

### SPECIFICATIONS

- Pollution degree II
- Installation category 2
- Altitude 1000 m
- Humidity 0 to 85%
- Electrical supply 110, 200 or 230 Vac
- Temperature 10° C to 40° C

### INSTALLATION

Check all applicable electrical codes before installation. This will help to ensure that the system is installed in safe and suitable manner. A wiring schematic of the dishwasher should be used as reference for making electrical connections. This is typically provided by the dishwasher manufacturer if one cannot be located on the machine itself. Also check the operation of the dishmachine to make sure its working properly.

- (1) Using the provided hardware, mount the unit on a nearby wall and close to the dishmachine to avoid long tubing runs. Do not mount the unit in the direct path of steam — this can short circuit and permanently damage the unit. Mounting the unit on the side, on the back, or on the vents of the dishwasher may cause thermal overload and damage or hinder the performance of the unit. Multiple units can be snapped together side by side, whereby the two outer holes on the end units will be used for mounting.
- (2) *For rinse versions:* Install the provided 1/4" tube x 1/8" NPT injection fitting into a suitable spot on the machine. If necessary, drill a 11/32" hole and tap to 1/8" NPT. Ensure the NRV is fitted within 150mm of the injection point.

*For detergent versions:* Install the provided bulkhead fitting through a wall of the wash tank (above water level). If an existing mounting hole cannot be located, use of a 7/8" hole saw or punch may be desired.

- (3) Cut a suitable length of 1/4" OD poly tubing and connect between the pump's discharge fitting (right side) and the fitting on the dishwasher (that was installed in step 2). Hand-tighten the compression nuts on both fittings.
- (4) Cut a suitable length of 1/4" OD poly tubing and connect between the pump's suction fitting (left side) and the provided pickup tube. Hand-tighten the compression nut on the fitting. Draw the poly tubing through the end of the pickup tube and cinch the included plastic tie near the end of the poly tube. Drop the pickup tube into the chemical container.

- (5) Connect the power cord to the rinse solenoid of the dishmachine (or equivalent power source that is "on" when you want the pump to run).

Note: Mains supply voltage fluctuations are not to exceed 10 percent of the nominal supply voltage.

Note: If installing a Spirit *rinse* version, it is recommended that an alternative power supply be used rather than the rinse solenoid itself. This will avoid the pump from being under strong pressure when the rinse solenoid is active, consequently increasing tube life. It is recommended that the rinse pump be triggered at the start of a wash cycle. This way the rinse will be injected into the boiler in absence of pressure and the rinse product will "hold" in the boiler until required. Be sure the voltage of the power source matches the voltage of the Spirit pump.

### ANALOG — SPEED CONTROL

- (1) Turn on the power source — the pump will run for as long as power is applied.
- (2) There is a hole on the front of the unit to allow adjustment of the speed control pot. Using a small screwdriver, adjust the pump speed by turning the control pot clockwise to increase, or counter-clockwise to decrease.

### ANALOG — TIMER CONTROL

The timer control version has two feed modes called "charge" and "recharge". The recharge dosage activates immediately on power up. When power has been on for at least 30 seconds, the unit will then activate the charge dosage. This allows the pump to maintain concentration in dishmachines that fill through the rinse solenoid.

There are two holes on the front of the unit to allow adjustment of the charge and recharge pots. Use a small screwdriver to adjust the pots.

- The upper hole is for charge time, and is adjustable from 0.5 to 30 seconds.
  - The lower hole is for recharge time, and is adjustable from 0.5 to 10 seconds.
- (1) Before powering up the unit, turn the charge and recharge adjustments to an estimated setting (clockwise to increase, counter-clockwise to decrease).
  - (2) Turn on the power source — the recharge dosage will activate. Adjust the recharge time as needed to achieve the desired dosage.
  - (3) Activate the charge by re-filling the machine with a fresh tank of water. Adjust the charge time as needed to achieve the desired dosage.

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## DIGITAL — SPEED CONTROL

- (1) Turn on the power source — the pump will run for as long as power is applied.
- (2) To set speed, hold both buttons down until the LED begins blinking — then release buttons.
- (3) Use the UP arrow and DOWN arrow buttons to achieve the desired speed.
- (4) If a button is not pressed for 12 seconds, the LED will change from blinking to constant and the new speed setting will be locked in.

## DIGITAL — TIMER CONTROL

Timer control operation has two feed modes called “charge” and “recharge”. The recharge dosage activates immediately on power up. When power has been on for at least 30 seconds, the unit will then activate the charge dosage. This allows the pump to maintain concentration in dishmachines that fill through the rinse solenoid.

- Maximum charge time is 60 seconds
- Maximum recharge time is 15 seconds

- (1) Turn power on — be aware that the pump will begin running.
- (2) Hold both buttons down until the LED begins blinking — then release buttons.
- (3) Press and release the CHARGE button (up arrow) — the pump will begin to run.
- (4) When the desired amount of product has been dispensed, press and release the CHARGE button again— the pump will stop, the LED will turn off, and the charge time setting will be locked in.
- (5) Hold both buttons down until the LED begins blinking again — then release buttons.
- (6) Press and release the RECHARGE button (down arrow) — the pump will begin to run.
- (7) When the desired amount of product has been dispensed, press and release the RECHARGE button again— the pump will stop, the LED will turn off, and the recharge time setting will be locked in.
- (8) When finished programming the time settings, cycle power to the pump (off/on) to begin normal operation.

## 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 ONE 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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