



# HI/LO FLOW FLUSH MANIFOLD INSTRUCTION MANUAL

## INTRODUCTION

The HI/LO Flow Flush Manifold offers an increased level of safety for operators as well as protection against corrosion to the washer and protection against chemical burns to the fabric. When the highly corrosive laundry chemicals are dispensed by the peristaltic pumps into the flush manifold, the unique flush mode of the control opens the built-in water solenoid to provide a diluted flush to the washer through a single injection line. Concentrated chemicals can now be dispensed with less chemical shock to the fabrics being washed. The built-in checkvalves prevent back-siphoning as well as cross contamination of the chemicals.

## THEORY OF OPERATION

After liquid chemicals are dispensed into the Flush Manifold assembly, water is injected into the manifold to “push” diluted chemistry to the washer. The delivery tube is flushed clean in a post flush operation and is ready for the next chemical. The flush mode of the dispenser flushes chemicals with water as they are dispensed to the manifold and washer. Consult your dispenser programming manual for setting the flush mode.

## SPECIFICATIONS

- System should operate at 20 to 40 PSI dynamic pressure.
- Solenoid maximum water pressure is 40 PSI dynamic.
- Water temperature should not exceed 140 degrees (F).
- O-ring material is AFLAS. Body and molded parts are Polypropylene.

## PRE-INSTALLATION

Before mounting the manifold to the dispenser, a site survey should be performed to avoid installation problems and to identify any items that will be needed to complete the task. You may also wish to read through the rest of this manual to get familiar with the installation steps. Your site survey should include the following checkpoints:

- Location of dispenser in relation to washer — dispenser can be located at the washer or remotely located with the chemical supplies. The dispenser should be no more than 100' from the washer.
- Determine proximity to water source — the water source should be as close to the dispenser as possible.
- Backflow prevention — local codes may require vacuum breakers or other safeguards for backflow prevention.
- Discharge tubing path from manifold to washer.
- Assessment of plumbing hardware required to connect system — this will help identify what hardware is required, based on how you choose to plumb the system.

## MOUNTING THE MANIFOLD

- (1) Attach the manifold's mounting brackets to an adjacent wall just below the pump case using provided screws.
- (2) One checkvalve fitting is required for each pump that will inject into the manifold. Plugs are provided with some manifolds to block off unused ports. Use a wrap of plumbing tape over the threads to help avoid leakage.
- (3) Use nylon braided tubing to connect each pump to the manifold; Cut the nylon braided tubing to the length required. Slide 2 hose clamps loosely over the nylon braided tube, then connect from the pump output barb fitting to the barb fitting on the manifold checkvalve. Position the hose clamps around the barbs and hand-tighten.
- (4) Connect the flush solenoid wires to the terminals designated for “FLUSH PUMP” on the circuit board in the dispenser — refer to the wiring diagram in the dispenser's instruction manual for more information.
- (5) Connect the water supply to the inlet fitting on the flush solenoid. Ensure that water connection is supported so that it does not put stress on the inlet fitting.

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## ROUTING MANIFOLD DISCHARGE TO WASHER

For best results, keep the distance between the manifold and the washer as short as possible. Avoid long vertical climbs that may require increased water pressure and/or lengthy flush time. 1/2" ID tubing will be required, and the connection to the barbed output fitting on the manifold should be secured with either a cable tie, or a hose clamp.

If using the optional "Flow Switch", ensure that it is connected to the proper terminals on the dispenser. See the wiring diagram included in the dispenser's instruction manual for connecting the wires from the switch to the circuit board. Be sure to remove any jumper wires or shunt jumpers from the circuit board if using the flow switch.

## MAINTENANCE

Routine inspection and maintenance of the flush manifold will ensure that it continues to provide trouble-free operation. Each time you visit the installation, check all hose and tubing connections for leaks or obstructions. In areas that have hard water, deposits can build up inside the flush solenoid, checkvalves, and manifold. Also check the flush line for obstructions or wear. Check that chemicals are flushing completely to the washer.

Checkvalves are like pump squeeze tubes in that they do wear over time. Checkvalves should be inspected on each service call to determine proper checking action and positive flow. The internal seals of the checkvalves are available in various materials and selected at the time of purchase — it is the user's responsibility to evaluate proper compatibility of laundry products to these checkvalves. Knight is not responsible for any damage resulting from product use or mis-use. The customer should determine a reasonable change out interval for checkvalves to assure proper performance and prevent chemical cross contamination or damage to lines.

## MANIFOLD DISASSEMBLY NOTES

- See the exploded view diagram on the following page that illustrates the order and orientation of the various parts that make up the entire manifold assembly.
- The manifold can be disassembled for service by rotating the twist-connect joints counter-clockwise. Be sure to retain the internal o-rings so they do not get lost.
- When re-assembling the manifold, ensure that all 3 o-rings are in place at the twist connect joints.

## TROUBLESHOOTING

### ***Flush water flowing constantly:***

- Turn off power to dispenser — if flush stops, problem is related to the pump circuit board.
- Debris or blockage inside the solenoid assembly, or may be a problem with the diaphragm inside the solenoid.

### ***Flush water does not flow:***

- Check to see if a "flush error" has happened — refer to the dispenser's instruction manual for details.
- Check dispenser programming to ensure that a flush pump volume is called for on each formula used.
- Check solenoid coil to verify that it is receiving voltage from the dispenser.
- Check incoming water source for adequate pressure.
- Check for obstructions or debris inside the solenoid (around the diaphragm) and in the manifold output line.

### ***Flush errors keep happening:***

- Check "Proof of Flow Switch" (if used) for correct operation — this can be done with a continuity tester or multi-meter by verifying that the switch makes contact across its 2 wires when water flows through.
- Check for a "jumper" wire (or shunt jumper) if a flow switch is not used. The jumper connects the necessary terminals on the circuit board — refer to the wiring diagram included in the dispenser's instruction manual.

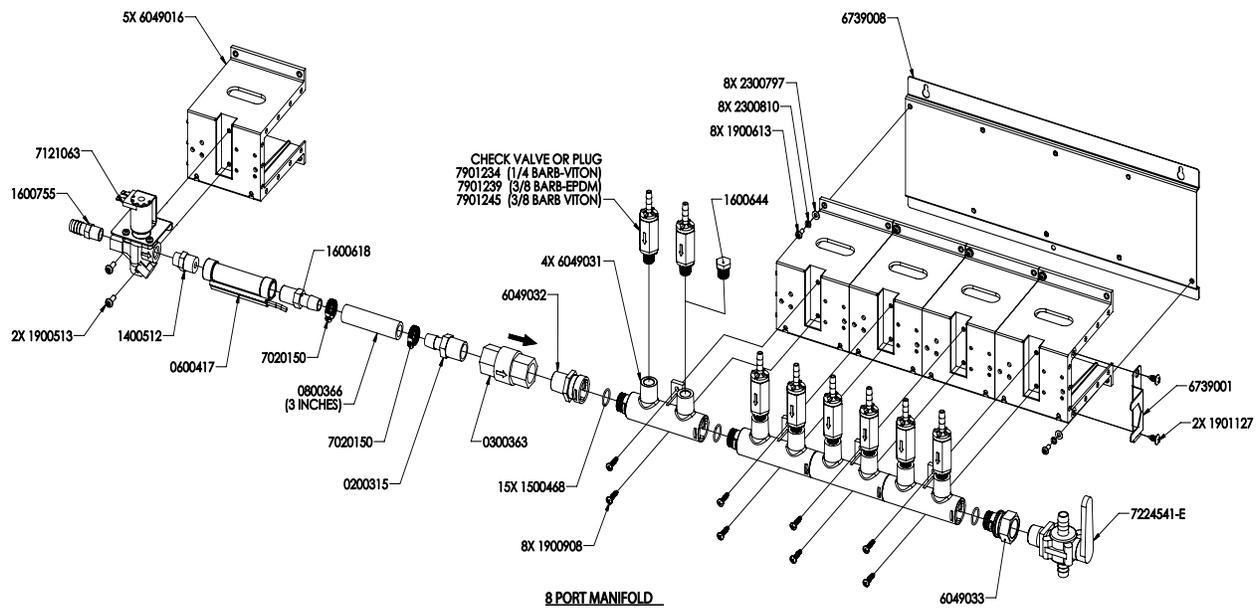
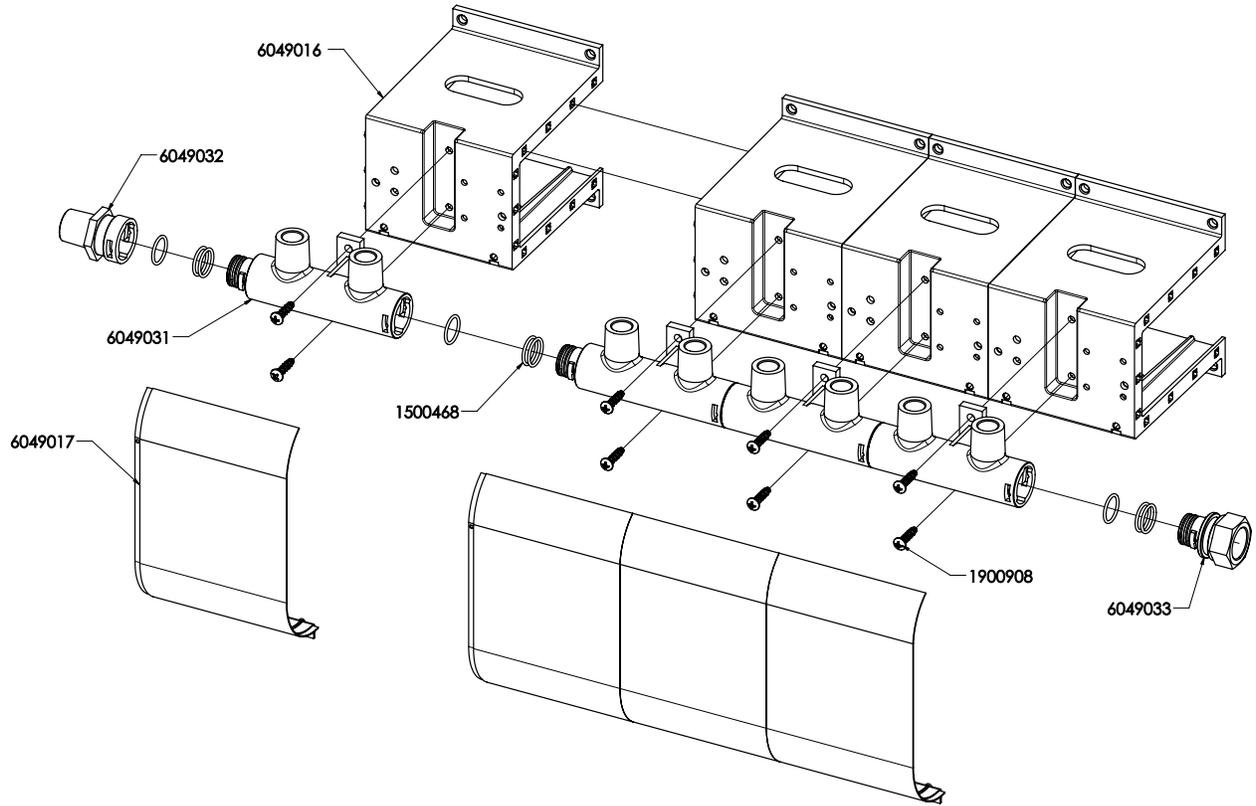
### ***Pumps do not dispense chemical into the manifold:***

- Inspect the checkvalves on the manifold — if they appear clogged, soak in warm water to clean, or replace.
- Check for correct pump operation per troubleshooting tips in dispenser's instruction manual.
- Check water pressure to manifold — pressure must be less than 40 PSI (dynamic).

### ***Water leaks at manifold twist-connect joints:***

- Ensure that all 3 o-rings are in proper placement inside the joint. There are 2 o-rings around the circumference of the male end and 1 o-ring that sits in a groove on the bottom of the female end.

# PARTS & ASSEMBLY DIAGRAMS



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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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