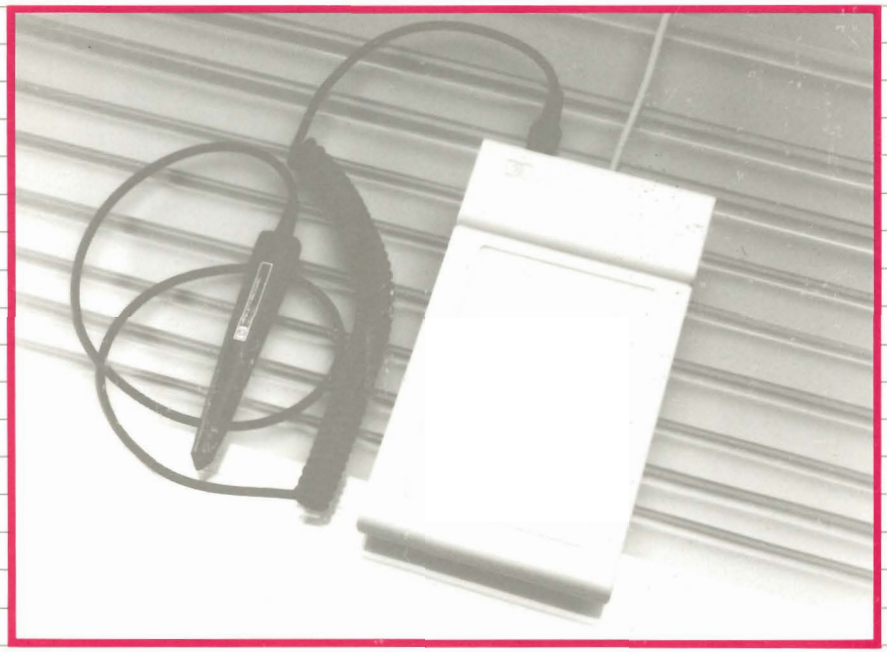
HEWLETT PACKARD

HP 92917A
Bar Code Reader

OPERATING AND SERVICE MANUAL



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HP 92917A

Bar Code Reader

OPERATING AND SERVICE MANUAL

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If changes have been made to the bar code reader since this manual was printed, a yellow "manual updating supplement" defining these changes is supplied with this manual to explain how to adapt the manual to the modified equipment. The changes will be incorporated in the next revision of the manual.

Certification

The information contained in this document is subject to change without notice.

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Congratulations !

You have chosen Hewlett-Packard's new 92917A Bar Code Reader, another technological advance in reliable equipment. The HP 92917A provides HP 700/92, HP 700/94, HP 700/43, HP 700/22 Display Terminal with a bar code reading capability. It allows bar code data and/or keyboard data to be displayed on the terminal/personal computer screen and transmitted to the host computer. This can save you valuable time and computer resources in a wide range of applications. The main features are:

- Compact, easily installed.
- Medium resolution (0.19 mm/0.0075 inches) wand suitable for most applications.
- Decodes the most commonly available codes:

  UPC/EAN/JAN codes (Universal product Code / European Article Numbering system / Japanese Article Numbering system), numeric codes used in the distribution area. These codes include: UPC A, UPC E, EAN 8, EAN 13, JAN 8, JAN 13.

  Interleaved 2 out of 5 code. A numeric code also known as Material Handling Institute standard USD-1 (Uniform Symbol Description 1).

  Codabar - two versions: MHI standard USD-4, and the American Blood Commission (ABC) standard.

  3 of 9 code. An alphanumeric code also known as MHI standard USD-3.

  Extended 3 of 9 code. An alphanumeric code that provides the full 128 ASCII character set.
- Check digit verification.
- Field length check.
- Selectable terminator character.
- Quick and easy verification of selected configuration.

This manual has been prepared to acquaint you with your bar code reader and serve as an aid to achieving optimum performance. It describes how to install and operate the reader, and should answer most questions on how to use it.

CAUTION

Before, installing your new Bar Code Reader, please read and strictly follow the installation procedure described in this manual at Chapter 1.

Radio Frequency Interference (RFI) Statements

RFI certification were made with the HP 16853D wand (16853-60004 and HBCS-5300, replacement product numbers for HP 16853D) and are only valid with this wand.

For the United States

Federal Communications Commission (FCC)

The US Federal Communications Commission (in 47 CFR 15.818) has specified that the following notice be brought to the attention of the users of this product.

WARNING

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device persuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

For Germany

Verband Deutscher Elektroniker (VDE)

Dieses Gerät wurder in einer typischen Systemkonfiguration gepruft und entspricht den Bestimmungen der Allgemeinen Genehmigung FTZ 1046/84. Als Machweis ist das Gerat mit dem VDE-Funkschutzzeichen mit Index 0871-B/P für Peripheriegerate gekennzeichnet.

Wird das Gerat innerhalb einer Anlage betrieben,

- so muss bei Inanspruchnahme der Allgemeinen Genehmigung FTZ 1046/84 die gesamte Anlage der oben genannten Genehmigung entsprechen.
- die mit einer FTZ-Serienprüfnummer gekennzeichnet ist und für die eine Betriebsgenehmigung vorliegt oder beantragt wird, so sind in der Regel keine weiteren Schritte notwendig.

Electromagnetic Interference regulations Germany.

This device was tested in a typical system configuration and meets the General License requirements in Germany (FTZ 1046/84). As a proof of compliance it carries the VDE Radio Protection Mark with the index 0871-B/P for peripherals.

If this device is to be operated with a system,

- and if the General License is being claimed, the complete system has to comply with the General Licensing requirements.
- which has its own FTZ-Serial-License, and for which an operating license has been granted or requested, usually no further steps are necessary.

Japanese Regulations

This apparatus is a class 2 ite (information apparatus which is to be used at residential or its adjacent areas) which meet to the VCCI standards to prevent radio interference at residential and its adjacent areas.

However, it may become a cause of radio interference if this apparatus is used with radio, television receivers at close range.

Please correctly use this as per the operating manuals.

この装置は，第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

しかし，本装置をラジオ，テレビジョン受信機に近接してご使用になると，受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

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1

Installing the Bar Code Reader

Introduction

Installing the bar code reader is as simple as:

1) Unpacking the components from the shipping carton.
2) Connecting the decoder pod to the terminal.
3) Selecting the bar code to be read (Chapter 3).

This section provides a step-by-step guide to install the bar code reader. If the reader is already installed, see Sections 2 and 3 for information on how to use it.

Unpacking and Inspecting the Bar Code Reader

WARNING

If upon receipt the reader is damaged, do not connect it to the display unit. Notify the nearest Hewlett-Packard office.

If the shipping carton is undamaged, open the top and carefully remove the contents. Place the bar code reader on a clean, dry, stable surface (if possible retain the shipping carton for future use).

In any correspondence with Hewlett-Packard concerning your bar code reader, specify the model number (as listed on the identification label on the base of the decoder pod).

What Terminals are Supported

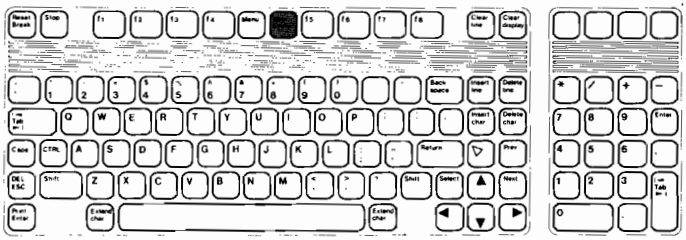
The HP 92917A is a bar code reader accessory for the HP 700/xx Display Terminal. The HP 92917A is supported on the HP 700/22 and HP 700/43 Display Terminals.

It is also supported on HP 700/92 and HP 700/94 Display terminals with a date code revision of firmware equal to 2733 or higher.

You may want to verify your terminal firmware date code by doing the following sequence:

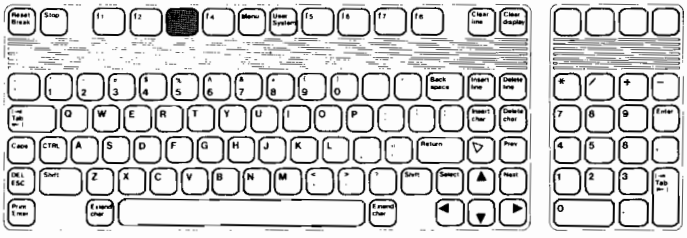
Press:

User System key



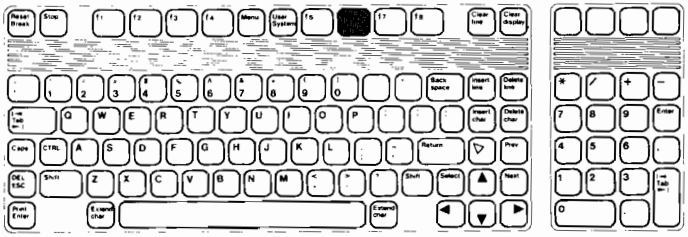
Press:

Service (f3) key



Press:

Identify ROMS (f6) key



The ROMS identifier is displayed on the terminal

FIRMWARE	ROMS
xxxx-xxxx	yyyy

The group of 4 digits located on the right hand side (represented by yyyy) is the firmware revision date code.

Any Identifier with date code equal or higher than 2733 is good.

Description of the Bar Code Reader

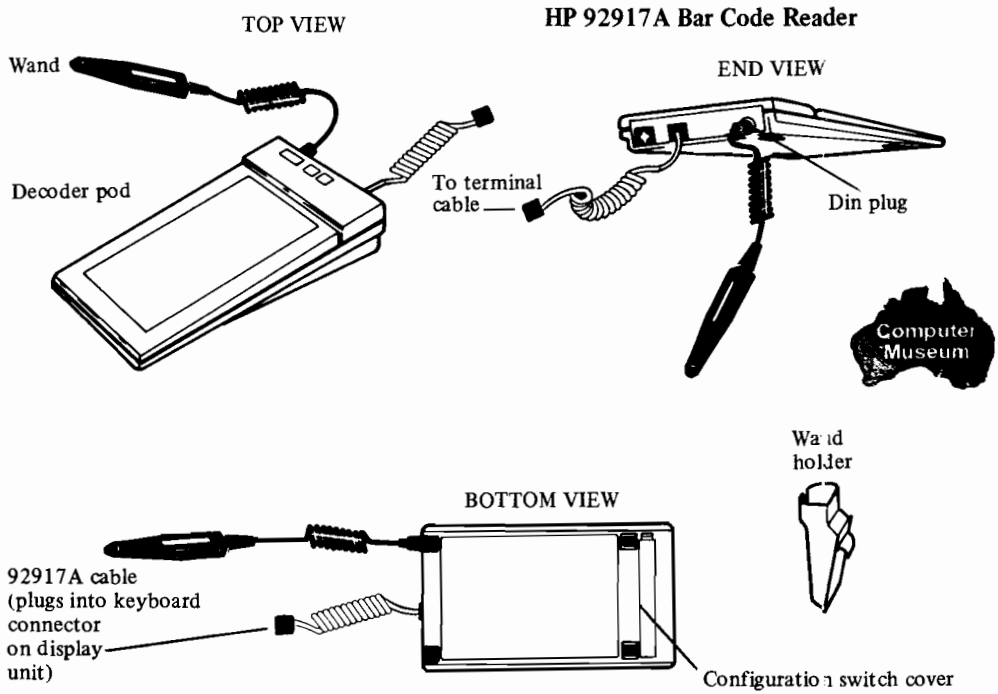


Figure 1-1. The 92917A Bar Code Reader

The HP 92917A comprises a decoder pod, earthing cable, bar code reader wand and wand holder (see Figure 1-1). The bar code reader wand is attached to the decoder pod via a coiled cable and a DIN plug. The decoder pod must be connected in series with the keyboard of the HP 700/xx Display Terminal.

If option 030 was ordered, the 92917A is delivered without any wand. In this case use bar code reader wand 16853D or HBCS-5300. Safety and environmental approvals are only guaranteed if the above mentioned bar code reader wand is used.

The bar code reader and/or keyboard can be used to enter data in the terminal. This data is displayed on the terminal's screen, and can be transmitted to a host computer.

WARNING ! ATTENTION ! ACHTUNG ! ATTENZIONE ! AVISO !

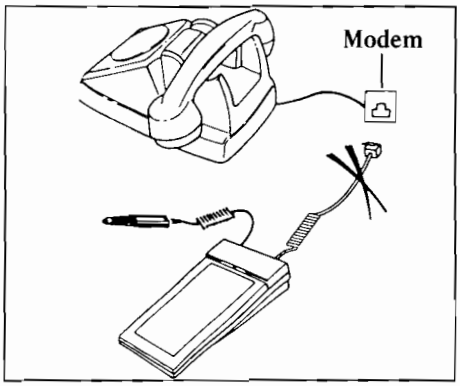
DO NOT PLUG DIRECTLY THE CABLE COMING FROM THE TERMINAL TO THE "TO KEYBOARD" SOCKET OF THE 92917A.

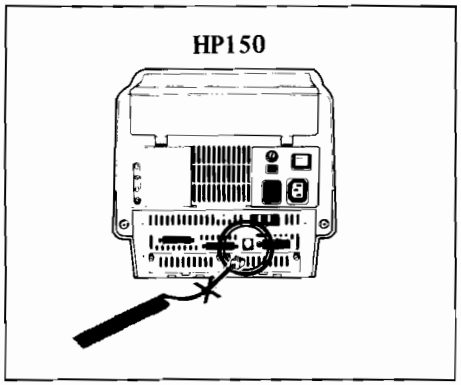
NE JAMAIS CONNECTER LE CABLE VENANT DU TERMINAL DANS LA PRISE MARQUEE "TO KEYBOARD" DU 92917A.

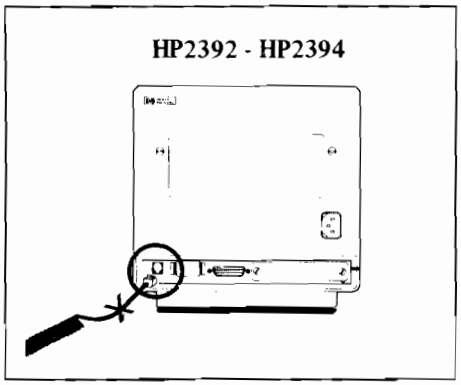
NIEMALS TERMINAL CABLE IN "TO KEYBOARD" STECKER ANSCHLIESSEN.

NON INSERIRE MAI IL CAVO PROVENIENTE DAL TERMINALE, DIRETTAMENTE NELLA PRESA "TO KEYBOARD" SITUATA SUL LETTORE CODICE A BARRA 92917A.

NO CONECTAR DIRECTAMENTE EL CABLE DEL TERMINAL DAS EN EL CONECTOR "TO KEYBOARD" DEL 92917A.







Compatibility List
Liste de compatibilité
Tastatur/Bildschirm Kombinationen
Lista di Compatibilita
Lista de Compatibilidades

Keyboard/Clavier Tastatur/Tastiera Teclado	Terminal/Terminale Bildschirm
C1400A	700/92* 700/94*
C1401A	700/43
C1402A	700/22

** Date code of firmware revision must be equal or higher than 2733 (refer to "What Terminals are Supported").*

Figure 1-2

Installing the Bar Code Reader

Installing the 92917A is not difficult but make sure to strictly follow the installation sequence described here after.

Place the bar code reader adjacent to the terminal and upside down as shown below.

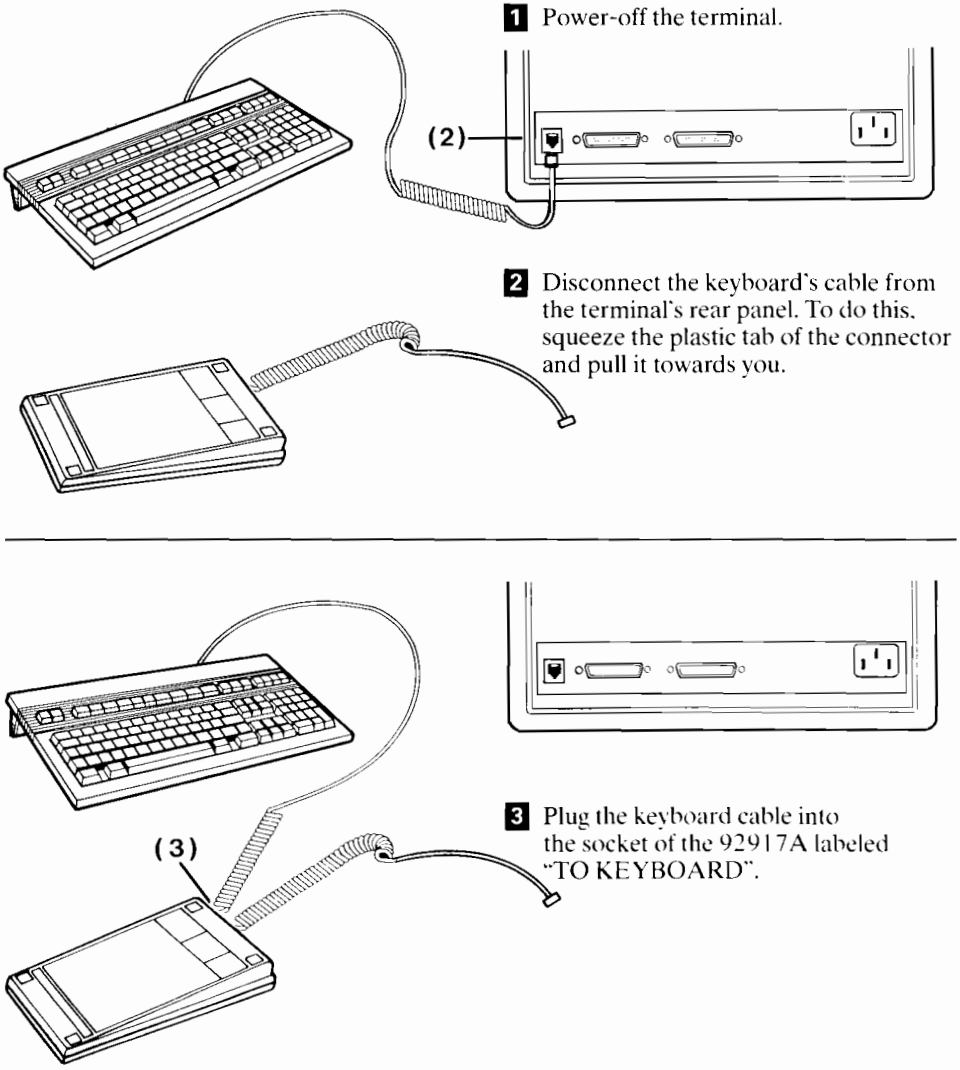
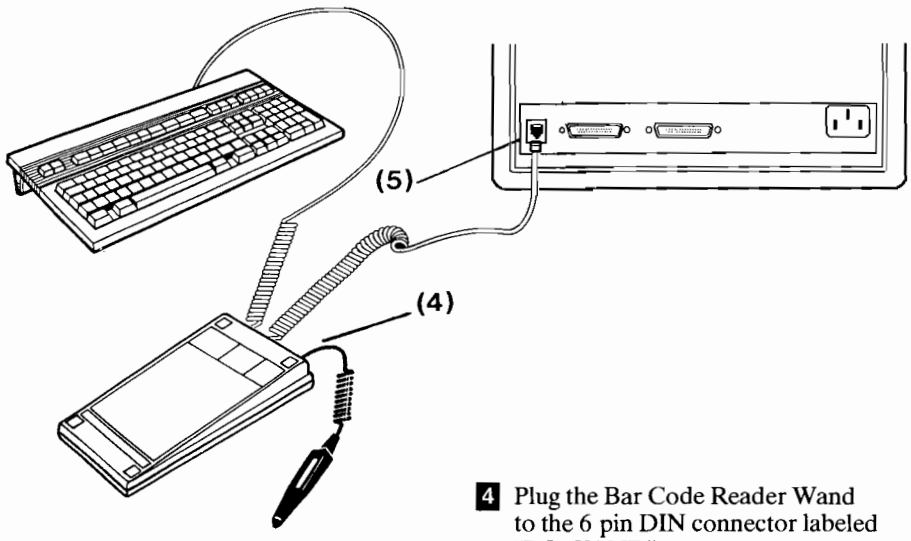


Figure 1-3. Installing the 92917A Bar Code Reader

How to Correctly Install the Reader



4 Plug the Bar Code Reader Wand to the 6 pin DIN connector labeled "TO WAND".

5 Plug the cable coming from the Decoder Pod's output labeled "TO TERMINAL" to the rear of the terminal.

Figure 1-4

6 Switch ON the terminal. This automatically powers on the bar code reader. Ensure there are four beeps from the terminal/decoder pod, that is:

a) Two beeps from the terminal; one when the terminal is switched on and a second beep several seconds later when the terminal has successfully performed its power-on test (and displays the screen labels). Refer to the terminal's user/operating manual for further details.

b) Two beeps in quick succession from the decoder pod after the terminal has performed its power-on self-test. This indicates the bar-code reader has successfully performed its power-on self-test.

7 Install the wand holder (as required). It is provided with adhesive tape, and may be directly attached to the decoder pod, keyboard or any convenient clean, dry, flat surface. Alternatively, it may be fixed to a flat surface using two screws.

CAUTION

The wand holder must NOT be attached to the decoder pod or terminal using screws, otherwise their warranties will be invalidated.
Only connect keyboard and decoder cables to designated Systems (see Figure 1-2).

2

The Bar Code Reader

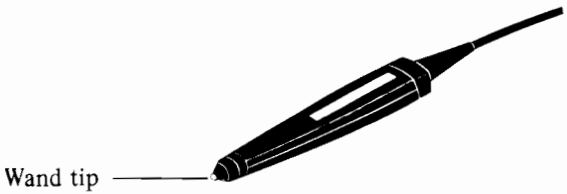


Figure 2-1. The Bar Code Reader Wand

Introduction

The 92917A is equipped with a 7.5 mils (0.19 mm/0.0075 in) wand. That is, it may be used to read bar code labels where the narrowest bar or space is 0.19 mm/0.0075 inches

The 92917A can read any of the following commonly available codes:

- UPC (Universal Product Code) A and E. Numeric codes used by the North American Distribution Industry.
- EAN 8 and 13. EAN is the European equivalent of UPC - EAN, is also known as European Article Numbering.
- JAN (Japanese Article Numbering). The Japanese equivalent of UPC.
- Interleaved 2 out of 5. A numeric code also known as Material Handling Institute standard AIM USD-1 (Uniform Symbol Description 1).
- Two versions of Codabar: MHI standard USD-4, and the American Blood Commission (ABC) standard.
- 3 of 9 code. An alphanumeric code also known as MHI standard AIM USD-3.
- Extended 3 of 9 code, An alphanumeric code that provides the full 128 ASCII character set.

Bar Code Reader Characteristics

Table 2-1 lists the bar code reader's reading characteristics and Table 2-2 its physical characteristics.

Table 2-1. Wand Reading Characteristics

Parameter	Units	
Minimum resolution (narrowest code element)	mm in	0.19 0.0075
Minimum depth of field (at 10° tilt)	mm in	0.85 0.035
Tilt angle Maximum Preferred	range	0° - 45° 10° - 20°
Scan speed	cm/s in/s	7.6 - 76 3 - 30

Table 2-2. Wand Physical Characteristics

Parameter	Units	
Light wavelength	nm	655
Wand diameter	mm in	23 0.9
Wand length	mm in	134 53
Cable length Maximum (spiral)	m ft	1.9 6.25

Bar Code Label Characteristics

The reader is capable of reading bar code whose characteristics conform to the dimensions listed in Table 2-3.

For complete details on how to design Interleaved 2/5, 3 of 9 code and Codabar labels, refer to "Elements Of A Bar Code System" (HP application note 1013, part number 5953-7732).

NOTE

The print quality specifications detailed in Table 2-3 must be strictly adhered to.

Table 2-3. Characteristics of Readable Bar Codes

Parameter			Units	
Minimum resolution (narrowest readable element)			mm in	0.19 0.0075
Maximum element size (determined by scan speed)	Scan speed	700 mm/sec	mm in	38 1.49
		70 mm/sec	mm in	3.8 0.149
Minimum bar/space print contrast*			%	45
Narrow bar/narrow space width ratio			–	1
Wide bar/wide space width ratio			–	1
Wide element/narrow element width ratio (see note*)			2.5 for high quality symbols (preprinted or specialized printers) — 3 for dot matrix type printers	
Color			Black bars on white substrate	
Note (*): Not applicable to UPC/EAN/JAN codes, with fixed ratios of 1, 2, 3 and 4.				

** Contrast is defined as R_W-R_B where R_W is the reflectance of white spaces and R_B is the reflectance of black bars measured at the emitter wavelength.*

3

Using the Bar Code Reader

Configuring the Bar Code Reader

Once Your Bar Code Reader is connected to the terminal you can verify it works by scanning the HELP bar code label located at the back of the 92917A. This will ask the 92917A to read the current setting and send the result on the terminal. This feature is detailed later in "Checking the configuration".

before you can use the bar code reader, you must CONFIGURE it, that is to say:

1) Select the bar code to be read (decoded).

2) Select if automatic code recognition is to be performed, and if so, on which code(s).

3) Select if field length verification is to be performed.

4) Select if a "terminal control operation" is to be appended to the read data.

5) Select if check digit verification is to be performed.

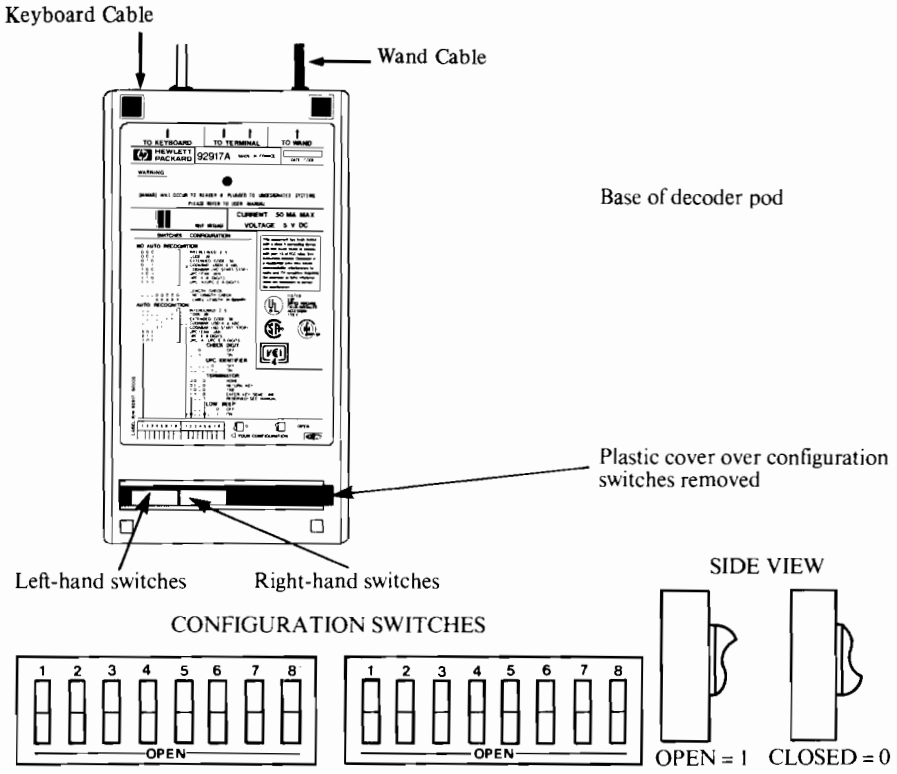
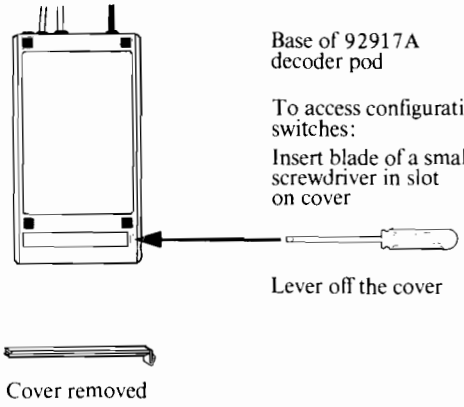


Figure 3-1. 92917A Configuration Switches

Configuring the bar code reader is performed using DIP switches mounted on the decoder pod, see Figure 3-1 and 3-2.

When the 92917A is delivered it is set to:

• Readable code	INTERLEAVED 2/5
• Automatic code recognition	OFF
• Field length verification	OFF
• Check digit verification	OFF
• Appended terminal control operation	NONE
• UPC identifier	OFF
• Low beep	OFF



You may change these settings as and when required, since the bar code reader automatically checks their values at the start of each read operation.

To access the switches, you must unclip the plastic cover protecting the switches on the decoder pod using a small screwdriver.

You can reset the configuration switches to the required setting (as listed in Figure 3-2). This may be done using a small screwdriver (or the tip of a ball-point pen). Do not touch the printed circuit card components.

CAUTION

Do NOT drop any metallic objects into the decoder pod when setting switches, as this may damage the equipment. If objects are dropped, switch OFF the terminal, disassemble the decoder pod and remove the objects.

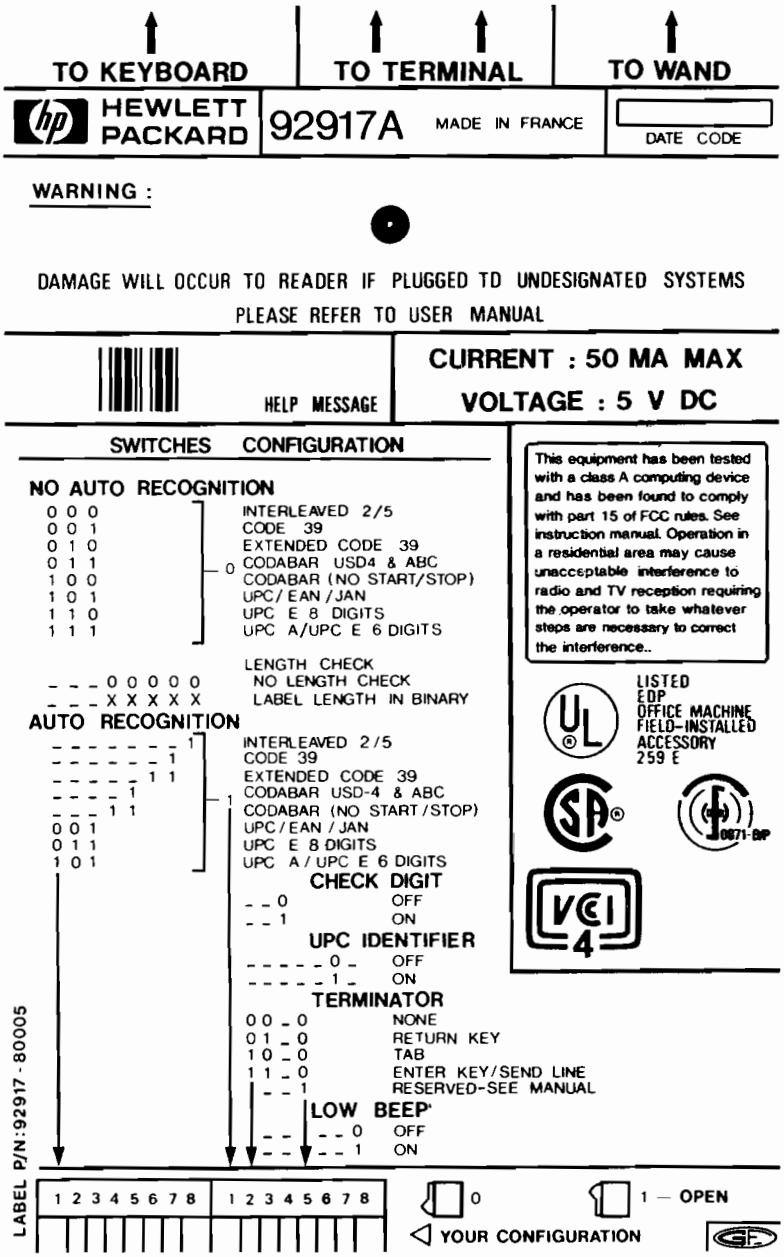


Figure 3-2. 92917A Configuration Switch Settings

The configurable parameters are:

Left-Hand Block of Switches

1) **Bar code** (the meaning of these switches depends on whether Automatic code recognition is ON or OFF) (switch 1 right hand side) – these switches select the bar code to be decoded.

   When Automatic code recognition is ON, the 92917A reads any of the code(s) selected on switches 1 to 8. (Note that the more codes you select to be recognized automatically, the higher the chances are of characters being misread). When Automatic code recognition is OFF, the 92917A reads one of the codes selected on switches 1 to 3. In addition, field length verification can be performed.

   When the 92917A is configured to read Codabar ABC and USD-4, it can also be configured so:

   – the Start and Stop characters (guard bars) of the code are sent to the terminal/host computer as data characters (first Start and last Stop only for Codabar ABC).

   – the Start and Stop characters are NOT sent.

   When the 92917A is configured to read UPC/EAN/JAN, it can be configured so:

   – UPC E is read and transmitted with a format of 8 digits.

   – UPC is transmitted with a format of 12 digits and UPC E is transmitted with a format of 6 digits.

2) Field length verification (switches 4, 5, 6, 7, 8 left hand side) – selects if the bar code reader is to verify the number of characters on the bar code and, if so, the number of characters to be verified.

a) When field length verification is OFF, the Decoder can read bar code labels containing from 1 to 60 characters, any bar code with more than 60 characters is NOT read.

For Codabar (ABC and USD-4), the standard sets the minimum length of a label as five characters: one start, three data and one stop (and the maximum as 60 characters). Consequently when filed length verification is OFF, the 92917A can read any Codabar bar code label containing from 5 to 60 characters.

b) When the field length check is ON, the data is only sent to the terminal/computer if the number of read characters corresponds to the specified number (from 1 to 31).

The specified number of characters should include the check digit (encoded on the label) when check digit verification is OFF, and exclude the check digit when check digit verification is ON. This is because the Decoder only checks the number of read data characters to be sent to the terminal/computer.

For Codabar (ABC and USD-4), a label may contain from five to 60 characters. Consequently when field length verification is ON, the specified number of characters must be from 5 to 31 (if less than 5 is selected, the bar code is NOT decoded).

c) When the 92917A is configured to read EAN/UPC/JAN codes, the field length check has no effect, as these codes have a fixed length.

NOTE

The configured appended control operation character is NOT included in the field length check. This is because the appended control character is NOT included on the bar code label.

Right-hand Block of Switches

1) **Automatic code recognition** (switch 1) – select if the codes are to be automatically recognized (and decoded) by the 92917A. When OFF, the 92917A only reads the code selected on switches 1 to 3 of the left-hand block of switches. When ON, the 92917A reads any of the code(s) selected on switches 1 to 8 of the left-hand block of switches. (It is recommended that check digit verification should be used to prevent errors).

2) **Check digit verification** (switch 4) – used with Interleaved 2 of 5 code and 3 of 9 code to select if the bar code reader is to verify the value of the bar code's check digit.

   a) When OFF, the data is read irrespective of the value of the last character (the check digit, if present, is read as a data character).

   b) When ON, the least significant (last) character on the bar code is interpreted as being the check digit, and the data is only sent to the terminal if this digit is valid (the check digit is NOT sent).

NOTE

When the 92917A is configured to read UPC/EAN/JAN, it ignores switch 4. This is because with UPC/EAN/JAN codes, a check digit is a mandatory part of the code and is always verified.

---

3) **UPC identifier** (switch 7) – used only if UPC A/UPC E 6 digits is selected. (UPC/EAN/JAN has then to be selected as well). Codes UPC, EAN, JAN, UPC E, EAN/JAN 8 will be attached to an identifier which is represented by one or two characters located in front of the data sent. **Appendix C** contains the tables of available output formats.

4) **Appended terminal control** (switches 2 and 3) – selects if the 92917A is to append a "terminal control operation" to the character string sent from the decoder pod to the terminal/host computer.

When OFF, the read data is transferred with no appended control operation.

When ON, the following control operations are available:

a) [Return] key simulation (switch 3 open). Appends a Return Key to the decoded string. This causes the cursor to return to the left margin of the current line (or the left margin of the next line if the terminal's automatic line feed feature is ON).

b) [Tab >] key simulation (switch 2 open). Appends a tab right character to the decoded string. This has the same effect as pressing the keyboard's [Tab >] key. That is, it causes the cursor to jump to:

- The next right tab stop when the terminal is operating in "normal mode".
- The next right unprotected field when the terminal is operating in "forms mode".

c) [Enter] key simulation (switches 2 and 3 open). Appends an [Enter] key or [Send Line] key (depending on the terminal type) to the decoded string. This triggers a transfer of a copy of the data displayed on the terminal to the computer or connected device (in the same manner as pressing the keyboard's [Enter] key or [Send Line] key, see the terminal's user/operating manual for details).

Note that when the terminal is used with a host computer, [Enter] key simulation should only be configured when the terminal-to-host computer connection uses block mode communications.

5) **Low beep** (switch 8) – selects the beep duration to allow a louder or lower beep level.

NOTE

Switches 5 and 6 are currently not used and are reserved for future possibilities. They should remain positioned to "0".

Checking Your Configuration

To ensure the configuration you selected is the one you were expecting, you can scan the HELP label printed on the back of the 92917A and also at **Appendix B**.

This special label will turn the bar code reader in a checking mode and will send to the terminal the actual configuration with the following format:

92917A Rev X.Y

_____
_____
_____
_____
_____
_____

– Selected Codes
– with check digit
– with field length check
– with UPC identifier

TERMINATOR: _____ can be NONE, RETURN KEY, ENTER KEY, TAB KEY

BEEP IS _____ can be LOW (short duration) or HIGH (normal duration).

The bar code reader is simply an extension of the keyboard. You can enter data on the terminal via the keyboard and bar code reader in any order, as and when required. When the keyboard is locked (disabled), so is the bar code reader.

When the terminal is in the Remote Mode (communicating with a host computer):

1) If Character Mode communications are used, the data is sent to the computer one character at a time (as it is read). The data is displayed on the terminal either directly (local echo) or as a re-transmission from the computer (remote echo). This must be specified in the terminal's configuration menu. The data transfer is terminated when the [Return] key is pressed. If required, the [Return] control operation can be automatically appended to the read data (see Figure 3-2). In which case, the bar code entry will terminate any previous keyboard entry that has not been terminated.

2) In Block Mode communications, the data is displayed directly on the terminal as it is read (because a local echo is always used), and is stored in the terminal's memory. It is not transmitted to the computer until the keyboard's [Enter] key is pressed. If required, the [Enter] control operation can be automatically appended to the read data (see Figure 3-2).

Refer to the terminal's user/operating manual for further information on how to use the terminal.

Reading a Bar Code

Before attempting to read a bar code label, ensure that the terminal's keyboard is enabled, the terminal is correctly set for LOCAL or REMOTE operations and the bar code reader is set to read the correct bar code.

To read a bar code label:

1) Hold the wand as for a pencil, at an angle of approximately 15° to the bar code (see Figure 3-3).

2) Place the wand tip in the white margin before the start of the bar code. (The bar code may be read from left-to-right or right-to-left as required).

3) Draw the wand tip across the longitudinal center line of the entire code, at a uniform speed (e.g. 30 cm/second = 12 in/second) and in light contact with the code. If required, the tip may be continuously drawn back and forth across the bar code until a correct read is obtained. Always start in the white margin before the code, do NOT let the wand tip "wander" off the code and do NOT stop before the white margin at the end of the code.

A correct read of the bar code causes the bar code reader's beeper to sound twice and the data to be displayed on the terminal's screen (in a similar way to keyboard originated data).

The first beep indicates that the 92917A has correctly decoded the bar code. The second beep indicates that the data has been correctly sent to the terminal. (If the terminal is connected to a computer which uses a Remote Echo, the data is only displayed when echoed back from the computer).

If the reading is NOT correctly performed the bar code reader's beeper will not sound and no data will be sent to the terminal. In which case the read should be repeated.

CAUTION

Do NOT use the keyboard while reading a bar code label as this may cause the data to be jumbled.

NOTE

Some labels generated by matrix printers may not conform to the print quality specifications and may have a low first read rate.

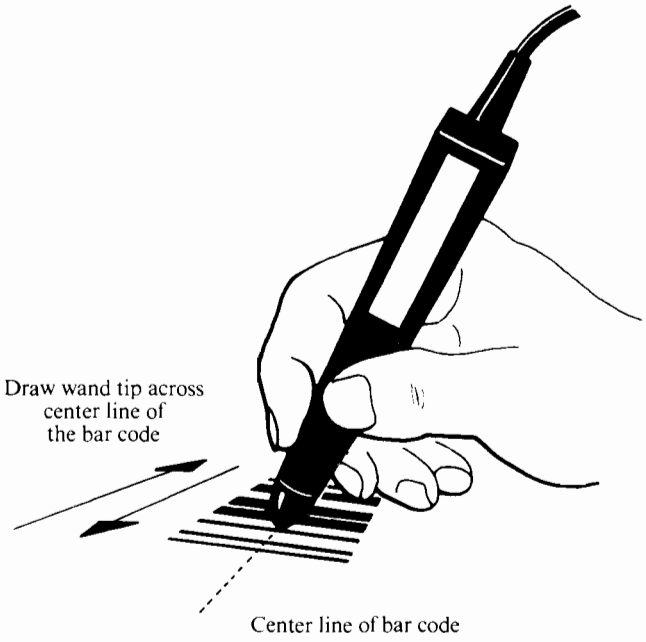


Figure 3-3. Using the Bar Code Reader (Wand)

4

Testing and Servicing the Bar Code Reader

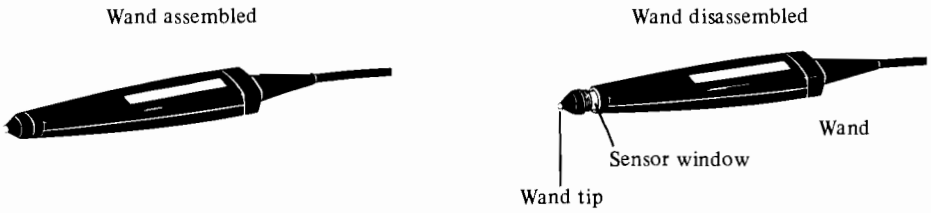


Figure 4-1. Wand Tip and Sensor Window

Routine Maintenance

There is no periodic maintenance or calibration required.

Nevertheless the coder pod and the wand may be cleaned to maintain their appearance.

CAUTION

Cleaning fluid must not be sprayed directly into the terminal or bar code reader.

Wand tip should only be removed for replacement.

Decoder pod case cleaning. The case may be cleaned by being wiped with a cloth lightly moistened with warm water.

Wand casing cleaning. The wand casing may be cleaned by being wiped with a cloth lightly moistened with warm water.

Wand tip replacement. If the tip shows visible signs of damage or if the sapphire ball tip is scratched or broken, performance may be degraded. The replacement tip part-number is 16800-60010.

What to Do in Case of Problems

If it comes that your Bar Code Reader does not read, here are some guidelines to help you in finding the reason.

The problem may be a hardware problem or a barcode problem.

Hardware Problems

- Verify that the connection of the 92917A is as per section "Installing the Bar Code Reader" of the installation procedure.
- After verification, switch on the terminal and wait five to ten seconds for the beeps of the 92917A.

1) If no beep occured:

CAUSE 1 — The terminal is in a lock mode. The 92917A will then not be able to start its self-test.

SOLUTION — *You may go out of this mode by switching off the terminal and maintaining the key "D" pressed on keyboard while switching on again the terminal. The 92917A should be able to perform its self-test.*

CAUSE 2 — The terminal is not working properly.

SOLUTION — *Call your local HP office to fix the problem on the terminal.*

CAUSE 3 — The Bar Code Reader has been connected the wrong way. The keyboard is then not activated and no power is delivered to the wand.

SOLUTION — *Power OFF the terminal and connect the 92917A as described in Chapter 1.*

2) Your hear a beep followed by a short beep.

This means that the self test was successful and the problem can be:

CAUSE 1 – The printed barcode you are trying to read is incorrect.

SOLUTION – Refer to "BARCODE PRINTING PROBLEMS" later in this manual.

CAUSE 2 – The configuration of the 92917A is incorrect according to the type of code you want to read.

SOLUTION – Scan the HELP label on the back of the 92917A to check the real configuration.

Compare this configuration to the type of bar code you are trying to read. If activated, check if the encoded check digit or the field length check are correct.

Refer to "Configuring your Bar Code Reader" for more details.

CAUSE 3 – The wand plugged into the 92917A does not work. This can be checked if no light comes out from the top of it. If you can see the red light, it still can be the wand.

SOLUTION – Try the wand on another 92917A configured the same way and which works..

If symptom remains, contact your Hewlett-Packard Agency to have the wand replaced.

3) You heard two beeps with the same duration.

CAUSE – The EPROM is corrupted.

SOLUTION – Have the 92917A repaired contacting your local HP office.

4) You heard one beep only.

CAUSE – The processor is out of order.

SOLUTION – Have the 92917A repaired contacting your local HP office.

5) You heard three or four beeps with the same duration.

CAUSE – The RAM is not working properly.

SOLUTION – Have the 92917A repaired contacting your local HP office.

6) Your heard six beeps with the same duration.

CAUSE – The interface circuits are not working properly.

SOLUTION – Have the 92917A repaired contacting your local HP office.

Bar Code Printing Problems

A lot of bad reading comes from the characteristics or structure of the Bar Code label you try to read.

1) Bad contrast: Remember that to read properly, you need to have a good contrast ratio between the media (White paper) and the bars (ink). This contrast ratio has to be measured at the same wave length as the wand you use. Please refer to the wand specifications.

Some thermal paper give black bars which looks perfect with your eyes but which reflects totally the wave length of the wand.

This is often solved by adjusting the burn time of the printer or selecting a thermal paper matching the wave length of the wand.

2) Field length verification:

If you selected a field length verification, make sure this length correspond to the number of data contained in the barcode label.

3) Check digit: Make sure that the encoded check digit is correct.
The check digit is the last encoded character and has different way of being calculated depending on the type of Code.

You should refer to the appropriate documentation to calculate the check digit.

4) Selection of the code:

Make sure the type of code you try to read is the one selected on the 92917A. You can check this configuration by scanning the HELP label as described in "CONFIGURING YOUR BAR CODE READER".

5) Density of the printing:

The density is represented by the width of a module that is to say the width of the smallest element (bar or space). This density must be lower than the resolution of the wand. In other words, the width of a module must be higher than the resolution of the wand (7.5 mils or 0.19 mm).

6) Defects in elements:

Normally, the black bars or the white spaces making the Bar code should be solid.

Depending on the printer you use, the type of ribbon or the quality of the media, it may happen that the ink smears on the spaces, or ink is missing in the bars creating defects on the bar code. These defects may have a dimension of the same size as the width of bars or spaces and be detected by the wand like any other module. In that case the 92917A will not transmit the data.

7) Code interleaved 2 out of 5:

This code has the particularity to only encode an even number of characters. If for any reason the printer you used printed an odd number of characters, the code is certainly wrong and will not be read by the 92917A.

Each time it is possible, we advise to use a check digit or/and a field length check verification with code 2 of 5.

Servicing the Bar Code Reader

CAUTION

Parts must only be replaced by a qualified Hewlett-Packard C.E. (Customer Engineer). The removal of parts by a user will invalidate the warranty.

If the power-on test fails and depending on the result of the diagnostics, there are two possible parts to replace.

1) Printed circuit assembly (PCA).

2) Wand.

Refer to Table 4-1 for part-numbers.

Table 4-1. 92917A Replaceable Parts

Part Number	Description
92917-60001	Decoder pod PCA (with EPROM)
92917-60002	Decoder pod casing
92917-90001	Operating and service manual
16853-60004	Wand 7.5 mils
16800-60010	Wand tip
92915-40003	Cover for switch door
5180--4721	Cable
0515-0104	Screw
03075-40006	Plastic wand holder

A

Bar Code Character Sets

ASCII (Decimal)	3 of 9	Int. 2 of 5	UPC/EAN/JAN	CODABAR
32	Space			
36	$			$
37	%			
42	* (note)			
43	+			+
45	–			–
46	.			.
47	/			/
48	0	0	0	0
49	1	1	1	1
50	2	2	2	2
51	3	3	3	3
52	4	4	4	4
53	5	5	5	5
54	6	6	6	6
55	7	7	7	7
56	8	8	8	8
57	9	9	9	9
58				:
65	A			A (note)
66	B			B (note)
67	C			C (note)
68	D			D (note)
69	E			
70	F			
71	G			
72	H			
73	I			
74	J			
75	K			
76	L			
77	M			
78	N			
79	O			
80	P			
81	Q			
82	R			
83	S			
84	T			
85	U			
86	V			
87	W			
88	X			
89	Y			
90	Z			

Note: Used for Start and Stop codes only.

Extended 3 of 9

ASCII	CODE 39	ASCII	CODE 39	ASCII	CODE 39	ASCII	CODE 39
NUL	%U	SP	Space	@	%V	`	%W
SOH	$A	!	/A	A	A	a	+A
STW	$B	"	/B	B	B	b	+B
ETX	$C	#	/C	C	C	c	+C
EOT	$D	$	/D	D	D	d	+D
ENQ	$E	%	/E	E	E	e	+E
ACK	$F	&	/F	F	F	f	+F
BEL	$G	'	/G	G	G	g	+G
BS	$H	(	/H	H	H	h	+H
HT	$I	)	/I	I	I	i	+I
LF	$J	*	/J	J	J	j	+J
VT	$K	+	/K	K	K	k	+K
FF	$L	,	/L	L	L	l	+L
CR	$M	-	-	M	M	m	+M
SO	$N	.	.	N	N	n	+N
SI	$O	/	/O	O	O	o	+O
DLE	$P	0	0	P	P	p	+P
DC1	$Q	1	1	Q	Q	q	+Q
DC2	$R	2	2	R	R	r	+R
DC3	$S	3	3	S	S	s	+S
DC4	$T	4	4	T	T	t	+T
NAK	$U	5	5	U	U	u	+U
SYN	$V	6	6	V	V	v	+V
ETB	$W	7	7	W	W	w	+W
CAN	$X	8	8	X	X	x	+X
EM	$Y	9	9	Y	Y	y	+Y
SUB	$Z	:	/Z	Z	Z	z	+Z
ESC	%A	;	%F	[	%K	{	%P
FS	%B	<	%G	\	%L	:	%Q
GS	%C	=	%H	]	%M	}	%R
RS	%D	>	%I	^	%N	~	%S
US	%E	?	%J	_	%O	DEL	%T

Extended 3 of 9 code characters $ / + and % can be paired with other characters to form an ASCII character not available in the standard 3 of 9 code.

When $ / + or % is followed by a digit, space, symbol or stop character, the $ / + or % and the edigit, space symbol or stop are decoded as two separate characters.

When the $ / + or % character is followed by an upper-case alpha character (A through Z), the two characters are combined to form a single ASCII character, as shown in the table above. Note that:

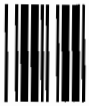
- %X, %Y or %Z is decoded as ASCII DEL.
- /P through /Y are decoded as digit 0 through 9.
- /M is decoded as -
- /N is decoded as .
- When using check digit verification, the check digit character is NOT paired with the previous character on the label.

A-2 Bar Code Character Sets

B

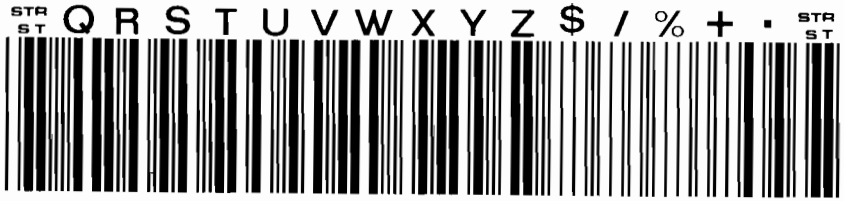
Bar Code Test Patterns

HELP



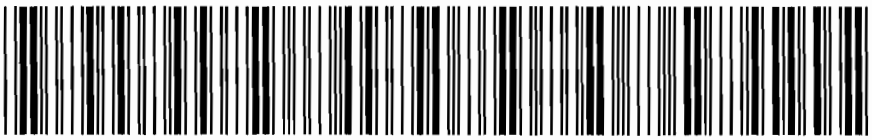
3 of 9 Code

MODULE WIDTH
= 0.38 mm = 15 Mils

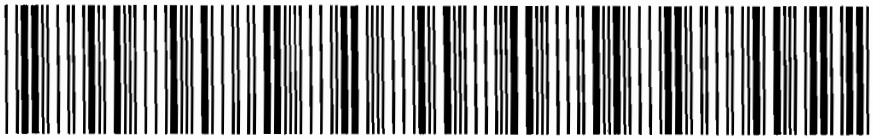


Extended 3 of 9 Code

a b c d e # & < > H



([: ; = ? @]) 7



Interleaved 2 out of 5

MODULE WIDTH
= 0,19 mm = 7,5 Mils

Module width 0.30 mm (0.012 in)

Module width 0.38 mm (0.015 in)

Module width 0.90 mm (0.035 in)

UPC / EAN

EAN 13

UPC A

EAN 8

UPC E

CODABAR

USD-4

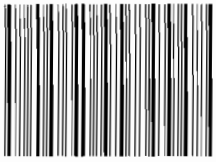
6.5 mils
(10 char/inch)

13 mils
(5 char/inch)

Codabar

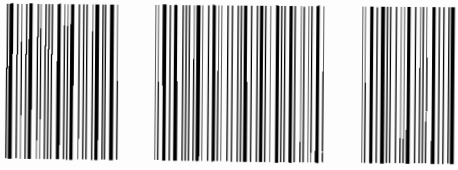
ABC

A012345671B



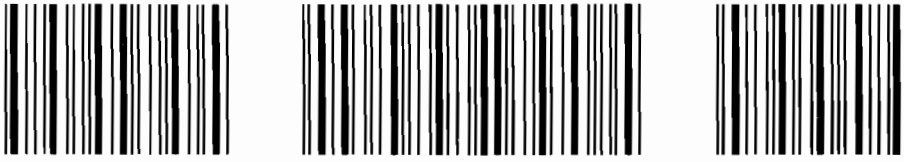
6.5 mils
(10 char/inch)

A$012D D3456789D D510B



13 mils
(5 char/inch)

A$151D D98765432D D620B



C

UPC/EAN/JAN Output Format Table

Selected Configuration

Bar Code Label Read.	UPC/EAN/JAN	UPC/EAN/JAN UPC E 8 digits
UPC A	0ndddddddddddc	0ndddddddddddc
UPC E	00ddddd0000dc *	0ddddddc
EAN/JAN 13	ffddddddddddc	ffddddddddddc
EAN/JAN 8	ffdddddc	ffdddddc

* This is an example. Arrangement between data and 0 may be different.

Selected Configuration

Bar Code Label Read.	UPC/EAN/JAN UPC A / UPC E 6 digits No identifier.	UPC/EAN/JAN UPC A / UPC E 6 digits With identifier.
UPC A	nddddddddddc	Anddddddddddc
UPC E	dddddd	E0dddddd
EAN/JAN 13	ffddddddddddc	Fffddddddddddc
EAN/JAN 8	ffdddddc	FFff[illegible].dddc

Key: A = character "A"
E = character "E"
F = character "F"
0 = number 0
n = number system digit
f = flag digit
d = data digit
c = check character

Glossary

Terms Used in this Manual

The following table explains some of the terms used in this manual (in alphabetical order).

TERM	DESCRIPTION
BAR CODE	A sequence of vertical bars and inter-bar spacings of various widths used to encode machine readable data.
BI-DIRECTIONAL	A bar code readable either from left-to-right or from right-to-left. All the codes readable by the HP 92917A Bar Code Reader are bi-directional.
CHECK DIGIT	A calculated check character appended at the end of the bar code for error detection purposes. Optional with codes 2 of 5 and 3 of 9, mandatory with UPC/EAN/JAN codes, not used with Codabar.
CONTRAST	The relative difference between the amount of light reflected from the black bars and the white substrate (space), normally measured as a percentage ratio.
DECODER POD	Converts the signals from the wand to readable data for display on the CRT screen of the terminal.
ELEMENT	A bar or a space.
FIELD LENGTH	A check system used with bar codes (that contain a fixed number of characters) to count and verify the number of characters in the code. The 92917A can verify a field length of up to 31 characters.
MODULE	Width of the narrowest printed bar code element.
RESOLUTION	The dimensions (width) of the narrowest element (space or bar) that can be read by the wand. The resolution is an optical characteristic of the wand.

TERM	DESCRIPTION
SUBSTRATE	The media surface on which the bar code is printed (that is, the media background).
TERMINAL	The device (HP 700/92, HP 700/94, HP 700/22, HP 700/43) to which the 92917A is connected.
TILT ANGLE	The angle between the wand and the perpendicular to the bar code.
WAND	The hand held bar code scanner, sometimes called a "light pen". It contains a light source and a light detector, and reads bar codes by distinguishing between the presence of reflected light from a space (the substrate) and the absence of reflected light from a bar.

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REFERENCE DOCUMENTATION

Elements of a Bar Code System	– HP Application Note number 1013 (part number 5953-7732)
HP 92917A Data Sheet	– Part number 5956-4286