

INSTALLATION, OPERATION & SERVICE MANUAL

FOR NOBLE MODELS:

NOBLE DG-E

NOBLE DG-D





REVISION/ PAGE	REVISION DATE	MADE BY	APPLICABLE ECN	DETAILS
A	07-15-15	KAP	N/A	Release to production.



NOBLE DG-E

DG-E - Low temperature, chemically sanitizing, with a booster tank.
Detergent, rinse aid & sanitizer chemical feeder pumps

DG-D - Dual door. Low temperature, chemically sanitizing, with a booster tank.
Detergent, rinse aid & sanitizer chemical feeder pumps

Model: _____

Serial No.: _____

Installation Date: _____

Service Rep. Name: _____

Phone No.: _____

TABLE OF CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
I.	SPECIFICATION INFORMATION	
	Specifications	2
	Dimensions	3
II.	INSTALLATION/OPERATION INSTRUCTIONS	
	Installation Instructions	5
	Electrical Installation Instructions	6
	Operation Instructions	7
	Chemical Dispensing Equipment	9
	Detergent Control	10
	Electronic Cycle Timer	11
III.	PREVENTATIVE MAINTENANCE	15
IV.	TROUBLESHOOTING SECTION	
	Common Problems	17
V.	PARTS SECTION	
	Chemical Feeder Pump Assembly	21
	Solenoid Valve Repair Parts	22
	Control Box Assembly	25
	Peripump Box Assembly	26
	Electrical Connection Box Assembly	27
	Frame Assembly	28
	Hood Assembly	29
	Switch Panel Assembly	30
	Tub Assembly	32
	Frame & Motor Assembly	34
	Pump and Motor Assembly	35
	Booster Tank Assembly	36
	Incoming Plumbing Assembly	37
	Door Components	38
	Front Panel Assembly	39
VI.	ELECTRICAL SCHEMATICS	
	NOBLE DG-E (prior to serial # 14A288762)	41
	NOBLE DG-E (after serial # 14A288762)	42
	NOBLE DG-E schematics	43
	NOBLE DG-E Harness Connections	44

SECTION 1: SPECIFICATION INFORMATION

SECTION 1: SPECIFICATION INFORMATION

SPECIFICATIONS OF THE NOBLE DG-E

OPERATING CAPACITY (NSF RATED):

RACKS PER HOUR	29
DISHES PER HOUR	725
GLASSES PER HOUR	1,044

OPERATING CYCLES (SECONDS):

NORMAL CYCLE:

WASH TIME	45
RINSE TIME	25
TOTAL CYCLE TIME	90

WASH TANK CAPACITY (GALLONS): 1.2

WASH PUMP CAPACITY (GPM): 61

OPERATING TEMPERATURES:

WASH (MINIMUM)	(48.9°C) 120°F
WASH (RECOMMENDED)	(60.0°C) 140°F
RINSE (MINIMUM)	(48.9°C) 120°F
RINSE (RECOMMENDED)	(60.0°C) 140°F

WATER REQUIREMENTS:

WATER LINE SIZE NPT	1/2"
DRAIN LINE SIZE NPT	2"
FLOW PRESSURE	20 ± 5 PSI

MINIMUM CHLORINE REQUIRED (PPM): 50

ELECTRICAL REQUIREMENTS:

WASH PUMP MOTOR HP 3/4

<u>VOLTS</u>	<u>PH</u>	<u>HZ</u>	<u>RINSE HEATER RATINGS</u>	<u>TOTAL AMPS</u>	<u>TYPICAL ELECTRICAL CIRCUIT</u>
115	1	60	2KW@110V	*16 A	20 AMP

* This dishmachine is designed so that the wash motor is never running when the wash heater is on. Service load is based upon the higher of the two amperages.

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 an electrical service contractor that the 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.

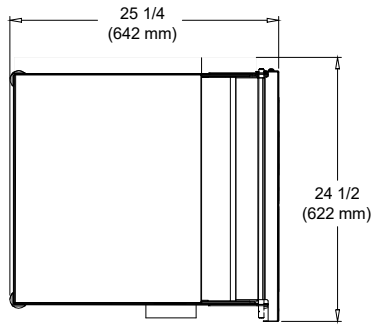
FRAME DIMENSIONS:

WIDTH	(622.3mm)	24 1/2"
DEPTH	(641.35mm)	25 1/4"
DEPTH, WITH FRONT DOOR OPEN	(933.45mm)	36 3/4"
HEIGHT	(990.6mm)	39"
MAXIMUM WASH CHAMBER CLEARANCE	(292.1mm)	11 1/2"
FRAME DIMENSION (DOUBLE DOOR):		
WIDTH	(622.3MM)	24 1/2"
DEPTH	(714.375MM)	28 1/8"
DEPTH, WITH DOOR OPEN	(1311.275MM)	51 5/8"
HEIGHT	(990.6MM)	39"
CHAMBER CLEARANCE	(292.1MM)	11 1/2"

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.

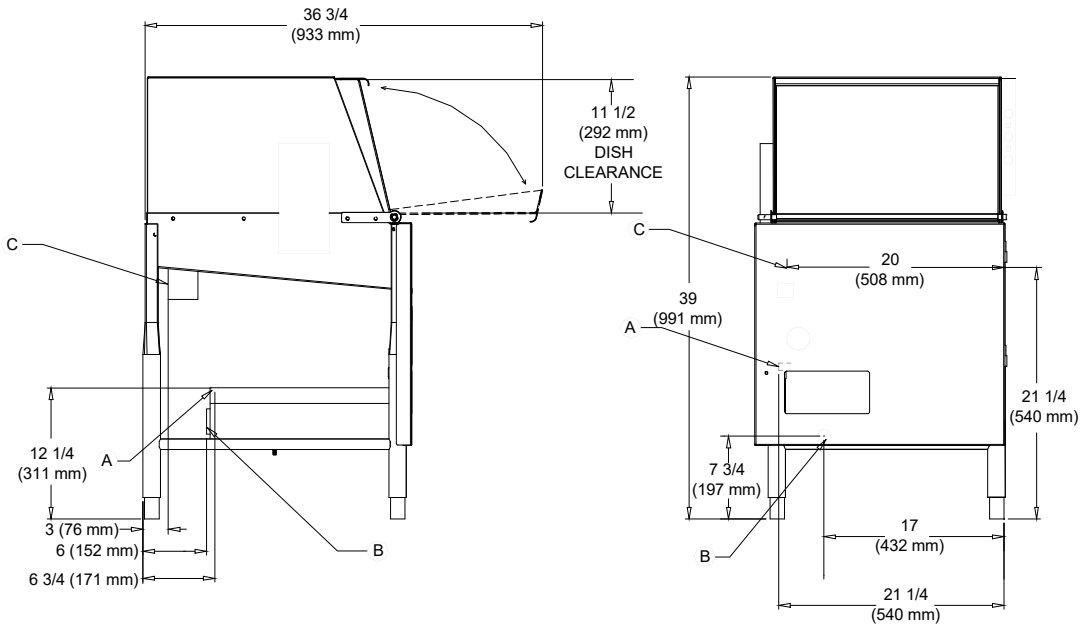
SECTION 1: SPECIFICATION INFORMATION

MACHINE DIMENSIONS

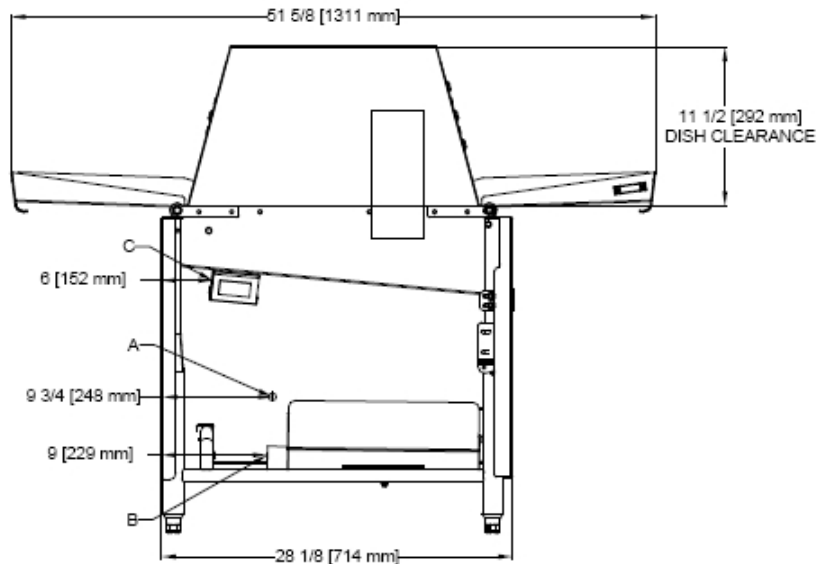


- A - Incoming Water Connection
- B - Drain Connection - 2" IPS
- C - Electrical Connection Point

NOTE: All vertical dimensions are at lowest point due to adjustable bullet feet and may be raised an additional 2 3/4".



DOUBLE DOOR MODEL
LEFT SIDE OF UNIT



SECTION 2: INSTALLATION & OPERATION INSTRUCTIONS

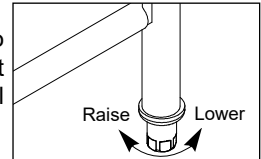
SECTION 2: INSTALLATION & OPERATION INSTRUCTIONS

INSTALLATION INSTRUCTIONS

VISUAL INSPECTION: Before installing unit check container and machine for damage. A damaged container may be an indication of damage to the machine. If there is any type of damage to both container and unit, do not throw away the container. The dishmachine has been inspected at the factory prior to shipping and is expected to arrive in new, undamaged condition. However, rough handling by carriers or others may result in damage to the unit while it is in transit. If such a situation occurs, do not return the unit to the manufacturer. Instead, contact the carrier and ask them to send a representative to the site to inspect the damage, and request that an inspection report be completed. Contact the carrier within 48 hours of receiving the machine (to report possible freight damage) and the dealer from whom the unit was purchased.

UNPACKING THE DISH MACHINE: Remove the machine from the container and inspect it for any missing parts. If a part is missing, contact manufacturer immediately.

LEVEL THE DISH MACHINE: The dishmachine is designed to operate while level. This is important to prevent any damage to the machine during operation and to ensure the best results possible. The unit is equipped with adjustable bullet feet which can be turned using a pair of pliers. Verify the unit is level from front to back and side to side before making any electrical or plumbing connections.

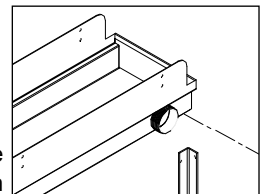


Frame with Adjustable Foot

PLUMBING THE DISH MACHINE: All plumbing connections must be made to adhere to local, state, territorial and national codes. The installing plumber is responsible for ensuring the incoming water lines are flushed of debris prior to connecting to the machine. Note that chips and materials from cutting processes can become lodged in the solenoid valves and prevent them from opening or closing. Any valves that are found to be fouled or defective because of foreign matter left in the water line, and any subsequent water damage, are not the responsibility of the manufacturer.

A water hardness test should be performed to determine if the HTS-11 (scale prevention & corrosion control) needs to be installed. If water hardness is higher than 5 GPG, the HTS-11 will need to be installed. Please contact manufacturer to purchase the HTS-11.

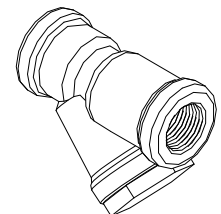
CONNECTING THE DRAIN LINE: This dishmachine drain requires a minimum 2" NPT piping that is pitched at least 1/4" per foot. There must also be an air gap between the machine drain line and the floor sink or drain. If a grease trap is required by code, it should have a flow capacity of 5 gallons per minute.



Drain Connection

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

PRESSURE REGULATOR: In areas where the water pressure fluctuates or is greater than the recommended pressure, it is suggested that a water pressure regulator be installed. This dishmachine does not come with a water pressure regulator as standard equipment.



Y-Strainer

SHOCK ABSORBER: It is recommended that a shock absorber (not supplied) be installed in the incoming water line. This prevents water hammer (hydraulic shock)—induced by the solenoid valve as it operates—from causing damage to the equipment.

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

SECTION 2: INSTALLATION & OPERATION INSTRUCTIONS

ELECTRICAL INSTALLATION INSTRUCTIONS

ELECTRICAL POWER CONNECTION: DISCONNECT ELECTRICAL POWER SUPPLIES & TAG OUT IN ACCORDANCE WITH APPROPRIATE PROCEDURES & CODES AT THE DISCONNECT SWITCH TO INDICATE THE CIRCUIT IS BEING SERVICED.

Electrical and grounding conductors must comply with the applicable portions of the National Electric Code ANSI/NFPA 70 (latest edition) and/or other electrical codes.

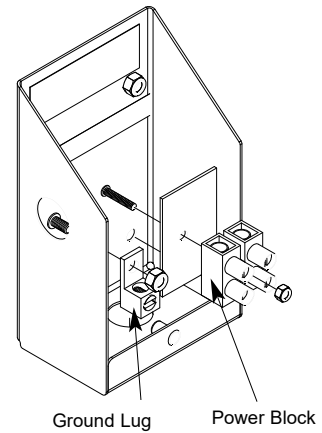
Refer to the machine's data plate for machine operating requirements, machine voltage, total amperage & serial number.

Remove the connection box lid to install the incoming power lines. Install 1/2" conduit into the pre-punched holes in the back of the connection box. Route the power wires and connect to the power block and grounding lug. Install the service wires (L1 and N) to the appropriate terminals as they are marked on the terminal block. Install the grounding wire into the lug provided. Wires should be firmly secured in place.

It is recommended that "De-Ox" or another similar anti-oxidation agent be used on all voltage connections.

VOLTAGE CHECK: Ensure that the machine is off and apply power to the machine. Check the incoming power at the terminal block and ensure it corresponds to the voltage on the machine data plate. 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 personnel of the location of the service breaker. Replace all covers and tighten the screws.

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 2: INSTALLATION & OPERATION INSTRUCTIONS

OPERATION INSTRUCTIONS

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

1. Open the door and verify that the sump strainer is correctly installed in the sump.
2. Verify that the drain stopper is in position.
3. Check that the plugs are securely screwed into the ends of the wash arm.
4. Check that the wash arm is securely screwed into the stationary base and that it rotates freely.
5. Check the levels in all chemical containers and replace if necessary.

INITIAL START-UP PROCEDURE:

1. Turn on dishmachine:
 - a) Turn on the incoming power to the machine at the circuit disconnect box.
 - b) Turn on the dishmachine by pressing the ON/OFF button. The red light will come on.
 - c) Check voltage at incoming terminals L1& L2. The voltage measured at these points should match data plate voltage.
 - d) If voltages are in required range, close the control box cover.
2. Fill the rinse booster heater with water:
 - a) Before the heater element can be energized, the rinse booster heater must be initially filled with water. Damage to the heater element will occur if the element is not submerged in water. To initially fill the booster heater with water:
 - i) Press and hold the FILL button to turn on the incoming water solenoid valve. Continue holding the button until water is heard entering the wash chamber through the airgap, then release the button. The rinse booster heater is now filled with water.
 - ii) Turn off the unit by pressing the on/off switch.
3. Enable heater element:
 - a) For the initial start-up only, the heater element must be enabled. The machine is shipped from the factory with the heater element disabled. This is done to ensure that the heater element is not damaged by energizing the element without the element being submerged in water. To enable the heater element:
 - i) Remove the booster heater cover panel.
 - ii) Connect the tagged white/blue wires.
 - iii) Replace heater cover.
 - iv) Press the on/off switch, heaters will energize to maintain booster heater temperature.

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

4. Adjust dishmachine fill level:
 - a) If the water level is not between the lines on the drain standpipe, it will require adjustment. Check to ensure that the recommended water pressure is being supplied to the machine (20 ±5 PSI is required). If the water pressure is correct, the electronic timer will need adjustment. Use the following steps to adjust the fill time.
 - i) Open control box cover.
 - ii) Adjust fill time as per instructions found in this section.
 - iii) Open and close the door to run a cycle, then check the water level. Adjust as necessary then close the control box cover.

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

The dishmachine is now ready to proceed with dishwashing.

SECTION 2: INSTALLATION & OPERATION INSTRUCTIONS

OPERATION INSTRUCTIONS (CONTINUED)

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

PREPARING DISHES: Proper preparation of ware is essential for the smooth and efficient operation of the dishmachine, resulting in fewer rewashes and using less detergent.

The following steps should be followed to ensure good results:

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

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

1. Open door and verify that the sump strainer is in place in the sump.
2. Verify that the drain stopper is in position.
3. Check that the plugs are securely screwed into the ends of all wash arms.
4. Check that the wash arms are securely screwed into the stationary bases and rotate freely.
5. Check levels in all chemical containers and replace if empty.
6. For initial fill, close doors and depress the "FILL" switch to the "FILL" position.

WASHING A RACK OF WARE:

1. Open doors, place a full rack into the machine, and close doors. Push the start switch and hold until unit starts (about 2 seconds).
2. After cycle is completed open doors and remove rack.
3. Repeat steps A and B.

SHUT DOWN AND CLEANING:

1. At the end of mealtime, move the "ON/OFF" switch to the "OFF" position.
2. Open doors and manually remove drain stopper to drain the unit.
3. Remove and clean upper and lower wash arms.
4. Remove and clean the sump strainer.

SECTION 2: INSTALLATION & OPERATION INSTRUCTIONS

CHEMICAL DISPENSING EQUIPMENT



WARNING: CHLORINE-BASED SANITIZERS CAN BE DETRIMENTAL TO THE MACHINE IF THE CHEMICAL SOLUTION IS TOO STRONG. SEE A CHEMICAL PROFESSIONAL TO ENSURE THE DISPENSER IS SET UP CORRECTLY.

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 and will void the manufacturer's warranty.

TO PREPARE CHEMICAL FEEDER PUMPS FOR OPERATION: The Delta 5 dishwashers are supplied with detergent, rinse additive and sanitizer dispensing chemical feeder pumps. Locate the open ends of the chemical tubes with the tube stiffeners and place each one in the appropriate container.

Red Tubing = Detergent

Blue Tubing = Rinse Aid

White Tubing = Sanitizer

PRIMING CHEMICAL FEEDER PUMPS: Chemical feeder pumps need priming when the machine is first installed or if for some reason the chemical lines have been removed and air is allowed to enter.



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

1. Verify that the proper chemical tube stiffener inlet is in the proper container.
2. Use the prime switches located on the control panel at the bottom of the unit to prime each pump. The switches are clearly marked as to what chemical feeder pump they are assigned to.
3. To prime the pumps, hold the switch in the momentary position until chemical can be observed entering the sump.
4. Detergent is dispensed as required during the wash cycle by the universal timer. The amount of detergent may need to be increased or decreased depending on water quality and type of detergent.
5. Rinse additive is dispensed as required into the final rinse. The amount of rinse aid may need to be adjusted depending on water hardness and results.
6. Sanitizer (either chlorine or iodine) is dispensed into the final rinse. The amount of sanitizer may need to be adjusted depending on the concentration and type of sanitizer used.
7. Please refer to the next page for instruction on adjusting the chemical feeder pumps on the universal timer.



WARNING: Some of the chemicals used in dishwashing may cause chemical burns if they come in contact with skin. Wear protective gear when handling these chemicals. If any skin comes in contact with these chemicals, immediately follow the instructions provided with the chemicals for treatment.

SECTION 2: INSTALLATION & OPERATION INSTRUCTIONS

DETERGENT CONTROL

DETERGENT CONTROL: Detergent usage and water hardness are two factors that contribute greatly to how efficiently this dishmachine will operate. Using detergent in the proper amount can become a source of substantial savings. A qualified water treatment specialist can relate what is needed for maximum efficiency from the detergent.

1. Hard water greatly affects the performance of the dishmachine, causing the amount of detergent required for washing to increase. If the machine is installed in an area with hard water, the manufacturer recommends the installation of water treatment equipment.
2. Deposited solids from hard water can cause spotting that will not be removed with a drying agent. Treated water will reduce this occurrence.
3. Treated water may not be suitable for use in other areas of operation and it may be necessary to install a water treatment unit for the water going to the dishmachine only. Discuss this option with a qualified water treatment specialist.
4. Dishmachine operators should be properly trained in how much detergent is to be used per cycle. Meet with a water treatment specialist and detergent vendor to discuss a complete training program for operators.
5. Certain dishmachine models require that chemicals be provided for proper operation and sanitization. Some models may require the installation of third-party chemical feeders to introduce those chemicals to the machine. The manufacturer does not recommend or endorse any brand name of chemicals or chemical dispensing equipment. Contact a chemical distributor for questions.
6. Some dishmachines come equipped with integral solid detergent dispensers. These dispensers are designed to accommodate detergents in a certain-sized container. If applicable, relate this to a chemical distributor upon first contacting them.
7. Water temperature is an important factor in ensuring that the dishmachine functions properly, and the machine's data plate details what the minimum temperatures must be for the incoming water supply, the wash tank and the rinse tank. If minimum requirements are not met, there is a possibility that dishes will not be clean or sanitized.
8. Instruct dishmachine operators to observe the required temperatures and to report when they fall below the minimum allowed. A loss of temperature can indicate a larger problem—such as a failed heater—or could indicate that the hot water heater for the operation is not up to capacity and a larger one may need to be installed.

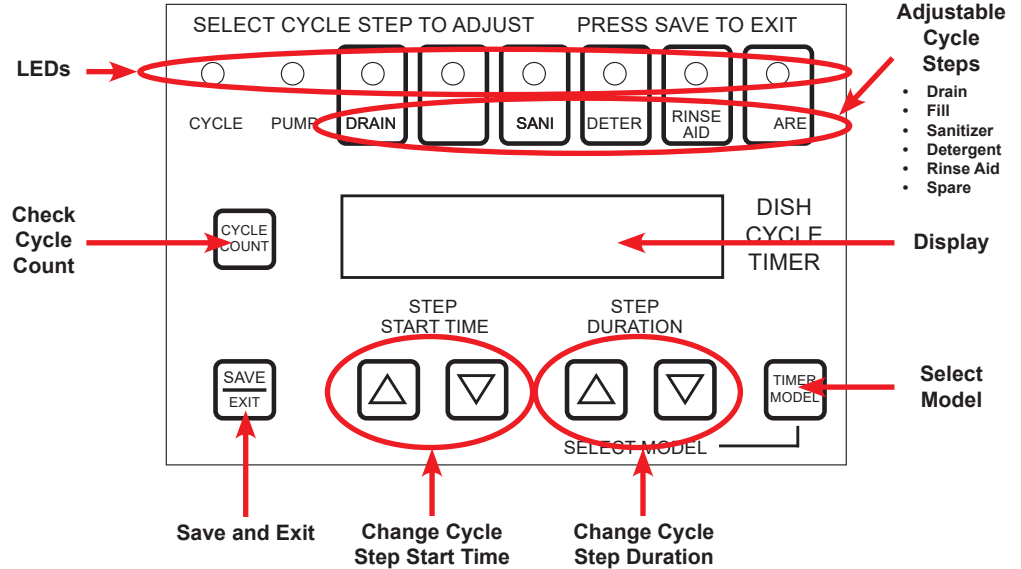
SECTION 2: INSTALLATION & OPERATION INSTRUCTIONS

ELECTRONIC CYCLE TIMER

OVERVIEW

The timer accepts user input and provides feedback on the status of the dishmachine.

Cycle steps are the different sub-cycles (fill, drain, etc.) of the total wash cycle.



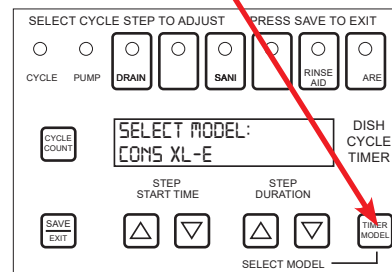
POWERING ON

The display will read "JACKSON WWS" and the firmware version when powered on. This is the Default/Home screen.

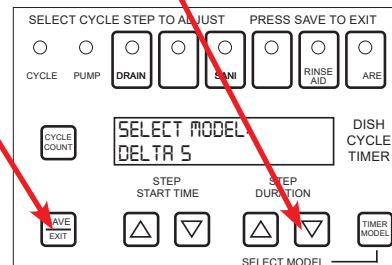
- If inactive for 15 seconds the blue backlight will turn off.
- If inactive for 30 seconds the display will turn off.
- Inactivity timer will reset if any button is pushed.
- Push any button while inactive and the display will turn on and show the Home screen.

SELECTING MODEL

1. With the display on, press **TIMER MODEL**. Display will show "SELECT MODEL" and the currently-active model.



2. Select correct model using **ARROW** buttons under **STEP DURATION**.
3. Press **SAVE/EXIT**.



Models
 CONS XL2
 CONS XL-E
 (Use for XL-E, XL-E-FL,
 and XL HH)
 CONS XL-E-LTH
 DELTA 5

SECTION 2: INSTALLATION & OPERATION INSTRUCTIONS

ELECTRONIC CYCLE TIMER

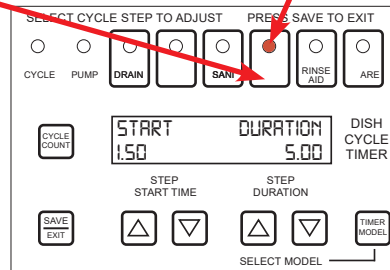
CHANGING CYCLE STEP TIMES

The first two steps (CYCLE and PUMP) are fixed and can't be adjusted. All other steps are adjustable.

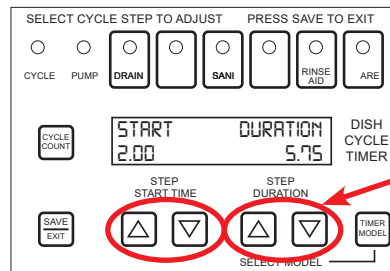
Timing of the total wash cycle begins when an open door is closed (or when START is pressed on Delta 5-E). Machine returns to IDLE after one full cycle.

Change is also saved if inactive for 10 seconds or any other button is pressed.

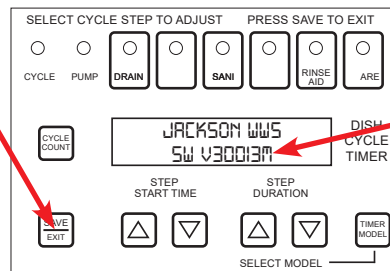
1. Press button for step being changed. The LED for that step will come on.



2. Change STEP START TIME or STEP DURATION using ARROW buttons (adjustments are made in 0.25-second increments).

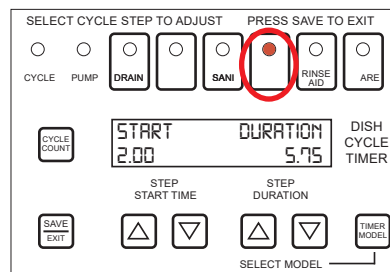


3. Press SAVE/EXIT to save the change and exit.



"M" = Modified Timing
"F" = Factory Defaults

4. Repeat with other steps as needed.
5. To review current settings for a given step, press button for that step during IDLE. Its current STEP START TIME and STEP DURATION will be displayed.

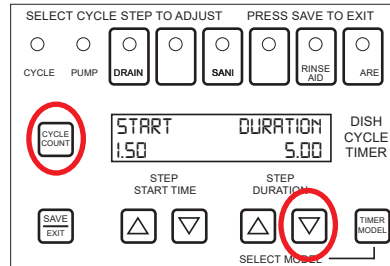


SECTION 2: INSTALLATION & OPERATION INSTRUCTIONS

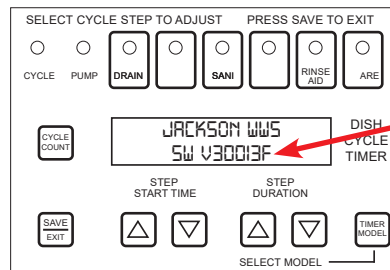
ELECTRONIC CYCLE TIMER

RESETTING TO FACTORY DEFAULTS

1. Press and hold CYCLE COUNT button and DOWN ARROW button (under STEP DURATION) simultaneously for 3–4 seconds.



2. Resets all settings to factory defaults for the active model. Cycle count is unaffected by the reset.
3. Firmware version on the Home screen shows "F" at the end, indicating the timer is now set to factory defaults for the active model.

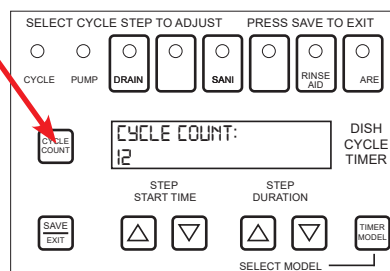


"M" = Modified Timing
"F" = Factory Defaults

Firmware version changes, so number will be different depending on when timer was installed.

CHECKING CYCLE COUNT

1. Press CYCLE COUNT button. Cycle count will show on display.

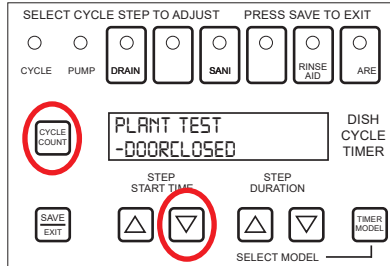


SECTION 2: INSTALLATION & OPERATION INSTRUCTIONS

ELECTRONIC CYCLE TIMER

PLANT TEST MODE

1. Press and hold CYCLE COUNT button and DOWN ARROW button (under STEP START TIME) simultaneously for 3–4 seconds.



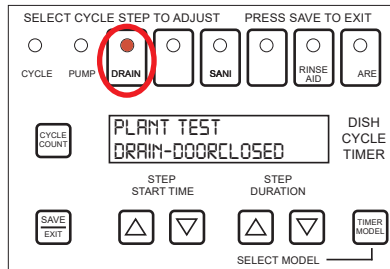
2. Press and hold the DRAIN button. The DRAIN output stays on while the button is held. The output turns off when the button is released. Repeat for the other seven buttons (use SAVE/EXIT to activate CYCLE output, use CYCLE COUNT to activate PUMP output). Second row of display shows outputs and inputs that are active.

After 15 seconds of no button being pressed, the timer exits the plant test mode.

If more than one input is on, the first letters of each will show (e.g. "Drain-DH" indicates the DRAIN output and DoorClosed and Heavy inputs are on).

Outputs

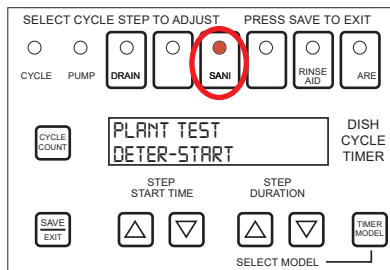
Cycle
Wash
Drain
Fill
Sani
Deter
Rinse
Spare



Inputs

DoorClosed
Start
LTH Only
Heavy
Medium

3. Plant test mode can also be used to prime chemicals if the machine has no priming function. Open door and press and hold the SANI button until sanitizer is seen entering the wash sump/tank and no air is in the line.



4. Repeat for DETER and RINSE AID buttons.

SECTION 3: PREVENTATIVE MAINTENANCE

SECTION 3: PREVENTATIVE MAINTENANCE

PREVENTATIVE MAINTENANCE

PREVENTATIVE MAINTENANCE: The manufacturer of this dishmachine highly recommends that any maintenance and repairs not specifically discussed in this manual should be performed by qualified service personnel only. Performing maintenance on the dishmachine may void a warranty.

By following the operating and cleaning instructions in this manual, users should get the most efficient results from the dishmachine. As a reminder, here are some steps to ensure that the dishmachine is used properly:

1. Ensure that the water temperatures match those listed on the machine data plate (on the front left of machine).
2. Remove as much soil as possible from dishes before loading into racks.
3. Ensure that all strainers are in place, laying flat in tub and free of soil and debris before operating the machine. To clean strainers, wipe them out with a rag and rinse under a faucet. For stubborn debris, a toothpick can be used to dislodge any obstructions from the perforations. Do not beat strainers on waste cans; once bent they will not work properly.
4. If hard water is present, install an HTS-11 into the water line connecting to the dishmachine (see section "Plumbing the Dishmachine").
5. Ensure that all wash and/or rinse arms are secure in the machine before operating.
6. Ensure that drains are closed/sealed before operating.
7. Do not overfill racks.
8. Ensure that glasses are placed upside down in the rack.
9. Ensure that all chemicals being injected into 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 (see section on "Shutdown & Cleaning").
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.

SECTION 4: TROUBLESHOOTING

SECTION 4: TROUBLESHOOTING SECTION

COMMON PROBLEMS



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

Problem: Water overflow from bottom of door.

CAUSE

Clogged drain

Machine not level

Excessive inlet pressure

Detergent foaming

Excessive fill time

SOLUTION

Remove obstruction.

Level machine, or increase height to the front.

Install pressure reducing valve, or adjust if one is present. Ensure flow is 20 ± 5 PSI.

Reduce detergent quantity.

Adjust timer fill time as per Section 2.

Problem: Wash motor doesn't operate on manual wash.

CAUSE

Loose or broken wires

Defective manual wash switch

Defective motor starting relay

SOLUTION

Reconnect or replace wires in motor.

Replace.

Replace.

Problem: Motor operates on manual wash/delime but not on automatic.

CAUSE

Defective circuit in manual wash switch

SOLUTION

Replace switch.

Problem: No water comes through the rinse arms when the "FILL" switch is depressed.

CAUSE

Water not turned on

Defective solenoid valve

SOLUTION

Turn water on.

Replace solenoid valve.

Problem: Little or no water coming through the rinse assemblies.

CAUSE

Limed up rinse heads or piping

Low water pressure

SOLUTION

Delime rinse heads.

Increase pipe size to machine. Adjust pressure regulator.

Continued on next page.

SECTION 4: TROUBLESHOOTING SECTION

COMMON PROBLEMS

Problem: Rinse water runs continuously with breaker turned off.

<u>CAUSE</u>	<u>SOLUTION</u>
Defective plunger in solenoid valve	Replace.
Defective diaphragm in solenoid valve	Replace diaphragm.

Problem: Wash temperature not at required reading on thermometer.

<u>CAUSE</u>	<u>SOLUTION</u>
Check that white/blue wires are connected	See note on page 12.
Defective thermometer	Replace.
Defective thermostat	Adjust or replace thermostat.
Rinse heater defective	Replace heater element.
Defective heater contactor R2	Replace.
Incoming inlet water temperature below required minimum.	Adjust.
Defective heater delay relay (R4)	Replace.

Problem: Rinse water not at required temperature range.

<u>CAUSE</u>	<u>SOLUTION</u>
Check that white/blue wires are connected	See note in installation instructions.
Thermometer is defective	Replace.
Thermostat is defective	Adjust or replace the thermostat.
Incoming rinse water does not meet minimum criteria indicated on machine data plate	Adjust as required.

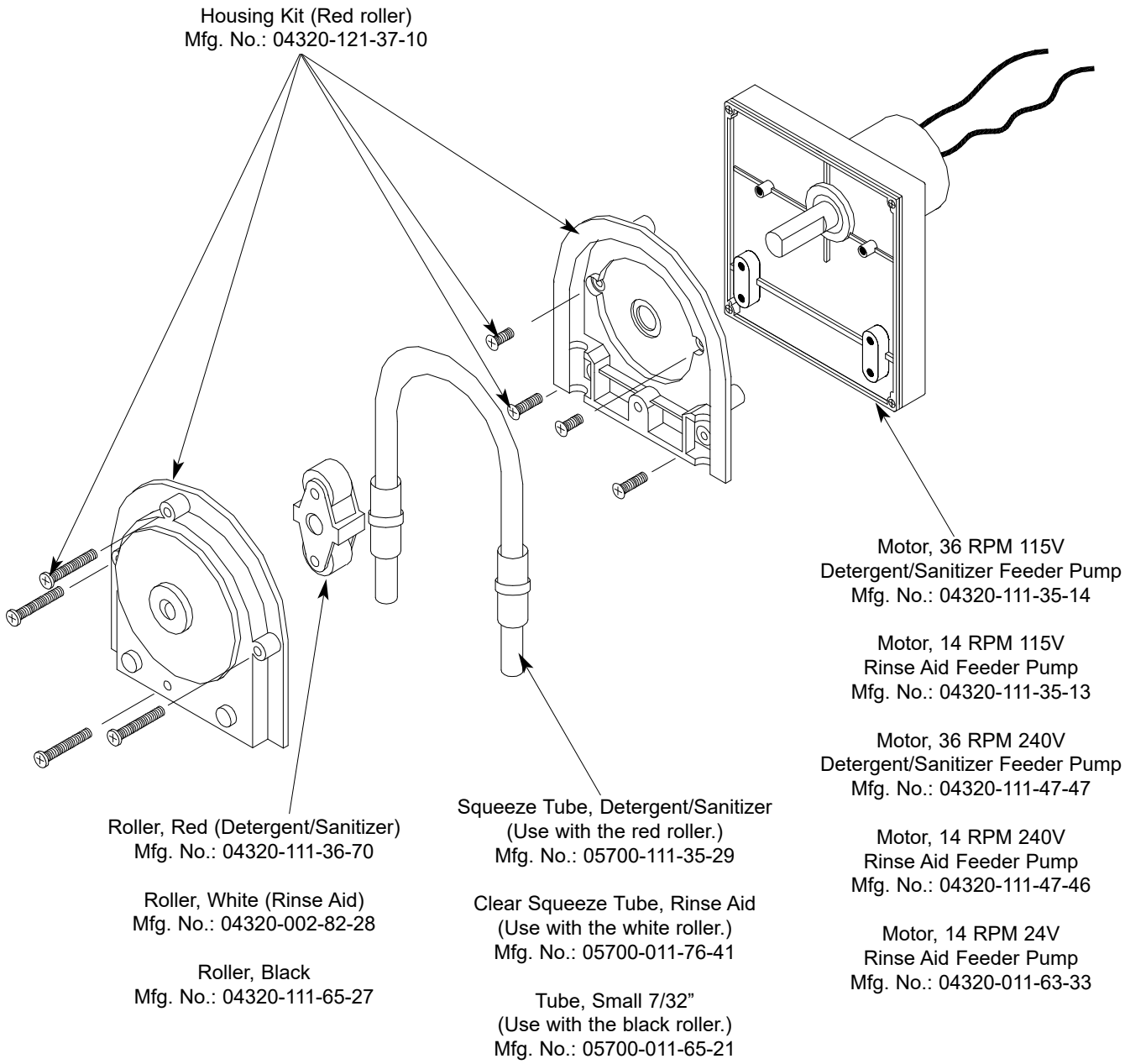
Problem: No indication of pressure.

<u>CAUSE</u>	<u>SOLUTION</u>
Water turned off	Turn water on.
Pressure gauge defective	Replace pressure gauge.

SECTION 5: PARTS SECTION

SECTION 5: PARTS SECTION
CHEMICAL FEEDER PUMP ASSEMBLY

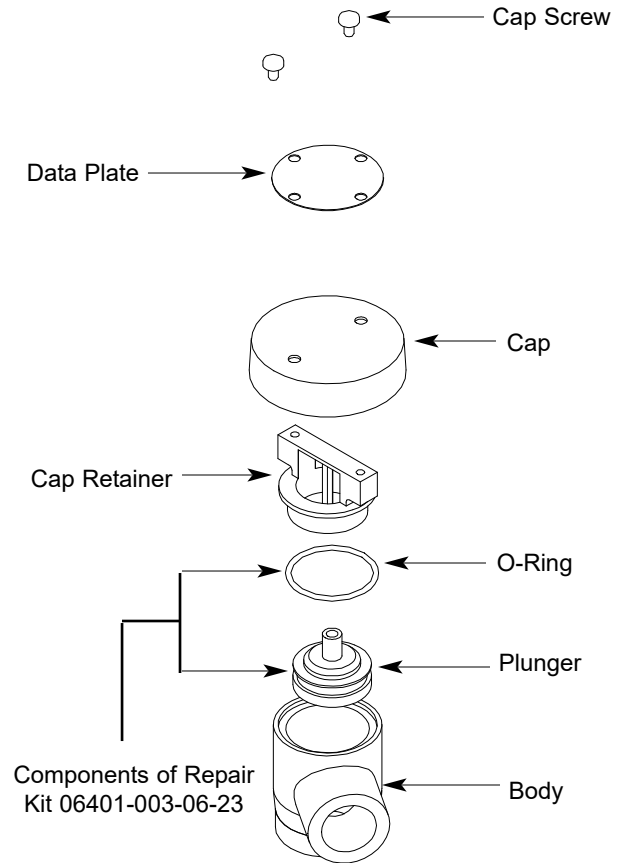
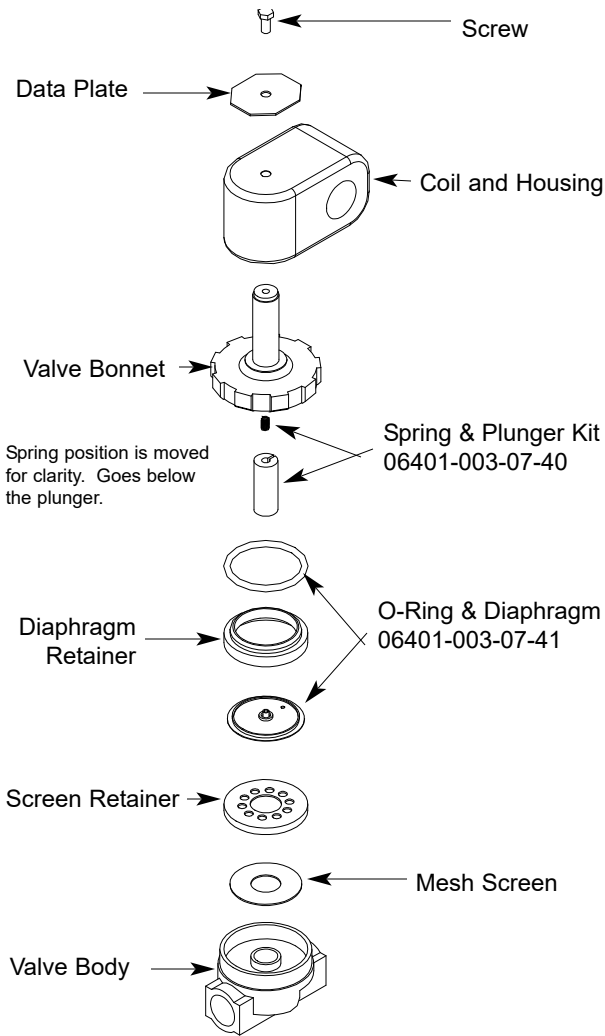
Squeeze Tube Lubricant



1/4" Sight Tube
3/8" Sight Tube

Mfg. No.: N/A
Mfg. No.: 05700-111-35-33

SECTION 5: PARTS SECTION
SOLENOID VALVE REPAIR PARTS KITS



Complete Vacuum Breaker Assembly, 1/2" NPT
 04820-003-06-13

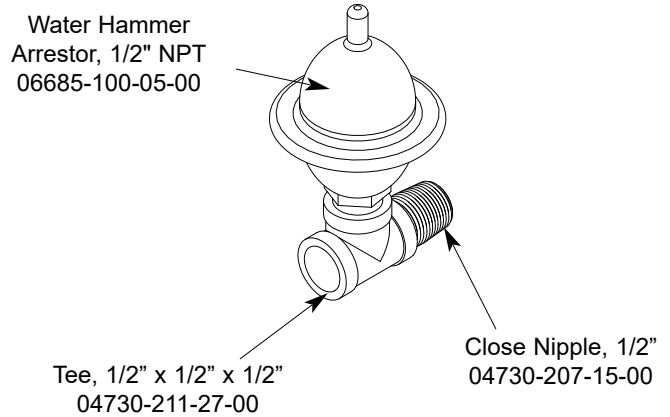
Complete 110 Volt Solenoid Valve Assembly, 1/2"
 04810-100-12-18

Coil & Housing only, 1/2"
 06401-003-07-43

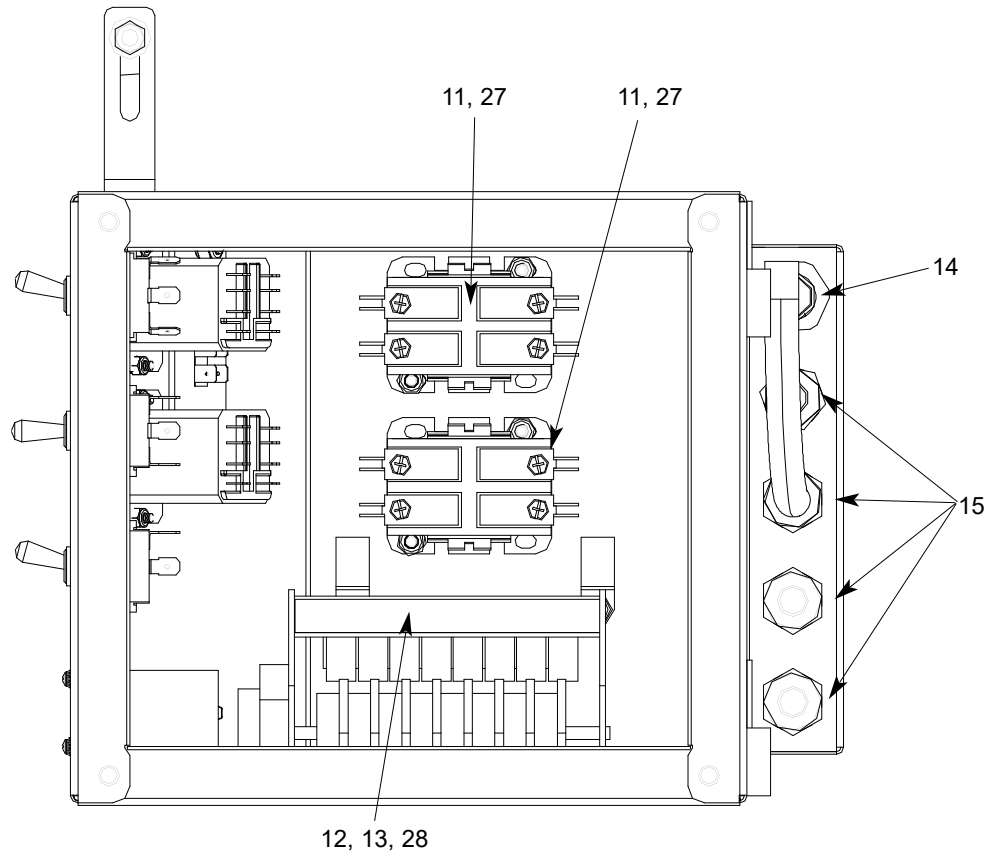
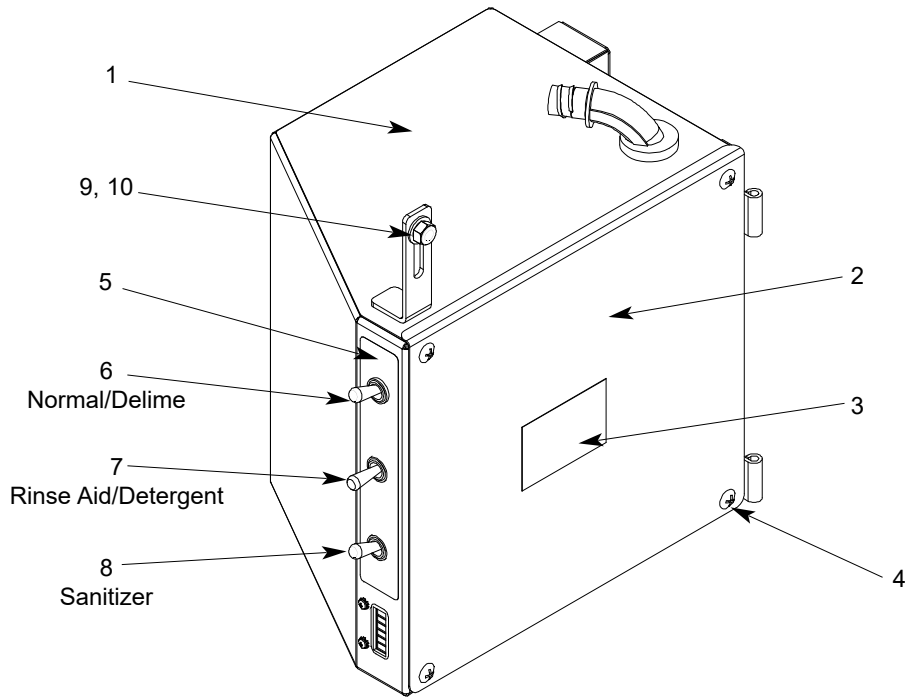
Complete 220 Volt Solenoid Valve Assembly, 1/2"
 04810-100-09-18

Coil & Housing only, 1/2"
 06401-003-07-44

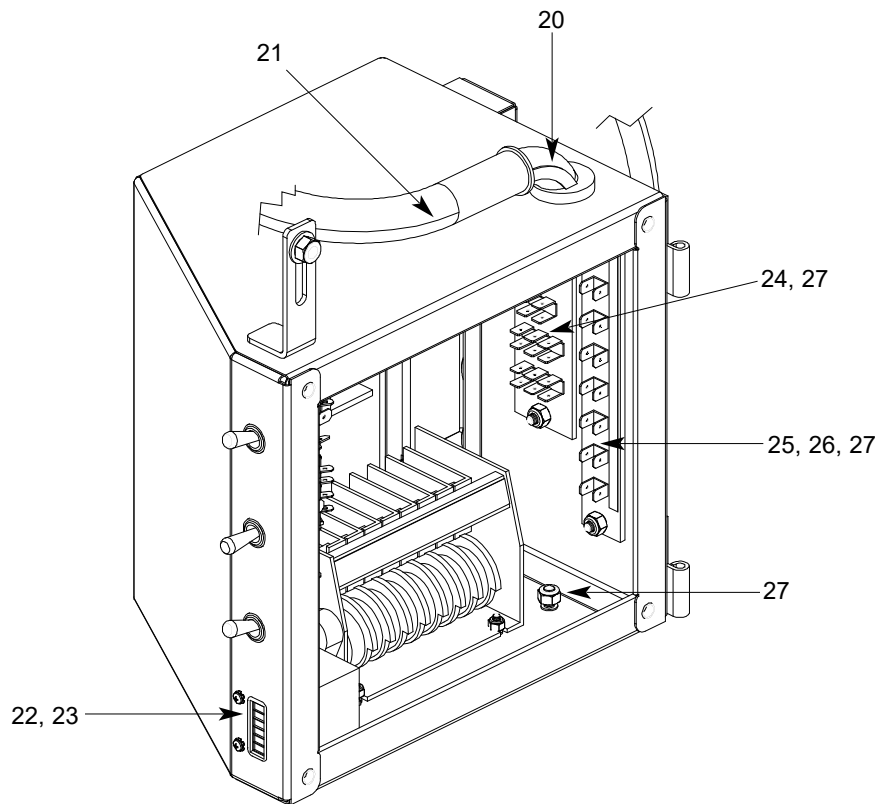
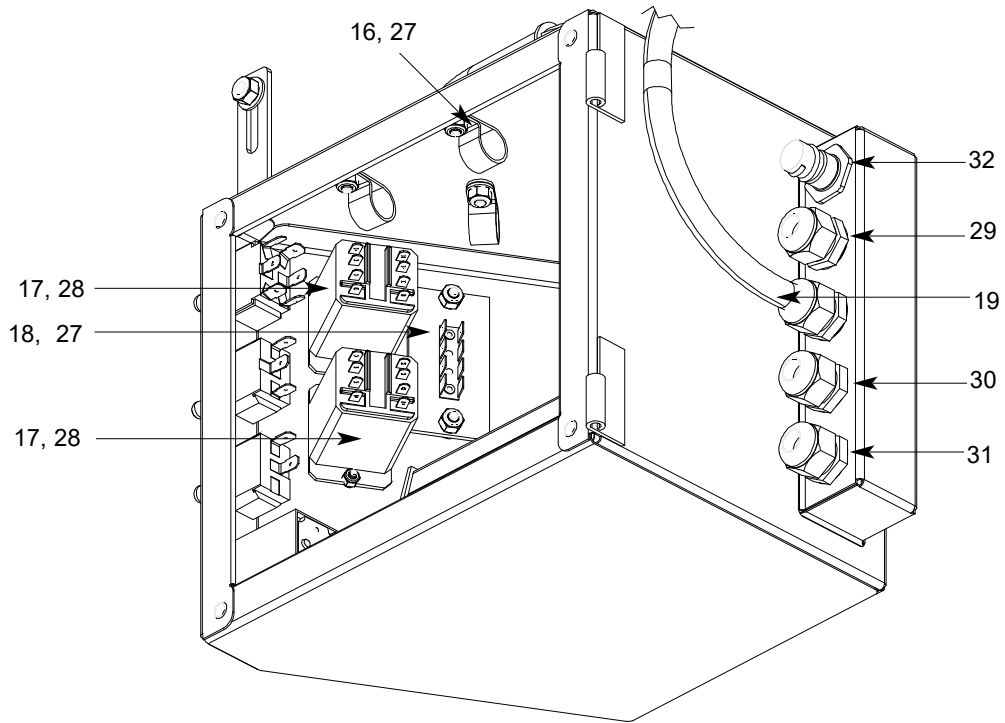
Water Hammer Arrestor Assembly
 05700-002-64-67



SECTION 5: PARTS SECTION
CONTROL BOX ASSEMBLY



SECTION 5: PARTS SECTION
CONTROL BOX ASSEMBLY

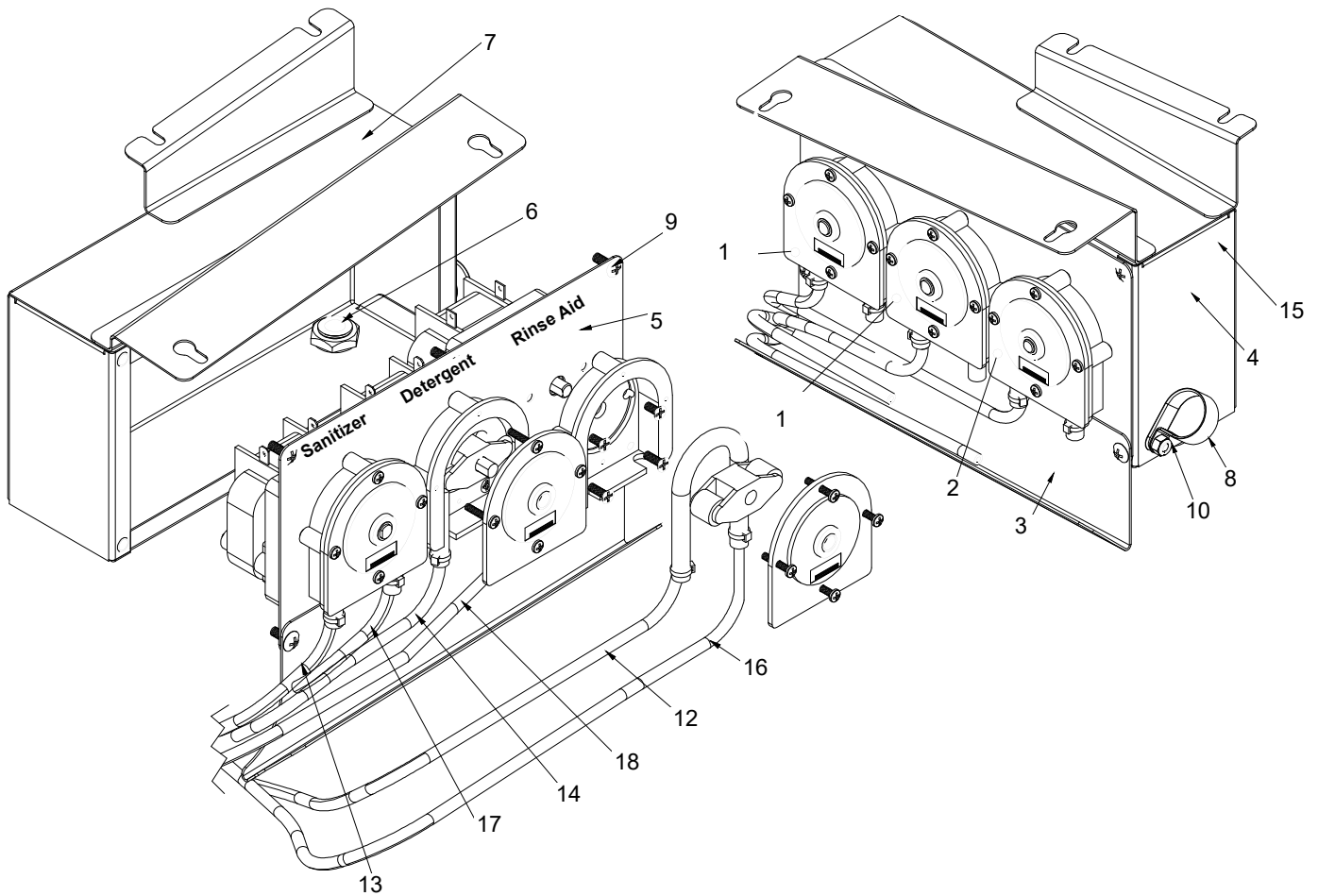


SECTION 5: PARTS SECTION
CONTROL BOX ASSEMBLY (CONTINUED)

ITEM	QTY	DESCRIPTION	Mfg. No.
1	1	Control Box Weldment	05700-003-09-42
2	1	Control Box Cover	05700-003-30-54
3	1	Decal, Warning - Disconnect Power	09905-100-75-93
4	4	Screw, 10-32 x 1/2" Long, Phillips Tusshead	05305-011-39-36
5	1	Decal, Peri-pump Prime	09905-003-32-56
6	1	Switch, Delime/Normal	05930-301-21-18
7	1	Detergent/Rinse Aid Pump Prime Switch	05930-011-35-27
8	1	Sanitizer Pump Prime Switch	05930-111-38-21
9	1	Locknut, 1/4"-20 S/S Hex with Nylon Insert	05310-374-01-00
10	1	Washer, 1/4"-20 S/S	05311-174-01-00
11	2	Contactator	05945-109-05-69
12	1	Timer, 8 Cam	05945-111-35-32
13	1	Decal, Cam Timer	09905-011-37-21
14	4	Fitting, Conduit, Heyco 1/2"	05975-011-49-03
15	1	Fitting, 1/2" Straight Snap In	05975-003-33-27
16	5	Clamp, 5/8" Nylon	04730-011-39-01
17	2	Relay, 2 Pole	05945-111-35-19
18	1	Terminal Board	05940-021-94-85
19	1	Harness, Switch Panel	05700-003-35-37
20	1	Fitting, 1/2" 90 Deg. Snap In	05975-003-33-28
21	1	Conduit, 1/2" x 40"	05700-003-35-48
22	1	Cycle Counter, 115V	05990-111-35-38
23	2	Screw, 4-40 x 1/4" Phillips Pan Head	05305-002-32-38
24	1	Terminal Board	05940-002-78-97
25	1	Terminal Board	05940-001-97-91
26	1	Decal, Terminal Board 8 Position	09905-003-09-30
27	16	Locknut, 10-24 S/S Hex with Nylon Insert	05310-373-01-00
28	6	Locknut, 6-32 S/S Hex with Nylon Insert	05310-373-03-00
29	1	Harness, Wash Pump	05700-003-35-34
30	1	Harness, Drain Solenoid	05700-003-35-36
31	1	Harness, Peri-pump	05700-003-35-35
32	1	Conduit, 1/2" x 17"	05700-003-35-49

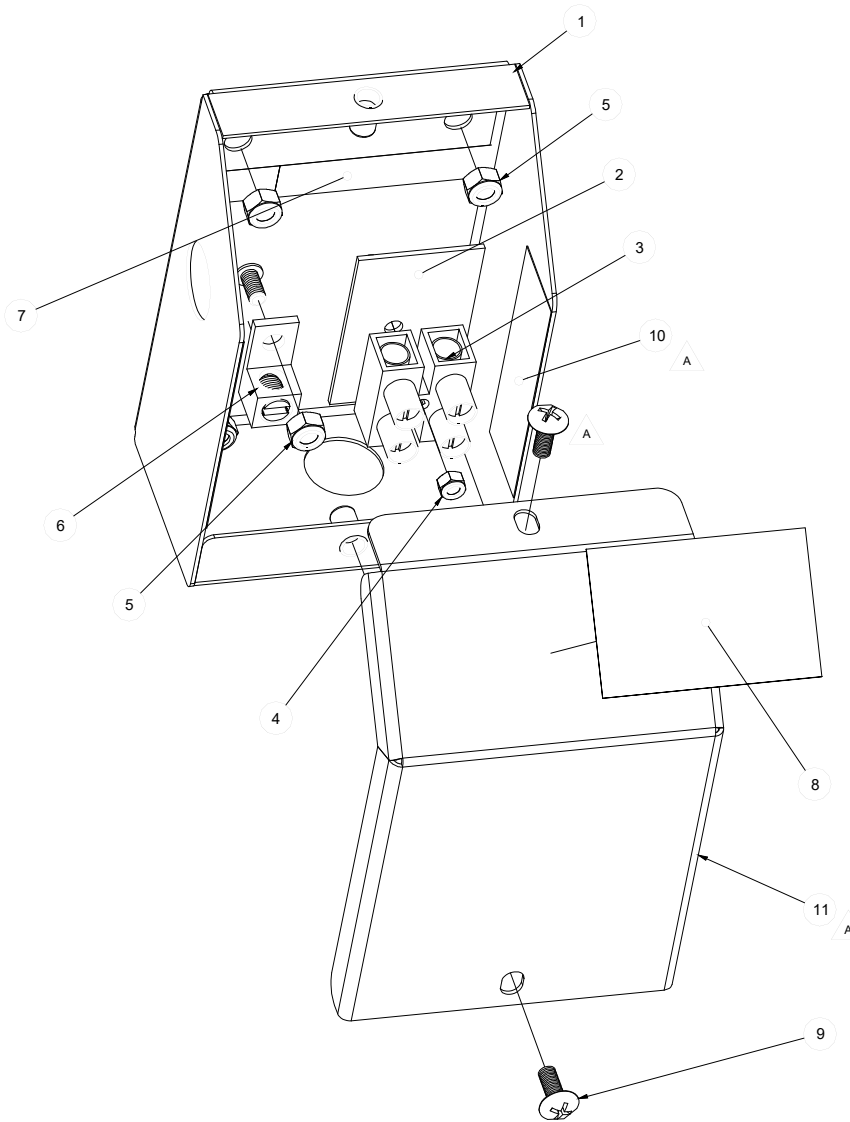
SECTION 5: PARTS SECTION

PERI-PUMP BOX ASSEMBLY



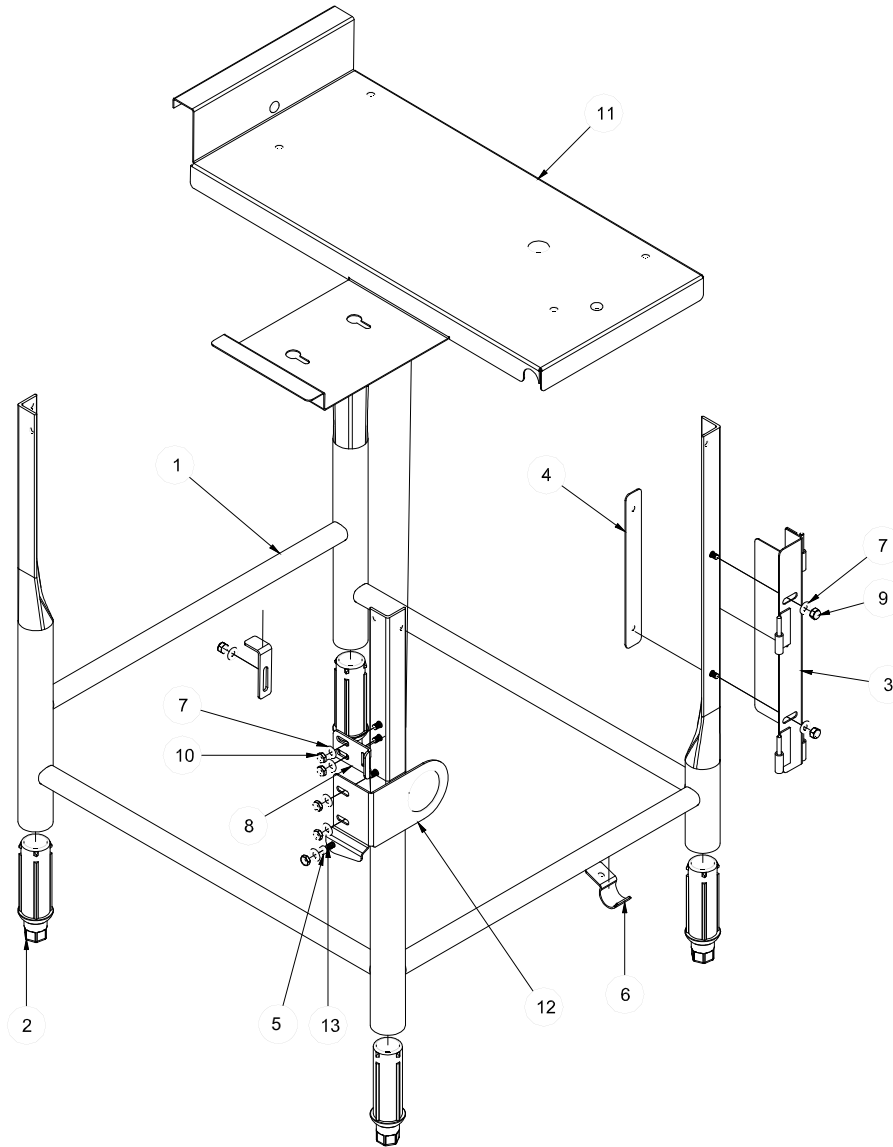
ITEM	QTY	DESCRIPTION	Mfg. No.
1	2	Peri-pump Assembly, 36 RPM	05700-002-96-08
2	1	Peri-pump Assembly, 14 RPM	05700-002-96-09
3	1	Drip Channel	05700-003-32-89
4	1	Weldment, Peri-pump Box	05700-003-32-00
5	1	Weldment, Peri-pump Box Cover	05700-003-33-80
6	1	Fitting, Conduit, Heyco 1/2"	05975-011-65-51
7	1	Clamp, 5/8" Nylon (Located inside of box)	04730-011-39-01
8	1	Clamp, 1" Nylon	04730-002-41-88
9	5	Screw, 10-32 x 1/2" Long, Phillips Tusshead	05305-011-39-36
10	3	Locknut, 10-24 S/S Hex with Nylon Insert	05310-373-01-00
11	3	Tube Stiffener (Not Shown)	05700-002-66-49
12	1	Tubing, 1/4" OD x 60" Long, Blue	05700-002-52-34
13	1	Tubing, 1/4" OD x 60" Long, White	05700-002-52-33
14	1	Tubing, 1/4" OD x 60" Long, Red	05700-011-63-18
15	1	Terminal Board (Not Shown)	05940-001-97-91
16	1	Tubing, 1/4 OD x 120 Long Blue	05700-011-37-17
17	1	Tubing, 1/4 OD x 120 Long Write	05700-011-37-13
18	1	Tubing, 1/4 OD x 120 Long Red	05700-011-37-15

SECTION 5: PARTS SECTION
ELECTRICAL CONNECTION BOX ASSEMBLY



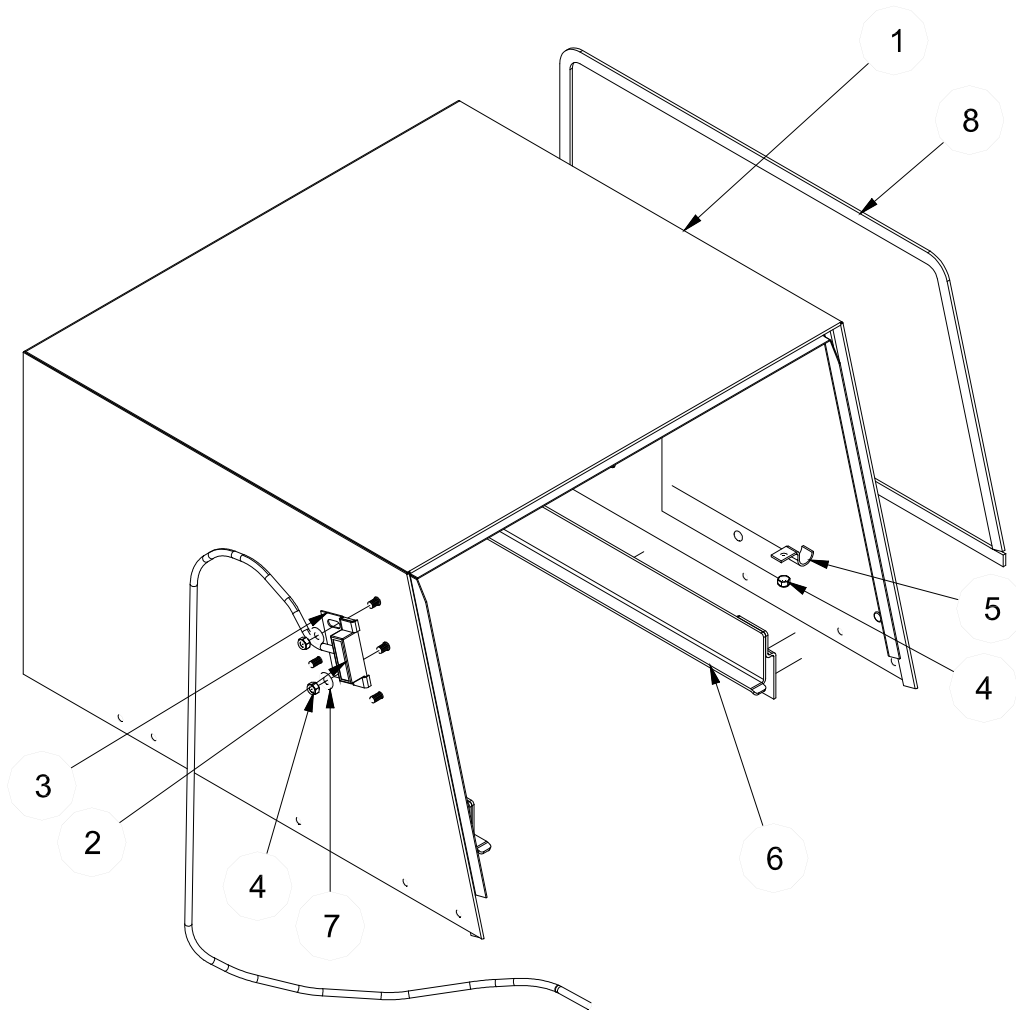
ITEM	QTY	DESCRIPTION	Mfg. No.
1	1	Box, Power Junction Weldment	05700-003-30-58
2	1	Terminal Block Spacer	05700-011-40-05
3	1	Terminal Block	05940-500-09-61
4	1	Locknut, 6-32 with Nylon Insert	05310-373-03-00
5	5	Locknut, 10-24 with Nylon Insert	05310-373-01-00
6	1	Lug, Ground	05940-200-76-00
7	1	Decal, Power Connection	09905-011-47-64
8	1	Decal, Warning to Disconnect Power	09905-100-75-93
9	1	Screw, 10-32 x 1/2" Long, Phillips Trusshead	05305-011-39-36
10	2	Decal, Copper Conductors Only	09905-011-47-35
11	1	Cover, Solenoid Box	05700-003-46-72

SECTION 5: PARTS SECTION
FRAME ASSEMBLY



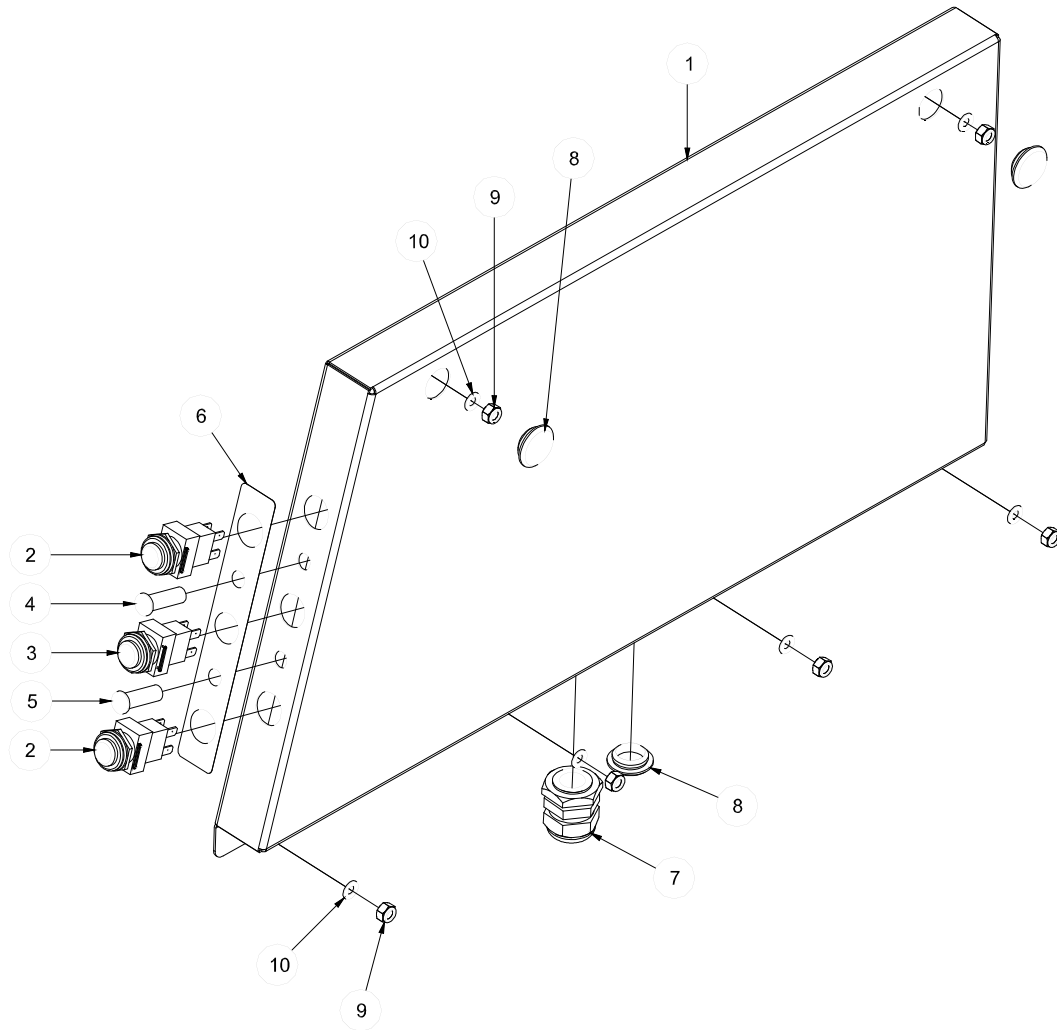
ITEM	QTY	DESCRIPTION	Mfg. No.
1	1	Frame Weldment	05700-003-09-40
2	1	Frame Weldment Double Door	05700-003-28-12
3	4	Foot, 3" Adjustable	05340-002-14-55
4	1	Plate, Hinge Weldment	05700-003-10-11
5	1	Washer, Hinge Weldment	05700-002-54-62
6	1	Spacer, PB Bolt	05700-000-29-40
7	1	Clamp, Pipe	05700-000-35-05
8	8	Washer, 1/4"-20 S/S	05311-174-01-00
9	1	Keeper, Door Panel Latch	05700-003-09-31
10	4	Locknut, 1/4"-20 S/S Hex with Nylon Insert	05310-374-01-00
11	5	Nut, Hex 1/4"-20	05310-274-01-00
12	1	Booster Mounting Plate Weldment	05700-002-51-93
13	1	Bracket, Temperature Gauge	05700-003-14-53
14	1	Bolt, 1/4"-20 x 1/2" Long	05305-274-02-00

SECTION 5: PARTS SECTION
HOOD ASSEMBLY



ITEM	QTY	DESCRIPTION	Mfg. No.
1	1	Hood Weldment	05700-003-09-56
1a	1	Hood Weldment Double Door	05700-003-28-17
2	1	Switch, 115V Reed	05930-002-36-80
3	1	Bracket, Limit Switch	05700-021-71-18
4	4	Locknut, 10-24 with Nylon Insert	05310-373-01-00
5	2	Clamp, Pipe 5/8"	05700-000-35-06
6	2	Rack Rail Weldment	05700-002-45-67
7	2	Washer, 1/4"-20 I.D.	05311-174-01-00
8	1	Gasket, Side Panel (5.3 Feet)	05700-003-35-51

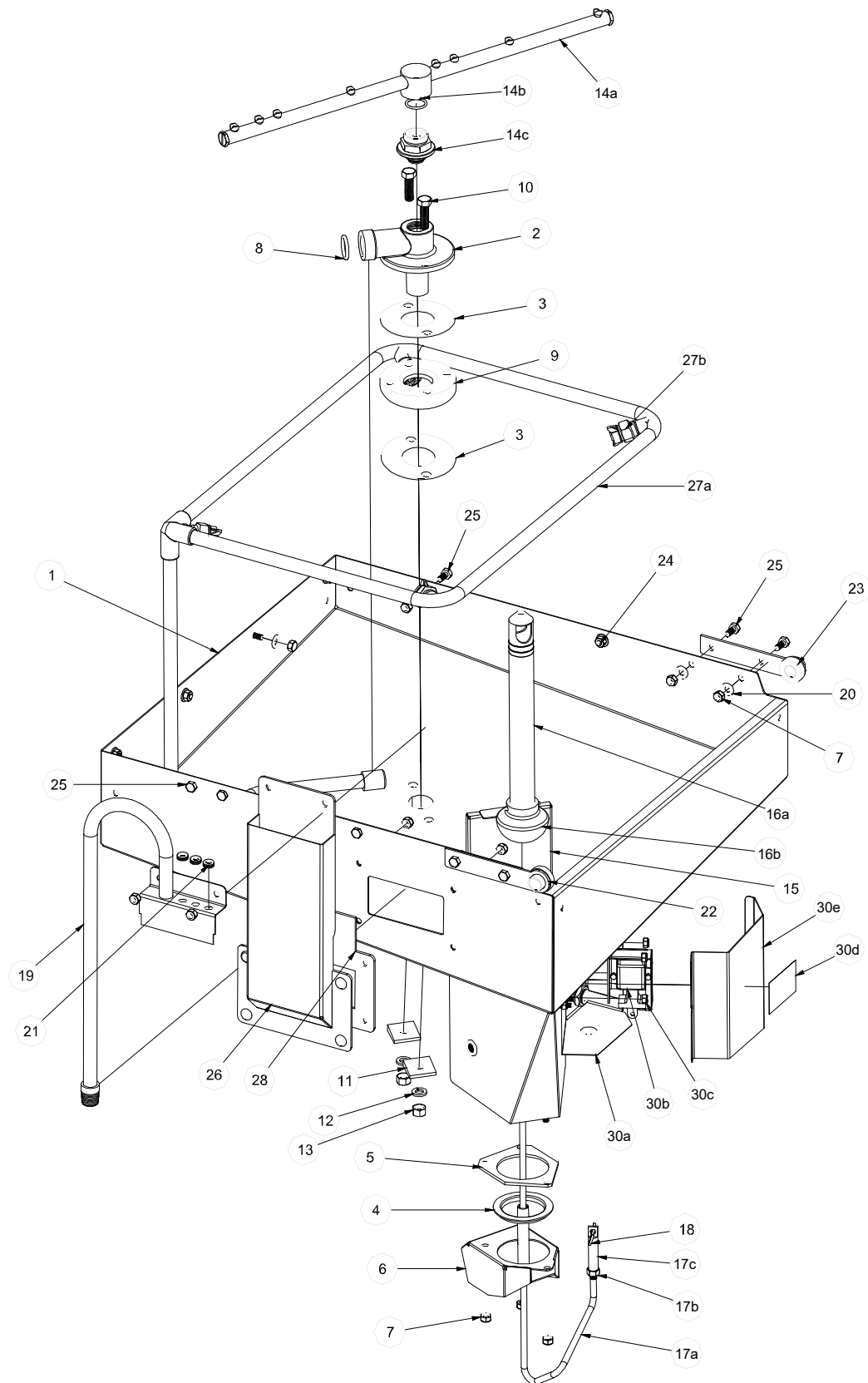
SECTION 5: PARTS SECTION
SWITCH PANEL ASSEMBLY



ITEM	QTY	DESCRIPTION	Mfg. No.
		Complete Side Panel Assembly	05700-003-24-38
		Complete Side Panel Assembly (Double Door)	05700-003-24-40
1	1	Side Panel Weldment	05700-003-24-36
1a	1	Side Panel Weldment (Double Door)	05700-003-24-37
2	2 (3)	Switch, Prime Assembly	05700-003-14-91
3	1	Switch, On/Off Assembly	05700-003-14-92
4	1 (2)	Light, Amber	05945-504-06-18
5	1 (2)	Light, Red	05945-504-07-18
6	1	Decal, Switch Panel	09905-003-08-63
7	1	Fitting, .25-.546	05975-011-65-51
8	3 (2)	Plug, 3/4" hole	04730-011-60-21
9	6	Locknut, 10-24 with Nylon Insert	05310-373-01-00
10	6	Washer, #10	05311-173-02-00
11	1	Decal Switch Panel (Double Door Only)	09905-003-38-95
12	1	Fitting (Double Door Only)	05975-011-49-03
13	1	switch (Double Door Only)	05930-002-36-80
14	1	bracket (Double Door Only)	05700-021-71-18
15	1	Terminal Board	05940-001-97-91

ALL NUMBERS THAT ARE IN PARENTHESES ARE FOR THE DOUBLE DOOR

SECTION 5: PARTS SECTION
TUB ASSEMBLY

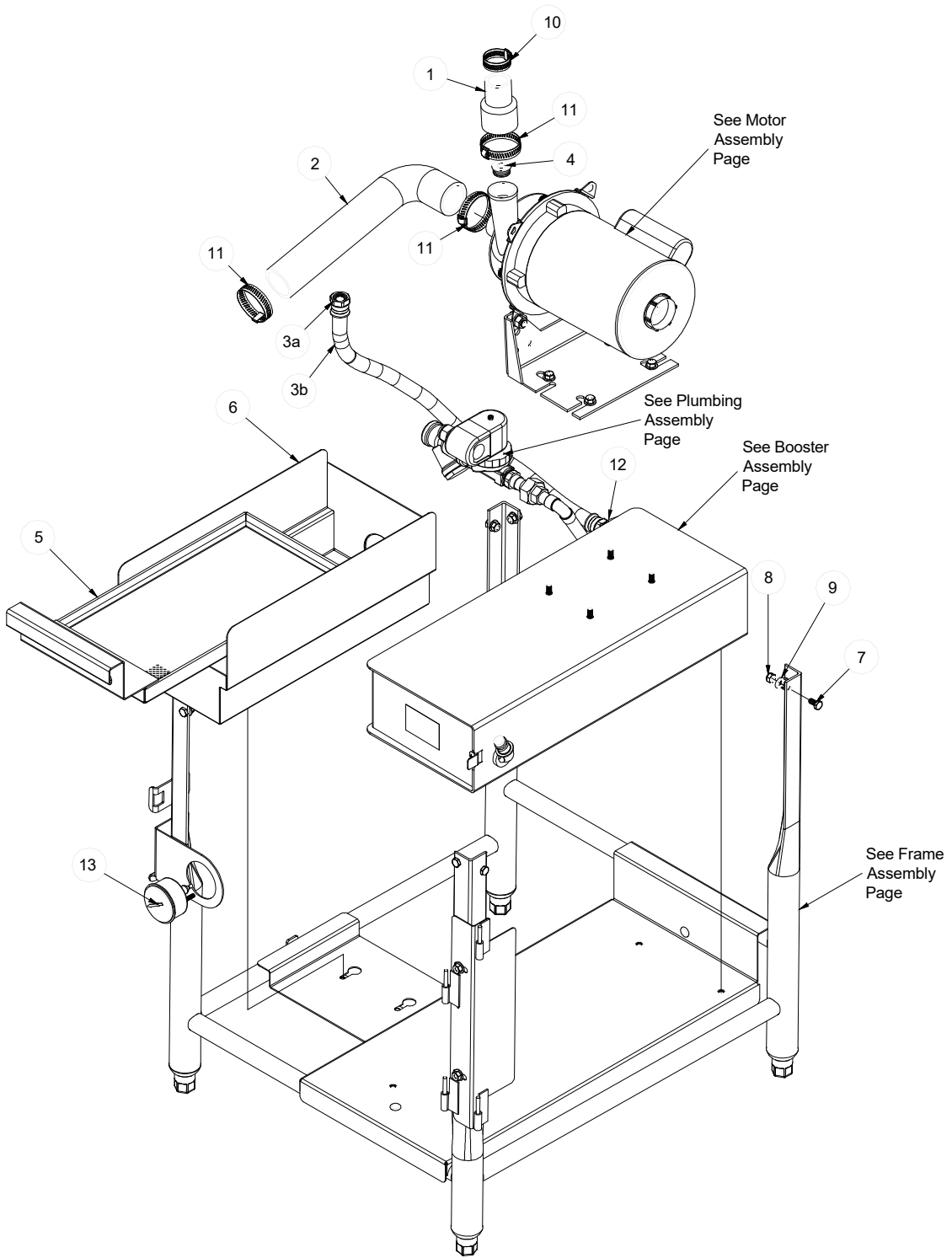


SECTION 5: PARTS SECTION**TUB ASSEMBLY CONTINUED**

ITEM	QTY	DESCRIPTION	Mfg. No.
1	1	Tub Weldment	05700-003-09-51
1a	1	Tub Weldment (Double Door)	05700-003-28-15
2	1	Lower Manifold Weldment	05700-002-45-51
3	2	Manifold Gasket	05700-111-35-03
4	1	Drain Seat Insert	05700-021-34-38
5	1	Spillway Gasket	05700-111-34-52
6	1	Spillway Weldment	05700-031-37-86
7	23	Locknut, 1/4"-20 S/S Hex with Nylon Insert	05310-374-01-00
8	1	Manifold O-Ring	05330-111-35-15
9	1	Modified Casting Wedge	09515-011-46-61
10	2	Bolt, 3/8"-16 x 1 1/4" S/S	05305-276-10-00
11	2	Washer, 3/8" Bevel-Square Iron	05311-011-35-36
12	2	Lockwasher, 3/8"	05311-276-01-00
13	2	Nut, 3/8"-16 S/S Hex	05310-276-01-00
14	1	Complete Wash Arm Assembly	05700-003-31-60
14a	1	Wash Arm Weldment w/ End Plugs	05700-003-31-61
	1	Wash Arm End Plugs	05700-003-31-59
14b	1	Wash Arm O-ring	05330-002-60-69
14c	1	Wash Arm Bearing Assembly	05700-021-35-97
15	1	Sump Strainer	05700-002-60-50
16a	1	Stand Pipe Weldment	05700-021-33-29
16b	1	Stopper, Stand Pipe	05700-121-35-54
17	1	Drain Link Assembly	05700-002-45-52
17a	1	Drain Link	05700-002-40-83
17b	1	Nut, Hex, 5/16"-18	05310-275-01-00
17c	1	Drain Link Connector	05700-002-38-10
18	1	Hair Pin, 1/8" to 1"	05315-011-60-09
19	1	Fill Tube Weldment	05700-002-45-61
20	18	Washer, 1/4"-20 I.D.	05311-174-01-00
21	3	Chemical Tube Grommet	05325-002-42-65
22	1 (2)	Pivot Plate, Left Door Complete Assembly	05700-002-45-62
22a	1	Door Pivot Plate Left Weldment	05700-002-45-63
22b	1	Door Pivot Plate Bearing	03110-002-45-09
23	1 (2)	Pivot Plate, Right Door Complete Assembly	05700-002-52-95
23a	1	Door Pivot Plate Right Weldment	05700-002-52-94
23b	1	Door Pivot Plate Bearing	03110-002-45-09
24	3	Bolt, 1/4"-20 x 1/2" Long	05305-274-02-00
25	6	Screw, 1/4"-20 x 5/8" Long	05305-274-24-00
26	1	Air Gap Weldment	05700-003-23-48
27	1	Halo Assembly	05700-003-23-49
27a	1	Halo Weldment	05700-003-16-65
27b	4	Spray Nozzle and Receptacle	04730-002-55-61
28	1	Gasket, Air Gap	05330-003-24-17
29	2	Clamp, 1" Nylon (Not Shown, located on bottom of tub.)	04730-002-41-88
30	1	Drain Solenoid Box Assembly	05700-003-09-61
30a	1	Solenoid Box Weldment	05700-003-35-88
30b	1	Drain Solenoid, 115V	04810-200-11-00
30c	4	Locknut, 10-24 with Nylon Insert	05310-373-01-00
30d	1	Decal, Warning	09905-100-75-93
30e	1	Solenoid Box Cover	05700-003-30-25

ALL NUMBERS THAT ARE IN PARENTHESES ARE FOR THE DOUBLE DOOR

SECTION 5: PARTS SECTION
FRAME AND MOTOR ASSEMBLY



SECTION 5: PARTS SECTION
FRAME AND MOTOR ASSEMBLY (CONTINUED)

ITEM	QTY	DESCRIPTION	Mfg. No.
1	1	Discharge Tube Connector	05700-011-70-34
2	1	Pump Suction Hose	05700-002-40-82
3	1	Discharge Hose Assembly	05700-002-45-58
3a	2	Fitting, 1/2" Pushlock, Female, Brass	04730-011-93-99
3b	1	Hose, 1/2" x 22 1/2" Long	05700-002-45-59
4	1	Wash Restrictor	05700-002-84-69
5	1	Accumulator Strainer Weldment	05700-003-33-25
6	1	Accumulator Weldment	05700-002-51-95
7	8	Bolt, 1/4"-20 x 1/2" Long	05305-274-02-00
8	18	Locknut, 1/4"-20 S/S Hex with Nylon Insert	05310-374-01-00
9	18	Washer, 1/4"-20 S/S	05311-174-01-00
10	1	Hose Clamp, 13/16 TO 1 1/2"	04730-719-06-09
11	3	Hose Clamp, 1 1/16" to 2 1/4"	04730-719-18-00
12	1	Close Nipple, 1/2" Brass	04730-207-15-00
13	1	Gauge, Thermometer	06685-111-68-48

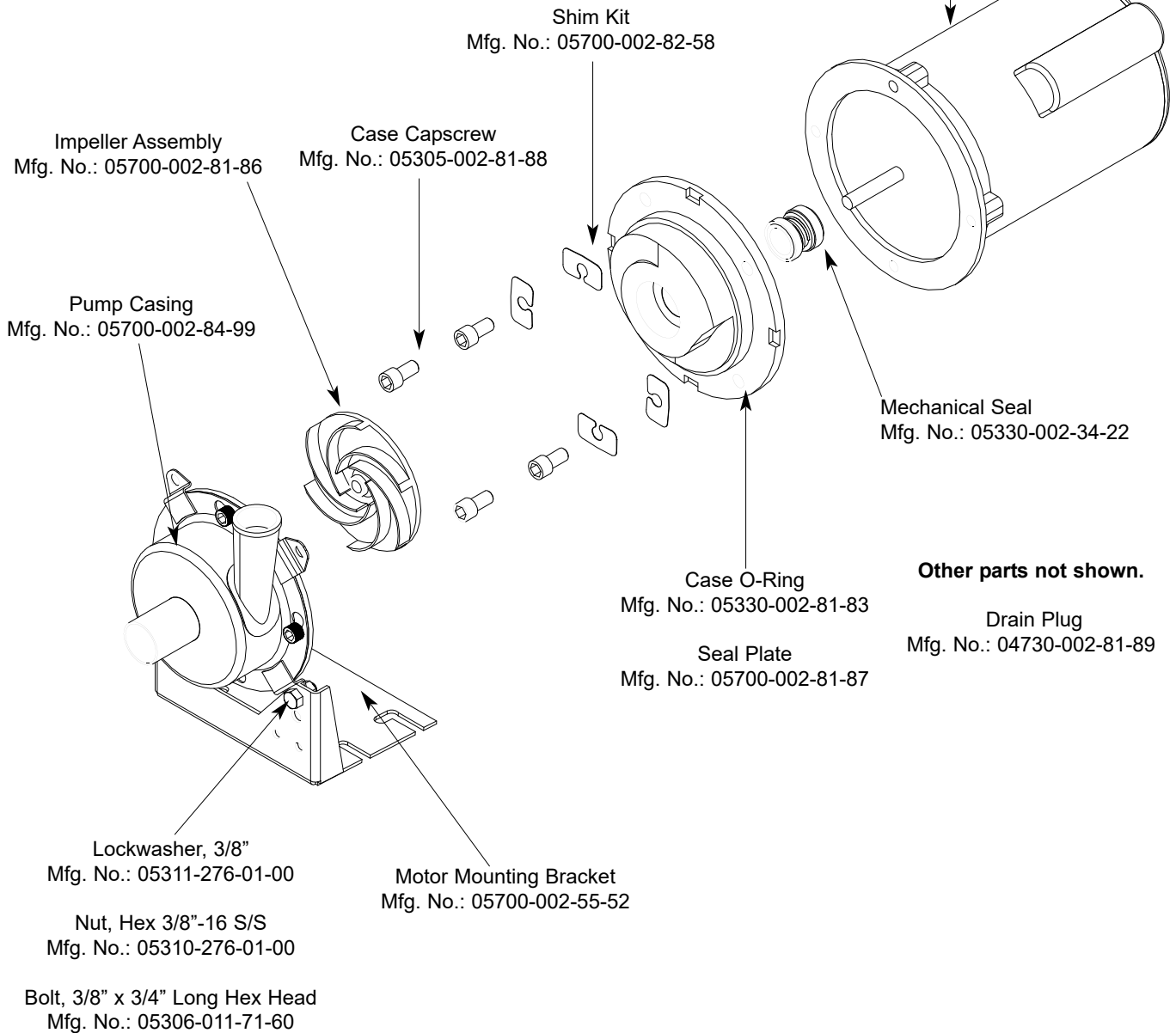
SECTION 5: PARTS SECTION

MOTOR & PUMP ASSEMBLY

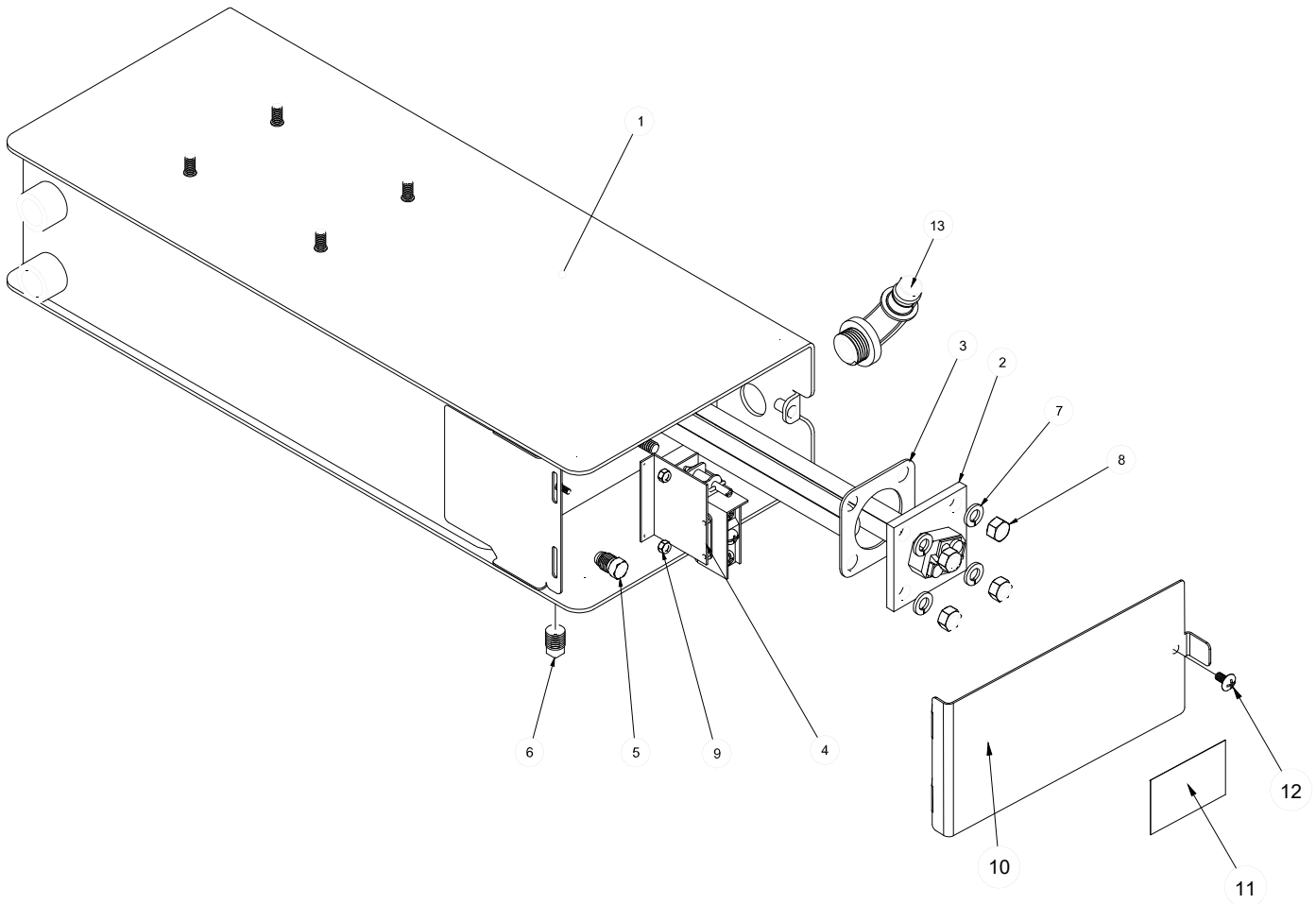
Complete Pump & Motor Assembly
Mfg. No.: 06105-002-16-29

Pump Only Assembly
Mfg. No.: 05700-002-79-49

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

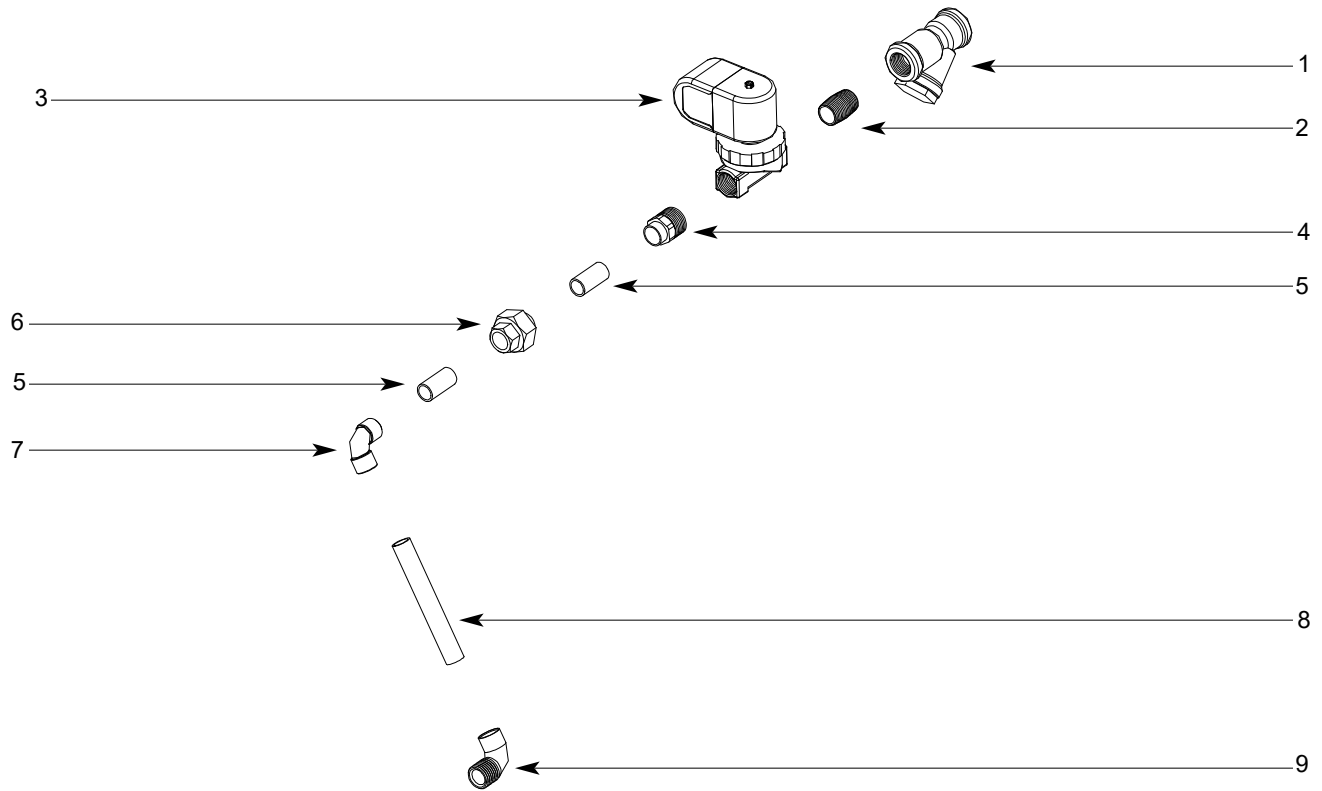


SECTION 5: PARTS SECTION
BOOSTER TANK ASSEMBLY



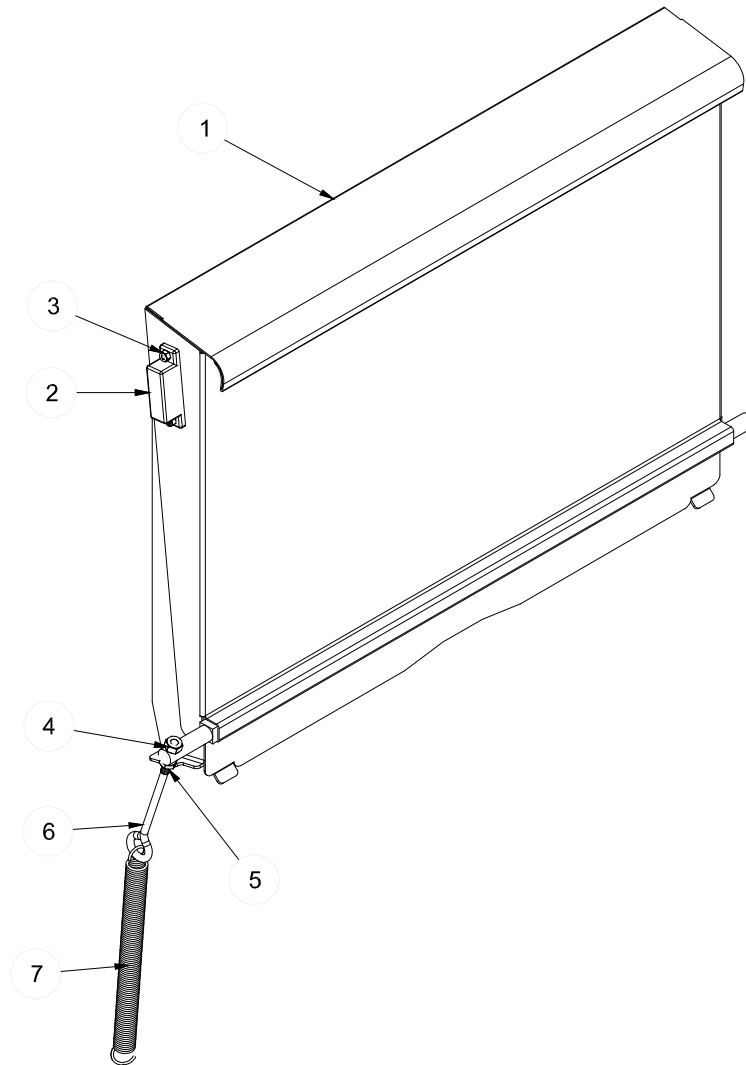
ITEM	QTY	DESCRIPTION	Mfg. No.
1	1	Booster Tank Weldment	05700-002-45-56
2	1	Heater, 120V, 2000 Watts	04540-002-45-13
3	1	Heater Gasket	05330-100-01-10
4	1	Thermostat	05930-003-13-65
5	1	Fitting, Imperial Brass	05310-924-02-05
6	1	Plug, 1/4" Brass	04730-209-01-00
7	4	Lockwasher, 5/16"	05311-275-01-00
8	4	Nut, 5/16"-18 S/S Hex	05310-275-01-00
9	2	Locknut, 6-32 S/S Hex w/ Nylon Insert	05310-373-03-00
10	1	Booster Tank Cover	05700-002-39-07
11	1	Decal, Warning, Disconnect Power	09905-100-75-93
12	1	Screw, 10-32 x 3/8"	05305-173-12-00
13	1	Fitting, 1/2" NPT x 90 Deg. Elbow	05975-003-35-32
13a	1	Nut, 1/2" NPT Nylon	05975-003-35-33

SECTION 5: PARTS SECTION
INCOMING PLUMBING ASSEMBLY



ITEM	QTY	DESCRIPTION	Mfg. No.
1	1	Y-Strainer	04730-217-01-10
2	1	Nipple, Close, 1/2" NPT, Brass	04730-207-15-00
3	1	Valve, Solenoid, 1/2" NPT, 115V	04810-100-12-18
4	1	Adapter, 1/2" Fitting (CU to Male)	04730-401-03-01
5	2	Tube, Copper, 1/2" x 1 1/4" Long	05700-001-08-28
6	1	Union, 1/2", Copper to Copper	04730-412-05-01
7	1	Elbow, 607, 1/2" Copper to Copper	04730-406-01-01
8	1	Tube, Copper, 1/2" x 4 1/4" Long	05700-001-01-60
9	1	Elbow, 90° (CU to MSPS)	04730-406-32-01

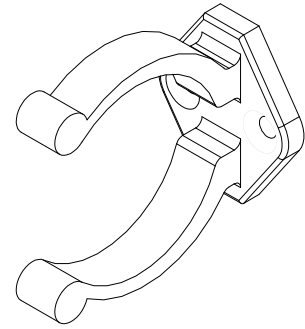
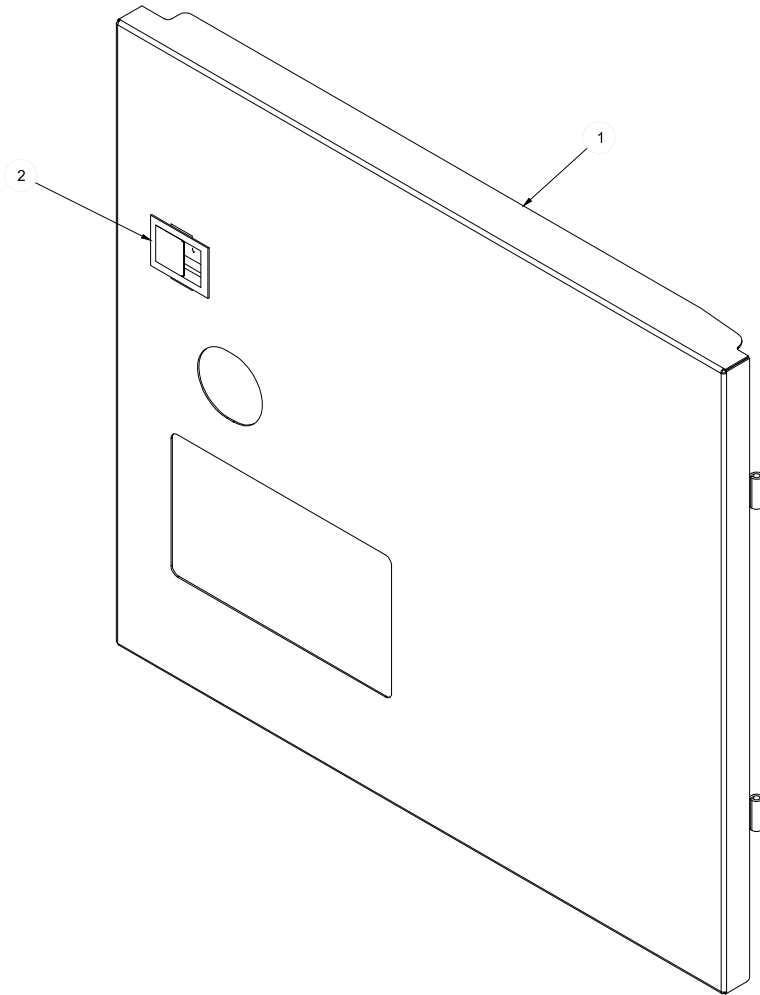
SECTION 5: PARTS SECTION
DOOR ASSEMBLY



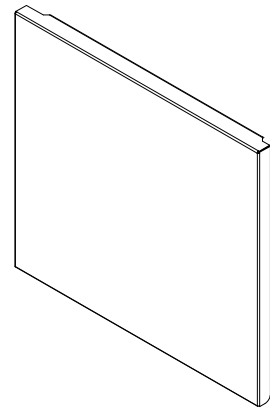
ITEM	QTY	DESCRIPTION	Mfg. No.
		Complete Door Assembly	05700-003-35-30
1	2 (2)	Door Weldment	05700-003-35-29
2	2 (2)	Magnet, Reed Switch	05930-002-68-53
3	4 (2)	Locknut, 6-32 S/S Hex with Nylon Insert	05310-373-03-00
4	2 (4)	Locknut, 1/4"-20 S/S Hex with Nylon Insert	05310-374-01-00
5	2 (2)	Nut, Hex 1/4"-20 S/S	05310-274-01-00
6	2 (2)	Bolt, 1/4"-20 Eye, S/S	05306-002-55-59
7	2 (2)	Spring, Door	05340-011-44-58
	1 (2)	Magnet Cover (not shown)	05700-004-07-38

ALL NUMBERS THAT ARE IN PARENTHESES ARE FOR THE DOUBLE DOOR

SECTION 5: PARTS SECTION
FRONT PANEL ASSEMBLY



Double Door Only
Panel Clips
2 per machine
05340-003-22-95



(Double Door Only)
Back Panel Weldment
1 per machine
05700-003-24-42

ITEM	QTY	DESCRIPTION
1	1	Complete Panel Assembly
2	1	Panel Weldment
3	1	Handle
4	1	Back panel weldment
	2	Panel clips

Mfg. No.
05700-003-09-53
05700-003-09-54
05340-001-96-30
05700-002-24-42
05700-033-22-95

SECTION 6: ELECTRICAL SCHEMATICS

SECTION 6: ELECTRICAL SCHEMATICS

NOBLE DG-E 115V, 50/60 HERTZ, SINGLE PHASE (BEFORE SERIAL # 14A288762)

115 VOLT 50/60 HERTZ 1 PHASE



L1



A terminal symbol represented by a small circle.



BLK



A wire connection symbol represented by a solid black dot.

BLK



A wire connection symbol represented by a solid black dot.

L1



A terminal symbol represented by a small circle.

BLK



A wire connection symbol represented by a solid black dot.

S1



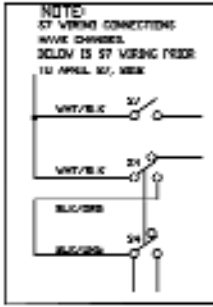
A terminal symbol represented by a small circle.

SECTION 6: ELECTRICAL SCHEMATICS

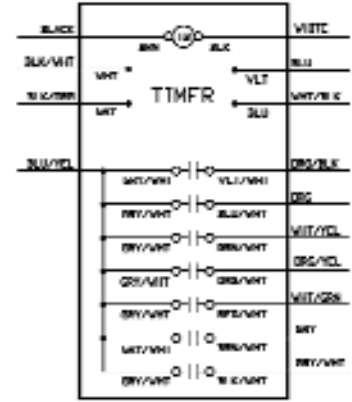
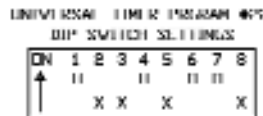
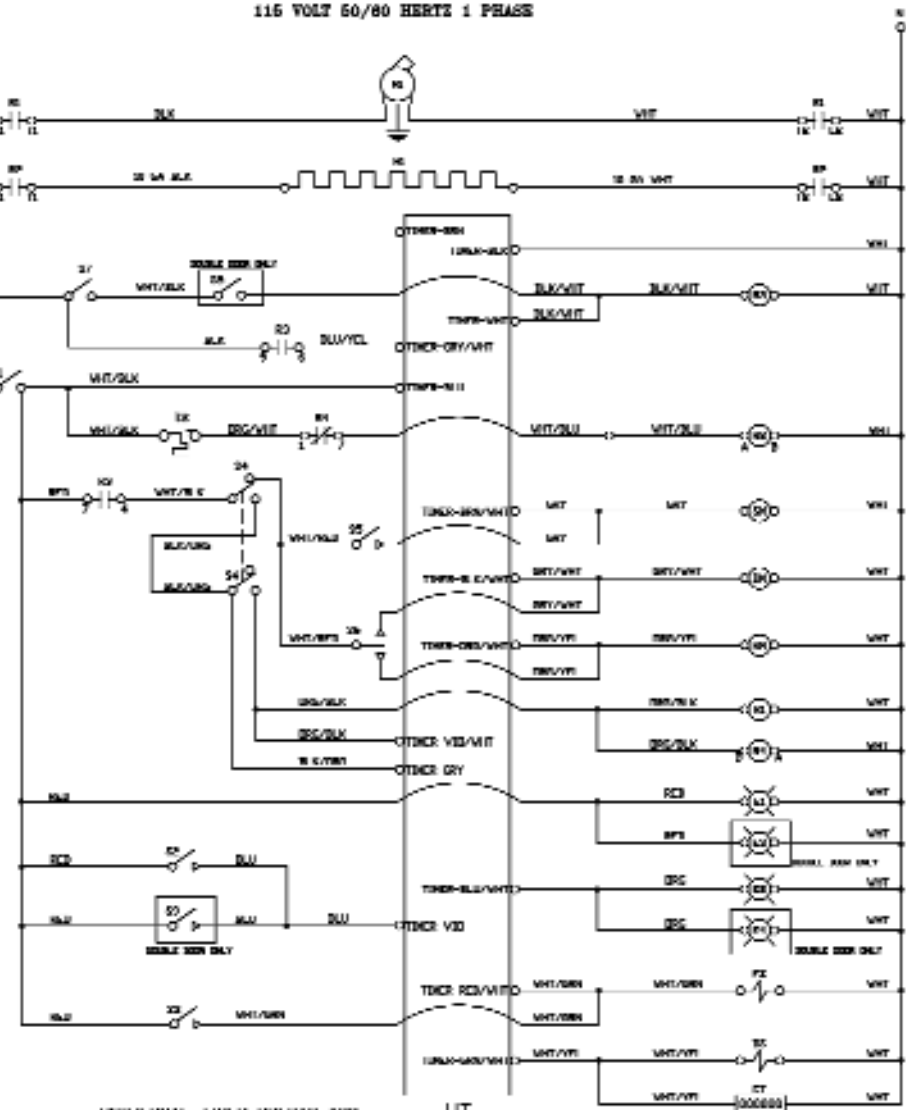
NOBLE DG-E 115V, 50/60 HERTZ, SINGLE PHASE (AFTER SERIAL # 14A288762)

ELECTRICAL DIAGRAM

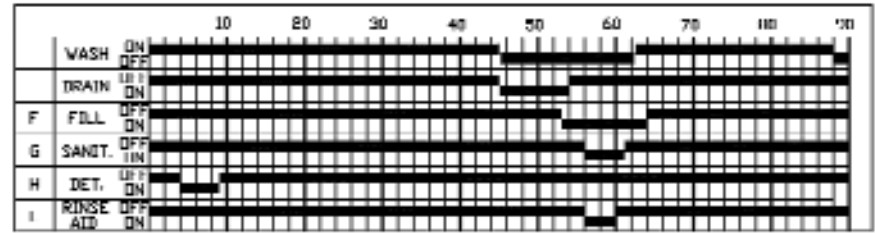
115 VOLT 50/60 HERTZ 1 PHASE



- LEGEND**
- I 1 N POWER DISTRIBUTION IN BOX
 - GRD GROUND
 - T2 THERMOSTAT
 - H2 MAINTAINING HEATLK
 - M1 WASH PRIME METER
 - TM DIFFERENT METER
 - RM RINSE AID METER
 - SM SANITIZER METER
 - UT UNIVERSAL TIMER
 - R1 WASH METER CONTACTOR
 - R2 HEATER RELAY
 - R3 DRAIN RELAY
 - R4 HEATER DISABLE RELAY
 - S1 POWER SWITCH
 - S2 START SWITCH
 - S3 FILL SWITCH
 - S4 BELINE SWITCH
 - S5 SANITIZER PRIME SWITCH
 - S6 1/2 RINSE PRIME SWITCH
 - S7 DOOR SWITCH
 - F1 POWER LIGHT
 - E2 CYCLE LIGHT
 - DS DRAIN SOLENOID
 - FX FILL SOLENOID
 - CT CYCLE COUNTER
- THE FOLLOWING ARE SPECIFIC TO DOUBLE DOOR UNITS ONLY:
- S8 DOOR SWITCH #2
 - S9 START SWITCH #2
 - E3 POWER LIGHT #2
 - E4 CYCLE LIGHT #2



TIMING CHART

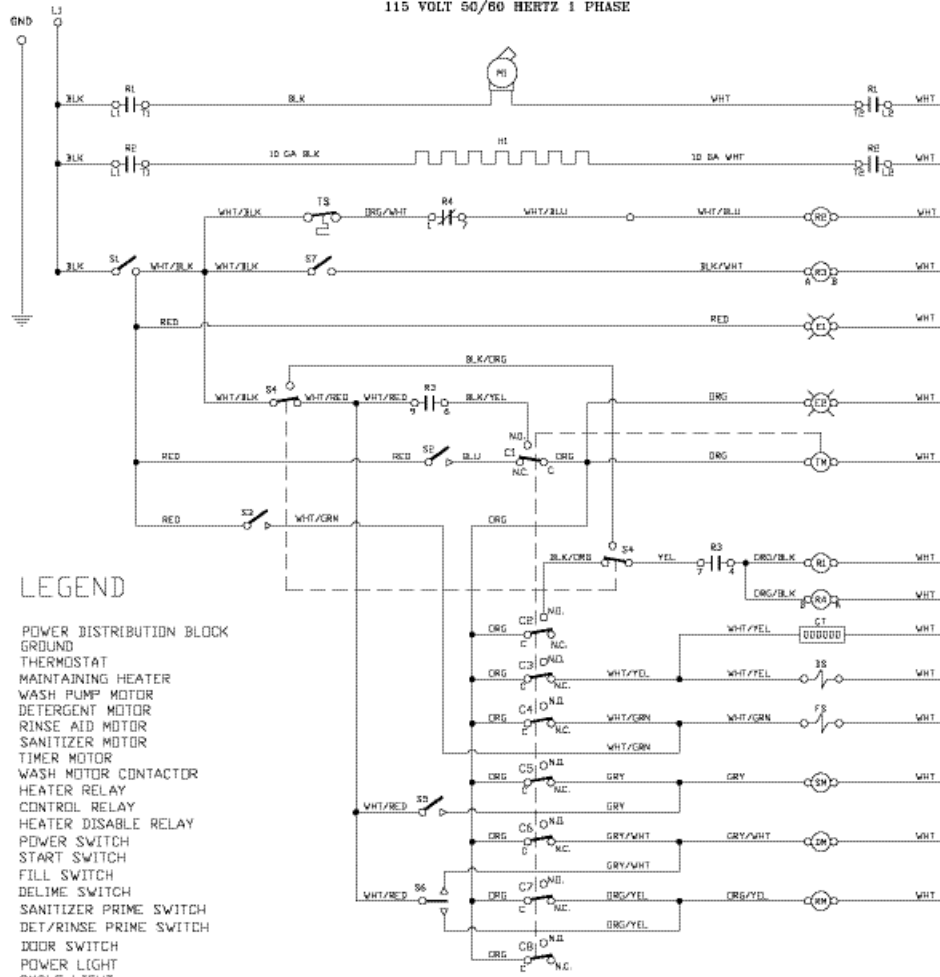


SECTION 7: ELECTRICAL SCHEMATICS

NOBLE DG-E, 115V, 50/60 HERTZ, SINGLE PHASE

ELECTRICAL DIAGRAM

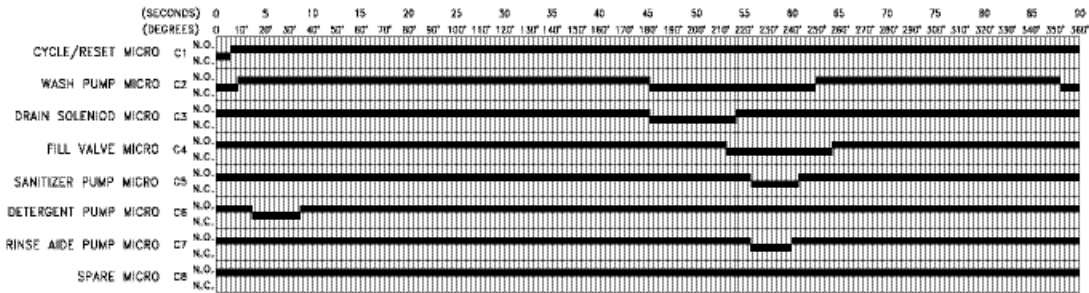
115 VOLT 50/60 HERTZ 1 PHASE



LEGEND

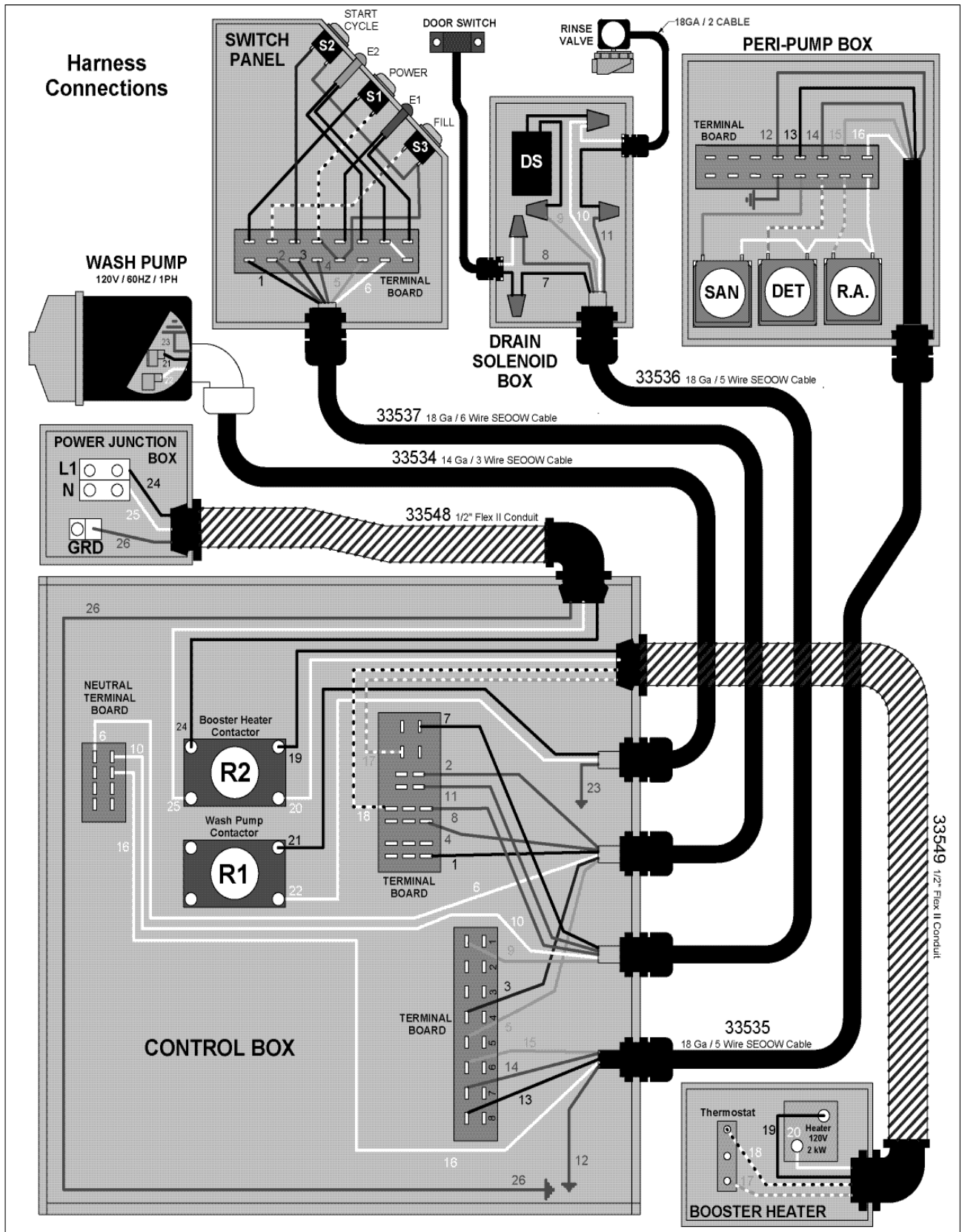
- LI N POWER DISTRIBUTION BLOCK
- GND GROUND
- TS THERMOSTAT
- H1 MAINTAINING HEATER
- M1 WASH PUMP MOTOR
- DM DETERGENT MOTOR
- RM RINSE AID MOTOR
- SM SANITIZER MOTOR
- TM TIMER MOTOR
- R1 WASH MOTOR CONTACTOR
- R2 HEATER RELAY
- R3 CONTROL RELAY
- R4 HEATER DISABLE RELAY
- S1 POWER SWITCH
- S2 START SWITCH
- S3 FILL SWITCH
- S4 DELTINE SWITCH
- S5 SANITIZER PRIME SWITCH
- S6 DET/RINSE PRIME SWITCH
- S7 DOOR SWITCH
- E1 POWER LIGHT
- E2 CYCLE LIGHT
- S3 DRAIN SOLENOID
- F3 FILL SOLENOID
- CT CYCLE COUNTER
- C1 CYCLE/RESET MICROSWITCH
- C2 WASH MICROSWITCH
- C3 DRAIN MICROSWITCH
- C4 FILL VALVE MICROSWITCH
- C5 SANITIZER MICROSWITCH
- C6 DETERGENT MICROSWITCH
- C7 RINSE AID MICROSWITCH
- C8 SPARE MICROSWITCH

TIMING CHART



SECTION 7: ELECTRICAL SCHEMATICS

NOBLE DG-E HARNESS CONNECTIONS





Noble Warewashing • Lancaster, Pennsylvania
www.nobleproducts.biz

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