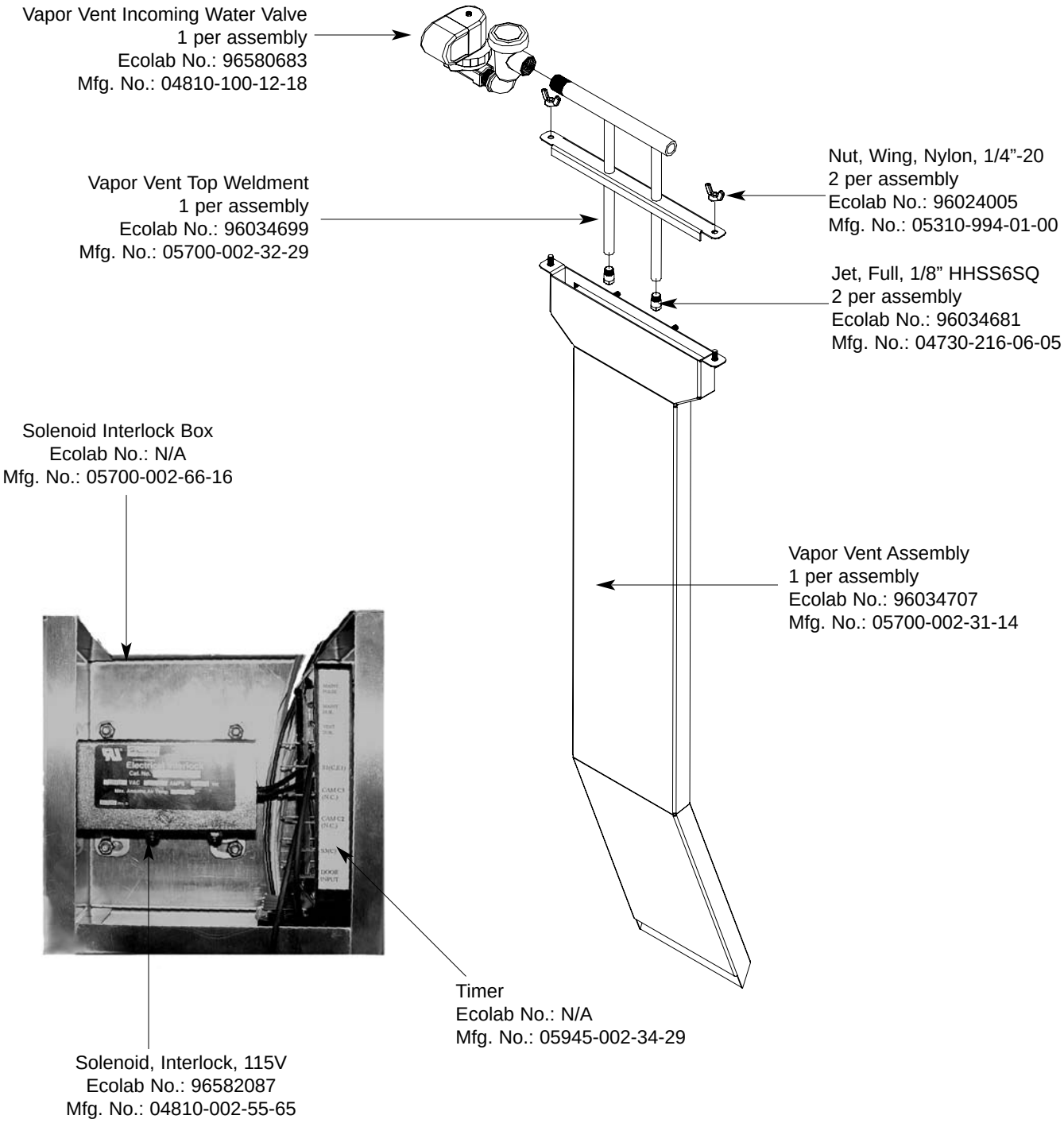






ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Hood Weldment	96041033	05700-002-07-72
2	1	Cantilever Arm Assembly	N/A	05700-002-07-70
	1	Cantilever Arm Weldment	96041082	05700-002-09-13
	2	Plug	96022447	05340-011-35-00
	2	Spring Pin, 1/4” Dia. x 1-1/8” Long	96039185	05315-407-06-00
3	1	Tub Weldment	96041058	05700-002-07-74
4	2	Inner Door Guide (Not Shown)	N/A	05700-002-07-21
5	1	Front Door Assembly	N/A	05700-003-02-57
	1	Front Door	N/A	05700-003-02-56
	2	Door Glide, UHMW	96552336	05700-111-33-59
6	1	Hinge, Bracket	96033618	05700-002-07-39
7	2	Front Door Bracket	96033030	05700-002-07-37
8	1	Frame Weldment	96040654	05700-002-07-51
9	1	Left Rear Door Guide	96030457	05700-021-84-71
10	1	Front Door Guide	96583570	05700-021-44-94
11	1	Bracket, Side Door Connecting	96033626	05700-002-07-33
	1	Hood Support Bracket Service Kit	96629227	06401-002-92-27
*	1	Rack Rail Assembly	96041009	05700-002-08-85
12	3	Locknut, 10-24 with Nylon Insert	88429063	05310-373-01-00
13	3	Screw, 10-24 x 1/2” Long S/S	88120746	05305-173-18-00
14	1	Guard, Front Track	N/A	05700-002-07-44
15	1	Chemical Feed Tube Weldment	96041066	05700-002-08-14
	1	Gasket, Chemical Feeding Tube	96562954	05700-011-45-36
	1	Bushing, 3/4” Hole, Snap	96033063	05975-002-47-54
16	2	Bracket, Cantilever Support	96581244	05700-031-88-00
17	6	Wear Button	96027743	05700-011-88-01
18	2	Spring Rod	96584313	05700-001-28-18
19	2	Spring	96581285	05340-109-02-00
20	2	Bolt, Hanger Eye	96582762	05306-956-05-00
21	2	Washer, Impeller	96581376	05311-176-02-00
22	4	Nut, Hex, 3/8”-16, S/S	88422068	05310-276-01-00
23	1	Left Door Assembly	N/A	05700-003-02-54
	1	Left Door Weldment	N/A	05700-003-02-53
	2	Door Glide, UHMW	96552336	05700-111-33-59
	1	Magnet, Reed Switch	96025200	05930-111-51-68
	2	Locknut, 8-32 Hex with Nylon Insert	88429105	05310-272-02-00

VAPOR VENT OPTION ASSEMBLY (REVISION A)



Items not shown:

DESCRIPTION	ECOLAB No.	Mfg. No.
Relay, 3PDT 115 Volt (found in control box)	96021159	05945-111-72-51
Solenoid Interlock Box Cover	N/A	05700-002-64-88

VAPOR VENT OPTION ASSEMBLY (REVISION B)

Vapor Vent Complete Assembly, 115V
1 per assembly
Ecolab No.: 96627582
Mfg. No.: 05700-002-75-82

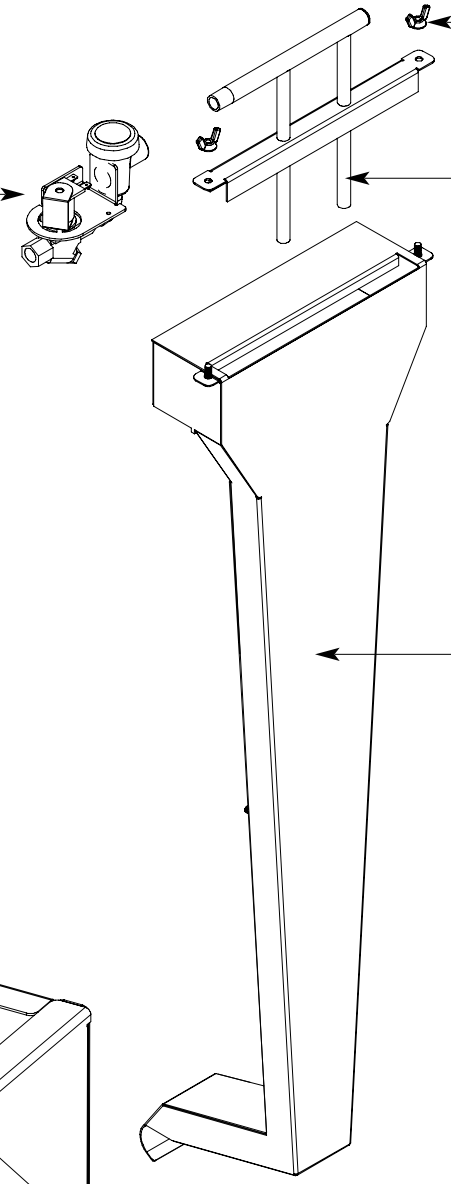
Vapor Vent Incoming Plumbing Assembly
1 per assembly
Ecolab No.: 96627752
Mfg. No.: 05700-002-77-52

Solenoid Valve, 3/8”, 115V
1 per assembly
Ecolab No.: N/A
Mfg. No.: 04730-002-75-48

Nipple, 3/8” Close NPT
1 per assembly
Ecolab No.: 85140804
Mfg. No.: 04730-002-18-00

Elbow, 3/8” 90° Street
1 per assembly
Ecolab No.: 86078052
Mfg. No.: 04730-002-15-36

Vacuum Breaker, 3/8”
1 per assembly
Ecolab No.: 85242527
Mfg. No.: 04820-002-75-73



Nut, Wing, Nylon, 1/4”-20
2 per assembly
Ecolab No.: 96024005
Mfg. No.: 05310-994-01-00

Vapor Vent Top Weldment
1 per assembly
Ecolab No.: 96034699
Mfg. No.: 05700-002-75-46

Jet, Full 1/8”, HHSS6HQ
2 per assembly
Ecolab No.: 96034681
Mfg. No.: 04730-216-06-05

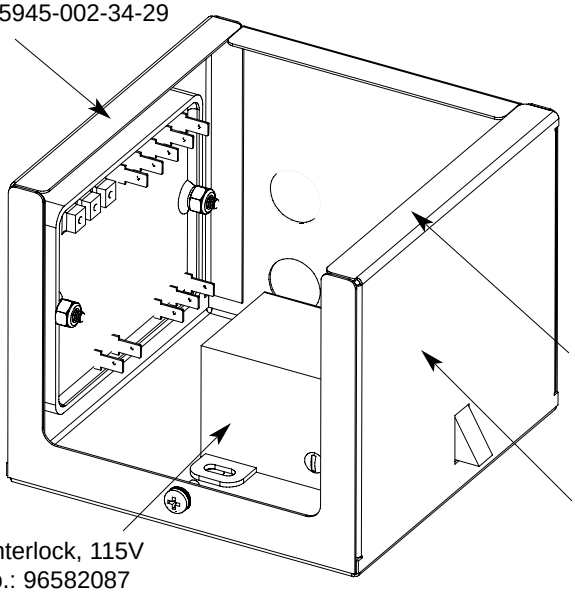
Gasket, Vapor Vent
1 per assembly
Ecolab No.: 96627506
Mfg. No.: 5330-002-75-06

Vapor Vent (Plastic Vent Only)
1 per assembly
Ecolab No.: 96629321

Vapor Vent (Metal Vent Only)
1 per assembly
Ecolab No.: 96582090

Bracket, Stand Off
1 per assembly
Ecolab No.: 96627216
Mfg. No.: 05700-002-72-16

Solenoid Interlock Timer
Ecolab No.: N/A
Mfg. No.: 05945-002-34-29

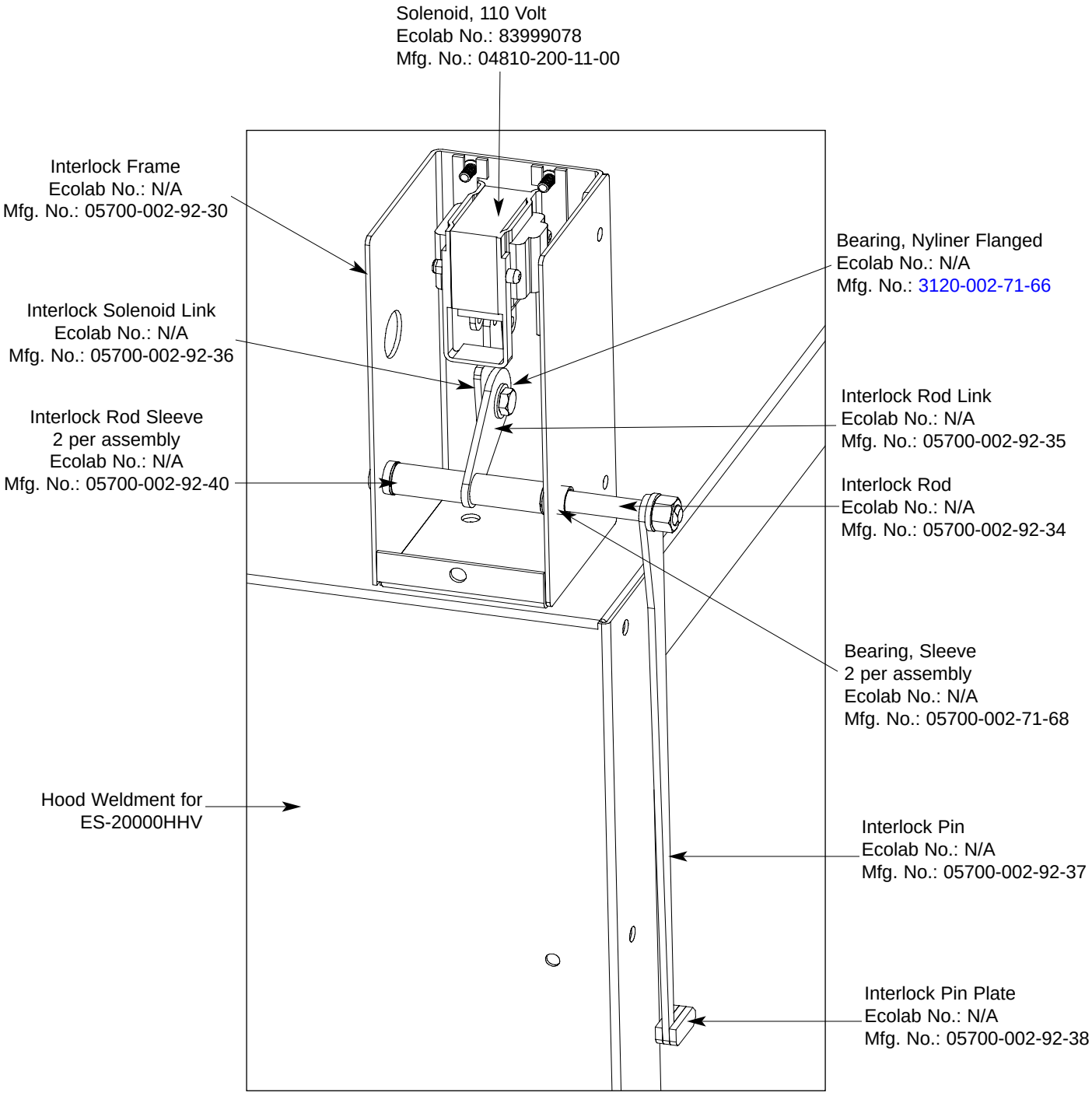


Solenoid Interlock Box Cover Kit
Not Shown
Ecolab No.: N/A
Mfg. No.: 06401-003-07-34

Solenoid Interlock Box
Ecolab No.: N/A
Mfg. No.: 05700-002-66-16

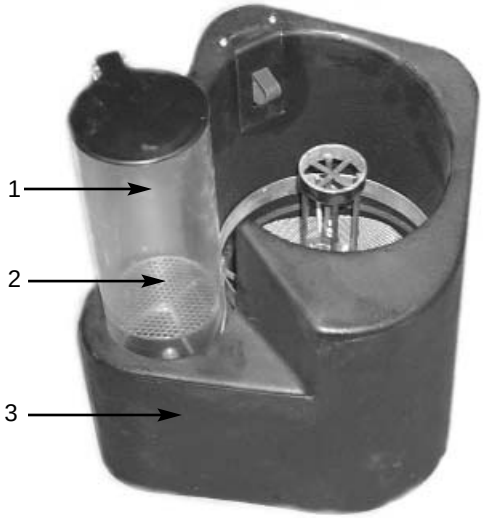
Solenoid, Interlock, 115V
Ecolab No.: 96582087
Mfg. No.: 04810-002-55-65

Solenoid Interlock Box Assembly Kit
Ecolab No.: N/A
Mfg. No.: 06401-002-66-17


Solenoid, 110 Volt
Ecolab No.: 83999078
Mfg. No.: 04810-200-11-00
Interlock Frame
Ecolab No.: N/A
Mfg. No.: 05700-002-92-30
Bearing, Nyliner Flanged
Ecolab No.: N/A
Mfg. No.: 3120-002-71-66
Interlock Solenoid Link
Ecolab No.: N/A
Mfg. No.: 05700-002-92-36
Interlock Rod Link
Ecolab No.: N/A
Mfg. No.: 05700-002-92-35
Interlock Rod Sleeve
2 per assembly
Ecolab No.: N/A
Mfg. No.: 05700-002-92-40
Interlock Rod
Ecolab No.: N/A
Mfg. No.: 05700-002-92-34
Bearing, Sleeve
2 per assembly
Ecolab No.: N/A
Mfg. No.: 05700-002-71-68
Hood Weldment for
ES-20000HHV
Interlock Pin
Ecolab No.: N/A
Mfg. No.: 05700-002-92-37
Interlock Pin Plate
Ecolab No.: N/A
Mfg. No.: 05700-002-92-38

SECTION 6: PARTS SECTION

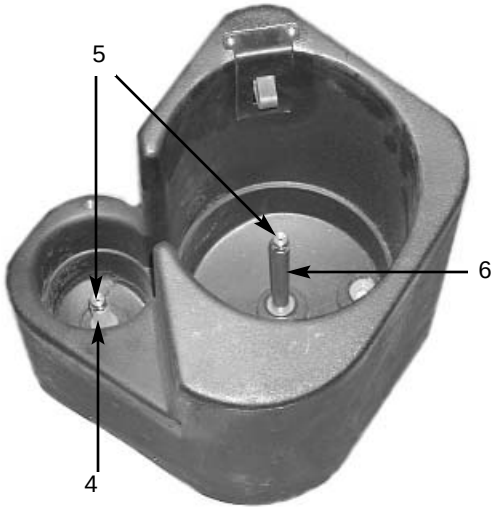
XSP DISPENSER ASSEMBLY



(FRONT VIEW)



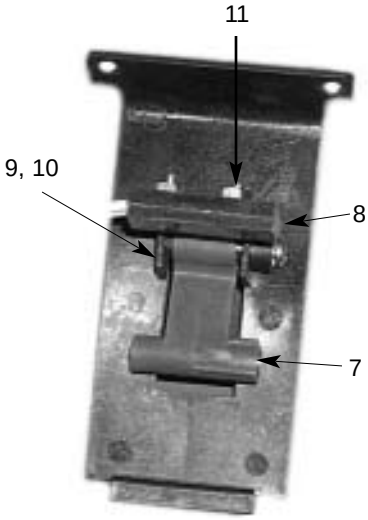
Detergent Pedestal
Ecolab No.: 92387588
Mfg. No.: 05700-021-48-84



(TOP VIEW)



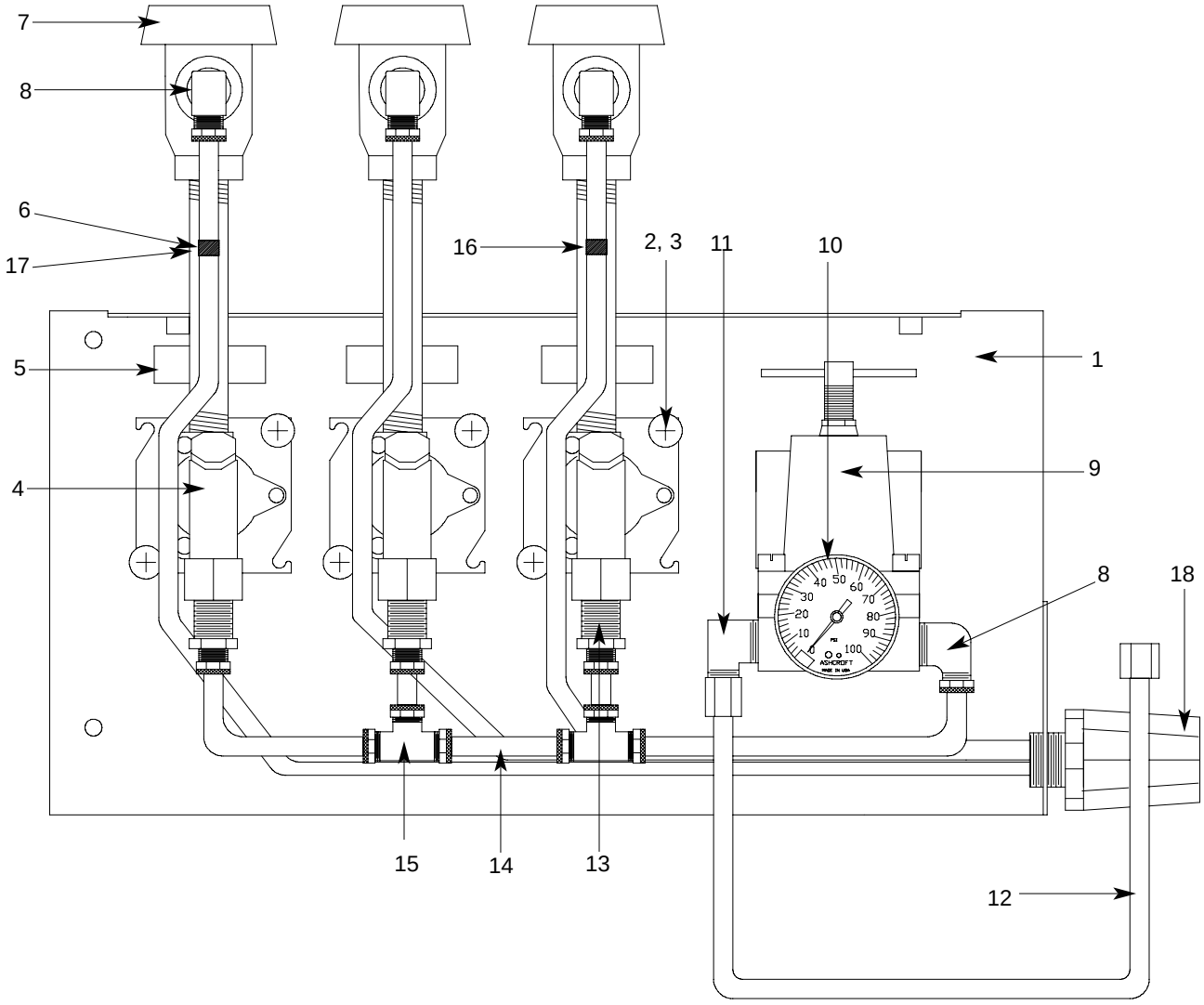
(BOTTOM VIEW)



ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Rinse Aid Cylinder	92381292	05700-021-60-28
2	1	Rinse Aid Hopper Screen	96200324	05700-011-48-91
3	1	Dispenser, Black, Molded	92382449	09515-131-48-79
4	1	Rinse Aid Standpipe	92389311	05700-002-11-13
5	2	Cap and Vane Nozzle	85312247	04730-011-49-46
6	1	Detergent Standpipe	92389279	05700-002-11-14
7	1	Bar Magnet	96581707	05930-011-48-81
8	1	Reed Switch	96581681	05930-011-59-65
9	2	Screw, 4-40 x 3/4" Long	96023247	05305-011-59-64
10	2	#4 External Tooth Starwasher	96557500	05311-011-59-70
11	1	Holder, Cam Assembly	92381367	05340-011-59-62
12	3	Elbow	85635043	04730-111-48-87
13	2	Fitting, 1/2", Straight	83311506	05975-011-45-13
Mounting Hardware:				
*	*	Dispenser Mounting Bracket Weldment	N/A	05700-011-50-31
*	*	Starwasher, External Tooth, 10-24	96026976	05311-273-02-00
*	*	Screw, 10-24 x 1/2” Long Phillipshead	88120746	05305-173-18-00

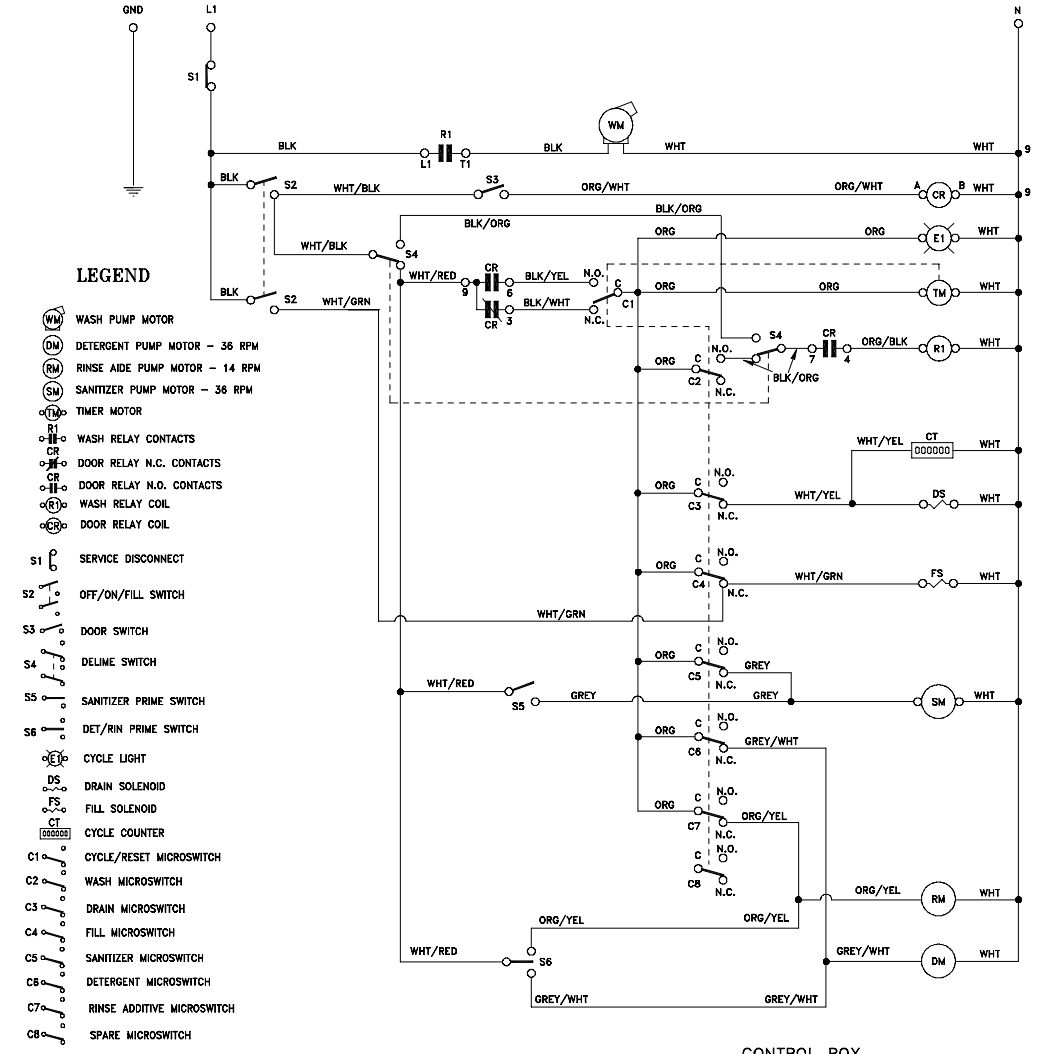
SECTION 6: PARTS SECTION

XSP SOLENOID MOUNTING PLATE ASSEMBLY



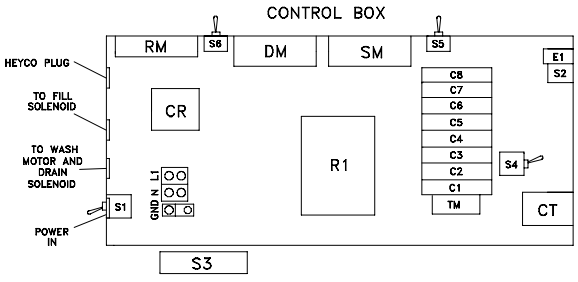
ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	XSP Controller Weldment	92387604	05700-031-76-15
2	8	Screw, 10-32 x 3/8" Long	88120878	05305-173-12-00
3	6	Washer, 10-24 External Tooth	96026976	05311-273-02-00
4	3	Y-Strainer, S-45 Valve	96582061	04730-111-48-73
5	1	Decal, Detergent-Flush-Rinse	96034806	09905-011-64-95
6	3	Nipple, 1/4" NPT x 6" Long	85110518	04730-011-79-29
7	3	Vacuum Breaker, 1/4" NPT	85242501	04810-011-51-62
8	4	Elbow, 1/4" NPT x 1/4” Paraflex	85533354	04730-111-65-43
9	1	Regulator, 1/4" NPT	85221018	04820-011-69-05
10	1	Gauge, 0-100 PSI	85390417	06685-011-48-32
11	1	Elbow, 1/4" Tube x 1/4 MNPT	86075108	04730-011-48-76
12	1	Tube, Dispenser Feed	96034822	05700-031-51-65
13	3	Fitting, 1/4" Paraflex x 1/4" MNPT	85513059	04730-011-48-76
14	18	Feet, 1/4" Paraflex Tubing	85019099	04720-111-51-70
15	2	Tee, 1/4" NPT, Paraflex	85543049	04730-111-65-42
16	1	Tape, Blue, 1-1/2"	96560636	08135-011-89-03
17	1	Tape, Red, 1-1/2"	96560727	08135-011-89-02
18	1	Fitting, Straight, 1/2" NPT	83311506	05975-011-45-13

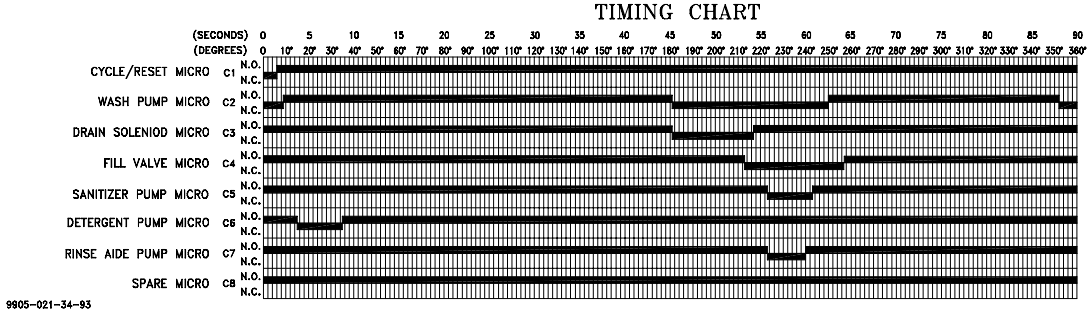
SECTION 7:
ELECTRICAL SCHEMATICS



OHM CHART

COMPONENT	VALUE
WASH MOTOR	1.0 OHM
DRAIN SOLENIOD	22 OHMS
TIMER MOTOR	1330 OHMS
WASH RELAY	55 OHMS
CONTROL RELAY	3142 OHMS
FILL SOLENIOD	104 OHMS
COUNTER	1017 OHMS
PERI-PUMP MOTOR	11 OHMS

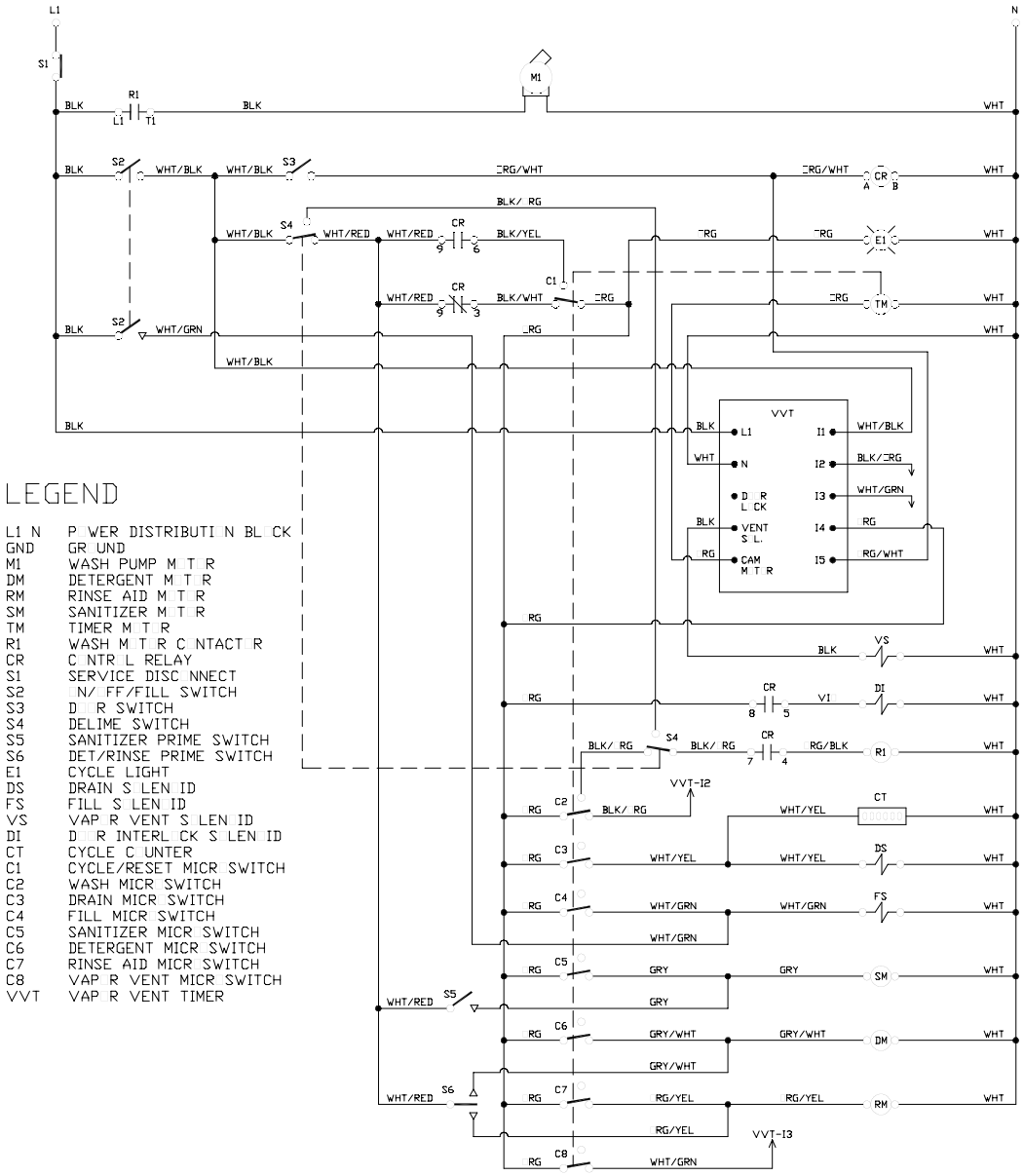




9905-021-34-93

SECTION 7: ELECTRICAL SCHEMATICS

ES-2000-V/ES-2000HHV (115 VOLT, 60HZ, SINGLE PHASE)



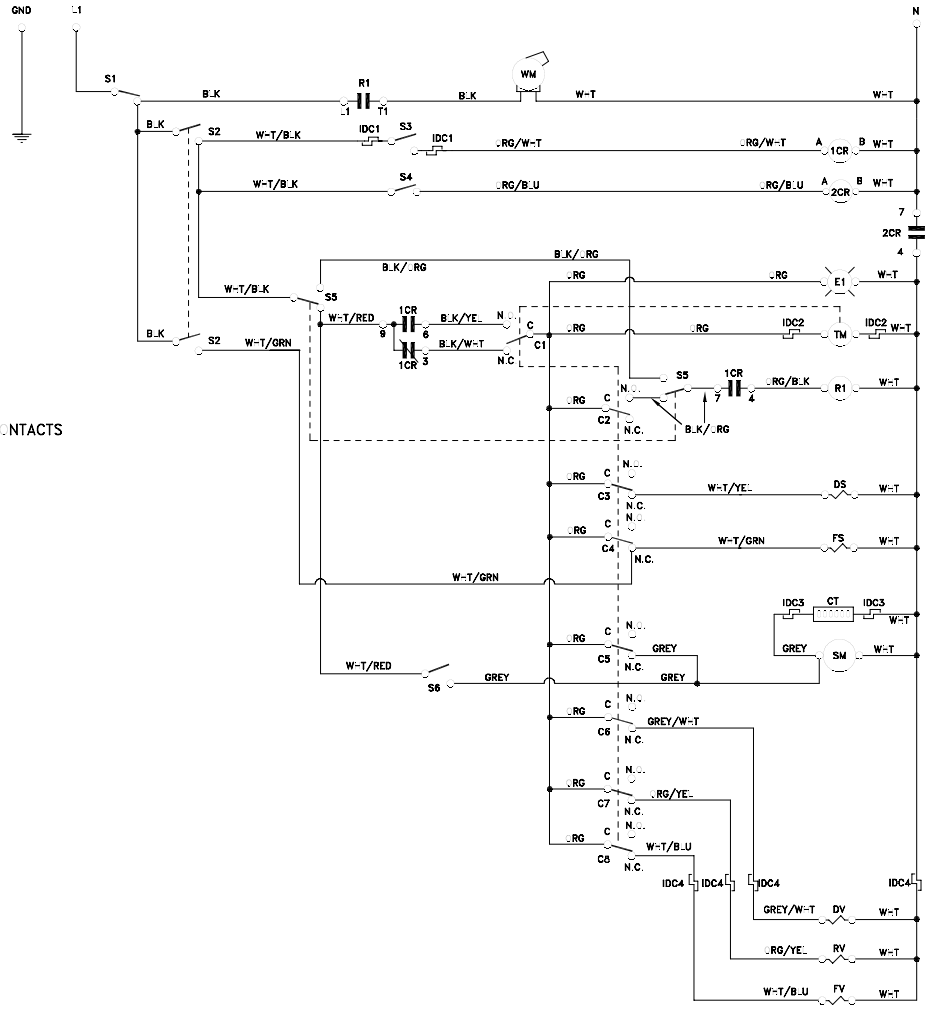
LEGEND

L1 N	P WER DISTRIBUTI N BL CK
GND	GR UND
M1	WASH PUMP M T R
DM	DETERGENT M T R
RM	RINSE AID M T R
SM	SANITIZER M T R
TM	TIMER M T R
R1	WASH M T R C NTACT R
CR	C NTR L RELAY
S1	SERVICE DISC NNECT
S2	N/ FF/FILL SWITCH
S3	D R SWITCH
S4	DELIME SWITCH
S5	SANITIZER PRIME SWITCH
S6	DET/RINSE PRIME SWITCH
E1	CYCLE LIGHT
DS	DRAIN S LEN ID
FS	FILL S LEN ID
VS	VAP R VENT S LEN ID
DI	D R INTERL CK S LEN ID
CT	CYCLE C UNTER
C1	CYCLE/RESET MICR SWITCH
C2	WASH MICR SWITCH
C3	DRAIN MICR SWITCH
C4	FILL MICR SWITCH
C5	SANITIZER MICR SWITCH
C6	DETERGENT MICR SWITCH
C7	RINSE AID MICR SWITCH
C8	VAP R VENT MICR SWITCH
VVT	VAP R VENT TIMER

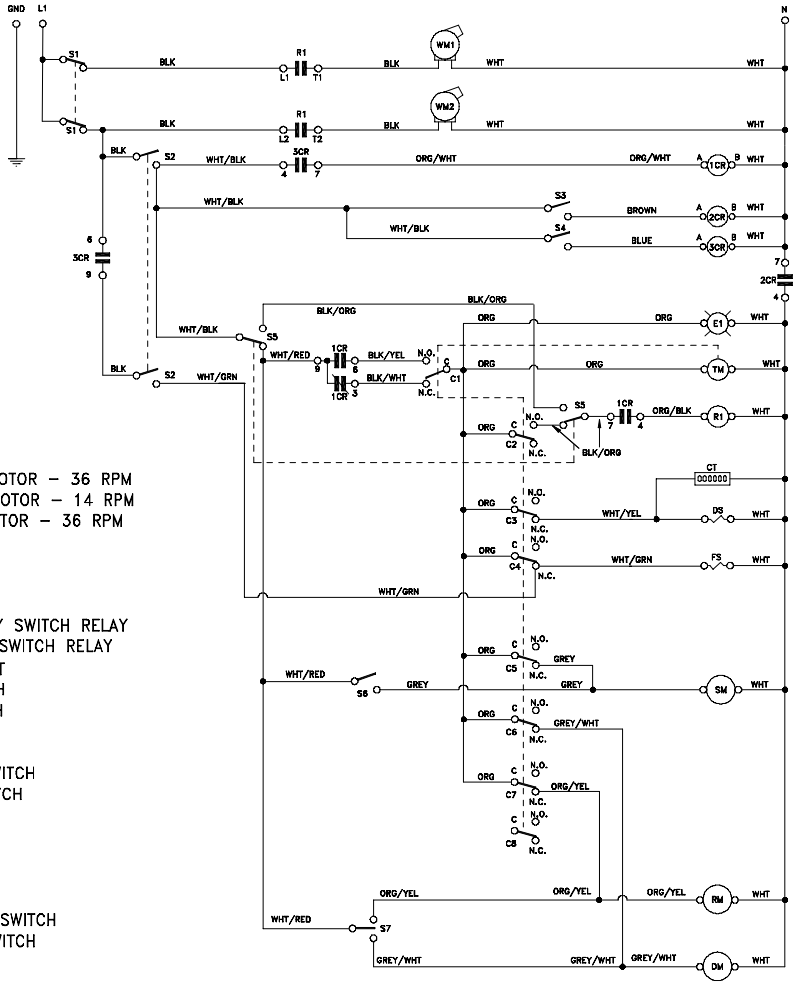
99 5- 2-66-84

LEGEND

WM	WASH PUMP MOTOR
DV	DETERGENT WATER VALVE
RV	RINSE AIDE WATER VALVE
FV	FLUSHING WATER VALVE
SM	SANITIZER PUMP MOTOR – 36 RPM
TM	TIMER MOTOR
R1	WASH RELAY COIL
1CR	CONTROL RELAY COIL
2CR	DISPENSER SAFETY SWITCH RELAY COIL
R1	WASH RELAY CONTACTS
1CR	CONTROL RELAY N.C. CONTACTS
1CR	CONTROL RELAY N.O. CONTACTS
2CR	DISPENSER SAFETY SWITCH RELAY N.O. CONTACTS
S1	SERVICE DISCONNECT
S2	OFF/ON/FILL SWITCH
S3	DOOR SWITCH
S4	DISPENSER SAFETY SWITCH
S5	DELIME SWITCH
S6	SANITIZER PRIME SWITCH
E1	CYCLE LIGHT
DS	DRAIN SOLENOID
FS	FILL SOLENOID
CT	CYCLE COUNTER
C1	CYCLE/RESET MICR. SWITCH
C2	WASH MICR. SWITCH
C3	DRAIN MICR. SWITCH
C4	FILL MICR. SWITCH
C5	SANITIZER MICR. SWITCH
C6	DETERGENT MICR. SWITCH
C7	RINSE ADDITIVE MICR. SWITCH
C8	FLUSHING VALVE MICR. SWITCH
IDC	INSULATION DISPLACEMENT CONNECTOR

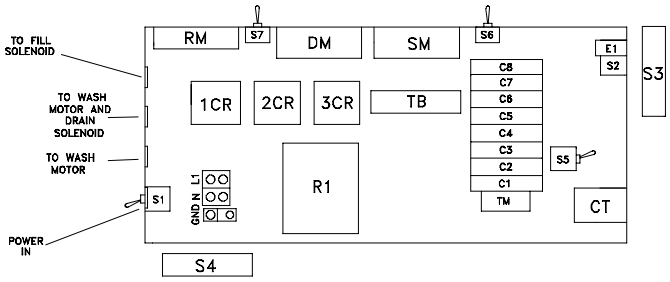


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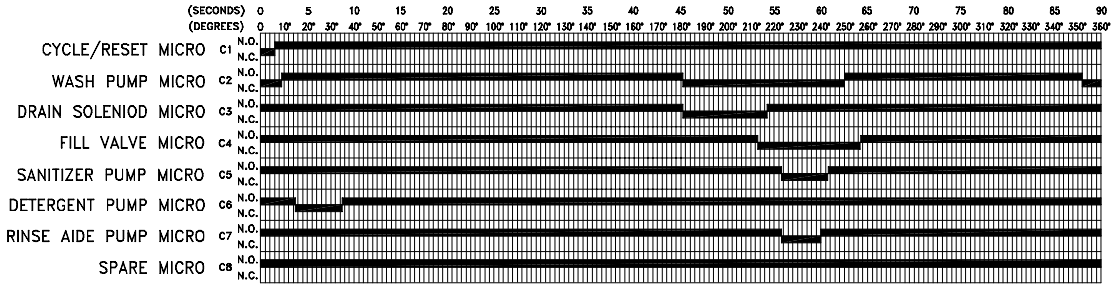


LEGEND

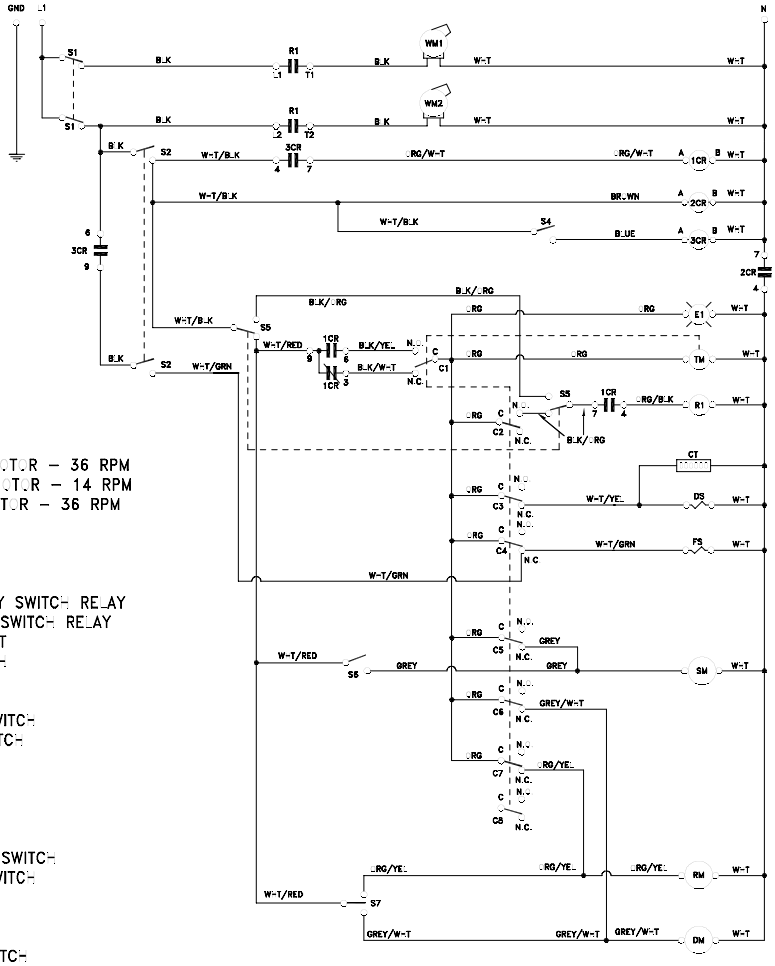
WM	WASH PUMP MOTOR
DM	DETERGENT PUMP MOTOR – 36 RPM
RM	RINSE AIDE PUMP MOTOR – 14 RPM
SM	SANITIZER PUMP MOTOR – 36 RPM
TM	TIMER MOTOR
DV	DRAIN VALVE
R1	WASH RELAY
1CR	CONTROL RELAY
2CR	FRONT DOOR SAFETY SWITCH RELAY
3CR	SIDE DOOR SAFETY SWITCH RELAY
S1	SERVICE DISCONNECT
S2	OFF/ON/FILL SWITCH
S3	FRONT DOOR SWITCH
S4	SIDE DOOR SWITCH
S5	DELIME SWITCH
S6	SANITIZER PRIME SWITCH
S7	DET/RIN PRIME SWITCH
E1	POWER LIGHT
E1	CYCLE LIGHT
DS	DRAIN SOLENOID
FS	FILL SOLENOID
CT	CYCLE COUNTER
C1	CYCLE/RESET MICROSWITCH
C2	OFF/DRAIN MICROSWITCH
C3	WASH MICROSWITCH
C4	DRAIN MICROSWITCH
C5	FILL MICROSWITCH
C6	SANITIZER MICROSWITCH
C7	DETERGENT MICROSWITCH
C8	RINSE ADDITIVE MICROSWITCH



TIMING CHART

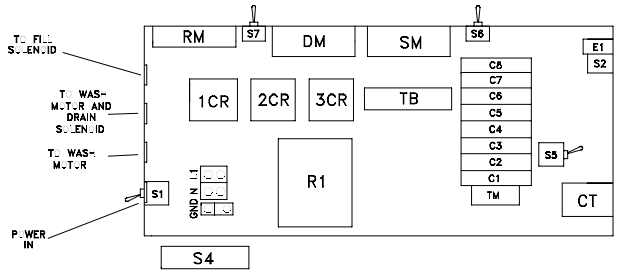


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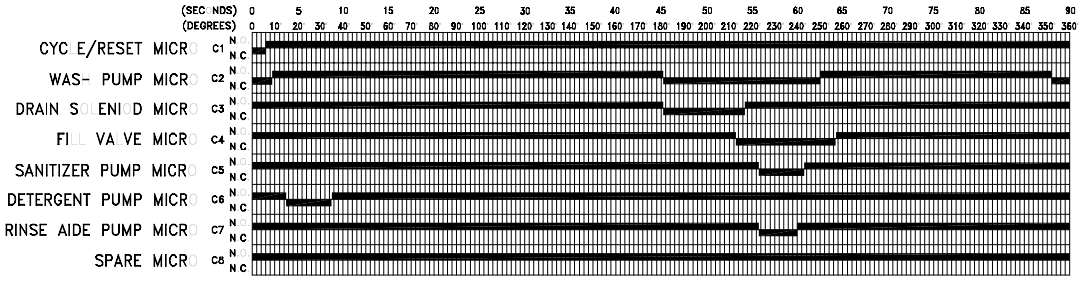


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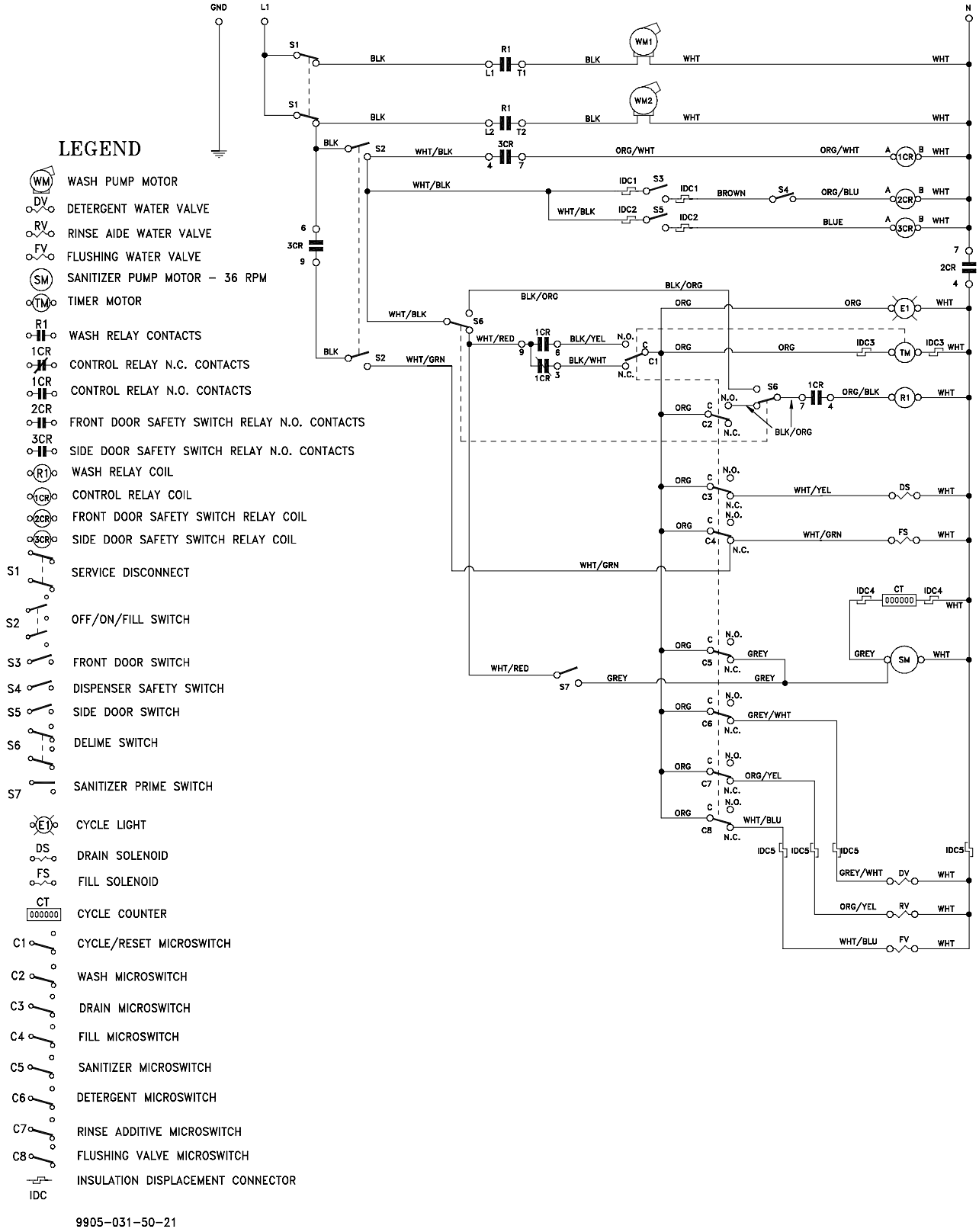
WM	WASH PUMP MOTOR
DM	DETERGENT PUMP MOTOR – 36 RPM
RM	RINSE AIDE PUMP MOTOR – 14 RPM
SM	SANITIZER PUMP MOTOR – 36 RPM
TM	TIMER MOTOR
DV	DRAIN VALVE
R1	WASH RELAY
1CR	CONTROL RELAY
2CR	FRONT DOOR SAFETY SWITCH RELAY
3CR	SIDE DOOR SAFETY SWITCH RELAY
S1	SERVICE DISCONNECT
S2	OFF/ON/FILL SWITCH
S4	SIDE DOOR SWITCH
S5	DELIME SWITCH
S6	SANITIZER PRIME SWITCH
S7	DET/RIN PRIME SWITCH
E1	POWER LIGHT
E1	CYCLE LIGHT
DS	DRAIN SOLENOID
FS	FILL SOLENOID
CT	CYCLE COUNTER
C1	CYCLE/RESET MICR. SWITCH
C2	OFF/DRAIN MICR. SWITCH
C3	WASH MICR. SWITCH
C4	DRAIN MICR. SWITCH
C5	FILL MICR. SWITCH
C6	SANITIZER MICR. SWITCH
C7	DETERGENT MICR. SWITCH
C8	RINSE ADDITIVE MICR. SWITCH



TIMING CHART



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LEGEND
WM WASH PUMP MOTOR
DV DETERGENT WATER VALVE
RV RINSE AIDE WATER VALVE
FV FLUSHING WATER VALVE
SM SANITIZER PUMP MOTOR – 36 RPM
TM TIMER MOTOR
R1 WASH RELAY CONTACTS
1CR CONTROL RELAY N.C. CONTACTS
1CR CONTROL RELAY N.O. CONTACTS
2CR FRONT DOOR SAFETY SWITCH RELAY N.O. CONTACTS
3CR SIDE DOOR SAFETY SWITCH RELAY N.O. CONTACTS
R1 WASH RELAY COIL
1CR CONTROL RELAY COIL
2CR FRONT DOOR SAFETY SWITCH RELAY COIL
3CR SIDE DOOR SAFETY SWITCH RELAY COIL
S1 SERVICE DISCONNECT
S2 OFF/ON/FILL SWITCH
S3 FRONT DOOR SWITCH
S4 DISPENSER SAFETY SWITCH
S5 SIDE DOOR SWITCH
S6 DELIME SWITCH
S7 SANITIZER PRIME SWITCH
E1 CYCLE LIGHT
DS DRAIN SOLENOID
FS FILL SOLENOID
CT 000000 CYCLE COUNTER
C1 CYCLE/RESET MICROSWITCH
C2 WASH MICROSWITCH
C3 DRAIN MICROSWITCH
C4 FILL MICROSWITCH
C5 SANITIZER MICROSWITCH
C6 DETERGENT MICROSWITCH
C7 RINSE ADDITIVE MICROSWITCH
C8 FLUSHING VALVE MICROSWITCH
IDC INSULATION DISPLACEMENT CONNECTOR
GND
L1
N
WM1
WM2
R1
3CR
1CR
2CR
IDC1
IDC2
IDC3
IDC4
IDC5
BLK
WHT
ORG/WHT
WHT/BLK
BROWN
ORG/BLU
BLUE
BLK/ORG
WHT/RED
BLK/YEL
BLK/WHT
WHT/GRN
ORG
ORG/BLK
WHT/YEL
WHT/GRN
GREY
GREY/WHT
ORG/YEL
WHT/BLU
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