



## INTRODUCTION

**Clean Guard** is Knight's newest pump designed to feed chemicals formulated for the dairy farm, food and beverage, and commercial laundry markets. Its quiet, smooth pumping operation is driven by a 115 or 230 VAC rectified DC motor with long life brushes. This pump is designed for control by Knight's Control Guard Dairy Chemical Control, Control Guard Conductivity Controller, Control Guard XL, and laundry chemical feed controls. These pumps are capable of continuous duty operation and seldom require service.

**Spray Guard** utilizes the same robust pump/motor design to dispense iodine based cow teat cleaning chemicals to drop points or misting type spray wands. Up to six spray wands or delivery points can be supplied from one Spray Guard pump.

## HOW IT WORKS

A brush-type DC motor turns the output shaft that's connected to a unique "wobbler plate" which in turn attenuates three or five elastomer checkvalve chambers that create a vacuum on the suction side and pressures up to 70 PSI on the outlet. Diaphragms and checkvalves are completely sealed from the outside and have no penetrating fasteners to create leaks or lose prime. Pumps include special liquid-end fittings that lock in place over proprietary barb-type fittings.

All Clean Guard and Spray Guard pumps include a pump mounted pressure switch to protect the pump from damage while in a "dead head" condition. For "demand flow" applications, this feature is ideal.

## KEY FEATURES / BENEFITS

- Auto-Start or Optional Manual Button Activation
- Secure Moisture-Resistant Enclosure
- Long-Life Wobbler Plate Pump Design
- Long Lasting Diaphragm and Seals
- Fixed or Variable Pump Configurations
- 1.5 / 3.2 GPM Flow Rates—Clean Guard
- 0.4 GPM Flow Rate—Spray Guard
- Pump Protection Circuit w/Fuse
- Pumps Up to 70 PSI
- Self Priming, Easy to Service



*Outside View*



*Inside View*



*Electric Diaphragm Pump*



*Remote Activator*

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## SPECIFICATIONS

- Pump Control Board: With proprietary signal, 24 VAC output (Spray Guard only)
- Pressure Switch: 70 PSI, N/C contacts
- Enclosure: Stainless steel #304
- Power Supply: 115VAC/50, 60HZ, 230VAC/50, 60HZ, 24 VAC/50, 60HZ
- Dimensions: Unit — 9 1/2"W x 11 1/2"H x 5 1/2"D (24cm x 29cm x 14cm)
- Max lift (suction): 10 feet
- Max head pressure: 70 PSI
- Max run time: Continuous duty (see note below)

NOTE: EDP series pumps are designed for intermittent duty, but may run continuously if the motor temperature does not exceed the recommended limit.

PART NO.	MODEL NO.	FLOW RATE	VOLTS	AMPS	WET MATERIALS	PRESSURE	TUBE SIZE
7640620-04	EDP-0.4	0.4 GPM	24 VAC	0.7	VITON	70 PSI	3/8"
7640621-01	EDP-1.5	1.5 GPM	115VAC	0.8	EPDM	70 PSI	3/8"
7640622-01	EDP-1.5	1.5 GPM	115VAC	0.8	VITON	70 PSI	3/8"
7640623-01	EDP-3.2	3.2 GPM	115VAC	0.8	EPDM	70 PSI	3/8"
7640624-01	EDP-3.2	3.2 GPM	115VAC	0.8	VITON	70 PSI	3/8"
7640621-02	EDP-1.5	1.5 GPM	230VAC	0.4	EPDM	70 PSI	3/8"
7640622-02	EDP-1.5	1.5 GPM	230VAC	0.4	VITON	70 PSI	3/8"
7640623-02	EDP-3.2	3.2 GPM	230VAC	0.4	EPDM	70 PSI	3/8"
7640624-02	EDP-3.2	3.2 GPM	230VAC	0.4	VITON	70 PSI	3/8"



**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.

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## IMPORTANT NOTES

- Maximum suction lift is 10 feet. That means suction hose length can be up to 10 feet, no longer.
- Recommended tubing is nylon braided hose with 3/8" inside diameter.
- No flow path restrictions, such as footvalves, checkvalves, or filters should be placed in the suction line.
- Do not operate the pump above the pressure limitations specified on the data label.
- Never operate the pump in a harsh environment or hazardous atmosphere, since motor brush and switch may cause electrical arcing.
- As long as there is inlet liquid pressure, the pump will not stop the forward flow of liquid even if the motor is turned off. Be sure the system has a positive means of shutting off liquid supply.
- Do not subject the pump to extreme high or low (freezing) temperatures while in operation. Ambient temperature range for operation is 32° F to 115° F.
- Knight recommends the use of flexible tubing with proper pressure rating.

## INSTALLATION

NOTE: See example installation diagram on page 5 for more information.

- (1) Check voltage of installation with a voltmeter and compare with voltage inputs of pump unit before mounting. Application of incorrect voltage will permanently damage unit and is not covered under warranty.
- (2) Mount unit on wall or shelf in a convenient location near both injection point and chemical supply. Do not mount unit in direct path of steam. This can short circuit and permanently damage your system.
- (3) Install power leads. Most systems include a power cord for easy connection. Spray Guard systems have an external transformer which steps down the incoming voltage. Rigid or flexible conduit should be used for all 115 and 230 VAC installations to ensure safety and continued operation without shorts. The green ground wire must be applied to ground. Failure to do so will void warranty.
- (4) Install vinyl hose between the discharge (right) tube side of the pump and the injection point. Use hose clamps to secure tubing to fittings. For all hose routing, avoid any sharp bends which may crimp tubing and restrict flow. As an alternative, use 90 elbow fittings, but only if absolutely necessary.
- (5) Install vinyl hose between the suction (left) tube side and the PVC product pickup tube provided.

## PRIMING

- (1) See dispenser controller manual for specific priming routines.
- (2) Initial prime should be performed using water as your media. Once the pump is primed with water the valves/diaphragm are ready for chemical.
- (3) Pump will prime only if all pressure is relieved from outlet port.

NOTE: If the pump fails to prime, pour a small amount of water into the suction port while the pump is running, then re-connect the suction hose.

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## MAINTENANCE

The Clean Guard/Spray Guard Series of Metering Pumps require a minimal amount of maintenance to achieve optimal performance.

- Flushing the pump with warm water every 60—90 days will prolong the life of your pump.
- Fluctuations in power will change pump speed. Be sure your power source provides enough voltage to run pump at full speed.
- See list below for repair parts.

## ADJUSTING THE PRESSURE SWITCH

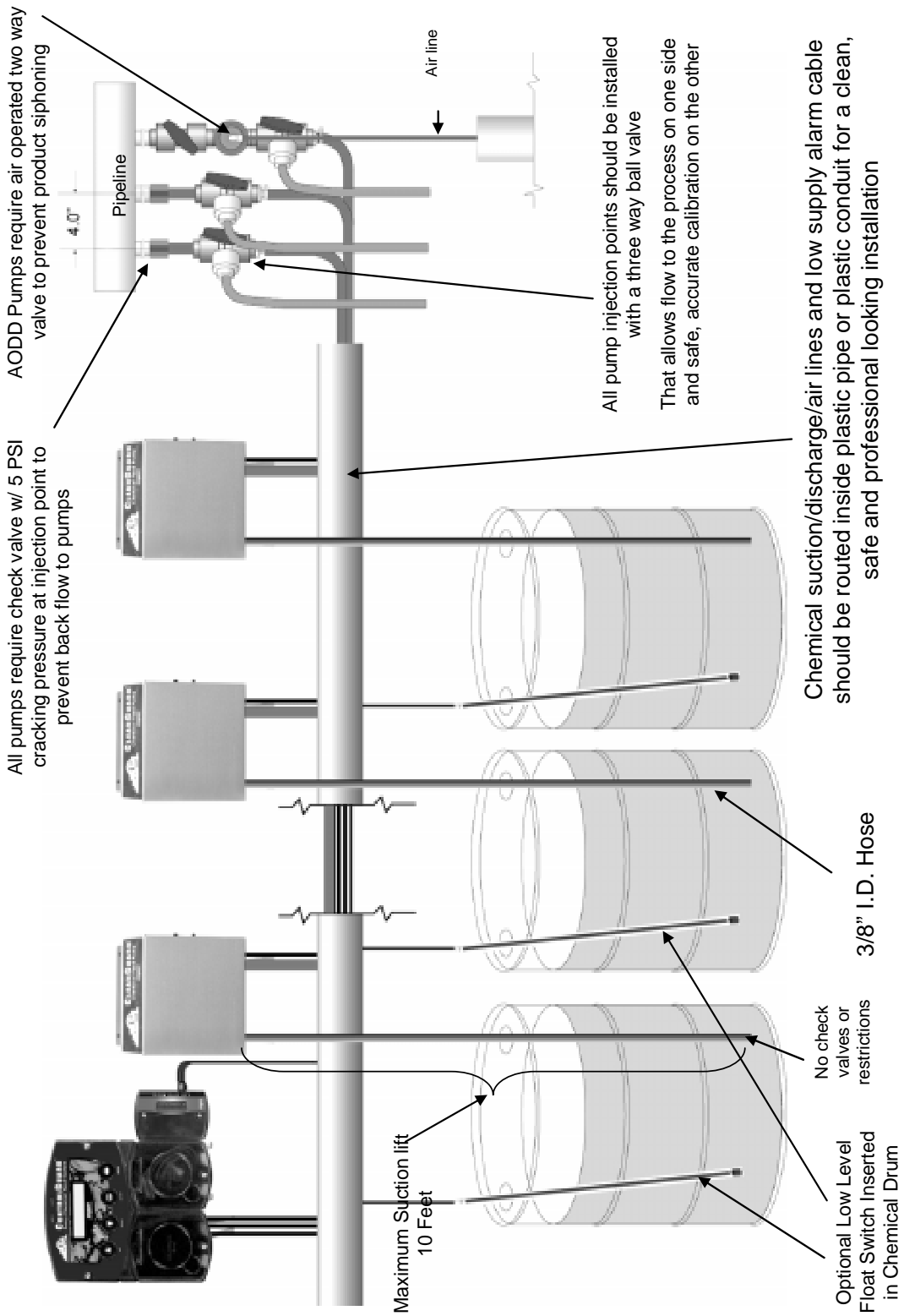
Should the pressure switch OFF setting vary with use and time to an unsuitable value, it may be adjusted for optimum performance.

- (1) Turn the set screw clockwise to increase the OFF pressure setting and counter-clockwise to decrease. The screw should not be adjusted more than one turn without consulting the factory. Excessive adjustment of the pressure switch could cause low system pressure and rapid ON/OFF cycling, reducing pump and motor life. Damage may also occur if recommended maximum pressures are exceeded. The warranty does not cover improper adjustment of the pressure switch.
- (2) Rapid ON/OFF cycling must be limited to no more than 6 times per minute, even if the pump is operating in the continuous duty zone. Cycling could cause the motor to heat beyond the recommended maximum temperature, and reduce the operational life of the pump and pressure switch.

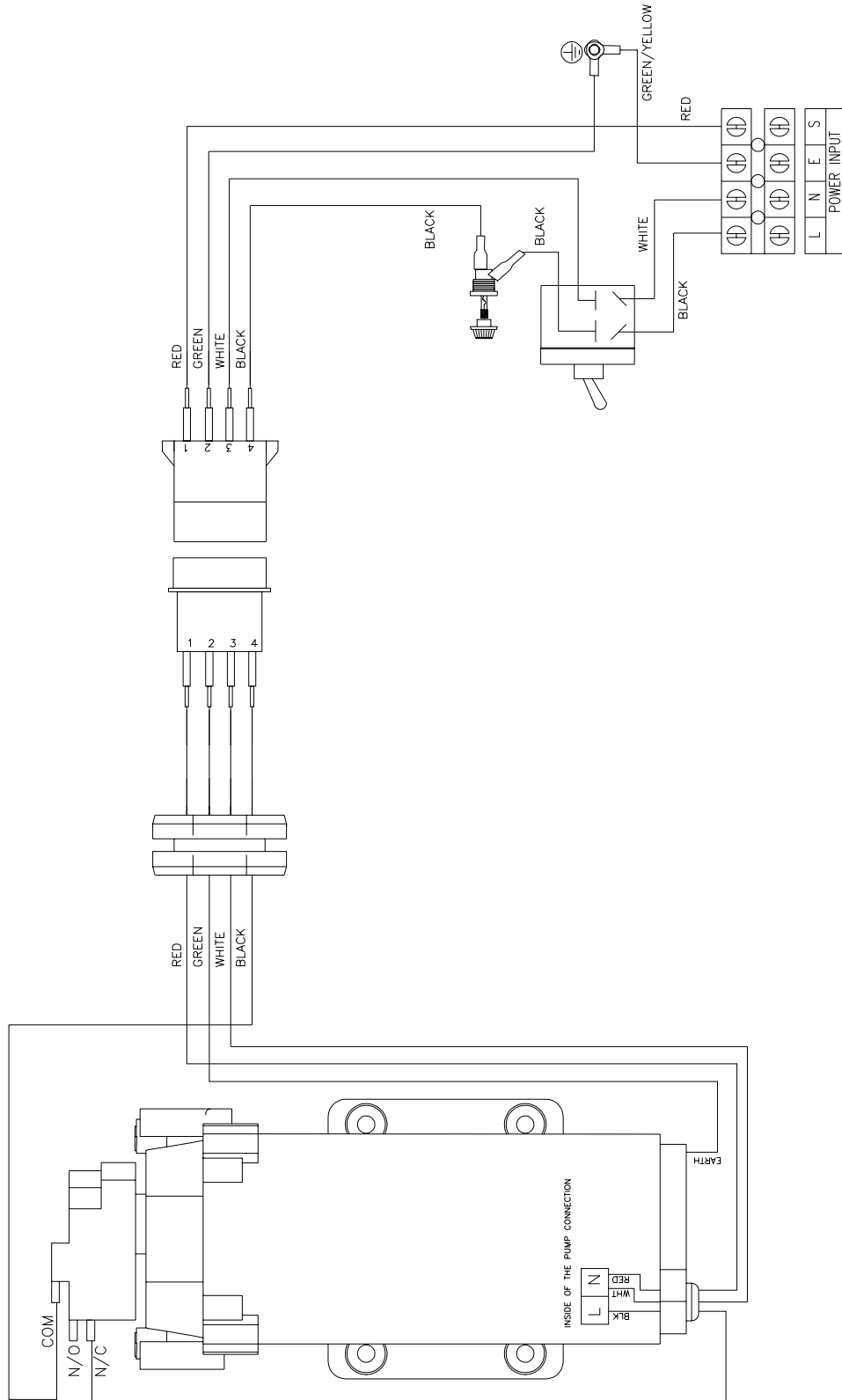
## REPLACEMENT PARTS

Part Number	Description
7317323	Three Chamber Upper Housing Assembly
7317324	Three Chamber Lower Housing Assembly
7317321	Three Chamber Valve Housing Assembly EPDM
7317322	Three Chamber Valve Housing Assembly Viton
7317317	Five Chamber Upper Housing Assembly
7317320	Five Chamber Lower Housing Assembly
7317326	Five Chamber Valve Housing Assembly EPDM
7317325	Five Chamber Valve Housing Assembly Viton
1600130-04	Spray Guard Pump, 24 VAC, Viton, 54 oz./min
1600131-01	Clean Guard Pump, 115 VAC, EPDM, 1.5 GPM
1600132-01	Clean Guard Pump, 115 VAC, Viton, 1.5 GPM
1600133-01	Clean Guard Pump, 115 VAC, EPDM, 3.2GPM
1600134-01	Clean Guard Pump, 115 VAC, Viton, 3.2GPM
1600131-02	Clean Guard Pump,230 VAC, Viton, 1.5 GPM
1600132-02	Clean Guard Pump,230 VAC, EPDM, 1.5 GPM
1600133-02	Clean Guard Pump,230 VAC, EPDM, 3.2GPM
1600134-02	Clean Guard Pump,230 VAC, Viton, 3.2GPM
1600800	Fitting, EPDM, Straight, 1/2"
1600801	Fitting, Viton, Straight, 1/2"
1600802	Fitting, EPDM, ELL, 1/2"
1600803	Fitting, Viton, ELL, 1/2"
1600804	Fitting, EPDM, Straight, 3/8"
1600805	Fitting, Viton, Straight, 3/8"
1600806	Fitting, EPDM, ELL, 3/8"
1600807	Fitting, Viton, ELL, 3/8"

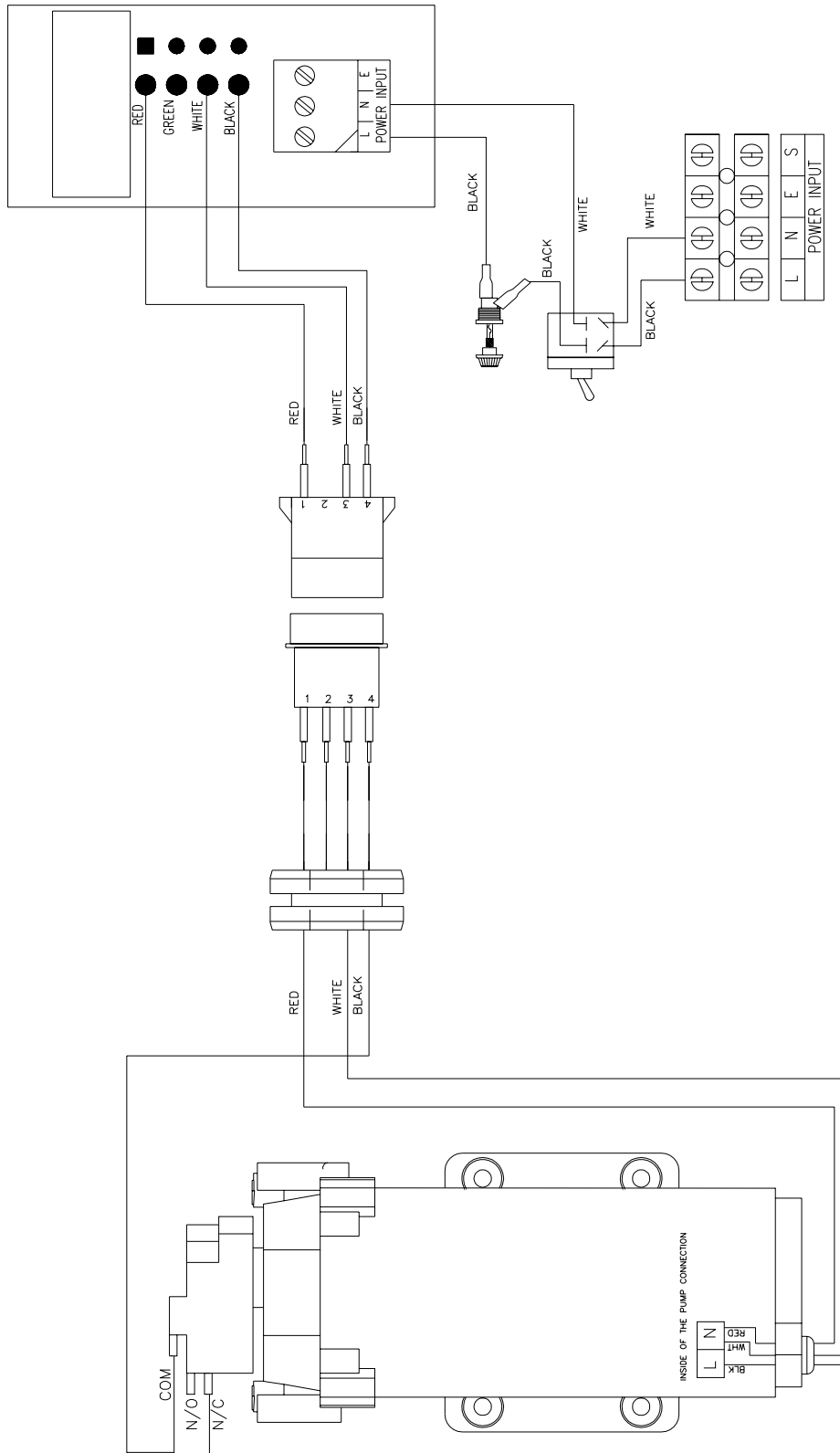
# RECOMMENDED INSTALLATION LAYOUT



# WIRING DIAGRAM — CLEAN GUARD



# WIRING DIAGRAM — SPRAY GUARD



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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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