



# LLA-400 LEVEL SENSOR INSTRUCTION MANUAL

## INTRODUCTION

A low-level alarm control is used to inform the user when one or more of his chemical supply containers is low or out of product. An audible buzzer and a visual indicator activate when a low level is sensed, allowing the user to refill or replace chemical and quickly get back "on line". A 24 VAC alarm output is provided for those applications where a remote low level indicator is required. Additionally, the LLA-400 can interface with a Knight Laundry Dispenser to activate many other low level features.

## OPERATION

- (1) The LLA-400 accepts input power ranges from 115, 208, or 230 VAC. Voltage from the power source is connected to the internally-mounted transformer (see included wiring diagram for the LLA-400).
- (2) Low level probes with PVC support tubing are placed in each chemical container to be sensed. The LLA-400 will activate an audible and visual alarm when chemical is absent at any of the signal tubes. Depressing the ALARM MUTE switch on the LLA-400 will shut the audible alarm off for 5 minutes, allowing the user to refill or resupply the chemical to the probe. If the chemical is refilled or resupplied within 5 minutes, the visual alarm will shut off and the alarm feature will be reset. If the chemical is not refilled or resupplied within 5 minutes, the audible alarm will again activate, reminding the user of the low level condition.
- (3) Connections to the LLA-400 circuit board marked LLA 1 and LLA 2 are provided to connect the LLA-400 to a Knight Microprocessor Laundry Feed system. In the event of a low level condition, audible and visual indicators on the Knight Microprocessor Laundry Feed System will activate, notifying the user of a low level condition.
- (4) Connections to the LLA-400 circuit board marked 24 VAC REMOTE MOUNTED ALARM are provided to connect an external alarm (such as the Knight SA-12 Strobe Alarm) which activates at the same time as the normal low-level alarm. This feature is especially useful in applications where equipment operators will not be in the vicinity of the liquid chemical drums or the LLA unit.

## INSTALLATION

- (1) Attach each supplied probe to the LLA-400 and insert each probe assembly into an appropriate chemical container. Any probe tubes from the LLA-400 which are not used must be capped or sealed.
- (2) Mount the LLA-400 on a wall near the chemical supply containers using the mounting keyholes provided.
- (3) Check voltage of power source and DISCONNECT POWER FROM SOURCE. Attach power leads to power source (see wiring diagram for connection information). Rigid or flexible conduit should be used to ensure safety and to comply with all applicable electrical codes.
- (4) Connect all external devices (i.e., Knight laundry dispenser, Knight SA-12, etc.) to the LLA unit. See the attached wiring diagram for further information.
- (5) Apply power to the LLA-400. The "power on" LED should light. The low-level alarms (audible and visual) will be off, indicating that levels for each chemical are not empty.

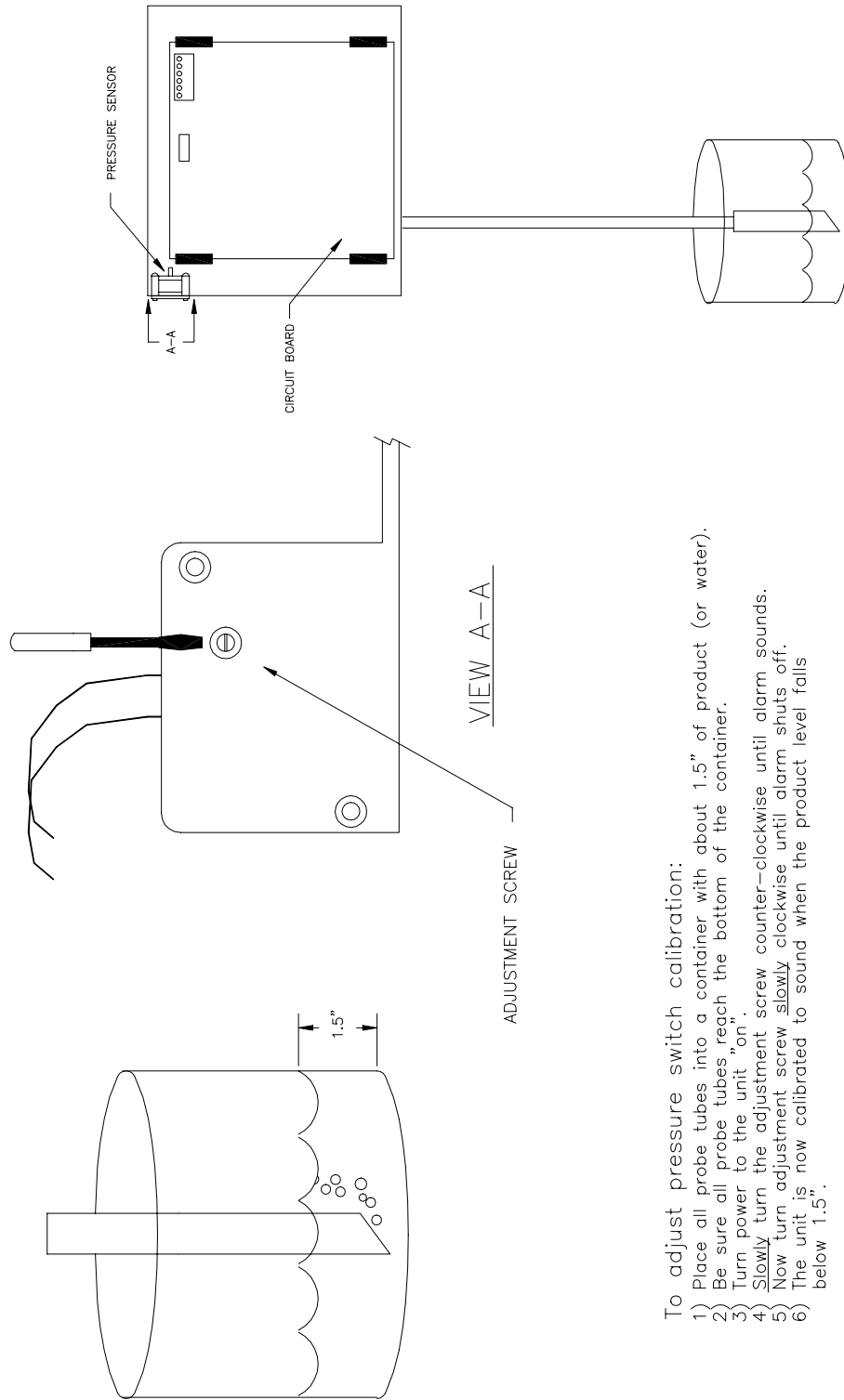


**CAUTION:** Wear protective clothing and eyewear when dispensing chemicals or other materials. Observe safety handling instructions (MSDS) of chemical manufacturers.



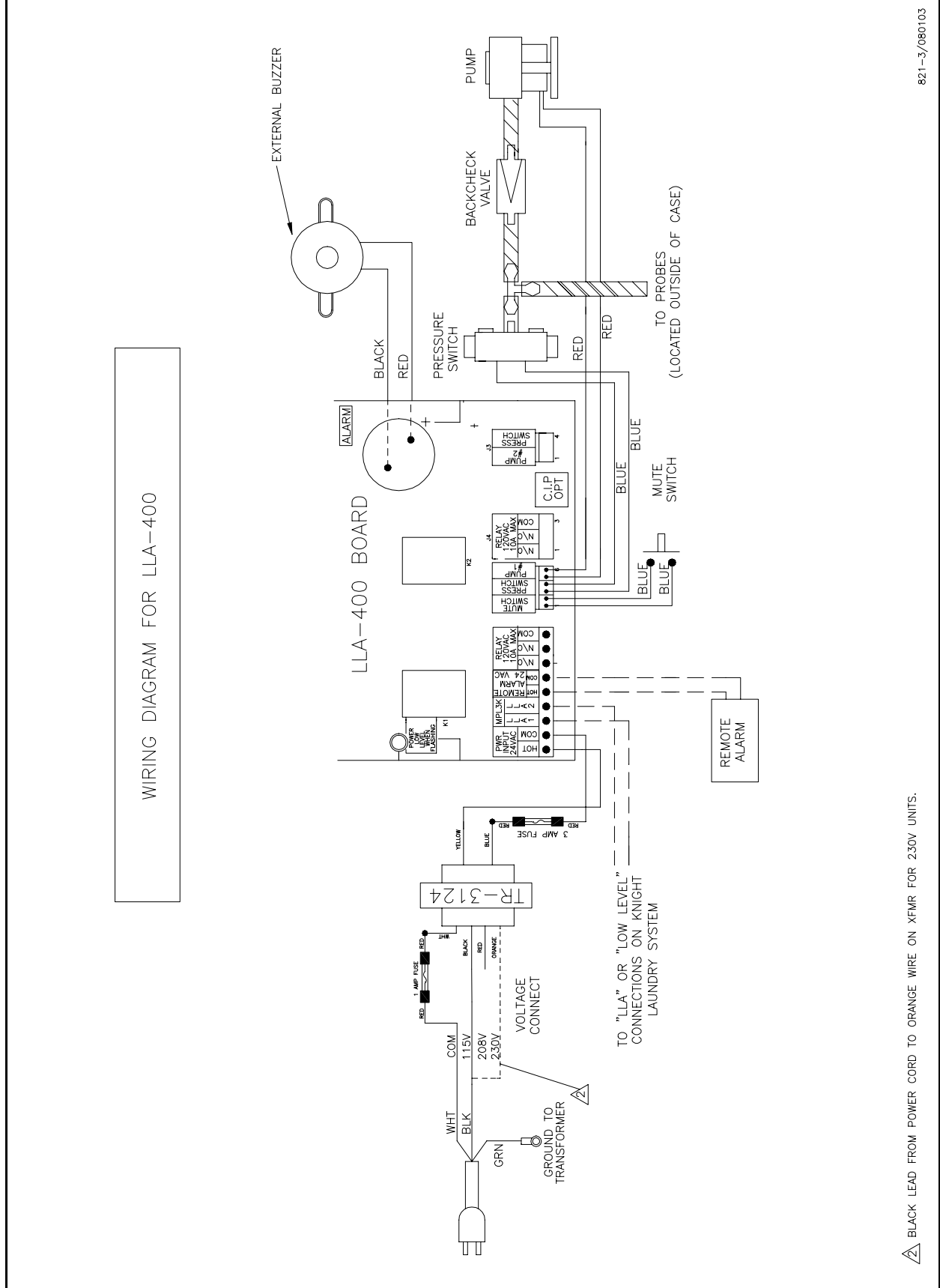
**CAUTION:** To avoid severe or fatal shock, always disconnect main power when servicing the unit.

# ADJUSTING THE PRESSURE SWITCH SENSITIVITY



## To adjust pressure switch calibration:

- 1) Place all probe tubes into a container with about 1.5" of product (or water).
- 2) Be sure all probe tubes reach the bottom of the container.
- 3) Turn power to the unit "on".
- 4) Slowly turn the adjustment screw counter-clockwise until alarm sounds.
- 5) Now turn adjustment screw slowly clockwise until alarm shuts off.
- 6) The unit is now calibrated to sound when the product level falls below 1.5".



WIRING DIAGRAM FOR LLA-400

⚠ BLACK LEAD FROM POWER CORD TO ORANGE WIRE ON XFMR FOR 230V UNITS.

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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.

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