

# On-Premise Hospitality Instruction Manual

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### **Equipment Ratings**

This includes equipment supply, description of I/O connections, duty cycle and operating environmental conditions.

1. Pollution degree 2
2. Installation category 2
3. Altitude 2000 m
4. Humidity 50% to 80%
5. Electrical supply 115/208/230 VAC, 50/60 Hz
6. Indoor use only
7. Temperature 5°C to 40°C
8. Mains supply voltage fluctuations are not to exceed 10 percent of the nominal supply voltage

### **Duty Cycle**

- Maximum run time per pump is 5 minutes ON
- Minimum OFF time is 5 minutes per pump between operating cycles
- Do not run any pump more than 3 times in a 30 minute period
- Do not run more than 3 pumps at the same time

### **Electrical Ratings**

- Chemical dispensing pumps, Model OP Hospitality, permanently connected, rated 115/208/230 VAC, 50/60 Hz, 1A

**Approvals Mark:**  



**CAUTION: Wear protective clothing and eyewear when dispensing chemicals or other materials. Observe safety handling instructions (MSDS) of chemical mfrs.**



**CAUTION: To avoid severe or fatal shock, always disconnect main power when servicing the unit.**



**CAUTION: When installing any equipment, ensure that all national and local safety, electrical, and plumbing codes are met.**

## PRE-INSTALLATION

Before the equipment is installed, you should survey the installation site thoroughly. At the very least, your survey should include the following:

- Check to make sure that all functions of the washmachine are operating properly. Including; card reader or timer, water solenoids, flush down valves, water level switch, machine motor, and drain valve.
- Check the proposed location for a 115/208/230 VAC power source.
- Check voltage of all supply signals that will be used from the washmachine. Measure voltage between supply signal and signal common with a voltmeter. DO NOT check signal voltage between supply signal and case (earth) ground.
- Measure the distance from chemical supply containers to pump housing, and from pump housing to injection point inside washmachine.

## INSTALLATION

- (1) **Disconnect all power to washer.**
  - (2) Mount pump cabinet in a convenient location no higher than 8' above, and within 10' horizontally, of supply containers. This is usually near the washer, however the dispenser can be mounted as a remote pumping system.
  - (3) If using the optional Formula Selector, mount it with the provided Velcro adhesive strips to the front of the washer where operators can easily access it (be sure to first clean the mounting surface as the adhesive will not stick to a dirty surface). Connect the low voltage cable from the Formula Selector to the pump cabinet.
  - (4) Connect 115/208/230 VAC power source to main power connection in pump cabinet. Use suitable conduit for electrical wiring (per applicable wiring codes). A suitable ground conductor should be connected to the ground terminal in accordance with local electrical codes. The user/installer should provide a disconnect switch or circuit breaker close to the equipment and should be marked that it is for this equipment.
- NOTE: Low voltage cables do not require conduit.
- (5) Install and wire the internal or external Signal Interface Module (SIB) per notes to the right.
  - (6) For each pump, cut the suction tube to length and insert one end into the appropriate supply container using PVC pipe as a support. Insert other end of suction tube into the left (input) side of the pump's squeeze tube.

- (7) For each pump, cut the discharge tube to length and insert one end into the right (output) side of the pump's squeeze tube. Form an anti-siphon loop (pointing "down") with the other end of discharge tube and insert into the supply pocket of the machine.
- (8) The system is now ready to be powered up and programmed.

### External Signal Interface Module (SIB)

If the external SIB is used, it will need to be mounted and connected to the dispenser before wiring signals.

- (1) Mount the module using the provided Velcro adhesive strip. The module can be mounted inside the washer's controls, along side the washer's controls, or to the bottom of the pump cabinet.
- (2) Connect the low voltage cable from the optional external SIB module to the remote (if used) or to the OP Hospitality pump system.
- (3) Connect the supply signals to the SIB per wire colors on the SIB label. If using Drain Mode, only one signal is required (pump #1).

### Internal SIB Connections

If the internal SIB is used, it will already be installed inside the pump cabinet. Connect the supply signals to the SIB per legend on the circuit board.

## LOW VOLTAGE SIGNAL FILTER

The SIB has low voltage signal filtering capability that can help prevent unwanted injections caused by low voltage stray signals or "bleed" voltages. The signal filter is controlled by resistor packs inside the SIB. The resistor packs are marked J1 and J2.

- When the resistor packs are in place (normal) the signal input range is 100 – 240 volts.
- When the resistor packs are removed, the signal input range is 24 – 240 volts.

### How to remove the resistor packs

- (1) Take out all screws from the bottom of the SIB to open the module (external SIB only).
- (2) Carefully remove the resistor packs marked J1 and J2.
- (3) Close the module and replace screws when finished (external SIB only).

RESISTOR PACK	100—240V SIGNAL RANGE	24—240V SIGNAL RANGE
J1	IN	OUT
J2	IN	OUT

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## OPERATION

□ **NORMAL MODE:** The system is capable of 30 user selectable formulas with each formula having unique volumes and delay times for each pump. Signals from the washer trigger the pumps, then the OP Hospitality microprocessor takes control to count down delay times and run times with up to 3 individual "levels" (explained below) for each pump. The supervisor of the facility, or the machine operator, will select the formula using ▲/▼ buttons to choose the appropriate wash formula.

Programming "levels" allows a pump to inject different amounts of chemical for multiple signals to the same pump during a formula. For example, pump 1 could inject 8 ounces of chemical on its first signal, then later inject 12 ounces of chemical on its second signal. Three levels are available for any pump on any formula, except for the load count pump. **ONLY 1 LEVEL CAN BE PROGRAMMED FOR THE LOAD COUNT PUMP** (and any other pump that may be signaled simultaneously with the load count pump's signal). The level feature can also be used to "skip over" an injection. Simply do not program any volume or delay time for that level.

When a formula begins (after power is turned on or the "Load Count" pump has been triggered from the previous formula) the first signal to a pump will activate level 1. The signal has to be present for at least 5 seconds to be recognized. The second signal to the pump during the formula will activate level 2. The third signal to the pump during the formula will activate level 3. The load count pump signal must be received to reset levels in preparation for the next formula.

□ **DRAIN MODE:** This mode is similar to normal operation but requires only one signal source from the washer and works by counting the number of drains during a wash cycle. When programming the dispenser for Drain Mode use, each chemical pump is assigned a specific drain occurrence ("drain count") to inject product on. This feature only affects how the pumps are triggered – all other functions such as pump volumes, delay times, and flush mode, will still operate in their normal fashion.

During a wash formula, each drain signal is counted and the pumps inject chemical according to the drain number they are assigned. Drain mode is similar to normal operation, in that the pumps are programmed with volumes (and delay times if necessary) and the flush mode works the same way it does in normal operation.

The "multiple level" feature works slightly different in drain mode, because of the way drain mode counts the number of signals to pump #1 input. If a second injection level is required, it must be programmed to inject on a later drain number (occurrence) than the first level for that pump.

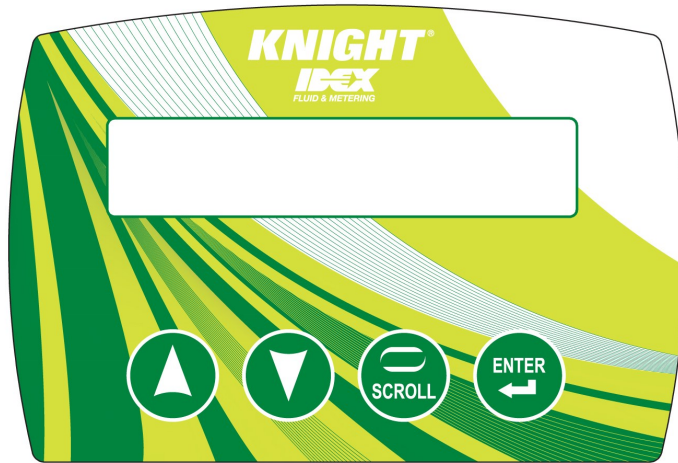
- Using signal lockout is not recommended for drain mode operation.
- During a washcycle, when pumps are idle, the display will show the formula name on the top line of the display and the current drain count on the bottom line. When a normal washcycle has ended, the drain count will show 00.
- Cycling power will reset the drain count if an incomplete load has been run.

□ **RELAY MODE:** This type of operation is typically used with a microprocessor controlled washer. When set to relay mode, the system will run its pumps as long as their respective signals are present. To accomplish this, the system "by-passes" its volume and delay time capabilities for the chemical pumps; however, flush mode is still available for optional use.

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## KEYPAD DIAGRAM

*Main Control Panel*



*Optional Formula Selector*



Allows you to choose the desired formula (unless using RELAY mode) for operation. When programming the system, allows you to change the value of a particular character (i.e. pump number, formula name, etc). A blinking “cursor” indicates which character will be changed by these buttons. Press repeatedly to advance through all available letters and numbers. The ▲ button also acts as a YES response for menus that have YES / NO prompts.



Allows you to move (SCROLL) the cursor position within certain menu selections to choose items you wish to change. Also used to exit certain menu options or to exit the programming mode to return to normal operation.



Allows you to access the system from the main (default) display. Takes you into the menus for programming. Logs data into memory when programming. Also acts as a NO response for menus that have YES / NO prompts.

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## PROGRAMMING

All systems are shipped from the factory with the access code set at 000. Changing the access code is explained later in this manual. **To get started, hold the ENTER button until you see the following display (this should only take a few seconds).**

<b>ACCESS CODE 000 V1.0</b>	Use the SCROLL and ▲/▼ buttons (not necessary if code has not yet been changed from factory default of 000) to input the access code, then press ENTER.
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<b>LANGUAGE = ENGLISH</b>	Use the SCROLL and ▲/▼ buttons to select the desired language (for the programming menus and running displays) then press ENTER.
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<b>CLEAR LOAD COUNT UP=YES ENTER=NO</b>	This selection allows you to clear the load count memory. Press ▲ if you wish to clear all load count information, or press ENTER to continue without clearing.
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<b>ARE YOU SURE? UP=YES ENTER=NO</b>	If you pressed YES, this prompt will appear to double check that you are sure you want to clear load counts.
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<b>PRIME PUMPS ? UP=YES ENTER=NO</b>	This selection allows you to prime the chemical pumps. Press ▲ if you wish to prime the pumps, or press ENTER to continue without priming. Use pump #9 if you wish to prime the flush manifold
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<b>PRIME PUMP 1 ENT = START/STOP</b>	This selection allows you to prime pumps. Use ▲/▼ to choose the pump number, then press ENTER to start pump. Press ENTER again to stop pump. When finished priming the pump, you will return to the previous menu.
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<b>LOAD DEFAULTS ? UP=YES ENTER=NO</b>	This selection allows you to clear pump volumes, flow rates and formula names in the dispenser and will reset the system to the factory default setting. Press ▲ if you wish to clear the memory and load defaults, or press ENTER to continue without loading.
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<b>ARE YOU SURE? UP=YES ENTER=NO</b>	<p>If you pressed YES, this prompt will appear to double check that you are sure you want to load defaults.</p> <p>NOTE: After loading defaults, the display window will show the system name briefly, then revert back to the run mode display—this is normal. You can then go back into programming mode using 000 as the access code.</p>
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<b>MAIN ACCESS CODE=000</b>	<p>This selection allows the “main” access code to be changed. The main access code allows entry into the programming menus as well as report functions. Use the SCROLL and ▲/▼ buttons to set a new code number, then press ENTER to continue.</p> <p>NOTE: If the access code is changed, keep a record of the new code in a safe place. If the new code is forgotten, contact Knight.</p>
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<b>USER ACCESS CODE=000</b>	<p>This selection allows the user access code to be changed. Use the SCROLL and ▲/▼ buttons to establish the new code number, then press ENTER to log the data into memory. When finished, press ENTER to continue.</p> <p>NOTE: The user access code allows access to the pump priming function only.</p>
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<b>UNIT OF MEASURE = US</b>	<p>This selection allows you to choose between US or Metric units of measure. Use the SCROLL and ▲/▼ buttons to establish the unit of measure, then press ENTER to log the data into memory. When finished, press ENTER to continue.</p>
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<b>SIGNAL LOCKOUT = 00 MINUTES</b>	<p>This selection sets the time (in minutes) that signal lockout will disregard incoming supply signals. The setting applies to all pumps except the load count pump. Use the SCROLL and ▲/▼ buttons to choose a lockout time between 0 and 99 minutes, then press ENTER. When finished, press ENTER to continue.</p> <p>NOTE: The signal lockout feature is by-passed when the system is operating in relay mode, as the pumps are directly controlled by the signals from the washer’s controller.</p>
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<b>DELAY UNITS = SECONDS</b>	<p>This selection allows you to choose seconds or minutes as the delay time unit of measure. Use the ▲/▼ buttons to choose the desired setting, then press ENTER to continue.</p>
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<b>OPERATING MODE = NORMAL</b>	<p>This selection allows you to choose between the following modes of operation: Normal, Drain, or Relay. Use the ▲/▼ buttons to select the desired operating mode, then press ENTER.</p>
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<b>DRAIN SIGNAL = NORMAL</b>	<p>NOTE: You will only see this display if Drain Mode was selected in the previous step.</p> <p>This selection allows you to select if the drain signal is to be NORMAL or INVERTED. Use the ▲/▼ buttons to make your selection, then press ENTER to continue.</p>
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<b>PUMP LEVELS = ENABLED</b>	<p>This selection allows you to choose if you wish to use multiple pump level programming. Pump levels allow the pumps to dispense up to 3 individual dosage amounts within the same formula. Use the ▲/▼ buttons to choose either enable or disable, then press ENTER.</p>
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<b>SYSTEM LOCKOUT</b> = 00 MINUTES	This selection sets the time (in minutes) that the system will be “locked-out” to all incoming supply signals. The lock-out time is started by a signal to the load count pump. Use the SCROLL and ▲/▼ buttons to choose a lockout time between 0 and 99 minutes, then press ENTER. When finished, press ENTER to continue.
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<b>LOAD COUNT PUMP</b> = 6	This selection shows which pump is being used to count loads. <u>Always</u> enter the last pump in the system that will receive a signal. Use the ▲/▼ buttons to choose the number, then press ENTER. When finished, press ENTER to continue.
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**IMPORTANT:** The load count pump must receive a signal on every washcycle for the system to operate correctly (even if the load count pump will not actually dispense chemical for the formula selected).

When the load count pump receives a signal, the load counter is incremented as well as resetting bleach defeat, formula levels, and signal lockout in preparation for the next washcycle.

This setting is critical when using Drain Mode to maintain proper injection sequence. Normally you will set the load count pump to correspond with the last drain signal that will be received during the formula, however there may be additional drain signals that occur after the last pump has injected. In this situation, a fictitious pump can be assigned to act as a load count pump.

<b>FLUSH MODE</b> = WITH	This selection allows you to select how you want the flush mode to operate (if a flush time will be set). Use the ▲/▼ buttons to choose if the flush will happen <u>with</u> any pump, or <u>after</u> any pump. Make a selection, then press ENTER.
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<b>FLUSH TIME</b> = 00 SECONDS	This selection allows you to set the flush time for all formulas, or if using RELAY MODE. To set the flush time (in seconds) use the SCROLL and ▲/▼ buttons to establish the desired time, then press ENTER. This is the amount of time that the flush will stay active when a pump finishes injecting.
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<b>SIGNAL TIME</b> = __ SECONDS	This selection allows you to determine the appropriate length of a valid supply signal from the washer. Supply signals must be of a duration that matches the minimum setting to activate any pump in the system, or start a pump delay. The range is from 1 to 10 seconds. To set the signal (qualify) time use the SCROLL and ▲/▼ buttons to establish the desired time, then press ENTER.
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<b>SIGNAL MODE</b> = ONE TO ONE	<p>This selection allows you to choose which pump signal mode you wish to use. Use the ▲/▼ buttons to choose the desired pump signal mode, then press ENTER to continue.</p> <p><b><u>ONE-TO-ONE:</u></b> Each pump has its own independent signal.</p> <p><b><u>ASSIGNED STEP:</u></b> Each signal input on the SIB becomes a signal number (for programming) and can be assigned to multiple pumps in each formula. Pump inputs 2 and 5 (main wash signals) become level 3 for any pumps that are assigned to it.</p> <p><b><u>ASSIGNED SIG:</u></b> Each signal input on the SIB becomes a signal number (for programming) and can be assigned to multiple pumps in each formula. Each time an assigned signal is received, the pump will sequence through normal volume levels.</p>
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**AFS MODE  
= MICRO**

This selection allows you to choose which AFS mode will be used to select formulas. See the notes below for details on how the modes work. Use the ▲/▼ buttons to select the appropriate AFS mode, then press ENTER.

**MICRO:** For use with microprocessor controlled washers that can send a signal of exact duration to the unit. The controller interprets the duration of the signal as the formula number requested, based on the AFS TIME setting explained in the next menu selection.

**CHART:** For use with card-reader type machines. Uses a combination of signals to pick the formula in a “binary” numbering format.

To operate Chart Mode, choose an available signal track on the chart or card that will be dedicated to selecting formulas. Connect the signal from that track to the AFS input on the SIB. The FIRST cut in the chart or card must be on the Automatic Formula Select Signal track. Thirty seconds after this cut begins, the controller will “look” at signal inputs 1 through 7 and evaluate the formula number selected (see diagram to the right). The controller will then display this formula number. Once the formula select is finished, pump input signals return to normal operation. All pump signals must turn off for a minimum of five seconds, then retriggered for pumps to operate.

←← CHART/CARD DIRECTION ←←

■	SIB PUMP #1 SIGNAL INPUT > ADD 1
	SIB PUMP #2 SIGNAL INPUT > ADD 2
■	SIB PUMP #3 SIGNAL INPUT > ADD 4
	SIB PUMP #4 SIGNAL INPUT > ADD 8
	SIB PUMP #5 SIGNAL INPUT > ADD 16
	SIB PUMP # 6 SIGNAL INPUT > ADD 32
	SIB PUMP # 7 SIGNAL INPUT > ADD 64
■	SIB AFS SIGNAL INPUT

Example: The chart cuts shown would automatically select formula #5 after 30 seconds.

**AFS TIME  
= 1 SECOND**

This selection is used with AFS micro mode to establish a time “increment” for selecting formulas. The signal duration will be divided by the number selected to choose the formula. The available signal time increments (in seconds) are 1—5.

Example: If AFS signal time is set for 2, a 20 second signal from the washer would choose formula 10 on the dispenser.

Use the ▲/▼ buttons to select the appropriate AFS time, then press ENTER.

**AUTO FORM RESET  
= DISABLED**

This selection allows you to choose if you wish to use auto formula reset. This feature resets the formula number to 00 after the load count pump activates. In cases where automatic formula select is OFF (formulas selected manually), this feature ensures that an operator cannot wash a load with the wrong formula. When a washcycle is finished, the next formula must be manually chosen. Use the ▲/▼ buttons to choose either enable or disable, then press ENTER.

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**PROG FORM ENABLE**  
UP=YES ENTER=NO

This selection allows you to choose which formulas will be selectable to operators. Press ▲ if you wish to change formula disable status, or press ENTER to continue without changing.

**FORMULA DISABLE**  
FORMULA 01 = ENA

Use the ▲/▼ buttons to select the formula number, then press SCROLL (to move the cursor to the right). Use the ▲/▼ buttons again to select enable or disable status, then press ENTER. Repeat for each formula necessary.

NOTE: When finished setting formula enable/disable status, hold down the SCROLL button until you see the previous display (this will only take a few seconds).

**PROG FORM NAMES?**  
UP=YES ENTER=NO

This selection allows you to change the formula names. Press ▲ if you wish to change formula names, or press ENTER to continue without changing.

**NAME FORMULA 01**  
FORMULA 01

Use the ▲/▼ buttons to select the formula number, then press SCROLL (to move the cursor to the bottom). Use the ▲/▼ and SCROLL buttons again to change the individual characters of the formula name, then press ENTER. Repeat for each formula necessary.

NOTE: When finished setting formula names, hold down the SCROLL button until you see the previous display (this will only take a few seconds).

**PROG PUMP INFO?**  
UP=YES ENTER=NO

This selection allows you to change the chemical pump names. Press ▲ if you wish to change pump information, or press ENTER to continue without changing.

**PUMP 1**  
PUMP -01

Use the ▲/▼ buttons to select the pump number, then press SCROLL (to move the cursor to the bottom). Use the ▲/▼ and SCROLL buttons again to change the pump name, then press ENTER. Repeat for each pump necessary.

NOTE: When finished setting pump information, hold down the SCROLL button until you see the previous display (this will only take a few seconds).

**CALIBRATE PUMPS?**  
UP=YES ENTER=NO

This selection allows you to set the pump calibrations (flow rates). Press ▲ if you wish to calibrate or change pump flow rates, or press ENTER to continue without changing.

**MANUAL CALIBRATE**  
UP=YES ENTER=NO

Press ▲ if you wish to manually view, or change, pump flow rates, or press ENTER to auto-calibrate.

**P1 FLOW RATE**  
010.0 OZS/MIN

Use the ▲/▼ buttons to select the pump number and view the existing flow rate. Press SCROLL (to move the cursor to the bottom) then use the ▲/▼ and SCROLL buttons again to change the number of ounces per minute of the pump and press ENTER.

NOTE: When finished setting pump flow rates, hold down the SCROLL button until you see the calibration display (this will only take a few seconds).

**CALIBRATE PUMP 1**  
ENTER START/STOP

**Auto-Calibrate Function**

Use the ▲/▼ buttons to select the pump number and press ENTER to start the pump. Measure out the volume dispensed into a beaker or measuring cup. Press ENTER again and you will see the following display.

NOTE: To exit, you must hold down the SCROLL button to return to the previous display.

**VOLUME PUMPED**  
000.0 OZS ENTER

Use ▲/▼ and SCROLL to input the number of ounces you measured in the previous step and press ENTER.

**FLOW RATE**  
P1=010.0 OZS/MIN

The resulting flow rate will then be displayed for the pump that you just auto-calibrated. Press ENTER to continue with calibrating other pumps.

**PROG FORMULAS ?**  
UP=YES ENTER=NO

This selection allows you to change the formula settings (dosage amounts, delay times, levels, etc). Press ▲ if you wish to change formula settings, or press ENTER to continue without changing.

**FORM01 L1 PUMP1**  
000 .0 OZS DT=000

Use SCROLL and ▲/▼ to choose the desired formula/level/pump on the top line, then press SCROLL to move the cursor to the bottom line. Use SCROLL and ▲/▼ to set the pump volume and delay time (if required) and press ENTER. Repeat these steps for all pumps and formulas that will be used.

When finished programming the formulas, hold down the SCROLL button until you see the previous display (this will only take a few seconds).

**PROG DRAIN COUNT**  
**UP=YES ENTER=NO**

NOTE: You will only see this display if using drain mode.

This selection allows you to change the drain counts. Press ▲ if you wish to change drain counts, or press ENTER to continue without changing.

**FORM01 L1 PUMP1**  
**DRAIN COUNT = 00**

This selection allows you to enter the drain assignment for each pump and formula. Use the SCROLL and ▲/▼ buttons to choose formula, level, and pump number on the top line, then press SCROLL to move the cursor to the bottom line. Set the appropriate drain count and press ENTER again. Repeat these steps for each pump on in each formula that will be used.

When finished setting drain counts, hold down the SCROLL button until you see the previous display (this will only take a few seconds).

NOTE: Be sure to assign the load count pump to the final drain count to properly end the washcycle. If there are additional drain signals after the load count pump, you can work around this by assigning a pump that is not used to the final drain (e.g. use pump 7 or pump 8).

**PROG PMP SIGNALS**  
**UP=YES ENTER=NO**

NOTE: You will only see this display if using assigned signals.

This selection allows you to change the assigned signals. Press ▲ if you wish to change assigned signals, or press ENTER to continue without changing.

**SIGNAL 1 = L1**  
**PUMPS 0 0 0**

*...if using Assigned Step mode*

Use the ▲/▼ buttons to choose the signal number, then press SCROLL to move the cursor to the bottom line. Use SCROLL and ▲/▼ to choose which pumps will be activated by this signal, then press ENTER.

When finished assigning signals, hold down the SCROLL button until you see the previous display (this will only take a few seconds).

**SIGNAL 1 =**  
**PUMPS 0 0 0**

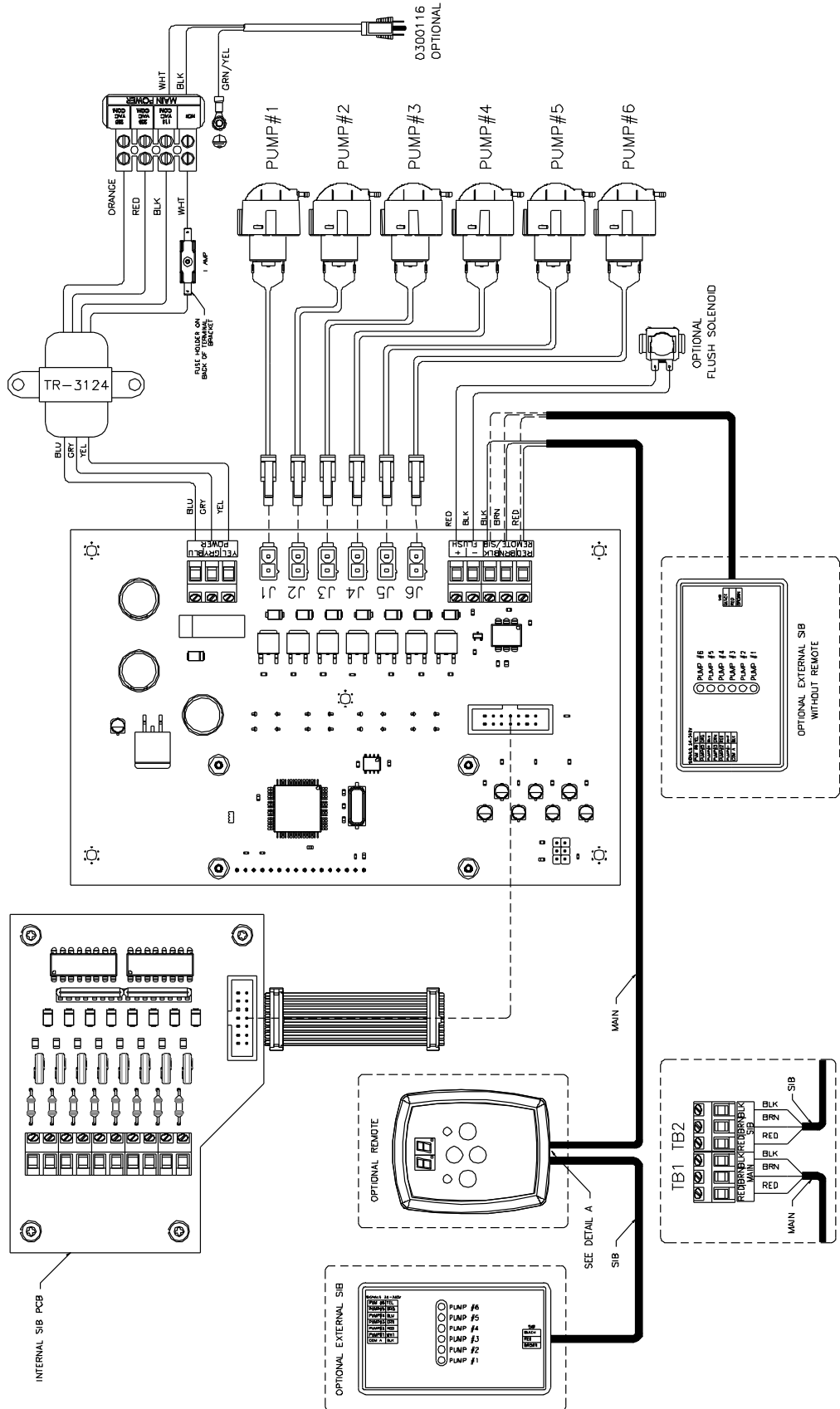
*...if using Assigned Signal mode*

Use the ▲/▼ buttons to choose the signal number, then press SCROLL to move the cursor to the bottom line. Use SCROLL and ▲/▼ to choose which pumps will be activated by this signal, then press ENTER.

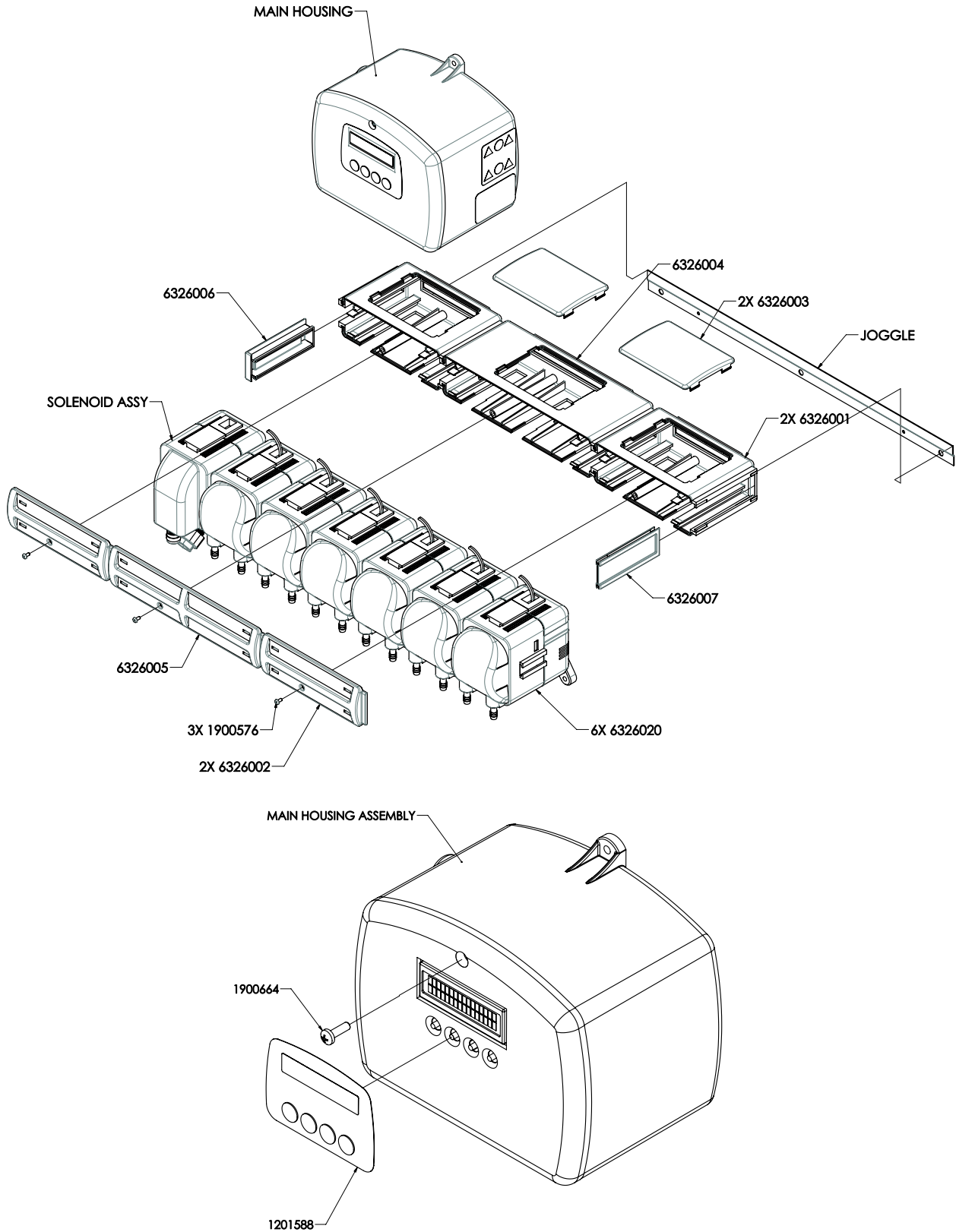
When finished assigning signals, hold down the SCROLL button until you see the previous display (this will only take a few seconds).

- To exit the programming mode, hold down on the SCROLL button until the normal operating screen appears (this will only take a few seconds).

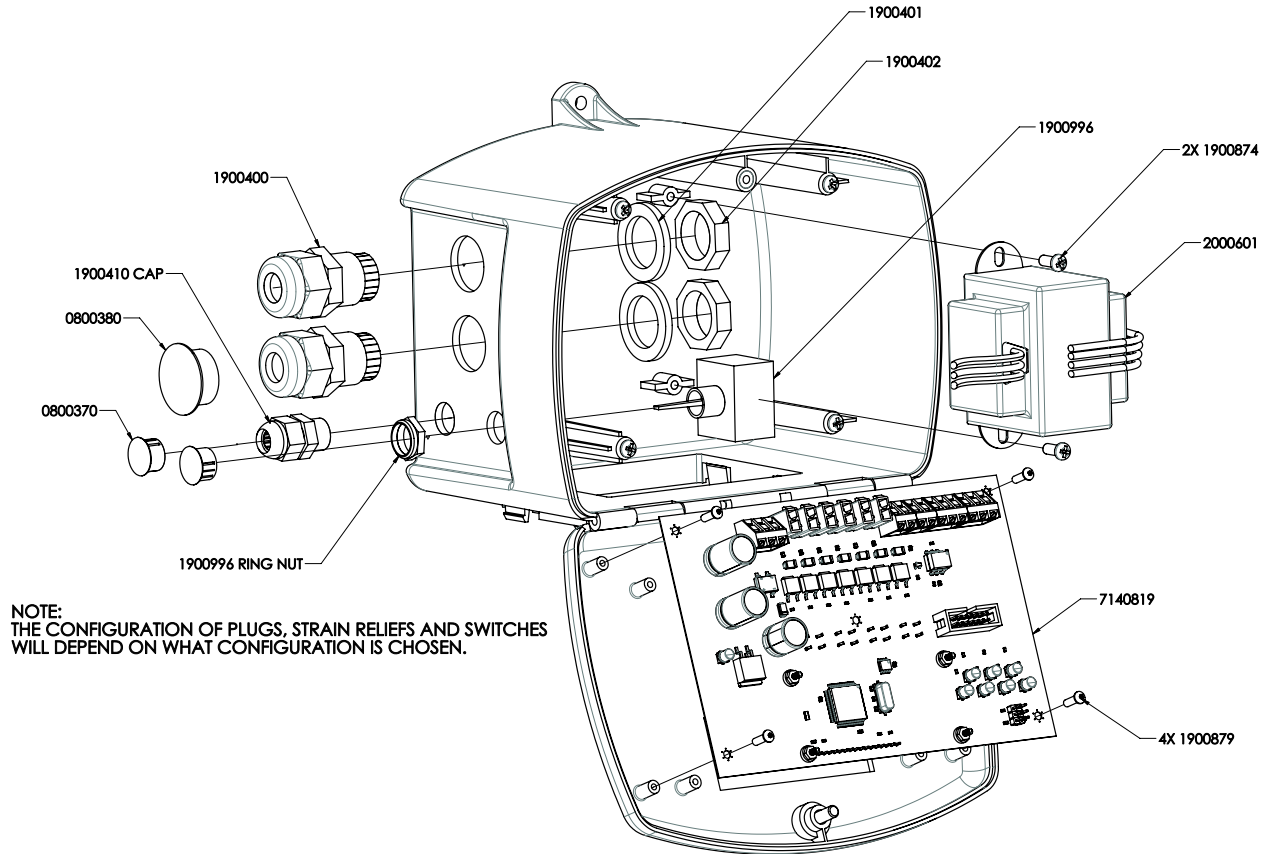
# WIRING DIAGRAM



# FULL ASSEMBLY / RELATED PARTS

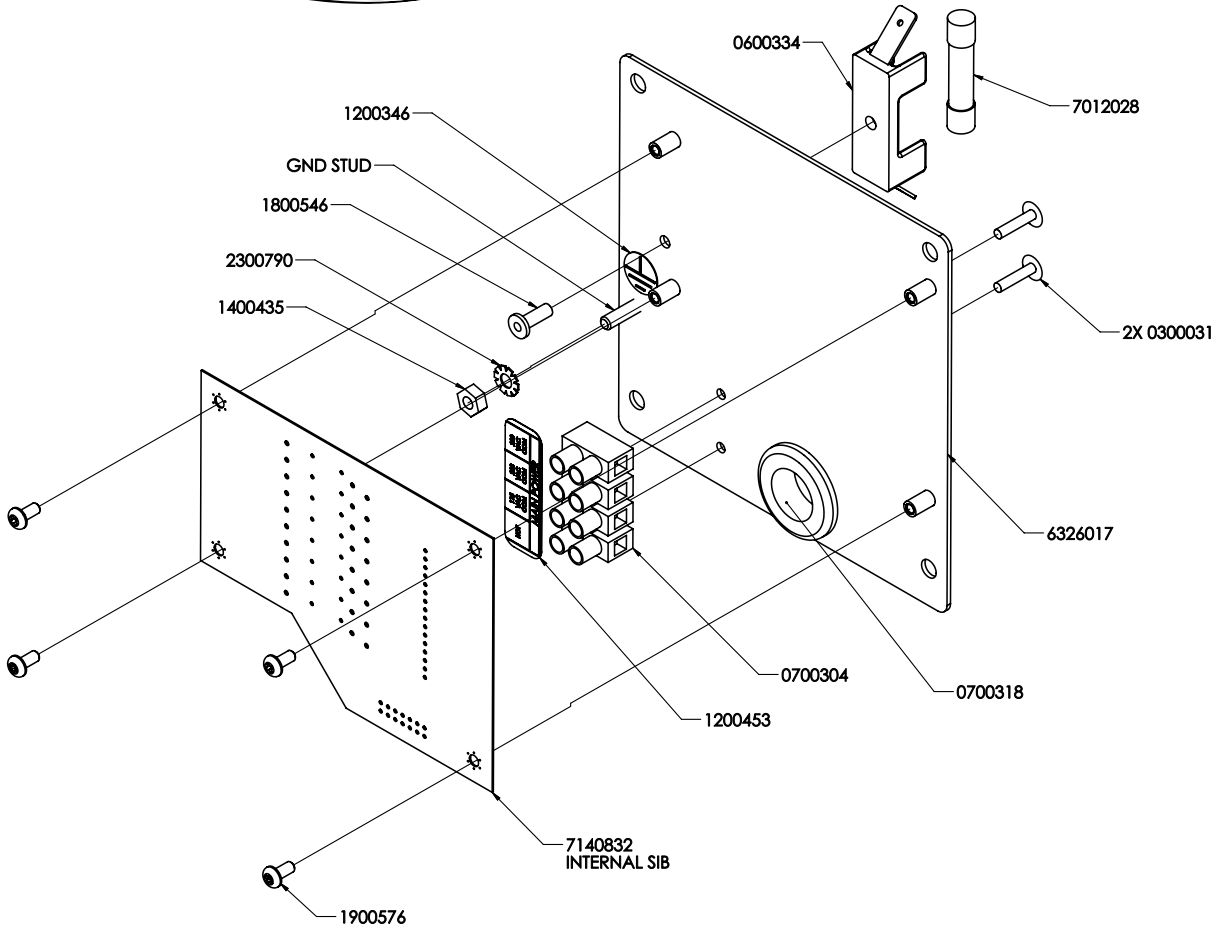
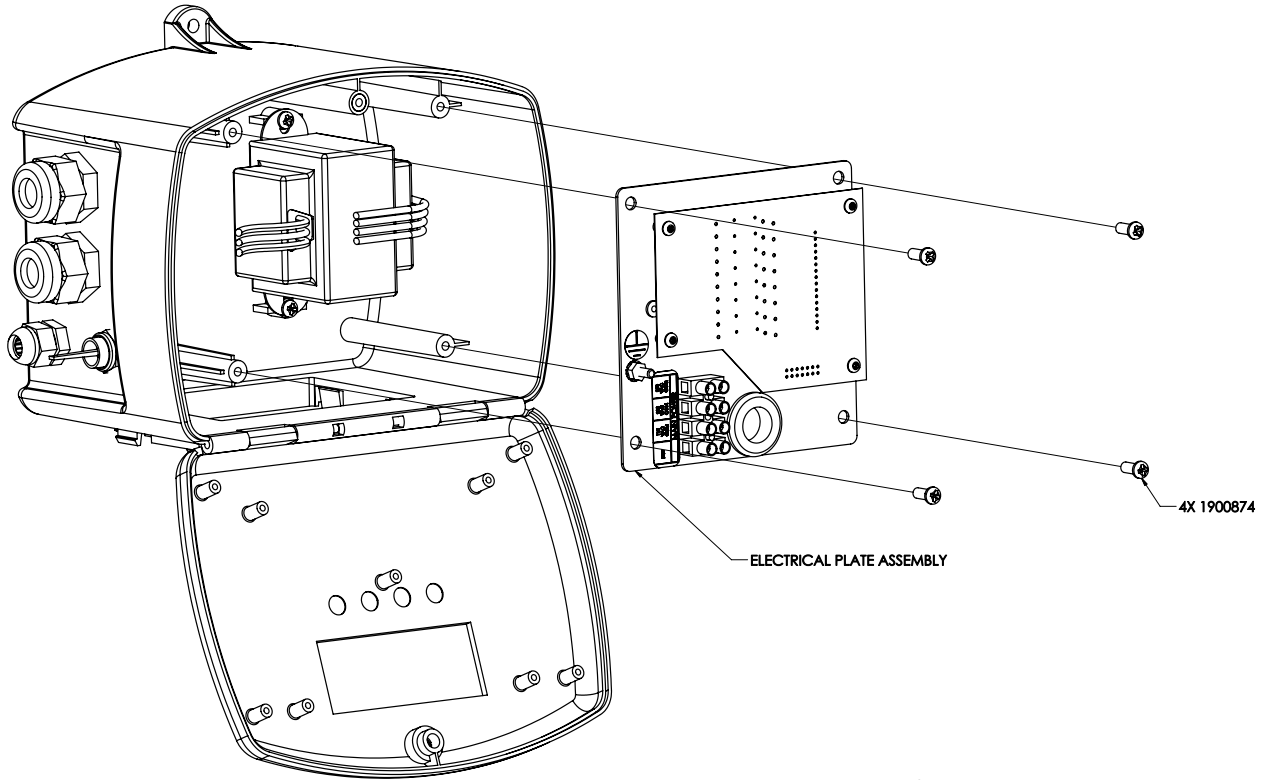


## MAIN HOUSING / TYPICAL PARTS



Part #	Description
7140819	C.B. Assy, OP Hospitality
7140832	Internal SIB
6326103	External SIB Module w/ 25 ft. cable
6326104	Knight Formula selector, OP Hospitality
6326019	Tube Assembly Super EPDM
7121069	Assy., Solenoid Valve, OP Hosp
0600777	Vinyl tubing per foot (chemical tubing)
6326023	Pump head (cover, roller, fitting, and Super EPDM tube)
6326001	Wiring case assembly for 2 pump mount
6326004	Wiring case assembly for 3 pump mount
6326018-02	2 port flush manifold
6326018-04	4 port flush manifold
6326018-06	6 port flush manifold
6326008	2 port manifold module (Note: does not include end caps or O-rings)
1500468	O-Ring, AS568-016, AFLAS 80A
5940042	Kit, Replacement, Check Valve
7407117	Pressure Regulator fixed 45 PSI

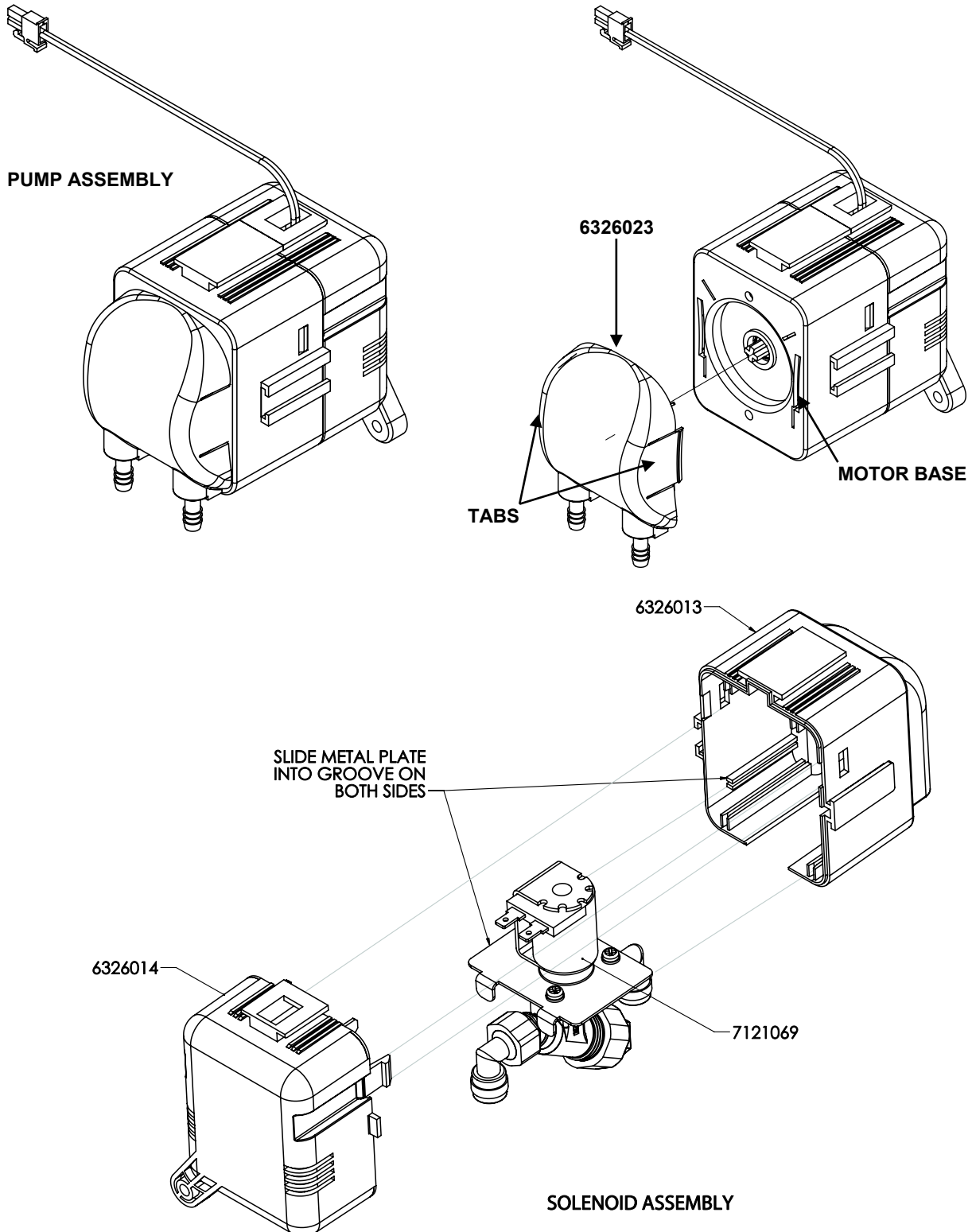
# ELECTRICAL PLATE PARTS



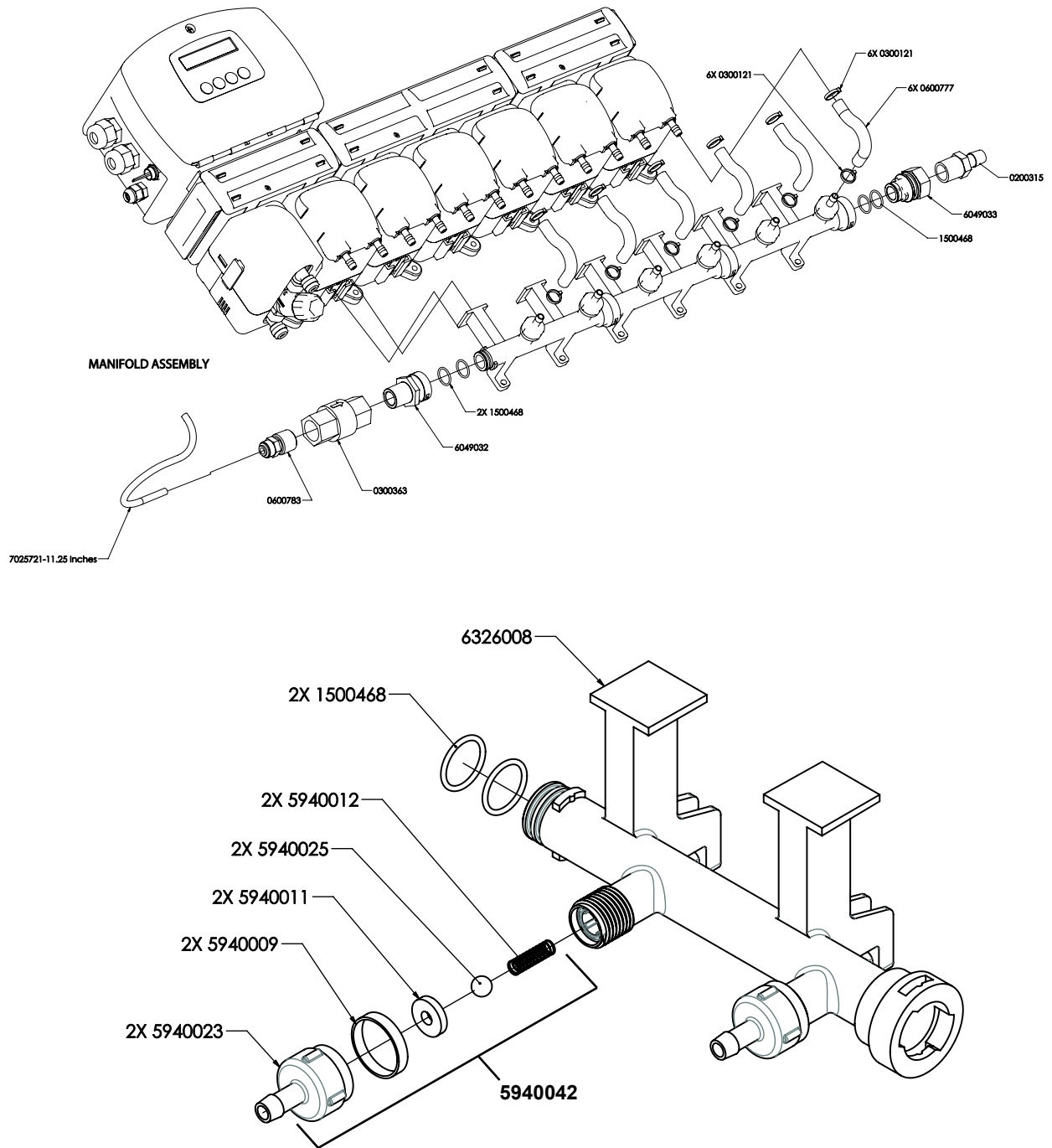


## PUMP / SOLENOID PARTS

- To remove the pump-head, squeeze the tabs on both sides and pull it away from the motor base.
- To insert a replacement pump-head, line up the tabs with the slots on the motor base and push inward so that the tabs “click” in place.



# FLUSH MANIFOLD PARTS



- To service the check-valve, remove the barb fitting by turning counter-clockwise. Replace the rubber washer, check-ball and spring in the order as shown and put the barb fitting back on by turning clockwise until hand-tight.

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**NOTES**

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## **DISCLAIMER**

Knight LLC does not accept responsibility for the mishandling, misuse, or non-performance of the described items when used for purposes other than those specified in the instructions. For hazardous materials information consult label, MSDS, or Knight LLC. Knight products are not for use in potentially explosive environments. Any use of our equipment in such an environment is at the risk of the user, Knight does not accept any liability in such circumstances.

## **WARRANTY**

All Knight controls and pump systems are warranted against defects in material and workmanship for a period of ONE year. All electronic control boards have a TWO year warranty. Warranty applies only to the replacement or repair of such parts when returned to factory with a Knight Return Authorization (KRA) number, freight prepaid, and found to be defective upon factory authorized inspection. Bearings and pump seals or rubber and synthetic rubber parts such as "O" rings, diaphragms, squeeze tubing, and gaskets are considered expendable and are not covered under warranty. Warranty does not cover liability resulting from performance of this equipment nor the labor to replace this equipment. Product abuse or misuse voids warranty.

## **FOOTNOTE**

The information and specifications included in this publication were in effect at the time of approval for printing. Knight LLC reserves the right, however, to discontinue or change specifications or design at any time without notice and without incurring any obligation whatsoever.

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