



INSTALLATION, OPERATION, AND SERVICE MANUAL

HT-180

HT-180
WITH VENTLESS
AND ENERGY RECOVERY



REVISION HISTORY

Revision Letter	Revision Date	Made by	Applicable ECN	Details
A	7-16-15	KAP	Process	Released to production.
B	9-8-15	KAP	N/A	Added Sleeve Hood Spacer to parts breakdown on pg. 21.
C	11-10-15	JH	N/A	Corrected part number for item #40 on pg. 25.
D	1-12-16	JH	QOF-386	Changed item 12 on page 25 to 05700-003-07-76. Added 05700-004-23-78 and 05700-004-23-79 to view (pg. 24) and parts list (pg. 25).
E	1-10-17	JH	N/A	Updated to new manual format. Removed language from pg. 9 indicating the pressure regulator is shipped standard with unit and added language indicating it is an option.
F	9-18-17	MAA	N/A	Updated HP from 3/4 to 1



Noble HT-180

Door-type dishmachine; electrically-heated, high-temp, hot-water sanitizing, with booster heater.

Noble HT-180

with Ventless and Energy Recovery

Door-type dishmachine; electrically-heated, high-temp, hot-water sanitizing, with booster heater and ventless energy recovery system.

Model: _____

Serial No.: _____

Installation Date: _____

Service Rep. Name: _____

Phone Number: _____

The manufacturer provides technical support for all of the dishmachines detailed in this manual. We strongly recommend that you refer to this manual before making a call to our technical support staff. Please have this manual with you when you call so that our staff can refer you, if necessary, to the proper page. Technical support is not available on holidays. Contact technical support toll free at 1-888-800-5672.

Technical support is available for service personnel only.

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SCHEMATICS

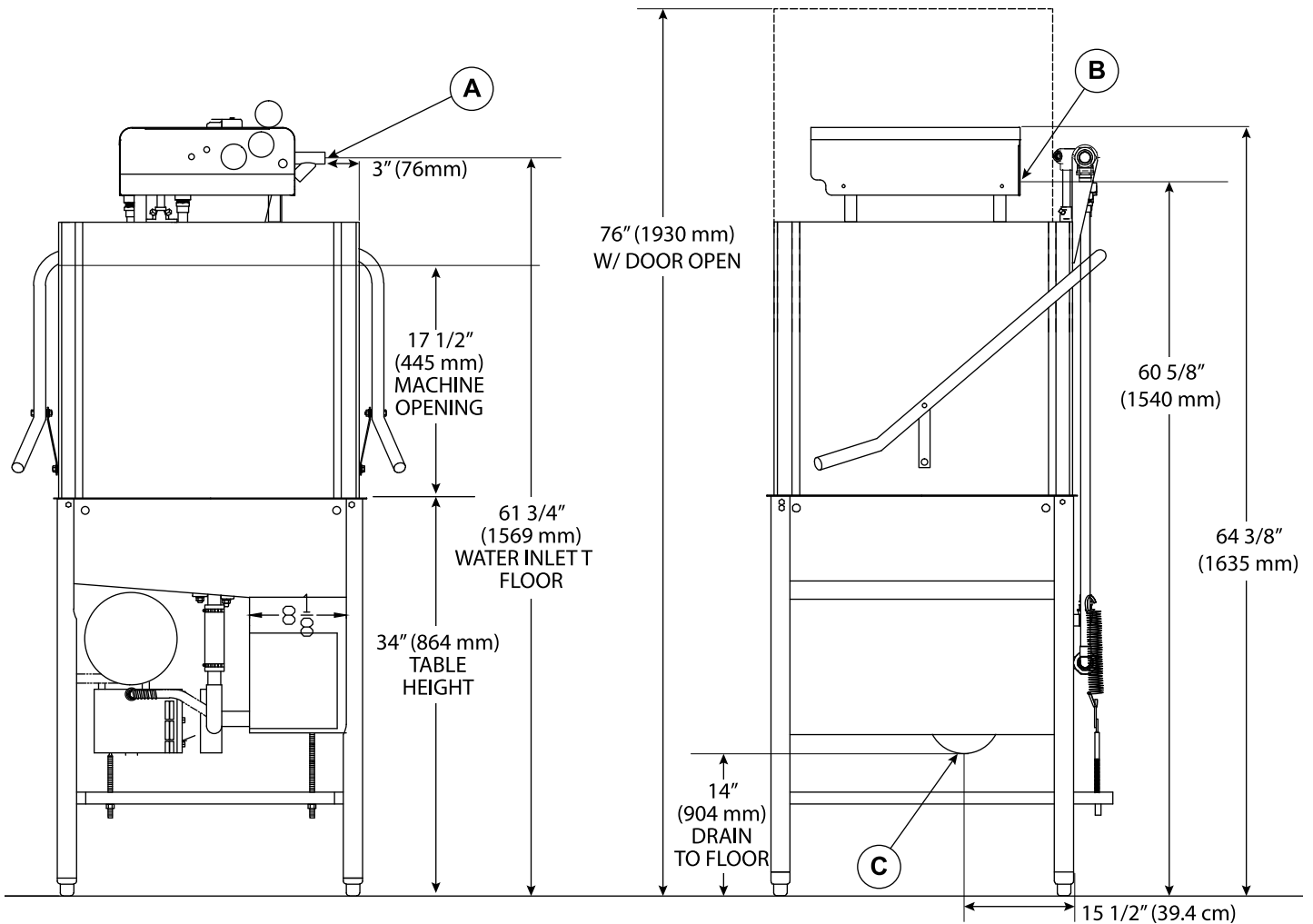
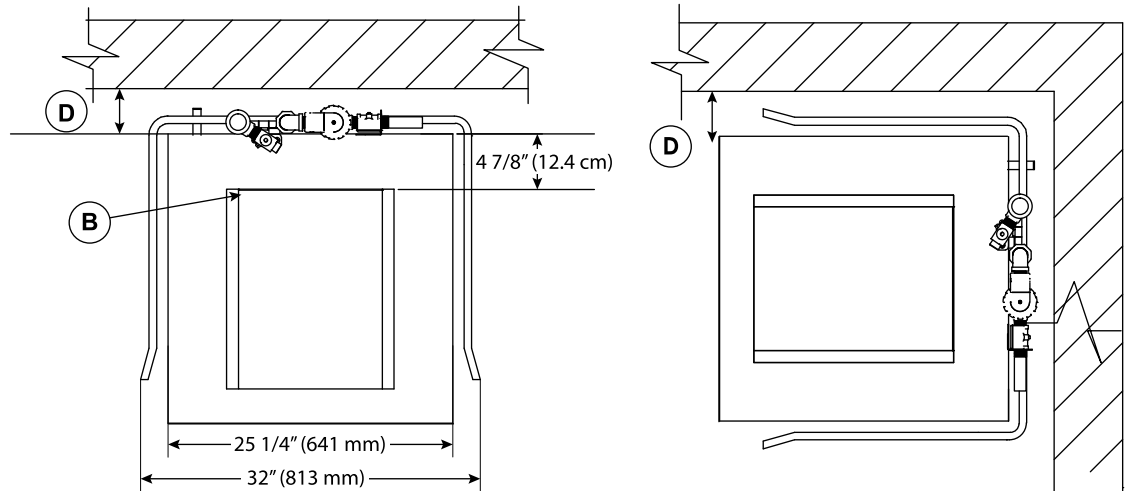
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LEGEND

- A- WATER INLET (1/2" NPT)
- B- ELECTRICAL CONNECTION POINT
- C- DRAIN (1 1/2" NPT)
- D- STANDARD CLEARANCE BETWEEN MACHINE AND WALL (WITH DISH TABLE) IS 4" (10.2 cm)

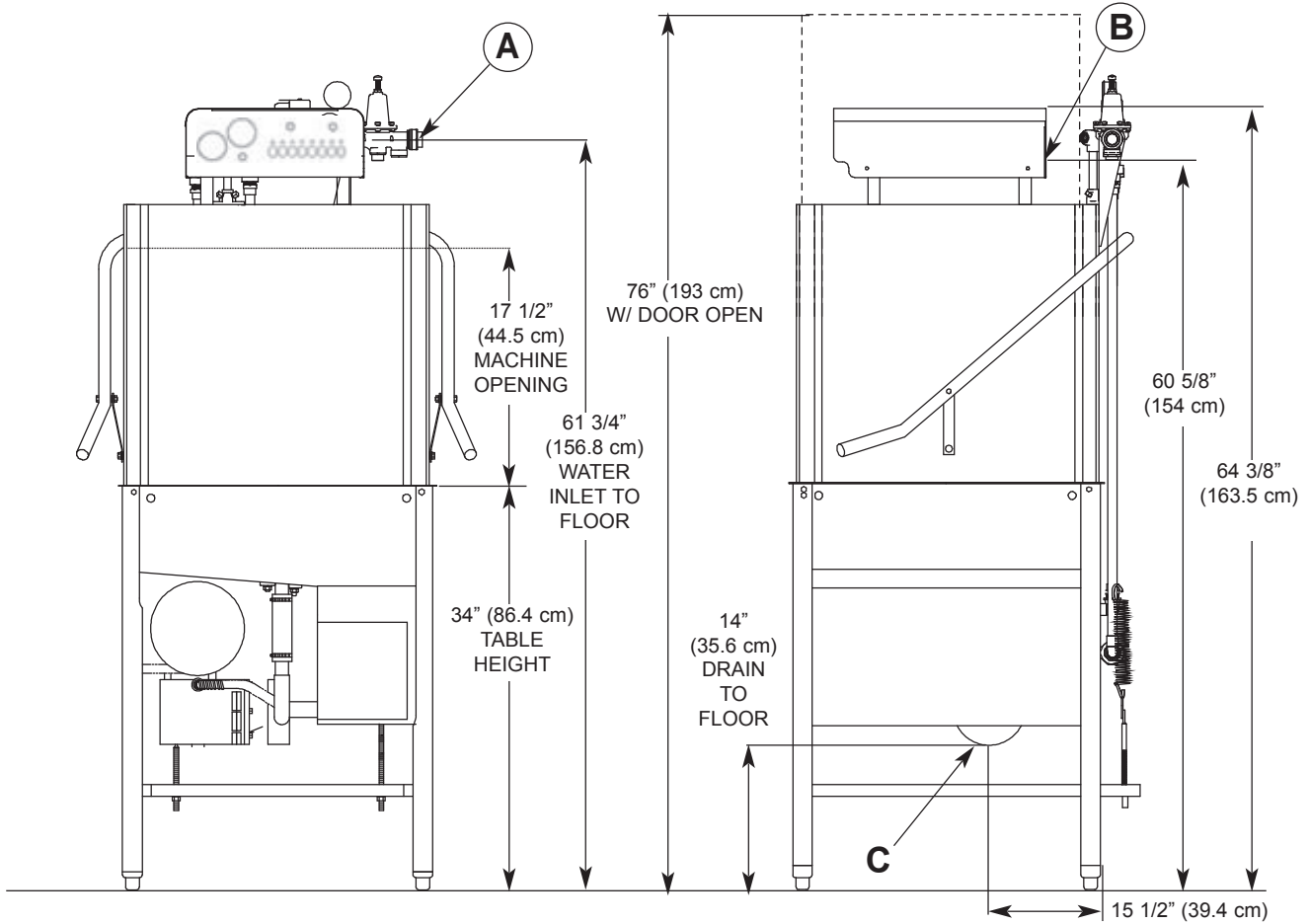
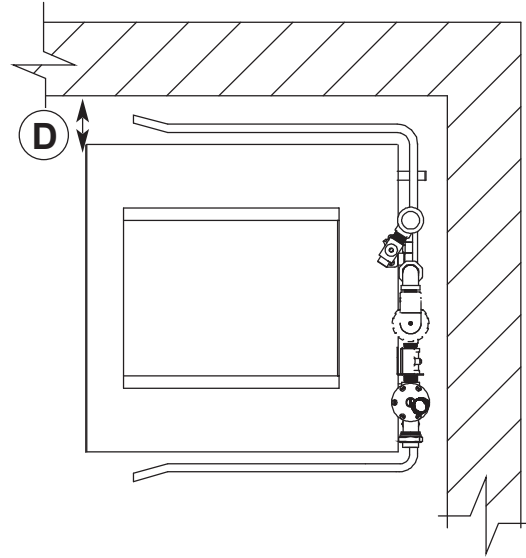
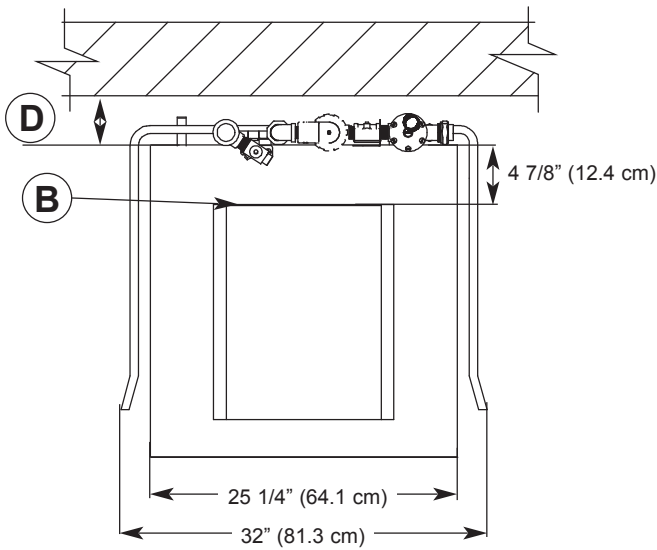


PRESSURE REGULATOR OPTION DIMENSIONS

SPECIFICATIONS

LEGEND

- A- WATER INLET (1/2" NPT)
- B- ELECTRICAL CONNECTION POINT
- C- DRAIN (1 1/2" NPT)
- D- STANDARD CLEARANCE BETWEEN MACHINE AND WALL (WITH DISH TABLE) IS 4" (10.2 cm)



SPECIFICATIONS

VENTLESS MACHINE DIMENSIONS

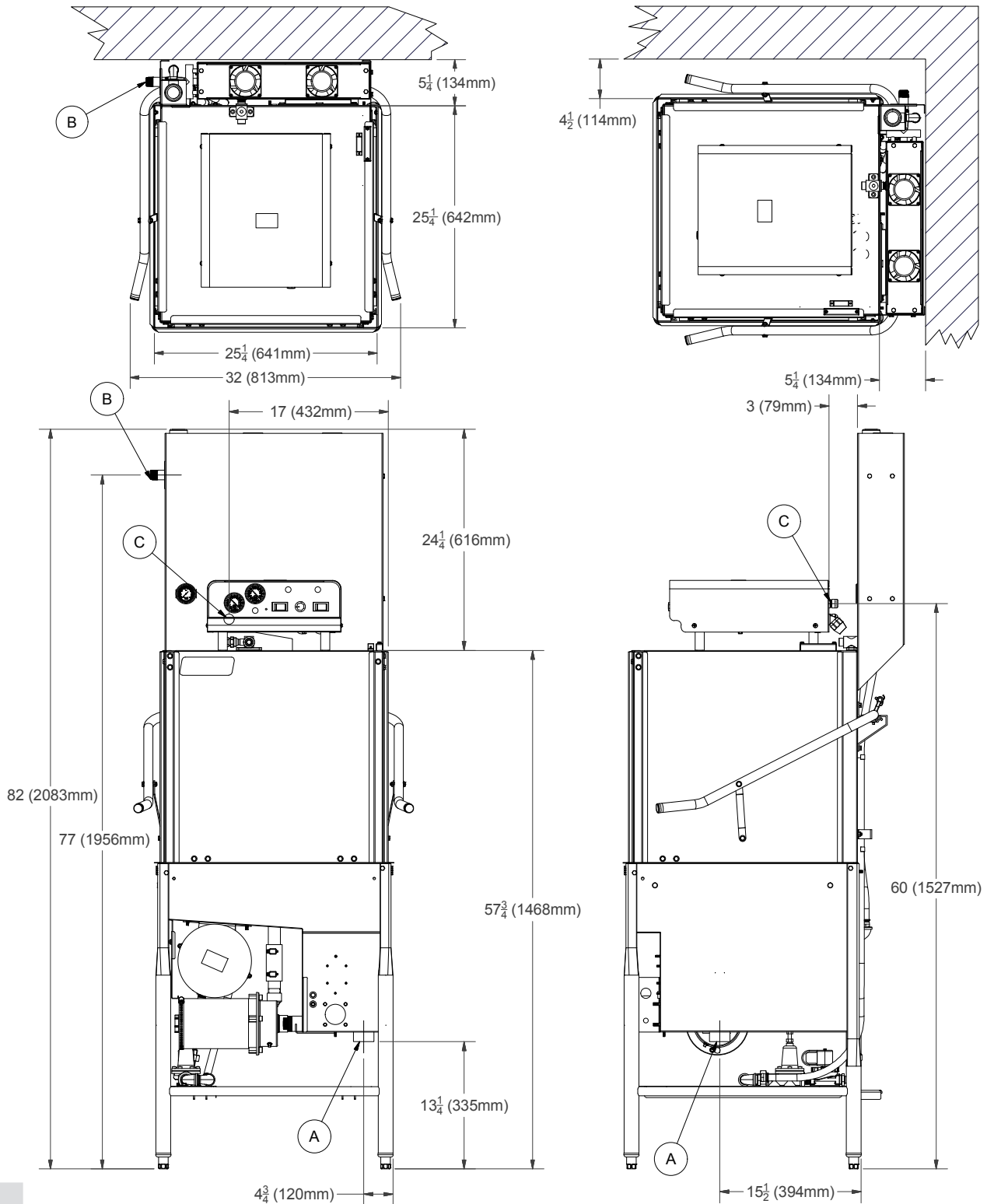
LEGEND

A- DRAIN (1 1/2" IPS)

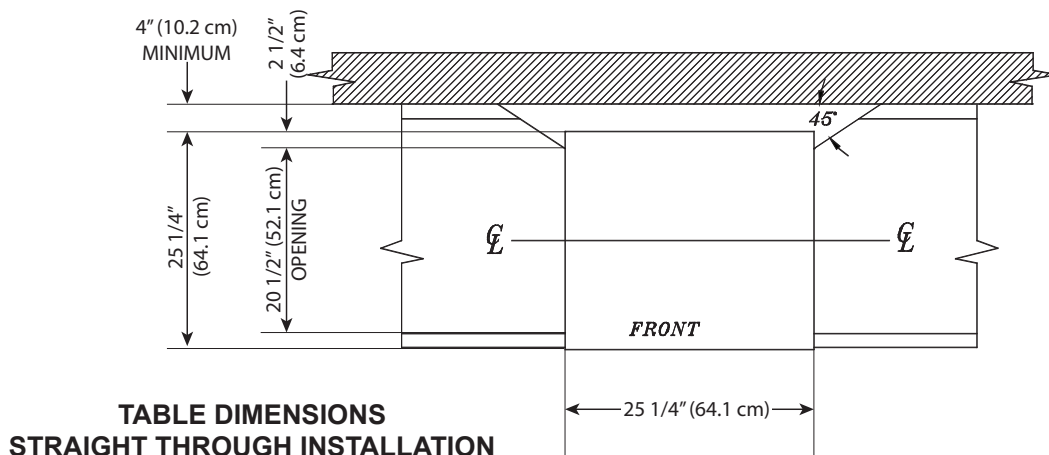
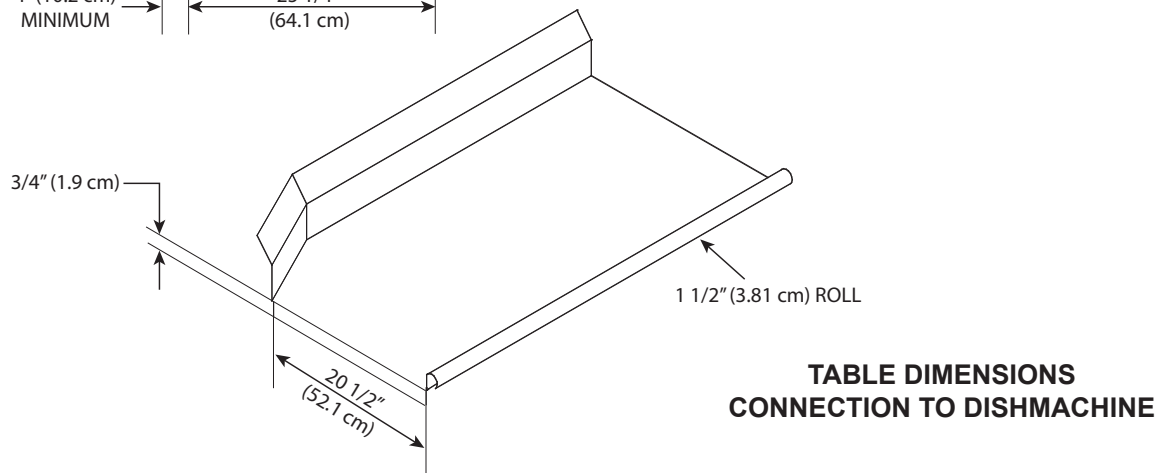
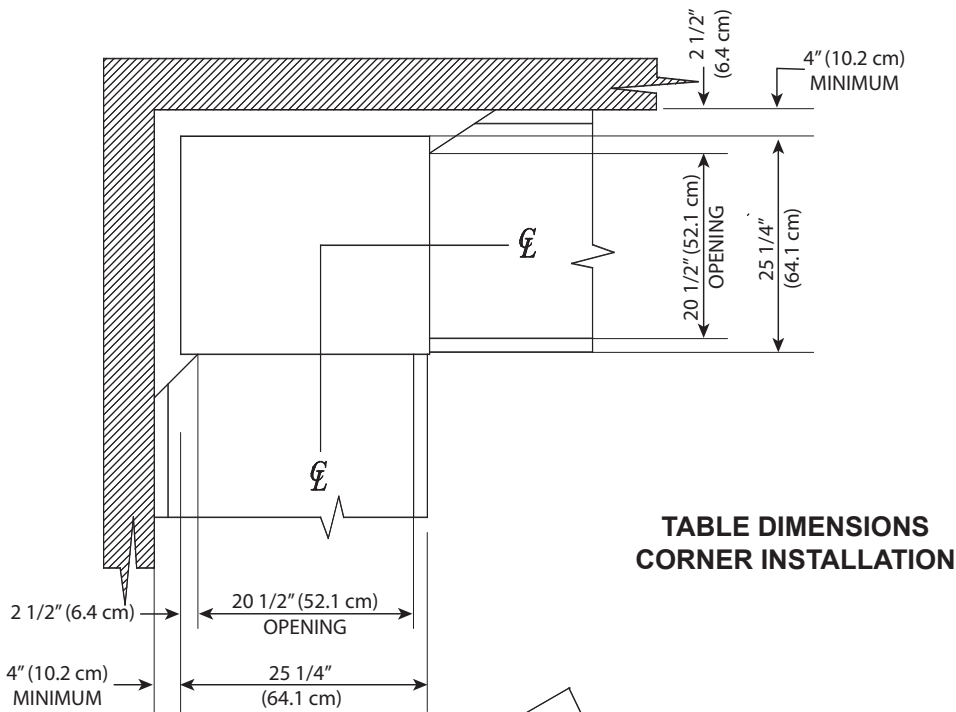
B- WATER INLET (3/4") MIP

C- ELECTRICAL CONNECTIONS

ALL VERTICAL DIMENSIONS ARE ± 1/2" DUE TO ADJUSTABLE BULLET FEET



NOTE: Please remove the front dress panel from the dishwasher if mounting dishwasher for a corner installation and attaching side tables. Corner installation will trap panel making it difficult to remove.



Model Designation:

Noble HT-180

PERFORMANCE/CAPABILITIES

Operating Capacity:

High Temperature

Racks per Hour	58
Dishes per Hour	1450
Glasses per Hour	1450

Low Temperature

Racks per Hour	50
Dishes per Hour	1250
Glasses per Hour	1250

Operating Cycle (SECONDS):

Minimum (other cycle times are available)

High Temperature

Wash Time	40
Rinse Time	13
Dwell Time	4
Total Cycle Time	57

High Temperature Ventless

Wash Time	40
Rinse Time	13
Dwell Time	4
Condensate Removal	30
Total Cycle Time	87

Low Temperature

Wash Time	45
Rinse Time	11
Dwell Time	10
Total Cycle Time	66

Tank Capacity (Gallons):

Wash Tank	8.0
Rinse Tank	3.0

Tank Capacity (Liters):

Wash Tank	30.3
Rinse Tank	11.4

Electrical Loads (as applicable):

Wash Motor HP	1
Wash Heater KW	4
Rinse Heater KW	4

WATER REQUIREMENTS

NOBLE & VENTLESS:

Wash Temperature (Minimum)(°F)	150
Wash Temperature (Minimum)(°C)	66
Rinse Temperature (Minimum)(°F)	180
Rinse Temperature (Minimum)(°C)	83
Inlet Water Temperature:	
12KW Rinse Heater (°F)	140
12KW Rinse Heater (°C)	60
14KW Rinse Heater (°F)	110
14KW Rinse Heater (°C)	44
Ventless (°F)	40-70
Ventless (°C)	4.4-21
Flow Pressure (PSI)	10
Water Line Size (NPT) (Vented)	1/2"
Water Line Size (Ventless)	3/4"
Drain Line Size (NPT)	1 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 is subject to change without notice.

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.

Noble HT-180 Electrical Characteristics:

VOLTS	PHASE	HZ	RINSE HEATER RATINGS	TOTAL AMPS	TYPICAL ELECTRICAL CIRCUIT
208	1	50	12KW@240V	71 A	90 AMP
208	1	50	14KW@240V	78 A	100 AMP
230	1	50	12KW@240V	78 A	100 AMP
230	1	50	14KW@240V	86 A	110 AMP

208	3	50	12KW@240V	45 A	60 AMP
208	3	50	14KW@240V	49 A	70 AMP
230	3	50	12KW@240V	48 A	60 AMP
230	3	50	14KW@240V	53 A	70 AMP
380	3	50	12KW@380V	29A	40 AMP
380*	3	50	14KW@208V	34A	45 AMP
415	3	50	12KW@415V	26 A	35 AMP
415	3	50	14KW@415V	29 A	40 AMP
440	3	50	12KW@460V	21 A	30 AMP
440	3	50	14KW@460V	25 A	35 AMP

* This model is wired in a wye configuration for the heaters.

VOLTS	PHASE	HZ	RINSE HEATER RATINGS	TOTAL AMPS	TYPICAL ELECTRICAL CIRCUIT
208	1	60	12KW@240V	69 A	90 AMP
208	1	60	14KW@240V	76 A	100 AMP
230	1	60	12KW@240V	76 A	100AMP
230	1	60	14KW@240V	84 A	110 AMP

208	3	60	12KW@240V	43 A	60 AMP
208	3	60	14KW@240V	47 A	60 AMP
230	3	60	12KW@240V	46 A	60 AMP
230	3	60	14KW@240V	51 A	70 AMP
460	3	60	12KW@480V	22 A	30 AMP
460	3	60	14KW@480V	25 A	35 AMP

VISUAL INSPECTION

Do not throw away packaging if damage is evident!

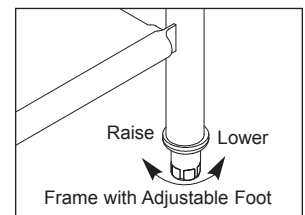
Before installing the unit, check the packaging and machine for damage. Damaged packaging is an indication that there might be some damage to the machine. If there is damage to both the packaging and machine, do not throw away the packaging. The dishmachine has been inspected and packed at the factory and is expected to arrive to you in new, in undamaged condition. However, rough handling by carriers or others may result in there being damage to the unit while in transit. If such a situation occurs, do not return the unit to the manufacturer; 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, as well as the dealer that sold you the unit.

UNPACKING THE MACHINE:

Once the machine has been removed from the container, ensure that there are no missing parts. This might not be obvious at first. If it is discovered that an item is missing, contact the manufacturer 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.

**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. Any valves that are fouled as a result of foreign matter left in the water line, and any expenses resulting from this fouling, are not the responsibility of the manufacturer.

CONNECTING THE DRAIN LINE

The drain for the Noble HT-180 models covered in this manual are gravity discharge drains. All piping from the 1 1/2" FNPT connection on the wash tank must be pitched (1/4" per foot) to the floor or sink drain. All piping from the machine to the drain must be a minimum 1 1/2" I.P.S. and shall not be reduced. There must also be an air gap between the machine drain line and the floor sink or drain. If a grease trap is required by code, it should have a flow capacity of 5 gallons per minute. Units equipped with Drain Quench Option, see page 60.

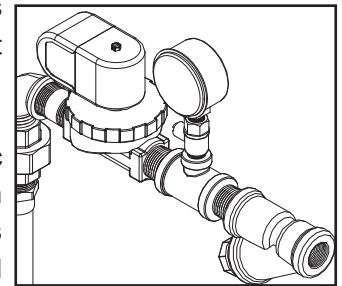
WATER SUPPLY CONNECTIONS

Ensure that you have read the section entitled “PLUMBING THE DISHMACHINE” above before proceeding. Install the water supply line (1/2” pipe size minimum) (3/4” pipe ventless) to the dishmachine line strainer using copper pipe. It is recommended that a water shut-off valve be installed in the water line between the main supply and the machine to allow access for service. Units equipped with Drain Quench Option, see page 60.

The water supply line is to be capable of 10 PSI “flow” pressure at the recommended temperature indicated on the data plate.

The manufacturer recommends the installation of a water pressure regulator in the incoming water line to ensure proper flowrate at all times and provides these devices as options. Please contact your dealer with any questions you may have.

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.



Incoming Plumbing Y-strainer Connection

It is also recommended that a shock absorber (not supplied with the Noble HT-180 model) 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 CONNECTION

The steam machines come with lines by which the source steam needs to be connected. Connect all steam lines to the machine as all applicable codes provide. See machine data plate for information concerning steam flow pressure.

CHEMICAL FEEDER EQUIPMENT

Your dishmachine DOES NOT COME WITH AN INTEGRAL CHEMICAL SUPPLY/ FEEDER SYSTEM. You must connect the unit to a third party chemical dispenser that meets the requirements of NSF Standard 29 for the machine to operate correctly.

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 CONNECTIONS

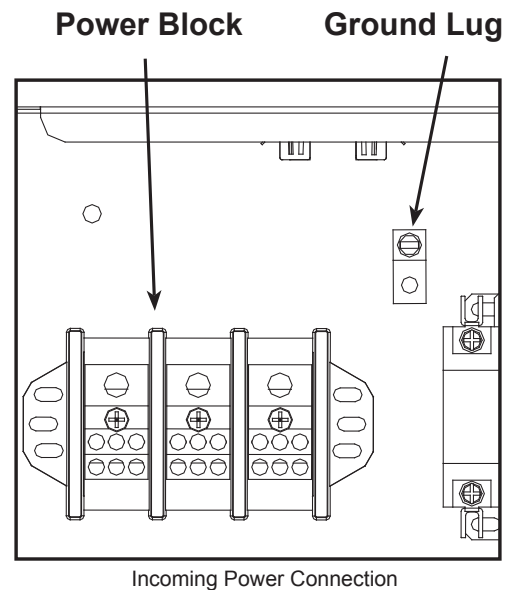
Disconnect electrical power at the breaker or disconnect switch and tag-out in accordance with procedures and codes.

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. This will require taking a Phillips head screwdriver and removing the four (4) screws on the front cover of the control box. Install 3/4" conduit into the pre-punched holes in the back of the control box. Route power wires and connect to power block and grounding lug. Install the service wires (L1, L2, 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.

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

1. The pan strainer and pump suction strainer are in place and are clean.
2. The overflow tube and o-ring are installed.
3. That the wash and rinse arms are screwed securely into place and that their endcaps are tight. The wash and rinse arms should rotate freely.

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.

FILLING THE WASH TUB Ensure that the delime switch is in the NORMAL position, and place the power switch into the ON position. The Noble should fill automatically and shut off when the appropriate level is reached (just below the pan strainer). Verify that the drain stopper is preventing the wash tub water from leaking excessively. There may be some slight leakage from the drain hole. Verify that there are no other leaks on the unit before proceeding any further. 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 unscrapped 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.

WARM-UP CYCLES For a typical daily start-up, it may be necessary to run the machine through 3 cycles to ensure that all of the cold water is out of the system and to verify that the unit is operating correctly. To cycle the machine, ensure that the power is on and that the tub has filled to the correct level. Lift the doors and the cycle light will illuminate. When the light goes out, close the doors, the unit will start, run through the cycle, and shut off automatically. Repeat this two more times. The unit should now be ready to proceed with the washing of ware.

WASHING A RACK OF WARE To wash a rack, open the doors completely (being careful for hot water that may drip from the doors) and slide the rack into the unit.

Close the doors and the unit will start automatically. Once the cycle is completed, open the door (again watching for the dripping hot water) and remove the rack of clean ware. Replace with a rack of soiled ware and close the doors. The process will then repeat itself.

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

SHUTDOWN & CLEANING At the end of the workday, close the doors. When the unit completes the cycle, turn the power switch to the OFF position and open the doors. Remove and clean the pan strainer. Remove the drain stopper from the tub and allow the tub to drain (NOTE: the wash tank water will be hot so caution is advised). Once the wash tub is drained, remove the pump suction strainer. Remove soil and debris from the strainer and set to the side. Unscrew the wash and rinse arms from their manifolds. Remove the endcaps and flush the arms with water. Use a brush to clean out the inside of the arms. If the nozzles appear to be clogged, use a toothpick to remove the obstruction. Wipe the inside of the unit out, removing all soil and scraps. Reassembly the wash and rinse arms and replace them in the unit. The arms only need to be hand tight, do not use tools to tighten them down. Reinstall the drain stopper and strainers and close the doors.

DETERGENT CONTROL

Detergent usage and water hardness are two factors that contribute greatly to how efficiently your dishmachine will operate. Using detergent in the proper amount can become, in time, a source of substantial savings. A qualified water treatment specialist can tell you what is needed for maximum efficiency from your detergent, but you should still know some basics so you'll understand what they are talking about.

First, you must understand that hard water greatly effects the performance of the dishmachine. Water hardness is the amount of dissolved calcium and magnesium in the water supply. The more dissolved solids in the water, the greater the water hardness. Hard water works against detergent, thereby causing the amount of detergent required for washing to increase. As you use more detergent, your costs for operating the dishmachine will increase and the results will decrease. The solids in hard water also may build-up as a scale on wash and rinse heaters, decreasing their ability to heat water. Water temperature is important in removing soil and sanitizing dishes. If the water cannot get hot enough, your results may not be satisfactory. This is why the manufacturer recommends that if you have installed the machine in an area with hard water, that you also install some type of water treatment equipment to help remove the dissolved solids from the water before it gets to the dishmachine.

Second, hard water may have you adding drying agents to your operating cycle to prevent spotting, when the real problem is deposited solids on your ware. As the water evaporates off of the ware, the solids will be left behind to form the spotting and no amount of drying agent will prevent this. Again, using treated water will undoubtedly reduce the occurrences of this problem.

Third, treated water may not be suitable for use in other areas of your operation. For instance, coffee made with soft water may have an acid or bitter flavor. It may only be feasible to install a small treatment unit for the water going into the dishmachine itself. Discuss this option with your qualified water treatment specialist.

Even after the water hardness problems have been solved, there still must be proper training of dishmachine operators in how much detergent is to be used per cycle. Talk with your water treatment specialist and detergent vendor and come up with a complete training program for operators. Using too much detergent has as detrimental effects as using too little. The proper amount of detergent must be used for job. It is important to remember that certain menu items may require extra detergent by their nature and personnel need to be made aware of this. Experience in using the dishmachine under a variety of conditions, along with good training in the operation of the machine, can go a long way in ensuring your dishmachine operates as efficiently as possible.

DETERGENT CONTROL (CONTINUED)

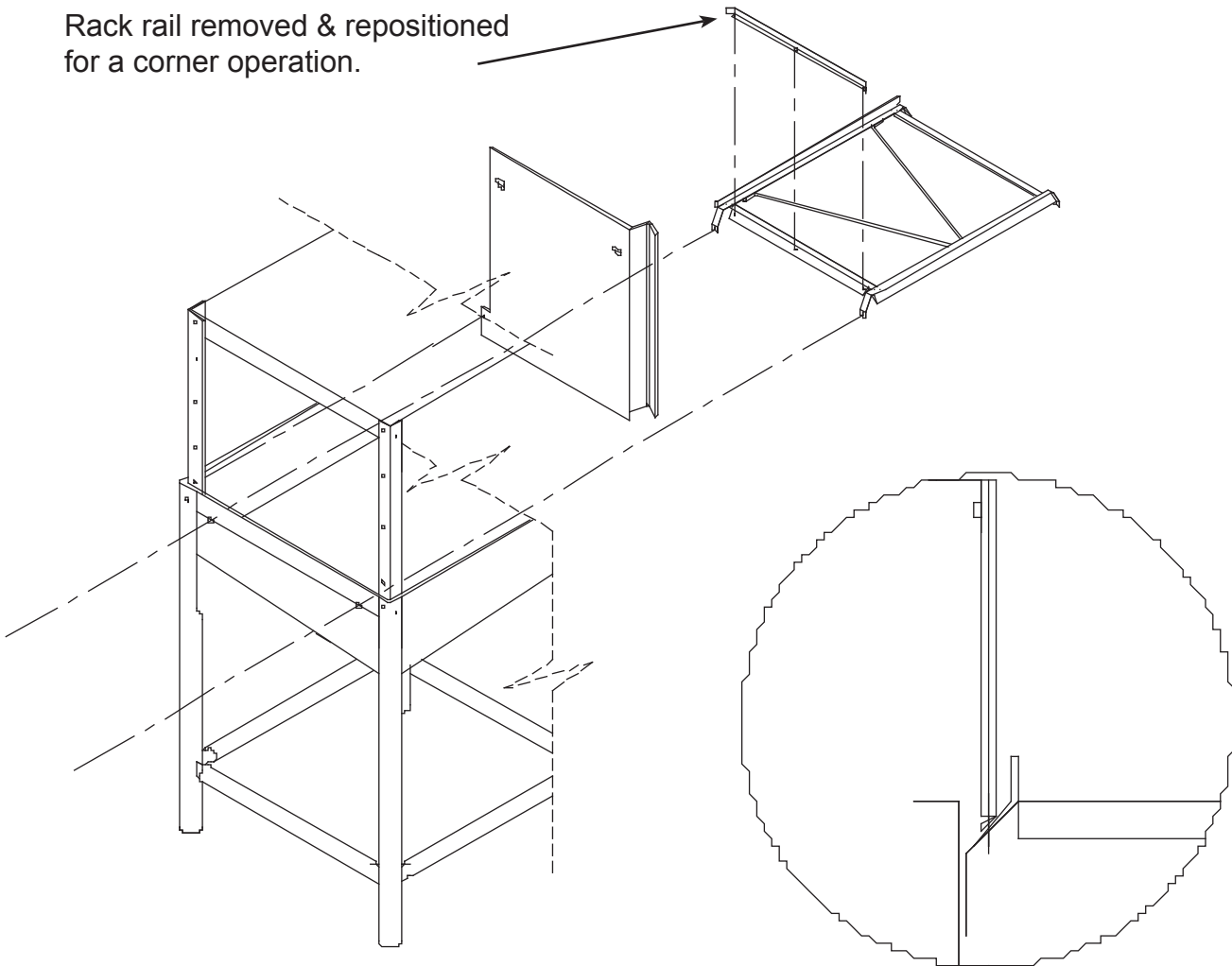
Certain dishmachine models require that chemicals be provided for proper operation and sanitization. Some models even require the installation of third-party chemical feeders to introduce those chemicals to the machine. The manufacturer does not recommend or endorse any brand name of chemicals or chemical dispensing equipment. Contact your chemical supplier for questions concerning these subjects.

Some dishmachines come equipped with integral solid detergent dispensers. These dispensers are designed to accommodate detergents in a certain sized container. If you have such a unit, remember to explain this to your chemical distributor upon first contacting them.

As explained before, water temperature is an important factor in ensuring that your dishmachine functions properly. The data plate located on each unit details what the minimum temperatures must be for either the incoming water supply, the wash tank and the rinse tank, depending on what model of dishmachine you have installed. These temperatures may also be followed by temperatures that the manufacturer recommends to ensure the highest performance from your dishmachine. However, if the minimum requirements are not met, the chances are your dishes will not be clean or sanitized. Remember, a dish can look clean, but it may not be sanitized. Instruct your dishmachine operators to observe the required temperatures and to report when they fall below the minimum allowed. A loss of temperature can indicate a much larger problem such as a failed heater or it could also indicate that the hot water heater for your operation is not up to capacity and a larger one may need to be installed.

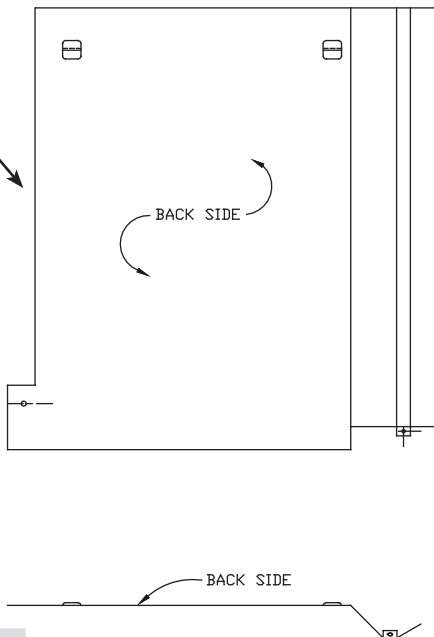
There are several factors to consider when installing your dishmachine to ensure that you get the best possible results from it and that it operates at peak efficiency for many years. Discuss your concerns with your local chemical distributor and water treatment specialist before there is a problem.

Rack rail removed & repositioned for a corner operation.



False panel positioned in unit.

Insert this side first.



1. Remove the rack assembly from the unit.
2. False panel will mount inside the dishmachine.
3. Position panel in unit on side to be closed.
4. Hold panel against side of dishmachine and push up.
5. Panel will clip in at the top, inside unit.
6. Holes in false panel will line up with rack assembly holes.
7. Re-install screws for rack assembly which will secure false panel to unit.
8. Re-assemble the rack track in an "L" shape for a corner operation.

PREVENTATIVE MAINTENANCE The dishmachines covered in this manual are designed to operate with a minimum of interaction with the operator. However, this does not mean that some items will not wear out in time. The manufacturer highly recommends that any maintenance and repairs not specifically discussed in this manual should be performed by **QUALIFIED SERVICE PERSONNEL ONLY**. Performing maintenance on your dishmachine may void your warranty if it is still in effect, so if you have a questions or concerns, do not hesitate to contact a **QUALIFIED SERVICE AGENCY**.

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

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

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

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

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 and you should discuss it with a **QUALIFIED SERVICE AGENCY** to determine what can be done.

**PREVENTATIVE
MAINTENANCE
(CONTINUED)**

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.



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.**

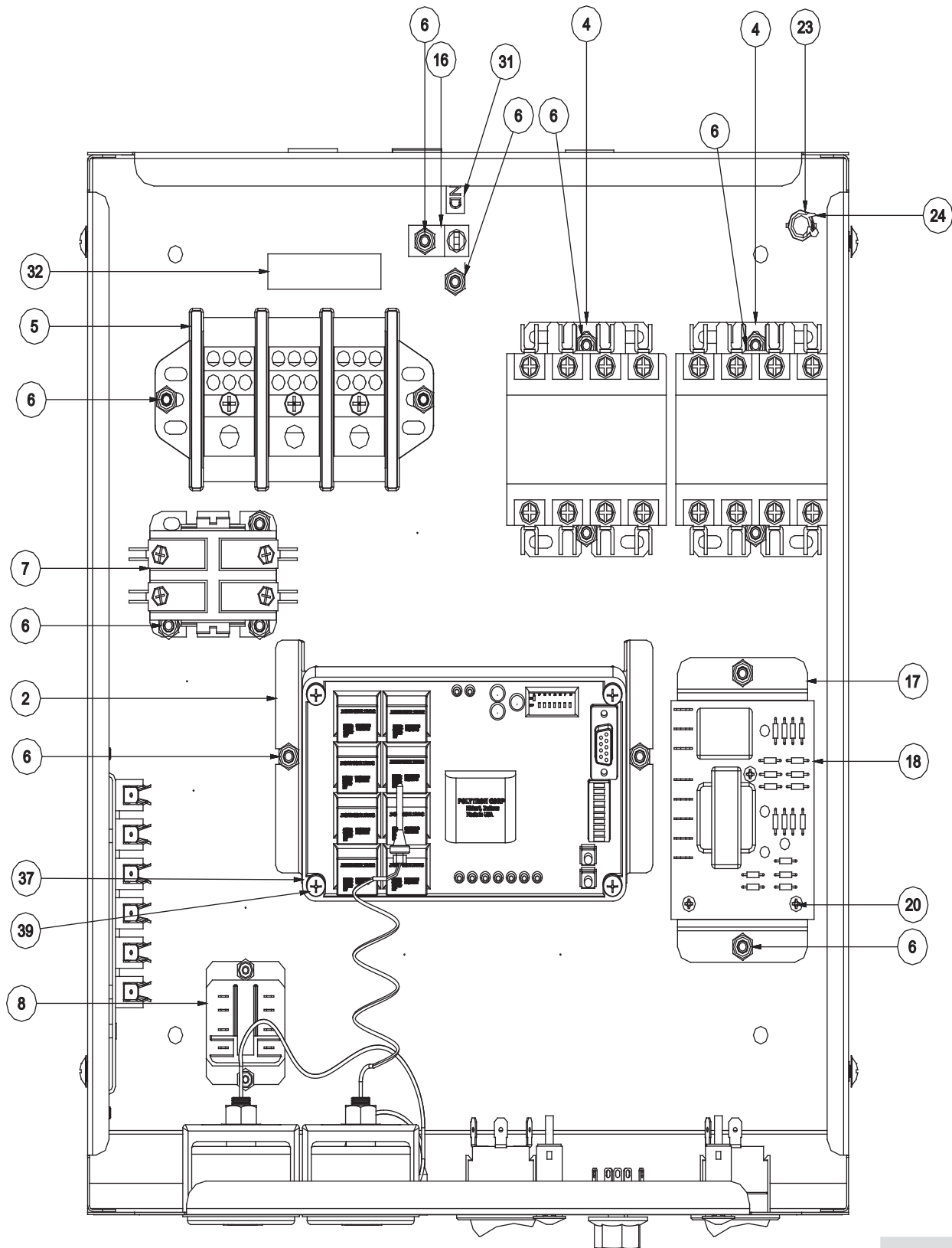
PROBLEM	POSSIBLE CAUSE	REMEDY
Dishmachine will not fill after the door is close. Power "ON" light is illuminated.	<ol style="list-style-type: none"> 1. Faulty rinse solenoid valve. 2. Faulty door switch. 3. Fouled/faulty high level probe. 	<ol style="list-style-type: none"> 1. Repair or replace valve as required. 2. Verify the wiring of the switch; if correct, replace the switch. 3. Clean probe if fouled. If clean, and still not working, replace.
Dishmachine will not fill after the door is closed. Power "ON" light is NOT illuminated.	<ol style="list-style-type: none"> 1. Service breaker tripped. 2. Machine not connected to power source. 3. Faulty power source. 	<ol style="list-style-type: none"> 1. Reset. If the breaker trips again, contact an electrician to verify the amp draw of the machine. 2. Verify that the machine has been properly connected to the power source. 3. Verify the wiring of the switch; if correct, replace switch.
Dishmachine will not run after the door is closed. Power "ON" light is illuminated and the unit is filling.	<ol style="list-style-type: none"> 1. Timer is faulty. 2. Wash motor faulty/damaged. 3. Wash motor contactor faulty. 	<ol style="list-style-type: none"> 1. Check to see that the timer is receiving power. If so, replace the timer assembly. 2. Verify that the wash motor is getting power. If so, replace the motor. 3. Check for continuity; if contacts are open, replace the contactor.
Dishmachine runs continuously in the wash cycle.	<ol style="list-style-type: none"> 1. Machine is in Delime mode. 2. Timer motor is faulty. 3. Cam timer jammed by obstruction. 	<ol style="list-style-type: none"> 1. Flip NORMAL/DELIME switch to NORMAL mode. 2. Verify that the timer is rotating. If not, check to see that the motor is receiving power. If so, replace the motor and/or timer assembly. 3. Remove obstruction.
Wash or rinse heater does not work	<ol style="list-style-type: none"> 1. Faulty heater element. 2. Faulty heater contactor. 3. Mis-adjusted/faulty thermostat(s). 	<ol style="list-style-type: none"> 1. Check element for continuity; if open, replace the heater. 2. Replace the contactor. 3. Verify operation and setting of thermostats, replace if necessary.
Dishmachine fill slowly and/or the rinse is weak.	<ol style="list-style-type: none"> 1. Clogged or obstructed rinse arms. 2. Low incoming water pressure. 3. Y-strainer is clogged 	<ol style="list-style-type: none"> 1. Remove and clean the rinse arms. 2. Adjust the water pressure regulator to ensure that there is 10A5 PSI flow. 3. Clean out the Y-strainer.
Rinse water not reaching required temperature.	<ol style="list-style-type: none"> 1. Faulty rinse heater. 2. Mis-adjusted/faulty thermostat(s). 3. Rinse thermometer is defective. 	<ol style="list-style-type: none"> 1. Check element for continuity; if open, replace heater. 2. Verify operation and setting of thermostats, replace if necessary. 3. Replace thermometer.

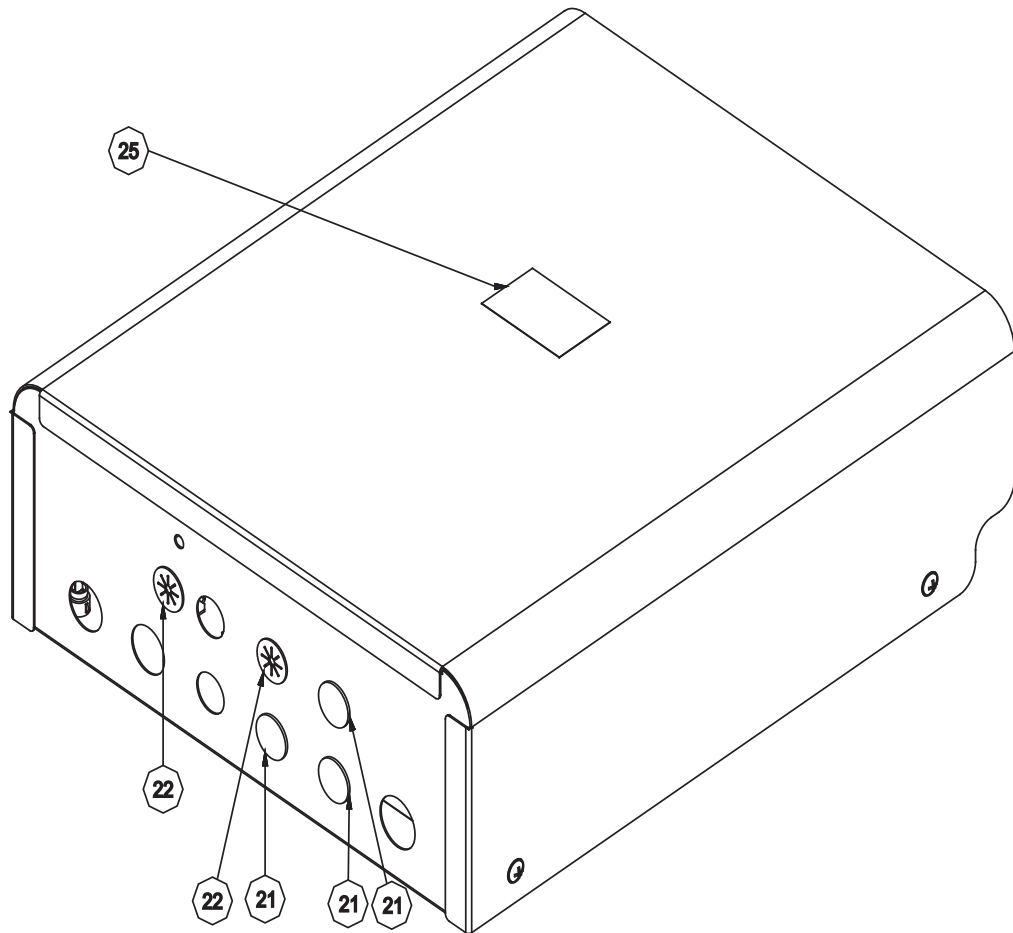
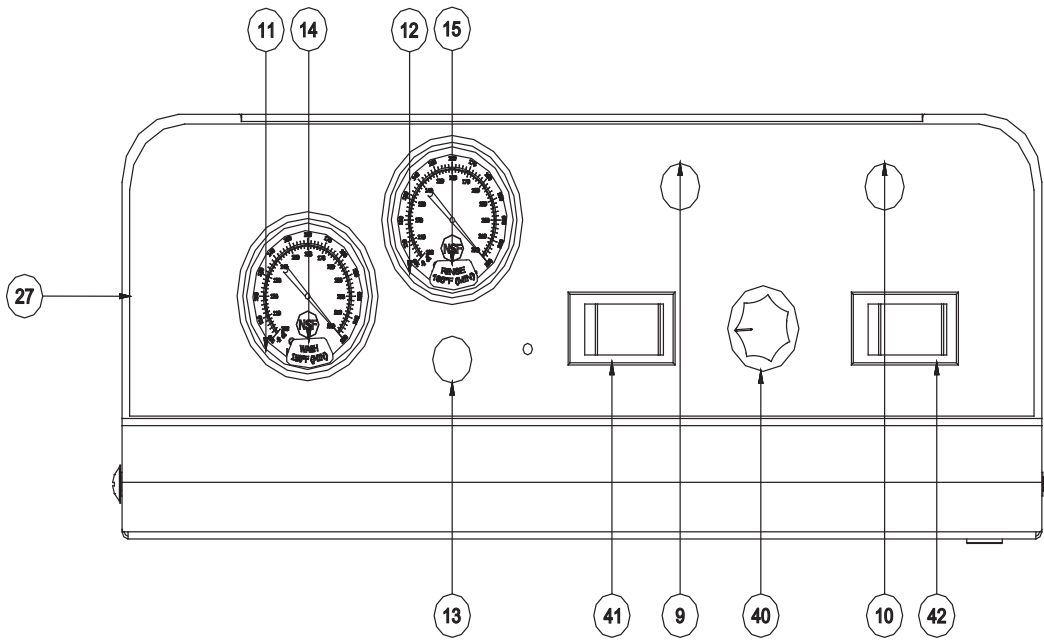


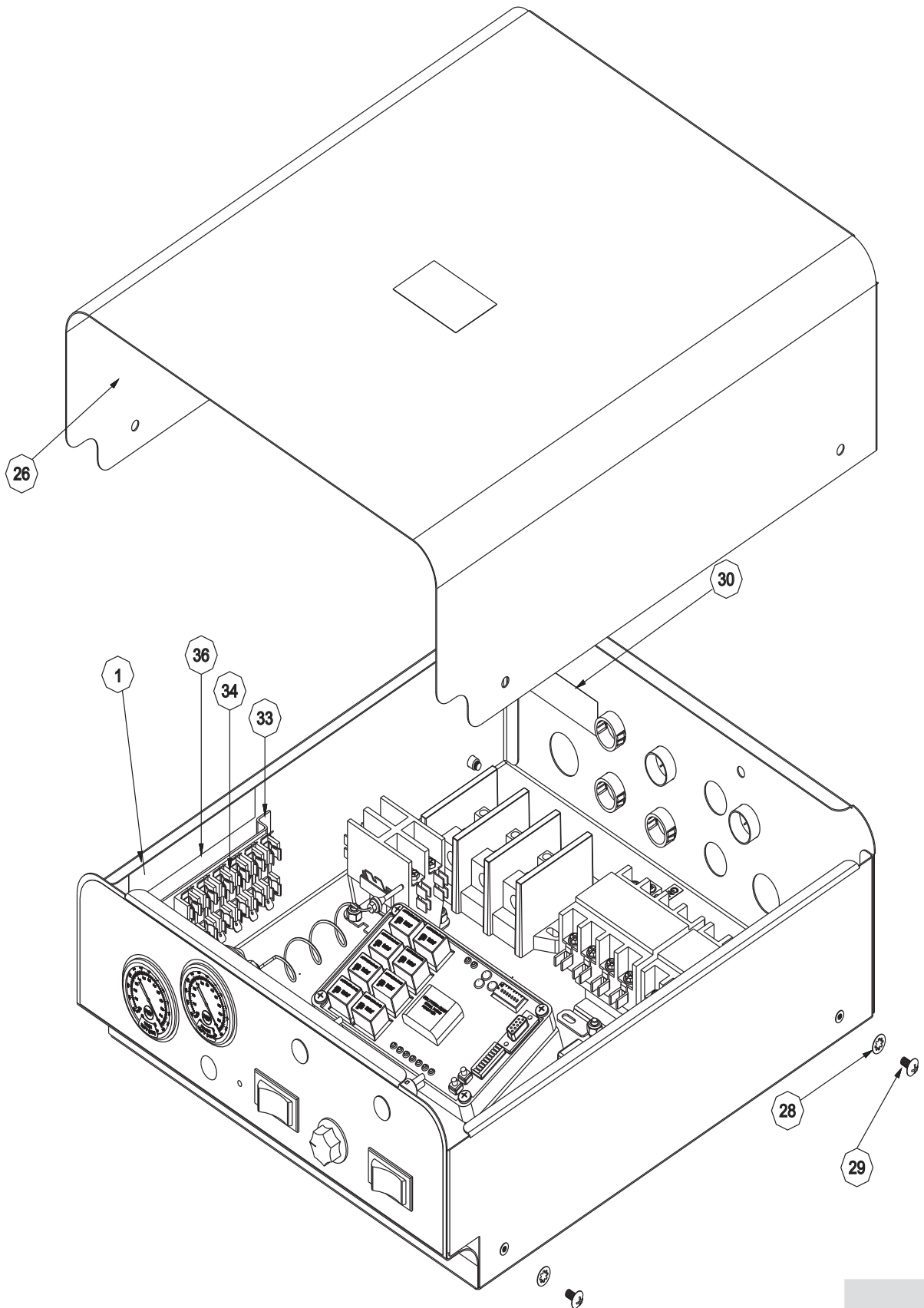
WARNING: Inspection, testing and repair of electrical equipment should only be performed by a qualified service technician. Many of the tests require that the unit have power to it and live electrical components be exposed. **USE EXTREME CAUTION WHEN TESTING THE MACHINE.**

PROBLEM	POSSIBLE CAUSE	REMEDY
Machine doesn't drain when power button is pressed.	<ol style="list-style-type: none"> 1. Drain clogged. 2. Standpipe not removed prior to drain. 3. Defective drain valve. 	<ol style="list-style-type: none"> 1. Remove obstruction. 2. Remove standpipe and run drain cycle again. 3. Replace.
No indication of pressure.	<ol style="list-style-type: none"> 1. Water turned off. 2. Transducer disconnected. 3. Pressure transducer defective. 	<ol style="list-style-type: none"> 1. Turn water on. 2. Verify wiring. 3. Replace pressure transducer.
Wash water is not reaching required temperature.	<ol style="list-style-type: none"> 1. Faulty wash heater. 2. Mis-adjusted/faulty thermostat(s). 3. Wash thermometer is defective. 	<ol style="list-style-type: none"> 1. Check element for continuity; if open, replace the heater. 2. Verify operation and setting of thermostats, replace if necessary. 3. Replace thermometer.
Doors will not close completely.	<ol style="list-style-type: none"> 1. Improper spring tension. 2. Obstruction in door channel. 3. Doors are not square with frame. 	<ol style="list-style-type: none"> 1. Adjust spring tension as required by loosening (not removing) spring bolt nuts and adjusting the tension. Tighten nuts back when done. 2. Remove the obstruction. 3. Adjust the frame to accommodate the doors.
Water leaks at the wash pump.	<ol style="list-style-type: none"> 1. Wash pump seal defective. 2. Petcock or pump drain (if equipped) not shut/tight. 3. Loose hoses (hose clamps) on the wash pump. 	<ol style="list-style-type: none"> 1. Replace the seal. 2. Close or tighten. <p>Tighten the hose clamps.</p>
Will not rinse during autcycle.	<ol style="list-style-type: none"> 1. Defective rinse solenoid. 2. Faulty timer. 3. No water to the machine. 	<ol style="list-style-type: none"> 1. Repair or replace the rinse solenoid as required. 2. Replace timer. 3. Verify that there is water at 10 PSI connected to the machine.
Dishes are not coming clean.	<ol style="list-style-type: none"> 1. Machine temperatures are not up to the minimum requirements. 2. No detergent/too much detergent. 3. Solid dispenser canister is empty. 	<ol style="list-style-type: none"> 1. Verify that incoming water, rinse water, and wash water match the required temperatures as listed on the machine data plate. 2. Adjust detergent concentration as required for the amount of water held by the machine. 3. Replace the canister.

TOP CONTROL BOX ASSEMBLY WITH UNIVERSAL TIMER





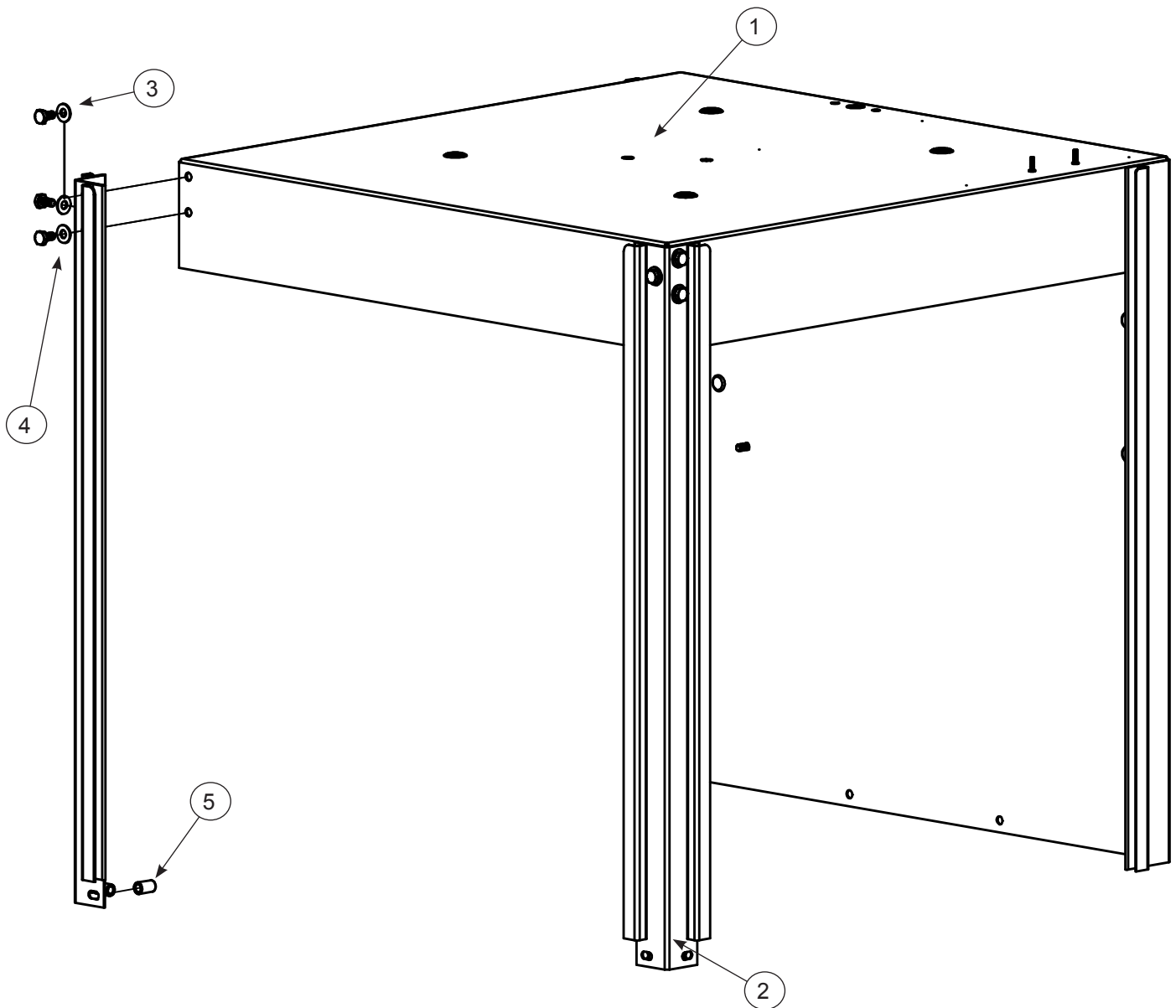


ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Control Box Weldment	05700-003-30-14
2	1	Timer Bracket	05700-003-02-08
3	2	Lock Nut 6-32	05310-373-03-00
4	2	Heater Contactor	05945-109-01-69
5	1	Terminal Block	05940-011-48-27
6	17	Lock Nut 10-24	05310-373-01-00
7	1	Contactor,Wash Motor	05945-002-74-20
8	1	Relay	05945-111-47-51
	1	Relay, (415V, 3PH, 5 Wire Only)	05945-111-89-75
9	1	Light, Green	05945-111-44-43
10	1	Light, Red	05945-111-44-45
11	1	Temperature Gauge, Wash 96" Lead	06685-111-68-49
12	1	Temperature Gauge, Rinse 48" Lead	06685-111-68-48
13	1	Light, Yellow	05945-111-44-44
14	1	Decal,Wash 150F Min	09905-002-97-61
15	1	Decal,Rinse 180F Min	09905-002-97-62
16	1	Ground Lug	05940-200-76-00
17	1	Bracket,Liquid Level Control Board	05700-002-13-22
18	1	Liquid Level Control Board	06680-200-08-21
19	6	Tricnut, 6-32	05340-118-04-00
20	3	Screw,6-32 X 5/8"	05305-011-39-85
21	3	Plug, 1/2"	05975-011-47-81
22	2	Grommet, 7/8" Split	05975-200-40-00
23	1	Bushing Snap	05975-210-05-00
24	1	Clamp,Hose .25-.312	05975-002-61-43
25	1	Decal,Warning-Disconnect Power	09905-100-75-93
26	1	Cover,Top Mount Control Box	05700-002-23-03
27	1	Decal,Control Box	09905-003-97-67
28	4	Lockwasher, Int. Tooth #10	05311-273-03-00
29	4	Screw, 10-32X3/8" Phillips Truss Head	05305-173-12-00
30	1	Decal,Copper Conductors	09905-011-47-35

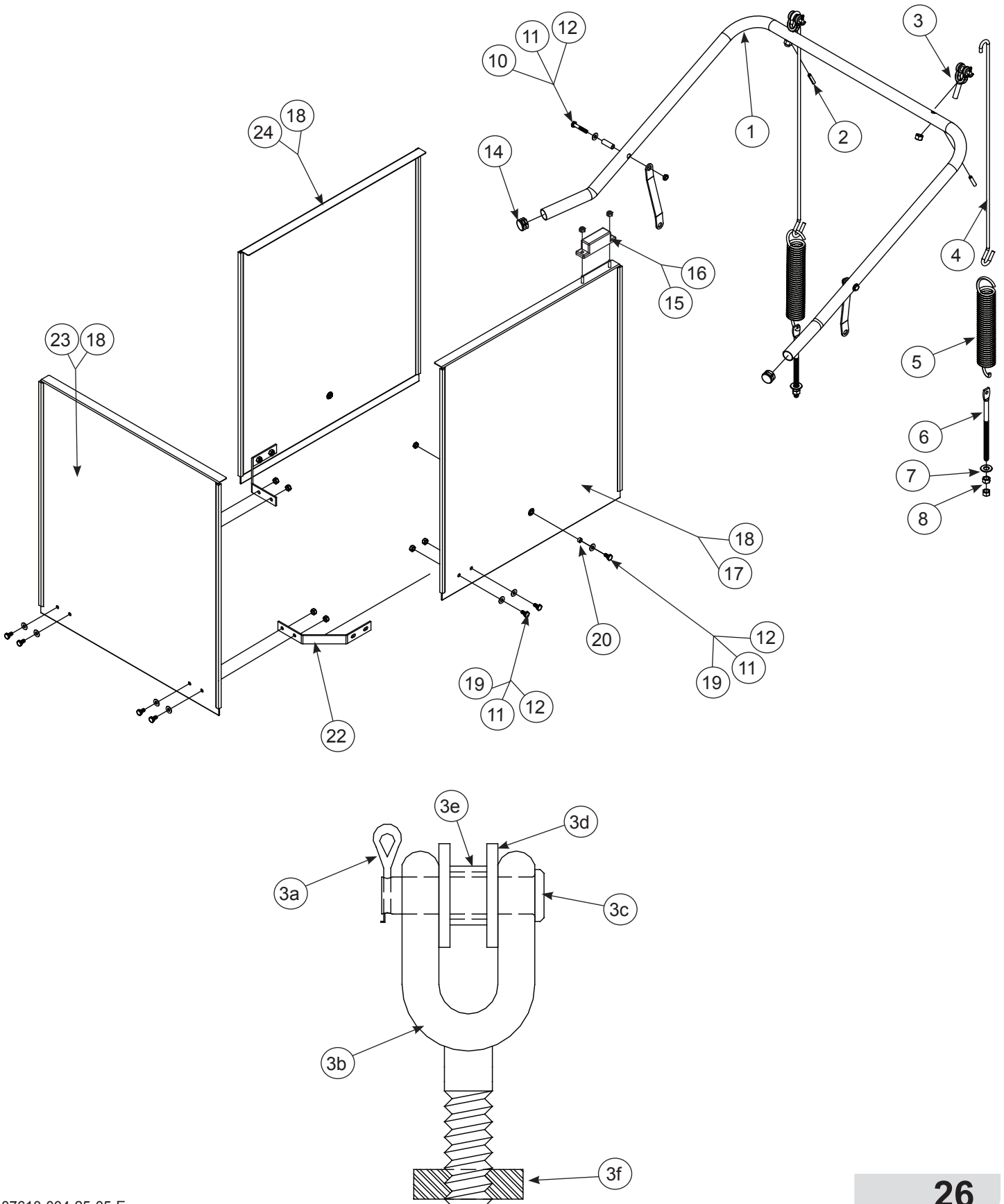
TOP CONTROL BOX ASSEMBLY

PARTS

ITEM	QTY	DESCRIPTION	PART NUMBER
31	1	Decal,Ground	09905-011-86-86
32	1	Decal,L1, L2	09905-002-78-67
33	1	Bracket, Fuse Strip	05700-002-42-03
34	1	Fuse Holder, 6 pole	05920-002-42-13
35	2	Screw, 6-32 x 3/8" W/Ext Tooth Washer	05305-002-25-91
36	1	Decal, Dispenser Connection	09905-003-34-09
37	1	Timer, Universal	05945-003-33-09
		Timer,Universal Fused(Alternate)	05945-003-75-23
38	4	Locknut, 10-32	05310-373-02-00
39	4	Screw 10-32X1"	05305-002-19-42
40	1	Switch, Rotary Selector	05930-003-97-61
41	1	Switch, Operation	05930-301-53-00
42	1	Switch, Power	05930-011-49-55

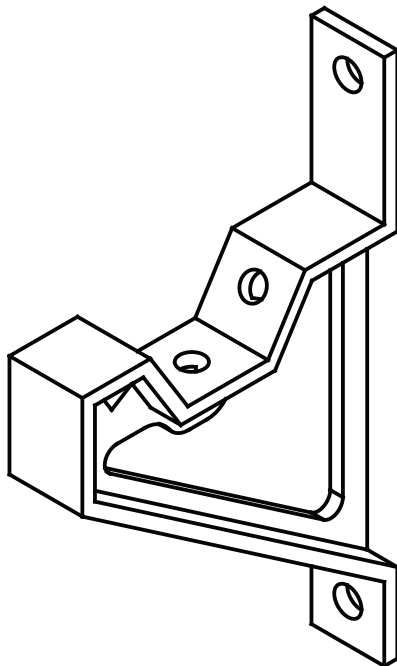


ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Hood Weldment	05700-002-29-79
2	2	Hood Support	05700-002-78-99
3	6	Bolt, 1/4"-20 x 1/2" Lon	05305-274-21-00
4	6	Washer, Flat, SS, 1/4"-20 ID	05311-174-01-00
5	4	Spacer, Sleeve Hood	05700-003-55-15
6	6	Locknut, 1/4"-20 with Nylon Insert (Not Shown)	05310-374-01-00



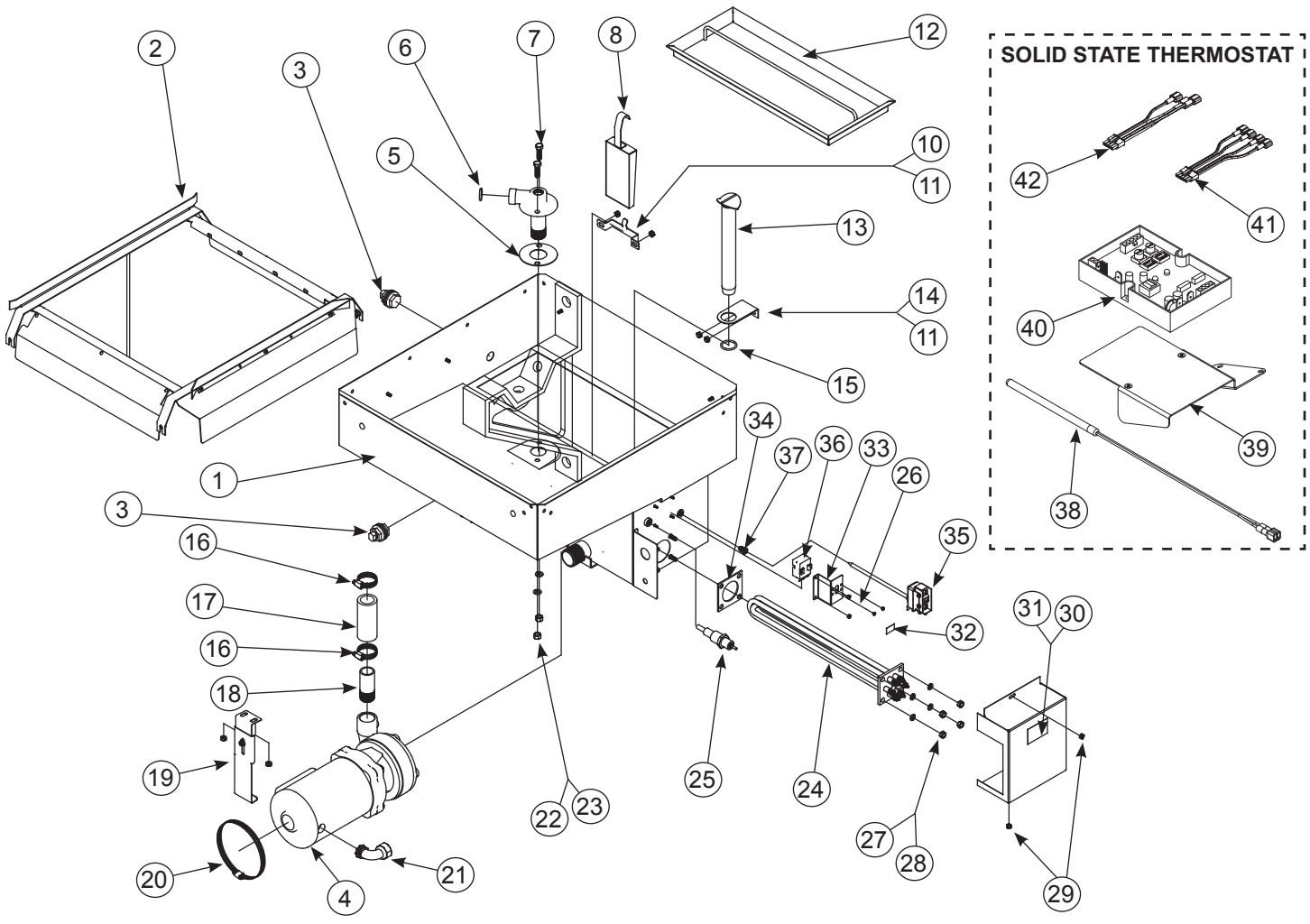
ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Cantilever Arm	05700-031-50-67
2	2	Spring Pin, 1/4" x 1 1/8"	05315-407-06-00
3	2	Yoke Assembly	05700-000-75-77
3a	1	Cotter Pin	05315-207-01-00
3b	1	Yoke	05700-000-75-78
3c	1	Clevis Pin, 5/16" x 1 3/8"	05315-700-01-00
3d	2	Nylon Washer	05311-369-03-00
3e	1	Bushing	03120-100-03-00
3f	2	Locknut, 3/8"-16 S/S Hex Center	05310-256-04-00
4	2	Rod, Spring	05700-002-29-38
5	2	Spring	05340-109-02-00
6	2	Bolt, Cantilever Hanger Eye 3/8"-16	05306-956-05-00
7	2	Washer, 3/8" ID x 7/8" OD S/S	05311-176-02-00
8	4	Nut, 3/8"-16 S/S Hex	05310-276-01-00
9	2	Connector, Cantilever Arm	05700-011-90-99
10	2	Screw, 1/4"-20 x 1 1/2" Long S/S	05305-274-23-00
11	4	Washer, 1/4" S/S	05311-174-01-00
12	4	Locknut, 1/4"-20 S/S Hex with Nylon Insert Low Profile	05310-374-02-00
13	2	Sleeve, Cantilever Arm	05700-000-85-69
14	2	Plug, Cantilever Arm	05340-011-35-00
15	1	Magnet, Reed Switch	05930-111-51-68
16	2	Locknut, 8-32 S/S Hex with Nylon Insert	05310-272-02-00
17	1	Door, Right Side (Complete Assembly)	05700-002-30-88
17A	1	Right Door Weldment with Studs	05700-002-29-85
18	6	Door, Guides	05700-111-33-59
19	2	Screw, 1/4"-20 x 1/2" Long S/S	05305-274-02-00
20	2	Spacer, PB Bolt	05700-000-29-40
21	4	Locknut, 1/4"-20 S/S Hex with Nylon Insert	05310-374-01-00
22	2	Door Connector Bracket	05700-021-33-39
23	1	Door, Front (Complete Assembly) w/ Decal	05700-002-30-89
	1	Door Only, Front	05700-002-29-83

ITEM	QTY	DESCRIPTION	PART NUMBER
24	1	Door, Left Side (Complete Assembly)	05700-002-30-87
	1	Door, Left Side (Complete Assm) (Door Interlock) (not shown)	05700-004-24-32
24A	1	Door Only, Left Side	05700-002-29-86
	1	Door Only, Left Side (Door Interlock) (not shown)	05700-004-24-34
	1	Door Interlock Bracket (not shown)	05700-004-23-17
25	1	Door Connecting Plate (Not Shown)	05700-002-20-78
26	1	Bracket, Cantilever Arm Support (Not Shown)	05700-031-88-00
27	1	Wear Button, 1/2" Dia. UHMW (Not Shown)	05700-011-88-01
28	1	Door Interlock Bracket (Not Shown)	05700-004-23-14



Bracket, Cantilever Arm Support
09515-003-15-64

Wear Button, 1/2" Dia. UHMW
05700-011-88-01



Nut, 1/4"-20 Serrated Nut
05310-011-66-49

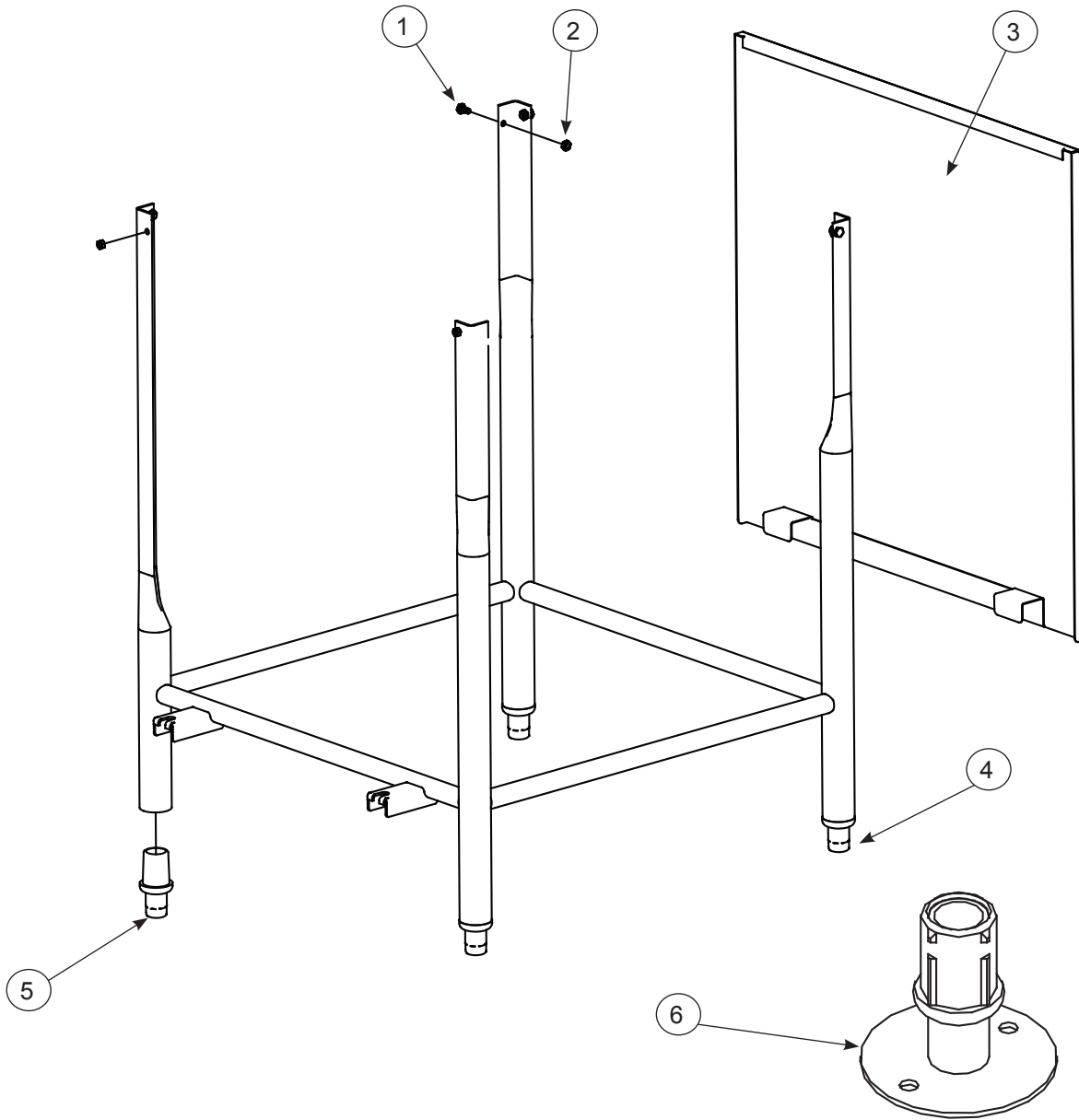
Bracket, Motor Support Weldment
05700-002-68-31

**Pump Support Adjustable Bracket
Complete Assembly**
05700-002-20-46

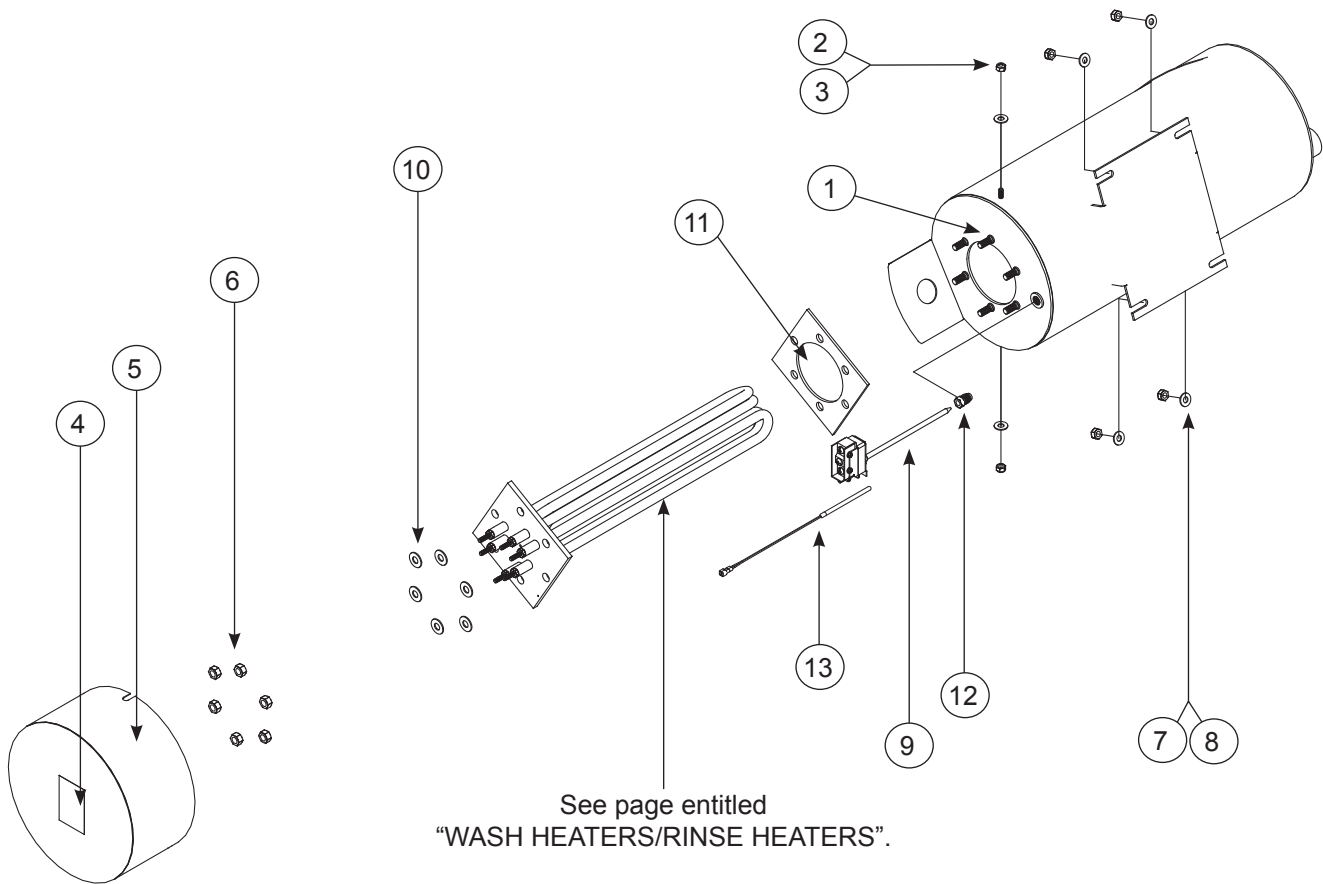
Pump Support Adjustable Bracket
05700-002-20-41

ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Tub Weldment	05700-002-12-59
2	1	Rack Assembly	05700-002-01-00
3	2	Bulk Head Plug	04730-609-05-00
4	1	See Page Entitled "Wash Motors"	N/A
5	1	Gasket	05700-111-35-03
6	1	O-ring	05330-400-05-00
7	4	Bolt, Hex 3/8"-16 x 1 1/4" Long	05305-276-10-00
8	1	Lower Wash Manifold Weldment	05700-031-46-00
9	1	Suction Strain Weldment	05700-001-22-23
10	1	Suction Strain Bracket	05700-001-22-24
11	8	Locknut, 1/4"-20 with Nylon Insert	05310-374-02-00
12	1	Strainer Weldment	05700-003-07-76
13	1	Wash Overflow Weldment	05700-001-25-69
*	1	Support, Ball Stop Lift	05700-002-91-55
*	1	Ball Stop Lift	05700-002-91-54
*	1	Shim, Overflow Support	05700-002-96-48
14	1	Overflow Support Bracket	05700-001-27-55
15	1	O-Ring	05330-400-05-00
16	2	Clamp, Hose 1 5/16" to 2 1/4"	04730-719-01-37
17	1	Discharge Hose	05700-011-88-24
18	1	Nipple	05700-021-34-84
19	1	Pump Support Bracket Assembly	05700-002-00-46
20	1	Clamp, Hose 5 5/8" to 6"	04730-011-34-90
21	1	Connector, 1/2" 90B	05975-111-01-00
22	4	Nut, 3/8"-16 S/S Hex	05310-276-01-00
23	4	Lockwasher 3/8"	05311-276-01-00
24	1	See Page Entitled "Wash Heaters/Rinse Heaters"	N/A
		See page 43 to order phase conversion kits for heater.	
25	5	Probe, High Water	06680-200-02-68
26	1	Locknut, 6-32 with Nylon Insert	05310-373-03-00
27		Lockwasher, 5/16", S/S, Split	05311-275-01-00

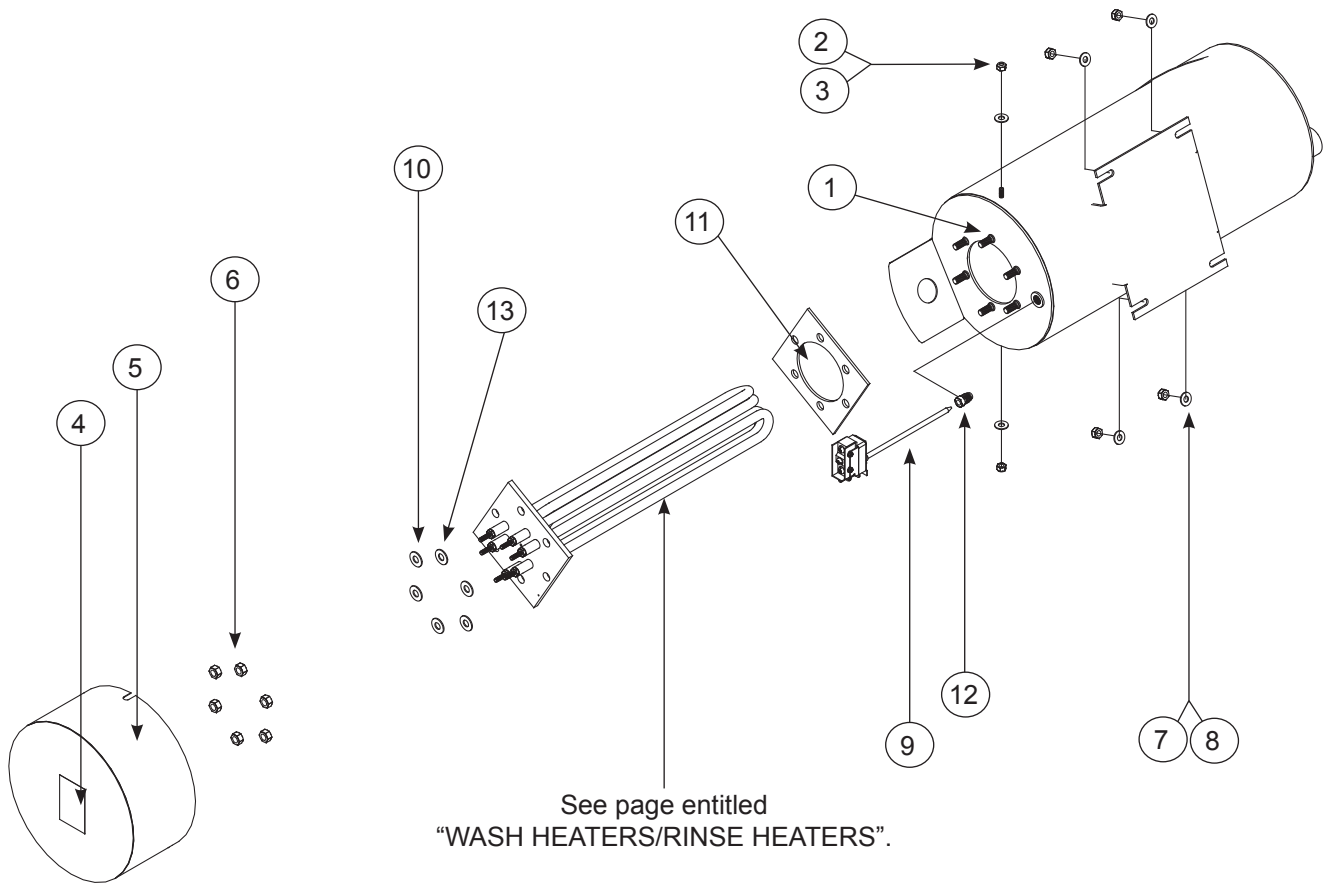
ITEM	QTY	DESCRIPTION	PART NUMBER
27	4	Lockwasher, 5/16", S/S, Split	05311-275-01-00
28	4	Nut, Hex, 5/16"-18, S/S	05310-275-01-00
29	4	Locknut, 10-24 with Nylon Insert	05310-373-01-00
30	1	Cover, Wash Heater	05700-031-47-57
31	1	Decal, Warning-Disconnect Power	09905-100-75-93
32	1	Decal, High Limit	09905-011-84-32
33	1	Thermostat Bracket	05700-011-81-64
34	1	Wash Heater Gasket	05330-011-47-79
35	1	Thermostat, Regulating	05930-510-02-79
	1	Kit, Wash Thermostat Replacement (Includes: thermostat, brass fitting, 2 jumper wires & instructions)	06401-003-18-22
36	1	Thermostat, High Limit	05930-011-49-43
37	1	Fitting, 1/4" Imperial Brass	05310-924-02-05
38	1	Probe, Thermistor 4" LG	06685-004-17-26
39	1	Thermostat Mounting Bracket	05700-004-22-17
40	1	Thermostat, Elan Electric Dual	06685-004-17-27
41	1	Harness, 5-Connector	05700-004-23-78
42	1	Harness, 4-Connector	05700-004-23-79



ITEM	QTY	DESCRIPTION	PART NUMBER
1	4	Bolt, 1/4"-20 x 1/2"	05305-274-02-00
2	4	Locknut, 1/4"-20 S/S Hex with Nylon Insert	05310-374-02-00
3	1	Front Panel	05700-002-36-65
4	1	Frame Weldment	05700-031-48-01
5	4	Bullet Foot	05340-108-01-03
6	4	Flanged Bullet Foot	05340-002-34-86



ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Booster Tank Weldment	05700-001-22-02
2	2	Locknut, 10-24 with Nylon Insert	05310-373-01-00
3	2	Washer, #10 S/S Flat	05311-173-01-00
4	1	Decal, Warning - Disconnect Power	09905-100-75-93
5	1	Booster Tank Cover Weldment	05700-001-29-30
6	6	Nut, Hex, 5/16"-18	05310-275-01-00
7	4	Locknut, 1/4"-20 with Nylon Insert	05310-374-01-00
8	4	Washer, 1/4" ID, S/S, Flat	05311-174-01-00
9	1	Thermostat, Rinse	05930-510-03-79
	1	Kit, Rinse Thermostat Replacement (Includes: thermostat, brass fitting, 2 jumper wires & instructions)	06401-011-66-55
10	6	Washer, 5/16" I.D.	05311-175-01-00
11	1	Gasket, Rinse Heater	05330-200-02-70
12	1	Fitting, 1/4" Imperial Brass	05310-924-02-05
13	1	Probe, Thermistor 4" LG	06685-004-17-26



ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Booster Tank Weldment	05700-003-58-41
2	2	Locknut, 10-24 with Nylon Insert	05310-374-01-00
3	2	Washer, #10 S/S Flat	05311-174-01-00
4	1	Decal, Warning - Disconnect Power	09905-100-75-93
5	1	Booster Tank Cover Weldment	05700-001-29-30
6	6	Nut, Hex, 5/16"-18	05310-274-01-00
7	4	Locknut, 1/4"-20 with Nylon Insert	05310-374-01-00
8	4	Washer, 1/4" ID, S/S, Flat	05311-174-01-00
9	1	Thermostat, Rinse	05930-510-03-79
	1	Kit, Rinse Thermostat Replacement (Includes: thermostat, brass fitting, 2 jumper wires & instructions)	06401-011-66-55
10	6	Washer, 5/16" I.D.	05311-174-01-00
11	1	Gasket, Rinse Heater	05330-200-02-70
12	1	Fitting, 1/4" Imperial Brass	05310-924-02-05
13	1	Washer, 1/4" Split Lock	05311-274-01-00

The Noble models covered in this manual come supplied with various wash motor assemblies (a wash motor assembly includes the wash motor and the pump end), depending on the characteristics of the machine. To ensure that you order the correct wash motor assembly for the model you are servicing, please refer to the following table:

MODEL	VOLTS	HZ	PHASE	WASH MOTOR ASSEMBLY
Noble HT-180	208	50	1	06105-002-19-87
Noble HT-180	208	50	3	06105-002-19-87
Noble HT-180	208	60	1	06105-002-69-78
Noble HT-180	208	60	3	06105-002-69-78
Noble HT-180	230	50	1	06105-002-19-87
Noble HT-180	230	50	3	06105-002-19-87
Noble HT-180	230	60	1	06105-002-69-78
Noble HT-180	230	60	3	06105-002-69-78
Noble HT-180	380	50	3	06105-002-41-24
Noble HT-180	415	50	3	06105-002-41-24
Noble HT-180	440	50	3	06105-002-41-24
Noble HT-180	460	60	3	06105-121-64-21

Important note: When servicing a wash motor, it is important to refer to the wiring schematic found on the motor, to ensure that the motor is wired correctly. Different manufacturers of motors may not use the same wire color codes and therefore, your new motor, which may have been built by someone different than who built your original motor, may not connect using the same wires. Always refer to the wiring diagrams on the motor you are installing. If the motor you are installing has had the schematic removed, contact the manufacturer for technical support.

MOTOR & PUMP ASSEMBLY

PARTS

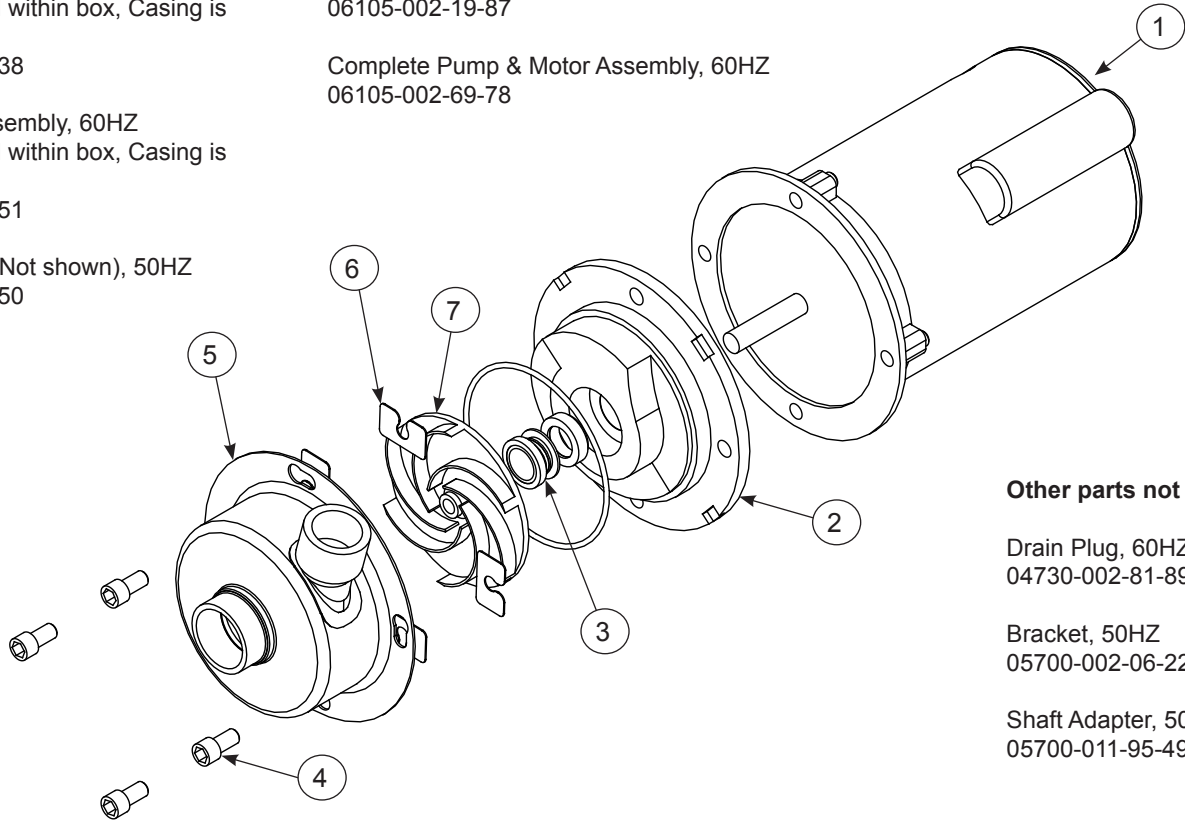
Pump Only Assembly, 50HZ
(Area indicated within box, Casing is included)
05700-002-85-38

Complete Pump & Motor Assembly, 50HZ
06105-002-19-87

Pump Only Assembly, 60HZ
(Area indicated within box, Casing is included)
05700-002-79-51

Complete Pump & Motor Assembly, 60HZ
06105-002-69-78

Pump Casing (Not shown), 50HZ
05700-002-41-50



Other parts not shown

Drain Plug, 60HZ
04730-002-81-89

Bracket, 50HZ
05700-002-06-22

Shaft Adapter, 50HZ
05700-011-95-49

ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Motor Only, 50HZ	06105-002-85-36
		Motor Only, 60HZ	06105-002-79-61
2	1	Case O-Ring, 60HZ	05330-002-81-83
		Seal Plate, 60HZ	05700-002-81-87
		Gasket, 50HZ	05330-002-41-48
3	1	Mechanical Seal, 60HZ	05330-002-34-22
		Seal, 50HZ	05330-002-06-21
4	1	Case Cap screw, 60HZ	05305-002-81-88
5	1	Pump Casing 60HZ	05700-002-85-01
6	1	Shim Kit, 60HZ	05700-002-82-58
7	1	Impeller Assembly, 50HZ	05700-002-41-49
		Impeller Assembly, 60HZ	05700-002-81-86

MODEL	VOLTS	HZ	PHASE	WASH HEATER	RINSE HEATER (12 KW)	RINSE HEATER (14 KW)
Noble HT-180	208	50	1	04540-121-47-39	04540-121-47-40	04540-121-63-38
Noble HT-180	208	50	3	04540-121-47-39	04540-121-47-40	04540-121-63-38
Noble HT-180	208	60	1	04540-121-47-39	04540-121-47-40	04540-121-63-38
Noble HT-180	208	60	3	04540-121-47-39	04540-121-47-40	04540-121-63-38
Noble HT-180	230	50	1	04540-121-47-39	04540-121-47-40	04540-121-63-38
Noble HT-180	230	50	3	04540-121-47-39	04540-121-47-40	04540-121-63-38
Noble HT-180	230	60	1	04540-121-47-39	04540-121-47-40	04540-121-63-38
Noble HT-180	230	60	3	04540-121-47-39	04540-121-47-40	04540-121-63-38
Noble HT-180	380	50	3	04540-002-44-31	04540-002-44-32	04540-121-63-38
Noble HT-180	415	50	3	04540-002-43-09	04540-002-43-10	04540-002-77-24
Noble HT-180	440	50	3	04540-121-65-99	04540-100-01-15	04540-121-63-39
Noble HT-180	460	60	3	04540-121-65-99	04540-100-01-15	04540-121-63-39

HEATER CONVERSION KITS

PHASE	Volts	HZ	CONVERSION KITS ORDER NUMBER
1 to 3 Phase	208-230	50	06401-003-15-59
3 to 1 Phase	208-230	50	06401-003-16-60
1 to 3 Phase	208-230	60	06401-003-16-61
3 to 1 Phase	208-230	60	06401-003-16-62

ROUND FLANGED RINSE HEATER

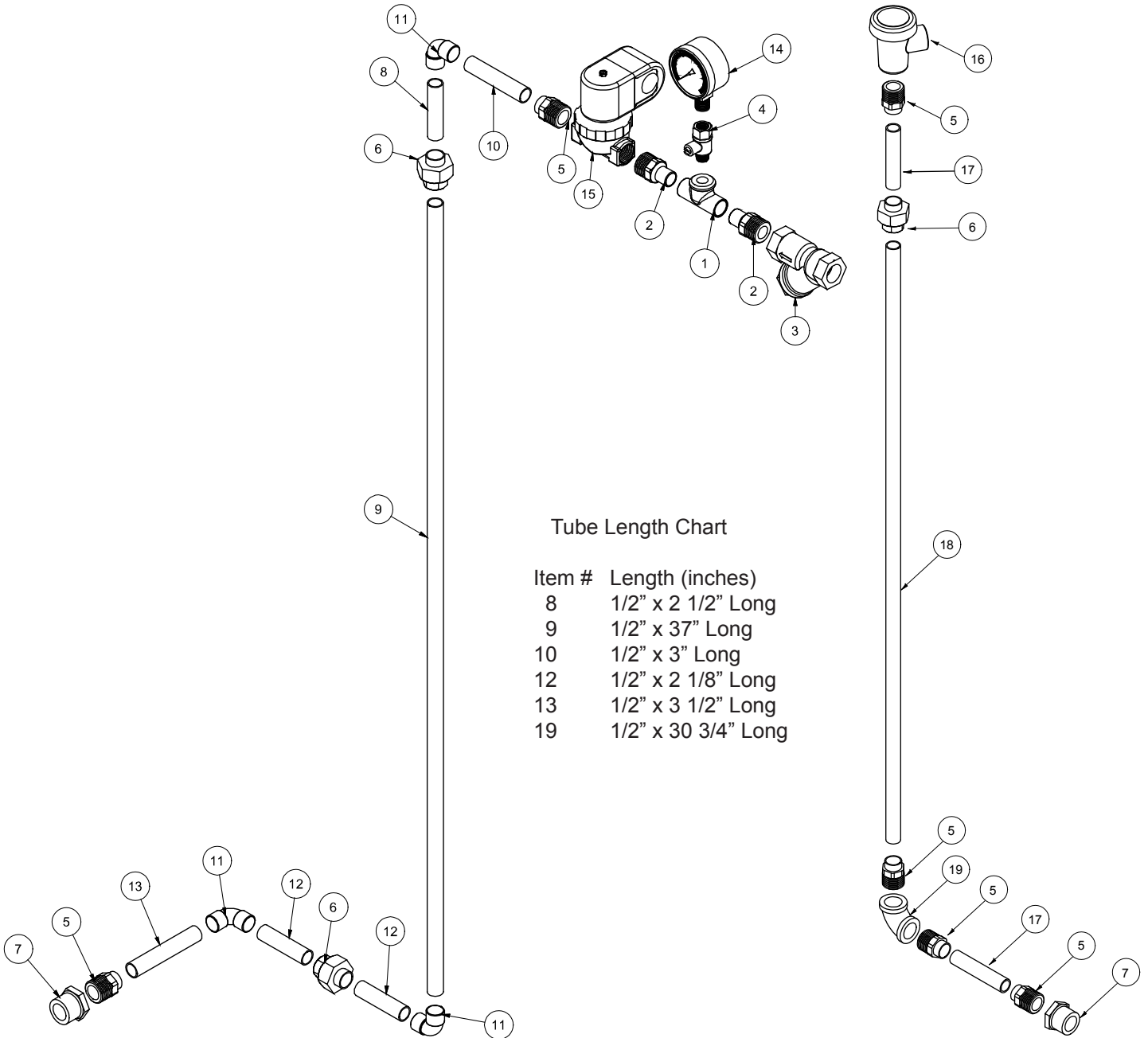
PARTS

MODEL	VOLTS	HZ	PHASE	WASH HEATER	RINSE HEATER (12 KW)
Noble HT-180	208	50	1	04540-003-58-27	04540-003-58-28
Noble HT-180	208	50	3	04540-003-58-27	04540-003-58-28
Noble HT-180	208	60	1	04540-003-58-27	04540-003-58-28
Noble HT-180	208	60	3	04540-003-58-27	04540-003-58-28
Noble HT-180	230	50	1	04540-003-58-27	04540-003-58-28
Noble HT-180	230	50	3	04540-003-58-27	04540-003-58-28
Noble	230	60	1	04540-003-58-27	04540-003-58-28
Noble	230	60	3	04540-003-58-27	04540-003-58-28

Y - STRAINER OPTION

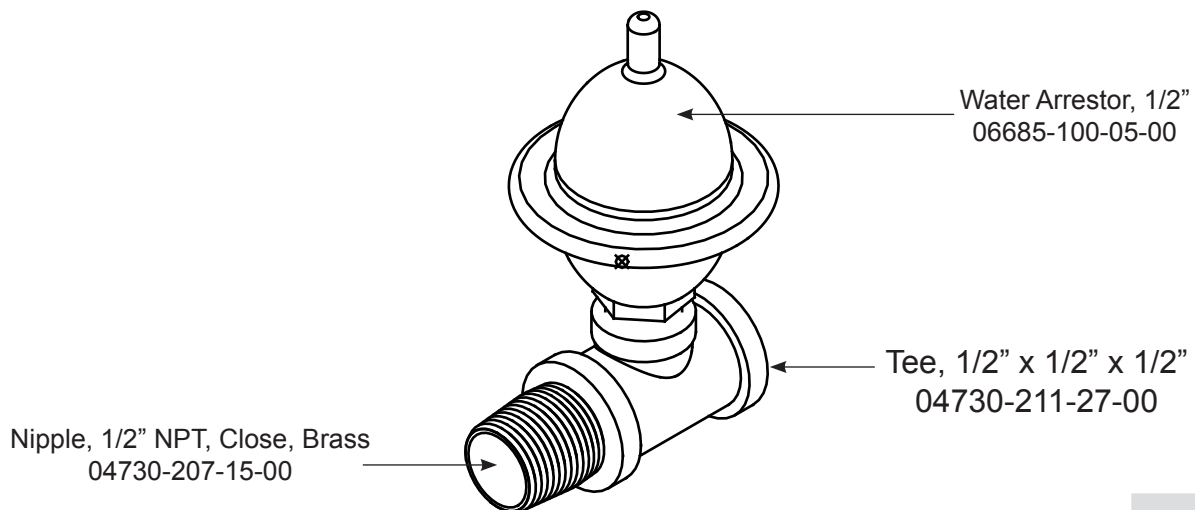
Noble Incoming Plumbing
(Complete Assembly)
05700-003-60-74

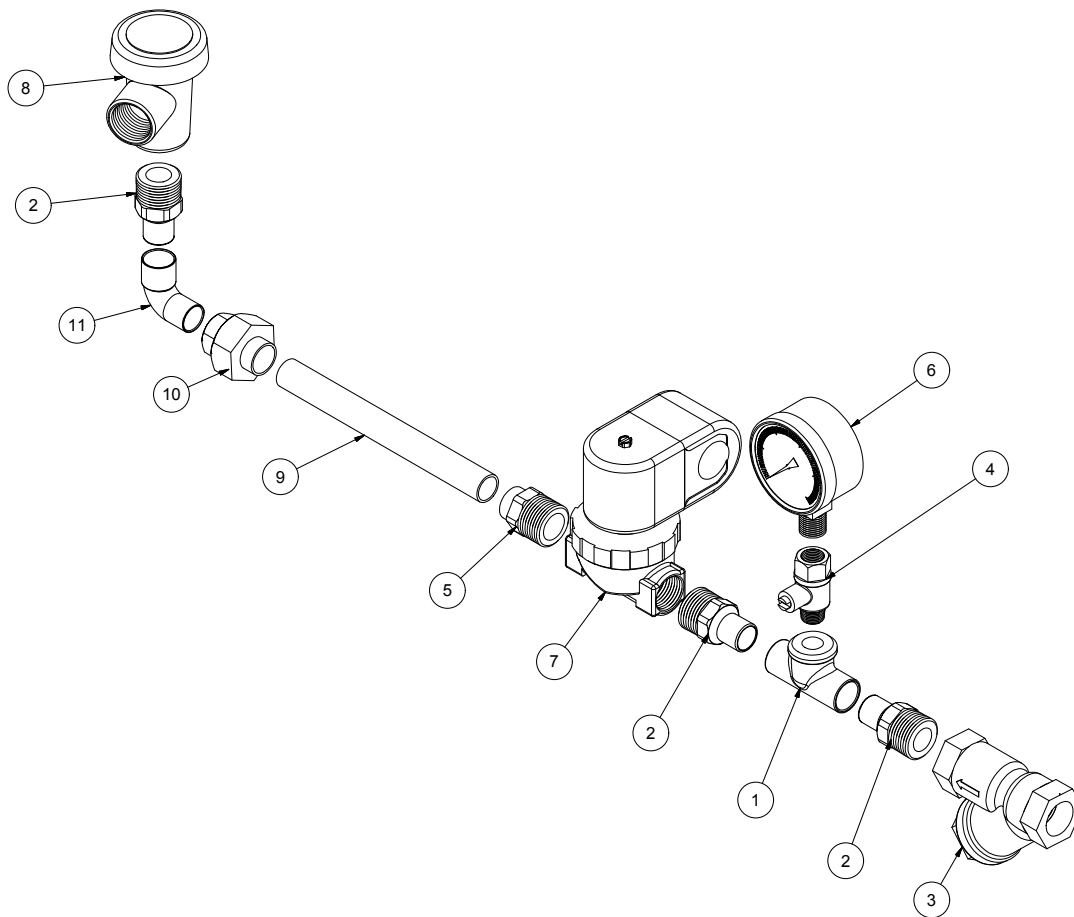
Noble Outlet Plumbing
(Complete assembly)
05700-003-60-75



ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Fitting, Tee, 1/2" x 1/2" x 1/4"	04730-411-25-01
2	2	Adapter, 1/2" MNPT x CU Male	04730-011-59-53
3	1	Strainer, Y 1/2"	04730-217-01-10
4	1	Valve, Ball Test Cock 1/4" Bronze	04810-011-72-67
5	6	Adapter, 1/2"	04730-401-03-01
6	3	Union, 1/2"	04730-412-05-01
7	1	Bushing, HEX 3/4 MNPT-1/2 FNPT Brass	04730-002-56-27
8	3	F-Tube, Copper 1/2" x 2.5"	05700-002-17-38
9	2	F-Tube, Copper 1/2" x 37"	05700-003-60-80
10	1	F-Tubing, Copper 1/2" x 3"	05700-001-05-21
11	3	Elbow, 1/2" CU x CU, 90B	04730-406-01-01
12	2	F-Tube, Copper 1/2" x 2.406"	05700-003-60-79
13	1	F-Tube, Copper 1/2" x 3.5	05700-003-60-78
14	1	Gauge 0-100# Pressure	06685-111-88-34
15	1	Valve, 1/2" 208-240 Red	04810-100-09-18
16	1	Vacuum Breaker, 1/2" NPT	04820-003-06-13
17	1	Adapter, Male	04730-401-03-01
18	1	F-Tube, Copper 1/2" x 30.75"	05700-003-60-81
19	1	Elbow, 1/2" NPT 90 Brass	04730-011-42-96

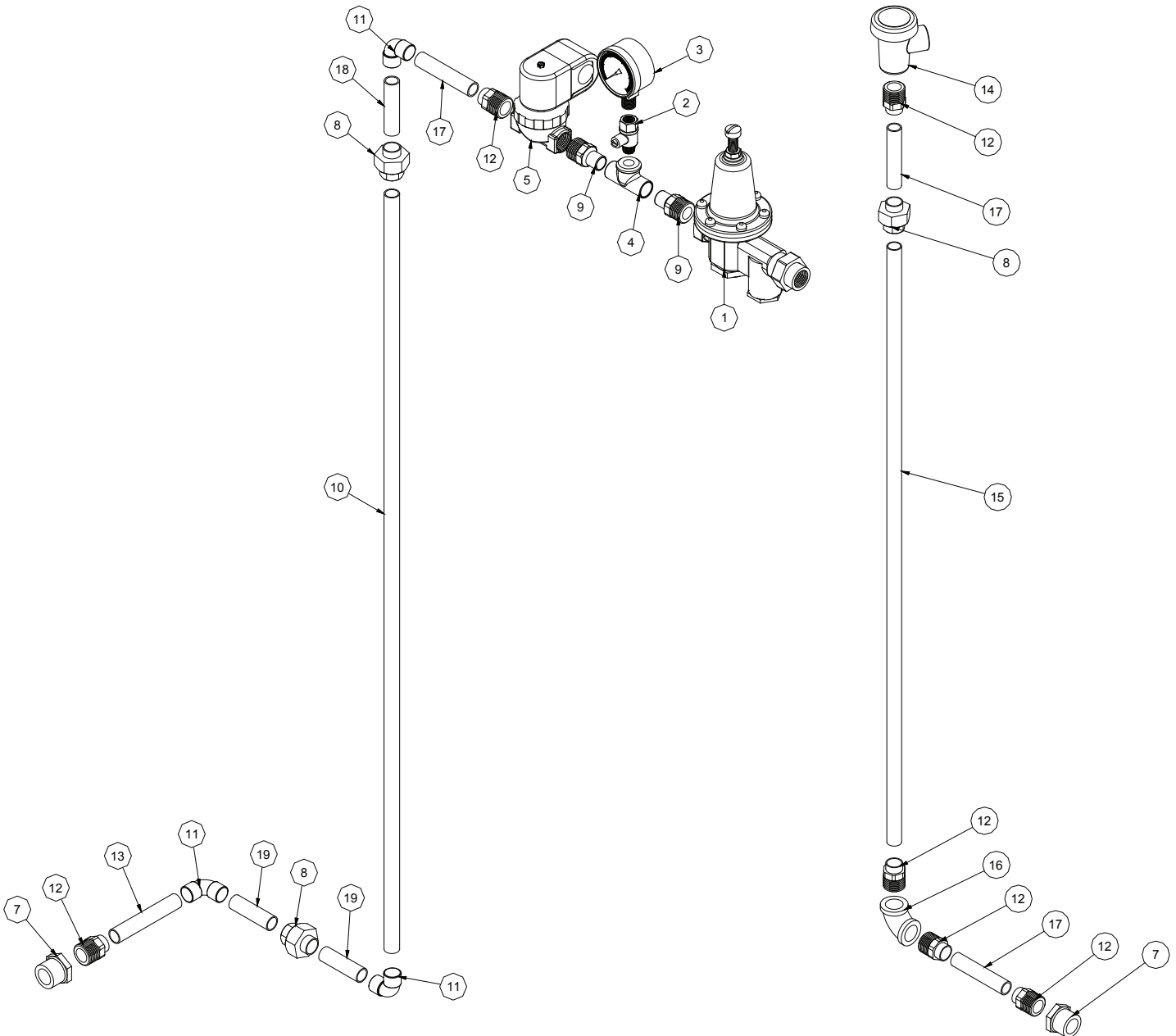
WPRK KIT OPTION Y - STRAINER & PRESSURE REGULATOR OPTIONS



Y - STRAINER OPTION INCOMING PLUMBING ASSEMBLY

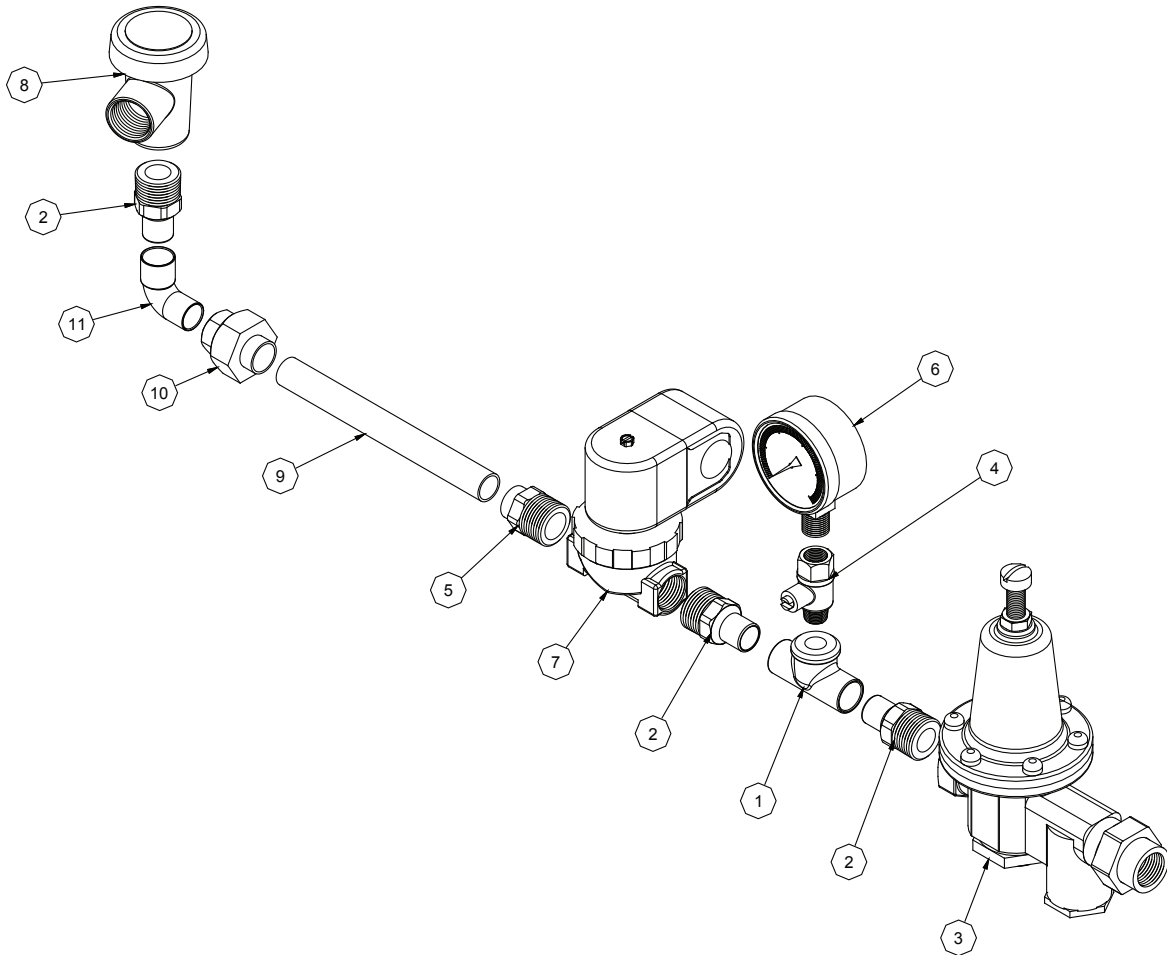
ITEM	QTY	DESCRIPTION	PART NUMBER
		Complete Assembly	05700-003-60-73
1	1	Tee, Brass, 1/2" x 1/2" x 1/4" NPT	04730-411-25-01
2	3	Adapter, 1/2" MNPT x Cu Male	04730-011-59-53
3	1	Strainer, Y 1/2"	04730-217-01-10
4	1	Valve, Ball, Bronze, 1/4" NPT	04810-011-72-67
5	1	Adapter, 1/2" Male/Cu to MSPS	04730-401-03-01
6	1	Pressure Gauge, 0-100 PSI	06685-111-59-66
7	1	Valve, Solenoid, 1/2" NPT 208-240V	04810-100-09-18
8	1	Vacuum Breaker, 1/2" NPT	04820-003-06-13
9	1	Tube, Copper 1/2" x 5.75	05700-002-91-03
10	1	Union, 1/2"	04730-412-05-01
11	1	Elbow, 1/2" 90° Cu to MSPS	04730-406-32-01

PRESSURE REGULATOR OPTION

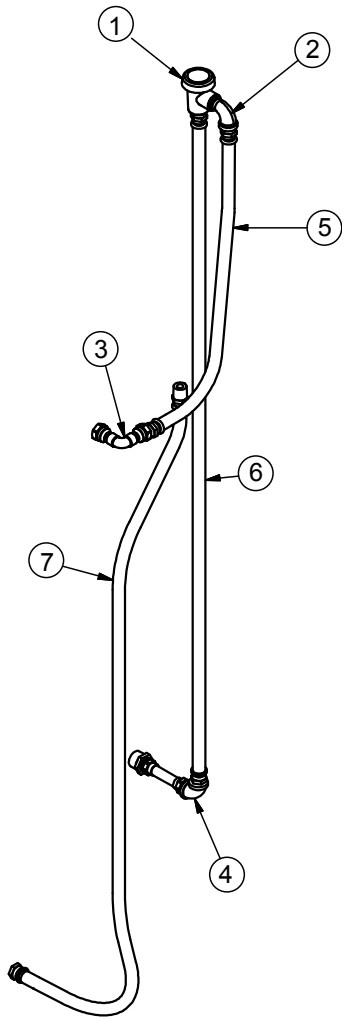


ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Water Pressure Regulator, 1/2" NPT	05700-100-04-07
2	1	Valve, Ball, 1/4" NPT	04810-011-72-67
3	1	Gauge, Pressure, 0-100 PSI	06685-111-88-34
4	1	Tee, Brass, 1/2" NPT x 1/2" x 1/4"	04730-411-25-01
5	1	Valve, Solenoid, 1/2" NPT	04730-100-09-18
6	2	Bracket, Booster Plumbing 1/2" (Not Shown)	05700-003-60-90
7	2	Bushing, HEX 3/4 MNPT-1/2 FNPT Brass	04730-002-56-27
8	3	Union, 1/2"	04730-406-01-01
9	2	Adapter, 1/2" MNPT x CU Male	04730-011-59-53
10	1	Tube, Copper	See Chart pg. 46
11	3	Elbow, 1/2" CU x CU, 90B	04730-406-01-01
12	6	Adapter, 1/2"	04730-401-03-01
13	1	Tube, Copper	See Chart pg. 46
14	1	Vacuum Breaker, 1/2" NPT	04820-003-06-13
15	1	Tube, Copper	See Chart pg. 46
16	1	Elbow, 1/2" NPT, 90B, Brass	04730-011-42-96
17	3	Tube, Copper	See Chart pg. 46
18	1	Tube, Copper	See Chart pg. 46
19	2	Tube, Copper	See Chart pg. 46

When servicing plumbing components, take care not to damage the threads of each individual item. Damaged threads can cause leaks and loss of pressure, which could adversely effect the performance of the Noble dishmachine. It is strongly recommended that teflon thread tape, used in conservative amounts, be applied to threads when joining components together. It is not advised to use thread sealing compounds, sometimes referred to as "pipe dope". Compounds can be ejected from the threads during the tightening process and become lodged in key components, thereby rendering them useless. Some of the components include the solenoid valve and the pressure gauge isolation ball valve.



ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Tee, Brass, 1/2" x 1/2" x 1/4" NPT	04730-411-25-01
2	3	Adapter, 1/2" MNPT x Cu Male	04730-011-59-53
3	1	Water Pressure Regulator, 1/2" NPT	04820-100-04-07
4	1	Valve, Ball, Bronze, 1/4" NPT	04810-011-72-67
5	1	Adapter, 1/2" Male/Cu to MSPS	04730-401-03-01
6	1	Pressure Gauge, 0-100 PSI	06685-111-59-66
7	1	Valve, Solenoid, 1/2" NPT 208-240V	04810-100-09-18
8	1	Vacuum Breaker, 1/2" NPT	04820-003-06-13
9	1	Tube, Copper 1/2" x 5.75	05700-002-91-03
10	1	Union, 1/2"	04730-412-05-01
11	1	Elbow, 1/2" 90° Cu to MSPS	04730-406-32-01



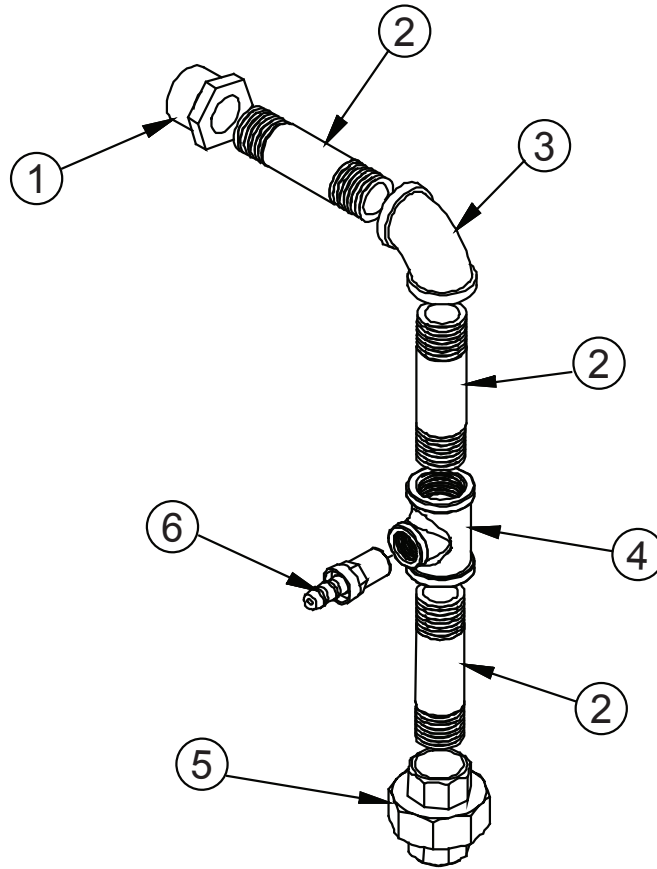
RINSE INJECTOR
09515-004-22-73



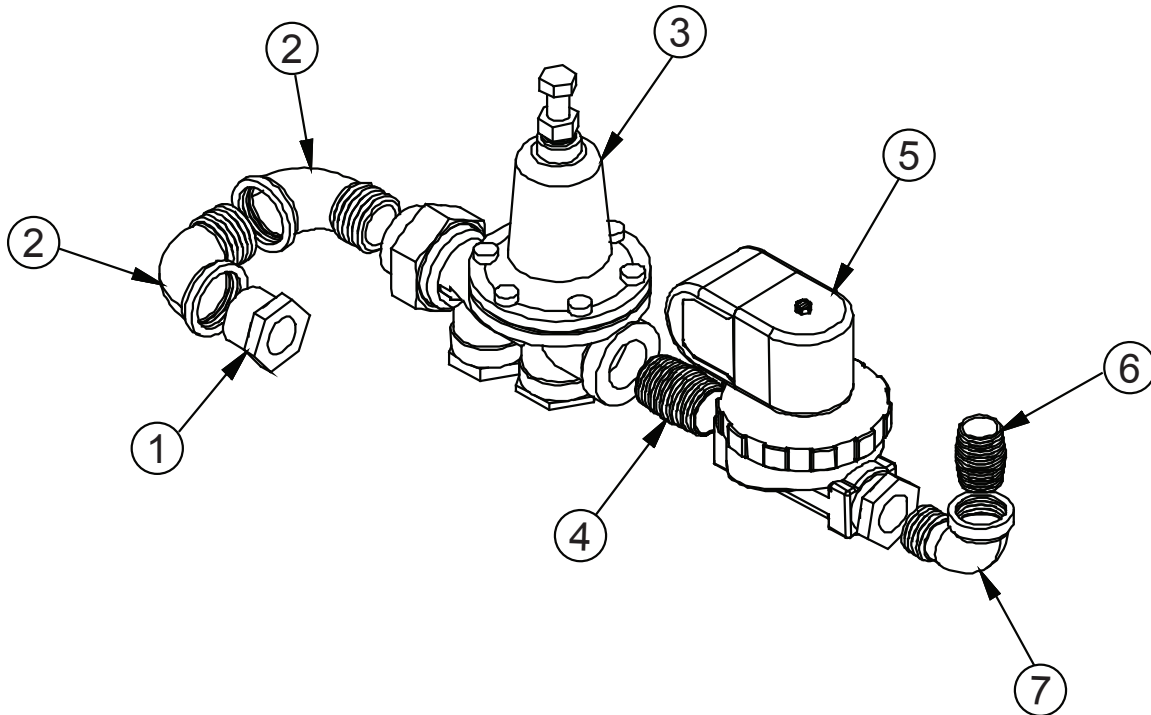
HOSE PAC, ASSEMBLY (HT-180) 05700-004-20-01

HOSE PAC, ASSEMBLY (HT-180HH) 05700-004-20-02

ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Vac Breaker 1/2 Brass	04820-003-06-13
2	1	Elbow, 90 Degree 1/2 Street Brass	04730-206-08-00
3	1	W-Plumbing, Rinse Injector	05700-004-19-83
4	1	A-Plumbing, Outlet w/ Heat Exc.	05700-004-19-12
5	1	Hose, 1/2" ID X 24" LG Red	05700-004-19-89
6	1	Hose, 1/2" ID X 60" LG Red	05700-004-19-90
7	1	Hose, 1/2" ID X 58" LG Blue	05700-004-19-91

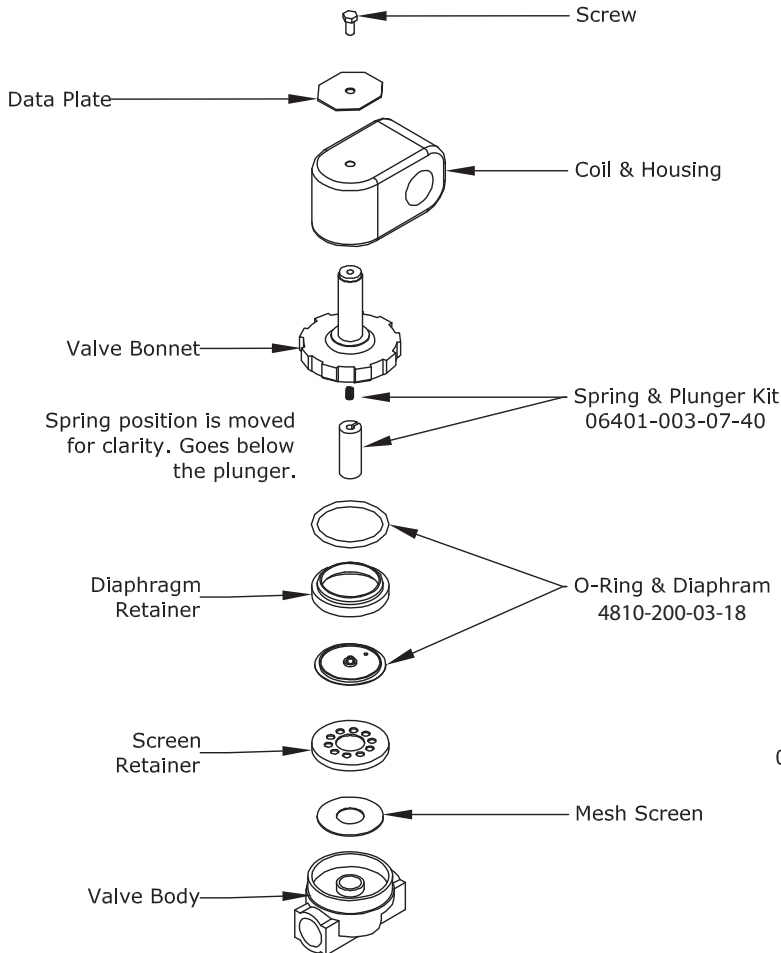


ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Bushing, Hex 3/4" M to 1/2" Brass	04730-002-56-27
2	3	Nipple, Brass 1/2" X 3" NPT	04730-004-20-10
3	1	Elbow, 1/2 NPT 90 Brass	04730-011-42-96
4	1	Tee, 1/2 FNPT X 1/2 FNPT 1/4 FNPT	04730-002-22-56
5	1	Union, 1/2" X 1/2" Brass	04730-003-62-44
6	1	Fitting, 1/4 Barb 1/4 MNPT Swivel	04730-011-95-41
7	1	Hose, 1/2" ID X 58" LG Blue	05700-004-19-91



ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Bushing, Hex 3/4"M to 1/2" Brass	04730-002-56-27
2	3	Elbow, 3/4 Street Brass 90 Degrees	04730-206-04-34
3	1	Regulator, Pressure 3/4	06685-011-58-22
4	1	Nipple, 3/4 NPT X 1-3/8 Closed Brass	04730-207-34-00
5	1	Valve, 3/4" - 220V Solenoid	04810-100-03-18
6	1	Nipple, 1/2 Closed Brass	04730-207-15-00
7	1	Elbow, 90 Degree 1/2 Street Brass	04730-206-08-00

1/2" SOLENOID VALVE & 1/2" NPT VACUUM BREAKER REPAIR PARTS KITS



Complete 110 Volt Solenoid Valve Assembly, 1/2"

04810-100-12-18

Coil & Housing only

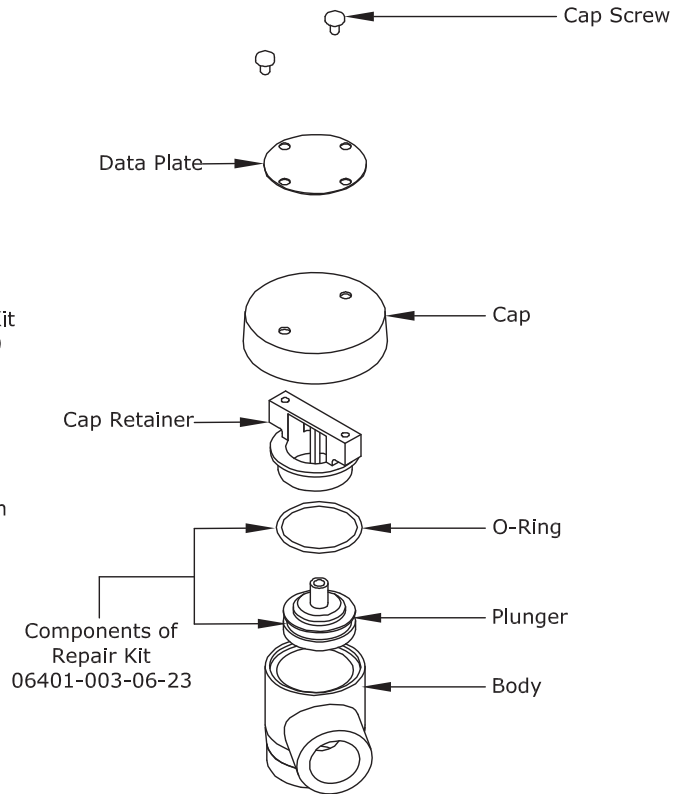
06401-003-07-43

Complete 240 Volt Solenoid Valve Assembly, 1/2"

04810-100-09-18

Coil & Housing only

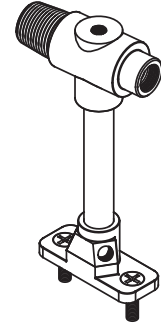
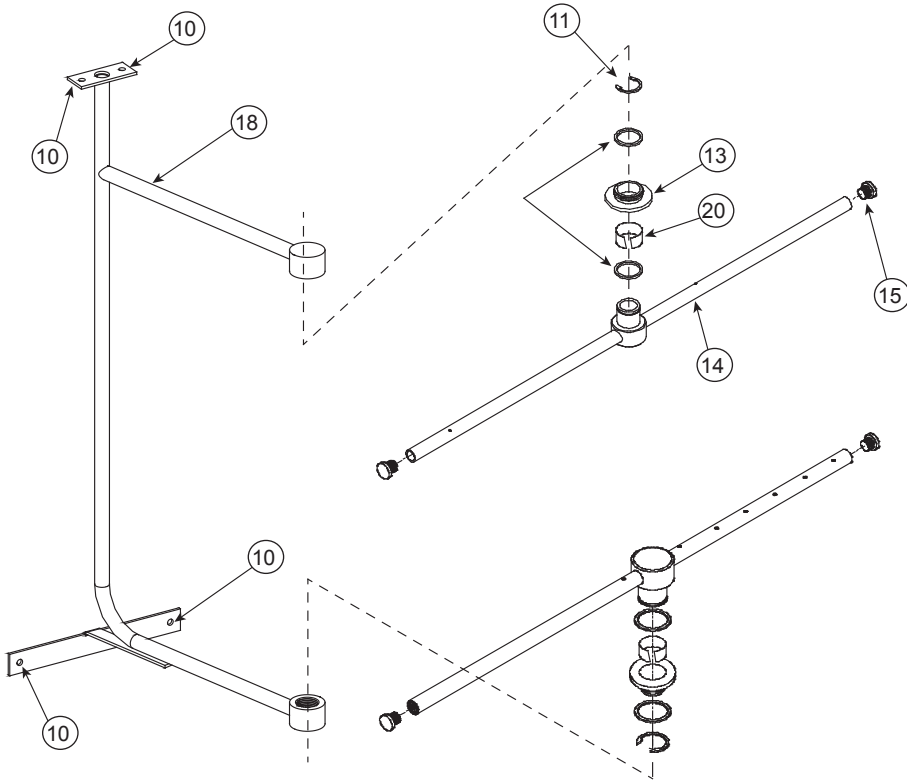
06401-003-07-44



Complete Vacuum Breaker Assembly, 1/2" NPT

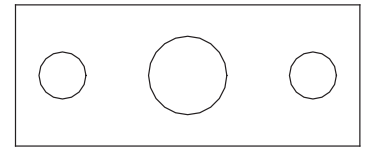
04820-003-06-13

DETAIL "A"
FINAL RINSE ARMS & MANIFOLD



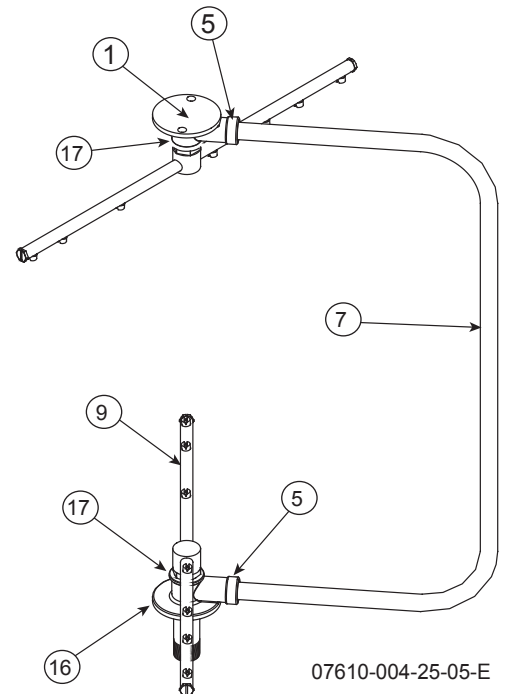
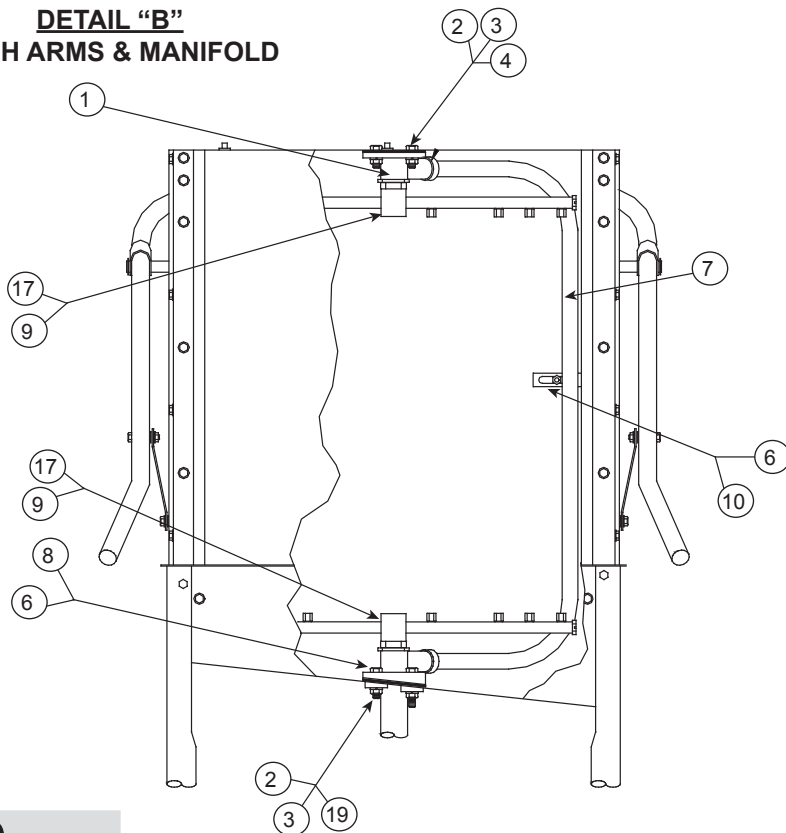
Rinse Injector Weldment
1 per machine
05700-002-56-75

Plug, 1/8" NPT, Brass
3 per Rinse Injector
04730-209-07-37



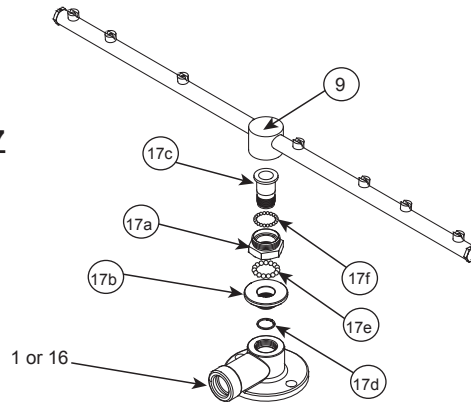
Rinse Injector Gasket
2 per machine
05330-111-42-81

DETAIL "B"
WASH ARMS & MANIFOLD

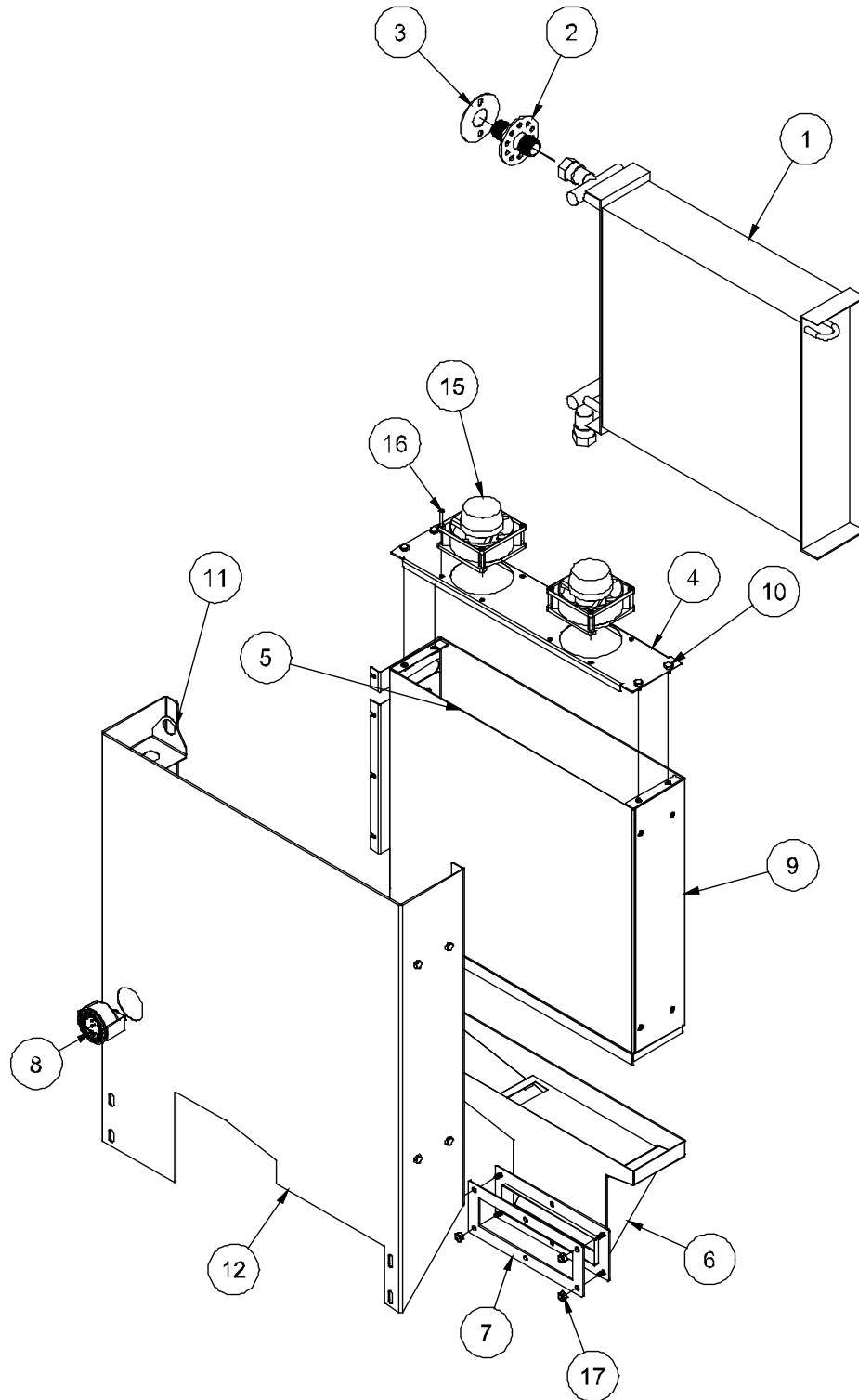


(Continued)

EXPLODED VIEW OF ITEM 17



ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Upper Manifold	05700-031-34-82
2	4	Nut, 3/8"-16 S/S Hex	05310-276-01-00
3	4	Lockwasher,3/8	05311-276-01-00
4	2	Bolt, Hex 3/8"-16 x 7/8" Long	05306-011-36-95
5	2	O Ring	05330-111-35-15
6	1	Positioning Bracket, Manifold Tube	05700-011-34-63
7	1	Tube, Wash Manifold	05700-131-15-07
8	2	Gasket, Manifold	05700-111-35-03
9	2	Wash Arm	05700-021-35-93
10	5	Locknut, 1/4"-20 S/S Hex with Nylon Insert	05310-374-01-00
11	2	Clip, Retaining, Rinse Head Bushing	05340-112-01-11
12	4	Rinse Arm Washer	05330-011-42-10
13	2	Bushing, Rinse Head	05700-021-33-84
14	2	Rinse Arm	05700-003-58-94
15	4	Plug, Rinse Arm	04730-609-04-00
16	1	Lower Wash Manifold	05700-031-46-00
17	2	Bearing Assembly	05700-021-35-97
17a	1	Hub Nut	05700-011-35-94
17b	1	Hub Bushing	05700-011-35-96
17c	1	Hub Spindle	05700-011-35-95
17d	1	Ring, Retainer	05340-011-37-81
17e	15	3/16" Stainless Steel Ball	03120-100-02-00
17f	20	1/8" Stainless Steel Ball	03120-011-37-82
18	1	Rinse Manifold Assembly	05700-021-47-61
19	2	Bolt, Hex 3/8"-16 x 1 1/4" Long	05305-276-10-00
20	2	Bearing, Rinse Head	03120-004-12-13

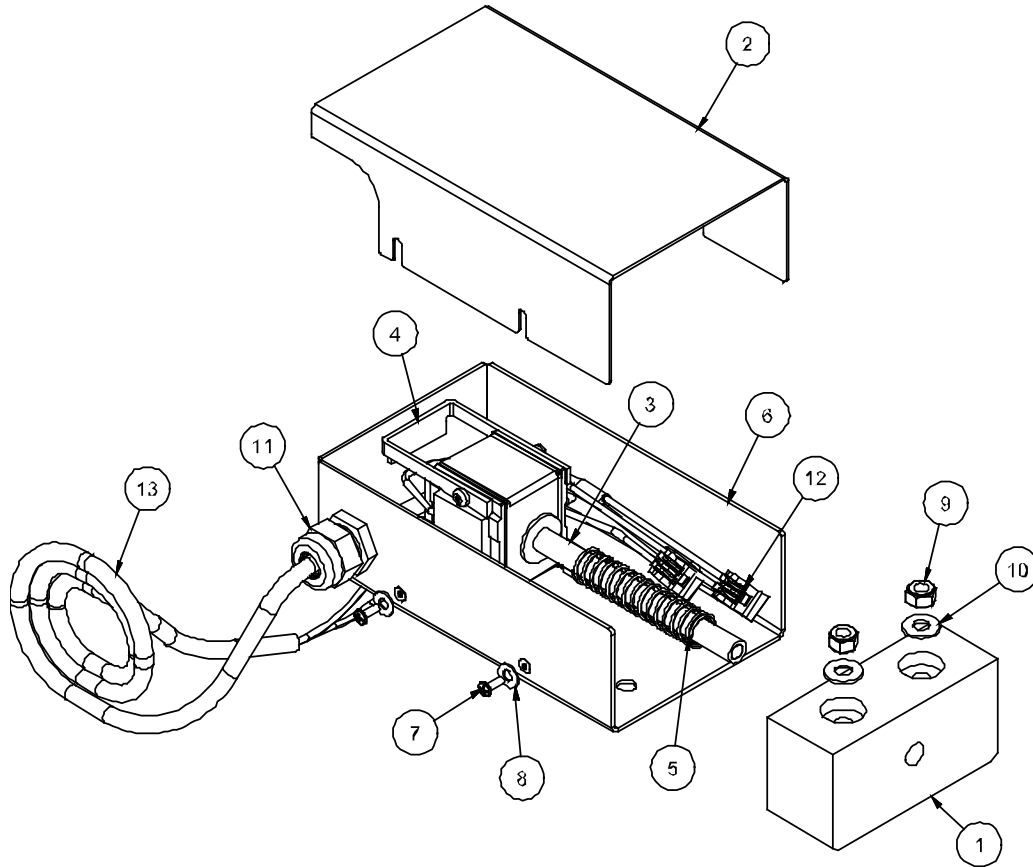


VENTLESS SYSTEM ASSEMBLY

PARTS

(Continued)

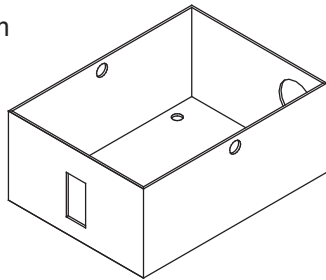
ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Coil, Heat Exchanger	04420-004-19-61
2	1	Inlet, Cold Water	05700-004-19-01
3	1	Ring, Water Inlet	05700-004-19-24
4	1	Plate, Fan Mounting	05700-004-18-07
5	1	Upper Shroud	05700-004-18-06
6	1	Exhaust Box	05700-004-18-04
7	1	Gasket, Heat Exchanger	05330-004-18-22
8	1	Gauge	06680-011-86-42
9	1	Coil Box Back	05700-004-18-03
10	12	Bolt, 1/4-20 X 3/8 Hex	05305-274-20-00
11	1	Bracket, Vacuum Breaker	05700-004-18-91
12	1	Shroud, Hear Exchanger	05700-004-18-92
13	6	Nut, Lock 10-24 S/S Hex w/ Nylon	05310-373-01-00
14	6	Washer, Flat	05311-173-02-00
15	2	Fan, 3.62 Square, 85-236V AC Corrosion Resistant	05999-004-19-46
16	8	Screw, 6-32 X 1 1/2 Long	05305-003-11-33
17	4	Nut, Lock 1/4-20 Hex Nylon Insert	05310-374-01-00



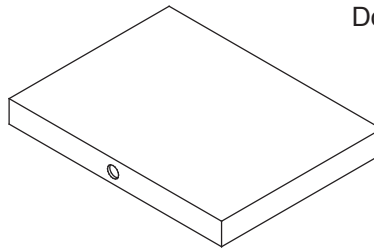
ITEM	QTY	DESCRIPTION	PART NUMBER
		Door Interlock Assembly	05700-004-23-06
1	1	Guide Block, Door Lock	09330-004-22-72
2	1	F-Cover, Door Lock Mounting	05700-004-22-80
3	1	W-Rod, Interlock Weldment	05700-004-23-15
4	1	Solenoid, Horizontal 1" Push	04820-004-24-11
5	1	Spring, Comp.	05935-004-24-10
6	1	W-Base, Door Interlock Box	05700-004-24-25
7	8	Screw 3/8 Pan Head	05305-171-02-00
8	8	Washer, Flat #10	05311-173-02-00
9	2	Locknut, 1/4-20	05310-374-01-00
10	2	Washer, S/S 1/4-20 I.D.	05311-174-01-00
11	1	Fitg, 3216 Liqtite Blk	05975-011-59-50
12	2	Connector, 2-Conductor	05935-004-03-49
13	1	Cord, SJ 55" LG	05700-004-24-31

DOOR INTERLOCK /EXHAUST FAN CONTROL/TRANSFORMER MOUNTING BOX

Door Interlock Box Bottom
05700-001-21-26

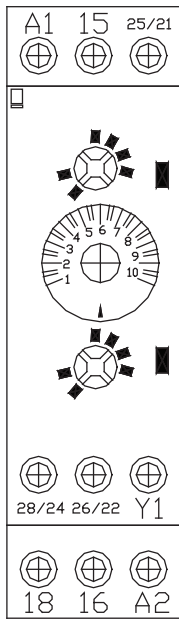


Door Interlock Box Cover
05700-001-21-27

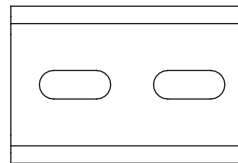


OTHER DOOR INTERLOCK (SDI) COMPONENTS (NOT SHOWN):

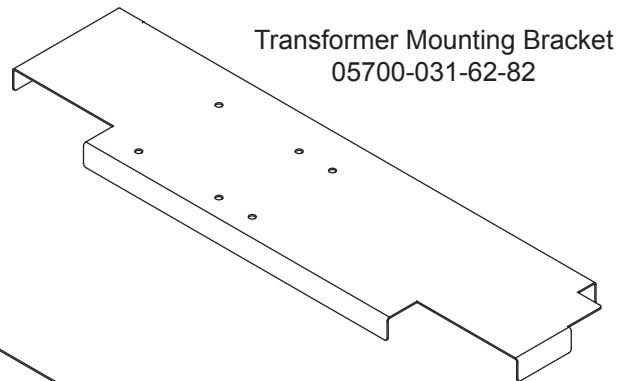
DESCRIPTION	PART NUMBER
Pipe Clamp (found on the side of the machine)	05700-000-35-05
Solenoid, Electrical Interlock Option	04810-100-61-33
Relay	05945-111-47-51



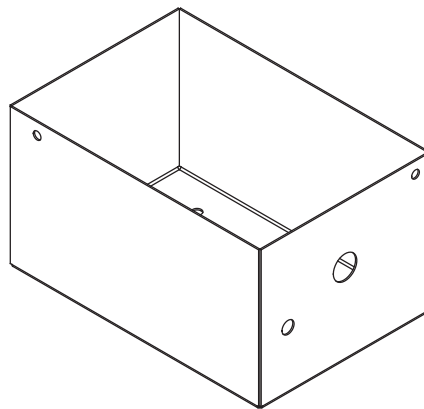
Exhaust Fan Control
Delay Timer
05945-011-65-44



Exhaust Fan Control
2" Din Rail
05700-002-36-09

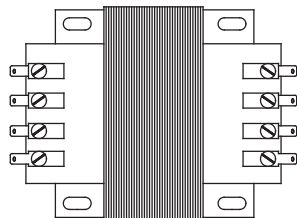


Transformer Mounting Bracket
05700-031-62-82

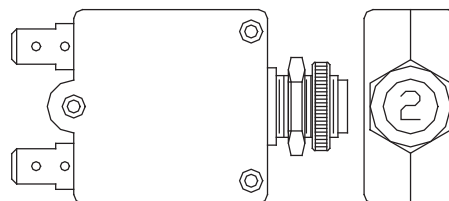


Transformer Mounting Box
05700-002-10-01

Transformer Mounting Box Top
(not shown)
05700-000-78-53



415/440/460V Transformer
05950-111-65-93



2 Amp Circuit Breaker
05925-111-64-18

380V Transformer
05950-111-64-17

A GO BOX is a kit of the most-needed parts for a particular model or model family to successfully effect a repair in the first call 90% or more of the time.

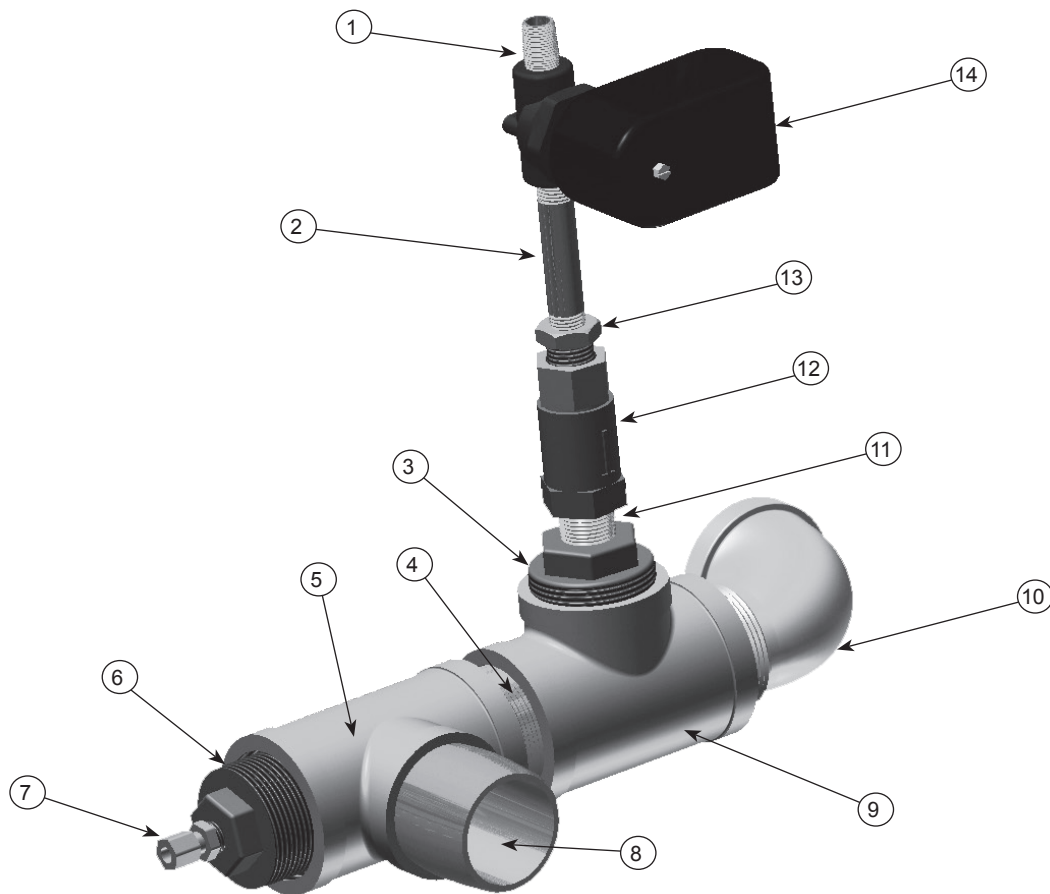
The following components may be ordered together using the following Mfg. No.: 06401-003-62-04

ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Contactora, Rinse/Wash Heater	05945-109-01-69
2	1	Contactora, Wash Motor	05945-002-74-20
3	1	Gauge, Pressure, 0-100 PSI	06685-111-88-34
4	1	Thermometer, 96" Capillary	06685-111-68-49
5	1	Thermometer, 48" Capillary	06685-111-68-48
6	1	Thermostat, Rinse Operating	06401-140-00-33
7	1	Thermostat, Wash Operating	06401-140-00-32
8	1	Thermostat, Hi-Limit	05930-011-49-43
9	1	Liquid Level Control	06680-200-08-21
10	1	Probe, water level sensing	06680-200-02-68
11	1	Magnet, Door	05930-111-51-68
12	6	Glide, Door Edge	05700-111-33-59
13	2	O-Ring Wash Manifold	05330-111-35-15
14	1	Relay, Control 240V 50/60Hz	05945-111-47-51
15	1	Seal, Mechanical Pump (S/S Pumps)	05330-002-34-22
16	1	O-Ring, Wash Pump Gasket	05330-002-81-83
17	1	Switch, Door, Magnetic Reed	05930-111-51-69
18	2	Snap Ring, Retaining, Rinse Arm	05340-112-01-11
19	1	Bearing Assembly, Wash Arm	05700-021-35-97
20	1	Switch, Power Push Button	05930-002-29-13
21	1	Timer, Universal	05945-003-33-09
22	4	Washer, Rinse Arm Nylatron	05330-011-42-10
23	1	Vacuum Breaker 1/2" Brass	04820-003-06-13
24	1	Valve, Solenoid, 1/2", 208-220V	04810-100-09-18

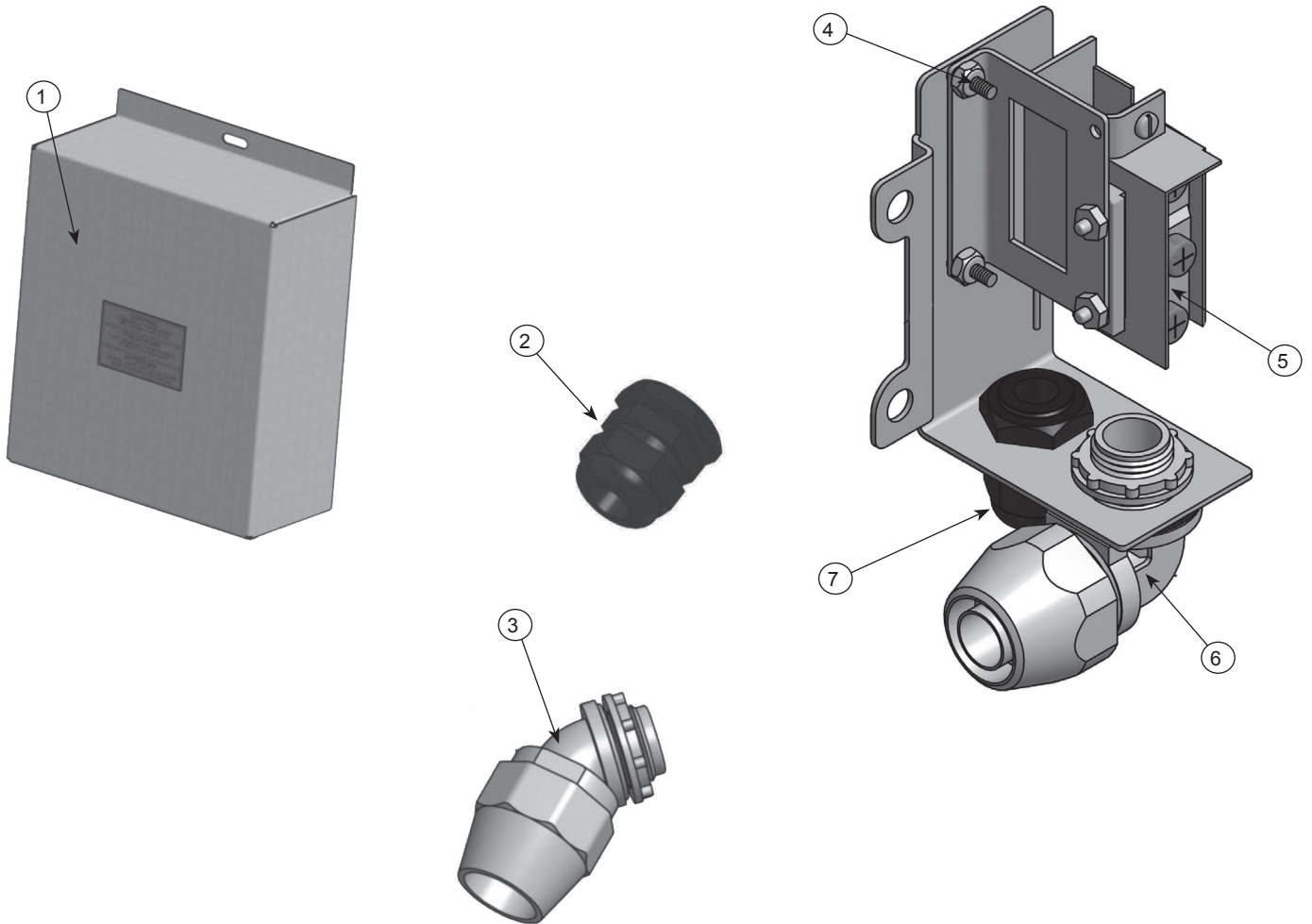
* 1 Pump & Motor Assembly, S/S 06105-002-69-78
Special pricing available when purchased with above GO*BOX. Call for details.

DRAIN QUENCH ASSEMBLY

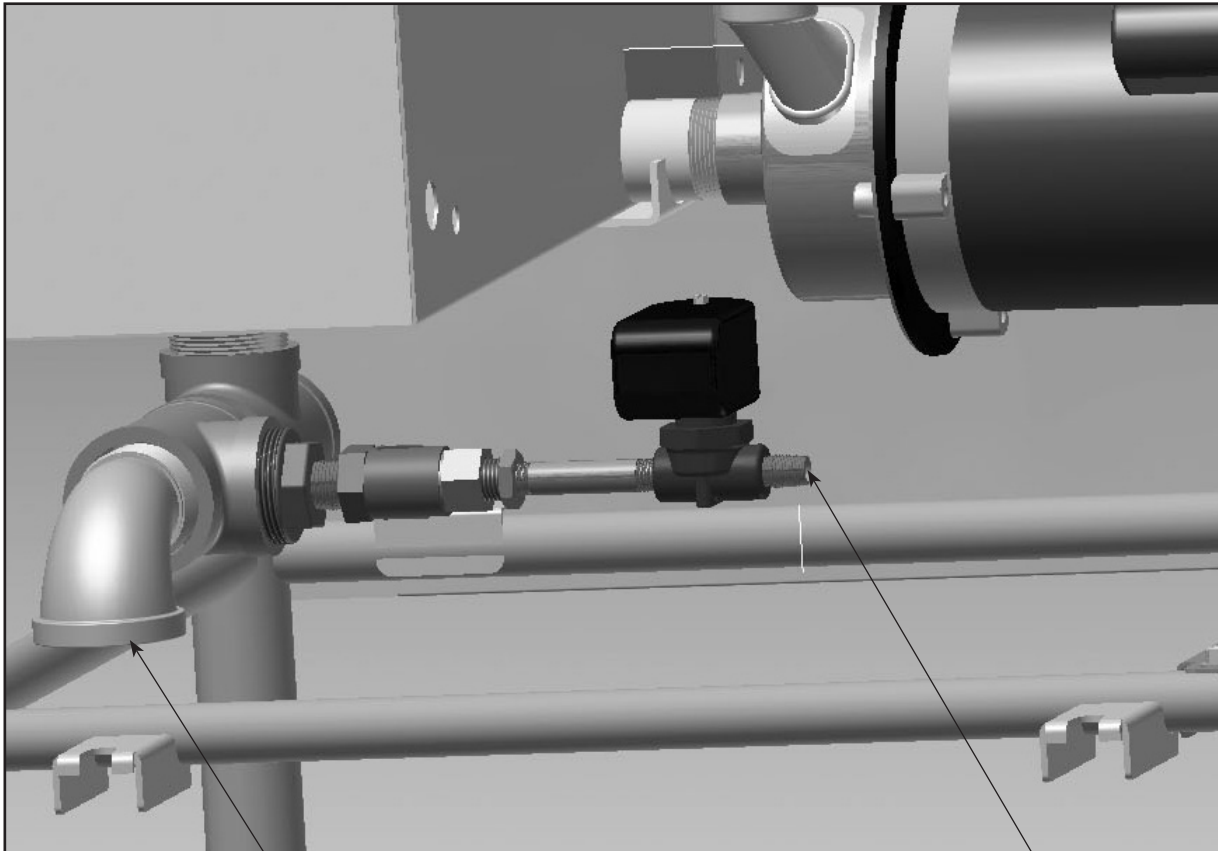
PARTS



ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Nipple, 1/4 NPT x 3 Brass	04730-004-08-07
2	1	Nipple, 1/4 NPT x 3 Brass	04730-004-08-07
3	1	Reducer, 1-1/2 x 1/2 Hex Brass	04730-002-55-75
4	1	Nipple, 1-1/12 Brass Close	04730-207-40-00
5	1	Tee, 1-1/2 Brass	04730-011-69-93
6	1	Reducer, 1-1/2 x 1/4 Hex Brass	04730-002-55-76
7	1	Union, 1/4 Modified	05700-001-16-52
8	1	Nipple, 1-1/12 Brass Close	04730-207-40-00
9	1	Tee, 1-1/2 Brass	04730-011-69-93
10	1	Elbow, 1-1/2 NPT, Female	04730-206-32-00
11	1	Nipple, 1/2 Close Brass	04730-207-15-00
12	1	Valve, Check 1/2	04820-002-55-77
13	1	Reducer, 1/2 x 1/4 Brass	04730-003-62-16
14	1	Solenoid Valve, 1/4, 240V	04810-002-31-09



ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	Wash Heater Cover	05700-004-07-92
2	1	Liquid Tight Fitting (Large)	05975-011-65-51
3	1	Conduit Fitting, 45°-1/2"	05975-011-45-23
4	2	Lock Nut, 6-32 Hex	05310-373-03-00
5	1	Thermostat	05930-003-13-65
6	1	Conduit Fitting, 90°-1/2"	05975-011-45-14
7	1	Liquid Tight Fitting (Small)	05975-011-49-03



Connect 1 1/2" drain plumbing
(elbow can be removed if not needed)

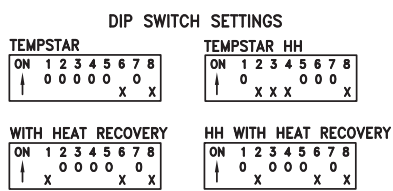
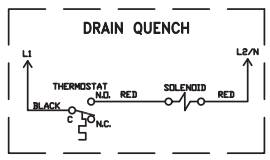
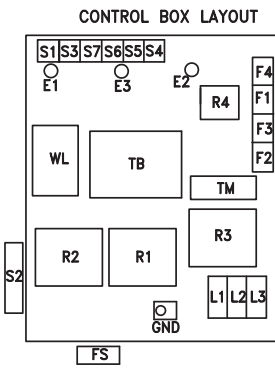
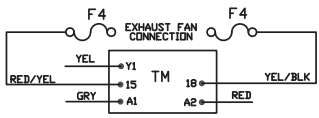
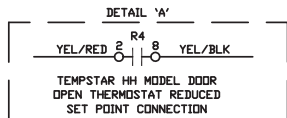
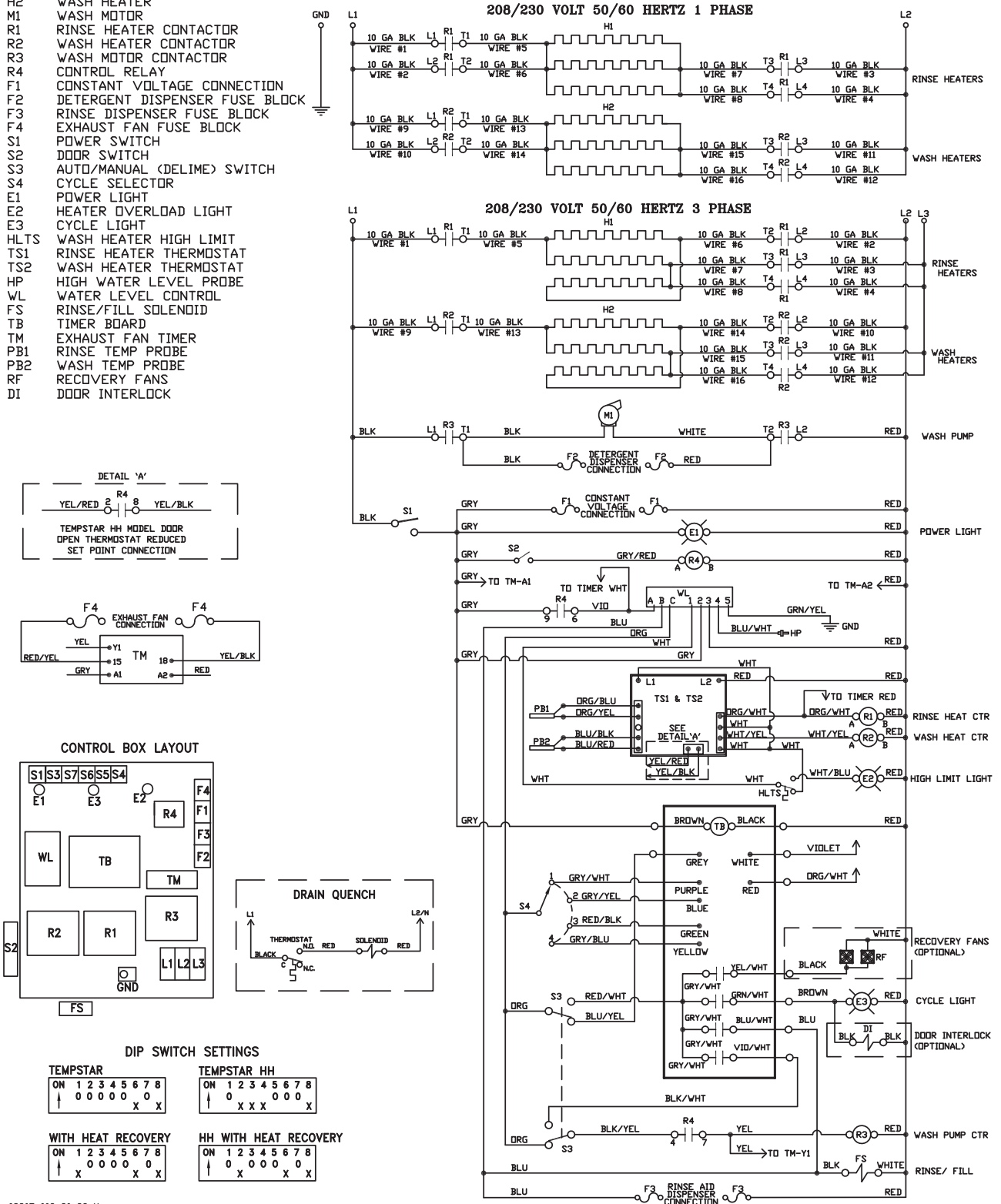
Connect 1/4" cold water line

Noble HT-180 (TOP MOUNT W/ CYCLE SWITCHES)

LEGEND

- L1 L2 L3 POWER DISTRIBUTION BLOCK
- GND GROUND
- H1 RINSE HEATER
- H2 WASH HEATER
- M1 WASH MOTOR
- R1 RINSE HEATER CONTACTOR
- R2 WASH HEATER CONTACTOR
- R3 WASH MOTOR CONTACTOR
- R4 CONTROL RELAY
- F1 CONSTANT VOLTAGE CONNECTION
- F2 DETERGENT DISPENSER FUSE BLOCK
- F3 RINSE DISPENSER FUSE BLOCK
- F4 EXHAUST FAN FUSE BLOCK
- S1 POWER SWITCH
- S2 DOOR SWITCH
- S3 AUTO/MANUAL (DELIME) SWITCH
- S4 CYCLE SELECTOR
- E1 POWER LIGHT
- E2 HEATER OVERLOAD LIGHT
- E3 CYCLE LIGHT
- HLTS WASH HEATER HIGH LIMIT
- TS1 RINSE HEATER THERMOSTAT
- TS2 WASH HEATER THERMOSTAT
- HP HIGH WATER LEVEL PROBE
- WL WATER LEVEL CONTROL
- FS RINSE/FILL SOLENOID
- TB TIMER BOARD
- TM EXHAUST FAN TIMER
- PB1 RINSE TEMP PROBE
- PB2 WASH TEMP PROBE
- RF RECOVERY FANS
- DI DOOR INTERLOCK

ELECTRICAL DIAGRAM



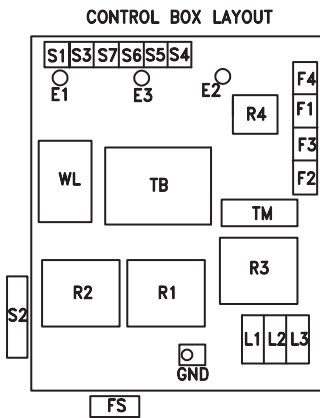
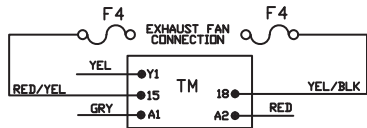
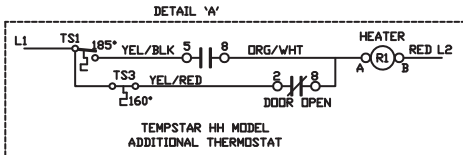
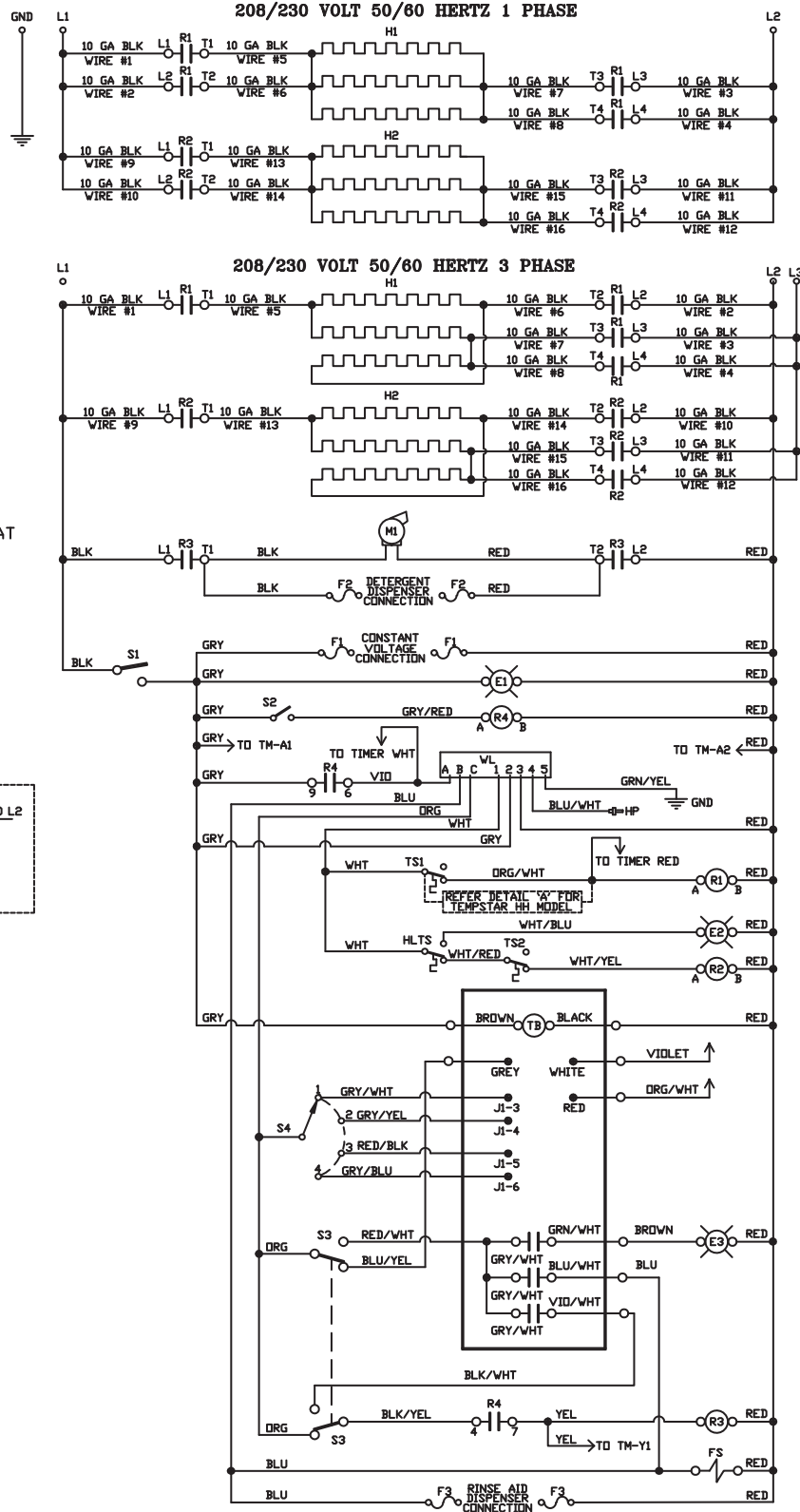
09905-003-30-39 M

Noble HT-180 (TOP MOUNT W/ CYCLE SWITCHES)

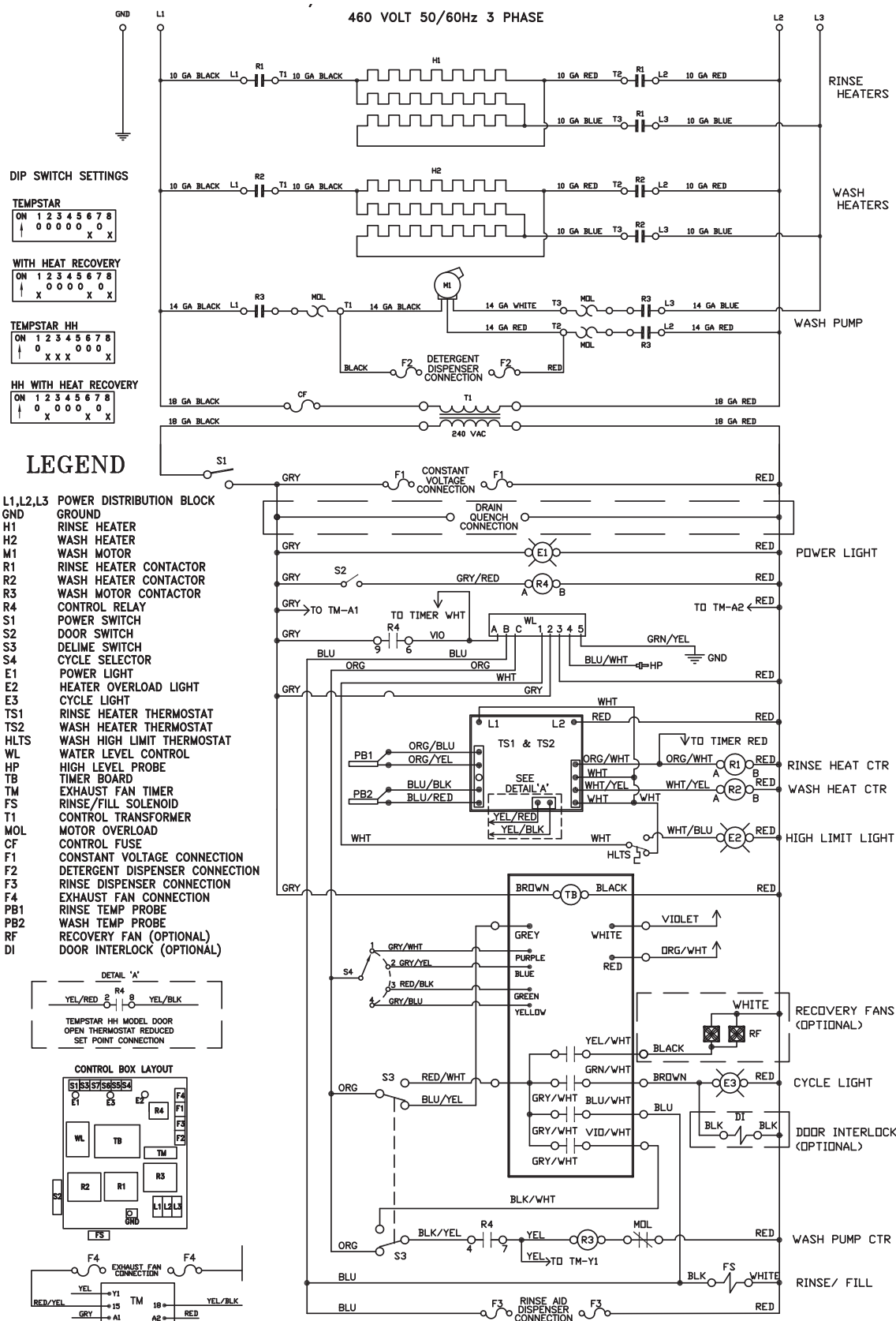
ELECTRICAL DIAGRAM

LEGEND

- L1 L2 L3 POWER DISTRIBUTION BLOCK
- GND GROUND
- H1 RINSE HEATER
- H2 WASH HEATER
- M1 WASH MOTOR
- R1 RINSE HEATER CONTACTOR
- R2 WASH HEATER CONTACTOR
- R3 WASH MOTOR CONTACTOR
- R4 CONTROL RELAY
- F1 CONSTANT VOLTAGE CONNECTION
- F2 DETERGENT DISPENSER FUSE BLOCK
- F3 RINSE DISPENSER FUSE BLOCK
- F4 EXHAUST FAN FUSE BLOCK
- S1 POWER SWITCH
- S2 DOOR SWITCH
- S3 AUTO/MANUAL (DELIME) SWITCH
- S4 CYCLE SELECTOR
- E1 POWER LIGHT
- E2 HEATER OVERLOAD LIGHT
- E3 CYCLE LIGHT
- HLTS WASH HEATER HIGH LIMIT THERMOSTAT
- TS1 RINSE HEATER THERMOSTAT 1
- TS2 WASH HEATER THERMOSTAT
- HP HIGH WATER LEVEL PROBE
- WL WATER LEVEL CONTROL
- FS RINSE/FILL SOLENOID
- TB TIMER BOARD
- TM EXHAUST FAN TIMER



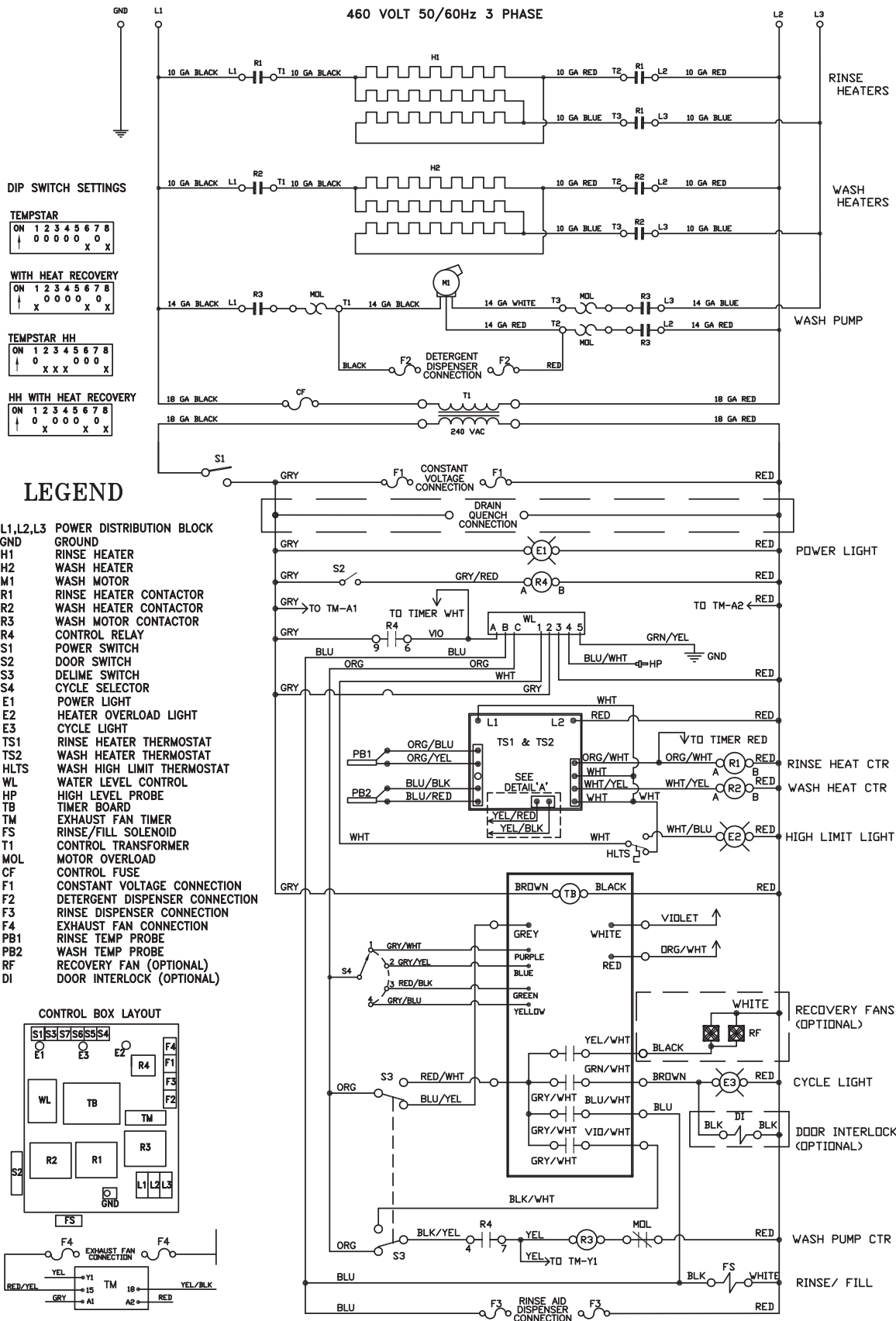
Noble HT-180 (TOP MOUNT W/ CYCLE SWITCHES)



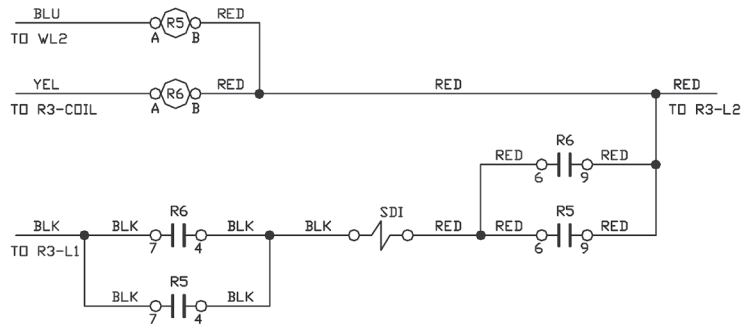
460 V, 60 HZ, 3 PHASE

SCHEMATICS

Noble HT-180 (TOP MOUNT W/ CYCLE SWITCHES)



DOOR INTERLOCK OPTION

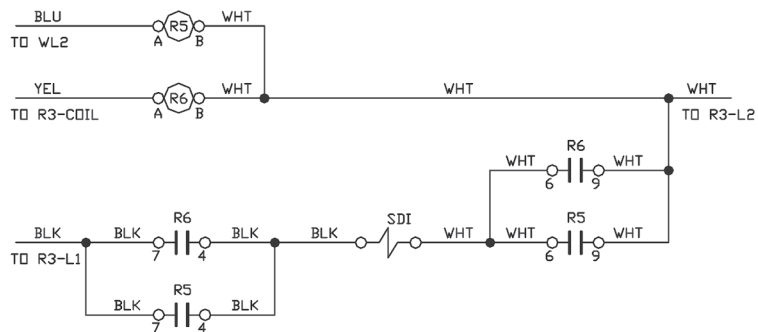


LEGEND

- R5 RINSE RELAY
- R6 WASH RELAY
- DI DOOR INTERLOCK SOLENOID

09905-002-35-85a

DOOR INTERLOCK OPTION

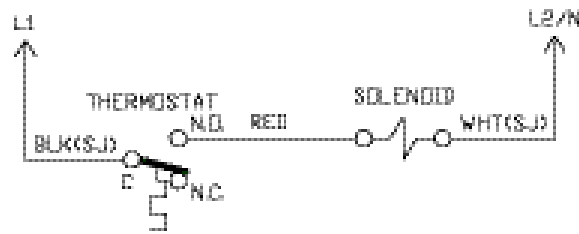


LEGEND

- R5 RINSE RELAY
- R6 WASH RELAY
- DI DOOR INTERLOCK SOLENOID


09905-002-55-78a

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

09905-004-07-98




SERIAL NUMBER: XXXXXXXXXX


MODEL: WareForce HT-180

208-230-460 Volt/60 Hz/3 Phase

40°F RISE BOOSTER		<u>208V</u>		<u>230V</u>		<u>460V</u>
WASH MOTOR	1.0 HP	5.0 A	1.0 HP	5.0 A	3/4 HP	1.8 A
WASH HEATER	4.1 KW	11.4 A	5 KW	12.6 A	5 KW	6.3 A
RINSE HEATER	9 KW	<u>25.0 A</u>	11 KW	<u>27.2 A</u>	11 KW	<u>13.8 A</u>
TOTAL LOAD		41.4 A		44.8 A		21.9 A

70°F RISE BOOSTER		<u>208V</u>		<u>230V</u>		<u>460V</u>
WASH MOTOR	1.0 HP	5.0 A	1.0 HP	5.0 A	3/4 HP	1.8 A
WASH HEATER	4.1 KW	11.4 A	5 KW	12.6 A	5 KW	6.3 A
RINSE HEATER	10.5 KW	<u>29.1 A</u>	12.9 KW	<u>32.4 A</u>	12.9 KW	<u>16.2 A</u>
TOTAL LOAD		45.5 A		50.0 A		24.3 A





Intertek
4000897
Conforms to UL Std 921
Conforms to CSA
Std C22.2 No.188

208-230 Volt/60 Hz/1 Phase

40°F RISE BOOSTER		<u>208V</u>		<u>230V</u>		
WASH MOTOR	1.0 HP	5.0 A	1.0 HP	5.0 A		
WASH HEATER	4.1 KW	19.7 A	5 KW	21.7 A		
RINSE HEATER	9 KW	<u>43.3 A</u>	11 KW	<u>47.8 A</u>		
TOTAL LOAD		68.0 A		74.5 A		

70°F RISE BOOSTER		<u>208V</u>		<u>230V</u>		
WASH MOTOR	1.0 HP	5.0 A	1.0 HP	5.0 A		
WASH HEATER	4.1 KW	19.7 A	5 KW	21.7 A		
RINSE HEATER	10.5 KW	<u>50.4 A</u>	12.9 KW	<u>56.1 A</u>		
TOTAL LOAD		75.1 A		82.8 A		

OPERATING PARAMETERS

MINIMUM WASH TEMPERATURE 150°F

MINIMUM RINSE TEMPERATURE 180°F

MINIMUM INCOMING WATER TEMPERATURE

70°F RISE BOOSTER 110°F

40°F RISE BOOSTER 140°F

WASH CYCLE TIME 45 SEC

RINSE CYCLE TIME 11 SEC

FLOW PRESSURE 10 PSI

Made in the USA
Jackson WWS, Inc.
6209 N US HWY 25E
Gray, KY 40734
(606) 523-9795
09905-003-71-17 F

Noble units that are manufactured with the data plate above can be field-converted to different phases and voltages. To accomplish this, your unit should have shipped with the Noble Phase Conversion Kit, part number 06401-003-71-71. This kit contains the appropriate decals and schematics to apply to your unit once the conversion is complete.

All work should be performed only by Authorized Service Agents.

Steps:

1. Perform the appropriate wiring and component changes as necessary to achieve the desired result. Reference technical manuals or contact technical service for assistance.
2. Verify the Schematic is correct. If not, replace with the correct one from the kit.
3. At the power inlet, remove the “Wired For” decal and replace with the one that matches the new configuration of your machine.



Noble Warewashing • Lancaster, Pennsylvania
www.nobleproducts.biz
For Service Call 1-888-800-5672