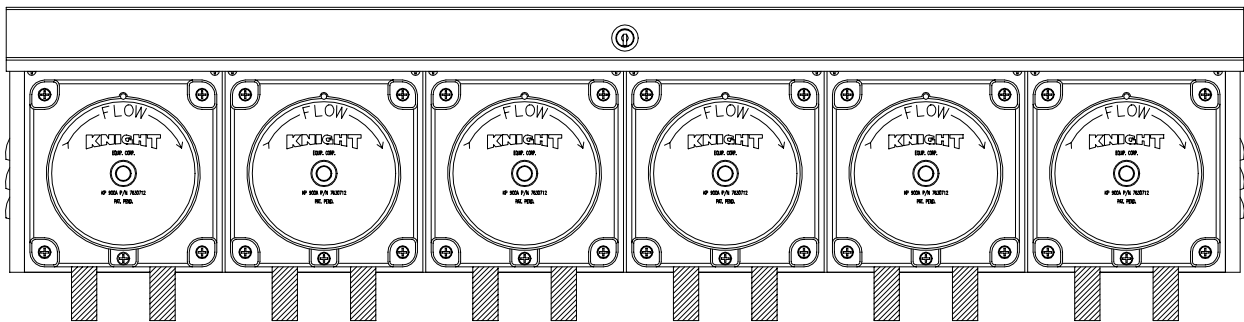

KNIGHT

IDEX

IDEX CORPORATION



Knight Trak II

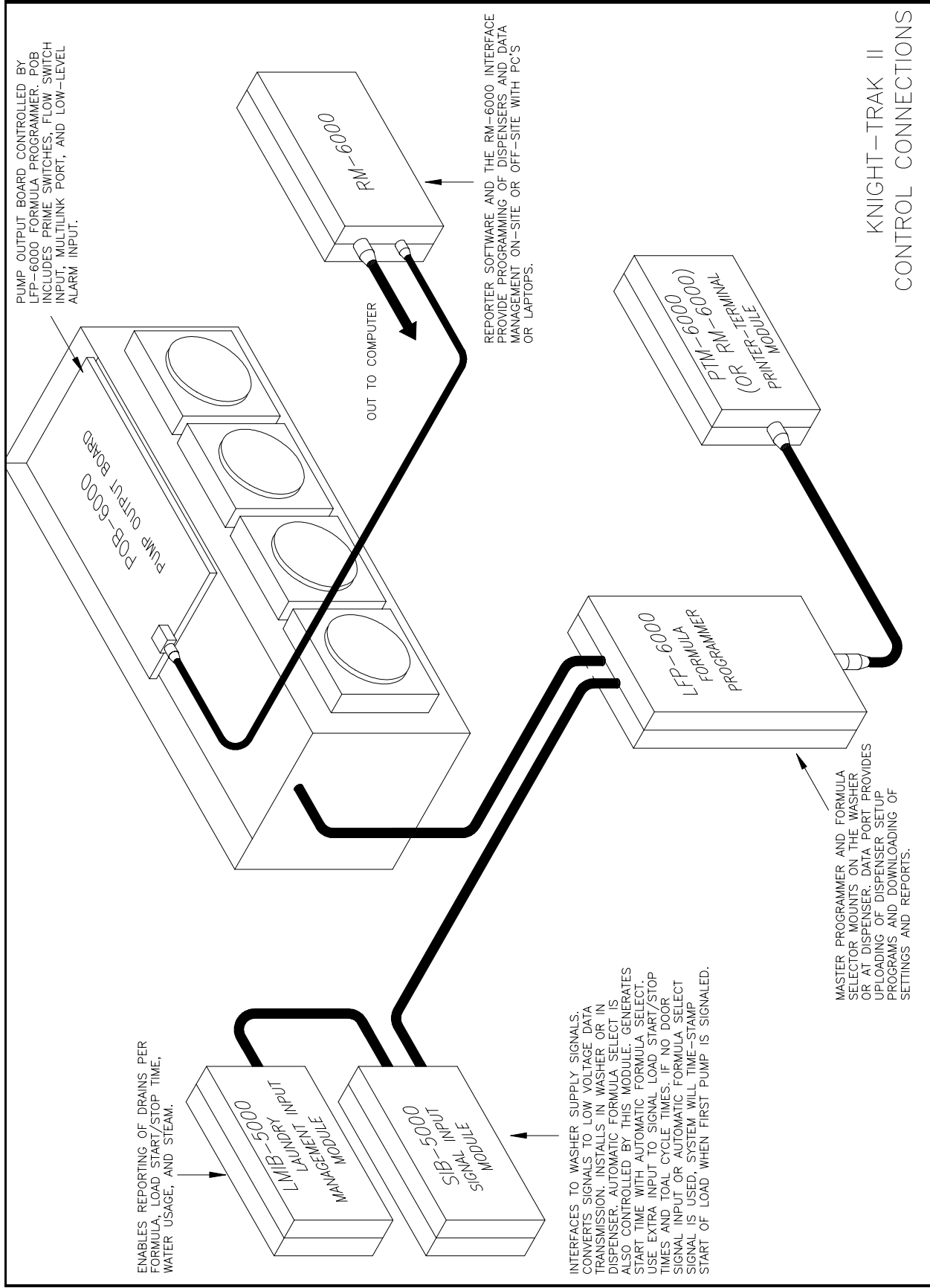
Instruction Manual

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CAUTION: Knight Trak II has high voltage connected to the transformer. Always disconnect main power when servicing the unit.



PUMP OUTPUT BOARD CONTROLLED BY LFP-6000 FORMULA PROGRAMMER. POB INCLUDES PRIME SWITCHES, FLOW SWITCH INPUT, MULTILINK PORT, AND LOW-LEVEL ALARM INPUT.

ENABLES REPORTING OF DRAINS PER FORMULA, LOAD START/STOP TIME, WATER USAGE, AND STEAM.

INTERFACES TO WASHER SUPPLY SIGNALS. CONVERTS SIGNALS TO LOW VOLTAGE DATA TRANSMISSION. INSTALLS IN WASHER OR IN DISPENSER. AUTOMATIC FORMULA SELECT IS ALSO CONTROLLED BY THIS MODULE. GENERATES START TIME WITH AUTOMATIC FORMULA SELECT. USE EXTRA INPUT TO SIGNAL LOAD START/STOP TIMES AND TOAL CYCLE TIMES. IF NO DOOR SIGNAL INPUT OR AUTOMATIC FORMULA SELECT SIGNAL IS USED, SYSTEM WILL TIME-STAMP START OF LOAD WHEN FIRST PUMP IS SIGNALLED.

OUT TO COMPUTER

REPORTER SOFTWARE AND THE RM-6000 INTERFACE PROVIDE PROGRAMMING OF DISPENSERS AND DATA MANAGEMENT ON-SITE OR OFF-SITE WITH PC'S OR LAPTOPS.

MASTER PROGRAMMER AND FORMULA SELECTOR MOUNTS ON THE WASHER OR AT DISPENSER. DATA PORT PROVIDES UPLOADING OF DISPENSER SETUP PROGRAMS AND DOWNLOADING OF SETTINGS AND REPORTS.

KNIGHT-TRAK II
CONTROL CONNECTIONS

SYSTEM OVERVIEW

The Knight-Trak II Data Management System represents the “Next generation” of laundry dispensing equipment with data tracking capability. On-site programming, centralized control, and the ability to export information to personal computers are just a few of the many enhancements provided by Knight-Trak II.

Main control, programming, and report parameters are established with the Laundry Formula Programmer (LFP). The LFP permits programming for each dispenser that the laundry specialist is responsible for, and also allows the operator to select formulas or obtain load count information. The LFP also allows for programmed and reported data to be SAVED for printing at a later date.

THE BASIC SYSTEM INCLUDES:

A heavy duty stainless steel case, with peristaltic pumps and a Pump Output Board (POB),

A Laundry Formula Programmer (LFP) which mounts on the front of the washer and provides the programmer/operator interface and battery backup for data ,

A Signal Input Board (SIB) which mounts inside washer and reduces high voltage supply signals to low voltage data signals.

SYSTEM OPTIONS:

- (1) A Laundry Management Input Board (LMIB), which receives hot and cold water signals and other information relating to wash cycle tracking,
- (2) A Low Level Alarm (LLA), which senses low chemical supplies and alerts washroom personnel,
- (3) A full-size 80 column printer, which provides printed information,
- (4) A Printer/Terminal Module (RM), which provides external storage/printing capabilities,
- (5) A Support Kit which includes cables and accessories in a durable, light-weight carrying case,
- (6) A Multi-Flow laundry chemical flush system,
- (7) The Reporter Software for Knight-Trak: Windows compatible software that allows a personal computer (PC) to perform many different functions (including remote programming, instant production status display, dispenser network printing, telephone modem functions, and more).

KNIGHT-TRAK II - PRE-INSTALLATION

Before the equipment is installed you should survey the installation site thoroughly. At the very least, your survey should include the following.

- (1) Check to make sure that all functions of laundry machine are operating properly examples are: drain valve, hot/cold water solenoids, flush-down valves, water level switch, card reader or timer, machine motor.
- (2) Check the proposed location for a 115 or 230 VAC power source.

INSTALLATION

- (1) Remove the locking cover panel from the pump housing using the key provided.
- (2) Mount pump housing in a convenient location on a wall near supply containers. This location is usually near the laundry machine, however, can be mounted as a remote pumping system. Use proper mounting hardware and utilize appropriate mounting techniques for various types of walls (i.e. cement, sheetrock, etc).
- (3) Insure that the voltage of the system matches the main power voltage.
- (4) Its very important to measure signal voltage between signal wires and signal *common* (*NOT* "ground"). This measurement must be taken when laundry machine is operating and when products are called for.
- (5) **BEFORE CONTINUING TO NEXT STEP, DISCONNECT ALL ELECTRICAL CONNECTIONS TO LAUNDRY MACHINE, CARD READER, AND INJECTOR. VERIFY THIS WITH A VOLTMETER.**
- (6) Inspect the wiring diagram for the laundry machine and card reader. They are available from the manufacturer upon request.
- (7) Gain access to the signal connections by removing the top or rear cover of the wash machine. Install the Signal Input Board (SIB) near the signal source and connect signal wires from the signal source to the SIB. Connect the SIB to the LFP. Connecting the SIB to the LFP requires a three-conductor shielded cable available from Knight Equipment. Color-coded connections on the LFP are marked to insure correct hookup. Conduit is not necessary as the SIB transmits low-voltage D.C. data signals.
- (8) Connect the LFP to the POB. Connecting the LFP to the POB requires a three-conductor shielded data cable available from Knight Equipment. Color-coded connections on the LFP and POB are marked to insure correct hookup. Conduit is not necessary as the LFP transmits low-voltage DC data signal.
- (9) Run all main power wires from the Pump Output Board (POB) to the power source through suitable conduit. Check local electrical wiring codes.

ACCESSORY CONNECTIONS

- (1) In order for the Knight-Trak II to collect hot water, cold water, drain counts, and full wash cycle tracking information, connect a Laundry Management Input Board (LMIB) to the SIB. Connections are shown on both the boards and on the included wiring diagram.
- (2) In order to sense if one or more chemicals are low or out of product, connect a Low Level Alarm (LLA) to the POB. Connections are shown on both boards and on the included wiring diagram.
- (3) Strobe-Alarm (SA-12) provides audio and visual indication for chemical flush errors or low supply.

MULTILINKING

Multilinking is a way to connect multiple Knight-Trak II dispensers in a laundry. Once connected, you can "talk" to all dispensers from a single connection.

- (1) Before connecting the multilinking cable, use the LFP to give each dispenser its own ID number. If dispensers on the multilink have the same ID number, they will not work correctly. **THIS MUST BE DONE BEFORE YOU CAN "LOG-ON" WITH REPORTER PC SOFTWARE OVER THE NETWORK.**
- (2) Using shielded cable, connect the multilink barriers on each POB in series. Be careful to keep the polarity the same on each dispenser.
- (3) A booster transformer must be used if multilinked dispensers are connected to a PC running with Reporter software. See Reporter network diagram included in this manual.

PC NETWORK CABLE INSTALLATION

Connecting the Knight-Trak II dispenser network to an on-site PC requires plugging-in the network cable to the jack on the POB (Pump Output Board) and connecting other end to a wall-mount booster transformer and RM-6000. Please see diagram included in this manual for details. For laptop computers, connect the RM-6000 to the female jack on the LFP.

remote location. See The Reporter Dispenser Network diagram (included in this manual) for more information on connecting modems to the network. Please refer to the RM-6000 or WinReporter instruction manual for actual setup of the remote modem. **A dedicated phone line must be installed and connected to the on-site modem.**

NOTE: For installations that require telephone modem *and* on-site PC access, contact the sales office

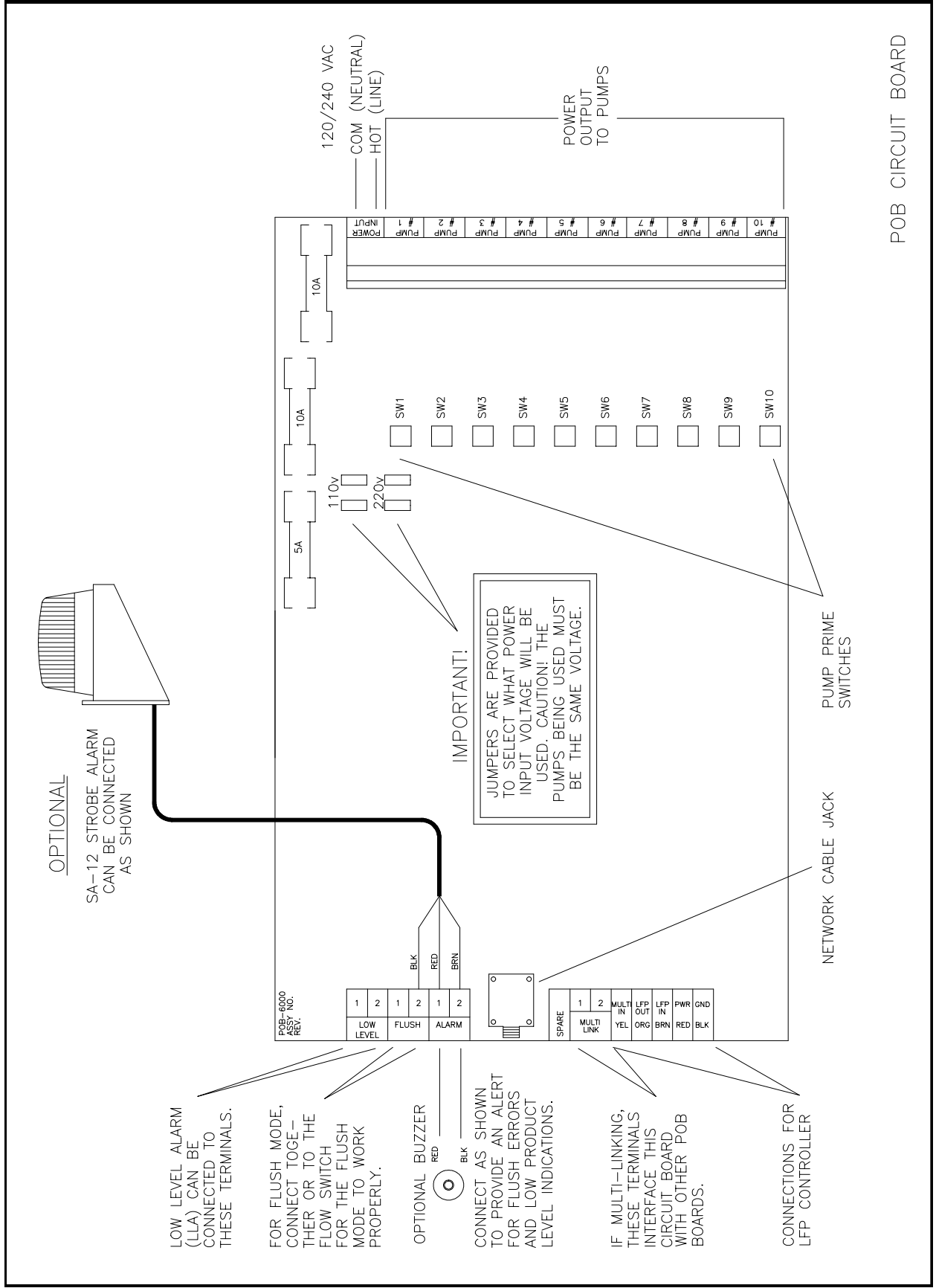
REPORTER - PC/MODEM INSTALLATION

Reporter Software features the ability to access dispensers from a remote location via telephone modems. A Hayes Acura 336 modem can be used along with a dedicated RM-6000 Reporter Module set in modem mode. Contact Knight Technical Services 1-800-241-7789 or 1-800-854-3764 for assistance. An RM-6000 Reporter Modem Cable (P/N 0300952) is required to access dispensers from a

for details on special "Y" network cable. Separate RM-6000's are required for the PC and modem (see diagram).

SET-UP AND OPERATION

- (1) Measure the distances from chemical supply container to pump housing and from pump housing to injection point inside the washmachine.
- (2) Insert one end of a suction tube into the left side of the squeeze tube in the leftmost peristaltic pump.
- (3) Cut the suction tube to length and insert other end into supply container using PVC pipe as a support.
- (4) Insert one end of the discharge tubing into the right side of the squeeze tube on each peristaltic pump.
- (5) If running pump outputs directly to the washer, form an antisiphon loop (with the loop pointing "down") with the other end of the discharge tubing and insert the end into the supply pocket of the machine.
- (6) If running a chemical flushing system, refer to the instructions provided with the system. For flush mode to work correctly, the flush terminals on the POB must be connected together with a jumper, or to a flow sensor. If this is not done, a flush error will result and the system will be disabled. To reset the system, push the reset button on the lfp.
- (7) Connect the 115 VAC or 230 VAC supply voltage to the system.
- (8) Program the system using the LFP. Detailed instructions regarding the programming of the system are located in the LFP Programming Manual.
- (9) For accuracy, when autocalibrating or testing flow rates, always measure chemicals at the washer. Product viscosity and tubing lengths will have a effect on the flow rates.
- (10) Operate the washer and inspect for proper function. If using auto formula select, ensure that correct formulas are chosen. Otherwise, use the FORMULA (up and down) buttons on the LFP to choose formulas. You will then be able to verify proper formula operation of the Knight-Trak II system.



POB CIRCUIT BOARD

OPTIONAL

SA-12 STROBE ALARM
CAN BE CONNECTED
AS SHOWN

LOW LEVEL ALARM (LLA) CAN BE CONNECTED TO THESE TERMINALS.

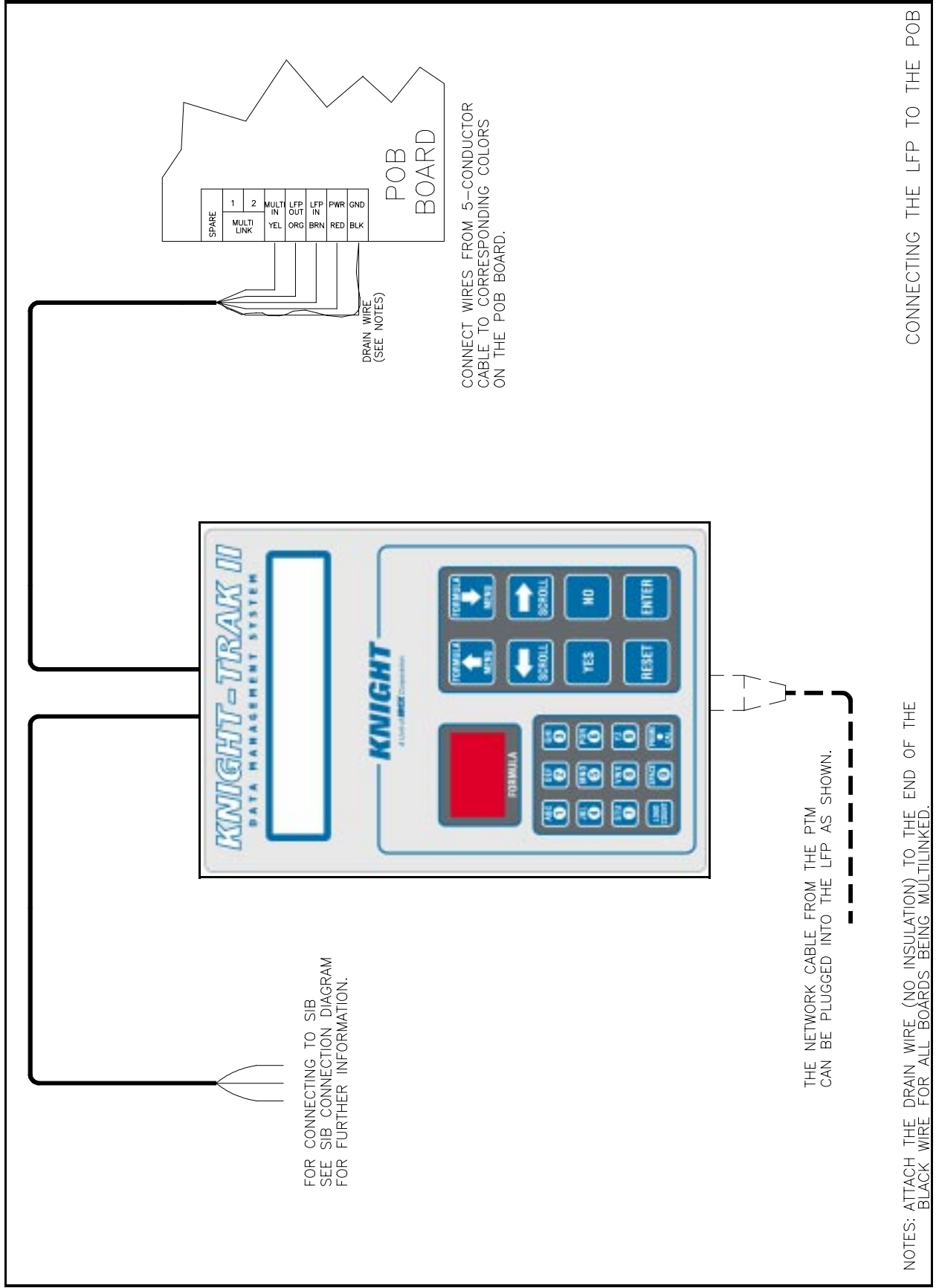
FOR FLUSH MODE, CONNECT TOGETHER OR TO THE FLOW SWITCH FOR THE FLUSH MODE TO WORK PROPERLY.

OPTIONAL BUZZER

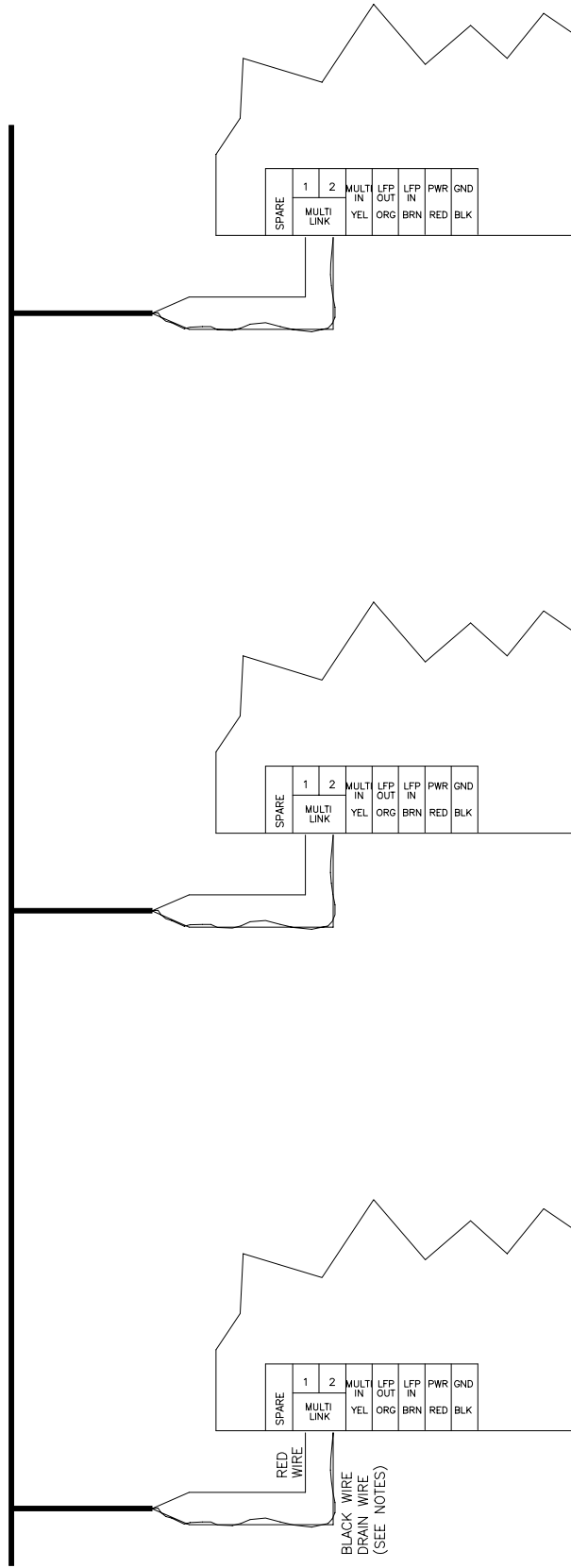
CONNECT AS SHOWN TO PROVIDE AN ALERT FOR FLUSH ERRORS AND LOW PRODUCT LEVEL INDICATIONS.

IF MULTI-LINKING, THESE TERMINALS INTERFACE THIS CIRCUIT BOARD WITH OTHER POB BOARDS.

CONNECTIONS FOR LFP CONTROLLER



MULTILINKING IS A WAY TO CONNECT ALL DISPENSERS TOGETHER SO YOU CAN "TALK" TO THEM ALL FROM ONE LOCATION.



TYPICAL VIEW OF CORNER OF POB CIRCUIT BOARD.

IMPORTANT: BE SURE THE BLACK AND RED WIRES DO NOT GET CROSSED!

NOTES: ATTACH THE DRAIN WIRE (NO INSULATION) TO THE END OF THE BLACK WIRE FOR ALL BOARDS BEING MULTILINKED

MULTILINKING POB'S

THE SIB

The Knight-Trak Signal Input Board (SIB) is an interface module which receives pump activation signals of 14 to 240 Volts from the washmachine and sends them as low-voltage data signals to the Knight-Trak II Dispenser. The module is available in 6, or 10 pump configurations.

The SIB should be installed in the washer near the supply signal outputs.

SIB INSTALLATION

- (1) Inspect the wiring diagram for the laundry machine (and card reader, if required). They are available from the manufacturer upon request. In addition, you may refer to the Knight Equipment Laundry Interface Manual for connection information.
- (2) Measure the signal voltage between the signal wires and signal common (NOT case ground). This measurement must be taken when the laundry machine is operating and products are being called for.
- (3) BEFORE CONTINUING TO THE NEXT STEP, DISCONNECT ALL ELECTRICAL CONNECTIONS TO THE LAUNDRY MACHINE, CARD READER, AND INJECTOR. VERIFY THIS WITH A VOLTMETER.
- (4) Upon request, Knight Equipment provides a laundry wiring interface manual. Use this, a schematic of the machine, or consult the dealer for proper signal points. The SIB has provisions for “split common” connection (some washmachine's have provisions for separate “wash” and “rinse” commons). See the next page.
- (5) Connect the color coded interface wire (Knight part number #0300058) to the SIB with gray wire nuts. Connect the other end to the Laundry Formula Programmer (LFP) mounted on the front of the machine. Wires must be shielded and maximum wire length is 100 feet. Color-coded markings labeled “SIB” are on both boards. See the next page.
- (6) Housed inside the plastic module is a 1 amp fuse to protect both the SIB and LFP. Consult the factory if the fuse blows.
- (7) The SIB is equipped with signal indicator lights. When a signal of sufficient voltage and current (24-240v) is present the light will activate. This and a voltmeter are the best way to determine if a signal is present from the washer, and the wiring is correct.

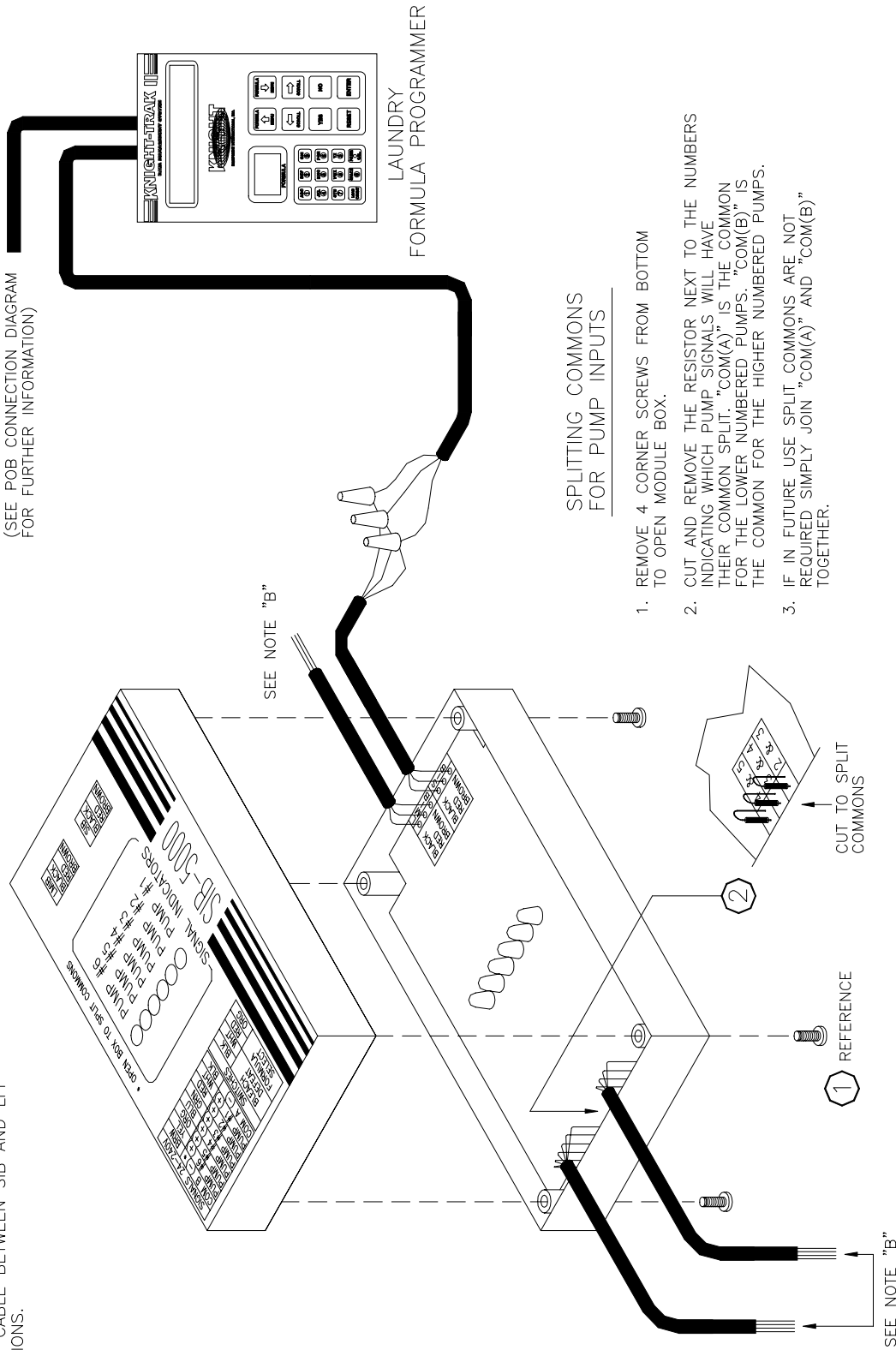
SIB ACCESSORIES

Some washmachines may have been provided with a toggle switch for selecting formulas. Other machines may need the addition of a toggle switch to select formulas. If this is the case, connect a toggle switch to the **NO VOLTAGE - FORM SEL** connections on the SIB. A momentary switch may be added for defeating bleach signals.

Additionally, an optional RSB-1000 remote signal box can be used. The RSB-1000 provides both a formula select switch and a bleach defeat switch to defeat bleach signals from triggering bleach pumps.

SIB-5000 SHOULD BE INSTALLED IN WASHER TO REDUCE INSTALLATION TIME. USE ONLY 3 CONDUCTOR SHIELDED CABLE BETWEEN SIB AND LFP CONNECTIONS.

FOR CONNECTING TO POB (SEE POB CONNECTION DIAGRAM FOR FURTHER INFORMATION)



SPLITTING COMMONS FOR PUMP INPUTS

1. REMOVE 4 CORNER SCREWS FROM BOTTOM TO OPEN MODULE BOX.
2. CUT AND REMOVE THE RESISTOR NEXT TO THE NUMBERS INDICATING WHICH PUMP SIGNALS WILL HAVE THEIR COMMON SPLIT. "COM(A)" IS THE COMMON FOR THE LOWER NUMBERED PUMPS. "COM(B)" IS THE COMMON FOR THE HIGHER NUMBERED PUMPS.
3. IF IN FUTURE USE SPLIT COMMONS ARE NOT REQUIRED SIMPLY JOIN "COM(A)" AND "COM(B)" TOGETHER.

- B. INDIVIDUALLY TAPE OFF ANY UNUSED WIRES
 A. ATTACH DRAIN WIRE (NO INSULATION) TO BLACK WIRE END

CONNECTING THE SIB TO THE LFP

THE LMIB

The Knight-Trak II Laundry Management Input Board (LMIB) is an interface module which receives wash tracking information signals from the washmachine and sends them as low-voltage signals to the Knight-Trak II Dispenser. The module is connected to a Knight-Trak II Signal Input Board (SIB).

THE LMIB IS TO BE INSTALLED BY CERTIFIED ELECTRICAL PROFESSIONALS ONLY. The LMIB accepts the following types of signals:

- **DOOR INTERLOCK** - This signal is used to generate start and finish time stamps in the wash cycle tracking report. Use a door switch, an light, or a track on a card reading machine. The signal only needs to be present at the start of the wash then just before the load count pump through to the end of the wash cycle. After the load count pump has been signalled the next time the door interlock signal is interrupted the finish time will occur. The door interlock signal may be interrupted before the load count pump as often as necessary.
- **STEAM** - This signal is used to determining auxiliary steaming or heating of water. Steam or heat signals are indications of additional time required to wash (many machines halt the normal wash cycle during steaming). The steam valve or relay is the source for the steam signal.
- **DRAIN** - This signal is used to count the number of drains in a given wash cycle. A drain solenoid or a drain track on a card reading machine are typical sources for the drain signal.
- **COLD WATER** - This signal is used to help track total cold water usage. Connect to the cold water fill valve or relay.
- **HOT WATER** - This signal is used to help track total hot water usage. Connect to the hot water fill valve or relay.

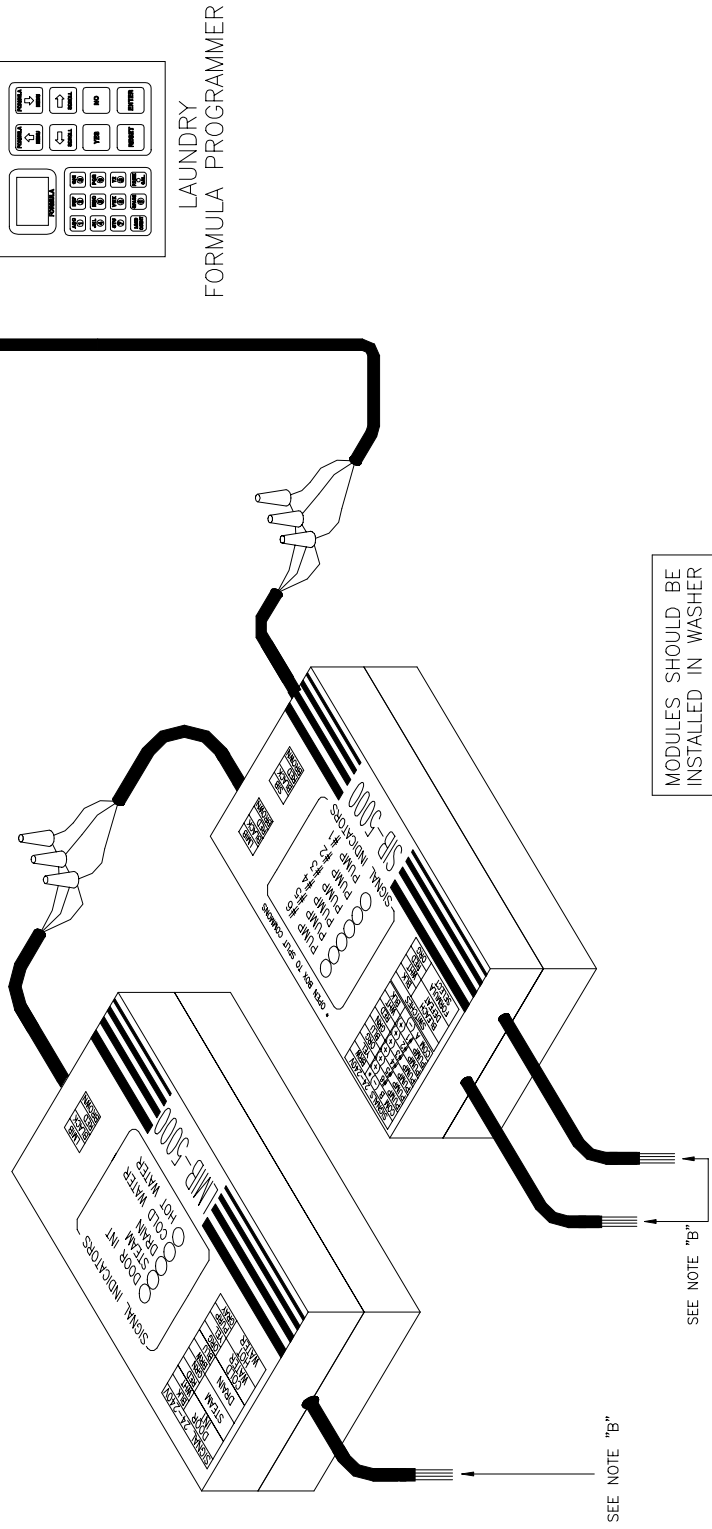
LMIB INSTALLATION

- (1) Inspect the wiring diagram for the laundry machine (and card reader, if required). They are available from the manufacturer upon request. Schematic interpretation skills are a must.
- (2) Measure the signal voltage between the valves, tracks, switches, or relays and signal common (NOT case ground). Operate the washer and ensure the signals are correct and on at the right time.
- (3) **BEFORE CONTINUING TO THE NEXT STEP, DISCONNECT ALL ELECTRICAL CONNECTIONS TO THE LAUNDRY MACHINE, CARD READER, AND INJECTOR. VERIFY THIS WITH A VOLTMETER.**
- (4) Install the LMIB near the SIB and connect wires from the signal sources to the LMIB. The LMIB is equipped with signal indicator lights. When a signal of sufficient voltage and current (12-240v) is present the light will activate.
- (5) Connect the color coded LMIB wire to the LMIB wire on the SIB with grey wire nuts. LMIBs not mounted in a plastic housing have removable barriers for interconnecting. See page 12.
- (6) Housed inside the plastic module is a 1 amp fuse to protect the LMIB, SIB, and KOB. Consult the factory if the fuse blows.

LMIB INPUT CONNECTIONS

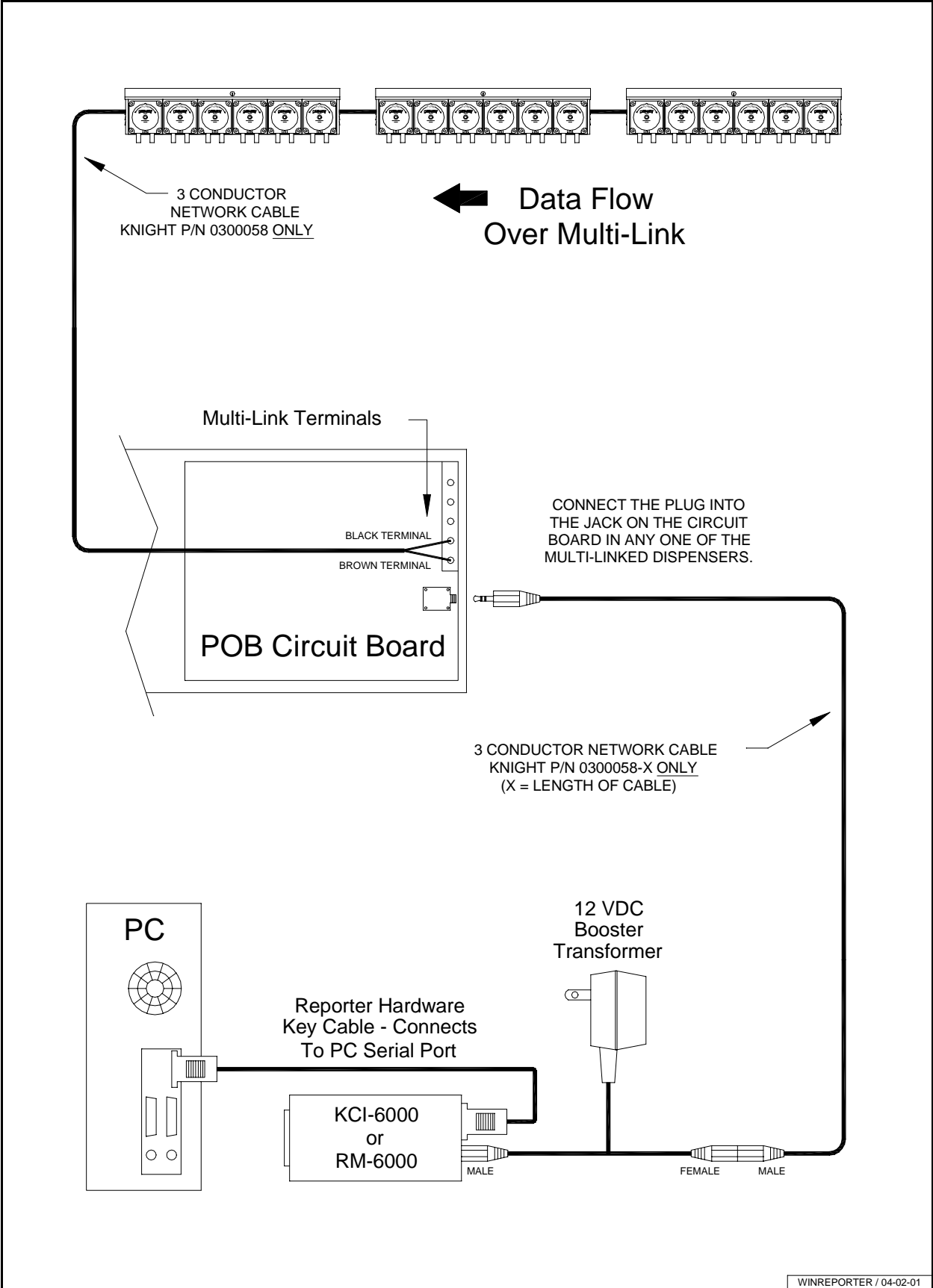
REFER TO LABEL ON LMIB FOR WIRE COLORS. THE FOLLOWING INPUT SIGNALS CAN BE USED: DOOR INTERLOCK, STEAM, DRAIN, COLD WATER, AND HOT WATER.

FOR CONNECTING TO POB (SEE POB CONNECTION DIAGRAM FOR FURTHER INFORMATION)



- B. INDIVIDUALLY TAPE OFF ANY UNUSED WIRES.
- A. ATTACH DRAIN WIRE (NO INSULATION) TO BLACK WIRE END

CONNECTING THE LMIB TO THE SIB



DISCLAIMER

Knight Inc. 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 Inc.

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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