

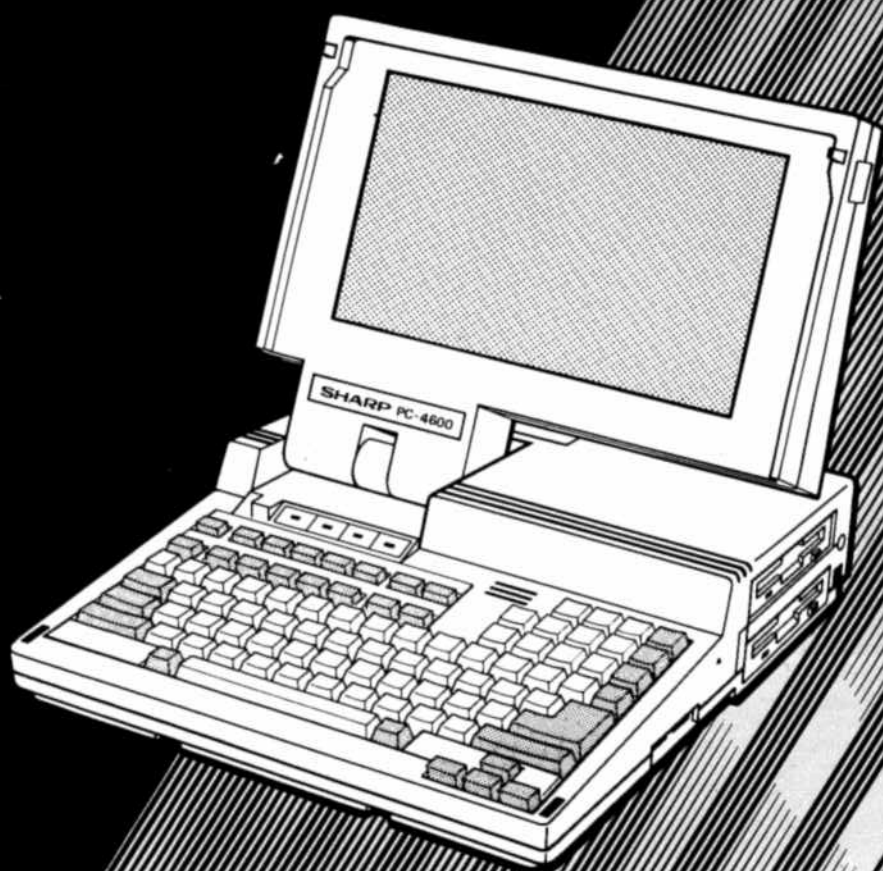
**SHARP**<sup>®</sup>

PERSONAL COMPUTER

PC-4602

PC-4641

OPERATION MANUAL



# Welcome

If you are new to the family of Sharp products, welcome. To all new owners of this computer, congratulations. You have purchased one of the most powerful – and easy to use – personal computers available today.

By using advanced technology, we were able to pack the power of larger personal computers into this compact system. On the job or at home, you will find this to be an exceptional computer.

# Overview

This chapter is an introduction to the Operation Manual.

The first section describes how to use this manual and includes a summary of each chapter.

The second section is an introduction to the system.

## How to Use This Manual

This manual describes the operation of the Sharp personal computer. In it, you will find all the information you need to become an accomplished user of this powerful computer.

We have designed the Operation Manual so that you can locate information quickly and easily. Each chapter begins with a title page that shows the major sections in the chapter. Titles at the top of each page help you to locate sections within chapters.

Here is an overview of what to expect in each chapter:

Chapter 1 is the introduction to the manual. It tells you how to use the manual and provides an overview of the system.

Chapter 2 describes how to set up the system as well as how to close down the system for travel.

Chapter 3 tells you how the system works together. You will see how the basic hardware and software of the computer combine to give you powerful computing capabilities.

Chapter 4 describes how to use the system to accomplish your computing needs.

Chapter 5 provides an overview of the MS-DOS\* features that are used on a regular basis when operating the computer.

Chapter 6 describes the internal options – CE-451A color/monochrome CRT adaptor and CE-451B serial I/O card.

Chapter 7 describes the CE-452F external 5-1/4" floppy disk drive unit.

Appendices cover a variety of topics such as general maintenance, diagnostics, glossary and specifications.

Index helps you locate specific information quickly.

## What to Read

If you plan on performing one of the tasks below, we recommend you read the corresponding chapters.

Of course, you may perform more than one of these tasks.

- ▲ Set up the system – Chapters 1 and 2
- ▲ Run an application – Chapters 1, 3, 4 and 5
- ▲ Use internal options – Chapters 1 and 6
- ▲ Use external floppy disk drive – Chapters 1 and 7
- ▲ Perform maintenance – Chapter 1 and Appendices

## Documentation Conventions

Throughout this manual we have used a set of style conventions. These conventions are described below.

**Keyboard Keys.** When referring to specific keys on the keyboard, the key label appears in boldface as shown below.

Example:

Press **Enter** to end the command.

**Sample Screens.** This manual contains sample screens. These samples include prompts (text generated by the system) and entries that you type on the keyboard.

As shown below, prompts are shown in normal type and your entries are shaded.

```
A>DIR A:
```

```
Volume in drive A has no label  
Directory of A:\
```

```
SALESREP  DOC  104960   11-11-87  12:00a  
MEMO      DOC    3072   11-11-87   9:15a  
2 File(s) 611968 bytes free
```

```
A>
```

**Command Names.** When referring to MS-DOS\* commands, the command name is written in uppercase as shown below.

Example:

Use COPY to move the file from one disk to another.

**Notes.** Notes are used to give you helpful hints or suggestions on ways of doing certain operations.

**Cautions.** Cautions are used to alert you that damage to the equipment or loss of data might occur if certain procedures are not followed carefully.

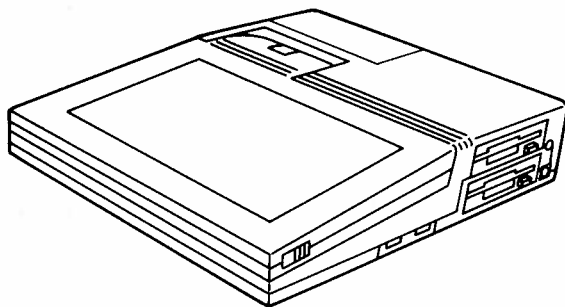
**Warnings.** Warnings are used to warn you that bodily injury might occur if precautions are not taken. Warnings always appear in *italic*.

# Overview of the System

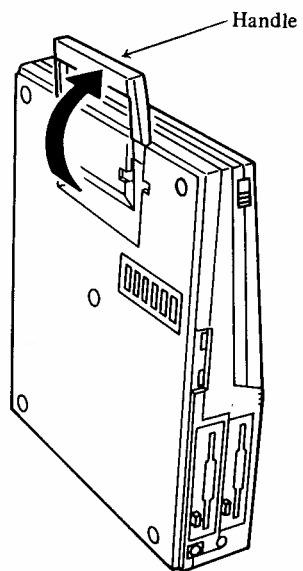
Your system is made up of hardware and software. Let's begin with the hardware.

## The Hardware

Simply put, hardware is equipment. It is the physical part of the computer system that you can touch. The illustration below shows you what the standard hardware looks like when the system is closed.

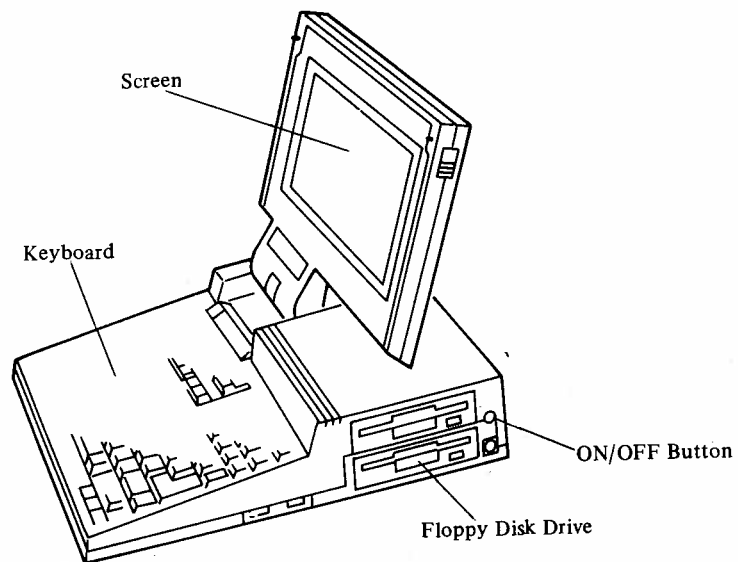


As you can see, the entire system can be carried by the handle.





Here's how the standard hardware looks when the system is set up.



Let's look at each piece.

**The Main Unit.** The main unit houses the keyboard, screen, two (PC-4602) or one (PC-4641) floppy disk drive(s), one hard disk drive (PC-4641), one parallel I/O (input/output) port, one serial I/O port, one port for the external floppy disk drive unit, and internal hardware needed to run your computer. All other hardware is connected to the main unit.

Let's begin with the internal hardware.

The system board in the main unit houses the processor, main memory, and the clock. It also contains hardware that controls the screen and keyboard. In addition to the system board, the computer can be configured with option cards to expand its capabilities.

The processor is the "brain" of the computer. It processes data – or information – at speeds so fast its performance is measured in millionths of a second.

This is because a processor handles information in binary code using the digit 0 or 1. Any piece of information (e.g., a number or character) is represented by a string of 0's and 1's. For example, the number 23 in binary is 10111.

A 0 or 1 in a binary system is referred to as a bit, the smallest piece of information handled by the processor. A byte is a group of bits representing a single character or number such as "H" or "9".

The standard processor for this computer is an 80188 compatible processor.

Main memory, usually referred to as RAM (Random Access Memory), stores data and applications software for the processor.

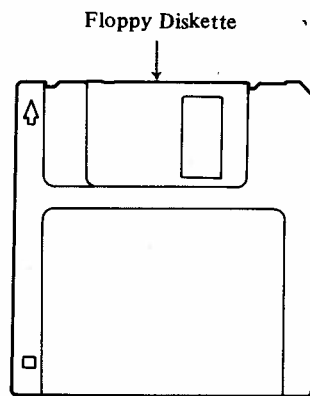
RAM is measured by the amount of information (bytes) it can store. A symbol often used for this measurement is "K". One K represents 1024 bytes.

The standard system guarantees 640K of usable memory.

Also inside the system is a clock that keeps track of the date and time, even when the system's power is turned off, and a speaker that provides audio feedback during certain operations.

Let's move on to the remaining system hardware – the disk drive, the screen, and the I/O ports.

**Floppy Disk Drive.** The computer contains two (PC-4602) or one (PC-4641) floppy disk drive(s) for storage and retrieval of information. Floppy diskettes like the one shown below can store up to 720K of information.



**Hard Disk Drive.** The computer (PC-4641 only) contains a hard disk drive which can store up to 40 megabytes of information. One megabyte (M byte) represents 1024K.

**Screen.** The screen acts as a window where the processor sends information for you to view. Information typed at the keyboard, read from a floppy diskette or hard disk, or sent via a modem, etc. is displayed here.

Text and graphics are displayed on the illuminated crystal display with 640 pixels horizontally  $\times$  400 pixels vertically in the following manners:

**Text:** The computer displays 80 characters  $\times$  25 lines.

1 character consists of  $8 \times 16$  pixels.

**Graphics:** For  $640 \times 200$  graphics, one pixel is displayed vertically expanded to two pixels (double scanned). For  $320 \times 200$  graphics, one pixel is displayed vertically and horizontally expanded to four pixels ( $2 \times 2$  pixels). By changing the number of illuminated pixels among the four pixels, four levels of gray are emulated to represent four possible colors.

**I/O Ports.** The computer has three I/O (input/output) ports for connecting external devices to the system – a parallel port, used to connect a parallel printer, a serial port, used for communications, and a port for connecting an external 5-1/4 inch floppy disk drive unit.

**Keyboard.** You communicate with the main unit by typing at the keyboard. Many of the keys work just like those on a regular typewriter. However, as you will see, some of the keys have special functions not available on a typewriter.

## Hardware Options

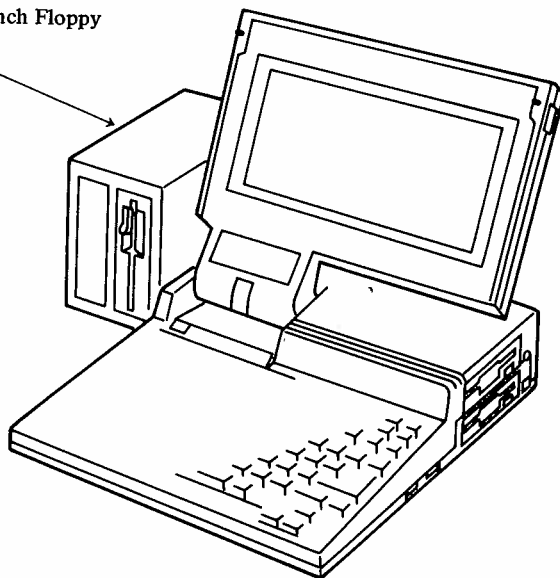
The hardware described above comprises the standard system. The following hardware options can be used with the standard system to expand capabilities:

- ▲ External 5-1/4 inch Floppy Disk Drive Unit
- ▲ 8087 Co-processor
- ▲ ROM Disk Card
- ▲ EMS Memory Card (Version 3.2)
- ▲ Color/Monochrome CRT Adaptor
- ▲ Serial I/O Card

**Note:** Only one of the ROM disk card, EMS memory card or the CRT adaptor can be installed in the computer at a time.

**External 5-1/4 inch Floppy Disk Drive Unit.** The computer has one port for connecting a 5-1/4 inch floppy disk drive to the system. You can easily connect the drive unit CE-452F to the system.

CE-452F 5-1/4 inch Floppy  
Disk Drive Unit



**8087 Co-processor.** For improved processing performance, an 8087 co-processor can be added to the system.

**ROM Disk Card.** The CE-452B ROM disk card can be customized to store software programs for easy execution. For details, contact your Sharp dealer.

**EMS Memory Card.** The CE-453B EMS memory card is a 1M byte memory card which conforms to the Lotus\*/Intel\*/Microsoft\* expanded memory specifications.

**Color/Monochrome CRT Adaptor.** A color or monochrome CRT (short for Cathode Ray Tube) can be used in addition to the standard screen. In order to use a CRT, the CE-451A color/monochrome CRT adaptor must be installed in the main unit.

**Serial I/O Card.** By installing the CE-451B serial I/O card, the computer has two serial ports to communicate with external devices such as a serial printer, external modem, and mouse pointing device.

## The Software

In order to use computer hardware for tasks like writing memos or balancing a checking account, software is required.

Software is a series of instructions that direct the computer to perform specific tasks. It is generally loaded into main memory from a floppy diskette where it remains until the system is turned off or other software is loaded.

Software (sometimes referred to as programs) can be divided into three categories – operating system software, programming languages, and applications software.

**Operating System Software.** Operating system software manages the computer's resources such as disk drives and printers. By performing these general routines, operating system software forms the base on which applications software can run.

The operating system software for this computer is MS-DOS\*, version 3.3. The diskette packaged with the computer contains this software.

**Programming Languages.** You can write programs using various languages. The computer provides GW-BASIC\* version 3.2 as its standard programming language.

**Applications Software.** Applications software helps you perform business and personal tasks such as word processing, spreadsheet analysis, and graphics presentations.

Many of the applications written to run with MS-DOS\* can be used on this computer.