



Little David™ Label Application System

**Microprocessor Labeler Controller
For Labeler Systems**



LSMANUAL-MP Version: A3

Technical Manual

LITTLE DAVID™ LABEL APPLICATION SYSTEM

Labeler Operation

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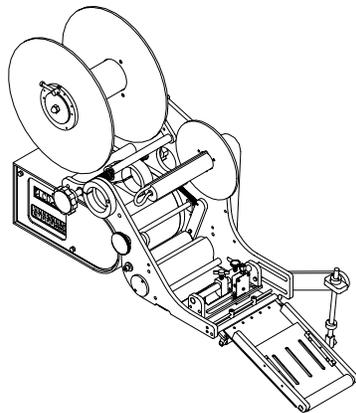
Monday, July 11, 2005

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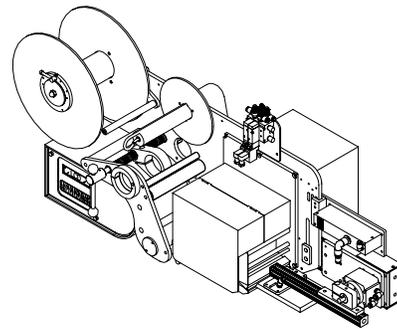
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Introduction

The .06940-MP Labeler Controller is used in current LS500P/LS600 and the .08882-MP is used in the LS800/LS800DT Loveshaw Labelers. They are very similar in form and function with the addition of a terminal strip being the key difference. They take up to nine inputs like Product Detection, Application Home to control up to three applicators and a Stepper Motor. If an OEM Print engine is used, a continuous AC motor is used to take up the excess label stock. An additional cable from the 'EXTERNAL' port of the printer is connected to the 'PRINTER' port of the controller to start the printer and get signals like Label Low, Label Out, Ribbon Low, and Ribbon Out. A RS232/RS422 port is available for communication to the OEM printers or to a PC computer. LABELS is the Windows program which provides PC communications using LBLINK Protocols via the RS232/RS422 port. The Protocols are included in this manual but the LABELS program is a separate package.



LS500



LS800DT

Safety

When the Labeler Controller is exposed, care should be taken if the power plug is plugged into an outlet. Even when the power is off AC power may still touch on the back of the CORCOM. Only experienced maintenance personnel should attempt any repair on electrical equipment.

Static Electricity Precautions

- When Labeler Controller is in use leave the unit plugged into its power outlet; this preserves a ground path for static discharges even when the switch is off. When working on the insides always remove the power plug.
- Touch the printer's bare metal frame often to discharge static electricity from your body.
- Handle the circuit board by the edges only.
- Do not lay the board on a metal surface.
- Make the least possible movements to avoid generating static electricity.
- Avoid wearing wool, nylon, or polyester clothing; they generate static electricity.
- Use static protective tools like grounded solder irons, ESD screwdrivers, and wrist straps.

User safety summary

Terms in manual:

CAUTION: Condition that can result in damage to the product.

WARNING: Condition that can result in personal injury or loss of life.

Power source: Use only the specified power cord and connector. Insure the CORCOM is selected to the correct incoming voltage. Refer to a qualified service technician for changes to the cord or connector.

Operation of product: Avoid electric shock by contacting a qualified service technician to replace fuses inside the product. Do not operate without the covers and panels properly installed. Do not operate in an atmosphere of explosive gases.

Safety instructions: Read all installation instructions carefully before you plug the product into a power source.

Terms on product:

CAUTION: Personal injury hazard exists that may not be apparent. For example, a panel may cover the hazardous area. Also applies to a hazard to property including the product itself.

DANGER: Personal injury hazard exists in the area where you see the sign.

Care of product: Disconnect the power plug by pulling the plug, not the cord. Disconnect the power plug if the power cord or plug is frayed or otherwise damaged, if you spill anything into the case, if product is exposed to any excess moisture, if product is dropped or damaged, if you suspect that the product needs servicing or repair, and whenever you clean the product.

Ground the product: Plug the three-wire power cord (with grounding prong) into grounded AC outlets only. If necessary, contact a licensed electrician to install a properly grounded outlet.

Symbols as marked on product and manual:

WARNING: If the product loses the ground connection, usage of knobs and controls (and other conductive parts) can cause an electrical shock. Electrical products may be hazardous if misused.

WARNING: For your protection, do not defeat any interlocks.



DANGER high voltage:



Protective ground (earth) terminal:



Use caution to avoid personal injury:

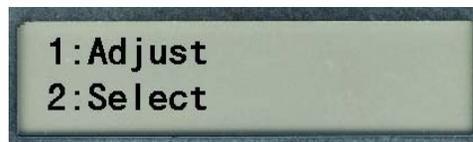


Use caution. Refer to the manual(s) for information:



Using Menu Features

In normal operation, the labeler is simply turned-on and products are moved past its sensor equipment and the labeler responds by applying a label. To adjust system behavior including important labeler parameters, the **Help Menu** must be accessed with the HELP key. The unit then displays a list of numbered features, one of which may be selected by pressing the number or letter next to it. The entire menu can't be seen at once, so use the arrow keys to move through it. It is not necessary to move in this way to an entry, it can be selected any time by pressing its associated number.



HELP shows the menu; CLEAR exits from the menu, and can be used to delete characters in features. To exit the help menu, press ENTER, **HELP**, or CLEAR.

How Help Menu Features Work

Selecting a typical feature will produce a prompt and a number, like *Feature value: 0*. To change the number, use the arrow keys, or press number keys. The system will automatically prevent values too large or small from being entered. When the desired value is set, press ENTER. Many features adjust timing and are set in milliseconds; 1,000 milliseconds equal one second. Several features use a similar arrangement, but only permit 0 or 1 as values, to control an *on/off* or *yes/no* labeler function. 1 is *on* or *yes*, 0 is *off* or *no*. **Record all settings values on the chart in the back of this manual.**

The following text describes each of the features in the help menu by name. The special-function keys on the keyboard have the following uses:

Help Menu Feature 1: Adjust

The most important feature on the help menu is **Adjust**, which allows control of labeler parameters. Selecting the feature produces another menu just like the help menu, which is used in the same way and has the following entries. Note that some or all of these features will vary depending on the selected unit (see **Help Menu Feature 2: Select**) and/or software version. Press the appropriate Number or Letter (use 2nd key and then the key) to select the feature for adjustment.

- Product Delay 1 / 2 controls the time from product detection to start of labeler activity; default setting is 250 milliseconds or ¼ second.
- Apply Solenoid 1 / 2 controls the time to hold the air solenoid ON to apply the label.
- Label Overfeed is the time from label sensor detect until label motor stop. A photoelectric sensor positions the label and stops when the label has moved to the right location. The hardware is deliberately designed so that the sensor detects the label too early so it can be fine tuned with this parameter. This feature is in the Apply Only Modes. Print/Apply and Apply/Print units have this feature in the Printer.
- LLTD Label Delay is the time delay before the label moves.
- Printer Time Out is the time before the printer is expected to be broken. In Print/Apply and Apply/Print modes only.
- Hold-Off controls the minimum time from the end of a labeling cycle to the beginning of the next cycle; this default value is 0.
- Jog Solenoid (Y:1) when set to 1 it applies when jogged and when set to 0 it will label feed only.
- Solenoid Signal (Y:1) enable/disables the wait for stop solenoid signal I9 flag wrap around.
- Web Break (Y:1) enable/disables the web break feature. The out of label relay is set, when label are fed without a label detect for a period of time. CAUTION: It is possible to set the web break value shorter than the label feed time and trigger an error condition.

Help Menu Feature 2: Select

Choosing this menu may simply display *Not Implemented*. If the DIP Switch S2, which is explained in the Controller Hardware section, is set to a NON-UNIT selection a menu will be provided. Scroll thru the selections using the arrow key. Selection 9 will give you more selections.

When Select provides a selection of labeler, type the number of the labeler required. A menu 9 gives more labeler selections.

Help Menu Feature 3: Language

The feature determines the language in which the Label Controller menus and other informative screens will be displayed. Pressing the arrow keys will “scroll” to show more of it. Then press the desired number.

Allows selection 1. ENG, 2. ITAL, 3. DEUT, 4. FRAN, 5. ESPA, 6. DUTC, 7. PORT

Available languages are English, Italian, German, French, Spanish, Dutch and Portuguese.

Help Menu Feature 4: Net

Some labeler units can operate within a Loveshaw Corp network, allowing control of multiple units from a central computer. In such networks each unit must have a unique identifying number, which can be set in this feature.

This feature is disabled if set to zero. If set to 1 thru 32 a special network using RS-422 may be possible. This selection changes from the normal RS-232 point to point communications to a network Board. The optional LABELS program is required. LABELS is a Windows program that runs on PC computers.

Help Menu Feature 5: Speed

This feature sets the feed rate of the label, in inches per minute, to match the conveyor speed. If the feed rate is too slow, the label might tear or drag/pull off the box. If the feed rate is set too fast, the label will crinkle.

Print and Apply dispense speeds are controlled by the printer that has been installed (consult your printer manual for specifics).



Help Menu Feature 6: Unlock code

The default unlock code 5863434 can be altered with this feature. Note that once it is altered if the new code is forgotten Loveshaw Corp cannot retrieve it and the unit will have to be cleared for features to be accessible again (see 666 Memory Clear procedure on next page).

Help Menu Feature 7: Other

This menu contains factory setting specific to your application. **Do not alter the settings in this menu unless directed by Loveshaw Corp.**

Other Control Functions

666 Memory Clear



To clear all memory in the labeler — if for instance, the unlock code has been altered and then lost — turn the unit off, press and hold the number 6, turn the unit on, wait about a second, release the 6, then press 6, 6, followed by CLEAR, HELP, and the down arrow key ↓; if any error is made in pressing the keys, the memory clear does not occur.

Jog

It is often desirable to cause the labeler hardware to execute a cycle without actual product processing; this is called a Jog. The 2ND key starts a jog cycle.

Normal Operation; Memory Clear Failures

The labeler will normally display the *READY* legend at power-on. When the labeler receives a product signal or the Jog control is used (see above) label cycling will occur and informative messages will appear describing the stages of the cycle.

If, however, memory is clear and parameters have not been adjusted; i.e. if 0 instead of 1 is pressed at power-on in answer to the *Memory clear; adjust parameters?* Question, then subsequently whenever the unit should start a cycle, it will instead produce the memory clear prompt all over again. It is easy to exit this prompt without actually adjusting parameters. Pressing 1 followed by ENTER will leave parameters in a nominal default state, and during installation could cause equipment malfunction.

Controller Hardware

The Label Controller is a 7" Width 6½" Depth 5½" Height enclosure with a twist front piece. When installed it has a metal cover that protects it and the motor. This controller includes a 2 by 20 character display and 2 x 8 button keypad for data entry. This controller interfaces the Print Trigger Devices, solenoids, and other sensors to signal the Stepper Motor or Printer to apply labels to the product.



Overview

Parts include:

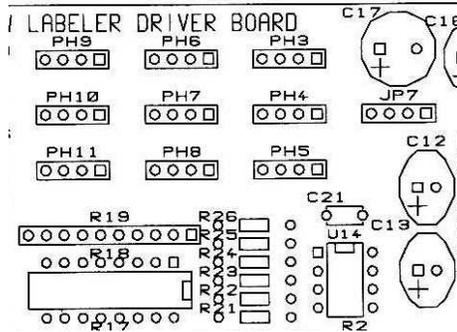
- a) Labeler CPU Controller Board — is the CPU of the package it provides the user with memory and control to the other subsystems.
- b) Driver Board — connects to the controller board to provided inputs from sensors and outputs for the Motor AC Board/Stepper Board.
- c) The Motor AC and Stepper Board include the voltage power supplies, relays and motor/solenoid controls. These boards provide LED for a visual indication of the motor and solenoids. Two types of motors are available.

The AC stepper motor is used with the Motor AC board and DC stepper motor is used with the Stepper board. The power supply on this board has two fuses for the DC circuitry. A 3Amp fuse for the logic and an 8Amp for the stepper motor/relays (depending on the choice of motor the current draw is 3Amp to 7Amp).

- d) A Keypad and LCD screen provide user-friendly interface. Both of these items are on a twistable plate.
- e) A power cord is plugged into a CORCOM. The CORCOM is selectable for 110/220. The AC Stepper Motor is voltage specific either 110 or 220/240 VAC. The Stepper Board uses DC Stepper Motor and can allow for any voltage settings. Two 3Amp fuses are used in the CORCOM.
- f) An RS-232 port is standard but included is a jumper change to RS-422 network.



External Inputs



- JP7 — Label Sensor Analog
- PH3 — Label Sensor Digital
- PH4 — Motor Lock-Out
- PH5 — Stop Solenoid Applicator Home
- PH6 — Inhibit Solenoid
- PH7 — Product Sensor
- PH9__Low Label Input

| | Product Sensor | | Label Sensor | | |
|-----------|----------------|-----|--------------|-----|---|
| | 9 Pin D | JP7 | 9 Pin D | PH7 | |
| +12 VDC | 6 | 1 | +12VDC | 6 | 1 |
| signal NO | 3 | 2 | signal | 3 | 2 |
| signal NC | 2 | 3 | output | 2 | 3 |
| ground | 5 | 4 | ground | 5 | 4 |

To use switch from the standard Analog sensor to the Digital with built-in amplifier remove U14 and use PH3.

The 3 tower Stack Indicator Lamp Port

Male 9D connector

- 3 Red Alarm
- 4 Yellow Alarm
- 5 Green Alarm
- 8 +12V DC

Inside controller

- 3 yellow wire RED label out, Web Break, printer error
- 4 black wire YELLOW label low, ribbon Low
- 5 red wire GREEN ok
- 8 brown wire +12VDC



RELAY connector

- | | |
|------------------|-------------------------------------------------|
| 1 (No Wire) | +12V but maybe +21V |
| 2 ----- | |
| 3 (White pin 9) | |
| 4 (Black pin 4) | label low, ribbon Low (AMBER LIGHT) |
| 5 ----- | |
| 6 (Red pin 5) | OK (GREEN LIGHT) |
| 7 (Yellow pin 3) | label out, Web Break, printer error (RED LIGHT) |
| 8 (White) | Ground |

NOTE: WebBreak 0(Y:1) – Software setting for enable/disable of web break feature based on time.

When active pin 3, 4, 5 are pulled to ground, this will turn ON a 12 volt light or 12 volt relay.



Interconnect Cables Between The PC And The Label Controllers.

Default setup is RS-232. RS-232 connection is a point-to-point connection where only one COM port may be connected to one Label Controller. A maximum cable length is 300 feet using Braided Shield Extended Quite Cable. The required data format is 8 data bits, no parity, with 1 stop bit, 9600 baud.

| DB9 | DB25 | Label Controller DB9 |
|---------|---------|----------------------|
| 2 (RXD) | 3 (TXD) | 2 (TX) |
| 3 (TXD) | 2 (RXD) | 3 (RX) |
| 5 (GND) | 7 (GND) | 5 (Ground) |
| Shield | Shield | Shield |

Some RS-232 boards have different pin-outs, review hardware provided documentation. If RS-232 is used only one unit can be connected to a Windows computer using multitasking. Only one Label Controller can be connected to one RS-232 system at one time. If more units have to be connected or if the cable length is longer than 300 feet, RS-422 must be used. RS-422 allows for up to 32 Label Controller units to be connected to each COM port.

RS-422 connection is a multi drop connection. The PC is the master and the Label Controllers are the slaves to it. A maximum cable length is 1000 feet.

| From Master (PC) | to Slave (Labeler) |
|-------------------------------|-------------------------------------------|
| TXD(PC) (H or +) to RXD | (H or +) TXD(PC) (L or -) to RXD (L or -) |
| RXD(PC) (H or +) to TXD | (H or +) RXD(PC) (L or -) to TXD (L or -) |
| Ground(PC) to Ground(Labeler) | Shield(PC) to Shield(Labeler) |

All units have RS-422; the second Interface connector is used to loop more than one controller. Switching from RS-232 to RS-422 requires a cable and jumper change. RS-232 connection is on the right internal driver board RS2 labeled RS-232. On the Left is RS7 labeled RS-422. Change this ribbon cable connection. It is selected by 3rd pin of RS6 from the two right pins to the two left pins. The last unit must only have pull up resistors on it therefore remove RS4 and RS5 jumper if not the last unit. The cable is specified below.

| Pin | Signal Name | Type Labeler Controller Signals |
|-----|-------------|---------------------------------|
| 1 | RS485 TX- | Output |
| 2 | RS485 RX+ | Input |
| 3 | RS485 RX- | Input |
| 5 | DC Ground | Ground |
| 9 | RS485 TX+ | Output |

Each RS485 board has different pin-outs, review the documentation provided by the board manufacturer. The provided RS485 board may or may not require terminator resistor or jumper change. Each Label Controller unit to next Label Controller unit is:

- 1 — 1 (TX-) 2 — 2 (RX+)
- 3 — 3 (RX-) 5 — 5 (Grounds)
- 9 — 9 (TX+) Shield to Shield

These Label Controller units are slaved to the PC master computer and have all their signals connected to each other.

Miscellaneous Notes

Each unit must have a unique **Net #**. To give the unit a net ID number see **Help Menu** in the preceding chapter. To setup PC computer see Loveshaw Corp *Net RS-232 & RS-485 Setup for Label Controller HR & SI Systems*.



DIP SWITCH S2

| | | | | | | |
|-------------------------------|------------------------------|-----------------------------|----------------------------------|------------------------------------|------------------------------------------------|-------------------------------|
| APPLY ONLY 0 (1) | APPLY/PRINT (S) 1 (2) | PASSIVE APPL 2 (3) | DUAL APPL (S) (PH11) 3 (4) | CORNER WRAP (S) (PH11) 4 (5) | TAMP & BLOW COND. END CYCLE 5 (6) (PH10) | PASSIVEPRINT 6 (7) |
| | | | | | | |
| TAMP & BLOW (S) 7 (8) | DUAL (Z) 8 (91) | DUAL NO PRINT 9 (92) | SERIAL APPL (Z) 10 (93) | SERIAL DUAL (Z) 11 (94) | PRINT/APPLY (S) 12 (95) | IR AP/PR (Z) 13 (96) |
| | | | | | | |
| IR AO 14 (97) | DUAL DISP/A AO 15 (98) | CORNER (Z) 16 (991) | APPLY/PRINT (Z) 17 (992) | PRINT/APPLY (Z) 18 (993) | IRAPPLY/PRINT (S) 19 (994) | IRPRINT/APPLY (S) 20 (995) |
| | | | | | | |
| IRPRINT/APPLY (Z) 21 (996) | SERIAL APPLY (S) 22 (997) | SERIAL DUAL (S) 23 (998) | DUAL A/DISP AO 24 (9991) | TRIPLE (Z) 25 (9992) | TRIPLE (S) 26 (9993) | TAMP & BLOW (Z) 27 (9994) |
| | | | | | | |

ANY OTHER SWITCH SETTING GIVES SELECTION MENU
(Z) Zebra (S) Sato

Dip Setting 0 Apply Only (1)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 4 LabelOverfeed 10(0-10000) – time from label sensor detect until label motor stop.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 WebBreak 0(Y:1) – setting for enable/disable of web break feature.
- 8 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around.
- 9 Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 1 Apply / Print(Sato) (2)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time stopping the printing of a label.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around
- 8 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- 9 Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 2 Passive Applicator (3)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 LabelOverfeed 10(0-10000) – time from label sensor detect until label motor stop.
- 3 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 4 WebBreak 0(Y:1) – setting for enable/disable of web break feature.
- 5 Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 3 Dual Applicator (Sato) (4)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 8 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 9 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- A Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 4 Corner Wrap (Sato Print/Apply) (5)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- 6 Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 5 Tamp and Blow (6)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 4 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 5 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 6 WebBreak 0(Y:1) – setting for enable/disable of web break feature.

Dip Setting 6 Passive Print (7)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 LLTD_LabelDelay 0(0-10000) – time stopping the printing of a label.
- 3 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 4 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- 5 Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 7 Tamp and Blow Print (Sato) (8)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time delay of before label moves.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around
- 8 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.

Dip Setting 8 Dual (Zebra) (91)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.
- 8 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 9 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- A Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 9 Dual No Print (92)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.
- 8 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 9 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- A Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 10 Serial Appl(Zebra) (93)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time delay of before label moves.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around
- 8 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- 9 Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 11 Serial Dual (Zebra) (94)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.
- 8 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 9 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- A Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 12 Print / Apply(Sato) (95)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time stopping the printing of a label.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around
- 8 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- 9 Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 13 Irregular Apply / Print (Zebra) (96)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ProductDelay2 250(0-10000) – second delay if photocell PH8 is tripped for height detection.
- 3 ApplSolenoid 5000(0-20000) – time to hold air on solenoid which applies the label.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 6 PrinterDelay 0(0-10000) – delays the start of printing.
- 7 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 8 ContactDwell 0(0-500)- delays the Applicator return cycle after pressure sensor.
- 9 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- A Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 14 Irregular Apply Only (97)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ProductDelay2 250(0-10000) – second delay if photocell PH8 is tripped for height detection.
- 3 ApplSolenoid 5000(0-20000) – time to hold air on solenoid which applies the label.
- 4 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 5 PrinterDelay 0(0-10000) – delays the start of printing.
- 6 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 7 WebBreak 0(Y:1) – setting for enable/disable of web break feature.
- 8 LabelOverfeed 10(0-10000) – time from label sensor detect until label motor stop.
- 9 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- A ContactDwell 0(0-500)- delays the Applicator return cycle after pressure sensor.
- B Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 15 Dual Applicator – Dispense/Apply Apply Only (98)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 WebBreak 0(Y:1) – setting for enable/disable of web break feature.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.
- 8 LabelOverfeed 10(0-10000) – time from label sensor detect until label motor stop.
- 9 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- A Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 16 Corner Wrap (Zebra Print/Apply) (991)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- 6 Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 17 Apply / Print (Zebra) (992)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time stopping the printing of a label.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around
- 8 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- 9 Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 18 Print / Apply (Zebra) (993)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time stopping the printing of a label.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around
- 8 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- 9 Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 19 Irregular Apply / Print (Sato) (994)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
 - 2 ProductDelay2 250(0-10000) – second delay if photocell PH8 is tripped for height detection.
 - 3 ApplSolenoid 5000(0-20000) – time to hold air on solenoid which applies the label.
 - 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
 - 5 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
 - 6 PrinterDelay 0(0-10000) – delays the start of printing.
 - 7 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
 - 8 ContactDwell 0(0-500)- delays the Applicator return cycle after pressure sensor.
 - 9 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- A Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 20 Irregular Print/Apply (Sato) (995)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
 - 2 ProductDelay2 250(0-10000) – second delay if photocell PH8 is tripped for height detection.
 - 3 ApplSolenoid 5000(0-20000) – time to hold air on solenoid which applies the label.
 - 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
 - 5 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
 - 6 PrinterDelay 0(0-10000) – delays the start of printing.
 - 7 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
 - 8 ALTD 0(0-10000) – Applicator Lockout Time Delay -Delays the applicator after End of Print.
 - 9 ContactDwell 0(0-500)- delays the Applicator return cycle after pressure sensor.
- A TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
B Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 21 Irregular Print/Apply (Zebra) (996)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
 - 2 ProductDelay2 250(0-10000) – second delay if photocell PH8 is tripped for height detection.
 - 3 ApplSolenoid 5000(0-20000) – time to hold air on solenoid which applies the label.
 - 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
 - 5 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
 - 6 PrinterDelay 0(0-10000) – delays the start of printing.
 - 7 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
 - 8 ALTD 0(0-10000) – Applicator Lockout Time Delay -Delays the applicator after End of Print.
 - 9 ContactDwell 0(0-500)- delays the Applicator return cycle after pressure sensor.
- A TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
B Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 22 Serial Appl(Sato) (997)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time delay of before label moves.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around
- 8 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- 9 Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 23 Serial Dual (Sato) (998)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.
- 8 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 9 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- A Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 24 Dual Applicator – Apply/Dispense Apply Only (9991)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-9000) – time to hold air on solenoid which applies the label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 WebBreak 0(Y:1) – setting for enable/disable of web break feature.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 LLTD_LabelDelay 0(0-10000) – time delay of before label moves.
- 8 LabelOverfeed 10(0-10000) – time from label sensor detect until label motor stop.
- 9 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- A Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 25 Triple Zebra – Dual Applicator Apply Print (9992)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 8 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 9 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- A Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 26 Triple Sato – Dual Applicator Apply Print (9993)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of first label activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the first label.
- 3 ProductDelay2 250(0-10000) – delay start of second label activity.
- 4 ApplSolenoid2 200(0-20000) – time to hold air on solenoid which applies the second label.
- 5 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 LLTD_LabelDelay 250(0-10000) – time delay of before label moves.
- 8 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 9 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.
- A Label Clear 0(0-10000) - blow the label off at the end of application.

Dip Setting 27 Tamp and Blow Print (Zebra) (9994)

- 1 ProductDelay 250(0-10000) – delay after product detection to start of labeler activity.
- 2 ApplSolenoid 200(0-20000) – time to hold air on solenoid which applies the label.
- 3 LLTD_LabelDelay 100(0-10000) – time delay of before label moves.
- 4 PrintTimeOut 3000(0-60000) – time before the printer is expected to be broken.
- 5 HoldOff 0(0-20000) – minimum time from the end of a labeling cycle to the beginning of the next cycle.
- 6 JogSolenoid 0(Y:1) – setting for enable/disable of the solenoid during a Jog.
- 7 SolenoidSignal 0(Y:1) – wait for stop solenoid signal I9 flag wrap around
- 8 TimeoutReset(Y:1) – if printer timeout occurs either it will continue the cycle or reset aborting the cycle.

1 Adjust

- 2 Select – allows switching unit type when switch is set.
- 3 Language – select menus in different languages.
- 4 Net # - RS422/RS485 ID number used for network communication.
- 5 Speed – stepper motor run speed in inches per minute.
- 6 Unlock Code – allows the access code to be changed.
- 7 Other

- 1 Continuous Label – when ON:1 provides for continuous application of labels as long product detect is triggered.
- 2 Encoder Delay – same as continuous label except encoder instead of product delay used to start next cycle.
- 3 Feet/minute – converts from inches per minute.
- 4 Gear Ratio – ratio of the size of the motor gear to the drive gear.
- 5 Diameter – diameter of the motor gear.

- 8 Save Area – allow setting to be save, typically 0-63 areas.

CONNECTORS on Piggy Back Board VLA-002

Label Sensor is the top connector on back chassis of Labeler Controller and connects to **PH3**.

Motor Lock Out connects to **PH4**.

Applicator Home signal use typically in dual application is connected to **PH5**.

Inhibit signal **PH6** is used on a Touch & Go Labeler which retracts the applicator when sensor trips on contact with box.

Product Sensor is the second from top connector on back of Labeler Controller and connected to **PH7**.

ProductDelay2 is in EPROM LBQB5 or greater for Irregular Labelers using “Height Detection”. Customer must purchase an additional photocell connected to **PH8**. This photocell must be positioned slightly before the product detector at the proper height to determine it is a larger box. This second ProductDelay2 will be used when a box trips both the new photocell and the product detector.

PH8 is used to Stop Solenoid is a software special. Inhibit signal **PH6** also does a similar application and is in standard software. It should be used instead **PH8**.

Label Low Sensor is an option which plug into the Labeler Controller and connects to **PH9**. When use this input will light an optional Low Light Tower which is a relay contact.

Blow Sensor **PH10** and provide a signal when to blow the label on the product at the end of the applicator cycle.

End of Cycle Photocell to **PH11** is used to insure that the box clears from the labeler before another cycle is started.

To select the letter, the **2nd** key must be pressed before pressing the associated number key.

(NOTE: All selections may only be available on latest version software and special hardware may be need for options to function.)



Troubleshooting

If the controller is not performing as expected, one of the first things is to do a 66 Clear Help Down Arrow Key. This clears the memory and resets the controller to normal default conditions. When the DIP switch S2 is selected to a specific labeler the correct labeler is also set. Then set the correct speed for your application.

66 Clear Memory

To clear all memory in the labeler — if for instance, the unlock code has been altered and then lost — turn the unit off, press and hold the number 6, turn the unit on, wait about a second, release the 6, then press 6, 6, followed by CLEAR, HELP, and the down arrow key ↓; if any error is made in pressing the keys, the memory clear does not occur.

Motor Grinds. If the motor grinds or makes noise, set the speed lower, until this noise disappears. This can sometimes be caused by very heavy or long labels. Adding a bearing driven label let-off will correct some of these problems. Putting Teflon on the peel blade also removes some friction. Check wires for motor both at the controller and in the motor itself.

Check the menu selections and make sure they are correct for your application.

Check fuses both the 8 Amp and 3 Amp fuses and the two 3 Amp fuse in the CORCOM. Check and secure the interconnect cable JP1 Stepper Board to JP2 Piggy Back Board.

Adjust R20 for label sensitivity.

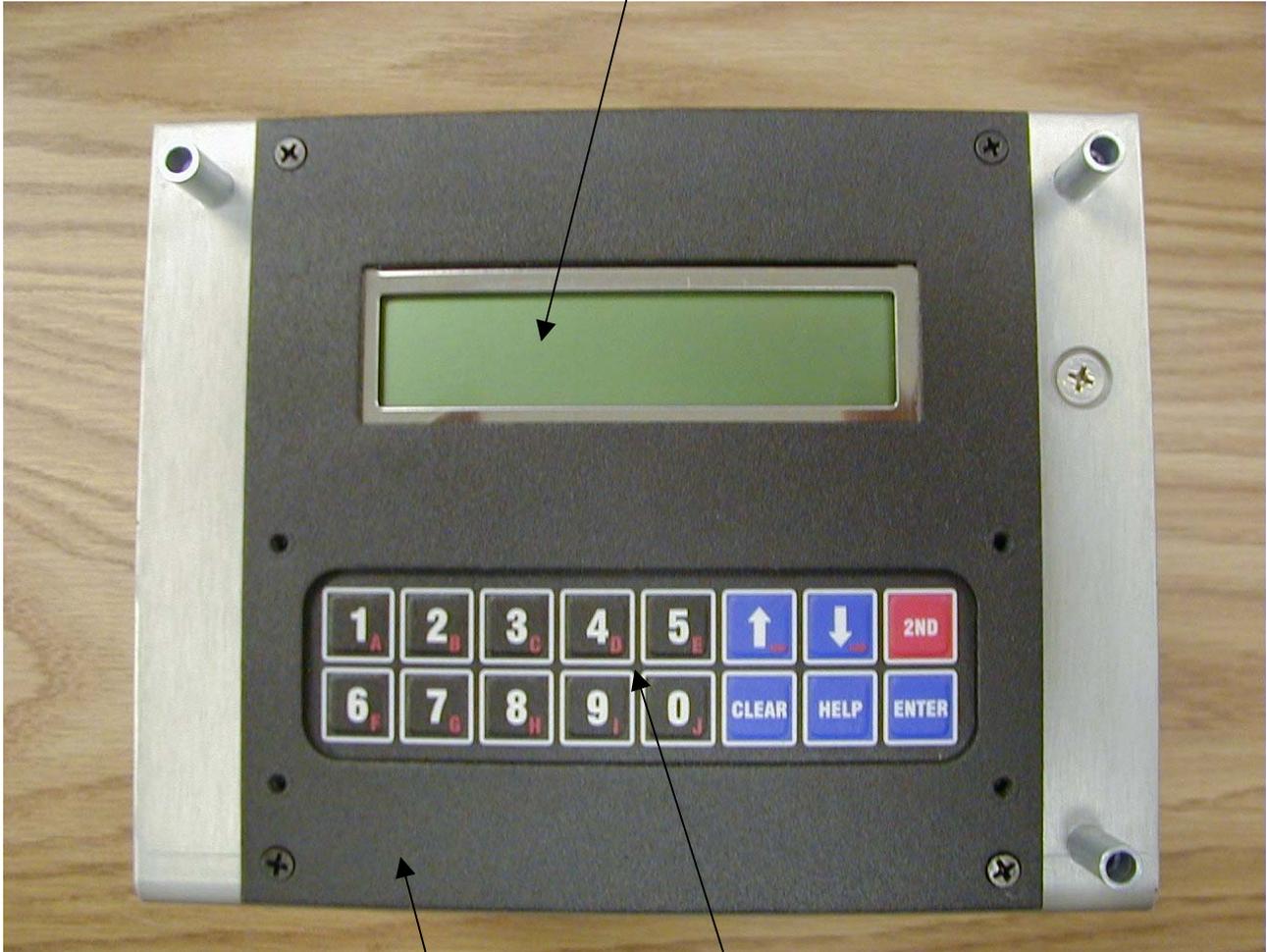
If the controller is set to 220 and is in a 110 supply, the solenoid will not work but the controller will seem OK.

Check the MOVs on the transformer if they are discolored or burnt the CORCOM fuse may blow. This is caused by connecting to the wrong AC supply or that the supply is not terminated correctly.

If the save areas or parameters or label selections are not being saved check the battery and insure that it is over 3 volts if it is not replace it, its part number is CPMD75-009-0.

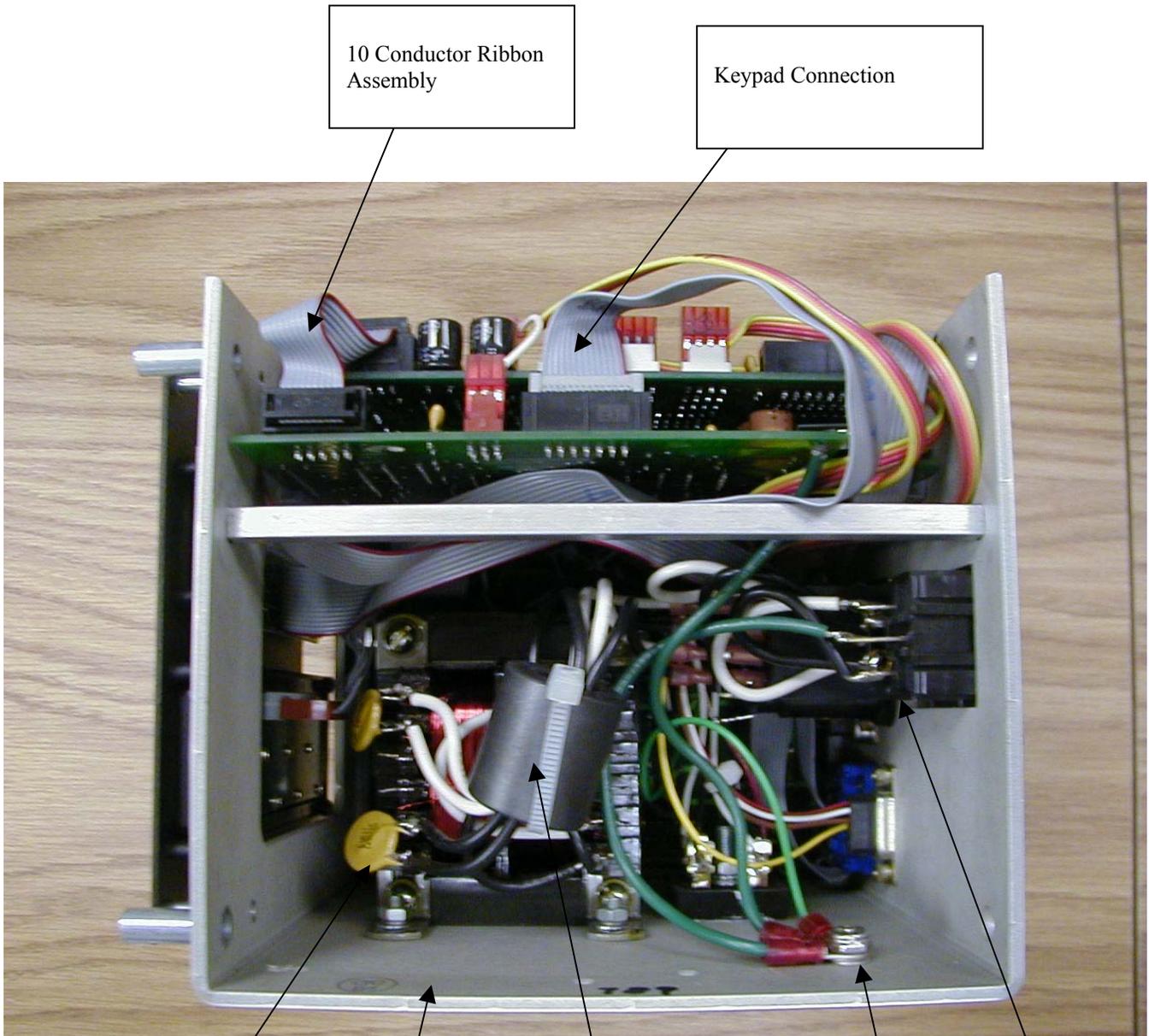
To check for voltages first insure that 12 Volt DC LED indicator L8 is lit on the Stepper Board, then insure on the Piggy Back Board that the LED indicator D1 +5 VDC, D2 +12 VDC, D3 +24 VDC. If LED L8 is lit but the others are not check the 12 conductor ribbon connector at JP2 on the Piggy Back Board to JP1 on the Stepper Board.

LCD Display Assembly
Part Number E9042-031



Keypad Assembly
Part Number E9042-030

Face Plate Overlay



10 Conductor Ribbon Assembly

Keypad Connection

MOVs


Ferrite Bead


Common Ground

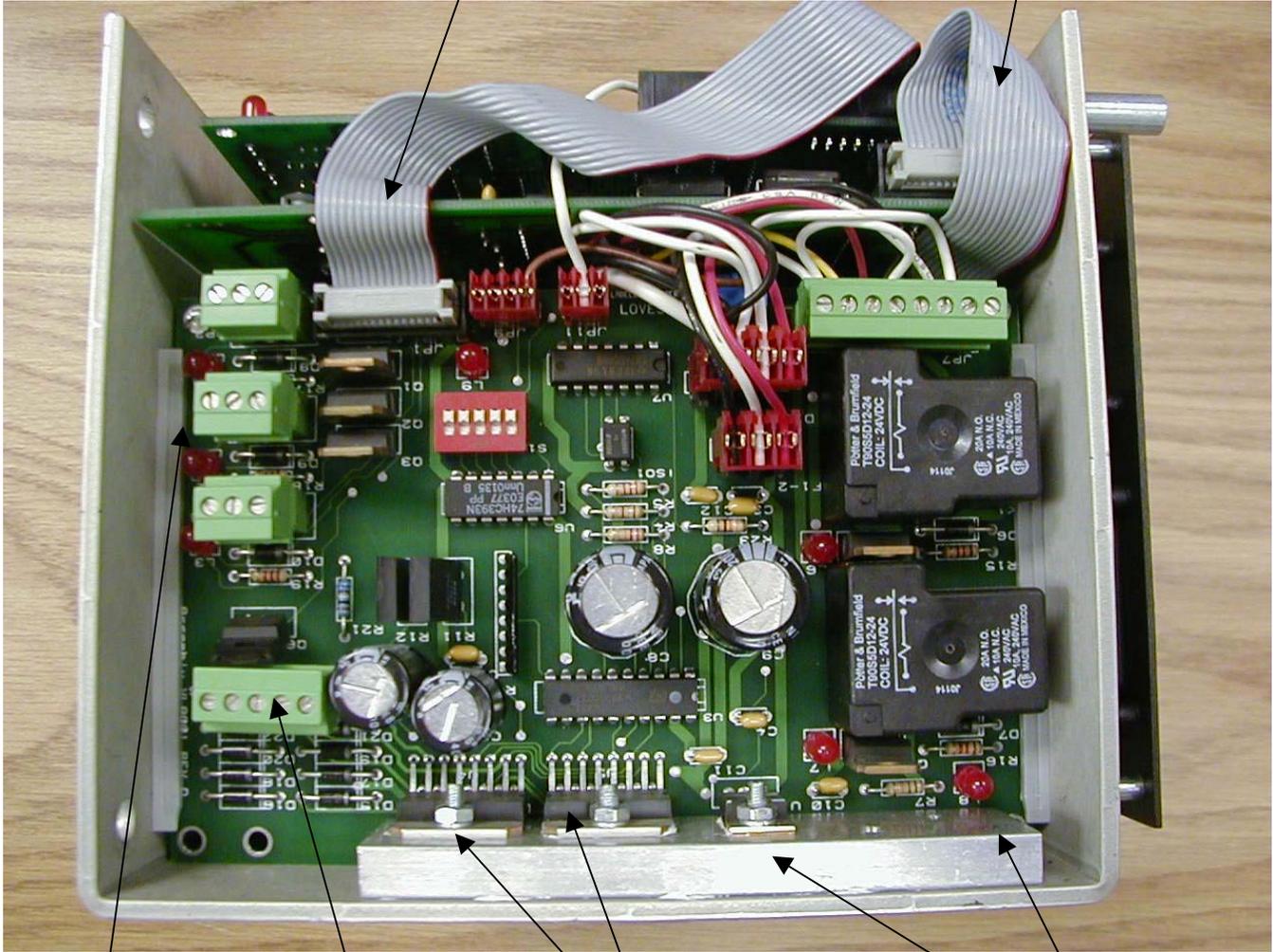

CORCOM
 Danger
 Exposed AC



Terminal Strip
 euro E6000-001/usa E6000-002
 2.5uf 300VAC Capacitor 06098
 (.08882-MP ONLY)

14 Conductor Ribbon Assembly

LCD Connection

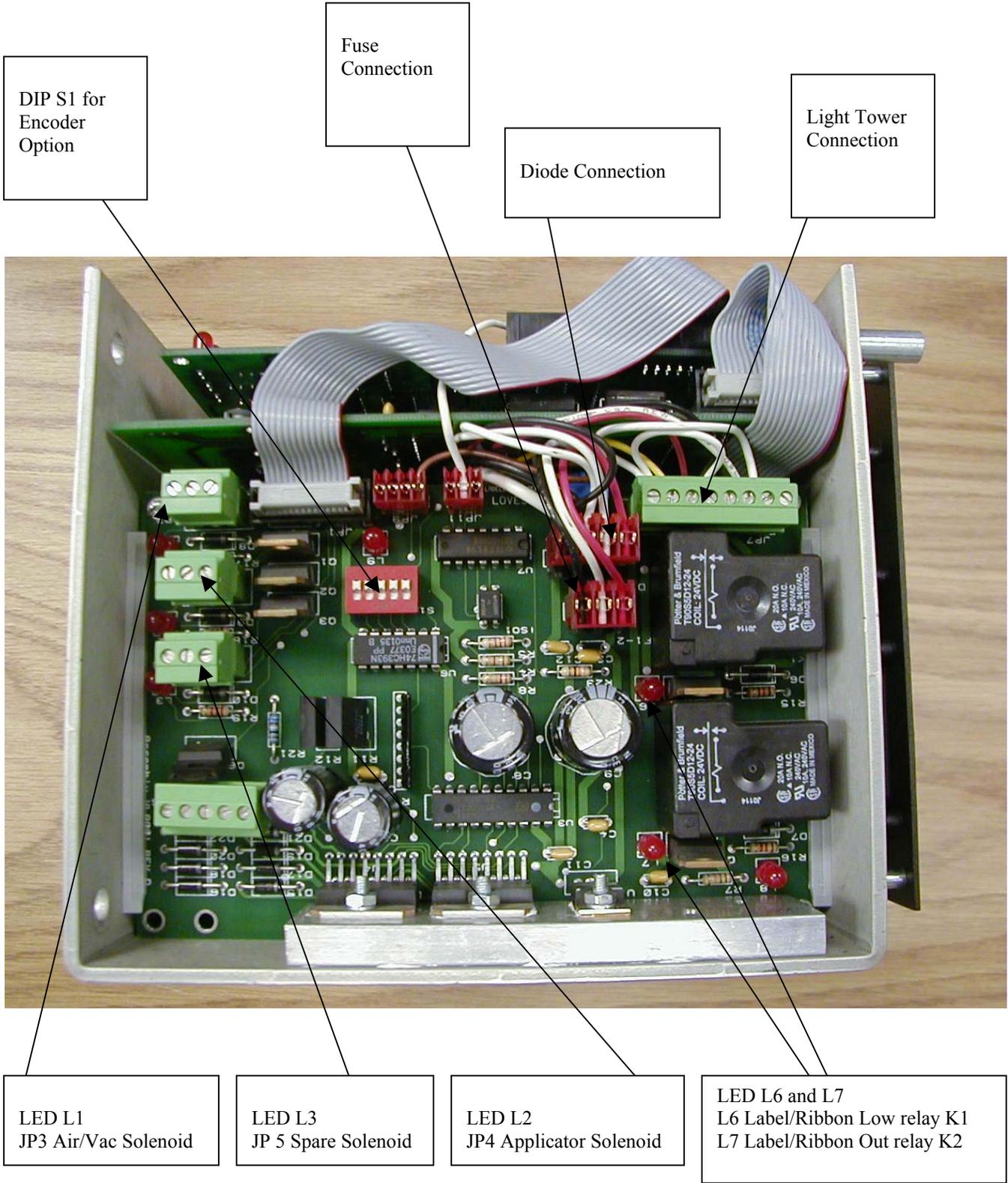


Outputs
JP3 LED L1
Air/Vac Solenoid
JP4 LED L2
Applicator Solenoid
JP5 LED L3
Spare Solenoid

Stepper Motor
Apply Only

Motor Drive
Chips

12 Volt DC
Regulator Chip
and LED indicator
L8



DIP S1 for Encoder Option

Fuse Connection

Diode Connection

Light Tower Connection

LED L1
JP3 Air/Vac Solenoid

LED L3
JP 5 Spare Solenoid

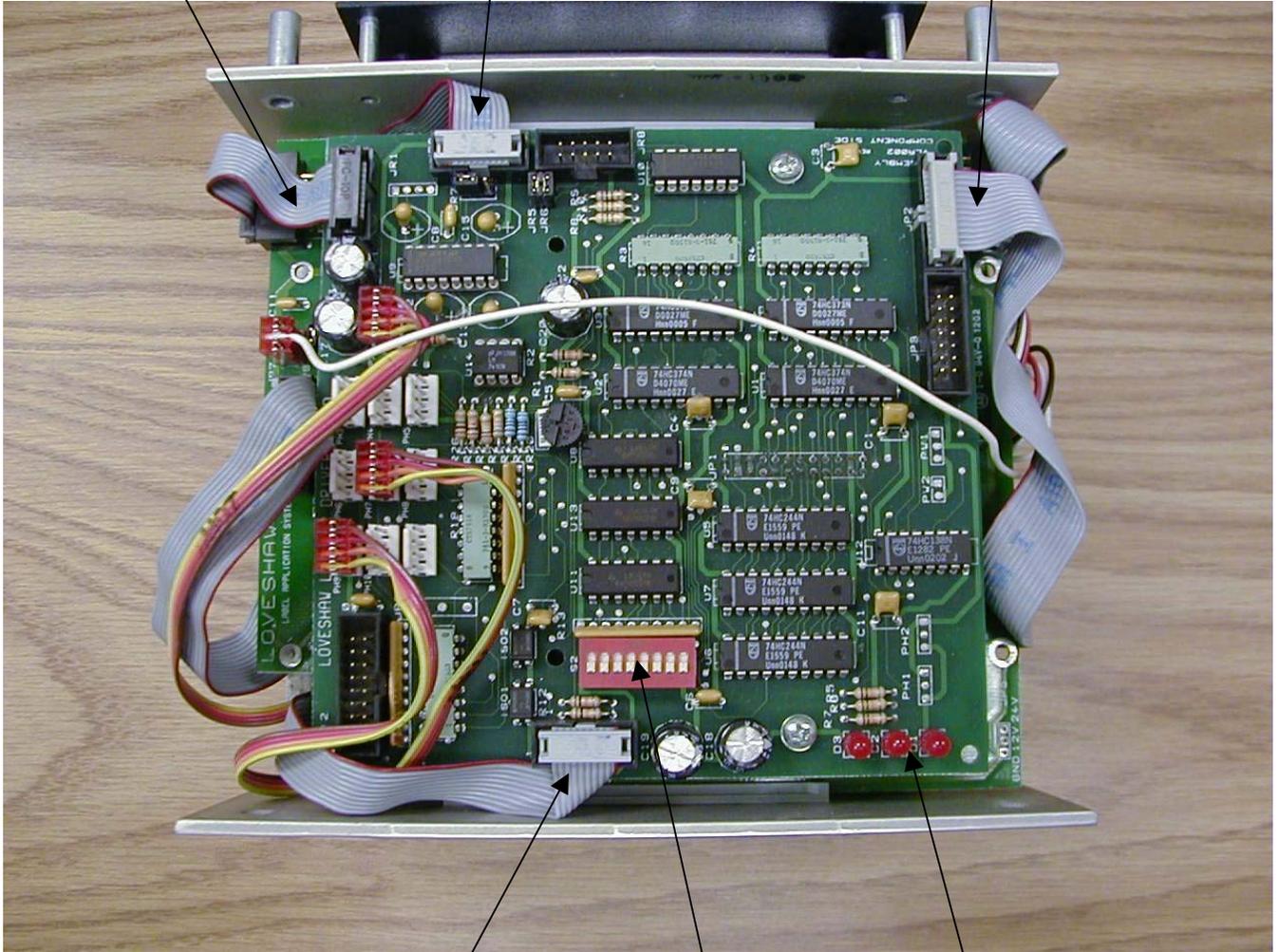
LED L2
JP4 Applicator Solenoid

LED L6 and L7
L6 Label/Ribbon Low relay K1
L7 Label/Ribbon Out relay K2

10 Conductor Ribbon Assembly

RS232 Connection

14 Conductor Ribbon Assembly



Printer Connection

DIP Switch S2

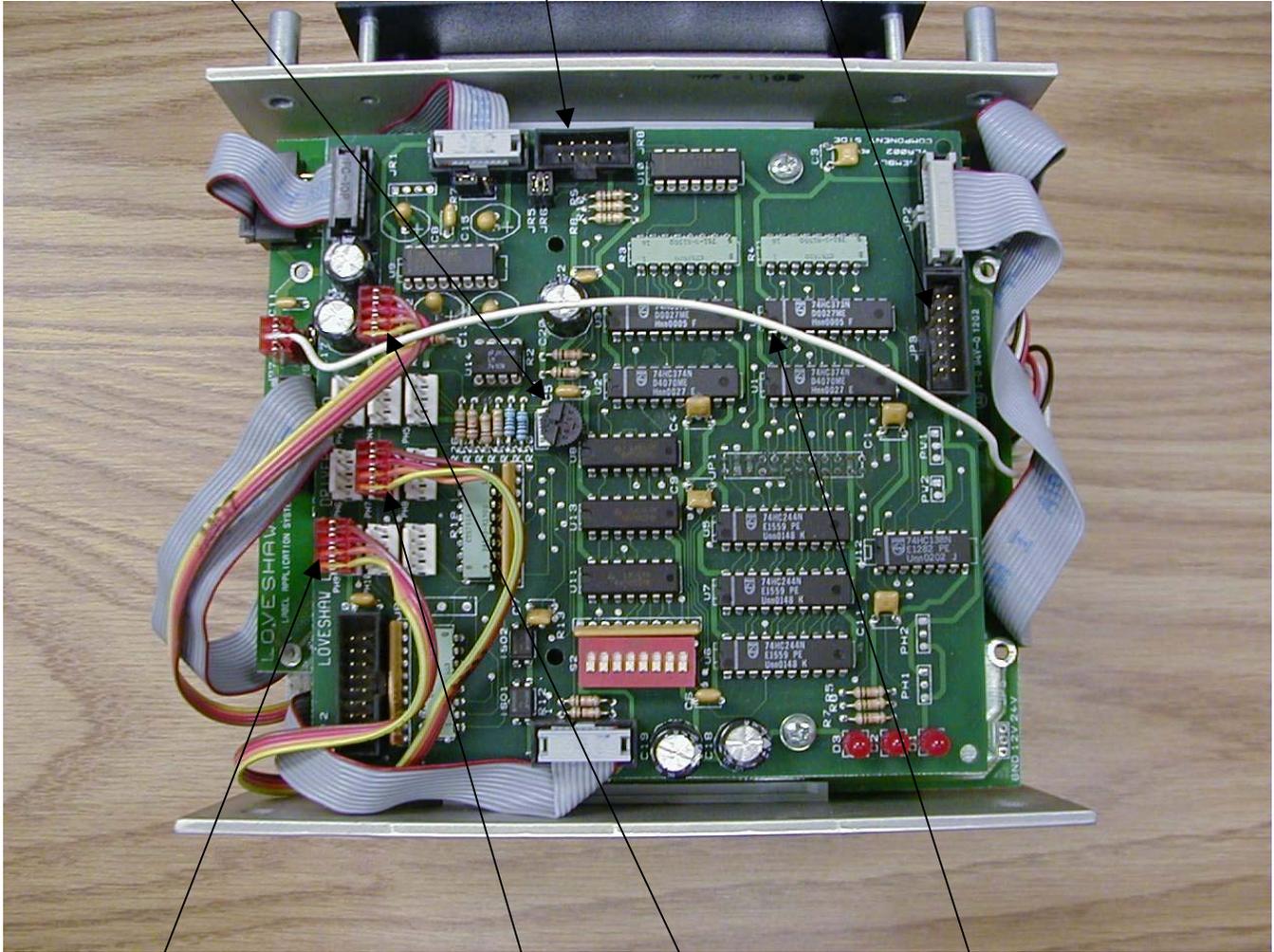
LED Indicators

D1 +5 VDC
D2 +12 VDC
D3 +24 VDC

R20 Label Sensor Adjustment

RS422 Connection

Spare Connection for more inputs and outputs – NOT USED.



PH9
Low Label
Sensor

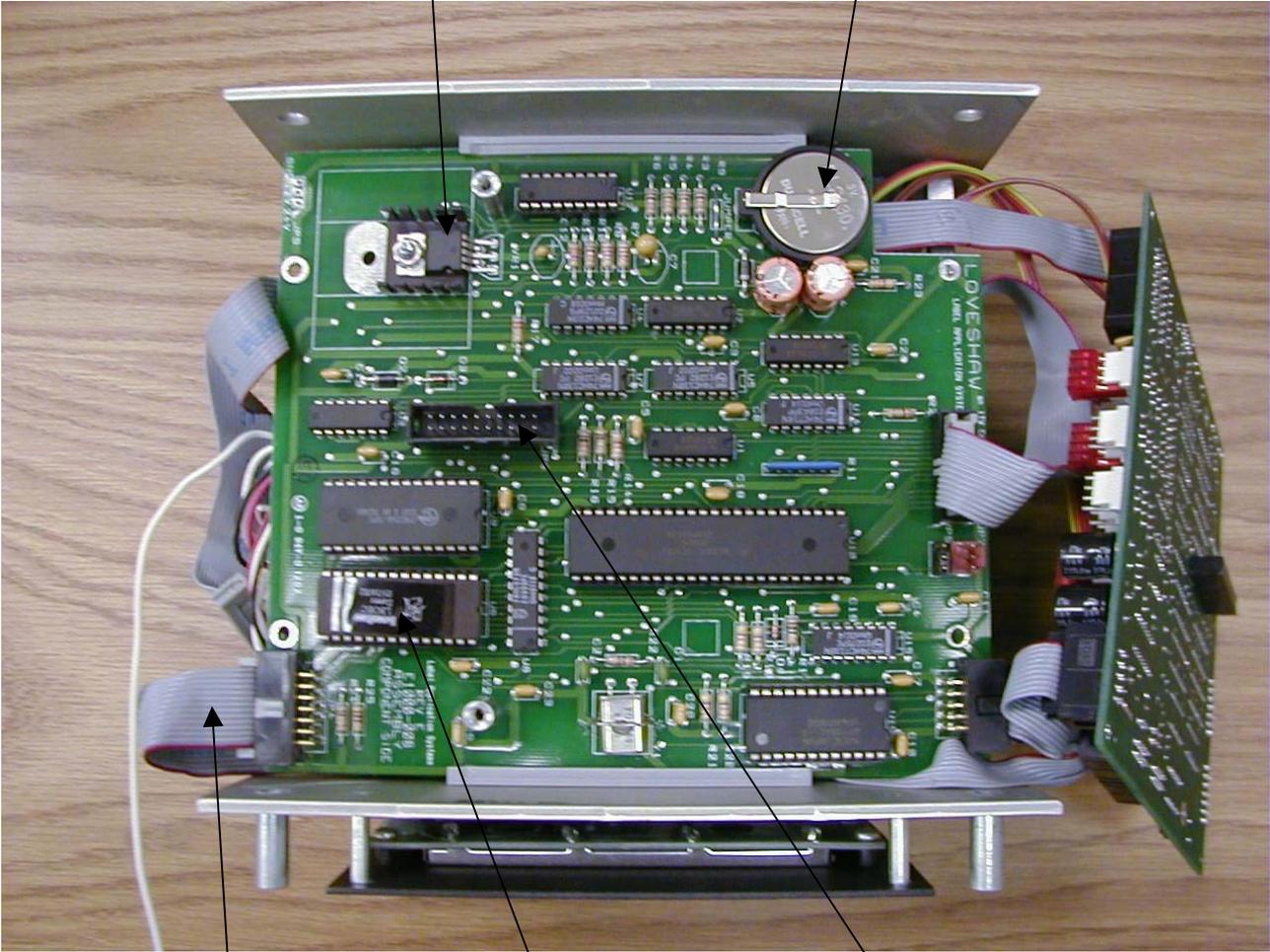
PH7
Product Detect

Label Sensor

1 Wire Connector
White Wire provides
timing to turn Stepper
Motor

+5 VDC
Regulator

3 Volt Lithium Battery
Part Number CPMD75-009-0

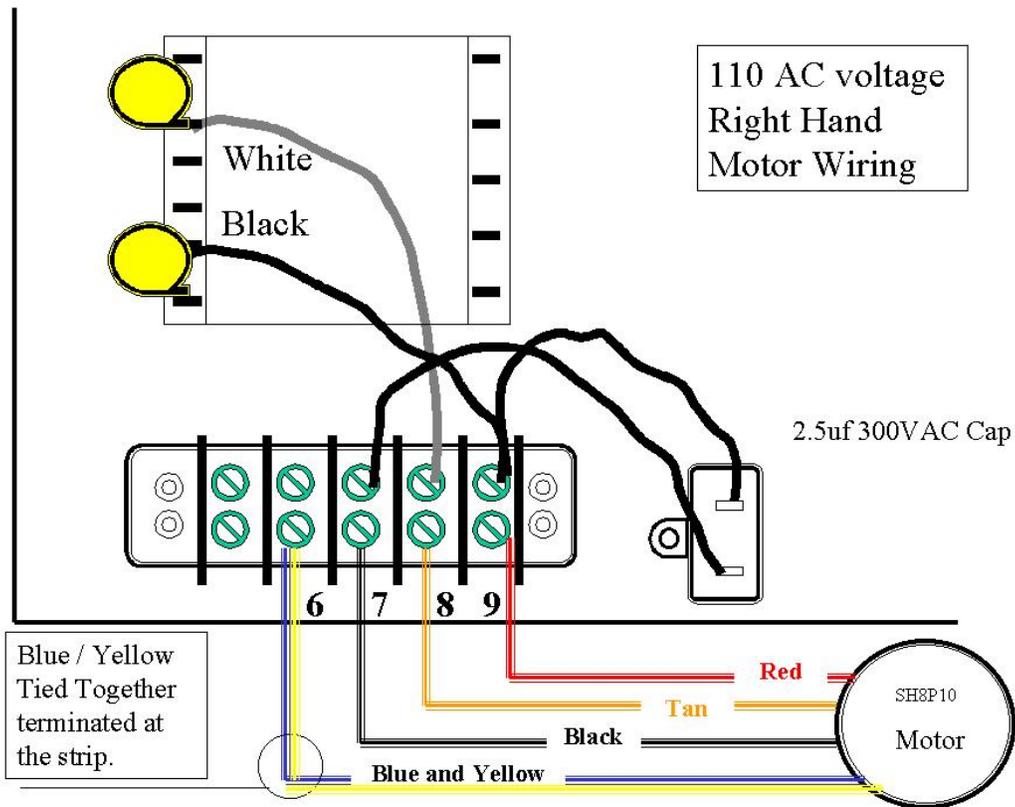
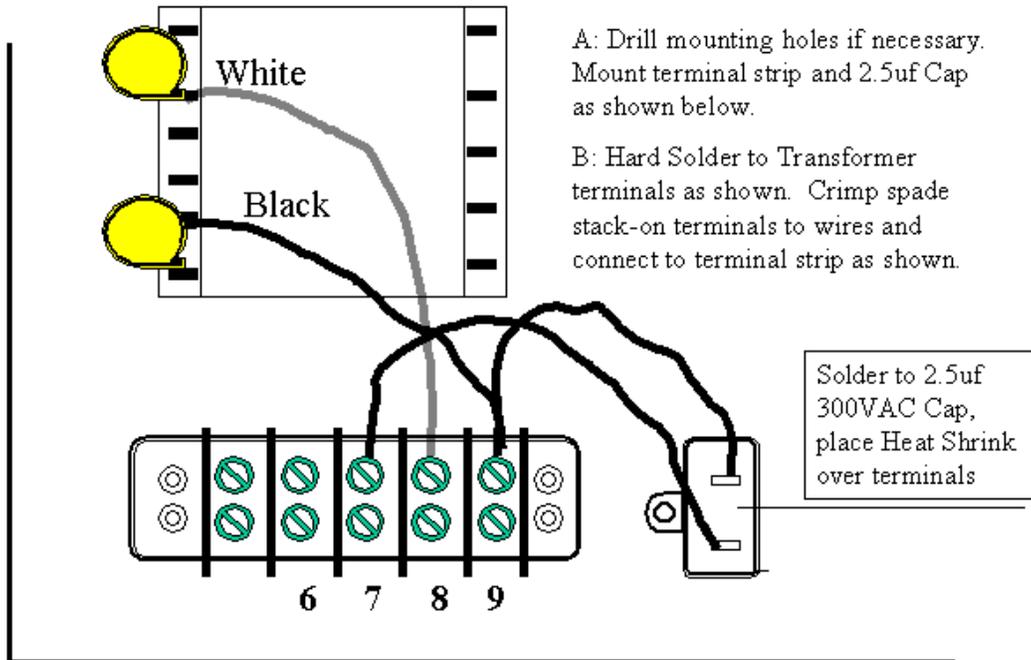


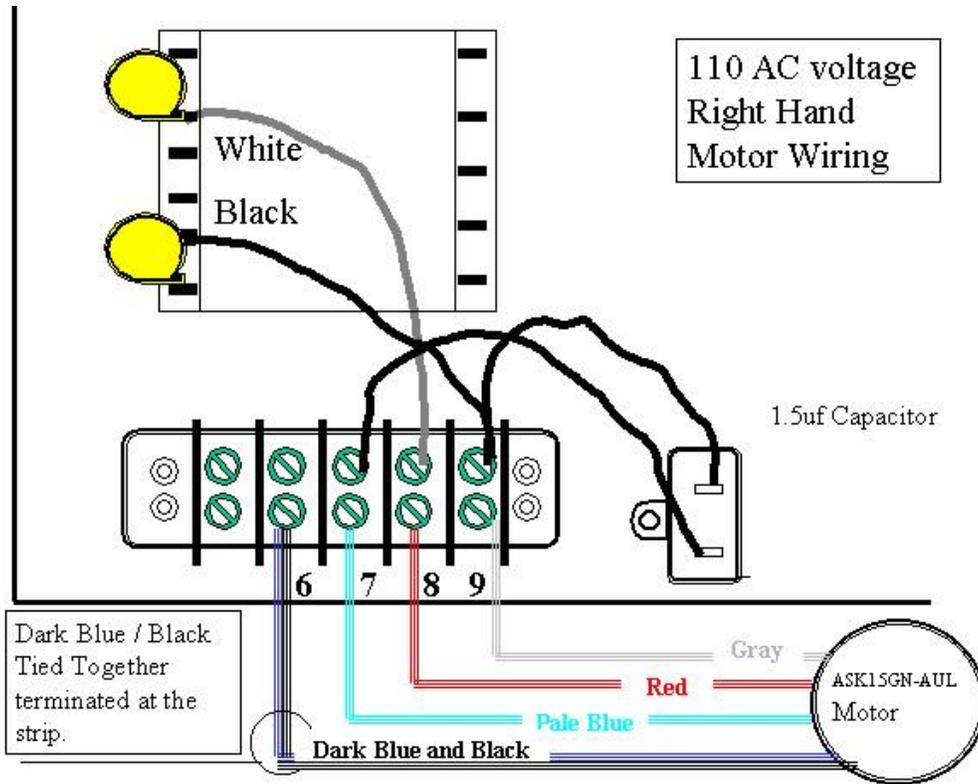
LCD Display Connection

EPROM
(Replaced with
Software Change)

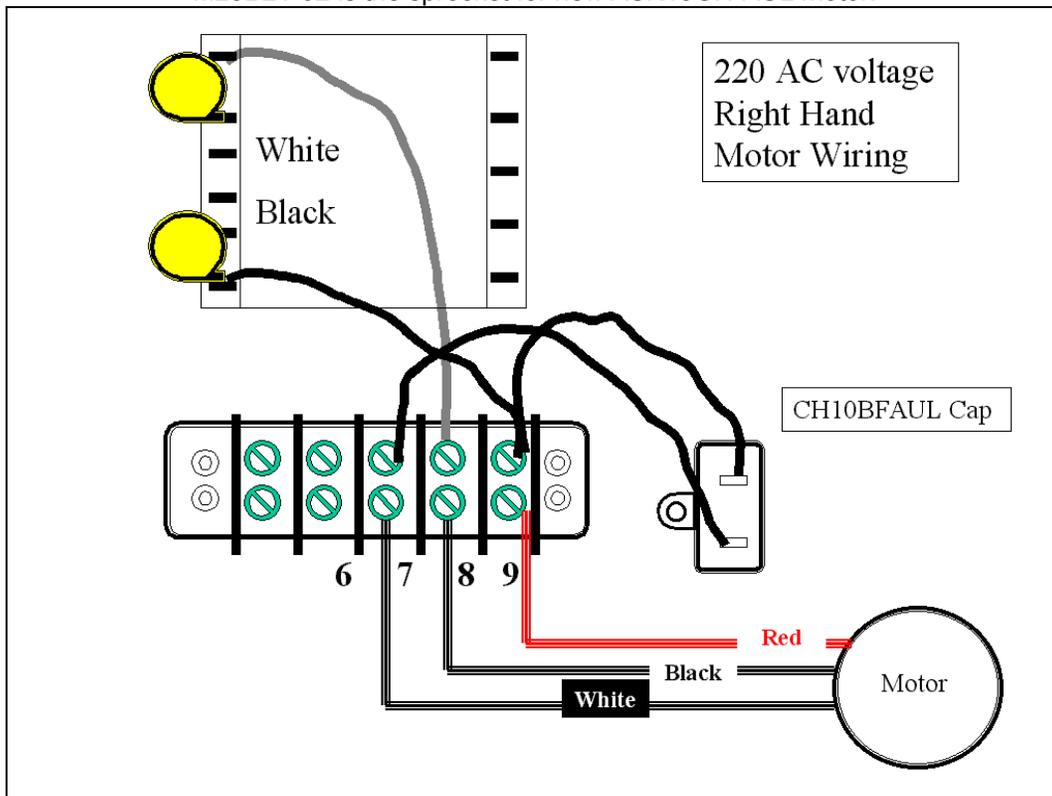

Piggy Back Board Connection
Piggy Back Board is off to the
right.

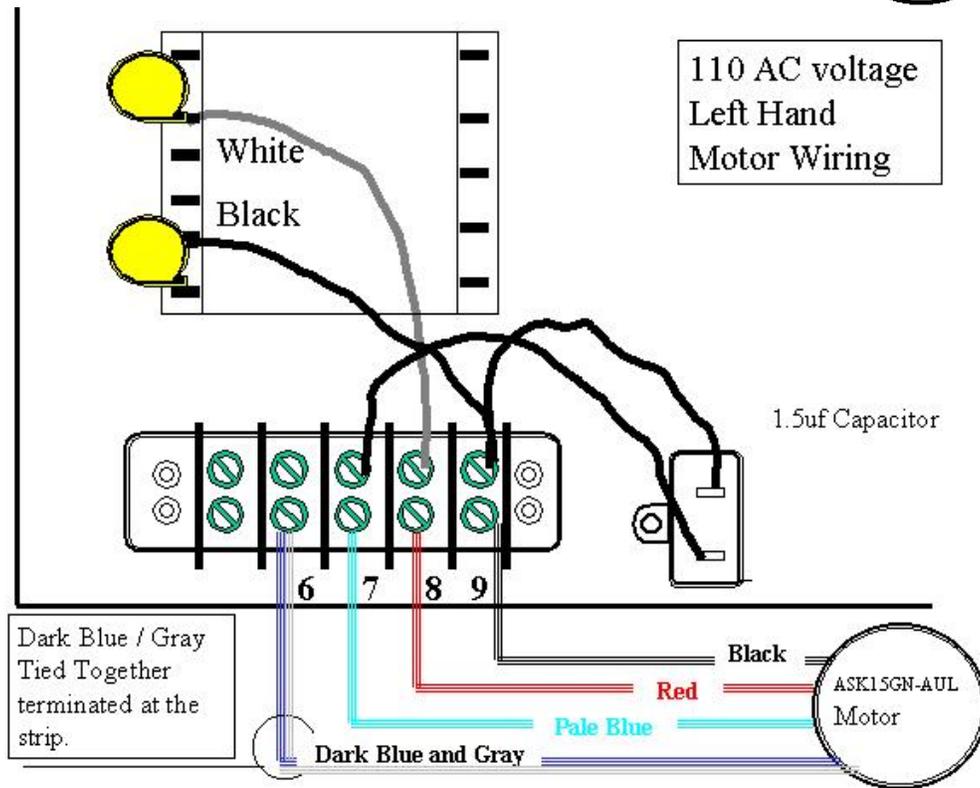
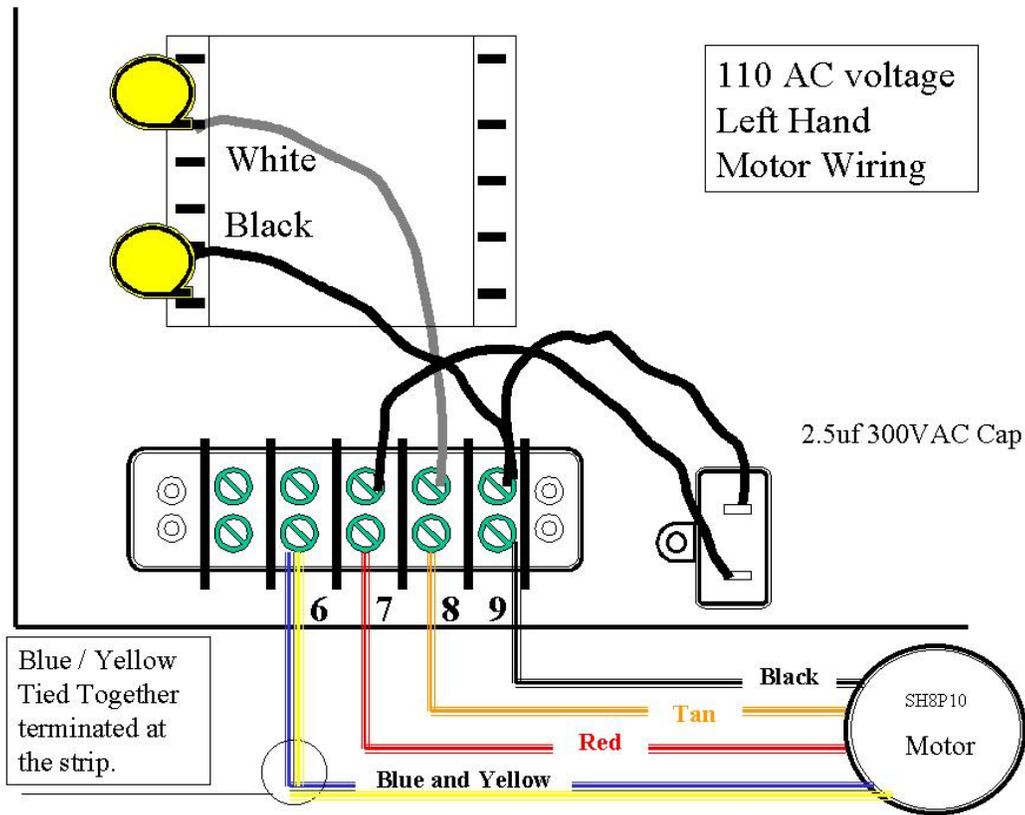
Microprocessor Motor Wiring



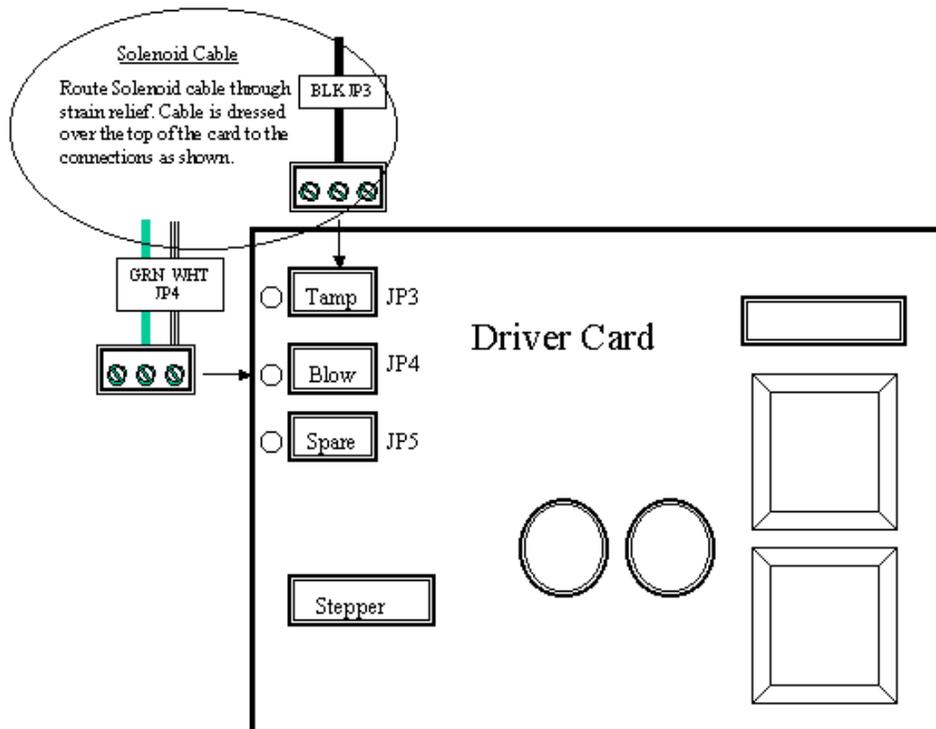
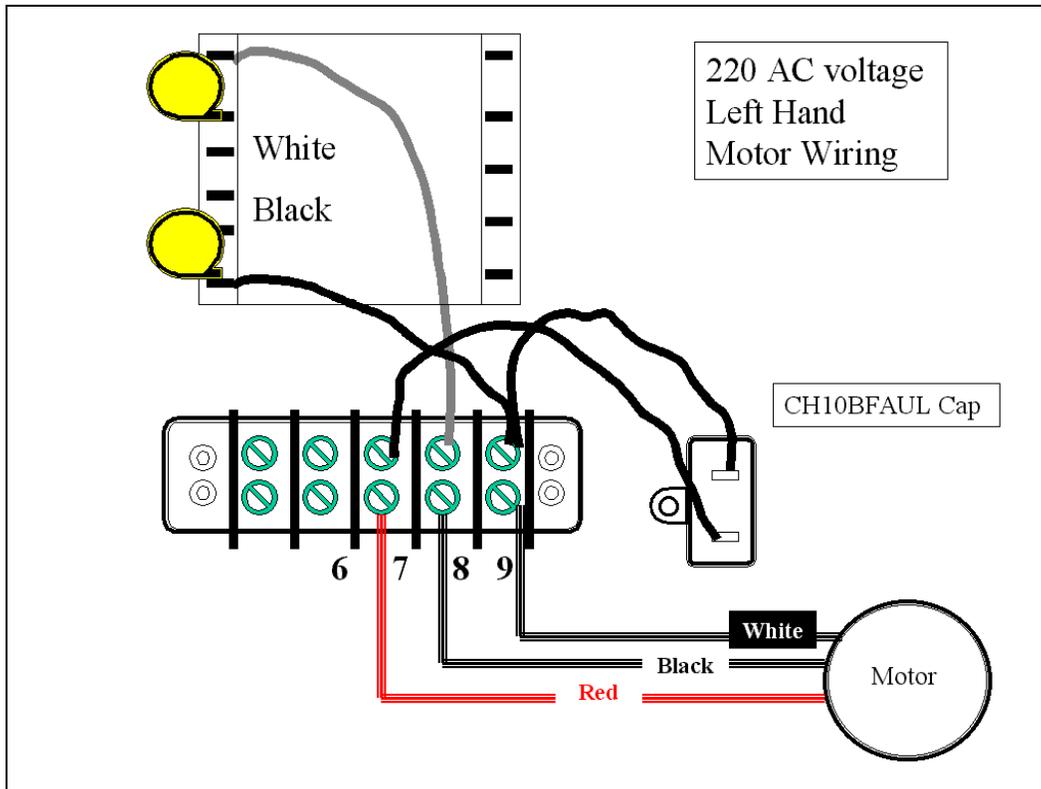


M25B21-02 is the sprocket for new ASK15GN-AUL motor.

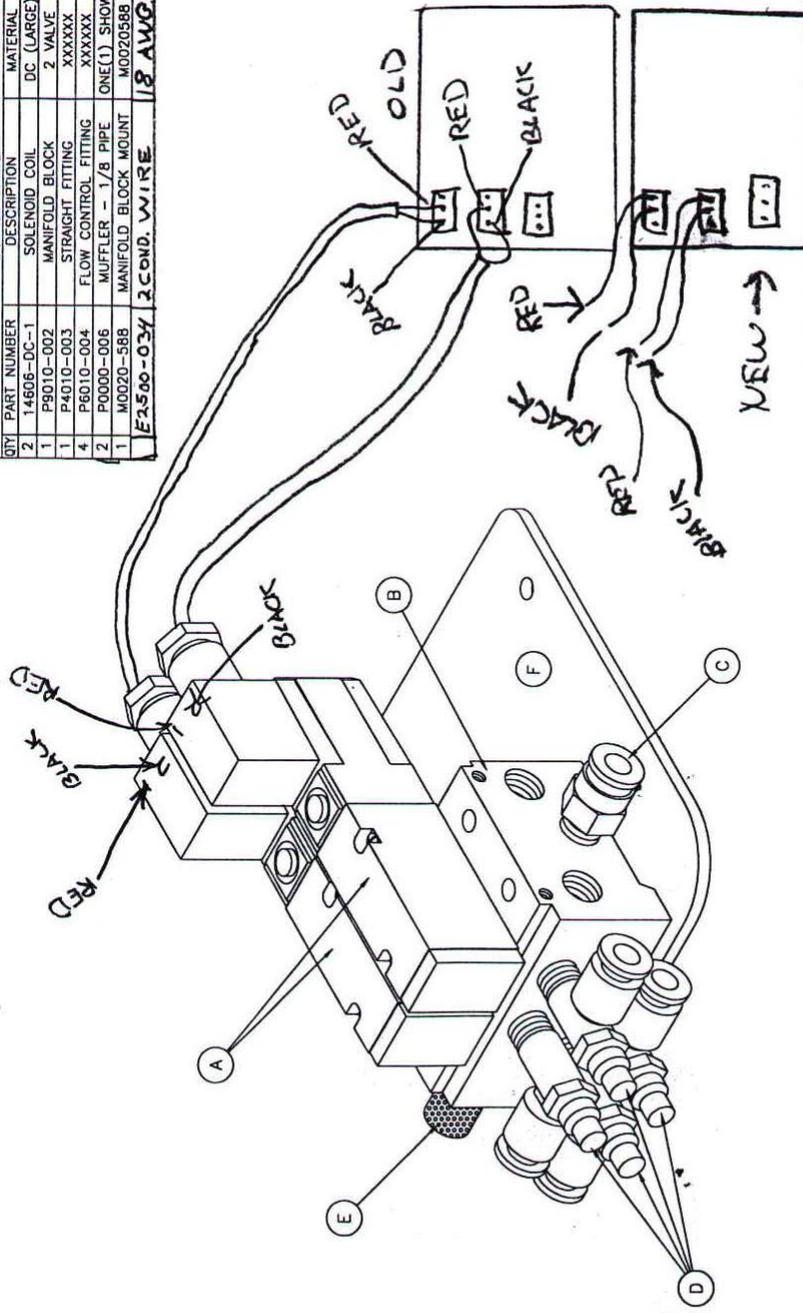




M25B21-02 is the sprocket for new ASK15GN-AUL motor.



| LIST OF PARTS | | | |
|-------------------------------|-------------|----------------------|---------------|
| QTY | PART NUMBER | DESCRIPTION | MATERIAL |
| 2 | 14606-DC-1 | SOLENOID COIL | DC (LARGE) |
| 1 | P9010-002 | MANIFOLD BLOCK | 2 VALVE |
| 1 | P4010-003 | STRAIGHT FITTING | XXXXXX |
| 4 | P6010-004 | FLOW CONTROL FITTING | XXXXXX |
| 2 | P0000-006 | MUFFLER - 1/8 PIPE | ONE(1) SHOWN |
| 1 | M0020-588 | MANIFOLD BLOCK MOUNT | M0020588 |
| F2500-034 2 COND. WIRE | | | 18 AWG |



| REVISIONS LIST | | | |
|----------------|------------------------------|------|-----------|
| REV | DESCRIPTION | DATE | BY / APPR |
| X | XXXXXXXXXXXXXXXXXXXXXXXXXXXX | XXXX | XXX |

| | | |
|-------------------|------------|------------------------|
| DESIGNED BY | SCHALLER | LOVESHAW ANTIW COMPANY |
| SCALE | 12"=1'-0" | WALVERN, PA |
| CHECKER | XXXXXXXXXX | DUAL TAMP/CORNERWRAP |
| MANUFACTURED DATE | 8-27-01 | AIR MANIFOLD ASSEMBLY |
| REV. NO. | 1 | PART # .14 |
| REV. DATE | 8-27-01 | REV. 1A |
| REV. BY | XXX | REV. DATE |
| REV. APPR | XXX | REV. DATE |



EPRM Replacement Procedure

PLEASE READ THROUGH FIRST BEFORE ATTEMPTING SOFTWARE CHANGE

To change software, you must do the following steps:

- A. Turn power **OFF** and remove power cord to the unit.
- B. With a Philip head screwdriver, unscrew the screws from the cover.
- C. Using the screwdriver remove the two screws from the top Piggy-Back Driver board from the Main CPU board. Then unplug the two boards.
- D. Locate the EPROM on the Main CPU board located in its socket at position **U9**. This EPROM will have a tag on the top to identify its software revision.
- E. With a small flat blade screwdriver, carefully pry the EPROM out of its socket.
- F. Now remove the new EPROM from the anti-static container and insert the EPROM in the **U9** socket.

NOTE: Before removal, observe the position on the notch on the side of the EPROM.

The socket will also have a notch on one end as well. This is used to guide so that the EPROM can be oriented the correct way and then inserted.

- G. When plugging in the new EPROM, verify that all of the legs are in the socket and are not curled up under the EPROM.
- H. Store the old EPROM in the anti-static container for possible reuse if there is a problem. Do not discard this chip. Either keep it or if asked return it to **LOVESHAW**. In any case keep it available until the unit has been used a few days.
- I. After the EPROM installation is complete, reconnect the Driver board to the Main CPU insuring that it is correctly connected. Then replace the screws on the Driver board.
- J. Reconnect the power cord and power up the unit.
- K. Clear the unit by using **66Clear Help Down Arrow Key procedure** explained on page 9 of this manual.
- L. Now the labeler is ready for programming. Refer to any enclosed manuals for further details of the new options included in this new version. If no manual is enclosed the options are self-explanatory.

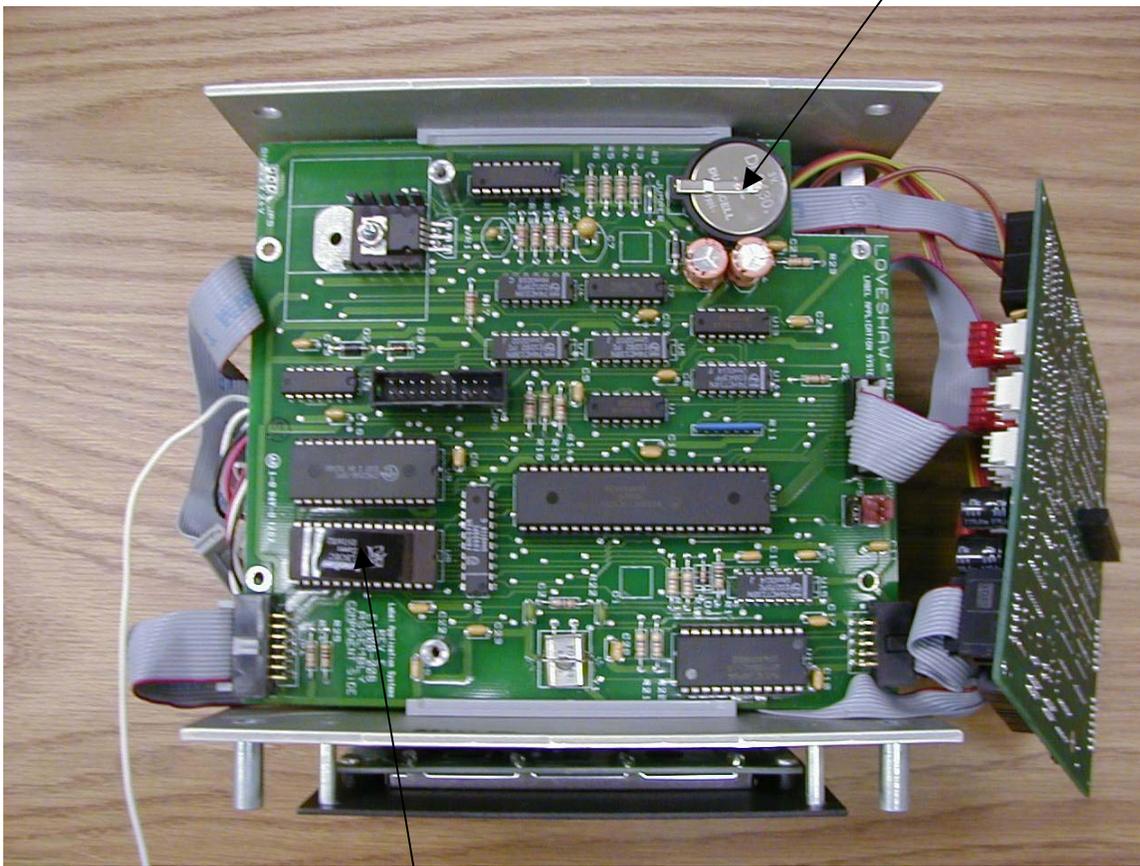
If questions should arise, please contact the **LOVESHAW Service Department** at (717) 937 - 4921 or at 1 - 800 - 962 - 2633. Thank you.

PLEASE READ THROUGH FIRST BEFORE ATTEMPTING SOFTWARE CHANGE

Battery Replacement

Caution, Risk of explosion if battery is replaced by an incorrect type.
Dispose of used batteries according to the instructions.

3 Volt Lithium Battery
Part Number CPMD75-009-0



U9 EPROM

Note where pin 1 is located and insure all pins are correctly in socket.



LITHIUM BATTERY WARNING

CAUTION! This product contains a lithium battery. There is danger of explosion if battery is incorrectly replaced. Replace only with a Duracell DL2430 or equivalent. Make sure the battery is installed with the correct polarity. Discard used batteries according to manufacturer's instructions.

ADVARSEL! Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt (Duracell DL2430) av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

ADVARSEL! Lithiumbatteri - Eksplosjonsfare ved feilagtig håndtering. Udskiftning må kun ske med batteri av samme fabrik(Duracell DL2430) at og type. Levér det brugte batteri tilbage til leverandøren.

VAROITUS! Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppin (Duracell DL2430). Hävitä käytetty paristovalmistajan ohjeiden mukaisesti.

VARNING! Explosionsfar vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ (Duracell DL2430) som rekommenderas av apparatillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

ATTENTION! Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type (Duracell DL2430) ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

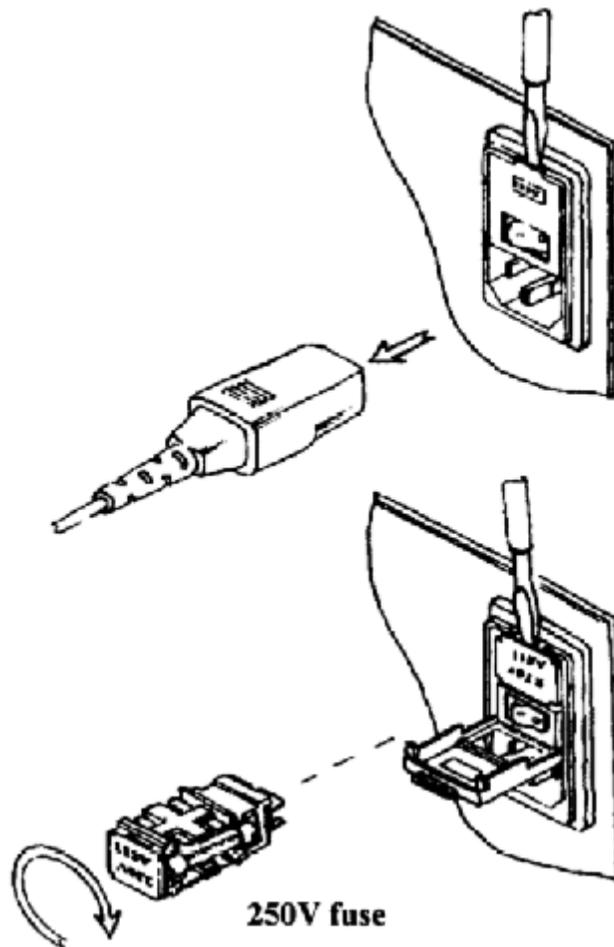


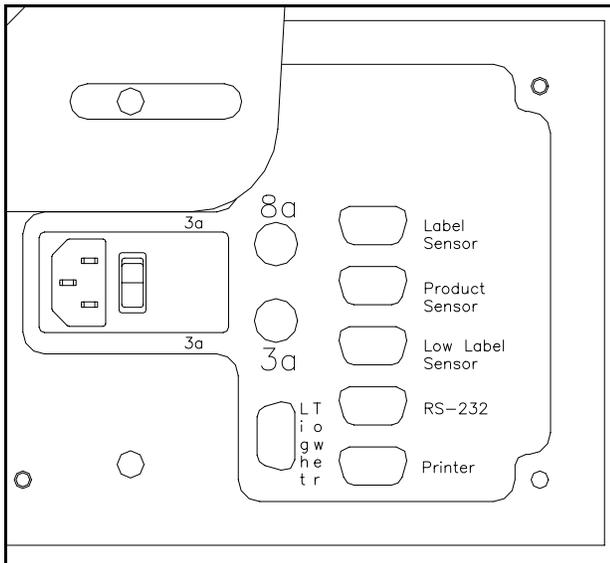
CORCOM

To insure proper operating conditions use dedicated AC drops. Do not use extensions. Use Line Conditioners or UPS to protect against surges, noise, and spikes.

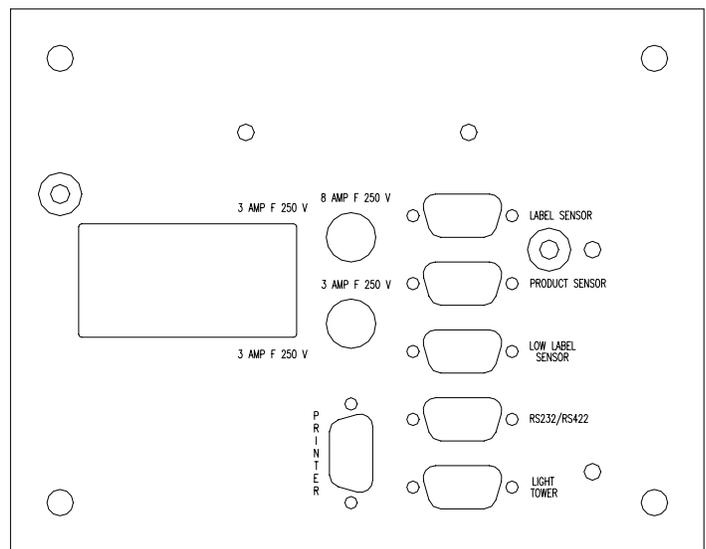
Note: Before plugging in the power cord, ensure the power switch is in the OFF position (Press the 0 on the ON/OFF switch). The ON/OFF switch is located the Power Entry Module on the rear of the Labeler controller.

CAUTION: Double Pole/Neutral Fusing.





Original Layout



New Layout to accommodate Left Hand LS600

Schematics

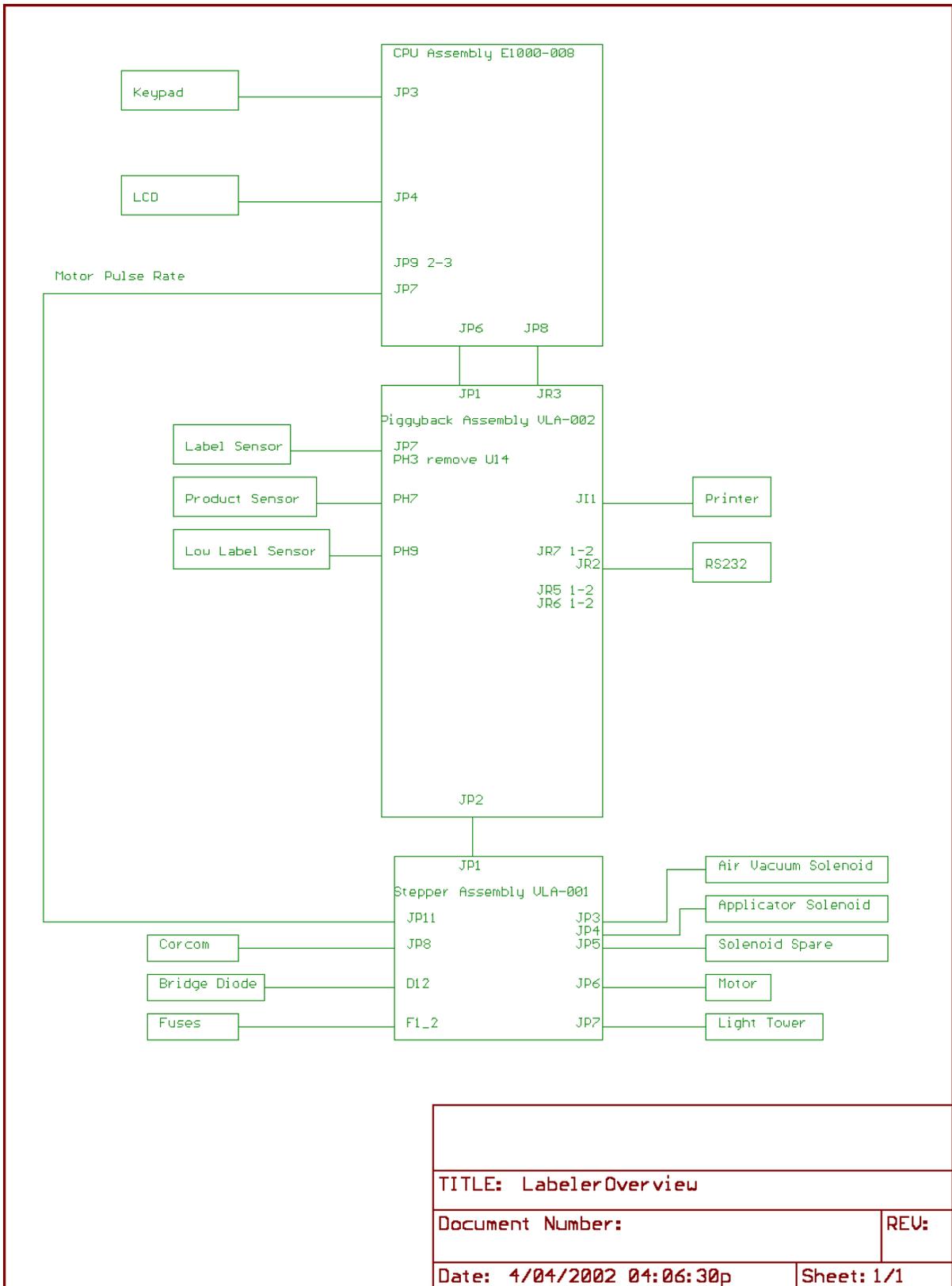
The schematics are for troubleshooting, although individual parts are not shown for resale. Board level replacement is available.

.08882-MP Labeler Controller Sub Assemblies

| Item | Qty | Description | Loveshaw Part Number |
|------|-----|-------------------------------|----------------------|
| 1 | 1 | Keypad Assembly | E9042-030 |
| 2 | 1 | Transformer Assembly | |
| 3 | 1 | CORCOM Filter Assembly | |
| 4 | 1 | Ferrite Bead | |
| 5 | 1 | Bridge Rectifier Assembly | |
| 6 | 1 | 8 Amp Fast Acting Fuse | 01173 |
| 7 | 3 | 3 Amp Fast Acting Fuse | 01171 |
| 8 | 1 | Fuse Holder Assembly | |
| 9 | 2 | 9 pin D Ribbon Assembly | |
| 10 | 3 | 9 pin D Four Wire Assembly | |
| 11 | 1 | Internal Light Tower Assembly | |
| 12 | 1 | 14 Conductor Ribbon Assembly | |
| 13 | 1 | 10 Conductor Ribbon Assembly | |
| 14 | 1 | 1 Conductor Wire Assembly | |
| 15 | 2 | Vector Card Guides | |
| 16 | 1 | Chassis | E9050-001 |
| 17 | 1 | Heat Sink | M0040-115 |
| 18 | 1 | Face Plate Overlay | E9050-002 |
| 19 | 1 | LCD Display Assembly | E9042-031 |
| 20 | 1 | Labeler Piggy Back Board | VLA-002 |
| 21 | 1 | Labeler CPU Board | E1000-008 |
| 22 | 1 | Labeler Stepper Board | VLA-001 |
| 23 | 1 | 3 Volt Lithium Battery | CPMD75-009-0 |

Additional parts for .06940-MP Labeler Controller Sub Assemblies

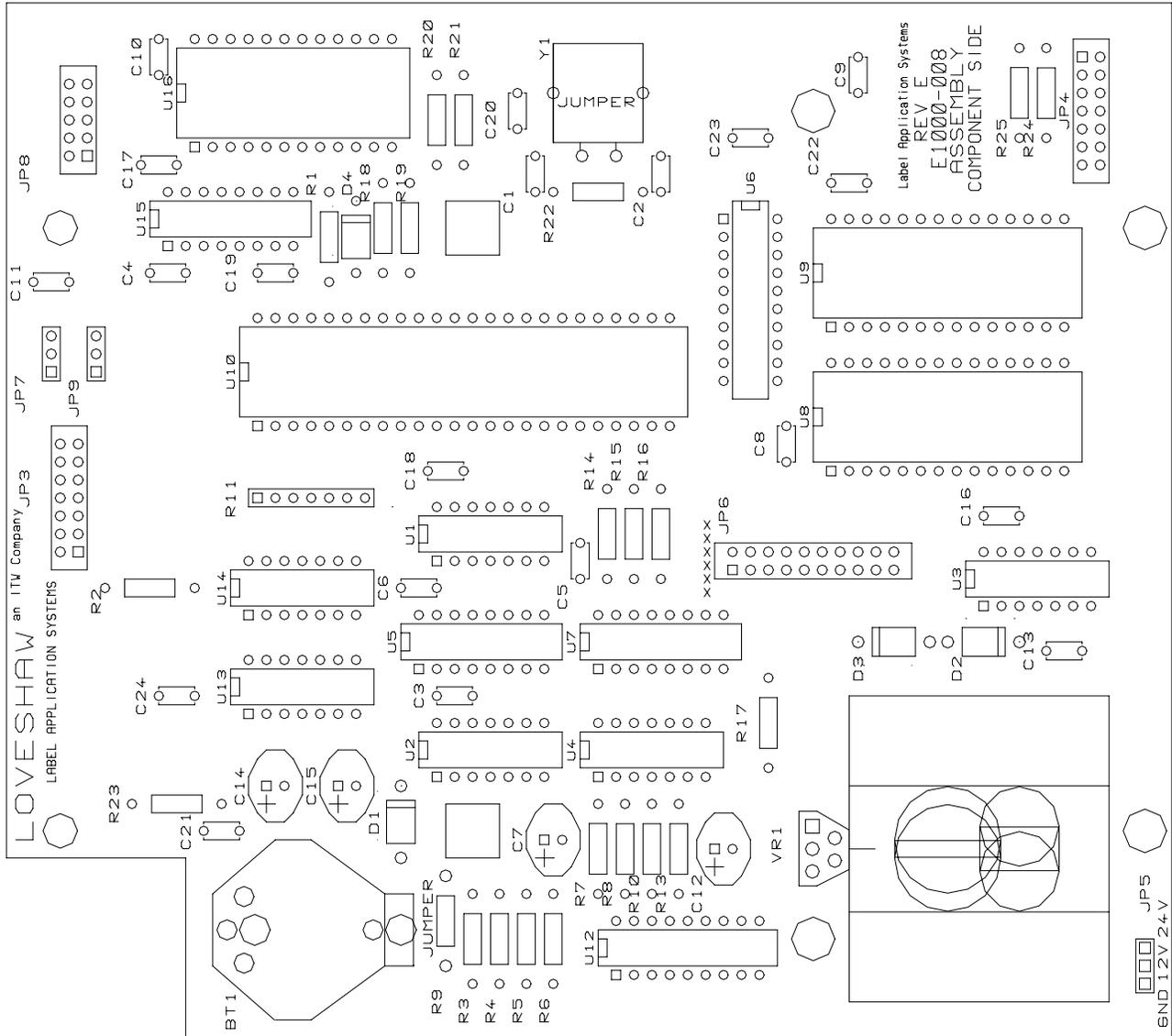
| Item | Qty | Description | Loveshaw Part Number |
|------|-----|------------------------|------------------------------|
| 24 | 1 | 2.5uf 300VAC Capacitor | 06098 |
| 25 | 1 | Terminal Strip | euro E6000-001/usa E6000-002 |



| | |
|----------------------------------|-------------------|
| | |
| TITLE: LabelerOverview | |
| Document Number: | REV: |
| Date: 4/04/2002 04:06:30p | Sheet: 1/1 |

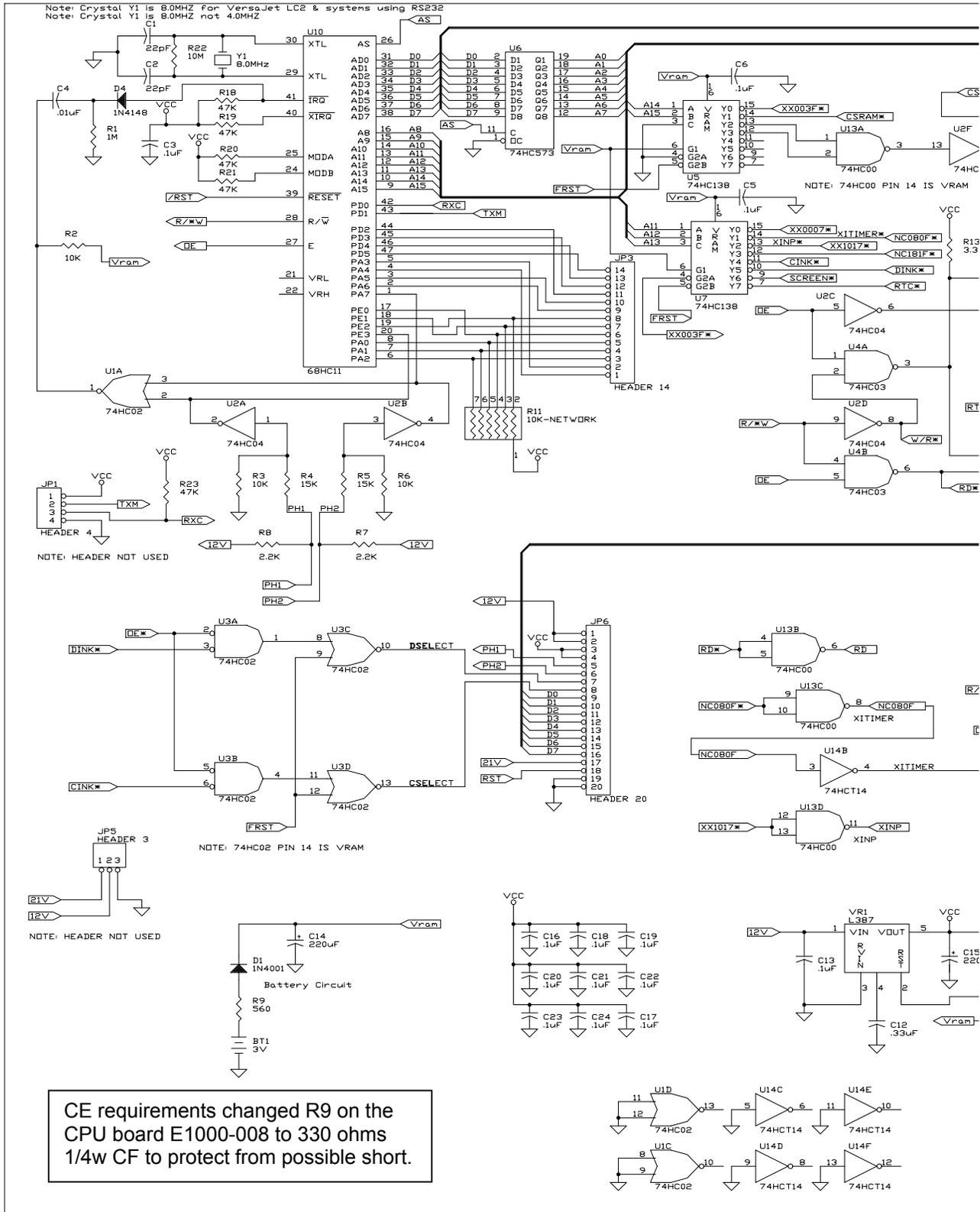
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E1000-008 CPU Board for Labeler

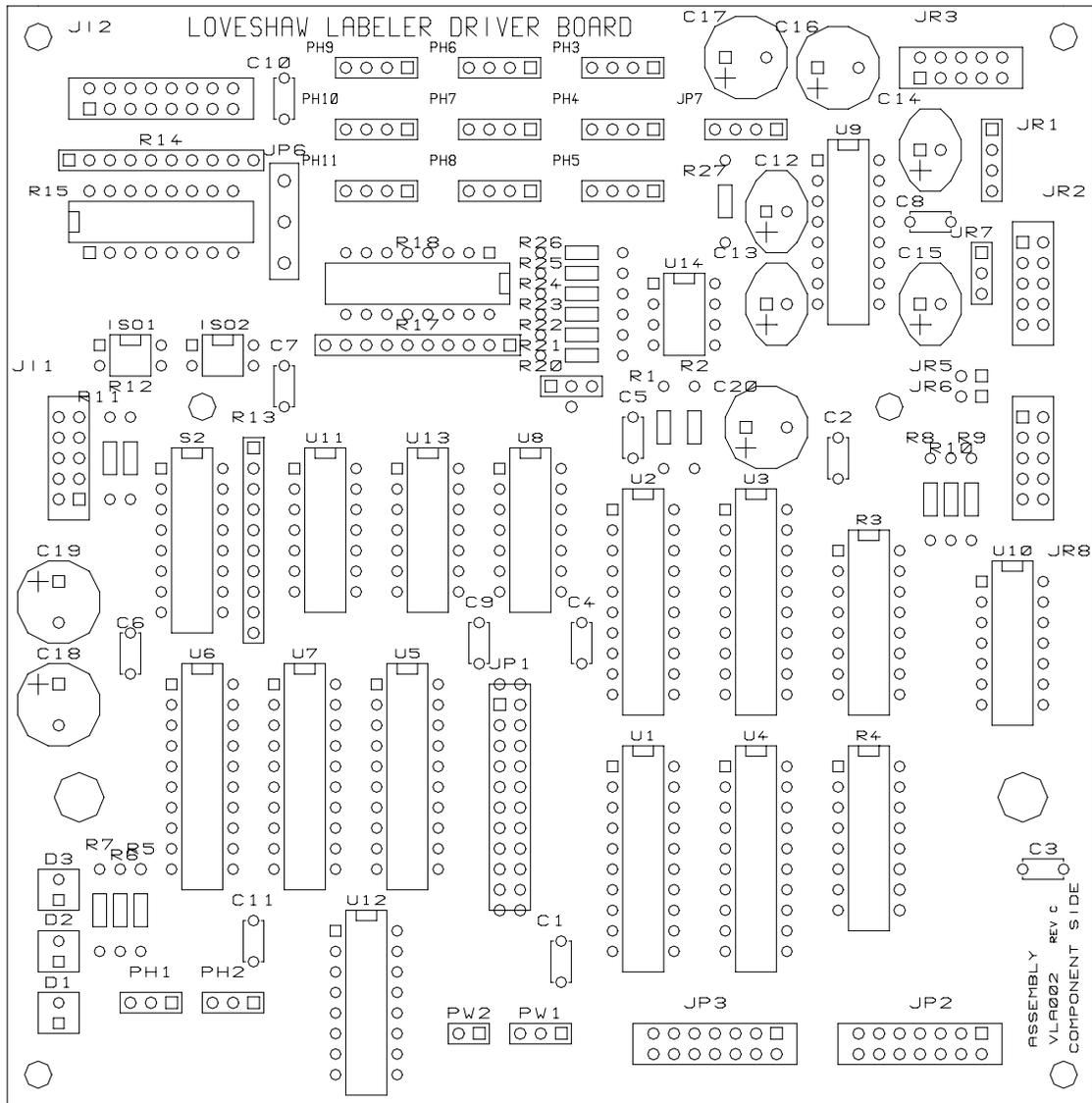


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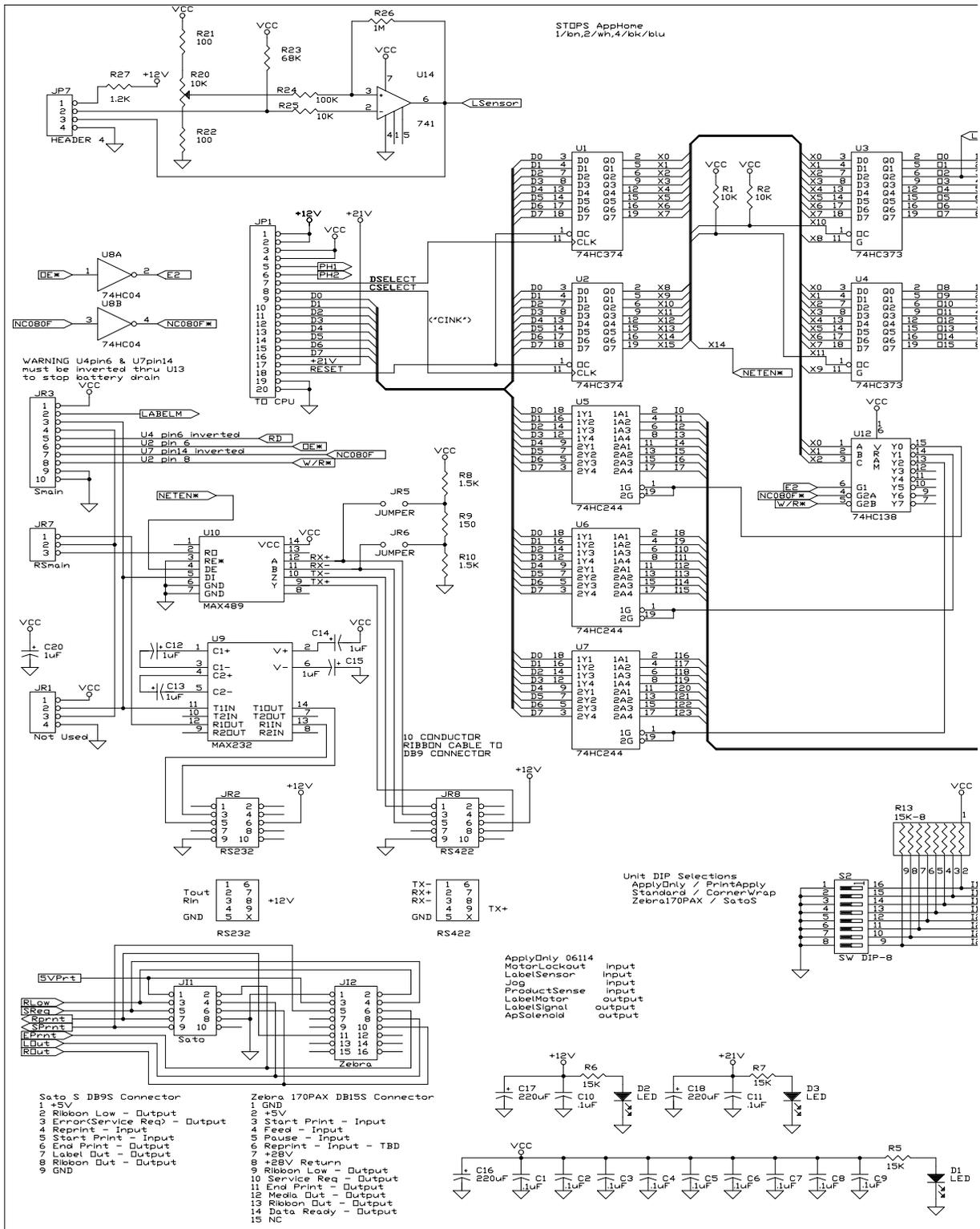
Note: Crystal Y1 is 8.0MHz for VersaJet LC2 & systems using RS232
 Note: Crystal Y1 is 8.0MHz not 4.0MHz



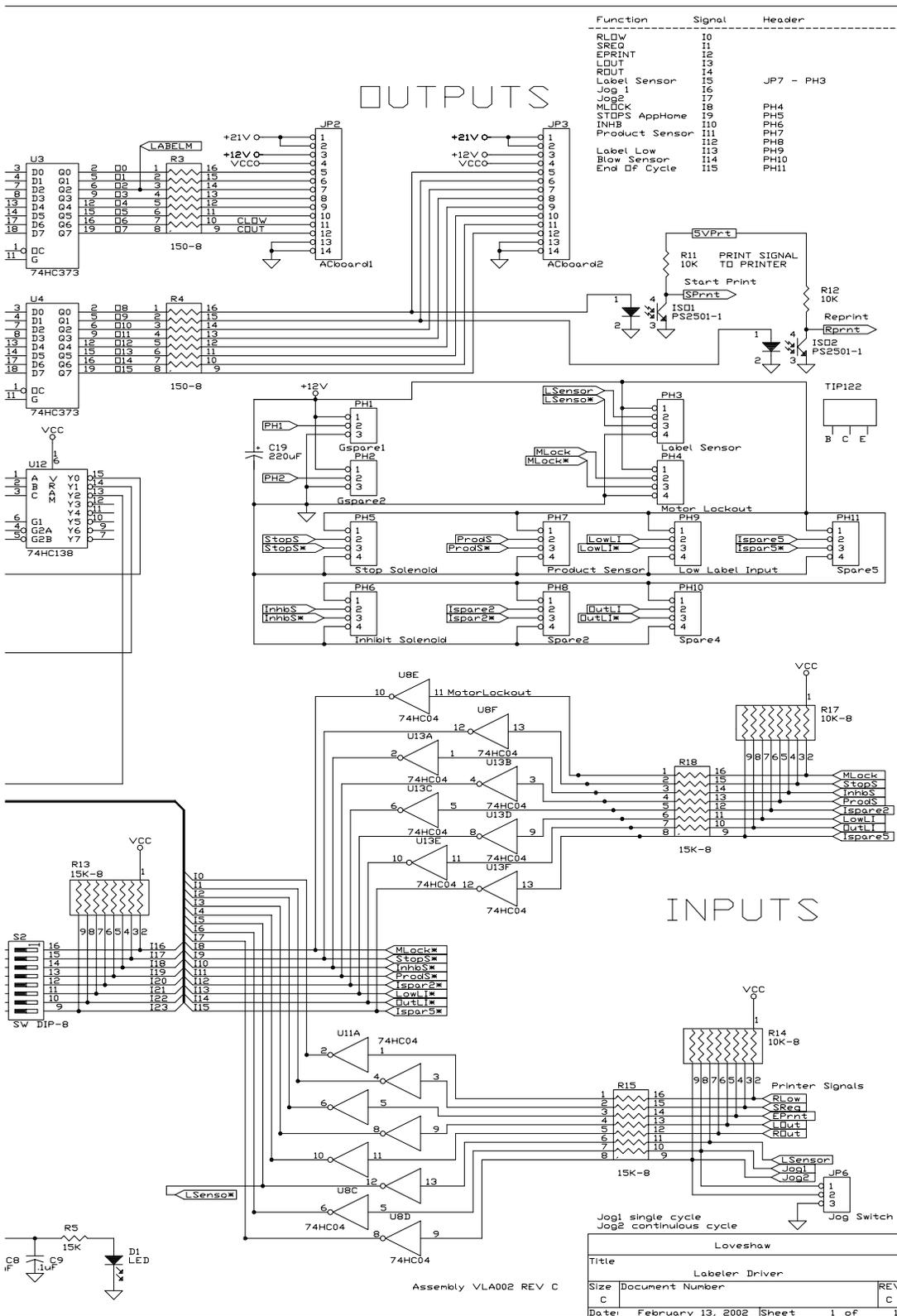
VLA-002 Piggy Back Board for Labeler



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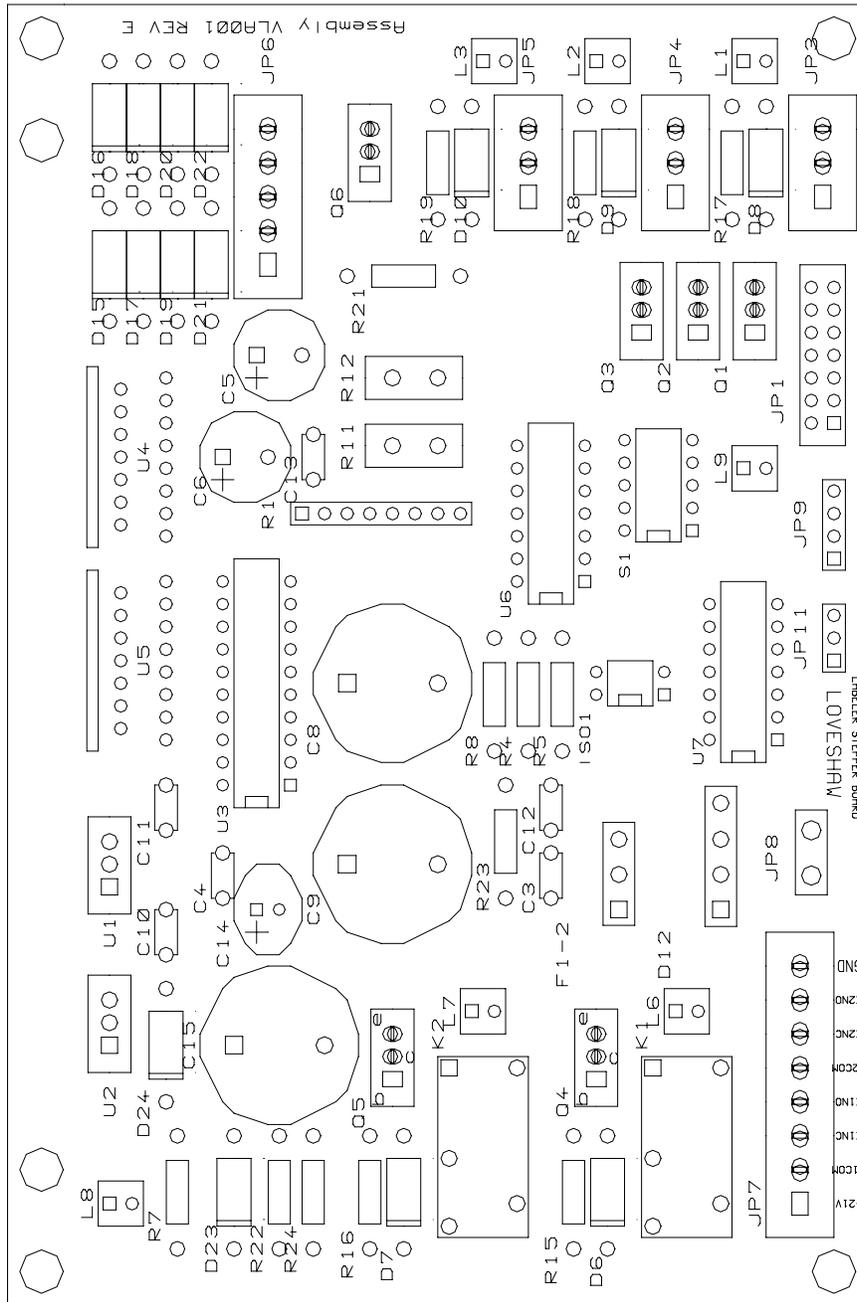


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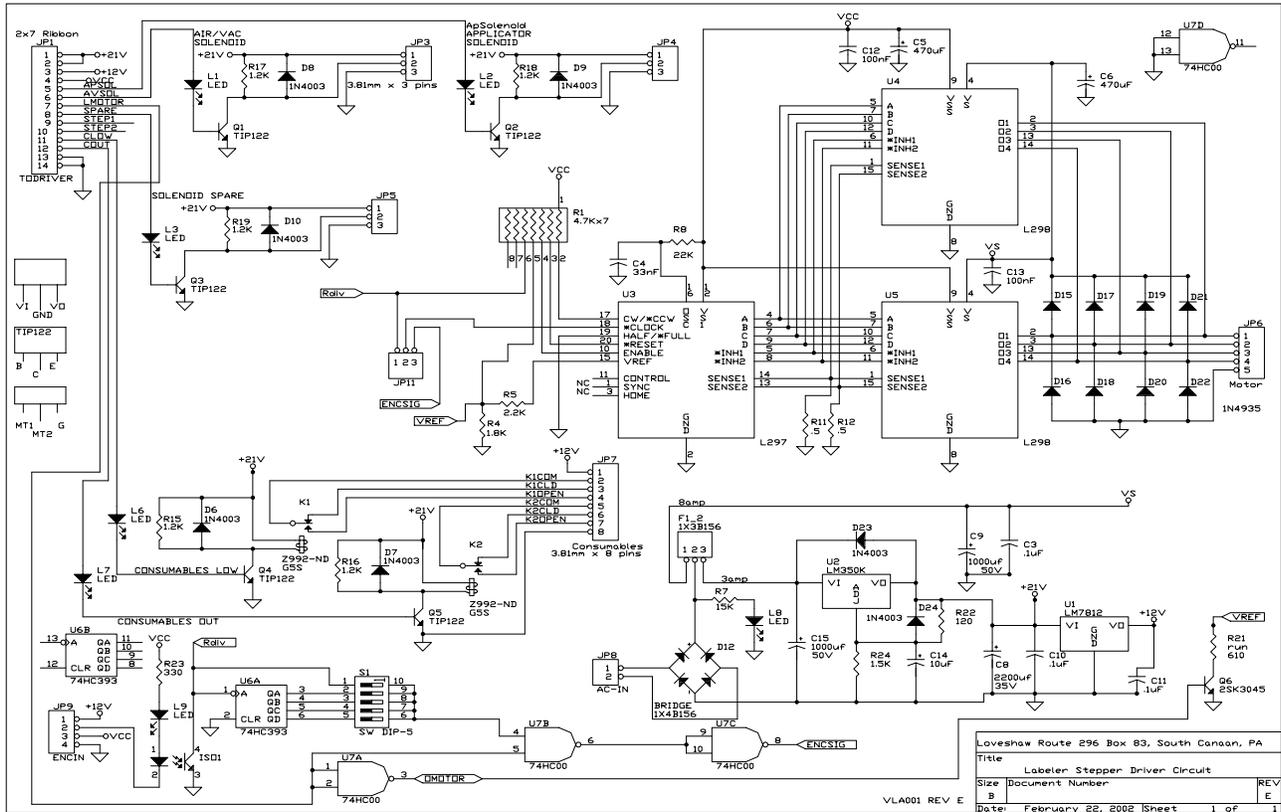


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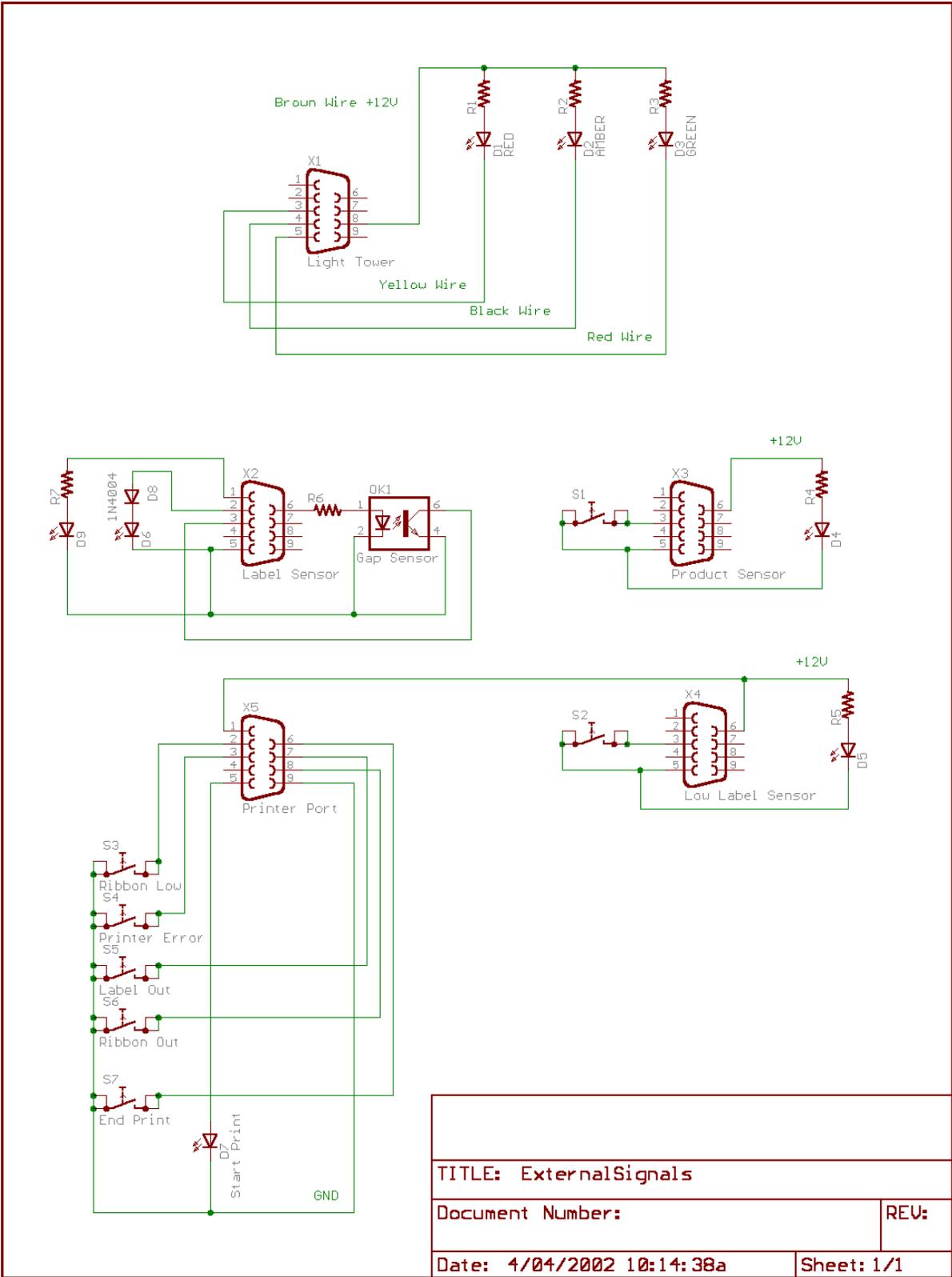
VLA-001 Motor Stepper Board for Labeler



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| | |
|---------------------------|------------|
| TITLE: ExternalSignals | |
| Document Number: | REV: |
| Date: 4/04/2002 10:14:38a | Sheet: 1/1 |

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LBLINK Protocols

LBLINK.A Technical Notes ohL

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L O V E S H A W

Box 83 Route 296, S. Canaan, PA 18459

1-800-962-2633

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Labeler units can be controlled through simple RS-232 ASCII commands.

LBLINK is the designation for the controller interface for various Loveshaw labelers. The interface supports control of all features and emulation, and is implemented through an RS-232 link, using serial port adapter equipment.

Implementation, Scope Of Documentation

The labelers LBLINK connects to consist of Loveshaw-designed equipment designed to apply pressure-sensitive labels to products.

This document assumes familiarity with standard labeler operation, as described above (see Chapter 2).

External automation equipment can control labeler operation using the LBLINK feature by sending simple ASCII commands through a PC serial port on the labeler.

Versions, Options

This document references current labeler versions. Appropriate LBLINK-optional software and hardware may have to be special-ordered¹.

¹ This document may support older software versions and more than one labeler; features are rarely changed in such a way that old descriptions are invalid. However, completely new features may be absent in older software, and occasionally obvious differences between equipment must be considered when considering the command descriptions.

This document references labeler version “mik”.

Labeler software and many other Loveshaw products are “versioned” with three letter/numbers, typically lower-case; letters are printed in upper-case when ambiguity would arise (i.e., “L” is used). The first letter indicates the year, where “a” is 1989, “b” 1990, and so forth — except at the year 2000, a “blip” occurs so that “M” is 2000, “N” 2001 etc. The second letter stands for the month, “a” for January and etc. The third letter is the date of the month, where 0 through 9 correspond to dates 1 through 10, and “a” indicates “11”, “b”, 12, and up. Comparing one version with another is a matter of comparing each of the three characters of each version in order, assuming that numbers come before letters — i.e., compare the two versions in ASCII sort

Connection

The controlling computer is connected to a serial port on the labeler unit. The labeler pin-out is shown in the table.

| DB9 | DB25 | Label Controller DB9 |
|---------|---------|----------------------|
| 2 (RXD) | 3 (TXD) | 2 (TX) |
| 3 (TXD) | 2 (RXD) | 3 (RX) |
| 5 (GND) | 7 (GND) | 5 (Ground) |
| Shield | Shield | Shield |

The Other End Of The Cable

It is beyond the scope of this document to describe how a controlling system would be programmed to appropriately emit and receive RS-232. However, note that if a PC is used for this purpose, it is almost always true that the serial software interrupts provided-for in the PC's BIOS built-in firmware are useless² and that either a commercial add-on serial library must be obtained, or some fairly low-level programming done to support communications. In this connection, see "HRPLINK:The Program" below; HRPLINK.C provides an example of entirely C-language communications handling.

Interface

1. The controller sends simple ASCII strings to the LBLINK port.
2. ASCII. No escape sequences are supported. The character set includes the extended "IBM" ASCII character-set, and a few common control characters. To be precise: the (extended) ASCII characters numbered 32 to 255, plus three control characters: CR, LF (ASCII 13, 10), and the DEL character (127). The tab character (ASCII 9) is not supported.
3. Response. Some commands, as noted (usually beginning with "?"), return a response. These have the same form as the description at (2.), including the terminating CR, LF.
4. Flow-control: Timing is controlled by the sender. LBLINK code maintains an input buffer and is interrupt-driven; in most units this buffer is 128 bytes. The NOP command (see below) can be used to return output to the controller as a form of

order; the ASCII-alphabetical first version is the older. (Some versions will have upper-case letters — i.e., to distinguish L etc. — but of course the comparison should be made ignoring case.)

Note however that if two or more versions are released on the same day, the automatic versioning system may "fake" a newer date for the second and subsequent releases on that day. The general effect is the same — i.e., the versions shouldn't be off by much — unless releases continue to emerge over a long period at a rate exceeding one per day for the same product.

² The Borland C++ 3.1 Compiler included a Q&A in \BORLANDC\DOC\HELPMEL.DOC: "Q: How come the bioscom() function does not work on my computer?"; "A: bioscom() uses DOS interrupt 0x14 directly, and ... MS-DOS support for the serial communications port may be inadequate in several respects..." and then goes on to describe some of the more noteworthy inadequacies. Because of this, they "strongly recommend getting a third party communications package" or downloading their example program SERIAL.ZIP from their BBS.

flow-control (i.e., send a command, send NOP, wait for the return information NOP sends back). Many applications can dispense even with this simple “handshake”.

Applications which send more than 128 bytes in a stream should definitely implement flow control with the NOP or some other command which returns data. Even when data quantity does not exceed the byte limit, in many applications it will be a good idea to implement flow control around relatively small blocks as a way of providing some assurance that data is actually arriving. The “?” command described below returns an error number and can be used instead of the NOP to control sending and also provide error detection.

Normally a protocol using “?” control would send the “?” command once before sending any data, which will clear error storage, and then use the command subsequently after blocks of data, taking corrective action when a non-zero error code is returned.

Data Format, Baud

The required data format is 8 data bits, no parity, with 1 stop bit, 9600 baud.

Syntax

1. Command lines begin with any non-control ASCII character. Any time the LBLINK port sees any printable ASCII character appear, it will be assumed to be part of a command.
2. Command lines end with the CR, LF sequence. This ASCII control sequence indicates the end of a command. The command does not start processing until the CR, LF sequence is received.
3. The *first* and *second letter* in a command line will always have special command significance. Sometimes additional characters will be significant.
4. Some commands will return output through the RS-232 port, as specified below (usually those beginning with a “?”).
5. Whenever the DEL character is received, all other characters received up to then in the command line will be discarded without error. This supports error-recovery when the controller is not sure what state the LBLINK is in (i.e. start a new command with DEL).

Labeler Control, Communications Flow

Normally, the system is adjusted by the operator through the labeler keyboard and screen.

Link control overrides local operator control; whenever a LBLINK command is received, it will be executed, interrupting and discarding any local operator activities underway. After any link command has executed, the user interface will clear to the ready-to-operate level, as if the operator had pressed repeated ENTER (and/or perhaps HELP) keys to return to the main screen.

When the labeler is operating, the link cannot execute. Executing a label cycle can take a while, although normally the cycle completes within a few seconds, and any pending LBLINK message will be serviced at that time. Characters are still *received* through LBLINK during operation; that is, the character reception is interrupt-driven.

Note the “Qh” and “Qx” commands, which allow the link to seize the machine and lock the operator out, if desired.

The host sending commands is responsible for controlling “flow”, either by occasionally sending a “?” (q.v.) and waiting for the returned error code, or by using commands that normally return data. The labeler receive buffer is about 128 characters, so programs should not send large amounts of data without confirming that the unit is responding.

=====

Commands

The commands + syntax available to the controller interface follow. Each example should be sent on a complete line, i.e., beginning with the legal two-letter command described, followed with any data as described, and ending with the normal CR, LF sequence, and containing no control characters (except for the DEL character usage described above).

Form Of Description

The form shown here below is <initial command letter> <second character> <typical argument> The accompanying description/ explanation will attempt to describe variations.

Some commands may utilize more than the two initial command characters, i.e., they will be extended in sets for certain commands (that is, a third letter — or more letters — will be significant for specified commands, as indicated).

The case (upper or lower case) of the command string (including the first two characters) is significant, unless specified otherwise.

=====

Command Description

??%

Returns an error number. The error number returned will be an ASCII string consisting of “%”, followed by decimal digits, followed by the CR, LF sequence. The error number is reset to 0 — no error — after any ??% sequence occurs; it is not reset to 0 by any other LBLINK sequence, except that it is set to zero at system start-up. If there is no error, ??% will return ‘%0’, CR, LF. The error returned will be the most recent error, regardless of what other errors previously occurred.

Currently defined errors include:

0: No error. Indicates no error has occurred since the last time ??% was sent, or since the machine was turned-on, whichever is most recent.

1: erBUF: Error in receiving a command line, i.e., contained wrong control characters etc.

2: erCMD: The characters starting the line were not a known LBLINK command. (Note that some commands will be absent because of version differences.)

3: erNOCMD: The command isn’t implemented in this version of the labeler.

4: erSYNTAX: Other faults in the command.

- 5: erDIG: A digit specifying a quantity was not correct.
- 8: erNOMEM: Some memory resource was used-up by a command.
- 11: erELSE: Other errors.
- 12: erMISSING: Some apparently-available resource isn't.

Parameter Errors

The various LBLINK commands which set labeler parameters usually do not return errors if the parameter is out-of-range; instead, the parameter is adjusted silently to be within range, and operation continues without error.

=====

- ?Mx** Returns the current value for the parameter. The value is prefixed with the appropriate M code. I.e., “?Mx” might return “Mx123” — terminated by the usual CR, LF.
Exceptions to this format are noted nearby individual instructions.
- ?Mx+** Including a plus at the end of the parameter request will return legal ranges when appropriate, denoted by a colon. For instance, “?Mx+” might return Mx20:0:255; the “0:255” is the legal range for the parameter.
The “+” option is accepted for all ?M..., but only returns the colon range if appropriate.
- ?N** “NOP” — No OPeration. Returns the letter “N” (followed as usual by CR, LF).
- ?V** Returns the version string for the system in the form Vabc. This should correspond to the three letter version printed during the “locked” state.
- Qh, Qx** Hold, release, user interface. After a Qh, the user cannot operate the unit until a subsequent Qx or a power cycle.
- ?Hn** In some versions, returns various further information in the form of letters like “Hnxy” etc. The letters might signify the following:
m: hardware motor control support. See “Md”.
s: save areas. See Mh.

=====

Strategy Selection And Adjustment

- Ma0** Set strategy to 0.
- Mb1,200** Set current adjustment parameter 1 to 200. “?Mb2+” might return the current value and allowed range of parameter 2.
- ?Mc** Return the current number of adjustment parameters.

Discussion

The labeler will have one or more strategies, numbered 0 and up, and each strategy will have 0 or more parameters, numbered 0 and up.

A *strategy* is a basic mode, conceived as corresponding to a particularly labeling device into which the labeler hardware/software has been embedded, i.e. there is an

“Apply Only” and an “Apply/Print” strategy. Perhaps variations on strategies will be provided; also test modes. The user finds strategies on the main menu under the “Select” item; the selections in that list will be available as strategies 0 and up, i.e. the selection item number 1 would be “Ma0”.

To discover the current strategy, use the command “?Ma” which might produce “Ma0”. To discover the current strategy and available entries, “?Ma+” might return “Ma0:0:2”.

Some strategies, although they exist, aren’t implemented. Selecting such a strategy will have no effect beyond setting an “erMISSING” error.

An “adjustment parameter” is one of the variables associated with the strategy, mostly timers. To discover the range of variables available, use “?Mc” which might return “Mc18”, indicating that the current strategy has variables numbered 0 through 17 available. “Mc0” would indicate that *no* adjustments are available for the current strategy.

Set an adjustment with a command like “Mb0,200”; discover the current value of an adjustment with “?Mb0” which might return “Mb200”, or “Mb0+” which might return “Mb0,200:1:2000”.

The adjustment numbers correspond to the menu entries under “Adjust” in the main menu.

DIP SWITCH SETTING AND Ma ERRORS

The above discussion is applicable when the unit's dip switch is set to \$FF or other out-of-range value. When the DIP switch is set to an appropriate strategy setting, then (a.) “?Ma+” might return “Ma2:2:2”, if the DIP switch setting were 2, and (b.) all “Ma” commands will fail with an error, since the setting should not be changed when it is set through the DIP switch which arrangement will be a common set-up.

Stepper

| | |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Md40 | Set stepper motor to a 40 tick step. The ticks can vary with release and are not necessarily milliseconds; check the feature in the label menu system. |
| Md1,1000,4 | To implement custom ramping and for test, some versions of the software use a multiple-step system. The example would set stepper step #1 to 1000 iterations of 4 tick step. A step with an iteration value of 0 terminates the set. In execution, that step will continue indefinitely. |
| Md7000,3000,10,5 | In style 4, the start, stop, width, and amounts are specified. If “+” in the request, might return “Md7000,3000,10,5:2:65535” indicating the ranges for the start and stop parameters. |
| Md1200,28,14,2000 | Md1200,28,14,2000 In style 5, a totally different arrangement is provided, with the parameters speed (inches per minute), gear numerator, gear denominator, and diameter (thousandths). |
| ?Md1 | Return the setting of step 1 like “Md1,1000,4”. |
| ?MdX | Return the current step strategy, followed by other information. |

- "MdX1": A single step system; i.e. multistep unavailable, and the single step is set like "Md40". Never implemented in link.
- "MdX2": Software-based multistep. Probably has information similar to
- "MdX3,1,100,Cycle (1/2 ms),0,65535,Step (500 ns),2,65520": shows step number minimum, maximum, followed by a typical prompt, minimum, maximum for the iterations/Cycle, Steps. This would be the hardware-timer-based step implementation.
- "MdX4": Moon-phase based step system, introduced around Mon 09-25-2000 version mio.
- "MdX5": Tue 5/07/02 11:32 am. Floating-point calculations are involved in a non-stepping but relatively precision speed system; see style 5 summary above.

MORE PARAMETERS

| | |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Me1 | A 1 turns-on a cycle end photocell, a 0, off. |
| Mf1 | Encoded product delay. |
| Mg1 | Continuous label. |
| Mh2 | Set save area to 2. |
| MiA~PH\$0D\$0A | Various values can be set with "Mi". In this case, the sometimes-Zebra print command is set to ~PH followed by a CR LF. Note that the hex values must be 2 digits. "?MiA" returns the current contents, with characters <'!' returned as \$HH. |

=====

Network

Some Loveshaw labelers support a multi-unit network, allowing up to 32 labelers to be connected to a single RS-422 cable.

BroadcastQueKill

```
#define commKILLQ (130)
```

Sending this character to a Loveshaw labeler network causes all the labelers to remove all characters from their input ques. When controlling a network, the controller might emit this character now and then to avoid overloading labelers' input ques that receive garbage while some other labeler is selected.

Note that commKILLQ overrides commSELECT properly; i.e. the sequence commSELECT, commKILLQ, will empty the que and perform no selection or deselection.

BroadcastSelect

```
#define commSELECT (131)
```

Sending the commSELECT character, followed by a printable character in the ASCII range '@' to 'a' or so, will select and deselect labelers on the net. The second printable character will be interpreted as a network address by subtracting the ASCII value of '@' (64 or \$40) from the character. After the second character in the commSELECT sequence is received, the input que on all labelers is emptied, as if a commKILLQ had been received.

Deselecting All Labelers

Thus in this scheme '@' is address 0, which will deselect all LC labelers on the net; letter 'A' would select labeler #1, and so forth.

?Se

Confirm the labeler's selection; should return the *number* of the labeler, i.e. for instance "Se1".

Labeler States

There are three labeler states:

1. The manufacturing default is a network address of zero. In this state, the labeler will never enable its network drivers, but will respond to link commands. Thus if the labeler is equipped with standard RS-232 drivers, it will behave normally. When installed in a network, the labeler would normally be set by the installation personnel to a unique network number other than zero using the menu feature provided for this purpose.
2. **Selected.** After receiving a select command (described above) specifying the labeler's address, the labeler will turn its drivers on and respond to link commands.
3. **Unselected.** After receiving a select command (as above) specifying an address other than the labeler's, the labeler turns off its drivers and does not respond to link commands. When the labeler powers-on normally, if its network address is zero, it will immediately go into state #1. Otherwise it will go into the unselected state #3.

=====

Emulation

Labeler software supports remote emulation with the "Gg" command. Emulation is much more difficult to support than the standard control commands.

Emulation must first be started with the "Gg" command before the other operations described here will work. Conversely, standard LBLINK commands are no longer available.

Gg

Go into emulation mode, which is entirely different than the standard LBLINK mode, comprised of the commands described above. Emulation mode supports remote emulation of the labeler screen. During emulation mode, the labeler is "shared" between the host program and the local operator; either can input keys. Operation can and will occur when the labeler is placed into ready state using the normal key sequences.

Emulation mode works like this:

- The labeler software sends any data it would send to the local labeler screen to the serial interface also.
- Any characters received from the serial channel are treated as keystrokes as if they had been input on the local keyboard.

Various special characters and protocols support the emulation.

Input Characters

These characters can be sent by the host to emulate various special labeler characters:

```
#define k(c)          (c-CTL)
#define lbUP          k('A')
#define lbDN          k('B')
#define lb2ND          k('C')
#define lbCLR          k('D')
#define lbHLP          k('E')
#define lbENT          k('F')
#define lbNONE          k('G')
#define lbCLR2          k('H')
```

lbNONE would be used to send a guaranteed-to-be-wrong key; lbCLR2 is used to exit the menu system without using the clear.

Output Characters

Some figure-characters from the LCD SCREEN are sent by the labeler.

```
#define epright      (126)
#define epleft      (127)
#define epblock      (255) /* a full block. */
#define epsmbox      (0xa1) /* small box. */
#define epbbox      (0xdb)
#define epsmi        (0xaa) /*a little i. */
#define epsmii       (10) /*a little ii. */
```

Also some screen control characters are sent by the labeler:

```
#define clrscr (1)
#define homescr (2)
#define curson (3)
#define cursoff (4)
#define cursleft (5)
#define CURSRIGHT (6)
#define eol (7)
```

Protocol

Two other characters will be sent by the labeler:

```
#define commREADY (128) /* sent when labeler is ready to receive a character; sent after any output characters are sent, as a way of letting the host know that the output is "over". At emulation-on, a commREADY is sent. */
```

```
#define commPOSITION (129) /* Screen position; followed by binary position from 0 to 39, but with BIT7 set. */
```

Exiting Emulation Mode

The host should send

```
#define EXITEM (254)
```

The labeler should respond with "OK", CR, LF.

=====

Input Emulation; Output Log

These input emulation and I/O log features are supported by some versions of the software.

- Ae+** Make labeler redirect input to emulation RAM. Sets current emulation to default.
- Ae-** Make labeler get input from hardware.
- AeX** Erase any stored emulation events. Set current emulation RAM to default (off) value, redirect input to emulation RAM (== Ae+). Also erases any logged events (== Bx).
Note that the above commands simply redirect sensor inputs to emulation RAM. The following commands set-up and execute emulation events.

Ae1000, 32769 Add an emulation input event to the list. This one would set the emulation bits to 8001H at 1000 milliseconds after emulation start. The inputs to the labeler are internally defined as bit 0 through bit 15. Bit 0 is the least significant bit on the first input buffer IC; bit 15 is the most significant bit on the second input buffer, if it exists.

Ae0 Start emulation events with bits set to 0. Any stored events will be executed at the times specified.

?Ae Returns the list of stored events in a list like

```
Ae1000,32769  
Ae1500,1  
.
```

with a line containing a single period indicating the end of the list.

Finally, a series of commands should display input and output events that have been logged by the logging system.

Bx Clear the logged events.

?Ba Return the list of logged events in the form

```
Ba7,0,1234 Ba2,0,1456  
.
```

terminated with a single period. The first number is that of the event, and the second two the millisecond timing in 32 bits: the first number is the most significant word in decimal, the second number the least significant word in decimal.

The significance of the event numbers should be available in some kind of Loveshaw document.

=====

Command Summary

| Command | Summary |
|---------|---------------------------------|
| ?% | Returns error. |
| ?H | Sysinfo. |
| ?N | NOP. Returns N. |
| ?Se | Returns selection number. |
| ?V | Return version. |
| Gg | Emulation. |
| Ma | Select strategy. |
| Mb | Set a parameter. |
| Md | Set something related to speed. |
| Me | Cycle end photocell. |
| Mf | Encoded product delay. |
| Mg | Continuous label. |
| Mh | Set save area. |
| Mi | Set special values. |
| ?M. | Return values. |
| ?Mc | Return # of parameters. |
| Qh | Lock user out. |
| Qx | Enable user access. |

=====

HRPLINK, The Program

A demonstration program HRPLINK.C is available. The source and the executable HRPLINK.EXE which provides simple LBLINK demonstration services on a PC (IBM-type XT or AT personal computer running MSDOS — *not* Windows). The program is compiled with Borland Turbo C 2.0. Files supplied on the HRPLINK diskette:

- HRPLINK.C. The entire C source to the program.
- HRPLINK.EXE. The executable.
- LBLINK.D. Demonstration input files (“hrplink lblink.d con”).
- LBLINK.BAT. DOS batch files show a typical command using LBLINK.D, i.e. “LBLINK LBLINK.D LBLINK.O -d -n -u -;”. After such a sequence the result will be in LBLINK.O. If it hangs-up, the system isn’t connected properly; exit with ^Break. LBLINK uses the LBLINK.D file.

HRPLINK entered without arguments presents a short description of operation. Basically, the program allows text to be entered at the console or from a file and sent to the HRPLINK port, and captures returned text, which can be sent to the console or a file.

Minor error-checking support is included. The program is not useful for applications “as is”, but should provide a starting point for software engineers.

Note that HRPLINK implements interrupt-driven input on the PC architecture using only Turbo C constructs, and may be useful as starting-point for this kind of work on PC platforms.

Loveshaw can also provide various labeler-emulation executables, which produce a labeler-like screen on a remote PC. The LABELS program is one such Windows program.

Troubleshooting LBLINK

If problems arise with using LBLINK at a particular installation, debugging possibilities:

- Use a PC communications program and enter the various strings by hand. Since LBLINK uses simple ASCII strings, this isn't difficult. Note that sometimes ^M, followed by ^J, must typically be used to produce the CR, LF sequence.
- See also **HRPLINK, The Program** above.

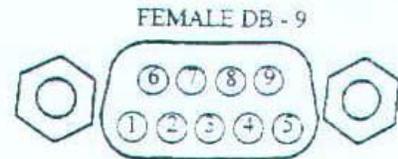
=====

| | Product Delay | Label Overfeed | Hold-Off | Speed | Net # | Notes: |
|----|---------------|----------------|----------|-------|-------|--------|
| | 250 | 0 | 0 | 1200 | 0 | |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
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| 6 | | | | | | |
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| 41 | | | | | | |
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| 43 | | | | | | |
| 44 | | | | | | |
| 45 | | | | | | |

Encoder Product Delay

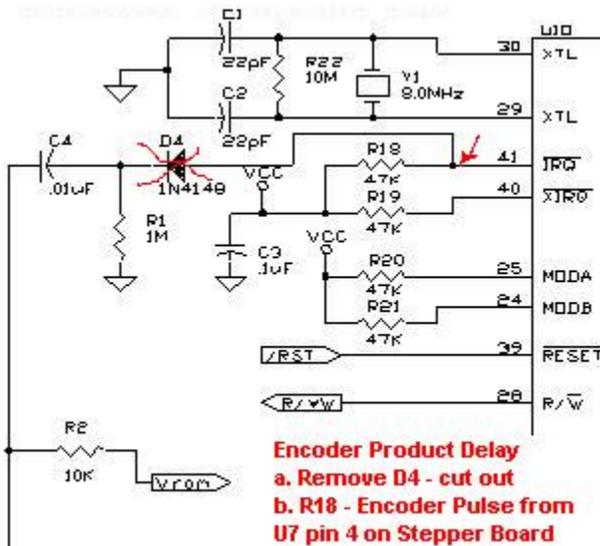
When this option is order the 9 pin D connector second from the bottom which is usually the RS232/422 port will be rewire as below where a standard 12 VDC encoder is used.

| PIN | SIGNAL NAME | TYPE |
|-----|----------------------|--------|
| 7 | Shaft Encoder Signal | Input |
| 5 | DC Ground | Ground |
| 6 | + 12 VDC | Supply |

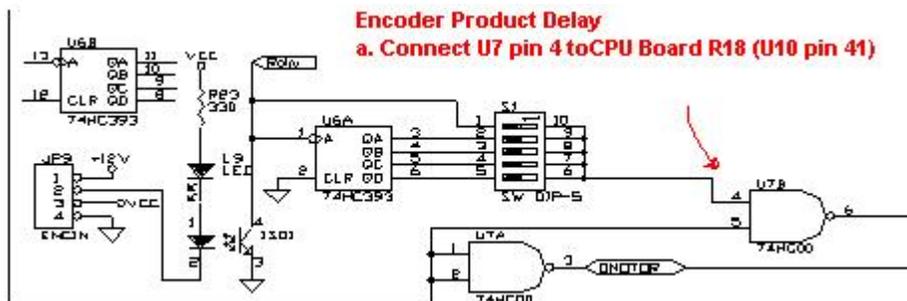


If needed, usually on pin 8, will have 5 VDC so that a 5 volt DC Encoder can be used.

Below is the Labeler CPU board.



Below is the Labeler Stepper board.



JP9 on Stepper Driver board is Encoder (Ribbon or 4 conductor wire).