Series 100
HP 150 Personal Computer

HP Touch Makes Personal Computing Easy

Imagine yourself, sitting in your office, pondering over a business problem. You turn to your personal computer and with a few "taps" on the display, the answer to your problems almost magically appears! The HP 150 personal computer from Hewlett-Packard brings that magic to your desk. With a wide range of software applications and the unique display with HP Touch, powerful problem-solving tools can literally be at your fingertips.

The HP 150, packed with powerful features, brings a new era of personal computer ease of use into reality. Nature has provided you with a very easy-to-use pointing device—your finger. Hewlett-Packard, with the HP 150, gives you the technology to use your fingertips to "push" command keys and "point" to information on the display to guide your application and get results.

Learning to use the HP 150 requires practically no time at all. For the HP 150, Hewlett-Packard has developed P.A.M. (Personal Applications Manager), a friendly facility to help you execute most system commands. P.A.M. uses the screen to display English-like commands which can be easily selected with HP Touch. With the HP 150 there is no need to spend hours reading manuals or going through tedious tutorials to learn how to use the system. With P.A.M., in a few minutes you can be making productive use of your system by simply reading and touching the instructions on the display. With the HP 150, if you can read and point you can use a computer!

Accounting, order processing, business planning, word processing, and many more . . . in short, the tasks that you and your staff are faced with every day can be solved with the powerful HP 150 personal computer. Whether in the office or at home, your HP 150 can help you with your daily information management needs.

Applications on the HP 150 are integrated so that information can easily be transferred from one application to another. For example, you can create a sales forecast using Series 100/VisiCalc. With a few touches of the screen, that sales forecast can be transferred to Series 100/Graphics and displayed on the screen as a bar chart. Alternatively, you may choose to include the sales forecast in a document which you have developed using the popular word processing software WordStar. The sales forecast from VisiCalc can just as easily be included in the text document.

As a professional, there is much demand for your desk space. Telephone, calendar, memo pad, card file, and in/out baskets all compete for your precious desk
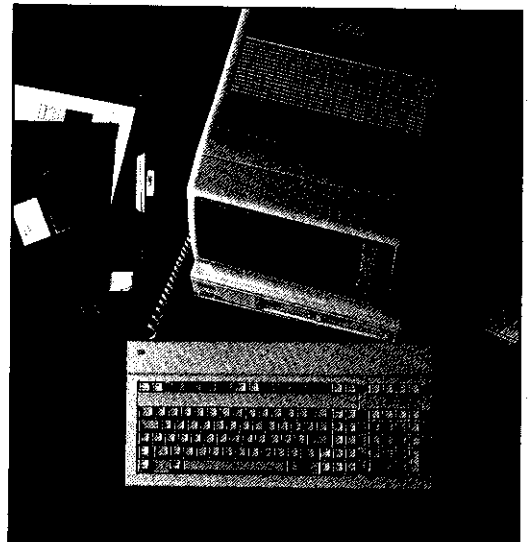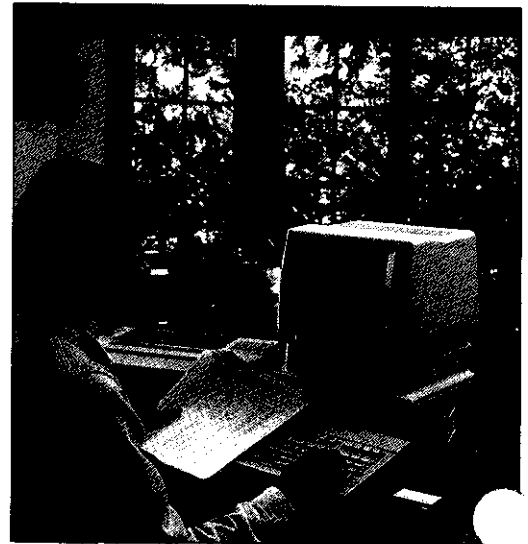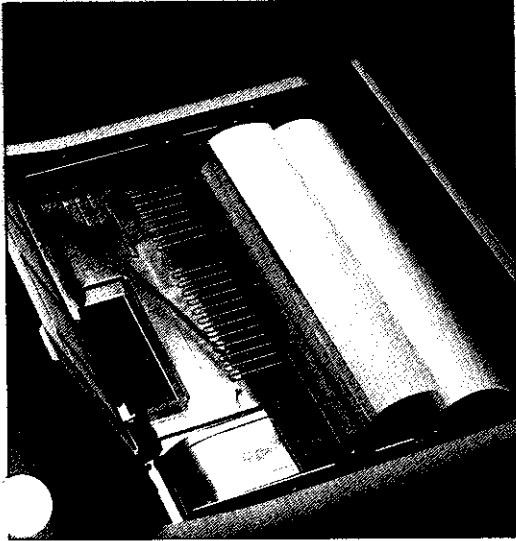
surface. The HP 150 is designed to make efficient use of your desk space. In less than the space occupied by an open looseleaf binder, Hewlett-Packard has packaged the system disc drives, processor, display, keyboard, and even a printer!
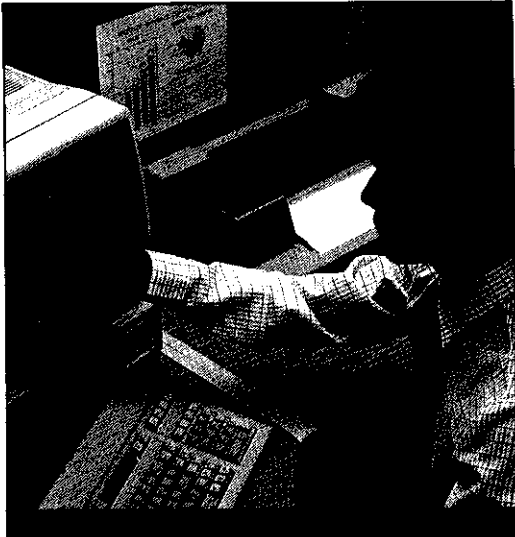
The HP 150 has the processing power and system features to make you immediately productive. The industry standard MS™-DOS operating system which is provided with the HP 150 offers access to a wide range of application programs to meet your needs. Included in the price of the system is a dual flexible disc drive to allow you to immediately load and execute your applications programs. The base configuration of the HP 150 includes 256Kb of main memory, enough main memory to be able to use most of the applications available on the market today. And, unlike other systems on the market, the base configuration of the HP 150 is equipped with full on-screen graphics support. With the HP 150, you can preview your slides prior to plotting them. All of these features and HP Touch are available on the HP 150 for one low system price.

Within a small business, systems are normally shared among several users with different needs. The HP 150, with its wide range of software applications, can perform multiple functions. The information management products available for the HP 150 allow you or your staff to keep track of information such as customer lists, employees, prospective customers, and delinquent accounts. Accounting and difficult tasks like generating financial statements can become simple matters with the accounting packages available for the HP 150.

If you are a professional within a large organization you also have the benefit of the wide range of applications available for the HP 150. But, no doubt, you will also want to access the information stored on the mainframe within your organization. The HP 150 offers immediate access to the HP 3000 systems and other timesharing systems through built-in terminal capabilities. The HP 150 is completely compatible with HP 2623A Graphics terminal applications which make it a powerful graphics workstation to an HP 3000. Furthermore, accessories are available to let the HP 150 access information on an HP 3000 or IBM host system to be processed locally.

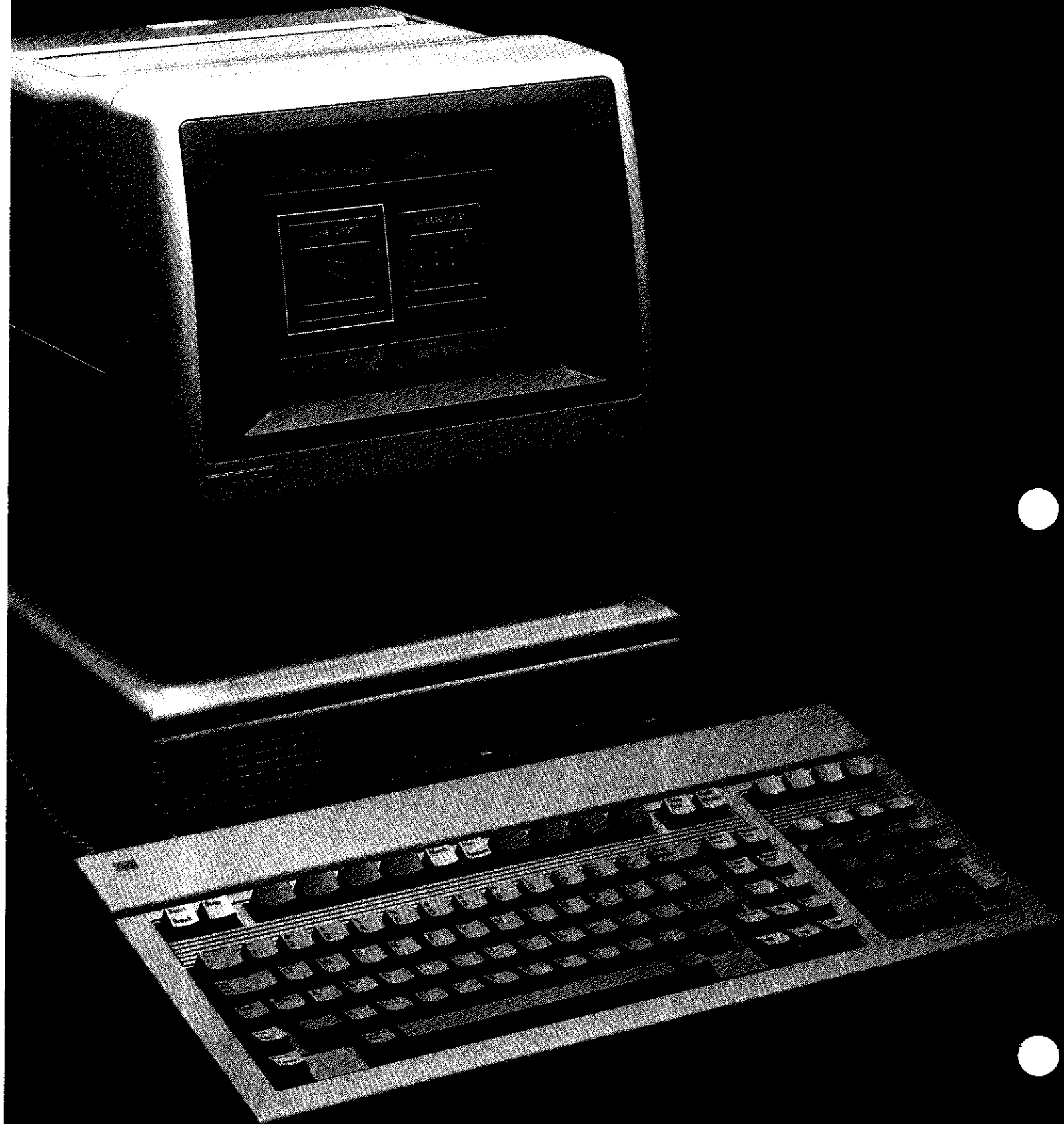Whatever your computational needs—The HP 150 puts the answer at your fingertips!

3

Table of Contents

.

Software Solutions

Series 100/VisiCalc

VisiCalc turns your HP 150 display screen into an electronic worksheet which you can use to develop forecasts, budgets, and financial plans which use rows and columns of numbers. You enter numbers, labels, and formulas just as you would on any worksheet. VisiCalc calculates the results, automatically. And if you decide to change a number, VisiCalc recalculates every number on the worksheet affected by the change. It is this ability to answer "what-if" questions that makes Series 100/VisiCalc ideal for analyzing information.

In addition, Series 100/VisiCalc provides advanced spreadsheet features such as extensive formatting and printing options which enhance your usage of the product. You can also graphically illustrate your VisiCalc information using Series 100/Graphics or include your worksheet in a report using Series 100/WordStar. And with the HP Touch screen, you can move around the worksheet or execute commands at the touch of a finger.

Applications
Series 100/VisiCalc is an important planning tool for most managers and professionals. You can use VisiCalc for:
- expense tracking and reporting
- sales forecasting
- capacity planning
- financial projections
- pricing and budgeting

Using the HP Touch screen, you touch the screen to enter information into any "cell." Other operations can be performed by touching labels on the bottom of the screen.

Operation
VisiCalc transforms the HP 150 display into rows and columns into which numbers, labels, and formulas can be directly entered. Using the HP Touch screen, you can move around your worksheet by just pointing on the screen at the location you want. Working on your spreadsheet is easier because operations are clearly labeled on the screen and can be executed by the touch of a finger. And an explanation of each command is immediately available on the display for quick reference without having to open a manual.

Experienced spreadsheet users will also be producing results quickly with Series 100/VisiCalc. Standard VisiCalc commands can be used to perform functions. Additional commands have been added to provide advanced spreadsheet performance such as individual column widths, protected cells, and accounting, scientific, and numeric cell formats.

Specifications

System Requirements
HP 150 computer system with 256K of memory (standard). Dual flexible disc drives or Winchester disc with a flexible disc backup.

Worksheet Size
254 rows by 254 columns of data. Workspace limited only by the amount of available system memory.

Data Interchange
Models are stored in VC (VisiCalc) format. Data can be transferred out in DIF™ (Data Interchange Format) or PRF (Print File) format for integration with other Series 100 applications.

Spreadsheet Commands
ATTRIBUTE—Set Attribute of a current cell to hide or protect
BLANK—Blanks current cell or column/row range of cells
CLEAR—Clears the entire worksheet
DELETE—Deletes the current row or column
EDIT—Edits the contents of the current cell
FORMAT—Sets Formats for individual cells. Multiple formats can be specified including: justification (left, right, center), numeric (percent, thousands separator, parentheses, accounting, integer, scientific notation, fixed decimal places), and currency ($, K$, M$)
GLOBAL—Sets Global formats for the entire worksheet, sets recalculation order and priority, specifies column widths
INSERT—Inserts a row or column
MOVE—Moves the current row or column
PRINT—Prints the worksheet or equations to a file or printer

Features	Benefits
Direct entry into cells; automatic recalculation of formulas.	Models can be created quickly, and results are updated interactively as variables change.
Backwards compatible with industry standard VisiCalc.	Data from existing models can be transferred to VisiCalc. Learning time for experienced users is decreased.
Screen labeled functions and HP Touch.	Series 100/VisiCalc is easy to learn and use.
Integrated on-line help.	Information about commands is available instantly, without having to reference a manual.
Memory configurations up to 640K supported.	Worksheet size is limited only by the available memory, and therefore large worksheets can be entered and stored.
Protected cells.	Formulas can be protected to prevent accidentally overwriting the model when values are entered. Tabbing between unprotected fields is useful to prompt users for data.
Extensive cell formats such as currency, accounting symbols, decimal, scientific, numeric and percent formats are specifiable.	The way in which data can be viewed is enhanced, and professional-looking reports can be generated.
Variable column widths.	More information can be viewed on the display. Enhanced report formatting.
Multiple windows supported.	Information from many parts of the worksheet can be viewed simultaneously on the display.
Print options and formats: ■ Automatic page breaks ■ Print configuration menu ■ Print formulas	Automatic page breaks prints large worksheets on any printer width. Print specifications for reports include: margin settings, titles, time and date stamping, and page numbering. Printing formulas for documentation purposes makes it easy to modify models.

REPLICATE—Replicates formulas
(absolute or relative), values, labels,
and formats

STORAGE—Storage command to save/
load files in VC or DIF format and to
exit

TITLE—Titles rows and columns

VERSION—Displays current version
number

WINDOW—Splits the worksheet
horizontally or vertically

Other Commands

FILE MANAGER—On-line access to file
manager utility

HELP—On-screen HELP facility

REPEAT LABEL—Repeats a label

TAB—Moves to next unprotected cell on
the worksheet

Print Specifications
- Printer page length
- Margin settings
- Time and date stamping
- Page numbers printed/suppressed

Arithmetic Operators
Sum (+), Minus (−), Multiply (*),
Divide (/), Exponential (^)

Built-in Functions
- Arithmetic Functions: Absolute
  Value, Average, Count, Error, Integer,
  Maximum Value, Minimum Value,
  Not Available, PI, Square Root, Sum
- Logical Functions: And, False, True,
  If, IsError, IsNotAvailable, Not, Or,
  True
- Search Functions: Choose, Lookup
- Financial Functions: Net Present
  Value
- Transcendental Functions: Tangent,
  ArcCosine, ArcSine, ArcTangent,
  Cosine, Exponentiate, Natural Log,
  Base 10 Log

Features	Benefits
Transfer data to other Series 100 applications.	Data can be transferred to Graphics to create charts or a model can be included in a WordStar document.
Local language versions.	Localized versions of VisiCalc make it easy to learn and remember commands in many countries, without learning another language. Models created by different nationalized versions of VisiCalc can be interchanged.

Series 100/Personal Card File

Personal Card File brings the computer revolution to your desktop rotary file. Now you can keep track of your customers, contacts, or any variety of information—simply and easily. And with HP Touch, the information you need is truly at your fingertips.

Applications
Personal Card File can handle a variety of information management tasks. It can easily maintain mailing lists, order entries, inventories, or customer records. And the full range of applications is limited only by the imaginations of our customers.

Personal Card File provides you with power to search a particular file based on any piece or pieces of information stored within a card. For example, if you want to send a mailing to customers in Boston with purchases in excess of a million dollars, Personal Card File will search your entire customer file and provide a list of that group. And that information can be transferred into Series 100/WordStar for form letter generation.

Operation
With the help of HP Touch, Personal Card File is easy to operate. Simply touch the screen to roll through a file; touch it again to look at a card . . . It's that easy!

Developing new files is equally simple. You design a form by typing fields anywhere on a card, then touch the screen to store the form and begin entering information. With Personal Card File, anyone can become more productive quickly and easily.
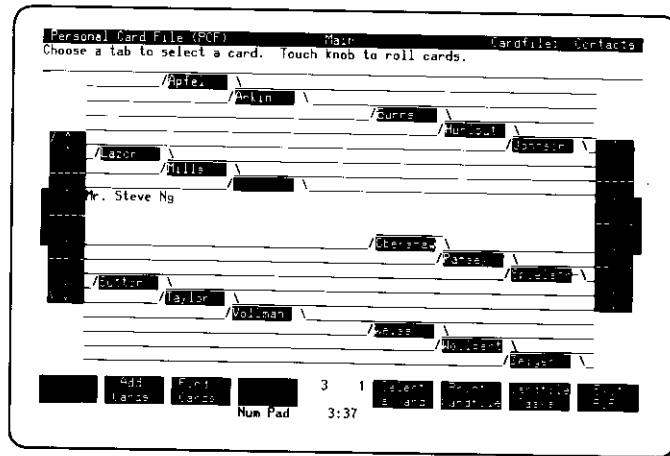
Touch the screen to roll the cards . . .
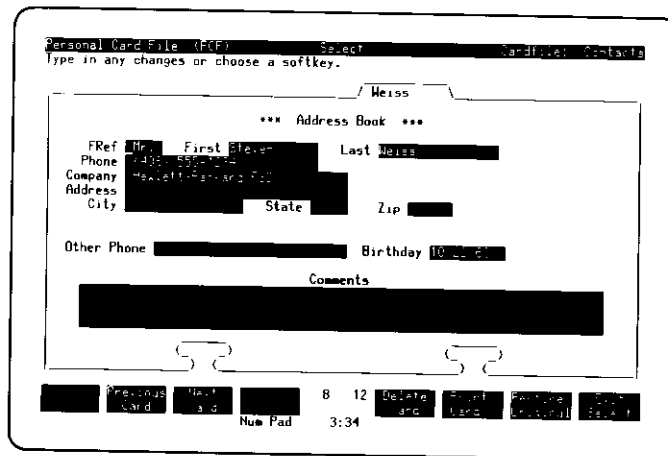
Touch it again to view an entire card!

Specifications

System Requirements
- HP 150 computer system with 256K of memory (standard).
- Dual flexible disc drives or a Winchester disc with a flexible disc backup.
- One or more of the following printers are supported:
  Rough draft: HP 82905B, HP 82906A, HP 2674A, HP 2932A, HP 2934A
  Letter quality: HP 2601A, HP 2602A

Number of Cards
550 Cards maximum per file

Card Size
1 to 1600 Characters (one screen)

Fields
1 to 252 fields per card

Maximum field length
80 characters (one line)

File Management Operations
- Create Card File
  User defined forms. Automatic sorting on user defined key field.
- Add Cards
- Delete Cards
- Delete Card File
- Display Cards in Card File
  Scroll through file
  Touch tab to view specific card
  Jump to any portion of database
- Update Cards
- Find Cards
  Multiple field search
  Alpha wild card search
  Numeric searches on =, <, or >
- Transfer files to other applications
- Copy Card File
- Append Card Files

Features	Benefits
Extensive use of HP Touch.	Software operation is as easy as touching the screen.
Simple database operations: create cards, update, add and delete entries, automatic sorting on user defined keyword, find individual entries and print card file.	Files can be created, stored, updated, and analyzed quickly—without a complicated query language.
Card files can be searched by matching user defined criteria with information stored in individual cards.	Specific information from a variety of records can be retrieved quickly and easily.
Data transfer to other applications.	Upgrade to more sophisticated database capabilities. Send custom form letters.

Print Operations
- Print individual cards as they appear on screen to printer
- Print text files containing data from selected fields to either files or printers

Data Interchange
- Produce transfer files acceptable by MailMerge™ Condor, or back into Personal Card File
- ASCII text files suitable for direct printing or transfer into WordStar

Series 100/MemoMaker

With the help of MemoMaker, you can use your HP 150 computer to create and revise documents—without learning complicated word processing commands. MemoMaker was designed for people who don't need sophisticated word processing. It's perfect for writing letters or rough drafts, and since MemoMaker and WordStar files are compatible, documents produced in either program can be easily edited in the other.

Applications

MemoMaker can increase productivity by making the most common office documents easy to create:
- Professional correspondence
- Inter-office memos
- Rough drafts

And even those with no typing or word processing experience can immediately take advantage of its capabilities.

Operation

MemoMaker works to make you more productive. It has many features designed especially for the first-time user and for those who do not require sophisticated editing. By using HP Touch, you can easily move the cursor from one point to another, and you can also move or erase any number of words or sentences. There are also keys such as INSERT LINE or DELETE CHARACTER built right into the
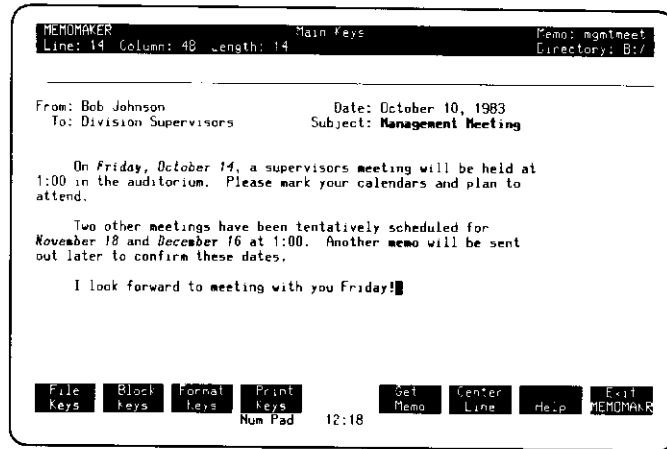
Using HP Touch you can move the cursor anywhere on the screen.

keyboard. So you can carry out the major editing functions without memorizing a single command.

With MemoMaker, what you see on the screen is what you get on paper. It's easy to enhance text with underline and **bold** print capabilities, and MemoMaker can center your text automatically. It even has an automatic carriage return, so you can type continuously without ever touching the carriage return key.

And since MemoMaker files are compatible with WordStar files, you can edit or add to WordStar texts without learning any special commands.

Specifications

System Requirements
- HP 150 computer system with 256K of memory (standard).
- Dual flexible disc drives or a Winchester disc with a flexible disc backup.
- One or more of the following printers is supported:
  Rough draft: HP 82905B, HP 82906A, HP 2674A, HP 2932A, HP 2934A
  Letter quality: HP 2601A, HP 2602A

Document Formats

MemoMaker files are stored in WordStar document format. Formatting specifications such as margin and tab settings can be saved in another file and loaded in addition to a document into MemoMaker.

Editing Commands

- Insert characters
- Insert line
- Delete character
- Delete line
- Clear to the end of a line
- Clear display
- Delete a block of text and store into buffer
- Store block into buffer
- Copy contents of buffer

Formatting and Printing Commands

- Center line
- Reformat block
- Enhance block: underline, bold, or erase enhancement
- Justification between margins
- Set tab
- Clear tab
- Set left and right margins
- Temporarily suspend margin settings (margin release)
- Save format information
- User defined or automatic page breaks
- Single or double-spaced text

Additional Commands

- Get document
- Save document
- Exit MemoMaker
- Help

Features	Benefits
Dedicated text editing keys and on-screen HP Touch commands.	Easy to use. Commands do not need to memorized.
Block moves and deletes.	Blocks of text can be quickly modified in addition to individual lines and characters.
Underline and **bold** enhancements.	Major points can be emphasized. Documents have a more professional appearance.
Full on-screen editing with automatic word wrap.	Text can be edited directly on-screen, and time is saved since the cursor is automatically repositioned to the beginning of the next line.
On-line help.	Information about commands is available instantly, without having to reference a manual.
What you see on the screen is what you get on paper.	Saves time in editing documents. High-quality results can be obtained the first time.
Format information can be stored in addition to the document.	Margin and tab settings do not have to be respecified when a document is retrieved for editing.
Document formats are compatible with Series 100/WordStar.	Rough drafts can be created using MemoMaker and transferred to WordStar to incorporate more advanced features. Documents created with WordStar can be edited with MemoMaker.

Series 100/WordStar

Letters, mailings, reports, even books are quicker and easier to create when you use the Series 100/WordStar family of products with the HP 150. And thanks to HP Touch, you don't need to learn special commands. HP Touch makes Series 100/WordStar the easiest-to-learn, easiest-to-use WordStar in the industry!

With a few points of the finger, you can copy a paragraph from a report, put it inside a letter, and then have it automatically addressed to anyone or everyone on your mailing list! And SpellStar will check for spelling errors too.

Applications

Anyone who writes articles, reports or sends out mailings will profit from WordStar's advanced editing and formatting capabilties. With WordStar, MailMerge, and SpellStar™ you can:

- Create "boiler plates" for customized form letters
- Check your spelling against a 20,000-word dictionary
- Get professional-quality reports with page numbers and headings inserted automatically

Operation

WordStar commands are performed by touching on-screen labeled functions. One touch can execute commands that would require confusing control codes on other personal computers. For example, to reformat a paragraph, just touch the "reform paragraph" label.

Editing
Editing is quick with Series 100/ WordStar. The Series 100 keyboard has dedicated keys for such common commands as "insert line," "delete line," "clear line," and "insert character," to name a few. And scrolling to the sentence you want to edit is effortless
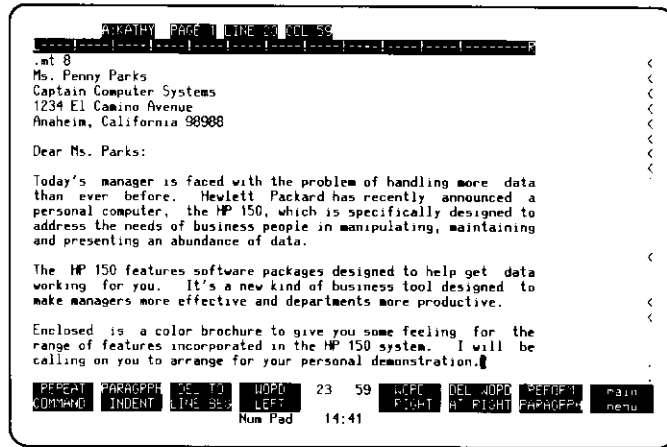
With Series 100/WordStar you get the fastest, easiest-to-use WordStar ever!

with the "scrolling" and "next page/ previous page" keys.

Using WordStar, even blocks of text may be moved and repositioned easily. With the Search and Replace routine, a specific phrase can be changed throughout the document with one command. The HP Touch commands "copy a file" and "read a file" allow information to be moved between documents and other HP 150 applications.

Text Formatting
WordStar allows you to see on the display what you'll get on the page. Page breaks are automatically displayed on your screen, as are centering and right justification. Standard formats can be changed either with HP Touch commands or special commands entered into your document.

Series 100/MailMerge
Series 100/MailMerge allows you to merge mailing lists into form letters and print mailing labels. You can create boiler plate letters by reading in paragraphs from multiple files.

Series 100/SpellStar
Series 100/SpellStar will check your documents for misspelled words and typos. It contains a dictionary of the 20,000 most commonly used words, based on the American Heritage Dictionaries. Also, you can add your special words and spellings to the main dictionary or create any number of custom dictionaries.

Specifications

System Requirements
- HP 150 computer system with 256K of memory (standard)
- Dual flexible disc drives or a Winchester disc with a flexible disc for backup
- One or more of the following printers is supported:
  Rough draft: HP 82905B, HP 82906A, HP 2674A, HP 2932A, HP 2934A
  Letter quality: HP 2601A, HP 2602A
  Sheet feeder: HP 26010D (on HP 2601A only)

Note: SpellStar and MailMerge must be purchased separately.

Text Formatting Features
- Right/left justify
- Centering
- Underline
- Bold print
- Shadow print
- Combinations of enhancements
- Proportional spacing
- Headers, footers
- Page break display while entering text
- Auto page numbering
- Subscripts, superscripts
- Overprint

Editing Features
- Auto word wraparound
- Insert—Characters
    —Any amount of text
- Delete—Characters
    —Any amount of text
- Optional control sequence commands
- Block move/copy
- Column move/copy
- Search and Replace
- Margins—Right and left
    —Default
- Auto reformatting
- Decimal tab
- Hyphenation—Automatic
    —Manual
- Vertical scrolling
- Full cursor control (arrows)
- Skip to end of line/page
- Next page/previous page
- Roll up/roll down
- Help facility

File Management
- Loading/saving/deleting
- Access to disc directory while editing
- Renaming
- Auto backup
- Merging with other WP files
- Auto long document management
- Merging with other application files

| Features	Benefits
On-screen labeled functions keys and HP Touch user interface.	On-screen labeled function keys and HP Touch make Series 100/WordStar the easiest-to-use WordStar in the industry.
Easy integration with other Series 100 applications.	VisiCalc spreadsheets, Condor reports, and other document files can be incorporated with WordStar reports, so information does not have to be retyped.
Powerful editing features: auto word wrap, block move and copy, search and replace.	Easy to make revisions: characters, words, and paragraphs may be deleted, replaced, changed, or moved with a few simple HP Touch commands.
Advanced text formatting and print features: automatic page breaks, centering, right justification, print enhancements.	Professional-quality hardcopy documents can be produced; "what you see is what you get," so printed output is right the first time.
Boiler plate letters.	Create customized form letters by combining standard paragraphs.
A family of Word Processing products: ■ Series 100/MailMerge	Names from mailing lists may be automatically inserted in the body of letters. Database information may also be merged directly into letters and documents.
■ Series 100/SpellStar	SpellStar, a spelling verifier for WordStar, checks for spelling errors and corrects or lists errors automatically. The 20,000-word dictionary allows you to add your own list of words.

Series 100/MailMerge
- Mailing lists
- Chain (batch) printing
- Multiple copy printing
- Nested printing
- Merge with form letter
- Boilerplate letters

Series 100/SpellStar
- Modifiable spelling dictionary
- Correction
- Auto prompting only
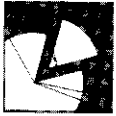
Series 100/Graphics
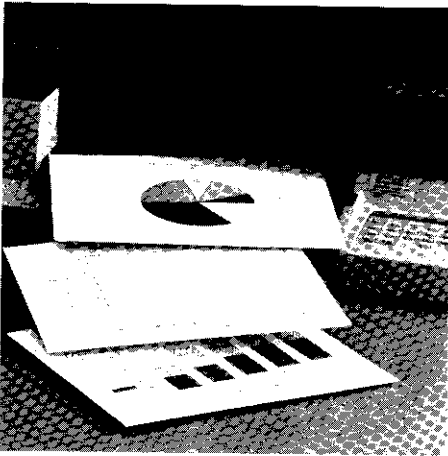
Pictures speak louder than words or numbers. That's why we developed Series 100/Graphics. Now, you can create your own professional-quality graphs—simply and inexpensively. Graphics helps you enliven reports and presentations with colorful pie and bar charts, line graphs, and scattergrams plotted on paper or slides. It can easily illustrate information from a VisiCalc spreadsheet or a Condor 20 database, in addition to plotting text for presentations. And with HP Touch, you can change your graphic output with the touch of a finger.

Operation
With menus to guide you, Graphics is simple to use. Charts can be previewed on screen before plotting, and making changes is as easy as touching the screen. Information from existing applications must only be loaded once to create graphs of many different shapes and patterns. And Graphics also creates eye catching texts with a variety of character sizes and fonts. Select a pen color and write a word in red or blue for emphasis. You can even choose to draw lines anywhere on a page.

Features	Benefits
HP Touch and menu-driven human interface.	Graphs and text slides can be quickly and easily prepared by nontechnical users.
On-screen preview.	Charts can be viewed and modified before they are plotted, saving time needed to make changes.
Common data menu for pie, bar, and line charts.	Data must only be entered once to be presented in a variety of charts.
Data created using other applications can be transferred into Graphics.	Graphics enhances the way data is viewed. Numbers from other applications can be read directly into the data menu, eliminating time needed to retype data.
Text slides can be produced using a variety of character fonts and sizes.	Presentation slides and professional hardcopy can be quickly and inexpensively created.
Local language versions available.	Graphs and text charts can be created in a variety of languages.
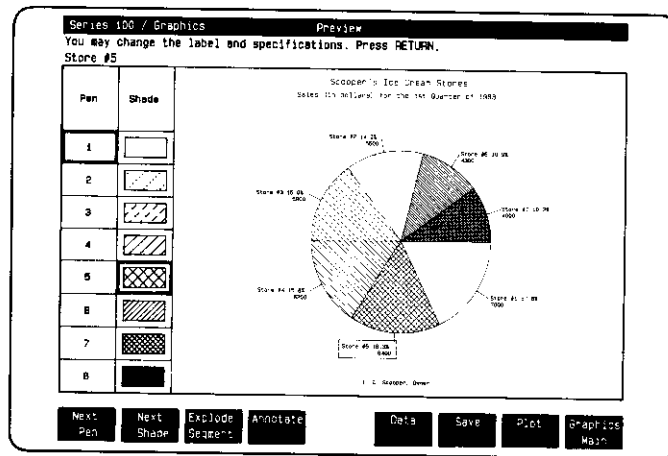
Select pen, type, shade and other options by simply touching the screen.

Specifications

System Requirements

- HP 150 computer system with 256K of memory (standard).
- Dual flexible disc drives or a Winchester disc with a flexible disc backup.
- The following printers can be used to print raster graphics from the display: HP 82906A, HP 2674A, HP 2932A, HP 2934A.
- The following HP plotters are supported: HP 7470A, HP 7475A.

Data Interchange

Data in DIF (Data Interchange Format) and PRF (Print File) formats can be transferred into Graphics. Applications which create these files include Series 100/VisiCalc and Series 100/Condor database system.

Chart Specifications

Bar Charts

- Horizontal or vertical bar orientation
- Stacked or clustered grouping for multiple data types
- Up to 16 groups of 5 bars or 24 groups of 3 bars
- Automatic period labels for years, quarters, months, and days
- Eight shading patterns
- Ten text annotations of 60 characters each
- Free format line drawing: one line style, up to 30 lines
- Main title, subtitle, and footnotes up to 60 characters each
- Legends for bar segments up to 20 characters

Pie Charts

- Up to 16 pie segments
- Optional sorting of pie segments
- Percentages and values associated with segments
- Exploded segments can be specified
- Eight shading patterns
- Ten text annotations of 60 characters each
- Free format line drawing: one line style, up to 30 lines
- Main titles and subtitles up to 60 characters each. X and Y axis titles = 40 characters

17
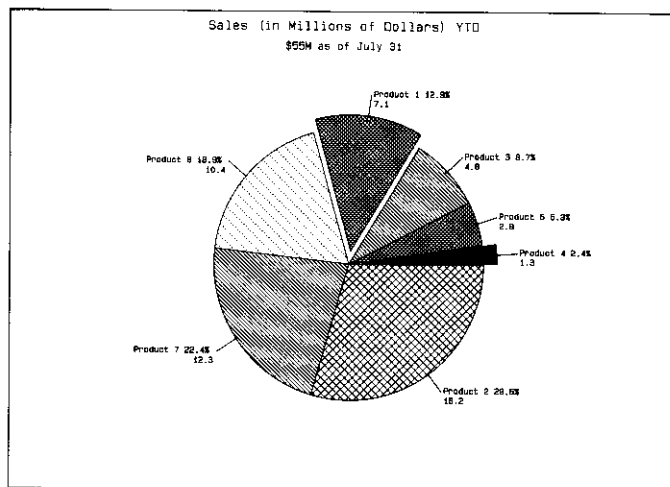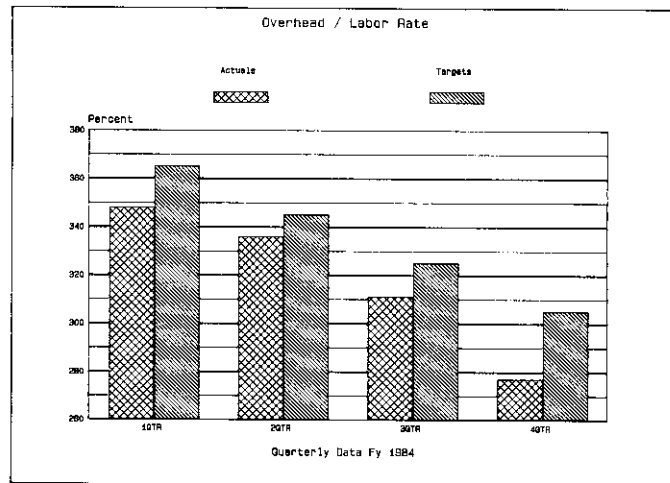
- Segment labels up to 20 characters

Line Charts
- Line charts and scattergrams
- Up to 5 lines can be plotted with a maximum of 64 data points per line
- Automatic period labels for years, quarters, months, and days
- Eight line styles/markers (scattergram)
- Ten text annotations of 60 characters each
- Free format line drawing: one line style, up to 30 lines
- Main titles, subtitles, and footnotes up to 60 characters each
- Legends for lines are 2 lines of 10 characters each

Text Charts
- Maximum of 64 lines of text
- Seventy characters per line
- Nine text fonts specifiable: Non-Proportional, Proportional, Bold, Roman, Triplex, Italic, Gothic, Script, Complex-Script
- Up to 8 text sizes
- Left, right, and center line justification
- Text attributes can be specified for individual words, lines, or multiple lines
- Free format line drawing: 8 line styles, up to 40 lines
- Footnotes up to 60 characters

Plot Specifications
- Plotting position (entire page, top half, bottom half, any quadrant, or user specifiable)
- Horizontal or vertical chart orientation
- Optional frame around chart
- Suppress plotting titles, axes, data, legends and grids
- Paper sizes supported: A, B, A3, A4
- Paper, transparency media, or plot to screen
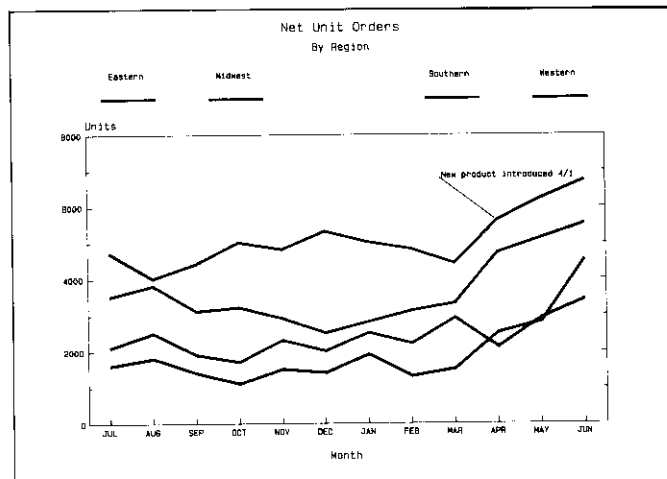
Financial Statistics

July FY83

Distribution

Rex Callaway
Scott Dey
David Grant
Janet Green
Nick Mathis
John Pendley
Connie Snyder
Dan Young

Company Confidential

Series 100/Condor

The Condor File and Database Management system lets you automate a wide range of information management needs. Everything from customer lists to accounting records can be put into Condor databases for easy access to timely information. Condor's easy-to-use features help you manage your information without programmer assistance. Create a database simply by typing a form on the screen! Or, use English-like commands to produce sorted lists and statistical summaries as well as complete reports with customized formats including headings, page breaks, subtotals, and totals. This ability to easily sort, analyze, and report information on demand makes database management a powerful new tool for busy business managers.

Condor becomes an even more powerful tool in combination with other Series 100 applications packages. Incorporate database reports and summaries into your memos with Series 100/WordStar. Plot full-color graphs and transparencies to present database information with Series 100/Graphics. Or, for customized mailings, pass a list of customers to WordStar and MailMerge to insert the client names and addresses into a form letter, and even print mailing labels.

Two versions of the Condor database system are offered to satisfy a wide range of filing needs. Condor 20-1 is a low-cost start-up system for users with simple database needs. Condor 20-3 is

Producing your own data management system is as easy as creating a form on the screen.

a powerful relational database system for users with more sophisticated database needs.

Applications

Condor database applications are virtually limitless. Anyone who keeps records on anything from checking accounts to inventory to customer names will find it a great time and money saver. Using Condor:

- Doctors can keep medical histories and bill patients.
- Production managers can keep an eye on inventory.
- Accountants can track financial transactions.
- A personnel department can maintain employee records.
- Sales managers can keep track of major customers, listed by sales volume, with monthly sales subtotals.

Operation

Simple Screen Forms.
Condor is a powerful, but easy-to-use data management system. Create a database by typing a form on your Series 100 screen. Then enter, update, and list data on the same form simply by filling in the blanks.

The Series 100 editing keys make creating a database as easy as typing your form on the screen. User choices are presented in plain English, through on-screen labeled function keys, eliminating awkward control key sequences. In addition, HP Touch can be used to move around on the screen.

19

Help Menus.

Once a database has been set up, you can construct a complete transaction processing application. Using English-like commands and help menus, you can make it easy for a user to activate a predefined sequence of commands. For example, clerical personnel can use databases for daily operations such as printing a report or updating employee records simply by selecting an option listed on a customized help screen.

Relational Capabilities.

For more powerful database needs, Condor has English-like commands that allow you to look at your information in new ways. Condor 20-3 offers full relational database power by allowing you to combine information from multiple databases. Relate parts usage to vendors for better purchasing control, or relate customer inquiries to shipment data to identify repeat orders.

Information Retrieval and Reports.

Information from a database can be quickly and easily summarized in useful reports, either on the screen or on paper. Condor 20-1 can provide simple row and column reports on preprinted business forms. With Condor 20-3, you can easily design and revise more advanced reports. These can include the separation of the report into sections based on changes in any data item value. The reports can be designed to print subtotals and totals at the end of any section. It can then skip to the top of the page for the start of a new section and print a section heading.

Features	Benefits
Simple screen forms.	Quickly and easily create a database and then enter, update, and list using the same form. You can produce results the first day you use Condor 20.
Reporting options include subtotals, totals, page breaks, headings, summary statistics, and data formatting.	Professional-quality reports can be created which display detail and summary information in a customzied format.
List management.	Easily create and maintain client or vendor lists. These can then be sent to WordStar and MailMerge for generation of form letters and mailing labels.
Help screens provide menu selection for customized applications.	End users can use databases for daily applications with minimal training.
Relational database functions let you combine information from two databases.	Give you more information from your data.
Indexing.	Locate information rapidly or produce sorted reports without having to re-sort the database each time a report is produced. Also prevent duplicate items in your database, if desired.
Data transfer to other Series 100 applications.	Incorporate database reports into memos or reports, plot full-color graphs and charts of your data, or exchange data with a host computer. Provides a complete information processing solution.
Local language versions.	Users in many countries can use Condor 20 without having to learn another language.

Specifications

System Requirements
- HP 150 computer with 256K of memory (standard.)
- Dual flexible disc or Winchester disc with a flexible disc backup.

Database Type
Relational

Command Language
English commands with the ability to save a sequence of commands in a command file

Number of Records
32,767 records maximum per file (usually limited by storage device)

Record Size
2 to 1,024 bytes per record

Fields
1 to 127 fields per record

A or An Data
1 to 127 bytes per field

Date or J Data
3 bytes per field

N or $ Data
1 to 10 digits (stored as a 1 to 4-byte integer, two decimal places maximum)

Condor Commands

Database Creation and Maintenance
DEFINE—Create or describe a new database
DESTROY—Eliminate a database or file
FORMAT—Create or revise a form
REORG—Reorganize the structure of a database

Information Input and Update
APPEND—Attach records of one database to another
*CHANGE—Change data item values in a database
*COMBINE—Attach records of two databases
*DELETE—Delete records of a database
EMPTY—Eliminate all data in a database
ENTER—Insert new data into a database
POST—Update data values in one database with those from another
UPDATE—Change data item values

Information
Processing and Report Writing
COMPARE—Compare data item values in two databases
COMPUTE—Compute data item values
*DISPLAY—View selected records of a database
*INDEX—Create quick access path by specified data item names
*JOIN—Attach data items of two databases
LIST—View records of a database
PRINT—Print records of a database
*PROJECT—Create a database from selected items of another database
*REPORT—Create, modify, or print a report
SELECT—Select records meeting specified conditions
SORT—Sort database records
STAX—View or print statistics of data item values
TABULATE—Summarize and print specified data items
TITLE—Print report headings

Operation Aids
ABORT—Stops a RUN command
HELP—Assist operator in selecting procedures
RESTART—Continue an interrupted procedure
RUN—Start processing a command procedure

Interfaces
READ—Read an ASCII file into an existing database
WRITE—Write from a database to an ASCII sequential file

Utilities
COPY—Copy a database or file
DATE—View or enter date
DIC—View entries in the data dictionary
DIR—View the list of files
EDIT—Create and edit command files
LOG—Log a new disc in the computer
RENAME—Change the name of a database or file
SAVE—Save a RESULT database
SET—Set operating parameters
SYSTEM—Exit from DBMS

*These commands are included only in Condor 20-3.

Series 100 / DSN/Link

Talking to other computers is made simple when you use DSN/Link. This communications package for the HP 150 provides easy transfer of information from other computer systems, including commercial time-sharing services like The Source, the Dow Jones News/ Retrieval service, and Compuserve. Information stored on your HP 150 can also be transferred back to another computer to update a database or to share with other users. You can even "converse" with another HP 150 using DSN/Link. And the HP Touch screen provides all this at the touch of a finger. There's a whole world of information available to you and no limit to what you and your HP 150 can do with it!

Applications
Your personal productivity increases when you automate the way you send, receive, and use information. Applications using DSN/Link include:

Order Processing.
Transfer order information from your local sales office to your company's central computer for processing at a later time.

Electronic Mail.
Send information stored on your HP 150 by using an electronic mail system. Electronic mail provides timely response to business correspondences.

Information Transfer.
Obtain sales or expense reports immediately from your corporate database, eliminating time-consuming mail delays. Or access the latest business news using an information service like The Source.

Resource Sharing.
Store commonly used Series 100/ VisiCalc models on a host system for use by several users.

Series 100 Communications.
Transfer files, programs, and messages between two Series 100 systems.
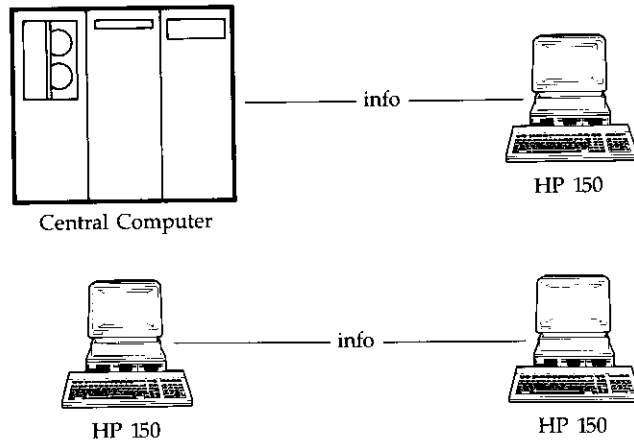
*DSN/Link transfers information
between the HP 150 and another computer.*

*Using DSN/Link, you transfer files
by simply entering information in the form
and by touching the screen labels.*

Operation

DSN/Link is a versatile communcations package. Information can be transferred between the HP 150 and the HP 3000, another HP 150, or other computer systems. Information transferred to the HP 150 can be viewed on the screen, stored on disc, or printed locally on a printer. A special command language is provided for users to customize their interface to information services and other host computer applications. And using the HP Touch screen, commands can be executed at the touch of a finger.

**Communicating Between Your
HP 150 and an HP 3000 Computer**
DSN/Link handles the communications with an HP 3000 automatically. You name the file you want to send or receive and initiate the file transfer by simply touching the screen. Error checking ensures the integrity of the information you transfer. And information generated by certain HP 3000 applications can be directly used by HP 150 applications such as VisiCalc or Graphics.

**Communicating Between Your
HP 150 and Other Computer Systems**
Using command files, your HP 150 can be customized to make it easy to talk with other computer systems. Store complicated log-on procedures and repetitive commands in a file only once, eliminating the need to type them each time.

**Communicating Between Your
HP 150 and Another HP 150**
A special program (DSN/Monitor) is provided with DSN/Link to allow two HP 150 computer users to interactively type messages to each other. Converse with other HP 150 users over long distances using DSN/Link and a modem. Even transfer files containing programs, data, and other information you wish to share.

Features	Benefits
Block mode error checking with automatic data retransmission if an error is detected.	Data is more likely to be transmitted without errors. Note: This feature requires a special host program resident on the HP 3000, DSN/LINK 100, or a user-developed application for transferring data with error checking.
Series 100 to Series 100 file transfers.	Users with an HP 120, 125, and 150 can transfer information without a host computer connection.
Multiple data types (ASCII or BINARY) can be transferred.	Information containing special control characters can be transmitted correctly. HEX mode must be used in X.25 networks.
Data transmission can occur at a specific time, with unattended operation.	Files can be automatically transmitted and received when transmission costs are low.
Automatic log on.	Time is saved to log on and initiate sessions on a host computer.
Customized interfaces to data services and host applications are definable.	Special command files can be defined to initiate sessions, save time, and make a central computer easy to use.
HP 3000 "self describing" data files are automatically converted to DIF format when transferred. These can then be used by Series 100/VisiCalc and Series 100/Graphics.	Information stored on an HP 3000 can be transferred and used by an HP 150 to plot charts and analyze data.
Programmatic chaining to Link from host and HP 150 applications.	An application can use Link to transfer data transparently to the user.
Automatic logging to disc and printer.	Logging directly to disc can reduce connect time. Transferring data files using logging is as easy as touching the screen.
On-screen HELP facility.	Information which describes commands can be accessed instantaneously without using a manual.
User definable host terminator characters, handshaking protocols. Half and full-duplex supported.	Data communications protocols for many host computers can be specified.

Specifications

System Requirements
- HP 150 computer system with 256K of memory (standard)
- Dual flexible disc drives or a Winchester with a floppy flexible disc backup
- The following printers are supported: HP 82905B, HP 82906B, HP 2674A, HP 2601A, HP 2602A, HP 2932A, and HP 2934A.

DSN/Link Commands

Transfer to Host
Transfer information to a host computer or another Series 100 computer.

Transfer from Host
Transfer information from a host computer or another Series 100 computer.

Command
Create or execute a user defined command file (see section below on command file instructions).

Logging
Transmit information received from another computer to the selected print devices and/or file.

File Manager
Transfer to file manager program to assist in selecting files for transfer.

DSN/Monitor Commands

Logging
Logs all commands executed by Monitor to a file or selected printers.

Set a Password
Must be entered on the DSN/Link workstation to transmit files.

Set a Message File
News bulletin. Send a Message to the Display of the DSN/Link Workstation.

Commands Used with DSN/Monitor
DIR—Examines a disc directory on the Monitor workstation
TYPE—List a Monitor file on the screen
NEWS—Display a news bulletin from the Monitor workstation
MSG—Sends a message to the display of the Monitor workstation

DSN/Link Special Command Language

The DSN/Link special command language uses a parameter syntax that is flexible enough to allow use of control characters and symbolic parameters. The commands provided allow the user to program batch access to DSN/Link capabilities, perform limited data communications configuration modifications, and present an enhanced, softkey-driven interface to other computer systems. The following is a list of the commands:

&ASSIGN—Assign the given variable to the value 'text'
&BLOCKSIZE—Redefine the size of data blocks transmitted
&CHAIN—Combine two command files
&CHARDELAY—Set the delay between each character transmission
&DISPLAY—Enable the screen as a display device
&DSCOPY—Copy a file between HP 150 and host computer
&DUPLEX—Set the duplex to echo keyboard inputs
&ELSE, &END IF—Performs an operation within an &IF command
&EXIT—Exit DSN/Link
&FASTKEY—Label a specified softkey
&HEX—Translate data into HEX format
&HOSTCONTROL—Define a special control character
&HOSTCOPY—Redefine a command that initiates a host transfer
&HP 3000—Disable the DC1 character in the block checking protocol
&IF—Compares two alpha strings and performs desired operation.
&INPUT—Specify a given value for a parameter
&KEY—Specify a command file for a given softkey
&LOGFILE—Designate a file for logging
&MSG—Display a message to the screen
&NOLOG—Cancel logging of these characters to the screen
&OFFKEY—Turn off user-defined keys
&PAUSE—Delay a set time before issuing next command
&SEND—Send text to host
&SENDFILE—Send the contents of a file to the host
&TAB—Define the number of characters for tab expansion
&TERMINATOR—Redefine the host terminator character
&TIMEOUT—Redefine the retransmission timeout period
&!—Insert a comment into a command file

24

Series 100/BASIC

Series 100/BASIC is a simple, easy-to-learn programming language. The beginning programmer will appreciate the Series 100/BASIC Interpreter which checks each program for errors. The advanced programmer will value the flexibility offered by its large set of commands.

Applications
With BASIC you can create your own custom software for the HP 150 to create applications specific to your business. Powerful INPUT/OUTPUT statements let you manipulate large amounts of data, while the PRINT USING command can be used to produce professional-quality reports. Using the arithmetic functions of Series 100/BASIC you can write your own programs for applications like:
- Bond pricing
- Sales forecasting

Other business applications you can program include:
- Lease/buy decisions
- Internal rate of return
- Home budgeting

Operation
Series 100/BASIC is a powerful but easy-to-use programming language. The Series 100/BASIC Interpreter allows you to write, correct, and execute a program in a friendly environment. The Interpreter can even number the program lines for you, automatically.

Features	Benefits
Four variable types: integer, string, single precision floating point, and double precision floating point.	Allows use of the right variable for the right job to produce efficient code.
Trace facilities.	Makes debugging a snap!
Extensive program editing features using the "Modify" mode of the HP 150.	Provides a friendly and productive programming environment.
Automatic line generation.	BASIC keeps track of line numbering, making the programmer more productive.
Matrices with up to 255 dimensions.	Allows the user to easily and efficiently manipulate large amounts of data.
Full PRINT USING commands for formatted output (includes asterisk fill, floating dollar sign, scientific notation, trailing sign, and comma insertion.)	Allows the user to easily create professional-looking reports.

Once the program has been created, the simple, yet powerful, debugging features of the Series 100/BASIC Interpreter allow you to quickly solve your problems. The Series 100/BASIC Interpreter will immediately point out syntax errors within your program when you first execute it. Once those syntax errors are resolved, commands like TRON (Trace on) and TROFF (Trace off) can help you pinpoint any additional errors.

The Series 100/BASIC Interpreter allows you to use the cursor control keys of the HP 150 to edit your program. Getting rid of those syntax errors is a snap! After your program has been written and is fully debugged it can be saved in a disc file for later use.

BASIC
Commands and Statements

AUTO	LLIST
CALL	LOAD
CHAIN	MERGE
CLEAR	MID$
COMMON	NEW
CONT	ON/ERROR/GOTO
CSRLIN	ON/GOSUB
DATE$	ON/GOTO
DEFINT/SGN/	OPTION BASE
DBL/STR	OUT
DEF FN	POKE
DEF USR	RANDOMIZE
DELETE	REM
DIM	RENUM
EDIT	RESET
END	RESUME
ERASE	RUN
ERROR	SAVE
FILES	STOP
FOR/NEXT	SWAP
GOSUB/RETURN	SYSTEM
GOTO	TIME$
IF/GOTO/ELSE	TROFF
IF/THEN/ELSE	TRON
INP	WAIT
LET	WHILE/END
LIST	

Input/Output
Statements and Functions

CLOSE	MKD$
CVI	MKI$
CVD	MKS$
CVS	NAME
DATA	NULL
EOF	OPEN
FIELD	POS
GET	PRINT
INKEY$	PRINT USING
INPUT	PRINT#
INPUT#	PRINT# USING
INPUT$	PUT
KILL	READ
LINE INPUT	RESTORE
LINE INPUT#	RSET
LOC	SPC
LOF	TAB
LPOS	WIDTH
LPRINT	WRITE
LPRINT USING	WRITE#
LSET	

Arithmetic Functions

ABS	INT
ATN	LOG
CDBL	RND
CINT	SGN
COS	SIN
CSNG	SQR
EXP	TAN
FIX	

String Functions

ASC	OCT$
CHR$	RIGHT$
HEX$	SPACE$
INSTR	STR$
LEFT$	STRING$
LEN	VAL
MID$	

Special Functions

ERL	PEEK
ERR	USR
FRE	VARPTR

Operators

|	
+	XOR
–	NOT
*	EQV
/	MOD
∧	IMP
&	AND
=	OR
< >	
> =	
< =	
<	
>	

Third Party Software

The HP 150's industry-standard operating system, MS-DOS, gives you access to a wide range of software from independent software vendors. From productivity software like spreadsheets and databases to more specialized products like statistics and accounting applications, there is a great deal of software available now on the HP 150. In addition, HP has a continuing program to make sure that there is much more to come.

Many popular software packages are available and can be ordered directly from HP. Other packages configured for the HP 150 and recorded in HP disc format can be purchased directly from the vendor. The *HP 150 Software Buying Guide* lists and describes the software which is currently available from HP for the HP 150. It also includes a number of products qualified for use with the system which are available directly from independent software companies. Since software packages are continually being added to the product line, be sure to look for new editions of the *HP 150 Software Buying Guide* to keep your list of HP 150 software current.

HP's worldwide network of dealers and support centers provide—at no charge— professional telephone assistance to supplement the manuals for all software which is distributed by HP—whether designed by HP or an independent software supplier.

Software companies which sell their products for the HP 150 directly to you will provide support services for those products. If you have a question about who supports a particular product, check the product's listing in the *HP 150 Software Buying Guide* under "Customer Support."

Hardware Solutions
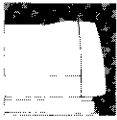
HP 150 Personal Office Computer System
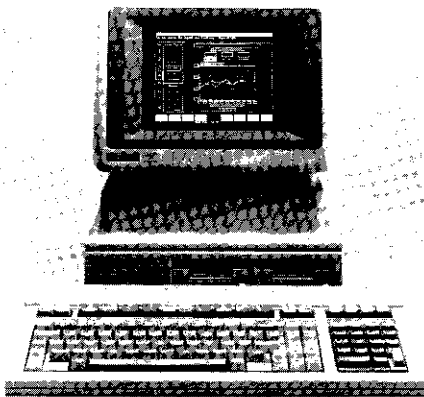
The HP 150 Personal Office Computer gives you power and memory space for a complete business solution in a small, efficient package.

The entire system (display, processor, keyboard, flexible and Winchester disc drives, and integral thermal printer) occupies only 2.1 square feet of space, about the same "footprint" as an open looseleaf notebook. This is by far the smallest "footprint" of any full-function personal computer.

An outstanding set of ease-of-use features are standard with the system. The HP Touch touch-sensitive display helps you to learn and use the system quickly. It allows you to use your most natural pointing device—your finger—to run your computer, reducing the need for typing. The Personal Applications Manager (P.A.M.) eliminates the "computerese" associated with many computer systems. Working closely with HP Touch, the HP 150 delivers simplicity never achieved by any other computer by translating your screen touches and simple keystrokes to commands that the HP 150 understands.

Features	Benefits
System Architecture	
Intel 8088 microprocessor (operating at 8Mz).	Powerful processing power.
MS-DOS 2.0 operating system.	Industry standard offering wide range of third-party software.
Built-in HP Touch.	Immediate access to a powerful user interface.
256K bytes of main memory standard; 640K bytes maximum.	Enough memory for any application.
Battery backup for system configuration and real time clock.	Set them once and stop worrying.
Display	
Built-in high-resolution on-screen graphics display (512 × 390).	Immediate access to a wide range of graphics software.
High-resolution character display. 9 × 14 dot character cells. Upper and lower case.	High-quality characters make the display easy to read.
Display enhancements.	Various ways to highlight important information on the display.
Up to two pages of 24 lines × 80 character display memory.	Can edit two screen pages without losing the text off the screen.
Keyboard	
Detachable, typewriter style.	Flexible positioning of keyboard.
Special editing function keys.	Easy display editing.
Numeric/Graphics pad.	Easy numeric entry and graphics control.
Eight screen-labeled softkeys.	Screen labeling of commands for easy-to-use software.
Communications/Peripherals	
Two RS-232 communications ports and one HP-IB port.	No additional cost for these common computer, disc drive, printer, and plotter interfaces.
Full block mode graphics terminal support.	Powerful graphics workstation to an HP 3000.

Computer Features

System Architecture

The HP Touch touch-sensitive display is standard on the HP 150. This is one of the most advanced interfaces on a personal computer today and probably one of the easiest to learn. If you can point, you can use the HP 150. It's as simple as that. And with P.A.M. (Personal Applications Manager), the HP 150 becomes even easier to use. Actions such as running programs, formatting discs, examining files, and many more can be performed without even touching the keyboard! You don't need any extra desk space, either, to use HP Touch. Powerful, simple, and natural.

Included in the base price of the HP 150 is a high quality monitor, 256K RAM, two RS-232 ports, and HP-IB (IEEE-488) port. In addition, the HP 150 has two accessory slots on the back of the system that allow you to add memory and data communications accessories to the system without requiring the assistance of an HP representative or dealer. This flexibility means that you can start with a minimum configuration on the system and expand it as your needs grow—you don't have to plan for everything that you will need later. Installation of accessories is a simple operation requiring an average of 5 to 10 minutes and can be performed by even the least technical users.

MS-DOS Operating System
The HP 150 Personal Computer uses MS-DOS 2.0 from Microsoft Corporation as the standard operating system. MS-DOS 2.0 is a single-user, single-task operating system for which many third-party software packages have been developed. The operating system resides on disc, and upon initialization MS-DOS is loaded into the processor's main memory.

MS-DOS 2.0 has been enhanced by Hewlett-Packard. The unique features of the HP 150 system are fully supported by the operating system. The keyboard softkeys, the HP Touch user interface facility, and the graphics display can all be accessed through MS-DOS.

P.A.M. Personal Applications Manager
A unique enhancement by Hewlett-Packard to the MS-DOS 2.0 operating system has been the addition of an easy-to-understand facility to help you execute commands. P.A.M. provides simple and intuitive menus for the most frequently used system commands. Unlike other systems which require the user to learn the system "computerese," P.A.M. uses menus and HP Touch guides the user through commands. With P.A.M., starting applications, creating directories, deleting files, and listing existing files can be as easy as touching the screen. For more advanced users the standard MS-DOS command facility is also available.

Disc Applications
HP provides four disc applications, accessed through P.A.M. to simplify system operations. These disc applications are menu-driven and use HP Touch.

Disc Applications for Applications Management
- Install
  This disc application allows the name of application programs to be displayed or removed from the "Applications Selection" menu of P.A.M.
- Set Up P.A.M.
  The purpose of this disc application is to let you arrange, to your taste, the names of application programs on the "Applications Selection" menu. The name and order of appearance of applications can be changed with this disc application. If you have an application that is used very often, this disc application will allow you to automatically start that application when the system is first turned on.

Disc Applications for Disc/Data Management
- Format
  This utility will initialize and format disc media for the HP 150. This utility also allows the user to copy MS-DOS and P.A.M. onto the newly formatted media.
- Copy/Backup
  With this utility the user can copy one or several files onto another disc. The format of the copied data can have two forms: standard MS-DOS format allows data sharing or a convenient back-up; a "compressed" format provides a media efficient archiving back-up. This utility also provides the means to transfer data among HP 120/125 and HP 150 systems.

Display
The HP 150 can display both alphanumeric and graphics on the 9" diagonal screen. The alphanumeric screen displays 1920 characters in a 24 line by 80 column format. The 25th and 26th lines are used for the screen labeling of function keys (and all are automatically "touchable" through HP Touch), and the 27th line is for system status and error messages. The screen memory stores 2 pages of text, which allows off-screen storage display for scrolling vertically without interrupting the processor. High-resolution characters with true descenders for lower case letters are generated in a 9 × 14 dot cell. The standard display is green characters against a black background.

The graphics resolution is 512 dots horizontally by 390 dots vertically. This gives a 1:1 aspect ratio guaranteeing symmetry (that is, circles look like circles). This ratio is also provided on HP printers so that if you transfer a screen to one of the graphics printers, your circle will still look like a circle.

The numerical keypad also serves as the graphics keypad, allowing you to turn on and off the alpha display, turn on and off the graphics display, clear the graphics display, or transfer the graphics display to one of the HP graphics printers. It also displays the graphics cursor and allows it to be moved around the screen.

Keyboard Features
The HP 150 keyboard is designed to provide a familiar interface to the system and minimize training time.

The low-profile keyboard shape, the sculptured keycaps, and the dished "home" keys help to make the keyboard comfortable to use. The 107-key keyboard contains the full local editing keys such as cursor control keys, display scrolling keys, "next" and "prev" keys for scrolling by pages (as well as allowing application programs to use them for the selection of alternative choices), and "insert" and "delete" keys for inserting or deleting single characters or entire lines.

Series 100 function keys are screen labeled used by the system and by application programs to increase the ease of use of the system. With the HP 150, this capability is enhanced by the use of HP Touch. Now, all softkeys can be selected by pressing the key itself or by touching the key label on the screen.

Data Communications
Two RS-232-C ports may be used to connect the system to a remote computer or to a printer. Flexible protocols allow the use of either hardware or software handshaking, and communications speeds can range from 110 to 19,200 baud (both configurable by the user through system menus).

Terminal Features
The HP 150 contains block mode graphics terminal features and can run HP 3000 software. This includes block

mode for V/3000 software and graphics applications such as HPEasychart and HPDraw as well as line-drawing and math character sets, "security" fields, transmit-only fields, edit checks, and Tektronix 4014 emulation.

Reliability and Serviceability
The HP 150 Personal Office Computer has been engineered for high reliability and fast repair when needed. A "Power On Test" provides a complete test of both the processor and terminal functions. Additional tests can be initiated by the user to test the integral printer and the datacomm channels. The built-in self-test capabilities provide the user with a GO/NO GO indication to isolate defective components or modules which can be quickly replaced.

Peripherals
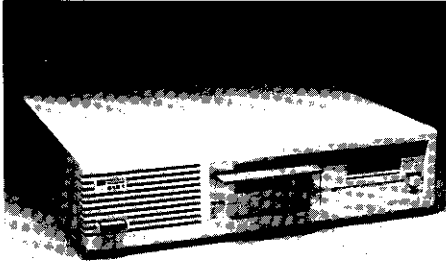
9121D
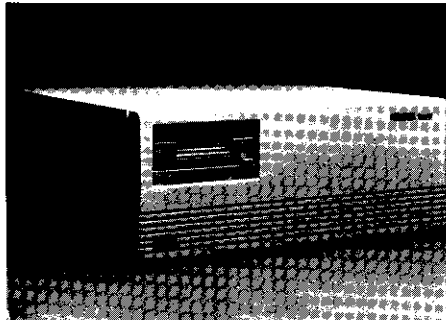
9133V, 9133XV, and 9134XV

Hewlett-Packard provides a full line of personal computer peripheral products that are supported on the HP 150. Reknowned for their reliability, the built-in HP-IB interface enables you to configure up to fifteen HP peripherals to one I/O port. The two standard RS-232 ports also enable you to operate serial devices such as printers and plotters.

Mass Storage Devices

The HP 150 may be configured with a 3.5-inch microflexible disc or 5¼-inch flexible disc drive. Winchester configurations are available in either 5 or 15 megabyte capacities. Both Winchester disc drives fit neatly under the system and do not expand the footprint. A total of eight disc drives can be attached to the HP 150, providing a maximum of 120 megabytes of on-line storage.

9121D and 82901M
Both 3.5-inch and 5.25-inch drives are supported with the HP 150.

9133V, 9133XV and 9134XV
The new family of small footprint Winchesters (5 and 15 megabyte) continues the space-saving mass storage design of the microflexible drives. Both Winchesters are priced very competitively.

Disc Drive Summary	9121D	82901M	9133V	9133XV/9134XV
Total Capacity (formatted)	264192 bytes	264192 bytes	4.8M	14.5M
Recording Surfaces per Drive	1	2	2	6
Recording Format Density	Double	Double	—	—
Tracks per Surface	66	35	305	305
Sector per Track	16	16	31	31
Bytes per Sector	256	256	256	256
Rotation Speed (rpm)	600	300	3600	3600
Average Access Time (msec)	415	187	85	85
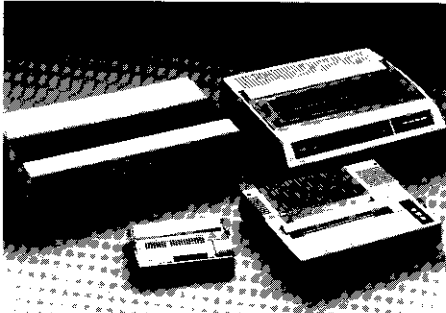
2932A, 2602A, 2674A and 82906A
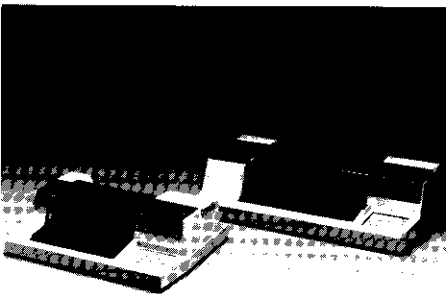
7470 and 7475

Printers

Hewlett-Packard offers a variety of word processing and general purpose printers to meet your different price/performance requirements. Each printer offers a unique combination of size, print quality, speed, and flexibility, and they can be easily used with the HP 150.

Internal Printer

The new HP 2674A internal printer sits conveniently in the top of your HP 150 and it's user-installable. It offers fast, virtually silent, high-quality text and graphics printing without adding to the footprint of your HP 150. You can use either roll or fan-fold thermal paper.

Word Processing

Word processing printers use full-font characters that produce letter-quality output that looks as if it has been typed on a sophisticated typewriter. Based on the daisywheel technology, the HP 2602A and HP 2601A give you 25 and 40 characters-per-second printing respectively, while producing professional-looking copies you will be proud to sign your name to.

General Purpose Printers

The HP 150 supports four general purpose impact printers. They range from the 80 cps HP 82905B to the 200 cps HP 2930 Series. The HP 82906A, HP 2932A, and HP 2934A offer a comprehensive selection of printing features and graphics capabilities to assure that you obtain output as you require. The HP 2934A offers matrix letter quality at 100 cps when you need more professional-looking documents.

Plotters

7470

Compact and portable, the HP 7470 produces quality A/A4-size graphics. It is a 2-pen writing system that plots on either paper or transparency.

7475

Simple and friendly, the HP 7475 has a built-in demo that starts with the press of the button. It is a 6-pen writing system that plots on either paper or transparency film.

Printer Summary	2674A	2601A/2602A	82905B/82906A		2932A/2934A	
Print Method	Thermal dot-matrix	Full-font impact (daisywheel)	Dot-matrix impact		Dot-matrix impact	
Speed (characters per second) = Peak	120	40 25	80	160	200	200/100
Column Width (at 10 characters per inch)	80	132	80	80	136	136
Print Quality	Memo	Letter	Memo		Memo/Memo matrix letter quality	
Graphics	Yes	No	No	Yes	Yes	Yes
Paper Type	Thermal: roll or fan-fold	Plain: single sheets or fan-fold and multi-part forms	Plain: single sheets or fan-fold and multi-part forms		Plain: letter quality or fan-fold and multi-part forms	

Plotter Summary	7475	7470
Media Size	210 × 297mm (8½ × 11 in.) 297 × 420mm (11 × 17 in.)	210 × 297mm (8½ × 11 in.)
Media Type	Paper or overhead transparency film	Paper or overhead transparency film
Pen Capability	6 automatic pen changing fiber tip	2 automatic pen changing fiber tip
Resolution	.025 mm (.001 in.)	.025 mm (.001 in.)
Repeatability	.1 mm (.004 in.) .2 mm (.008 in.)	.1 mm (.004 in.) .2 mm (.008 in.)

HP 150 Product Specifications

General

System Processor:	Intel 8088 microprocessor operating at 8MHz.
Main Memory:	256K bytes of RAM memory.
Screen Size:	9-inch diagonal
(Alphanumeric)	116mm × 150mm (4.5 in. × 5.9 in.)
(Graphics)	120mm × 160mm (4.7 in. × 6.3 in.)
Screen Capacity:	24 lines × 80 columns, 25th and 26th lines for labeling of function/softkeys, and 27th line for system status/error messages.
Character Generation:	7 × 10 enhanced dot matrix with 1/2 dot shifting; 9 × 14 dot character cell; noninterlaced raster scan.
Character Size:	1.3mm × 2.8mm (2.15 aspect ratio)
Character Set:	Roman8, line-drawing, math standard (also bold and italic usable by applications only). Total of 896 characters.
Cursor:	Blinking-underline or blinking-square.
Display Enhancements:	Inverse video, underline, blinking, half-bright, security, and all combinations
Refresh Rate:	60Hz
Tube Phosphor:	P31 (Green)
Implosion Protection:	Tension band
Keyboard:	Full ASCII code keyboard, eight screen-labeled function keys, auto-repeat, N-Key rollover, cursor controls, 18-key numeric pad, detachable with 1.83m (8 ft.) coiled cable.

Physical Specifications

System Processor Weight:	10.15 Kg (22.34 lbs.)
Keyboard Weight:	2.14 Kg (4.70 lbs.)
Display Monitor Dimensions:	305mm (W) × 305mm (D) × 287mm (H) 12.0 in. (W) × 12.0 in. (D) × 11.3 in. (H)
Keyboard Dimensions:	
Flat:	456mm (W) × 225mm (D) × 35mm (H) 18.0 in. (W) × 8.9 in. (D) × 1.4 (H)
Standing:	456mm (W) × 225mm (D) × 63mm (H) 18.0 in. (W) × 8.9 in. (D) × 2.5 (H)

Environmental Conditions

Temperature:
(Free Space Ambient):	Nonoperating: −40° to +75°C
	(−40° to +167°F)
	Operating: 0° to +55°C
	(+32° to +131°F)
	With 2674A: 0° to +55°C
	(+32° to +131°F)

Humidity:	5% to 95% (noncondensing)
With built-in printer:	5% to 95% (noncondensing)
Vibration:*	5–55 Hz @ .015" displacement
Shock:*	30g, 11 ms, 1/2 sine

*Type tested to qualify for normal shipping and handling in original shipping container.

Product Regulations

Product Meets:	The requirements of the following agencies/standards for EDP equipment/or office equipment in the following countries:
Safety:	Canada—CSA Certification
	International—IEC 380/435 Compliance
	U.S —U.L. Listing
	Switzerland—SEV (pending)
	Finland—FEI (pending)
RFI:	Germany—VDE Class B (pending)
	U.S —FCC Level B
Datacomm:	CCITT V.24 interchange V.28 electrical
	Australia—Telecomm (pending)
	Belgium—PTT (pending)
	Finland—PTT (Pending)
	Germany—FTZ (pending)
	Sweden—PTT (pending)
	U.K —BT (pending)

Check with your Dealer or Sales Representative to verify product safety and data communications certification in your country.

Power Requirements

|	
Input Voltage:	115V (+10%, −25%) at 50/60Hz (+−5%)
	230V (+10%, −25%) at 50/60Hz (+−5%)
Power Consumption:	
45610A:	240 Volt Amps
45650A:	356 Volt Amps
45655A:	356 Volt Amps
45660A:	356 Volt Amps

Data Communications

Data Channels:	1 HP-IB, 2 RS-232 ports.
HP-IB Channel:	Bus used for specified HP peripherals (IEEE 488).
RS-232 Channel:	General asynchronous and synchronous communications.
Data Rate (RS-232):	110, 150, 300, 600, 1200, 2400, 4800, 9600, and 19200 baud.
Port 1 Asynchronous:	EIA standard RS-232-C and CCITT V.24. Hardware and XON/XOFF handshaking available.
Port 2 Asynchronous:	EIA standard RS-232-C and CCITT V.24. Hardware and XON/XOFF handshaking available.

Product Support

Hardware Supplied: 45610A: Personal Computer	HP 150 central processor unit, keyboard with numeric keypad, 30cm HP-IB cable, interconnect power cable, *HP 150 Personal Computer Owner's Guide* (45621A), *HP 150 Terminal User's Guide* (45623A), Literature Pack.
45650: Flexible Disc-Based Personal Computer	Same as 45610A plus 9121D dual 3.5″ flexible disc drive
45655: 5Mb Winchester-Based Personal Computer	Same as 45610A plus 9133V 5Mb Winchester with 3.5″ flexible disc drive.
45660: 15Mb Winchester-Based Personal Computer	Same as 45610A plus 9133XV 15Mb Winchester with 3.5″ flexible disc drive.
Documentation Available:	Service Manual (45611-90002)
Warranty:	Series 100 computers are warranted against defects in materials and workmanship. Contact the local HP Sales Office or Dealer for terms and conditions.
Maintenance:	HP maintenance agreements are available for support after the warranty period. Contact the local HP Sales Office or Dealer for terms and conditions.
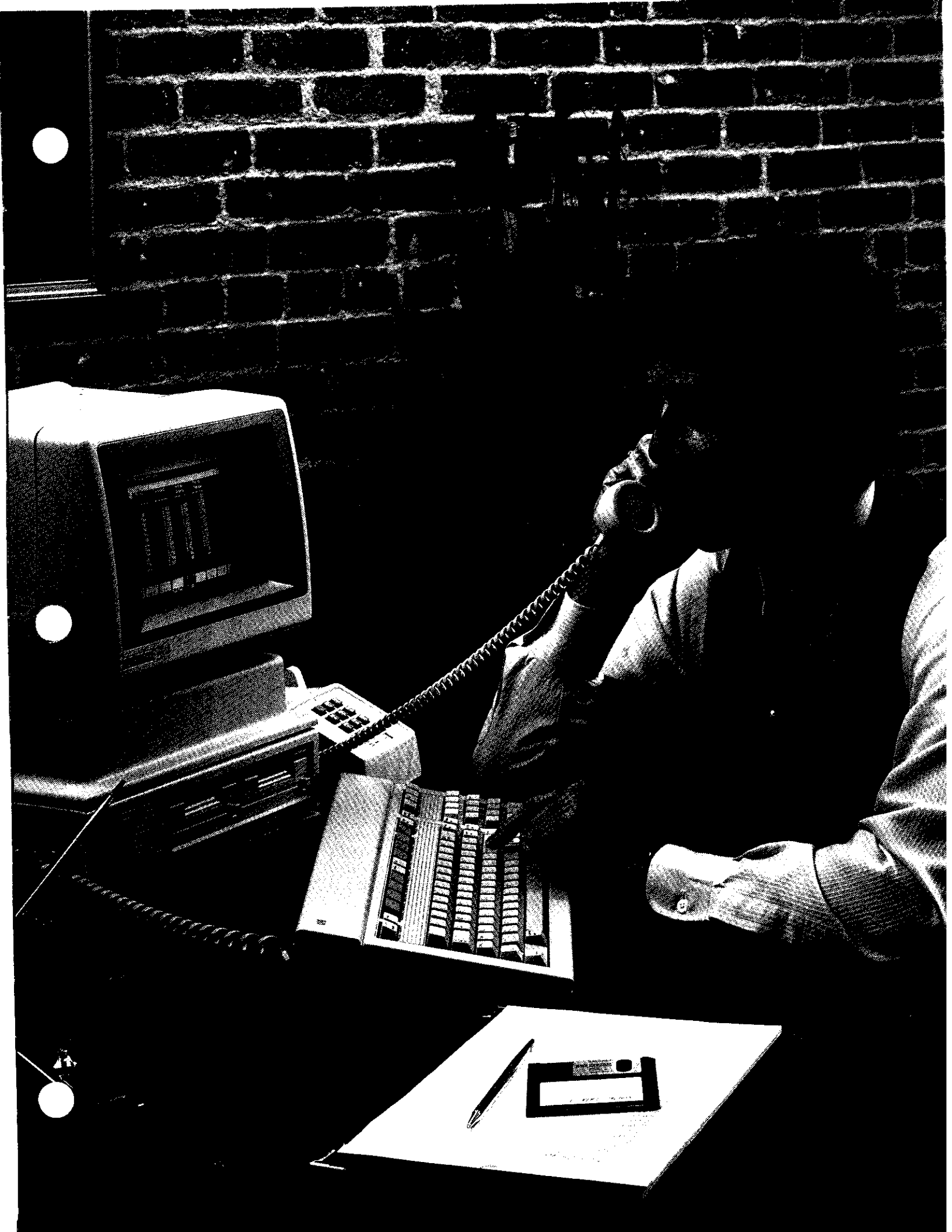
Support

To help you make the most productive use of your Series 100 systems, Hewlett-Packard and HP Personal Computer Dealers work together to offer a comprehensive, flexible, and realistic set of quality support services.

Comprehensive

All aspects of personal computer support are covered:

- **Answers to Your Questions**
  HP's worldwide network of dealers and support centers provide—at no charge—professional telephone assistance to supplement the system and software manuals.

- **Training**
  To bring new users rapidly up-to-speed on applications, Hewlett-Packard and many HP dealers provide hands-on classroom instruction.

- **Continuing Information**
  The *Series 100 Communicator* magazine keeps you up-to-date with how-to articles, solutions for common problems, news, and current reference information.

- **Software and Manual Updates**
  You can rapidly obtain software and manual revisions to keep your system current.

- **Consulting**
  Professional software assistance can be provided at your facility.

- **Software Disc Replacement**
  You make a working copy of each application from your master disc; if, however, the master disc is damaged, you can rapidly obtain a replacement.

- **Hardware Maintenance**
  HP Sales and Service Offices and HP Personal Computer Dealer Repair Centers stand ready to resolve any problem.

- **Supplies**
  Quality supplies and accessories can be ordered easily from HP . . . and are stocked at most dealers.

Flexible

We believe that your support plan should match your needs and those of your organization. To do this, you need alternatives to choose from. For example, hardware maintenance is available from Hewlett-Packard under a broad range of plans: repair at your site or at an HP Repair Center; at an annual fixed price or on a per-incident basis.

Realistic

Through extensive use of personal computers within Hewlett-Packard and work with user organizations of all sizes, we have learned how personal computers are most productively applied in real situations. This is reflected in the Series 100's outstanding ease of use—and in our set of support services. For example, we have found that systems are often shared by a group of users for whom full personal systems are not yet justified. The Series 100 support program takes this into acccount—each user has direct access to phone-in software assistance.

Answers to Your Questions

We stand behind every product we sell—including not only the software developed by Hewlett-Packard but also the industry-standard software packages we provide.

The level of capability provided by advanced personal computer software—together with the rapid evolution of this field—means that you will occasionally have questions which are not answered in the product manuals or in the *Series 100 Communicator*.

Depending on how your system is purchased and how it is used, the optimum source of assistance may be Hewlett-Packard, your dealer, or your own organization:

Your Direct Line to Hewlett-Packard.
To provide answers to your questions on software distributed by Hewlett-Packard, HP's Phone-In Software Assistance service is available to you at no charge. You call a Phone-In Software Assistance Center in your region or
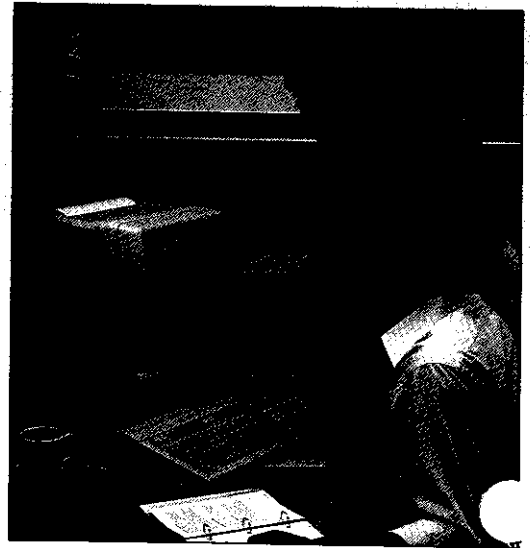
country; a phone-in coordinator determines the type of question and arranges for the appropriate HP support representative to call you. Using a full set of Series 100 software and documentation—together with computer knowledge, problem-solving skills, and access to further assistance via HP's worldwide telecommunications network—the support representative works with you to resolve your question.

Assistance From Your Local Dealer
If your system is purchased from a dealer or system house, they have worked with you to define your application and configure your system—perhaps selecting software or peripherals not supplied or supported by HP. Here, your dealer is the best source of assistance—knowing you, your needs, and your configuration well. Of course, your dealer is backed up by special support resources within HP.

**Optimized Assistance from
Your Own Organization**
If yours is a large organization using
Series 100 systems in a networking
environment, the best software support
source may be your central MIS or data
processing department. They have full
knowledge of your organization's overall
system: your internally developed
programs, your unique operating and
networking procedures . . . plus your
specific hardware and software
configuration. The central support
personnel, in turn, can call on special
resources within Hewlett-Packard.

Training

The Series 100 and its application
programs are designed for ease of use
and ease of learning. Classroom
training courses can help your first-time
computer users rapidly build confidence
and gain new skills in a supportive
environment away from the day-to-day
job.

As HP training courses are developed,
they are listed in the *Series 100
Communicator.* Currently available
courses include:

Introduction to Personal Computers.
This one-day course, Product 35119A, is
for managers and professionals who are
new to personal computing. It provides
hands-on experience with an HP
personal computer. The objective is to
help you become comfortable with
personal computers through
understanding and actual use: you learn
the fundamental terms, you solve
financial problems with a spreadsheet
program, you use word processing and
graphics . . . plus there is a non-
technical discussion on how a computer
works.

Introduction to WordStar
This half-day course is for users who
are new to computers; it provides an
introduction to the Series 100 and the
use of Series 100/WordStar. Upon

completion, you will be able to produce
memos with WordStar . . . and use the
WordStar manuals to learn further
skills.

*Series 100/SpellStar
and Series 100/MailMerge*
Going beyond the introductory
WordStar course, this half-day segment
teaches you how to check documents
with SpellStar and how to produce
mailings with MailMerge.

Customized Training
These courses can be taught at your
facility using your own systems—or
training to suit your specific needs can
be designed and given through HP's
Business Computer Consulting Service.

Many dealers teach similar courses or
arrange for Hewlett-Packard to teach
courses in your area—contact your local
dealer for details.

Continuing Information

The *Series 100 Communicator* is the heart
of the support program. This magazine
brings you application information,
operational tips, programming
techniques, information on software
updates, manual corrections, and data
on known software problems and their
solution. The *Communicator* is both a
reference to everything current on the
system and your window into the
continually expanding world of the
Series 100. A copy is included with
each system; subscriptions are available
as Product 45530N.

Software and Manual Updates

As the Series 100 is improved—to add
new features, to work with new
peripherals, or to correct problems—
updated software and manuals are
made available to current owners.

■ Software Update Kits contain the
 latest software . . . and any new
 manuals or manual updates issued
 since the original manual; a kit is
 provided at a nominal charge in
 exchange for your original master
 disc as proof of purchase. You
 continue operating as usual with

your work copy of the software. The
kits are available through your dealer
or from HP; the *Communicator*
provides ordering information.

■ Minor documentation corrections are
 given in the *Communicator*; for
 extensive manual revisions
 independent of software changes,
 change packages are available
 through your dealer or HP.

■ Each application package includes a
 complete Tutorial/Reference Manual;
 in addition, many include a pocket-
 sized Quick Reference Guide. For the
 other users of your system, extra
 copies of the Quick Reference
 Guides are available from your
 dealer or HP.

Consulting

You may require technical consulting
beyond the scope of Phone-In Software
Assistance. HP's Business Computer
Consulting Service, available by the
hour (Product 35021A) or by the day
(Product 35032A), provides personalized
assistance in system operation,
recommendations for improved
performance, or suggestions on
application design. Your dealer or
system house may also have consulting
services available.

Software Disc Replacement

The master-copy/work-copy technique
used by the Series 100 is designed to
minimize the risk of damage to your
master software discs due to handling
or human error. Should this occur,
Software Exchange Kits are available for
all Series 100 software packages
distributed by Hewlett-Packard.

Hardware Maintenance

Recognizing that mechanical parts do wear . . . and that electronic devices do occasionally need service, high-quality professional hardware support is provided through HP Personal Computer Dealer Repair Centers and the worldwide network of HP Sales and Service Offices. Larger organizations may elect to perform their own maintenance . . . backed up by HP parts and expertise.

Maintenance by Hewlett-Packard

- Under a *Field Repair Center Maintenance Agreement*, you send the product to a nearby HP Field Repair Center, where it is repaired within three working days. This contract is priced below the average cost of per-incident service. In addition, you get higher-priority service . . . and your costs are pre-budgeted, with no chance of an unexpected expense.

- *On-Site Maintenance Agreements* are available with several levels of response time and coverage . . . so that you may select the support level best suited for your system usage. For example, if you are within 100 miles of a primary service office, the available plans range from next-weekday repair to 4-hour response, 24 hours per day, 7 days a week.

- For organizations with multiple Series 100 systems, a *Volume On-Site Maintenance Agreement* provides scheduled weekly repair visits at your central location if you are located within 100 miles of an HP office. A contract can be written for any combination of 25 or more workstation products—processors, discs, printers, or plotters—all at low Field Repair Center Agreement rates.

Maintenance by Your Local Dealer.

The HP dealers who are designated as Personal Computer Dealer Repair Centers provide maintenance at their location; many also offer maintenance contracts which include additional services such as pickup-and-delivery or loaner equipment.

Maintenance by Your Own Personnel

If yours is a large organization, cooperative support may be the most economical alternative. Self-paced maintenance courses, service manuals, parts, exchange assemblies, and technical assistance are available from HP.

Supplies and Accessories

For optimum performance of your system, it is important to use quality media and operating supplies. Flexible discs, thermal printer paper, and plotter pens specifically matched to your system—as well as *Communicator* back issues, books, and accessories—are available from your local dealer or, if this is not convenient, by telephone from Hewlett-Packard.

Support Contact Points

Here's how to get further information on Series 100 support or obtain support products or services.

In the U.S.

Call the appropriate special telephone line:

- For assistance before your purchase, or to determine the local telephone number for Phone-In Software Assistance, call 800-FOR-HPPC.

- To subscribe to the *Series 100 Communicator*, or to order back issues, software and manual updates, supplies, or accessories, call HP Computer Supplies at 800-538-8787. In California, Alaska, or Hawaii, call 408-738-4133.
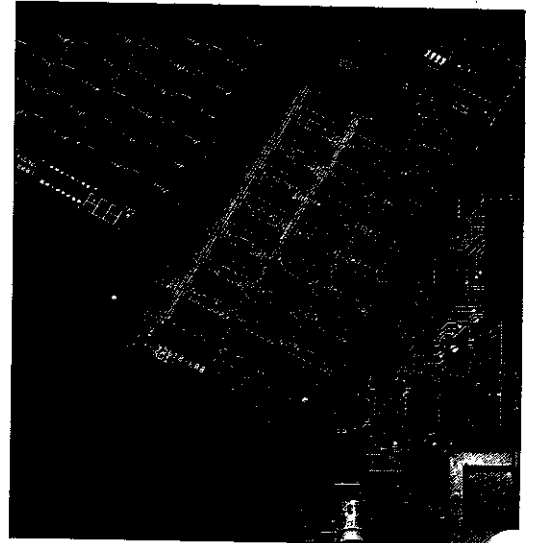
- To discuss training or consulting, call your local HP Sales and Service Office.

- To discuss maintenance agreements, to locate the nearest Personal Computer Dealer Repair Center or HP Field Repair Center, call 800-835-HPHP.

- To locate the Hewlett-Packard dealer near you, call 800-FOR-HPPC.

Outside the U.S.

Your local Hewlett-Packard Sales and Service Office can help you make contact with a dealer or the appropriate operation in HP.

HEWLETT PACKARD