



*PEL* SERIES  
INK JET SYSTEM  
PC SOFTWARE

Revision C  
Versions 1.06 - 3.20  
6600-191

Information contained in this manual is commercially confidential and may not be reproduced or disclosed without the written permission of Diagraph, Inc. The supply of this manual or the equipment to which it applies does not constitute or imply the transfer of any rights to any party.

The information contained in this manual is correct and accurate at the time of its publication. Diagraph reserves the right to change or alter any information or technical specifications at any time and without notice.

*©1996 Diagraph, Inc. All rights reserved.  
Printed in the United States of America*

## SOFTWARE LICENSING AGREEMENT

The software in this package is sold on condition of your agreement with the terms and conditions of this licensing agreement. You may use this software only if you agree to the terms and conditions of this agreement. If you do not agree with these terms and conditions, return the package and your money will be refunded.

The software in this package is to be used only on a single computer.

You can make backup copies of this software only in support of your use of this software on the single computer.

You may transfer this software and license to another party only if the other party agrees to accept the terms and conditions of this license and only if you do the following: you must transfer all copies, in printed or machine-readable form, in whole or in part, to the same party or, at the time of the transfer, you must destroy any copies, in printed or machine-readable form, in whole or in part, not transferred. At the time you transfer possession, your license is automatically terminated.

On any copy, you must retain and reproduce any copyright notices contained in the software.

You may not use, copy or transfer the software or any copies, in printed or machine-readable form, in whole or in part, except as expressly provided in this agreement.

## DISCLAIMER OF WARRANTIES

The author and the publisher have taken due care in preparing this software and manual. The author and the publisher make no warranties either expressed or implied in regard to this software or this manual. The author and the publisher do not warrant that the software will meet your specific requirements or that the software will be error free. In no event shall the author or the publisher be liable to you for any damages, incidental or consequential, arising out of the use or performance of this software.

## MANUAL CONVENTIONS

### Text

Specific text that you are to type is shown in bold. For example, if the manual says to type **COPY A:\*.B:**, type all bold characters including the asterisks, the period and the colons.

Placeholders in the manual for field and file names are shown in italic. For example, when the manual says enter *filename.extension*, type in the name of your file followed with a period and its three letter extension.

### Technical Notes

Notes, primarily for clarification on complex program functions or system characteristics, appear in boxes with inverse titles:

#### Background Information

These notes focus on background information rather than on how to perform a procedure. If you are in hurry, read them after your system is printing.

### Symbols & Warnings

Symbols appear before items that require close attention for both safety and success in running a PEL System. They appear at the left margin and have accompanying text:



CAUTION. This symbol indicates that some action maybe hazardous. Take particular care when involved in procedures with this symbol



NOTE: This symbol accompanies a procedure that requires close attention to detail for success.

### Keyboard

Keys to press on the computer keyboard are designated by underlining--ESC, ENTER, ALT and HOME--or by the same symbols that appear on the keys such as ↑ and ↓.

Choices to be made from screen menus are capitalized--Y, N, S, P.

### Screen Representations

Prompts that appear on the screen are framed and shadowed:

< SET SEQUENCE NUMBER >

Upper : 99999999

Lower : 0

Rep : 0

Inc : 1

Head 1 : N

Head 2 : Y

Head 3 : N

Head 4 : N

Ctrl-Enter to Accept

## Greeting & Warranty Table of Contents

### 1 • Installation & Passwords

1.1 Installing the Software.....	1 - 1
1.2 Passwords.....	1 - 2
1.2.1 Enter Passwords .....	1 - 2

### 2 • Program Navigation

2.1 Main Menu.....	2 - 1
2.2 Keyboard Operations.....	2 - 1
2.3 Hot Keys .....	2 - 6
2.4 Quit.....	2 - 6
2.5 DOS Shell.....	2 - 6
2.6 Exiting Software .....	2 - 7

### 3 • Setting Up the Workplace

3.1 Setup Menu .....	3 - 1
3.2 Version 1.06 Station Port Setup (A & B) .....	3 - 1
3.3 Version 3.20 Network Port Setup .....	3 - 2
3.4 DOS Printer Port Setup.....	3 - 3
3.5 Scanner Port Setup .....	3 - 4
3.6 Station Configuration .....	3 - 4
3.7 Setup Shift .....	3 - 6
3.8 Setup Rollover Time.....	3 - 7
3.9 RAM Drive .....	3 - 7
3.9.1 RAM Drive Installation .....	3 - 8
3.9.2 Setting the Temp Drive.....	3 - 9
3.10 Password .....	3 - 10
3.11 Sign On .....	3 - 12
3.12 Time.....	3 - 12
3.13 Date .....	3 - 12

### 4 • Creating & Editing Labels

4.1 Label Menu.....	4 - 1
4.2 Creating a New Label .....	4 - 1
4.3 Selecting Font Templates.....	4 - 4
4.3.1 Per Template Bold Value.....	4 - 5
4.3.2 Bar Code Parameters.....	4 - 6
4.4 Autocodes.....	4 - 7
4.4.1 Variable Field Prompt Code .....	4 - 9
4.4.2 Spaces Code.....	4 - 9
4.5 Edit Existing Labels.....	4 - 10

4.6	Rename a Label.....	4 - 11
4.7	Delete a Label.....	4 - 11
4.8	Copy a Label .....	4 - 12
4.9	Archive Labels .....	4 - 12
4.9.1	Label Archives—Store All.....	4 - 13
4.9.2	Label Archives—Store One.....	4 - 15
4.9.3	Archives—Read.....	4 - 16
 <b>5 • Printing Labels</b>		
5.1	Print Label Option.....	5 - 1
5.2	Station Status.....	5 - 2
5.3	Sequence Number .....	5 - 3
 <b>6 • Importing Data &amp; Generating Reports</b>		
6.1	Data and Reports Menu .....	6 - 1
6.2	Import Data .....	6 - 1
6.3	Label Report.....	6 - 5
6.3.1	All Label Formats Report .....	6 - 6
6.3.2	Single Label Format Report .....	6 - 6
6.3.3	Label List Report .....	6 - 7
6.4	Log.....	6 - 7
 <b>7 • RS-485/RS-422 Network</b>		
7.1	The RS-485 and RS-422 Standards .....	7 - 1
7.2	Setting Up the PEL Controllers .....	7 - 1
7.3	Setting Up Network Software.....	7 - 3
7.3.1	Setting the Network Port.....	7 - 3
7.3.2	Configuring the Network.....	7 - 4
7.3.3	Configuring a Station.....	7 - 5
7.3.4	Off-Line Stations.....	7 - 6
7.4	Labels in Network Software .....	7 - 6
7.5	Label Save and Label Request .....	7 - 7
7.5.1	Label Save.....	7 - 8
7.5.2	Label Request Commands.....	7 - 9
 <b>8 • Look-Up Tables</b>		
8.1	Setting Up the Scanner/Decoder .....	8 - 2
8.2	Creating a Look-Up Table.....	8 - 3
8.3	Editing a Look-Up Table .....	8 - 5
8.3.1	Adding Keys to a Look-Up Table .....	8 - 6
8.3.2	Deleting Keys from a Look-Up Table .....	8 - 7
8.3.3	Changing Entries in a Look-Up Table .....	8 - 8
8.4	Renaming a Look-Up Table .....	8 - 9
8.5	Deleting a Look-Up Table .....	8 - 10
8.6	Copying a Look-Up Table.....	8 - 10
8.7	Using a Look-Up Table.....	8 - 11

8.7.1 Activating a Look-Up Table.....	8 - 11
8.7.2 Changing The Active Look-Up Table.....	8 - 13
8.7.3 Inactivating a Look-Up Table .....	8 - 14
8.7.4 Look-Up Status .....	8 - 14
8.8 Look-Up Table Error Messages .....	8 - 17

## 9 • Disk-Based Look-Up Tables

9.1 When to Use Disk-Based Look-Up Tables .....	9 - 1
9.1.1 Managing Disk-Based Look-Up Tables with External Software .....	9 - 1
9.1.2 Creating a Disk-Based Look-Up Table .....	9 - 2
9.1.3 Editing a Disk-Based Look-Up Table .....	9 - 3
9.1.3.1 Adding Keys to a Disk- Based Look-Up Table .....	9 - 3
9.1.3.2 Deleting Keys from a Disk- Based Look-Up Table .....	9 - 4
9.2 Renaming a Disk-Based Look-Up Table .....	9 - 6
9.3 Deleting a Disk-Based Look-Up Table .....	9 - 7
9.4 Copying a Disk-Based Look-Up Table .....	9 - 7
9.5 Using a Disk-Based Look-Up Table .....	9 - 8
9.5.1 Specifying the Temp Drive.....	9 - 9
9.6 Setting Up a RAM Drive.....	9 - 9
9.6.1 Setting the Temp Drive.....	9 - 9
9.7 Activating a Disk-Based Look-Up Table .....	9 - 9
9.7.1 Changing the Active Look-Up Table .....	9 - 11
9.7.2 Inactivating a Disk-Based Look-Up Table.....	9 - 12

## 10 • Production Logging & Report Generation

10.1 Production Logging & Report Generation.....	10 - 1
10.1.1 Production Logging .....	10 - 1
10.1.1.1 Setting Up Log Change Over .....	10 - 2
10.1.1.2 Setting Up Events .....	10 - 3
10.1.1.3 Turning Log On & Off .....	10 - 4
10.1.1.4 Viewing the Log .....	10 - 5
10.1.1.5 Printing the Log .....	10 - 5
10.1.1.6 Deleting Records.....	10 - 6
10.2 Table Look-Up Production Logging.....	10 - 7
10.2.1 Production Logging .....	10 - 7
10.2.1.1 Setting Up Look-Up Events.....	10 - 8
10.2.2 Look-Up Report Generation .....	10 - 10
10.3 Sequence Number Production Logging .....	10 - 10
10.3.1 Production Logging .....	10 - 10
10.3.1.1 Selecting a Printhead.....	10 - 10
10.3.1.2 Setting the Sequence Number .....	10 - 11
10.3.1.3 Setting the Sequence Number Event .....	10 - 12
10.3.1.4 Example Applications .....	10 - 14

10.3.1.4.1 Two Stations, Two Lines .....	10 - 14
10.3.1.4.2 One Station, Two Lines.....	10 - 14
10.3.2 Sequence Number Report Generation .....	10 - 15
10.4 Production Report Generation	10 - 15
10.4.1 Typical Report Output.....	10 - 17
10.4.2 Summary Reports.....	10 - 18
10.4.2.1 Summary Report by Label .....	10 - 18
10.4.2.2 Summary Report by Station.....	10 - 19
10.4.2.3 Summary Report for One Station .....	10 - 20
10.4.3 Detail Reports .....	10 - 20
10.4.3.1 Detail Report by Time.....	10 - 21
10.4.3.2 Detail Report by Label .....	10 - 21
10.4.3.3 Detail Report by Station.....	10 - 22
10.4.3.4 Detail Report for One Station.....	10 - 23

## 11 • Table Look-Up with Network Applications

11.1 Look-Up on Two Conveyors	11 - 1
11.1.1 Scanner/Decoder Configuration.....	11 - 2
11.1.2 Look-Up Definition .....	11 - 3
11.2 Look-Up to Multiple Controllers from One Scanner .....	11 - 4
11.3 Look-Up to Multiple Controllers on Two Conveyor Lines.....	11 - 6

## 12 • Appendices

### Appendix A - Creating a Sample Label

A.1 Open Label Menu.....	A - 1
A.2 New Label .....	A - 1
A.3 New Label Name.....	A - 2
A.4 Select Heads .....	A - 2
A.5 Printhead 1 .....	A - 2
A.6 Printhead 2 .....	A - 4
A.7 Printhead 3 .....	A - 6
A.8 Printhead 4 .....	A - 7

### Appendix B - Troubleshooting

### Appendix C - Network Tips & Guidelines

C.1 RS-485 Multi-drop Network vs. Straight RS-232.....	C - 1
C.2 RS-485 Cabling Requirements .....	C - 2
C.3 Software Network Requirements & Capabilities .....	C - 5



*This section covers installation of Diagraph PEL software onto a PC hard disk and instructions for defining passwords.*

### 1.1 Installing the Software

The Diagraph PEL Series Ink Jet System Software resides on a single diskette with four files:

- Disk identifier
- Installation program
- Compressed system file
- Data file

The installation program uses the data file to set up the PC and install the software. You are not confined however by its preset choices. During the installation procedure, you can change most of the setup conditions. Once you have installed the software, you can still go back and make any desired changes through normal DOS procedures.

1. Turn the PC power on. When the BOOT process is finished you should be at a DOS prompt.
2. Insert the PEL diskette into the disk drive that matches your diskette size.
3. If your diskette is in drive A, type **A: INSTALL**. If it is in drive B, type **B: INSTALL**.
4. Follow the instructions on the screen. You will be prompted for the rest of the installation procedure. If you have more than one hard drive configured, the default drive will be the last one on the PC and it will be blinking. If this is not the one that you want, use the cursor key to select the correct hard drive.

5. Reboot the PC. The *PEL* Ink Jet software needs to start from a reboot after installation.
6. After rebooting, type **CD\PEL** to change to the PEL subdirectory.
7. Type **PEL** and press ENTER.

## 1.2 Passwords

There are two password levels—Primary and Secondary. The Primary level allows complete system access in which you can use any of the software's features

Figure 1-1  
Password



### 1.2.1 Enter Passwords

The Secondary level allows limited system access to prevent accidental changes to the system setup. The primary user controls the extent of the secondary user's access. The software is set up with Manager as the initial password and pass as the secondary password.

Type in the selected password and then press ENTER. The password is upper and lower case sensitive. Type **Manager** (not manager), **pass** (not Pass).

You have three chances to enter the password correctly. After three incorrect passwords, the system returns to DOS. This is a security feature that prevents unauthorized access. With the correct password, the main menu screen appears.

## Section 2 Program Navigation

---

*This section leads you through all the unique keyboard functions and hot keys of PEL software. It starts with the Main Menu and finishes with instructions on quitting the system.*

### 2.1 Main Menu

Each menu choice at the top of the screen leads to menus and additional functions. The fold-out charts show the functions accessible from the first level Main Menu. Each of these choices receives detailed explanation in this manual.

To select an item from the Main Menu, use the arrow keys to highlight your choice and press ENTER. You can also access choices from secondary menus by pressing the highlighted character in the designated function followed by ENTER. While in a lower level menu, you can return to the Main Menu by pressing ESC.

### 2.2 Keyboard Operations

For most functions, you can save and enter your responses in PEL Software with the key combination of CTRL + ENTER. This is done because there are multiple fields to edit for these menu items.

Table 2-1a  
Keyboard  
Operations  
and Key  
Combinations

<u>Backspace</u>	Moves the cursor backward one space and deletes the character.
<u>CTRL-End</u>	Updates the current field and moves the cursor to the first position of the last field on the same screen.
<u>CTRL-ENTER</u>	Updates the current field and exits the field (except when selecting font templates).
<u>CTRL-Home</u>	Updates the current field and moves the cursor to the first position of the first field on the same line.

During data entry, the keys work as described:

Table 2-1b  
Keyboard  
Operations  
and Key  
Combinations

<u>CTRL-K</u>	Erases the content of the current field and moves the cursor to the first position within the current field.
<u>CTRL-Page-Up</u>	Updates the current field and scrolls the cursor to the upper-left most field.
<u>Delete</u>	Deletes the character on that cursor position.
<u>Down Arrow</u>	Updates the current field and proceeds to the field on the next line down closest to the current field.
<u>End</u>	Moves the cursor to the last position of the current field.
<u>ENTER</u>	Updates the current field and proceeds to the next field.
<u>ESC</u>	Returns to the main menu and allows you to make selections from there.
<u>F10</u>	Updates the current field and proceeds to the next field.
<u>F9</u>	Scrolls the cursor up in the Label Creation screen.
<u>Home</u>	Moves the cursor to the first position of the current field.
<u>Insert</u>	Toggles between insert mode and overstrike mode within the current field.

Table 2-1c  
Keyboard  
Operations  
and Key  
Combinations

<u>Left Arrow</u>	Moves the cursor one character to the left within the current field.
<u>Page Down</u>	Updates the content of the current field and moves the cursor to the last field of the screen.
<u>Page Up</u>	Updates the current field and moves the cursor to the beginning field of the screen.
<u>Right Arrow</u>	Moves the cursor one character to the right within the current field.
<u>Shift-TAB</u> <u>CTRL-Left</u> <u>Arrow</u>	Tabs backward to previous field in entry mode.
<u>TAB</u> <u>CTRL-Right</u> <u>Arrow</u>	Updates the current field and proceeds to the next field.
<u>Up-Arrow</u>	Updates the current field and returns to the field on the previous line closest to the current field.

### 2.3 Hot keys

HOT-KEY combinations save several key strokes and quickly execute functions from the selected menu or main menu (see Table 2-2).

Table 2-2  
Hot-Key  
Combinations

Combination	Function	Menu Location
ALT-E	Edit/change label	LABEL
ALT-P	Print label	PRINT
ALT-Q	Quit software/ return to DOS	QUIT
ALT-S	Station status	PRINT
ALT-C	Cancel printing	PRINT

HOT-KEY combinations enable you to jump past multiple menus. For example, after creating a new label, simply hit ALT-P to print that label.

### 2.4 Quit

When you select Quit, you will see two choices:

Figure 2-1  
Quit Choices

Exit software Dos shell	Leave software and return to DOS (ALT-Q)
----------------------------	--

You can quit *PEL* software by pressing ALT-Q or, if you want to keep *PEL* software running and execute a DOS function, choose DOS Shell.

### 2.5 DOS Shell

The DOS shell command returns to DOS and *PEL* software remains in memory. You can return to the software anytime by typing EXIT and pressing ENTER.

Some DOS applications may lock up the system when returning to the software from DOS Shell. Reboot the

computer and start over. The software that remained in memory may have been overwritten.

## 2.6 Exiting Software

If you leave the software through Exit Software, the printhead controllers continue printing the most recent message sent to the printhead controller. A system reset does not change the message. Changing the message requires entering the Print Menu and choosing to print a label. You can access a different label by either typing in a label name or pressing ENTER when prompted for a name. The later choice brings up a list of available labels.

## Section 3 Setting Up the Workplace

---

*This section covers the procedures to set up a PEL ink jet printing system. All steps are accessible through the Setup Menu. For successful implementation, you need to know quantities and models of hardware components in your PEL system. Check them before starting.*

### 3.1 Setup Menu

After the software has been installed (Section 1), use the SETUP menu to establish the PEL System environment.

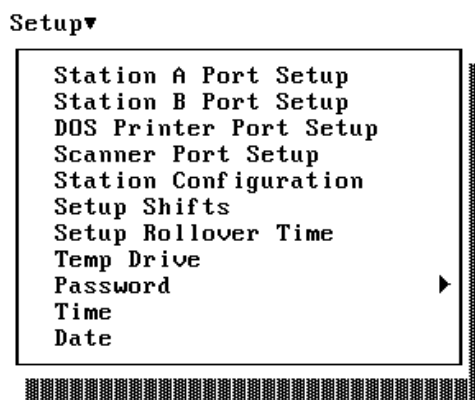
To open the Setup menu, press S or use the arrow keys to highlight it and press ENTER.

The SETUP menus for Versions 1.06 and 3.20 have different approaches so identify your software version and follow the appropriate setup sequence.

### 3.2 Version 1.06 Station Port Setup (A and B)

The Station Port Setup screen in Version 1.06 directs you to select a serial port.

Figure 3-1  
V1.06 Setup  
Menu



1. Use A, B or ↓ to highlight STATION A PORT or STATION B PORT SETUP.
2. Press ENTER.



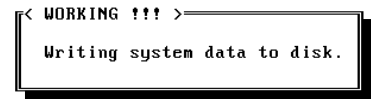
Figure 3-2  
Station Port  
Setup



Select the correct COM port or the NOT CONNECTED option by highlighting it and pressing ENTER. Only ports that are not used by other devices will be listed.

Once entered, the system records the data and acknowledges the receipt.

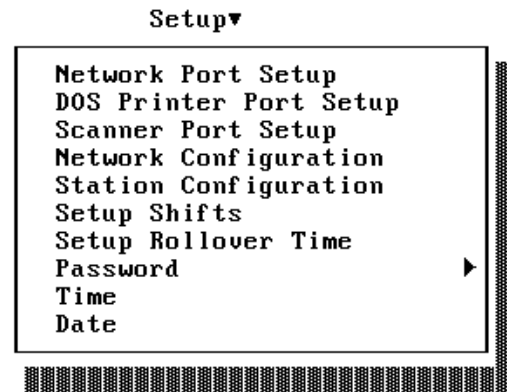
Figure 3-3  
Acknowledged  
Receipt



### 3.3 Version 3.20 Network Port Setup

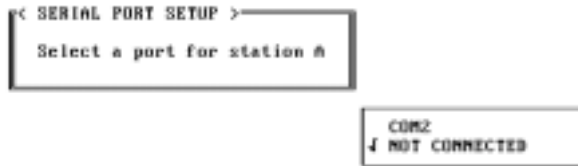
The Network Port Setup directs you to select a serial port to communicate with the stations.

Figure 3-4  
V3.20 Setup  
Menu



1. Use N or ↓ to highlight NETWORK PORT SETUP.
2. Press ENTER.

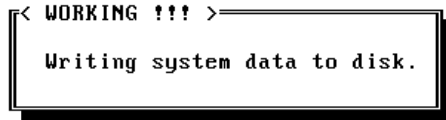
Figure 3-5  
Station Port  
Setup



Select the correct COM port or the NOT CONNECTED option by highlighting it and pressing ENTER. Only ports that are not used by other devices will be listed.

Once entered, the system records the data and acknowledges the receipt.

Figure 3-6  
Acknowledged  
Receipt

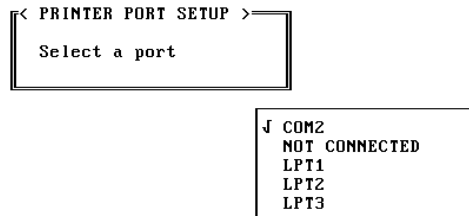


### 3.4 DOS Printer Port Setup

DOS Printer Port Setup allows you to select a serial or parallel port to connect a printer (any standard 80 column printer can be used). To select this option, press O or highlight it and press ENTER.

The screen will ask for a port selection:

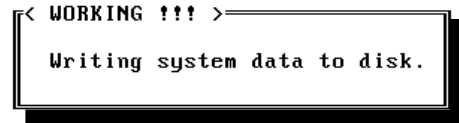
Figure 3-7  
Print Port Setup



If a COM port is assigned to another device (such as a station or scanner), it will not be displayed. Only serial ports that are available for use will appear in the small window-COM1 and COM2 are serial communication lines. LPT1, LPT2 and LPT3 are parallel communication lines for printers.

Select the port with the arrow keys to and press ENTER. The "Working" screen will flash:

Figure 3-8  
Working  
Acknowledg-  
ment

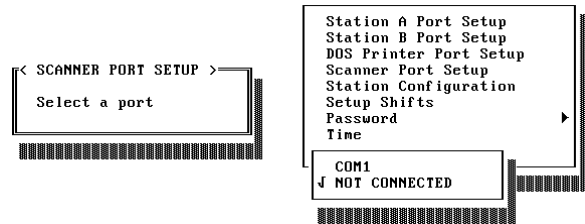


Press the ESC key to close.

### 3.5 Scanner Port Setup

Scanner Port Setup allows you to select a serial port for a bar code scanner. To select this option press C or highlight it and press ENTER.

Figure 3-9  
Scanner Port  
Setup



Select a COM port or NOT CONNECTED by highlighting it and press ENTER. Press the ESC key to close.

### 3.6 Station Configuration

Use the Station Configuration option to assign Long Bar, Trigger and Encoder Values to the printheads in your system.

1. Press S, highlighted in the phrase Station Configuration, or ↓ to highlight it.
2. Press ENTER.
3. Your choices are Station A or B. Select the appropriate station and press ENTER. The STATION CONFIGURATION screen appears.

Figure 3-10  
Station  
Configuration

```

< STATION CONFIGURATION >
Station A
(Head 1) 2560 Print Head (Y/N): N   (Head 3) 2560 Print Head (Y/N): Y
(Head 1) Longbar Value (1-32): 32   (Head 3) Longbar Value (1-32): 16
(Head 2) 2560 Print Head (Y/N): Y   (Head 4) 2560 Print Head (Y/N): Y
(Head 2) Longbar Value (1-32): 16   (Head 4) Longbar Value (1-32): 16
(Head 1 & 2) Trigger on rising edge: Y
(Head 3 & 4) Trigger on rising edge: Y
(Head 1,2,3 & 4) Encoder (Requires switch settings): Y
Clear station on bad lookup (Y or N): N
Print each label only once: N
Ctrl-Enter to Accept
  
```

The Station Configuration screen has input fields that set variables for the selected printstation: 2560 Print Head, Longbar Value, Trigger on rising edge and Encoder. The Longbar fields require numeric inputs while the 2560 Print Head, Trigger and Encoder entries must be either Y or N. Each input field has fixed ranges. Entries out-of-range will produce an error prompt as shown below.

Figure 3-11  
Out of Range  
System Error

```

( SYSTEM ERROR !!! )
Value out of range: (1 through 32)

Strike any key to continue.
  
```

**2560 Print Head** enables you to configure a station to support a 2560 printhead by setting this option to Y. An entry of N supports the 9600 and the 1920 printheads.

**Long Bar Value** is the height of long (or tall) bars in bar codes such as Postnet. The Long Bar Value range is 1-32 and entries out of range will produce a "SYSTEM ERROR!!! Value Out of Range" prompt. For most applications, the desired value is 32, but because the Default Value in the print controller is 16, the software default is also 16.

**Trigger on falling edge** requires a response that depends on what kind of photosensor you have and when you want it to trigger the system—when an object moves into the photosensor field of view or when an object leaves the field of view. If you wish to trigger on the front of a

box and have a proximity photocell, type **Y**. If you have a retro-reflective photocell, type **N**.

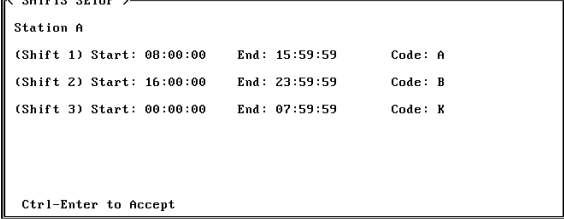
**Encoder** needs a response that indicates the type of encoder used in this *PEL* system. Enter **N** for Encoder in The Station Configuration screen if your system has an internal encoder. Enter **Y** if you are using an external Diagraph encoder. If you change this setting, you must also change the switch settings inside the station. Consult the controller technical manual for additional information.

### 3.7 Setup Shift

Use the Setup Shifts to set the times that define the start and end of each shift, as well as the code for each shift.

1. Press H, or **↓** to highlight it.
2. Press ENTER. If you have more than one print station setup, the display prompts for a print station selection.

**Figure 3-12**  
**Shifts Setup**



```
< SHIFTS SETUP >
Station A
(Shift 1) Start: 00:00:00   End: 15:59:59   Code: A
(Shift 2) Start: 16:00:00   End: 23:59:59   Code: B
(Shift 3) Start: 00:00:00   End: 07:59:59   Code: K

Ctrl-Enter to Accept
```

You can enter anytime between 00:00:00 and 23:59:59 in each of the time fields. Use TAB to move between fields. The program will not allow you to leave any field unless the value is a valid time.

You may set the code used for each shift in the code field. This is the character that will appear in the text when you use the shift autocode, {SH} in the text of a message.

For example, in Figure 3-12, Shift 1 goes from 8:00 a.m. until 4:00 p.m. (15:59:59) and is represented by the code **A**.

*Note:* The station accepts only alphabetic shift codes, no numeric or symbolic codes.

### 3.8 Setup Rollover Time

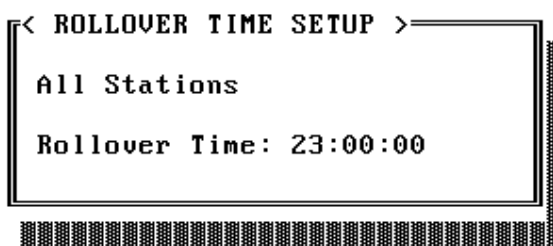
The rollover date is similar to the normal date except that it changes at the rollover time instead of midnight. The autocodes for the rollover date are shown in Table 3-1. These autocodes can be used just like the ones in the Autocodes portion of Section 4.4.

Table 3-1  
Rollover  
Autocodes

Autocode	Meaning
RM	Rollover Month
RD	Rollover Day
RY	Rollover Date (XX/XX/XX)
RL	Rollover - Last digit of year
JR	Rollover Julian Date

The rollover time screen, shown in Figure 3-10, uses 24 hour time format and accepts any time from 00:00:00 to 23:59:59. The example shown in Figure 3-10 has the time set to 23:00:00 (11:00 PM). To enter a time, just type the six numeric digits. Do not type colons (:) and use a leading 0 if the hour, minutes or seconds are less than 10, .09 for example.

Figure 3-10  
Rollover Time  
Screen



### 3.9 RAM Drive

DriveRandom access memory (RAM) provides much faster data retrieval than disk access, floppy or hard. PEL Software can take advantage of this faster retrieval by accessing a data from a disk drive that has been configured inside of RAM. Retrieval from RAM can be as much as 100 times faster than a normal hard drive.

The downside of a simulated disk drive inside RAM is that RAM is volatile and can not retain any data when the power is turned off.

If you want the faster look-up capability of a RAM drive and are DOS literate, then follow the instructions in the box below. If you want the faster look-up and are not DOS proficient, then contact your FSR and arrange for an on-site installation of a RAM drive. You will need two megabytes of RAM or more in your system to set up a RAM drive and use it as your temporary drive.

#### 3.9.1 RAM Drive Installation

- Make a backup copy of your original config.sys and rename it to config.bak.
- Use DOS Edit or a similar editor and add the following line to your config.sys file in the root directory of your boot drive:

**DEVICE=C:\DOS\RAMDRIVE *size* /E**

*size* is the size of the RAM drive in kilobytes.  
For example, a device statement for a 2 Mb RAM drive would be

DEVICE=C:\DOS\RAMDRIVE 2048 / E

- Make sure that you add this line AFTER the line which loads your extended memory manager (typically DEVICE=C:\DOS\HIMEM.SYS)
- Reboot to create the RAM drive. DOS will name the disk drive with the next available letter above C. For

example, if you have only one hard disk drive—C—DOS will name the new RAM drive D.

- Locate the RAM drive by entering each of the letters above C with the DIR command until a prompt until a prompt appears that identifies the RAM drive. For example, if you type **DIR D:** you could see the following:

```
DIR D:  
Volume in drive D is MS-RAMDRIVE  
Directory of D:\  
File not found
```

- Run CHKDSK by typing **CHKDSK D:** to make sure that your RAM disk is the correct size. Note the number of “bytes total disk space.” This is the size of the RAM drive.

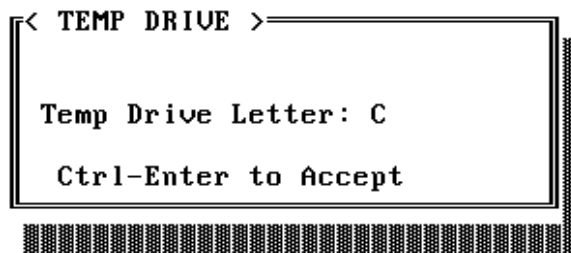
If you cannot locate the RAM drive on your system, review the troubleshooting tips in Appendix B.

### 3.9.2 Setting the Temp Drive

Once you have decided which drive to use for the temporary storage, start the software if you have not done so.

- 1 Select Temp Drive from the Setup Menu. The software will then display the Temp Drive screen shown in Figure 3-11 below.

Figure 3-11  
Temp Drive  
Setup Screen





2. Type the letter of the drive you wish to use for the temp files. For example, if you wish to use drive C:, type **C**; if you wish to use D:, type **D**, etc.
3. Press CTRL-ENTER to accept the new drive letter.

### 3.10 Password

Use the password option to change passwords or set secondary password access.

1. Press P, highlighted in **P**assword, or **↓** to highlight it.
2. Press ENTER.

There are two password levels: Primary and Secondary. Passwords may be up to eight characters long and are initially set to **Manager** (Primary) and **pass** (Secondary). Note that this field is case-sensitive. “Manager” is not the same as “manager” so type uppercase and lowercase characters exactly and include spaces.

The Primary password provides full system access. The Primary level user also sets the features that the secondary level password user can access. The Secondary password provides limited access, although all system features except password can be selectively assigned.

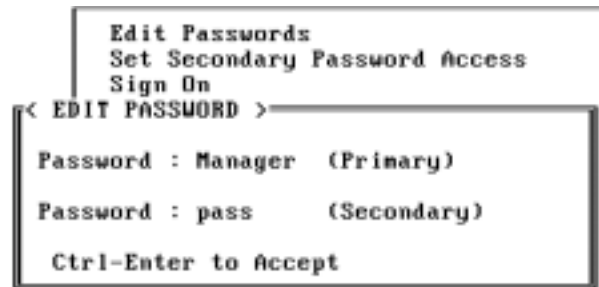
The first two options illustrated below, Edit Password and Set Secondary Password Access, are only usable by the Primary password holder. If the current user does not have the Primary password, the Sign On option is used to sign on at the primary level during an active session to allow access to the first two options.

**Edit Password** is accessible only to the Primary Password holder.

1. Press **↓** highlight it or E, highlighted in “**Edit Password**.”
2. Press ENTER.

*NOTE:* If you leave the secondary password blank, the program will immediately activate the option selected under secondary password access. If the program had an active look-up table and/or was logging when last exited, it will resume these functions.

Figure 3-12  
Edit Passwords

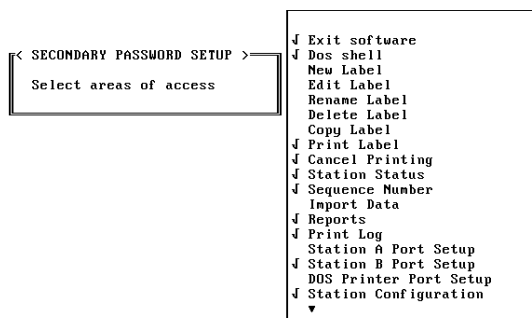


3. Type the new primary and secondary passwords and press CTRL-ENTER to accept the changes. The passwords are upper and lower case sensitive and may contain up to eight characters, including spaces.

**Set Secondary Password Access** selectively assigns feature access for the Secondary user.

1. Press A, highlighted in this option.
2. Press ENTER.
3. Highlight the feature to add to the Secondary password access and press ENTER. Check marks appear next to the selected features.
4. Highlight an already-selected feature and press ENTER to restrict access to that feature.
5. Use ↑ and ↓ to scroll the list of access features.
6. Use Esc to exit the selection screen.

Figure 3-13  
Secondary  
Password Setup



### 3.11 Sign On

Sign On allows you to change access levels without exiting the software.

1. Press S, highlighted in Sign On.
2. Press ENTER.
3. Enter the password on the following screen.

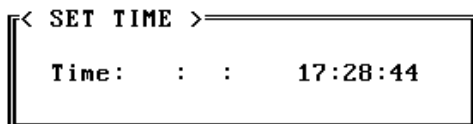
*NOTE:* Set Secondary Password Access and Edit Password options are available only if you enter the primary password.

### 3.12 Time

Time allows you to change the time on the system clock.

1. Press T, highlighted in Time, or use ↓ to highlight it.
2. Press ENTER.

Figure 3-14  
Set Time



3. Key in the time in military format (HH:MM:SS). Enter all six digits without colons and press ENTER. This updates the time for all of the printhead controllers and the PC system clock.
4. Press ESC to exit, without changing the time.

### 3.13 Date

The Date function allows you to set the date on the system calendar from the following screen. The PC will then download the Date to the controller.

1. Press D, highlighted in **Date**, or use ↓ to highlight it.
2. Press ENTER.

Figure 3-15  
Set Date

< SET DATE >			
Date:	/	/	01/27/94

3. Key in the date in the American date format (MM/DD/YY). Enter all 6 digits, no slashes and press ENTER. This alters the date for the PC system.
4. Press ESC to exit without changing the date.

## Section 4 Creating & Editing Labels

---

*This section explains how PEL software enables you to create, edit, rename, copy and delete labels. Appendix A contains a sample label that's worth a try after you've reviewed this section.*

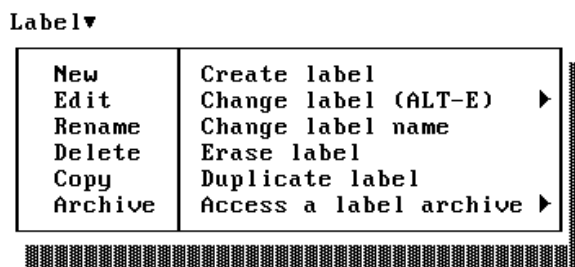
### 4.1 Label Menu

Once you have installed the software (Section 1) and setup the workplace (Section 3), it is time to work with labels. A label is a record with all the information required to print a message on a substrate. It contains many fields of information including: expiration date, print delay, bold value, character spacing, font template and the message.

To select the Label option from the Main Menu:

1. Press L, highlighted in Label, or → to highlight Label.
2. Press ENTER.

**Figure 4-1**  
Label Menu



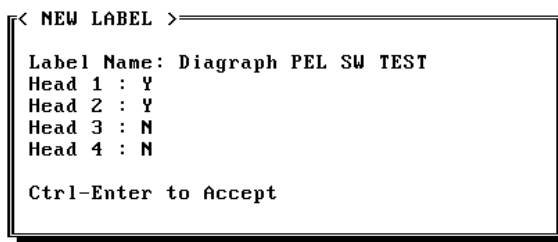
To return to the Main Menu from any Label submenu, press ESC.

### 4.2 Creating a New Label

The New command creates a new label.

1. Press N, highlighted in New, or ↓ to highlight it.
2. Press ENTER.

Figure 4-2  
New Label Menu



The screenshot shows a terminal window titled '< NEW LABEL >'. Inside, the text is as follows:  
Label Name: Diagraph PEL SW TEST  
Head 1 : Y  
Head 2 : Y  
Head 3 : N  
Head 4 : N  
Ctrl-Enter to Accept

3. Type in the new label name, (up to 25 characters), on the first available line in the field called *Label Name* and press ENTER. Each label name can be used only once and names are case sensitive.
4. Enter a **Y** for each printhead where this label will be printed. Press CTRL-ENTER to accept settings or ESC to cancel.

Once you have selected the printheads for the label, you will be prompted for attributes for each printhead.

5. Enter values for each of the fields that appear in the Attribute screen. After entering a value or accepting the default setting, go to the next field by pressing ENTER or TAB. If you enter a value outside the range, the system responds with a message providing the valid range.

**Label** is the name of the label entered on the previous screen and can not be edited.

**Expiration Date** sets up future dates. It takes the number of days you enter for this field, adds it to the current date to derive a future (expiration) date to print in the message.

**Figure 4-3**  
**Printhead 1**  
**Menu**

```

< PRINT HEAD 1 >
Label : Diagraph PEL SW TEST

Expiration Date (0-999): 0
Delay (0-9999): 1
Print Width (1-255): 40
Slant (0-31): 7
Bold Value (0-9): 0
Character Spacing (0-99): 0
Upside Down Print (Y or N): N
Reverse Print (Y or N): N

Font                                Bold
Template 1: TEMPLATE NOT USED      0
Template 2: TEMPLATE NOT USED      0
Template 3: TEMPLATE NOT USED      0
Template 4: TEMPLATE NOT USED      0
Ctrl-Enter to Accept

```

**Delay** controls the indentation, the distance from where the box triggers the sensor to where the label starts printing. Its value range is 0 to 9999. A delay of 1 indicates that the box will move 1 pixel between the time the sensor detects the box and the time the printing starts. The width of a pixel is determined by the print width and the encoder (internal or external).

**Print Width** regulates the width of each pixel measured in encoder or internal oscillator pulses. Its value range is 1 to 255 and the bigger the value, the wider the label.

**Slant Value** is the number of encoder ticks between two adjacent channels. The value you enter here is dependent on line speed, the angle of the PEL printhead, the selected font, the Width Value and the Bold value.

**Bold Value** increases the darkness of printed characters. Its value range is 0 to 9 and the higher the value, the darker the print. To print bar codes, the Bold value must be set to 2.

**Character Spacing** is another relative value operator. It ranges from 0 to 9 and the higher the number, the greater the space between characters.

**Upside Down Print** toggles with Yes or No to print either upside down or right side up.



**Reverse Print** toggles with Yes or No to print characters either left-to-right or right-to-left which is determined by the direction the substrate travels past the printhead.

### 4.3 Selecting Font Templates

Font templates provide access to the available fonts in a PEL system.

**Figure 4-4**  
**Printhead 1**  
**Template**  
**Selection**

```
< PRINT HEAD 1 >
Label : Diagraph PEL SW TEST
Expiration Date (0-99)
Delay (0-9999): 1
Print Width (1-255):
Slant (0-31): 7
Bold Value (0-9): 0
Character Spacing (0-
Upside Down Print (Y
Reverse Print (Y or N
Font
Template 1: TEMPLATE NOT USED
Template 2: TEMPLATE NOT USED 0
Template 3: TEMPLATE NOT USED 0
Template 4: TEMPLATE NOT USED 0
Ctrl-Enter to Accept
```

TEMPLATE NOT USED  
 I2of5 BARCODE TOP HALF  
 I2of5 BARCODE BOTTOM HALF  
 5 X 5 DOT MATRIX (5 LINES)  
 7 X 5 DOT MATRIX (4 LINES)

Because the templates are pre-defined you can not select a template by typing its name. To select a template:

1. Use the arrow keys and move the cursor to the template field you wish to change.
2. Press ENTER or **➔** to open a list of available templates.
3. Use **⬆** and **⬇** to highlight the desired template and press ENTER. This will change the value in the field.
4. Press CTRL-ENTER after the fourth Template and the entry field for label data appears.

**Figure 4-5**  
**Template**  
**Blocks**

```
< NEW > Print Head 2 (Diagraph PEL SW TEST)
Template 1:
1: Diagraph
Template 2:
1: PEL Series Ink Jet System
2:
3:
4:
Ctrl-Enter to Accept
```

The text appears in blocks as shown in the illustration above. Each block corresponds to a template.

Each label field can hold up to 40 characters. The number of fields depends on the templates selected for the printhead. For example, if Template 1 is a five-line font, Template 2 is a two-line font, and Templates 3 and 4 are not used, the screen will have seven lines. Lines 1 through 5 will be printed on Template 1 and lines 6 through 7 will be printed on template 2. The text may also include autocodes discussed in Section 4.4. Enter data on any or all of the lines and press CTRL-ENTER when complete.

#### 4.3.1 Per Template Bold Value

You can set different bold values for each template. When either creating or editing the attributes of a label, you can select boldness values for each template. The per template bold values, which are shown in the screen below, are located next to the font corresponding to that template.

**Figure 4-6**  
**Head and Per**  
**Template**  
**Bold Values**

The screenshot shows a configuration screen titled '< PRINT HEAD 1 >'. It contains various label attributes and a section for per-template bold values. Callouts point to the 'Head Bold Value' and 'Per Template Bold Values' sections.

< PRINT HEAD 1 >	
Label : Diagraph PEL SW TEST	
Expiration Date (0-999): 0	
Delay (0-9999): 1	
Print Width (1-255): 40	
Slant (0-31): 7	
Bold Value (0-9): 1	
Character Spacing (0-99): 0	
Upside Down Print (Y or N): N	
Reverse Print (Y or N): N	
Font	Bold
Template 1: 14 X 8 DOT MATRIX (2 LINES)	0
Template 2: UPC SHIP CONTAINER BC W/HR	2
Template 3: TEMPLATE NOT USED	0
Template 4: TEMPLATE NOT USED	0
Ctrl-Enter to Accept	

For normal fonts, values 0-9 are acceptable, where 9 is the darkest. For bar code fonts, only values 0 - 2 are acceptable. As the illustration also shows, there is also a bold value for the head. This can be considered the default boldness value. Any fonts that have a per

template bold value of 0 will use the default bold value instead. For example, in the illustration above, template 1 will be printed with the head bold value of 1. Template 2 will use its per template bold value of 2. The default per template bold value is 0.

4.3.2 Bar Code Parameters

Because bar codes must be printed clearly to be readable, and because printing surfaces vary, the PEL software allows you to vary the width of the individual bars. The parameters that control these widths are stored in the label’s text as shown in the following illustration.

**Figure 4-7**  
**Bar Code Width**  
**Parameters**

```
< NEW > Print Head 1 (Diagraph PEL SW TEST)
Template 1:
1: 0123456789
2: 12 14
3: 09 11
4: 05 08
5: 02 04
Template 2:
1: 0123456789
2: 7
3: 1
4: 9
5: 4
Ctrl-Enter to Accept
```

Because different bar codes use different standards, the parameter formats depend on the font. Bar code standards that use 4 different bar widths and 4 different space widths (such as UPC, EAN-8 and EAN-12) use the first format. Bar code standards that use 2 different bar widths and 2 different space widths (such as Interleaved 2 of 5 and 3 of 9) use the second format. The two formats are shown in tables 4-1 and 4-2.

**Table 4-1**  
**Bar code**  
**Parameter**  
**Format 1**

Line	Contents	Example
1	Barcode Data	0123456789
2	Widest bar, Widest space	12 14
3	Wider bar, Wider space	09 11
4	Wide bar, Wide space	05 08
5	Narrow bar, Narrow space	02 04

**Table 4-2**  
**Bar code**  
**Parameter**  
**Format 2**

Line	Contents	Example
1	Barcode Data	0123456789
2	Wide bar	7
3	Narrow bar	1
4	Wide space	9
5	Narrow space	4

Whenever you select a bar code template, the default values for that font and bold value are loaded into the text. If you are having a problem with the readability of bar codes being printed by the system, these values will have to be changed. Consult Diagraph Technical Support before trying to modify these values yourself.

#### 4.4 Autocodes

Autocodes are codes enclosed by braces ({ }) with or without additional modifiers that automatically add the date, time, or other variable information to the label text. Not all autocodes can be combined. Autocodes are not case sensitive. Some customized autocodes may require customized hardware changes to the controller.

## Autocode Table

### Time, Date and Count into a Message

The time and date can be entered into a text message by following the sequence below. The lowercase d's in braces represent digits:

{DT}	To insert Month/Day/Year
{YE}	To insert the Year
{MO}	To insert the Month
{DA}	To insert the Day
{TI}	To insert Hour:Minute:Second
{HO}	To insert the Hour
{MI}	To insert the Minute
{JD}	To insert the Julian day (1 to 365)
{AM}	To insert the Alphabetic Month (Aug, Sept, etc.)
{AD}	To insert the Alphabetic Day (Mon, Tue, etc.)
{EC}	To insert the Expiration Date, Month:Day:Year
{EY}	To insert the Expiration Year
{EM}	To insert the Expiration Day
{EJ}	To insert the Expiration Julian Day
{NL}	To print the counter as a down counter, all 8 digits
{Ld}	To print a specified digit of the counter as a down counter.
{Wd}	To print a d'th digit of the down counter, unless it is a leading zero. Ex: {W1} for the first digit.
{NU}	To print the counter as an up counter, all 8 digits.
{Ud}	To print a d'th digit of the down counter, unless it is a leading zero. Ex: {U1} for the first digit.
{Vd}	To print a d'th digit of the down counter, unless it is a leading zero. Ex: {V1} for the first digit.
{SH}	To insert a shift code.
{YL}	Last digit of the year
{SE}	Seconds



#### 4.4.1 Variable Field Prompt Code

**Z** The {Z} code allows you to put variable data into a label. When it appears in a message, you will be prompted for data and any characters you type will be entered between the Z and the closing brace (}). Your input will appear before the message is sent to print. The maximum number of characters that can appear between the braces is 30, including the Z. A single message line can have four variable fields. Multiple lines in the same message **can** contain separate variable fields. Your response can be up to 40 characters. For example, {Z ENTER CODE} produces the following screen:

**Figure 4-8**  
**Variable Field**  
**Data**

The image shows a computer screen with a title bar that reads "< VARIABLE FIELD DATA >". Below the title bar, the text "ENTER CODE:" is displayed, followed by a large, empty rectangular text input field. The entire window has a thin black border.

#### 4.4.2 Spaces Code

Traditionally, the spacing between two templates for a head was adjusted by adding spaces to the end of the first one. However, the dialog screen tends to remove these spaces before the label is saved. To prevent these spaces from being removed and make it clear that they are there, the spaces code was created.

**NOTE:** It is recommended that you use the spaces code instead of just typing spaces ANY TIME YOU ARE USING A LINE WITH SPACES AT THE END OR A LINE CONTAINING ONLY SPACES.

The spaces code works just like an autocode. You insert it into the text and the software will expand it to the correct number of spaces before the message prints. The format for the code is shown below:

{SPn} where n = number of spaces

Examples:

abc{SP3}d = abc\_\_d  
(3 spaces between c and d)

{SP5}abc = \_\_\_\_abc  
(5 spaces before a)

abc{SP2} = abc\_\_  
(2 spaces after c)

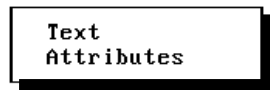
{SP4} = \_\_\_\_  
(line with only 4 spaces)

#### 4.5 Edit Existing Labels

The Edit function allows you to alter existing labels.

1. Press E, the highlighted letter in the word **Edit**, or use the down arrow key to highlight it.
2. Press ENTER.

**Figure 4-9**  
**Text Attributes**



If you want to change a label's content, select **Text**, enter the name of the label you wish to edit or press ENTER and select one of the listed label names. The screen for text editing is the same one shown when you create a new label. Type in any changes to your text and press CTRL-ENTER to accept or ESC to cancel.

If you wish to edit a label's attributes, then select **Attributes**. Enter the name of the label and the attribute screen appears. Attributes you can edit include expiration date, print width, bold value, character spacing, upside down print, reverse print and templates.



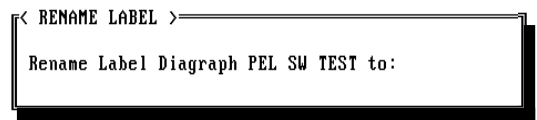
Make any changes and press CTRL-ENTER when finished.

#### 4.6 Rename a Label

The Rename function allows you to rename a label.

1. Press R, highlighted in **Rename**, or **↓** to highlight it.
2. Press ENTER.
3. When you select Rename, a window appears asking for the label name. Type the label name and press ENTER or leave the name blank and press ENTER to select it from a list of labels. This function is case sensitive. After the label name has been selected, you are prompted to enter a new name. Type in the new Label Name and press ENTER.

**Figure 4-10**  
**Rename Label**

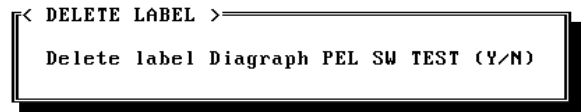


#### 4.7 Delete a Label

The Delete function allows you to erase a label.

1. Press D, highlighted in **Delete**, or **↓** to highlight it.
2. Press ENTER.
3. A window appears asking for the Label Name. Either type the label name and press ENTER or leave the area blank and press ENTER to select the label from a list of labels. After the label name has been entered, the following screen appears:

**Figure 4-11**  
**Delete Label**



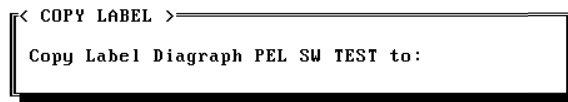
4. Type **Y** to delete the label or **N** to retain the label.

## 4.8 Copy a Label

Copy allows you to copy a label.

1. Press C, highlighted in Copy, or **↓** to highlight it.
2. Press ENTER.
3. A window appears for entering the label name to be copied. Alternately, you can press ENTER to select the source label from a list of names. This function is upper and lower case sensitive. When the label name has been entered, the screen prompts for a target label name.

**Figure 4-12**  
**Copy Label**



4. Key in the new label name to receive the copied information and press ENTER.

## 4.9 Archive Labels

The PEL Software provides a tool to back up all of your label data to either a floppy disk or a special archive directory on your hard disk. Because the archive tool uses data compression, it can store as many as 2,800 labels on a single high density 3.5 inch floppy disk, depending on the size and complexity of the labels. In the event that all of your labels do not fit on a single floppy, the software allows you to use multiple floppies. **Keep a recent back-ups all of your labels in case of an unforeseen disaster.**

There are three functions that access archived labels: Store All, Store One, and Read. These functions are available under the Archive function of the Label menu. Select Label from the main menu. This will bring you to the label menu shown in Figure 4-13.

Figure 4-13  
Label Menu

Label ▼

New	Create label
Edit	Change label (ALT-E) ▶
Rename	Change label name
Delete	Erase label
Copy	Duplicate label
Archive	Access a label archive ▶

Select **Archive** from the **Label** menu. This will bring you to the Label Archive menu shown in Figure 4-14.

Figure 4-14  
Label Archive  
Menu

Store All	Store all labels in an archive
Store One	Store one label in an archive
Read	Read labels from an archive

Each of these three menu options are discussed in the following sections.

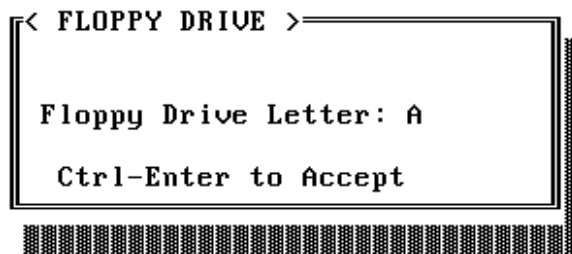
#### 4.9.1 Label Archives—Store All

The Store All function allows you to create a new archive for all your labels. It can also update an existing archive by adding new labels and updating the contents of older labels already in storage.

#### Creating and Updating an Archive for Many Labels

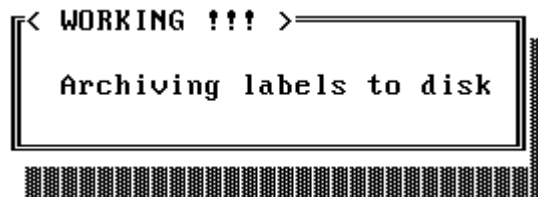
1. Insert a blank, formatted floppy disk in one of the disk drives of your computer. If you are updating an existing archive, place the floppy disk which contains the archive in your floppy drive.
2. Select Store All from the label archive menu. The software will then prompt you for the floppy drive letter as shown in Figure 4-15.

Figure 4-15  
Floppy Drive  
Prompt



- 3 Type the letter of the floppy drive which you are using to create the archive (A or B). If you wish to archive to your hard disk, use C.
- 4 Press CTRL-ENTER. The software will then begin creating the archive and display the message shown in Figure 4-16.

Figure 4-16  
Archiving  
Labels Message  
Screen



If, during the archive process, the software discovers a label with the same filename as the one it is trying to archive, it will prompt you for what to do, as shown in Figure 4-17.

Figure 4-17  
Duplicate Label  
Name Screen



If you select "Overwrite old label," the software will overwrite the label data stored in the archive (the diskette). Use this option when you want to update a label in the archive.

If you select “Skip this label,” the software will leave the data in the archive intact and not archive the label in the system onto the diskette. Use this option when know that the label in the system has not been changed since the last time you archived your labels.

If you select “Overwrite all future duplicates” option, the software will overwrite the label that is already in the archive (just like “Overwrite old label”) AND overwrite any other duplicate labels it finds. It executes overwrites without prompts. Use this option when you want to update an entire archive and avoid the drudgery of confirming each label update.

If you select “Rename file” option, the software will try to save the label in the computer under a different name. Usually this name will be the same as the current name of the label with an @ sign appended. If it finds the same label name ending in @, it will continue trying by appending an A or B until it creates a name ending with a unique character. This renaming for archival will not however, change the name of the label in the system. Use the rename when you have changed a label but do not want to overwrite the old version of the label.

If you select “Abort label archive” or press ESC, the software will stop the Store All operation and return to the Label Archive Menu.

When the software finishes creating the archive, it returns to the Label Archive Menu.

#### 4.9.2 Label Archives—Store One

The store one function allows you to add one label to an existing archive or update the data for a particular label in an archive. It can also create a new archive which contains only one label.

Creating and Updating an Archive for a Single Label

1. Insert a blank, formatted floppy disk in one of the disk drives of your computer. If you are updating an existing archive, place the floppy disk which contains the archive in your floppy drive.
2. Select Store One from the label archive menu. The software will then prompt you for the label name as shown in Figure 4-18.

**Figure 4-18**  
**Label Name**  
**Prompt**



Label Name:

Enter with a blank label name to  
select via a list.

3. Choose the label you want to archive by either typing the name at the prompt or entering a blank and selecting the label from a list. As with Store All, the software will then prompt you for the floppy drive letter.
4. Type the letter of the floppy drive which you are using to create the (A or B). If you wish to archive to your hard disk, use C.
5. Press CTRL-ENTER. The software will then begin adding the label to the archive.

If the software discovers that the label you selected is already in the archive, it will prompt you with choices that are described in the previous section, Select All 4.9.1.

#### 4.9.3 Archives—Read

The read function allows you to retrieve labels stored in an archive. You can use this function to read labels which are not on the system or restore labels to what they were when you created the archive. You can read in as many or as few labels as you want.

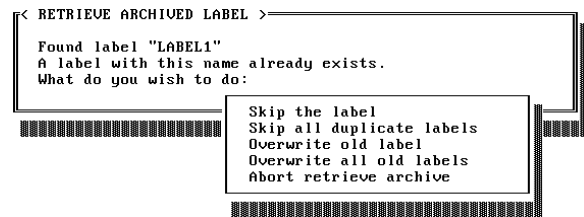
#### Reading and Restoring Labels

1. Insert the floppy disk which contains the archive in one of the disk drives of your computer.
2. Select Read from the label archive menu. The software will then prompt you for the floppy drive letter as shown in section 4.9.1, Figure 4-15.
3. Type the letter of the floppy drive which you are using to create the archive either A or B. If you wish to retrieve labels from an archive on your hard disk, use C.
4. Press CTRL-ENTER. The software will then begin reading the archive.

Each time the software encounters a label in the archive, it checks to see if the label is already on the system. Depending on what it finds, it will inform you that the label either is or is not present.

The "Label Already Present" prompt (Figure 4-19) shows you which label was found, a statement that the label is already on the system and a list of options for you to select.

**Figure 4-19**  
**Label Already**  
**Present Prompt**



If you select "Skip the label" option, the software does not retrieve the label and proceeds to the next label in the archive.

If you select "Skip all duplicate label" option, the software does not retrieve the label in the archive and proceeds to the next label. It also skips any labels it finds in the archive that are already loaded on the system. Select this option when you want to retrieve one or more

deleted labels and do not want to be prompted for every label that is already on the system.

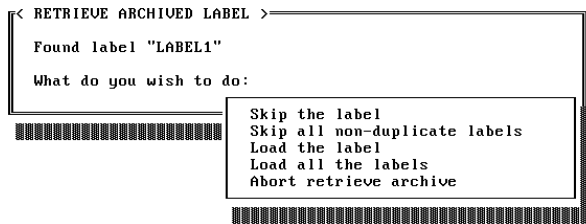
If you select “Overwrite old label” option, the software will overwrite the label stored on the system. Use this option when you change a label after the archive was created and you want to restore the label to what it was before the changes.

If you select “Overwrite all old labels” option, the software will overwrite the label that is on the system, just like “Overwrite old label.” It will also overwrite the any other labels it finds in the system with labels from the archive. Use this option when you have a large number of labels that have been changed since the archive was created and you want to restore all of the labels to what they were before the changes.

If you select “Abort retrieve archive” or press ESC, the software will stop the Read operation and return to the Label Archive Menu.

The Label Not Present prompt, shown in Figure 4-20, shows you which label was found and a list of options for you to select.

**Figure 4-20**  
**Label Not**  
**Present Prompt**



If you select “Skip the label,” the software will not retrieve this label and proceed to the next label in the archive. Select this option when you do not want that label loaded on the system.

If you select the “Skip all non-duplicate label” option, the software will not retrieve this label and proceed to the next label in the archive. It will also skip any labels it



finds in the archive that are not already loaded on the system. Use this option when you have a number of labels in the archive that are not loaded on the system and you do not want to load any of them from the archive at this time.

If you select “Load the label,” the software will read the data from the archive into the system and create a new label with that name. Choose this option when you have deleted a label since the archive was created and want to restore the deleted label to the system.

If you select “Load all the label,” the software will read the data from the archive into the system and create a new label with that name. It will also load any other labels it finds in the archive that are not already in the system. Use this option when you have deleted more than one label since the archive was created and want to restore all of the deleted labels to the system.

If you select “Abort retrieve archive” or press ESC, the software will stop the Read operation and return to the Label Archive Menu.

## Section 5 Printing Labels

---

*This section explains how to print labels with PEL software and how to monitor the status of printing through the Station Status function. As you work your way through, keep in mind that you can return to the main menu from any print submenu by pressing ESC.*

### 5.1 Print Label Option

To select the Print option from the main menu:

1. Press P, highlighted in **Print**, or **→** to highlight it.
2. Press ENTER, or **↓** to access the Print submenu.

**Figure 5-1**  
**Print Menu**

Print Label	(ALT-P)
Cancel Printing	Stop printing (ALT-C)
Station Status	(ALT-S)
Sequence Number	Change sequence number

Use the Print Label option to specify the label to print. To select this option from anywhere other than this menu, press ALT+P.

1. Press P, highlighted in **Print**, or **→** to highlight it.
2. Press ENTER.
3. Type the label name or press ENTER to display a list of existing label names.

**Figure 5-2**  
**Label Name**

<p>Label Name: Diagraph PEL SW TEST</p> <p>Enter with a blank label name to select via a list.</p>
--

Use **↑** and **↓** to scroll to a label to print and press ENTER. If more than one printstation is set up, you are prompted to select a print station.

Figure 5-3  
Print Label

```
< PRINT LABEL >
Select a Print Station.

ALL STATIONS
Station A
Station B
```

4. Use **↑** and **↓** to select which printstation will print the label and press ENTER. The screen will inform you that the program is doing its job.

When it's finished writing, the PRINT LABEL screen appears.

Figure 5-4  
Print Label

```
< PRINT LABEL >
Print label Diagraph PEL SW TEST at All Stations? (Y/N)
```

5. Enter N or press ESC to cancel the print request. Enter Y to print the label selected at the station selected. The system will begin printing and the display returns to the print option submenu.

## 5.2 Station Status

Use this option to monitor the printing status of each printstation. To select this option from anywhere other than this menu, press ALT-S.

1. Press S, highlighted in this option, or use **→** to highlight it.
2. Press ENTER. To exit, press ESC.

Figure 5-5  
Station Status

```
< STATION STATUS >
Station A Head 1 Sequence # :
Station A Head 2 Sequence # :
Station A Head 3 Sequence # :
Station A Head 4 Sequence # :
Station B NO LINK
Station B NO LINK
Station B NO LINK
Station B NO LINK
```

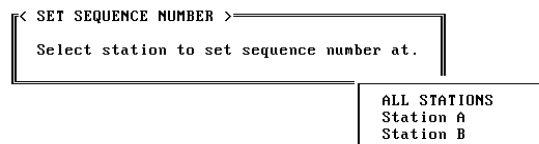
### 5.3 Sequence Number

The sequence number command sets up product and batch counters. These counters have the ability to count up or down, increment by a multiplier, repeat by a multiplier or be set up as a simple count routine.

1. Press N, highlighted in this option, or use ↓ to highlight it.
2. Press ENTER.

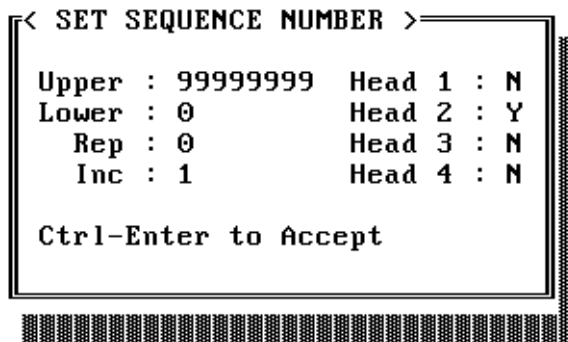
If you have set up more than one printstation, the Select Station screen will appear.

**Figure 5-6**  
**Select Station**



3. Select station to set sequence number and press ENTER. The Set Sequence Number screen appears.

**Figure 5-7**  
**Set Sequence**  
**Number**



UPPER: A limit you set for your rollover point.

LOWER: The initial count value after system rollover.

REP: The number of times the count value will repeat.

INC: The amount the count value will increase or decrease.

- Set an upper limit

- Fill in the appropriate values in the spaces provided.
- Set a lower limit
- Set a repeat (0 = print 1 time, 1 = repeat one time after the first printing.)
- Set an increment value
- Select which printheads will be affected.

4. Press CTRL-ENTER to accept these settings.

## Section 6 Importing Data & Generating Reports

---

*This section explains how to create reports about your labels and transport text file data into a label. It also covers the details of how to log information collected with your scanner.*

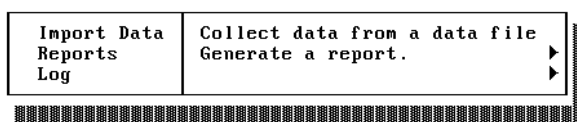
### 6.1 Data and Reports Menu

The Data & Reports menu enables you to print labels from a data file and create reports about existing labels.

#### Starting from the Main Menu:

1. Press D, highlighted in Data & Reports, or ➔ to highlight Data & Reports.
2. Press ENTER.

**Figure 6-1**  
Data and  
Reports



### 6.2 Import Data

Import Data allows you to create labels from a text file. Before you can use of this option, you must prepare a file with the extension .IMP and copy it to the /PEL directory. The file should be in the following form:


```
*label_1_name
label 1 line 1
label 1 line 2
.
.
.
*label_2_name
label 2 line 1
label 2 line 2
.
.
```

Label\_1\_name is the name of the first label, label\_2\_name is the name of the second label and so forth. The asterisks are necessary because they indicate where a new label begins. All of the text that follows the label name will be used as the text printed on the labels.

```
*Apples
Fresh Apples
10 lbs.
*Oranges
Fresh Oranges
10 lbs.
```

If we use this import file, the software will create two labels. The first label will be called “Apples” with “Fresh Apples” for the first line and “10 lbs.” for the second. The second label will be called “Oranges” with “Fresh Oranges” for the first line and “10 lbs.” for the second.

Once the file is ready to import, select the Import Data option:

1. Press I or use  to highlight it.
2. Press ENTER. The program will search its directory for .IMP files and display a list of all its findings.
3. Select one of the files using the up and down arrow keys and press ENTER.

Label files do not contain information on which printheads are used and what attributes are used for each printhead—this is information you must provide. The procedure is similar to the one for creating a new label (see Section 3). It is assumed that all of the labels in the file will use the same printheads and the attributes for each printhead will be the same. First you are prompted for the printheads that will be used to print the labels.

Figure 6-2  
Import

```
< IMPORT >
Head 1 : Y
Head 2 : Y
Head 3 : N
Head 4 : N

Ctrl-Enter to Accept
```

4. Select the printheads for the labels and you will be prompted for the attributes of each printhead. This screen, shown below, is the same as the attribute screen for new labels.

Figure 6-3  
Printhead 1

```
< PRINT HEAD 1 >
Label : IMPORT

Expiration Date: 0
Delay: 1
Print Width: 40
Bolderization Value: 0
Character Spacing: 0
Upside Down Print: N
Reverse Print: N
Template 1: TEMPLATE NOT USED
Template 2: TEMPLATE NOT USED
Template 3: TEMPLATE NOT USED
Template 4: TEMPLATE NOT USED

Ctrl-Enter to Accept
```

After you have entered all of the information, the program will begin reading the labels from the file.

Figure 6-4  
Import File

```
< IMPORT >
Import file : TEST
Creating Label : Diagraph PEL SW TEST
Label Line: 4

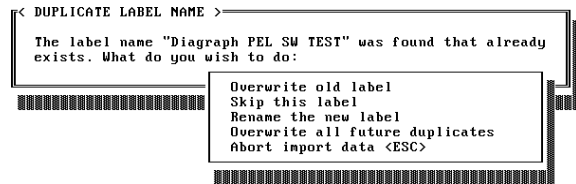
< WORKING !!! >
Saving Label
```



If the program finds a label name that has already been defined, it announces the duplication and provides five choices:

- Overwrite the old label,
- Skip the label
- Rename the new label
- Overwrite all future duplicates
- Abort import data.

**Figure 6-5**  
**Duplicate Label**  
**Name**

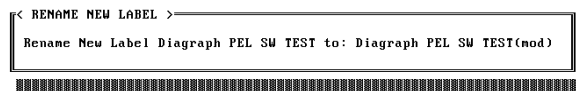


**Overwrite old label** will delete the existing label and replace it with the label created from the file. This is useful when you wish to update a label by loading a new one from file or when the old label is no longer used.

**Skip this label** prevents the new label from loading into memory and leaves the old label intact. Later, you can rename the existing label with the RENAME command in the Edit Menu and then load the new label with the Import Data command.

**Rename the new label** will leave the existing label unchanged and change the name of the new label. This allows you to load the new label without affecting the old one. When you select this option, you are prompted for a new label name. To proceed, you must enter a label name that does not already exist (the program checks all names to avoid duplicates). Press ESC, to cancel and select another option.

**Figure 6-6**  
**Rename New**  
**Label**



**Overwrite all future duplicates** overwrites the old label any time it finds a duplicate label name. This is useful when updating an entire list of labels because it overwrites the old labels without prompting you for each label.

**Abort import data** (which can be selected by pressing the ESC key) stops the import operation without loading the current label or any other labels.

If the program can not find any files with the extension .IMG in its directory, it will display a warning message:

**Figure 6-7**  
**System Warning**

```
< SYSTEM WARNING !!! >
  No Import file found.

  Strike any key to continue.
```

This probably indicates that the .IMP file is in the wrong directory.

### 6.3 Label Report

To select this item from the Data & Reports menu:

1. Press R or ↓ to highlight it.
2. Press ENTER and a small submenu appears:

**Figure 6-8**  
**Reports**  
**Submenu**

```

Data & Reports▼
┌───────────┬───────────┬───────────┐
│ Summary Report │ Import Data │ Collect data from a data file │
│ Detail Report │ Reports    │ Generate a report.             │
│               │ Log       │                               │
├───────────┴───────────┴───────────┤
│ Label Definition │                               │
│ Label List      │                               │
└───────────┴───────────┴───────────┘
```

The Reports Submenu allows you to print out information on any or all labels that currently exist. The reports come in three variations:

- All label formats report
- Single label format report
- Label list

### 6.3.1 All Label Formats Reports

The all label formats report is a printout of all of format information: delay, width, bold, spacing, upside down, reverse, templates and the message text for each printhead. To print it from the Reports menu:

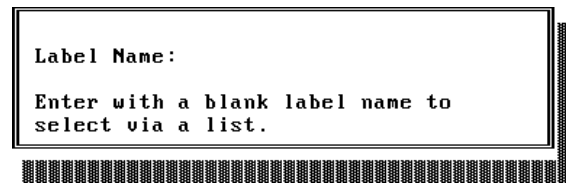
1. Press D or ↑ and ↓ to highlight Label Definition.
2. Press ENTER to open the Label Definition submenu.
3. Press A or ↑ and ↓ to highlight Report on ALL label formats.
4. Press ENTER to start printing.

### 6.3.2 Single Label Format Report

The single label format report is similar to the all label formats report except it only prints information on one label. To print the format of a label from the Reports menu:

1. Press D or ↑ and ↓ to highlight Label Definition.
2. Press ENTER to open the Label Definition submenu shown above.
3. Press S or ↑ and ↓ to highlight Report on a single label format.
4. Press ENTER.

**Figure 6-9**  
**Label Name**



Label Name:

Enter with a blank label name to  
select via a list.

5. Select the label to be printed by typing the name and pressing ENTER or press ENTER on a blank line and select the name from the list that appears.

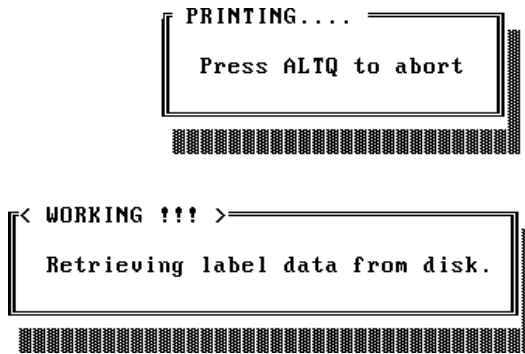
### 6.3.3 Label List Report

The label list is a brief list of all labels. It includes only the label name and the date and time the label was last modified. To print a label list from the Reports menu:

1. Press L or use the arrow keys to highlight Label List.
2. Press ENTER to start printing the label.

The program lets you know when it is printing the report:

**Figure 6-10**  
Printing Report



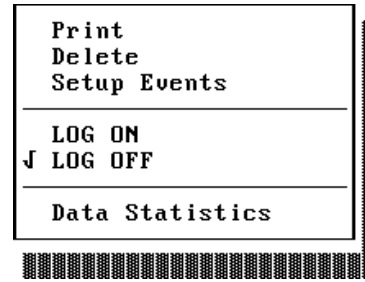
Press ALT-Q to abort a print operation in progress.

### 6.4 Log

To select the log from the Data & Reports menu

1. Press L or use the down arrow key to highlight it.
2. Press ENTER and the following submenu appears.

Figure 6-11  
Log On/Off



Log enables you to verify the readability of bar codes printed by the PEL system. It is capable of collecting data from two separate scanners through a single COM port. To setup the Log, a scanner must be plugged into one of the COM ports setup with 9600 baud, 8 data bits, 1 stop bit and no parity.

Configure the scanner to send the following message to the computer:

Good Scan: [ID] [data] [CR]  
Bad Scan: [ID] ??? [CR]

Where [ID] is 1 for scanner one and 2 for scanner two, [data] is the message scanned by the scanner and [CR] is a single carriage return. For example, a good scan on scanner one might look like this:

1message[CR]

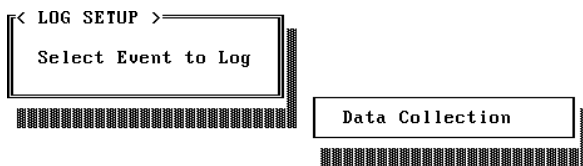
A bad scanner on scanner two would look like:

2????[CR]

Once the hardware is configured you must tell the program to collect data from the scanner. To do this, first choose Setup Events from the Log submenu:

1. Press E or **↓** to highlight it.
2. Press ENTER to bring up the Log Setup screen:

**Figure 6-12**  
**Log Setup**



Press ENTER to select DATA Collection and then ESC to return to the Log submenu.

To begin logging data collected from the scanners, select LOG ON from the Log Submenu:

1. Press N or ↓ to highlight it.
2. Press ENTER.

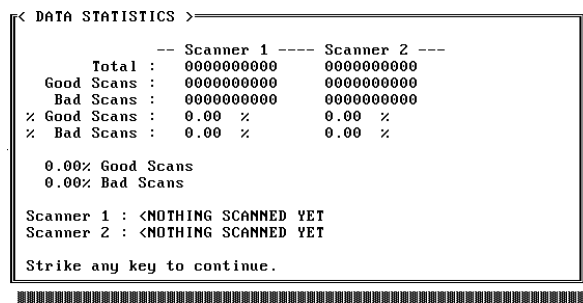
To stop logging data collected from the scanners, select LOG OFF from the Log Submenu:

1. Press F or ↓ to highlight it.
2. Press ENTER.

To display the data collected so far, select Data Statistics from the Log submenu:

1. Press S or use the down arrow key to highlight it.
2. Press ENTER and the Statistics Screen appears:

**Figure 6-13**  
**Data Statistics**



Data collected from the scanners will be displayed on this screen as they are collected.

To print the data to a printer, you must have a DOS printer connected to a properly configured printer port.

1. Select Print from the Log Submenu (P or use the down arrow to highlight it).
2. Press ENTER.

To clear the data collected so far, select Delete from the Log submenu:

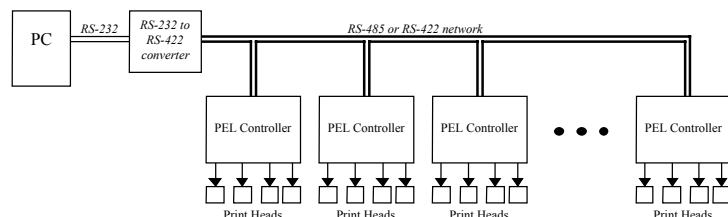
1. Press D or use the down arrow to highlight it.
2. Press ENTER.

## Section 7 RS-485/RS-422 Network

*This section discusses the RS-485/422 network and how to use it. It describes how to set up the PEL controllers, set up the software and create labels for the network. It also discusses the other features of the network. **Note:** You must have Version 3.20 of the PEL Software to use an RS-485/422 network.*

The PEL network configuration allows up to 16 PEL controllers to communicate to the PC through a single serial port on the PC. It uses either an RS-485 or RS-422 standard to communicate with each of the controllers.

**Figure 7-1 RS-485/422 Network**



### 7.1 The RS-485 and RS-422 Standards

The PEL controller utilizes RS-485 (or RS-422) serial asynchronous communication to transmit and receive data from a computer. It uses these standards because they allow data transmission over long distances (up to 4000 feet) between multiple devices (as many as 32). Personal computers however, are equipped with computer industry standard RS-232 communication ports. And RS-232 is not directly compatible with RS-485 or RS-422. As a result, converters must be used between the serial port of the PC and the PEL network.

### 7.2 Setting up the PEL Controllers

Network PEL controllers can be configured for either RS-232 or RS-485 communication.

**WARNING:** Make sure the controller is turned off before changing switches or jumpers on the controller.



Controller configurations depend on switch settings and jumpers. When configuring the controllers for network mode, the controller farthest from the computer must be configured as an End Node and all others must be configured as Normal Nodes. Table 7-1 shows the switch settings for each node.

**Table 7-1  
Controller  
Jumper and  
Switch Settings  
for Network  
Mode**

Location	Switch/ Jumper	Setting for End Node	Setting for Normal Node
Interface brd	SW1	Down	Down
CPU Board	SW6	Down	Down
CPU Board	JP3	Jumpered	Open
CPU Board	JP4	Jumpered	Open

### Setting the Firmware to Network Mode

Once the hardware has been configured, the firmware must be set into network mode. To do this, you must have a Hand-Held unit. At least one unit should be included with the system. If you did not receive one, contact your Diagraph sales representative.

1. Plug the Hand-Held unit into the front port of the controller and turn the controller on. After about five seconds, the status screen will appear.

In order for the controllers to communicate on the network, each one must have a unique Station ID. The ID may be any number between 01 and 99, but each ID must be different from all other controllers on the network. If two or more controllers have the same ID, the software will not be able to talk to either of them.

2. Type **ID** on the Hand-Held unit to set the station ID for a controller. The Hand-Held will then prompt for the station ID.
3. Type the station ID for that controller and press ENTER.

4. Type **NE** on the Hand-Held unit to enable network mode on the controller. The Hand-Held will prompt for either Y or N.
5. Type **Y** to turn network mode on, and press ENTER. Set the station ID and network mode for each controller.

The controllers should now be ready to communicate on the network.

### 7.3 Setting Up Network Software

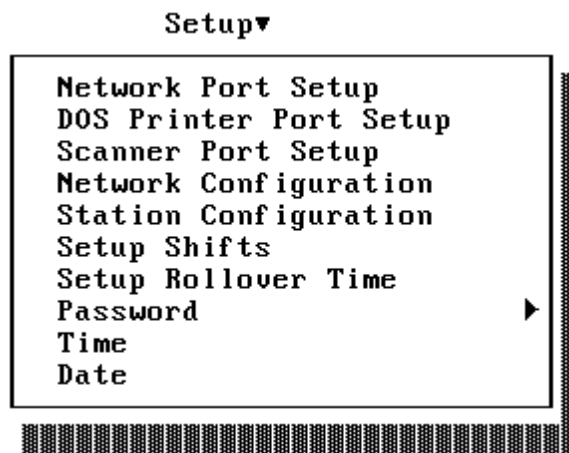
Once the controllers and network have been setup, the software must be set up to communicate with the controllers. To do this, you must set the network port, configure the network, and then configure each of the stations. Each of these operations is discussed in the following sections. The commands you need to do each of these can be found in the Setup menu shown in Figure 7-2 below.

#### 7.3.1 Setting the Network Port

Once the network is connected to one of the serial ports, you must tell the software to which port it is connected.

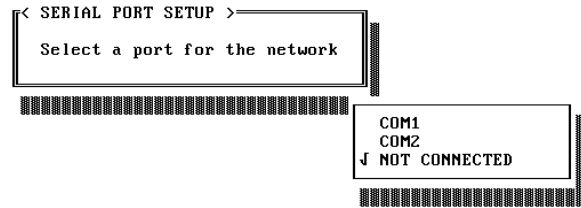
1. Select Network Port Setup from the Setup Menu .

Figure 7-2  
Setup Menu  
with Network  
Software



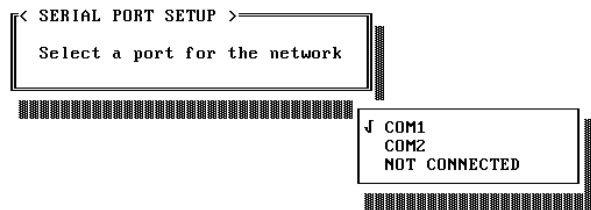
The software will display a list of all serial ports that are not assigned to other devices (such as a scanner or DOS printer).

**Figure 7-3**  
**Network Port**  
**Setup**



2. If your network port connection is not listed, select Not Connected, set the correct ports for the scanner and DOS printer (Section 3) and select Network Port Setup again.
3. Select the port to which the network is connected. The check mark will appear next to that port. Figure 7-4 shows COM1 selected.

**Figure 7-4**  
**Network Port**  
**Setup with**  
**COM1 Selected**



4. Once the correct port is selected, press ESC to return to the Setup menu.

### 7.3.2 Configuring the Network

Once the port has been specified, the software must know what controllers are on the network. The Configure Network command will automatically search the network for controllers. You will need to do this the first time the network is set up and any time new controllers are added to the network. The process takes about 1 minute.

1. To configure the network, select Configure Network from the Setup menu (Figure 7-2). The software will then search of the network and each time it finds a station it will display the station ID on the screen. In the example shown in Figure D-5, the software has found two stations, the first had the station ID 1 and the second had the station ID 2.

**Figure 7-5**  
**Network**  
**Configuration**  
**Screen with 2**  
**Station Found**

```
< NETWORK CONFIGURATION >
Please wait while network is configured
Station 1
Station 2
```

2. Wait 40-50 seconds while the software check all possible station ID's for a response. When the search is complete, the software will assign letters to each station and prompt you to continue, as shown in Figure 7-6.

**Figure 7-6**  
**Network**  
**Configuration**  
**Complete with 2**  
**Station Found**

```
< NETWORK CONFIGURATION >
Please wait while network is configured
Station 1 (A)
Station 2 (B)

Press ESC or ENTER to continue
```

### 7.3.3 Configuring a Station

The software will try to match station letters to station IDs based on the previous state of the network. For example, if station B had the ID of 2 before the configuration ran, it will make sure that the station with ID 2 is assigned B, even if there are no other stations.

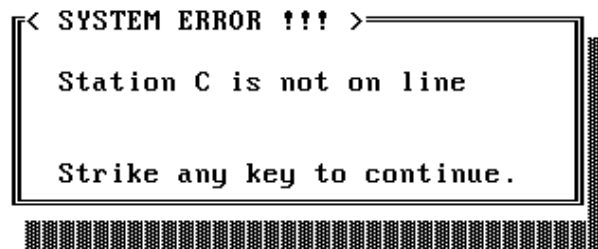
Press ESC to return to the Setup menu. Once the network port has been selected and the network has been configured, you can configure each station. This procedure is almost identical to the procedure in Section 3.5 for station configuration. The only difference is that you will be given a list of only stations that are currently on line. If the software has not detected any station or

there are none currently on the network, you will not be allowed to configure any station. Otherwise, you will be offered a list of all the stations that the software knows are on line.

#### 7.3.4 Off-Line Stations

Once the software has detected a station during network configuration, it will keep watching that station. If the station cannot be detected at any point because it was disconnected, turned off, or taken out of network mode, it will be marked as off-line. While it is off-line, you will not be allowed to communicate with it. This includes printing labels, configuring, status-checking and changing rollover time or shifts. If you try to print a label to a station that is off-line, you will get an error message similar to the one shown below.

Figure 7-7  
Station Off-Line  
Error Message



Even though the station is marked off-line, the software will periodically try to re-establish communications with it. Once the station is able to communicate on the network (because it was re-connected, turned back on, or put back into network mode), the software will detect it within about 2 seconds if the station has the same station ID as before. If the station ID has changed, it will not be able to detect it unless you run Network Configuration again.

#### 7.4 Labels in Network Software

Labels in the network version of the software are the same as in other versions with one difference: Each label must be associated with one station. Whenever you create or edit a label, you will be given a station field as shown in Figure 7-8.

**Figure 7-8**  
**Station Field**  
**While Creating a**  
**Label**

```
< NEW LABEL >
Label Name:
Station: A
Head 1 : N
Head 2 : N
Head 3 : N
Head 4 : N
Ctrl-Enter to Accept
```

Whenever you print that label, the software will not allow you to choose to which station the label is printed and just prompt for confirmation. It is implemented this way because delay values in a label are dependent on the position of the photocell and printheads for a controller, and these always vary from one controller to another.

If you enter a station in the station field that is off-line, you will be given a warning, as shown in Figure 7-9.

**Figure 7-9**  
**Station Off-Line**  
**Warning**

```
< STATION OFF LINE >
Station C is not on line right now. Proceede(Y/N)?
```

This allows you to create labels for a station that has not been added to the network yet, but makes sure that you know the station is off-line before proceeding.

## 7.5 Label Save and Label Request

The Label Request allows you to access labels stored on the PC from the controller. Similarly, Label Save allows you to save labels on the PC from the controller. Once the network has been set up, configured and the software

is running, these features can make defining labels easy, especially in applications where the PC is located long distances from the PEL controllers.

The controller has stricter guidelines on label names than the software. Although the software allows spaces and punctuation in label names, the controller does not. It only accepts lowercase letters, uppercase letters and numbers in label names. Therefore, if you are using Label Save and Label Request, you must use only letters and numbers in all of you label names.

*NOTE:* PEL Software allows labels to be as long as 25 characters, but the controller restricts the length of label names to 15 characters. Therefore, if you are using Label Save and Label Request, you must use only label names that are 15 or less characters long.

#### 7.5.1 Label Save

Often, it is easier to edit the parameters of a label at the controller using a Hand-Held unit than at the PC. However, to store the label, the information must be stored on the PC, not on the controller. Label Save is a command issued with the Hand-Held unit at the controller that sends all the information associated with a label to the PC so that it can be stored for later use.

1. Use the Hand-Held to enter or modify a label with the commands described in the *PEL Series Ink Jet System User's Manual* (Diagraph Part No. 6600-190).
2. Adjust parameters until the label prints as desired.
3. Type the command **LS** on the Hand-Held. The controller will then prompt for the label name as shown in Figure 7-10.

Figure 7-10  
Save Label  
Name Prompt

<p><b>SAVE LABEL NAME</b> <b>1-15 CHARACTERS</b></p> <p>-----</p>
---

4. Type the name of the label you are saving and press ENTER. The name must be at least one character and no more than 15 and only contain letters and numbers. Once you have entered the label name and pressed enter, the display will flash until either the label is stored on the PC or a time-out occurs. If a time-out occurs, check the troubleshooting section of this manual for corrective actions.

#### 7.5.2 Label Request Command

In some applications, you may want to load labels from the PC into the controller using the Hand-Held. For example, the PC may be far from the controller and it is inconvenient to walk to PC to load a message. Label Request is a command issued with the Hand-Held at the controller that loads all of the information associated with a label from the PC so that it can be printed by the controller.

When using the Label Request command, the PC ignores the station associated with a label. For example, if Station B requests the label *ApplesA*, then that label will be sent to Station B, even if it is associated with Station A.

1. Type the command LR on the Hand-Held. The controller will then prompt for the label name as shown in Figure 7-11.



Figure 7-11

<b>SAVE LABEL NAME</b> <b>1-15 CHARACTERS</b> -----
---

2. Type the name of the label you want to retrieve and press ENTER. The name must be at least one character and no more than 15, contain only letters and numbers, and exactly match a label name stored on the PC.

*NOTE:* Label names are case sensitive. This means the software does not consider a lower case letter equal to the same upper case letter. For example, the software would not consider the label names “Apples” and “APPLES” to be equal.

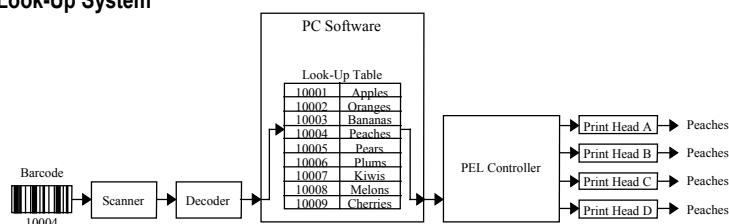
3. Press ENTER and the display will flash until either the label is retrieved on the PC or a time-out occurs. If a time-out occurs, check the troubleshooting section of this manual for possible causes and actions.

## Section 8 Look-Up Tables

*This section covers look-up tables and how to use them. It describes how to set up a bar code scanner; how to create, edit, rename, copy and delete look-up tables; and how to turn a look-up table on or off.*

When configured correctly, PEL software can automatically send the correct label to the PEL controller to be printed. This configuration, shown in Figure 8-1, requires a bar code scanner and decoder in addition to the PC software, controller, and printheads.

**Figure 8-1**  
**Block Diagram of Table**  
**Look-Up System**



*Figure 8-1 Block Diagram of Table Look-Up System*

First, the scanner scans a bar code (typically located somewhere on the box) and sends the information to the decoder which decodes the bar code and sends the information to the PC. The PEL software translates the message into a label and sends it to the PEL controller and to be printed.

To translate a bar code message into a label, the software uses a look-up table—a list of keys, each of which equals a possible bar code message. A label is associated with each key. When the decoder sends a message to the PC, the PC software compares that message to each of the keys in the active look-up table. If it matches one of the keys, the label associated with that key is sent to the controller. If it does not match any of the keys, the

software clears the PEL controller and nothing will be printed.

There are two types of look-up tables: memory-based and disk-based. Memory-based look-up tables store the data in memory while the look-up table is active. Since these tables do not have to access the hard disk, the look-up is done very quickly. But because memory is limited, memory-based look-ups cannot contain more than 20 keys.

Disk-based look-up tables store the data on a disk drive while the look-up table is active and are much slower than memory-based look-ups because disk access is much slower than RAM access. But, because there is much more space on the hard drive, a disk-based look-up is not limited to 20 keys. The PEL software works well with 2000 labels in a disk-based look-up and can handle more.

### 8.1 Setting Up the Scanner/Decoder

The scanner must be configured to send data to the PC at 9600 b/s, 8 data bits, 1 stop bit, and no parity in the RS-232 protocol. It must be connected to either COM1 or COM2 of the PC. For table look-up, the scanner must send the message to the PC in the following format:

<STX>0[key]<CR>

where:

<STX> = ASCII value 2 (Start of Transmission)

0 = ASCII value 48 (the character zero)

[key] = bar code message

<CR> = ASCII value 13 (Carriage Return)

Example:

<STX>010004<CR>

Because a scanner can also be used for logging good and bad scans (see section 6.4), the 0 is needed to identify the message as a table look-up message.

Follow the instructions in Section 3 (Scanner Port Setup) to select the correct port within the software.

## 8.2 Creating a Look-Up Table

Before creating a look-up table, you must create all the labels you want to put in the table. To do this, follow the directions in Section 3.4 (4.2–4.4.2). When all of the labels have been created follow the directions below.

1. Select New from the Look-Up menu, shown below in Figure 8-2. The look-up table menu looks a lot like the edit menu, so make sure you are using the correct one.

Figure 8-2  
Look-Up Menu

Look-Up▼	
New	Create look-up table
Edit	Change look-up table
Rename	Change look-up table name
Delete	Erase look-up table
Copy	Duplicate look-up table
Disk-based	Disk-based look-up ►

The software will then prompt you for the name of the new table and the number of keys in the table.

2. Type the name of the table, press TAB, and then type the number of keys. In the example shown in Figure 8-3, the name of the table is TABLE1 and it will have two keys.

Figure 8-3  
New Look-Up  
Table Prompt

<p>&lt; NEW LOOK-UP TABLE &gt;</p> <p>Look-up table name: TABLE1</p> <p>Number of keys: 2</p> <p>Ctrl-Enter to Accept</p>
---

3. Press CTRL-ENTER to enter your parameters and the screen will change to the look-up entry screen (Figure 8-4).

4. Type the first key and then press TAB. Although the scanner must send a zero in the message, do not include that zero in the key. If the scanner is set up to send check digits, make sure that you include those check digits in the key. In the example shown in Figure 8-4, the first key is 10001.

**Figure 8-4**  
**Look-Up Table**  
**Entry Screen**

```
< LOOK-UP TABLE > (Ctrl-Enter to Accept)
Key: 10001      Label:
Key:            Label:
```

Once you press TAB, you will be prompted for the label that corresponds to that key, as shown in Figure 8-5.

5. Either type the name of the label and press ENTER, or just press ENTER on the blank line to choose the label from a list.

**Figure 8-5**  
**Label Name**  
**Prompt**

```
Label Name:
Enter with a blank label name to
select via a list.
```

If you just press ENTER on the blank line, a list of the currently defined labels will appear as shown in Figure 8-6.

6. Move up and down the list with ↑ and ↓ to highlight your chosen label and press ENTER. ("Apples" In the example).

**Figure 8-6**  
**List of Defined**  
**Labels**

```
Select label

Apples
Oranges
```

Once you have selected a label, the software will return to the table look-up entry screen with the

name of the label in the label column, as shown in Figure 8-7.

**Figure 8-7**  
**Look-Up Table**  
**Entry Screen**  
**with One Key**  
**and Label**  
**Entered**

< LOOK-UP TABLE > (Ctrl-Enter to Accept)	
Key: 10001	Label: Apples
Key:	Label:

7. Continue entering keys and labels until all of the keys have been entered. Once you have finished entering the table, each key must be unique and each key should have a label associated with it, like the table in Figure 8-8. This is particularly important for single station applications, since duplicate keys will produce incorrect labels.

**NOTE for v3.20 users:** There are some situations when performing look-ups with a network when you need two or more entries with the same key. See section 11 for more information.

**Figure 8-8**  
**Completed**  
**Look-Up Table**

< LOOK-UP TABLE > (Ctrl-Enter to Accept)	
Key: 10001	Label: Apples
Key: 10002	Label: Oranges

If you have empty slots after you finish, leave them blank and the software will remove them when you press CTRL-ENTER. If you do not have enough slots, fill out as many as you can, accept the table with CTRL-ENTER and then edit the table to add the entries that were omitted (see section 8.3, “Editing a Look-Up Tables”).

### 8.3 Editing a Look-Up Table

Once you have created a look-up table, it is possible to edit it in a number of ways. You can add keys to it, delete keys from it, change the keys in it, or change the labels associated with keys in the table.

**NOTE:** Whenever you edit the active look-up table or a label that is in the active look-up table, you must

inactivate the table, and then re-activate it for the changes to take effect. Editing an active look-up table can cause the program to function incorrectly.

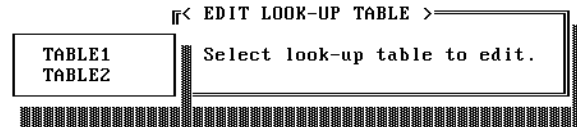


### 8.3.1 Adding Keys to a Look-Up Table

To add one or more keys to an existing look-up table, follow the directions below.

1. Select Edit from the look-up table menu (Figure 8-2). The screen will display a list of all the defined look-up tables (Figure 8-9).

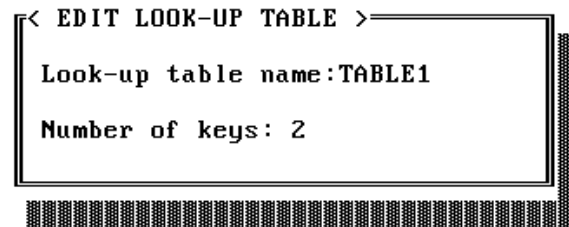
**Figure 8-9**  
List of Look-Up  
Tables



The screenshot shows a terminal window titled "< EDIT LOOK-UP TABLE >". On the left, there is a list of tables: "TABLE1" and "TABLE2". On the right, the text "Select look-up table to edit." is displayed. The bottom of the screen shows a series of asterisks representing a progress bar or status indicator.

2. Move up and down the list until the table you want to edit is highlighted and press ENTER. The screen will prompt for the number of keys in the table (Figure 8-10). This prompt is similar to the prompt for a new table, but does not allow you to edit the table name.
3. To add keys to the table, enter a number greater than the number of keys that are currently in the table.

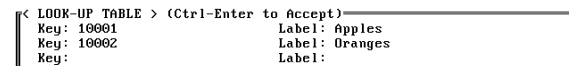
**Figure 8-10**  
Prompt for  
Number of Keys



The screenshot shows a terminal window titled "< EDIT LOOK-UP TABLE >". It displays the text "Look-up table name: TABLE1" and "Number of keys: 2". The bottom of the screen shows a series of asterisks representing a progress bar or status indicator.

The look-up entry screen will then appear. If you increased the number of keys, there should be empty slots at the bottom of the look-up table. In the example in Figure 8-11, the number of keys was increased from 2 to 3 and there is one empty slot at the bottom of the table.

**Figure 8-11**  
Look-Up Entry  
Table with Empty



The screenshot shows a terminal window titled "< LOOK-UP TABLE > (Ctrl-Enter to Accept)". It displays a table with two columns: "Key:" and "Label:". The first row contains "Key: 10001" and "Label: Apples". The second row contains "Key: 10002" and "Label: Oranges". The third row contains "Key:" and "Label:", indicating an empty slot. The bottom of the screen shows a series of asterisks representing a progress bar or status indicator.

**Slot at the  
Bottom**

4. To enter the new keys, move the highlight down with ↓ until it reaches the first empty slot.
5. Type in the new key and select a label to correspond to it. Be sure to avoid duplicating keys in single station look-up tables.
6. Once the new keys have been entered, press CTRL-ENTER to accept the table.

### 8.3.2 Deleting Keys from a Look-Up Table

To delete keys from an existing look-up table, follow the instructions below.

1. Select Edit from the look-up table menu and then select the table you want to edit as described in 8.3.1.
2. When you are prompted for the number of keys, do not change the value. Just press CTRL-ENTER and accept the current number of keys. The table look-up entry screen will appear.
3. Move the highlight to the key of the entry you wish to delete with the ↑ and ↓ keys. Press DELETE until the key for that entry has been cleared, as shown in Figure 8-12. In this example, the third key is being deleted from the table.

**Figure 8-12**  
**Third Key being**  
**Deleted from a**  
**Look-Up Table**

< LOOK-UP TABLE > (Ctrl-Enter to Accept)	
Key: 10001	Label: Apples
Key: 10002	Label: Oranges
Key:	Label: Bananas

4. Delete all of the keys of entries that you want to delete and press CTRL-ENTER to accept the edited table. When you accept the table, all entries that do not have a key will be deleted from the table. In the example in Figure 8-12, the third key would

be deleted and the resulting table would have only 2 keys, 10001 and 10002.

You do not need to delete the label on the entries you wish to remove because the software will erase all entries that do not have a key.

### 8.3.3 Changing Entries in a Look-Up Table

In addition to adding keys to and deleting keys from an existing look-up table, you can also use the Edit command to modify keys.

1. Select Edit from the look-up table menu and choose the look-up table that you wish to edit. If you are not adding more keys, do not change the number of keys in the table, just press CTRL-ENTER. This will bring you to the look-up entry screen as shown in Figure 8-13.

**Figure 8-13**  
**Look-Up Table**  
**Entry Screen**

< LOOK-UP TABLE > (Ctrl-Enter to Accept)	
Key: 10001	Label: Apples
Key: 10002	Label: Oranges

2. To change a key, highlight to the key you wish to edit with the **↑** and **↓** keys and type the new key. The old key will disappear when you begin typing the new one.

**Figure 8-14**  
**Look-Up Table**  
**Entry Screen**  
**with Changed**  
**Key**

< LOOK-UP TABLE > (Ctrl-Enter to Accept)	
Key: 10001	Label: Apples
Key: 10003	Label: Oranges

3. To change a label, move the highlight to the key next to the label you wish to edit with the **↑** and **↓** keys. Press TAB and the screen will prompt for the new label, as shown in Figure 8-15. Select the new label as described in section 8.2.

Figure 8-15  
Prompt for New  
Label



```
Label Name:
Enter with a blank label name to
select via a list.
```

If the screen prompts for a new label name and you do not want to change that label, press ESC and you will return to the look-up table entry screen without changing the label. Avoid duplicating keys in single station look-up tables.

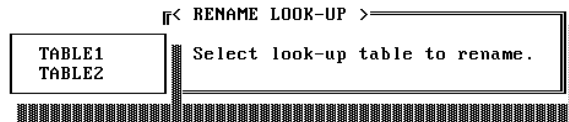
4. Press CTRL-ENTER when you have finished editing the look-up table to accept the changes. If you decide you do not want to accept the changes and want to cancel them, press ESC and the changes will not be saved.

#### 8.4 Renaming a Look-Up Table

If you want to change the name of a look-up table, you can do this easily with the rename command on the look-up table menu.

1. To rename a look-up table, first select Rename from the look-up menu, shown in Figure 8-2. A list of the existing look-up tables will appear.

Figure 8-16  
List of Look-Up  
Tables



```
< RENAME LOOK-UP >
Select look-up table to rename.
TABLE1
TABLE2
```

2. Select a table to rename with the ↑ and ↓ keys and press ENTER. The screen will prompt for the new table name (Figure 8-17).

Figure 8-17  
Prompt for New  
Table Name

```
< RENAME LOOK-UP >
Old Table Name: TABLE2
New Table Name:
```

3. Type the new table name and press ENTER. The software will change the name of the table and return you to the look-up menu. If you do not want to enter a new name for the table, press ESC.

### 8.5 Deleting a Look-Up Table

If you wish to delete a look-up table that you are no longer using, you can do this with the delete command.

1. Select Delete from the lookup menu to delete a look-up table. A list of look-up tables will appear.

Figure 8-18  
List of Look-Up  
Tables

```
< DELETE LOOK-UP >
TABLE1
TABLE2
Select look-up table to Delete.
```

2. Select a table to delete with the ↑ and ↓ keys and press ENTER. The screen will prompt you to confirm that your intentions to delete.

Figure 8-19  
Confirmation  
Prompt for  
Deleting a Look-  
Up Table

```
< DELETE LOOK-UP >
Delete look-up table TABLE3 (Y/N)?
```

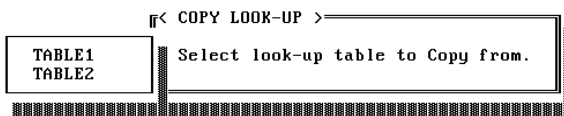
3. To delete the look-up table, press Y and the software will delete the table. If you do not want to delete the table, press N or ESC. The software will then return to the look-up menu.

## 8.6 Copying a Look-Up Table

If you want to create a new look-up table similar to an existing table without changing the existing table, you can do this by copying the table with the copy command on the look-up menu and then editing the new table as described in section 8.3.

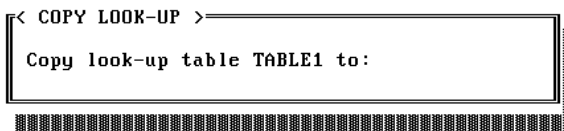
1. Select Copy from the look-up menu to copy a look-up table. A list of the existing look-up tables will appear.

**Figure 8-20**  
**List of Look-Up**  
**Tables**



2. Select a table to copy with the **↑** and **↓** keys and press **ENTER**. The screen will prompt you for the new table name.

**Figure 8-21**  
**Prompt for New**  
**Table Name**



3. Type the new table name and press **ENTER**. The software will create a new table that is exactly the same as the old table except for the name. If you do not want to copy the old table, press **ESC**.

## 8.7 Using a Look-Up Table

Once you have created a look-up table with entries, you can not use it until activated. When activated, the PEL software employs it to translate messages from a scanner into a labels and then send them to a print controller. If no table is activated, the software will not respond to messages from a scanner. Only one look-up table can be active. Whenever a table is active, the software will not

allow you to perform some of the functions that are normally allowed such as manually printing a label.

8.7.1 Activating a Look-Up Table

The Print Menu contains the options to activate a look-up table.

- 1. Choose Look-Up from the Print menu.

Figure 8-22  
Print Menu

Print▼	
Print Label	(ALT-P)
Cancel Printing	Stop printing (ALT-C)
Station Status	(ALT-S)
Sequence Number	Change sequence number
Look-up	Look-up table ▶
Disk-based	Disk-based look-up ▶

The Print Look-Up sub-menu will appear as shown in Figure 8-23. If there is no active look-up table at the time, the check mark will be next to Inactive. If there is an active look-up table, the check mark will be by Active.

*NOTE:* If the check mark is by Active, refer to section 8.7.2 "Changing which Look-Up Table is Active" instead of this section.

Figure 8-23  
Print Look-Up  
Sub-Menu

ACTIVE J INACTIVE	Look-up table Look-up table
----------------------	--------------------------------

- 2. Select Active to activate a look-up table. The screen will prompt you to choose the table to make active.

Figure 8-24  
Prompt for  
Table to Make  
Active

⏏< ACTIVATE LOOK-UP >	
TABLE1 TABLE2	Select look-up table to make active

3. Select a table to activate with the **↑** and **↓** keys and press **ENTER**. The software will then load that table and all labels in that table into memory and use it for translating any messages received from the scanner.

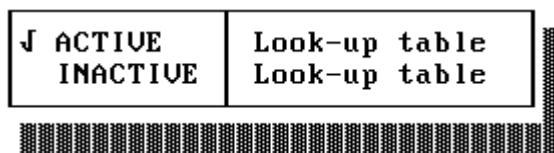
*NOTE:* You can restart the system with the initialized look-up table if it is supported under secondary access and the secondary Password is blank (see Section 3.10).

### 8.7.2 Changing the Active Look-Up Table

Once you have activated a look-up table it is possible to easily change which look-up table is active.

1. Select Look-Up from the Print menu and the Print Look-Up sub-menu will appear. The process is similar to activating the first table.

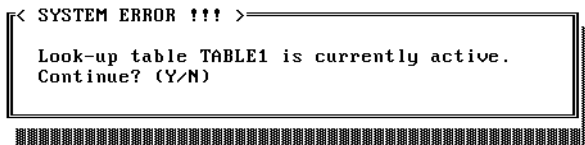
**Figure 8-25**  
Print Look-Up  
Sub-Menu



If there is no active look-up table at the time, the check mark will be next to Inactive. If there is an active look-up table, the check mark will be by Active. If the check mark is by Inactive, refer to section 8.7.1 "Activating a Look-Up Table" instead of this section.

2. Select active from the menu and you will then be prompted with the warning message shown in Figure 8-26.

**Figure 8-26**  
Change Look-  
Up Warning  
Prompt





This warning is a strong reminder that a look-up table is already active. Because only one look-up table can be active at a time, the program must inactivate the current table if you want to activate another one.

2. Press Y to inactivate the current table so that another one can be activated. The screen will prompt for the table to be activated.

**Figure 8-27**  
**Prompt for**  
**Active Table**

⌘< ACTIVATE LOOK-UP >	
TABLE1 TABLE2	Select look-up table to make active

3. Select a table to activate with the  $\uparrow$  and  $\downarrow$  keys and press ENTER. The software will then load that table and all labels in that table into memory and use it for translating any messages received from the scanner.

### 8.7.3 Inactivating a Look-Up Table

Once you activate a look-up table, you may want to inactivate it without activating another one. You can do this with the Print Look-Up sub-menu.

1. Select Look-Up from the Print menu and the Print Look-Up sub-menu will appear.

**Figure 8-28**  
**Print Look-Up**  
**Sub-Menu**

⌘ ACTIVE INACTIVE	Look-up table Look-up table
----------------------	--------------------------------

If the check mark is by Inactive, then you do not need to inactivate the look-up table because there is no current look-up table active. If the check mark is by Active, then there is an active look-up table.

2. Select Inactive from the Print Look-Up sub-menu.  
This will inactivate the current look-up table and move the check mark from Active to Inactive.

#### 8.7.4 Look-Up Status

The look-up status window allows you to monitor the look ups as they occur. Although this may not be a useful tool during normal operation, it can be invaluable when setting up the system or diagnosing problems.

1. Select Status from the Look-Up menu to turn the look-up status window on. The look-up status window will appear in the back of the screen.
2. To turn the look-up status window off, select Status from the Look-Up menu again.

**Figure 8-29:**

**Look-Up  
Status Window**

< LOOK-UP STATUS >		
Key	Label Name	Count
1234510001	(no active table)	1
***** Lookup changed to : TABLE1		
1234510001	Apples	2
1234510006	(invalid key)	1
1234510005	Peaches	1

The status window scrolls up as look-up related events occur. New events are added to the bottom of the screen and older events disappear off the top.

There are two types of events: a look-up change event and a key received event. A look-up change event occurs when you activate a new look-up table through either the Print-Lookup-Active command or the Print-Diskbased-Active command. When the change occurs, a line similar to the following appears at the bottom of the Look-Up Status:

```
***** Lookup changed to : TABLE1
```

A key-received event occurs any time the scanner transmits a key. Typically, the program looks up the key

in the currently active table and sends the corresponding label to the print station. However, if there is no active look-up table or the key is not in the look-up table, no label will be sent to the controller. There are three types of key-received events: i) no active table, ii) invalid key, and iii) valid key.

i) The no active table event occurs when the software receives a key while there is no active lookup table. In this case, the software displays the key it received and the message “(no active table)”:

1234510001	(no active table)	1
------------	-------------------	---

ii) The invalid key event occurs when the software receives a key while there is an active lookup table, but the does not appear in the lookup table. In this case, the software displays the key it received and the message “(invalid key)”:

1234510006	(invalid key)	1
------------	---------------	---

iii) The valid key event occurs when the software receives a key while there is an active lookup table. The software finds the key in the table and sends the corresponding label to the station. In this case, the software displays the key it received and the name of the label that was sent to the station:

1234510005	Peaches	1
------------	---------	---

If the software receives the same key two or more consecutive times, it will not display one row for each receipt. Instead, it indicates how many consecutive times it received the same key in the “count” field. For example, if the software received the valid key “1234510001”, it would display the line:

1234510001	Apples	1
------------	--------	---

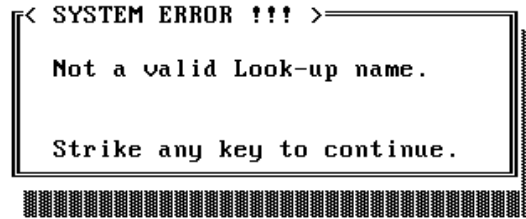
If it received the same key a second time and looked up the same label, the software would not display another line. Instead, it would simply change the count for the last line from 1 to 2:

1234510001	Apples	2
------------	--------	---

## 8.8 Look-Up Table Error Messages

Shown in this section are all of the error messages you are likely to see while working with look-up tables and what each of them means. All messages appear in boxes labeled "< SYSTEM ERROR !!! >" that tell you to "Strike any key to continue."

Figure 8-29 Not a Valid Look-Up Name Error Message



Message	When Seen
<b>Not a valid Look-up name.</b>	While trying to create a new look-up table (section 8.2).
Probable Cause	Corrective Action
You did not enter anything in the look-up table name field.	Enter a name for the new look-up table in the name field.

Message	When Seen
<b>Look-up name all ready in use.</b>	When trying to create a new look-up table (section 8.2), rename a look-up table (8.4), or copy a look-up table (8.6).
Probable Cause	Corrective Action
When prompted for a new name for a look-up table, you selected a name of an existing table. Instead of over-writing the old table, the software gives you an error message.	Use a name that does not equal any other table in the system or delete the look-up table with that name (8.5) and try the operation again.

Message	When Seen
<b>Value out of range: (1 through 20)</b>	When trying to create a new look-up table (8.2).
Probable Cause	Corrective Action
The value that you entered for the number of keys in a new look-up table was either less than 1 or greater than 20. Only values in this range are acceptable.	Change the number in the number of keys field so that it is within this range.

Message	When Seen
<b>Value out of range: (10 through 20)</b>	When trying to edit a look-up table (8.3).
Probable Cause	Corrective Action
The value you entered for the number of keys in the look-up table was either less than the current number of keys or greater than 20. Only values in this range are acceptable.	Change the number in the number of keys field so that it is within this range.

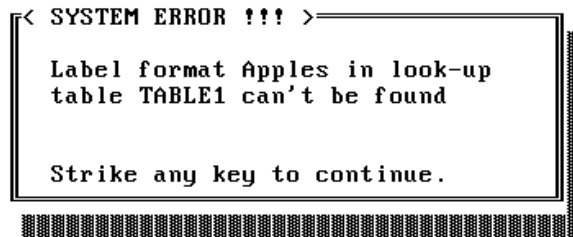
Message	When Seen
<b>Can't find label.</b>	When trying enter a label in the look-up entry screen while creating a new look-up table (8.2) or editing a look-up table (8.3).
Probable Cause	Corrective Action
The software can't find the label that you specified. Either you have not created the label yet or you misspelled the name of the label.	Check the label name to make sure that you spelled it correctly (if you forgot how the label name is spelled, enter a blank for a label name and select it from

	the list) or create the label and try the operation again.
--	--

Message	When Seen
<b>A look-up table is currently active. To print you must inactivate the look-up table.</b>	When trying to print a label from the Print menu (5).
Probable Cause	Corrective Action
You tried to print a label manually while a look-up table was active	Inactivate the look-up table (8.7.3) and try to print the label again.

Message	When Seen
<b>Either a look-up table is currently active or you are logging input from the scanner. To change ports you must inactivate the look-up table or turn off the log.</b>	When trying to change the port setup for the scanner or station (3).
Probable Cause	Corrective Action
You tried to change the port for the scanner or station while a look-up table was active	Inactivate the look-up table (8.7.3), change the port, and then re-activate the look-up table (8.7.1).

Figure 8-30  
Label Format in  
Look-Up Table  
Can't be Found  
Error Message



Message	When Seen
<b>Label format XXXXX in look-up table XXXXX can't be found.</b>	When trying to activate a table look-up (8.7.1).
Probable Cause	Corrective Action
One of the labels listed in the look-up table could not be found. Typically, the label was either deleted or renamed	Create the label that was not found by copying another label, renaming another label or creating the new label from scratch (4) or change the label name in the look-up table (8.3.3) or delete the entry with that label from the look-up table (8.3.2). Try to activate the table again.



## Section 9 Disk-Based Look-Up Tables

---

*This section covers creating, managing, editing, renaming, deleting and copying disk-based look-up tables. It also covers ram disks as a method of accelerating table look-ups.*

### 9.1 When to Use Disk-Based Look-Up Tables

Because disk-based look-up tables are designed to avoid a size limit, they are not as easy to work with as memory based look-up tables. If your application requires more than 20 keys in a look-up table, you should use disk-based look-up tables. If not, disk-based look-up tables do work with less than 20 keys, but you should use memory based look-up tables, discussed in Section 8.

#### 9.1.1 Managing Disk-Based Look-Up Tables with External Software

The PEL software handles any file in the PEL directory with the extension .DBL (**Disk-Based Look-up**) as a disk-based look-up file. It uses a text format with one entry on each line, where the format for each line is:

[key]<tab>[labelname]

[key] is the bar code message that initiates label look-up; <tab> is the ASCII value 9 (tab character); and [labelname] is the name of label that prints when the key is received.

This text format allows you edit .DBL files with the MS-DOS editor. It also allows easy access to databases stored on a mainframe: a simple procedure can read data from a database and write it out to a text file in the above format which can then be read by the PEL software.

### 9.1.2 Creating a Disk-Based Look-Up Table

Before creating a look-up table, you must create all the labels you want to put in the table. To do this, follow the directions in Sections 4.2–4.4. When you have created all the labels, follow the directions below.

**Figure 9-1**  
**Look-Up Menu**

New	Create look-up table
Edit	Change look-up table
Rename	Change look-up table name
Delete	Erase look-up table
Copy	Duplicate look-up table
Disk-based	Disk-based look-up ▶

1. Select *Disk-Based* from the Look-Up menu. The screen will display the Disk-based look-up menu:

**Figure 9-2**  
**Disk-Based Menu**

Create	Create a Disk-based table
Add	Add a key to a Disk-based table
Delete	Delete a key from a Disk-based table
List	List the contents of a Disk-based table

2. Select *Create* from the Disk-Based menu and the screen will prompt you for the name of the new look-up table:

**Figure 9-3**  
**New Disk-Based Look-Up Table Prompt**

< NEW DISK-BASED LOOK-UP TABLE >	
New Disk-Based Table Name:	
Ctrl-Enter to Accept	

3. Type the name of the new look-up table and press CTRL-ENTER. The software will then create an empty .DBL file with that file name. If there is already a .DBL file with that name, it is not affected and no new file is created.

### 9.1.3 Editing a Disk-Based Look-Up Table

Once a look-up table has been created, you must add keys to it to make it useful. You may also want to delete keys from the table that are wrong or not needed.

*Note:* Whenever you edit the active look-up table or a label that is in the active look-up table, you must inactivate the table, and then re-activate it for the changes to take effect. Editing an active look-up table can cause the program to function incorrectly.

#### 9.1.3.1 Adding Keys to a Disk-Based Look-Up Table

Adding one or more keys to a disk-based look-up table requires key and label definition.

1. Select *Add* from the disk-based menu:

**Figure 9-4**  
Disk-based  
Menu

Create	Create a Disk-based table
Add	Add a key to a Disk-based table
Delete	Delete a key from a Disk-based table
List	List the contents of a Disk-based table

The screen will display a list of all the defined look-up tables:

**Figure 9-5**  
List of Disk-  
Based Look-Up  
Tables

<< ADD KEY TO DISK-BASED TABLE >>	
DBTABLE1 DBTABLE2	Select disk-based look-up table to modify

2. Select a table with  $\uparrow$  and  $\downarrow$  keys and press ENTER. The Add Key screen will appear:

**Figure 9-6**  
Add Key Screen

< ADD KEY TO DISK-BASED TABLE > (Ctrl-Enter to Accept)	
Key:	Label:

3. Type the new key and press Tab.
4. Either type the name of the label and press ENTER or just press ENTER on the blank line to choose the label from a list

If you press ENTER on the blank line, a list of the currently defined labels will appear.

5. Move up and down the list with the ↑ and ↓ keys to highlight your chosen label and press ENTER.
6. Press CTRL-ENTER to add it to the table. The screen will display the key and label name to acknowledge that the key was added:

**Figure 9-7**  
**Confirmation**  
**That Key Was**  
**Added to Table**

```
< ADD KEY TO DISK-BASED TABLE > (Ctrl-Enter to Accept)
Entry Added:
Key: 12345                      Label: Apples
Key:                             Label:
```

7. The screen will prompt you for another entry. Enter any other keys and labels that you need to add to the table.
8. When you have added the last entry, press ESC.

If you enter a key that is already in the table, the software will indicate that the key was already in the look-up table and display the record that was found in the table with that key, as shown in Figure 9-8. It then prompts you to continue to add keys to the look-up table. DO NOT use duplicate keys in a look-up table since duplicates produce incorrect labels.

**Figure 9-8**  
**Notification That**  
**Key Was Al-**  
**ready in the**  
**Table**

```
< ADD KEY TO DISK-BASED TABLE > (Ctrl-Enter to Accept)
Key was already in table:
Key: 12345                      Label: Apple
Key:                             Label:
```

#### 9.1.3.2 Deleting Keys from a Disk-Based Look-Up Table

If you wish to delete one or more keys from a disk-based look-up table,

1. Select Delete from the disk-based menu:

**Figure 9-9**  
**Disk-Based**  
**Menu**

Create	Create a Disk-based table
Add	Add a key to a Disk-based table
Delete	Delete a key from a Disk-based table
List	List the contents of a Disk-based table

The screen will show a list of all the defined look-up tables.

2. Choose a table with the **↑** and **↓** keys and then press **ENTER**. The Delete Key screen will appear:

**Figure 9-10**  
**Delete Key**  
**Screen**

```
< DELETE KEY FROM DISK-BASED TABLE > (Ctrl-Enter to Accept)
Key:
```

Deleting keys is similar to adding keys, except you must only specify the key that is to be deleted.

3. Type the key you wish to delete from the table and press **ENTER**. The software will search the look-up table and remove all occurrences of that key. It will display the key and label of the last record deleted from the table as shown in Figure 9-9.

**Figure 9-11**  
**Acknowledg-**  
**ment That Entry**  
**Was Deleted**

```
< DELETE KEY FROM DISK-BASED TABLE > (Ctrl-Enter to Accept)
Entry Deleted:
Key: 12345          Label: Apple
Key:
```

The software then prompts you for another entry.

4. Enter any other keys and labels that you wish to delete from the table. When you are finished, press **ESC**.

If you enter a key that the software cannot find in the table, it will indicate that the key could not be found:

**Figure 9-12**  
**Indication That**  
**Key Was Not**  
**Found in Table**

```
< DELETE KEY FROM DISK-BASED TABLE > (Ctrl-Enter to Accept)
Key was not found in table:
Key: 111
Key:
```

## 9.2 Renaming a Disk-Based Look-Up Table

If you want to change the name of a look-up table, you must exit the software and use DOS.

1. Select *Exit Software* from the Quit Menu. This will bring you to DOS.
2. To rename a table, type the following command:

**MOVE *oldname*.DBL *newname*.DBL**

*oldname* is the name of the table you wish to rename and *newname* is the new name.

For example, to rename the table DBTABLE2 to OLDTBL, type the following command:

**MOVE DBTABLE2.DBL OLDTBL.DBL**

If DOS responds with a message similar to the one below, the table was successfully renamed:

```
c:\pel\oldname.dbl => c:\pel\newname.dbl [ok]
```

If DOS responds with a prompt similar to the one below, then there is already a table with the name *newname*:

```
Overwrite c:\pel\newname.dbl (Yes/No/All)?
```

If you respond with either Y or A, the table with the name *newname* will be deleted and the other table will be renamed. If you respond with N, the rename will be aborted.

If DOS responds with a message similar to the one below, the table with the name you specified could not be found:

```
Cannot move oldname.dbl - No such file or directory
```

3. Make sure that you type the name correctly and that you are in the PEL directory. Use the command DIR \*.DBL to list the disk-based look-up tables.

### 9.3 Deleting a Disk-Based Look-Up Table

If you want to delete a look-up table, exit the software and use DOS.

1. Select Exit Software from the Quit Menu. This will bring you to DOS.
2. Type the following command to delete a table:

**DEL *tablename*.DBL**

*tablename* is the name of the table you wish to delete.

For example, to delete the table OLDTBL, type the following command:

**DEL OLDTBL.DBL**

If DOS does not display any messages and returns with a prompt, the table was successfully deleted.

If DOS responds with the message below, the table with the name you specified could not be found:

File not found
----------------

Make sure that you type the name correctly and that you are in the PEL directory. You can use the command DIR \*.DBL to list the disk-based look-up tables.

### 9.4 Copying a Disk-Based Look-Up Table

If you want to create a new disk-based look-up table identical to an existing table, you must exit the software and use DOS.

1. Select Exit Software from the Quit Menu. This will bring you to DOS. To copy a table, type the following command:

**COPY *oldname*.DBL *newname*.DBL**

*oldname* is the name of the table you wish to copy and *newname* is the new name.

For example, to copy the table DBTABLE2 to DBTABLE3, type the following command:

**MOVE DBTABLE2.DBL DBTABLE3.DBL**

If DOS responds with a message similar to the one below, the table was successfully copied:

1 file(s) copied
------------------

If DOS responds with a prompt similar to the one below, then there is already a table with the name *newname*:

Overwrite <i>newname</i> .dbl (Yes/No/All)?
---

If you respond with either Y or A, the table with the name *newname* will be deleted and the other table will be copied. If you respond with N, the copy will be aborted.

If DOS responds with a message similar to the one below, the table with the name you specified could not be found:

File not found - <i>oldname</i> .dbl 0 file(s) copied
--

3. Make sure that you type the name correctly and that you are in the PEL directory. You can use the command DIR \*.DBL to list the disk-based look-up tables.

### 9.5 Using a Disk-Based Look-Up Table

A new look-up table with labels must be activated before it can be used. Only one look-up table can be active at a time. Whenever a table is activated, the software uses only that table to translate messages from a scanner into a labels for printing. If no table is activated, the software will not respond to messages from a scanner.. Whenever a table is active, the software will not allow you to



perform some of the functions that are normally allowed such as manually printing a label.

#### 9.5.1 Specifying the Temp Drive

When a disk-based look-up is activated, it builds a temporary file that contains all of the labels from that table. Through file compression and indexing techniques, the software can retrieve label data from this temporary file much faster than it can from the label file. To accelerate look-ups, the software allows you to select a disk drive on which to store this temporary file. The best choice is the fastest drive.

### 9.6 Setting Up a RAM Drive

If you are DOS literate and comfortable altering a config.sys file, follow the instructions in Section 3.8 on setting up a RAM drive. If you are not familiar with DOS or comfortable with system level commands, contact your Diagraph FSR to schedule an on-site installation of a RAM drive.

#### 9.6.1 Setting the Temp Drive

For disk-based Look-Up Tables to work, the Temp Drive must be set. Review Section 3.8 for instructions to do this.

### 9.7 Activating a Disk-Based Look-Up Table

Only one look-up table can be active. The process of activating a table starts with a check to see if another table is already active.

1. To activate a look-up table, choose *Disk-based* from the Print menu:

Figure 9-13  
Print Menu

Print▼

Print Label	(ALT-P)
Cancel Printing	Stop printing (ALT-C)
Station Status	(ALT-S)
Sequence Number	Change sequence number
Look-up	Look-up table ▶
Disk-based	Disk-based look-up ▶

The Print Disk-Based Look-Up sub-menu will appear as shown in Figure 9-14. If there is no active disk-based look-up table at the time, the check mark will be next to Inactive. If there is an active disk-based look-up table, the check mark will be next to Active. If the check mark is by Active, refer to section 9.7.1 – Changing the Active Look-Up Table – instead of this section.

Figure 9-14  
Print Disk-  
Based Look-Up  
Sub-Menu

ACTIVE	Disk-based look-up table
✓ INACTIVE	Disk-based look-up table

2. Select *Active* to activate a look-up table.

If there is a memory-based look-up table active, the screen will prompt for confirmation as shown in Figure 9-14.

*NOTE:* When a look-up table is active, do not attempt to edit it. Attempting to edit an active look-up table can cause program malfunctioning.

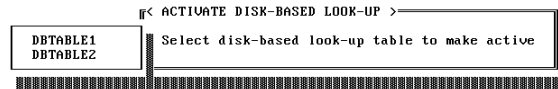
3. Enter either Y or N. If you enter N, the software will keep the current look-up table active and return to the Print Disk-Based Look-Up sub-menu. If you press Y, the software will deactivate the currently active look-up table and proceed.

Figure 9-15  
Prompt If There  
is Already a  
Memory Based  
Table Active

< SYSTEM ERROR !!! >
Look-up table TABLE2 is currently active. Continue? (Y/N)

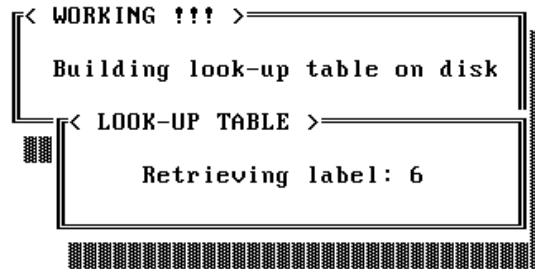
The screen will prompt for the table you would like to make the active:

**Figure 9-16**  
Prompt for  
Active Table



4. Choose a table with the **↑** and **↓** keys and then press **ENTER**. The software will then read the label data for each entry in the look-up table and build a temp file. As it builds this file, it will display how many labels have been retrieved as it works:

**Figure 9-17**  
Building Disk-  
Base Look-Up

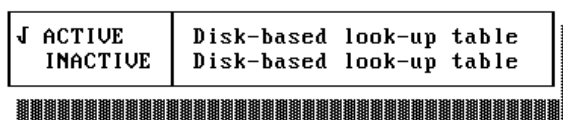


#### 9.7.1 Changing the Active Look-Up Table

Once you have activated a look-up table, it is easy to change the active look-up table. Making this change is similar to activating the first table.

1. Select *Disk-Based Look-Up* from the Print menu and the Print Look-Up sub-menu will appear:

**Figure 9-18**  
Print Disk-  
Based Look-Up  
Sub-Menu

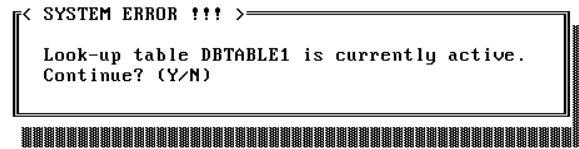


If there is no active disk-based look-up table at the time, the check mark will be next to Inactive. If there is an active disk-based look-up table, the check mark will be by Active. If the check mark is

by Inactive, refer to section 9.7 – Activating a Disk-Based Look-Up Table – instead of this section.

2. Select *Active* from the menu and the screen will display a warning message:

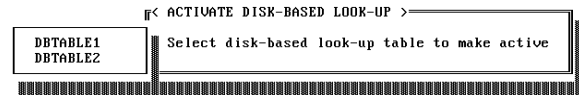
**Figure 9-19**  
**Change Disk-**  
**Based Look-Up**  
**Warning Prompt**



This warning ensures that you know that there is a look-up table already active. The system will continue to operate with the previously active look-up table until after the new table has been selected and built. Once the new one is built, it will switch to the new one.

3. Press Y to continue. The screen will prompt for name of the table to make active:

**Figure 9-20**  
**Prompt for**  
**Active Table**



4. Choose a table with the  $\uparrow$  and  $\downarrow$  keys and then press ENTER. The software will read the label data for each entry in the look-up table and build a temp file. As it builds this file, it displays how many labels have been retrieved as shown in Figure 9-16 above. Once it is finished building the new table, it deactivates the old one and makes the new one active.

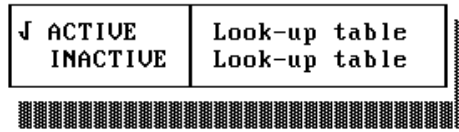
*NOTE:* The software will continue to use the old table to perform lookups until it finishes activating the new table.

### 9.7.2 Inactivating a Disk-Based Look-Up Table

Once you activate a look-up table, you may want to inactivate it without activating another one. You can do this with the Print Disk-Based Look-Up sub-menu.

1. Select *Disk-Based Look-Up* from the Print menu shown in Figure 9-11. The Print Disk-Based Look-Up sub-menu will appear:

**Figure 9-21**  
Print Disk-  
Based Look-Up  
Sub-Menu

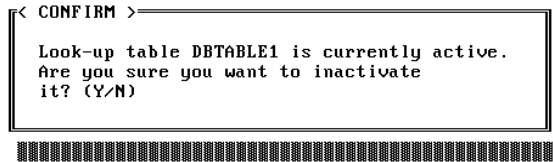


If the check mark is by Inactive, then no disk-based look-up is active, but there may be a memory based look-up active. To inactivate a memory based look-table, use the Print Look-Up sub-menu.

If the check mark is by Active, then there is an active disk-based look-up table.

2. Select *Inactive* from the Print Disk-Based Look-Up sub-menu. The screen will prompt for confirmation:

**Figure 9-22**  
Confirm  
Inactivate



3. Press Y to continue. This will inactivate the current look-up table and move the check mark from Active to Inactive.

*This section explains the logging and report capabilities of PEL Software:*

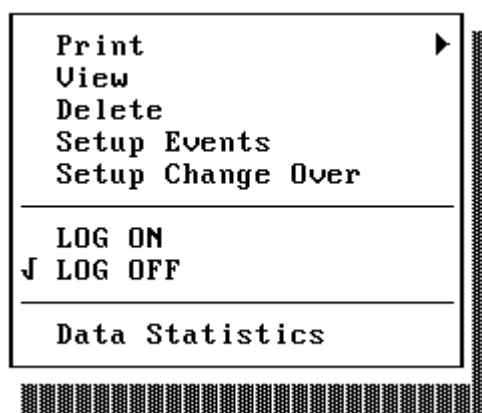
### 10.1 Production Logging and Report Generation

The PEL software can log when it sends individual labels to controllers and generate reports based on these logs. Versions higher than 1.06 can log how times a controller prints each label. Version 1.06 however, can only log when labels are sent to the printer, not how many times a controller prints each label.

#### 10.1.1 Production Logging

There are several features available through the software that allow you to create and manipulate logs: Setup Change Over, Setup Events, Log On, Log Off, View, Print and Delete. Each of these features is accessible from the Log sub-menu:

Figure 10-1  
Log Menu



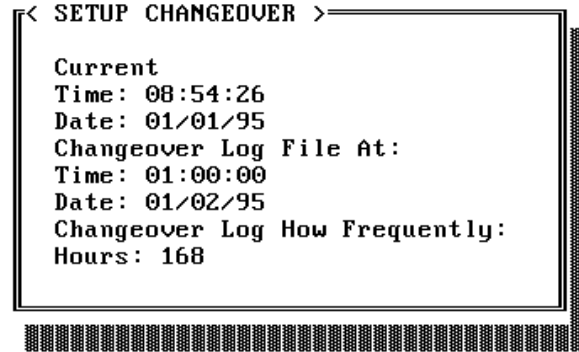
To get to the Log sub-menu, select *Data & Reports* from the main menu and then select *Log* from that menu.

#### 10.1.1.1 Setting Up Log Change Over

The production log appears as a single, continuous log that starts at the oldest record and ends at the newest. For efficiency, the PEL software does not store all logging information in one file. Instead, it divides log data into multiple files. Because applications vary, you can specify how frequently the software closes its logging file and opens a new one through the Setup Change Over option on the Log Menu (Figure 10-1)

1. **Select Setup Change Over** and software will display the Change Over screen:

Figure 10-2  
Change Over  
Screen



```
< SETUP CHANGEOVER >
Current
Time: 08:54:26
Date: 01/01/95
Changeover Log File At:
Time: 01:00:00
Date: 01/02/95
Changeover Log How Frequently:
Hours: 168
```

The screen displays the current time and date along with the next scheduled changeover and change over frequency. The default frequency is 168 hours (1 week). Typically, it is best to have the log change over at 1,000 records. The following table represents typical change over frequencies depending on how frequently events are logged:

Events logged at	Changeover frequency
1 every 30 seconds	8 hours
1 every 2 minutes	24 hours
1 every 10 minutes	168 hours

2. Enter the time and date for the next changeover in the correct fields.

3. Enter the number of hours per changeover in the last field.

When the change over time occurs, the software will change the log and set the change over time according to the frequency.

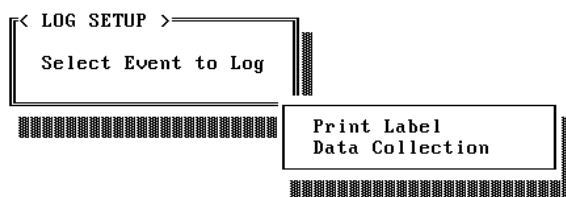
#### 10.1.1.2 Setting Up Events

Once you have set up the log change over, you need to decide which events you wish to log.

1. Select Setup Events from the log sub-menu shown in Figure 10-1. The software will then give you a list of events you can select, shown in Figure 10-3.

*Note:* In Version 1.06, there are only two events that you can select: Print Label and Data Collection.

Figure 10-3  
Setup Events  
Screen



If you select *Print Label*, the software will make one log record each time the Print Label Command in the Print menu sends a label to the controller.

Note that this operation does not count the number of labels printed by the controller. It only counts the number of times the label is sent to the controller. For example, if you use Print Label to send the label “Apples” to the controller three times and no boxes pass by the controller, the log will show that the label was printed three times, even though the controller never printed the label on a box. For another example, if you use Print Label to send the label “Apples” to the controller



once and the controller prints the label on 1000 boxes, the log will show that the label was printed one time, even though the controller printed the label many times.

The *Data Collection* option tracks the readability of bar codes and is discussed in Section 10.2.1.1.

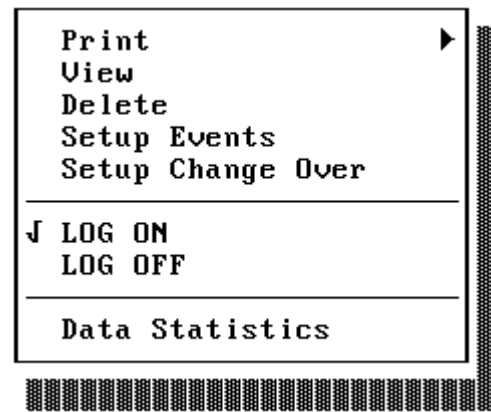
3. Select an event with the **↑** and **↓** keys and press ENTER. A check mark will appear next to the event. To change the selection, press ENTER again and the check mark will disappear. Once you have set up the events, press ESC to return to the Log sub-menu.

#### 10.1.1.3 Turning Log On and Off

Once you have selected which events to log, you must activate logging for the software to record any events.

1. Select *LOG ON* from the log menu. The check mark will move from LOG OFF to LOG ON:

Figure 10-4:  
Log Menu with  
Logging  
Enabled



While the log is enabled, the software will log the specified events until logging is disabled.

2. Select *LOG OFF* to disable the log and the check mark will move back to LOG OFF.

NOTE: The program can initialize a “log-on” if selected under secondary access and the secondary Password is left blank (see Section 3.10).

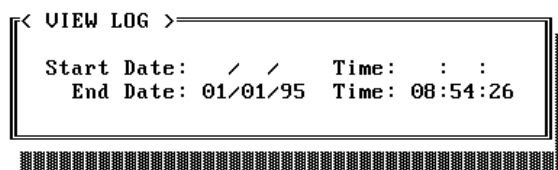
#### 10.1.1.4 Viewing the Log

PEL software can take several minutes to prepare a log for viewing or printing. During the compiling and preparation process, all menu options are frozen but become active again when the log is complete.

Once the system has logged events, you can look at the contents of the log with the View command in the log menu.

1. Select *View* from the log menu shown in Figure 10-1. The screen will prompt for a start and end time:

Figure 10-5  
View Log  
Range Prompt



The screenshot shows a terminal window titled "< VIEW LOG >". Inside the window, there are two lines of text: "Start Date: / / Time: : :" and "End Date: 01/01/95 Time: 08:54:26". The window has a double-line border and is set against a background of asterisks.

2. Enter the start and end times/dates. The default end time is the current time.
3. Press CTRL-ENTER. The screen will display all records, in chronological order, found in the logs between the start time/date and the end time/date. You can scroll with the through the log PgUp and PgDn.
4. When you are done viewing the log, Press ESC to return to the log menu.

#### 10.1.1.5 Printing the Log

Once the system has logged events, you can print the contents of the log with a DOS printer by using the Print command in the log menu.

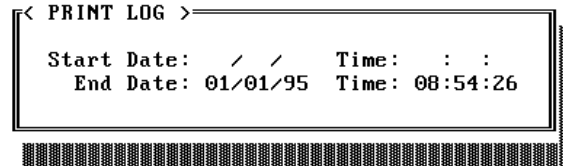
1. Select *Print* from the log menu shown in Figure 10-1. The screen offers two choices:

Figure 10-6  
Print Log  
Menu



2. Select *Logged Data* to indicate you want to print records contained in the logs. The screen will prompt for a start and end time as shown in Figure 10-7 below.

Figure 10-7  
Print Log  
Range Prompt



3. Enter the start and end times/dates. The default end time is the current time.
4. Press CTRL-ENTER and the software will print all records, in chronological order, found in the logs between the start time/date and the end time/date to the DOS printer.



**WARNING:** If the DOS printer is not connected or turned off, the software will report a DOS printer error and stop operations.

#### 10.1.1.6 Deleting Records

Once your system has been working for a while, you may find that the logs take up too much space on your hard drive. The Delete command allows you to delete old records from your logs to free up valuable disk space.

1. Select *Delete* from the log menu. The screen will display the delete log prompt which tells you how

much free disk space you have and the age of your oldest record:

Figure 10-8  
Delete Log  
Prompt

```
< DELETE LOG >
Disk Space Free: 90768 Kbytes
Oldest Record: 01/01/95 08:56:00

Delete all records before what time:
Date:  /  /      Time:  :  :
```

2. Specify the time and date as a cutoff for the delete command. For example, if you wish to delete all records before February 1, 1995, specify 01/31/95 23:59:59. The software will then scan the logs and display the Delete Log Confirmation Prompt which indicates how many records would be deleted by the operation and an estimate of how much disk space would be available:

Figure 10-9  
Delete Log  
Confirmation  
Prompt

```
< DELETE LOG >
Records which would be deleted: 19 records

Estimated amount of
space which would be freed:      1 Kbytes

Are you sure you want to delete this data(Y/N)?
```

3. Press Y to accept the operation and delete the labels or press N to cancel the operation and keep the records.

## 10.2 Table Look-Up Production Logging

Software Versions 2.00 and 3.20 have more production logging capabilities than version 1.06. These versions can log each time a label is looked up and sent to the printstation. They can also log each time the PC receives an invalid key.

When one label is looked up every time a box passes the printstation, these features allow you to generate reports on exactly how many boxes of each type were printed during a specified time period.

#### 10.2.1 Production Logging

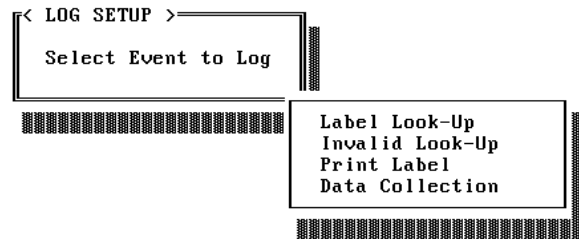
Refer to Section 10.3.1 for instructions on how to use production logging. All of the information regarding setting up change over, printing, viewing, and deleting the log and turning the log on and off applies to table look-up logging. However, instead of selecting the Print Label Event, use the events described below.

##### 10.2.1.1 Setting Up Look-Up Events

Important: If you are using the look-up events with software version 3.20, do not use sequence number events. Using both of these features at the same time produces inaccurate data in the logs.

Unlike version 1.06, versions 2.00 and 3.20 offer the events Label Look-Up and Invalid Label Look-Up in addition to Print Label and Data Collection as shown in Figure 10-10.

Figure 10-10  
Setup Events  
Screen



#### **Label Look-Up Event**

If you select *Label Look-Up*, the software will make an entry in the logs each time a label is sent to a printstation because of a table look-up. This means that either a look-up table or a disk-based look-up must be active, a key must be sent to the software from a scanner, and the key

must be in the currently active look-up table. The entry will indicate the name of the label, the key which the software received, the time, the date and the station.

Typical uses of Label Look-Up event:

- If your system is set up to send a key to the look-up table every time a box approaches the printstation, the software will log every label which is looked-up and sent to the printstation.
- If your system is set up to send a key only once for each batch of boxes, the software will record each batch that was printed. It would not, however, log how many boxes were in each batch.

### **Invalid Label Look-Up Event**

If you select *Invalid Look-Up*, the software will make an entry in the logs each time a key is sent to the PC that was not in the currently active look-up table. This means that either a look-up table or a disk-based look-up must be active, a key must be sent to the software from a scanner and the key must not be in the current table. The entry will indicate that the key was invalid, the key which the software received, the time, the date and the station.

Typical uses of Invalid Look-Up event:

- If your system expects every box to have a bar code on it that looks up a label for that box, this event will track problems in the look-up system such as bar codes that are not in the look-up table, bad scans, missing bar codes or accidental scans.
- If your system expects some boxes to have bar codes that are not in the look-up table or no bar codes at all, this event can track how many such boxes pass the printstation.

Once the logs have been created, you can use the same report generation features as described in section 10.2.2 to generate any of the different reports.

### 10.2.2 Look-Up Report Generation

Once the logs have been created, you can use the same report generation features as described in section 10.3 to generate any of the different reports.

### 10.3 Sequence Number Production Logging

Software Versions 3.00 and 3.20 have more production logging capabilities than Version 1.06. These later versions can monitor sequence numbers in each station to track how many times the sequence number increases while printing.

If the sequence number for one head is set up with the repeat value (Rep) field set to 0 and the increase (Inc) field to 1, and the number is never changed during production, this method can track how many times the station prints each label.

#### 10.3.1 Production Logging

Refer to Section 10.4.1 for instructions on how to use production logging. All of the information regarding setting up change over, printing, viewing, and deleting the log; and turning the log on and off applies to table look-up logging. However, instead of selecting the Print Label Event, use the events described below.

##### 10.3.1.1 Selecting a Printhead

In most cases, sequence number logging will be used to keep track of the exact number of boxes printed by a printstation. To do this, the sequence number for a head must increase by 1 each time a box is printed and each number should only be printed once—the repeat value (Rep) should be 0 and the increase (Inc) should be 1. The sequence number for each head can be configured differently, so one head must be set up this way per production line. If you are using one station to print on



two production lines, you must select two heads for that station, one for each line.

If available, select a head that is not printing a sequence number. For example, if you have a two head system and head 1 is printing a sequence number while head 2 is printing a time date and bar code, select head 2 because it is not printing a sequence number.

If all heads are printing sequence numbers, select a head that increases by 1 every time a box is printed and is never changed manually. For example, if you have a two head system and head 1 is printing a serial number and head 2 is printing batch number, select head 1 because it increases once every box.

If all heads are used to print sequence numbers and none increment by one every box, you cannot use sequence logging to track numbers of prints.

#### 10.3.1.2 Setting the Sequence Number

Once you have selected which head(s) to use, you must set the sequence number for that head.

1. Select Sequence Number from the Print Menu and the screen will prompt for the station on which to set the sequence number.
2. Select a station from the list and the screen will display the Set Sequence Number screen:

Figure 10-11  
Set Sequence  
Number  
Screen

```
< SET SEQUENCE NUMBER >
Upper : 99999999  Head 1 : Y
Lower : 0         Head 2 : Y
Rep : 0          Head 3 : Y
Inc : 1          Head 4 : Y

Ctrl-Enter to Accept
```

3. Leave the default values for Upper, Lower, Rep and Inc as shown in Figure 10-11. Press Tab four times until Head 1 is highlighted.
4. Enter N for all of the heads except the head(s) you want to use for sequence logging. Leave the other head(s) at Y. Use the  $\uparrow$  and  $\downarrow$  keys to highlight different heads and press N for each head except the one(s) you selected to use for sequence logging. For example, if you want to use Head 2, you should enter the Ys and Ns as shown in Figure 10-12.

Figure 10-12  
When using  
head 2, only  
head 2 should  
have a Y

```

< SET SEQUENCE NUMBER >
Upper : 99999999  Head 1 : N
Lower : 0          Head 2 : Y
Rep : 0           Head 3 : N
Inc : 1           Head 4 : N

Ctrl-Enter to Accept
  
```

5. Press CTRL-ENTER to configure the sequence count in the controller.

#### 10.3.1.3 Setting Up the Sequence Number Event

Important Note for Version 3.20 Users Only: If you are using the Sequence Number Events, do not use the Look-Up or Print Label Events. Using both of these features at the same time produces inaccurate data in the logs.

Unlike v1.06, Versions 3.00 and 3.20 offer the events Sequence Number 1, Sequence Number 2, Sequence Number 3, and Sequence Number 4, in addition to Print Label and Data Collection as shown in Figure 10-13.

Figure 10-13  
Setup Events  
Screen

< LOG SETUP >	
Select Event to Log	
=====	
Print Label	
Sequence Number 1	
Sequence Number 2	
Sequence Number 3	
Sequence Number 4	
Data Collection	

If you select *Sequence Number X*, the software will make an entry in the logs each time it sends a label to a the printstation with printhead X. The log entry will indicate the name of the last label that used head X on that station, the head, the time, the date and the station. It will also indicate the difference between the sequence number when the previous label was printed and the current sequence number.

For example, consider a system with Sequence Number 1 as the selected event and logging is on. At 9:00, the PC sends the label "Apples," designated for printhead 1, to printstation A. When this occurs, the sequence number for head 1 is 00010000. At 10:30, the PC sends the label "Bananas", which also uses head 1, to printstation A. When this occurs, the sequence number for head 1 is now 00010100. The software will record that at 10:30 the label "Apples" was printed 100 times on station A.

NOTES:

1. If the sequence number does not change between labels, the software reads this lack of change as no labels being printed and makes no entry in the log.
2. If Sequence Number 1 is the chosen event to log and the PC sends a label to heads 3 and 4, that label is ignored for the Sequence Number 1 event. This avoidance allows you to log correctly in a

situation where one controller is printing on two production lines.

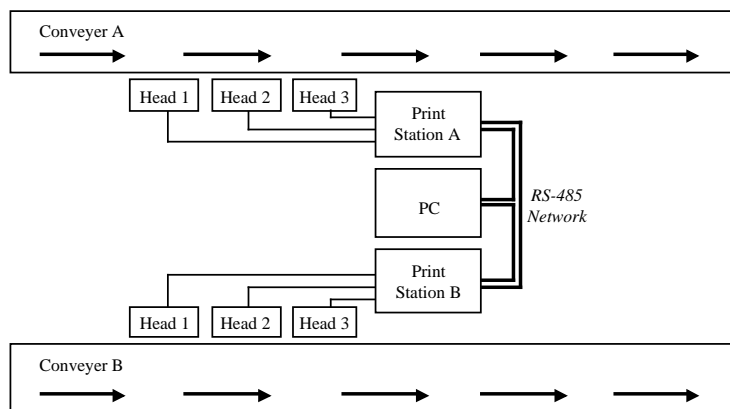
#### 10.3.1.4 Example Applications

Sections 10.3.1.4.1 and 10.3.1.4.2 describe two typical applications in which sequence number logging tracks how many times each label prints from a printstation.

##### 10.3.1.4.1 Two Stations, Two Lines

Figure 10-14 shows a setup with two conveyers with one station on each conveyer; the PC send labels to both stations, but each line operates independently.

Figure 10-14 Example Application 1

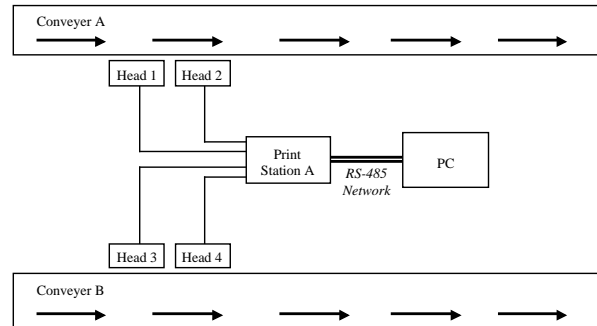


In this example with duplicated printheads, the printheads identified as “Head 1” do not print sequence numbers. This means they can use the Sequence Number 1 Event for logging. The software uses the sequence number in station A head 1 to count boxes on conveyer A while it uses the sequence number event in station B head 1 to count boxes on conveyer B.

##### 10.3.1.4.2 One Station, Two Lines

Figure 10-15 shows a setup with one printstation printing on two conveyers: the PC sends either a label that uses heads 1 and 2 on conveyor A or a label that uses heads 3 and 4 on conveyor B.

Figure 10-15  
Example  
Application 1



Because head 1 on conveyor A and head 3 on conveyor B do not print sequence numbers, both Sequence Number 1 and Sequence Number 3 events are used for logging. The software then uses the Sequence Number 1 for head 1 to count boxes on conveyor A while it uses the Sequence Number 3 for head 3 to count boxes on conveyor B.

In this system, labels created to print on conveyor A only use heads 1 and 2 and labels for conveyor B only use heads 3 and 4. When a label is used to change the message on conveyor A, data are only sent for heads 1 and 2 and only the sequence number for head 1 is checked. Because the label does not use head 3, it does not check that sequence number at that time.

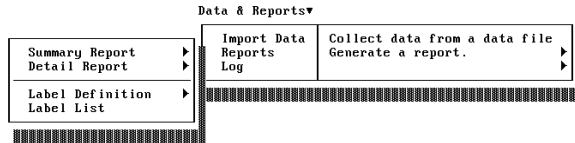
#### 10.3.2 Sequence Number Report Generation

Once the logs have been created, you can use the same report generation features as described in Section 6 to generate any of the different reports.

#### 10.4 Production Report Generation

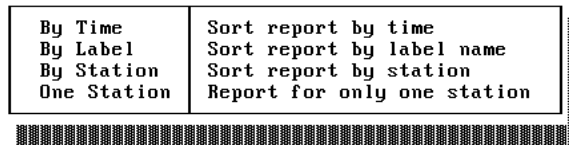
Once the logs have been created, you can use the report generation features to generate any of a number of different reports. All reports are sent to the DOS printer port which must be set under the Setup Menu. There are two types of reports, summary reports and detail reports. Summary reports only include totals over a period of time while detail reports include all the records for each total. The report options can be found in the Reports sub-menu of the Data & Reports menu shown in Figure 10-16.

Figure 10-16  
Reports Sub-  
menu



To generate a report, first decide which type of report (summary or detail) you want. Select either Summary Report or Detail Report. The screen will show a menu of formats:

Figure 10-17  
Report Format  
Sub-menu



Decide which format you wish to use. Each is discussed in the following sections.

If you select One Station, you will be prompted for which station you wish to generate the report, as shown in Figure 10-19. Type the letter of the station and press CTRL-ENTER.

Figure 10-18  
Station Prompt

```
<DETAIL REPORT>

Which Station: A

Ctrl-Enter to Accept
```

The software will prompt you for starting time/date and an ending time/date, as shown in Figure 10-20. These are the time bounds for the report. Only data logged between the start time/date and the end time/date will be included in the report. For example, if you wish to generate a report of what occurred during an 8 hour shift that began at 8 AM and ended at 4 PM on January 1, 1995, the start date would be 01/01/95, the start time would be 08:00:00, the end date would be 01/01/95, and the end time would be 16:00:00.

Figure 10-19  
Start and End  
Time/Date  
Prompt

```
< DETAIL REPORT >

Start Date:  /  /      Time:  :  :
End Date: 01/01/95    Time: 08:54:26
```

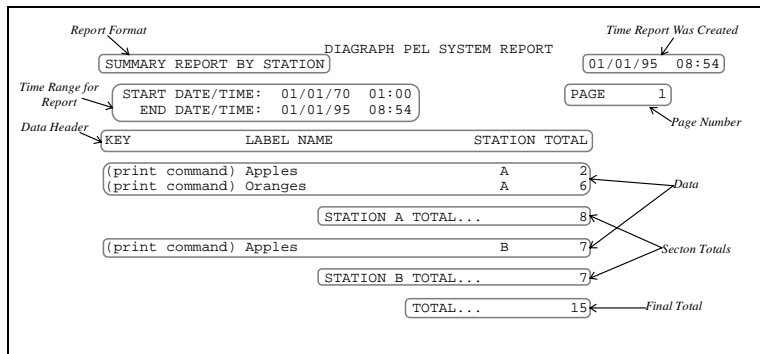
Type the starting date in Month/Day/Year format. Press Tab to move to the start time field. Type the starting time in 24-Hour format (i.e. 1:00 PM is 13:00, 2:00 PM is 14:00, etc.) with Hour : Minute : Second. The End Date and End Time are set to the current time and date by default. If you want to change them, press tab to move to the end date, type the end date, press tab to move to the end time, and type the end time.

Press CTRL-ENTER to generate the report and print it on the DOS printer. Note that the user interface of the software is suspended while this is being done.

#### 10.4.1 Typical Report Output

Each report format varies, but all of them are similar. A typical format appears below:

Figure 10-20: Typical Report Output



Note that the name of the specific report format is in the upper left hand corner and that the time and date of report creation appears in the upper right hand corner. In many formats, the data are divided into multiple sections. In Figure 10-20 it is divided into two sections, one for each station. There is a section total at the end of each section and one final total at the end of the report.

The Key column identifies the event that caused the entry to be logged. The key “(print command)” indicates that the Print Command printed the label and the report logged the event.

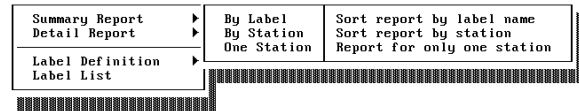
There is a total (or count) in the right-hand column for each entry. This total depends on how the log was created. If the Print Label event generated the log, the total will be the number of times a user selected this label and sent it to the station with the Print Command. If the Look-Up event generated the log (only available on versions 2.00 and 3.20), the total is the number of times the label was looked up. If the Sequence Number event generated the log (only available on version 3.00 and 3.20), the total is the number of times the sequence number increased while that label was printing.



## 10.4.2 Summary Reports

There are three types of summary reports: By Label, By Station, and One Station. These are listed in the Summary Report sub-menu which is under the Reports sub-menu, as shown in Figure 10-21.

**Figure 10-21**  
Summary  
Report Sub-  
menu



### 10.4.2.1 Summary Report By Label

The summary report by label has the format shown in Figure 10-22.

**Figure 10-22: Example Summary Report by Label**

DIAGRAPH PEL SYSTEM REPORT			
SUMMARY REPORT BY LABEL		01/01/95 08:54	
START DATE/TIME: 01/01/70 01:00		PAGE 1	
END DATE/TIME: 01/01/95 08:54			
KEY	LABEL NAME	STATION TOTAL	
(print command) Apples		A	5
(print command) Apples		B	3
(print command) Oranges		A	6
TOTAL...			14

The data are not divided into sections for this format.

Entries are sorted first by Label Name, second by Key and then by Station.

There is one entry for each label printed at each station. For example, if the label “Apples” was printed at both station A and station B, there would be two entries for “Apples,” one for station A and one for station B, as shown in Figure 10-22.

### 10.4.2.2 Summary Report By Station

The summary report by station has the format shown in Figure 10-23.

Figure 10-23: Example Summary Report by Station

DIAGRAPH PEL SYSTEM REPORT				
SUMMARY REPORT BY STATION			01/01/95	08:54
START DATE/TIME:		01/01/70 01:00	PAGE	1
END DATE/TIME:		01/01/95 08:54		
KEY	LABEL NAME	STATION TOTAL		
(print command)	Apples	A	5	
(print command)	Oranges	A	6	
STATION A TOTAL...			11	
(print command)	Apples	B	3	
STATION B TOTAL...			3	
TOTAL...			14	

Data divide into sections based on stations. Each section contains data for only one station. There is one section for each station that has data in the log. For example, in Figure 10-23, there are two sections, one for station A and one for station B.

Entries of each section are sorted first by Label Name and then by Key.

There is one entry for each label printed at each station, just like in the Summary Report by Label format.

#### 10.4.2.3 Summary Report For One Station

The summary report for one station has the format shown in Figure 10-24.

Figure 10-24: Example Summary Report For One Station

DIAGRAPH PEL SYSTEM REPORT				
SUMMARY REPORT FOR STATION A			01/01/95	08:54
START DATE/TIME: 01/01/70 01:00		PAGE	1	
END DATE/TIME: 01/01/95 08:54				
KEY	LABEL NAME	STATION TOTAL		
(print command) Apples		A	5	
(print command) Oranges		A	6	
TOTAL...			11	

For this format you must specify the station to generate the report.

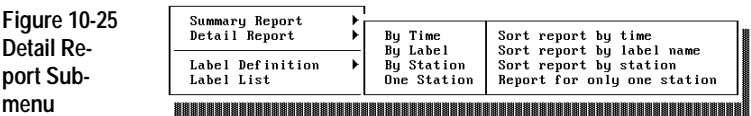
The data are not divided into sections for this format.

Entries are sorted first by Label Name, second by Key.

There is one entry for each label printed at each station, just like in the Summary Report by Label format. Only data relating to the station specified will be included in the report. No other data will be included.

10.4.3 Detail Reports

There are four types of detail reports: By Time, By Label, By Station, and One Station. These are listed in the Detail Report sub-menu which is under the Reports sub-menu, as shown in Figure 10-25.



10.4.3.1 Detail Report By Time

The summary report by label has the format shown in Figure 10-26.

Figure 10-26: Example Detail Report by Time

DIAGRAPH PEL SYSTEM REPORT					
DETAIL REPORT BY TIME			01/01/95 08:54		
START DATE/TIME: 01/01/70 01:00			PAGE 1		
END DATE/TIME: 01/01/95 08:54					
KEY	LABEL NAME	STATION	DATE	TIME	COUNT
(print command)	Oranges	A	01/01/95	08:01	1
(print command)	Apples	B	01/01/95	08:05	1
(print command)	Apples	A	01/01/95	08:10	1
(print command)	Oranges	A	01/01/95	08:15	1
(print command)	Apples	A	01/01/95	08:22	1
(print command)	Apples	B	01/01/95	08:26	1
(print command)	Oranges	A	01/01/95	08:30	1
(print command)	Apples	A	01/01/95	08:32	1
(print command)	Oranges	A	01/01/95	08:33	1
(print command)	Apples	A	01/01/95	08:36	1
(print command)	Apples	B	01/01/95	08:39	1
(print command)	Oranges	A	01/01/95	08:39	1
(print command)	Apples	A	01/01/95	08:45	1
(print command)	Oranges	A	01/01/95	08:49	1
TOTAL . . .					14

The data are not divided into sections for this format.

Entries are sorted in chronological order.

There is one entry for each record in the logs. For example, if the label “Apples” printed eight times—five at station A and three at station B—there will be eight entries for “Apples,” as shown in Figure 10-26.

#### 10.4.3.2 Detail Report By Label

The summary report by label has the format shown in Figure 10-27.

Figure 10-27: Example Detail Report by Label

DIAGRAPH PEL SYSTEM REPORT					
DETAIL REPORT BY LABEL			01/01/95 08:54		
START DATE/TIME: 01/01/70 01:00			PAGE 1		
END DATE/TIME: 01/01/95 08:54					
KEY	LABEL NAME	STATION	DATE	TIME	COUNT
(print command)	Apples	B	01/01/95	08:05	1
(print command)	Apples	A	01/01/95	08:10	1
(print command)	Apples	A	01/01/95	08:22	1
(print command)	Apples	B	01/01/95	08:26	1
(print command)	Apples	A	01/01/95	08:32	1
(print command)	Apples	A	01/01/95	08:36	1
(print command)	Apples	B	01/01/95	08:39	1
(print command)	Apples	A	01/01/95	08:45	1
	Apples	TOTAL	...		8
(print command)	Oranges	A	01/01/95	08:01	1
(print command)	Oranges	A	01/01/95	08:15	1
(print command)	Oranges	A	01/01/95	08:30	1
(print command)	Oranges	A	01/01/95	08:33	1
(print command)	Oranges	A	01/01/95	08:39	1
(print command)	Oranges	A	01/01/95	08:49	1
	Oranges	TOTAL	...		6
		TOTAL...			14

The data are divided into sections based on labels. Each section contains data for only one label with one section for each label that has data in the log. For example, in Figure 10-27, there are two sections, one for “Apples” and one for “Oranges.”

Entries of each section are sorted by chronological order.

There is one entry for each record in the logs.

#### 10.4.3.3 Detail Report By Station

The summary report by station has the format shown in Figure 10-28.

Figure 10-28: Example Detail Report by Station

DIAGRAPH PEL SYSTEM REPORT					
DETAIL REPORT BY STATION			01/01/95 08:54		
START DATE/TIME: 01/01/70 01:00			PAGE 1		
END DATE/TIME: 01/01/95 08:54					
KEY	LABEL NAME	STATION	DATE	TIME	COUNT
(print command)	Oranges	A	01/01/95	08:01	1
(print command)	Apples	A	01/01/95	08:10	1
(print command)	Oranges	A	01/01/95	08:15	1
(print command)	Apples	A	01/01/95	08:22	1
(print command)	Oranges	A	01/01/95	08:30	1
(print command)	Apples	A	01/01/95	08:32	1
(print command)	Oranges	A	01/01/95	08:33	1
(print command)	Apples	A	01/01/95	08:36	1
(print command)	Oranges	A	01/01/95	08:39	1
(print command)	Apples	A	01/01/95	08:45	1
(print command)	Oranges	A	01/01/95	08:49	1
STATION A TOTAL ...					11
(print command)	Apples	B	01/01/95	08:05	1
(print command)	Apples	B	01/01/95	08:26	1
(print command)	Apples	B	01/01/95	08:39	1
STATION B TOTAL ...					3
TOTAL...					14

The data are divided into sections based on stations. Each section contains data for only one station. There is one section for each station which has data in the log. For example, in Figure 10-28, there are two sections, one for station A, and one for station B.

Entries of each section are sorted in chronological order.

There is one entry for each record in the logs.

#### 10.4.3.4 Detail Report For One Station

The summary report for one station has the format shown in Figure 10-29.

Figure 10-29: Example Detail Report for One Station

DIAGRAPH PEL SYSTEM REPORT					
DETAIL REPORT FOR STATION A			01/01/95 08:54		
START DATE/TIME: 01/01/70 01:00			PAGE 1		
END DATE/TIME: 01/01/95 08:54					
KEY	LABEL NAME	STATION	DATE	TIME	COUNT
(print command)	Oranges	A	01/01/95	08:01	1
(print command)	Apples	A	01/01/95	08:10	1
(print command)	Oranges	A	01/01/95	08:15	1
(print command)	Apples	A	01/01/95	08:22	1
(print command)	Oranges	A	01/01/95	08:30	1
(print command)	Apples	A	01/01/95	08:32	1
(print command)	Oranges	A	01/01/95	08:33	1
(print command)	Apples	A	01/01/95	08:36	1
(print command)	Oranges	A	01/01/95	08:39	1
(print command)	Apples	A	01/01/95	08:45	1
(print command)	Oranges	A	01/01/95	08:49	1
TOTAL...					11

For this format, you must specify for which station to generate the report.

The data are not divided into sections for this format.

Entries of each section are sorted in chronological order.

There is one entry for each record in the logs. Only data relating to the station specified will be included in the report. No other data will be included.

## Section 11 Table Look-up With Network Applications

*This section discusses some common applications that use both network and table look-up. These applications include performing look-up on two conveyer lines at the same time, performing look-up with multiple controllers from a single scanner and performing look-up with multiple stations on two conveyer lines. All of these applications require both table look-up and network software (v3.20).*

### 11.1 Look-Up on Two Conveyers

It is possible to use the PEL software to do look-ups on two conveyers, as shown in Figure 11-1a, or at two locations on the same conveyer, as shown in Figure 11-1(b). Note that both systems require a dual-headed scanner (Scanner A, Scanner B and Decoder) and an RS-485 (or RS-422) network with two controllers and a PC.

Figure 11-1(a)  
Table Look-Up on  
Two Conveyers

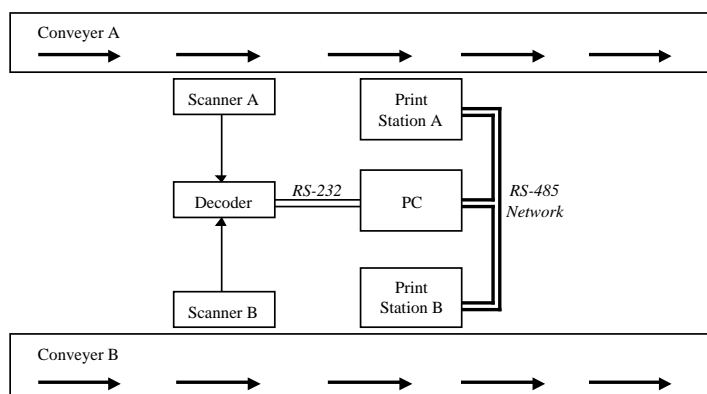
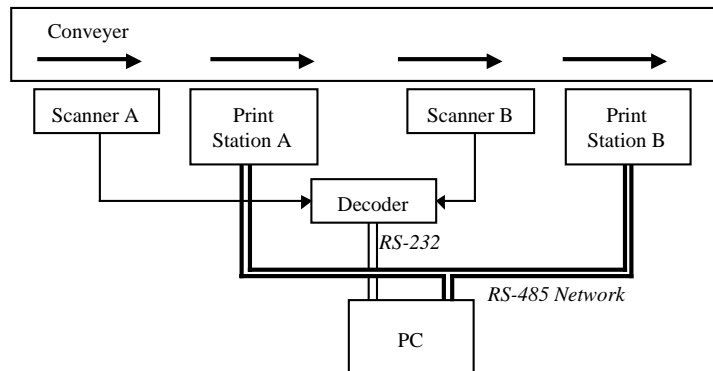




Figure 11-1(b)  
Table Look-Up on  
Two Locations on  
a Conveyor



Both systems work in a similar manner. When Scanner A scans a bar code, the PC looks up the corresponding label and sends it to Print Station A. When Scanner B scans a bar code, the PC looks up the corresponding label and sends it to Print Station B.

The configurations described in Section 11.1.1 and 11.2 following are recommended for successful implementation of PEL Software with a network of multiple scanners.

#### 11.1.1 Scanner & Decoder Configuration

The decoder in a bar code reading system receives the signals from the scanner, performs an algorithm to interpret the signals into meaningful data and transmits the interpreted data to other devices. When the scanner scans a bar code, the decoder adds a prefix to indicate on which scanner the key was scanned. If Scanner A scans a key, the decoder adds the prefix "A" to the key; if Scanner B scans a key, the prefix "B" is added to the key. Thus, using the message format in Section 8.1, we get the formats:



<STX>0A[key]<CR> for a key from Scanner A

<STX>0B[key]<CR> for a key from Scanner B

where:

<STX> = ASCII value 2 (Start of Transmission)

0 = ASCII value 48 (the character zero)

A = ASCII value 65 (the character A)

B = ASCII value 66 (the character B)

[key] = bar code message

<CR> = ASCII value 13 (Carriage Return)

Examples:

<STX>0A12345<CR> for the key "12345" from scanner A

<STX>0B12345<CR> for the key "12345" from scanner B

When the software extracts a key, it will contain the letter prefix which indicates the scanner. In the examples shown above, the keys extracted will be A12345 and B12345.

#### 11.1.2 Look-Up Definition

Since only one look-up table can be active at a time, it must contain all of the keys and labels for both stations. The keys should include both the scanner prefix ("A" or "B") and the message scanned from the bar code. Any key that has an A prefix should translate into a label for Station A and any key that has a B prefix should translate into a label for Station B. An example look-up table appears in Table 11-1.

Table 11-1  
Example Look-  
Up Table

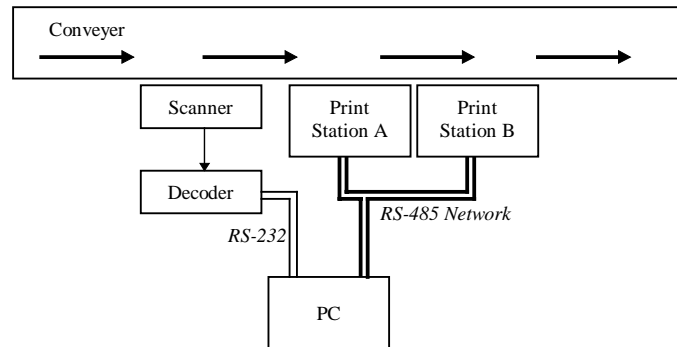
Key	Label
A12300	A-Apples
A12301	A-Oranges
A12302	A-Bananas
B12300	B-Apples
B12301	B-Oranges
B12303	B-Peaches

Station A and station B are on the same conveyer. Labels in the above table that start “A-” are associated with station A and labels that start “B-” are associated with station B. When Scanner A sees the key 12300, it would prefix A to the key and send A12300 to the PC. At this point, the PC will lookup the label for A12300 which is “A-Apples.” It will then print this message. Because “A-Apples” is associated with station A, the message is sent to station A. When Scanner B scans the same key, it would prefix B to the key and send “B12300” to the PC. The PC would then print the label “B-Apples” to station B.

## 11.2 Look-Up to Multiple Controllers from One Scanner

It is possible to use one scanner to initiate look-ups on more than one station over a network. This is particularly useful when printing labels that require more than four heads. Figure 11-2 shows a situation where two controllers are used to print a message on a box, but only one scanner is provided to scan the bar code.

Figure 11-2:  
Table Look-Up to Two  
Controllers from One  
Scanner



What makes this possible is that v3.20 software allows a key to appear in more than one entry in a look-up table. When a key is received from the scanner, the software prints all messages that are associated with that key. An example look-up table is shown below:

Table 11-2  
Example Look-  
Up Table

Key	Label
12300	Apples-A
12300	Apples-B
12301	Oranges-A
12301	Oranges-B
12302	Bananas-A
12302	Bananas-B

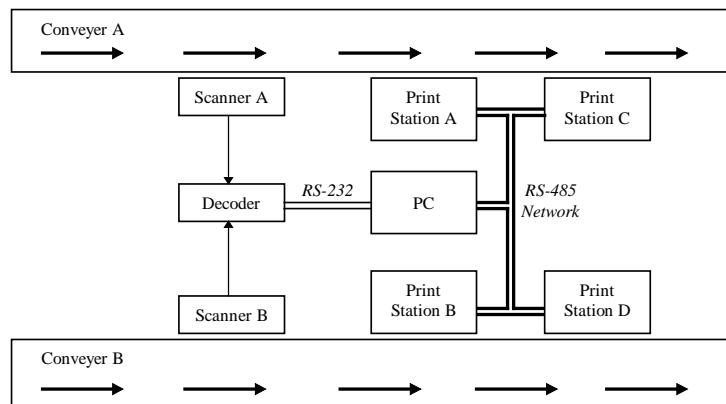
In the example lookup table, labels that end “-A” are the portion of the label that Station A prints and labels that end “-B” are the portion of the label that station B prints. To print a complete label on a box of Apples, station A must print “Apples-A” on the box while station B prints “Apples-B.” When the scanner scans the key “12300”, it

sends that key to the PC. The PC looks up “Apples-A” and sends it to station A and then looks up “Apples-B” and sends it to station B.

### 11.3 Look-Up to Multiple Controllers on Two Conveyor Lines

It is possible to combine the techniques from sections 11.1 and 11.2 to perform lookups from two scanners to multiple stations as shown in Figure 11-3.

**Figure 11-3**  
Table Look-Up to  
Multiple Controllers  
on Two Conveyers



To do this, the scanner must be set up in the same way as described in section 11.1.1. The Look-Up table will be similar to the one in section 11.1.2, except there would be more than one entry for each key in the table. An example is shown below in Table 1-3

Table 11-3

Key	Label
A12300	A-Apples
A12300	C-Apples
A12301	A-Oranges
A12301	C-Oranges
A12302	A-Bananas
A12302	C-Bananas
B12300	B-Apples
B12300	D-Apples
B12301	B-Oranges
B12301	D-Oranges
B12303	B-Peaches
B12303	D-Peaches

Stations A and C are printing the two halves of a label on boxes on line A while stations B and D are printing labels on boxes on line B. The scanner prefixes keys from line A with an **A** while it prefixes keys from line B with a **B**. When the key 12300 is seen on line 1, the scanner sends "A12300" to the PC and labels A-Apples and C-Apples are sent to the correct stations on line A while line B is unaffected.

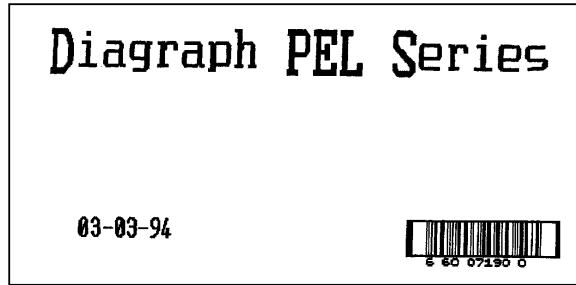
## Appendix A - Creating a Sample Label

*This section will walk you through the creation, setup and printing of a typical label. The label will include three entries:*

- *Text Message*
- *Date Code*
- *UPC Bar Code with Human Readable Text*

*The label will be printed on both sides of a 17 x 11 inch box and will look like the sample below.*

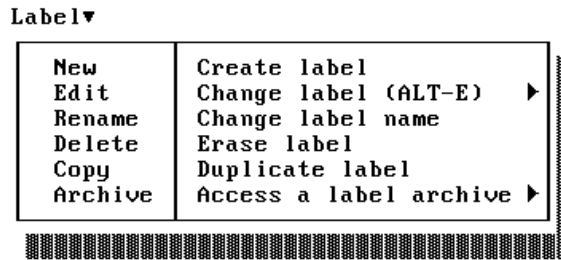
Figure A-1  
Label



### A.1 Open Label Menu

From the main menu, press the L key to open the LABEL menu.

Figure A-2  
Label Menu



### A.2 New Label

Press the N key to create a New label.



### A.3 New Label Name

Type in **PEL TEST** for the new label name and press ENTER.

**Figure A-3**  
**New Label Menu**

```
< NEW LABEL >
Label Name: PEL TEST
Head 1 : N
Head 2 : N
Head 3 : N
Head 4 : N

Ctrl-Enter to Accept
```

### A.4 Select Heads

Type Y next to each printhead where this label will be printed. Remember that since the label will be printed on both sides of the box, you will need to put a Y in front of four heads instead of two.

Press CTRL-ENTER to accept.

**Figure A-4**  
**Selecting Heads**

```
< NEW LABEL >
Label Name: PEL TEST
Head 1 : Y
Head 2 : Y
Head 3 : Y
Head 4 : Y

Ctrl-Enter to Accept
```

### A.5 Printhead 1

#### **Set Attributes for Printhead 1**

*Expiration Date* Enter **999**. The Expiration Date Autocode will not be used for this label and this number is not significant.

*Delay* Enter **1**. Delay and spacing values are dependent upon printhead distance, photocell placement and message text. The settings shown in this manual may not be right for your

application. Consult with a Diagraph Technician if you have trouble with delay and spacing values.

*Width* Enter **4**.

*Slant* Enter **7**.

*Bold Value* Enter **2**. This will make the type slightly bold.

*Character Spacing* Enter **Ø**. Space between characters does not need adjusting for this label.

*Upside Down Print* Enter **N**.

*Reverse Print* Enter **N**.

**NOTE:** Make sure that Reverse Print is set to Y when entering information for printheads 3 and 4.

**Figure A-5**  
**Printhead 1**  
**Attributes**

```
< PRINT HEAD 1 >
Label : PEL TEST
Expiration Date (0-999): 999
Delay (0-9999): 1
Print Width (1-255): 4
Slant (0-31): 7
Bold Value (0-9): 2
Character Spacing (0-99): 0
Upside Down Print (Y or N): N
Reverse Print (Y or N): N
      Font                                Bold
Template 1: TEMPLATE NOT USED            0
Template 2: TEMPLATE NOT USED            0
Template 3: TEMPLATE NOT USED            0
Template 4: TEMPLATE NOT USED            0
Ctrl-Enter to Accept
```

### Select Templates for Printhead 1

Scroll down to the font 32 X 20 Dot Matrix for Printhead 1. Press ENTER to accept. Select "TEMPLATE NOT USED" for templates 2, 3 and 4. Press CTRL-ENTER to accept.

**Figure A-6**  
**Select Head 1**  
**Template**

```

< PRINT HEAD 1 >
Label : PEL TEST
Expiration Date (0-999): 999
Delay (0-9999): 1
Print Width (1-255): 4
Slant (0-31): 7
Bold Value (0-9): 2
Character Spacing (0-99): 0
Upside Down Print (Y or N): N
Reverse Print (Y or N): N
Font
Template 1: 32 X 20 DOT MATRIX (1 LINE) 0 Bold
Template 2: TEMPLATE NOT USED 0
Template 3: TEMPLATE NOT USED 0
Template 4: TEMPLATE NOT USED 0
Ctrl-Enter to Accept

```

## Entering Message Text for Printhead 1

Type **Diagraph PEL Series** and press CTRL-ENTER to accept.

**Figure A-7**  
**New Printhead 1**  
**Menu**

```

< NEW > Print Head 1 (PEL TEST)
Template 1:
1: Diagraph PEL Series
Ctrl-Enter to Accept

```

## A.6 Printhead 2

### Setting Attributes for Printhead 2

*Expiration Date* Enter **999**. Since the expiration date is not a part of this label, enter the highest possible value.

*Delay* Enter **100**. Since delay and spacing values are dependent upon printhead distance, photocell placement, and message text, the settings shown in this manual may not be right for your application. Consult with a Diagraph Technician if you have trouble with delay and spacing values.

*Width* Enter **4**. Slant **7**.

*Bold Value* Enter **2**. This will make the type slightly bold.

*Character Spacing* Enter **2**. Space between characters does not need adjusting for this label.

*Upside Down Print* Enter **N**.

*Reverse Print* Enter **N**.

Scroll down to the font 14 X 8 Dot Matrix (two lines) for template 1. Scroll down to the font UPC SHIP CONTAINER BC W/HR for template 2. Press ENTER to accept. Select "TEMPLATE NOT USED" for templates 3 and 4. Press CTRL-ENTER to accept.

**Figure A-8**  
**Printhead 2**  
**Attributes**

```
< PRINT HEAD 2 >
Label : PEL TEST
Expiration Date (0-999): 999
Delay (0-9999): 100
Print Width (1-255): 4
Slant (0-31): 7
Bold Value (0-9): 2
Character Spacing (0-99): 0
Upside Down Print (Y or N): N
Reverse Print (Y or N): N
Font
Template 1: TEMPLATE NOT USED      Bold
Template 2: TEMPLATE NOT USED      0
Template 3: TEMPLATE NOT USED      0
Template 4: TEMPLATE NOT USED      0
Ctrl-Enter to Accept
```

## Select Templates for Printhead 2

For Template 1, scroll down the font 19X8 DOT MATRIX (2 lines) and press ENTER. Press TAB to move to Template 2. Scroll down to the font UPC SHIP CONTAINER BC w/HR. Press ENTER to accept, then press CTRL-ENTER to exit this screen.

**Figure A-9**  
**Select Template**  
**Menu**

```
< PRINT HEAD 2 >
Label : PEL TEST
Expiration Date (0-999): 999
Delay (0-9999): 100
Print Width (1-255): 4
Slant (0-31): 7
Bold Value (0-9): 2
Character Spacing (0-99): 0
Upside Down Print (Y or N): N
Reverse Print (Y or N): N
Font
Template 1: 14 X 8 DOT MATRIX (2 LINES)  Bold
Template 2: UPC SHIP CONTAINER BC W/HR    0
Template 3: TEMPLATE NOT USED              0
Template 4: TEMPLATE NOT USED              0
Ctrl-Enter to Accept
```

## Entering Message Text for Printhead 2

Type {DT} for Line 1 of Template 1 and 660071900 for line 1 of Template 2..

Press CTRL-ENTER to accept.

**Figure A-10**  
**New Printhead 2**  
**Menu**

```
< NEW > Print Head 2 (PEL TEST)
Template 1:
1: {DT}
2:
Template 2:
1: 6600071900
2: 7{SP1}
3: 1{SP1}
4: 9{SP1}
5: 4{SP1}
Ctrl-Enter to Accept
```

## A.7 Printhead 3

### Entering Attributes for Printhead 3

Follow the illustration below to enter the attributes for printhead 3. All the attributes will be the same except for Reverse print which should be set to Y.

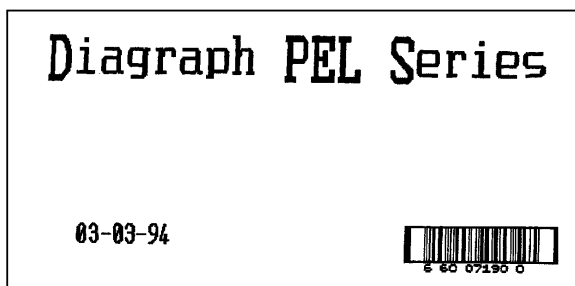
**Figure A-11**  
**Printhead 3**  
**Attributes**

```
< PRINT HEAD 3 >
Label : PEL TEST

Expiration Date (0-999): 999
Delay (0-9999): 1
Print Width (1-255): 4
Slant (0-31): 7
Bold Value (0-9): 2
Character Spacing (0-99): 0
Upside Down Print (Y or N): N
Reverse Print (Y or N): Y

Font
Template 1: 32 X 20 DOT MATRIX (1 LINE) Bold 0
Template 2: TEMPLATE NOT USED 0
Template 3: TEMPLATE NOT USED 0
Template 4: TEMPLATE NOT USED 0
Ctrl-Enter to Accept
```

Figure A-12  
Label



#### A.8 Printhead 4

#### Entering Attributes for Printhead 4

Follow the illustration below to enter the attributes for printhead 4. Reverse print should be set to Y.

Figure A-13  
Printhead 4  
Menu

```

< PRINT HEAD 4 >
Label : PEL TEST

Expiration Date (0-999): 999
Delay (0-9999): 100
Print Width (1-255): 4
Slant (0-31): 7
Bold Value (0-9): 2
Character Spacing (0-99): 0
Upside Down Print (Y or N): N
Reverse Print (Y or N): Y

Font                                Bold
Template 1: 14 X 8 DOT MATRIX (2 LINES) 0
Template 2: UPC SHIP CONTAINER BC W/HR 0
Template 3: TEMPLATE NOT USED            0
Template 4: TEMPLATE NOT USED            0
Ctrl-Enter to Accept

```

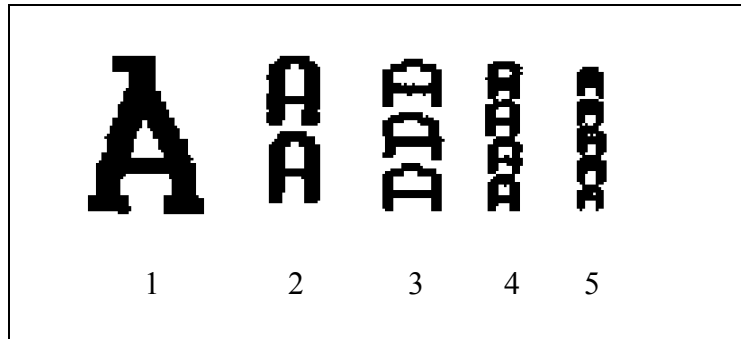
The following is what you will see when you print.

TEMPLATE = UPC Ship Container BC

The PEL system is very flexible in comparison to other ink jet systems because of its ability to generate up to four different font templates for each printhead. The following illustration will show the various options available when choosing Templates.

The characters on the next page were printed with one PEL printhead.

Figure A-19:  
Template Options



- #1 Shows a template that prints extra large characters on one line.
- #2 Shows a template that prints large characters on two lines.
- #3 Shows a template that prints medium-sized characters on three lines.
- #4 Shows a template that prints small characters on four lines.
- #5 Shows a template that prints extra small characters on five lines.

## Appendix B - Troubleshooting

Type	Problem	Probable Cause Action
Label Creation	Software does not accept a newly created label.	<i>There is already a label stored on the PC with that name.</i>  Try again with a different name
Label Request	Time out during a label request operation	<i>The PC software is not running</i>  Turn the PC on, run the software and try again.
Label Request	System does not respond to a label request	<i>There is no label stored on the PC that matches your requested name.</i>  Make sure that the name you entered exactly matches the name of the label you are requesting.
Label Save	Time Out During a Label Save Operation	<i>The PC software is not running.</i>  Turn the PC on, the run the software and try again.
Look-Up Table, Large	Poor system performance when using a look-up table with more than 100 entries.	<i>Conflicts with TSR programs.</i>  Try removing any memory resident programs from your AUTOEXEC.BAT and CONFIG.SYS files and reboot your computer. If problems continue, contact Diagraph Technical Support



Type	Problem	Probable Cause Action
Network	PC does not see a controller on the network.	<i>The network has not been configured since this controller was added.</i>  Configure the network as described in Section 7.3.2 and try again.
Network	PC does not see a controller on the network.	<i>The controller is not connected to the network.</i>  Make sure that the controller is connected to the network correctly and try again
Network	PC does not see a controller on the network.	<i>The controller is incorrectly configured.</i>  Review Section 7.2 to make sure that all jumpers and switch settings are correct. Check all Hand-Held commands that have been issued.
RAM Drive	Can not find the RAM drive after adding <b>DEVICE=C:\RAM-DRIVE 2048 / E</b> to your config.sys.	<i>The RAM drive had problems loading.</i>  1. Try moving the <b>DEVICE=C:\DOS\RAM-DRIVE.SYS</b> line to the end of your config.sys file to ensure that your memory manager is loading before you try to load the RAM drive. Reboot your computer and check to see if the ramdrive was created

Type	Problem	Probable Cause Action
RAM Drive	Still can not locate the RAM drive after taking action 1 above.	<p><i>Your system is using expanded memory instead of extended memory.</i></p> <p>2. Load the RAM drive into expanded memory instead of extended memory: change the line in your config.sys to:</p> <p>DEVICE=C:\DOS\RAM DRIVE size /A</p> <p>Notice that the /E is changed to /A. Reboot your computer and check to see if the RAM drive was created.</p>
Printing	Printheads are firing but the message is unreadable.	<p><i>Printhead type is set incorrectly in Station Configuration.</i></p> <p>See section 3.6 on setting printhead parameters in Station Configuration.</p>

## Appendix C - Network Tips and Guidelines

---

*A PEL network system consists of one PC and a group of controllers supported by that PC. If you need more than one PC, you will need more than one system. This appendix provides guidelines on choosing the correct network and tips on network setup.*

### C.1 RS-485 Multi-drop Network vs. Straight RS-232

The RS-485 Network system is far more robust than an RS-232 system, but for small applications (one or two controller systems), the RS-232 system costs less than an RS-485 network.

RS-232 Network Requirements (does not support table look-up):

- 1 Serial Port per controller
- Maximum of 2 controllers
- Maximum distance of 50 feet

RS-485 Network Requirements (supports table look-up):

- 1 Serial Port for all controllers
- Maximum of 16 controllers
- Maximum distance of 4000 feet

Both systems are limited in that they can only use two serial ports. For example, you cannot use an RS-232 Setup for two controllers and data collection, because each controller needs a serial port and the data collection needs a serial port as well. Therefore, three ports are needed, but only two are available.

Use the following questions to determine which you need.

Will the system have Table Look-Up?

- Yes - RS-485 Network
- No - next question

Will the controller be more than 40 feet from the PC?

- Yes - RS-485 Network

No - next question

Will the system have only one controller?

Yes - RS-232

No - next question

Will the system have more than two controllers?

Yes - RS-485 Network

No - next question

Will the system use the data collection feature of the software?

Yes - RS-485 Network

No - RS-232

## C.2 RS-485 Network Cabling Requirements

The table below shows the cables needed in a simple network with two controllers. Figure C-1 identifies the cables in a typical configuration.

Part Number	Description
<b>Quantity</b>	
6600-225 1 per System	5 ft. cable which connects the RS-232 serial port from the PC to the RS-232 side of the converter
6600-162 1 per System	RS-232 to RS-485 converter
1901-554 1 per System	12V DC power supply needed by the RS-232 to RS-485 converter
6600-604 1 per System	1 ft. cable to connect the RS-485 converter to the DB9 cabling of the RS-485 network
6600-222 1 per Controller minus 1	2 ft. RS-485 Y cable
6600-809 Ext. 2 max. per Controller plus 1	10 ft. RS-485 optional extension cable
6600-812 Ext. 2 max. per Con-	Variable length RS-485 optional extension cable

troller plus 1	
----------------	--

**Figure C-1  
Simple Two  
Controller  
Setup**

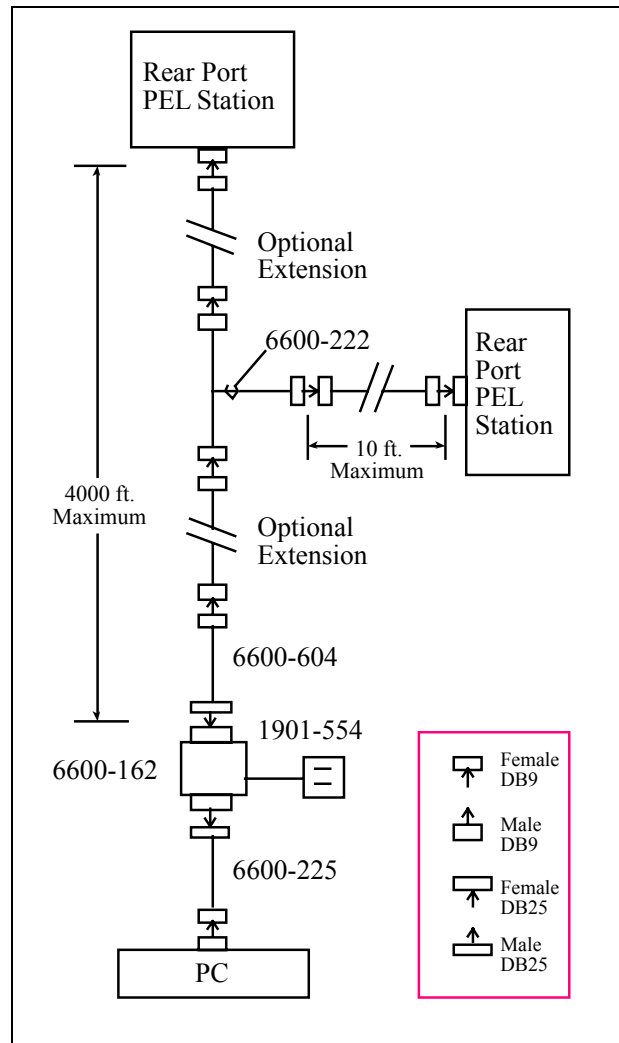
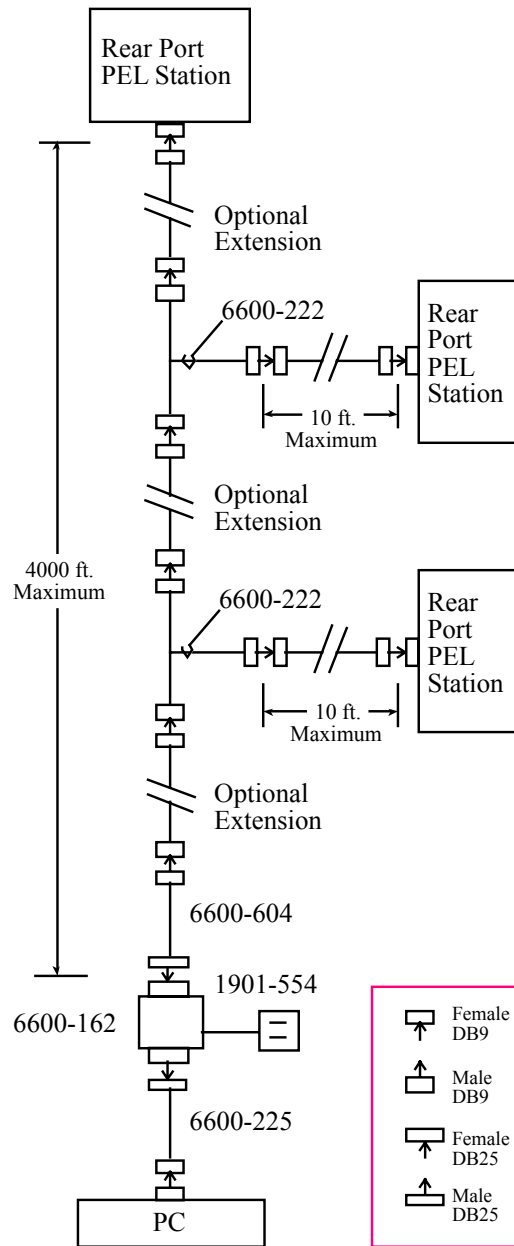


Figure C-2 shows a configuration with three controllers. Note that with the additional controller, another Y cable (6600-222) is needed and possibly two more extension cables. Keep in mind that the extension cables are optional. It is possible to plug an output of a Y cable directly into the rear port of a PEL station, or directly into the input of another Y cable.

**Figure C - 2**  
**Network Con-**  
**figuration with**  
**Three Con-**  
**trollers**



### C. 3 Software Network Requirements and Capabilities

There are two different software packages, one for RS-232 and one for RS-485. They are not interchangeable. 6600-193 is for RS-232 and will not work for RS-485 networks. 6600-720 is for a RS-485 network. Despite the differences between the software, however, they do have the same Users manual (6600-191).

PEL software does not work on IBM Value Point computers. It can not because Value Points have non-standard timing chips that are not compatible with the rest of the PC world. The software does have an excellent track record with Compaq brand computers.

The following table shows typical throughput of the lookup system in label changes per minute at each station. A small label is about three heads and 100 letters in the message. A large label is four heads with about 1000 letters in the message.

Number of controllers	LCPM for small label	LCPM for large label
2	12	10
4	10	7
8	7	5
16	5	3



## C.x Disk Based Look-Up Tables

Because disk based look-up tables are designed to avoid a size limit, they are not as easy to work with as memory based look-up tables. If your application requires more than 20 keys in a look-up table, you should use disk based look-up tables. If not, disk based look-up tables do work with less than 20 keys, but you should use memory based look-up tables, discussed in Section C.2.

### C.x.1 Managing Disk Based Look-Up Tables with External Software

The PEL software assumes that any file in the PEL directory with the extension .DBL (for **Disk Based Look-up**) is a disk based look-up file. It uses a text format with one entry on each line, where the format for each line is:

[key]<tab>[labelname]

where:

[key] = barcode message that causes the label to be looked up

<STX> = ASCII value 9 (tab character)

[labelname] = name of label which is printed when the key is received

This text format allows .DBL files to be managed with other (external) software easily.

For example, a .DBL file could be edited using the MS-DOS editor: edit. Another example, if the look-up table is very large and based on a database stored on a main-frame, a simple procedure could read the data from the database and write it out to a text file in the above format which could be read by the PEL software.

### C.x.2 Creating a Disk-Based Look-Up Table

Before creating a look-up table, you must **create all the labels you want to put in the table**. To do this, follow the directions in Section 4 (New). Once all of the labels have been created, **select Disk-based from the Look-Up menu**, shown below in Figure C-X1.

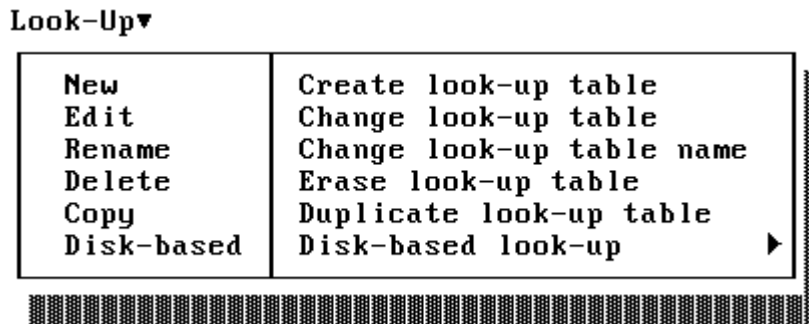


Figure C-X1: Look-Up Menu

The software will then display the Disk-based look-up menu, shown in Figure C-X2.

Create	Create a Disk-based table
Add	Add a key to a Disk-based table
Delete	Delete a key from a Disk-based table
List	List the contents of a Disk-based table

*Figure C-X2: Disk-Based Menu*

**Select Create from the Disk-based menu.** The software will then prompt you for the name of the new look-up table, shown in Figure C-X3.

```
< NEW DISK-BASED LOOK-UP TABLE >
New Disk-Based Table Name:
Ctrl-Enter to Accept
```

*Figure C-X3: New Disk-Based Look-Up Table Prompt*

**Type the name of the look-up table to be created and press Ctrl-Enter.** The software will then create an empty .DBL file with that file name. If there is already a .DBL file with that name, it is not affected and no new file is created.

## C.x.3 Editing a Disk-Based Look-Up Table

Once a look-up table has been created, you must add keys to it to make it useful. You may also want to delete keys from the table that are wrong or not needed.

**Note:** Whenever you edit the active look-up table or a label that is in the active look-up table, you must inactivate the table, and then re-activate it for the changes to take effect.

### C.x.3.1 Adding Keys to a Disk-Based Look-Up Table

If you wish to add one or more keys to a disk-based look-up table, first **select Add from the disk-based menu**, shown in Figure C-X2 above. You will then be given a list of all the defined look-up tables as shown in Figure C-X4.

```
&&< ADD KEY TO DISK-BASED TABLE >
DBTABLE1
DBTABLE2
Select disk-based look-up table to modify
```

*Figure C-X4: List of Disk-Based Look-Up Tables*

Move up and down the list until the table you want to edit is highlighted. Then press Enter. The Add Key screen will then appear, as shown in Figure C-X5.

```
< ADD KEY TO DISK-BASED TABLE > (Ctrl-Enter to Accept)
Key:                                     Label:
```

*Figure C-X5: Add Key Screen*

Type the new key and press Tab. Select the corresponding label using the method described in section C.2.1. Once the label is selected and appears in the Label field, press Ctrl-Enter to add it to the table. To acknowledge that the key was added, the software displays the key and label that was added to the table at the top of the screen, as shown in Figure C-X6.

```
< ADD KEY TO DISK-BASED TABLE > (Ctrl-Enter to Accept)
Entry Added:
Key: 12345                                     Label: Apples
Key:                                     Label:
```

*Figure C-X6: Confirmation That Key Was Added to Table*

The software then prompts you for another entry. Enter any other keys and labels that you need to add to the table. When you have added the last entry, press ESC.

If you enter a key which is already in the table, the software will not add the key to the table. Instead of acknowledging that the key was added, it will indicate that the key was already in the look up table and display the record that was found in the table with that key, as shown in Figure C-X7.

```
< ADD KEY TO DISK-BASED TABLE > (Ctrl-Enter to Accept)
Key was already in table:
Key: 12345                                     Label: Apple
Key:                                     Label:
```

*Figure C-X7: Notification That Key Was Already in the Table*

### C.X.2.2 Deleting Keys from a Disk Based Look-Up Table

If you wish to delete one or more keys from a disk-based look-up table, first select **Delete from the disk-based menu**, shown in Figure C-X2 above. You will then be given a list of all the defined look-up tables as shown in Figure C-X4. Move up and down the list until the table you want to edit is highlighted. Then press Enter. The Delete Key screen will then appear, as shown in Figure C-X8.

```
< DELETE KEY FROM DISK-BASED TABLE > (Ctrl-Enter to Accept)
```

---

Key :

*Figure C-X8: Delete Key Screen*

Deleting keys is similar to adding keys, except you must only specify the key that is to be deleted. **Type the key which you wish to delete from the table and press enter.** The software will then search through the look-up table and remove all occurrences of that key. It will display the key and label of the last record deleted from the table as shown in Figure C-X9 below.

```
< DELETE KEY FROM DISK-BASED TABLE > (Ctrl-Enter to Accept)
```

---

Entry Deleted:

Key: 12345	Label: Apple
------------	--------------

Key :

*Figure C-X9: Acknowledgment That Entry Was Deleted*

The software then prompts you for another entry. **Enter any other keys and labels that you wish to delete from the table.** When you have deleted all the entries you wish, **press ESC.**

If you enter a key which cannot be found in the table, the software will indicate that the key could not be found as shown in Figure C-X7.

```
< DELETE KEY FROM DISK-BASED TABLE > (Ctrl-Enter to Accept)
```

---

Key was not found in table:

Key: 111

Key :

*Figure C-X10: Indication That Key Was Not Found in Table*

### C.x.3 Renaming a Disk-Based Look-Up Table

If you want to change the name of a look-up table, you must exit the software and use DOS. **Select Exit Software from the Quit Menu.** This will bring you to DOS. To rename a table, **type the following command:**

```
MOVE oldname.DBL newname.DBL
```

where *oldname* is the name of the table you wish to rename and

where *newname* is the new name.

Example: To rename the table DBTABLE2 to OLDTBL, type the following command:

```
MOVE DBTABLE2.DBL OLDTBL.DBL
```

If DOS responds with a message similar to the one below, the table was successfully renamed:

```
c:\pel\oldname.dbl => c:\pel\newname.dbl [ok]
```

If DOS responds with a prompt similar to the one below, then there is already a table with the name *newname*:

```
Overwrite c:\pel\newname.dbl (Yes/No/All)?
```

If you respond with either Y or A, the table with the name *newname* will be deleted and the other table will be renamed. If you respond with N, the rename will be aborted.

If DOS responds with a message similar to the one below, the table with the name you specified could not be found:

```
Cannot move oldname.dbl - No such file or directory
```

Make sure that you type the name correctly and that you are in the PEL directory. You can use the command `DIR *.DBL` to list the disk-based look-up tables.

## C.x.4 Deleting a Disk-Based Look-Up Table

If you want to delete a look-up table which you are no longer using, you must exit the software and use DOS. **Select Exit Software from the Quit Menu.** This will bring you to DOS. To delete a table, **type the following command:**

```
DEL tablename.DBL
```

where *tablename* is the name of the table you wish to delete.

Example: To delete the table OLDTBL, type the following command:

```
DEL OLDTBL.DBL
```

If DOS does not display any messages and returns with a prompt, the table was successfully deleted.

If DOS responds with the message below, the table with the name you specified could not be found:

```
File not found
```

Make sure that you type the name correctly and that you are in the PEL directory. You can use the command `DIR *.DBL` to list the disk-based look-up tables.

## C.x.5 Copying a Disk-Based Look-Up Table

If you want to create a new disk-based look-up table identical to an existing table, you must exit the software and use DOS. **Select Exit Software from the Quit Menu.** This will bring you to DOS. To copy a table, **type the following command:**

```
COPY oldname.DBL newname.DBL
```

where *oldname* is the name of the table you wish to copy and

where *newname* is the new name.

Example: To copy the table DBTABLE2 to DBTABLE3, type the following command:

```
MOVE DBTABLE2.DBL DBTABLE3.DBL
```

If DOS responds with a message similar to the one below, the table was successfully copied:

```
1 file(s) copied
```

If DOS responds with a prompt similar to the one below, then there is already a table with the name *newname*:

```
Overwrite newname.dbl (Yes/No/All)?
```

If you respond with either Y or A, the table with the name *newname* will be deleted and the other table will be copied. If you respond with N, the copy will be aborted.

If DOS responds with a message similar to the one below, the table with the name you specified could not be found:

```
File not found - oldname.dbl  
0 file(s) copied
```

Make sure that you type the name correctly and that you are in the PEL directory. You can use the command `DIR *.DBL` to list the disk-based look-up tables.

## C.x.6 Using a Disk-Based Look-Up Table

Once a look-up table has been created and filed in, it must be activated to be used. Whenever a table is activated, the software knows that it must use that table to translate messages from a scanner into a labels which it sends to a print controller. If no table is activated, the software will not respond to messages from a scanner. Only one look-up table can be active at once. Whenever a table is active, the software will not allow you to perform some of the functions that are normally allowed such as manually printing a label.

### C.x.6.1 Specifying the Temp Drive

When a disk-based look-up is activated, it builds a temporary file which contains all of all of the labels in that table. Because of file compression and the use of a hash table, the software is able to retrieve label data from this temp file much faster than it can from the label file. To increase the speed of look-ups faster, the software allows you to select which disk drive you want to use to store this temp drive. You should select the fastest drive for this temp drive.

Ideally, if you have 2 megabytes of RAM or more in your system, you should set up a ramdrive and use that as your temp drive. Normally, the PEL software cannot access extended memory and is forced to use only the first 640 kilobytes of RAM. If your system has 4 megabytes of RAM, then your system has over 3 megabytes of RAM which the PEL software cannot use.

A ramdrive is a DOS option which allows you to use a block of this memory as a fake disk drive. Because the contents of RAM memory is destroyed whenever the computer is

turned off or rebooted, everything on this disk drive is lost. However, it is ideal of temporary storage because it is as much as 100 times faster than a normal hard drive.

**Using a disk-based look-up with a ramdrive can be almost as fast (50-90%) as a memory-based look-up.** If you are using a disk-based look-up table, it is highly recommended that you use a ramdrive.

### C.x.6.1.1 Setting up a Ramdrive

A ramdrive can only be created when the computer is turned on or rebooted. To instruct DOS to create the ramdrive when it starts, you must add the following line to your **config.sys** file in the root directory of your boot drive (The boot drive is almost always C):

```
DEVICE=C:\RAMDRIVE size /E
      where size is the size of the ramdrive in kilobytes.
```

**Make sure that you add this line AFTER the line which loads your extended memory manager.** (Typically this line is `DEVICE=C:\DOS\HIMEM.SYS`).

Example: If you want to create a ramdrive with 2 megabytes of memory and your config.sys file contains the line `DEVICE=C:\DOS\HIMEM.SYS` use the following line after the `DEVICE=C:\DOS\HIMEM.SYS` line:

```
DEVICE=C:\RAMDRIVE 2048 /E
```

Once the line is added, **reboot your computer** so that DOS can create the hard drive. You should be able to access the new ramdrive. DOS will name the disk drive with the next available letter above C. For example, if you have only one hard disk drive, C:, DOS will name the new ramdrive D:. If you have two hard disk drives, C: and D:, DOS will name the new ramdrive E:. To determine which letter DOS used for the ramdrive, check each of the letters with the DIR command. **Type DIR D:.** If DOS responds as follows then the new ramdrive is named D:

```
Volume in drive D is MS-RAMDRIVE
Directory of D:\
```

File not found

If you get a different directory which is not labeled MS-RAMDRIVE, try typing `DIR E:`, then `DIR F:`, and so on. Once you located the drive, run `CHKDSK` to make sure that it is the correct size. Do this by typing **CHKDSK D:** if your ramdrive is D, or **CHKDSK E:** if your ramdrive is E, etc. DOS will respond as follows:

```
Volume MS-RAMDRIVE created 07-21-1992 12:00a
```

```
2,057,726 bytes total disk space
2,057,726 bytes available on disk
```

```
512 bytes in each allocation unit
4,019 total allocation units on disk
4,019 available allocation units on disk
```

Note the number of “bytes total disk space.” This is the size of the ramdrive. The ramdrive above has 2 megabytes. Make sure that this number is correct for the size you specified in your config.sys file. If the number is significantly less, it is because you do not have enough memory available in your system for that size drive.

If you cannot locate the ramdrive on your system, it may be because ramdrive had problems loading. First, try moving the `DEVICE=C:\DOS\RAMDRIVE.SYS` line to the end your config.sys file to make sure that your memory manager is loading before you try to load the ramdrive. Reboot your computer and check to see if the ramdrive was created.

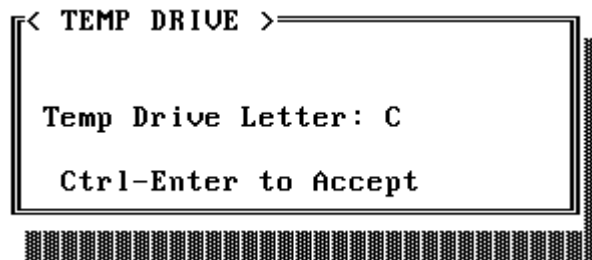
If you still cannot locate the ramdrive, it may be because your system is using expanded memory instead of extended memory. To load the ramdrive into expanded memory instead of extended memory, change the line in your config.sys to:

```
DEVICE=C:\RAMDRIVE size /A
```

Notice that the /E is changed to /A. Reboot your computer and check to see if the ramdrive was created.

### C.x.6.1.2 Setting the Temp Drive

Once you have decided which drive to use for the temporary storage, start the software is you have not done so. **Select Temp Drive from the Setup Menu.** The software will then display the Temp Drive screen shown in Figure C-X11 below.



*Figure C-X11: Temp Drive Setup Screen*

**Type the letter of the drive** you wish to use for the temp files. For example, if you wish to use drive C:, type C; if you wish to use D:, type D, etc. **Press Ctrl-Enter** to accept the new drive letter.

### C.x.6.2 Activating a Disk-Based Look-Up Table

To activate a look-up table, **choose Disk-based from the Print menu**, shown in Figure C-X12.



Print▼

Print Label	(ALT-P)
Cancel Printing	Stop printing (ALT-C)
Station Status	(ALT-S)
Sequence Number	Change sequence number
Look-up	Look-up table ▶
Disk-based	Disk-based look-up ▶

Figure C-X12: Print Menu

The Print Disk-Based Look-Up sub-menu will appear as shown in Figure C-X13. If there is no active disk-based look-up table at the time, the check mark will be next to Inactive. If there is an active disk-based look-up table, the check mark will be by Active. If the check mark is by Active, refer to section C.x.6.3 (Changing which Look-Up Table is Active) instead of this section.

ACTIVE	Disk-based look-up table
√ INACTIVE	Disk-based look-up table

Figure C-X13: Print Disk-Based Look-Up Sub-Menu

To activate a look-up table, **select Active**.

If there is a memory based look-up table active, the software will prompt for confirmation as shown in Figure C-X14. If you press N, the software will leave the currently active look-up table active and will return to the Print Disk-Based Look-Up sub-menu. If you press Y, the software will deactivate the currently active look-up table and proceed.

```
< SYSTEM ERROR !!! >
Look-up table TABLE2 is currently active.
Continue? (Y/N)
```

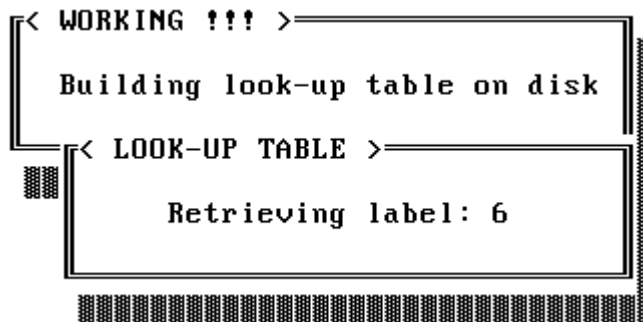
Figure C-X14: Prompt If There is Already a Memory Based Table Active

The software will then respond by prompting you for which table you would like to make the active table, as shown in Figure C-X15.

```
< ACTIVATE DISK-BASED LOOK-UP >
DBTABLE1
DBTABLE2
Select disk-based look-up table to make active
```

*Figure C-X15: Prompt for Table to Make Active*

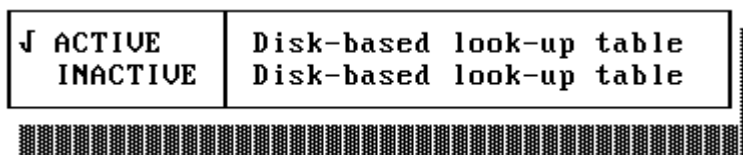
To choose the table you want, **use the up and down arrows until the table you want to select is highlighted; then press enter**. The software will then begin reading the label data for each entry in the look-up table and build the temp file. As it builds this table, it displays how many labels have been retrieved as it works, as shown in Figure C-X16.



*Figure C-X16: Building Disk-Base Look-Up*

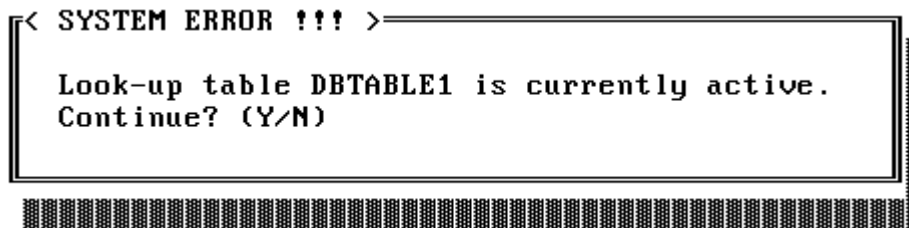
### C.x.6.3 Changing which Look-Up Table is Active

Once you have activated a look-up table it is possible to easily change which look-up table is active. Doing this is similar to activating the first table. First, **select Disk-Based Look-Up from the Print menu**, shown in Figure C-X12 above. The Print Look-Up sub-menu will appear as shown in Figure C-X17.



*Figure C-X17: Print Disk-Based Look-Up Sub-Menu*

If there is no active disk-based look-up table at the time, the check mark will be next to Inactive. If there is an active disk-based look-up table, the check mark will be by Active. If the check mark is by Inactive, refer to section C.x.6.2 (Activating a Look-Up Table) instead of this section. **Select active** from the menu and you will then be prompted with the warning message shown in Figure C-X18.



*Figure C-X18: Change Disk-Based Look-Up Warning Prompt*

This warning is to make sure that you know that there is already a look-up table active. The system will continue to operate with the previously active look-up table until after the new table has been selected and built. Once the new one is built, it will switch to the new one. **Press Y** to continue. You will then be prompted for the table to be activated. This prompt is shown below in Figure C-X19.

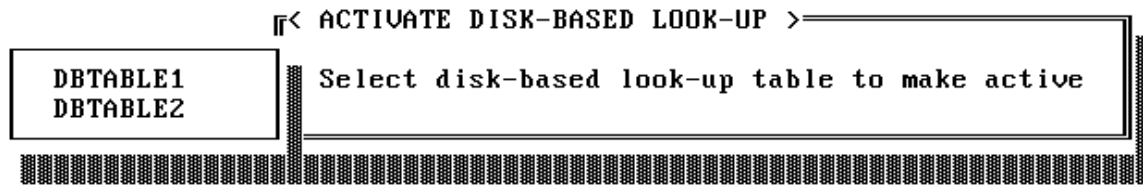


Figure C-X19: Prompt for Table to Make Active

To choose the table you want, **use the up and down arrows until the table you want to select is highlighted; then press enter**. The software will then begin reading the label data for each entry in the look-up table and build the temp file. As it builds this table, it displays how many labels have been retrieved as it works, as shown in Figure C-X16 above. Once it is finished building the new table, it deactivates the old one and makes the new one active.

#### C.2.6.4 Inactivating a Disk-Based Look-Up Table

Once you activate a look-up table, you may want to inactivate it without activating another one. You can do this with the Print Disk-Based Look-Up sub-menu. First, **select Disk-Based Look-Up from the Print menu** shown in Figure C-X12. The Print Disk-Based Look-Up sub-menu will appear as shown in Figure C-X20 below.

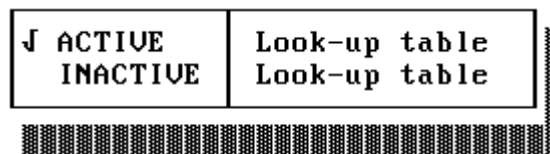
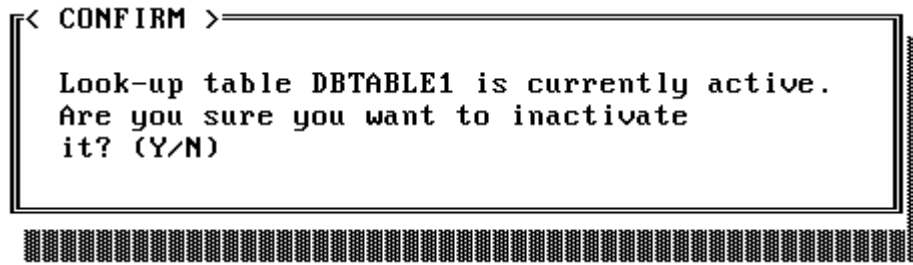


Figure C-X20: Print Disk-Based Look-Up Sub-Menu

If the check mark is by Inactive, then no disk-based look-up is active, but there may be a memory based look-up active. To inactivate a memory based look-table, use the Print Look-Up sub-menu.

If the check mark is by Active, then there is an active disk-based look-up table. **Select Inactive from the Print Disk-Based Look-Up sub-menu**. The software will prompt for confirmation as shown in Figure C-X21. **Press Y** to continue.



*Figure C-X21: Confirm Inactivate*

This will inactivate the current look-up table and move the check mark from Active to Inactive.

## PEL Network Tips and Guidelines

---

*A PEL network system consists of one PC and a group of controllers supported by that PC. If you need more than one PC, you will need more than one system. This document provides guidelines on choosing the correct network and tips on network setup.*

### 1 RS-485 Multi-drop Network vs. Straight RS-232

The RS-485 Network system is far more robust than an RS-232 system, but for small applications (one or two controller systems), the RS-232 system costs less than an RS-485 network.

RS-232 Network Requirements (does not support table look-up):

- 1 Serial Port per controller
- Maximum of 2 controllers
- Maximum distance of 50 feet

RS-485 Network Requirements (supports table look-up):

- 1 Serial Port for all controllers
- Maximum of 16 controllers
- Maximum distance of 4000 feet

Both systems are limited in that they can only use two serial ports. For example, you cannot use an RS-232 Setup for two controllers and data collection, because each controller needs a serial port and the data collection needs a serial port as well. Therefore, three ports are needed, but only two are available.

Use the following questions to determine which you need.

Will the system have Table Look-Up?

- Yes - RS-485 Network
- No - next question

Will the controller be more than 40 feet from the PC?

- Yes - RS-485 Network
- No - next question

Will the system have only one controller?

- Yes - RS-232
- No - next question

Will the system have more than two controllers?

- Yes - RS-485 Network
- No - next question

Will the system use the data collection feature of the software?

- Yes - RS-485 Network
- No - RS-232



## 2 RS-485 Network Cabling Requirements

The table below shows the cables needed in a simple network with two controllers. Figure 1 identifies the cables in a typical configuration.

Part Number / Quantity	Description
6600-225 / 1 per System	5 ft. cable which connects the RS-232 serial port from the PC to the RS-232 side of the converter
6600-162 / 1 per System	RS-232 to RS-485 converter
1901-554 / 1 per System	12V DC power supply needed by the RS-232 to RS-485 converter
6600-604 / 1 per System	1 ft. cable to connect the RS-485 converter to the DB9 cabling of the RS-485 network
6600-222 / 1 per Controller minus 1	2 ft. RS-485 Y cable
6600-809 Ext. / 2 max. per Controller plus 1	10 ft. RS-485 optional extension cable
6600-812 Ext. / 2 max. per Controller plus 1	Variable length RS-485 optional extension cable

**Figure 1**  
Simple Two  
Controller  
Setup

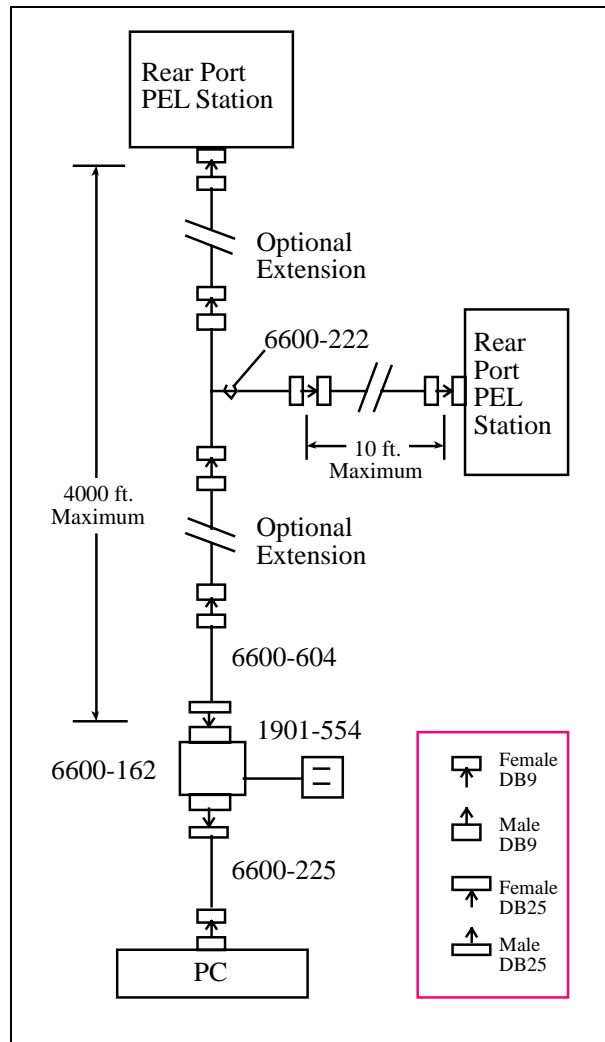
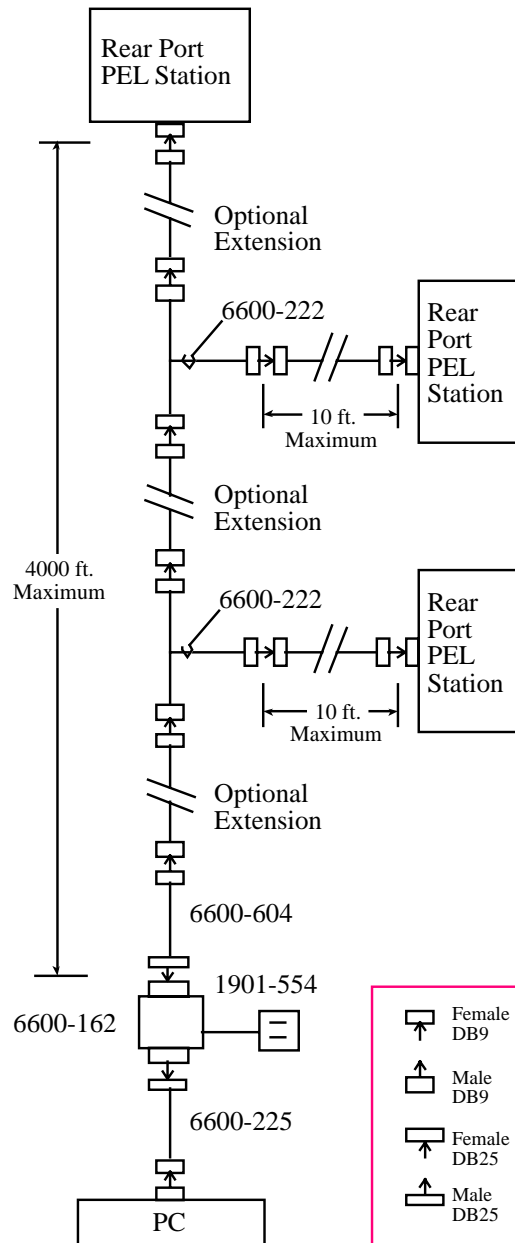


Figure 2 shows a configuration with three controllers. Note that with the additional controller, another Y cable (6600-222) is needed and possibly two more extension cables. Keep in mind that the extension cables are optional. It is possible to plug an output of a Y cable directly into the rear port of a PEL station, or directly into the input of another Y cable.

Figure 2  
Network Con-  
figuration with  
Three Con-  
trollers





### 3 Software Network Requirements and Capabilities

There are two different software packages, one for RS-232 and one for RS-485. They are not interchangeable. 6600-193 is for RS-232 and will not work for RS-485 networks. 6600-720 is for a RS-485 network. Despite the differences between the software, however, they do have the same Users manual (6600-191).

PEL software does not work on IBM Value Point computers. It can not because Value Points have non-standard timing chips that are not compatible with the rest of the PC world. The software does have an excellent track record with Compaq brand computers.

The following table shows typical throughput of the lookup system in label changes per minute at each station. A small label is about three heads and 100 letters in the message. A large label is four heads with about 1000 letters in the message.

<b>Number of controllers</b>	<b>LCPM for small label</b>	<b>LCPM for large label</b>
2	12	10
4	10	7
8	7	5
16	5	3