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# **KNIGHT**

## **IDEX**

IDEAL CORPORATION



# **Lube Saver System Instruction Manual**

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**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.

## SPECIFICATIONS

Pumps	Wet End Materials	Flow Rate	System Voltage	PSI	Suction Lift
Three Chamber Electric Diaphragm w/ 3/8" (.95cm) Fittings	Viton/Santoprene	.4 GPM / 1.5 LPM	115 or 230	70 PSI (4.82 Bar)	10 feet 3.04 meters (see note)
Case Material	Dimensions	Case Rating	Signal Start Input Voltage	Lube Zone Valve Voltage	
Stainless steel #201	Width:24.91" (63.27 cm) Height: 15.11" (38.38 cm) Depth: 8.4" (21.34 cm)	IP-65	18 to 250 VAC	110 or 230 VAC	

NOTE: The pump is capable of operating with a suction lift up to 10 feet once primed. The maximum lift for priming is 5.5 feet.

## PRE-INSTALLATION

- (1) Check all applicable plumbing and electrical codes before installation. This will help to ensure that the system is installed in a safe and suitable manner.
- (2) Get a wiring schematic for the lube system if you will wire it for direct signal start.
- (3) Check to make sure that all functions of the lube system are operating properly.
- (4) Check the proposed location for a 115, or 230 VAC power source (based on the model you will be using).
- (5) Determine locations for lube brush/jet placements on the conveyor(s).
- (6) Determine routing for lube fluid lines to brushes/jets.
- (7) Determine mounting location for low supply alarm beacon.
- (8) Determine location for lube supply container. Must be within 10 feet/3 meters of system.
- (9) Determine how much 3/8" (.95 cm) tubing needed to run to each jet/brush location.

**Before beginning the installation, make sure you have the following tools and materials ready...**

- Flat and Phillips screwdrivers
- Drill and drill bits
- Suitable wire for main power and signals (check local codes)
- Wire cutters, wire strippers, and pliers
- Wire terminal connectors and a crimping tool
- Voltmeter (or multi-meter)
- Dry wall inserts and mounting screws
- Electrical tape and wire nuts
- 3/8" O.D. Poly Tubing

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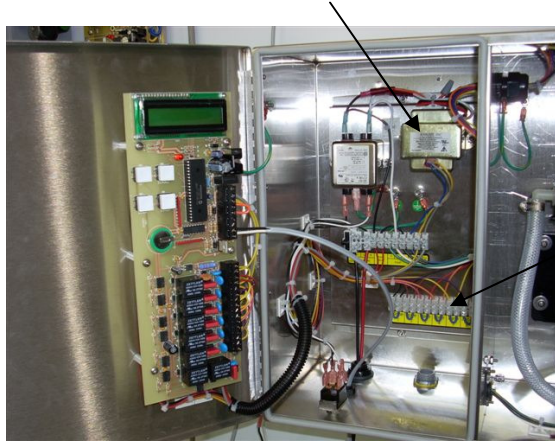
## INSTALLATION

### Mounting

Hang the unit on a wall in a suitable location that is close to the chemical containers and also the chemical injection point(s). Mounting height should be no more than 10'3 meters away from the chemical containers.

### Main Power

Connect leads to a constant 115, or 230 VAC power source on one end and the other to the terminals marked "main power" in the proper black/white/ground phasing. Wiring of the internal transformer for 115 or 230 VAC power is factory set. The microprocessor operates on 24 VAC.

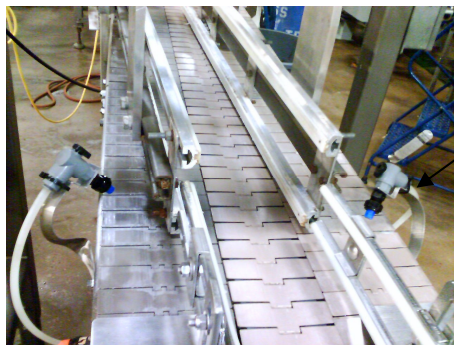


### Automatic Zone Lube Signal Wiring

The Lube Saver is designed to accept direct "dry contact" inputs from an external source (PLC's, the conveyor controller etc.) to independently control lubrication for zones 1-6. Simply connect dry contact inputs to the terminal labeled Zone 1-6 located at the bottom of the power supply panel (as shown to the left).

### Electric Diaphragm Pump Fluid Connections

- (1) Cut a suitable length of 3/8" vinyl reinforced hose (no more than 10 ft. / 3 meters) for suction and push over barbed connector on right side of the pump securing with a stainless gear clamp. Use a suitable rigid pipe pick up probe that sinks to the bottom of the chemical container.



- (2) Connect suitable length of 3/8" polyethylene tubing from zone valve connector fittings to brush/jet assemblies located at each lube point on the conveyor.
- (3) Prime the system and check for leaks from the pump all the way through each lube point. See "Prime System" menu for how to start/stop pump prime functions.

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## OPERATION

### *How It Works*

The Lube Saver system is designed to dispense fluid based lubricants using a simple dedicated logic controller with repeat cycle intervals programmed to apply just the right amount of lubricant at each lube point. Menu driven programming allows the lube technician to quickly and easily program how long the lube pump will run for each “event” and how long the corresponding lube zone valve will remain open to allow lube to flow.

An integrated low fluid sensor\* option signals the operator when lube fluid pressure (low supply) conditions exist. At the beginning of each shift the operator determines which zones are to be lubricated and selects the corresponding zone switches on the front of the system as well as turning on the Cycle Start switch. At the end of the shift the operator turns the Cycle Start switch on the system to the off position. Note: The system will not recycle lube until the Cycle End/Start Time has expired.

NOTE: The low fluid sensor option is available only to customers outside North America.

### *Manual Mode*

- (1) Turn main system power switch to On position. Switch is located on underside of the unit.
- (2) Turn Cycle Start switch on front panel to On position.
- (3) For each zone to be lubricated turn the corresponding lube valve zone switch to On.
- (4) System defaults to “On” for each lube valve programmed to run followed by an Off cycle. Observe On operation and subsequent Off event cycles to be sure the system is fully operational.
- (5) End of shift.

Note: The system will not start a new lube cycle event unless the programmed Start/End Cycle time has expired.

## BUTTON FUNCTIONS

**ENTER** Hold the enter button for 3 seconds (approx.) to enter the program mode. Enter is used to save any changes made in the programming menus.

**SCROLL** The scroll button moves the position of the cursor in menus where text or number changes are done. The scroll button will “wrap around” at the end of a line of characters, meaning that the cursor will advance to the beginning of the line automatically.

*Hold the Scroll key to escape to the next menu.*

**UP** Increases numeric values or advances upward through available characters and allows navigation through the menus.

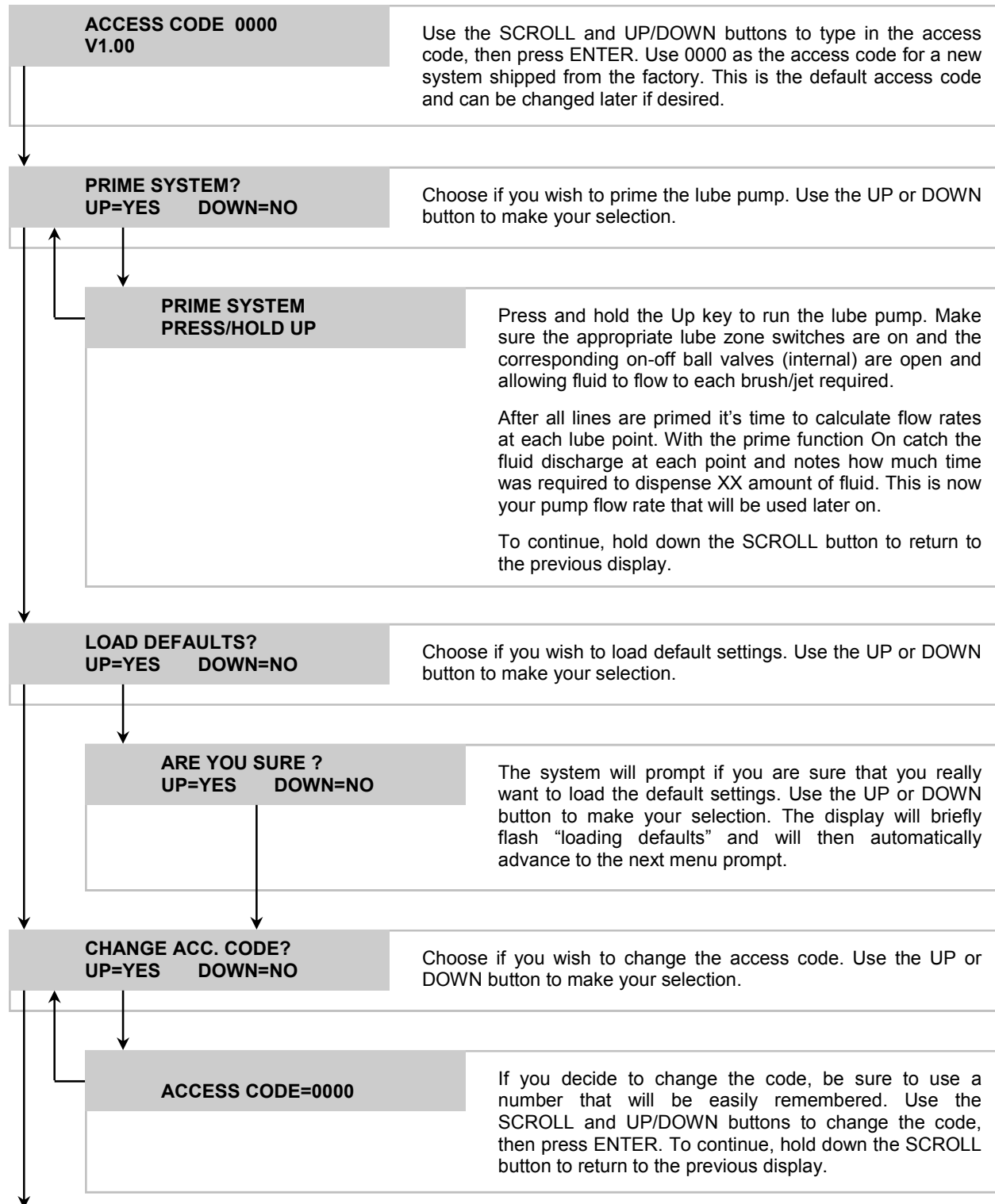
**DOWN** Decreases numeric values or advances downward through available characters and allows navigation through the menus.

### *Alarm Mute*

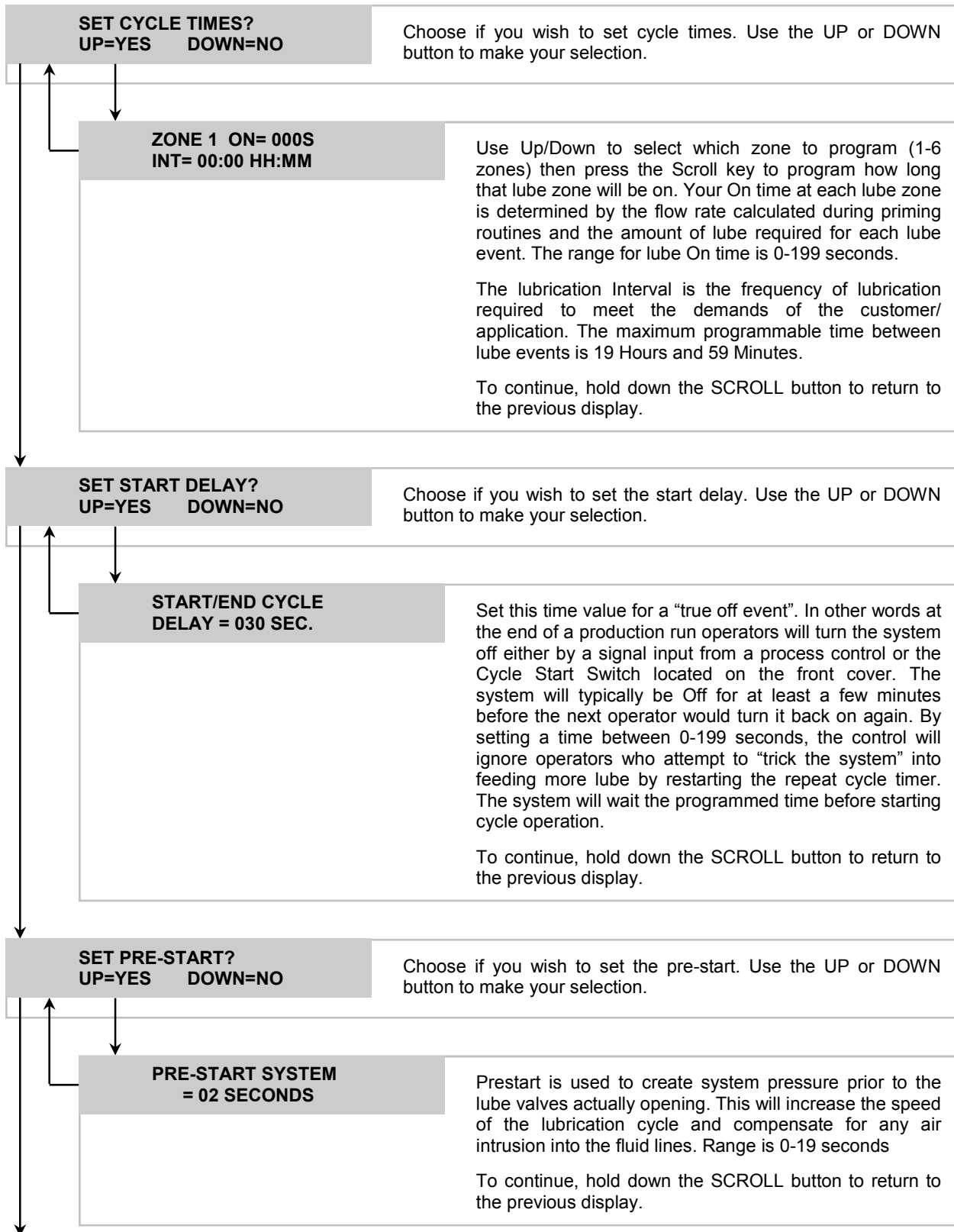
Press Scroll to mute the alarm. This only applies to units equipped with a pressure switch.

## PROGRAMMING

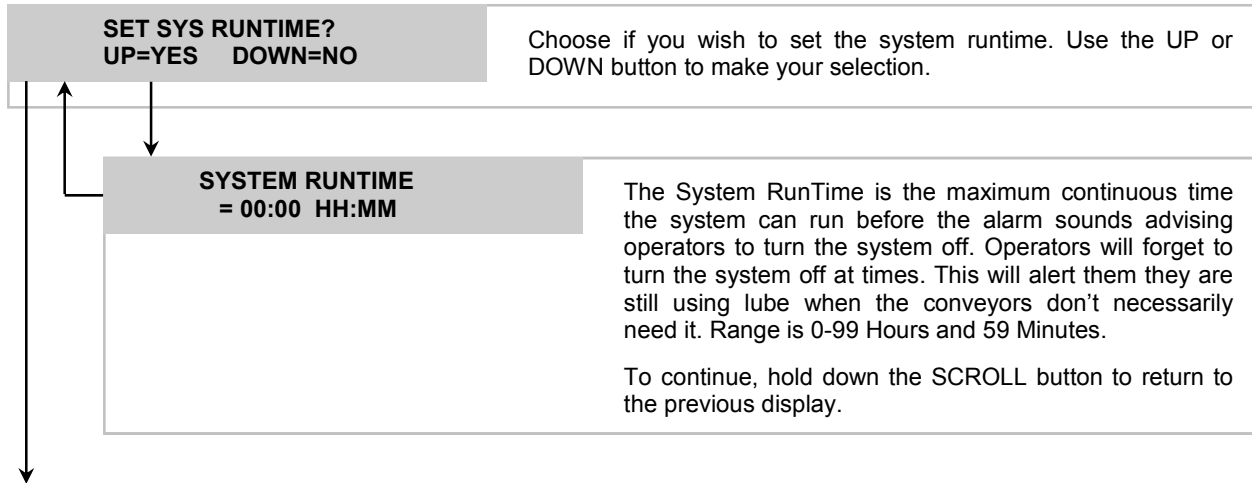
To begin programming, hold down the ENTER button until you see the following display...



Continue on next page



Continue on next page



When finished programming, you will return (wrap-around) to the very first menu prompt. From there, you can go back through all programming menu prompts as many times as you wish. To exit the programming mode, hold the SCROLL button until you see the normal operating display (as shown below).

<b>WAITING FOR SIGNAL 030 SEC</b>	When the display window shows this message, it indicates that the system is waiting for an activation signal from either the cycle start switch, or a discrete signal.
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<b>PRIMING SYSTEM</b>	When the display window shows this message, it indicates that the system is actively priming.
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<b>SYSTEM RUNTIME ALARM</b>	If the display window ever shows this message, it indicates that the system is still using lube when the conveyors don't necessarily need it. Silence the alarm by pressing the scroll key.
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<b>LOW SUPPLY ALARM</b>	If the display window ever shows this message, it indicates that lube pressure from the pump has dropped (caused by low supply in the lube container. Silence the alarm by pressing the scroll key or by replacing the lube container.
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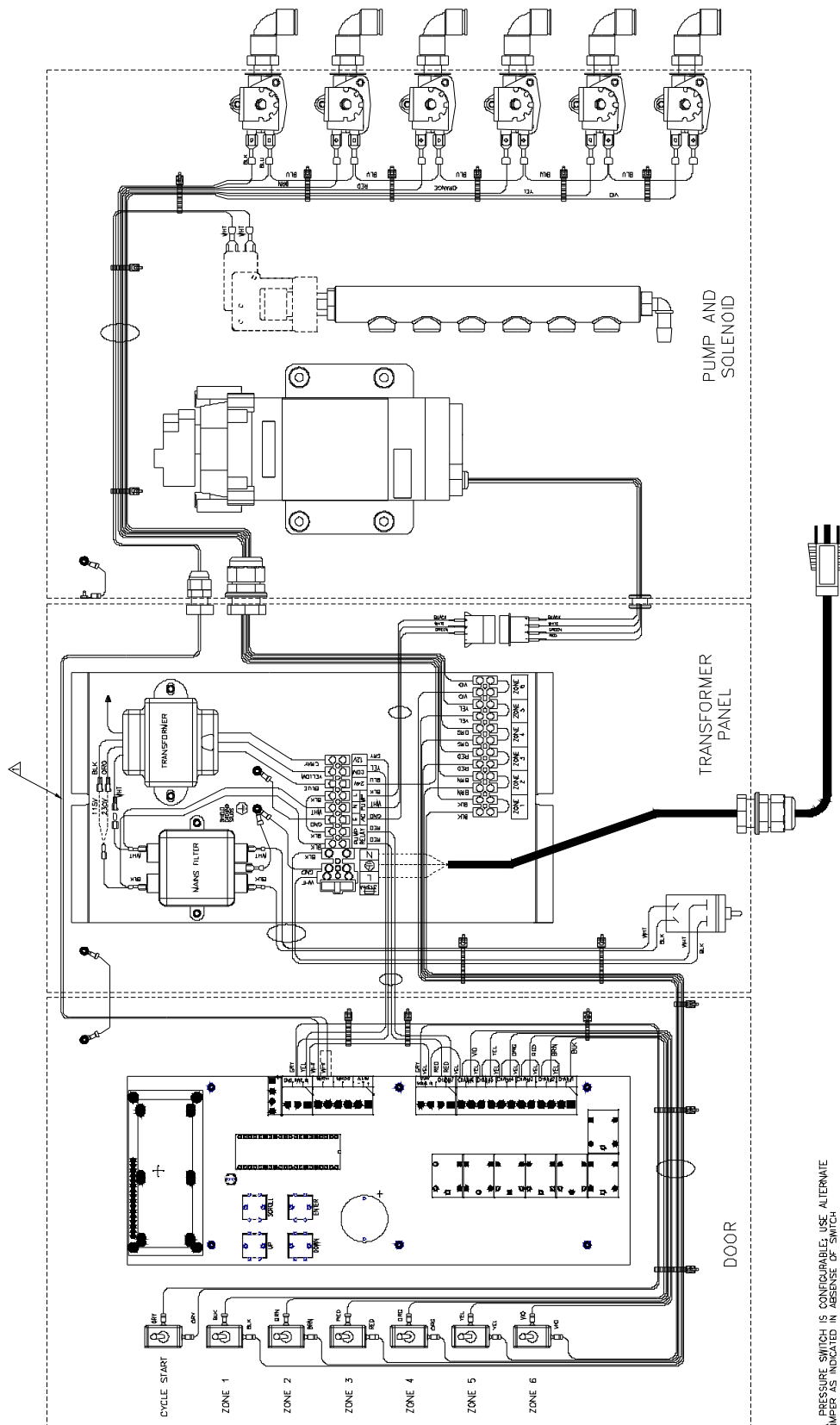


## TROUBLESHOOTING

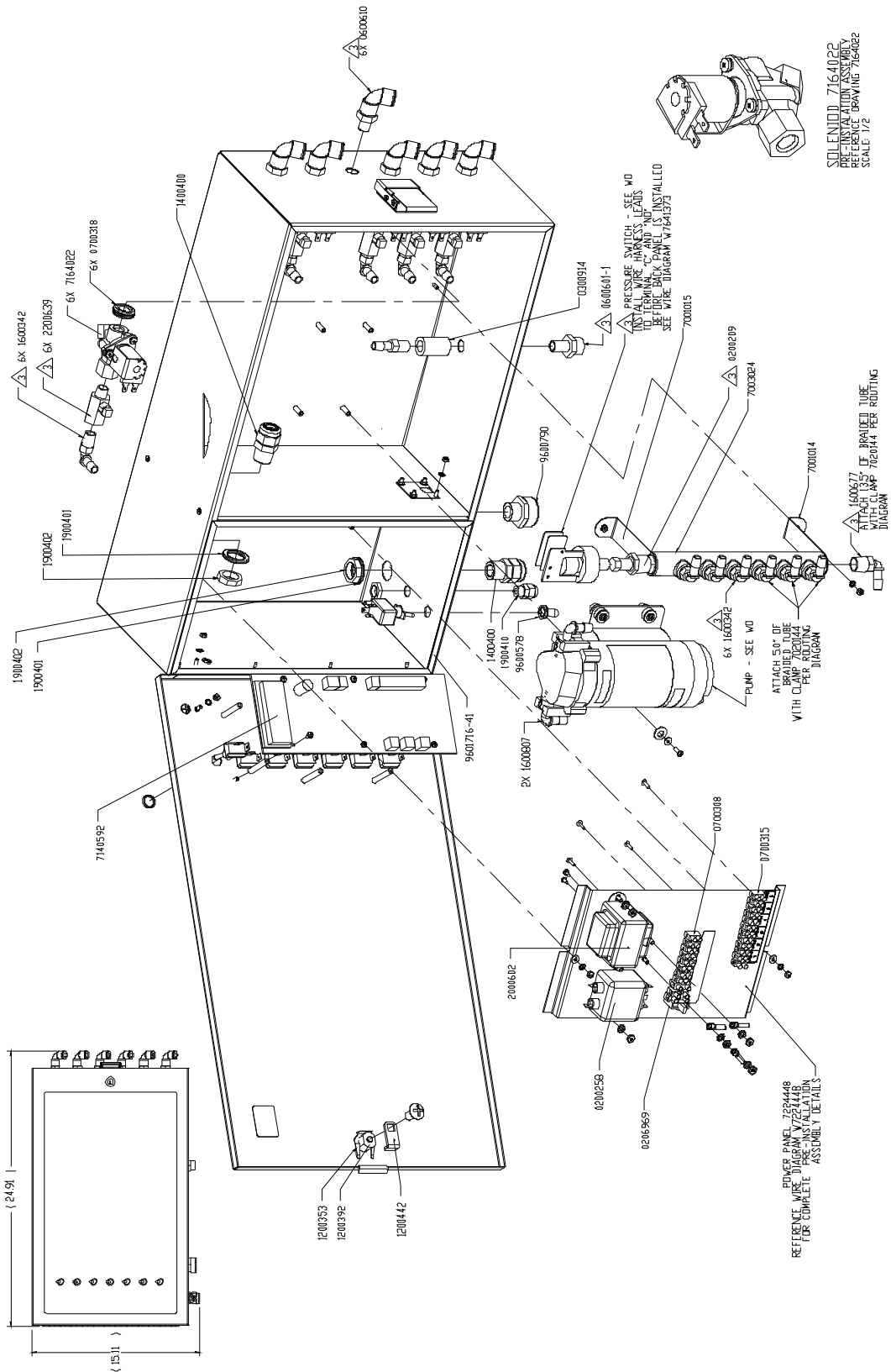
Problem	Probable Cause	Solution
Pump won't prime	Suction line too long	Maximum 10 ft. (3 meters)
	Particles lodged in pump seals	Remove upper pump housing and rinse with water
	Restriction in fluid path	Clear obstructions in path
	Pump seals dry	Prime first time with water
Low Supply Alarm won't turn off	Pressure setting too high (higher than 70 PSI / 4.2 bar)	Adjust pressure setting on pressure switch to lower setting
	Leak in the system somewhere	Find the leak
	Pump won't create pressure	Service pump
	Out of chemical	Replace/refill chemical container
System won't start lube cycle	No start signal at board input or cycle start switch is off	Verify start signal
	On or Interval timing changed	Reprogram settings
	No password used	Put in password to protect unit
Flow rate too low	Too many lube points	Reduce lube points or increase restriction
	Particles lodged in pump seals	Remove upper pump housing and rinse with water
	Restriction in fluid path	Clear obstructions in path
	Pump seals dry	Prime first time with water
	Check ball valve positions	Turn internal valves to full open position
Can't get lube to all points	Pressure in the system not balanced	Use in line ball valves or modify tube lengths to balance pressure in the system

## RECOMMENDED SPARE PARTS

Part#	Description
7005040	Lube Zone Valve Body, Solenoid, Plated
7005030	Lube Zone Armature, Solenoid
7005012	Lube Zone Valve Armature, Guide, SS
7121210	Lube Zone Coil, Solenoid
7005020	Lube Valve Coil Mounting Plate, For Guide
1900679	Main Power Switch, DPST
1900677	Lube Zone Switch, SPST
0200258	Mains, Filter
2000602	Power Supply, Transformer, TR-3124
1600136-01	Lube Pump. Elec. Diap. 115V .4 GPM@70PSI
7317322	Electric Diaphragm Pump Low Housing Assy. Viton
7003024	6 Port Manifold
1900911	Pressure Switch
7140592	Lube Saver Microprocessor Control Board



▲ PRESSURE SWITCH IS CONFIGURABLE; USE ALTERNATE  
 ▲ JUMPER AS INDICATED IN ABSENCE OF SWITCH  
 ▲ WIRES AND HARNESSES AS NOTED ARE REQUIRED BY  
 ▲ CSA TO CROSS THROUGH WIRE LODD PN 1200757061N



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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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