ES SERIES RACK CONVEYOR DISHMACHINES

Manufactured in the United States by:

Jackson

INSTALLATION & OPERATION MANUAL

FOR ECOLAB MODELS:

ES-4400

ES-4400CS

ES-4400CSS

ES-4400S

ES-6600

ES-6600CS

ES-6600CSS

ES-6600S

ES-8000

ES-8000CS

ES-8000CSS

ES-8000S

AND ASSOCIATED OPTION PACKAGES

ECOLAB®

January 09, 2007
P/N 7610-001-76-20 (Revision I)

www.ecolab.com

REVISION	REVISION DATE	MADE BY	APPLICABLE ECN	DETAILS
F	03-11-04	CBW	6933	Added drain handle spacer to drain plumbing assemblies. Added Steam models, D226 Steam Booster Option, Side Loader Option and Drain Quench System Option to manual. Combined the ES-4400, ES-6600 and ES-8000 MODELS into (1) manual. Obsoleted ES-6600 and ES-8000 model manuals. Updated format.
G	08-09-05	MAW	6685, 6964 7006, 7064 7096, 7138	Replaced embossed cover with no emboss cover. Changed thermostat from 05930-121-71-36 to 05930-011-49-43. Changed thermostat bracket and hardware. Added rack rail stabilizer to door splash shield. Added limit switch options and instructions. Added 05700-002-97-42 final rinse kit for service. Made other changes per Ecolab request.
H	04-03-06	MAW	7367, 7462 7463, 7634 7558, 7571 7730	Replace door weldments. Add wash/rinse/psi Decals. Added rinse fill motor assembly. Added vent cowl assembly for hooded loader. Changed rinse drain weldment. Added themostat replacement kits. Updated scrap basket assembly drawing.
	05-02-06	MAW	N/A	Updated dimensions pages to make legible.
PG. 139	08-10-06	MAW	N/A	Updated the exhaust fan schematic.
	10-20-06	MF	7878	Change prewash door weldment R/L from 05700-002-57-19 to 05700-002-49-59.
PG. 116	04-19-07	MAW	7898	Added 09905-003-32-20 Fan Load Decal to the Exhaust Fan Kit.
PG. 33 & 34	05-03-07	MAW	7913	Added instructions and all necessary information for change of sanitization mode.
I	01-09-07	MAW	PROCESS	Updated dimension drawings. Made updates per Ecolab requests. Added extended pawl bar assembly.

NOMENCLATURE FOR THE MODELS COVERED IN THIS MANUAL

ES-8000CSS

ES = ES Series of rack conveyors

4400 = 44” wide machine from tub edge to tub edge
6600 = 66” wide machine from tub edge to tub edge
8000 = 80” wide machine from tub edge to tub edge

No Suffix = Electrically-heated, hot water sanitizing dishmachine
CS = Electrically-heated, chemical sanitizing dishmachine
CSS = Steam-heated, chemical sanitizing dishmachine
S = Steam-heated, hot water sanitizing dishmachine

Model:_____

Serial No.:_____

Installation Date:_____

Service Rep. Name:_____

Phone No.:_____

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

SECTION 1:
SPECIFICATION INFORMATION

SECTION 1: SPECIFICATION INFORMATION

ES-4400 MODELS OPERATING SPECIFICATIONS

PERFORMANCE:

RACKS PER HOUR:

ES-4400	248
ES-4400CS	234
ES-4400CSS	234
ES-4400S	248

DISHES/GLASSES PER HOUR:

ES-4400	6200
ES-4400CS	5850
ES-4400CSS	5850
ES-4400S	6200

CAPACITIES:

WASH TANK (GALLONS)	15.4
WASH PUMP (GPM)	270

VENTING REQUIREMENTS:

INPUT END (CFM)	200
OUTPUT END (CFM)	400
TOTAL (CFM)	600

CONVEYOR SPEED:

ES-4400	6.9 FPM
ES-4400CS	6.5 FPM
ES-4400CSS	6.5 FPM
ES-4400S	6.9 FPM

GALLONS PER RACK:

ES-4400	0.94
ES-4400CS	1.00
ES-4400CSS	1.00
ES-4400S	0.94

WATER REQUIREMENTS:

ES-4400/ES-4400S

WASH TEMPERATURE	160°F
RINSE TEMPERATURE	180°F

**NOTE: TEMPERATURES LISTED ARE MINIMUMS*

ES-4400CS/ES-4400CSS

WASH TEMPERATURE	140°F
RINSE TEMPERATURE	140°F

**NOTE: TEMPERATURES LISTED ARE MINIMUMS*

FLOW PRESSURE (PSI)	20 ± 5
FLOWRATE (GPM)	3.9

STEAM REQUIREMENTS:

STEAM FLOW PRESSURE (PSIG)	10-20
CONSUMPTION AT 15 PSIG (LBS/HR)	60

SANITIZER REQUIREMENTS:

ES-4400CS	50 PPM
ES-4400CSS	50 PPM

MOTOR ELECTRICAL REQUIREMENTS:

DRIVE MOTOR HP	1/4
WASH MOTOR HP	2

SECTION 1: SPECIFICATION INFORMATION

ES-6600 & ES-8000 MODELS OPERATING SPECIFICATIONS

PERFORMANCE:

RACKS PER HOUR:

ES-6600	248
ES-6600CS	234
ES-6600CSS	234
ES-6600S	248
ES-8000	248
ES-8000CS	234
ES-8000CSS	234
ES-8000S	248

DISHES/GLASSES PER HOUR:

ES-6600	6200
ES-6600CS	5850
ES-6600CSS	5850
ES-6600S	6200
ES-8000	6200
ES-8000CS	5850
ES-8000CSS	5850
ES-8000S	6200

CAPACITIES:

PREWASH TANK (GALLONS)	16
PREWASH PUMP (GPM) (ES-6600 MODELS)	120
PREWASH PUMP (GPM) (ES-8000 MODELS)	270
WASH TANK (GALLONS)	15.4
WASH PUMP (GPM)	270

VENTING REQUIREMENTS:

INPUT END (CFM)	200
OUTPUT END (CFM)	400
TOTAL (CFM)	600

CONVEYOR SPEED:

ES-6600	6.9 FPM
ES-6600CS	6.5 FPM
ES-6600CSS	6.5 FPM
ES-6600S	6.9 FPM
ES-8000	6.9 FPM
ES-8000CS	6.5 FPM
ES-8000CSS	6.5 FPM
ES-8000S	6.9 FPM

GALLONS PER RACK:

ES-6600	0.94
ES-6600CS	1.00
ES-6600CSS	1.00
ES-6600S	0.94
ES-8000	0.94
ES-8000CS	1.00
ES-8000CSS	1.00
ES-8000S	0.94

WATER REQUIREMENTS:

ES-6600/ES-6600S

WASH TEMPERATURE	160°F
RINSE TEMPERATURE	180°F

**NOTE: TEMPERATURES LISTED ARE MINIMUMS*

ES-6600CS/ES-6600CSS

WASH TEMPERATURE	140°F
RINSE TEMPERATURE	140°F

**NOTE: TEMPERATURES LISTED ARE MINIMUMS*

ES-8000/ES-8000S

WASH TEMPERATURE	160°F
RINSE TEMPERATURE	180°F

**NOTE: TEMPERATURES LISTED ARE MINIMUMS*

ES-8000CS/ES-8000CSS

WASH TEMPERATURE	140°F
RINSE TEMPERATURE	140°F

**NOTE: TEMPERATURES LISTED ARE MINIMUMS*

FLOW PRESSURE (PSI)	20 ± 5
FLOWRATE (GPM)	3.9

STEAM REQUIREMENTS:

STEAM FLOW PRESSURE (PSIG)	10-20
CONSUMPTION AT 15 PSIG (LBS/HR)	60

ES-6600 & ES-8000 MODELS OPERATING SPECIFICATIONS (CONTINUED)

SANITIZER REQUIREMENTS:

ES-6600CS	50 PPM
ES-6600CSS	50 PPM
ES-8000CS	50 PPM
ES-8000CSS	50 PPM

MOTOR ELECTRICAL REQUIREMENTS:

DRIVE MOTOR HP	1/4
PREWASH MOTOR HP (ES-6600 MODELS)	1
PREWASH MOTOR HP (ES-8000 MODELS)	2
WASH MOTOR HP (ES-6600 MODELS)	2
WASH MOTOR HP (ES-8000 MODELS)	2

SECTION 1: SPECIFICATION INFORMATION

ES-4400 MODELS ELECTRICAL REQUIREMENTS

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.

MODEL	VOLTS	PH	HZ	WASH HEATER RATINGS	TOTAL AMPS	TYPICAL ELECTRICAL CIRCUIT
ES-4400	208	1	60	15KW @ 208V	83 A	110 AMP
ES-4400	230	1	60	15KW @ 230V	76 A	100 AMP
ES-4400	208	3	60	15KW @ 208V	49 A	70 AMP
ES-4400	230	3	60	15KW @ 230V	45 A	60 AMP
ES-4400	460	3	60	15KW @ 460V	23 A	30 AMP
ES-4400CS	208	1	60	15KW @ 208V	83 A	110 AMP
ES-4400CS	230	1	60	15KW @ 230V	76 A	100 AMP
ES-4400CS	208	3	60	15KW @ 208V	49 A	70 AMP
ES-4400CS	230	3	60	15KW @ 230V	45 A	60 AMP
ES-4400CS	460	3	60	15KW @ 460V	23 A	30 AMP
ES-4400CSS	208	1	60	N/A	11 A	15 AMP
ES-4400CSS	230	1	60	N/A	11 A	15 AMP
ES-4400CSS	208	3	60	N/A	7 A	15 AMP
ES-4400CSS	230	3	60	N/A	7 A	15 AMP
ES-4400CSS	460	3	60	N/A	4 A	15 AMP
ES-4400S	208	1	60	N/A	11 A	15 AMP
ES-4400S	230	1	60	N/A	11 A	15 AMP
ES-4400S	208	3	60	N/A	7 A	15 AMP
ES-4400S	230	3	60	N/A	7 A	15 AMP
ES-4400S	460	3	60	N/A	4 A	15 AMP

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-6600 MODELS ELECTRICAL REQUIREMENTS

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.

MODEL	VOLTS	PH	HZ	WASH HEATER RATINGS	TOTAL AMPS	TYPICAL ELECTRICAL CIRCUIT
ES-6600	208	1	60	15KW @ 208V	89 A	125 AMP
ES-6600	230	1	60	15KW @ 230V	82 A	110 AMP
ES-6600	208	3	60	15KW @ 208V	52 A	70 AMP
ES-6600	230	3	60	15KW @ 230V	48 A	60 AMP
ES-6600	460	3	60	15KW @ 460V	24 A	30 AMP
ES-6600CS	208	1	60	15KW @ 208V	89 A	125 AMP
ES-6600CS	230	1	60	15KW @ 230V	82 A	110 AMP
ES-6600CS	208	3	60	15KW @ 208V	52 A	70 AMP
ES-6600CS	230	3	60	15KW @ 230V	48 A	60 AMP
ES-6600CS	460	3	60	15KW @ 460V	24 A	30 AMP
ES-6600CSS	208	1	60	N/A	17 A	25 AMP
ES-6600CSS	230	1	60	N/A	17 A	25 AMP
ES-6600CSS	208	3	60	N/A	11 A	15 AMP
ES-6600CSS	230	3	60	N/A	11 A	15 AMP
ES-6600CSS	460	3	60	N/A	6 A	15 AMP
ES-6600S	208	1	60	N/A	17 A	25 AMP
ES-6600S	230	1	60	N/A	17 A	25 AMP
ES-6600S	208	3	60	N/A	11 A	15 AMP
ES-6600S	230	3	60	N/A	11 A	15 AMP
ES-6600S	460	3	60	N/A	6 A	15 AMP

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

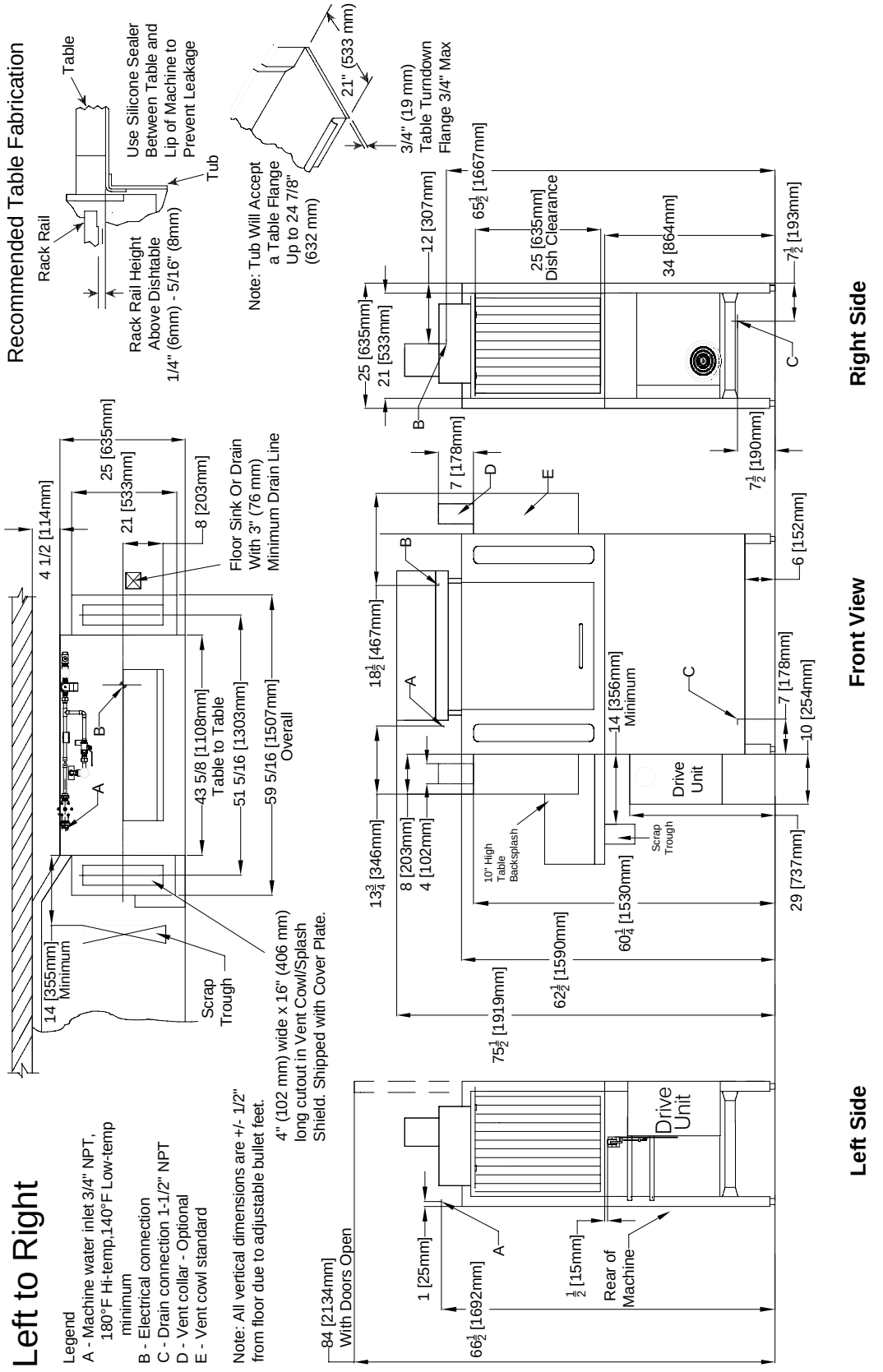
ES-8000 MODELS ELECTRICAL REQUIREMENTS

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.

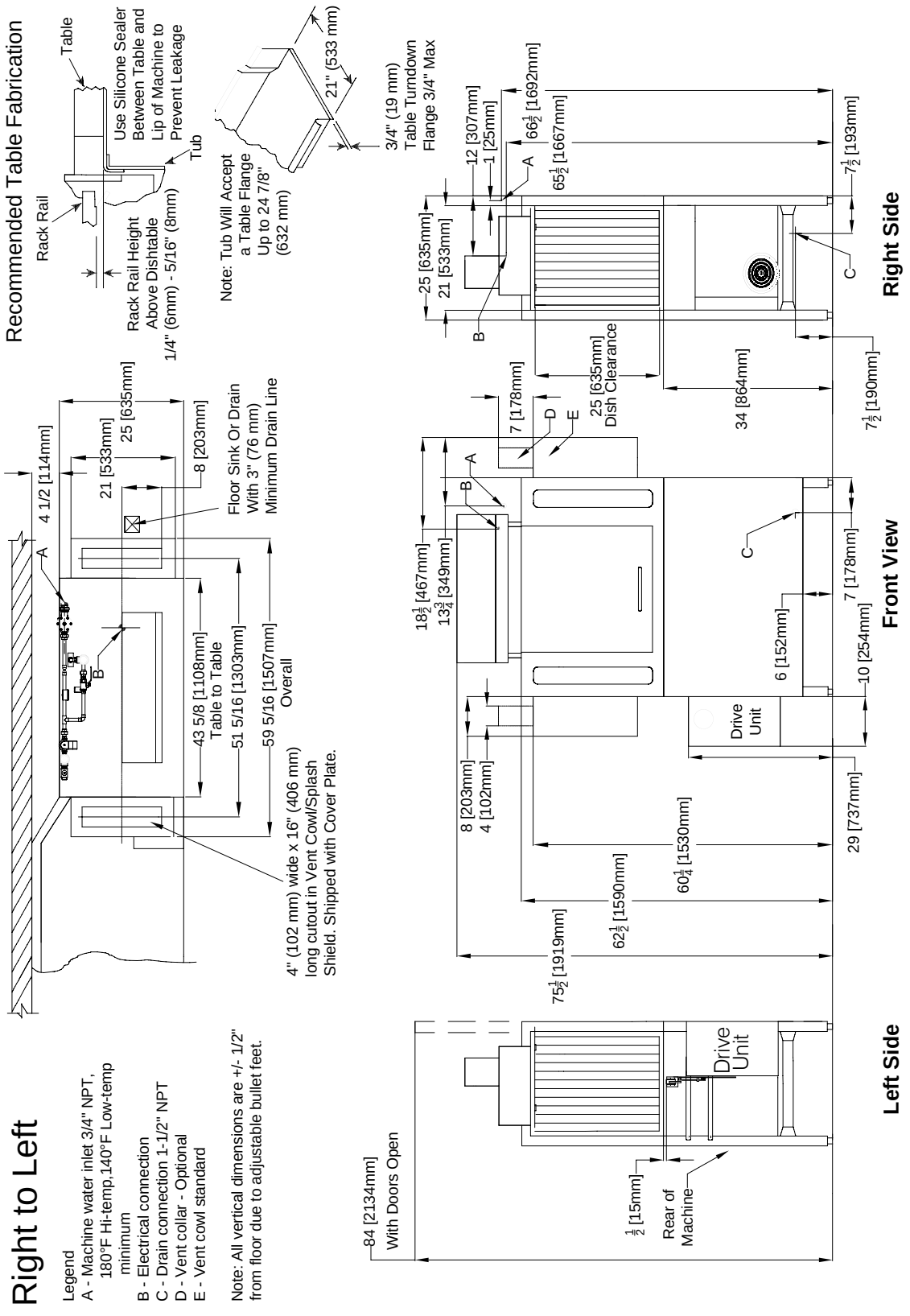
MODEL	VOLTS	PH	HZ	WASH HEATER RATINGS	TOTAL AMPS	TYPICAL ELECTRICAL CIRCUIT
ES-8000	208	1	60	15KW @ 208V	91 A	125 AMP
ES-8000	230	1	60	15KW @ 230V	84 A	110 AMP
ES-8000	208	3	60	15KW @ 208V	54 A	70 AMP
ES-8000	230	3	60	15KW @ 230V	50 A	70 AMP
ES-8000	460	3	60	15KW @ 460V	25 A	35 AMP
ES-8000CS	208	1	60	15KW @ 208V	91 A	125 AMP
ES-8000CS	230	1	60	15KW @ 230V	84 A	110 AMP
ES-8000CS	208	3	60	15KW @ 208V	54 A	70 AMP
ES-8000CS	230	3	60	15KW @ 230V	50 A	70 AMP
ES-8000CS	460	3	60	15KW @ 460V	25 A	35 AMP
ES-8000CSS	208	1	60	N/A	19 A	25 AMP
ES-8000CSS	230	1	60	N/A	19 A	25 AMP
ES-8000CSS	208	3	60	N/A	13 A	20 AMP
ES-8000CSS	230	3	60	N/A	13 A	20 AMP
ES-8000CSS	460	3	60	N/A	7 A	15 AMP

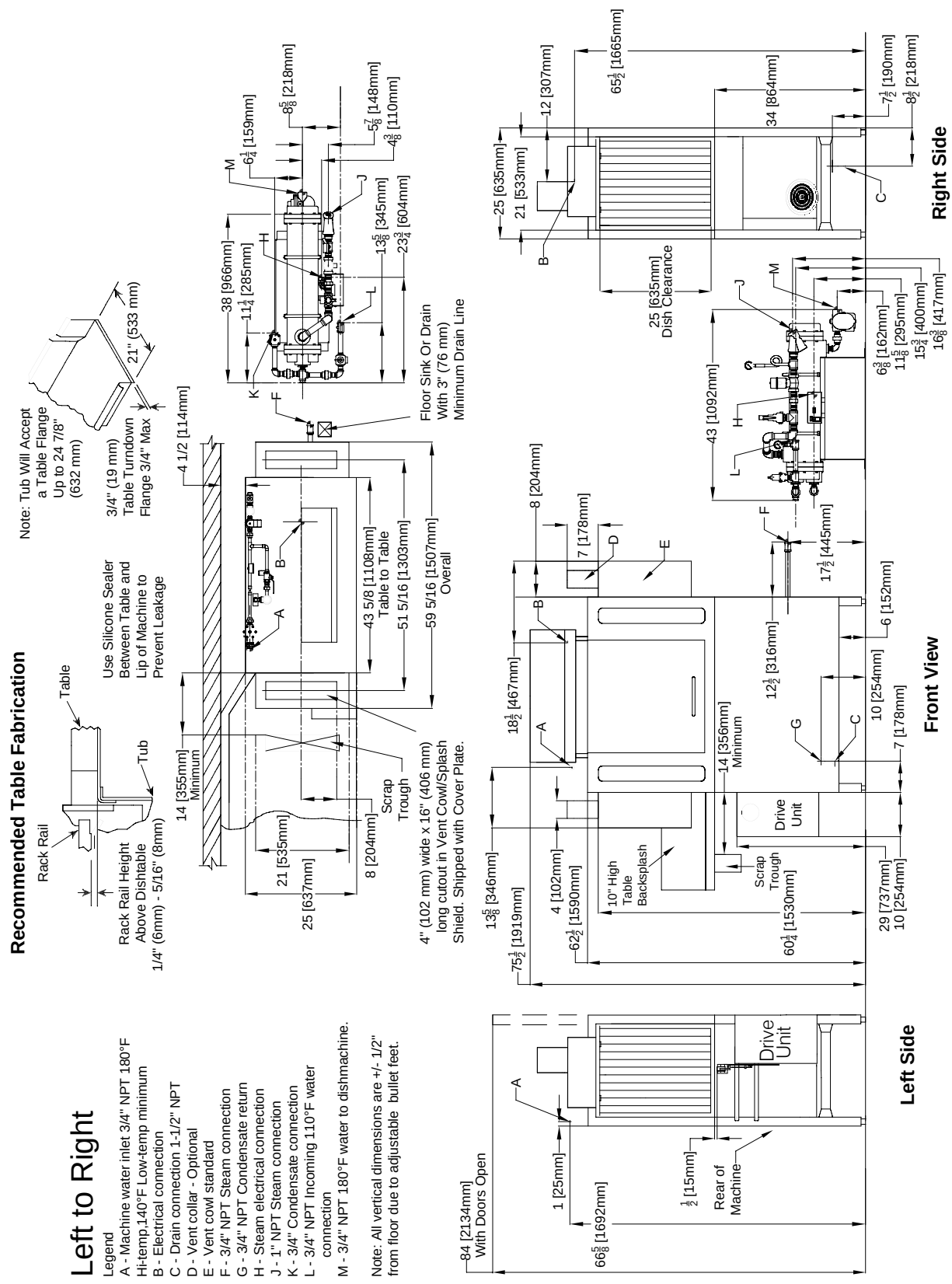
NOTE: Always refer to the machine data plate for specific electrical and water requirements. The material provided on this page is for reference only and may be subject to change without notice.

ES-4400/ES-4400CS (LEFT TO RIGHT) DIMENSIONS

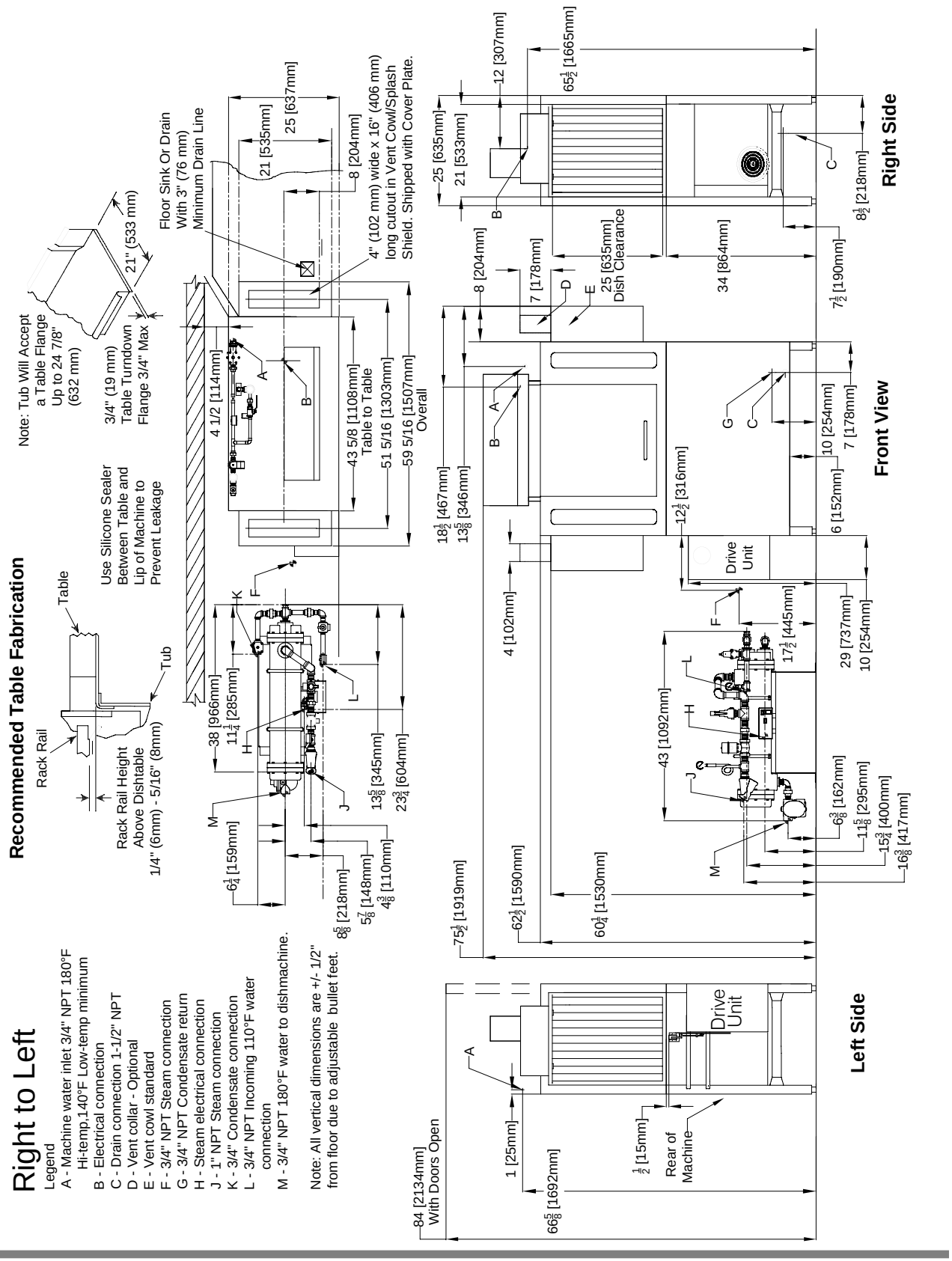


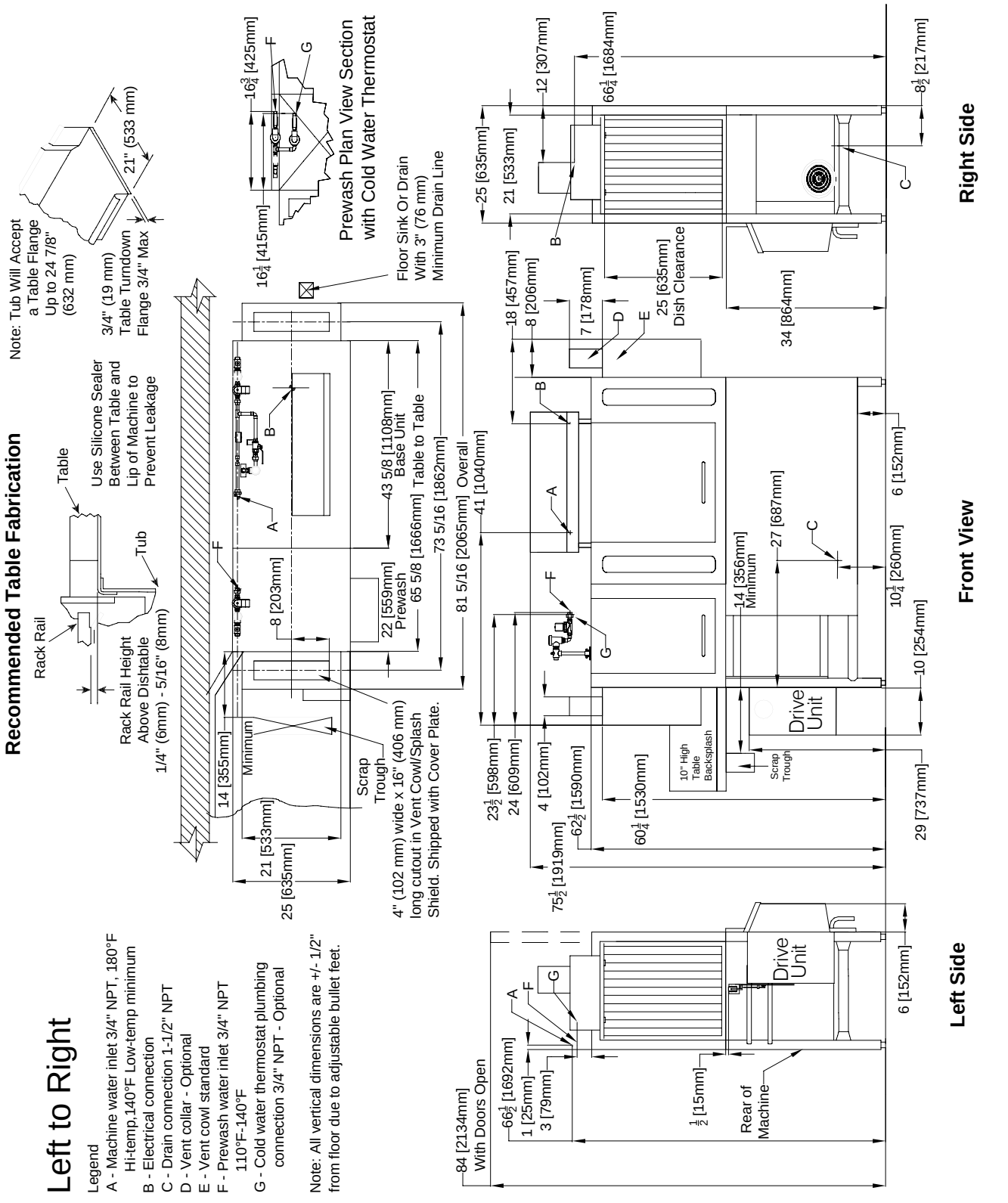
ES-4400/ES-4400CS (RIGHT TO LEFT) DIMENSIONS

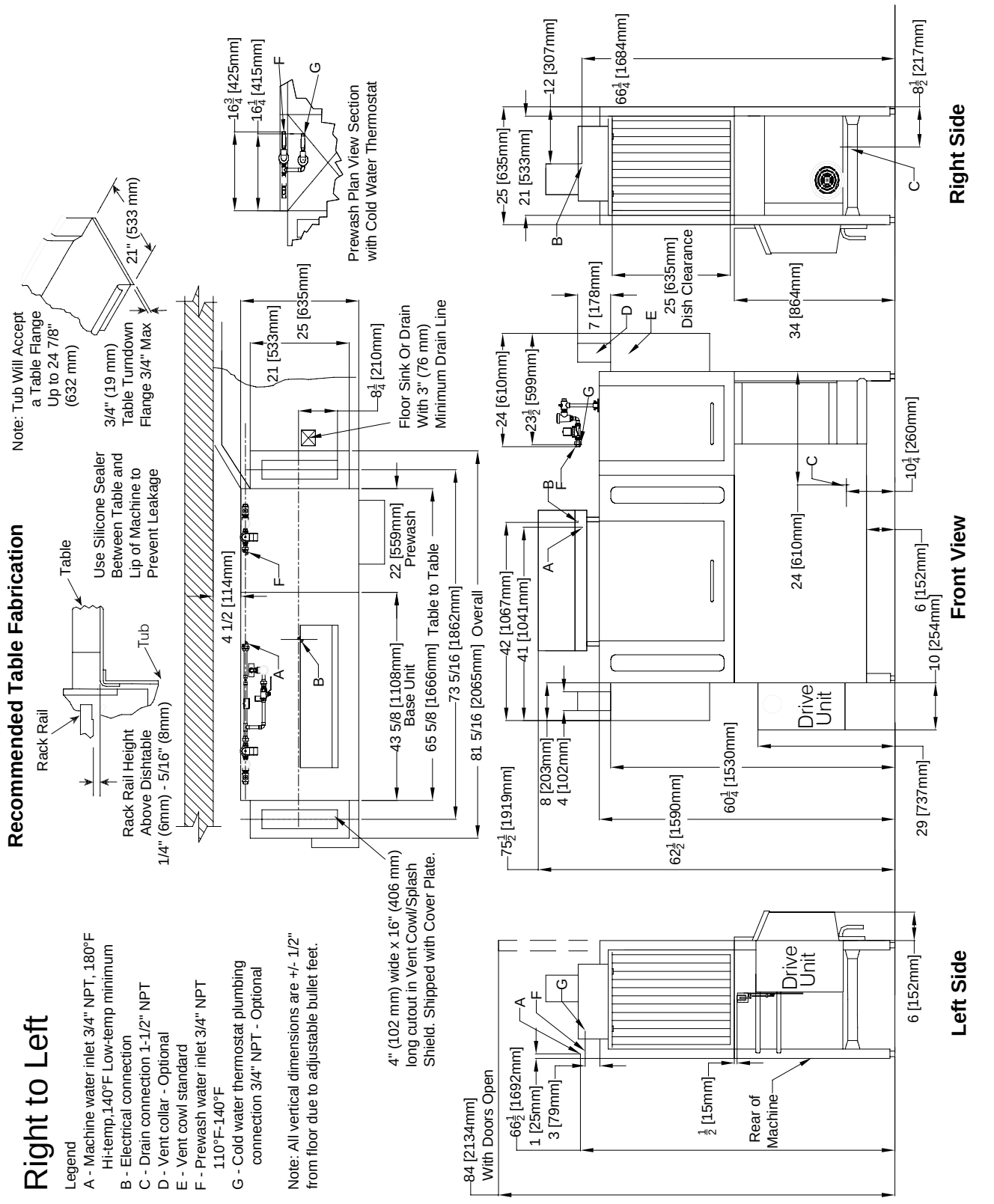



Left to Right
Legend
A - Machine water inlet 3/4" NPT 180°F Hi-temp,140°F Low-temp minimum
B - Electrical connection
C - Drain connection 1-1/2" NPT
D - Vent collar - Optional
E - Vent cowl standard
F - 3/4" NPT Steam connection
G - 3/4" NPT Condensate return
H - Steam electrical connection
J - 1" NPT Steam connection
K - 3/4" Condensate connection
L - 3/4" NPT Incoming 110°F water connection
M - 3/4" NPT 180°F water to dishmachine.
Note: All vertical dimensions are +/- 1/2" from floor due to adjustable bullet feet.
Recommended Table Fabrication
Rack Rail
Table
Tub
Rack Rail Height Above Dishtable 1/4" (6mm) - 5/16" (8mm)
Use Silicone Sealer Between Table and Lip of Machine to Prevent Leakage
Note: Tub Will Accept a Table Flange Up to 24 7/8" (632 mm)
3/4" (19 mm) Table Turndown Flange 3/4" Max
21" (533 mm)
Floor Sink Or Drain With 3" (76 mm) Minimum Drain Line
4 1/2 [114mm]
14 [355mm] Minimum
21 [535mm]
25 [637mm]
8 [204mm]
Scrap Trough
43 5/8 [1108mm] Table to Table
51 5/16 [1303mm]
59 5/16 [1507mm] Overall
4" (102 mm) wide x 16" (406 mm) long cutout in Vent Cowl/Splash Shield. Shipped with Cover Plate.
38 [966mm]
11¼ [285mm]
6¼ [159mm]
8⅝ [218mm]
5⅞ [148mm]
4⅜ [110mm]
13⅝ [345mm]
23¾ [604mm]
Front View
Left Side
Right Side
Drive Unit
Rear of Machine
1 [25mm]
½ [15mm]
84 [2134mm] With Doors Open
66⅝ [1692mm]
75½ [1919mm]
62½ [1590mm]
13⅝ [346mm]
18½ [467mm]
10" High Table Backsplash
4 [102mm]
14 [356mm] Minimum
60¼ [1530mm]
Scrap Trough
8 [204mm]
7 [178mm]
12½ [316mm]
17½ [445mm]
6 [152mm]
10 [254mm]
7 [178mm]
29 [737mm]
10 [254mm]
43 [1092mm]
25 [635mm] Dish Clearance
25 [635mm]
21 [533mm]
12 [307mm]
65½ [1665mm]
34 [864mm]
7½ [190mm]
8½ [218mm]
6⅜ [162mm]
11⅝ [295mm]
15¾ [400mm]
16⅜ [417mm]

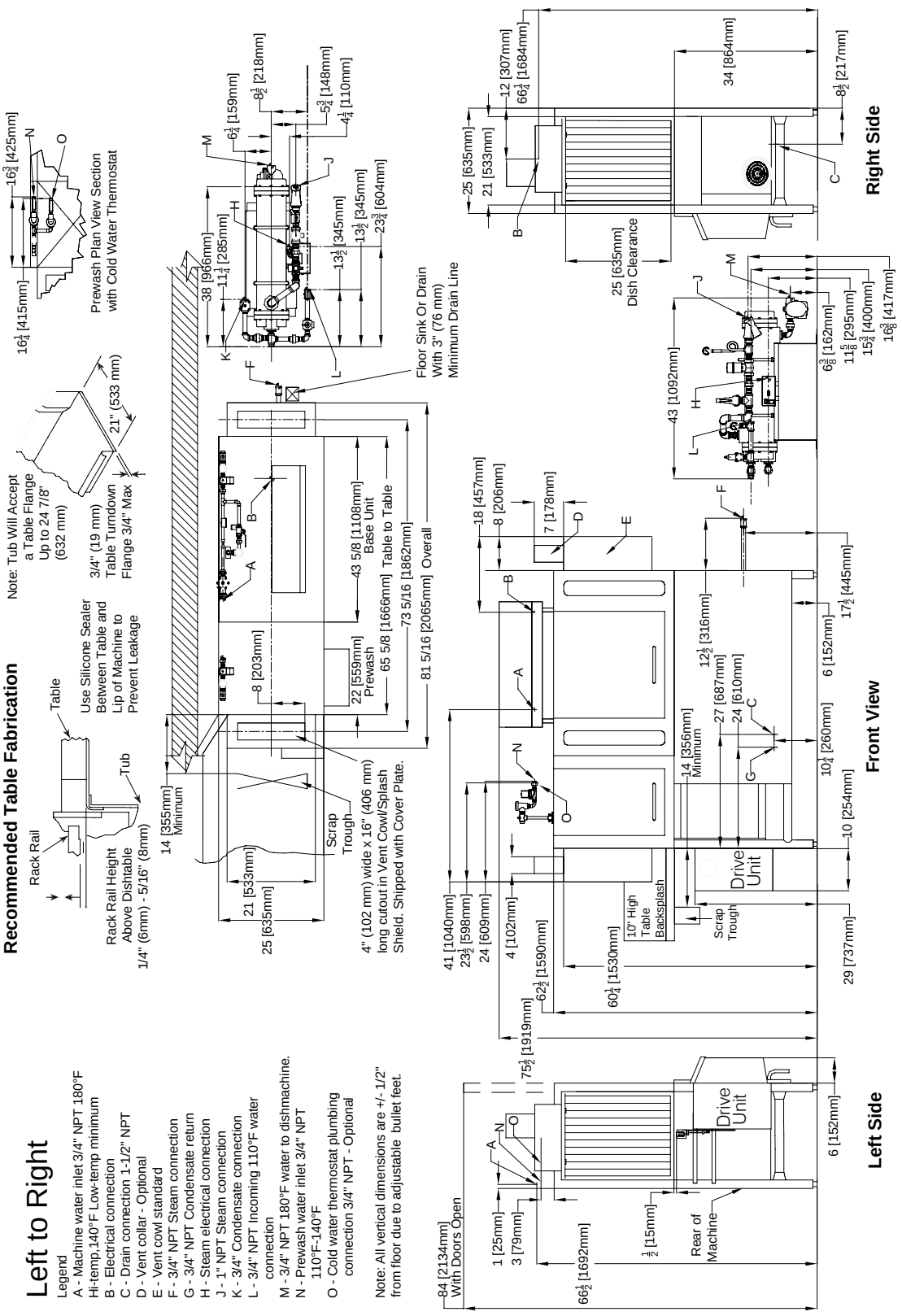
ES-4400CSS/ES-4400S (RIGHT TO LEFT) DIMENSIONS



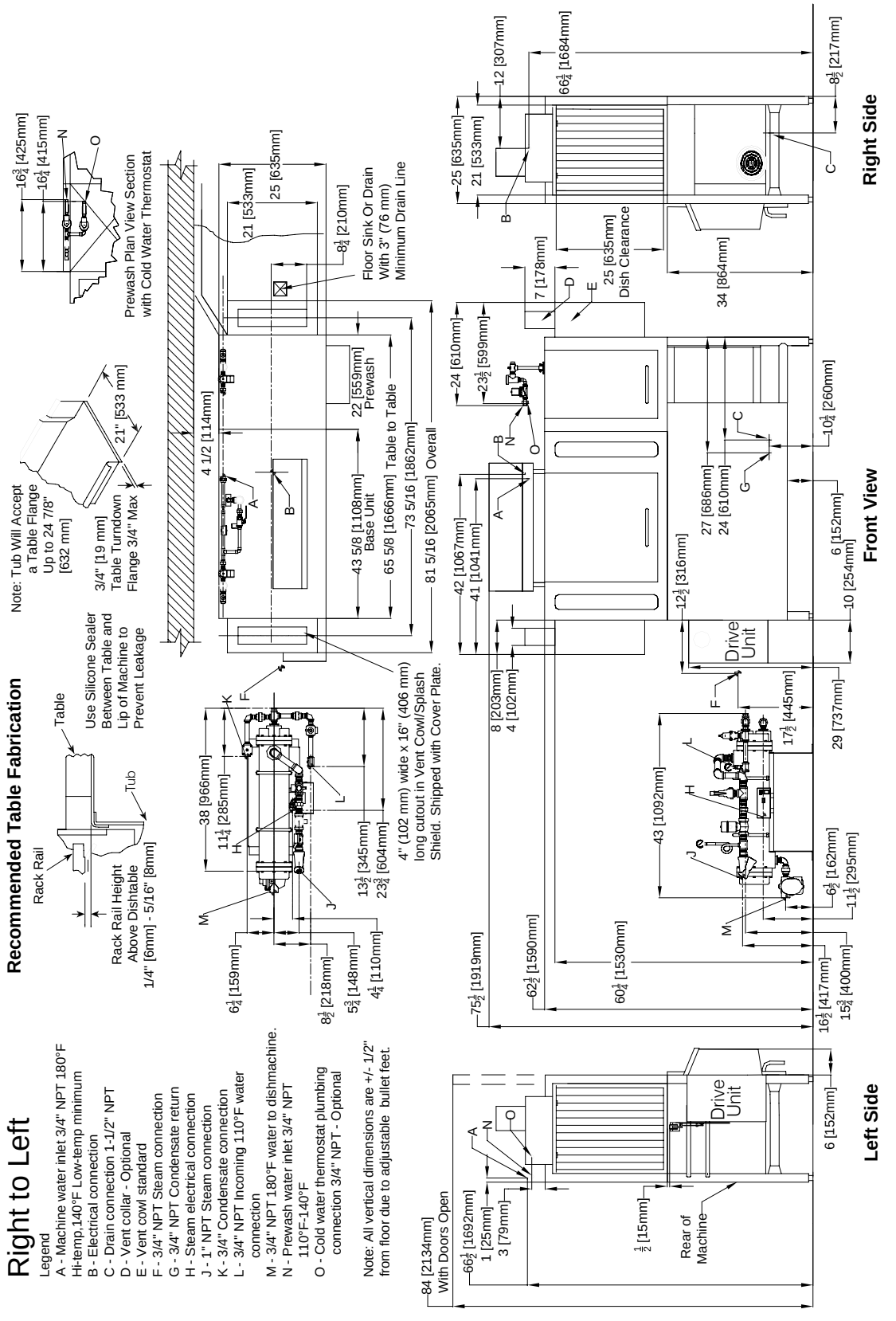

Left to Right
Legend
A - Machine water inlet 3/4" NPT, 180°F Hi-temp.140°F Low-temp minimum
B - Electrical connection
C - Drain connection 1-1/2" NPT
D - Vent collar - Optional
E - Vent cowl standard
F - Prewash water inlet 3/4" NPT 110°F-140°F
G - Cold water thermostat plumbing connection 3/4" NPT - Optional
Note: All vertical dimensions are +/- 1/2" from floor due to adjustable bullet feet.
Recommended Table Fabrication
Rack Rail
Table
Tub
Use Silicone Sealer Between Table and Lip of Machine to Prevent Leakage
Rack Rail Height Above Dishtable 1/4" (6mm) - 5/16" (8mm)
Note: Tub Will Accept a Table Flange Up to 24 7/8" (632 mm)
3/4" (19 mm) Table Turndown Flange
21" (533 mm) Max
Prewash Plan View Section with Cold Water Thermostat
Floor Sink Or Drain With 3" (76 mm) Minimum Drain Line
16¾ [425mm]
16¼ [415mm]
14 [355mm] Minimum
21 [533mm]
25 [635mm]
8 [203mm]
22 [559mm] Prewash
43 5/8 [1108mm] Base Unit
65 5/8 [1666mm] Table to Table
73 5/16 [1862mm]
81 5/16 [2065mm] Overall
Scrap Trough
4" (102 mm) wide x 16" (406 mm) long cutout in Vent Cowl/Splash Shield. Shipped with Cover Plate.
Front View
41 [1040mm]
23½ [598mm]
24 [609mm]
4 [102mm]
75½ [1919mm]
62½ [1590mm]
60¼ [1530mm]
10" High Table Backsplash
Scrap Trough
Drive Unit
14 [356mm] Minimum
27 [687mm]
10¼ [260mm]
6 [152mm]
10 [254mm]
29 [737mm]
Right Side
25 [635mm]
21 [533mm]
12 [307mm]
66¼ [1684mm]
8½ [217mm]
18 [457mm]
8 [206mm]
7 [178mm]
25 [635mm] Dish Clearance
34 [864mm]
Left Side
84 [2134mm] With Doors Open
66½ [1692mm]
1 [25mm]
3 [79mm]
½ [15mm]
Rear of Machine
6 [152mm]

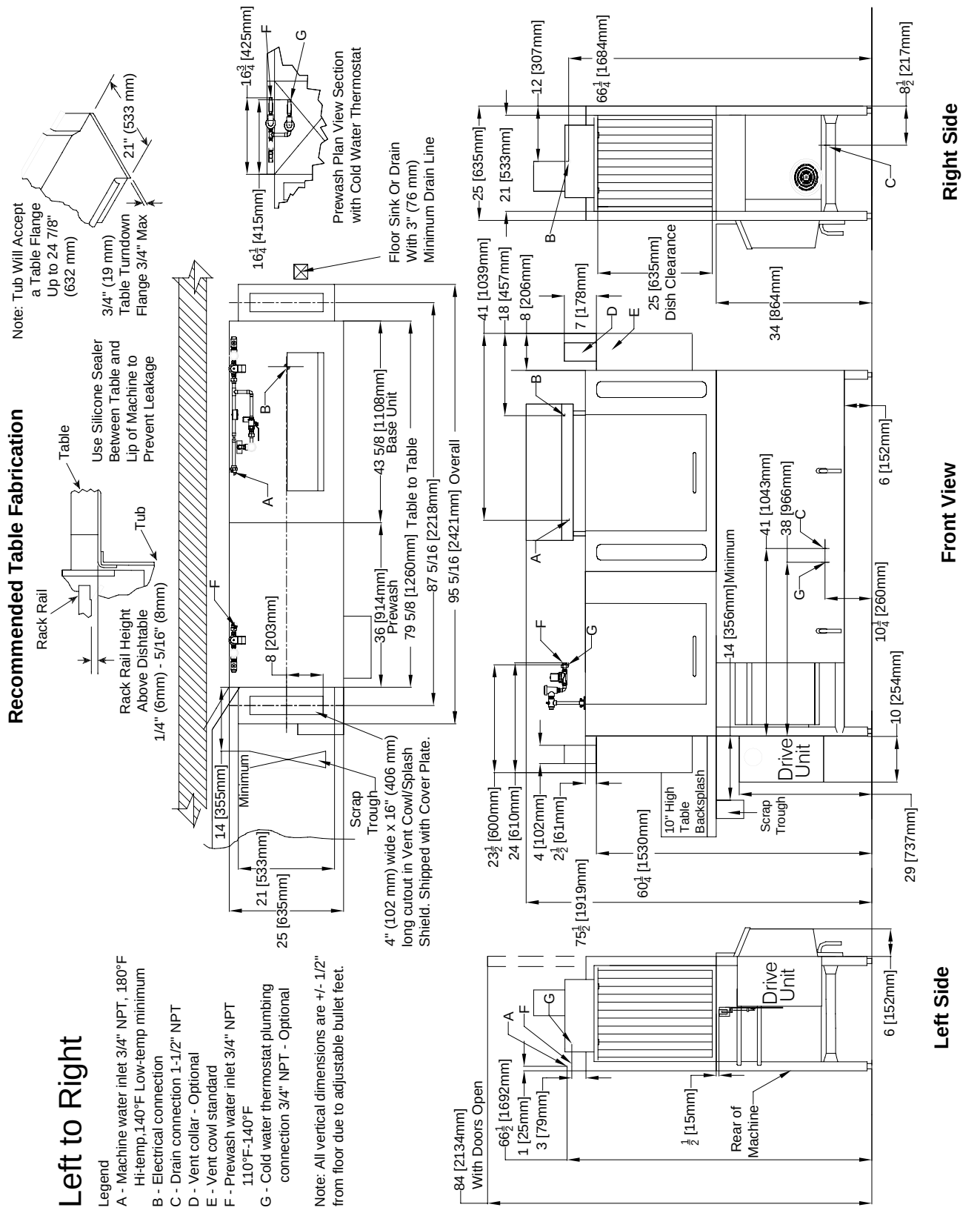

Right to Left
Legend
A - Machine water inlet 3/4" NPT, 180°F Hi-temp,140°F Low-temp minimum
B - Electrical connection
C - Drain connection 1-1/2" NPT
D - Vent collar - Optional
E - Vent cowl standard
F - Prewash water inlet 3/4" NPT 110°F-140°F
G - Cold water thermostat plumbing connection 3/4" NPT - Optional
Note: All vertical dimensions are +/- 1/2" from floor due to adjustable bullet feet.
Recommended Table Fabrication
Rack Rail
Table
Tub
Rack Rail Height Above Dishtable 1/4" (6mm) - 5/16" (8mm)
Use Silicone Sealer Between Table and Lip of Machine to Prevent Leakage
Note: Tub Will Accept a Table Flange Up to 24 7/8" (632 mm)
3/4" (19 mm) Table Turndown Flange 3/4" Max
21" (533 mm)
Prewash Plan View Section with Cold Water Thermostat
Floor Sink Or Drain With 3" (76 mm) Minimum Drain Line
4" (102 mm) wide x 16" (406 mm) long cutout in Vent Cowl/Splash Shield. Shipped with Cover Plate.
Left Side
Front View
Right Side
Drive Unit
Rear of Machine

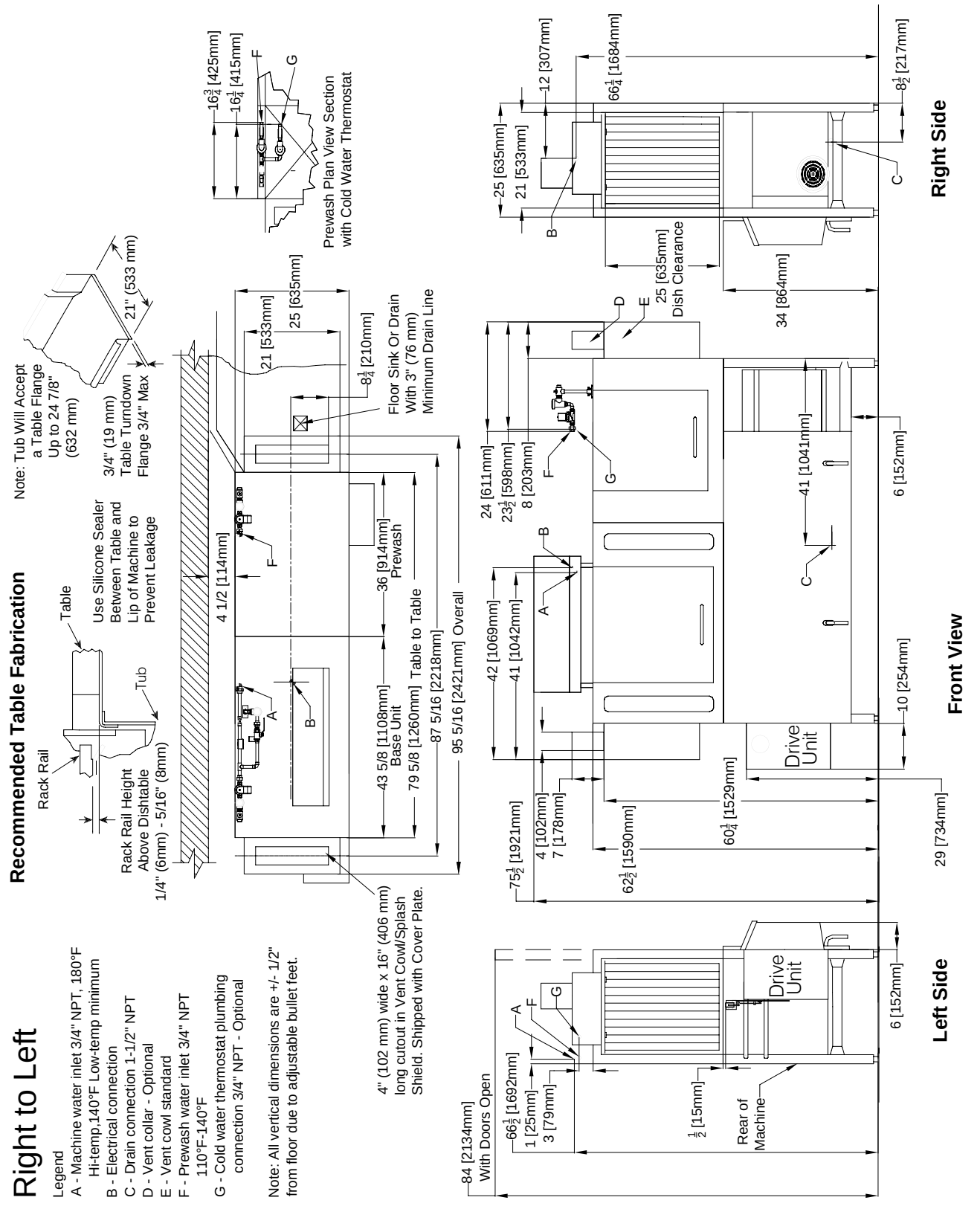
ES-6600CSS/ES-6600S (LEFT TO RIGHT) DIMENSIONS



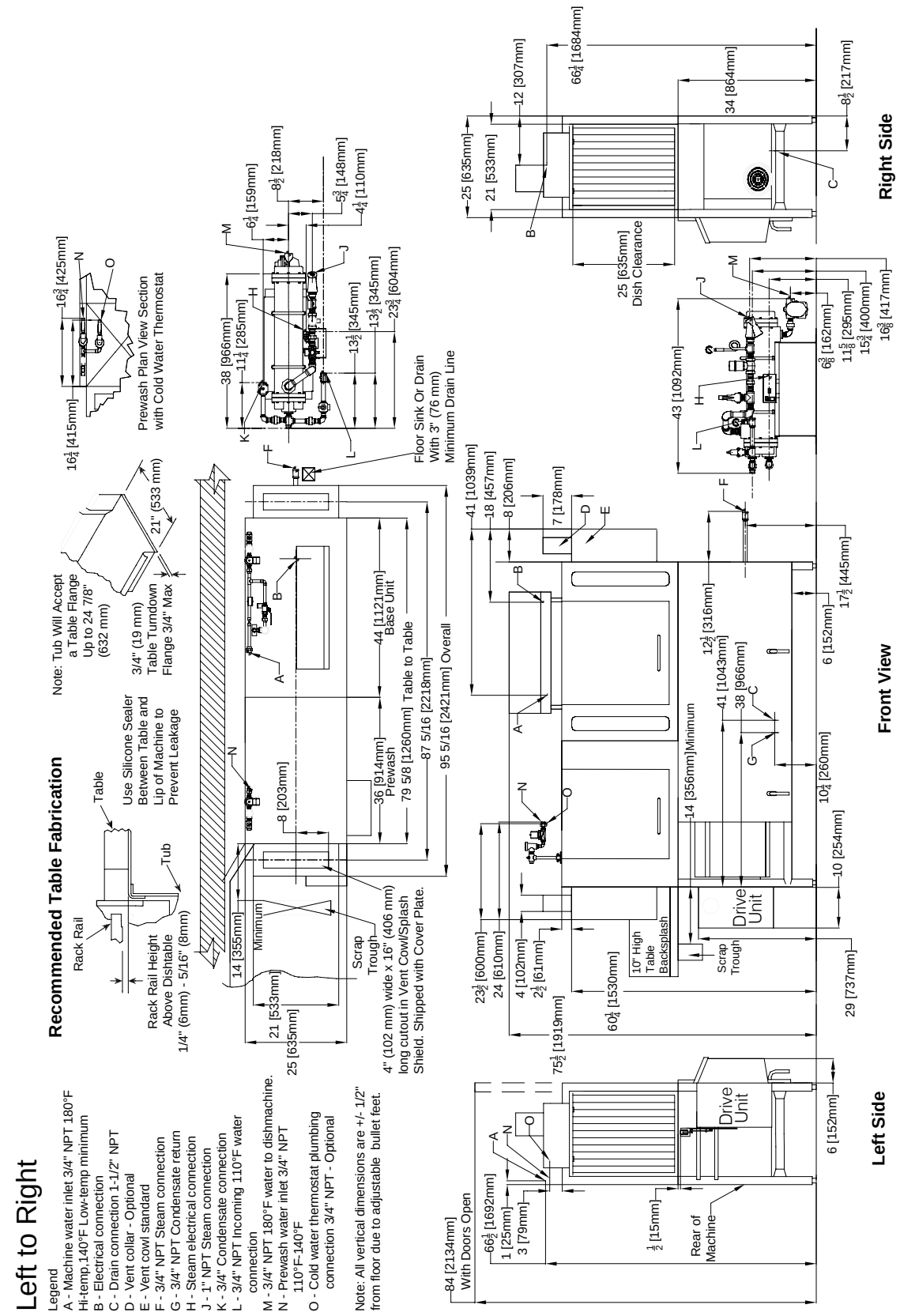
ES-6600CSS/ES-6600S (RIGHT TO LEFT) DIMENSIONS



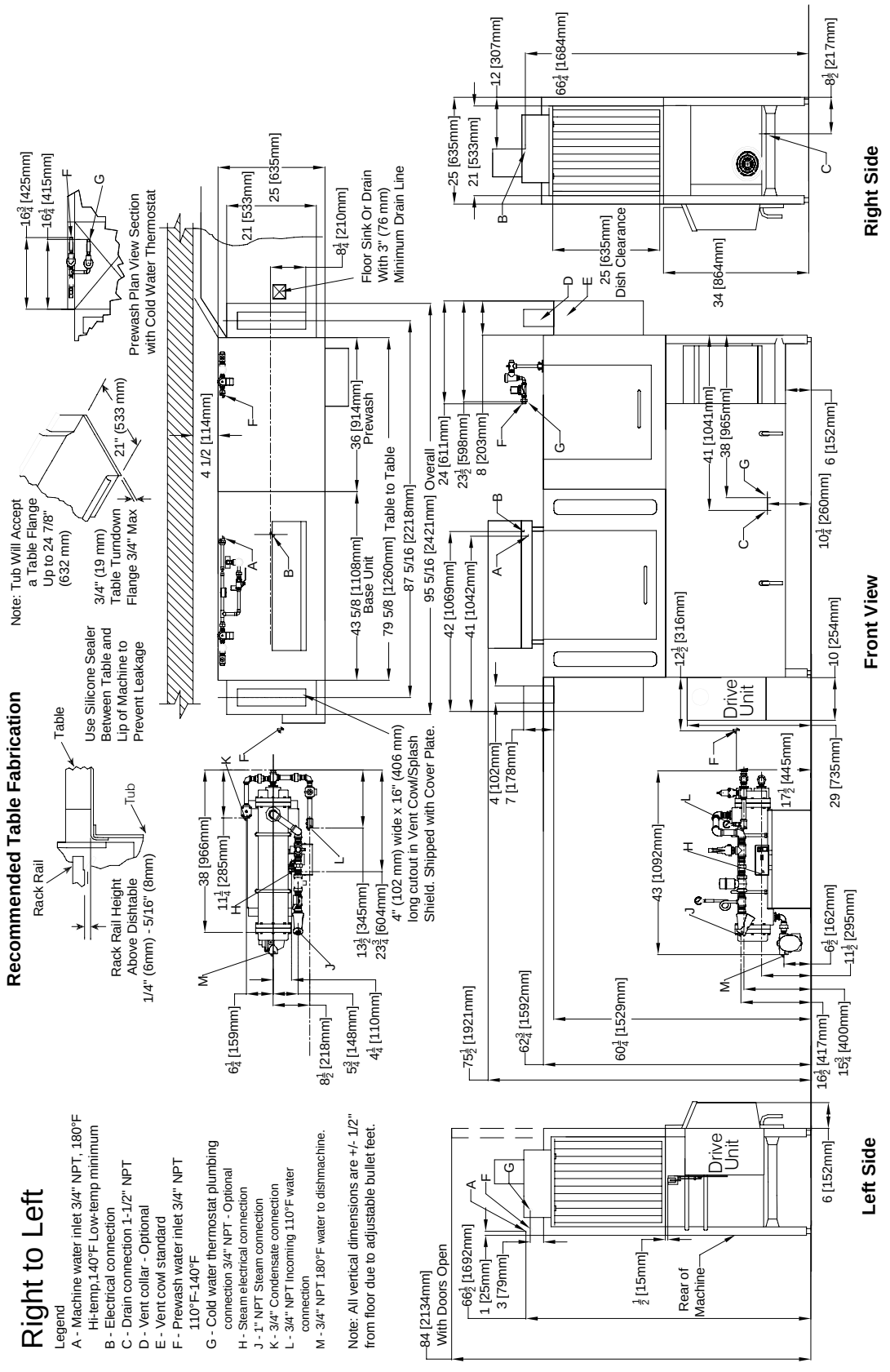

Left to Right
Legend
A - Machine water inlet 3/4" NPT, 180°F Hi-temp,140°F Low-temp minimum
B - Electrical connection
C - Drain connection 1-1/2" NPT
D - Vent collar - Optional
E - Vent cowl standard
F - Prewash water inlet 3/4" NPT 110°F-140°F
G - Cold water thermostat plumbing connection 3/4" NPT - Optional
Note: All vertical dimensions are +/- 1/2" from floor due to adjustable bullet feet.
Recommended Table Fabrication
Rack Rail
Table
Tub
Rack Rail Height Above Dishtable 1/4" (6mm) - 5/16" (8mm)
Use Silicone Sealer Between Table and Lip of Machine to Prevent Leakage
Note: Tub Will Accept a Table Flange Up to 24 7/8" (632 mm)
21" (533 mm)
3/4" (19 mm) Table Turndown Flange 3/4" Max
Prewash Plan View Section with Cold Water Thermostat
Floor Sink Or Drain With 3" (76 mm) Minimum Drain Line
Scrap Trough
4" (102 mm) wide x 16" (406 mm) long cutout in Vent Cowl/Splash Shield. Shipped with Cover Plate.
Drive Unit
10" High Table Backsplash
Rear of Machine
Left Side
Front View
Right Side
84 [2134mm] With Doors Open
75½ [1919mm]
60¼ [1530mm]
29 [737mm]
95 5/16 [2421mm] Overall
87 5/16 [2218mm] Table to Table
79 5/8 [1260mm]
43 5/8 [1108mm] Base Unit
36 [914mm] Prewash
34 [864mm]
14 [356mm] Minimum


Right to Left
Legend
A - Machine water inlet 3/4" NPT, 180°F Hi-temp,140°F Low-temp minimum
B - Electrical connection
C - Drain connection 1-1/2" NPT
D - Vent collar - Optional
E - Vent cowl standard
F - Prewash water inlet 3/4" NPT 110°F-140°F
G - Cold water thermostat plumbing connection 3/4" NPT - Optional
Note: All vertical dimensions are +/- 1/2" from floor due to adjustable bullet feet.
Recommended Table Fabrication
Rack Rail
Table
Tub
Use Silicone Sealer Between Table and Lip of Machine to Prevent Leakage
Rack Rail Height Above Dishtable 1/4" (6mm) - 5/16" (8mm)
Note: Tub Will Accept a Table Flange Up to 24 7/8" (632 mm)
3/4" (19 mm) Table Turndown Flange 3/4" Max
21" (533 mm)
Prewash Plan View Section with Cold Water Thermostat
Floor Sink Or Drain With 3" (76 mm) Minimum Drain Line
4" (102 mm) wide x 16" (406 mm) long cutout in Vent Cowl/Splash Shield. Shipped with Cover Plate.
Left Side
Front View
Right Side
Drive Unit
Rear of Machine
25 [635mm] Dish Clearance
34 [864mm]
84 [2134mm] With Doors Open
95 5/16 [2421mm] Overall
87 5/16 [2218mm] Table to Table
79 5/8 [1260mm]
43 5/8 [1108mm] Base Unit
36 [914mm] Prewash
4 1/2 [114mm]
21 [533mm]
25 [635mm]
29 [734mm]
10 [254mm]
6 [152mm]
41 [1041mm]
12 [307mm]
25 [635mm]
21 [533mm]
8½ [217mm]

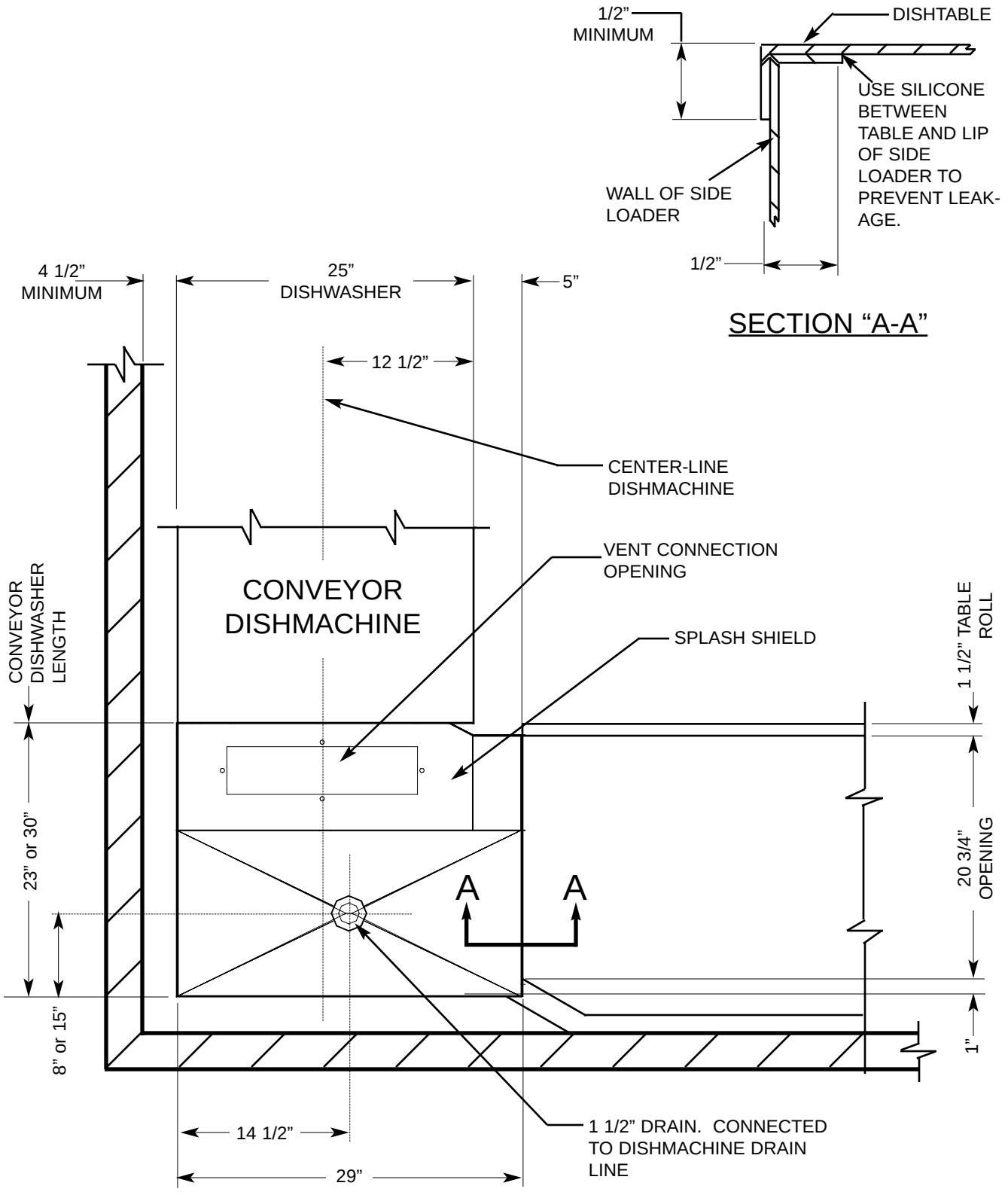
ES-8000CSS/ES-8000S (LEFT TO RIGHT) DIMENSIONS



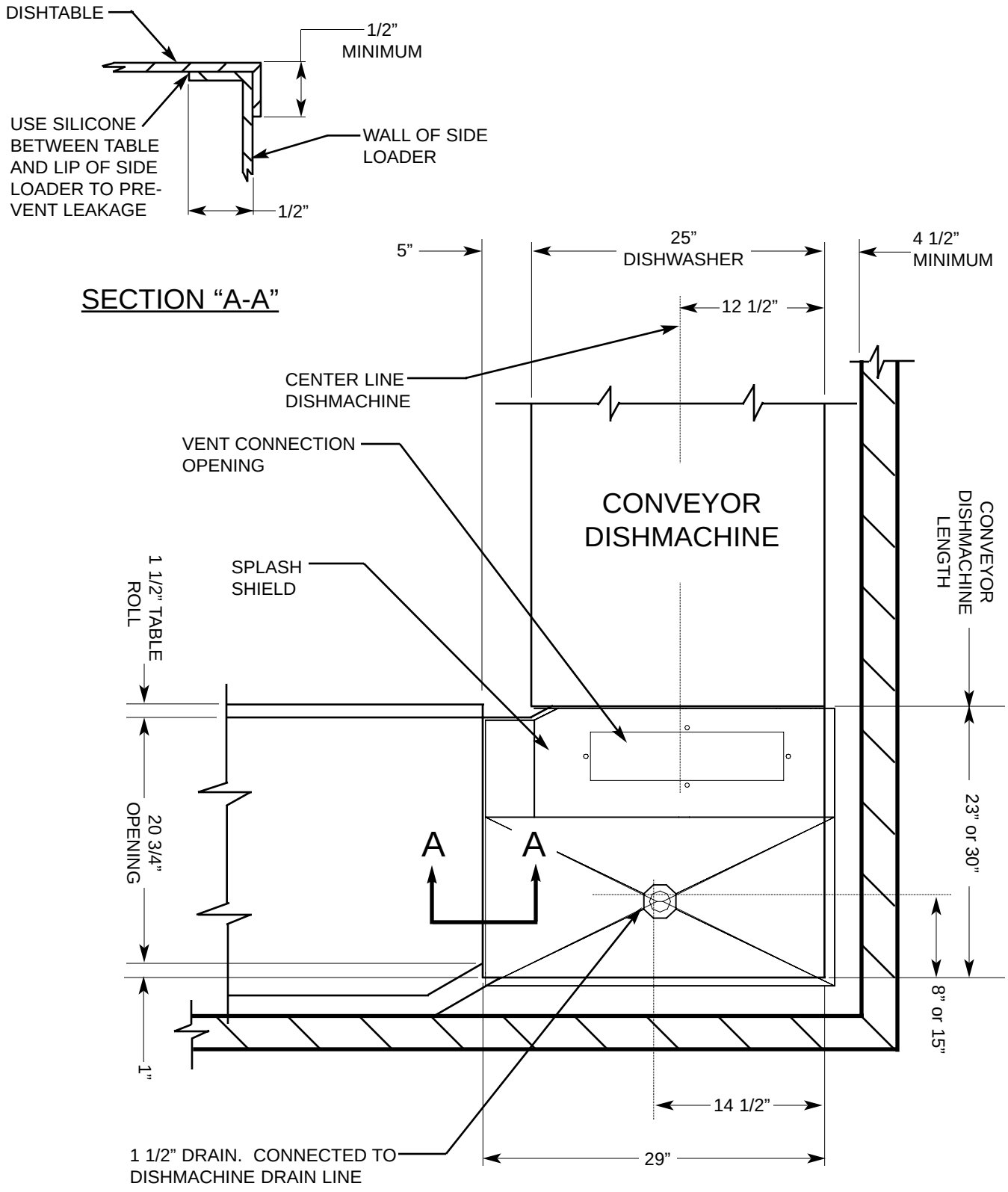
ES-8000CSS/ES-8000S (RIGHT TO LEFT) DIMENSIONS



SIDE LOADER (LEFT TO RIGHT) DIMENSIONS



SIDE LOADER (RIGHT TO LEFT) DIMENSIONS



SIDE LOADER INSTALLATION DIMENSIONS

NOTE: ALL DIMENSIONS ARE TYPICAL.

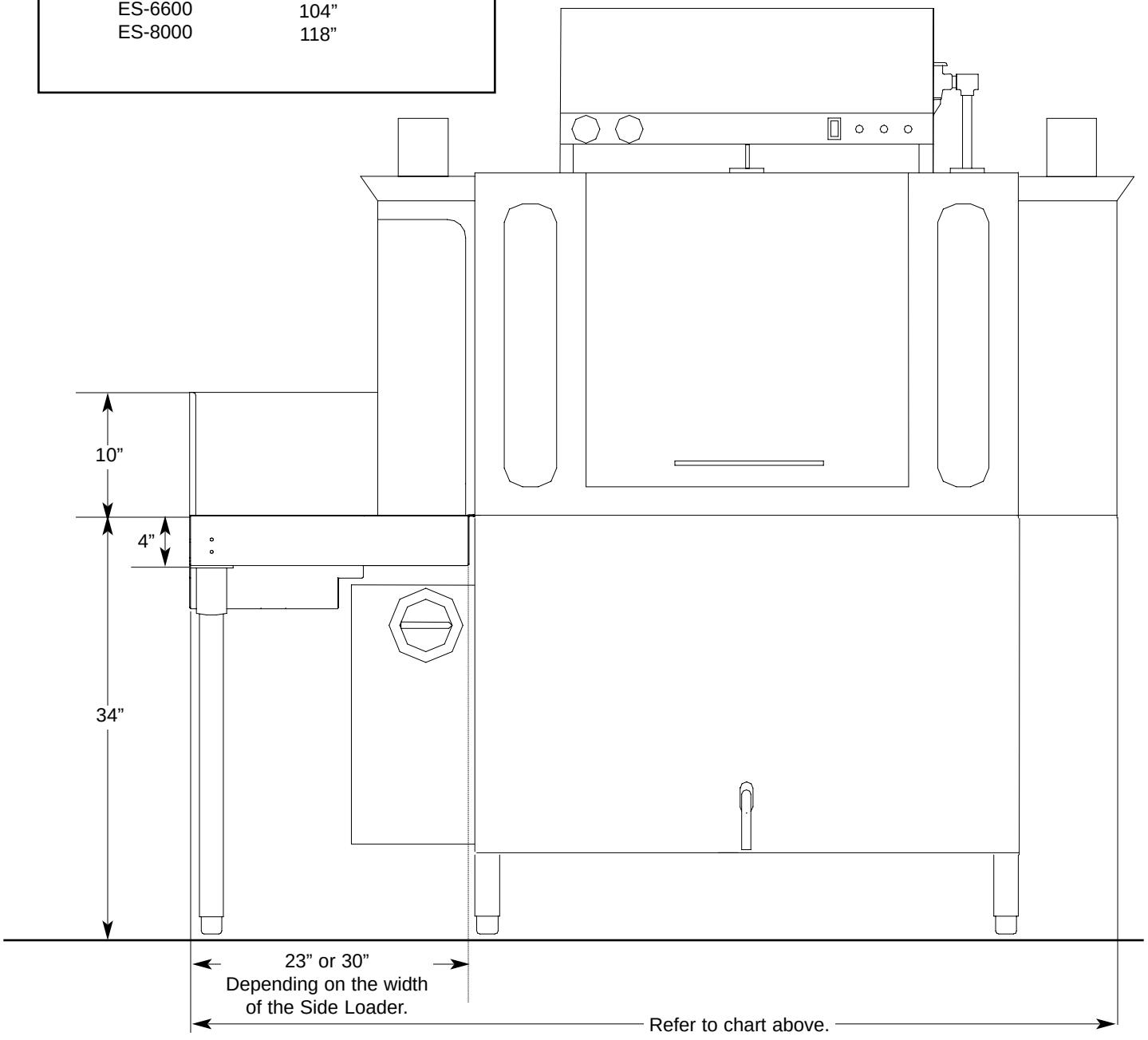
23" SIDE LOADER DIMENSIONS

MODEL	DIMENSIONS
ES-4400	75"
ES-6600	97"
ES-8000	111"

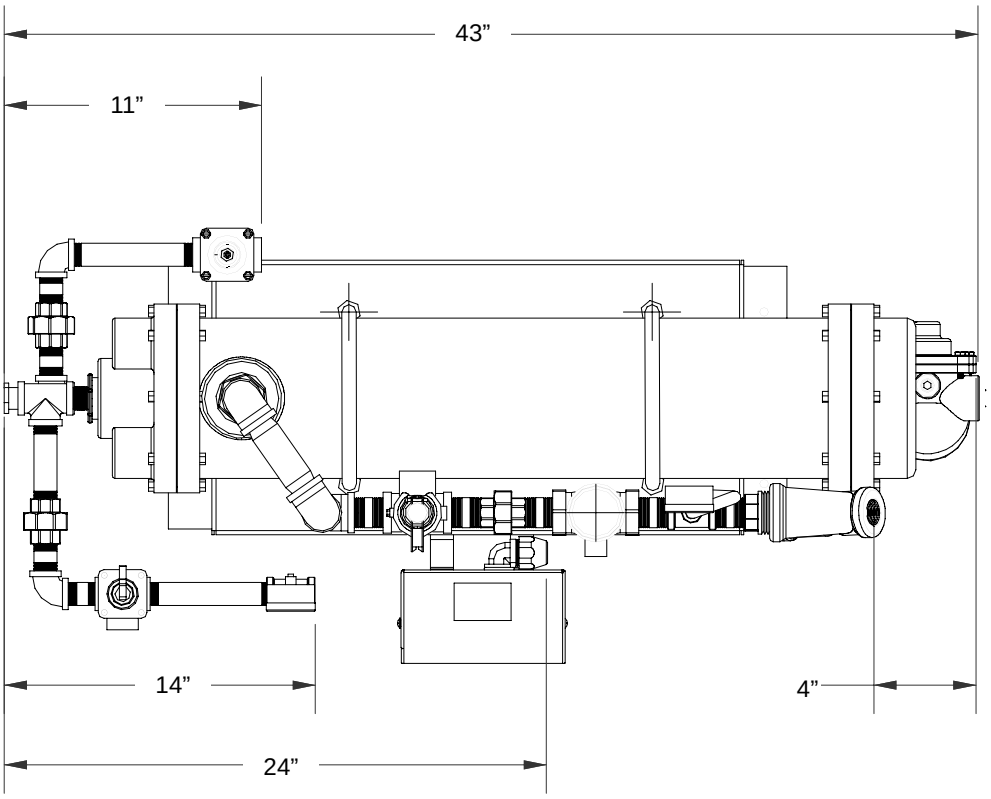
30" SIDE LOADER DIMENSIONS

MODEL	DIMENSIONS
ES-4400	82"
ES-6600	104"
ES-8000	118"

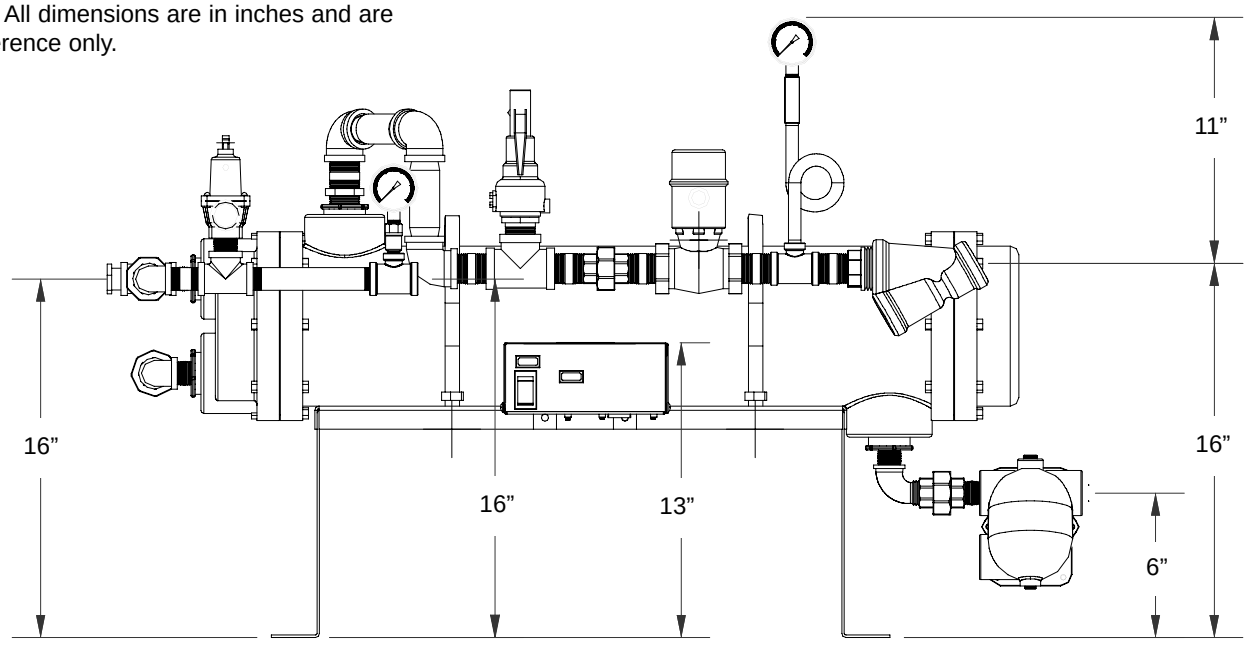
(Left to Right installation shown for reference.)



D226 STEAM BOOSTER DIMENSIONS



NOTE: All dimensions are in inches and are for reference only.



SECTION 2:
INSTALLATION/OPERATION INSTRUCTIONS

SECTION 2: INSTALLATION/OPERATION INSTRUCTIONS

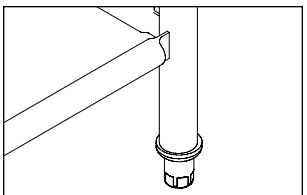
INSTALLATION INSTRUCTIONS

NOTE: THE INSTRUCTIONS PROVIDED HEREIN, UNLESS OTHERWISE SPECIFIED ARE FOR THE DISHMACHINES ONLY. THERE ARE SEPARATE DIRECTIONS FOR THE GAS BOOSTER.

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 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: The machine should be unboxed and removed from shipping pallet prior to being installed. Open the front door and remove all of the packing materials. Once unpacked, 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.

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. You will be able to adjust the overall height of the unit by turning the bullet feet from between 75-1/2" to 76-1/2".



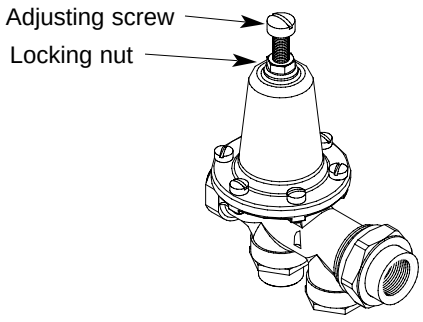
Frame with Adjustable Foot

PLUMBING THE DISHMACHINE: All plumbing connections must comply with all applicable local, state, and national plumbing codes. The plumber is responsible for 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.

Water hardness should be a maximum of 6 grains per gallon. Harder water should be treated prior to using the machine. Iron in the water supply can cause staining. A filter designed to remove iron from the supply water is highly recommended for supplies in excess of 0.1 ppm (parts per million).

CONNECTING THE DRAIN LINE: The drain for the models covered in this manual are gravity discharge drains. All piping from the machine to the drain must be a minimum 1 1/2" NPT and should 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 30 gallons per minute.

WATER SUPPLY CONNECTION: Ensure that you have read the section entitled "PLUMBING THE DISHMACHINE" above before proceeding. The supply water temperature must meet the minimum requirements listed on the machine data plate. Install the water supply line (3/4" pipe size minimum) to the dishmachine line strainer. 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 25 PSI "flow" pressure at the recommended temperature indicated on the data plate.



Incoming Plumbing Connection

If the water level is too low or too high, check the incoming water pressure. It should be 20 ± 5 PSI. Too high of pressure results in too much water; too low of pressure results in too little water. To adust the regulator, loosen the nut at the top, this will allow you to screw or unscrew the adjustment. With a screwdriver, turn the adjuster clockwise to increase pressure or counter clockwise to decrease it.

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.

STEAM LINE CONNECTIONS: Some machines covered in this manual are designed to use low pressure steam as a source of heat for wash tank water. The machines come with lines by which outside source steam needs to be connected. Connect all incoming steam lines in accordance with the steam booster manufacturer's instructions. Ensure that all applicable codes and regulations are adhered to. See machine data plate for information concerning steam flow pressure.

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.

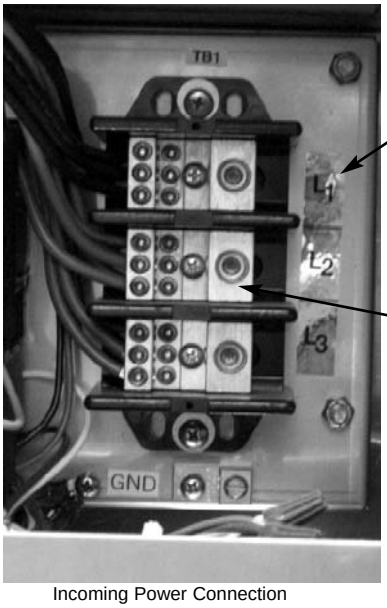
ELECTRICAL POWER CONNECTION: Electrical and grounding connections must comply with the applicable portions of the National Electrical Code ANSI/NFPA 70 (latest edition) and/or other electrical codes.

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, open the control box. Install 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, and L3 (3 phase only)) to the appropriate terminals as they are marked on the terminal block. Install the grounding wire into the lug provided. Tighten the connections. 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.



Incoming Power Connection

VENTILATION OF DISHMACHINE: The dishmachine should be located with provisions for venting into an adequate exhaust hood or ventilation system. This is essential to permit efficient removal of the condensation exhaust. Ensure that the exhaust system is acceptable in accordance with all applicable codes and standards.

NOTE: Any damage that is caused by steam or moisture due to improper ventilation is NOT covered under the warranty.

This units covered in this manual have the following exhaust requirements:

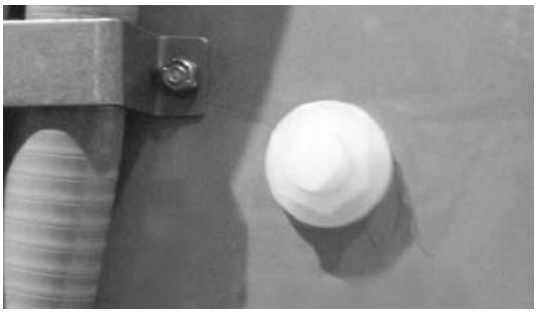
Load End:	200 CFM
Unload End:	400 CFM

The exhaust system must be sized to handle this volume for the dishmachine to operate as it was designed to.

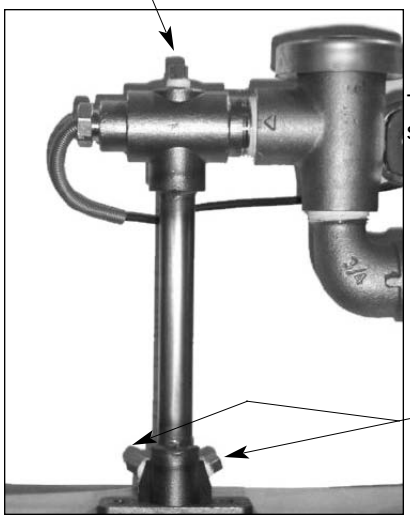
ELECTRIC HEAT: The thermostats for the machines covered in this manual are factory set. They should not be adjusted except by an authorized service agent.

CHEMICAL FEEDER EQUIPMENT: The ES-4400CS, ES-4400CSS, ES-6600CS, ES-6600CSS, ES-8000CS and ES-8000CSS machine(s) requires that a separate chemical feeder be connected to it to provide the required detergent and sanitizer. This feeder needs to be able to operate against a head of 25 PSI and provide 7.34 ml of a 10% Chlorine sanitizer per minute.

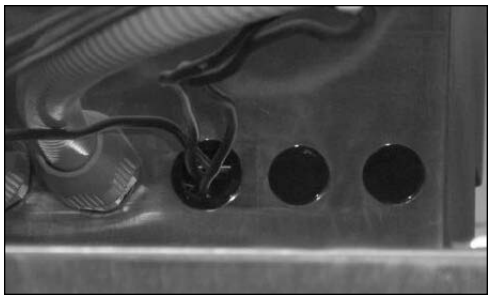
Detergent may be introduced into the unit through the removal of the bulkhead plug in the rear of the tub and replacing it with the third party detergent injection fitting. Remove the bulkhead plug in the side of the tub to install the detergent concentration probe.



Detergent Connection Point
(Machine rear view)

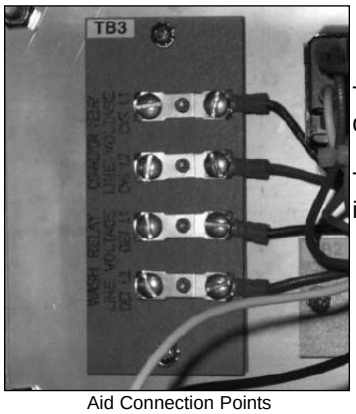


The 1/8” brass plugs on the incoming plumbing rinse injector may be removed to install sanitizer and rinse aid injection fittings.



Back of Control Box

All wires for the chemical injectors should be routed through one of the extra openings in the back of the control box.



Aid Connection Points

Terminals in the control box marked “CVS” provide a constant voltage signal whenever the drive motor is operating.

Terminals in the control box marked “DET” provide a voltage signal whenever the wash motor is operating.

DELIMING OPERATIONS

DELIMING OPERATIONS: In order to maintain the dishmachine at its optimum performance level, it will be required to remove lime and corrosion deposits on a frequent basis. A deliming solution should be available from your detergent supplier. Read and follow all instructions on the label of the deliming solution.

To proceed with the deliming operation, fill the dishmachine and add the correct amount of deliming solution as recommended by the deliming solution manufacturer. The water capacity of the various tanks of the dishmachine can be verified on the specification sheet(s) of this manual.

Perform the following operations to delime the dishmachine:

Delime Switch

1. Turn the AUTOMATIC/DELIME switch on the back of the control box to the DELIME position.

2. Disconnect or turn off all chemical feeder pumps.

3. Close all doors (after adding the deliming solution).

4. Run the machine for the recommended period of time.

5. Turn the unit off and open the doors.

6. Wait five minutes, then inspect the inside of the machine. If the machine is not delimed, run another time cycle as per the deliming solution's instructions.

7. When clean, drain and re-fill the machine.

8. Run in MANUAL for 10 minutes to remove residual deliming solution.

9. Drain and re-fill the machine.

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

SIDE LOADER & D226 STEAM BOOSTER INSTALLATION & OPERATION INSTRUCTIONS

SIDE LOADER OPTION INSTALLATION: This accessory assists in the delivery of a full dish rack from the break down (scrapping) table to the dishmachine. It will convert the direction of travel 90°. Since the Side Loader is shipped mounted on the conveyor dishwasher there is no additional installation required for this option. As it is operated mechanically by the dishwasher it does not require any plumbing or electrical connections.

This Side Loader does not require or add any additional electrical or mechanical devices to the unit which could create operational or maintenance problems. As designed the drive mechanism is powered by the conveyor drive motor on the dishmachine. An extension on the pawl bar provides the drive to push the racks into the unit.

D226 STEAM BOOSTER OPTION INSTALLATION:

CONCEALED DAMAGE OR MISSING PARTS:

IMPORTANT: FOR YOUR PROTECTION, PLEASE READ AND OBSERVE THE FOLLOWING:

This steam booster has been thoroughly inspected and carefully packed before leaving our warehouse.

Concealed loss or damage means loss or damage which does not become apparent until the booster has been unpacked. The contents may be damaged in transit due to rough handling even though the carton may not show external damage.

If it is found that the shipment has concealed damage, PLEASE DO NOT RETURN IT TO Ecolab, but notify the carrier (within 48 hours) asking them to send their agent to fill out an inspection report. Save the cartons so he may inspect them and be sure to note in the report any black marks, creases, tears, crushed corners or any other marks indicating rough handling. Also, notify your Ecolab dealer immediately.

If it is discovered that there are missing parts, please notify your Ecolab dealer immediately.

EQUIPMENT MOUNTING:

Your booster should come pre-assembled and will require that it be permanently mounted in place. The platform has prepunched holes to allow for mounting to the installation floor. **NOTE:** The D226 Booster must be properly mounted and level before being used. Once the platform is secure to the floor, attach the water and steam lines in accordance with local and national codes.

PLUMBING:

NOTE: ALL CONNECTIONS MUST COMPLY WITH ALL APPLICABLE LOCAL, STATE AND NATIONAL PLUMBING CODES.

The plumber is responsible for ensuring that the water line is **THOROUGHLY FLUSHED BEFORE** connecting it to any manual or solenoid valve. It is necessary to remove all foreign matter such as chips (resulting from cutting or threading pipes), pipe joint compound or, if soldered fittings are used, bits of solder or cuttings from the lines. This debris, if not removed, may lodge in the valves and render them inoperative.

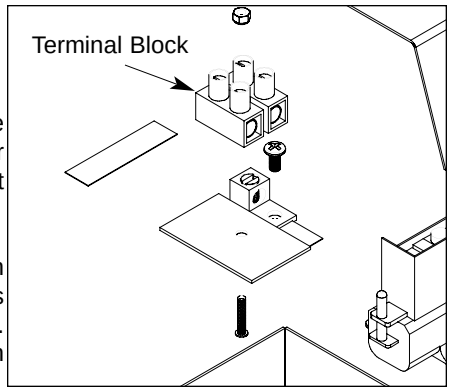
The D226 Booster is designed to take incoming water from a minimum temperature of 110°F to approximately 180°F for use in the final rinse of your Ecolab dishmachine. In order to do this, water is supplied to the booster and is heated by tubes carrying 15-25 PSIG flow steam. Heat is transferred from the steam into the water, raising the temperature.

Install condensate drains in accordance with applicable codes.

The D226 Booster is designed to operate at a water flow rate of 20 $\pm$5 PSI. The assembly comes with a water pressure regulator, which is preset at the factory. However, adjustment may be required so ensure that you verify the the flow pressure before beginning operations. See the instructions regarding adjustment and maintenance of the water pressure regulator for more information.

WARNING: The D226 Booster is designed to heat water to a minimum of 180°F and is extremely hot during operations. Advise personnel of the dangers associated with touching booster components as burns or severe injury can occur.

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



D226 Control Box

ELECTRICAL:

WARNING: Electrical and grounding connections must comply with 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 or lock at the disconnect switch to indicate that you are working on the circuit.

To connect the incoming power, run the conduit for power wires through the open hole in the back of the control box. Connect the power wires to the terminal block as it is labeled (L1 and L2). Run the ground wire to the grounding lug marked “GND”. Tight connections and conduit nuts and close the control box by putting the cover on and securing with the 10-32 screws.

OPERATION:

WARNING: The heat exchanger used in the D226 Booster system is a pressure vessel with very precise operating parameters. Safety equipment such as relief valves should never be tampered with or disabled. These devices are meant to protect the equipment and the operator from harm, damage and death.

1. Ensure that water, steam and any condensate drains are connected to the booster.
2. Start the water flow first, open the condensate drains and then begin steam flow.
3. On the control box, press the power switch and put it in the ON position. The power light should illuminate.

The unit should run normally now.

WARNING: Do not shock the system by applying the steam before the water. This can cause damage to the booster.

The following explanation describes the operation of the D226 Booster.

NOTE: This explanation assumes that water and steam have been connected to the machine.

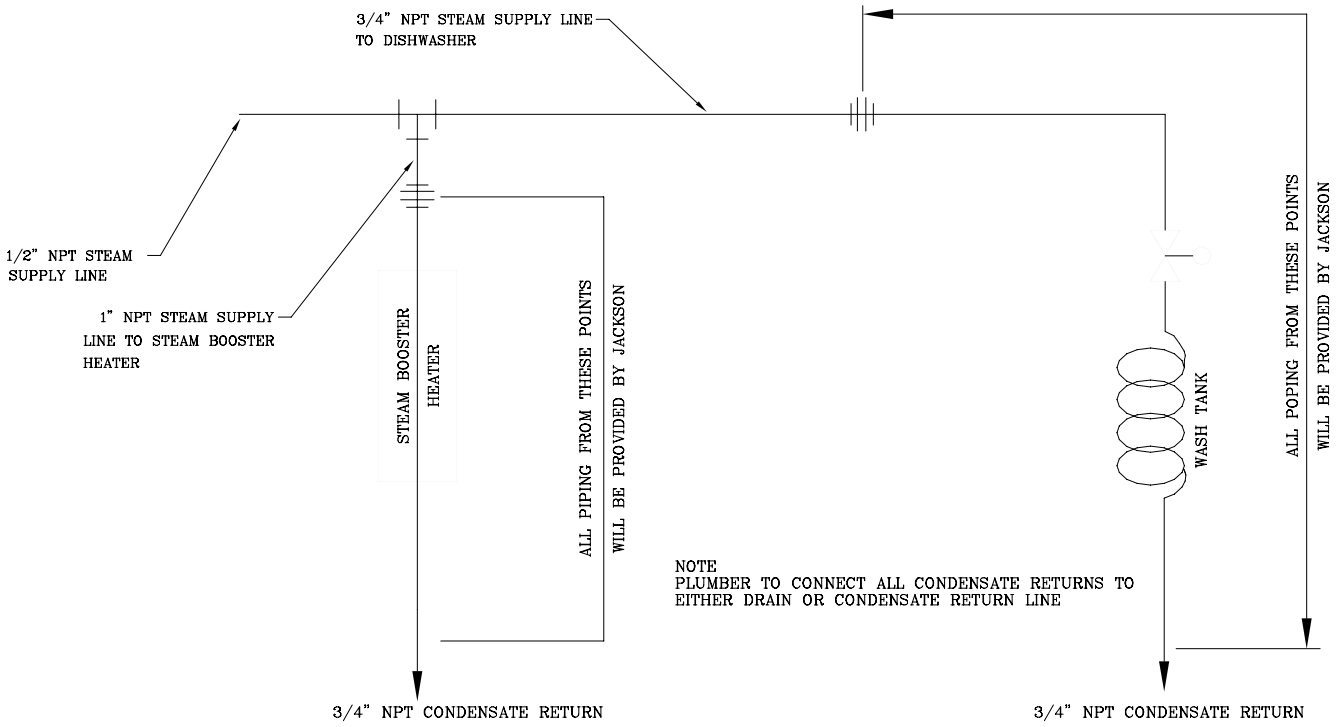
1. When the power switch (S1) is placed in the ON position, power is provided to both the power light (E1) and the thermostat (TS1).
2. The thermostat (TS1) will close when the water falls below the minimum setpoint, energizing the steam solenoid light (E2) and the steam solenoid (FS1).
3. The steam solenoid (FS1) will remain open, allowing steam into the booster, until the water temperature reaches the desired temperature. At that point, the thermostat (TS1) will open, de-energizing the steam solenoid (FS1) and the steam solenoid light (E2).

IMPORTANT: Please remember that all of the components in the control box are under line voltage (208-240 volts). Under no circumstance is the control box cover to be removed or opened during normal operations!

SHUTDOWN (FOR SERVICE ONLY):

WARNING: The D226 Booster is designed to heat water to a minimum of 180°F and is extremely hot during operations. Advise personnel of the dangers associated with touching booster components as burns or severe injury can occur.

1. Turn the power switch to the OFF position. The power light should extinguish.
2. Secure steam flow to the unit.
3. Secure water flow.
4. Close the condensate drains as required by procedure and/or code.
5. Do not attempt to clean, wipe down or perform any maintenance on the booster until it has been given a generous amount of time to cool down.



DISHMACHINE OPERATING INSTRUCTIONS

PREPARATION: Before proceeding with the start-up of the unit, verify the following:

1. Close door(s) on dishmachine.
2. Close the drain valve(s).
3. Install pan strainers.

POWER UP: To energize the unit, turn on the power at the service breaker. The voltage should have been previously verified as being correct. If not, the voltage will have to be verified. For the “CS” machines ensure that the steam service is connected and that steam is flowing to the machine. Without steam, the water will not reach the required minimum temperatures that the machine is designed to operate at.

FILLING THE WASH TUB: Ensure that the delime switch is in the NORMAL position, and place the power switch into the ON position. The machine should fill automatically and shut off when the appropriate level is reached (just below the pan strainer). The wash tub must be completely filled before operating the wash pump to prevent damage to the component. Once the wash tub is filled, the unit is ready for operation.

WARE PREPARATION: Proper preparation of ware will help ensure good results and less re-washes. If not done properly, ware may not come out clean and the efficiency of the dishmachine will be reduced. It is important to remember that a dishmachine is not a garbage disposal and that simply throwing unscraped dishes into the machine simply defeats the purpose altogether of washing the ware. Scraps should be removed from ware prior to being loaded into a rack. Pre-rinsing and pre-soaking are good ideas, especially for silverware and casserole dishes. Place cups and glasses upside down in racks so that they do not hold water during the cycle. The dishmachine is meant not only to clean, but to sanitize as well, to destroy all of the bacteria that could be harmful to human beings. In order to do this, ware must be properly prepared prior to being placed in the machine.

DAILY MACHINE PREPARATION: Refer to the section entitled “PREPARATION” at the top of this page and follow the instructions there. Afterwards, check that all of the chemical levels are correct and/or that there is plenty of detergent available for the expected workload.

WASHING A RACK OF WARE: To wash a rack, simply slide a rack of soiled ware into the load end of the machine. Once the the machine is started, it should pull the rack through the machine and push it out the unload end. Once a rack has started through, you may put another rack in.

WASHING A RACK OF WARE FOR SIDE LOADER OPTION: Once a rack is fully loaded it should be positioned against the front of the dish table. The rack should then be moved into the Side Loader until it activates the actuator switch. Once the the machine is started, it should pull the rack through the machine and push it out the unload end. Once a rack has started through, you may put another rack in.

OPERATIONAL INSPECTION: Based upon usage, the pan strainers may become clogged with soil and debris as the workday progresses. Operators should regularly inspect the pan strainers to ensure they have not become clogged. If the strainers do, they will reduce the washing capability of the machine. Instruct operators to clean out the pan strainers at regular intervals or as required by work load.

SHUTDOWN AND CLEANING: At the end of the workday, place the power switch in the OFF position, secure the flow of steam to the machine and open the door(s). Open the drain valves and allow the machine to drain completely. Remove the pawl bar assembly (clean as required). Remove the pan strainers and, if equipped, the prewash strainers, run off sheets and scrap basket strainer. Remove the wash and, if equipped, the prewash arms and verify that the nozzles and arms are free from obstructions. Flush the arms with fresh water. Remove the pump suction strainers and clean out as required. Remove the rinse tray assembly and clean. Remove the curtains and scrub with a mild detergent and warm water. Wipe out the inside of the unit and then reassemble with the components previously removed.

CHANGING THE ES-4400 DIRECTION OF TRAVEL

The ES-4400 dishmachine has the ability to have its direction of travel changed from left to right, or from right to left. Direction of travel is determined by which end the rack of ware is put into the machine and which end the rack comes out.

There may come times when it is necessary to change the direction of travel after the unit is installed. 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 and may also require that personnel change the wiring of the machine. Only authorized personnel should ever perform any maintenance evolution 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. Disconnect incoming water at the water pressure regulator or Y-strainer.
3. Disconnect the service drain line from the drain plumbing of the dishmachine itself. Ensure that the unit is completely drained before doing this.
4. Remove the locking screw from the control box.
5. Remove the front dress panel.

TOOLS REQUIRED

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

1. 5/16” nutdriver
2. 7/16” nutdriver
3. 7/16” combination wrench
4. 7/16” socket with drive ratchet and 4” extension
5. 12” pipe wrench
6. 10” adjustable wrench
7. Wire cutters
8. Phillipshead screwdriver

TIME REQUIRED

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

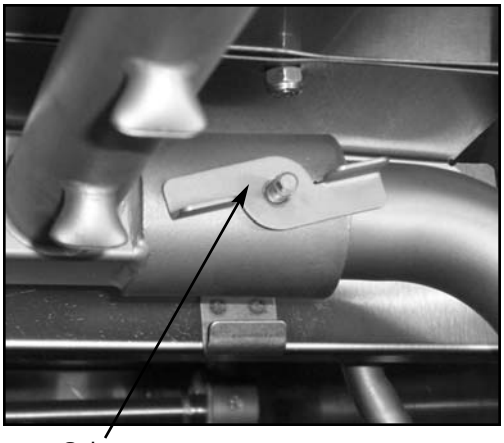
IMPORTANT NOTES

1. Do not lose hardware! Place hardware in a safe spot away from the machine, ensuring that it does not fall loose into the machine tub. Hardware that is drawing into the suction of the wash pump will damage the equipment. If you do need more hardware, contact your ECOLAB representative to purchase new items.

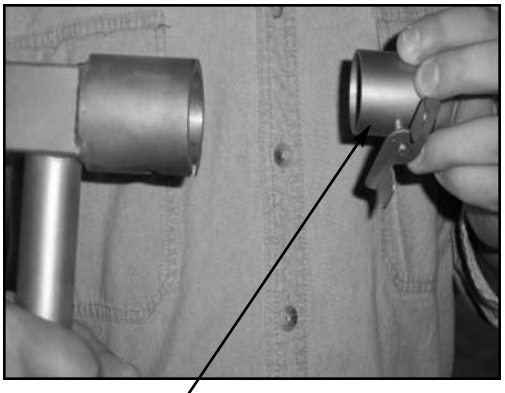
2. Read these instructions thoroughly before attempting this maintenance evolution. Become familiar with the parts and what actions need to be taken. This will save time in the long run!

STEPS

1. Remove the upper wash arm assembly by loosening the spin nut. The spin nut has a stop so it will not come off. Once it is loosened, the wash arm assembly should slide off.



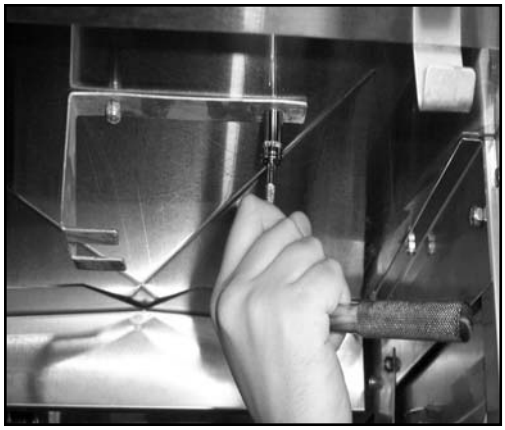
2. Remove the end cap from the wash arm assembly and place in the opposite end, securing it snugly.



3. With the end cap securely in the opposite end of the wash arm assembly, set the assembly gently to the side. Go back inside the unit to where the upper wash arm assembly secured in the unit and turn the spin nut so that it is all the way down. This needs to be done because in a further step, if the spin nut is out, it will get in the way. Do not over-tighten the spin nut as it only needs to be out of the way, not secured.

CHANGING THE ES-4400 DIRECTION OF TRAVEL (CONTINUED)

4. Remove the upper wash arm assembly bracket. This step may require that you have help as the bolts for securing the bracket to the top of the inner hood are the same bolts that hold the control box to the hood top. Do not remove the bolts once the nuts are taken off. Once the bracket is removed, place the nuts immediately back on the bolts. To hold the bolts (to keep them from spinning), a 7/16" combination wrench or 7/16" nutdriver will be required in order to hold the bolt head inside the control box.



Removing bracket (bottom view)

Removing bracket (control box view)

Remove the locknuts from the opposite bolts used to hold down the control box (do not remove the bolts) and secure the bracket to underside of the hood. The folded part of the bracket should be facing the rear of the machine. Immediately tighten down the locknuts.

5. Remove the splash shield, which is bolted to the underside of the hood next to the wash manifold and turn it 180°.

Removing and turning splash shield

6. Remove the pawl bar and set to the side.

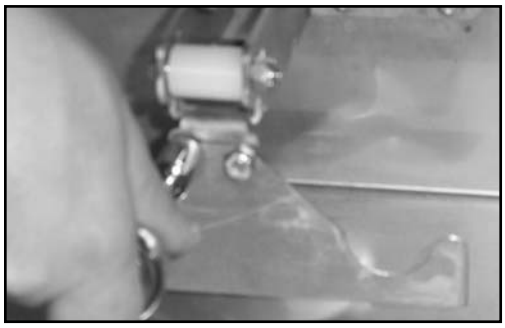
Remove the pawl bar by grasping firmly and lifting up.

7. Remove the lower wash arm assembly by turning the locking screw to unlatch it. The entire assembly should then lift out.

Locking screw

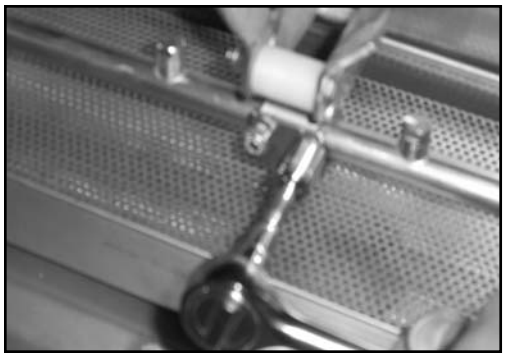
8. Remove the lower wash arm support bracket. Place it to the side with its locknuts.

CHANGING THE ES-4400 DIRECTION OF TRAVEL (CONTINUED)



Removing the locknuts for the lower wash arm support bracket.

9. Remove the lower rinse arm support bracket, which is mounted directly opposite of the lower wash arm support bracket.



Removing the lower rinse arm support bracket

10. Remove the lower and upper rinse arms by unscrewing them and then gently pulling them out.

Unscrewing and removing the lower rinse arm

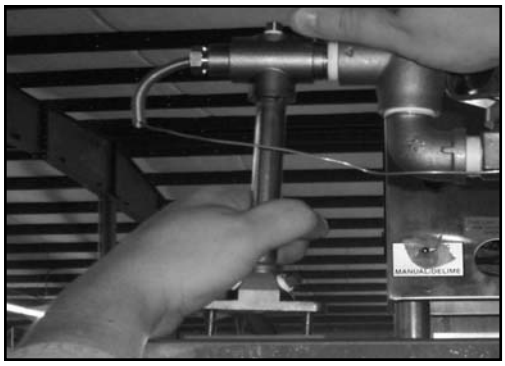
11. Behind the rinse manifold, remove the nut on the bracket.

Removing the bracket nut

12. Remove the nuts from the rinse manifold mounting bracket located on the underside of the hood. These nuts are mounted directly to the rinse injector weldment on the hood top.

Removing the locknuts from the rinse manifold mounting bracket

13. The rinse manifold must be removed. This may prove difficult while the rinse injector is still mounted. With great care, it is possible to gently lift the rinse injector off of the hood to allow the rinse manifold to be removed from the unit. Ensure that the gasket in the underside of the hood stays with the rinse manifold as it must be replaced when re-installing the manifold. If the gasket becomes lost or torn, order a new one immediately.

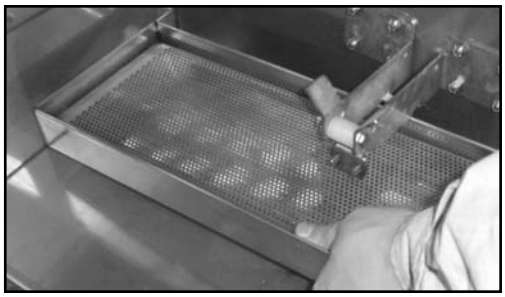


Lifting the rinse injector to make room

14. Remove the entire rinse tray assembly, including the pan

and the strainer within in. The assembly should lift right out. (See next page for photograph detailing this step)

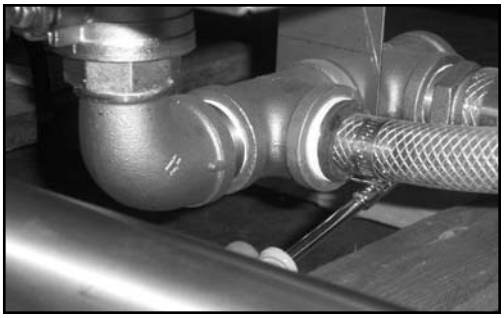
15. Remove the front and rear rinse pan locator brackets. **Note: the brackets are mounted to the bolts that secure the tub weldment to the frame.** Once the locknuts are removed, pull the locator brackets off and immediately replace the locknuts back onto the bolts. Failure to do so at a minimum may cause excessive leaking of the tub once the unit is placed back in operation.



Lifting out the rinse tray assembly

Removing a rinse tray guide bracket

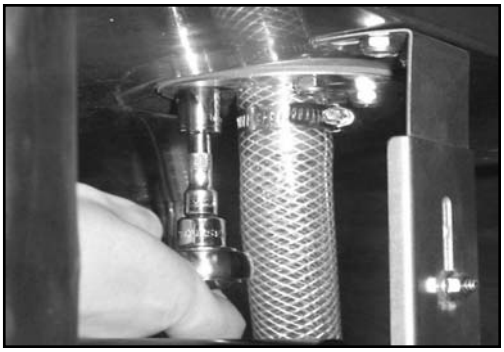
16. On the drain plumbing, the rinse drain tube needs to be removed from the plumbing, as well as the wash drain tube. Both of these tubes are secured with hose clamps. Loosen the hose clamps and pull the tubes off.



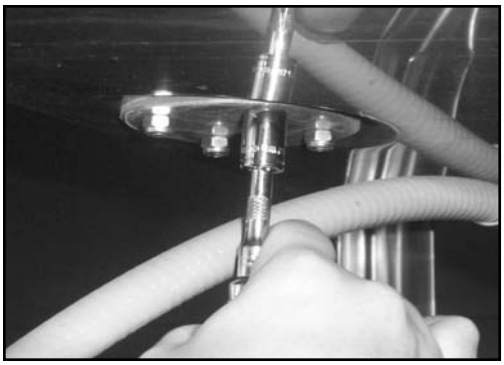
Loosening the rinse drain hose from the rinse drain nipple

17. The tee that the rinse drain nipple is in must be turned 180° so that it is facing the opposite direction. This may require dismantling the plumbing by removing the tee with the wash drain barb in it. Put the plumbing back together, after ensuring that the rinse drain tee has been rotated. Use thread tape to protect the threads while putting the plumbing back together. Ensure that the wash drain barb is in the exact same position it was prior to this step.

18. On the underside of the tub, remove the rinse drain weldment and the rinse drain plug. Switch their locations so that the rinse drain weldment is in the spot that the rinse drain plug was in.



Removing the rinse drain weldment



Removing the rinse drain plug

19. Reconnect the rinse drain hose and the wash drain hose to the drain plumbing.

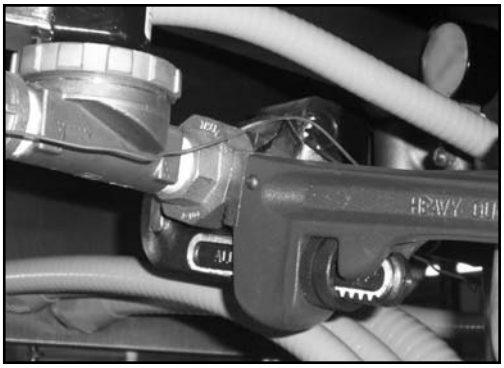
20. On the opposite end from where they were removed, install the front and rear rinse pan assembly locating brackets. **Note: the brackets are mounted to the bolts that secure the tub weldment to the frame.** Install the brackets one at a time and ensure that they are firmly tightened down once installed.

21. Remove the hole cover weldment from the top of the hood. The cover is located on the end of the hood opposite of the rinse injector weldment. Once removed, set to the side along with its gasket.

CHANGING THE ES-4400 DIRECTION OF TRAVEL (CONTINUED)

Removing the hole cover weldment

22. Separate the rinse plumbing from the rest of the incoming plumbing by loosening the union. Ensure that the gasket on the bottom of the rinse injector stays with the assembly as you remove it.



Loosening the union on the incoming plumbing

23. Remove the remaining half of the union from the incoming plumbing.

24. Remove the incoming water pressure regulator from the incoming plumbing and replace with the union half that was removed in step 23. Place the water pressure regulator on the end that the union half was removed from.

25. Place the removed rinse plumbing assembly (with the gasket) in the hole left open from when you removed the hole cover weldment in step 21. Tighten the two halves of the union together.

26. Place the hole cover weldment (with its gasket) over the hole from where the rinse plumbing assembly was originally installed. Tighten down with the locknuts.

27. Re-install the rinse manifold (with its gasket) by connecting it to the rinse injector weldment at its new location. Remove the locknut from the stud for the bracket down near the rack rails and then secure the bracket to the machine using the same lock nut.

28. Re-install the lower wash arm support bracket to the pawl bar support on the end of the tub opposite from where it was removed.

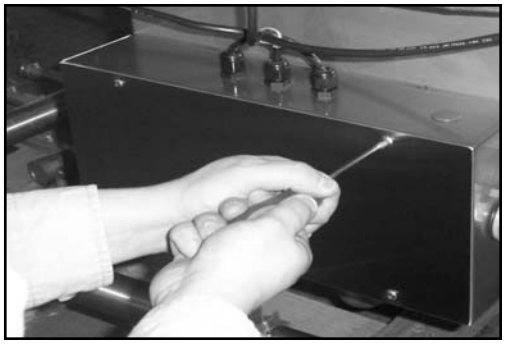
29. Re-install the upper and lower rinse arms. Reinstall the lower rinse arm support bracket.

30. Re-install the lower wash arm assembly, turning it 180° and locking it in place with the locking screw.

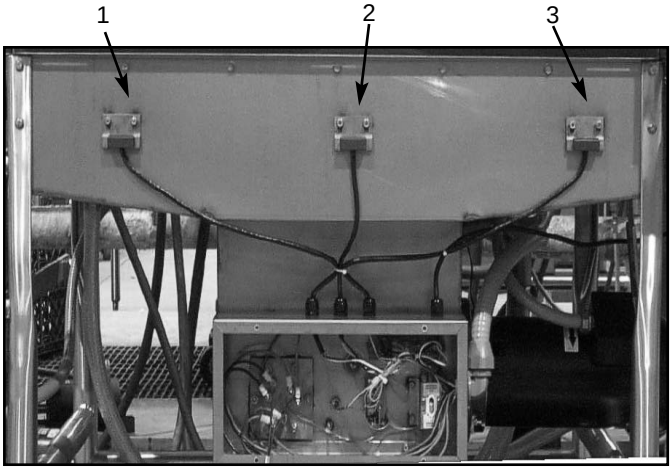
31. Re-install the pawl bar. Ensure that the pawl bar is placed so that when racks are placed in the unit, the pawl bar dogs fold down.

32. Re-install the upper wash arm assembly. If you performed all of the actions outlined in step 2, when you install it, it will be directly over the lower wash arm assembly.

33. Remove the heater box cover by unscrewing the four screws holding it on.



Removing the heater box cover



Front of rack conveyor showing the conveyor switches

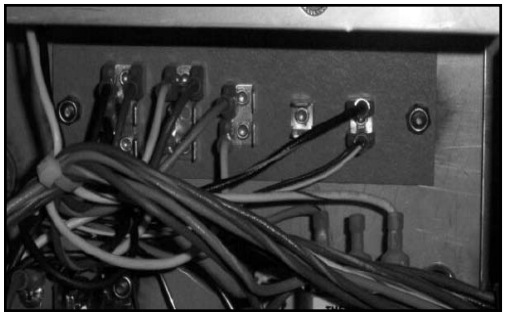
CHANGING THE ES-4400 DIRECTION OF TRAVEL (CONTINUED)

Conveyor Switch Chart:

Unit Direction	Switch #1	Switch #2	Switch #3
Left to Right	Wash Switch #1	Wash Switch #2	Rinse Switch
Right to Left	Rinse Switch	Wash Switch #2	Wash Switch #1

The chart above lists the conveyor switches and their functions, depending on the direction of travel for the machine. As you can see, when you change the direction of the conveyor, you must also alter the way the conveyor switches operate.

There is no need to remove the switches, only to change the wiring inside the heater box.



Terminal board inside the heater box

34. **Note:** Before beginning any part of this maintenance evolution that deals with the wiring of the machine, ensure that it is performed by qualified technicians only. Always refer to the machine schematic, located inside the control box, for any questions.

Wash Switch #1 and the Rinse Switch need to have their wire positions changed on the terminal board pictured above. Locate the **gray/yellow** wire for Wash Switch #1 (do not confuse it with the gray/yellow wire for Wash Switch #2) and the **orange/yellow** wire for the Rinse Switch. Exchange their positions on the terminal board.

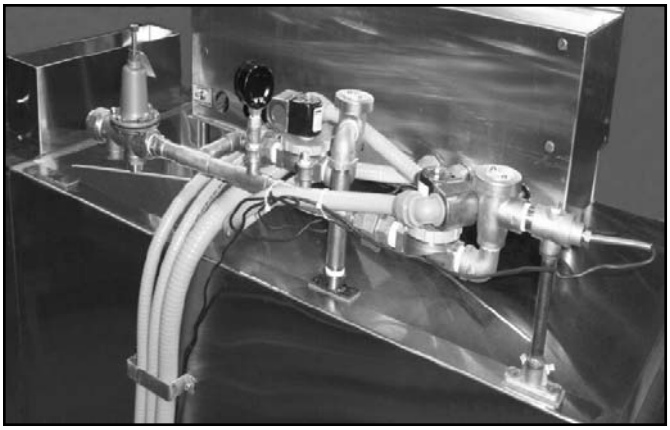
35. Verify that the plumbing has been reassembled correctly and that the hole cover weldment has been replaced and none of the gaskets are torn or pinched as this could lead to leaking when the machine operates.

35. Re-install the heater box cover.

SPECIAL PARTS

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

Incoming plumbing assembly for a Left to Right machine (note hole cover weldment in lower right corner)



Incoming plumbing assembly for a Right to Left machine (note hole cover weldment in upper left corner)

AFTER MAINTENANCE ACTIONS

1. Reconnect the incoming water and drain lines and then restore power to the unit. Run the unit for at least 1/2 hour to ensure there are no leaks. Test the unit with an empty rack to ensure that it pulls the rack all of the way through the unit. If any problems arise you can contact your Ecolab representative.

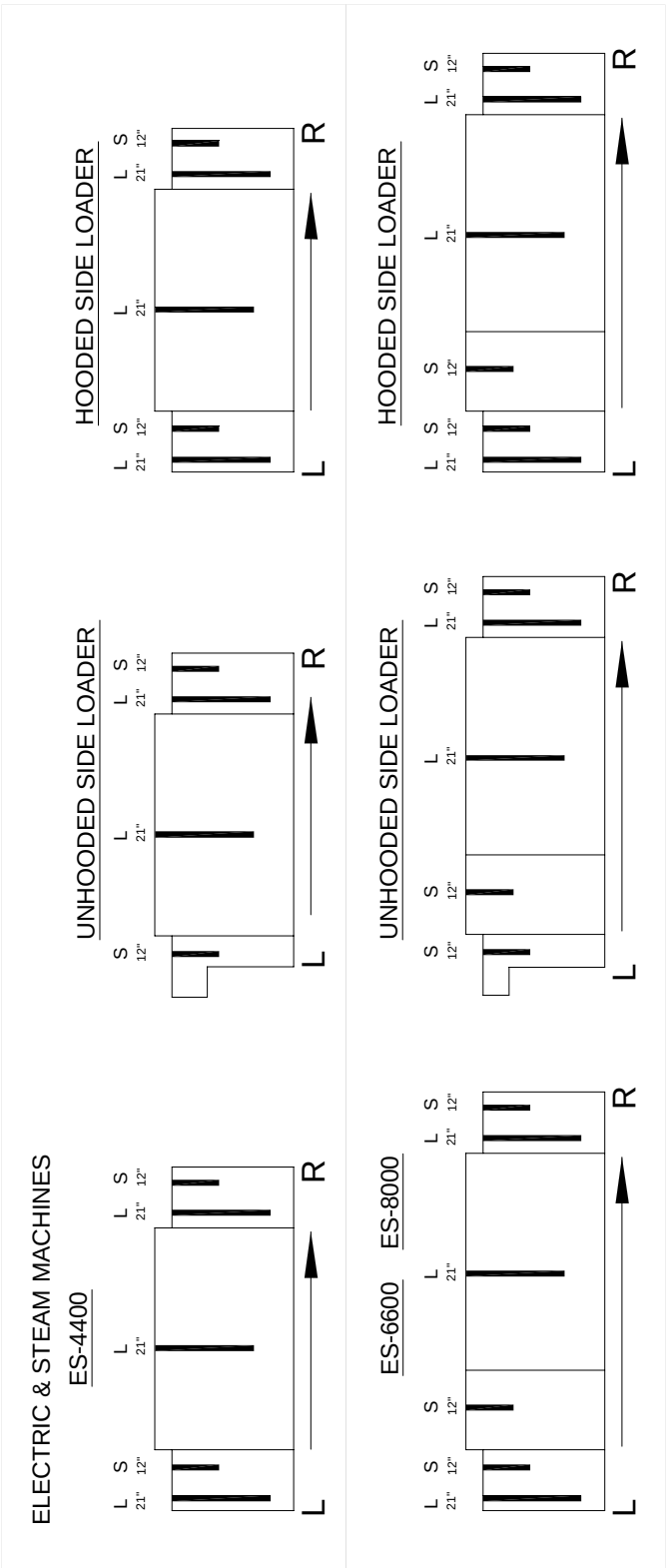
2. Replace the front dress panel once the unit is ready for service again.

SPECIAL NOTES

1. There is a possibility that you may be required to shorten or lengthen the conduit and wire lengths for the inlet solenoid on the rinse plumbing once it is moved. This work should be performed by qualified technicians who will do the work according to applicable local, state and national codes. Questions concerning this should be directed to your Ecolab representative.

CURTAIN INSTALLATION DIAGRAMS

Please refer to the chart for placement of the curtains.



CHANGING DUAL SANITIZATION MODE

If the machine has a dataplate like the one shown, which indicates both Hot Water Sanitizing and Chemical Sanitizing operation parameters (the area within dashed box), it is possible to change the sanitizing mode after the machine has left the original manufacturer's facility. This change can only be performed by an authorized Ecolab service technician. If the machine does not have a dataplate like the one shown, the sanitization mode **CAN NOT** be changed.

Follow the instructions below to change the mode of sanitization. Failure to follow these instructions can result in a violation of applicable regulatory codes.

DRIVE MECHANISM MAXIMUM SPEED ADJUSTMENT: Note: This adjustment is only required when changing from hot water sanitizing to chemical sanitizing mode.

Locate the maximum speed adjustment mechanism at the top of the conveyor drive mechanism (Figure 1). Figure 2 shows an enlarged view of the maximum speed adjustment mechanism. Loosen the Bottom Jam Nut approximately one turn counterclockwise. Move the Top Jam Nut down on the threaded shaft by turning it approximately 1/2 turn counterclockwise. Tighten the Adjustment Nut by turning it clockwise. Retighten the Bottom Jam Nut against the Top Jam Nut.

MODEL: XXXXXXXXX **SERIAL #** XXX XXXX X

60 HZ 3 PHASE 3 WIRE

		208 V	230 V	460 V
WASH MOTOR	2.0 HP	5.6 A	5.6 A	2.8 A
DRIVE MOTOR	1/4 HP	1.1 A	1.1 A	0.6 A
WASH HEATER LOAD	15 KW	41.7 A	37.7 A	18.8 A
TOTAL AMP LOAD		48.4 A	44.4 A	22.2 A

HOT WATER SANITIZING		CHEMICAL SANITIZING
6.9 FPM	CONVEYOR SPEED	6.5 FPM
160° F MIN.	WASH TANK TEMPERATURE	140° F MIN.
180° F MIN.	FINAL RINSE TEMPERATURE	140° F MIN.
20 ±5 PSI	FLOW PRESSURE	20 ±5 PSI

NOTE: SEE INSTRUCTION IN MANUAL FOR MODIFYING MODE OF SANITIZATION.

c UL us LISTED Commercial Dishwasher 597G

NSF

c SA us

US Patent Number(s): 6,012,567
Canadian Patent Number(s): 2,205,331

Made in the USA
Jackson MSC Inc.
P. O. Box 1060
Barbourville, KY. 40906
(606) 523-9795
09905-021-70-81 E

Please note the parameters for both modes of sanitization. If your data plate has this information, it is convertible from one mode to another.

Figure 1: Drive Mechanism

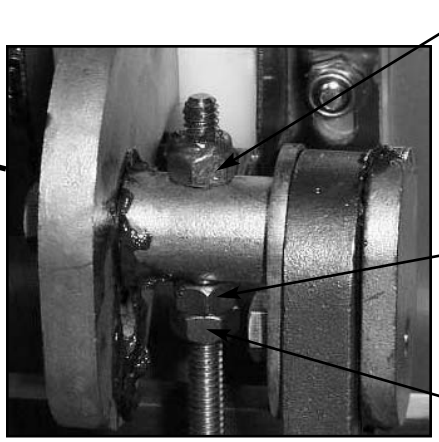
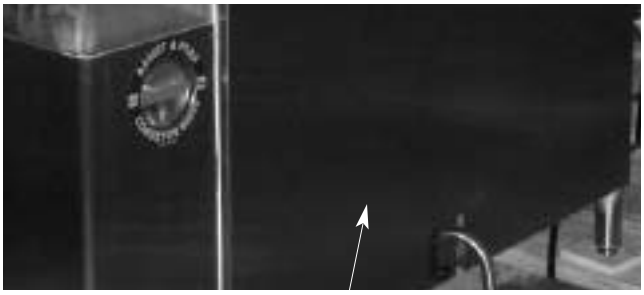


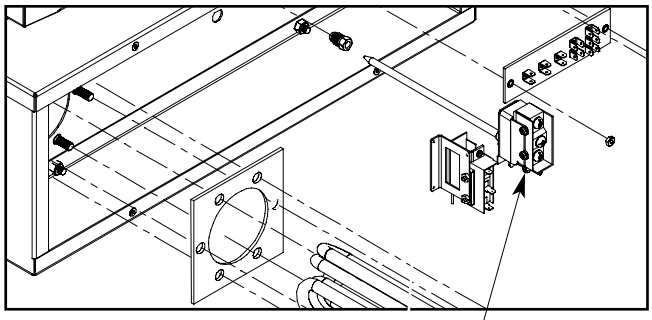
Figure 2

CHANGING DUAL SANITIZATION MODE (CONTINUED)

THERMOSTAT ADJUSTMENT: Remove the front dress panel from the machine to expose the heater/thermostat box. Remove the cover from the heater/thermostat box. Locate the wash tank regulating thermostat (see diagram).



Front Dress Panel



Wash Thermostat

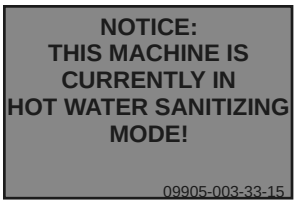
The wash tank regulating thermostat will maintain the correct wash water temperature. NSF requirements specify that the wash water during operation be 140ºF minimum in the chemical sanitizing mode and 160ºF minimum in the hot water sanitizing mode. Adjust the thermostat to achieve the required minimum temperatures during operation. Turn the adjustment screw clockwise to increase the temperature set point, counterclockwise to decrease the temperature set point.

Replace heater/thermostat box cover and front dress panel.

Control Box Gauge Location

IDENTIFICATION OF SANITIZING MODE: Apply the correct temperature gauge label to the face of the temperature gauges. In the chemical sanitizing mode, the temperature gauge labels must specify 140ºF minimum wash temperature and 140ºF minimum rinse temperature. In the hot water sanitizing mode, the temperature gauge labels must specify 160ºF minimum wash temperature and 180ºF minimum rinse temperature.

Apply the correct sanitizing mode label in a visible location on the side of the control box.



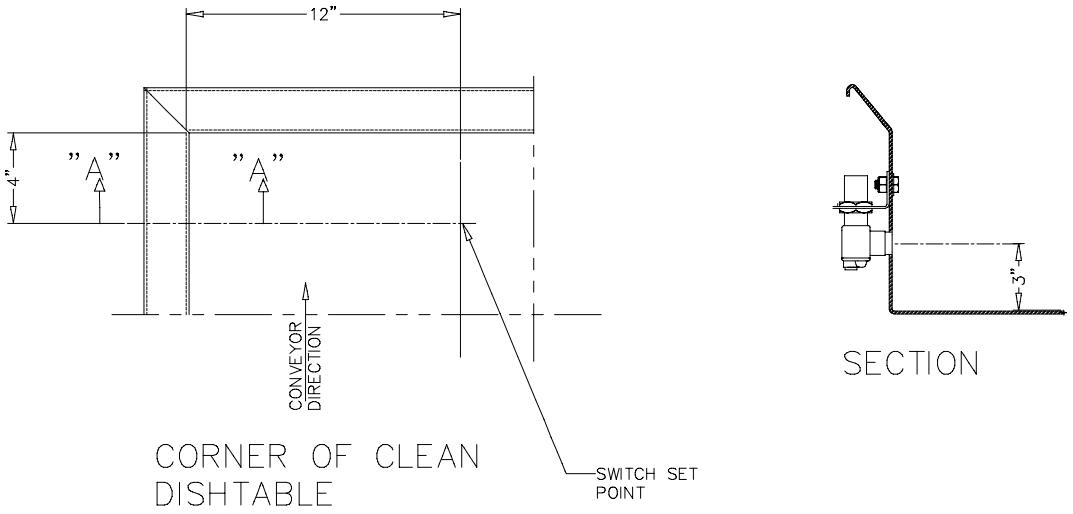
Orange background

Yellow background

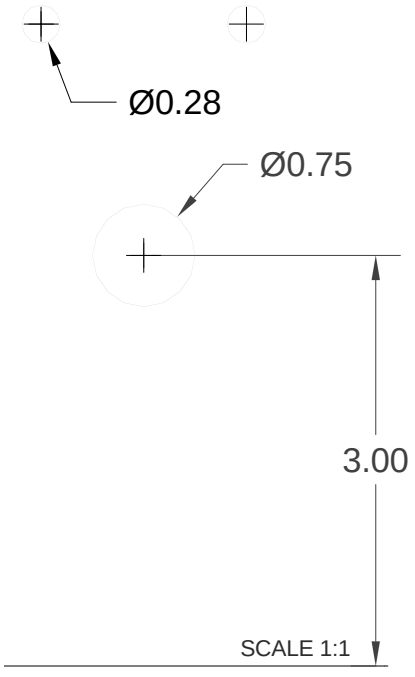
INSTALL SANITIZER DISPENSER: For machines in the chemical sanitizing mode, a NSF Standard 29 approved chemical dispenser must be installed to dispense sanitizer into the final rinse line. Follow instructions included with the chemical dispenser. After installation of the dispenser, verify that the required minimum sanitizer concentration is dispensed. Refer to the machine data plate.

FINAL CHECK: Verify that the incoming water matches the flow pressure and temperature requirements listed on the machine data plate. Verify that minimum wash and rinse temperatures are maintained during operation.

PHOTOELECTRIC LIMIT SWITCH INSTALLATION INSTRUCTIONS



BRACKET MOUNTING TEMPLATE



Installation Instructions:

1. Locate and drill a 3/4" diameter hole through the back of the dishtable, 4" from the end and 3" above the surface of the table.

2. Using the switch mounting bracket template (a photocopy of it may prove beneficial), locate and drill the 9/32" diameter hole on either side of the 3/4" hole.

3. Mount the switch bracket to the outside of the dishtable using the 1/4"-20 hardware supplied. The cable entering the switch body should be pointing upwards so that the switch sensitivity adjustment screw is downwards for adjusting from the underside of the table.

4. Wiring instructions:
a. White wire from the conveyor control panel to red/black wire from proximity switch.
b. Door switch wire from the conveyor control panel to the black wire from the proximity switch.
c. Black/white wire from the conveyor control panel to the red/white wire from the proximity switch.

5. Adjust the sensitivity of the proximity switch by turning the adjustment screw on the switch. The proper setting is reached when the switch will sense an object approximately 12" from the switch.

Unless noted, all dimensions are in inches.

STRIKER PLATE LIMIT SWITCH INSTALLATION INSTRUCTIONS

Installation Instructions:

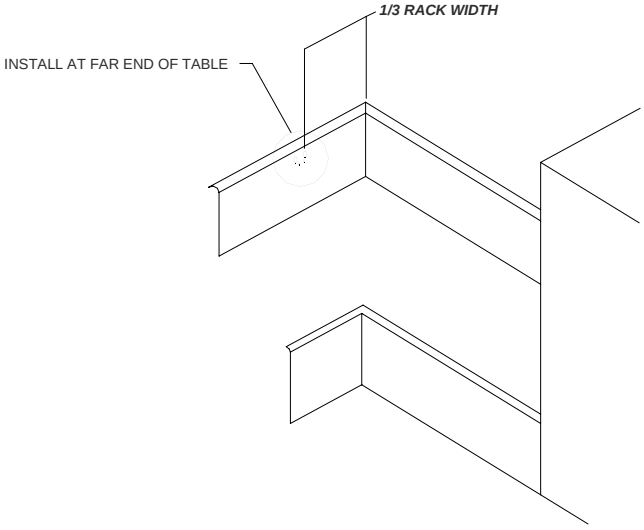
1. Wiring: The switch is wired common and normally open because of the hinge design. By interrupting the line in series with the door switches, the dishmachine ceases to operate. Refer to the machine schematic for details on how to wire the switch.

2. Parts of the table switch are mounted in the dishtable, at the end of the table and under the table. See the drawing(s) for the relationship of the switch to the table.

3. Move the limit switch as far down on the two slots as possible and see that the limit switch is straight on the base plate. This might require adjustment of the nut on the connector for the limit switch.

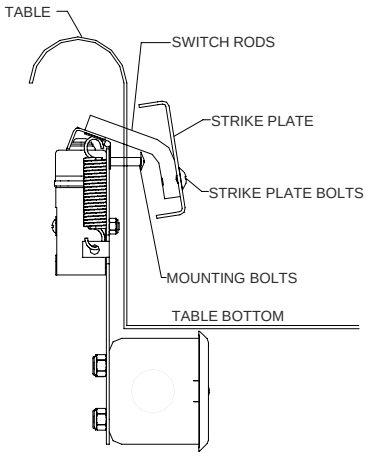
4. Then adjust the inside and the outside connector nuts for the connector box so that it lines up even with the limit switch and the base plate.

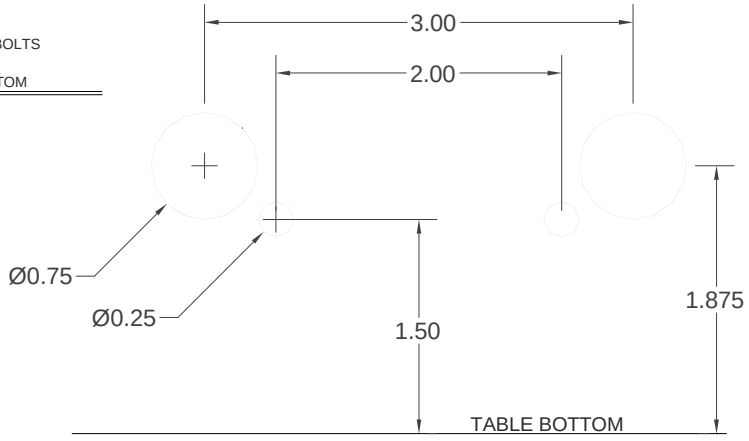
5. Tighten down the nuts for the seal so that they are tight.



6. If you have any difficulty you might have to adjust the connectors to the seal, screwing in or screwing out until the installation is straight on the table and the limit switch is actuated correctly by the rack.

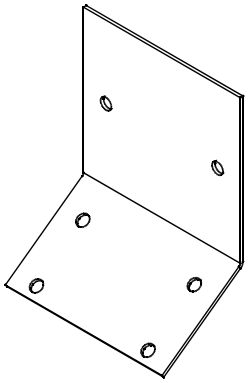
TABLE LIMIT SWITCH THROUGH ROD HOLES



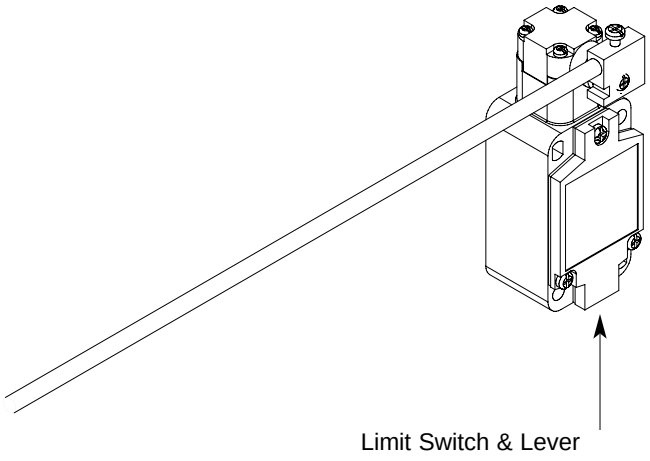


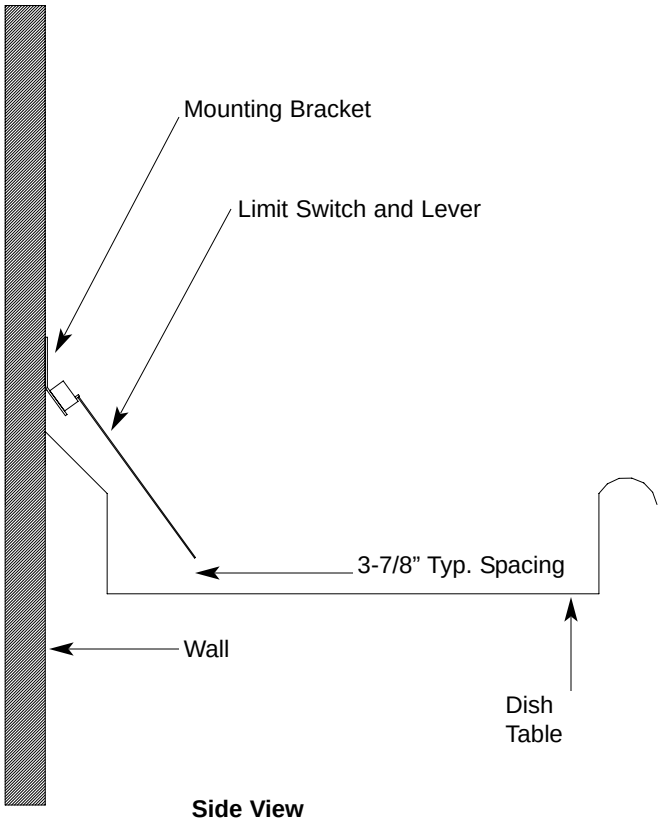
Unless noted, all dimensions are in inches.

WHISKER LIMIT SWITCH INSTALLATION INSTRUCTIONS

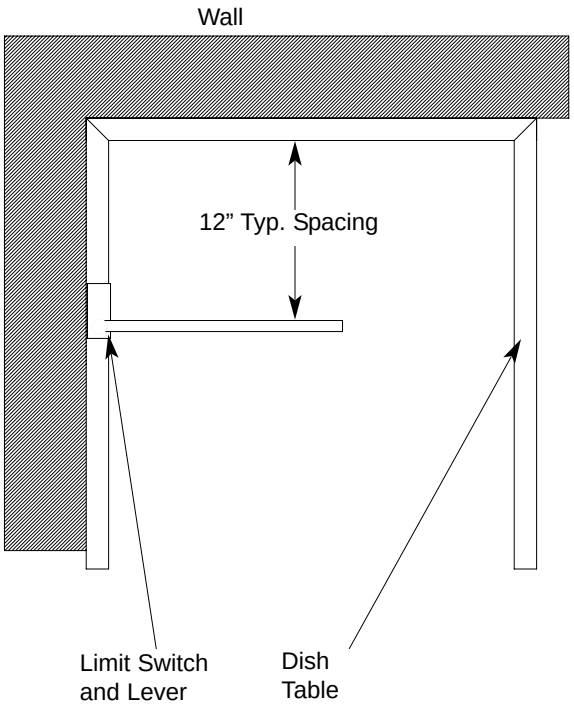


Switch Mounting Bracket





Side View



Top View

Installation Instructions:

1. Wiring: Refer to the machine schematic.
2. Mounting: Mount the switch as indicated in the drawing(s) above.

SECTION 3:
PREVENTATIVE MAINTENANCE

SECTION 3: PREVENTATIVE MAINTENANCE

DISHMACHINE/SIDE LOADER PREVENTATIVE MAINTENANCE & TORQUE SETTINGS

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 prescraping 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 of they are clogged. Have operators regularly inspect the pan strainers to ensure (1) that they are free of soil and debris and (2) they are laying flat in the tub.

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

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.

Some problems, however, may having nothing to do with the machine itself and no amount of preventative maintenance 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.

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 a QUALIFIED SERVICE AGENCY 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.

TORQUE SETTINGS

When replacing components either in the control box or the heater box area, the manufacturer has suggestions on how much to torque the screws and nuts used in securing items to the machine. Refer to the table below for the torque specifications:

ITEMS	TORQUE SPEC
Relays	16 In/lbs
Heater Contactor	35 In/lbs
Heater Nuts	16 In/lbs
Terminal Block	50 In/lbs

GEAR DRIVE MAINTENANCE

Note: The maintenance procedures detailed here are manufacturer's instructions for the WINSMITH brand of gear reducer that is installed on the rack conveyors covered in this manual.

Lubrication & Maintenance:

Factory filling - WINSMITH speed reducers are oil filled at the factory to the proper level for the standard mounting position that you will find it in on the unit. The oil level should be checked and adjusted (if necessary) prior to operation, using the oil level plug provided and while the unit is oriented in its operating position.

Ambient temperature - If the operating ambient temperature is other than 51 - 95°F, then refer to the lubrication chart and refill the unit with the correct grade based on actual ambient temperature and operating speed. See "Oil changing" below for additional information.

Oil changing - When changing the oil for any reason, it should be remembered that oils of various types may not be compatible. Therefore, when changing to a different oil, it is recommended that the housing be completely drained and thoroughly flushed with a light flushing oil prior to refilling with the appropriate lubricant. The oil level should be rechecked after a short period of operation and adjusted, if necessary. When changing double reduction models, each housing should be drained and filled independently, even though there may be a common level.

Initial oil change: The new oil in a speed reducer should be changed at the end of 250 hours of operation. This is equivalent to 30 days of operation for 8 hours per day; 15 days of operation for 16 hours per day, or 10 days of operation for 24 hours per day.

Subsequent oil changes: Under normal conditions, after the initial oil change, the oil should be changed after every 2500 hours of operation, or every 6 months, whichever occurs first. Under severe conditions (rapid temperature changes, moist, dirty or corrosive environment) it may be necessary to change oil at intervals of one to three months. Periodic examination of oil samples taken from the unit will help establish the appropriate interval.

Synthetic oils: Synthetic lubricants can be advantageous over mineral oils in that they generally are more stable, have a much longer life, and operate over a wider temperature range. These oils are appropriate for any application but are especially useful when units are subjected to low start-up temperatures or high operating temperatures. However, continuous operation above 225°F may cause damage to seals or other components. It is recommended that the initial oil be changed or filtered after the first 1500 hours of operation to remove metal particles that accumulate during break-in. Subsequent oil changes should be made after 5000 hours operation if units are operating in a clean environment. This can be extended to 10,000 hours if using new reformulated Mobil SHC lubricants (orange in color) and the lubricant remains free of contamination over this period. See comments under "Subsequent oil changes" for discussion of severe ambient conditions.

Long term storage or infrequent operation: If a speed reducer is to stand idle for an extended period of time, either prior to installation or during use, it is recommended that the unit be filled completely with oil to protect interior parts from rust and corrosion due to internal condensation. Be sure to drain the oil to the proper level before placing the speed reducer in service.

Grease fittings: Some units are equipped with grease fittings to lubricate bearings not adequately lubricated by the oil splash. These fittings must be lubricated every 3 - 6 months depending on operating conditions. bearing greases must be compatible with the type of gear lubricant being used (i.e. mineral, synthetic, food grade, etc.). For mineral oils, use a high quality lithium base NLGOI #2 bearing grease. For synthetic oils, use a synthetic bearing grease such as Mobil Synthetic Universal grease, Mobilith SHC 100 or a suitable equivalent. For food grade lubricants, use Chevron FM grease, NGLI 2, or equivalent.

Low input speeds (under 1600 RPM): When input speeds are less than 1600 RPM, grease fittings will be required to lubricate any bearings not partially covered by the normal oil level.

Oil temperature: Speed reducers in normal operation can generate temperatures up to 200°F depending on the type of reducer and the severity of the application 9loading, duration of service, ambient temperatures). Excessive oil temperatures may be the result of several factors including overloading, overfilling, underfilling or inadequate cooling.

Nominal Ratio

Size	5	7.5	10	15	20	25	30	40	50	60	80	100
920	0.347	0.263	0.225	0.216	0.202	0.191	0.215	0.200	0.188	0.182	0.164	0.161

Lubricant selections are provided by the lubricant manufacturer based on AGMA recommended viscosity grades. Viscosity grades are based on Lubrication Standard ANSI/AGMA 9005-D94.

SECTION 4:
TROUBLESHOOTING SECTION

SECTION 4: TROUBLESHOOTING

DISHMACHINE/SIDE LOADER COMMON PROBLEMS

WARNING: Inspection, testing and repair of electrical equipment should only be performed by a qualified service technician. Many of the tests require that the unit have power to it and live electrical components be exposed. USE EXTREME CAUTION WHEN TESTING THE MACHINE.

Problem: Nothing on dishmachine operates. The power switch is ON and the power indicator light is OFF.

1. Machine is not wired correctly to incoming power source. Have an electrician verify wiring.
2. Machine circuit breaker is tripped. Reset the circuit breaker. If it trips again, contact an electrician to verify the machine amp draw.
3. Service breaker is tripped. Reset the service breaker. If it trips again, contact an electrician to verify the machine amp draw.

Problem: Machine will not fill. The power switch is ON and the power indicator light is ON.

1. No water supply to machine. Verify that water lines have been connected to the machine.
2. Dishmachine doors are not closed. Close doors completely.
3. Incoming water solenoid valve damaged/faulty. Verify that the valve is operating.
4. Tank floats faulty. Verify the wiring of the floats. Verify that no debris is jamming the floats.

Problem: Machine fills, but fill is weak.

1. Low incoming water pressure. Verify that incoming water pressure during fill is 20 ±5 PSI.
2. Incoming water solenoid is clogged. Verify that debris is not entrapped in valve. If so, remove debris.

Problem: Low wash tank temperature.

1. Low incoming water temperature. Verify that the incoming water temperature matches what is indicated on the machine data plate.
2. Heater not energizing. Verify that the wash tank heater is operating.
3. Low incoming voltage. Have an electrician verify that the power coming to the machine is the same as indicated on the data plate.

Problem: Low wash arm pressure, poor spray pattern.

1. Clogged wash arm nozzles. Verify that nozzles are not clogged with debris. If so, remove debris.
2. Clogged wash tank or wash pump strainers. Clean out strainers if necessary.
3. Worn wash pump impeller. Verify status of impeller, replace if necessary.

Problem: Low prewash arm pressure, poor spray pattern.

1. Clogged prewash arm nozzles. Verify that nozzles are not clogged with debris. If so, remove debris.
2. Clogged prewash tank or prewash pump strainers. Clean out strainers if necessary.
3. Worn prewash pump impeller. Verify status of impeller, replace if necessary.

Problem: Inadequate rinse.

1. Low incoming water pressure. Verify that incoming water pressure during fill is 20 ±5 PSI.
2. Incoming water solenoid is clogged. Verify that debris is not entrapped in valve. If so, remove debris.

Problem: Pawl bar moves with no load, but does not move when loaded.

1. Clutch on drive assembly is out of adjustment. Adjust as required.

DISHMACHINE/SIDE LOADER COMMON PROBLEMS (CONTINUED)

Problem: Pawl bar does not move.

1. Failed or broken overload spring. Replace spring if necessary.
2. No power to the drive motor/failed drive motor. Verify power and wiring connections to the motor.
3. Pawl bar not properly installed. Verify that the pawl bar is installed correctly.

Problem: Racks go through the machine, but results are poor.

1. Verify that detergent is being dispensed into the machine at the appropriate quantities for the water volume. If not, get detergent to appropriate level and review results of washing ware.
2. Clogged strainers/scrap basket. Clean out strainers and scrap basket and replace.
3. Ware not being properly prescraped. Review paragraph entitled “Ware Preparation” in the operating instructions.
4. Wash or rinse arms missing end plugs or caps. Verify and replace as required.
5. Low tank heat (see previous page).
6. Inadequate rinse (see previous page).
7. Incorrect voltage coming to the machine. Verify that the voltage matches that on the machine data plate.
8. Wash pump cavitation due to low water level. Verify that the drains are shut and that the water level is correct.

Problem: Spotting of silverware, glasses and dishes.

1. Incorrect final rinse temperature. Verify that the rinse water temperature matches that which is listed on the machine data plate.
2. Clogged wash and/or rinse nozzles and arms. Remove the arms and verify that they and their nozzles are free from debris.
3. Excessively hard water. Install a water softener to reduce hardness.
4. Loss of water pressure due to clogged/obstructed wash pump. Turn the power off to the machine at the source. Drain the wash tank of water and verify that the pump intake is free from debris.
5. Improper scrapping procedures. Review the paragraph entitled “Ware Preparation” in the operating instructions.
6. incorrect detergent/chemical concentrations. Verify that the detergent/chemical concentrations are correct for the associated water volume.

SECTION 4: TROUBLESHOOTING

D226 STEAM BOOSTER COMMON PROBLEMS

Problem: Power light does not illuminate.

1. Power not connected to the unit through the control box. Open the control box cover and verify that incoming power lines are connected and light.
2. Service breaker tripped or open. Verify that the breaker is closed.
3. Power switch connections could be loose. Ensure that the connections are of sound quality.
4. Power switch is faulty.
5. Power light is faulty.

Problem: Water pressure is too low.

1. Water pressure regulator is out of adjustment. Follow the instructions provided in the maintenance section and adjust so that the flow pressure is 20 ±5 PSI.
2. Water pressure regulator internal strainer is clogged. Clean in accordance with the instructions provided in the maintenance section.
3. Water pressure regulator is faulty.
4. Water pressure gauge is faulty or the cut off from the system. Verify that the test cock valve under the gauge is open to allow for the sensing of line pressure. Replace gauge if necessary.
5. Heat exchanger is clogged. Replace the heat exchanger.

Problem: Solenoid valve is not opening/shutting.

1. Power not connected to the unit through the control box. Open the control box cover and verify that incoming power lines are connected and light.
2. Service breaker tripped or open. Verify that the breaker is closed.
3. Power switch connections could be loose. Ensure that the connections are of sound quality.
4. Solenoid wires are loose or broken. Verify that the electrical connections are of sound quality.
5. Faulty solenoid coil. Replace the solenoid.

Problem: Outlet water temperature too low.

1. Thermostat is faulty. Replace the thermostat.
2. Steam flow pressure is too low for the unit. Verify that the steam flow is 15-25 PSIG.
3. Water flow pressure is too high. Follow the instructions provided in the maintenance section and adjust so that the flow pressure is 20 ±5 PSI.
4. Insufficient volume of steam to unit. Check the line size and flow pressure.

SECTION 5:
SERVICE PROCEDURES

REPLACING THE PUMP GASKET & SEAL

These rack conveyor machines come equipped with powerful motors and pumps to ensure ware washing results. Occasionally, some of the parts on these components may need replacing to maintain optimum performance. Two components in particular are the wash pump gasket and the mechanical seal.

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.

3. Ensure that the dishmachine has been completely drained of water and has been allowed to cool down prior to beginning this maintenance procedure.

TOOLS REQUIRED

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

1. 7/16” socket and ratchet with extension
2. 9/16” socket and ratchet with extension
3. 5/16” Allen wrench
4. 5/16” nutdriver
5. Large flathead screwdriver

TIME REQUIRED

It is estimated that it will take (1) person one and a half hours 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 procedure. 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 wash, prewash or power rinse motor found on an Ecolab rack conveyor dishmachine.

STEPS

1. **Note:** in this procedure, it is not necessary to always remove the wiring from the motor. However, the motor should be treated with the greatest of care when being pulled away and set on the floor for maintenance, as demonstrated in these instructions.

2. Remove the (4) nuts holding the mounting plate in position.

Removing the mounting plate nuts with the 9/16” socket

3. Loosen the band clamp on the back end of the motor.

Loosening the band clamp on the back end of the motor.

4. With the band clamp loosened, carefully remove it from the back end of the motor. Once the clamp is removed, examine it to determine if it needs to be replaced as well. If it is broken in any spots or shows signs of metal fatigue, it is best to order a new one. The purpose of the clamp and the attached support bracket is to keep the weight of the motor from pulling on the tub, damaging it. It is absolutely necessary that this component be replaced once the maintenance procedure is completed.

Removing the rear clamp

5. Remove the motor support bracket.

Removing the motor support bracket

6. With the motor support bracket removed, gently pull back on the motor. You may have to move it from side to side, but it should start to move back. Pull it completely away from the mounting studs on the tub and set down gently to work on it.

7. Remove the gasket from the tub. If you are going to replace it with a new one, do so at this time. Otherwise, carefully examine the gasket for tears and other damage. If it is acceptable, set to the side. If you are not going to replace the seal, go to step 16.

Removing the pump gasket

8. Using a large screwdriver (flathead preferred, but a phillip-shead will work just as well) and the 7/16” socket, loosen and then remove the bolt holding the impeller to motor shaft. Refer to the picture below.

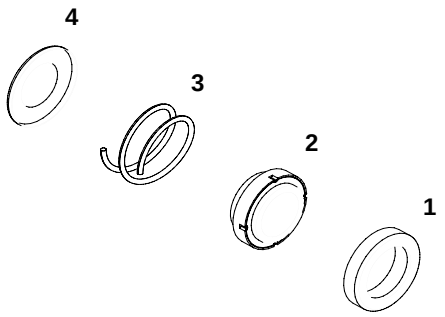
Removing the bolt that holds the impeller to the shaft

9. With the bolt and washer removed, grasp the sides of the impeller and pull up gently. The impeller should slide off of the shaft. Remove the woodruff key as well and set to the side.

Removing the impeller

Removing the woodruff key

10. Note that the mechanical seal will consist of the following parts:



1. A rubber seal with a ceramic ring set inside it that will seat in the center of the mounting plate.

2. A rubber seal with a stainless steel covering on the outside that seals the motor shaft and seats against the ceramic ring.

3. A spring.

4. A stainless steel spring cap to capture the top of the spring and hold it in place.

11. Most of the mechanical seal should simply come off, leaving the rubber seal with the ceramic ring inside the pump mounting plate.

12. Using a screwdriver, pry out the remaining part of the mechanical seal, taking care not to score or damage the motor shaft.

13. Once the hole is free of any parts of the mechanical seal, verify that the hole is clean and free of debris.

14.Gently press the new seal and ceramic over the shaft and slide down into the mounting plate hole. NOTE: Do not touch the surface of the seal with your bare fingers; place a rag or paper towel between your fingers and the seal. Gently slide the shaft seal over the shaft and push it down against the mounting plate seal. Place the spring and cap over the shaft.

15. Place the woodruff key back into the groove of the motor shaft and re-install the impeller, being careful to align the woodruff key with the slot in the impeller. Replace the bolt and washer, then tighten.

16. Install the motor by placing it on the studs and sliding it forward until it is against the wash tank wall. Replace the nuts and washers and tighten.

17. Re-install the pump motor support bracket and tighten down the nuts used to secure it to the tub.

18. Replace the band clamp on the motor and support bracket, tighten until snug.

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 you hear any grinding sounds while the motor is running, immediately shut off the unit and secure power and water. There is a serious problem that must be addressed. If any problems arise you can contact your Ecolab representative.

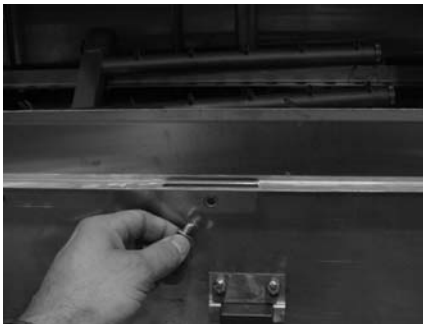
SPECIAL PARTS

Mechanical Seal
Ecolab No.: 96563812
Mfg. No.: 06401-003-06-73

Motor Mounting Gasket
Ecolab No.: 96020060
Mfg. No.: 06401-003-06-75

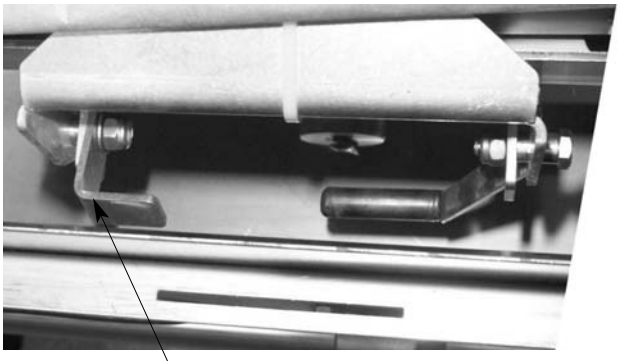
Motor Support Clamp
Ecolab No.: 96021852
Mfg. No.: 04730-002-32-15

First, remove three bolts, locknuts and flat washers at middle hood/tub junction.



Next, remove door splash shield.

Then, install the stabilizer using the three bolts, locknuts and flat washers.



Rack Rail Stabilizer
Ecolab No.: 96582986
Mfg. No.: 05700-011-34-63

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!

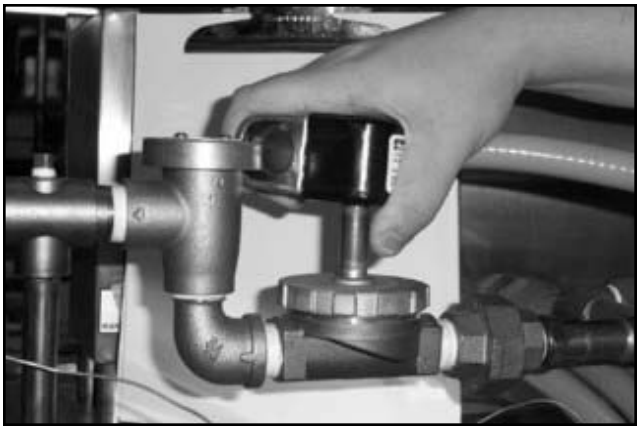
2. The procedures demonstrated in this manual are shown being performed on an ES-4400 rack conveyor dishmachine. The actual maintenance steps, however, apply to any Parker style solenoid valve found on a Ecolab dishmachine.

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.

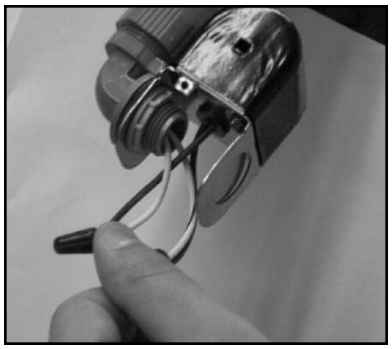


Removing the coil

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

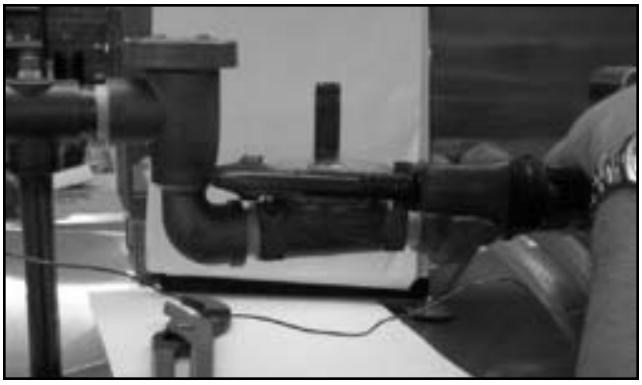
7. Using a pair of channel locks, gently loosen the conduit retaining ring for the conduit nut. Once it is loosened, use your fingers to unscrew and remove it.

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

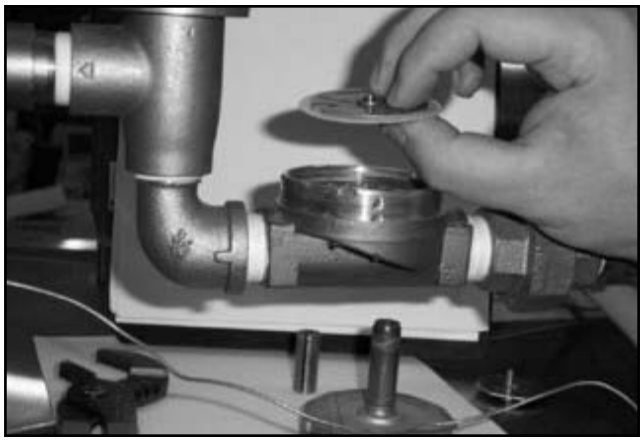


Loosening the valve bonnet

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.

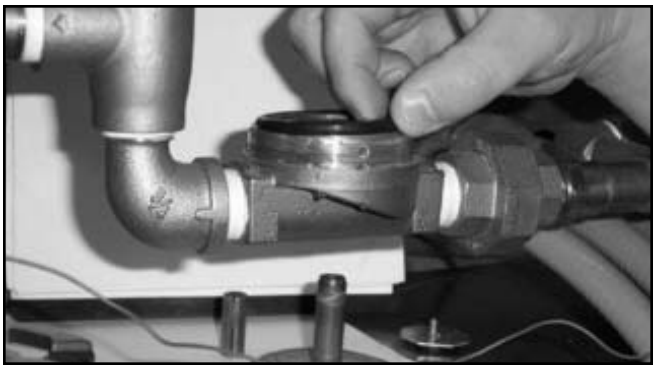
Removing the valve bonnet

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.

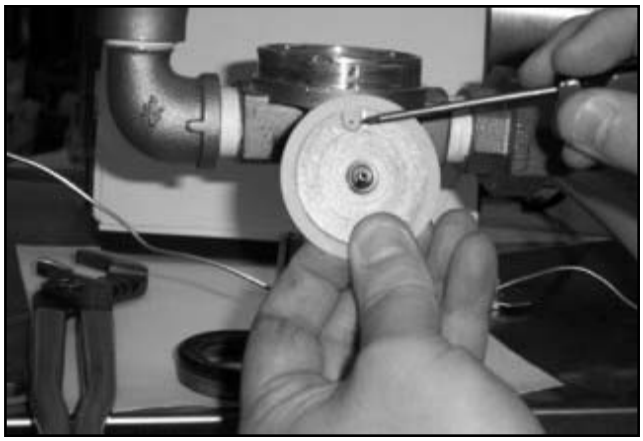


Removing the O-ring

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

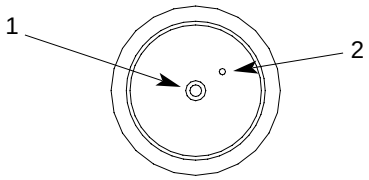
15. Examine the threads for the valve bonnet. Check them for scoring or signs of damage. Take a cloth and clean them out to remove any foreign particles that might get lodged in the threads and cause a leak. Severely damage threads should not be repaired; instead it is recommended that the entire valve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

VACUUM BREAKER REPAIR PARTS KIT

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

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

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

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

PREPARATION

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

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

TOOLS REQUIRED

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

1. Small flathead screwdriver
2. Needle nose pliers

TIME REQUIRED

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

IMPORTANT NOTES

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

STEPS

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

Vacuum breaker

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

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

Removing the cap

4. Set the cap to the side.

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

Removing the plunger

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

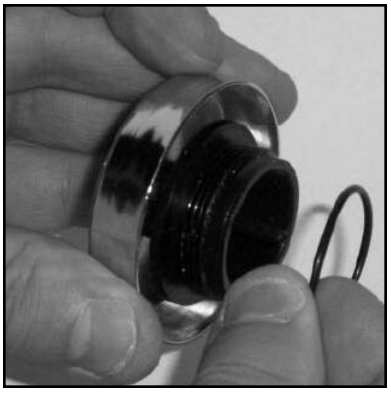
Examining the seal ring on the plunger

Examining the plunger seating surface

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

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

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



Replacing the O-ring

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

AFTER MAINTENANCE ACTIONS

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

SPECIAL PARTS

To order the kit with components and instructions:

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

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

The drive motor and the gear reducer of your Ecolab rack conveyor are responsible for moving racks of ware through the dishmachine. If needed to be replaced, these instructions will show you how to get your machine up and running in the shortest possible time.

Ecolab offers all of the repair parts necessary for performing this task.

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 turned off to the unit at the service breaker. Tag or lock out the service breaker to prevent accidental or unauthorized energizing of the machine.

TOOLS REQUIRED

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

1. 7/16” socket and ratchet with extension
2. 9/16” socket and ratchet with extension
3. 7/16” combination wrench
4. 9/16” combination wrench
5. 3/4” combination wrench
6. 1/8” Allen wrench
7. 1/4” nutdriver
8. Large flathead screwdriver
9. Medium phillipshead screwdriver
10. Medium hammer
11. Rubber mallet

TIME REQUIRED

It is estimated that it will take (1) person one and a quarter hours to replace the drive motor, one and a quarter hours to just replace the gear reducer or two hours to do both at one time, not including all of the items indicated in the section entitled “PREPARATION”.

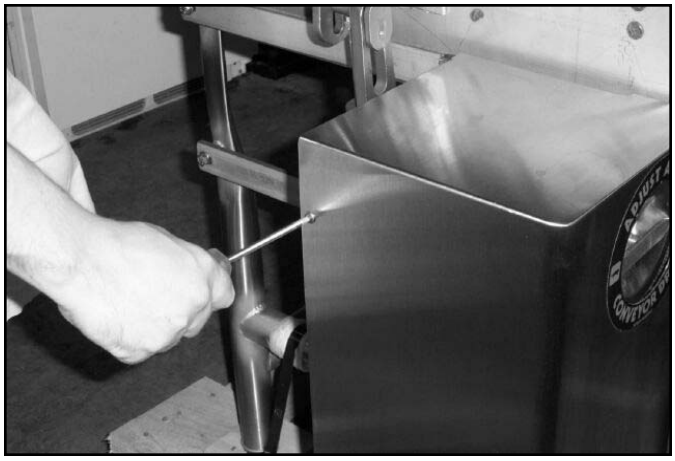
IMPORTANT NOTES

1. Read these instructions thoroughly before attempting this maintenance procedure. 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 drive motor or gear reducer found on a Ecolab rack conveyor dishmachine.

STEPS

1. Remove the (2) screws that secure the top drive assembly cover in place.



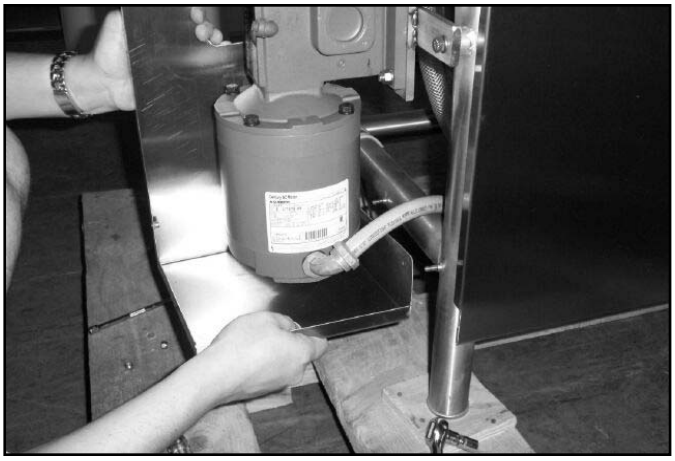
Removing the screws from the top cover.

2. Remove the top cover to expose the drive assembly.

Removing the top cover.

3. Set the top cover to the side and out of the way so that it does not become a trip hazard. From here, the next step will be to remove the bottom cover. This will require using the 7/16” socket with ratchet and most likely the 7/16” combination wrench. Do not lose the hardware for the covers as your repair kits do not come with the hardware necessary to replace these. If you do require hardware that is not present in your kits, do not hesitate to contact Ecolab for help.

Removing the nuts securing the bottom cover.



Removing the bottom cover.

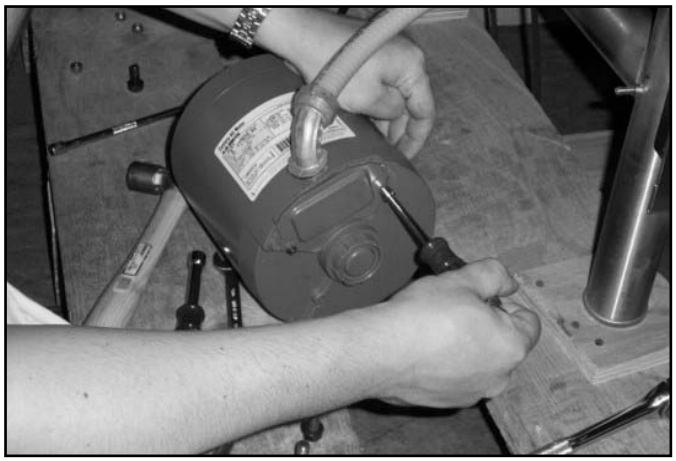
4. Remove the bottom and set to the side so that it does not become a trip hazard.

Removing the bolts holding the drive motor to the gear reducer.

5. With the cover removed you may now remove the bolts used to connect the drive motor to the gear reducer. **Note:** you need to support the motor as you remove the bolts; failure to do so could result in the motor falling to the ground and becoming damaged.

Removing the drive motor.

6. Once the bolts are removed, the motor should slide out of the gear reducer. Remember to support and lay it gently on the floor or some other surface in order to continue working on it. Be sure that you get the key, checking the keyway on the motor shaft and in the gear reducer.



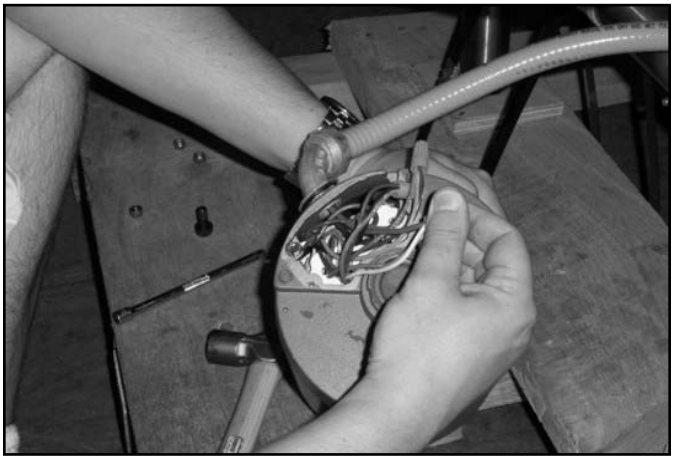
Removing the wiring access cover.

7. If the purpose of this maintenance action is to replace the drive motor, continue to step 8. If you wish to replace the gear reducer, continue to step 21.

8. With the motor laying on a level surface, you need to remove the conduit from it. First, use the 1/4” nutdriver to remove the wiring access cover on the back of the motor.

9. Once the cover is removed and the wiring is exposed, you

may want to jot down how your motor is wired. You can also refer to the schematic located on the motor itself because how the motor is wired when you remove it is how you will wire it when you replace it. If you have any questions regarding the wiring of your motor, do not hesitate to contact Ecolab for help.



Removing the wire nuts.

10. pull the bundled wires out and remove the wire nuts. Set the wire nuts to the side as you will need them when you wire up the new motor.

11. Once the wire nuts are removed, separate the wires.

12. With the flathead screwdriver and the hammer, loosen the conduit nut. Once loosened, pull the conduit away from the motor. The motor may now be disposed of.

13. Remove the access cover off of the new motor.

14. Attach the conduit and pull the wires through the hole provided. Tighten the conduit nut.

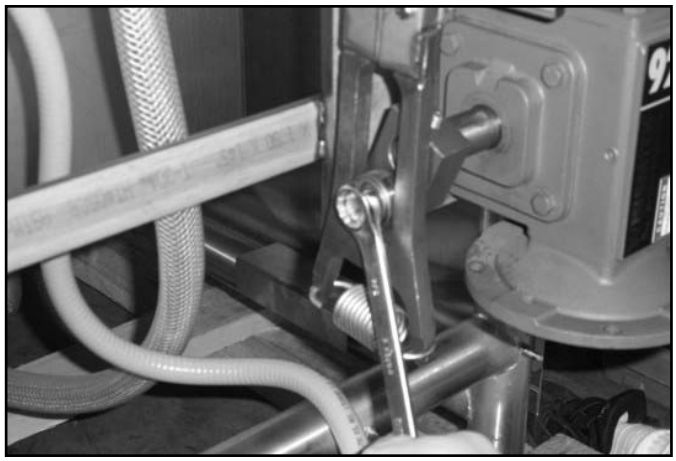
15. Using the wire nuts, wire the motor back the same way the old one had been. Refer to the schematic on the motor itself or contact Ecolab if you any questions.

16. Once the wiring is done, carefully push wires back into the motor and put the access cover back on. Tighten down the screws for securing it.

17. The drive motor now needs to be reattached to the gear reducer. There are two methods for doing this. The first is to try and and reinsert the drive motor shaft into the gear reducer with it (gear reducer) still attached to the unit. This is difficult but possible. Ensure that the key is in the keyway when you mate the parts. The second method and perhaps the easiest is to remove the gear reducer, mate the two parts and bolt them together and then put them on the unit at one time. This method takes a little more time. If you wish to remove the gear reducer and assemble the two components continue on to step 27.

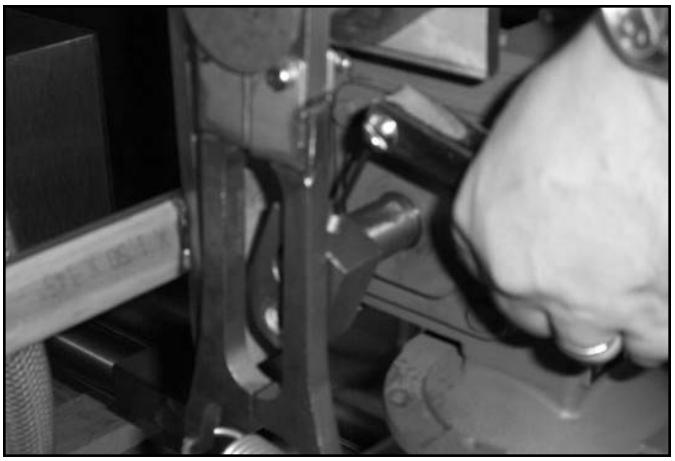
The WRONG way to mount the drive motor.

The Correct way to mount the drive motor.

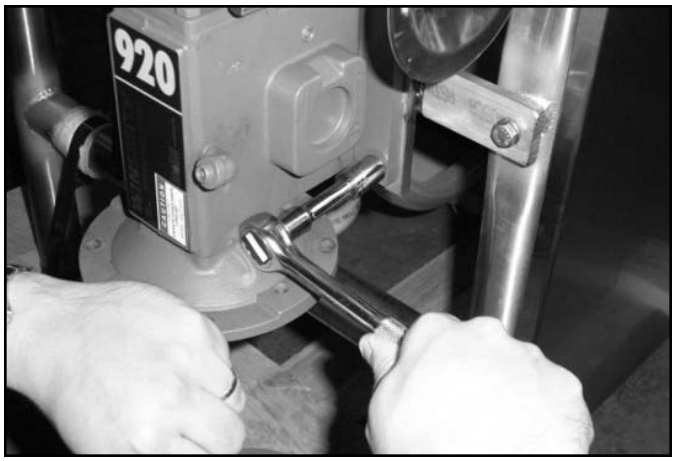


Removing the drive hub bolt.

18. Once the motor and gear reducer are mated, secure them with the locknuts and bolts. Ensure the bolts are tight.



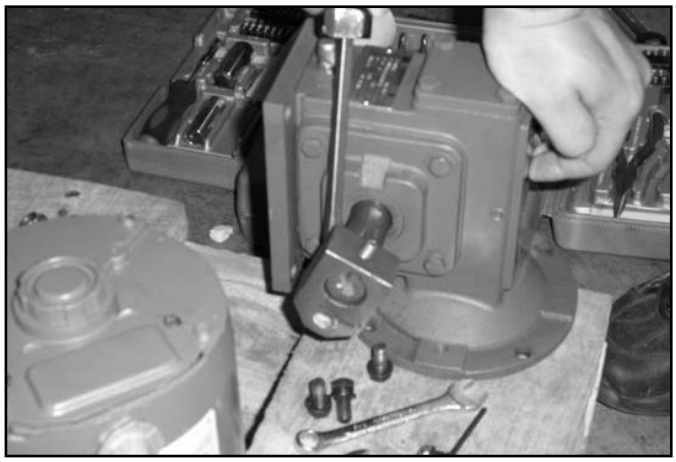
Loosening the set screw with the 1/8 allen wrench.



Removing the nuts holding the gear reducer on.

Removing the gear reducer.

Note: Because of the way the covers for the drive assembly are designed, it is imperative that you position the motor on the gear reducer so that the conduit fitting is facing towards the front of the dishmachine. If it is facing away from the machine, the covers may not go back on.



Removing the drive hub.

19. Reattach the bottom and top drive assembly covers.

20. Proceed to the sections entitled “AFTER MAINTENANCE ACTIONS”.

21. (Continuing from step 7) To remove the gear reducer, first take the 3/4” combination wrench and remove the drive hub bolt.

22. Once the drive hub bolt & bearing are removed, loosen the set screw on the drive hub. There is no need to remove it.

23. Remove the gear drive by using the 9/16” socket and ratchet, as well as the combination wrench as required, to remove the nuts holding it to the mounting plate.

24. Gently remove the gear reducer, careful not to drop it.

25. Set the gear reducer on a flat surface. The drive hub needs tobe removed. You have already loosened the set screw, but it may take some more effort to remove it. You may have pry it off, or give it some taps with a mallet to coax it off of the shaft. The liberal use of spray lubricants will also help.

26. Once the drive hub is removed, place it on the shaft of the new gear reducer. Ensure the key is in the keyway. Once it is on and flush with the end of the shaft, tighten down on the set screw with the 1/8” allen wrench.

27. As you have both the drive motor and the gear reducer off of the machine, it is much simpler to assemble them together prior to mounting them. Ensuring that the key for the drive shaft of the drive motor is in the keyway.

28. After the motor is mated against the gear reducer, turn the motor so that the conduit fitting will face towards the front of the dishmachine once both components are mounted to the frame. This is to all the drive assembly covers to go back on. If you do not do this, then there is a possibility the covers will not fit back on the unit. Refer to step 18 and the note following for more details.

29. Stand the assembly up and secure them using the lockwashers and bolts. Use the 9/16" combination wrench to tighten them down.

Mounting the motor to the gear reducer.

Tightening the bolts to secure the drive motor to the gear reducer.

30. Once the motor is securely fastened to the gear reducer, carefully lift the assembly up and mount it on the fasteners. Be sure to use proper lifting techniques to prevent injury.

31. Once mounted, secure with the lockwashers and locknuts.

32. Reinstall the drive hub bearing and drive hub bolt, tightening down with the 7/8" combination wrench.

33. Reattach the bottom and top assembly covers.

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, running an empty rack through the machine to ensure that it is carried all of the way through. If you hear any grinding sounds while the motor is running, immediately shut off the unit and secure power and water. There is a serious problem that must be addressed. If any problems arise you can contact your Ecolab representative.

SPECIAL PARTS

Gear Reducer
Ecolab No.: N/A
Mfg. No.: 06105-011-71-88

Drive Motor Replacement Kit

60Hz/1 Ph
Ecolab No.: N/A
Mfg. No.: 06401-003-08-42

60 Hz/3 Ph
Ecolab No.: N/A
Mfg. No.: 06401-003-08-40

REPLACING THE WASH HEATER

Ecolab rack conveyor machines come equipped with heaters to ensure proper ware washing results. Occasionally, some of these components may need replacing to maintain optimum performance.

Ecolab offers all of the repair parts necessary for performing this task.

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.

3. The unit must be drained completely.

TOOLS REQUIRED

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

1. 3/8” Nutdriver
2. Ratchet
3. 1/2” Socket
4. 3/8” Socket
5. Phillipshead Screwdriver
6. Needlenose Pliers
7. Torque Wrench
8. Siliconee Sealant
9. Amp Meter

TIME REQUIRED

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

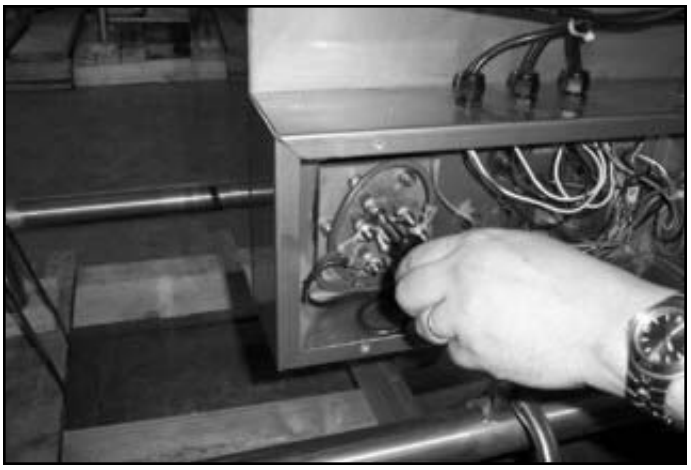
IMPORTANT NOTES

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

STEPS

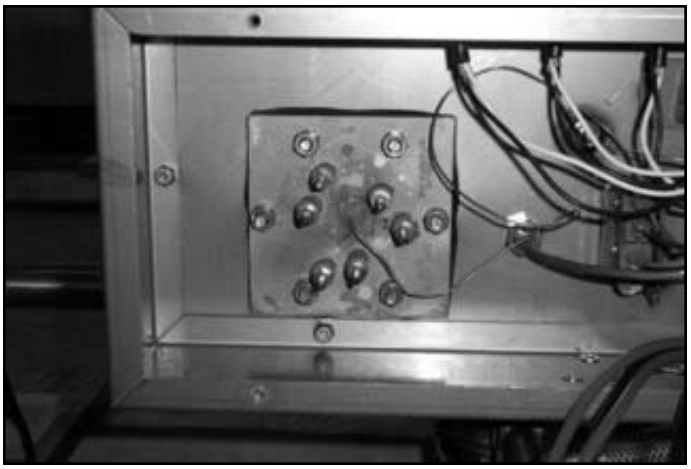
1. Remove the front dress panel.

2. Remove the heater box cover to expose the heater. Set the cover and hardware to the side.



Removing the power lines.

3. Remove the incoming electrical lines from the heater. Set the hardware to the side.



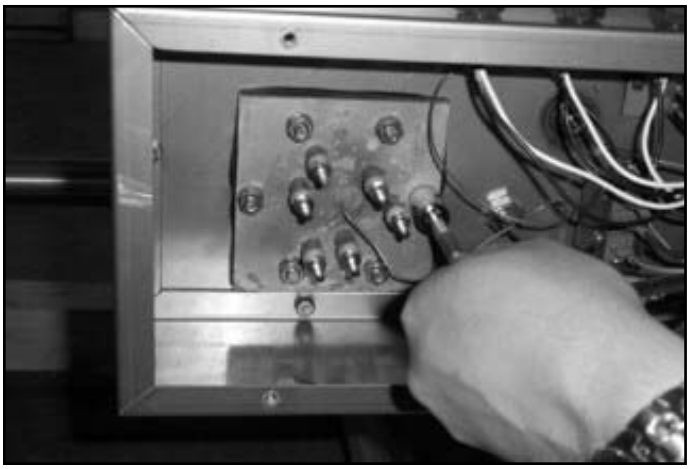
Heater without power lines attached.

4. Push the incoming electrical lines out of the way.

5. The thermostat probe needs to be removed from the well inside the heater. The probe is secured in place with silicone that must be peeled away prior to attempting to remove it. It is important that you do not damage the probe during this part of the maintenance action. If you do, then the thermostat will have to be replaced as well.

Removing silicone from thermostat well

6. Using your hand or needlenose pliers, remove the silicone so that the thermostat probe may be gently removed.



Removing the nuts and lockwashers

Removing the heater

Removing the gasket

7. With the thermostat probe out of the way, use the 1/2" socket and ratchet to remove the nuts holding the heater to the tub. Remove all nuts and lockwashers.

8. Remove the heater from the tub weldment.

9. Remove the gasket.

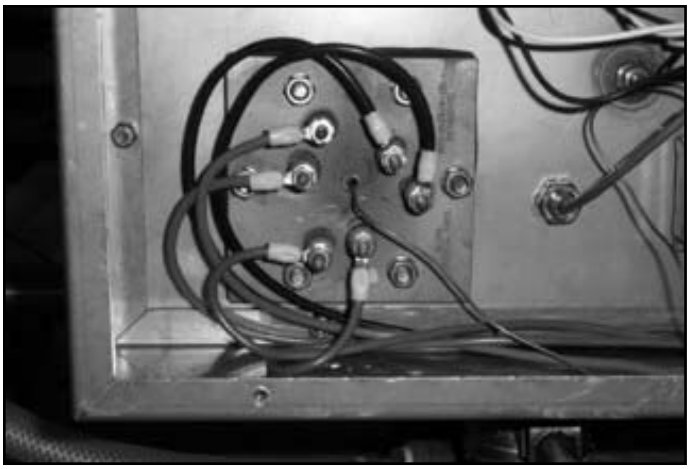
Applying the torque wrench to the nuts

10. Before proceeding any further, it is important to verify that the tub wall is free of any excess debris so that when the new gasket is applied, there are no gaps that could lead to leaking around the heater.

11. Apply the new heater gasket from your service kit.

12. Slide the heater onto the studs and apply by hand the lockwashers and nuts. Tighten the nuts by hand and then use the torque wrench set to 154 in-lbs to ensure that the nuts are secure.

Putting the thermostat probe in the heater well



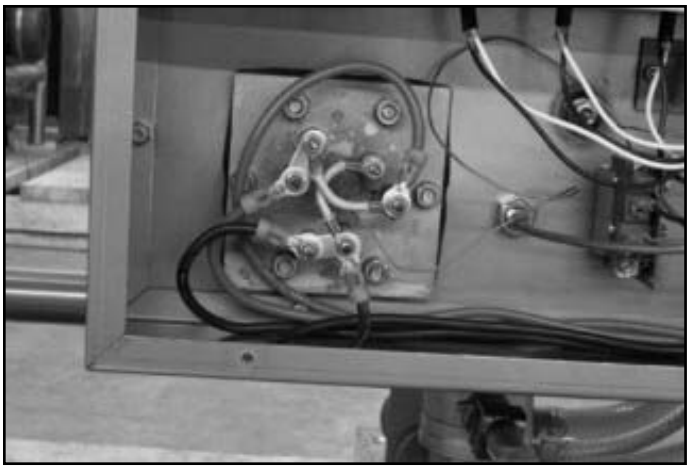
Three phase wiring

Applying silicone to the heater well

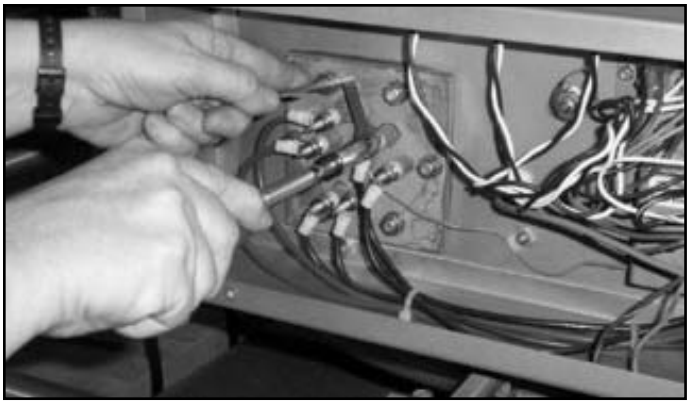
13. The thermostat probe needs to be placed into the well of the new heater. Again, use caution when doing this so that the probe or the capillary tube do not become broken. If this occurs, then the thermostat will have to be replaced.

14. Apply silicone to seal the well and hold the thermostat probe in place.

15. Reattach the incoming power lines to the heater, ensuring that you wire the heater correctly for either single or three phase operation.



Single phase wiring



Tightening the nuts holding the power lines

16. Using the torque wrench or a torque nutdriver (if available) torge the nuts holding the wires, jumpers and bus bars to 16 in-lbs.

17. Ensuring that all non-essential personnel are clear of the area, close the drain valve(s) and restore power and water to the unit. Turn the unit on and allow it to fill normally.

18. Verify that there are no leaks around the heater. If there are, attempt to tighten it down as the tub will change shape slightly as it heats up.

19. Use the amp meter to take readings off of the power lines to the heater, verifying the amperage draw to the machine data plate.

20. Wait until the heater contactor kicks out (meaning that the tub has reached the appropriate temperature) and place the unit in DELIME mode by flipping the switch on the back of the control box. Allow the unit to operate for at least ten minutes to verify that there are no leaks and that the heater is maintaining the tank temperature.

21. If the unit appears to be operating correctly, return it to AUTO mode and turn off.

22. Replace the heater box cover.

23. Replace the front dress panel.

AFTER MAINTENANCE ACTIONS

Service perosnnel may want to drain the machine and allow it to cool down. Secure power to the unit at the service breaker and then verify the torque of all fasteners covered in this instruction.

SPECIAL PARTS

Heater Replacement Kit Chart

Model	Volts	Phase	KW	Part Number
All	208	1	15	06401-003-10-21
	230	1	15	06401-003-10-22
	208	3	15	06401-003-10-21
	230	3	15	06401-003-10-22
	460	3	15	06401-003-10-31
	208	1	10	06401-003-12-94
	230	1	10	06401-003-12-95
	208	3	10	06401-003-12-94
	230	3	10	06401-003-12-95
	460	3	10	06401-003-12-96

REPLACING CONVEYOR MOTOR

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.
3. Ensure that the dishmachine has been completely drained of water and has been allowed to cool down prior to beginning this maintenance procedure.

TOOLS REQUIRED

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

1. 7/16” socket and ratchet with extension
2. 9/16” socket and ratchet with extension
3. 5/16” Allen wrench
4. 5/16” nutdriver
5. Large flathead screwdriver
6. Small flathead screwdriver

TIME REQUIRED

It is estimated that it will take (1) person one and a half hours 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 procedure. 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 wash, prewash or power rinse motor found on an Ecolab rack conveyor dishmachine.
3. These basic instructions will apply to all prewash, wash and power rinse motors found on ES & WH series machines.

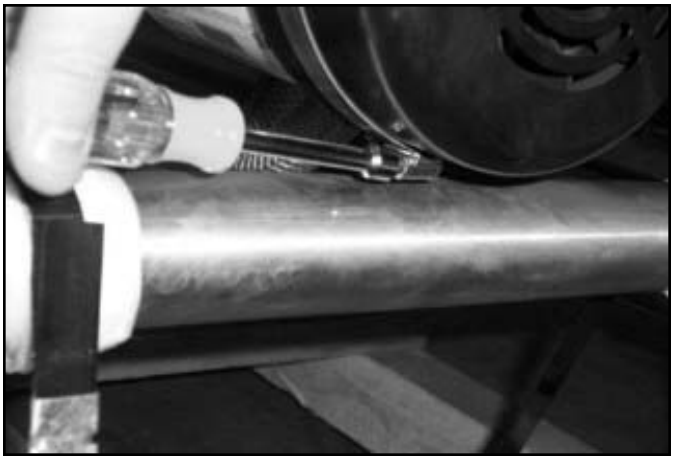
STEPS

1. Remove the (4) nuts holding the mounting plate in position.

Removing the mounting plate nuts with the 9/16” socket

2. Loosen the band clamp on the back end of the motor.

3. With the band clamp loosened, carefully remove it from the back end of the motor. Once the clamp is removed, examine it to determine if it needs to be replaced as well. If it is broken in any spots or shows signs of metal fatigue, it is best to order a new one. The purpose of the clamp and the attached support bracket is to keep the weight of the motor from pulling on the tub, damaging it. It is absolutely necessary that this component be replaced once the maintenance procedure is completed.



Loosening the band clamp on the back end of the motor.

Removing the rear clamp

4. Remove the motor support bracket.

Removing the motor support bracket

5. With the motor support bracket removed, gently pull back on the motor. You may have to move it from side to side, but it should start to move back. Pull it completely away from the mounting studs on the tub and set down gently to work on it.

6. Remove the gasket from the tub.

7. Use a screwdriver to remove the wiring cover from the motor wiring box. Take note of how the motor is wired up because you will have to wire it up the exact same way when you install the new motor.

8. Remove the conduit fitting from the motor wiring box.

9. Pull the conduit away from the motor and set old motor to the side. Dispose of the old motor in accordance with warranty or national/state/local guidelines, whichever may apply.

Removing the pump gasket

10. Remove the wiring cover on the new motor assembly and pull the wires free. Install the conduit fitting.

11. Run the conduit to the motor, pulling the machine wires through and into the motor wiring box.

12. Rewire the motor exactly the same way the old one was wired and/or refer to the motor schematic to determine how the motor should be wired for the incoming power. If you require help on this, do not hesitate to contact Ecolab. Ensure that all wiring is done in accordance with national, state and local codes as applicable.

Remounting the wash motor assembly

13. Place the new motor gasket on the tub over the mounting studs.

14. Carefully lift the motor assembly and slide it onto the mounting studs.

15. Re-install the mounting hardware and tighten down.

16. Attach the motor support rear clamp.

17. Adjust the motor support bracket so that the motor assembly is level and tighten down.

18. Attach the motor wiring cover.

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 you hear any grinding sounds while the motor is running, immediately shut off the unit and secure power and water. There is a serious problem that must be addressed. If any problems arise you can contact Ecolab.

SPECIAL PARTS

Bracket, Motor Support
Ecolab No.: 96022017
Mfg. No.: 05700-021-73-42

Clamp, Motor Support
Ecolab No.: 96021852
Mfg. No.: 04730-002-32-15

SECTION 6:
PARTS SECTION

HARDWARE- Stainless Steel

Ecolab No.	Description	Mfg. 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

Ecolab No.	Description	Mfg. No.
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	005311-002-78-93
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

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

Ecolab No.	Description	Mfg. No.
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

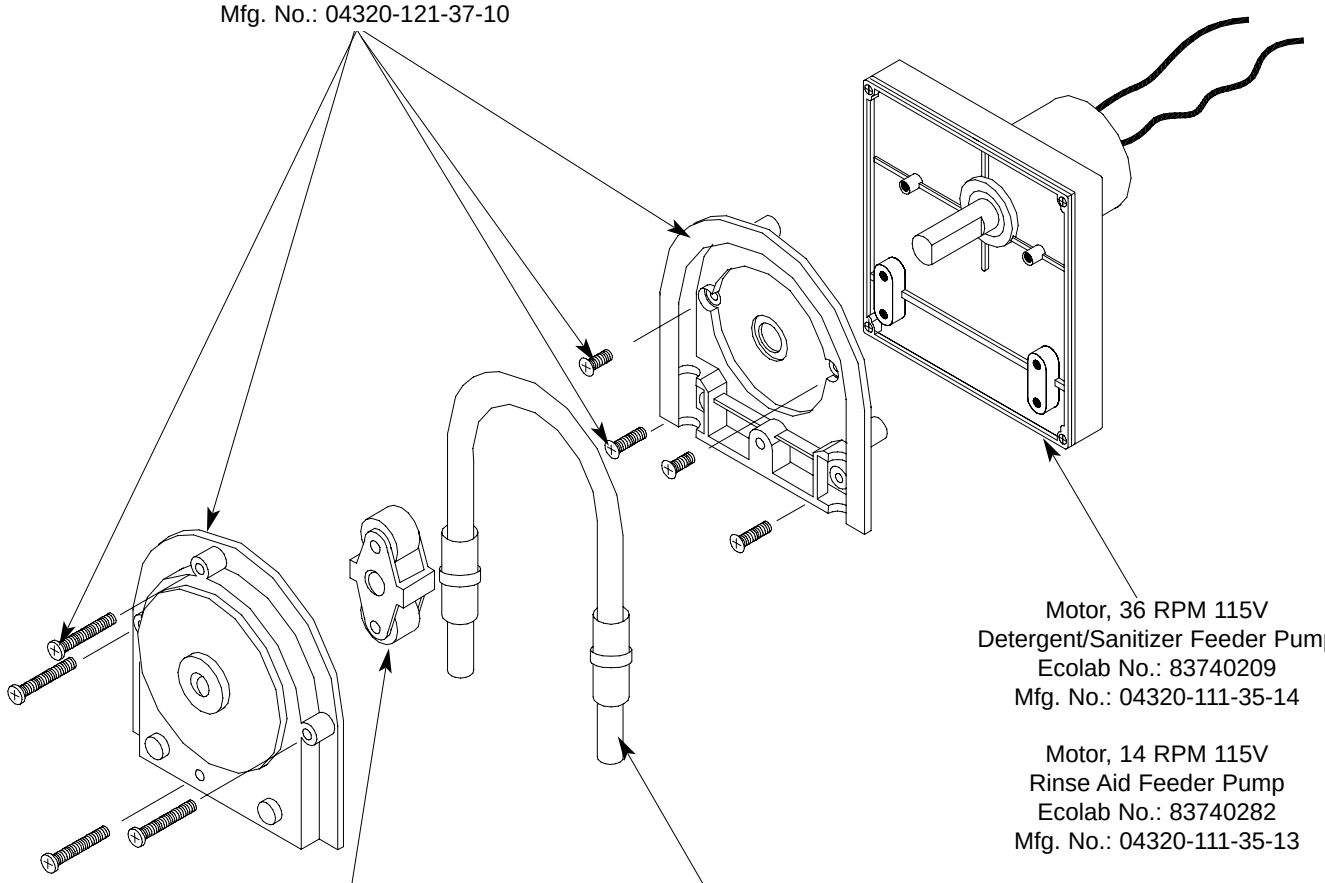
85015105	TUBING 1/4" CLEAR	05700-011-37-12
85015097	TUBING 1/4" RED	05700-011-37-14
85015089	TUBING 1/4" BLUE	05700-011-37-16
92661024	COPPER TUBE 1/4" 50 FT	N/A
92661016	COPPER TUBE 3/8" 25 FT	N/A
92661032	COPPER TUBE 1/2" 50 FT	N/A

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

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

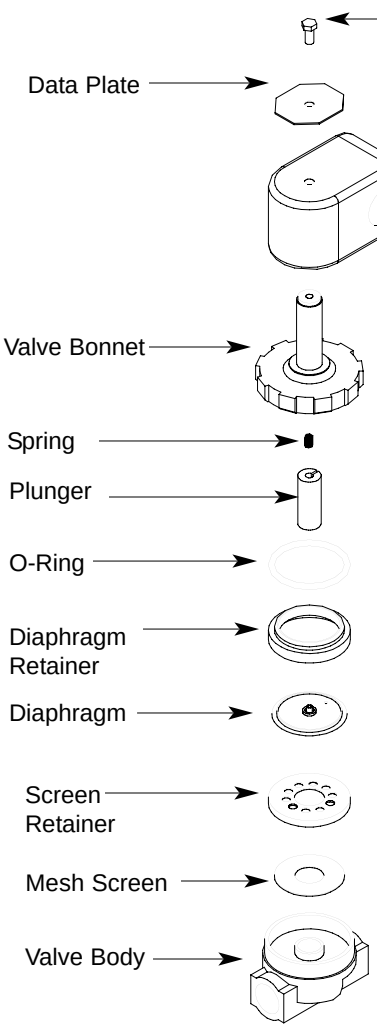
Clear Squeeze Tube, Rinse Aid
(Use with the white roller.)
Ecolab No.: 85017119
Mfg. No.: 05700-011-76-41

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

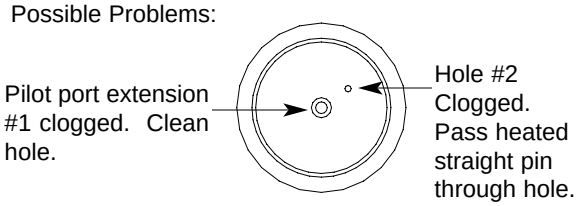
1/2” 110/240 Volt Solenoid Valve
Complete Assembly
Ecolab No.: 96580683
Mfg. No.: N/A

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

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

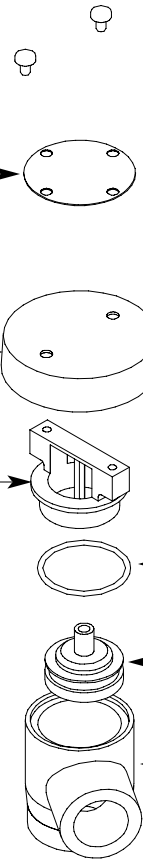
TO REASSEMBLE - Place the diaphragm cartridge in the body with the pilot port extension UP. Hold the plunger with the synthetic seat against the pilot port. Make sure the o-ring is in place, then lower the bonnet and enclosing tube assembly over the plunger. Screw the bonnet assembly snugly down on the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

Possible Problems:



SECTION 6: PARTS SECTION

VACUUM BREAKER REPAIR PARTS KITS



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

3/4” Cap
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

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

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

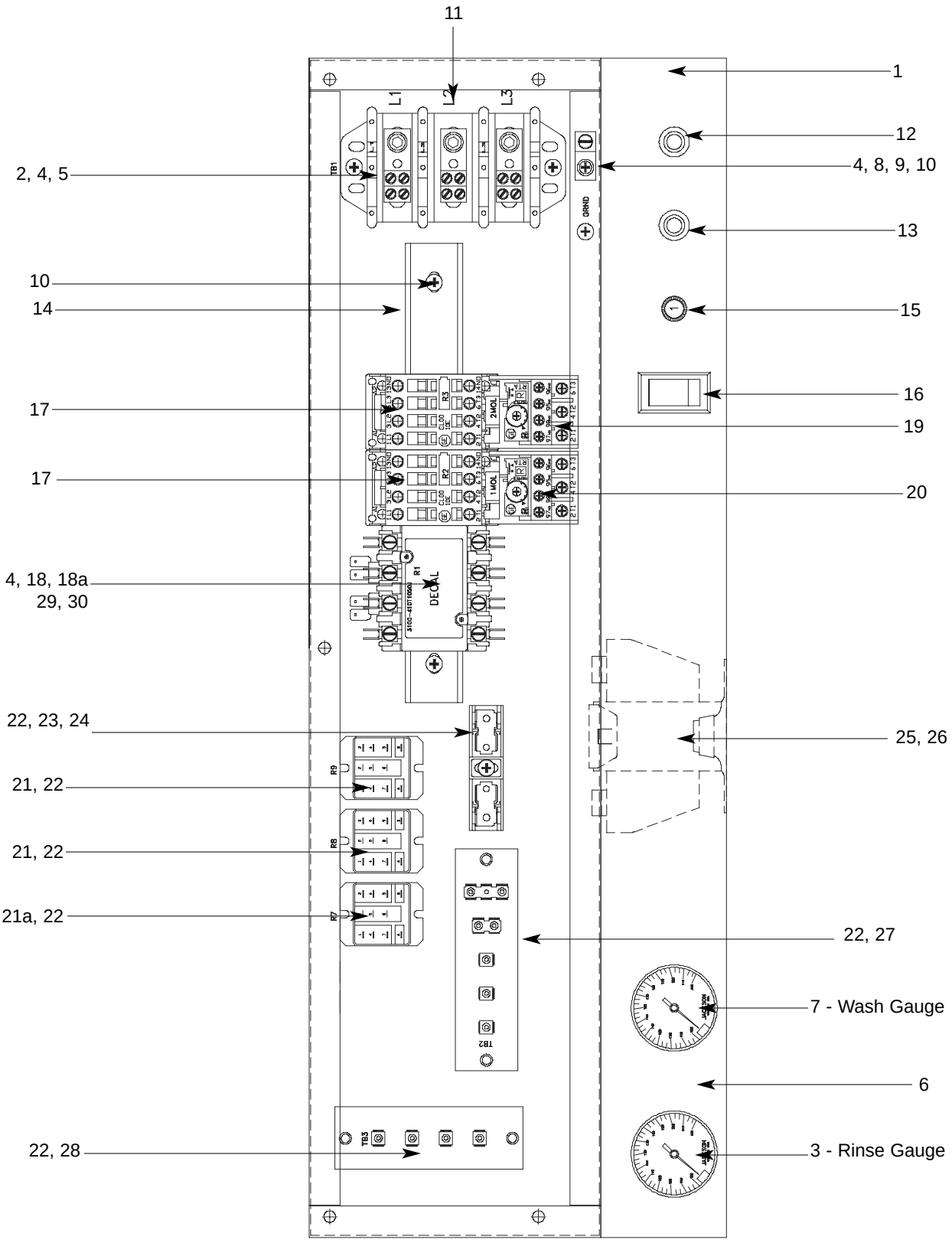
1/4” Complete Vacuum Breaker Assembly
Ecolab No.: 85242501
Mfg. No.: 004810-011-51-62

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

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

SECTION 6: PARTS SECTION

ES-4400 MODELS CONTROL BOX ASSEMBLY



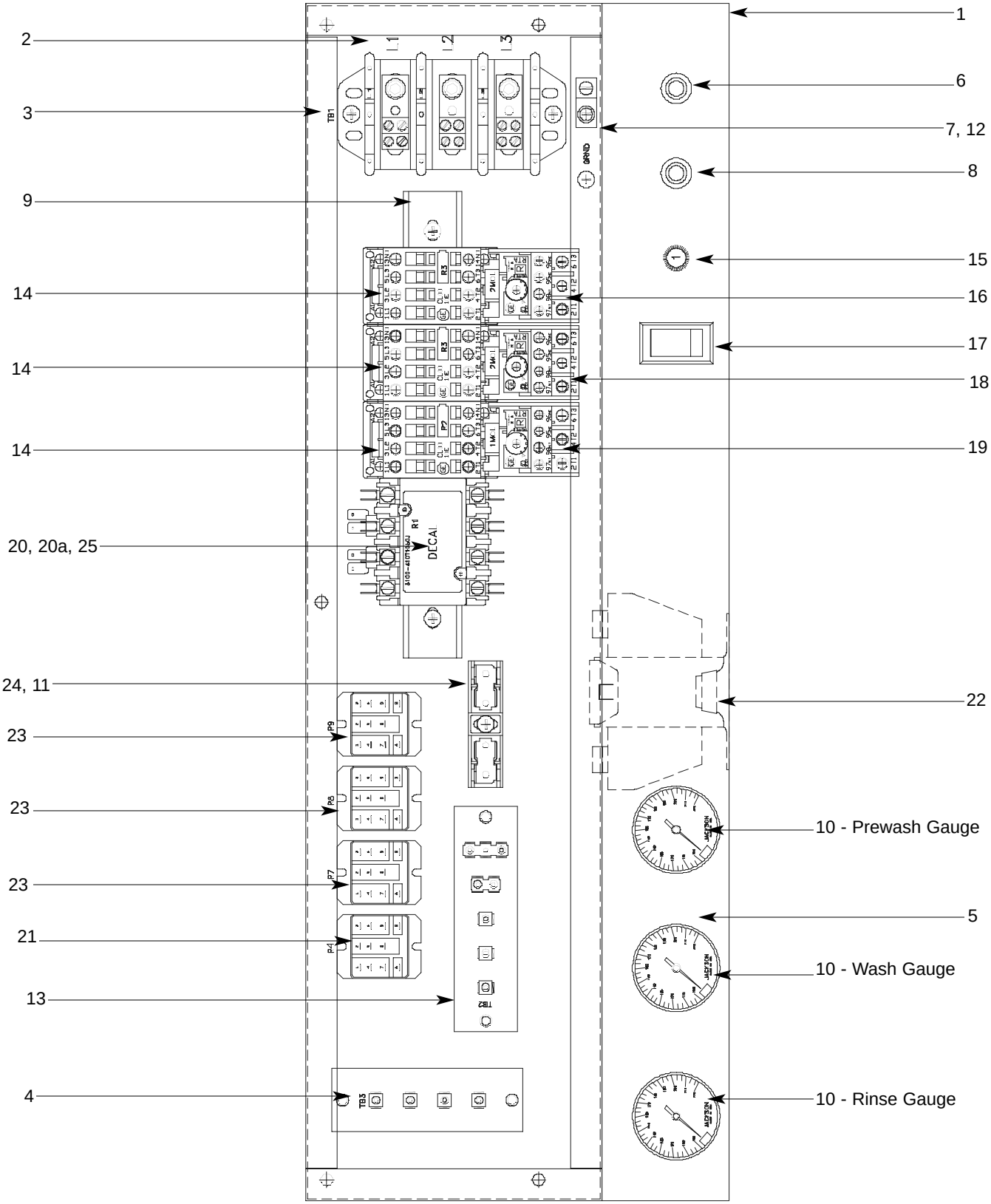
ITEM	QTY	DESCRIPTION	ECOLAB NO.	Mfg. No.
1	1	Electrical Box Weldment	96031620	05700-041-88-43
2	1	Terminal Block, 3 Pole	96021233	05940-011-48-27
3	1	Thermometer, Rinse	96021316	06685-111-68-49
		Decal, Rinse 180°F	N/A	09905-002-97-62
		Decal, Rinse 140°F (CS/CSS Models Only)	N/A	09905-003-10-03
4	6	Star Washer, External Tooth, 10-24	96026976	05311-273-02-00
5	6	Screw, 10-32 x 3/4” Long Phillips Trusshead	88120217	05305-011-62-17
6	1	Decal, Gauge	96021308	09905-021-72-29
7	1	Thermometer, Wash	96021316	06685-111-68-49
		Decal, Wash 180°F	N/A	09905-003-00-69
		Decal, Wash 140°F (CS/CSS Models Only)	N/A	09905-003-10-02
8	1	Wire Lug, 2 AWG to 14 AWG	83118000	05940-200-76-00
9	1	Decal, Ground	96028245	09905-011-86-86
10	1	Screw, 10-32 x 1/2” Long Phillips Trusshead	96022124	05305-011-39-36
11	1	Decal, L1-L2-L3	96021357	09905-101-12-66
12	1	Light, Amber	96583703	05945-111-44-44
13	1	Light, Red	96583943	05945-111-44-45
14	1	Din Rail	96021183	05700-021-72-75
15	1	Circuit Breaker	96021290	05925-011-68-34
16	1	Switch, ON/FILL - OFF/DRAIN	83020404	05930-301-46-00
17	2	Motor Contactor	96021209	05945-111-68-38
18	1	Heater Contactor (2 - 10GA Wires)	96021175	05945-002-24-70
18a	1	Heater Contactor (Compression Style 8 GA Wires)	96022010	N/A
19	1	Overload	N/A	See Chart
20	1	Overload	N/A	See Chart
21	2	Control Relay	96582895	05945-111-35-19
21a	1	Relay	96021159	05945-111-72-51
22	12	Screw, 6-32 x 3/8” Long Round Phillipshead	88110242	05305-171-02-00
23	1	Fuse (460 Volt models Only)	96022835	05920-011-72-88
24	1	Fuse Holder for (23) Above	96022843	05920-011-72-89
25	1	Transformer	96021167	05950-011-68-35
26	4	Locknut, 10-24 with Nylon Insert	88429063	05310-373-01-00
27	1	Terminal Board	96021134	05940-002-78-97
28	1	Terminal Board	96021142	05940-021-89-41
29	3	Screw, 10-32 x 3/8” Long Phillips Trusshead	88120878	05305-173-12-00
30	1	Heater Contactor (single phase-four pole)	96582153	05945-111-68-37

MISCELLANEOUS PARTS NOT SHOWN:

Grommet, 1/2” OD x 3/8” ID	96030341	05325-011-46-73
Bushing, Heyco SB100	96031745	05975-210-09-00
Plug, Heyco 2700 G-875	96024567	05975-011-47-81
Control Box Cover	96031612	05700-031-66-88
Control Box Cover Hinge Weldment	96031588	05700-021-68-57
Cotter Pin, 1/16” SS x 1/2” Long	N/A	05315-011-68-56
MANUAL/DELIME Switch (located on rear of control box)	96582030	05930-301-22-18
MANUAL/DELIME Switch Decal (located on rear of control box)	96038559	09905-011-74-61
Copper Conductors Only Decal	96021365	09905-011-47-35
Control Box Leg	96021381	05700-011-71-47
Bolt, 1/4”-20 x 2-1/2” Long Hex Head	88000104	05306-011-83-52
Locknut, 1/4”-20 with Nylon Insert	88429113	05310-374-01-00
Component Mounting Plate (located inside the control box)	96021100	05700-031-67-03
Decal, 180 Deg. Rinse	N/A	09905-002-97-62
Decal, 160 Deg. Wash	N/A	09905-003-00-69
Decal, 140 Deg. Rinse (CS Models Only)	N/A	09905-003-10-02
Decal, 140 Deg. Rinse (CS Models Only)	N/A	09905-003-10-03
Heater Contactor Din Rail Plate	96029475	05700-001-98-37

SECTION 6: PARTS SECTION

ES-6600 & ES-8000 MODELS CONTROL BOX ASSEMBLY



ES-6600 & ES-8000 MODELS CONTROL BOX ASSEMBLY (CONTINUED)

ITEM	QTY	DESCRIPTION	ECOLAB NO.	MFG. No.
1	1	Electrical Box Weldment	96034830	05700-041-88-50
2	1	Decal, L1-L2-L3	96021357	09905-101-12-66
3	1	Terminal Block	96021233	05940-011-48-27
4	1	Terminal Board	96021142	05940-021-89-41
5	1	Decal, Gauge	96022892	09905-021-72-30
6	1	Light, Amber	96583703	05945-111-44-44
7	1	Wire Lug, 2 AWG to 14 AWG	83118000	05940-200-76-00
8	1	Light, Red	96583943	05945-111-44-45
9	1	Din Rail	96021183	05700-021-72-75
10	3	Thermometer, 96” Lead	96021316	06685-111-68-49
		Decal, Rinse 180°F	N/A	09905-002-97-62
		Decal, Wash 180°F	N/A	09905-003-00-69
		Decal, Rinse 140°F (CS/CSS Models Only)	N/A	09905-003-10-03
		Decal, Wash 140°F (CS/CSS Models Only)	N/A	09905-003-10-02
11	1	Fuse (460 Volt Models Only)	96022835	05920-011-72-88
12	1	Decal, Ground	96028245	09905-011-86-86
13	1	Terminal Board	96021134	05940-002-78-97
14	3	Motor Contactor	96021209	05945-111-68-38
15	1	Circuit Breaker (208/230 Volt Models Only)	96021290	05925-011-68-34
16	1	Overload	N/A	See Chart
17	1	Switch, ON/FILL & OFF/DRAIN	96584024	05930-301-46-00
18	1	Overload	N/A	See Chart
19	1	Overload	N/A	See Chart
20	1	Heater Contactor (2 - 10GA Wires)	96021175	05945-002-24-70
20a	1	Heater Contactor (Compression Style 8GA Wires)	96022010	N/A
21	1	Relay	96021159	05945-111-72-51
22	1	Transformer	96021167	05950-011-68-35
23	3	Control Relay	96582895	05945-111-35-19
24	1	Fuse Holder (460 Volt Models Only)	96022843	05920-011-72-89
25	1	Heater Contactor (single phase-four pole)	96582153	05945-111-68-37

Items not shown:

1	Manual/Delime Switch	96582030	05930-301-22-18
1	Manual/Delime Switch Decal	96038559	09905-011-74-61
1	Decal, High Limit Warning Light	N/A	09905-002-49-48
1	Control Box Cover	96034855	05700-031-91-17
4	Control Box Leg	96021381	05700-011-71-47

MOTOR OVERLOADS CHART

DRIVE MOTORS:

MODEL(S)	VOLTS	PHASE	ECOLAB No.	Mfg. No.
ES-4400's	208	3	96021217	05945-111-68-39
	230	3	96021217	05945-111-68-39
	460	3	N/A	05945-002-71-09
ES-6600's	208	3	96021217	05945-111-68-39
	230	3	96021217	05945-111-68-39
	460	3	N/A	05945-111-69-12
ES-8000's	208	3	96021217	05945-111-68-39
	230	3	96021217	05945-111-68-39
	460	3	N/A	05945-002-71-09

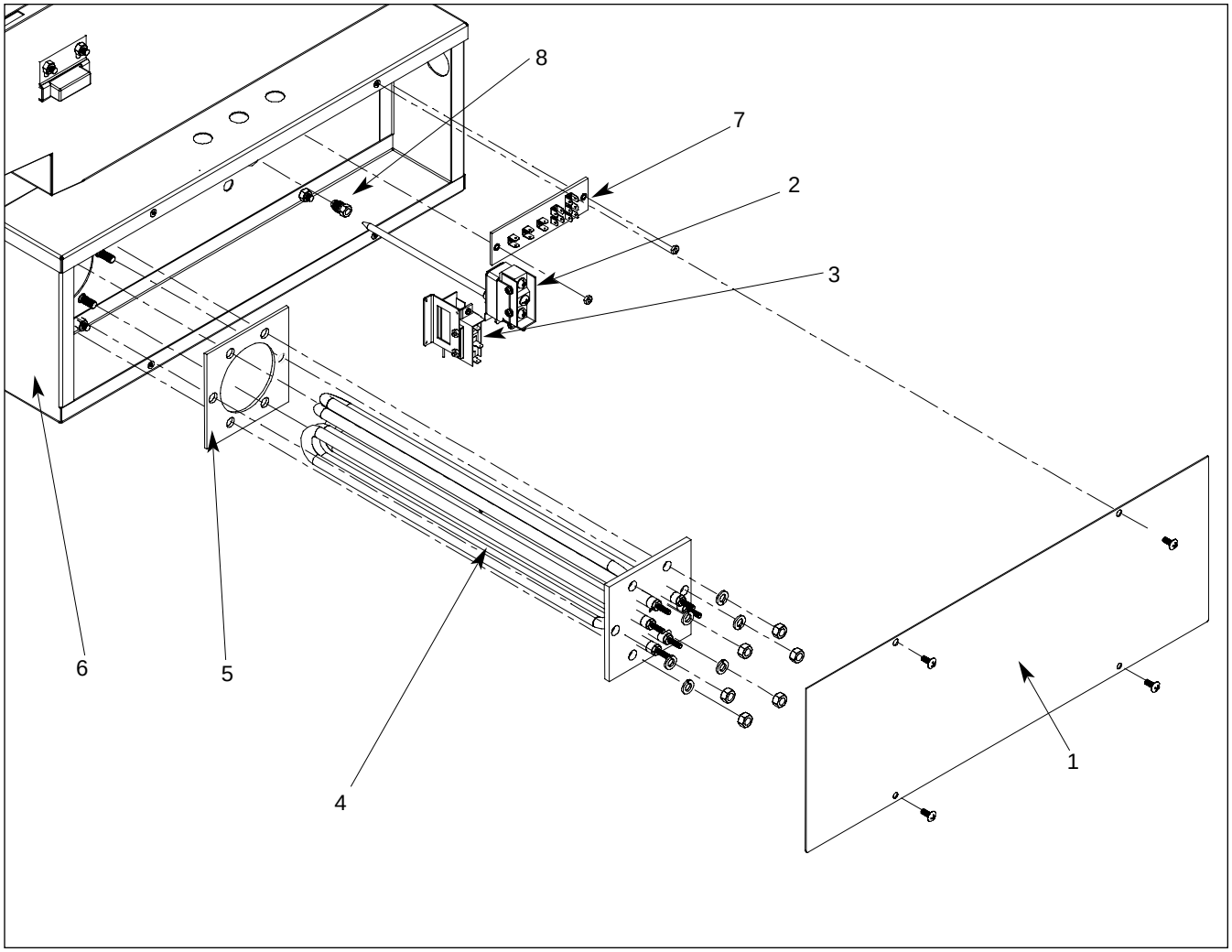
PREWASH MOTORS:

MODEL(S)	VOLTS	PHASE	ECOLAB No.	Mfg. No.
ES-6600's	208	3	96022884	05945-111-68-41
	230	3	96022884	05945-111-68-41
	460	3	N/A	05945-111-69-13
ES-8000's	208	3	96021225	05945-111-68-40
	230	3	96021225	05945-111-68-40
	460	3	N/A	N/A

WASH MOTORS:

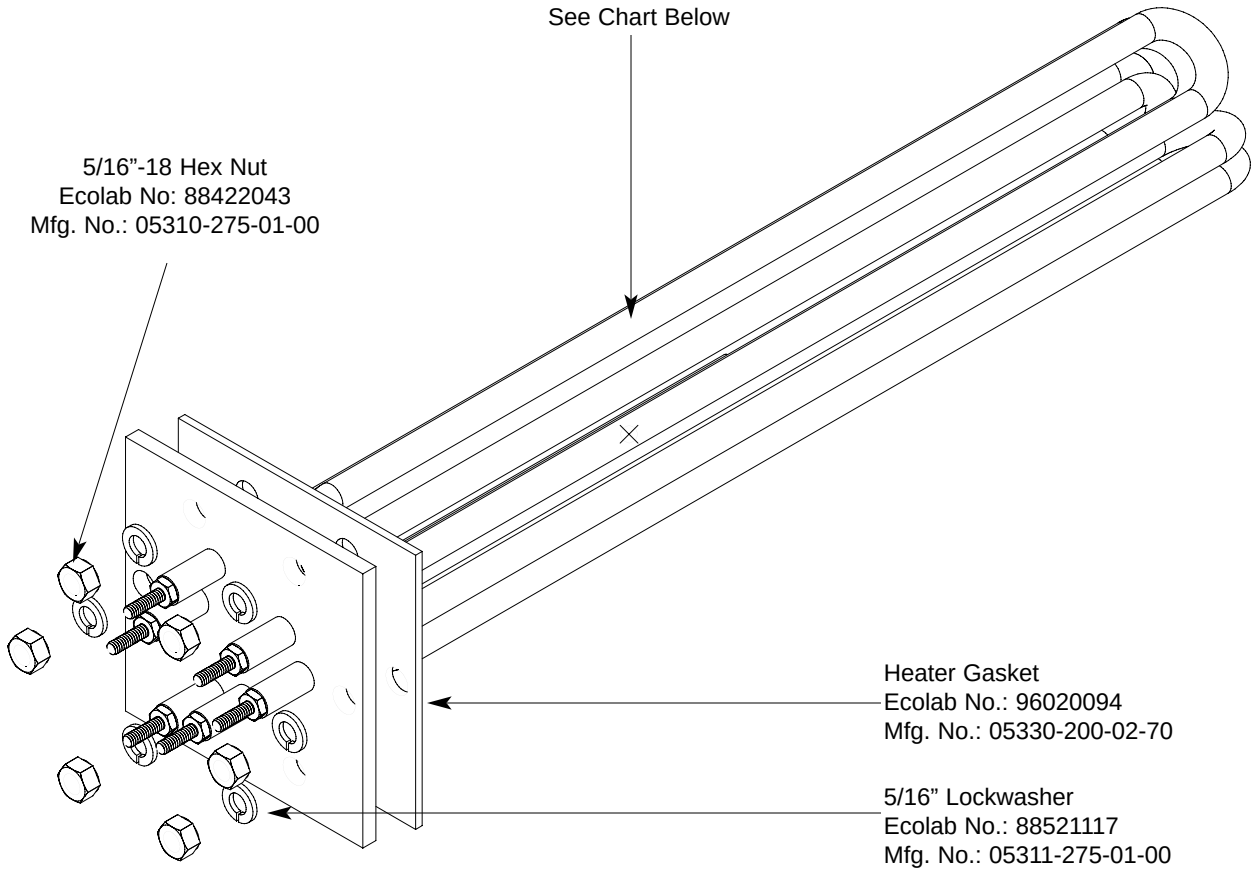
MODEL(S)	VOLTS	PHASE	ECOLAB No.	Mfg. No.
ES-4400's	208	3	96021225	05945-111-68-40
	230	3	96021225	05945-111-68-40
	460	3	96022884	05945-111-68-41
ES-6600's	208	3	96021225	05945-111-68-40
	230	3	96021225	05945-111-68-40
	460	3	96022884	05945-111-68-41
ES-8000's	208	3	96021225	05945-111-68-40
	230	3	96021225	05945-111-68-40
	460	3	96022884	05945-111-68-41

HEATER BOX ASSEMBLY



ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Heater Box Cover, ES-4400	96033097	05700-031-66-82
1	1	Heater Box Cover, ES-6600/8000	96033675	05700-031-71-70
2	1	Kit, Thermostat, Wash Regulating (Electrically Heated)	N/A	06401-003-18-20
2	1	Kit, Thermostat, Wash Regulating (Steam Heated)	N/A	06401-003-18-21
3	1	Thermostat, High Limit	96020110	05930-011-49-43
4	1	See Next Page	N/A	N/A
5	1	Gasket	96020094	05330-200-02-70
6	1	Heater Box Weldment, ES-4400	96020136	05700-031-66-81
6	1	Heater Box Weldment, ES-6600/8000	96033089	05700-031-71-66
7	1	Terminal Board	N/A	05940-002-78-97
8	1	Fitting, 1/4”, Imperial Brass	96024344	05310-924-02-05

HEATER BOX ASSEMBLY (CONTINUED)



Replacement Kit Note:
All heater kits come with the heater, the gasket, lockwashers and locknuts.

Heater Chart

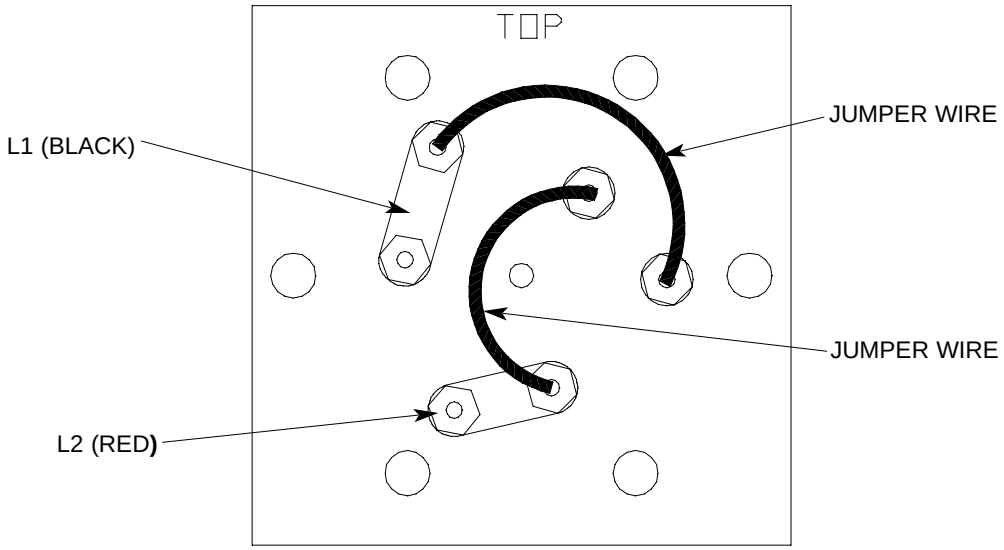
Model	Volts	Phase	KW	ECOLAB No.	Mfg. No.	Kit. No.
All	208	1	15	96020086	04540-121-68-45	06401-003-10-21
All	230	1	15	96022173	04540-121-68-46	06401-003-10-22
All	208	3	15	96020086	04540-121-68-45	06401-003-10-21
All	230	3	15	96022173	04540-121-68-46	06401-003-10-22
All	460	3	15	96022181	04540-121-68-47	06401-003-10-31

* - Steam models do not use electric heaters in the wash tank or power rinse tank.

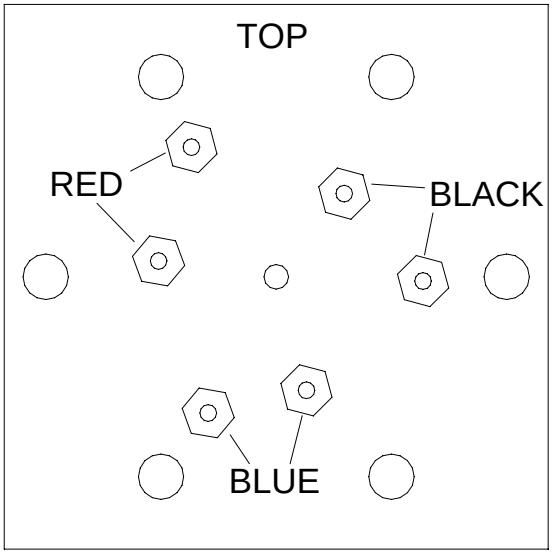
SERVICE NOTE: When replacing the tub heaters, it is HIGHLY recommended that you also change out the gasket as well. Once installed, gaskets become compressed and are subjected to extreme temperature changes. Replacing the gasket with a new one when replacing the heater may prevent future leaks.

SERVICE NOTE: The nuts used to secure the heater to the tub should be torqued to 16 in-lbs. After tightening, the unit should be allowed to heat up and operate normally for approximately 30 minutes. Secure power to the machine and check the nuts once more to ensure that they are torqued to 16 in-lbs.

BUS BAR, JUMPER WIRES AND LEAD LOCATIONS FOR WASH HEATER TO BE WIRED FOR 1 PHASE AC.



BUS BAR AND LEAD LOCATIONS FOR WASH HEATER TO BE WIRED FOR 3 PHASE AC.



SECTION 6: PARTS SECTION

HEATER SYSTEM EXPLANATION

The wash tank heater system is electrically connected in the circuit so that they are dependent upon the dishwasher being properly filled with and maintaining a safe water level, two thermostats (mounted in the heater box behind the dress panel), float switch (mounted in the wash tank), and the heater relay (mounted in control box) with the heater being activated by the thermostats.

Once the dishwasher has been filled to the correct level, the heater should operate automatically. Should the tank heat be too high, too low or no indication of temperatures at all, the following checkout should be made.

Note: The following checkout should be made by either a qualified service person or electrician.

A.- Checkout of the heater system

1.- If the temperature is too high, adjust thermostat using instructions on the page entitled “Thermostats”.

2.- If temperature is too low, adjust thermostat as above, then:

a.- Turn off power to machine by placing customer’s circuit breaker in the “OFF” position.
b.- Remove cover from control box on top of dishwasher.
c.- Make sure water temperature is below 140°F (preferably about 130°F.).
d.- Turn on both circuit breakers. Observe heater relay (R1) while the power switch is turned “ON” and “OFF”. If relay contacts move in and out, the heater relay is operating correctly: if not proceed to “C”.

B.- If heater relay (R1) closes:

1.- Check power supply at incoming terminal board L1, L2 & L3. It should be the same voltage as indicated on the machine data plate.

2.- Check power at connections on heater relay (R1). The voltage should agree with the voltage on the machine data plate. If not, check wires for breaks or bad connections.

3.- Check power at terminals of heater which should agree with the data plate. If not check wires for breaks or bad connections.

4.- Temperatures should rise as explained in “C-1”, and amperage may be checked according to those instructions. Replace any defective elements.

C.- If heater relay (R1) does not close.

1.- There is an insulated movable bar on relay across the top. With an insulated probe, depress this bar and observe the thermometer: the temperature should rise noticeably in a minute or two. If it moves slowly, it would indicate that the element is faulty. If it moves constantly higher at a good rate, elements should be good.

Note: A check with an amp probe at heater relay (R1) terminals should be made to verify the amp draw on each leg. This should be appropriate for the voltage and phase indicated on the data plate.

HEATER PROTECTION & AUTOMATIC FILL:

This control is activated when the power switch is turned “ON”. The primary function is to automatically energize the wash tank heat circuit. It will also cutoff the wash tank heat circuit should the water be accidently drained from the machine with the power switch still “ON”. The power switch should always be turned-off before draining the unit.

This water level control consists of two (2) floats that operate when the power switch is turned on and works in conjunction with the thermostats and heater relays.

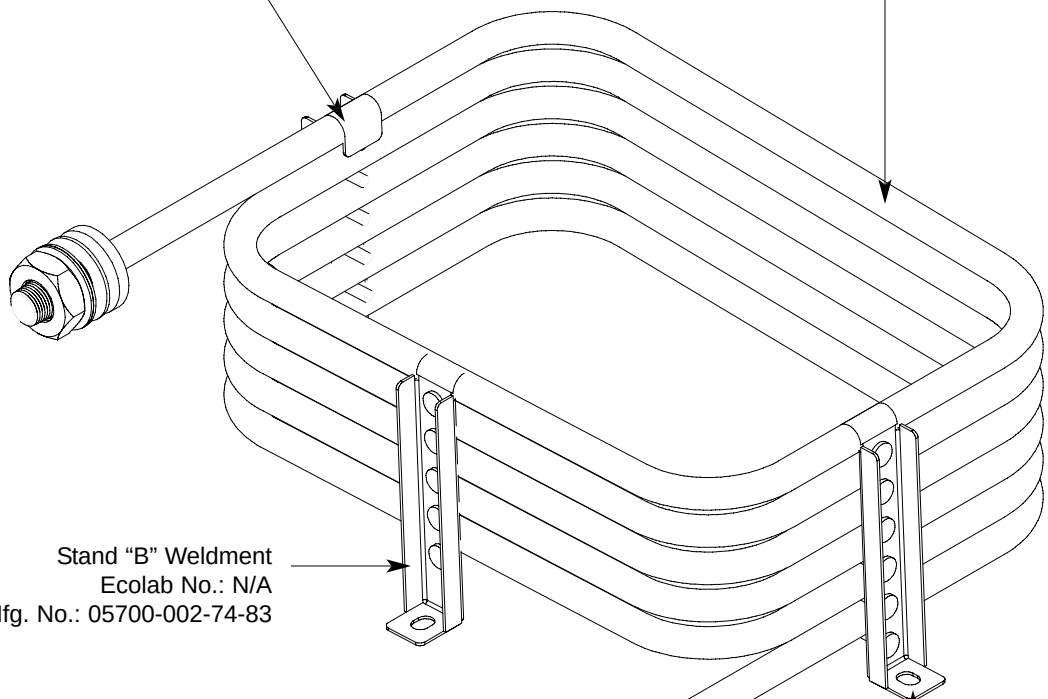
When the power switch is turned “ON” water starts to enter the dishmachine. When it reaches the proper level the normally open contacts in the water level float switch close activating the heating circuit for tank heat.

If the water level falls below the correct level while power is still on, the float switch will sense the lack of water and de-activate the heater.

THERMOSTATS:

This unit has a probe-direct sensing type thermostat with fixed set point and adjustable range for both wash and booster tank heat regulating. The same type thermostat is used as the high limit sensor for the wash tank heater. It operates a precision single pole double throw switch through a lever for close tolerance narrow differential switching capability. There are two (2) thermostats on the dishwasher. Although all are identical in appearance there are different replacement part numbers depending on the function of the thermostat.

STEAM MODEL WASH TANK COIL ASSEMBLY



Stand “D” Weldment
Ecolab No.: N/A
Mfg. No.: 05700-002-74-85

Coil Weldment
Ecolab No.: N/A
Mfg. No.: 05700-002-84-03

Stand “B” Weldment
Ecolab No.: N/A
Mfg. No.: 05700-002-74-83

Coil Nut
Ecolab No.: N/A
Mfg. No.: 05310-011-17-85

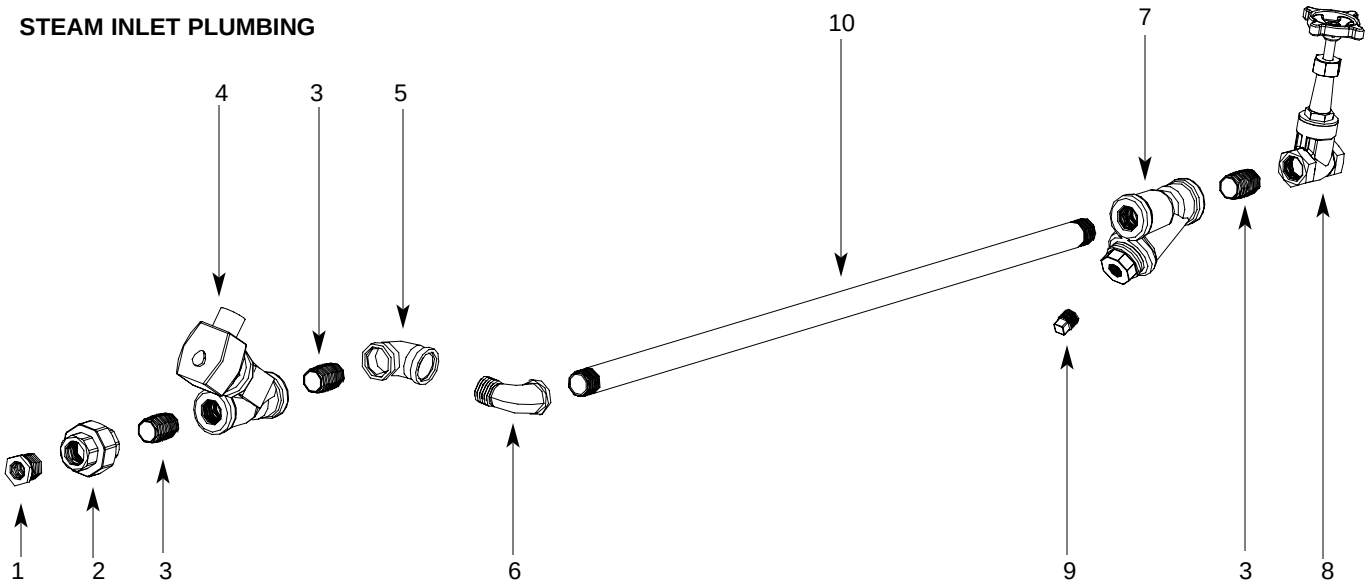
Stand “C” Weldment
Ecolab No.: N/A
05700-002-74-84

SERVICE NOTE: It is HIGHLY recommended that the Coil Gaskets be replaced any time the Coil Weldment is replaced or removed for an extended period of time.

Flat Washer
Ecolab No.: N/A
Mfg. No.: 05700-001-17-87

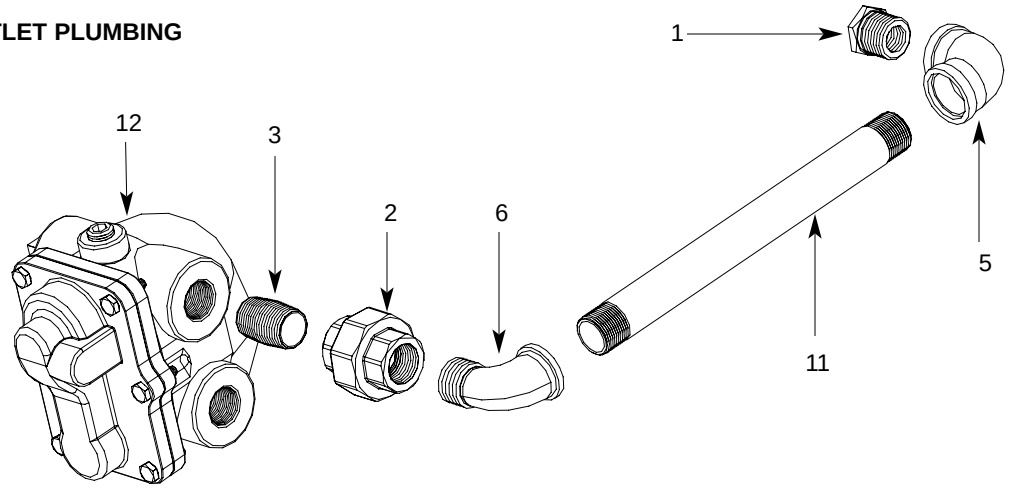
Coil Gasket
Ecolab No.: N/A
Mfg. No.: 05700-001-17-86

STEAM INLET PLUMBING



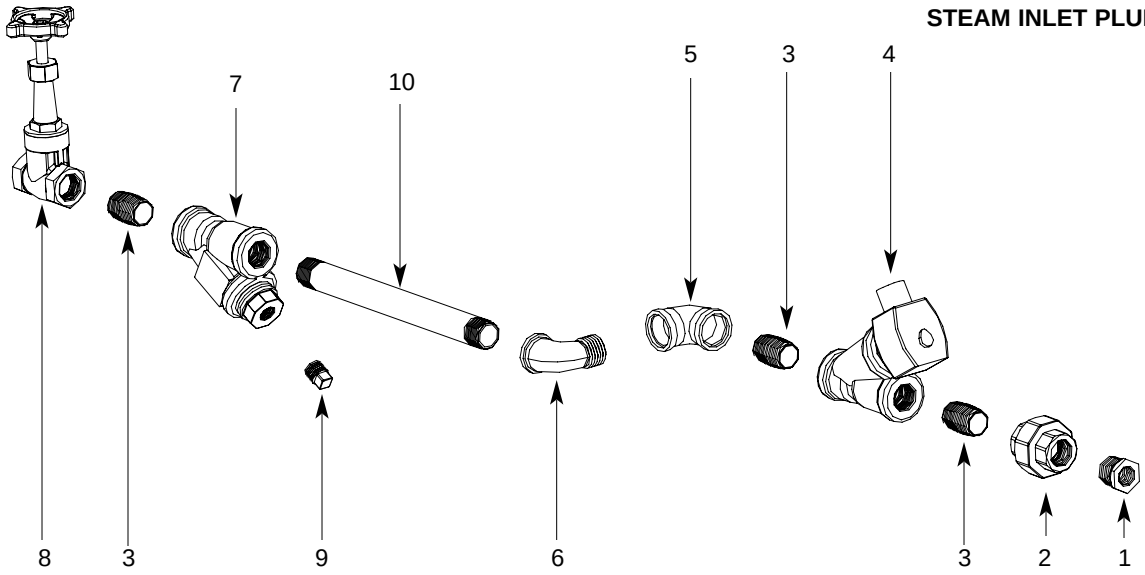
ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	-	Reducer, 3/4” NPT to 1/2” NPT, Black Iron	N/A	04730-911-02-34
2	-	Union, 3/4” NPT, Black Iron	N/A	04730-912-01-00
3	-	Nipple, Close, 3/4” NPT, Black Iron	N/A	04730-907-01-00
4	-	Valve, Solenoid, 3/4” NPT, Steam, 120 V	N/A	04820-011-87-39
5	-	Elbow, 3/4” NPT, 90°, Black Iron	N/A	04730-906-10-34
6	-	Elbow, 3/4” NPT, 90°, Black Iron, Street	N/A	04730-011-87-37
7	-	Y-Strainer, 3/4” NPT, Steam, Black Iron	N/A	04730-217-01-32
8	-	Valve, Gate, 3/4” NPT, Steam	N/A	04820-100-19-00
9	-	Plug, 3/8” NPT, Black Iron	N/A	04730-909-02-34
10	-	Nipple, 3/4” NPT x 32” Long, Black Iron	N/A	04730-002-21-27
11	-	Nipple, 3/4” NPT x 10” Long, Black Iron	N/A	04730-907-06-34
12	-	Steam Trap, 3/4” NPT	N/A	06680-500-02-77

STEAM OUTLET PLUMBING



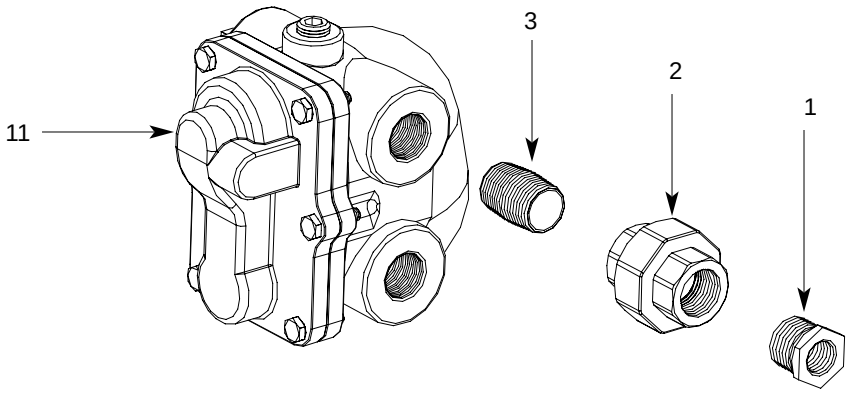
STEAM PLUMBING (RIGHT TO LEFT)

STEAM INLET PLUMBING

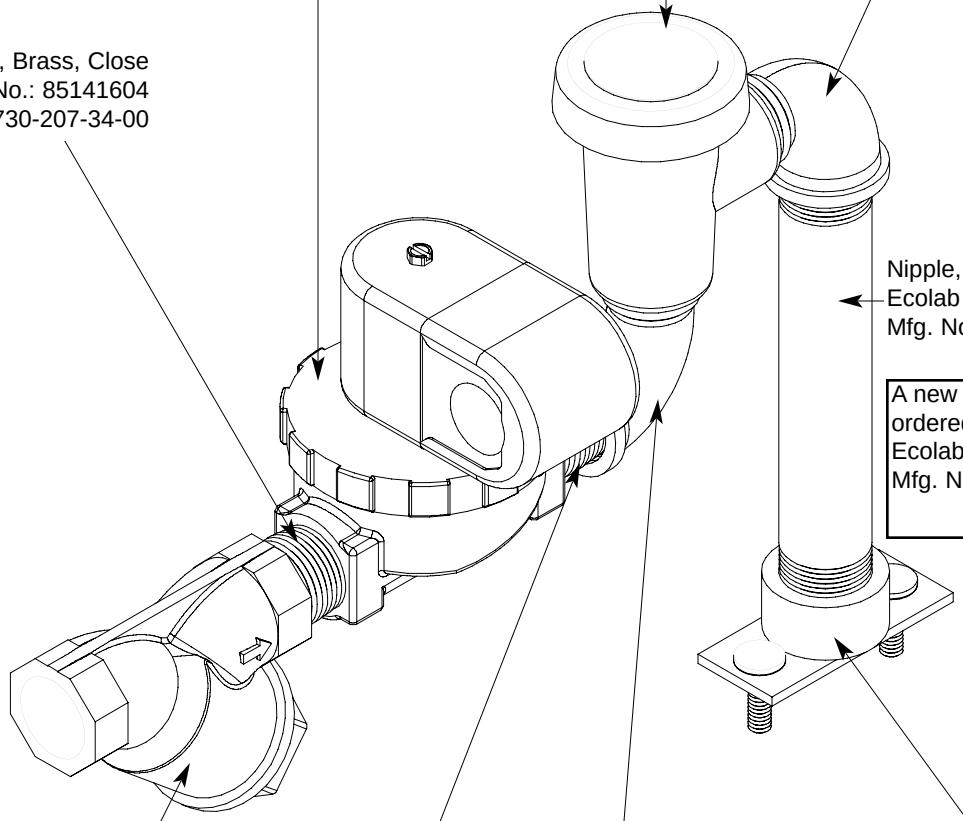


ITEM	QTY	DESCRIPTION	ECOLAB NO.	MFG No.
1	-	Reducer, 3/4” NPT to 1/2” NPT, Black Iron	N/A	04730-911-02-34
2	-	Union, 3/4” NPT, Black Iron	N/A	04730-912-01-00
3	-	Nipple, Close, 3/4” NPT, Black Iron	N/A	04730-907-01-00
4	-	Valve, Solenoid, 3/4” NPT, Steam, 120 V	N/A	04820-011-87-39
5	-	Elbow, 3/4” NPT, 90°, Black Iron	N/A	04730-906-10-34
6	-	Elbow, 3/4” NPT, 90°, Black Iron, Street	N/A	04730-011-87-37
7	-	Y-Strainer, 3/4” NPT, Steam, Black Iron	N/A	04730-217-01-32
8	-	Valve, Gate, 3/4” NPT, Steam	N/A	04820-100-19-00
9	-	Plug, 3/8” NPT, Black Iron	N/A	04730-909-02-34
10	-	Nipple, 3/4” NPT x 32” Long, Black Iron	N/A	04730-002-21-27
11	-	Steam Trap, 3/4” NPT	N/A	06680-500-02-77

STEAM OUTLET PLUMBING



PREWASH SECTION INCOMING PLUMBING ASSEMBLY



Vacuum Breaker, 3/4”
Ecolab No.: 85242626
Mfg. No.: 04820-002-53-77

Elbow, 90°, 3/4” Brass
Ecolab No.: 96020508
Mfg. No.: 04730-206-04-34

Valve, Solenoid, 3/4”
Ecolab No.: 85260511
Mfg. No.: 04810-100-53-00

Nipple, 3/4”, Brass, Close
Ecolab No.: 85141604
Mfg. No.: 04730-207-34-00

Nipple, 3/4” x 6” Long
Ecolab No.: 96020516
Mfg. No.: 05700-001-26-74

A new gasket can be ordered using part number
Ecolab No.: 96020482
Mfg. No.: 05330-111-42-81

Fill Line Injector
Ecolab No.: 96020532
Mfg. No.: 05700-011-67-99

Fill Line Injector Replacement Kit
06401-003-09-93

Replacement Kit Note:
The kit for the fill line injector comes with the injector weldment, a new gasket and the mounting hardware.

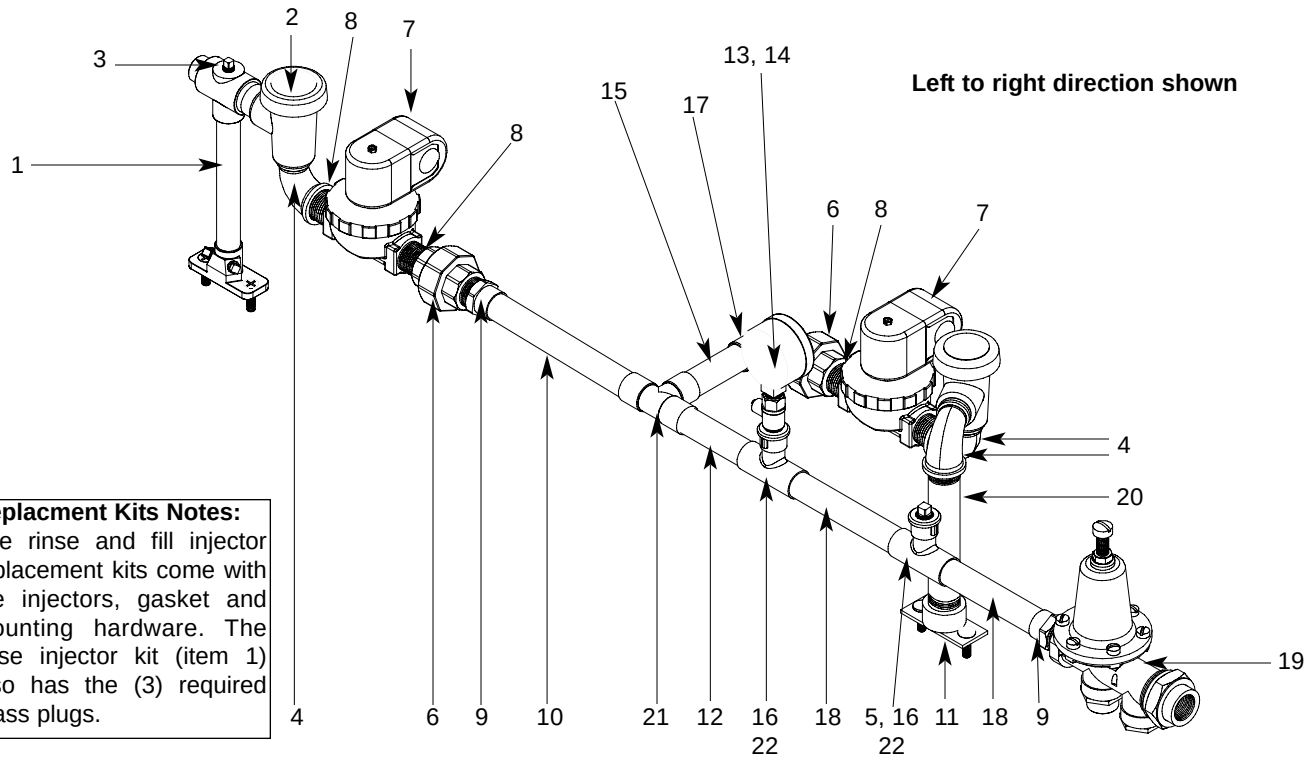
Y-Strainer, 3/4” NPT, Brass
Ecolab No.: 85300325
Mfg. No.: 04730-717-02-06

Elbow, 90°, 3/4” Brass
Ecolab No.: 96020508
Mfg. No.: 04730-206-04-34

Nipple, 3/4”, Brass, Close
Ecolab No.: 85141604
Mfg. No.: 04730-207-34-00

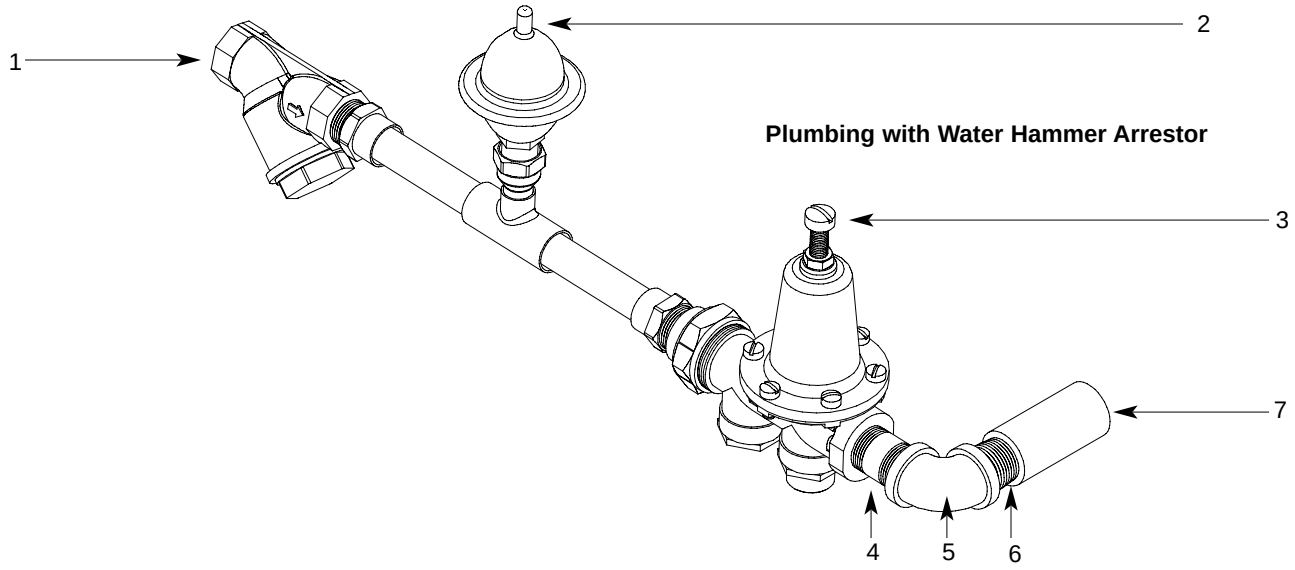
SECTION 6: PARTS SECTION

WASH SECTION INCOMING PLUMBING ASSEMBLY



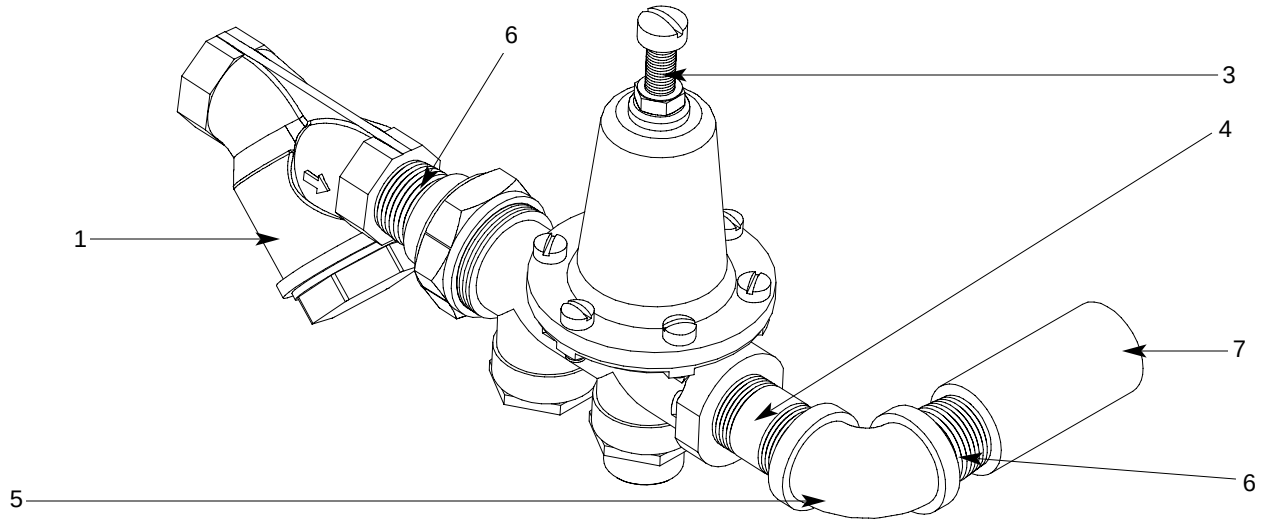
Replacment Kits Notes:
The rinse and fill injector replacement kits come with the injectors, gasket and mounting hardware. The rinse injector kit (item 1) also has the (3) required brass plugs.

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Rinse Injector Replacement Kit	N/A	06401-003-11-88
1	1	Rinse Injector Manifold Weldment	96020524	05700-021-67-98
2	3	Plug, Brass, 1/8” NPT	86138005	04730-209-07-37
3	2	Vacuum Breaker, 3/4” NPT	85242626	04820-002-53-77
4	3	Elbow, Street, 3/4” NPT	96020508	04730-206-04-34
5	1	Plug	86135019	04730-209-01-00
6	2	Union, Brass, 3/4”	806105053	04730-212-05-00
7	2	Solenoid Valve, 3/4”	85260511	04810-100-53-00
8	4	Nipple, Close, Brass, 3/4” NPT	85141604	04730-207-34-00
9	2	Fitting, 3/4” Male to Slip Copper	86185030	04730-401-11-01
10	1	Tube, Copper, 3/4” x 3-7/16” Long	Buy Locally	Buy Locally
11	1	Fill Injector Replacement Kit	N/A	06401-003-09-93
11	1	Fill Injector	96020532	05700-011-67-99
12	1	Tube, Copper, 3/4” x 2-5/8” Long	Buy Locally	Buy Locally
13	1	Gauge, Pressure, 0-100 PSI	96582086	06685-111-88-34
	1	Decal, 15-25 PSI	N/A	09905-003-00-69
14	1	Valve, Ball, Test Cock, 1/4” NPT	96030762	04810-011-72-67
15	1	Tube, Copper, 3/4” x 3” Long	Buy Locally	Buy Locally
16	2	Tee, 3/4” x 3/4” x 1/2”	N/A	04730-411-03-01
17	1	Elbow, Brass, 90°, 3/4” Copper	86055092	04730-406-42-01
18	2	Tube, Copper, 3/4” x 2-13/16” Long	Buy Locally	Buy Locally
19	1	Regulator, Pressure, 3/4” NPT, Brass	96582154	06685-011-58-22
20	1	Nipple, Brass, 6” Long	96020516	05700-001-26-74
21	1	Tee, 3/4”, CU x CU x CU	806105137	04730-411-46-01
22	2	Fitting, Adapter, 1/2” to 1/4”	86148582	04730-401-41-01



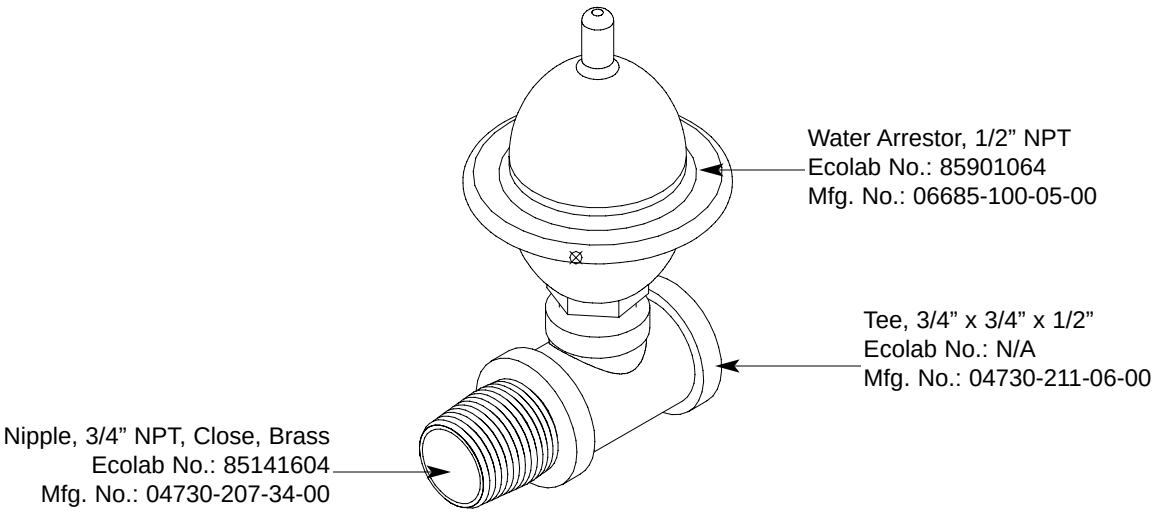
Plumbing with Water Hammer Arrestor

Plumbing without Water Hammer Arrestor

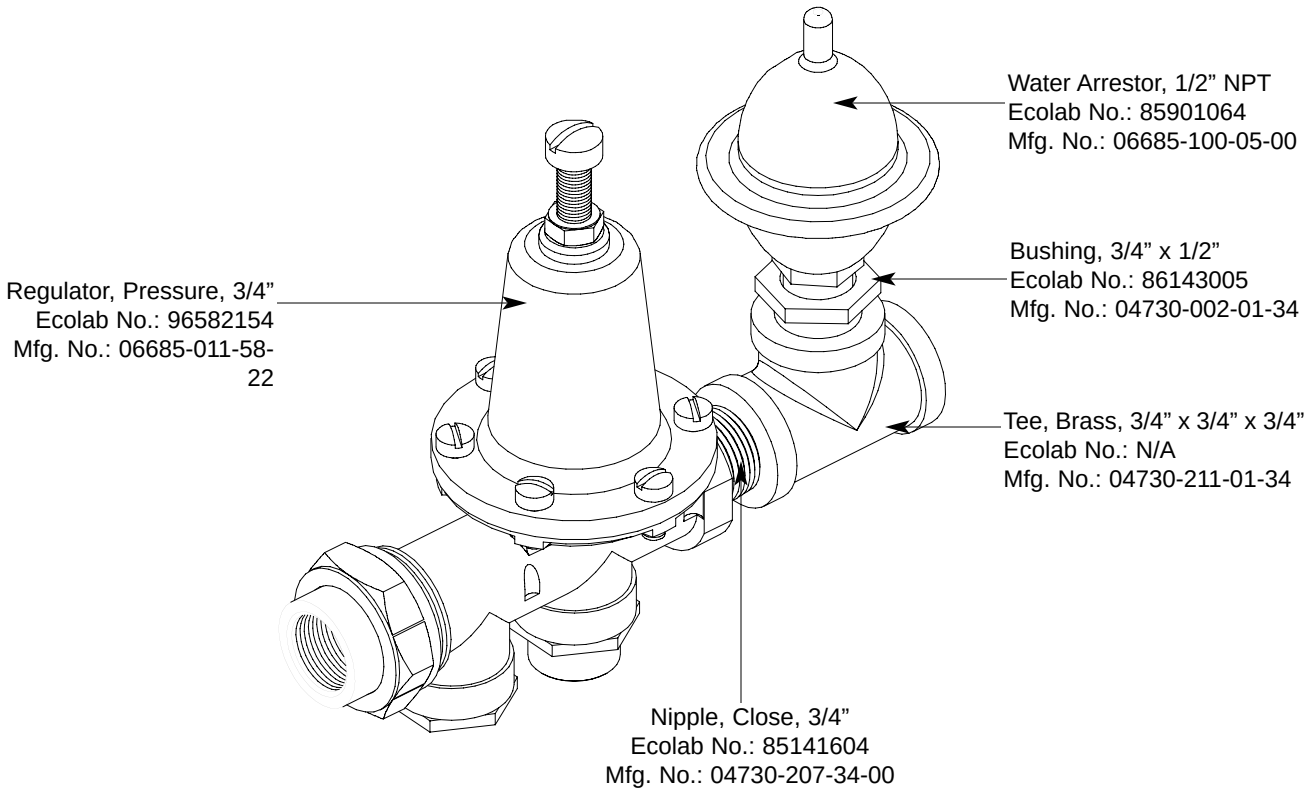


ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	-	Y-Strainer, 3/4” NPT, Brass	85300325	04730-717-02-06
2	-	Arrestor, Water Hammer, 1/2” NPT	85901064	06685-100-05-00
3	-	Regulator, Pressure, 3/4” NPT, Brass	96582154	06685-011-58-22
4	-	Nipple, 3/4” NPT x 2” Long, Brass	85141612	04730-207-46-00
5	-	Elbow, Brass, 90°, 3/4”	86055043	04730-206-13-00
6	-	Nipple, 3/4” NPT, Close, Brass	85141604	04730-207-34-00
7	-	Coupling, 3/4” FNPT x 3/4” FNPT, Brass	N/A	04730-011-87-95

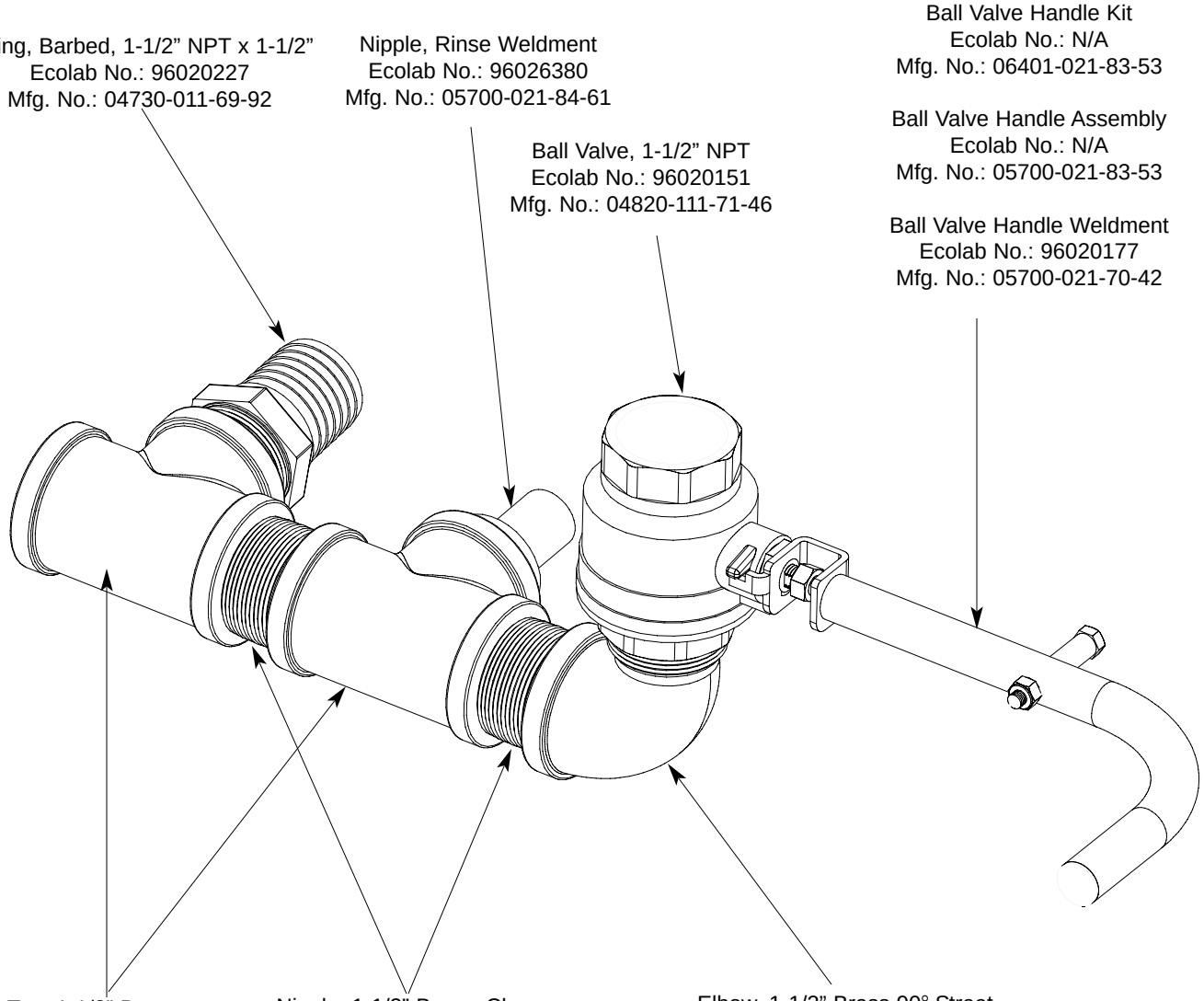
WATER HAMMER ARRESTOR OPTION

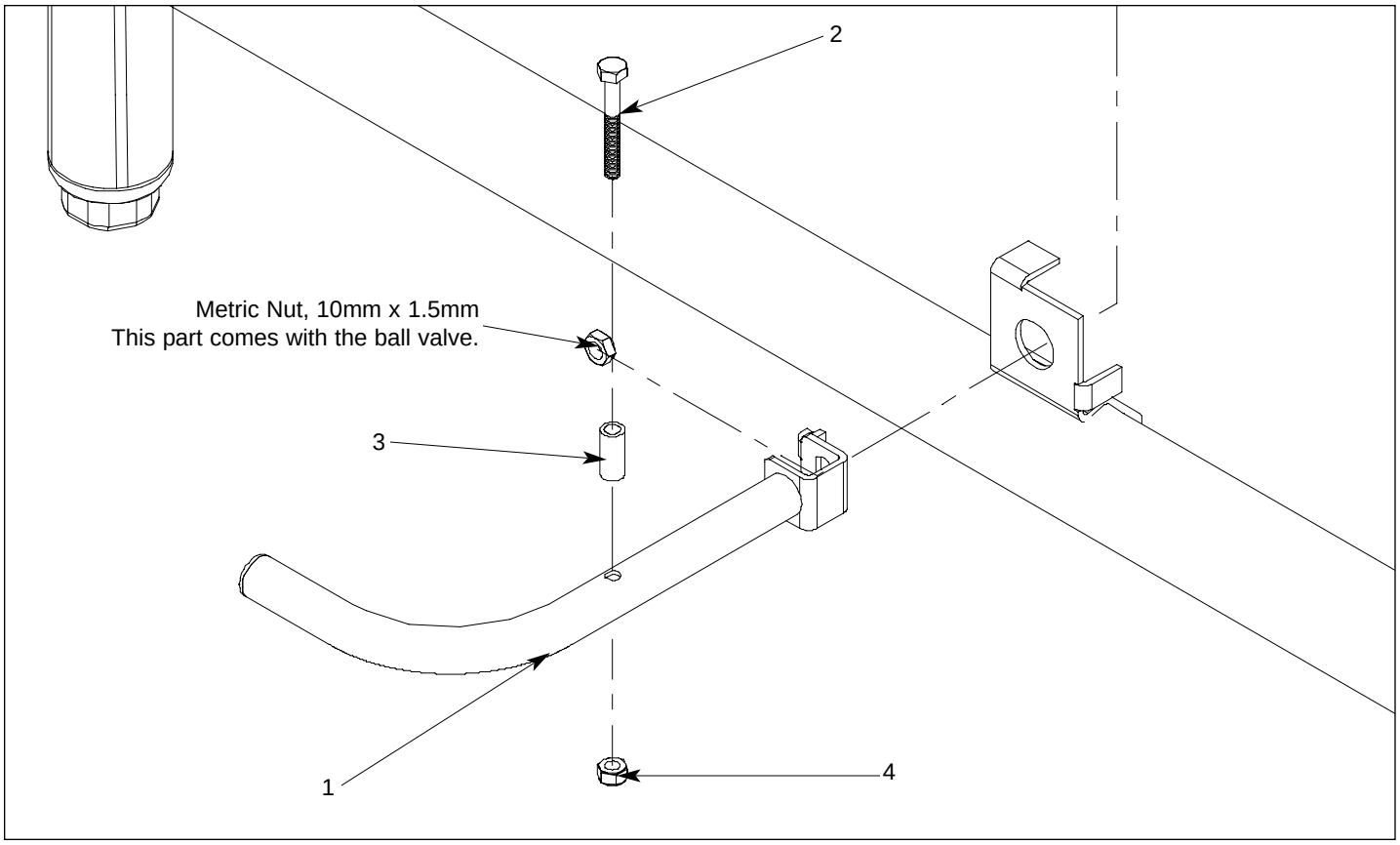


WATER PRESSURE REGULATOR WITH ARRESTOR KIT OPTION

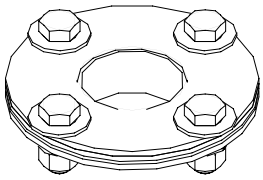


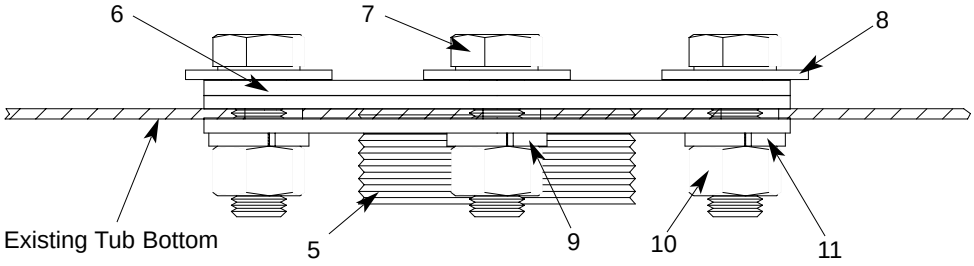
ES-4400 MODELS DRAIN PLUMBING ASSEMBLY



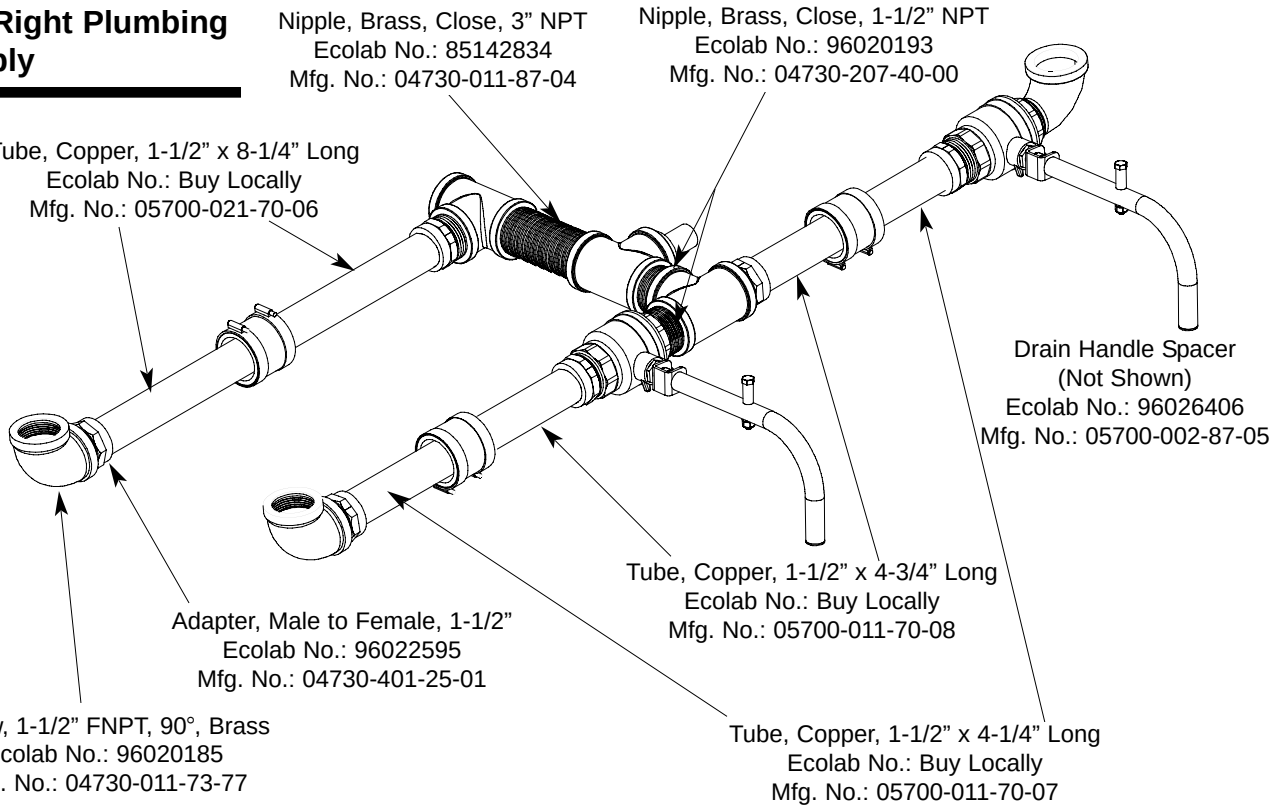


ITEM	QTY	DESCRIPTION	ECOLAB NO.	Mfg. No.
1	1	Ball Valve Handle Weldment	96020177	05700-021-70-42
2	1	Bolt, 1/4”-20 x 2” Long	96026398	05306-011-84-72
3	1	Sleeve	96026406	05700-000-01-53
4	1	Locknut, 1/4”-20 with Nylon Insert	88429113	05310-374-01-00
*	1	Drain Repair Kit (Shown Below)	96031448	05700-002-10-59
5	1	Weldment, Tub Drain Replacement Plate	N/A	05700-002-10-58
6	1	Gasket, Tub Drain Replacement Plate	96038609	05330-002-10-56
7	1	Bolt, Hex Head, 3/8”-16 x 1” Long	96034053	05305-276-03-00
8	1	Flat Washer, 3/8”	88530605	05311-176-02-00
9	1	Split Lock Washer 3/8”	88521109	05311-276-01-00
10	1	Hex Nut, 3/8”-16	88422068	05310-276-01-00
11	1	Tub Drain Plate A	N/A	05700-002-12-58



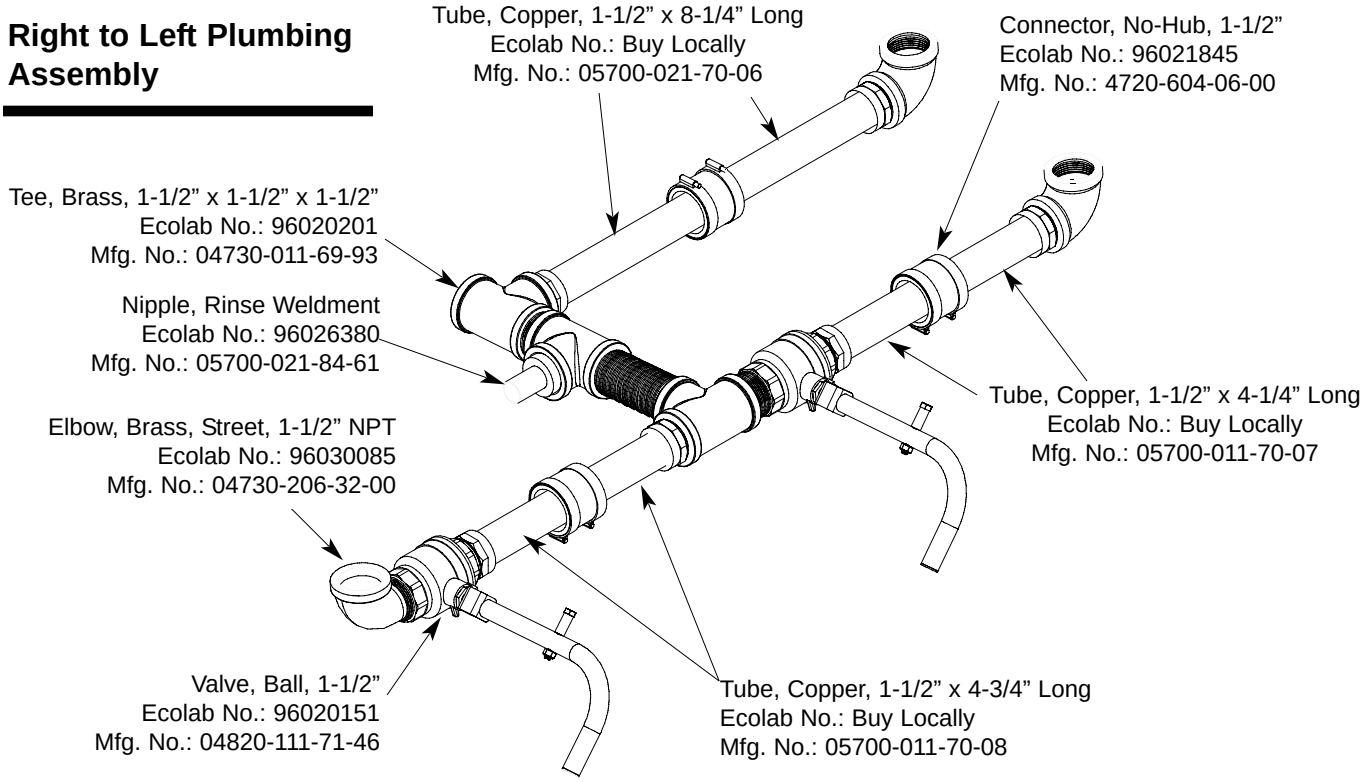


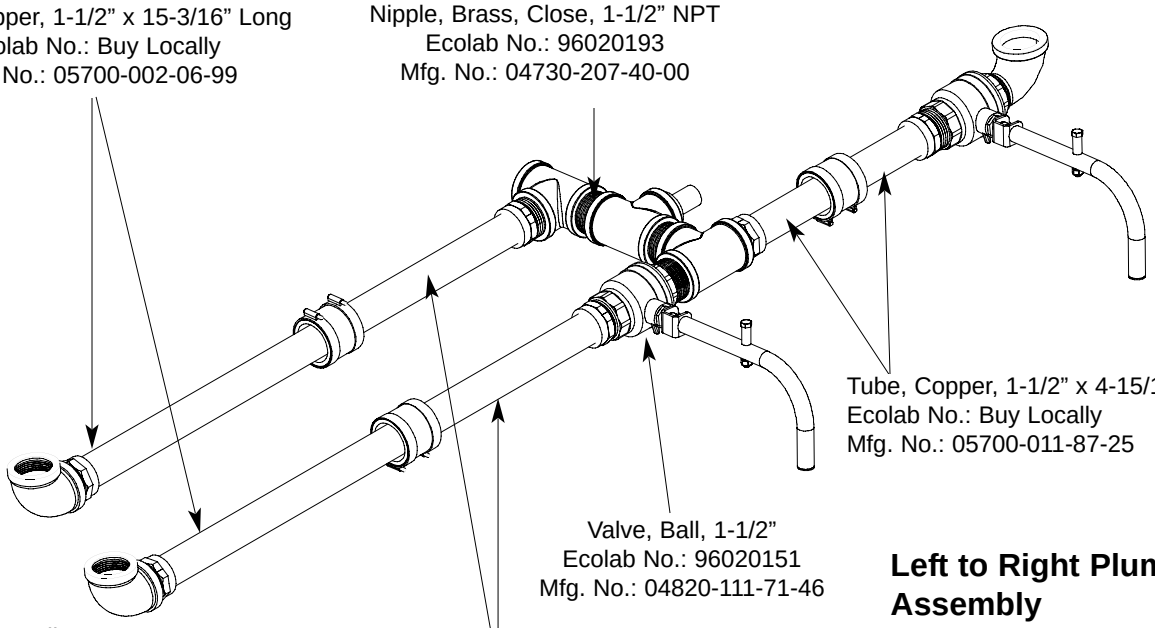
Left to Right Plumbing Assembly



All parts are common to both assemblies.

Right to Left Plumbing Assembly

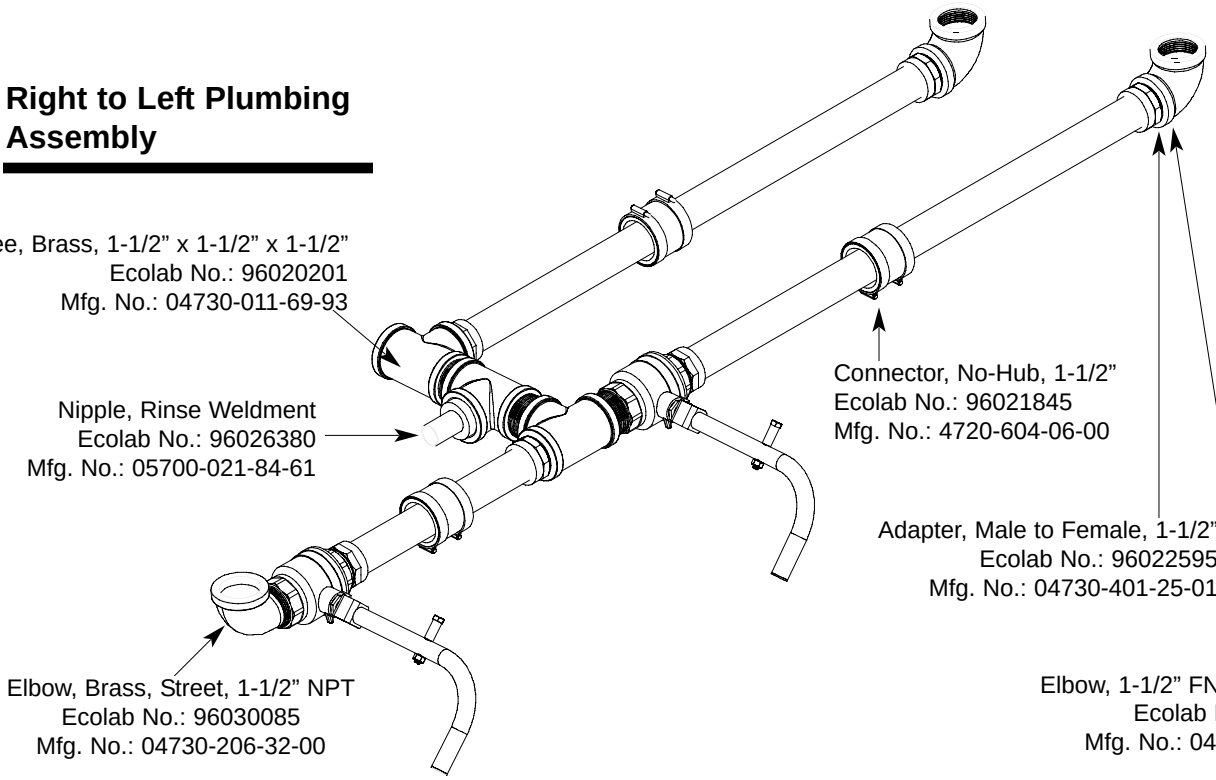




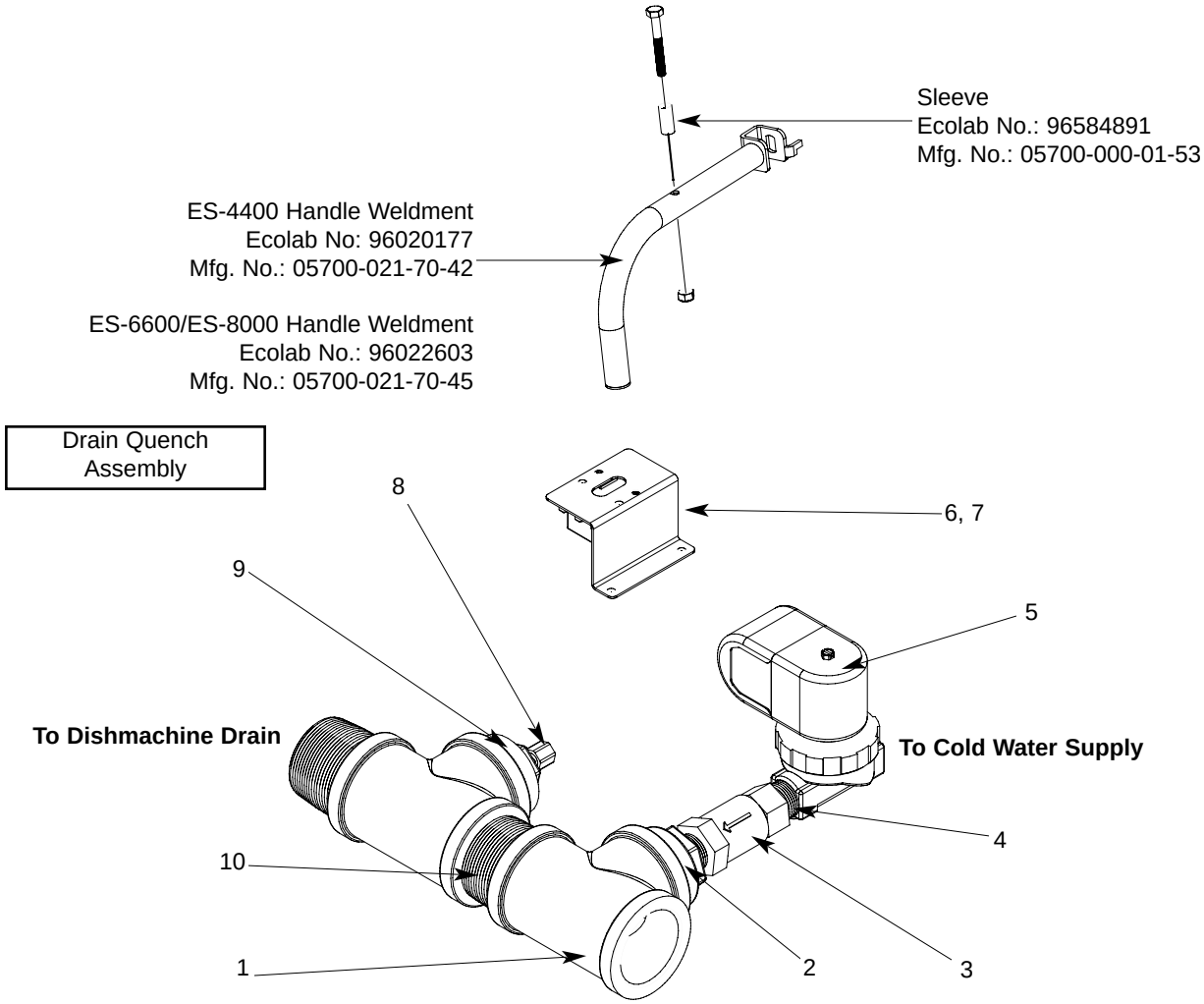
Left to Right Plumbing Assembly

Assemblies are mirrored and all parts are common to both assemblies.

Right to Left Plumbing Assembly



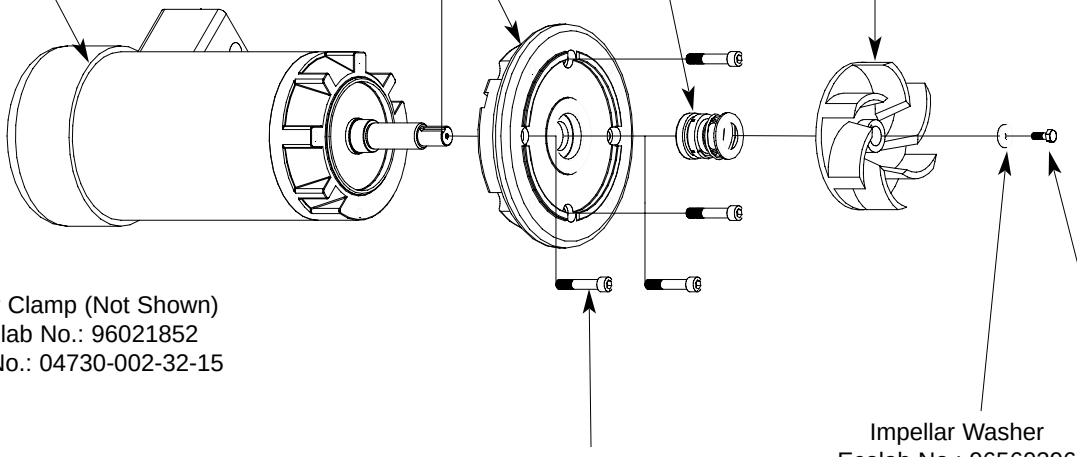
DRAIN VALVE HANDLE ASSEMBLY/DRAIN QUENCH SYSTEM



From the existing drain, attach the two additional Tees using the 1-1/2" NPT Close Nipples. Tighten the Reducers into the Tees as shown above. Attach the Modified Compression Fitting into the 1-1/2" to 1/4" Reducer. Position the bulb of the thermostat so that it rests approximately 1/4" from the bottom of the Tee. Tighten the Modified Compression Fitting as required.

Mount the Thermostat to the tub using the Thermostat Bracket and set it for 120°F - 140°F. Install the Solenoid Valve to the second Tee and then attach to the incoming cold water line. Use pipe dope or thread tape as required to prevent any leaks.

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	2	Tee, 1-1/2" x 1-1/2" x 1-1/2"	96020201	04730-011-69-93
2	1	Reducer, 1-1/2" to 1/2"	N/A	04730-002-55-75
3	1	Valve, Check, 1/2"	N/A	04820-002-55-77
4	1	Nipple, Close, 1/2" NPT	85141208	04730-207-15-00
5	1	Solenoid Valve	96580683	04810-100-09-18
6	1	Thermostat	96020102	05930-121-67-72
7	1	Thermostat Bracket	96029285	05700-011-81-64
8	1	Modified Compression Fitting	N/A	05700-001-16-52
9	1	Reducer, 1-1/2" x 1/4"	N/A	04730-002-55-76
10	1	Nipple, 1-1/2" NPT	96020193	04730-207-40-00
		Entire Assembly	96582193	06401-002-44-07



Key, 3/16” x 1” Long
Ecolab No.: 96569983
Mfg. No.: 05700-011-89-17

Pump Plate
Ecolab No.: 96020052
Mfg. No.: 05700-021-71-83

Wash Impellar
Ecolab No.: 96582052
Mfg. No.: 05700-031-67-45

Wash Impeller Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-51

Pump Seal
Ecolab No.: 96563812
Mfg. No.: 05330-011-71-98

Prewash Impellar (ES-6600 & ES-8000)
Ecolab No.: 96582053
Mfg. No.: 05700-031-71-78

See Motor Assemblies Page

Pump Seal Kit
Ecolab No.: 96563812
Mfg. No.: 06401-003-06-73

Prewash Impeller Replacment Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-55

Motor Clamp (Not Shown)
Ecolab No.: 96021852
Mfg. No.: 04730-002-32-15

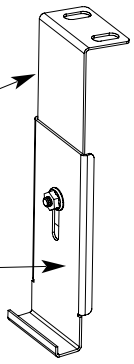
Cap Screw, 3/8”-16 x 2”
Ecolab No.: 96034582
Mfg. No.: 05305-011-74-98

Impellar Washer
Ecolab No.: 96560396
Mfg. No.: 05700-011-71-95

Bolt, 1/4”-20 x 3/4”
Ecolab No.: 88020458
Mfg. No.: 05305-274-04-00

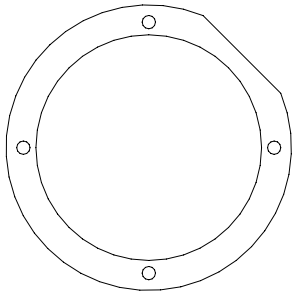
Replacment Kit Notes:
The impeller replacement kits come with the impeller, washer, key and bolt. The motor kits come with everything detailed above as well as two new mounting gaskets.

Kit, Motor Brkt Replace
Ecolab No.: 96022017
Mfg. No.: 06401-021-73-42



Upper Support Bracket
Ecolab No.: N/A
Mfg. No.: 05700-021-73-68

Lower Support Bracket
Ecolab No.: N/A
Mfg. No.: 05700-021-73-71



Motor Mounting Gasket
Ecolab No.: 96020060
Mfg. No.: 05330-011-71-62

WASH MOTOR CHART

Volts	Phase	Hz	Ecolab No.	Motor Part Number	Kit Part Number
208 - 230	1	60	96022454	06105-021-70-57	06401-003-09-97
208 - 230	3	60	96020045	06105-121-70-58	06401-003-09-98
460	3	60	96020045	06105-121-70-58	06401-003-09-98

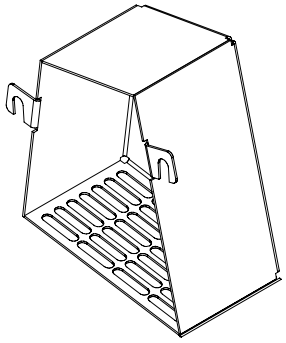
PREWASH MOTOR CHART

Model(s)	Volts	Phase	Hz	Ecolab No.	Part Number	Kit Part Number
ES-6600's	208	1	60	96022397	06105-121-70-55	06401-003-10-40
	230	1	60	96022397	06105-121-70-55	06401-003-10-40
	208	3	60	96021951	06105-121-70-56	06401-003-10-38
	230	3	60	96021951	06105-121-70-56	06401-003-10-38
	460	3	60	96021951	06105-121-70-56	06401-003-10-38
ES-8000's	208	1	60	96022454	06105-121-70-57	06401-003-10-42
	230	1	60	96022454	06105-121-70-57	06401-003-10-42
	208	3	60	96020045	06105-121-70-58	06401-003-10-43
	230	3	60	96020045	06105-121-70-58	06401-003-10-43
	460	3	60	96020045	06105-121-70-58	06401-003-10-43

PREWASH & WASH PUMP WELDMENTS

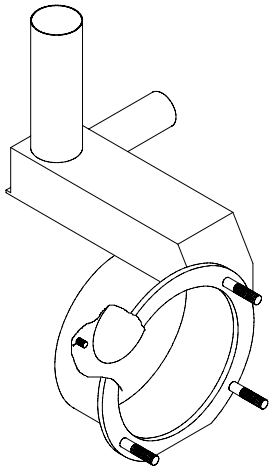
The pump weldment is secured to the pump plate (through the actual tub wall) using the following fasteners:

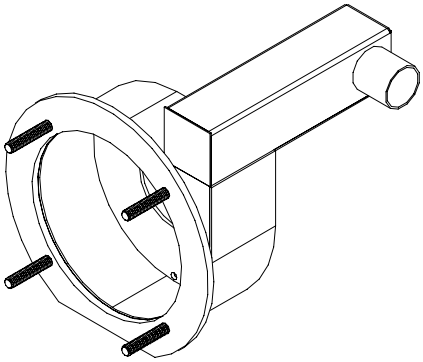
DESCRIPTION	ECOLAB No.	Mfg. No.
Nut, Hex, 3/8”-16	88422068	05310-276-01-00
Washer, Flat, 3/8”	88530605	05311-176-01-00
Lockwasher, Split, 3/8”	88521109	05311-276-01-00



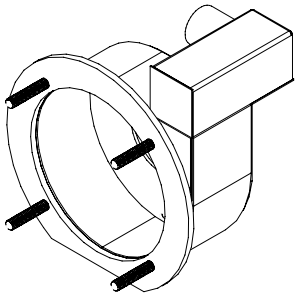
Intake Suction Scoop Weldment
Ecolab No.: 96029640
Mfg. No.: 05700-021-87-60

The wash pump weldment is a single part. Separate pieces of the weldment are not available for purchase. The weldment is used for the wash pump in all models covered in this manual. The weldment may be ordered using Ecolab No.: 96021621 or Mfg. No.: 05700-041-68-88.

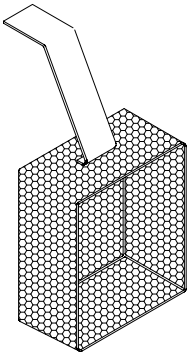




Prewash Pump Weldment
ES-6600/8000 Left to Right models
Ecolab No.: 96027677
Mfg. No.: 05700-002-10-62

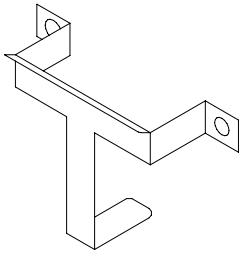


Prewash Pump Weldment
ES-6600/8000 Right to Left models
Ecolab No.: N/A
Mfg. No.: 05700-002-11-96



Prewash Intake Strainer Weldment
Ecolab No.: N/A
Mfg. No.: 05700-021-74-96

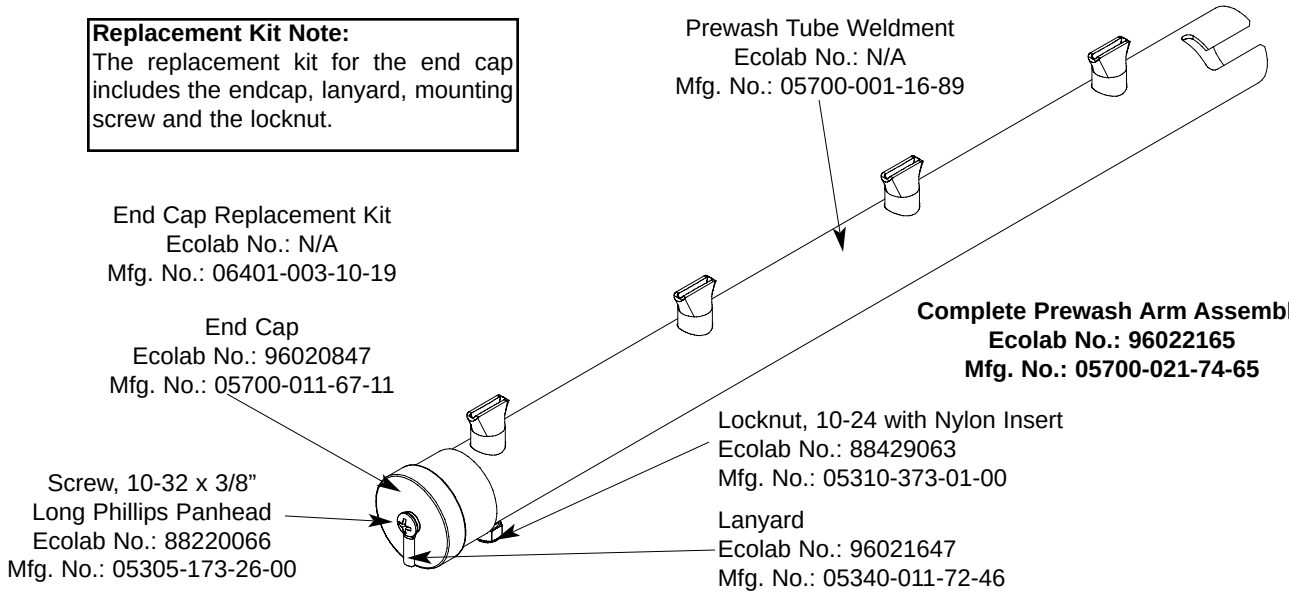
The prewash pump weldment is a single part. Separate pieces of the weldment are not available for purchase. The weldment is used for the prewash pump in all models covered in this manual.



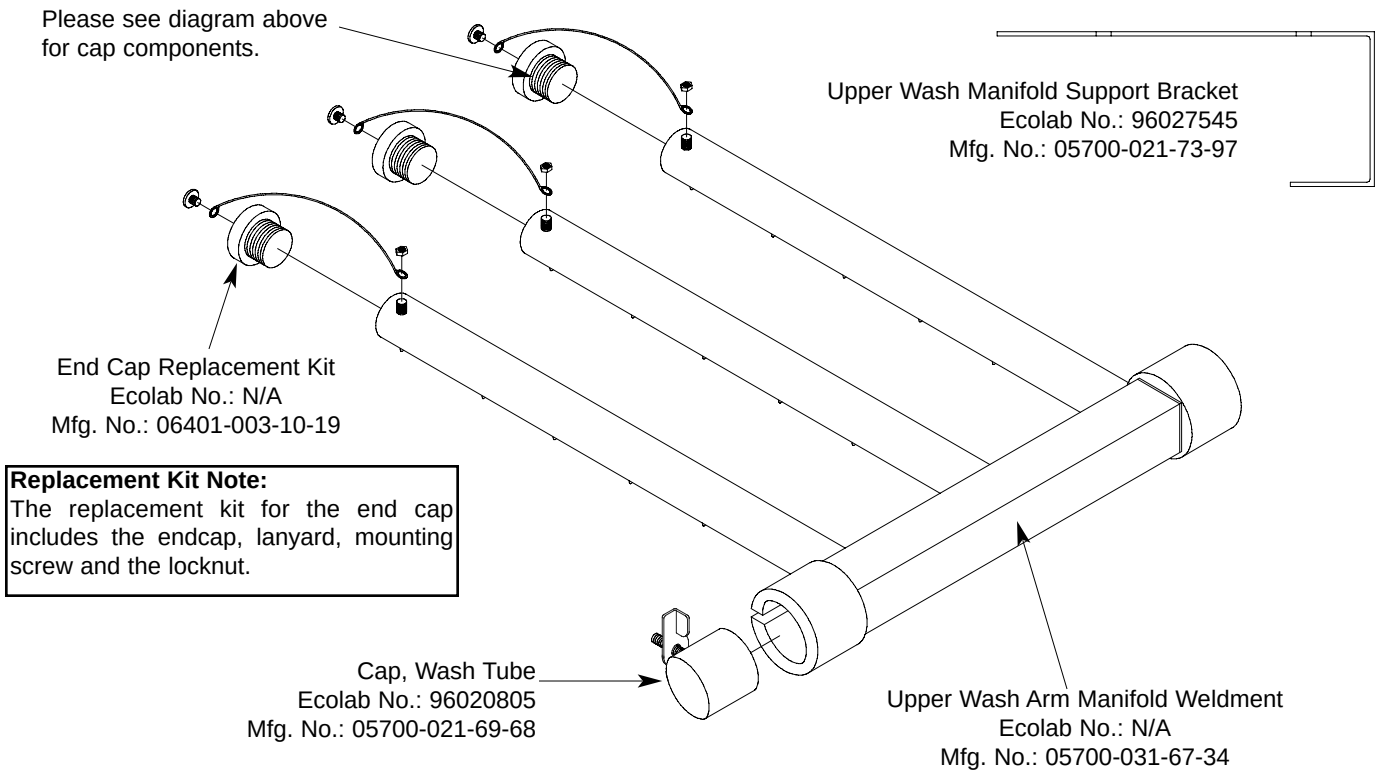
Prewash Strainer Bracket
Ecolab No.: N/A
Mfg. No.: 05700-021-74-94

PREWASH ARM/UPPER WASH ARM ASSEMBLY

Replacement Kit Note:
The replacement kit for the end cap includes the endcap, lanyard, mounting screw and the locknut.



Complete Prewash Arm Assembly
Ecolab No.: 96022165
Mfg. No.: 05700-021-74-65



Replacement Kit Note:
The replacement kit for the end cap includes the endcap, lanyard, mounting screw and the locknut.

Service Note:
When replacing the 10-32 screws in the End Caps, it is recommended that a thread locking fluid be used to ensure that the screws do not back out during normal operation.

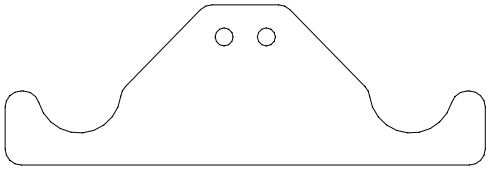
Complete Upper Wash Arm Assembly
Ecolab No.: 96020797
Mfg. No.: 05700-031-74-99

SECTION 6: PARTS SECTION

LOWER WASH ARM ASSEMBLY

Lower Wash Arm Support Bracket
Ecolab No.: 96022470
Mfg. No.: 05700-011-71-20

Secured with Locknut, 1/4”-20 with Nylon Insert
Ecolab No.: 88429113
Mfg. No.: 05310-374-01-00



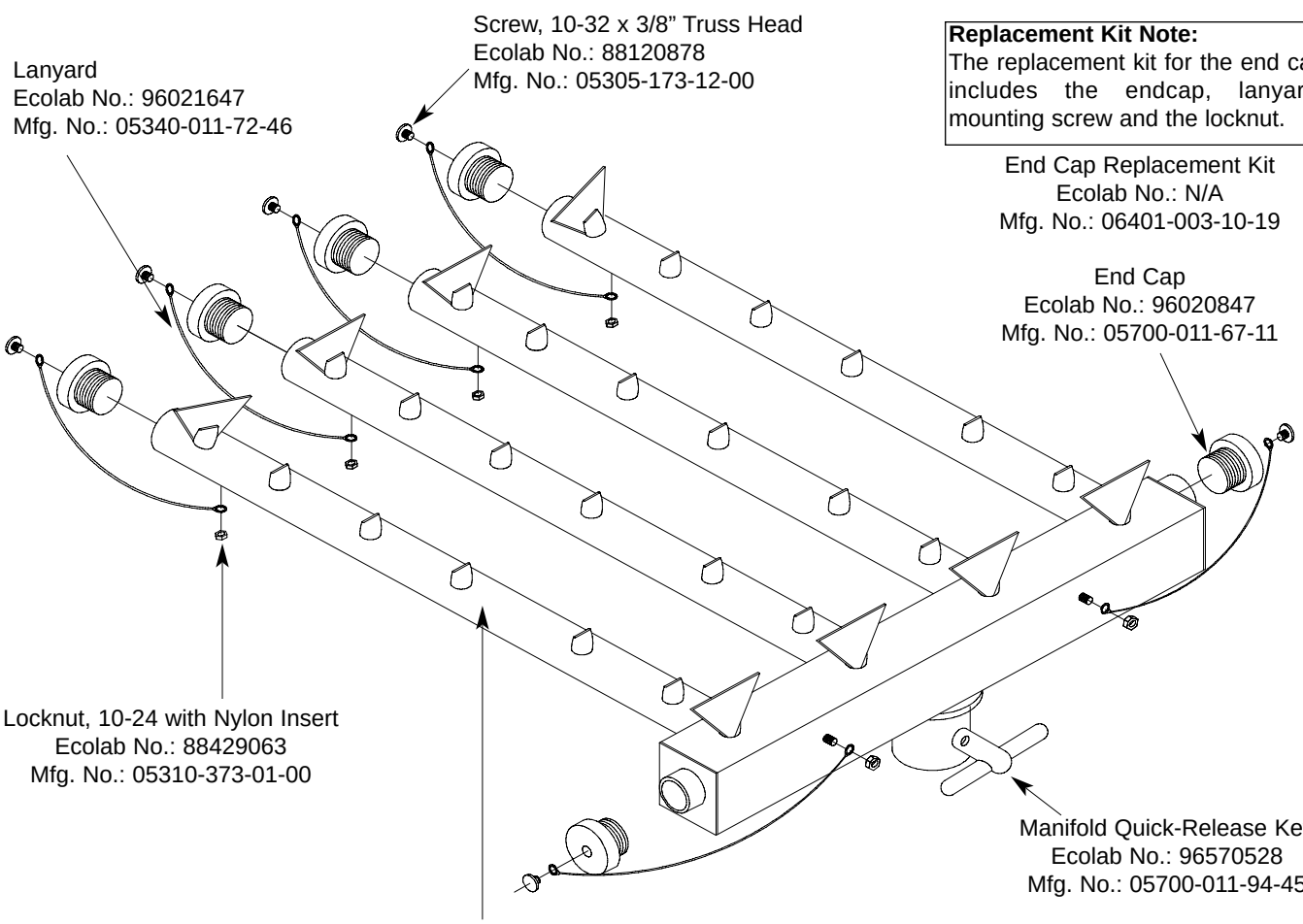
Screw, 10-32 x 3/8” Truss Head
Ecolab No.: 88120878
Mfg. No.: 05305-173-12-00

Lanyard
Ecolab No.: 96021647
Mfg. No.: 05340-011-72-46

Replacement Kit Note:
The replacement kit for the end cap includes the endcap, lanyard, mounting screw and the locknut.

End Cap Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-19

End Cap
Ecolab No.: 96020847
Mfg. No.: 05700-011-67-11



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

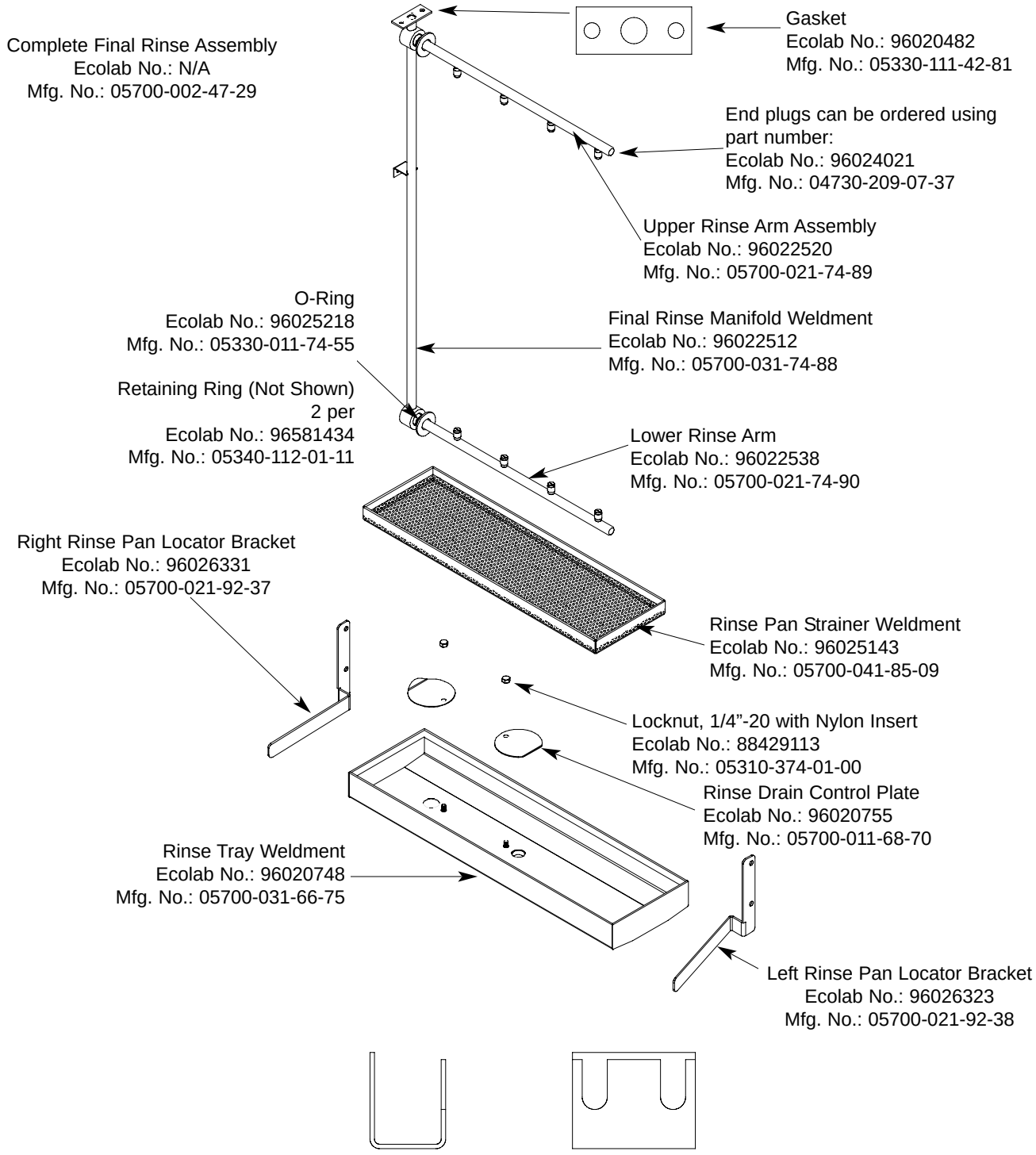
Manifold Quick-Release Key
Ecolab No.: 96570528
Mfg. No.: 05700-011-94-45

Lower Wash Arm Manifold Weldment
Ecolab No.: N/A
Mfg. No.: 05700-031-67-29

SERVICE NOTE:
When replacing the 10-32 screws in the End Caps, it is recommended that a thread locking fluid be used to ensure that the screws do not back out during normal operation.

Complete Lower Wash Arm Assembly
Ecolab No.: 96020821
Mfg. No.: 05700-031-74-66

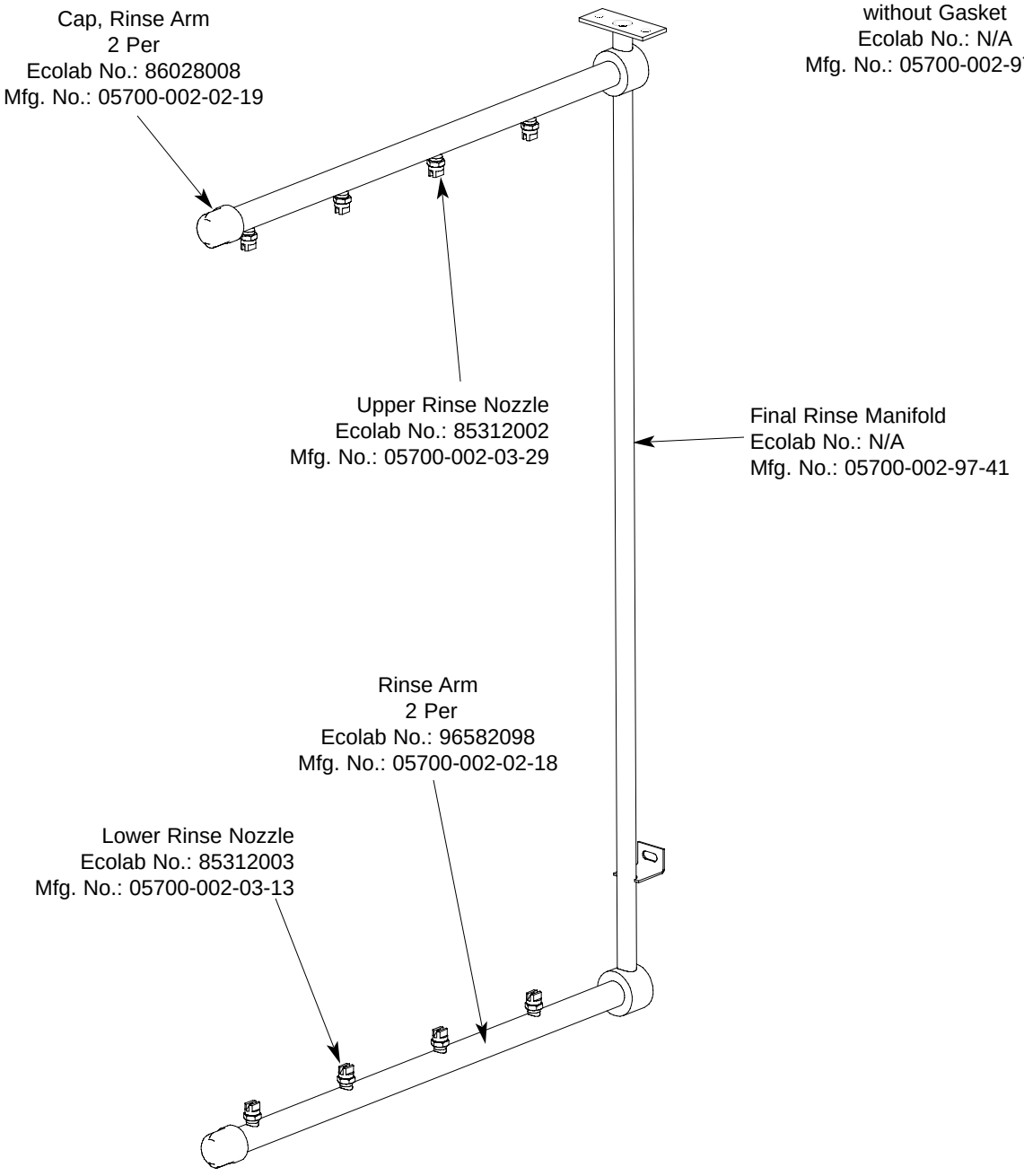
FINAL RINSE ASSEMBLY & ASSOCIATED PARTS



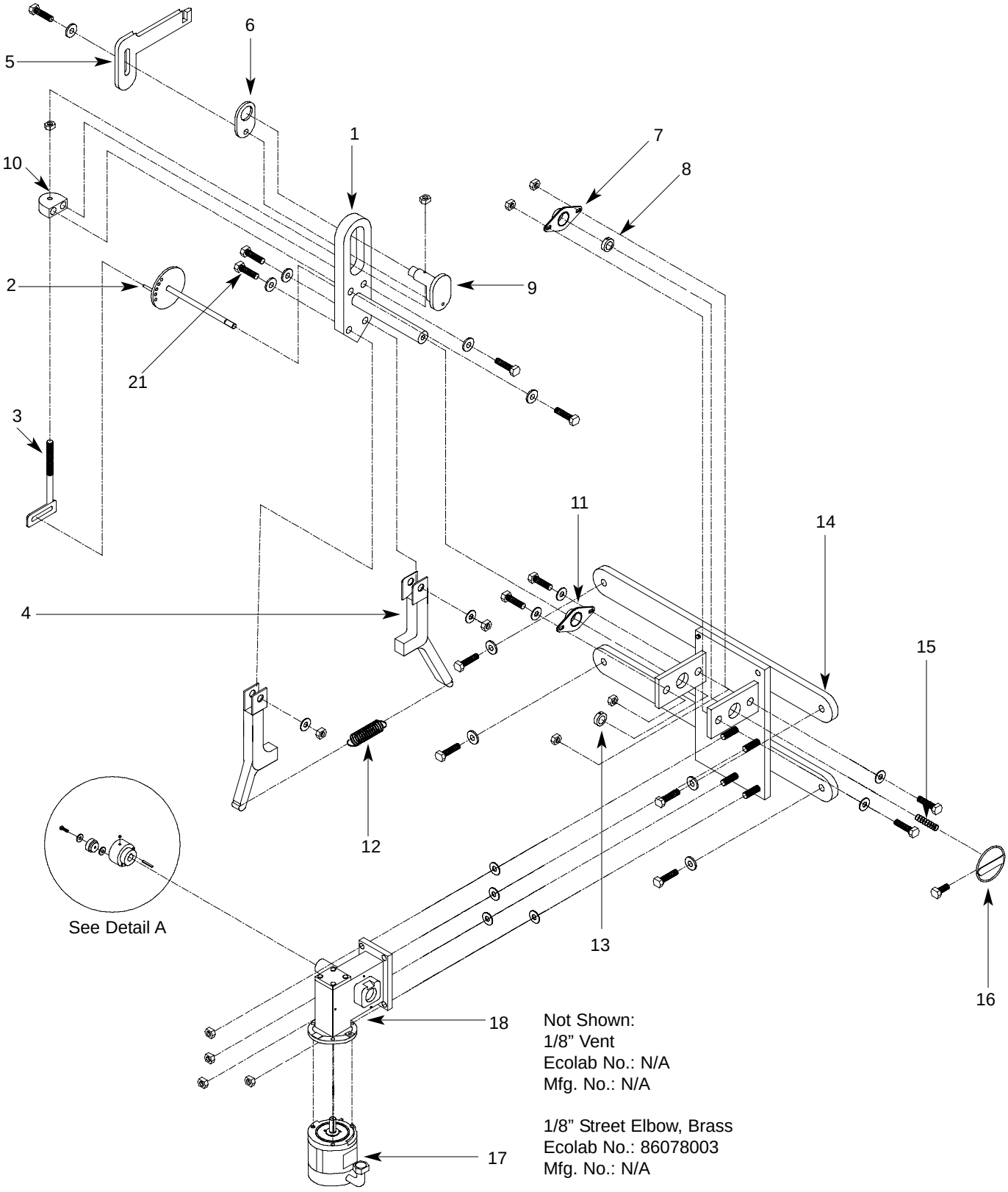
OPTIONAL FINAL RINSE ASSEMBLY WITH REMOVABLE NOZZLES

Complete Final Rinse Assembly
with Gasket
Ecolab No.: N/A
Mfg. No.: 06401-002-97-42

Complete Final Rinse Assembly
without Gasket
Ecolab No.: N/A
Mfg. No.: 05700-002-97-40

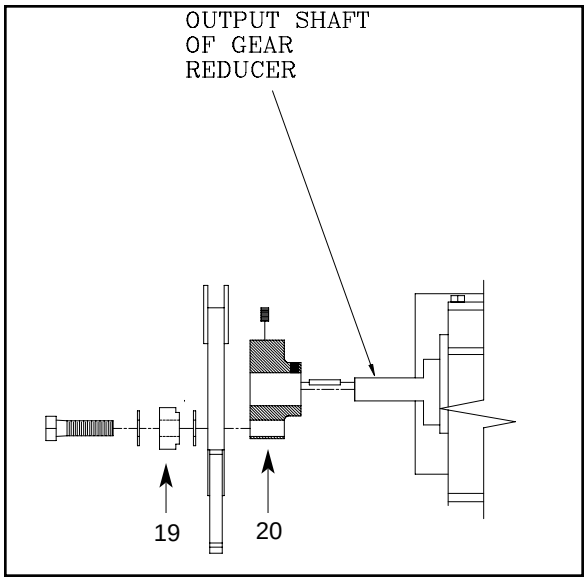


DRIVE ASSEMBLY

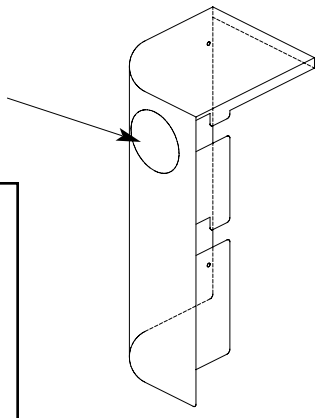


ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Drive Plate and Rod Weldment	N/A	05700-021-67-44
		Replacement Kit with Expansion Legs	96020946	06401-021-86-80
		Replacement Kit with Expansion Legs/Adjuster Crank	N/A	06401-011-94-54
2	1	Adjuster Crank Assembly	96020961	05700-021-69-95
3	1	Adjuster Skotch Yoke Weldment	96021001	06401-003-08-48
4	2	Coupling & Expansion Leg Weldment	N/A	05700-021-67-50
5	1	Pawl Bar Drive Linkage Casting	96026489	09515-021-87-73
6	1	Spacer Plate	96021050	05700-011-67-58
7	2	Pillow Block	96020920	06401-003-08-50
8	2	Shaft Collar	96040506	05700-011-89-18
9	1	Drive Socket	96021043	05700-021-67-39
10	1	Adjuster Yoke Guide	N/A	05700-021-67-42
11	2	Pillow Block	96020920	06401-003-08-50
12	1	Drive Spring	96021035	05315-011-83-51
13	2	Shaft Collar	96040506	05700-011-89-18
14	1	Drive Motor Mounting Bracket	96026505	05700-031-73-56
15	1	Adjuster Spring	96020979	05315-011-71-90
16	1	Adjusting Handle Weldment	96020987	05700-021-72-28
17	1	Drive Motor (208-230 Volt, 60 Hz, Single Phase)	83710061	06105-021-70-53
		Drive Motor (208-230 Volt, 60 Hz, Three Phase)	83710060	06105-121-70-54
		Drive Motor (460 Volt, 60 Hz, Three Phase)	83710060	06105-121-70-54
18	1	Gear Drive	96021936	06105-011-71-88
19	1	Roller Bearing	96566112	03120-011-71-81
20	1	Drive Hub	96020862	05700-011-67-97
21	2	Screw, Slotted Shoulder	N/A	05305-011-86-65

To order the Drive Adjuster Decal:
Ecolab No.: 96021605
Mfg. No.: 09905-021-72-24

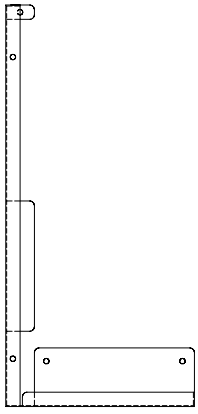


Detail A



Drive Motor Cover Front Weldment
Ecolab No.: 96021522
Mfg. No.: 05700-031-69-39

Front Drive Motor Cover Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-11-64



Rear Drive Motor Cover Assembly
Ecolab No.: 96021506
Mfg. No.: 05700-002-41-21

Rear Drive Motor Cover Replacment Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-18

Replacement Kits Notes:
The replacement kits for the drive motor covers come with the weldments and the mounting hardware.

SECTION 6: PARTS SECTION

LUBRICATION CHART FOR GEAR DRIVE

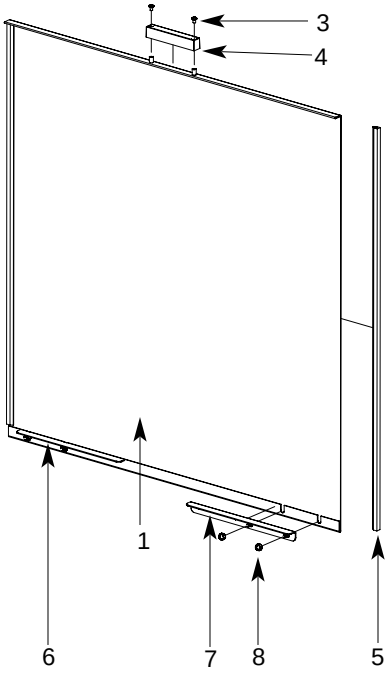
Note: The maintenance procedures detailed here are manufacturer's instructions for the WINSMITH brand of gear reducer that is installed on the rack conveyors covered in this manual.

Ambient Temperature	-30 - 15°F	16 - 50°F	51 - 95°F	51 - 95°F	96 - 131°F	96 - 131°F
Final Stage Worm Speed[1]	up to 2000 FPM	up to 2000 FPM	up to 450 FPM	above 450 FPM	up to 450 FPM	above 450 FPM
ISO Viscosity Grade	220	460	680	460	680	460[1]
AGMA Lubricant No.	5S	#7 Compounded	#8 Compounded	#7 Compounded	8S	7S
Mobil	SHC 630	600W Super Cylinder	Extra Hecla Super	600W Super Cylinder	SHC 636	SHC 634
American Lubricants	SHC-90W	AGMA #7 Gear Oil	AGMA #8 Gear Oil	AGMA #7 Gear Oil	N/A	N/A
Castrol	Tribol 800/220	Tribol 1105-7C	Tribol 1105-8C	Tribol 1105-7C	Tribol 800/680	Tribol 800/460
Chevron	Tegra 220	Cylinder Oil W460	Cylinder Oil W680	Cylinder Oil W460	Tegra 680	Tegra 460
Conoco	Syncon R & O 220	Inca Oil 460	Inca Oil 680	Inca Oil 460	N/A	Syncon R & O 460
Exxon (Esso)	Teresstic SHP220	Spartan EP 460	Spartan EP 680	Spartan EP 460	Teresstic SHP 680	Teresstic SHP 460
Fiske Brothers	SPO-MG	SPO-277	SPO-288	SPO-277	N/A	N/A
Shell	Omala RL 220	Valvata J 460	Valvata J 680	Valvata J 460	Omala RL 680	Omala RL 460
Texaco	Pinnacle 220	Vanguard 460	Vanguard 680	Vanguard 460	Pinnacle 680	Pinnacle 460

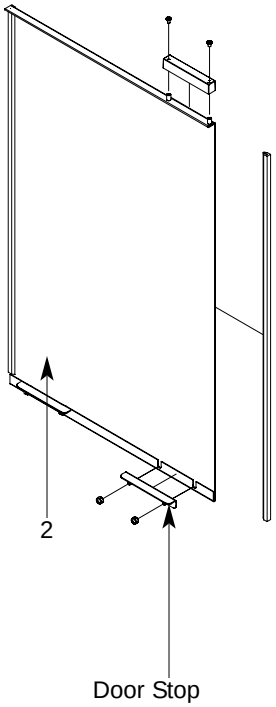
[1] The sliding velocity in feet per minute (FPM) for standard ratios is determined by multiplying the speed of the worm in RPM by the factor from the table below. For selecting proper lubricant, use the speed of the worm in the final stage (input RPM divided by the first stage ratio).

SECTION 6: PARTS SECTION

DOOR ASSEMBLIES



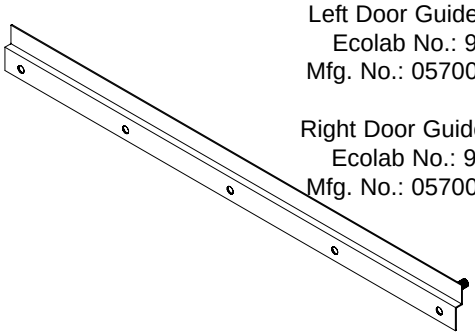
Locknut, 1/4”-20 with Nylon Insert
Ecolab No.: 88429113
Mfg. No.: 05310-374-01-00

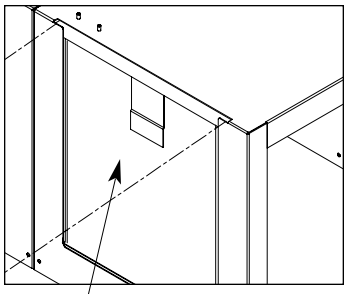


Door Stop
Ecolab No.: 96041611
Mfg. No.: 05700-002-05-46

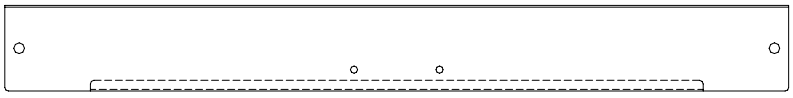
Left Door Guide Weldment
Ecolab No.: 96028113
Mfg. No.: 05700-002-32-51

Right Door Guide Weldment
Ecolab No.: 96028121
Mfg. No.: 05700-031-76-44



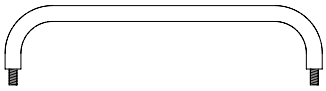


Door Catch Weldment
Ecolab No.: 96022525
Mfg. No.: 05700-031-84-80



Wash Door Hood Support: Ecolab No.: 96020565 Mfg. No.: 05700-031-84-13
22” Prewash Door Hood Support: Ecolab No.: N/A Mfg. No.: 05700-031-84-14

Door Stiffener (Not Shown) Ecolab No.: N/A Mfg. No.: 05700-031-83-43



Wash Door Handle Weldment
Ecolab No.:96021431
Mfg. No.: 05700-011-82-63

Prewash Door Handle Weldment
Ecolab No.: N/A
Mfg. No.: 05700-011-80-45

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Wash Door Weldment	96021415	05700-003-13-35
	1	No Emboss Wash Door Weldment	N/A	05700-002-43-30
2	1	Prewash Door Weldment (ES-6600’s)		
		Left to Right Model	96021415	05700-003-13-40
		Right to Left Model	96030655	05700-003-13-42
		No Emboss - Left to Right Model	N/A	05700-002-52-51
		No Emboss - Right to Left Model	N/A	05700-002-49-59
2	1	Prewash Door Weldment (ES-8000’s)		
		Left to Right Model	96022751	05700-031-80-46
		Right to Left Model	N/A	05700-031-80-43
		No Emboss - Left to Right Model	N/A	05700-002-52-51
		No Emboss - Right to Left Model	N/A	05700-002-57-19
3	1	Screw, 8-32 x 1/4” Long	88125620	05305-172-09-00
4	1	Door Switch Magnet	96025200	05700-111-51-68
5	1	Door Guide	96021456	05700-111-70-92
6	1	Door Stop Weldment, Right	N/A	05700-002-96-33
7	1	Door Stop Weldment, Left	N/A	05700-002-96-32
8	2	Locknut, 10-24 SS Hex with Nylon Insert	88429063	05310-373-01-00

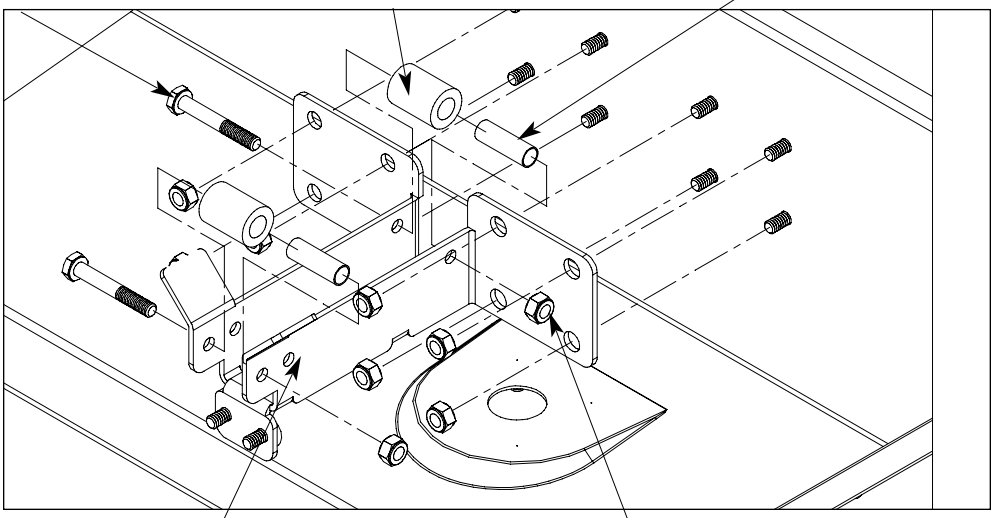
SECTION 6: PARTS SECTION

PAWL BAR ROLLER BRACKET

Bolt, 1/4”-20 x 1-3/4” Long
Ecolab No.: 96035472
Mfg. No.: 05305-274-10-00

Roller, UHMW
Ecolab No.: 96022272
Mfg. No.: 05700-011-68-16

Roller Shaft
Ecolab No.: 96582770
Mfg. No.: 05700-011-68-14

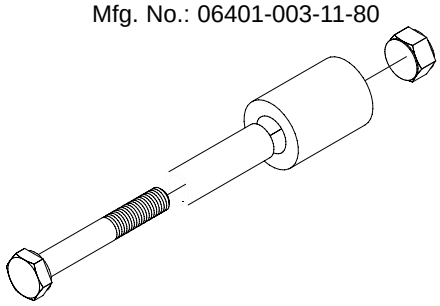


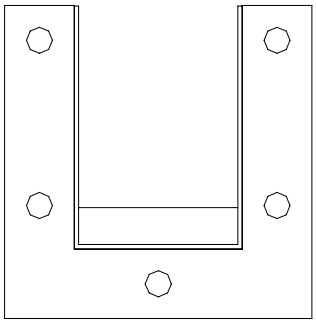
Pawl Bar Roller Bracket with Tabs
Ecolab No.: 96026075
Mfg. No.: 05700-031-84-68

Locknut, 1/4”-20 with Nylon Insert
Ecolab No.: 88429113
Mfg. No.: 05310-374-01-00

Replacement Kit Notes:
The replacement kit for the pawl bar roller comes with the roller, roller shaft, hardware and locknut as shown.

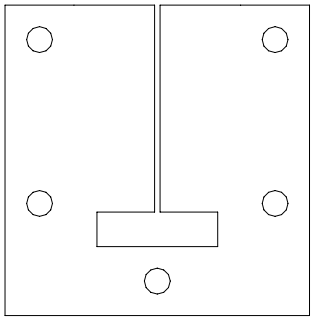
Pawl Bar Roller Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-11-80





Pawl Bar Gutter Weldment
Ecolab No.: 96020706
Mfg. No.: 05700-021-66-86

Pawl Bar Gutter Weldment
Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-09-95



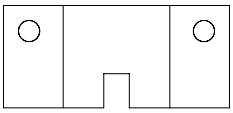
Pawl Bar Gutter Gasket
Ecolab No.: 96020714
Mfg. No.: 05330-011-68-55

Service Note:
It is highly recommended that when changing out one guide block, that the other be changed out as well, along with the gasket.

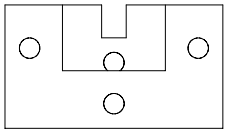
Guide Block Replacment Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-15

Replacement Kits Notes:
The pawl bar gutter weldment replacement kit contains the weldment, a gasket and the mounting hardware. The guide block kit contains both blocks and a gasket.

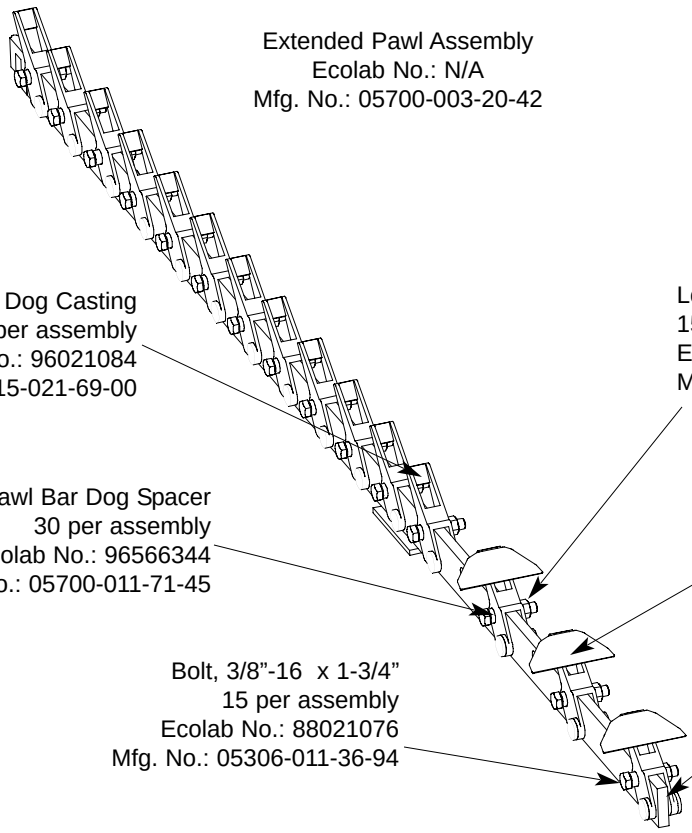
Top Guide Block
Ecolab No.: 96020722
Mfg. No.: 05700-011-69-49



Bottom Guide Block
Ecolab No.: 96020730
Mfg. No.: 05700-011-69-50



EXTENDED PAWL BAR OPTION & COMPONENTS



Extended Pawl Assembly
Ecolab No.: N/A
Mfg. No.: 05700-003-20-42

Pawl Bar Dog Casting
12 per assembly
Ecolab No.: 96021084
Mfg. No.: 09515-021-69-00

Lock Nut, 3/8”-16 w/Nylon Insert
15 per assembly
Ecolab No.: 88419007
Mfg. No.: 05310-011-72-55

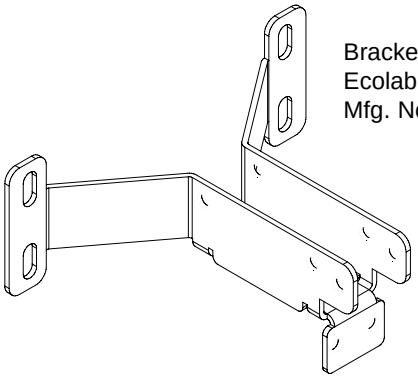
Pawl Bar Dog Spacer
30 per assembly
Ecolab No.: 96566344
Mfg. No.: 05700-011-71-45

Pawl Bar Wing Weldment
3 per assembly
Ecolab No.: 96036851
Mfg. No.: 05700-021-86-79

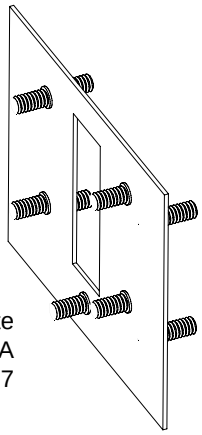
Bolt, 3/8”-16 x 1-3/4”
15 per assembly
Ecolab No.: 88021076
Mfg. No.: 05306-011-36-94

Pawl Bar Weldment
Ecolab No.: 96632043
Mfg. No.: 05700-003-20-43

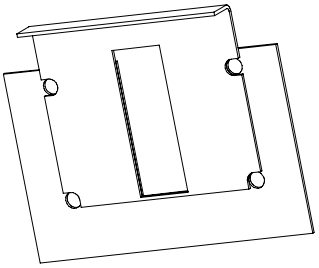
Extended Pawl Bar Dog
Ecolab No.: 96027610



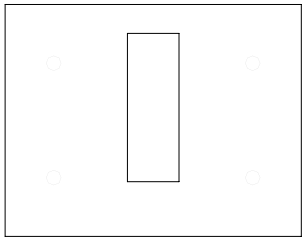
Bracket, Pawl Bar Roller
Ecolab No.: 96632038
Mfg. No.: 05700-003-20-02



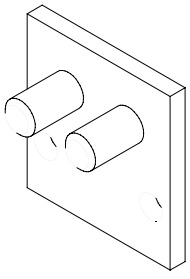
Weldment, Pawl Bar Gutter Plate
Ecolab No.: N/A
Mfg. No.: 05700-003-20-27



Weldment, Tub Drive Slot
Ecolab No.: N/A
Mfg. No.: 05700-003-20-28



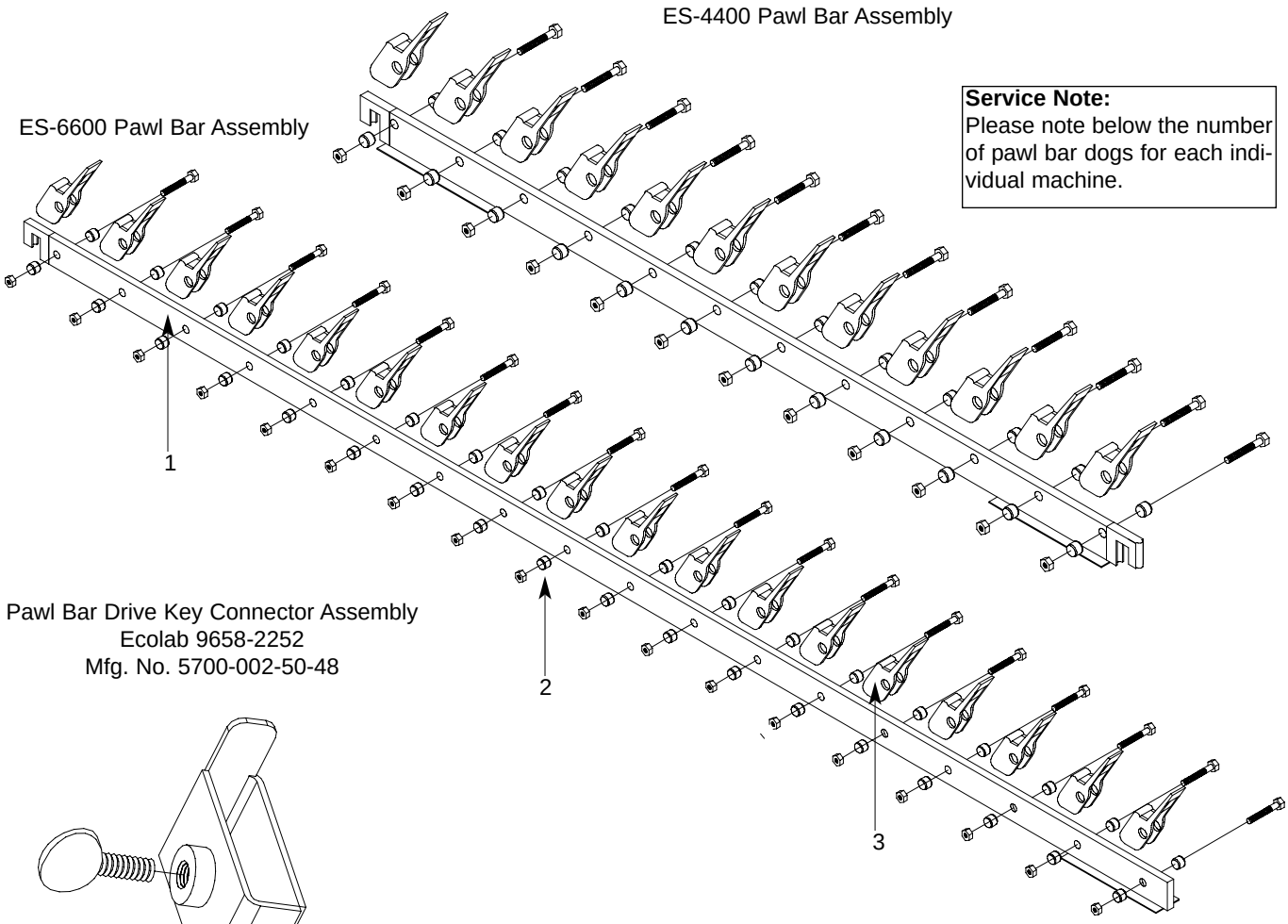
Gasket, Tub Drive Slot
Ecolab No.: 96632030
Mfg. No.: 05330-003-20-30



Weldment, Pawl Bar Guide
Ecolab No.: 96632020
Mfg. No.: 05700-003-20-20

SECTION 6: PARTS SECTION

PAWL BAR ASSEMBLIES



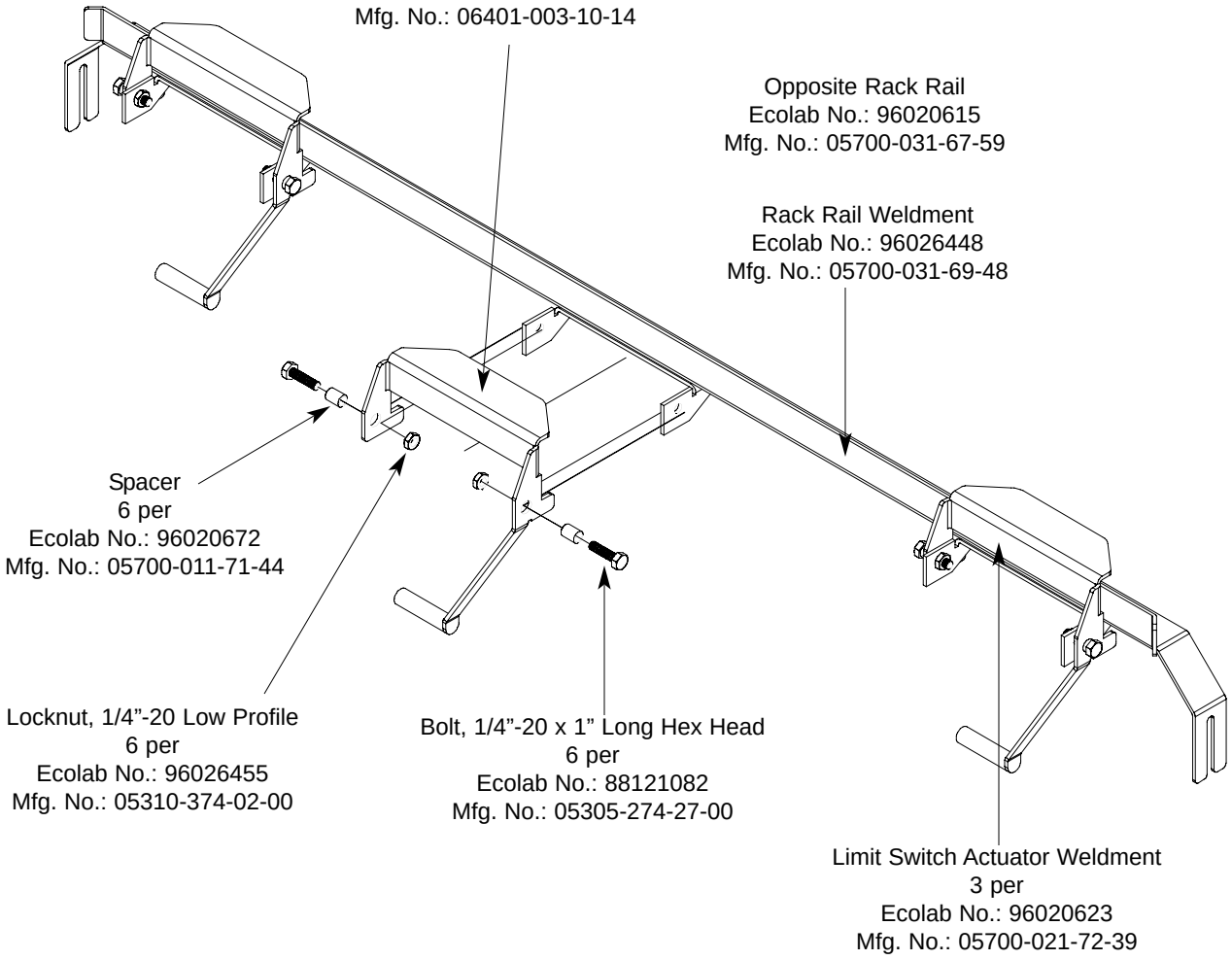
Service Note:
Please note below the number of pawl bar dogs for each individual machine.

Pawl Bar Drive Key Connector Assembly
Ecolab 9658-2252
Mfg. No. 5700-002-50-48

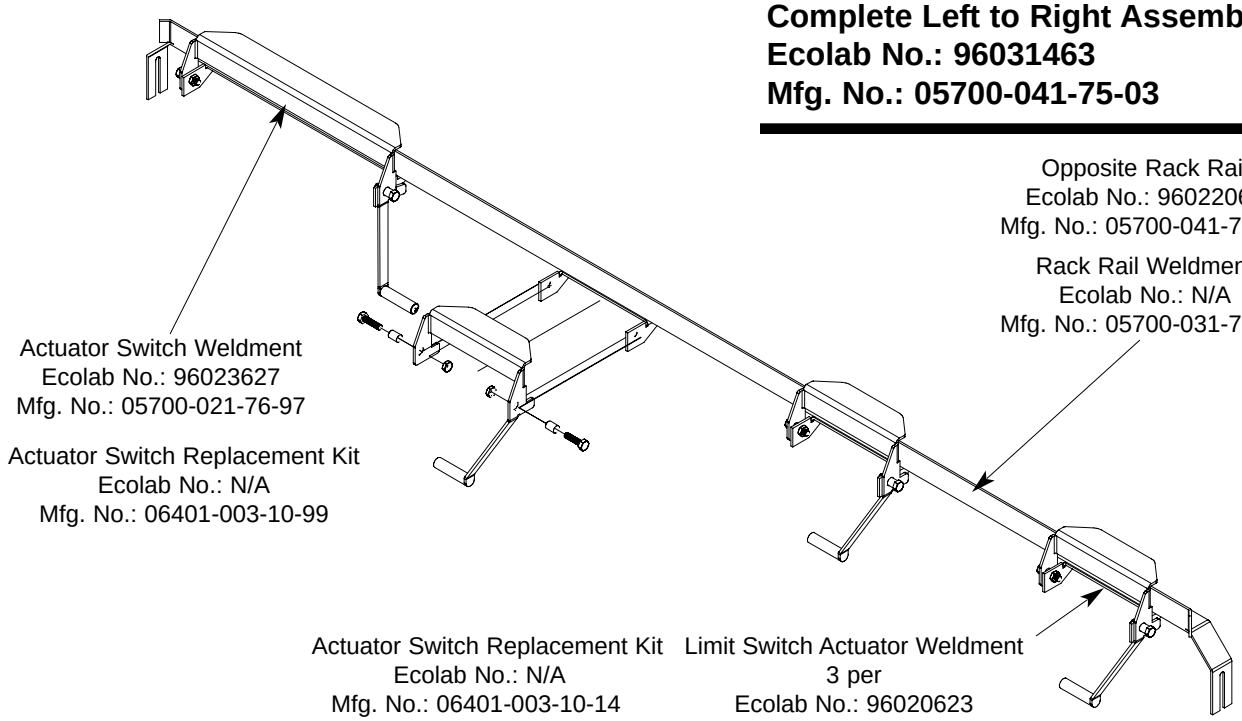
ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Pawl Bar Weldment (ES-4400's)	N/A	05700-031-72-77
	1	Pawl Bar Weldment (ES-6600's)	N/A	05700-031-72-78
	1	Pawl Bar Weldment (Left to Right) (ES-8000's)	96022223	05700-031-74-19
	1	Pawl Bar Weldment (Right to Left) (ES-8000's)	N/A	05700-041-82-01
2	24	Pawl Bar Dog Spacer (ES-4400's)	96566344	05700-011-71-45
	36	Pawl Bar Dog Spacer (ES-6600's)	96566344	05700-011-71-45
	40	Pawl Bar Dog Spacer (ES-8000's)	96566344	05700-011-71-45
3	12	Pawl Bar Dog Casting (ES-4400's)	96021084	05700-021-69-00
	18	Pawl Bar Dog Casting (ES-6600's)	96021084	05700-021-69-00
	20	Pawl Bar Dog Casting (ES-8000's)	96021084	05700-021-69-00
	1	Entire Assembly with Hardware (ES-4400's)	96021076	06401-131-81-00
	1	Entire Assembly with Hardware (ES-6600's)	96582079	06401-141-74-64
	1	Entire Assembly with Hardware (ES-8000's)		
		Left to Right	N/A	06401-141-81-06
		Right to Left	N/A	06401-241-81-06

Replacement Kit Note:
The replacement kit for the actuator switch comes with the switch, two spacers and the mounting hardware.

Complete Assembly
Ecolab No.: 96022033
Mfg. No.: 05700-031-81-37



Complete Left to Right Assembly
Ecolab No.: 96031463
Mfg. No.: 05700-041-75-03



Opposite Rack Rail
Ecolab No.: 96022066
Mfg. No.: 05700-041-71-37

Rack Rail Weldment
Ecolab No.: N/A
Mfg. No.: 05700-031-76-27

Actuator Switch Weldment
Ecolab No.: 96023627
Mfg. No.: 05700-021-76-97

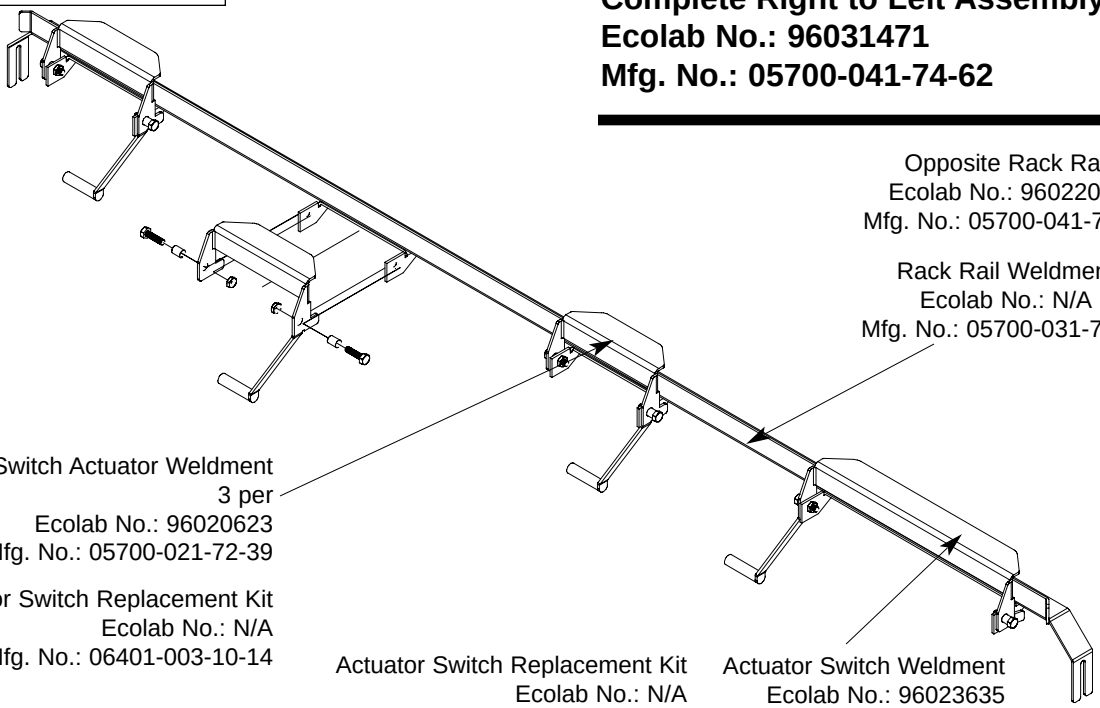
Actuator Switch Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-99

Actuator Switch Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-14

Limit Switch Actuator Weldment
3 per
Ecolab No.: 96020623
Mfg. No.: 05700-021-72-39

Replacement Kit Notes:
The replacement kits for the actuator switches come with the switch, two spacers and the mounting hardware.

Complete Right to Left Assembly
Ecolab No.: 96031471
Mfg. No.: 05700-041-74-62



Opposite Rack Rail
Ecolab No.: 96022066
Mfg. No.: 05700-041-71-37

Rack Rail Weldment
Ecolab No.: N/A
Mfg. No.: 05700-031-76-28

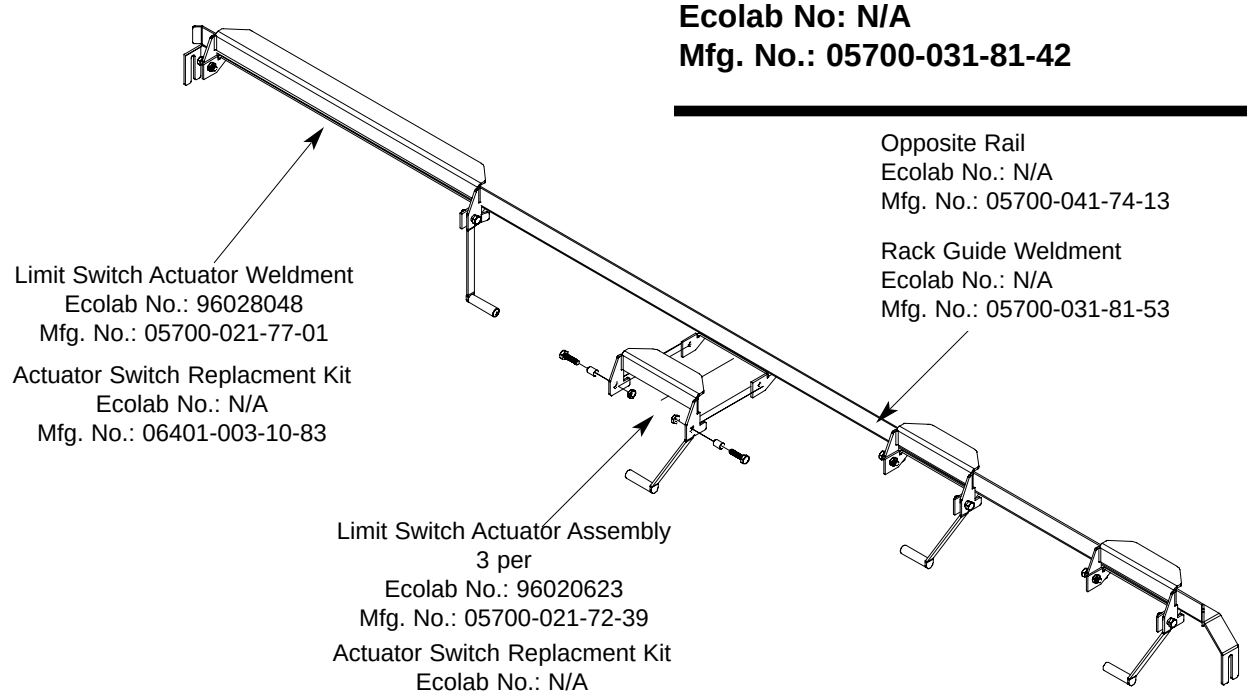
Limit Switch Actuator Weldment
3 per
Ecolab No.: 96020623
Mfg. No.: 05700-021-72-39

Actuator Switch Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-14

Actuator Switch Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-86

Actuator Switch Weldment
Ecolab No.: 96023635
Mfg. No.: 05700-002-91-09

Complete Left to Right Assembly
Ecolab No: N/A
Mfg. No.: 05700-031-81-42



Opposite Rail
Ecolab No.: N/A
Mfg. No.: 05700-041-74-13

Rack Guide Weldment
Ecolab No.: N/A
Mfg. No.: 05700-031-81-53

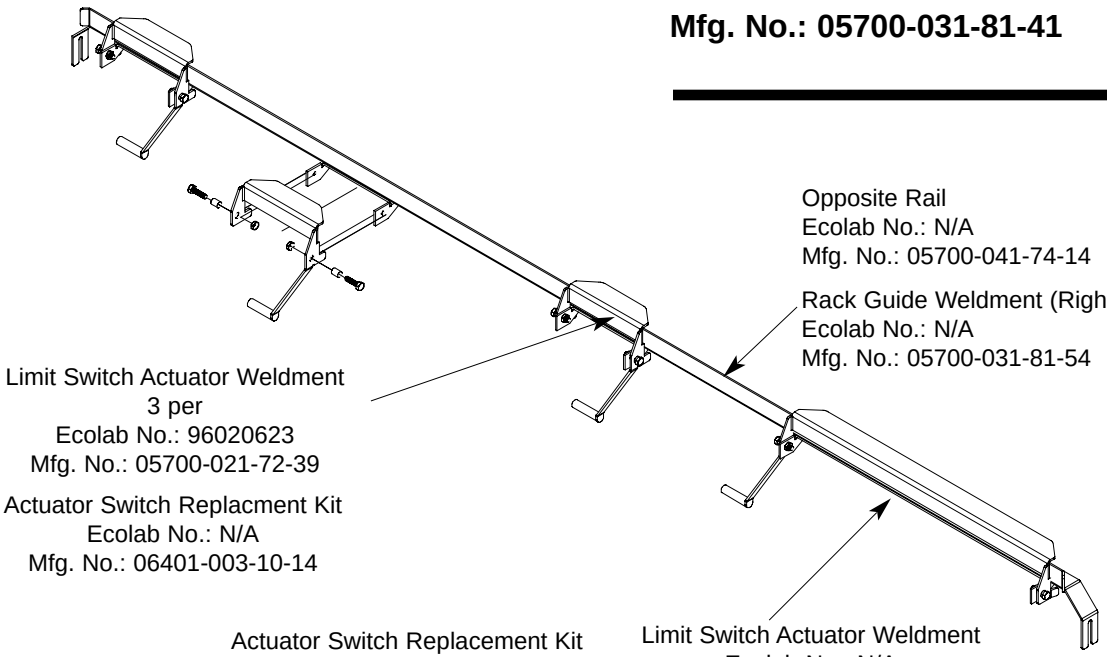
Limit Switch Actuator Weldment
Ecolab No.: 96028048
Mfg. No.: 05700-021-77-01

Actuator Switch Replacment Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-83

Limit Switch Actuator Assembly
3 per
Ecolab No.: 96020623
Mfg. No.: 05700-021-72-39

Actuator Switch Replacment Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-14

Complete Right to Left Assembly
Ecolab No: N/A
Mfg. No.: 05700-031-81-41



Opposite Rail
Ecolab No.: N/A
Mfg. No.: 05700-041-74-14

Rack Guide Weldment (Right to Left)
Ecolab No.: N/A
Mfg. No.: 05700-031-81-54

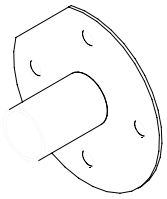
Limit Switch Actuator Weldment
3 per
Ecolab No.: 96020623
Mfg. No.: 05700-021-72-39

Actuator Switch Replacment Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-14

Actuator Switch Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-85

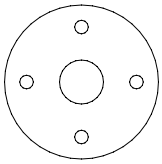
Limit Switch Actuator Weldment
Ecolab No.: N/A
Mfg. No.: 05700-002-91-10

Replacement Kits Notes:
The kits for the drain weldments and drain plugs come with the weldments/parts, a new gasket and the mounting hardware.

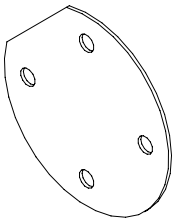


Rinse Drain Weldment
Ecolab No.: N/A
Mfg. No.: 05700-002-51-12

Rinse Drain Weldment
Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-05

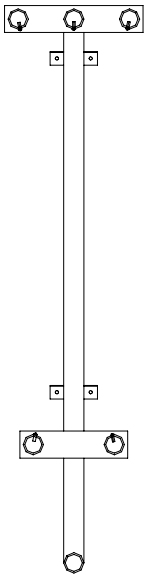


Rinse Drain Plate Gasket
Ecolab No.: 96031927
Mfg. No.: 05330-011-72-27



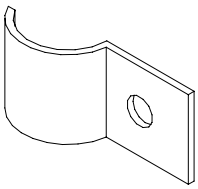
Plate, Rinse Drain
Ecolab No.: 96022579
Mfg. No.: 05700-002-52-24

Rinse Drain Plug Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-06

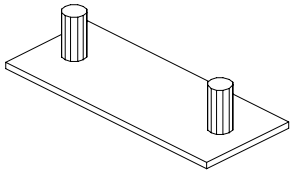


Prewash Manifold Weldment
ES-6600 Models Only
Ecolab No.: N/A
Mfg. No.: 05700-031-69-70

Prewash Manifold Weldment
ES-8000 Models Only
Ecolab No.: 96022140
Mfg. No.: 05700-002-24-94



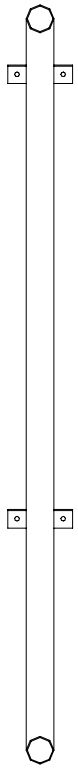
Pipe Clamp
Ecolab No.: 96572466
Mfg. No.: 05700-000-35-05



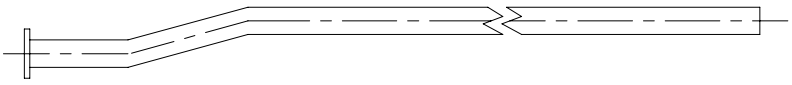
Hole Direction Cover Weldment
Ecolab No.: 96038526
Mfg. No.: 05700-002-32-50

Hole Direction Plate Replacment Kit
06401-003-10-00

Replacment Kit Note:
The kit for the hole direction plate comes with the plate, a new gasket and the mounting hardware.

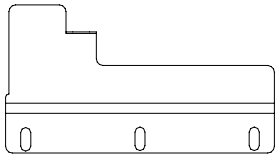


Wash Manifold Weldment
Ecolab No.: 96020383
Mfg. No.: 05700-031-71-13

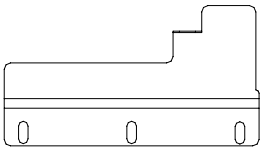


Wash Fill Tube Weldment
Ecolab No.: 96022231
Mfg. No.: 05700-021-71-21

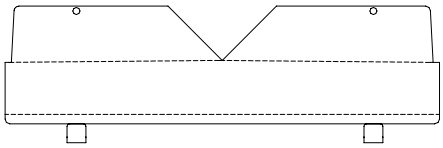
Prewash Fill Tube Weldment
(ES-6600 & ES-8000 Models Only)
Ecolab No.: 96022348
Mfg. No.: 05700-021-74-76



Plate, Left Water Directional
Ecolab No.: N/A
Mfg. No.: 05700-021-79-27

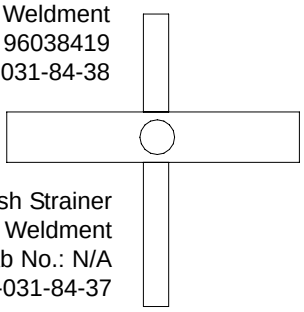


Plate, Right Water Directional
Ecolab No.: N/A
Mfg. No.: 05700-021-79-23

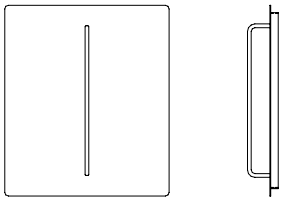


Splash Shield Weldment
Ecolab No.: 96024039
Mfg. No.: 05700-031-85-16

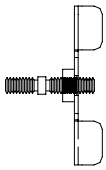
ES-6600/8000 Wash Strainer
Separator Weldment
Ecolab No.: 96038419
Mfg. No.: 05700-031-84-38



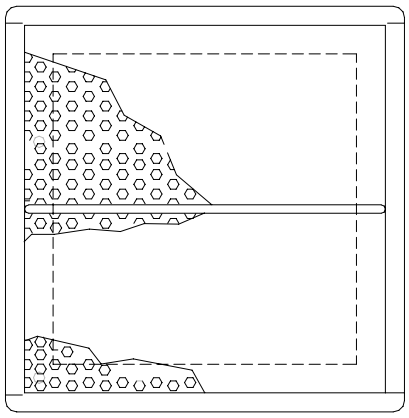
ES-4400 Wash Strainer
Separator Weldment
Ecolab No.: N/A
Mfg. No.: 05700-031-84-37



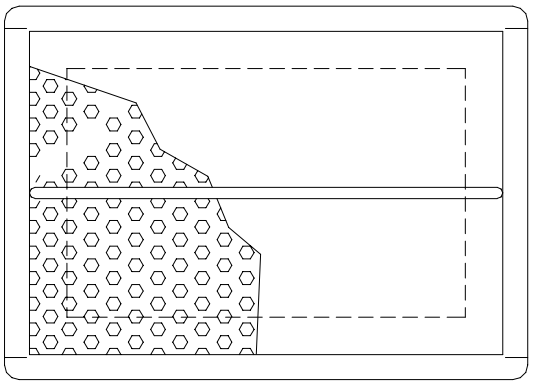
Run Off Sheet Weldment
Ecolab No.: 96022381
Mfg. No.: 05700-021-71-39



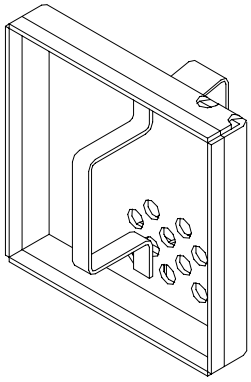
Shoulder Bolt Wingnut Weldment
Ecolab No.: 96582034
Mfg. No.: 05700-002-46-02



Back Strainer Weldment
Ecolab No.: 96031307
Mfg. No.: 05700-021-85-11

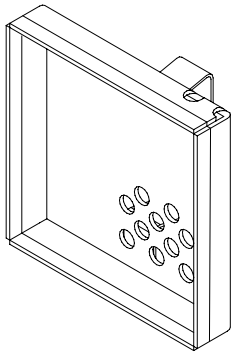


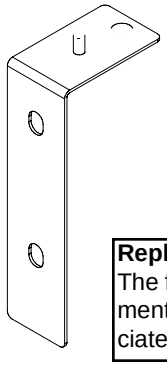
Front Strainer Weldment
Ecolab No.: 96031315
Mfg. No.: 05700-021-85-10



Drain Guard Strainer Weldment
Ecolab No.: 96030648
Mfg. No.: 05700-002-09-15

Screen Strainer with Handle
Weldment
Ecolab No.: 96028170
Mfg. No.: 05700-002-09-04

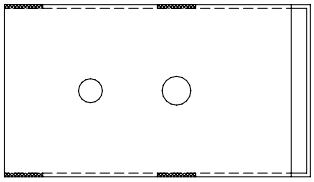




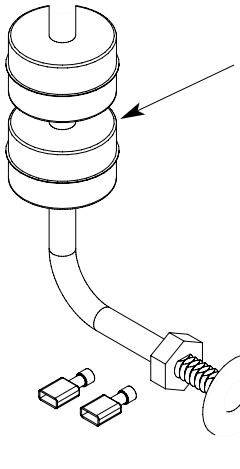
Float Support Bracket
Ecolab No.: 96589005
Mfg. No.: 05700-021-85-15

Float Switch Support Bracket
Replacement Kit
06401-003-11-77

Replacment Kit Note:
The float switch support bracket replacement kit contains the bracket and associated hardware for mounting.



Float Switch Cover
Ecolab No.: 96023700
Mfg. No.: 05700-021-75-71



Prewash Float Switch, 60" Lead
Ecolab No.: 96021407
Mfg. No.: 06680-121-70-16

Wash Float Switch, Dual
Ecolab No.: 96585682
Mfg. No.: 06680-121-70-71

1/2" Flat Washer
Ecolab No.: 88520069
Mfg. No.: 05700-011-71-93

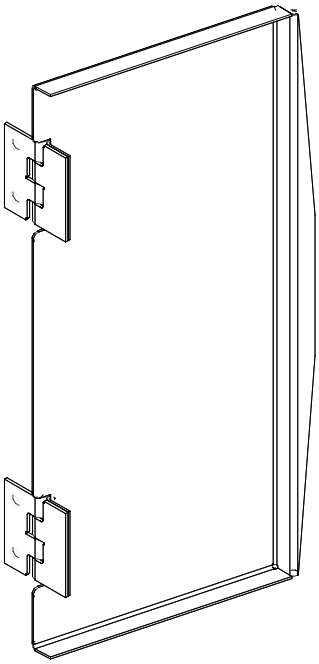
Hex Nut (1/2"-13 Thread)
Ecolab No.: 88430517
Mfg. No.: 05310-011-72-58

Wash Tank Float Switch Replacment Kit
06401-003-11-75

Prewash Tank Float Switch Replacment Kit
06401-003-11-76

Replacment Kit Note:
The float switch replacement kits contain the float switch with associated terminals, the flat washer and the nut.

Service Agent Note:
Remember than when reinstalling the float switch that the flat washer goes inside against the tub wall while the nut is on the outside of the tub.

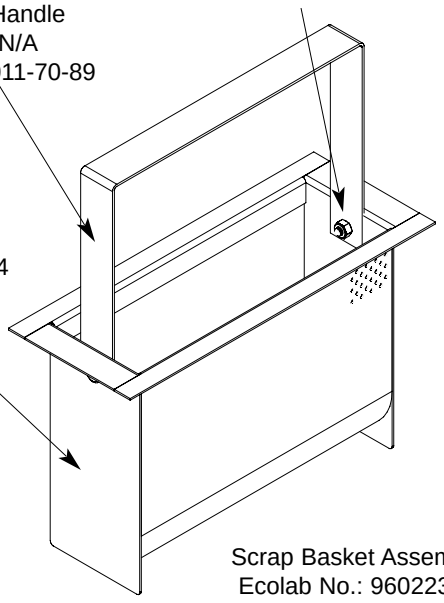


Scrap Basket Lid
Ecolab No.: 96022371
Mfg. No.: 05700-002-56-55

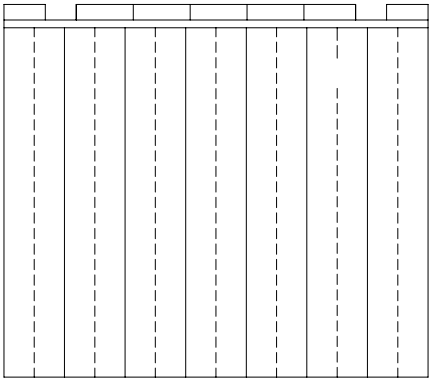
Locknut, 1/4"-20 with Nylon Insert
Ecolab No.: 88429113
Mfg. No.: 05310-374-01-00

Scrap Basket Handle
Ecolab No.: N/A
Mfg. No.: 05700-011-70-89

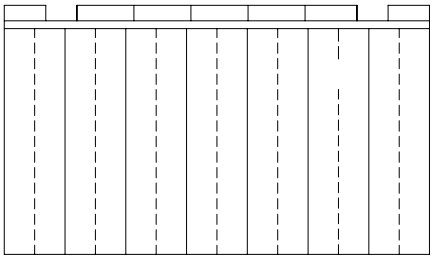
Prewash Scrap Basket
Weldment
Ecolab No.: N/A
Mfg. No.: 05700-041-92-24



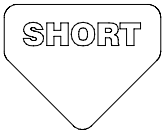
Scrap Basket Assembly
Ecolab No.: 96022363
Mfg. No.: 06401-011-87-78



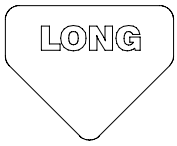
Curtain, 21” Long x 20-1/2” Wide
Ecolab No.: 96021548
Mfg. No.: 08415-131-73-45



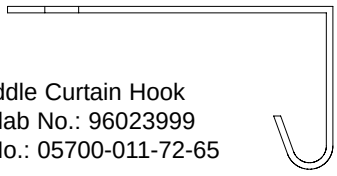
Curtain, 12” Long x 20-1/2” Wide
Ecolab No.: 96021555
Mfg. No.: 08415-131-73-44



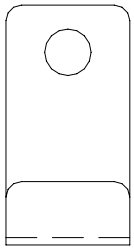
Short Curtain Decal
Ecolab No.: 96025978
Mfg. No.: 09905-011-73-82



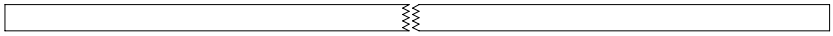
Long Curtain Decal
Ecolab No.: 96025986
Mfg. No.: 09905-011-73-84



Middle Curtain Hook
Ecolab No.: 96023999
Mfg. No.: 05700-011-72-65

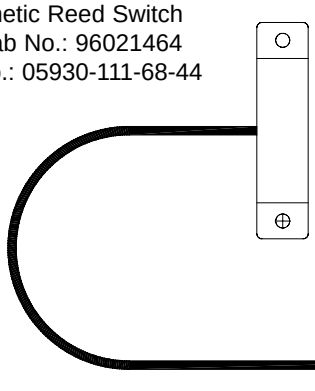


Curtain Hook
Ecolab No.: 96023981
Mfg. No.: 05700-011-68-80



Curtain Rod
Ecolab No.: 96021563
Mfg. No.: 05700-021-73-43

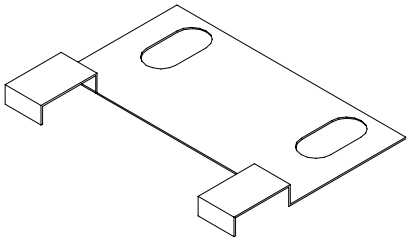
Magnetic Reed Switch
Ecolab No.: 96021464
Mfg No.: 05930-111-68-44



Wash Door/Prewash Door Magnetic Reed Switch
Ecolab No.: 96027990
Mfg. No.: 05930-002-36-80

Conveyor Switch Replacement Kit
06401-003-11-79

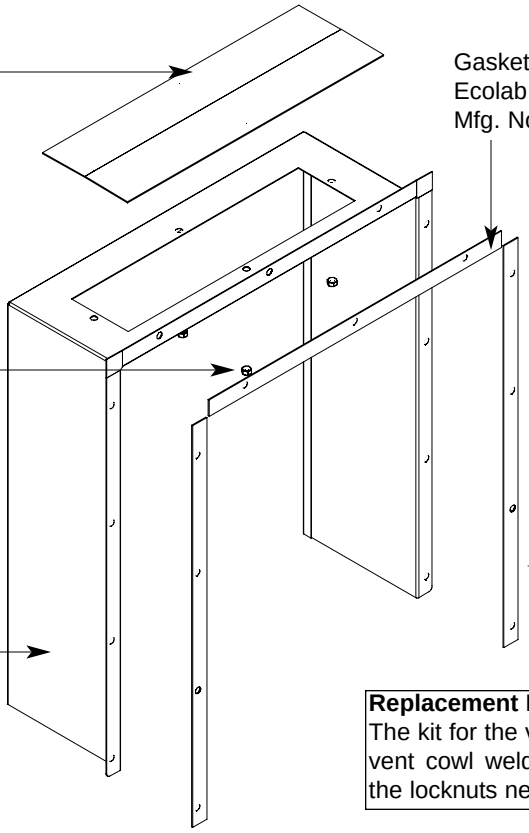
Replacement Kit Note:
The conveyor switch replacement kit comes with the switch, a terminal and a wire nut.



Limit Switch Bracket
Ecolab No.: 96021472
Mfg. No.: 05700-021-71-18

Service Note:
The cord for the conveyor switch needs to be cut to length in the field and have the pink terminal applied there.

VENT COWL ASSEMBLY/VENT SCOOP OPTION



Vent Cowl Cover Weldment
Ecolab No.: 96022728
Mfg. No.: 05700-011-74-67

Vent Cowl Cover Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-16

Gasket, Top Vent Cowl
Ecolab No.: 96037593
Mfg. No.: 05330-031-83-47

Locknut, 1/4”-20 Hex with Nylon Insert
4 per
Ecolab No.: 88429113
Mfg. No.: 05310-374-01-00

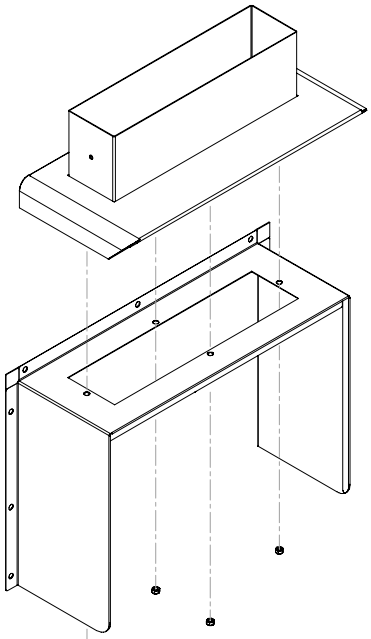
Gasket, Side Vent Cowl
Ecolab No.: 96037650
Mfg. No.: 005330-031-83-48

Vent Cowl Weldment
Ecolab No.: 96022000
Mfg. No.: 05700-041-86-94

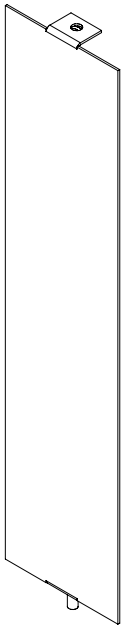
Vent Cowl Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-11-62

Replacement Kit Note:
The kit for the vent cowl comes with the vent cowl weldment, new gaskets and the locknuts needed to mount it.

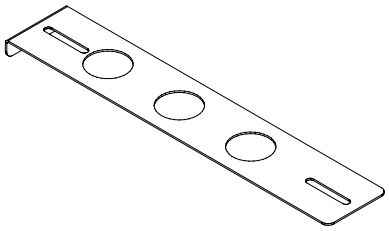
VENT SCOOP OPTION



Complete Vent Scoop Assembly
Ecolab No.: 96020359
Mfg. No.: 05700-002-04-08



Vent Cowl Baffle Weldment
Ecolab No.: 96582060
05700-002-11-47

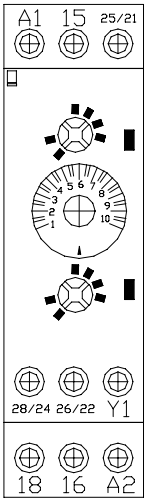


Scoop Damper
Ecolab No.: 96582059
Mfg. No.: 05700-002-36-55

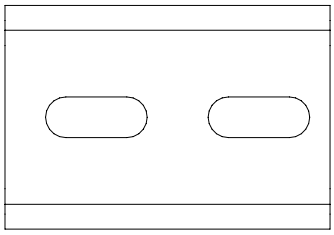
Wing Nut, 10-24
Ecolab No.: 96582058
Mfg. No.: 05310-993-01-00

SECTION 6: PARTS SECTION

EXHAUST FAN CONTROL/TABLE LIMIT SWITCH OPTIONS



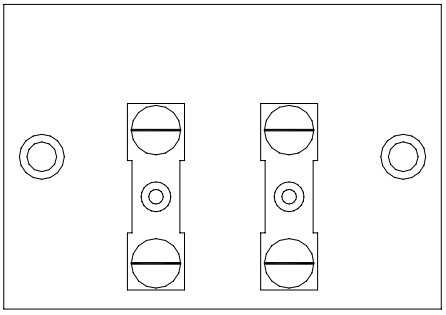
Delay Timer
Ecolab No.: 96031513
Mfg. No.: 05945-011-65-44



2” Din Rail
Ecolab No.: N/A
Mfg. No.: 05700-002-36-09

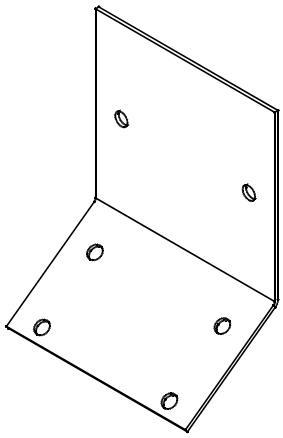
FAN LOAD ON TIMER OUTPUT
5A, 1/4HP, 240 V AC MAX

Decal, Fan Load
Ecolab No.: N/A
Mfg. No.: 09905-003-32-20



Terminal Board
Ecolab No.: 96030390
Mfg. No.: 05940-011-84-41

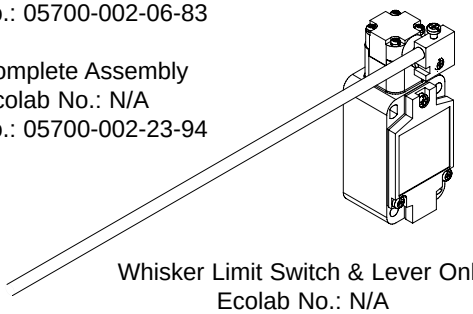
Kit, Exhaust Fan - Electric & Steam Models
Ecolab No.: N/A
Mfg. No.: 05700-031-90-53



Whisker Limit Switch Mounting Bracket
Ecolab No.: N/A
Mfg. No.: 05700-000-14-55

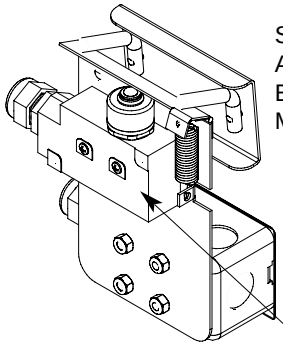
12’ Complete Assembly
Ecolab No.: 96023726
Mfg. No.: 05700-002-06-83

15’ Complete Assembly
Ecolab No.: N/A
Mfg. No.: 05700-002-23-94



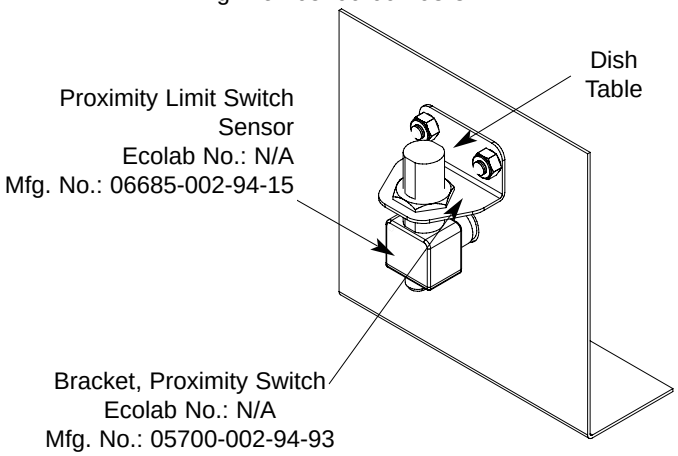
Whisker Limit Switch & Lever Only
Ecolab No.: N/A
Mfg. No.: 05930-303-40-01

Photoelectric Limit Switch Assembly
Ecolab No.: N/A
Mfg. No.: 05700-002-93-81

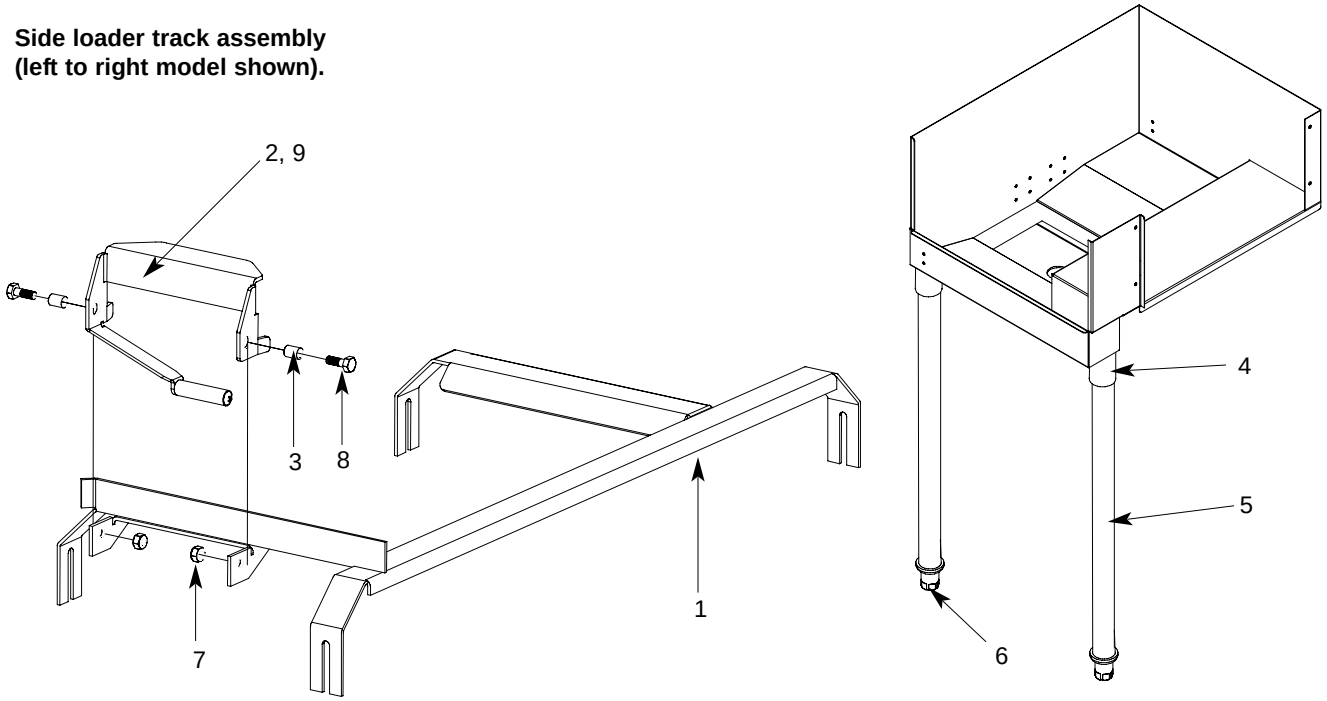


Striker Plate Limit Switch Assembly
Ecolab No.: 96202866
Mfg. No.: 05700-002-62-94

Limit Switch
Ecolab No.: N/A
Mfg. No.: 05930-002-62-81



Side loader track assembly (left to right model shown).



ITEM	QTY	DESCRIPTION	Ecolab No.	Mfg. No.
1	1	Track Weldment (Left to Right) 24”	N/A	05700-031-78-98
	1	Track Weldment (Right to Left) 24”	N/A	05700-031-95-20
	1	Track Weldment (Left to Right) 30”	N/A	05700-003-04-57
	1	Track Weldment (Right to Left) 30”	N/A	05700-003-04-58
2	1	Actuator Switch Replacement Kit	N/A	06401-003-10-64
3	2	Spacer	96020672	05700-011-71-44
4	1	Leg Socket Replacement Kit	N/A	06401-003-09-79
5	1	Leg Support Replacement Kit	N/A	06401-003-09-80
6	1	Bullet Foot	96552666	05340-108-01-03
7	2	Locknut, 1/4”-20 with Nylon Insert Low Profile	88429113	05310-374-01-00
8	2	Bolt, 1/4”-20 x 3/4” Long Hex Head	88020458	05305-274-04-00
9	1	Loader Actuator Weldment	N/A	05700-002-91-12

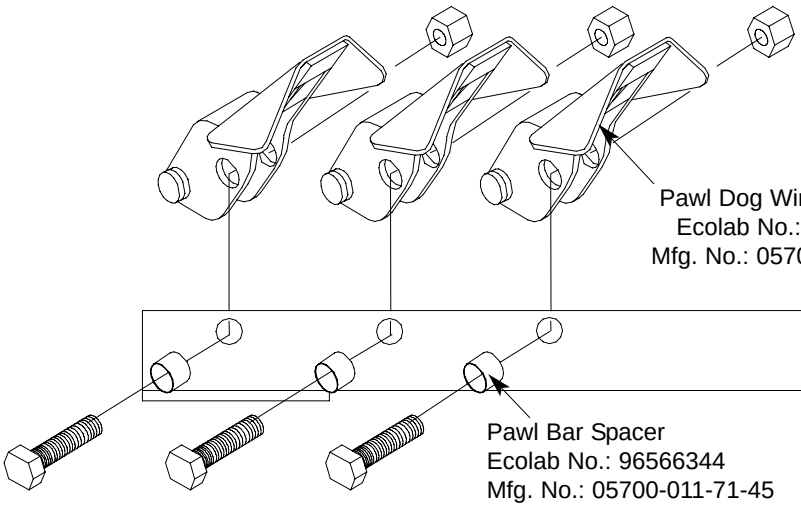
Replacement Kits Notes:
The actuator switch replacement kit comes with the actuator weldment, mounting hardware and (2) spacers.

The leg socket replacement kit has the leg socket, mounting hardware and set screw.

The leg support replacement kit has the leg and the bullet foot included.

SECTION 6: PARTS SECTION

SIDE LOADER PAWL BAR ASSEMBLIES/STRAINER/MAGNET



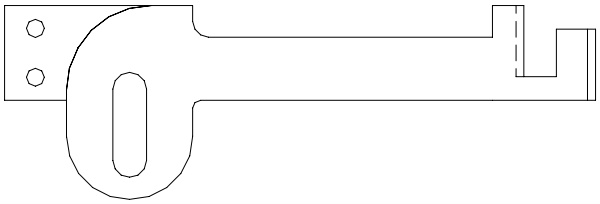
Pawl Dog Wing Weldment
Ecolab No.: 96036851
Mfg. No.: 05700-021-86-79

Replacement Kit Note:
The kits for the pawl bars come with the bar weldment, (3) dogs and the hardware.

Replacement Kit Note:
The replacement kits for the drive linkages come also with the hardware for mounting them to the pawl bars.

Pawl Bar Spacer
Ecolab No.: 96566344
Mfg. No.: 05700-011-71-45

Kit, Pawl Bar Replacement: 06401-131-86-90
Kit, 30" Pawl Bar Replacement: 06401-231-86-90

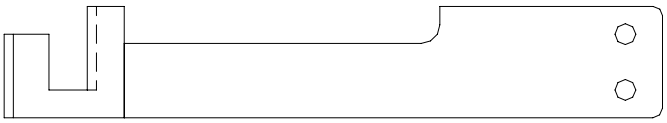


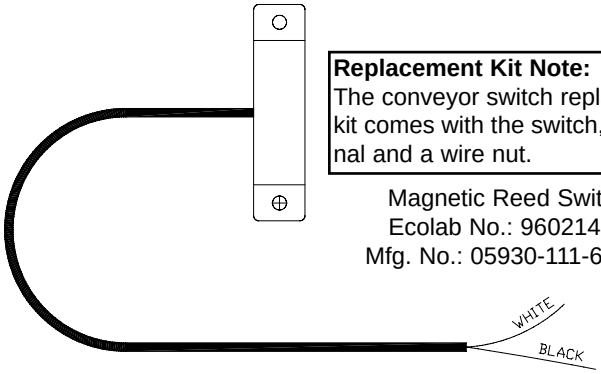
Drive Linkage Weldment (L-R)
Ecolab No.: N/A
Mfg. No.: 05700-002-56-15

Drive Linkage Replacment Kit (L-R)
Ecolab No.:N/A
Mfg. No.: 06401-003-11-59

Drive Linkage Weldment (L-R)
Ecolab No.: N/A
Mfg. No.: 05700-001-99-16

Drive Linkage Replacement Kit (R-L)
Ecolab No.:N/A
Mfg. No.: 06401-003-11-60

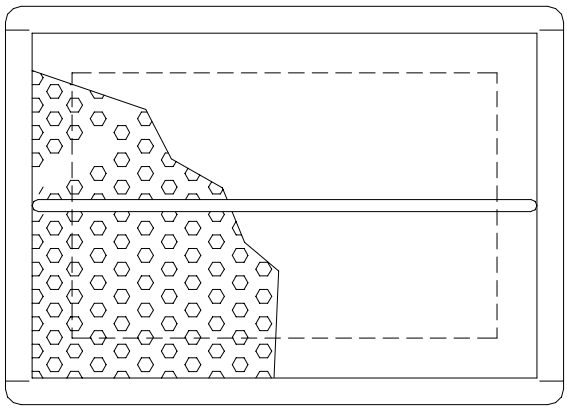




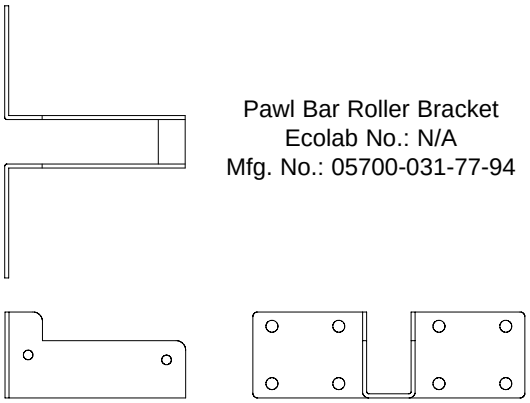
Replacement Kit Note:
The conveyor switch replacement kit comes with the switch, a terminal and a wire nut.

Magnetic Reed Switch
Ecolab No.: 96021464
Mfg. No.: 05930-111-68-44

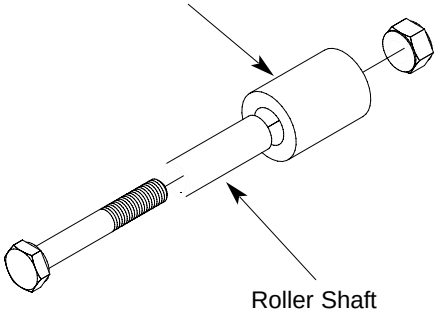
Service Note:
The cord for the conveyor switch needs to be cut to length in the field and have the pink terminal applied there.



Front Strainer Weldment
Ecolab No.: 96031315
Mfg. No.: 05700-021-85-10



Pawl Bar Roller Bracket
Ecolab No.: N/A
Mfg. No.: 05700-031-77-94

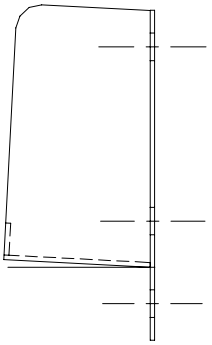


Bracket Rod Roller
Ecolab No.: 96022272
Mfg. No.: 05700-011-68-16

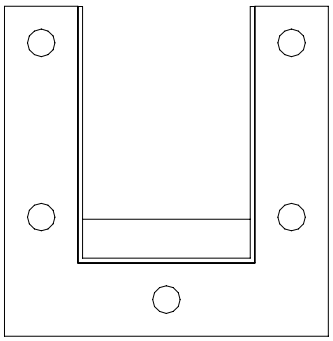
Roller Shaft
Ecolab No.: 96582770
Mfg. No.: 05700-011-68-14

Replacement Kit Notes:
The replacement kit for the pawl bar roller comes with the roller, roller shaft, hardware and locknut as shown.

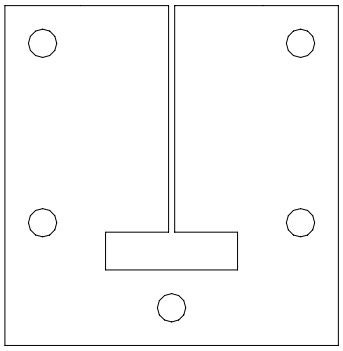
Pawl Bar Roller
Replacement Kit
06401-003-11-80



Pawl Bar Gutter Weldment
Replacement Kit
06401-003-09-95

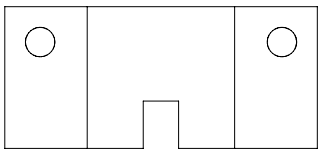


Pawl Bar Gutter Weldment
Ecolab No.: 96020706
Mfg. No.: 05700-021-66-86

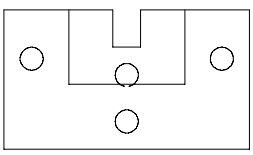


Drive Gutter Gasket
Ecolab No.: 96020714
Mfg. No.: 05330-011-68-55

Guide Block Replacment Kit
06401-003-10-15



Top Guide Block
Ecolab No.: 96020722
Mfg. No.: 05700-011-69-49



Bottom Guide Block
Ecolab No.: 96020730
Mfg. No.: 05700-011-69-50

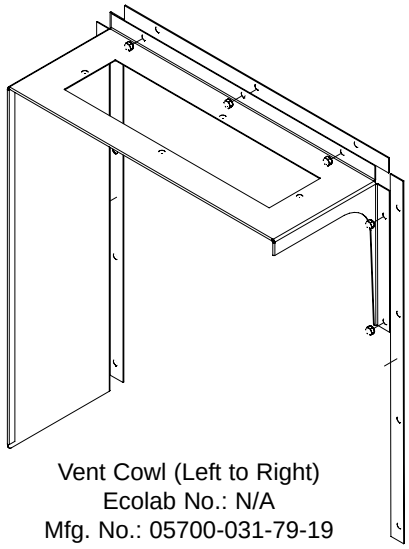
Replacement Kit Notes:
The pawl bar gutter kit includes the weldment, locknuts and the gasket. The guide block kits includes the blocks and the gasket.

Service Note:
Because of wear patterns that develop over time, it is highly recommended that when replacing either of the guide blocks, that the other be replaced as well from the kit.

SECTION 6: PARTS SECTION

SIDE LOADER VENT COWL OPTION

Vent Cowl Replacement Kit (Left to Right)
06401-003-11-81

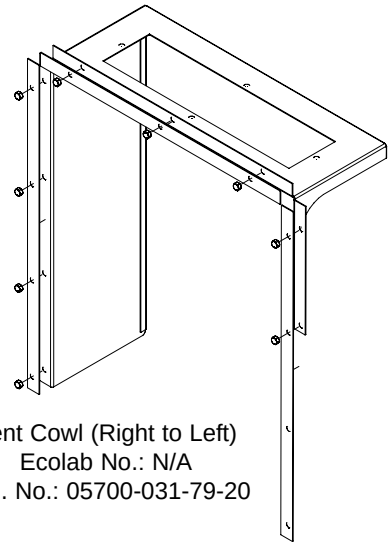


Vent Cowl (Left to Right)
Ecolab No.: N/A
Mfg. No.: 05700-031-79-19

Service Note:
One of the side gaskets that come in the kit will need to be cut to length in order to fit properly on the unit when replaced.

Replacement Kit Note:
The replacement kit(s) for the vent cowls come with the cowls, the gaskets and mounting hardware.

Vent Cowl Replacement Kit (Right to Left)
06401-003-11-83



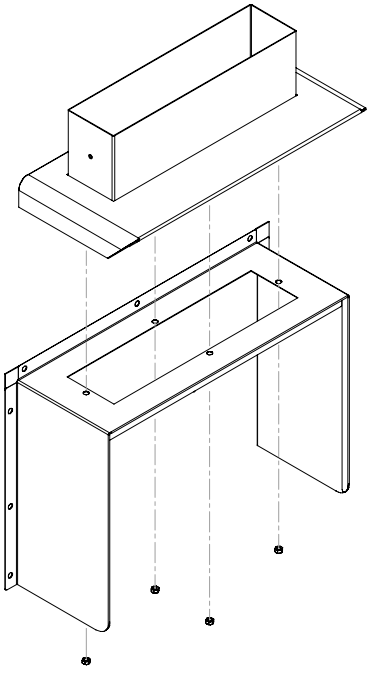
Vent Cowl (Right to Left)
Ecolab No.: N/A
Mfg. No.: 05700-031-79-20

Gasket, Side Vent Cowl
Ecolab No.: 96037650
Mfg. No.: 005330-031-83-48

Gasket, Top Vent Cowl
Ecolab No.: 96037593
Mfg. No.: 05330-031-83-47

VENT SCOOP OPTION

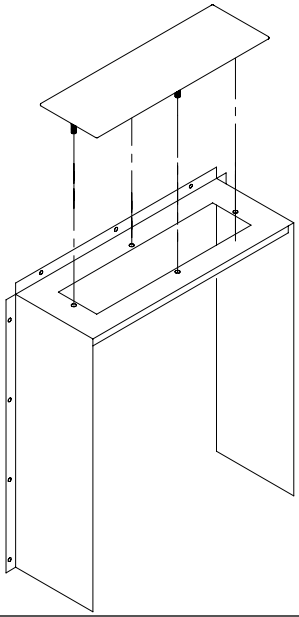
Vent Scoop Assembly
Ecolab No.: 96020359
Mfg. No.: 05700-002-04-08



STANDARD ASSEMBLY

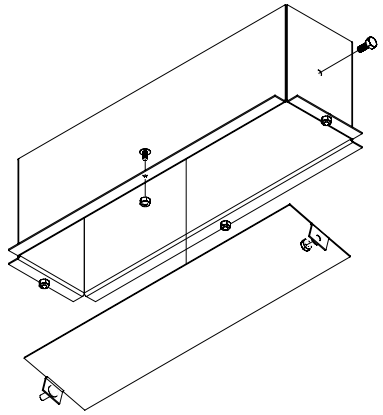
Vent Cowl Cover Replacement Kit
Ecolab No.: N/A
Mfg. No.: 06401-003-10-16

Vent Cowl Cover
Ecolab No.: 96022728
Mfg. No.: 05700-011-74-67

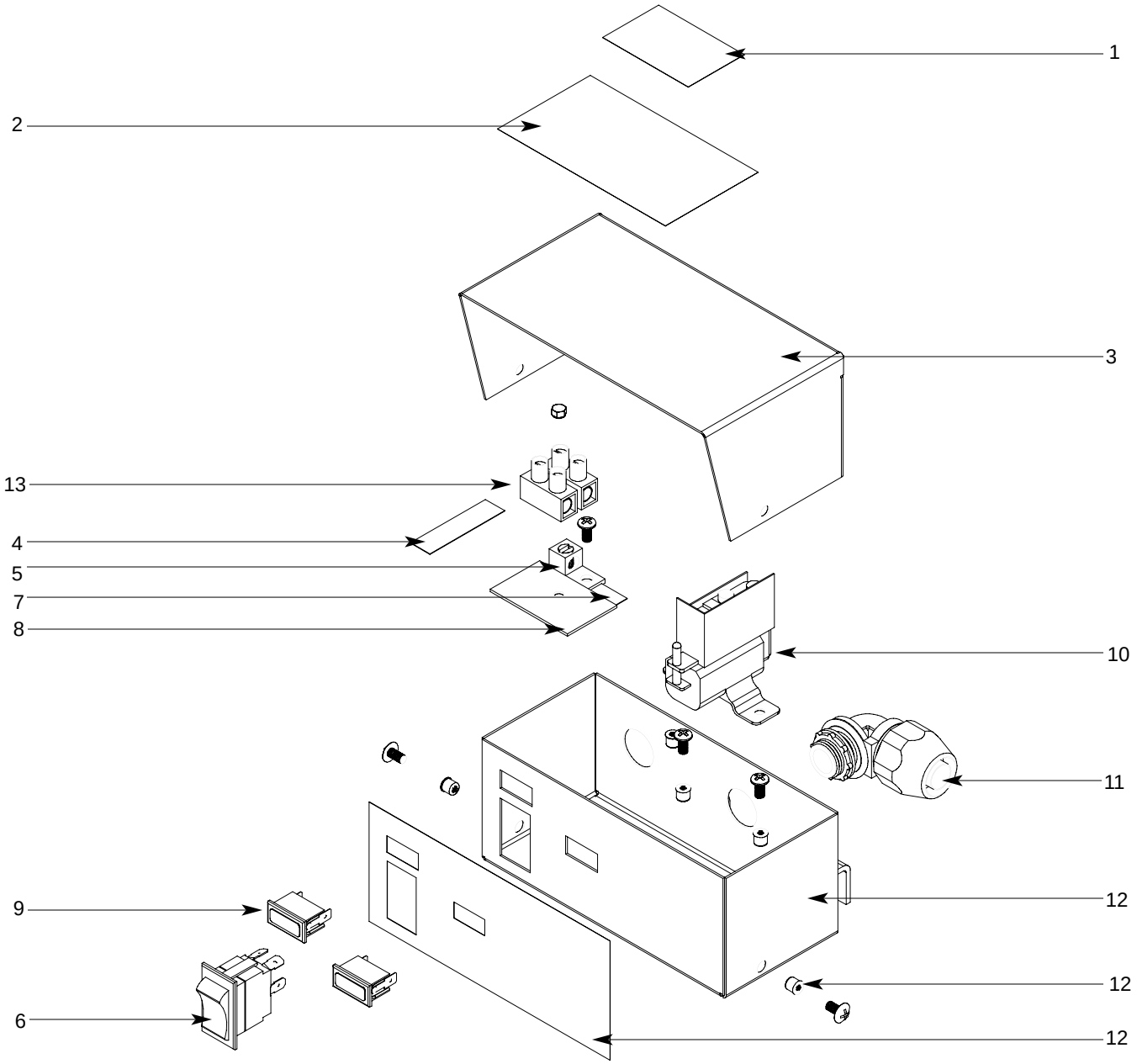


Replacement Kit Note:
The cover kit contains the cover and the hardware for mounting it.

Vent Cowl Assembly for
Hooded Side Loader Option
Ecolab No.: N/A
Mfg. No.: 05700-003-15-66

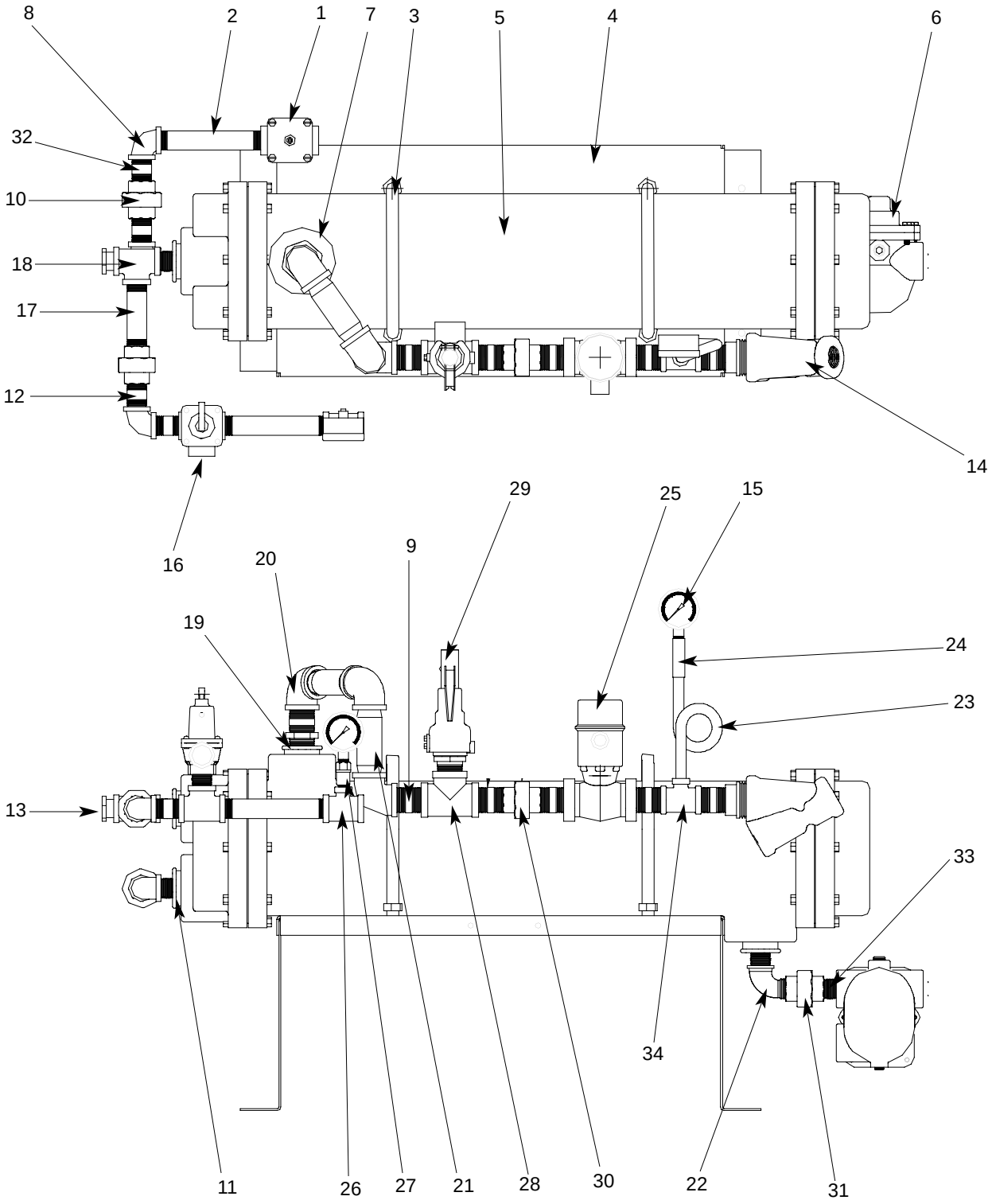


D226 STEAM BOOSTER CONTROL BOX ASSEMBLY



ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Decal, Warning, Disconnect Power	96039821	09905-100-75-93
2	1	Decal, Schematic, D226 Booster	N/A	09905-002-78-56
3	1	Cover, Control Box	N/A	05700-001-19-82
4	1	Decal, L1-L2	N/A	09905-002-78-67
5	1	Ground Lug	83118000	05940-200-76-00
6	1	Power Switch	83020404	05930-011-49-55
7	1	Decal, Ground	96028245	09905-011-86-86
8	1	Spacer, Terminal Block	96025127	05700-011-40-05
9	2	Light, Red	N/A	05945-111-21-57
10	1	Thermostat	N/A	06680-500-01-77
11	1	Conduit Fitting, 90°, 1/2”	83311753	05975-011-45-14
12	1	Control Box with Decal	N/A	06401-002-78-87
	1	Decal Only	N/A	09905-021-44-97

D226 STEAM BOOSTER PLUMBING ASSEMBLY



D226 STEAM BOOSTER PLUMBING ASSEMBLY (CONTINUED)

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
1	1	Water Pressure Regulator, 3/4”	85220010	04820-100-01-06
2	2	Nipple, Brass, 3/4” NPT x 6” Long	96020516	05700-001-26-74
3	2	U-Bolt, 6”, 5/8”-11 Thread	N/A	05306-458-01-04
4	1	Platform Weldment	N/A	05700-002-78-02
5	1	Heat Exchanger	N/A	04420-100-01-05
6	1	Steam Trap, 3/4”	N/A	06680-500-02-77
7	2	Bushing, 2” NPT x 3/4” NPT, Black Iron	N/A	04730-902-06-34
8	2	Elbow, 3/4” NPT, Brass	86055043	04730-206-13-00
9	6	Nipple, 1” NPT, Close, Black Iron	N/A	04730-907-08-34
10	2	Union, 3/4” NPT, Brass	N/A	04730-212-05-00
11	2	Bushing, 2” NPT x 3/4” NPT, Brass	N/A	04730-202-18-00
12	4	Nipple, 3/4” NPT x 1-3/8” Long	85141604	04730-207-34-00
13	1	Bushing, 3/4” NPT x 1/2” NPT, Brass	86143005	04730-002-01-34
14	1	Y-Strainer, 1” NPT, Black Iron	N/A	04730-217-02-32
15	2	Pressure Gauge	96582086	06685-111-88-34
16	1	Steam Relief Valve	N/A	04820-100-07-06
17	1	Nipple, 3/4” NPT x 4” Long, Brass	N/A	04730-207-05-00
18	2	Tee, 3/4” NPT x 3/4” NPT x 3/4” NPT, Brass	N/A	04730-211-01-34
19	1	Reducer, 1” NPT to 3/4” NPT	N/A	04730-011-95-66
20	3	Elbow, 90°, 1” NPT, Black Iron	N/A	04730-906-03-34
21	2	Nipple, 1” NPT x 4” Long, Black Iron	N/A	04730-907-09-34
22	1	Elbow, 90°, Street, 3/4” NPT, Black Iron	N/A	04730-011-87-37
23	1	Nipple, Pigtail, 1/4” NPT	N/A	04730-907-14-34
24	1	Coupling, 1/4” NPT x 1/4” NPT	N/A	04730-904-01-34
25	1	Steam Solenoid Valve	N/A	04820-100-29-34
26	1	Tee, 3/4” NPT x 3/4” NPT x 1/4” NPT, Brass	N/A	04730-211-04-00
27	1	Valve, Test Cock, 1/4” NPT	96030762	04810-011-72-67
28	1	Tee, 1” NPT x 1” NPT x 1” NPT, Black Iron	N/A	04730-911-01-34
29	1	Valve, Safety Relief 1” NPT	N/A	04820-100-01-35
30	1	Union, 1” NPT, Black Iron	N/A	04730-912-02-34
31	1	Union, 3/4” NPT, Black Iron	N/A	04730-912-01-00
32	2	Nipple, 3/4” NPT x 2” Long, Brass	85141612	04730-207-46-00
33	2	Nipple, 3/4” NPT, Close, Black Iron	N/A	04730-907-01-00
34	1	Tee, 1” NPT x 1” NPT x 1/4” NPT, Black Iron	N/A	04730-911-01-00

WARNING: The D226 Steam Booster is designed to operate at temperatures capable of causing burns to personnel. Always allow the unit to cool down to an acceptable temperature prior to performing any maintenance.

MAINTENANCE OF THE WATER PRESSURE REGULATOR:

Incoming water pressure can be regulated by adjusting the water pressure regulator on the system. In order to adjust pressure, loosen the top nut on the regulator. This will allow you to turn the adjusting screw. Turn the adjusting screw clockwise to increase pressure and counter-clockwise to decrease. Pressure can be read on the pressure gauge located on the water outlet side of the heat exchanger. Once the desired pressure is achieved, tighten the top nut to ensure that the adjustment cannot be accidently changed.

The water pressure regulator has an internal strainer that can be removed through the bottom hexagonal plug. This may need to be periodically checked depending on the water quality. It is important that the water supply to the water pressure regulator be secured prior to trying to clean the strainer.

MAINTENANCE OF THE RELIEF VALVES, SAFETY VALVES AND THERMOSTAT:

These components are shipped from the factory preset and should not be tampered with. None of these components are considered adjustable and no attempt should be made to do so. If a component does not appear to be working properly, then it should be replaced immediately by an authorized service representative.

SECTION 6: PARTS SECTION

FRAME, HOOD & TUB WELDMENTS/DRESS PANELS

The models covered in this manual each have different tub and hood weldments. The weldments, when ordered, do not come with any parts that attach separately to the machine (for example, curtain hooks in the case of the hood weldments are a Separate item and must be ordered independently of the hood weldments). To order these components, refer to the tables below:

FRAME WELDMENTS:

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
	1	Frame, ES-4400's	N/A	05700-031-67-15
	1	Frame, ES-6600's (Left to Right)	N/A	05700-002-32-01
		(Right to Left)	N/A	05700-031-68-09
	1	Frame, ES-8000's (Left to Right)	N/A	05700-031-74-07
		(Right to Left)	N/A	05700-002-32-14

TUB WELDMENTS:

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
	1	Tub Weldment, ES-4400/ES-4400CS	96020011	05700-031-65-98
	1	Tub Weldment, ES-4400CSS/ES-4400S	N/A	05700-041-92-29
	1	Tub Weldment, ES-6600/ES-6600CS		
		Left to Right	96038369	05700-041-68-83
		Right to Left	96038377	05700-041-68-84
	1	Tub Weldment, ES-6600CSS/ES-6600S		
		Left to Right	N/A	05700-041-92-28
		Right to Left	N/A	05700-001-99-57
	1	Tub Weldment, ES-8000/ES-8000CS		
		Left to Right	N/A	05700-002-53-23
		Right to Left	N/A	05700-002-32-16
		Tub Weldment, ES-8000CSS/ES-8000S		
		Left to Right	N/A	05700-041-91-80
		Right to Left	N/A	05700-041-87-83

HOOD WELDMENTS:

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
	1	ES-4400's	96022629	05700-041-67-28
	1	ES-6600's (Left to Right)	96022652	05700-031-71-71
		(Right to Left)	96022637	05700-031-80-86
	1	ES-8000's (Left to Right)	96022744	05700-041-74-12
		(Right to Left)	96022736	05700-041-71-68

DRESS PANELS:

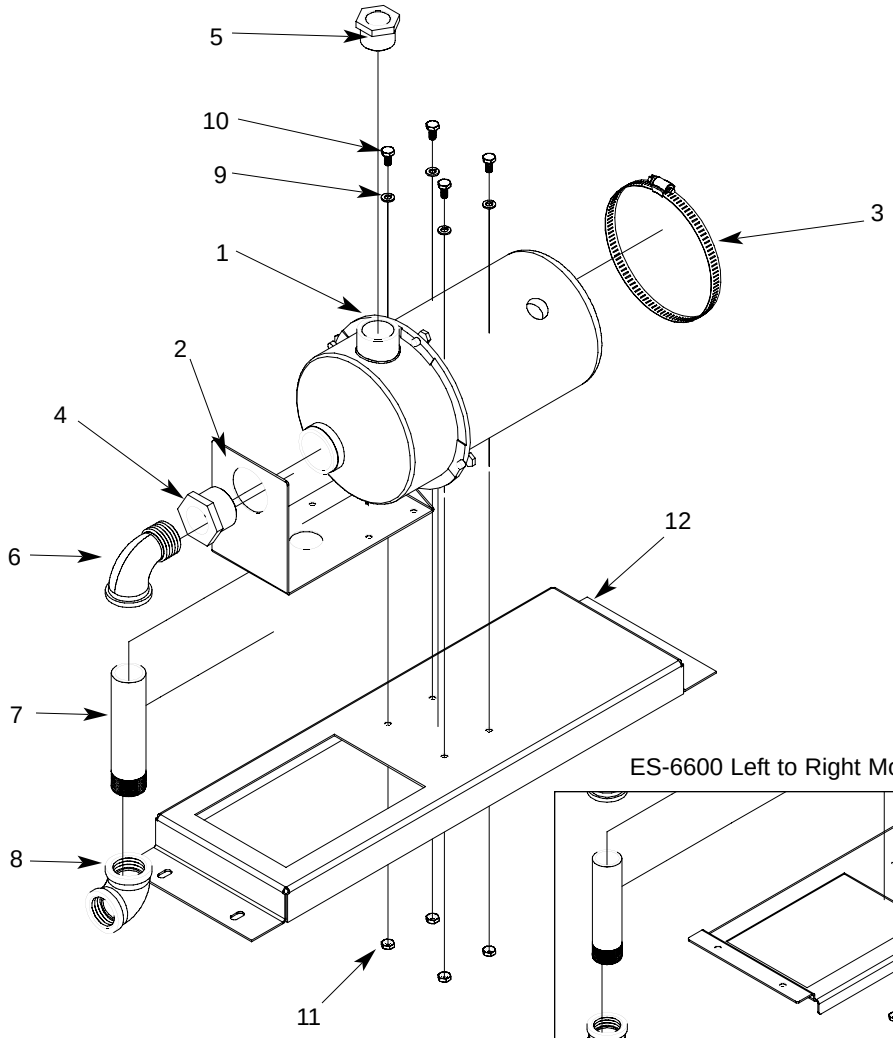
ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
	1	Dress Panel ES-4400's	96025929	05700-031-72-22
	1	Dress Panel ES-6600's (Left to Right)	96021829	05700-031-71-85
		(Right to Left)	96021837	05700-031-72-42
	1	Dress Panel ES-8000's (Left to Right)	96022710	05700-031-74-06
		(Right to Left)	N/A	05700-031-77-10

MISCELLANEOUS ITEMS:

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
	4	Bullet Foot	96023692	05340-011-71-74
	4	Bullet Foot, Flanged	N/A	05340-002-15-47

SECTION 6: PARTS SECTION

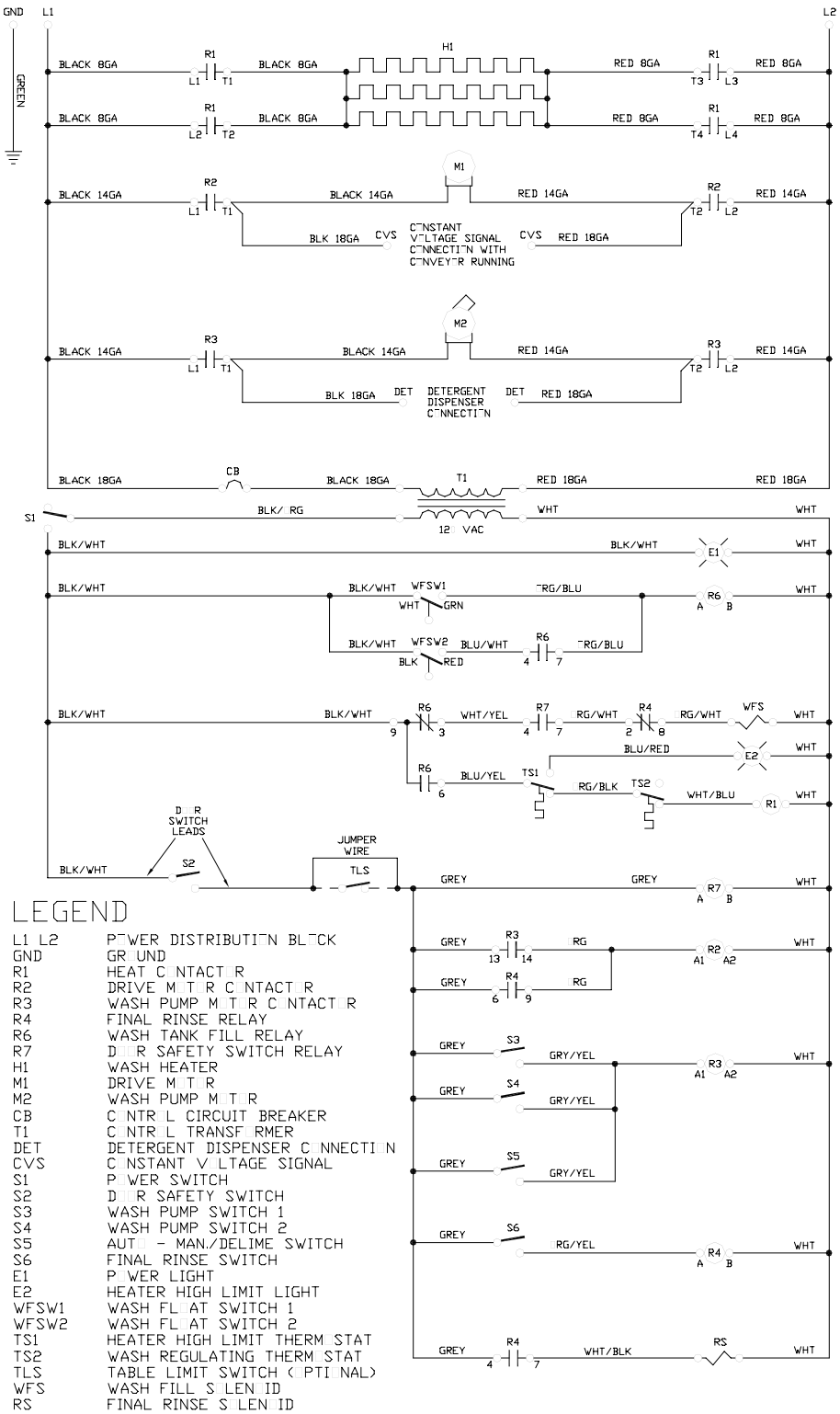
RINSE FILL MOTOR OPTION



ES-6600 Left to Right Models Only

ITEM	QTY	DESCRIPTION	ECOLAB No.	Mfg. No.
	1	Rinse Fill Motor Assembly	N/A	05700-002-40-25
	1	Rinse Fill Motor Assembly (ES-6600 Left to Right Models Only)	N/A	05700-002-48-22
1	1	Motor	N/A	06105-002-72-71
2	1	Bracket, Pump Mounting	N/A	05700-002-63-59
3	1	Clamp, Hose 5 5/8” to 6”	N/A	04730-011-34-90
4	1	Reducer Bushing, 1 1/4” to 1”	N/A	04730-002-73-62
5	1	Reducer Bushing 1” to 3/4”	N/A	04730-011-65-14
6	1	Elbow, 90 Deg., 1” Street	N/A	04730-002-11-99
7	1	Nipple, 1” NPT x 6” Long Brass	N/A	04730-002-12-00
8	1	Elbow, 90 Deg. Brass Female	N/A	04730-002-12-55
9	4	Lockwasher, 1/4”	N/A	05311-274-01-00
10	4	Bolt, 1/4”-20 x 1/2” Long	N/A	05305-274-02-00
11	4	Nut, Hex S/S 1/4”-20	N/A	05310-274-01-00
12	1	Rinse Motor Mounting Bracket	N/A	05700-002-38-90
12	1	Rinse Motor Mounting Bracket (ES-6600 Left to Right Models Only)	N/A	05700-002-39-33

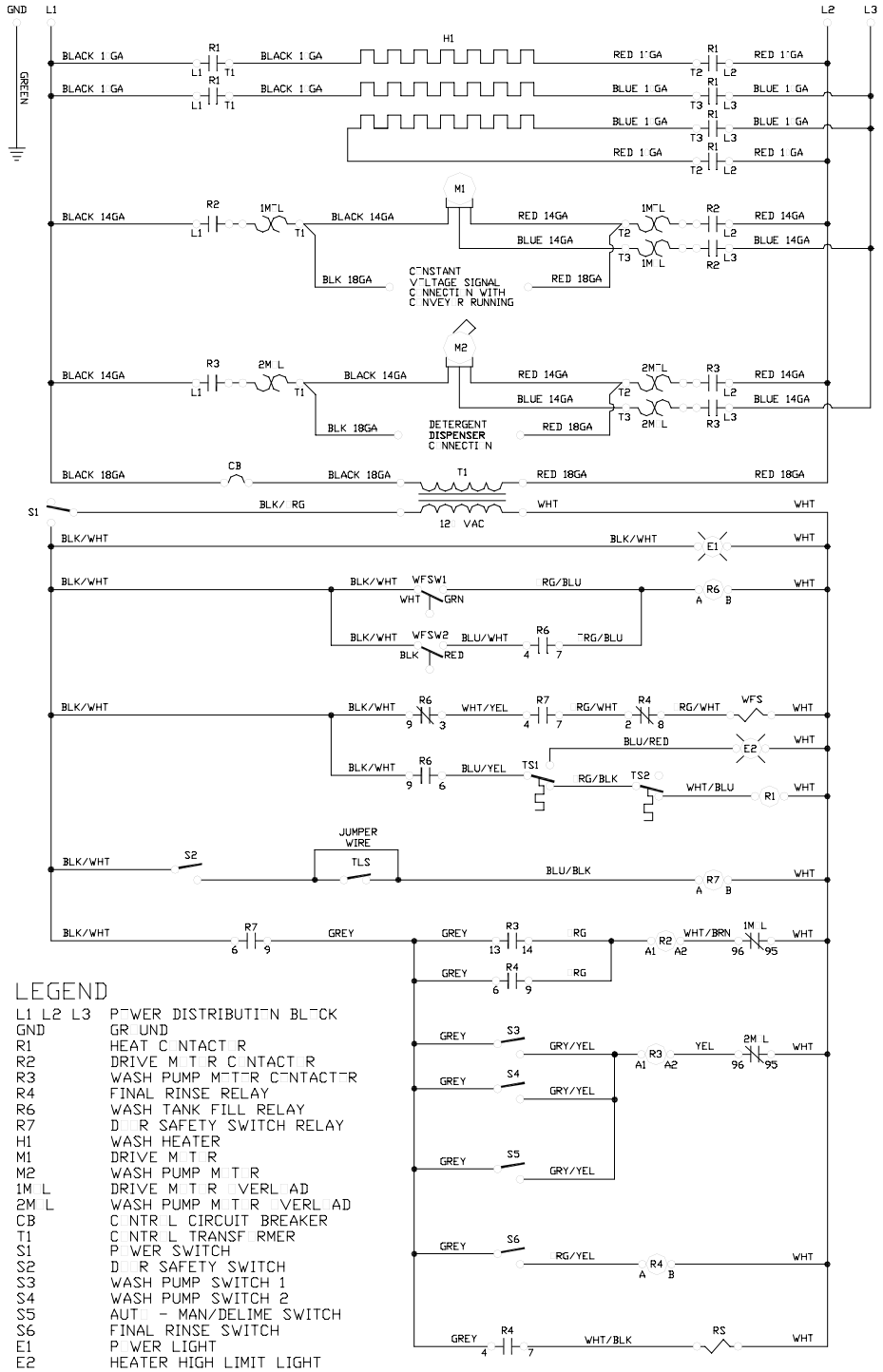
SECTION 7:
ELECTRICAL SCHEMATICS



LEGEND

L1 L2	POWER DISTRIBUTION BLOCK
GND	GROUND
R1	HEAT CONTACTOR
R2	DRIVE MOTOR CONTACTOR
R3	WASH PUMP MOTOR CONTACTOR
R4	FINAL RINSE RELAY
R6	WASH TANK FILL RELAY
R7	DOOR SAFETY SWITCH RELAY
H1	WASH HEATER
M1	DRIVE MOTOR
M2	WASH PUMP MOTOR
CB	CONTROL CIRCUIT BREAKER
T1	CONTROL TRANSFORMER
DET	DETERGENT DISPENSER CONNECTION
CVS	CONSTANT VOLTAGE SIGNAL
S1	POWER SWITCH
S2	DOOR SAFETY SWITCH
S3	WASH PUMP SWITCH 1
S4	WASH PUMP SWITCH 2
S5	AUTO - MAN./DELIME SWITCH
S6	FINAL RINSE SWITCH
E1	POWER LIGHT
E2	HEATER HIGH LIMIT LIGHT
WFSW1	WASH FLOAT SWITCH 1
WFSW2	WASH FLOAT SWITCH 2
TS1	HEATER HIGH LIMIT THERMOSTAT
TS2	WASH REGULATING THERMOSTAT
TLS	TABLE LIMIT SWITCH (OPTIONAL)
WFS	WASH FILL SOLENOID
RS	FINAL RINSE SOLENOID

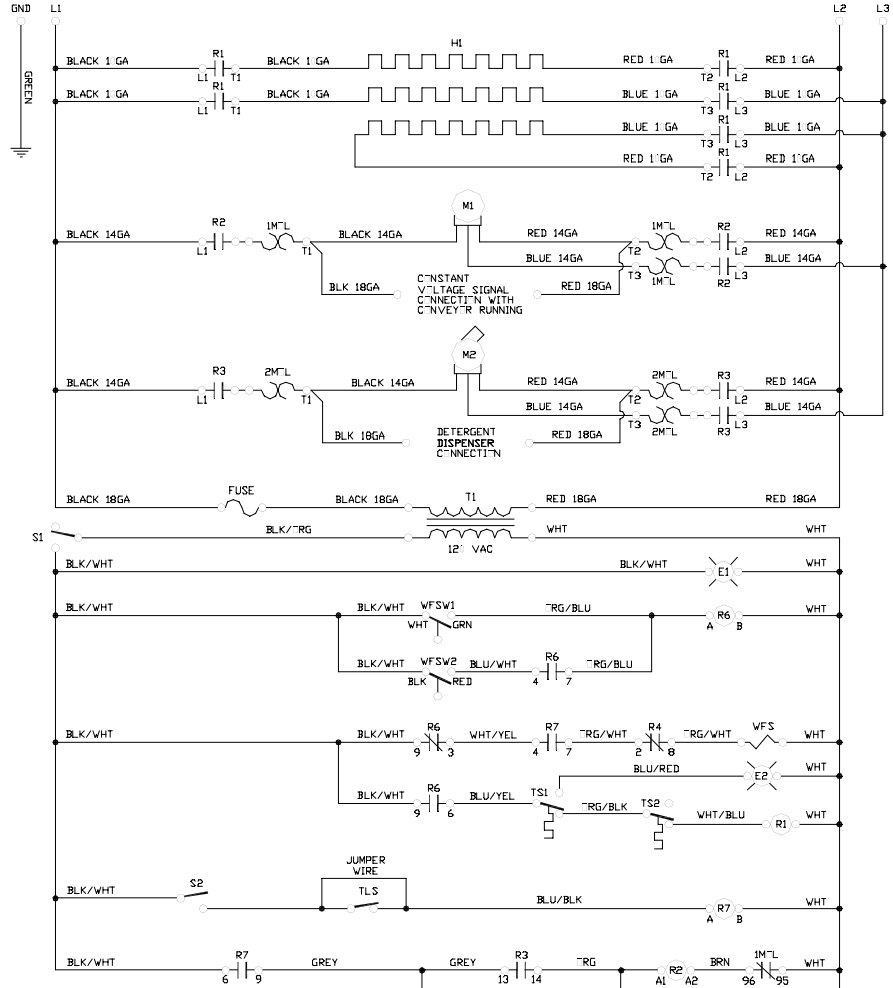
09905-031-73-34



LEGEND

L1 L2 L3	POWER DISTRIBUTION BLOCK
GND	GROUND
R1	HEAT CONTACTOR
R2	DRIVE MOTOR CONTACTOR
R3	WASH PUMP MOTOR CONTACTOR
R4	FINAL RINSE RELAY
R6	WASH TANK FILL RELAY
R7	DOOR SAFETY SWITCH RELAY
H1	WASH HEATER
M1	DRIVE MOTOR
M2	WASH PUMP MOTOR
1M TR	DRIVE MOTOR OVERLOAD
2M TR	WASH PUMP MOTOR OVERLOAD
CB	CONTROL CIRCUIT BREAKER
T1	CONTROL TRANSFORMER
S1	POWER SWITCH
S2	DOOR SAFETY SWITCH
S3	WASH PUMP SWITCH 1
S4	WASH PUMP SWITCH 2
S5	AUTO - MAN/DELIME SWITCH
S6	FINAL RINSE SWITCH
E1	POWER LIGHT
E2	HEATER HIGH LIMIT LIGHT
WFSW1	WASH FLOAT SWITCH 1
WFSW2	WASH FLOAT SWITCH 2
TS1	HEATER HIGH LIMIT THERMOSTAT
TS2	WASH REGULATING THERMOSTAT
TLS	TABLE LIMIT SWITCH (OPTIONAL)
WFS	WASH FILL SOLENOID
RS	FINAL RINSE SOLENOID

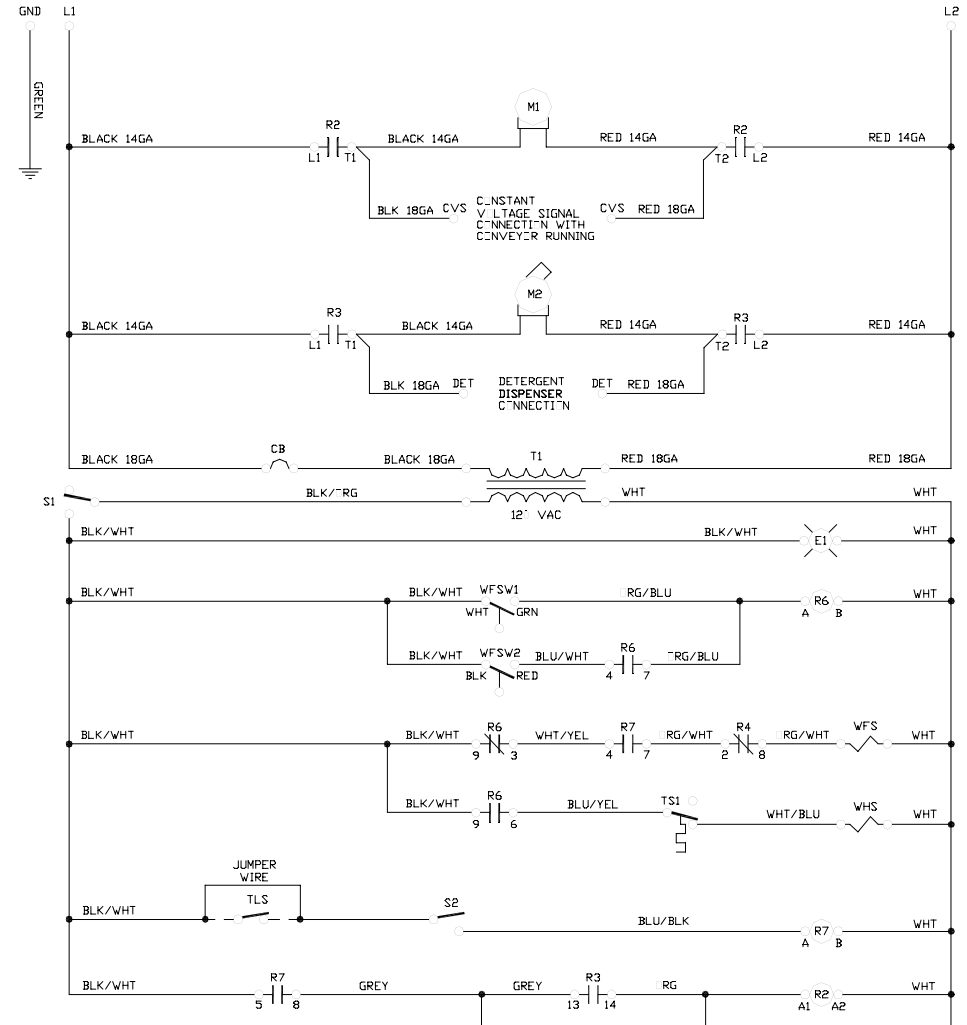
99 5-31-73-36c



LEGEND

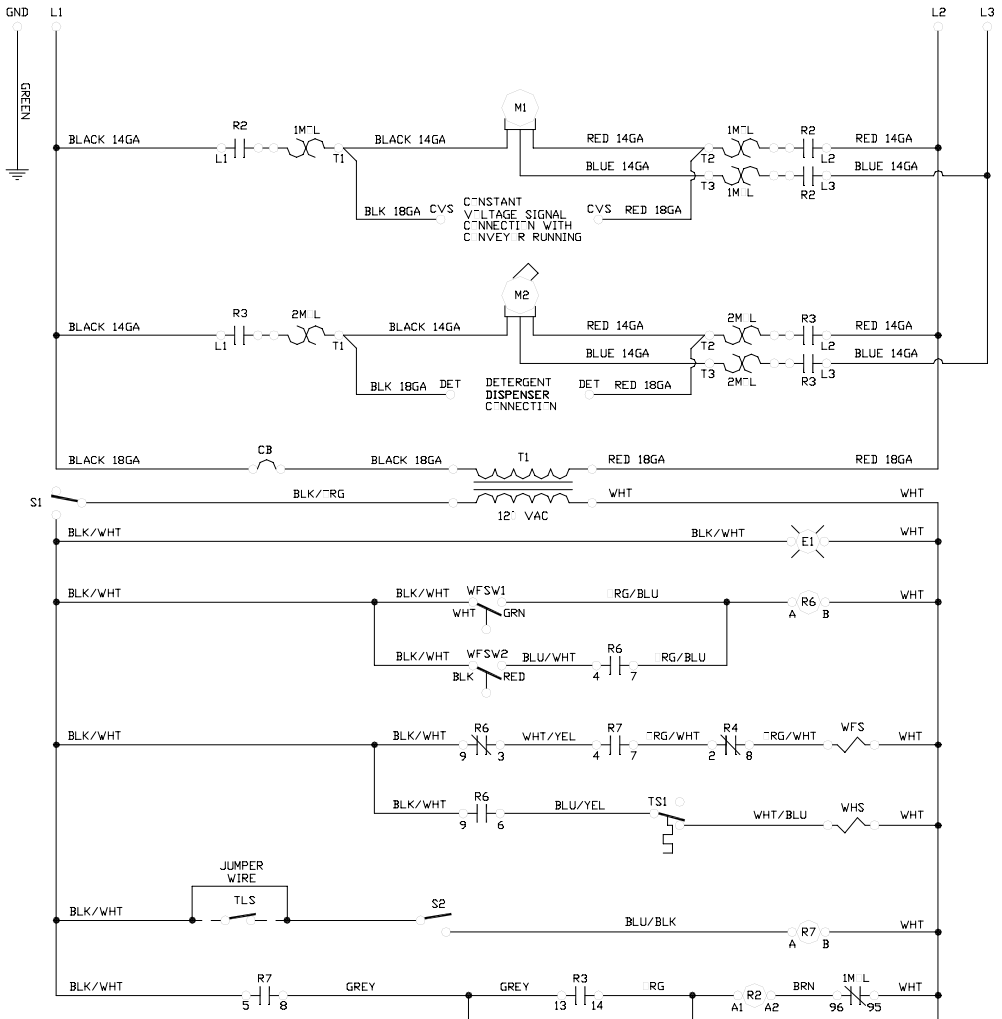
L1 L2 L3	POWER DISTRIBUTION BLOCK
GND	GROUND
R1	HEAT CONTACTOR
R2	DRIVE MOTOR CONTACTOR
R3	WASH PUMP MOTOR CONTACTOR
R4	FINAL RINSE RELAY
R6	WASH TANK FILL RELAY
R7	DOOR SAFETY SWITCH RELAY
H1	WASH HEATER
M1	DRIVE MOTOR
M2	WASH PUMP MOTOR
1MFL	DRIVE MOTOR OVERLOAD
2MFL	WASH PUMP MOTOR OVERLOAD
FUSE	CONTROL CIRCUIT TRANSFORMER FUSE
T1	CONTROL TRANSFORMER
S1	POWER SWITCH
S2	DOOR SAFETY SWITCH
S3	WASH PUMP SWITCH 1
S4	WASH PUMP SWITCH 2
S5	AUTO - MAN/DELIME SWITCH
S6	FINAL RINSE SWITCH
E1	POWER LIGHT
E2	HEATER HIGH LIMIT LIGHT
WFSW1	WASH FLOAT SWITCH 1
WFSW2	WASH FLOAT SWITCH 2
TS1	HEATER HIGH LIMIT THERMOSTAT
TS2	WASH REGULATING THERMOSTAT
TLS	TABLE LIMIT SWITCH (OPTIONAL)
WFS	WASH FILL SOLENOID
RS	FINAL RINSE SOLENOID

9905-031-73-41H



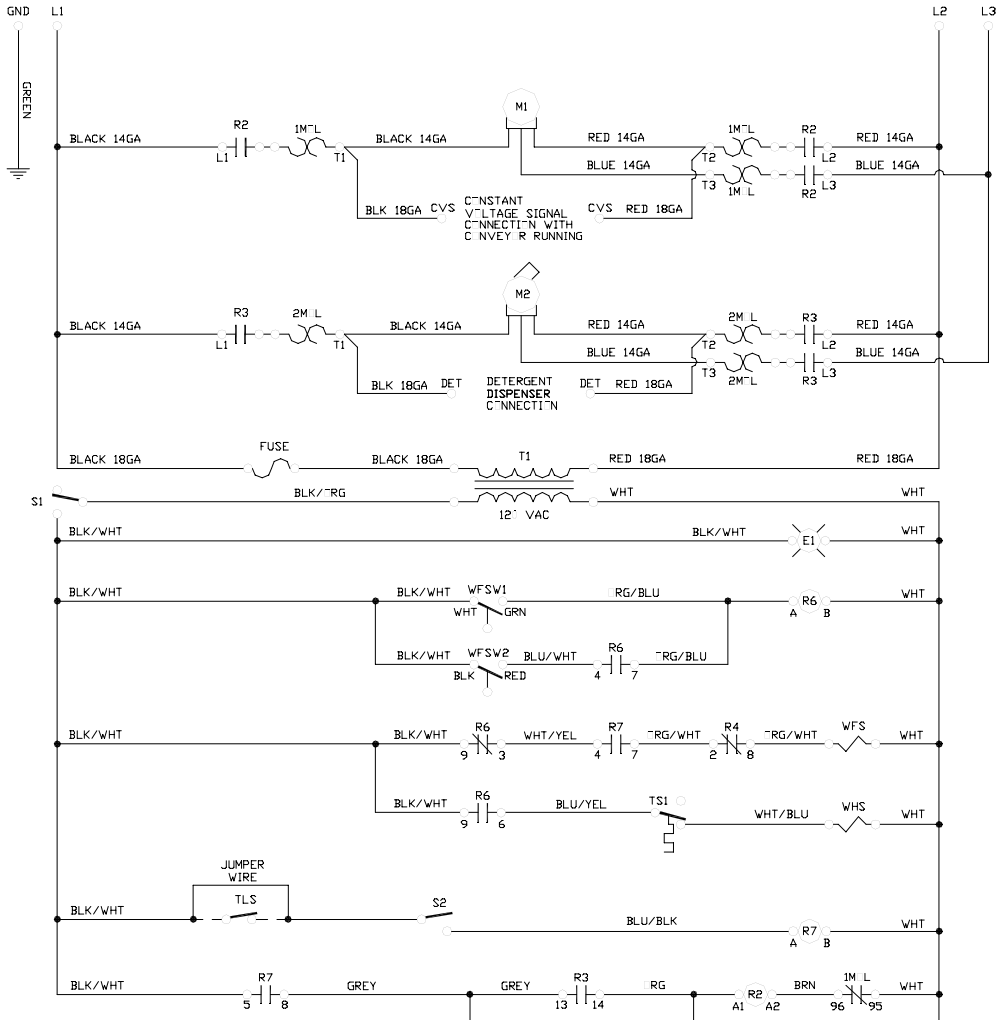
LEGEND

L1 L2 L3	POWER DISTRIBUTION BLOCK
GND	GROUND
R2	DRIVE MOTOR CONTACTOR
R3	WASH PUMP MOTOR CONTACTOR
R4	FINAL RINSE RELAY
R6	WASH TANK FILL RELAY
R7	DOOR SAFETY SWITCH RELAY
M1	DRIVE MOTOR
M2	WASH PUMP MOTOR
CB	CONTROL CIRCUIT BREAKER
T1	CONTROL TRANSFORMER
DET	DETERGENT DISPENSER CONNECTION
CVS	CONSTANT VOLTAGE SIGNAL
S1	POWER SWITCH
S2	DOOR SAFETY SWITCH
S3	WASH PUMP SWITCH 1
S4	WASH PUMP SWITCH 2
S5	AUTO - MAN/DELIME SWITCH
S6	FINAL RINSE SWITCH
E1	POWER LIGHT
WFSW1	WASH FLOAT SWITCH 1
WFSW2	WASH FLOAT SWITCH 2
TS1	WASH REGULATING THERMOSTAT
TLS	TABLE LIMIT SWITCH (OPTIONAL)
WFS	WASH FILL SOLENOID
WHS	WASH HEAT SOLENOID
RS	FINAL RINSE SOLENOID



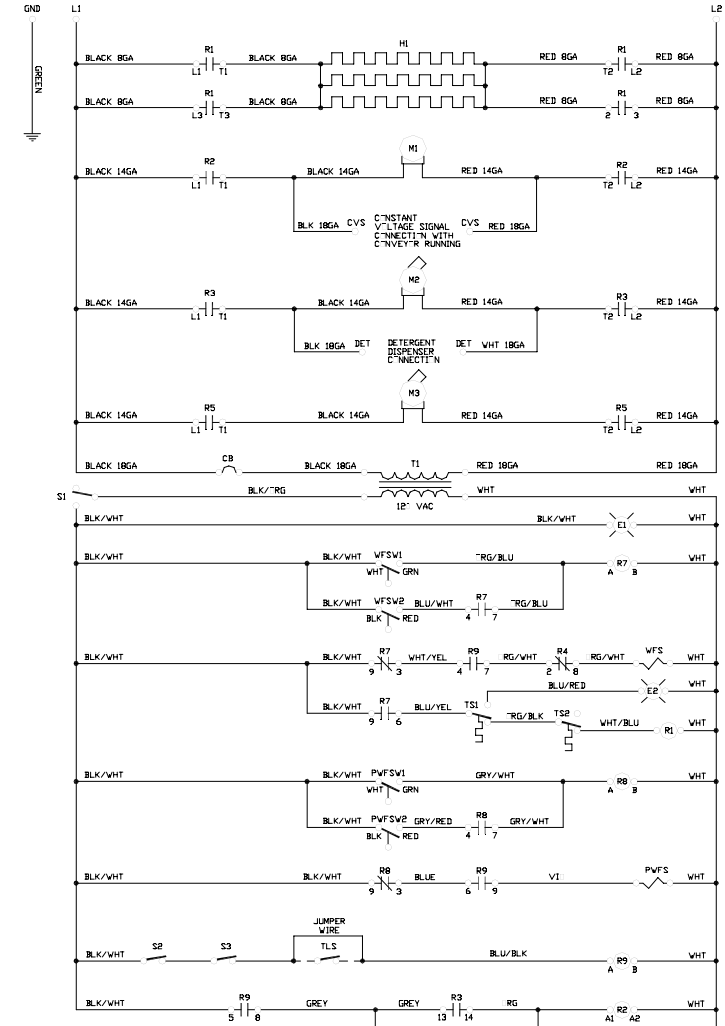
LEGEND

L1 L2 L3	POWER DISTRIBUTION BLOCK
GND	GROUND
R2	DRIVE MOTOR CONTACTOR
R3	WASH PUMP MOTOR CONTACTOR
R4	FINAL RINSE RELAY
R6	WASH TANK FILL RELAY
R7	DOOR SAFETY SWITCH RELAY
M1	DRIVE MOTOR
M2	WASH PUMP MOTOR
1ML	DRIVE MOTOR OVERLOAD
2ML	WASH PUMP MOTOR OVERLOAD
CB	CONTROL CIRCUIT BREAKER
T1	CONTROL TRANSFORMER
DET	DETERGENT DISPENSER CONNECTION
CVS	CONSTANT VOLTAGE SIGNAL
S1	POWER SWITCH
S2	DOOR SAFETY SWITCH
S3	WASH PUMP SWITCH 1
S4	WASH PUMP SWITCH 2
S5	AUTO - MAN/DELIME SWITCH
S6	FINAL RINSE SWITCH
E1	POWER LIGHT
WFSW1	WASH FLOAT SWITCH 1
WFSW2	WASH FLOAT SWITCH 2
TS1	WASH REGULATING THERMOSTAT
TLS	TABLE LIMIT SWITCH (OPTIONAL)
WFS	WASH FILL SOLENOID
WHS	WASH HEAT SOLENOID
RS	FINAL RINSE SOLENOID



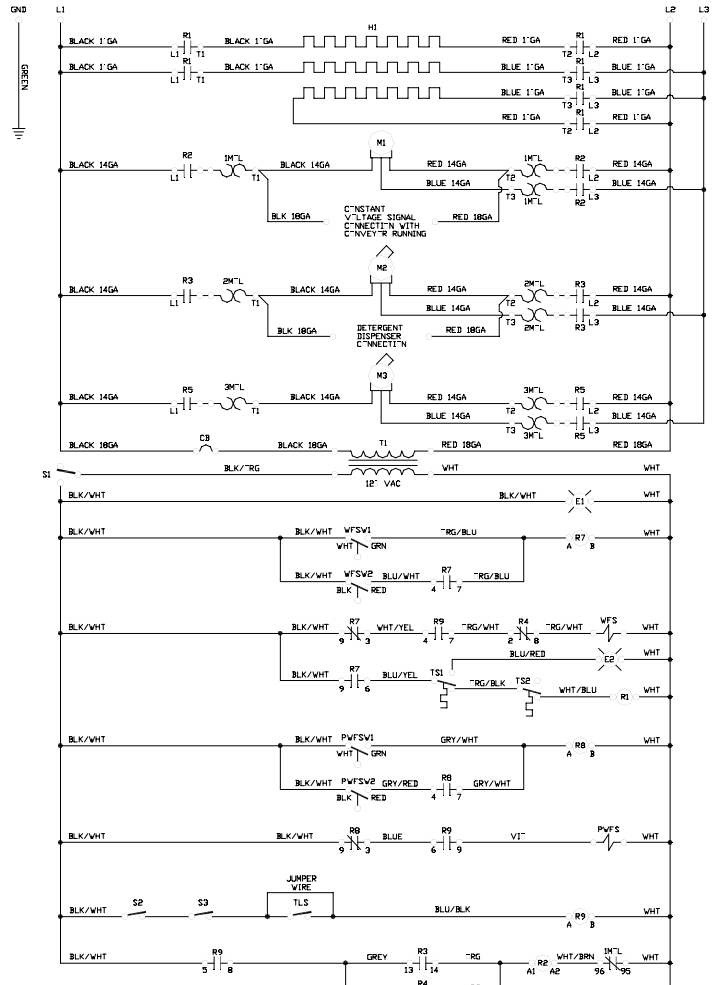
LEGEND

L1 L2 L3	POWER DISTRIBUTION BLOCK
GND	GROUND
R2	DRIVE MOTOR CONTACTOR
R3	WASH PUMP MOTOR CONTACTOR
R4	FINAL RINSE RELAY
R6	WASH TANK FILL RELAY
R7	DOOR SAFETY SWITCH RELAY
M1	DRIVE MOTOR
M2	WASH PUMP MOTOR
1M L	DRIVE MOTOR OVERLOAD
2M L	WASH PUMP MOTOR OVERLOAD
FUSE	CONTROL FUSE
T1	CONTROL TRANSFORMER
DET	DETERGENT DISPENSER CONNECTION
CVS	CONSTANT VOLTAGE SIGNAL
S1	POWER SWITCH
S2	DOOR SAFETY SWITCH
S3	WASH PUMP SWITCH 1
S4	WASH PUMP SWITCH 2
S5	AUTO - MAN/DELIME SWITCH
S6	FINAL RINSE SWITCH
E1	POWER LIGHT
WFSW1	WASH FLOAT SWITCH 1
WFSW2	WASH FLOAT SWITCH 2
TS1	WASH REGULATING THERMOSTAT
TLS	TABLE LIMIT SWITCH (OPTIONAL)
WFS	WASH FILL SOLENOID
WHS	WASH HEAT SOLENOID
RS	FINAL RINSE SOLENOID



LEGEND

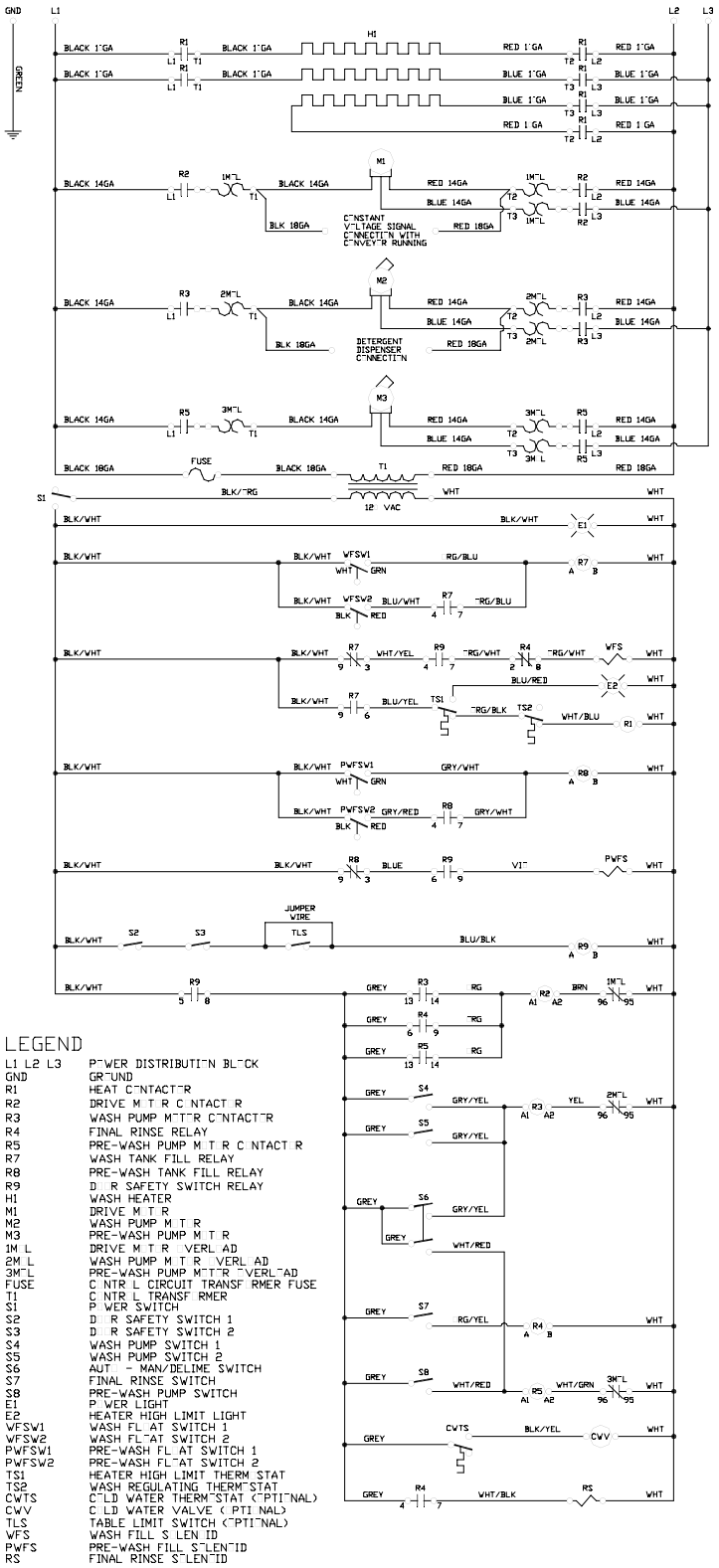
L1 L2	POWER DISTRIBUTION BLOCK
GND	GROUND
R1	HEAT CONTACTOR
R2	DRIVE MOTOR CONTACTOR
R3	WASH PUMP MOTOR CONTACTOR
R4	FINAL RINSE RELAY
R5	PRE-WASH PUMP MOTOR CONTACTOR
R7	WASH TANK FILL RELAY
R8	PRE-WASH TANK FILL RELAY
R9	DOOR SAFETY SWITCH RELAY
H1	WASH HEATER
M1	DRIVE MOTOR
M2	WASH PUMP MOTOR
M3	PRE-WASH PUMP MOTOR
CB	CONTROL CIRCUIT BREAKER
T1	CONTROL TRANSFORMER
DET	DETERGENT DISPENSER CONNECTION
CVS	CONSTANT VOLTAGE SIGNAL
S1	POWER SWITCH
S2	DOOR SAFETY SWITCH 1
S3	DOOR SAFETY SWITCH 2
S4	WASH PUMP SWITCH 1
S5	WASH PUMP SWITCH 2
S6	AUTO - MAN/DELIME SWITCH
S7	FINAL RINSE SWITCH
S8	PRE-WASH PUMP SWITCH
E1	POWER LIGHT
E2	HEATER HIGH LIMIT LIGHT
WFSW1	WASH FLOAT SWITCH 1
WFSW2	WASH FLOAT SWITCH 2
PWFSW1	PRE-WASH FLOAT SWITCH 1
PWFSW2	PRE-WASH FLOAT SWITCH 2
TS1	HEATER HIGH LIMIT THERMOSTAT
TS2	WASH REGULATING THERMOSTAT
CWTS	COLD WATER THERMOSTAT (OPTIONAL)
CWV	COLD WATER VALVE (OPTIONAL)
TLS	TABLE LIMIT SWITCH (OPTIONAL)
WFS	WASH FILL SOLENOID
PWFS	PRE-WASH FILL SOLENOID
RS	FINAL RINSE SOLENOID

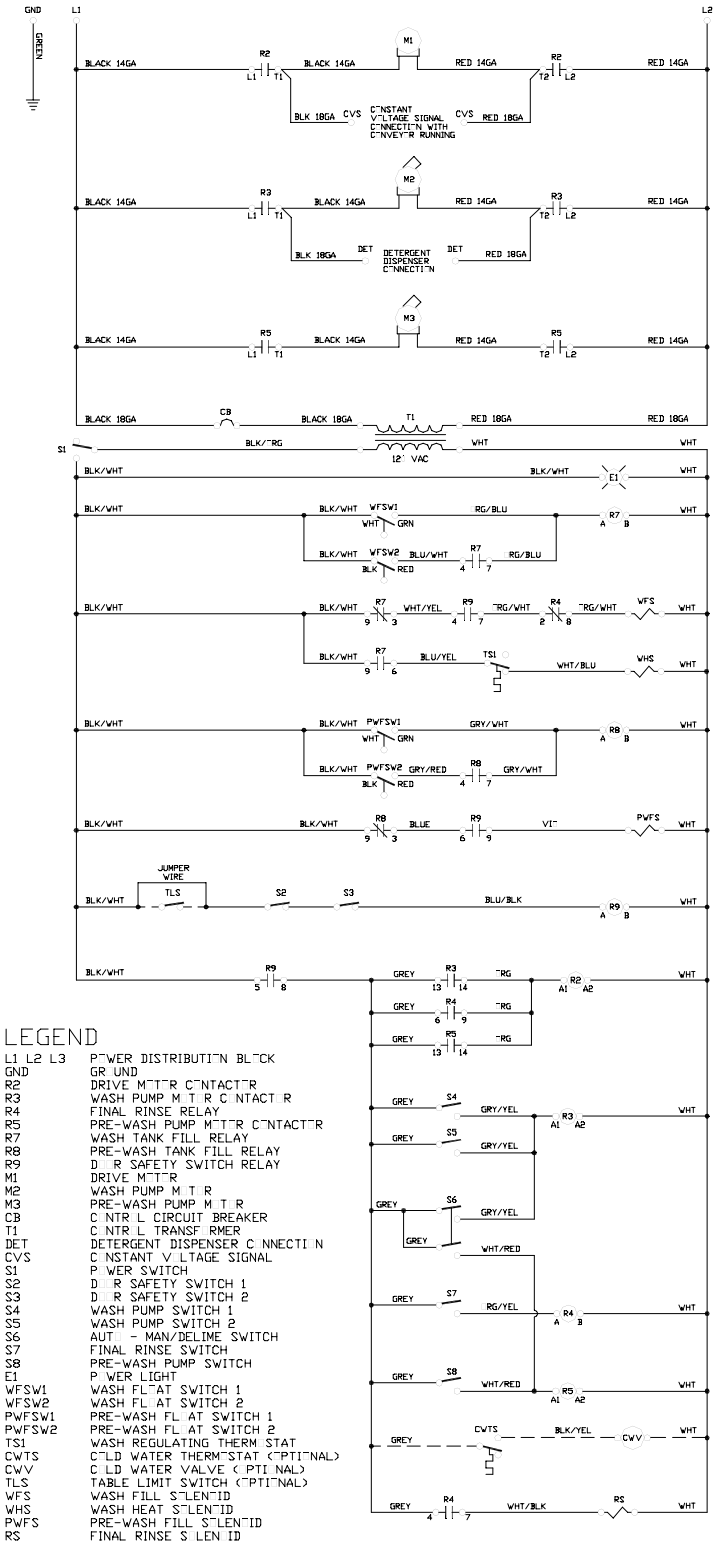


LEGEND

L1 L2 L3	POWER DISTRIBUTION BLOCK
GND	GROUND
R1	HEAT CONTACTOR
R2	DRIVE MOTOR CONTACTOR
R3	WASH PUMP MOTOR CONTACTOR
R4	FINAL RINSE RELAY
R5	PRE-WASH PUMP MOTOR CONTACTOR
R7	WASH TANK FILL RELAY
R8	PRE-WASH TANK FILL RELAY
R9	DOOR SAFETY SWITCH RELAY
H1	WASH HEATER
M1	DRIVE MOTOR
M2	WASH PUMP MOTOR
M3	PRE-WASH PUMP MOTOR
1M-L	DRIVE MOTOR OVERLOAD
2M-L	WASH PUMP MOTOR OVERLOAD
3M-L	PRE-WASH PUMP MOTOR OVERLOAD
CB	CONTROL CIRCUIT BREAKER
T1	CONTROL TRANSFORMER
S1	POWER SWITCH
S2	DOOR SAFETY SWITCH 1
S3	DOOR SAFETY SWITCH 2
S4	WASH PUMP SWITCH 1
S5	WASH PUMP SWITCH 2
S6	AUTO - MAN/DELIME SWITCH
S7	FINAL RINSE SWITCH
S8	PRE-WASH PUMP SWITCH
E1	POWER LIGHT
E2	HEATER HIGH LIMIT LIGHT
WFSW1	WASH FLOAT SWITCH 1
WFSW2	WASH FLOAT SWITCH 2
PWFSW1	PRE-WASH FLOAT SWITCH 1
PWFSW2	PRE-WASH FLOAT SWITCH 2
TS1	HEATER HIGH LIMIT THERMOSTAT
TS2	WASH REGULATING THERMOSTAT
CWTS	COLD WATER THERMOSTAT (OPTIONAL)
CWV	COLD WATER VALVE (OPTIONAL)
TLS	TABLE LIMIT SWITCH (OPTIONAL)
WFS	WASH FILL SOLENOID
PWFS	PRE-WASH FILL SOLENOID
RS	FINAL RINSE SOLENOID

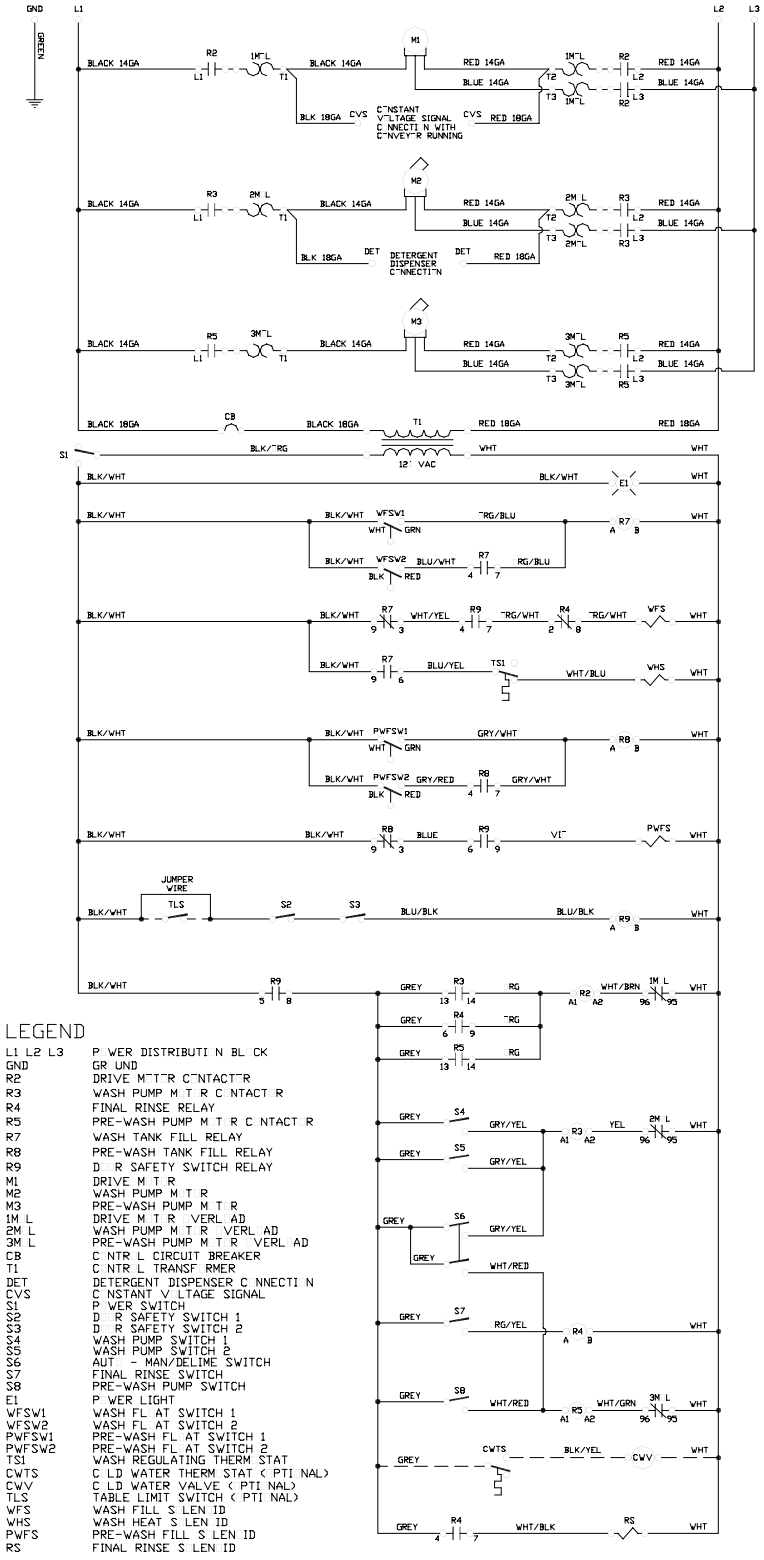
99S-731-73-37C


GND
L1
L2
L3
H1
M1
M2
M3
FUSE
T1
12 VAC
S1
E1
E2
R1
R2
R3
R4
R5
R7
R8
R9
WFSW1
WFSW2
PWFSW1
PWFSW2
TS1
TS2
JUMPER WIRE
TLS
WFS
PWFS
RS
CWTS
CWV
S2
S3
S4
S5
S6
S7
S8
1M"L
2M"L
3M"L
CONSTANT VOLTAGE SIGNAL CONNECTION WITH CONVEYOR RUNNING
DETERGENT DISPENSER CONNECTION
LEGEND
L1 L2 L3 POWER DISTRIBUTION BLOCK
GND GROUND
R1 HEAT CONTACTOR
R2 DRIVE MOTOR CONTACTOR
R3 WASH PUMP MOTOR CONTACTOR
R4 FINAL RINSE RELAY
R5 PRE-WASH PUMP MOTOR CONTACTOR
R7 WASH TANK FILL RELAY
R8 PRE-WASH TANK FILL RELAY
R9 DOOR SAFETY SWITCH RELAY
H1 WASH HEATER
M1 DRIVE MOTOR
M2 WASH PUMP MOTOR
M3 PRE-WASH PUMP MOTOR
1M"L DRIVE MOTOR OVERLOAD
2M"L WASH PUMP MOTOR OVERLOAD
3M"L PRE-WASH PUMP MOTOR OVERLOAD
FUSE CONTROL CIRCUIT TRANSFORMER FUSE
T1 CONTROL TRANSFORMER
S1 POWER SWITCH
S2 DOOR SAFETY SWITCH 1
S3 DOOR SAFETY SWITCH 2
S4 WASH PUMP SWITCH 1
S5 WASH PUMP SWITCH 2
S6 AUTO - MAN/DELIME SWITCH
S7 FINAL RINSE SWITCH
S8 PRE-WASH PUMP SWITCH
E1 POWER LIGHT
E2 HEATER HIGH LIMIT LIGHT
WFSW1 WASH FLOAT SWITCH 1
WFSW2 WASH FLOAT SWITCH 2
PWFSW1 PRE-WASH FLOAT SWITCH 1
PWFSW2 PRE-WASH FLOAT SWITCH 2
TS1 HEATER HIGH LIMIT THERMOSTAT
TS2 WASH REGULATING THERMOSTAT
CWTS COLD WATER THERMOSTAT (OPTIONAL)
CWV COLD WATER VALVE (OPTIONAL)
TLS TABLE LIMIT SWITCH (OPTIONAL)
WFS WASH FILL SOLENOID
PWFS PRE-WASH FILL SOLENOID
RS FINAL RINSE SOLENOID
99"5-"31-73-41



LEGEND

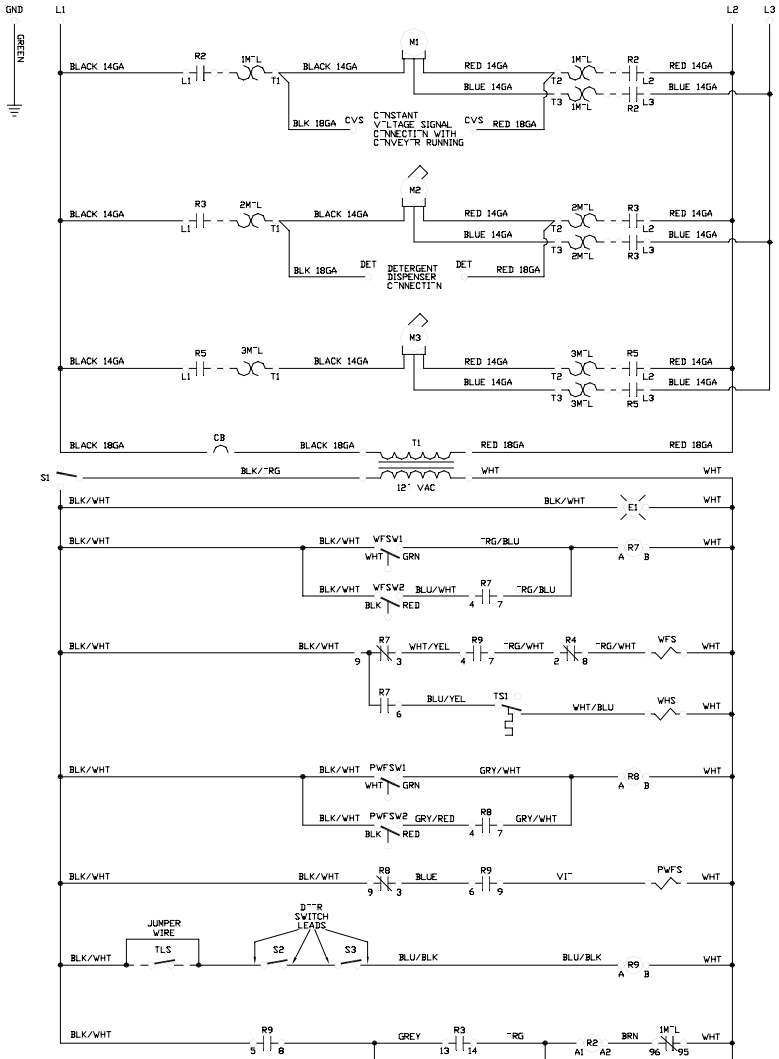
L1 L2 L3	POWER DISTRIBUTION BLOCK
GND	GROUND
R2	DRIVE MOTOR CONTACTOR
R3	WASH PUMP MOTOR CONTACTOR
R4	FINAL RINSE RELAY
R5	PRE-WASH PUMP MOTOR CONTACTOR
R7	WASH TANK FILL RELAY
R8	PRE-WASH TANK FILL RELAY
R9	DOOR SAFETY SWITCH RELAY
M1	DRIVE MOTOR
M2	WASH PUMP MOTOR
M3	PRE-WASH PUMP MOTOR
CB	CONTROL CIRCUIT BREAKER
T1	CONTROL TRANSFORMER
DET	DETERGENT DISPENSER CONNECTION
CVS	CONSTANT VOLTAGE SIGNAL
S1	POWER SWITCH
S2	DOOR SAFETY SWITCH 1
S3	DOOR SAFETY SWITCH 2
S4	WASH PUMP SWITCH 1
S5	WASH PUMP SWITCH 2
S6	AUTO - MAN/DELIME SWITCH
S7	FINAL RINSE SWITCH
S8	PRE-WASH PUMP SWITCH
E1	POWER LIGHT
WFSW1	WASH FLOAT SWITCH 1
WFSW2	WASH FLOAT SWITCH 2
PWFSW1	PRE-WASH FLOAT SWITCH 1
PWFSW2	PRE-WASH FLOAT SWITCH 2
TS1	WASH REGULATING THERMOSTAT
CWTS	COLD WATER THERMOSTAT (OPTIONAL)
CWV	COLD WATER VALVE (OPTIONAL)
TLS	TABLE LIMIT SWITCH (OPTIONAL)
WFS	WASH FILL SOLENOID
WHS	WASH HEAT SOLENOID
PWFS	PRE-WASH FILL SOLENOID
RS	FINAL RINSE SOLENOID



LEGEND

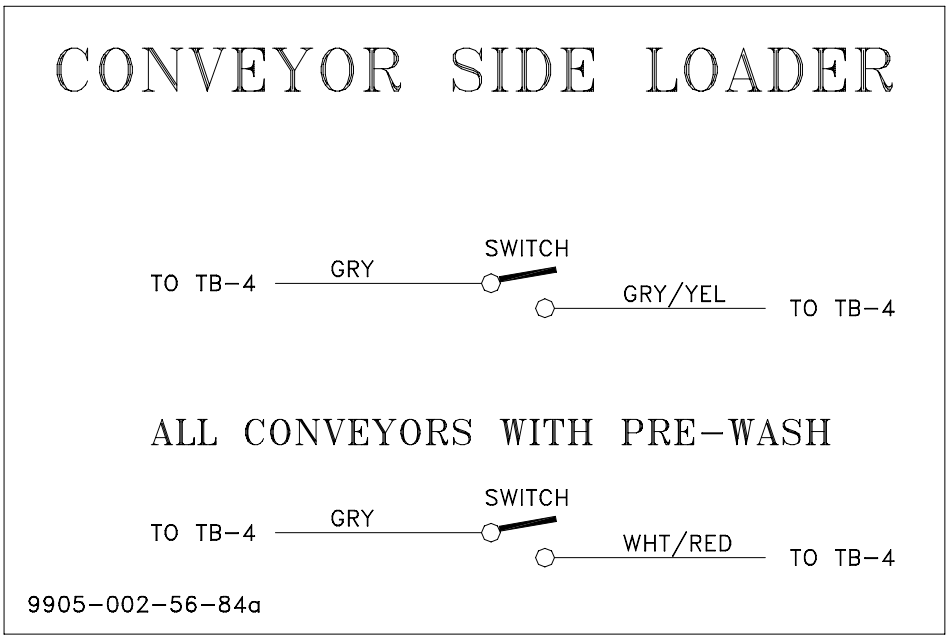
L1 L2 L3	P WER DISTRIBUTI N BL CK
GND	GR UND
R2	DRIVE M"T"R C"NTACT"R
R3	WASH PUMP M T R C NTACT R
R4	FINAL RINSE RELAY
R5	PRE-WASH PUMP M T R C NTACT R
R7	WASH TANK FILL RELAY
R8	PRE-WASH TANK FILL RELAY
R9	D R SAFETY SWITCH RELAY
M1	DRIVE M T R
M2	WASH PUMP M T R
M3	PRE-WASH PUMP M T R
1M L	DRIVE M T R VERL AD
2M L	WASH PUMP M T R VERL AD
3M L	PRE-WASH PUMP M T R VERL AD
CB	C NTR L CIRCUIT BREAKER
T1	C NTR L TRANSF RMER
DET	DETERGENT DISPENSER C NNECTI N
CVS	C NSTANT V LTAGE SIGNAL
S1	P WER SWITCH
S2	D R SAFETY SWITCH 1
S3	D R SAFETY SWITCH 2
S4	WASH PUMP SWITCH 1
S5	WASH PUMP SWITCH 2
S6	AUT - MAN/DELIME SWITCH
S7	FINAL RINSE SWITCH
S8	PRE-WASH PUMP SWITCH
E1	P WER LIGHT
WFSW1	WASH FL AT SWITCH 1
WFSW2	WASH FL AT SWITCH 2
PWFSW1	PRE-WASH FL AT SWITCH 1
PWFSW2	PRE-WASH FL AT SWITCH 2
TS1	WASH REGULATING THERM STAT
CWTS	C LD WATER THERM STAT (PTI NAL)
CWV	C LD WATER VALVE (PTI NAL)
TLS	TABLE LIMIT SWITCH (PTI NAL)
WFS	WASH FILL S LEN ID
WHS	WASH HEAT S LEN ID
PWFS	PRE-WASH FILL S LEN ID
RS	FINAL RINSE S LEN ID

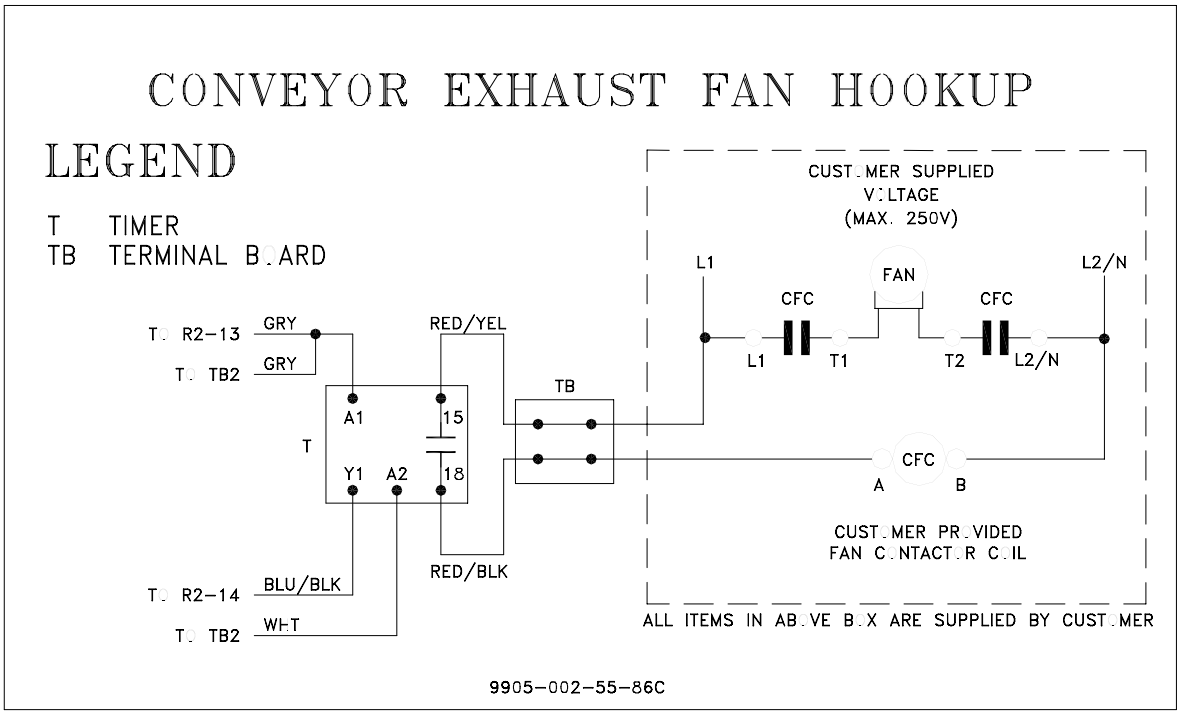
99 5- 31-9 -76

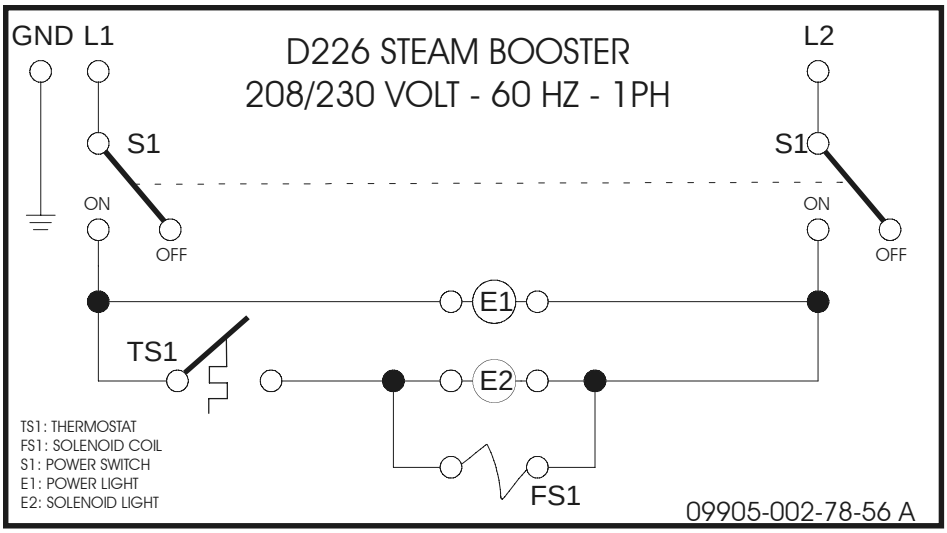


LEGEND

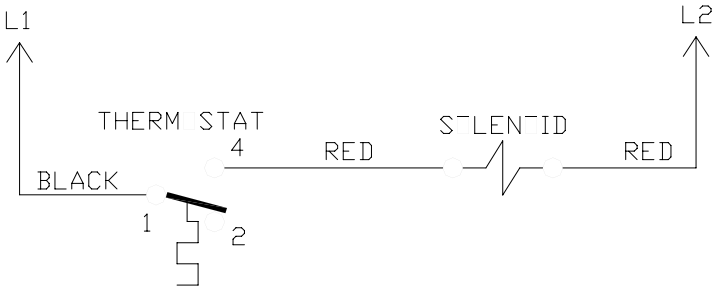
L1 L2 L3	POWER DISTRIBUTION BLOCK
GND	GROUND
R2	DRIVE MOTOR CONTACTOR
R3	WASH PUMP MOTOR CONTACTOR
R4	FINAL RINSE RELAY
R5	PRE-WASH PUMP MOTOR CONTACTOR
R7	WASH TANK FILL RELAY
R8	PRE-WASH TANK FILL RELAY
R9	DOOR SAFETY SWITCH RELAY
M1	DRIVE MOTOR
M2	WASH PUMP MOTOR
M3	PRE-WASH PUMP MOTOR
1ML	DRIVE MOTOR OVERLOAD
2ML	WASH PUMP MOTOR OVERLOAD
3ML	PRE-WASH PUMP MOTOR OVERLOAD
CB	CONTROL CIRCUIT BREAKER
T1	CONTROL TRANSFORMER
DET	DETERGENT DISPENSER CONNECTION
CVS	CONSTANT VOLTAGE SIGNAL
S1	POWER SWITCH
S2	DOOR SAFETY SWITCH 1
S3	DOOR SAFETY SWITCH 2
S4	WASH PUMP SWITCH 1
S5	WASH PUMP SWITCH 2
S6	AUTO - MAN/DELIME SWITCH
S7	FINAL RINSE SWITCH
S8	PRE-WASH PUMP SWITCH
E1	POWER LIGHT
WFSW1	WASH FLOAT SWITCH 1
WFSW2	WASH FLOAT SWITCH 2
PWFSW1	PRE-WASH FLOAT SWITCH 1
PWFSW2	PRE-WASH FLOAT SWITCH 2
TS1	WASH REGULATING THERMOSTAT
CWTS	COLD WATER THERMOSTAT (OPTIONAL)
CWV	COLD WATER VALVE (OPTIONAL)
TLS	TABLE LIMIT SWITCH (OPTIONAL)
WFS	WASH FILL SOLENOID
WHS	WASH HEAT SOLENOID
PWFS	PRE-WASH FILL SOLENOID
RS	FINAL RINSE SOLENOID


CONVEYOR SIDE LOADER
TO TB-4
GRY
SWITCH
GRY/YEL
TO TB-4
ALL CONVEYORS WITH PRE-WASH
TO TB-4
GRY
SWITCH
WHT/RED
TO TB-4
9905-002-56-84a


CONVEYOR EXHAUST FAN HOOKUP
LEGEND
T TIMER
TB TERMINAL BOARD
T. R2-13
GRY
T. TB2
GRY
RED/YEL
A1
15
T
Y1
A2
18
TB
T. R2-14
BLU/BLK
T. TB2
WHT
RED/BLK
CUSTOMER SUPPLIED
VOLTAGE
(MAX. 250V)
L1
FAN
L2/N
CFC
CFC
L1
T1
T2
L2/N
CFC
A
B
CUSTOMER PROVIDED
FAN CONTACTOR COIL
ALL ITEMS IN ABOVE BOX ARE SUPPLIED BY CUSTOMER
9905-002-55-86C



Drain Quench System



CONNECT BLACK WIRE TO MOTOR CONTACTOR - L1 WITH PIGGYBACK TERMINAL PROVIDED

CONNECT WHITE WIRE TO MOTOR CONTACTOR - L2 WITH PIGGYBACK TERMINAL PROVIDED