Section 3

Unit Operation

The following subsections provide operating procedures for the printer, including information on using the printer's control panel menu to configure parameters.

Controls and Indicators

Figure 3-1 shows the control panel for the Model 48 and 412 printer. Figure 3-2 shows the control panel for the Model 88 printer. The control panel contains the LCD display, power and alert indicators, and buttons that allow you to control and monitor printer operation. Explanations for each button and indicator are listed in Table 3-1. The subsections that follow provide printer default settings configured using the control panel, menu button explanations, and control panel status messages that indicate the operating condition of the printer.

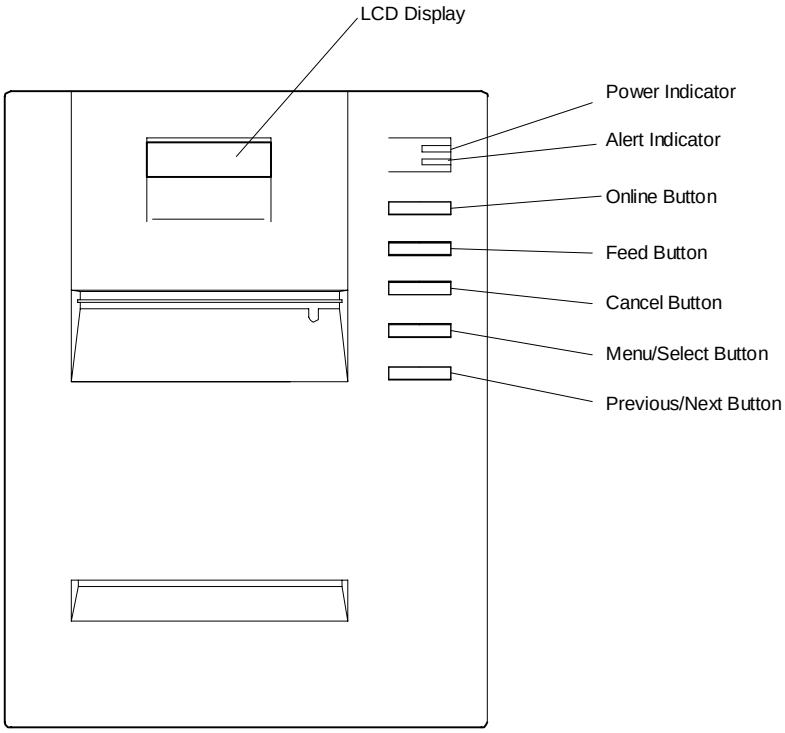


Figure 3-1 Control Panel (Model 48 and 412)

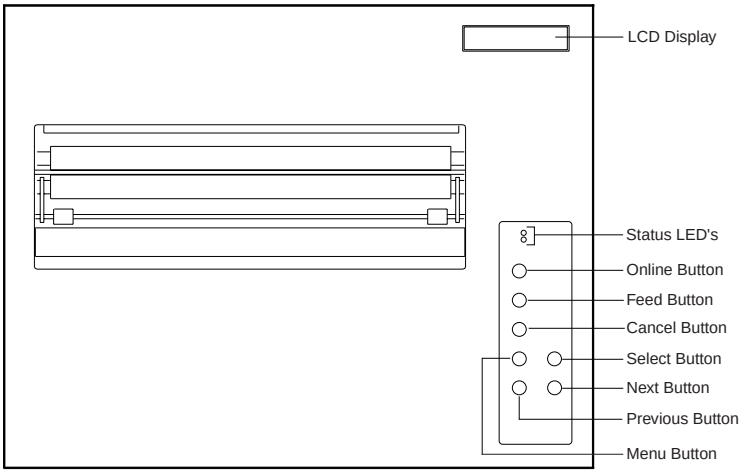


Figure 3-2 Control Panel (Model 88)

NOTE: With the exception of the Feed button, the control panel buttons will not work unless the printer is offline. The Feed button works in both offline and online modes. The printer must be online before it will print any data.

Table 3-1 Control Panel Explanations

Buttons/Indicators	Explanation
Power indicator	Lit whenever printer power is ON.
Alert indicator	Lit when the printer has a problem needing attention, such as replacing ribbons or labels. The lamp blinks if a service related error occurs.
Online button	The Online button switches the printer between online mode when it can receive data and offline mode when operation pauses so you can change menu items or cancel an operation.
Feed button	Advances labels through the print head. One label at a time is fed each time the button is pushed. Works in both offline and online modes.

Table 3-1 Control Panel Explanations

Buttons/Indicators	Explanation
Cancel button	Performs the following functions: • Quits the current job. • Resets the printer parameters to the default settings (when Cancel is pressed and held for at least five seconds while the printer is in offline mode). • Clears all data in the print buffer. • Resets printer engine errors. • Cancels the alarm sound. • Cancels the pre-heating sequence for the Model 412 when “OPEN PRINT HEAD” appears in the control panel LCD. • Cancels the “LABEL SENSOR ADJ” parameter setting when the control panel LCD displays “SET LABEL, NOT GAP, UNDER HEAD”.
Menu/Select button	Used when the printer is in offline mode. Pressing the button to the right selects the menu item and category displayed on the LCD. Pressing the button to the left enters the menu listings.
Previous/Next button	Moves you forward and backwards through the menu categories and selections.
Display	Allows you to monitor the current state of printer by providing a two-line screen for messages. Messages include • operator messages requiring you to perform a task such as replacing the label supply or ribbon so the printer can resume printing. • status messages that let you know the printer’s current condition. The standard status message reads “READY”, meaning the printer is online and ready for use. • error messages that let you know when the printer has a problem that needs service. • menu selections for printer configuration.

Self-Test

Follow the printer self-test procedure in this subsection to verify that the printer is set up correctly. The three self-tests exercise all the print head elements so you can also verify that the print head is adjusted correctly.

Before running the self-test, load the label and ribbon rolls (see “Installing the Thermal Ribbon” and “Installing Labels” in Section 2). Do not run the self-test without properly installing a label and ribbon. The ribbon and label must be a minimum of 4.25 in. (108 mm) wide. Running the self-test with narrower ribbons or labels can damage the print head or platen roller.

NOTE: Check that the label sensor is centered over the label and is not over the label gap. When you turn on the printer as described below, the label sensor automatically detects the label gap.

To run the self-test, proceed as follows.

1. Turn on the printer and wait for it to initialize.

   NOTE: At power-on, the green power and red alert LEDs light and an audible alarm sounds. Then “OFF LINE, INITIALIZE” appears in the 2-line, control panel LCD, followed by “ONLINE, READY.”

   The printer feeds several labels under the print head and out the label exit slot as it automatically measures label length.

2. Press the **Online** button to take the printer offline (“OFF LINE, PAUSE” appears in the 2-line LCD).

3. Press the **Menu** button to access the printer menu listings (“MAIN MENU, PRINT MENU” appears).

4. Press **Next** four times to advance to the Configuration submenu (“MAIN MENU, CONFIGURE MENU” appears).

5. Press **Select** to access the available selections (“TEST PAGE, BAR CODE, FONT LIST”).

- TEST PAGE — Prints a preformatted test label listing the standard default settings (see Figure 3-3).

> **NOTE:** TEST PAGE output includes the label count used for determining print head life. The label count is measured in linear inches.

- BAR CODE — Prints a preformatted bar code label used for adjusting print quality (see Figure 3-4).
- FONT LIST — Lists the resident fonts and their assigned number.

6. Press **Next** to advance to the desired self-test selection. (If running TEST PAGE, you do not have to press **Next**).
7. Press **Select** to select the self-test.
8. Press **Select** again to start the test.

   The printer will run the self-test and output a label. The examples in Figures 3-3 and 3-4 show the TEST PAGE and BAR CODE self-tests. To stop the test, press the **Online** button.

9. Examine the printout carefully for signs of uneven print quality between the left and right sides of the label (or the top and bottom). Examine the top and bottom edges of the label to make sure the horizontal print line is straight. In addition, look carefully for blank areas in the label.

   If print quality is uneven, not straight, or if blank areas appear, these are signs that the print head pressure, position, and/or alignment need adjustment (see "Mechanical Adjustments" in Section 5) or that the ribbon is wrinkled as it passes under the print head.

10. Examine the print sample for overall print quality, making sure the output is crisp and sharp with optimum black and white contrast between text and graphics and the label surface.

    If the printed image is too light, or if the image is too dark, use the control panel menu to adjust the print density and head voltage so that the desired print quality is obtained (see "Menu Tree" in the next subsection).

Test Page


```
Print Menu:
  Print method    =  TRANSFER
  Print mode      =  STANDARD
  Print speed     =  4 ips

Label Menu:
  Label type      =  DIE CUT
  Measurement     =  AUTOMATIC

LJ3 Setup Menu:
  Font source     =  INTERNAL
  Font number     =  6
  Symbol set      =  ROMAN-8
  Copies          =  1
  Page rotation   =  0
  Line spacing    =  8/48
  Top/bot margin  =  IGNORE

Configuration Menu:
  Page protect    =  YES
  Panel language  =  ENGLISH
  Interface       =  HOT PORTS

Ram size:            1 Mbytes
Firmware revision:   2.7B1
Font revision:       5.791
Distance count:
  transfer        =  174
  direct          =  0
```

Figure 3-3 Self-Test Sample Printout (All Models)

Bar Code

Figure 3-4 Bar Code Sample Printout (All Models)

Menu Tree

You can control the operation of the printer through software commands from the host computer or through the printer's control panel menu button. Information on software commands is provided in the Programmer's Reference Guide. To configure the printer to meet unique job requirements, use the control panel menu tree described below to select new default parameters.

The menu consists of parameter listings with a variety of setting selections. These listings control printer features and configurations. For nearly all printing jobs, the default factory settings do not have to be changed.

Default Factory Settings

Table 3-2 lists the default printer settings.

Table 3-2 IntelliBar Default Printer Settings

Main Menu	Printer Default
PRINT MENU	
Print method	Thermal transfer
Print mode	Standard
Ribbon type	Express wax
Print speed	4, 8, or 12 in. per second (ips) maximum (depending on model)
LABEL MENU	
Label type	Die cut
Measure label	Automatic
Set label length*	—
Set gap length*	—
ADJUSTMENTS MENU	
Print density	0
Print position	0
Cut position	0
Label sensor adj**	—
LJIII SETUP MENU	
Font source	Internal
Font number	6 (Courier 10)
Point size	xx
Symbol set	Roman-8
Number of copies	Copies=1
Page rotation	0
Line spacing	1/48
Top/bottom margin	Ignore
CONFIGURATION MENU	
Test print	Test page
Hex dump	Off
Page protect	Yes
Panel language	English
Interface	Parallel
MAINTENANCE MENU***	
Display counters	xxxx
Display head voltage	xx.xxxx
Adj head voltage	xxxx

*Does not appear when “Measure Label” is set.

**Sensor adjusts automatically to liner opacity.

*** Not available from main menu. Accessed by turning the printer off and then on again. When “Initialize” appears in the LCD display, push and hold down the Menu button until “Maintenance Menu” appears in the LCD display.

Changing Settings

To configure the printer to meet unique job requirements, refer to the detailed menu tree in Figure 3-5. Change the printer's default settings from the control panel as follows.

1. Turn the printer ON.
2. Press **Online** to take the printer offline. The 2-line display will read "OFF LINE, PAUSE."
3. Press **Menu**. The 2-line display will change to "MAIN MENU, PRINT MENU."
   - Press **Prev** to go to the previous item in the menu structure.
   - Press **Next** to go to the next item in the menu structure.
   - Press **Select** to choose the displayed setting.

> **NOTE:** Once the selections have been made, press **Online** to exit the menu, save the selections, and put the printer online ("READY" appears in the display). The selections are not lost when you turn the printer off.

You can restore the factory default setting with the following steps.

1. Press **Online** to take the printer offline. The 2-line display will read "OFF LINE, PAUSE."
2. Press and hold down **Select** for at least 5 seconds.

   The printer parameters will reset to their factory default settings except for:
   - Page protect
   - Panel language
   - Interface
   - Unit of measure

MAIN MENU

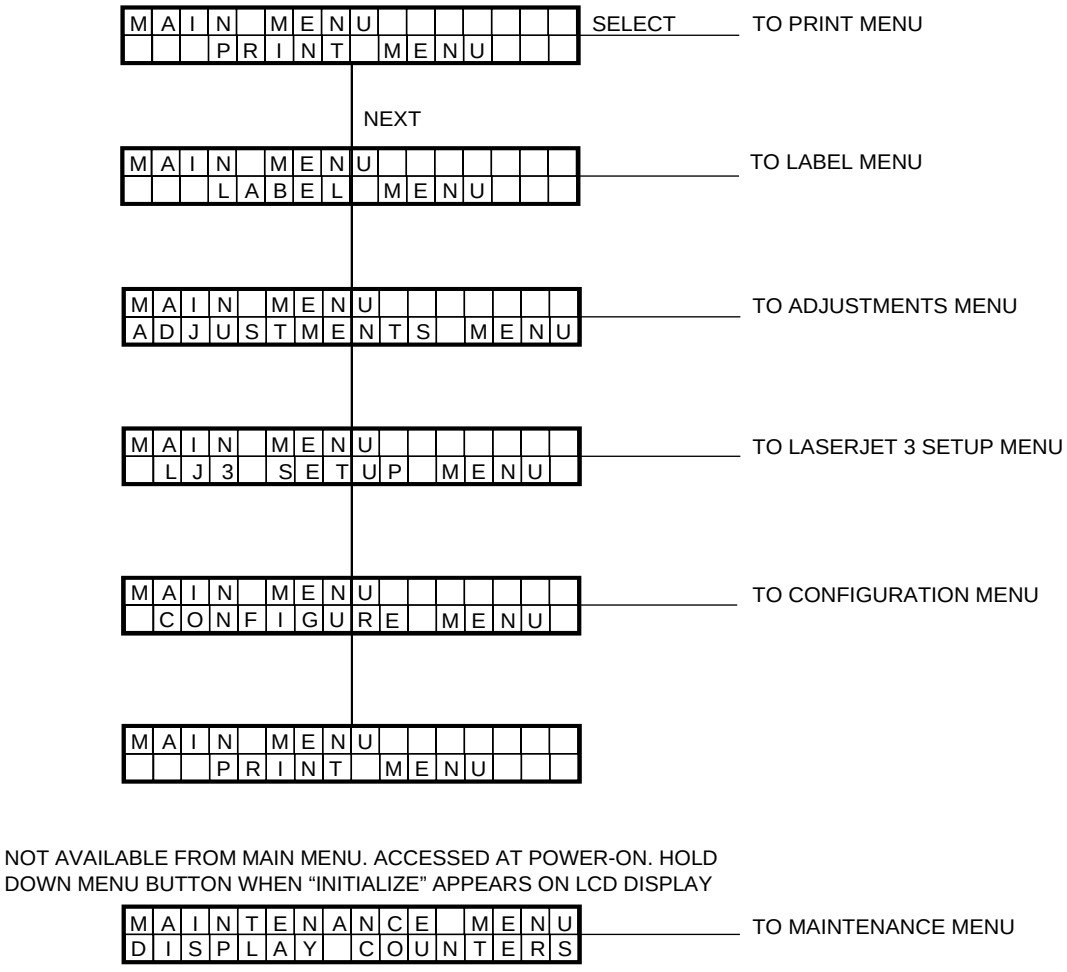


Figure 3-5 Menu Tree

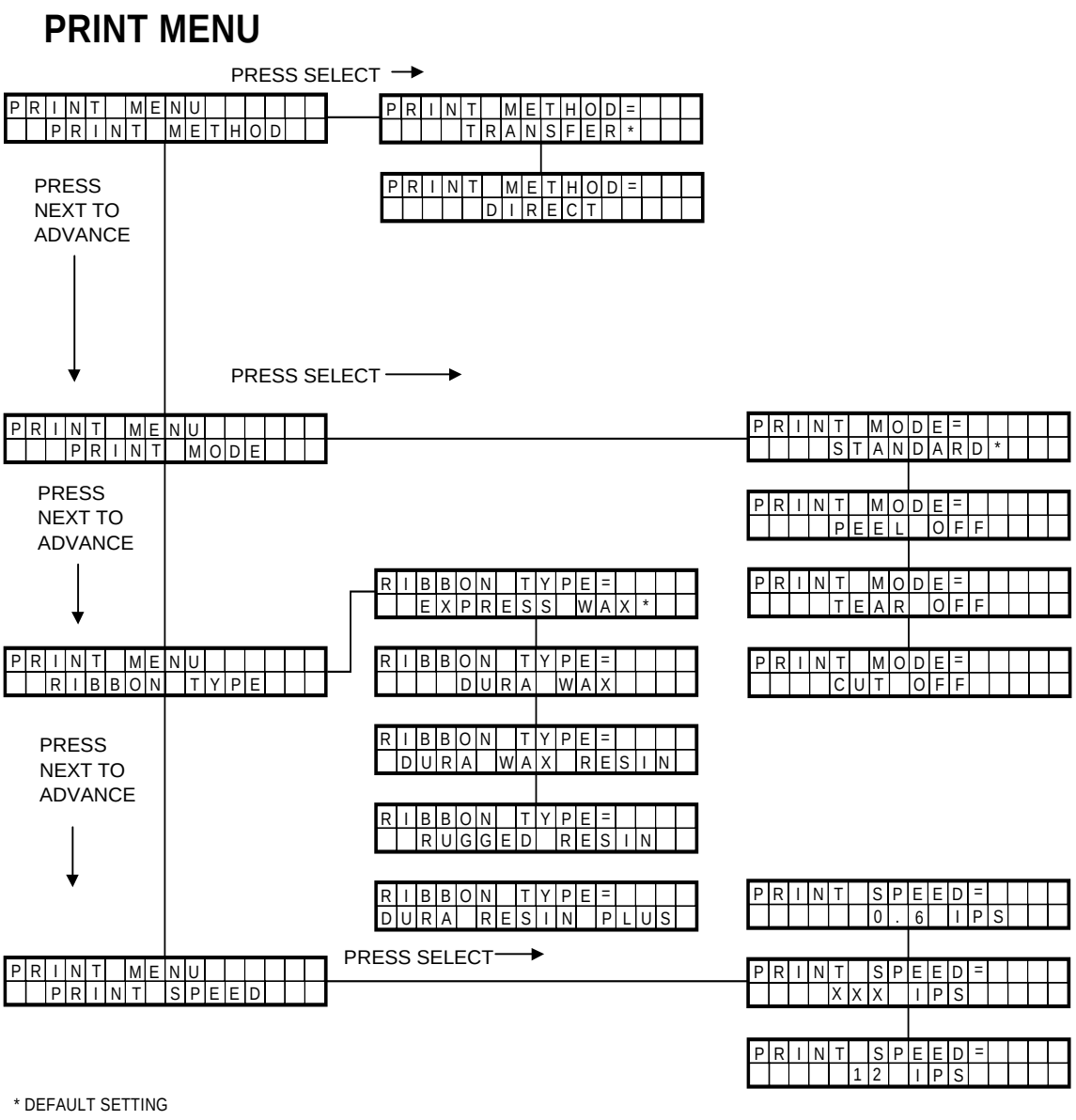


Figure 3-5 Menu Tree (cont'd)

LABEL MENU

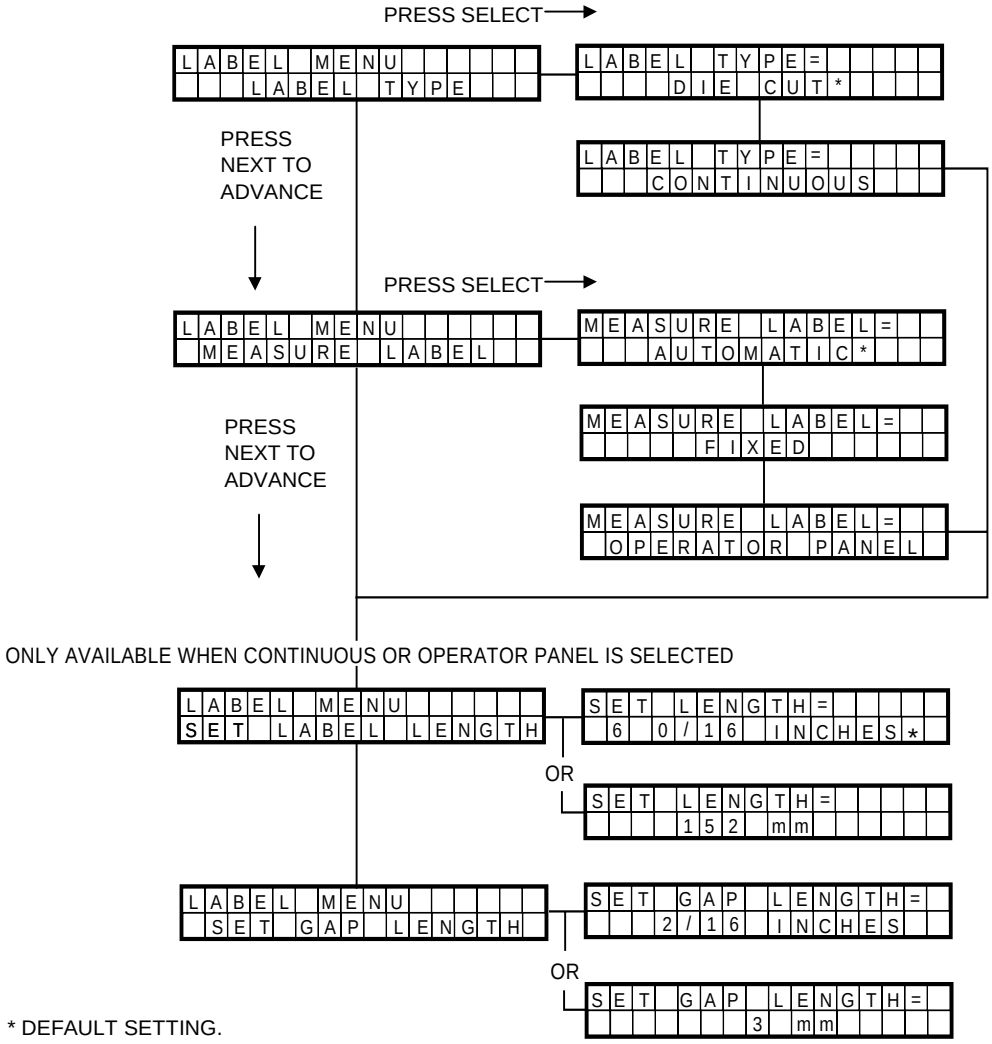


Figure 3-5 Menu Tree (cont'd)

ADJUSTMENTS MENU

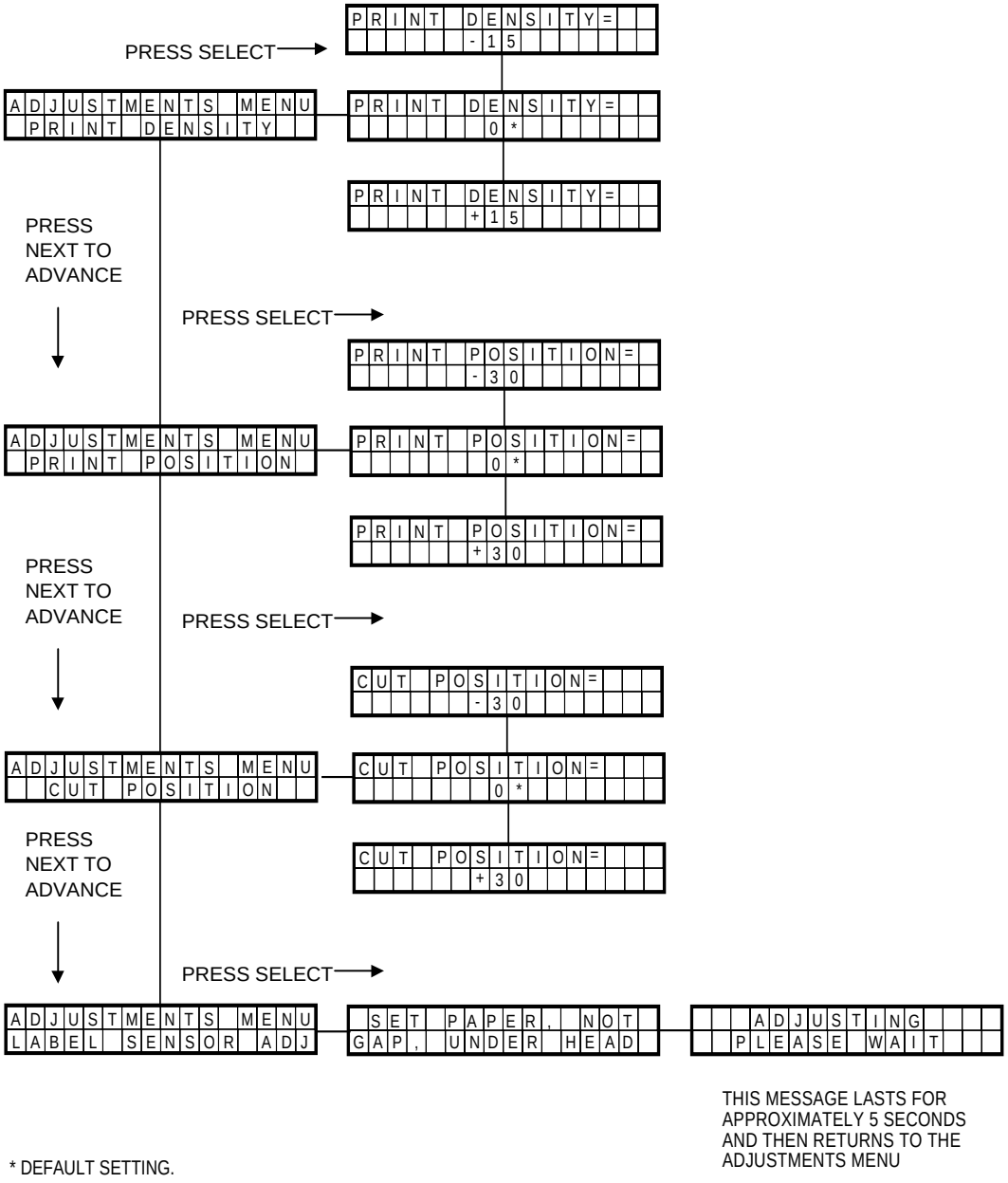
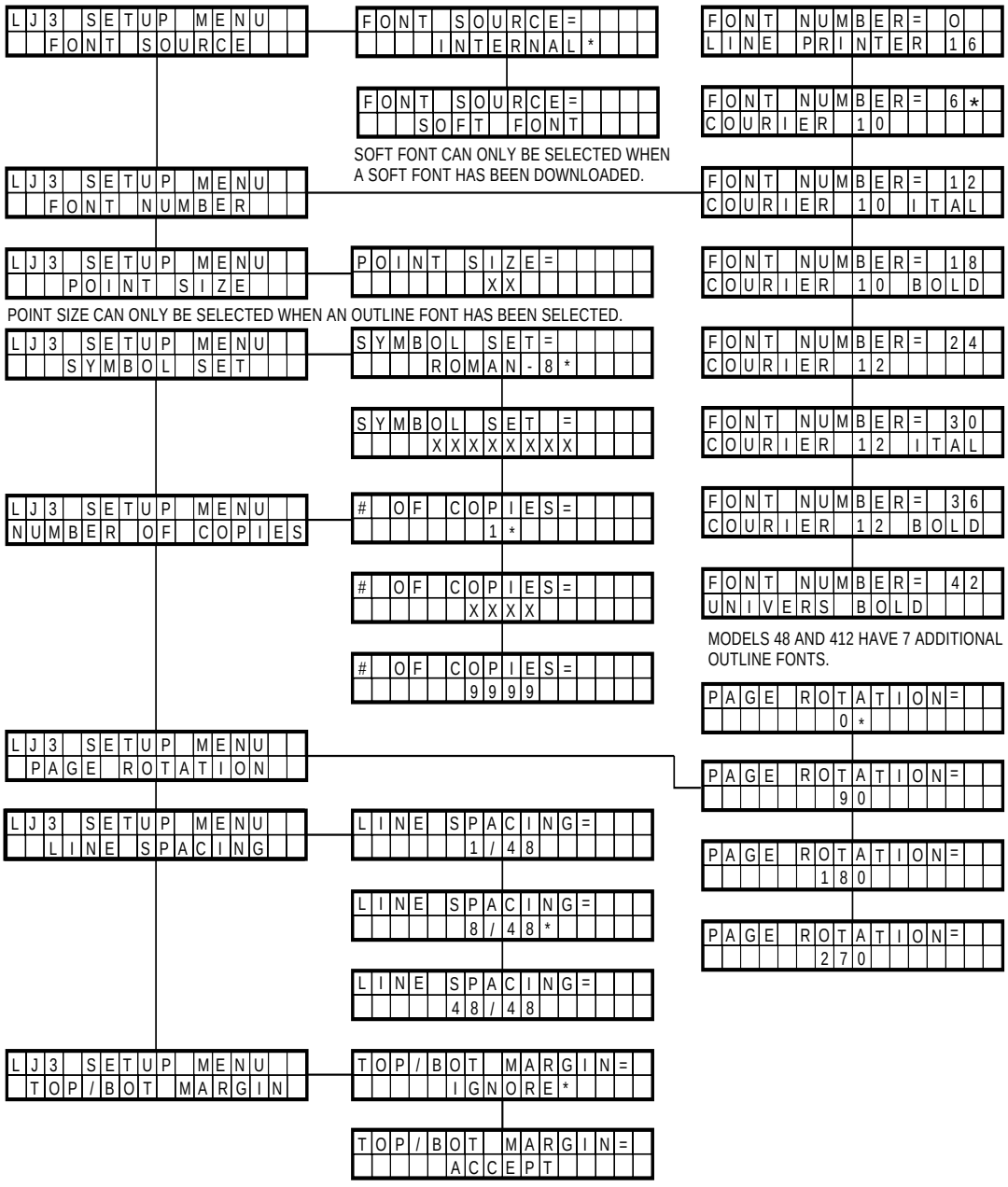


Figure 3-5 Menu Tree (cont'd)

LJ3 SETUP MENU



* DEFAULT SETTING

Figure 3-5 Menu Tree (cont'd)

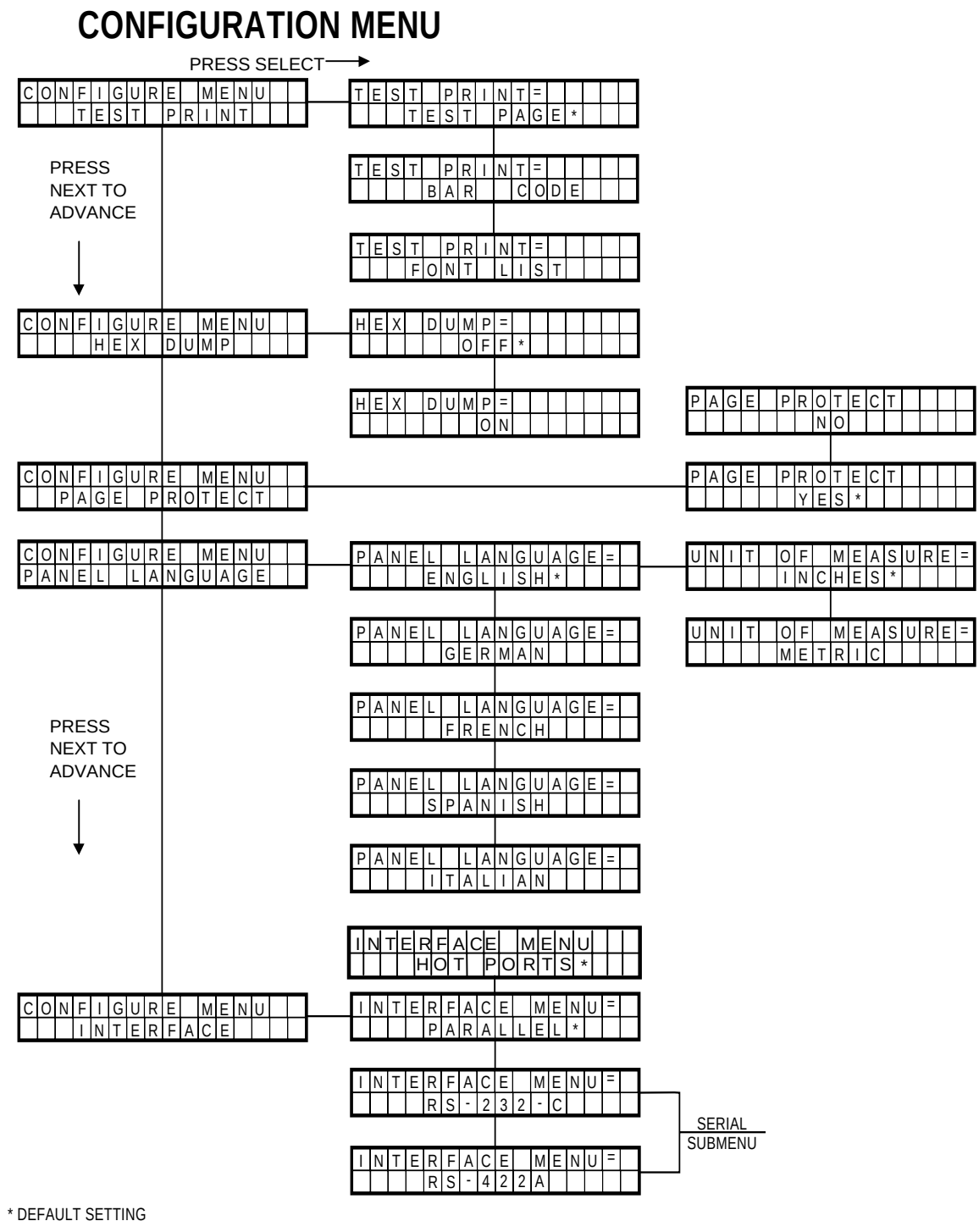
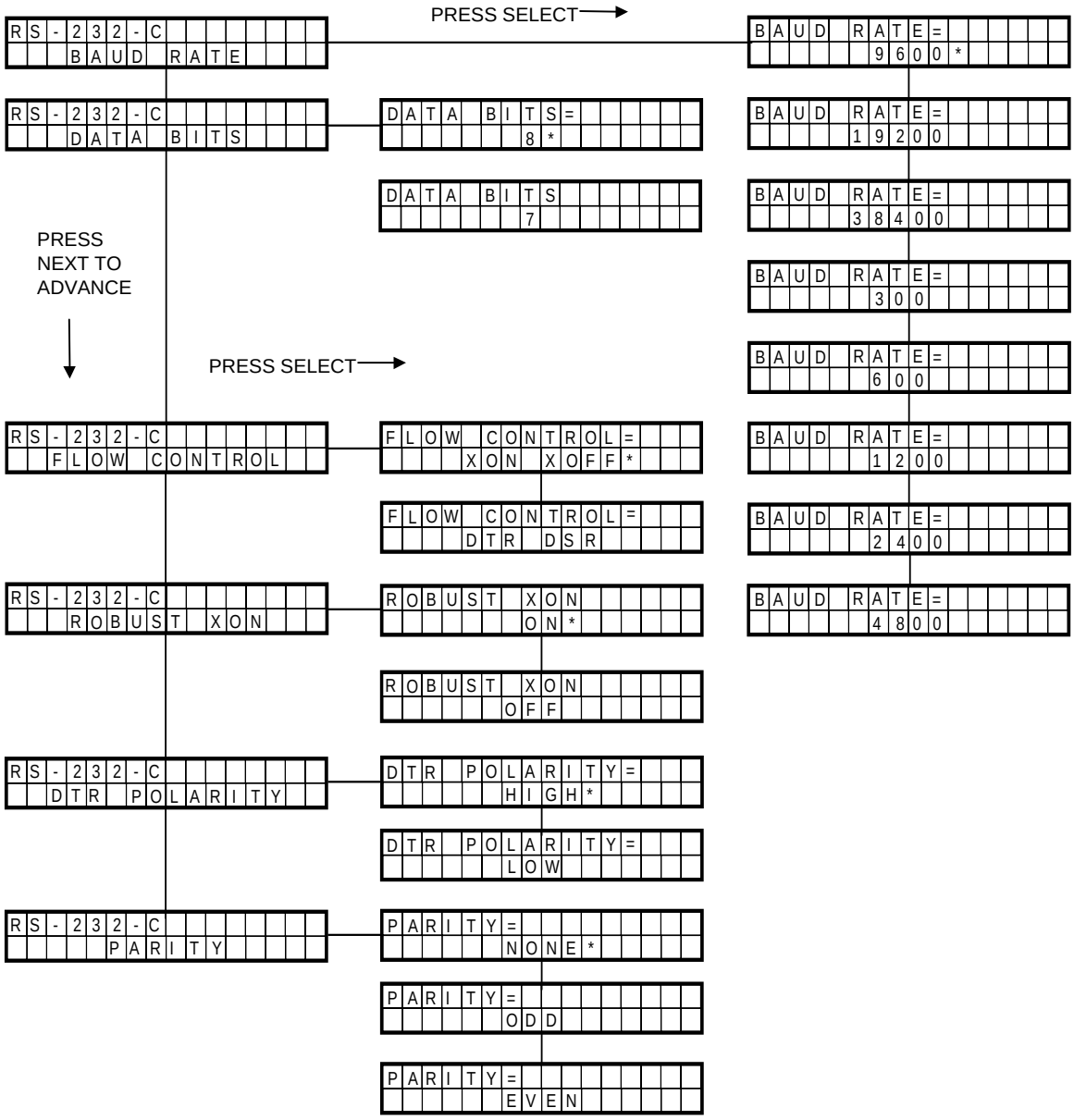


Figure 3-5 Menu Tree (cont'd)

SERIAL SUBMENU



* DEFAULT SETTING

Figure 3-5 Menu Tree (cont'd)

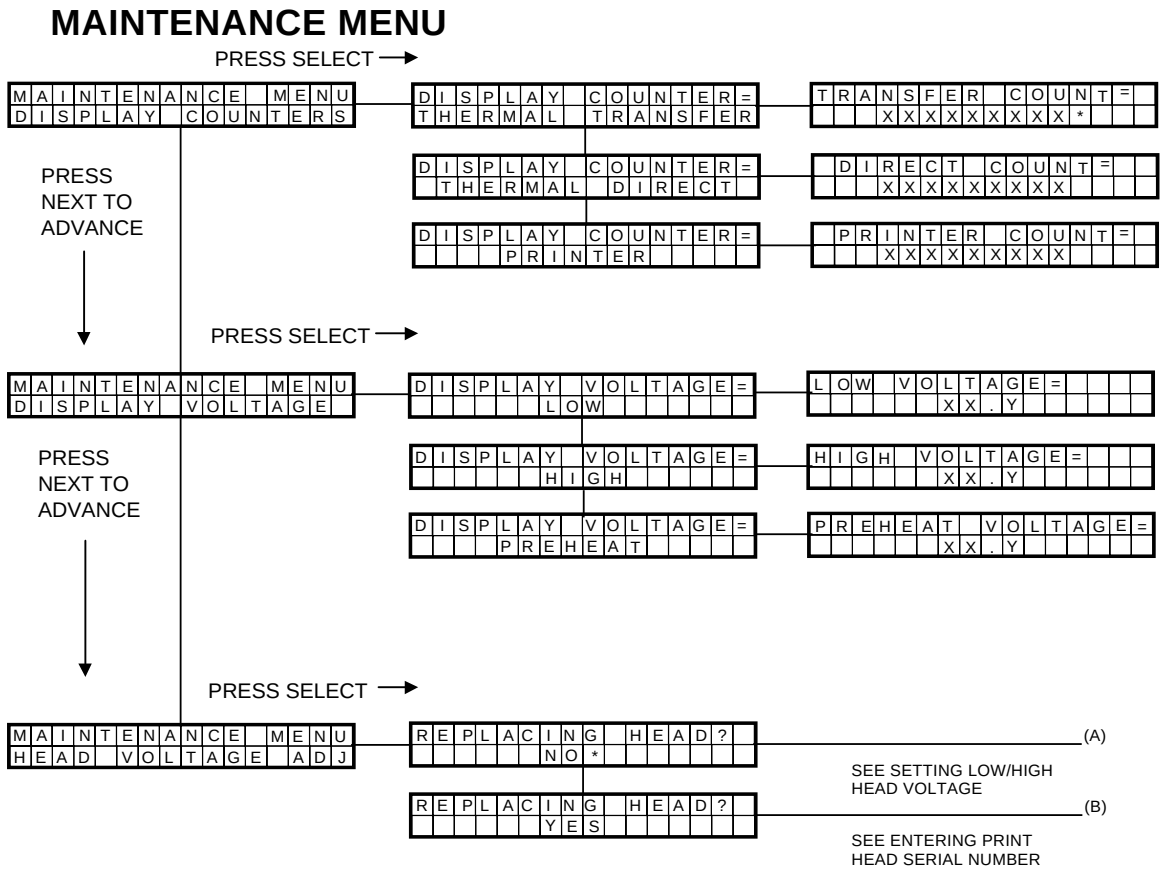


Figure 3-5 Menu Tree (cont'd)

SETTING LOW/HIGH HEAD VOLTAGE

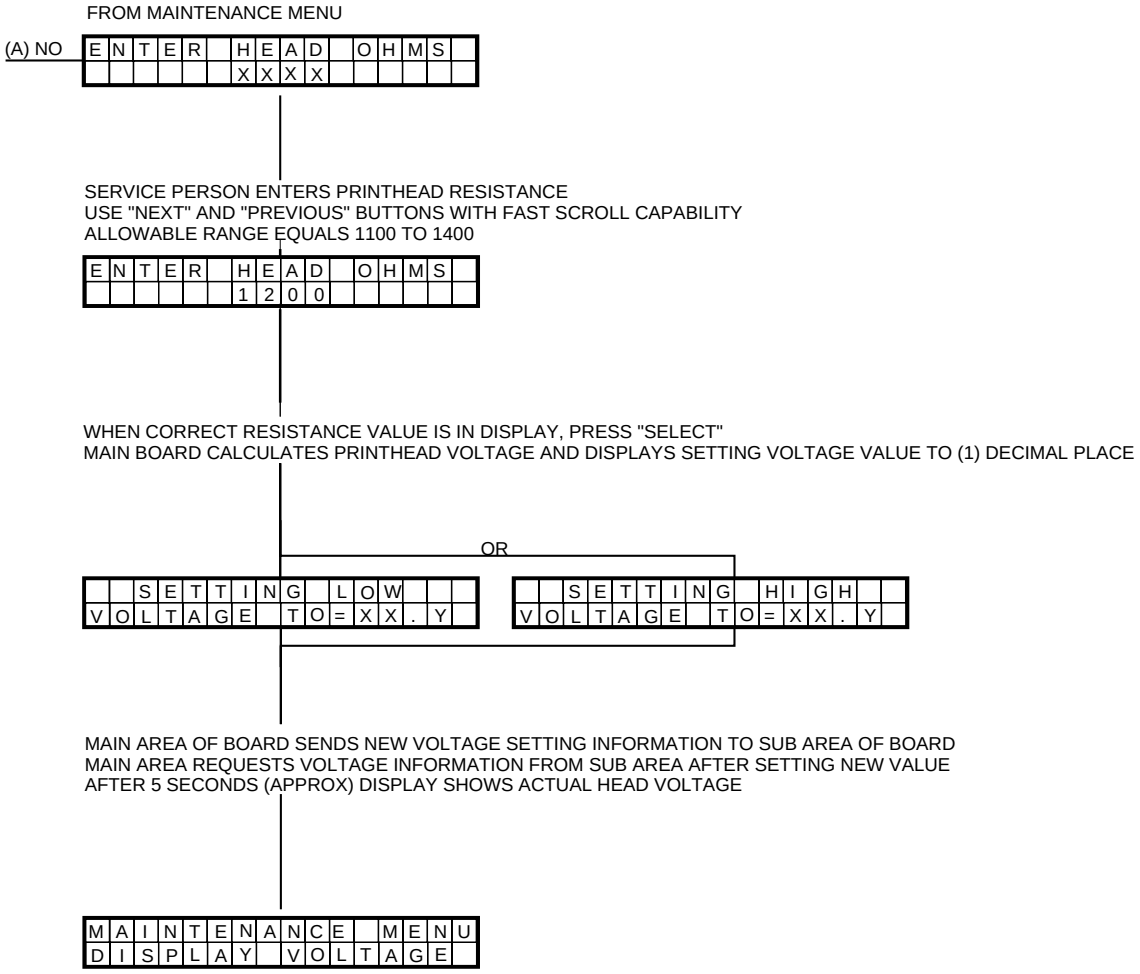


Figure 3-5 Menu Tree (cont'd)

ENTERING PRINT HEAD SERIAL NUMBER

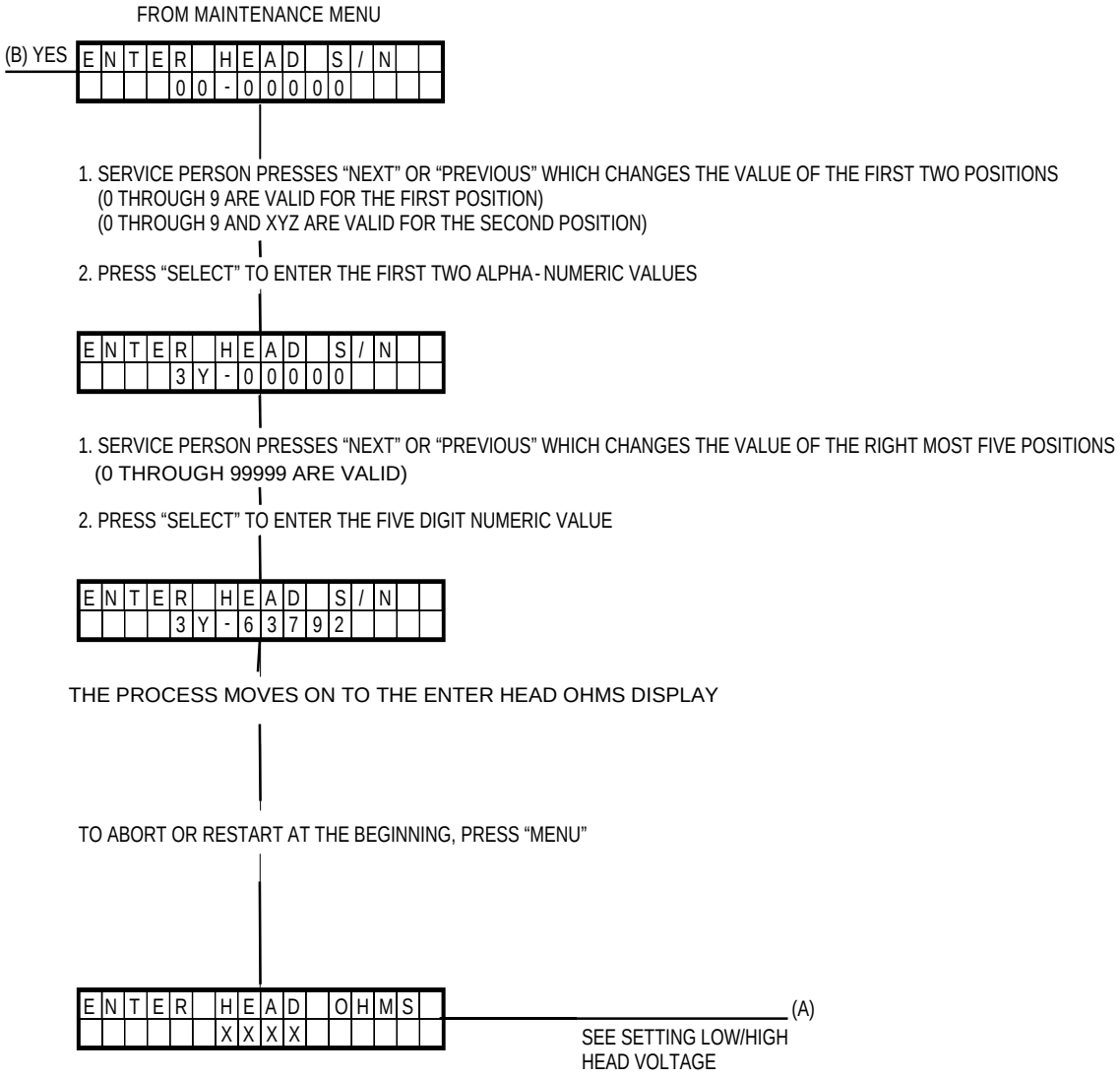


Figure 3-5 Menu Tree (cont'd)

Controlling the Printer

Table 3-3 explains the settings and functions of menu choices.

Table 3-3 Controlling the Printer

Menu Selection	Description
Print Menu	
PRINT METHOD	
Transfer	Selects thermal transfer printing and enables the ribbon sensor. Thermal transfer printing requires less print head energy and therefore increases print head life.
Direct	Selects direct thermal printing (no ribbon required). Disables the ribbon sensor and automatically increases print head energy. Higher energy requirements and direct contact between the print head and label surface shortens print head life.
PRINT MODE	
Standard	Printing is continuous. Normally selected when using either the internal or external rewinder or when printing long strips of labels.
Peel off	Use for printing one label at a time while automatically separating the label from the liner (backing paper).
Tear off	Use for printing one label at a time and positioning for easy tear-off.
Cut off	When the optional Label Cutter is installed, allows automatic cut-after-print of die cut labels. Intended for cutting backing paper.
RIBBON TYPE	Use to match ribbon type with label application. Not all ribbons perform equally at the same print speed and print density settings. By selecting the correct ribbon for the application, the printer automatically adjusts the print speed and print density to predetermined average values.
PRINT SPEED	Use to match the print speed with the application. The type of ribbon and label media (along with the level of print quality desired) are also critical factors when choosing the correct print speed.

NOTE: Peel-off, Tear-off, and Cut-off modes feature automatic backup prior to printing the next label so that printing begins at the beginning of the label.

Table 3-3 Controlling the Printer (cont'd)

Menu Selection	Description
Label Menu	
LABEL TYPE	
Die cut	Use to select die-cut labels and enable the printer's label sensor, which detects the beginning of a label. Die-cut labels must have a minimum label gap of 0.125 in. (3 mm).
Continuous	Use to select continuous media (labels with no gaps) and disable the label sensor. Requires setting of label and gap length (see "Operator Panel" below).
MEASURE LABEL	
Automatic	Automatically measures die-cut label length at power on by advancing a predetermined number of blank labels.
Fixed	Disables automatic label measurement. The last label length measured during automatic measuring is stored in memory, and this value is used at power on. Use this feature when the label media remains constant (no change in size).
Operator panel	Select this feature to print on continuous labels or die-cut labels that are less than 0.95 in. (24 mm) long. You must set label length and gap length. Minimum label length is 0.51 in. (13 mm) and minimum gap length is 0.125 in. (3 mm).
Set label length	Used to enter label length information when continuous media is selected or operator panel is selected. Length can be set in increments of 1/16 in (1.6 mm).
Set gap length	Used to enter gap length information when continuous media is selected or operator panel is selected. Length can be set in increments of 1/16 in (1.6 mm).

Table 3-3 Controlling the Printer (cont'd)

Menu Selection	Description
Adjustment Menu	
PRINT DENSITY	Used to increase or decrease print head temperature resulting in darker or lighter print. Allowable range is +15 to -15. Increasing the number by pressing the NEXT button causes the printed areas to get darker; decreasing the number by pressing PREVIOUS causes the printed areas to get lighter.
PRINT POSITION	Used to establish the first print line relative to the leading edge of the label. Adjustable range is 0.12 in. (3 mm) forward or backward in 0.004 in. (0.1 mm) steps. Increasing the number by pressing the NEXT button moves the first line of print back on the label; decreasing the number by pressing PREVIOUS moves the first print line closer to the front edge of the label. For details, see "Print Position Adjustment" in Section 4.
CUT POSITION	Adjusts the cut or tear position when advancing labels using tear-off and cut-off print modes. For tear-off mode, use this adjustment to ensure that the label perforations or the center of the label gap is directly above the edge of the tear bar. For cut-off mode, use this adjustment to ensure that cutting occurs in the center of the label gap. Allowable range is +30 to -30. Adjustable range is 0.12 in. (3 mm) forward or backward in 0.004 in. (0.1 mm) steps. Increasing the number by pressing the NEXT button causes the cut position to move forward; decreasing the number by pressing PREVIOUS moves the position backward.
LABEL SENSOR ADJ	Automatically calibrates sensitivity of label sensor to the opaqueness level of the label and liner.

Table 3-3 Controlling the Printer (cont'd)

Menu Selection	Description
LJIII Setup	
FONT SOURCE	
Internal	Selects the printer's internal resident fonts.
Soft font	Selects the downloaded (soft) fonts as default fonts. Not selectable if soft font is not loaded.
FONT NUMBER	Used to select the type face. Every font (resident or soft) is assigned a font number that is used to select a specific type face. See TEST PRINT below for information on printing out a font list, which lists the resident fonts and their numbers.
POINT SIZE	Used to select a specific size for outline fonts. One point equals 1/72 in. Not selectable if selected font is not an outline font.
SYMBOL SET	Used to select a specific character set for international use.
NUMBER OF COPIES	Used to print from 1 to 9999 copies of the same label.
PAGE ROTATION	Used to rotate the contents of the label in four different orientations: 0 = portrait 90 = landscape 180 = reverse portrait 270 = reverse landscape
LINE SPACING	Used to set the line spacing in 1/48 in. increments.
TOP/BOTTOM MARGIN	
Ignore	Activates an additional 35 scan lines of print area on each of the top and bottom page margins compared to standard PCL. The result is an unprintable area of 15 scan lines top and bottom (1/20-in). 1 scan line equals 1/300 in.
Accept	Accepts standard PCL unprintable page margins of 50 scan lines top and bottom.

Table 3-3 Controlling the Printer (cont'd)

Menu Selection	Description
Configuration	
TEST PRINT	
Test page	Prints a preformatted test label listing the standard default settings.
Bar code	Prints a preformatted bar code used for adjusting print quality.
Font list	Lists the resident fonts and their assigned number.
HEX DUMP	Used for problem isolation. Causes the printer to print out host data in hexadecimal format.
PAGE PROTECT	
On	Reserves enough memory to image an entire label to prevent possible loss of data (default setting for Models 48 and 412).
Off	Selects banded printing.
PANEL LANGUAGE	Selects 1 of 5 languages for use in the 32-character LCD display. Also allows selection of metric measurement when English is selected.
INTERFACE	
Parallel	Selects the Centronics parallel port for communications.
RS-232C	Selects asynchronous serial port for communications.
RS-422A	Selects RS-422A as serial communications interface.
Baud rate	Selects communication speed in bits per second.
Data bits	Selects either 7 or 8 data bits.

Table 3-3 Controlling the Printer (cont'd

Menu Selection	Description
Flow control DTR	Selects Data Terminal Ready (DTR) to control communications from the host to the printer.
X-ON	Selects X-ON or X-OFF to control communications from the host to the printer. The printer sends an X-ON character to the host when it is ready to receive data.
Robust X-ON	Same as X-ON except that the printer sends multiple X-ON characters to the host when it is ready to receive data.
DTR polarity	Can be set either high or low depending on the host's requirements.
Parity	Selects whether the parity bit is used or unused, depending on the host's requirements.

LCD Display Messages

Table 3-4 lists in alphabetical order the error messages that appear on the control panel LCD. Table 3-5 lists the control panel LCD status messages that indicate the operating condition of the printer.

Table 3-4 Error Messages

Error Message	Definition
BREAK INTERRUPT	Host system has broken or is holding communications open. Check the host protocol.
CUTTER ERROR	Cutter option failed to cut or blade is jammed. Clear the jam or replace the cutter option.
ENGINECOMM ERROR	Image processor (main) side of main board receives status or command that it cannot interpret.
FATAL ERROR	No fonts on main board or PCL failure. (Replace main board.)
FRAMING ERROR	Printer received an invalid stop bit for a character. Check the host protocol or the serial cable connections.
FRONT DOOR OPEN	Front panel is not fully closed and latched.
HEAD OVERHEAT	Print head has overheated. The printer stops printing. It will resume printing when the print head cools down. Reset the printer.
HEAD POWER LOAD	Print head and/or power supply problem. Drawing too much current. Reset the printer by turning it off and then on.
INSUF. MEMORY FOR PAGE PROTECT	Add additional SIMM memory to enable page protection (see Section 4 for SIMM memory installation procedures).
LABEL OUT	Label sensor detects no label. • A new label roll needs to be installed. See “Loading Labels” in Section 2 for label installation procedures. • Label media improperly loaded (the label media should be under the label sensor). • Label sensor needs adjusting (call *Intelli*Tech for service information at 800-694-3034). • More than one label missing from release paper (liner).

Table 3-4 Error Messages (cont'd)

Status Message	Definition
MEDIA JAM	IntelliBar cannot measure label length or gap. • Sensitivity of label sensor needs adjustment (call *Intelli*Tech for service information at 800-694-3034). • Wrong media in use; change to label type that matches sensitivity setting of label sensor. • If the "MEASURE LABEL, FIXED" parameter is set from the control panel and the value is 6 in. (for example), a media jam occurs if you load labels of another size. • If "MEASURE LABEL, AUTOMATIC" is set from the control panel with 6 in. labels loaded (for example), a media jam will occur if you load labels of another size. You must do another auto measure, i.e., turn printer off and then on. Mechanical interference: Label sticking or slipping due to improper label installation or the build up of label residue, dirt, or foreign material under the print head or on the platen roller. See "Loading Labels" in Section 2 for label installation procedures; see Section 5 for cleaning procedures. Mechanical failure (call *Intelli*Tech for service information at 800-694-3034). • Bad stepper motor (replace) • Bad driver (replace) • Bad sensor (replace)
OUT OF MEMORY	Print job requires more memory than is available. Add additional SIMM memory (see Section 4 for SIMM memory installation procedures).
OVERRUN ERROR	Printer could not keep up with host. Use a lower baud rate.

Table 3-4 Error Messages (cont'd)

Status Message	Definition
PARITY ERROR	Printer received the wrong parity bit from the host. Check the host protocol or the serial cable connections.
PRINT HEAD OPEN	Appears when printer is online or offline and the print head is not closed and latched. When it occurs, printer automatically goes offline. Close and latch print head, and press **Online** button. "READY" appears in control panel display.
RIBBON OUT	Ribbon sensor detects no ribbon. • A new ribbon roll needs to be installed. See "Installing the Thermal Ribbon" in Section 2 for ribbon installation procedures. • The label roll is not installed correctly under the print head, blocking ribbon detection. Install the label roll properly, making sure to feed the label liner under the label sensor plate. See "Loading Labels" in Section 2 for label installation procedures. • Ribbon sensor needs adjustment or replacement (call I*ntelli*Tech for service information at 800-694-3034). • Ribbon leader is under ribbon sensor.
SERIAL OVERFLOW	Host system continues to send data after the printer has signaled that it cannot accept more data. Check the host protocol.
SUB RAM ERROR	Main board controller requires service (call *Intelli*Tech for service information at 800-694-3034).

Table 3-5 Status Messages

Status Message	Definition
BUFFER CLEAR	The print buffer contains no data.
DATA IN BUFFER	Data remains in the print buffer. Press **Feed** to print the last label.
CANCEL=NOREPRINT	If a recoverable error occurs, press **Cancel** and the last label will not reprint.
INITIALIZE	Operating parameters are loading into the printer's memory, making it ready to print.
OFFLINE PAUSE	Printer is not ready to accept computer data.
ONLINE READY	Printer is ready to accept data from the computer.
ONLINE=REPRINT	If a recoverable error occurs, press **Online** to reprint the last label.
PEEL OFF LABEL	Tells you when to peel off the label.
PRESS SELECT	Press **Select** button.
PREHEATING	Model 412 print head is pre-heating for high-speed printing.
CLOSE HEAD	When pre-heating completes, close the print head (Model 412 only).
LIFT HEAD	During pre-heating (Model 412 only), open the print head.
TEAR OFF LABEL	Tells you when to tear off the label.

PRINTING MODES

The IntelliBar can operate in any of the following modes: Standard, Peel-off, Tear-off, and Cut-off.

NOTE: Peel-off, Tear-off, and Cut-off modes are intended for print speeds of 6 ips or less.

Standard Mode

Standard Mode, sometimes called strip printing, is recommended for higher speed printing applications, such as normal batch or volume printing.

In Standard mode, the application prints one label after another, and the print head maintains a relatively constant temperature. When the last label is printed, the label gap is positioned behind the tearbar, making it difficult to remove the last label unless you advance one label using the FEED button.

Standard Mode is the only selection possible when winding printed labels on the internal or external rewinder option.

NOTE: When printing at high speeds (10 ips or higher), Express Wax ribbons are recommended. For the best print quality at print speeds of 10 ips or higher, media specially formulated for high-speed thermal transfer printing is recommended.

Peel-Off Mode

Peel-off Mode is intended for on-demand applications, where you print and take off one label at a time and set the printer to automatically strip the label from the backing material (liner). The internal rewinder option can be used to rewind the backing material. When peel-off mode is set through the Print Menu, the printer

- receives data from the host
- prints the label
- instructs you (through the LCD display) to remove the label. After you remove the label, the liner backs up and printing resumes at the beginning of the next label.

Since Peel-off Mode automatically strips the label from the liner, change the MEASURE LABEL selection in the Label Menu from automatic (the default) to fixed. This ensures that no more than one label advances during power-on initialization. If left in the Automatic mode, more than one label advances, which may result in a media jam at the label exit slot.

Tear-Off Mode

Like Peel-off Mode, Tear-off Mode is commonly used in on-demand, one-label-at-a-time printing applications. The printer instructs you to tear off the label after automatically positioning the label stock so that the label gap is above the tear bar, making the tearing operation easier.

After you tear off the label, the label automatically backs up so that printing resumes at the beginning of the next label. While this eliminates waste, printing is discontinuous, and it is therefore recommended that Tear-off Mode be used at slower print speeds (less than 6 ips).

Cut-Off Mode

Cut-off Mode is available when you install the Cutter option (Model 2401) as described in Section 3. Designed for on-demand, one-label-at-a-time printing, Cut-off Mode provides the convenience of a label that is automatically cut and ready to apply. The printer can also be programmed to print a number of labels (up to 32,767) and then perform the cut function. The cutter is designed to cut paper or synthetic liners, and can also cut continuous label media that does not contain rubber-based adhesives..

NOTE: If Cut-off Mode is used to cut through the entire label material, frequent cleaning of the cutter blade may be required to remove adhesive residue that could adversely affect the operation of the device.

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