

BASIC 5.0/5.1
**Documentation Guide
and Master Index**

HP 9000 Series 200/300 Computers

HP Part Number 98613-90072



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November 1987...Edition 2. This edition reflects the 5.0 corrections and 5.1 additions.

BASIC 5.0/5.1 Documentation Guide

As with most products, learning how to use it properly and effectively will require a little reading. This guide helps you begin using the BASIC manuals in the most beneficial way. It briefly describes the purpose and contents of each of the manuals. It also shows the overall organization of the information in this manual set.

Structure of the BASIC Documentation

The information in this documentation set is divided into the following categories:

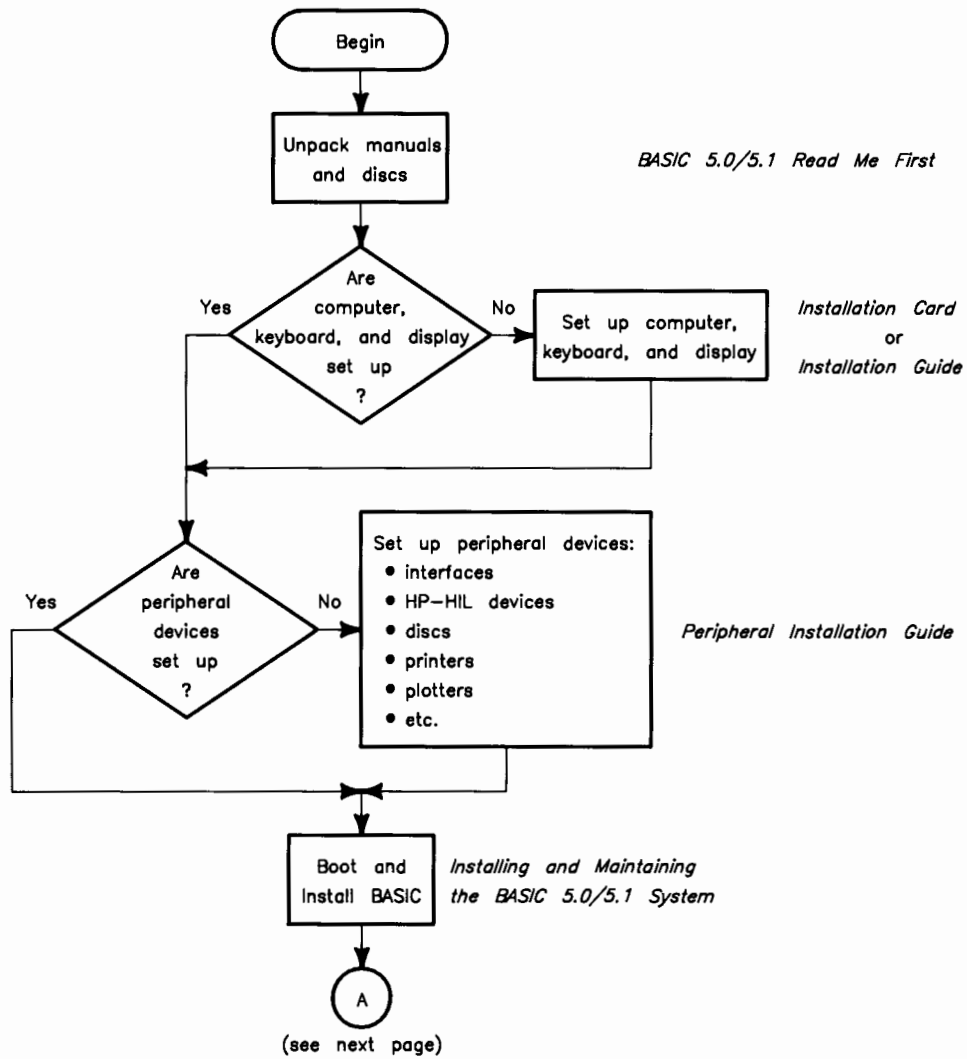
- installation instructions
- operating and system-administration instructions
- programming tutorials
- programming reference information.

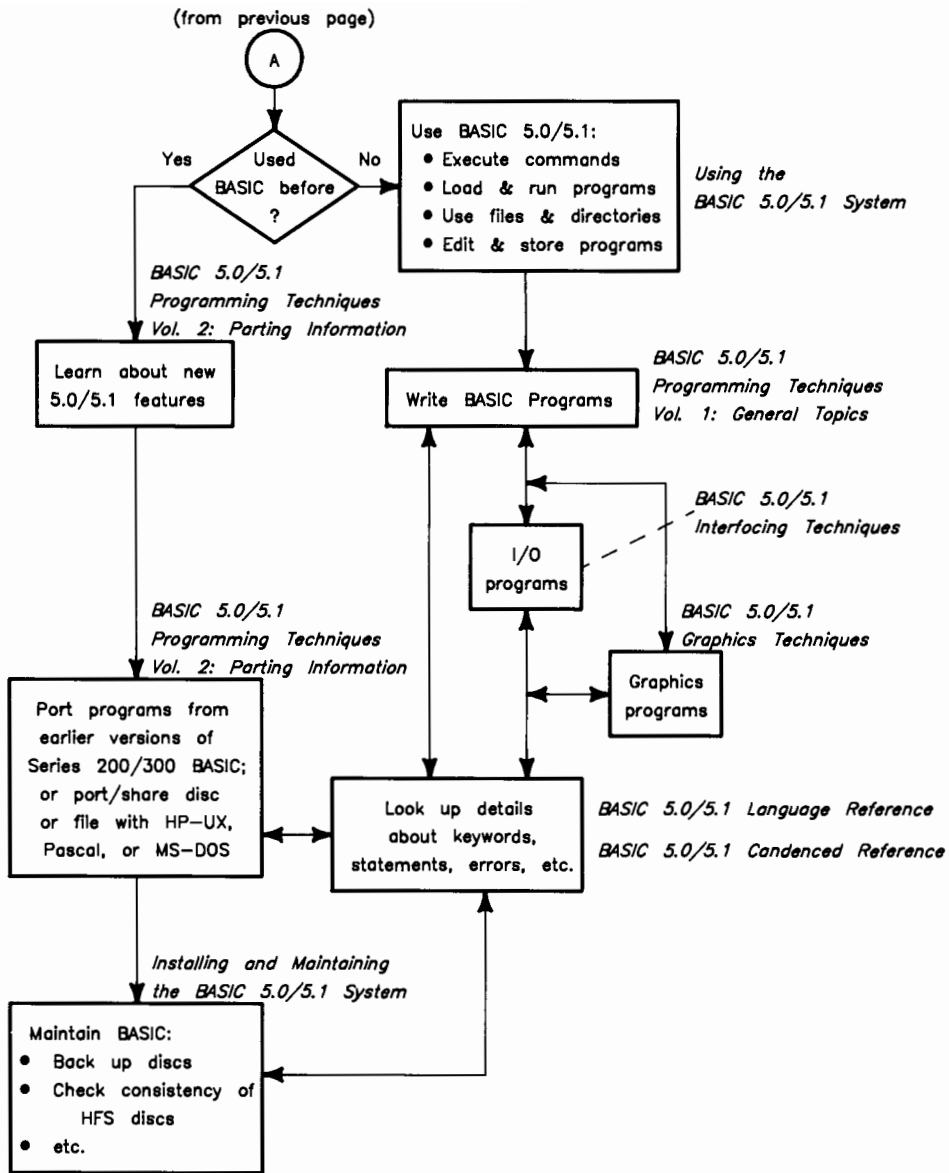
The following pages further explain the manuals you will read while using the BASIC system on your Series 200/300 computer.

About the Master Index

The *Master Index* is a compilation of all the individual indexes of the BASIC manuals. The last part of this guide describes the master index.

Flow Chart





Computer Installation Cards and Guides

One of these cards and one of these manuals is shipped with each Series 200/300 computer.

Installation Card

(HP Part Number Varies According with Computer Model)

This document is intended to help you get your computer, keyboard, and display connected and operational.

- Unpacking and connecting the following components:
 - Computer
 - Keyboard
 - Display
- Verifying the operation of these components.

Installation Guide

(HP Part Number Varies According to Computer Model)

This document, also shipped with each computer, is a companion to the *Installation Card*, providing **additional details** about the instructions and information in the *Installation Card*.

Peripheral Installation Guide

(HP Part Number 97005-90000)

This manual shows you how to configure and install *optional* peripheral devices for your Series 200/300 computer:

- Memory cards
- Interfaces
- I/O expander chassis
- Mass storage devices (discs, tapes, etc.)
- Printers
- HP-HIL devices (Mouse, graphics tablet, knobs, etc.)
- Plotters
- HP-IB graphics tablets.

Installing and Maintaining the BASIC System

(HP Part Number 98613-90042)

This manual describes:

- Installing BASIC:
 - Installing BASIC from flexible discs onto
 - a hard disc
 - an SRM (Shared Resource Manager)
 - back-up flexible discs
 - Customizing your system
 - Verifying and labeling your peripherals (discs, printers, plotters, etc.)
- Maintaining your system:
 - Making file-by-file and disc-image back-up copies
 - Checking the consistency of HFS discs
 - Details about HFS disc structure (used for background information to the preceding chapter)
 - Other miscellaneous maintenance tasks
- Utilities
 - various programs that will help you better use and maintain your system.

Using the BASIC System

(HP Part Number 98613-90000)

This manual describes:

- Using the System:
 - Loading and running application programs
 - Managing files and directories
 - Editing and storing programs
- Keyboard references:
 - ITF (Integrated Terminal Family) keyboards
 - HP 98203B/C keyboards
 - HP 98203A keyboards.

BASIC Programming Techniques

(HP Part Number 98613-90012)

This manual is divided into two volumes:

- **Volume 1: General Topics**
 - Program structure and flow
 - Numeric computation
 - Numeric arrays
 - String manipulation
 - Subprograms and user-defined functions
 - Data storage and retrieval (including file I/O)
 - Using a printer
 - Using the clock and timers
 - Communicating with the operator
 - Handling errors
 - Debugging programs
 - Effective use of the computer's resources
- **Volume 2: Porting Information**
 - Porting to BASIC 3.0
 - Porting to Series 300 computers and BASIC 4.0
 - Porting to BASIC 5.0
 - Porting and sharing files
(between HP-UX, Pascal, and BASIC)
 - 5.1 enhancements.

BASIC Interfacing Techniques

(HP Part Number 98613-90022)

This book describes how to enter and output data through interfaces.

- **Volume 1: General Topics** describes general information and examples of OUTPUT and ENTER statements, interface registers, and interface interrupts and timeouts, as well as how to perform high-speed transfers between buffers and devices (or files)
 - Interfacing concepts
 - Directing data flow
 - Outputting data
 - Entering data
 - Using interface registers
 - Interface interrupts and timeouts
 - I/O path attributes
 - Advanced transfer techniques
- **Volume 2: Specific Interfaces** describes specific techniques for entering and outputting data through the interfaces available with the Series 200/300 computers
 - Display keyboard
 - The HP-IB Interface
 - The RS-232C Serial Interface
 - The Datacomm Interface
 - The GPIO Interface
 - The BCD Interface
 - The Powerfail Interface (Models 226 and 236 only)
 - The EPROM Programmer Interface
 - The HP-HIL Interface.

BASIC Graphics Techniques

(HP Part Number 98613-90032)

This manual describes how to draw and label pictures with BASIC programs. Here are some of the topics presented:

- Introduction to graphics:
 - Why use graphics
 - Scaling
 - Plotting
 - Labeling
 - Axes and tick marks
- Effective use of graphics:
 - A closer look at the fundamentals shown in “Introduction to Graphics”
 - Advanced topics (such as clipping, rotating, storing raster images, data-driven plotting, polygons, and graphics masks)
- Using printers and plotters:
 - Dumping raster images from the screen to a printer
 - Using pen plotters to draw graphics
- Interactive graphics and graphics input:
 - How to design interactive graphics systems
 - Example BASIC programs that handle graphics input devices
- Color graphics
- Data display and transformations (such as rotating and shearing)
- Utility routines (drawing arcs, simulating wide pens, handling mundane tasks associated with using plotters, etc.)
- Explanations of graphics programs on the *Manual Examples* disc.

BASIC Language Reference

(HP Part Number 98613-90052)

This manual is a complete “dictionary” of the Series 200/300 BASIC language. It contains the following sections:

- Using the Keyword Dictionary—shows how to use the information in the “Keyword Dictionary”, including interpreting the syntax drawings and tables.
- Keyword Dictionary—contains a complete description of each keyword and provides several relevant example statements.
- Miscellaneous appendices (in *Volume 2*):
 - Language History—contains a list of the BASIC keywords and indicates which system revision first introduced the feature. (If the keyword is not in the “Main” BASIC system, the language extension binary that provides the keyword is also listed.)
 - Glossary—contains definitions of commonly used terms
 - Interface Registers—contains descriptions of each STATUS and CONTROL register of all Series 200/300 interfaces
 - Useful Tables—contains tables such as interface select codes, display characters, reset, and keycode tables
 - Errors—contains a brief explanation of all errors that the BASIC system can report
 - Keyword Summary—lists the BASIC keywords by *functional group*, rather than by alphabetic order.

BASIC Condensed Reference

(HP Part Number 98613-90062)

This manual will eventually be the most often used manual in the set. It contains brief descriptions of all keywords in this BASIC language. Here are the sections it contains:

- Glossary
- Keyword dictionary (brief description and examples)
- Registers
- Keyword summary
- Useful tables
- Error messages.

Structure of the Master Index

The master index provided in this guide references topics in all of the BASIC manuals. It was created by merging the indexes of all these manuals into one large index.

Referencing Scheme

Here are some example entries from the Master Index, along with an explanation of how to interpret the entries:

Abort message **IT 2:** 12-20
ABORT statement **IT 2:** 12-10, 12-13, 14-54
Aborting graphics dumps **GT:** 3-3
ABORTIO statement **IT 1:** 9-20
Above-Screen Lines **IT 2:** 10-23
ABS function **PT 1:** 3-16, 4-68

IM *Installing, Using, and Maintaining the BASIC 5.0/5.1 System*
PT 1: *BASIC 5.0/5.1 Programming Techniques, Volume 1*
PT 2: *BASIC 5.0/5.1 Programming Techniques, Volume 2*
IT 1: *BASIC 5.0/5.1 Interfacing Techniques, Volume 1*
IT 2: *BASIC 5.0/5.1 Interfacing Techniques, Volume 2*
GT: *BASIC 5.0/5.1 Interfacing Graphics Techniques*
LR: *BASIC 5.0/5.1 Language Reference*
US: *Using the BASIC 5.0/5.1 System*



Note the following key features of the index format:

- A mnemonic is always given in bold font and followed by a colon (for instance **IM:**) before any page numbers are shown. This mnemonic identifies the manual. If there are two volumes in the manual, the mnemonic includes the volume number (for example, **PT 1:**).
- Page numbers following each mnemonic are found in the corresponding manual. However, when another mnemonic is given, subsequent page numbers are found in the second mnemonic; and so forth.
- A legend defining each mnemonic is given at the bottom of each odd page.
- Page numbers in the index that are listed IM (for the *Installing and Maintaining the BASIC System* manual), the numbers beginning with a-e (e.g. a-3, b-4, e-10) refer to the tabbed sections immediately following Chapter 2 (“Putting BASIC on a Hard Disc”).

Using the BASIC Manuals

The preceding sections described the contents of each of the BASIC manuals. If you are not familiar with each of these manuals, please review those sections now.

Now that you have seen what each manual does for you, you are ready to begin using these manuals.

An Algorithm for Writing Programs Using these Manuals

Although simplistic, here is a “two-step” procedure that you will probably use in designing and implementing BASIC programs.

1. Develop an algorithm for solving your problem. Break large tasks into smaller, specific, manageable sub-tasks. Work on one sub-task at a time, expanding and refining each by taking the following steps:
 - a. Examine the mechanics of performing the task. Read the relevant discussion(s) in the programming techniques manual(s). Keep in mind that these manuals will probably only describe one or two approaches to performing elemental tasks. You may be able to expand or modify one of these fundamental examples to suit your particular needs. You may need to consult an advanced or specialized programming text to see how to design more complex, application-specific algorithms and programs.
 - b. Determine what hardware the task will require, if any, and install it according to the appropriate installation manual.
 - c. Code your algorithm into a BASIC language program. Consult the reference manuals to answer questions that arise about specific keywords.
 - d. Test your algorithm, which may require using both techniques and reference manual(s).
2. Repeat Step 1, breaking each task into finer detail, until you have the final solution.

Loading (Booting) BASIC 5.0/5.1

This procedure is a condensed version of the steps shown in the *Installing and Maintaining Your BASIC System* manual. If you have a hard disc and have not installed your system, go to this manual first.

1. Prepare your system:
 - a. If HP-UX is currently running, shutdown the system
 - b. Turn off computer.
2. Insert the BASIC System **DISC ONE** (use back-up copy if you made back-ups of the system discs) into your flexible disc drive—for an internal drive on a Model 236, you must use the right-hand drive.
3. Turn on the computer, and **hold down the space bar**.
4. In the Boot screen, type the characters you see to the left of **SYSTEM_BA5** (listed in the upper right corner of the screen); for example .

If you have not labeled all your discs, go to the “Verifying and Labeling Peripherals” chapter in *Installing and Maintaining the BASIC System*, and follow the instructions for labeling mass storage devices.

Preparing a Blank Flexible Disc

A blank flexible disc must be formatted (initialized) before using it with BASIC.

Do not initialize a disc with a BASIC label on it because it contains a system, binaries, or utilities.

CAUTION: initializing a disc will destroy all information on it. DO NOT use these steps unless you know the volume specifier of the flexible disc drive; if you accidentally use a hard disc's volume specifier, its contents will be destroyed. If you have not labeled your disc drives, see *Installing and Maintaining the BASIC System*, "Verifying and Labeling Peripherals."

1. Load BASIC into memory.
2. Insert a blank disc into a flexible drive with a volume specifier sticker on it.
3. Type: `CAT "msvs"` (where *msvs* is the volume specifier shown on the sticker) to list the contents of the disc.

If an empty catalog appears, continue with Step 4. Otherwise, you have a flexible disc with files on it, or your *msvs* is incorrect. If your *msvs* is incorrect, **do not continue**; go to "Verifying and Labeling Peripherals" to check the labels. If the flexible disc has no files that you wish to keep, then you can continue with Step 4.

4. Type: `INITIALIZE "msvs"` (where *msvs* is the same volume specifier used in Step 3). The process takes about a minute—wait for the disc drive light to turn off.

Common Disc Operations

Use these operations when working with the default disc drive (add volume specifier after the name in italics when not working with the default disc drive).

Operation	Command
Show disc contents	<code>CAT</code>
Store file on disc	<code>STORE "<i>filename</i>"</code>
Load program from disc	<code>LOAD "<i>programname</i>"</code>
Load binary from disc	<code>LOAD BIN "<i>binaryname</i>"</code>

Master Index

a

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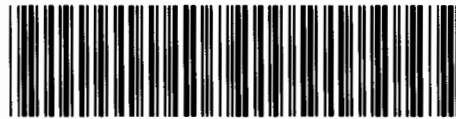
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