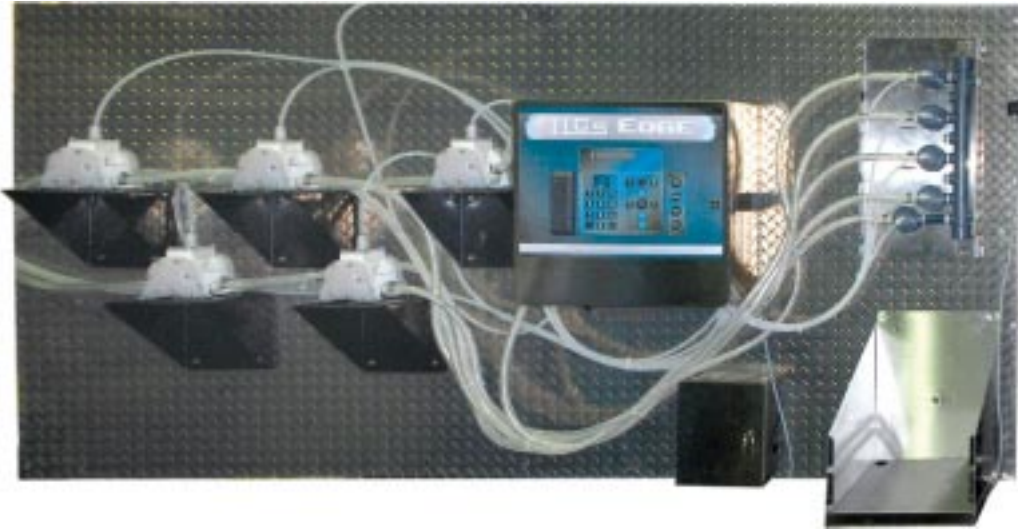


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# **KNIGHT**

## **IDEX**

IDEX CORPORATION



# **ILCS EDGE System Installation 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.

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## SYSTEM OVERVIEW

The ILCS EDGE (Intelligent Liquid Control System) is an automated chemical control system that accumulates critical usage data of chemicals used for cleaning in food plants. Using the very latest concepts in process control technology, the ILCS provides key benefits:

- **Ease of Operation:** ILCS EDGE eliminates messy drum pumps and the need to lift heavy drums of chemical that can splash hazardous chemicals or spill on the ground. Pre-determined formulas can be dispensed into a gerry can or other container.
- **Cost Control:** ILCS EDGE does more than just dispense chemicals. It gives all users the opportunity to get real control of every aspect of day-to-day operation.
- **Safety:** The system limits the worker from coming in contact with concentrated cleaners by automatically dispensing products into standard containers to use throughout the food plant.
- **Environmental Safety:** By dispensing directly to a product container the system limits spillage or waste. Chemical concentrations and volumes are computer controlled to eliminate waste and guarantee the exact amount of product used for each cleaning process.
- **Main control:** The ILCS EDGE control panel allows direct programming of the system at the keypad, and also stores report information. PC interface to the control panel expands the data management capabilities.

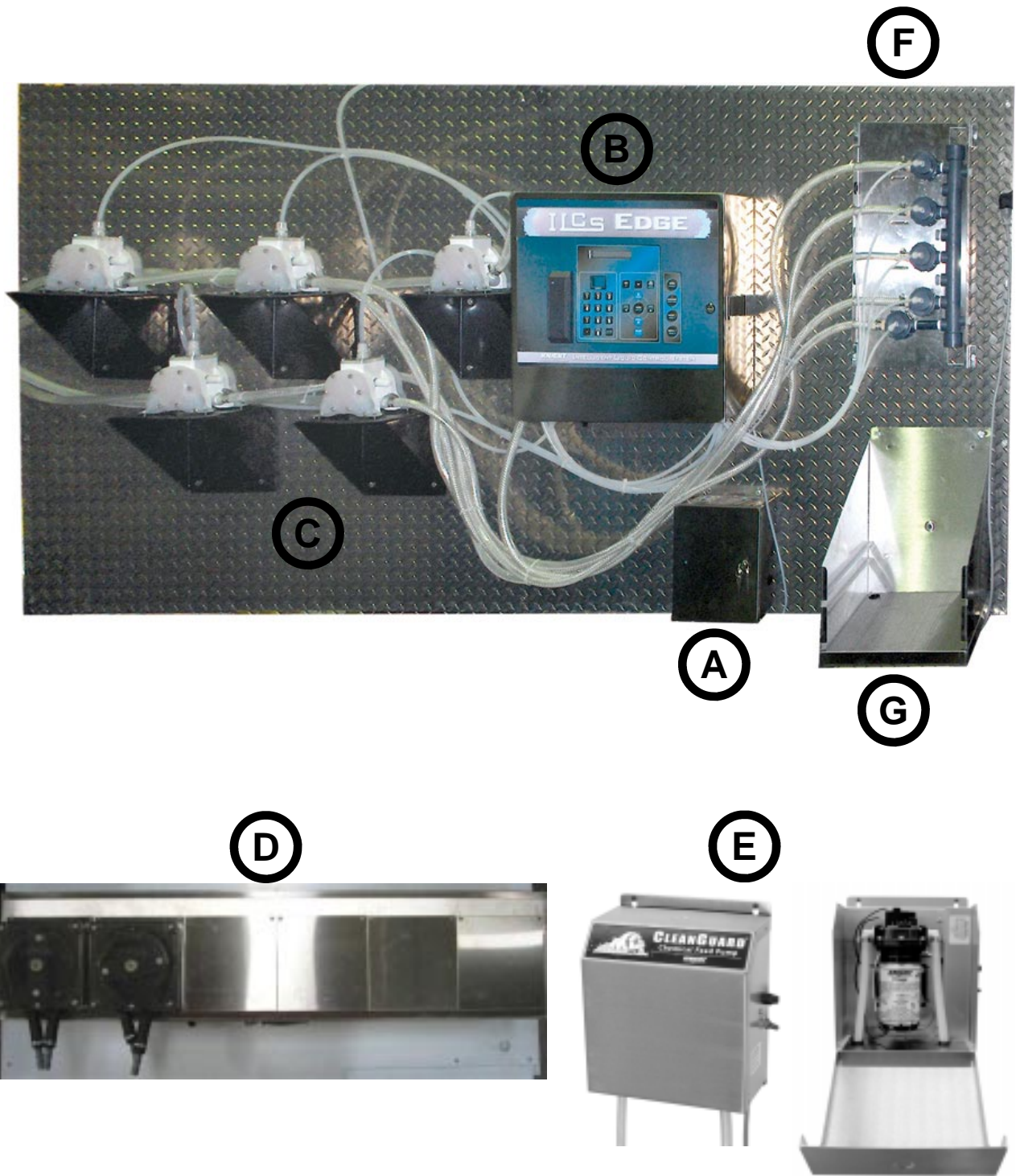
## SYSTEM COMPONENTS

See the diagram on the following page for identification of the system components listed below. The available pump options for the ILCS Edge system consist of Air Operated Diaphragm, Peristaltic, or Electric Diaphragm. If necessary, various pump configurations can be utilized to meet specific application requirements.

- (A) **Power Supply:** Isolates high voltage system operating power from the control box. The power supply box contains a transformer and electrical noise filter for added protection.
- (B) **Control Box:** Contains all system electronics and is the main command center for operation. The keypad allows programming of all system operating parameters and entry of access codes for batch dispensing. Also housed inside the control box are an air filter, air solenoids, and water flush valves. The system can be equipped with an optional proximity card reader for convenient and secure access code entry.
- (C) **Air Operated Diaphragm Pumps:** Available in 3/8" or 1/2" models. Use of air operated diaphragm pumps provides high volume product delivery up to 14 GPM with a wide range of chemical compatibility. The pumps are controlled via air solenoids in the system control box.
- (D) **Peristaltic Pumps:** Available in 155 oz/min or 226 oz/min configurations. Use of peristaltic pumps provides easy installation and maintenance, and does not require an air supply. The pumps are controlled via POB circuit board inside the peristaltic pump cabinet.
- (E) **Electric Diaphragm Pumps:** Available in 1.5 GPM and 3.2 GPM flow rates. These pumps are controlled via POB circuit board. A separate POB Enclosure is available for this application, or the pumps can utilize extra (unused) pump outputs on a POB board that is inside of a peristaltic pump cabinet.
- (F) **Flush Manifold (optional):** Used for diluting and blending chemicals with water. The system has two separate water flush solenoids that can be setup for single or dual manifold configuration. The use of dual manifolds prevents cross-contamination of non-compatible chemicals. Air operated anti-siphon valves provide a positive checkpoint to prevent siphoning of chemical and from water pushing back into chemical lines.
- (G) **Container Shelf (optional):** Rugged stainless steel construction. The container shelf is large enough to hold up to 5-gallon containers and comes with a wire rack and drip tray.
- **SIB Enclosure (optional—not shown):** For use with CIP (or external) pump applications. The SIB signal input board provides an interface between the ILCS system and CIP (or external) pump activation signals. Connection from the SIB to the ILCS control box is through low voltage data cable.

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**SYSTEM DIAGRAM**



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## PRE-INSTALLATION

Before the equipment is installed, you should survey the installation site thoroughly. Listed below are some of the factors to consider when picking your location.

- ☑ Work Area — the unit should be mounted in centralized area to work areas.
- ☑ Chemical location — unit should be mounted close to the chemical tanks. For bulk tank installations, pumps must be placed on, or near tanks.
- ☑ Mounting surface — ensure there is a sturdy wall (or panel) with enough space for all system components and routing of chemical tubes, air lines, and cables.
- ☑ Electrical — requires 115 VAC/60 Hz power source, 1 amp service for air pump only applications (20 amp service recommended if using peristaltic pumps).
- ☑ Air Service — required if equipped with air option for use of air pumps and anti-siphon valves (optional for manifold applications). Available air pressure should be 70 PSI and 12 SCFM. Check specification of air compressor on site for adequate air flow.
- ☑ Water Service — system requires ambient water service to flush manifold (if so equipped). Recommended minimum 25 PSI flow pressure.
- ☑ Familiarize yourself with all applicable safety, electrical, and plumbing codes.

## CONTROL BOX & POWER SUPPLY INSTALLATION

- (1) Mount the joggle bracket to the wall at a height that all users can access and read the display screen. Use the hardware in the accy kit or other appropriate hardware for the mounting surface.
- (2) Hang the control box unit on the joggle bracket. Secure the control box to the wall with provided hardware.
- (3) Mount the power supply box in close proximity to the control box unit.
- (4) Connect main power from a suitable breaker to the power input terminal block inside the power supply box, and per local wiring codes.
- (5) Connect power from the power supply box to the appropriate terminals on the main control board inside the control box using the cable provided (see wiring diagram for details).
- (6) Connect air line to input fitting on the air filter inside the control box. Hardware not provided. Disregard this step if not equipped with air option.
- (7) Connect water supply (if flush will be used). Hardware not provided.

## PERISTALTIC PUMP INSTALLATION

- (1) Mount the peristaltic pump cabinet as close as possible to the chemical supply and no more than 10 ft above chemical containers.
- (2) Install braided tubing between the discharge (right) tube side of the peristaltic pump and the injection point. Use stainless steel hose clamps and barb fittings to secure braided tubing to squeeze tube. If using a flush manifold, connect the discharge line to corresponding port on manifold.
- (3) Install braided tubing between the suction (left) tube side and the barb fitting on the PVC pickup tube. Use the provided stainless steel hose clamps and barb fittings to secure braided tubing to squeeze tube.
- (4) Insert pickup line into appropriate chemical container.
- (5) Connect the POB circuit board (inside the peristaltic pump cabinet) to corresponding terminals in the ILCS Edge Control Box (see wiring diagram).
- (6) Connect power to the POB circuit board from the Power Supply Unit (see wiring diagram). Follow local wiring codes — this will typically require the use of conduit.
- (7) Prime all chemical pumps. This can be done with manual prime buttons on the POB board or the control panel of the ILCS EDGE system.

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## **AIR PUMP INSTALLATION**

Before installation, choose a mounting location for the chemical pumps that is as close as possible to chemical containers. Be sure to allow enough space between pumps for ease of installation and service. Follow the installation steps below for each chemical pump that will be used.

- (1) Attach air input fitting provided in accy kit to the air inlet port on the pump.
- (2) Attach inlet and outlet barb fittings provided in the accy kit.
- (3) Mount the pumps as close as possible to the chemical supply and no more than 6 ft above chemical containers.
- (4) Connect pickup line to input side of pump.
- (5) Connect discharge line between output side of pump and point of injection. If using a flush manifold, connect the discharge line to corresponding port on manifold.
- (6) Route and connect air line for each pump to corresponding air solenoid control box.
- (7) Insert pickup line into appropriate chemical container.
- (8) Prime all chemical pumps. This can be done with manual prime buttons on the main control board or the control panel of the ILCS EDGE system.
- (9) Adjust the flow rate of each chemical pump to desired setting using the air pressure regulators inside the main control box. Each regulator has a built in air gauge.

## **EDP PUMP INSTALLATION**

The use of Electric Diaphragm Pumps requires a POB circuit board (with enclosure) to interface with the ILCS Edge Control Box. Mount the POB enclosure in a location that is preferably near the EDP pumps and the ILCS Edge Control Box.

Before installation, choose a mounting location for the chemical pumps that is as close as possible to chemical containers. Be sure to allow enough space between pumps for ease of installation and service. Follow the installation steps below for each chemical pump that will be used.

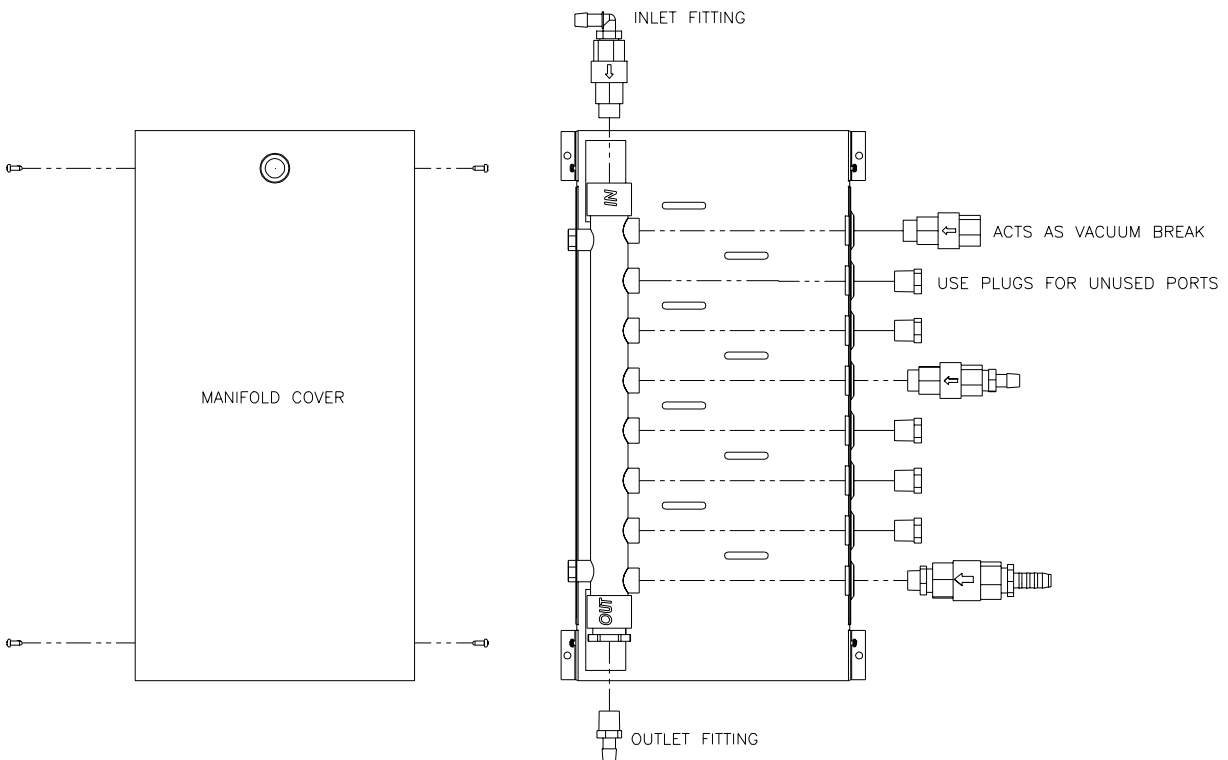
- (1) Mount the pumps as close as possible to the chemical supply and no more than 10 ft above chemical containers.
- (2) Install braided tubing between the discharge (right) tube side of the pump and the injection point. Use stainless steel hose clamps and barb fittings to secure braided tubing to pump. If using a flush manifold, connect the discharge line to corresponding port on the manifold.
- (3) Install braided tubing between the suction (left) tube side and the barb fitting on the PVC pickup tube. Use stainless steel hose clamps and barb fittings to secure braided tubing to squeeze tube.
- (4) Insert pickup line into appropriate chemical container.
- (5) Connect each pump to corresponding terminals on the POB circuit board (see wiring diagram).
- (6) Connect the POB circuit board (inside the POB enclosure) to corresponding terminals in the ILCS Edge Control Box (see wiring diagram).
- (7) Connect power to the POB circuit board from the Power Supply Unit (see wiring diagram). Follow local wiring codes — this will typically require the use of conduit.
- (8) Prime all chemical pumps. This can be done with manual prime buttons on the POB board or the control panel of the ILCS EDGE system.

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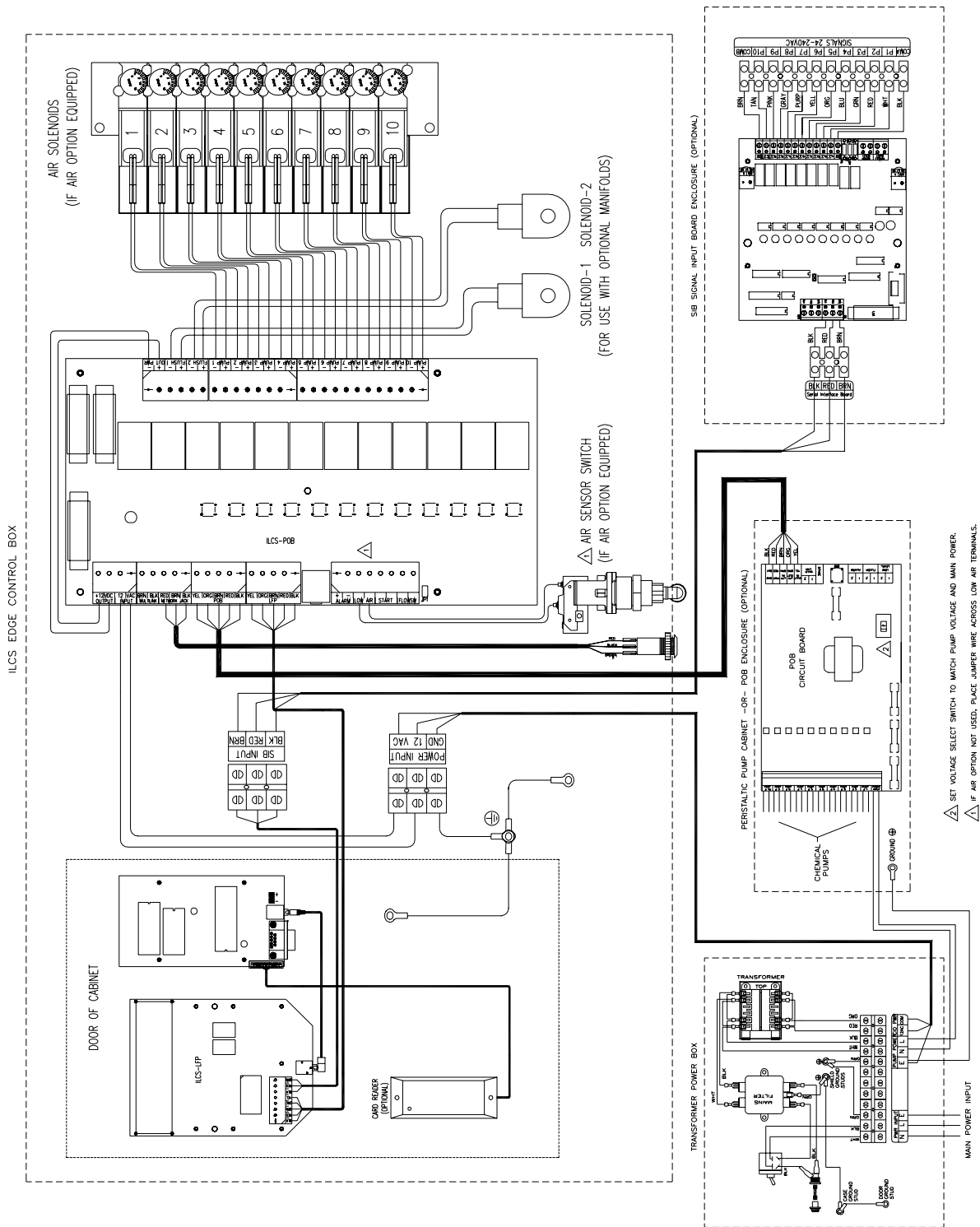
## MANIFOLD INSTALLATION (OPTIONAL)

- (1) Determine the vertical mounting configuration desired for the application (top and bottom orientation). This is particularly important for dual manifold applications.
- (2) Attach the input (elbow) and output (straight) barb fittings included in accy kit.
- (3) A checkvalve is included in the accy kit that will function as a vacuum break. Attach this checkvalve to the top port of the manifold. This will leave 7 ports remaining for chemical pumps.
- (4) Plugs should be installed in any of the unused ports of the manifold.
- (5) Mount manifold to wall using appropriate hardware.
- (6) Connect tubing from pumps to inlet port barb fittings using hose clamps to secure connections.
- (7) Connect the inlet fitting to the appropriate water flush solenoid in the control box. This is particularly important for dual manifold applications.
- (8) Connect the outlet fitting to bucket fill spout (or hose) or other point of discharge.
- (9) Put the cover on the manifold and secure in place with provided screws.

### ► Installation Example

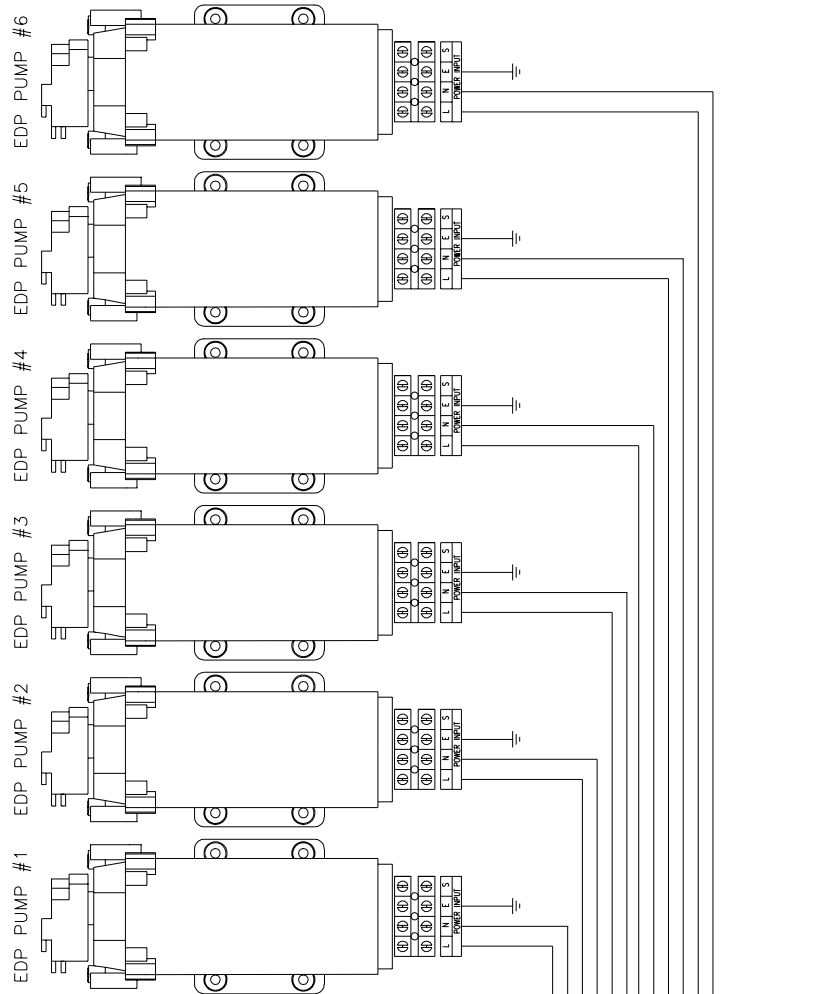


# SYSTEM WIRING DIAGRAM

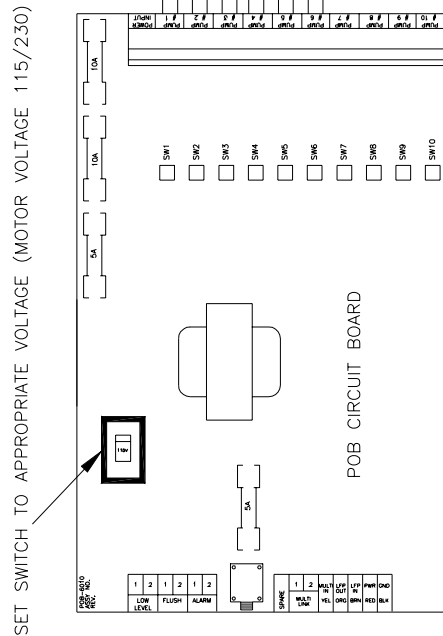




# EDP PUMP WIRING DIAGRAM

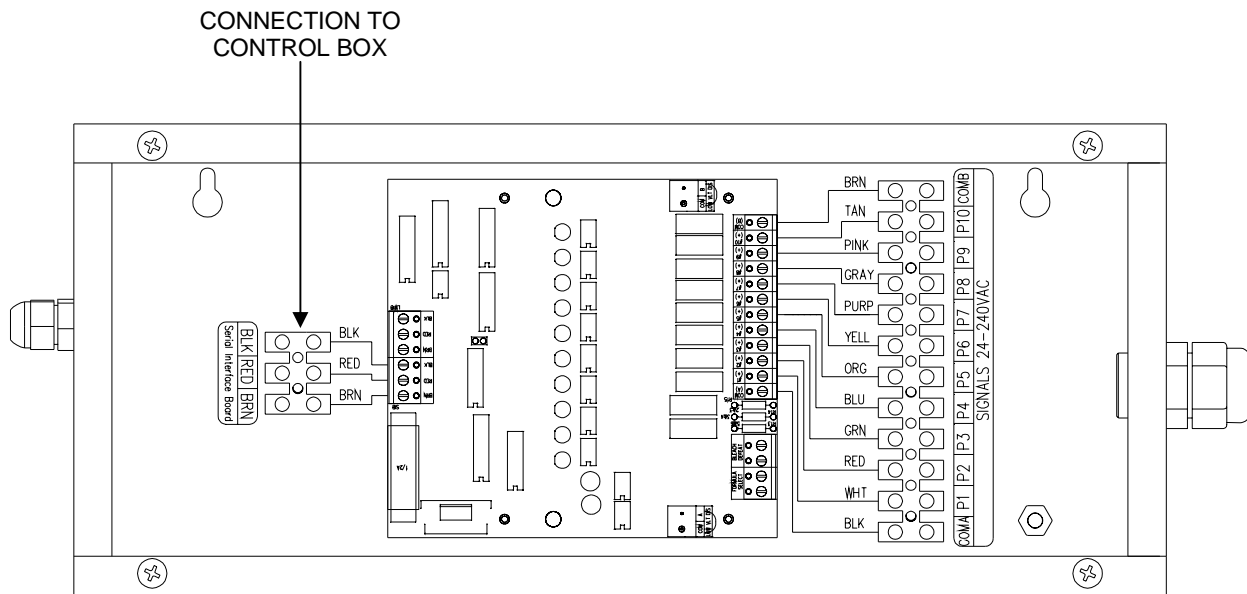


THIS IS AN EXAMPLE OF USING ELECTRIC DIAPHRAGM PUMPS WITH THE ILCS EDGE SYSTEM. CONNECT THE EDP PUMPS AS SHOWN TO THE POB CIRCUIT BOARD. ENSURE THAT THE "E" TERMINAL IS CONNECTED TO A PROPER EARTH GROUND.



## SIB INSTALLATION (OPTIONAL)

- (1) Mount the SIB near the signal source at the CIP (or external pump) controller using suitable hardware.
- (2) Connect the SIB to the control box using 3 conductor cable (see wiring diagram in this manual).
- (3) Check the signal voltage output from the CIP (or external pump) controller. Measure the voltage between control signal and signal common, NOT control signal and case ground.
- (4) Connect signal wires to SIB terminal block for signal inputs. If split commons are required, a resistor can be removed on the SIB to allow use of 2 different signal commons (see details below)



### ► **Splitting Signal Commons**

Shut off all power sources before continuing. If you have one signal common (typical) connect it to “COM A” only. If you have two signal commons, you will need to remove a resistor on the SIB before connecting common wires! Once the resistor is removed, you can then use COM A and COM B for different groups of signals shown in the table.

- (1) Locate the three resistors marked R15, R14, and R13, on the right side of the circuit board (each resistor has a single black band to identify it).
- (2) Cut and remove the resistor that will “split” the commons between the desired pumps. Remove only one resistor.
- (3) Proceed with signal wire connection to SIB.

<i>CUT RESISTOR</i>	<i>TO USE COM A FOR PUMPS</i>	<i>AND COM B FOR PUMPS</i>
R15	1 — 2	3 — 10
R14	1 — 3	4 — 10
R13	1 — 5	6 — 10

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## **LABEL CHANGE PROCEDURE**

- (1) Shut off power to the system.
- (2) Remove screws that hold the LFP circuit board to the front panel of the control box.
- (3) Disconnect ribbon cable from the LFP circuit board.
- (4) Use 2 of the screws to temporarily hold the board onto the front panel while changing the label.
- (5) Carefully remove old label. Start by prying up on a corner with a sharp edge blade. Use of a heat gun may be helpful to loosen the adhesive.
- (6) Clean old adhesive from the front panel with alcohol in preparation for adhering the new label.
- (7) Carefully remove the backing paper from the new label. Route the ribbon cable through the slot in the front panel and adhere the label in place using the keyhole and LFP window for proper alignment.
- (8) Push out any air bubbles that may have gotten trapped while attaching the new label. Work from the middle region of the label to outer edges.
- (9) Remove the 2 screws that were temporarily holding the LFP circuit board in place and attach the ribbon cable.
- (10) Re-attach the LFP circuit board back on the front panel using all mounting screws.
- (11) Turn power to system back on.
- (12) Test each button of the new label to ensure proper function.

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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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