

COMMODORE

128 ^{T.M.}

PERSONAL COMPUTER
Introductory Guide



**Introducing the
Commodore
128
Personal Computer**

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Commodore BASIC 7.0

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THE COMMODORE 128 PERSONAL COMPUTER

—A Powerful New Multi-Mode Computer

Your new Commodore 128 Personal Computer is packed with a host of novel and exciting features that make it one of the best performing, most versatile microcomputers available at any price. Among the many impressive features of the Commodore 128 are:

- 128K of user memory which is expandable to 256K or 640K by using optional RAM expansion modules
- 40 and/or 80 column full color display
- Professional typewriter keyboard with full numeric keypad
- Built-in advanced Basic 7.0 computing language
- CP/M Plus Version 3.0 operation
- Complete compatibility with Commodore 64 hardware and software
- Access to thousands of existing software programs

Not the least of the Commodore 128's virtues is the fact that it is produced by Commodore—the maker of more microcomputers than any other company in the world. And as with all Commodore products, the C128 gives you high performance without high price.

About The Commodore 128 Manuals

There are two books packed with the Commodore 128 computer:

- **INTRODUCING THE COMMODORE 128 PERSONAL COMPUTER**—This is the book you are reading. It gives you all the information you need to know to load prepackaged (commercial) software programs.

- **THE COMMODORE 128 SYSTEM GUIDE**—This is the larger book. It describes the Commodore 128's capabilities in detail. You will want to consult this book if you are an experienced BASIC programmer, or if you are interested in learning how to program in BASIC.

THE THREE OPERATING MODES OF THE COMMODORE 128

The Commodore 128 is actually three computers in one, offering three primary operating modes:

- **C128 Mode**
- **C64 Mode**
- **CP/M Mode**

Here's a summary of what each mode gives you.

C128 Mode

In C128 Mode, the Commodore 128 Personal Computer provides 128K of RAM (Random Access Memory). This supplies all the memory needed to run even sophisticated applications like word processing, spreadsheets, database programs, or integrated software programs like JANE, which allow you to combine word processing, graphics and filing capabilities. And you can easily expand the RAM to 256K or 640K with optional RAM expansion modules. With 640K RAM installed, the Commodore 128 can handle virtually any application.

C128 Mode also incorporates a powerful extended Commodore BASIC language, known as BASIC 7.0. Offering over 140 commands, statements and functions, BASIC 7.0 provides better, quicker and easier ways to perform what otherwise would be complex and time-consuming programming tasks, such as graphics, animation, sound and music. C128 mode also offers both 40- and 80-column output, and a 92-key keyboard. The keyboard features a numeric keypad as well as Escape, Tab, Alpha Lock, and Help keys.

The powerful capabilities available in C128 Mode are complemented by the family of new peripheral devices from Commodore (1571 fast disk drive, 1902 40/80-column RGBI monitor, etc.). And you can still use all standard Commodore peripherals as well.

C64 Mode

In C64 Mode, the Commodore 128 retains all the capabilities of the commercially successful Commodore 64, thus allowing you to take full advantage of the wide range of available Commodore 64 software. You also have full compatibility with standard Commodore 64 peripherals, including user port and serial devices, cassette recorder, joysticks, composite video monitors, and TV output.

C64 Mode provides the BASIC 2.0 language, 40- column output and access to 64K of RAM. The keyboard provides the same functions available on a Commodore 64 computer. And all the Commodore 64 graphics, color and sound capabilities are retained, used exactly as on a Commodore 64 computer.

CP/M Mode

In CP/M Mode, an onboard Z80 microprocessor gives you access to the capabilities of Digital Research's CP/M Version 3.0, plus a number of new capabilities added by Commodore. The Commodore 128's CP/M package, called CP/M Plus, provides 128K bytes of RAM, 40- and 80-column output, access to the full keyboard including the numeric keypad and special keys, and access to the new fast serial disk drive and the standard peripherals. With some exceptions, you will be able to choose from thousands of popular software programs—already available, and already proven. (Programs created for a specific computer may not run on the Commodore 128. Also, CP/M 3.0 programs on the Commodore 128 may run somewhat slower than CP/M systems on high-priced machines.)

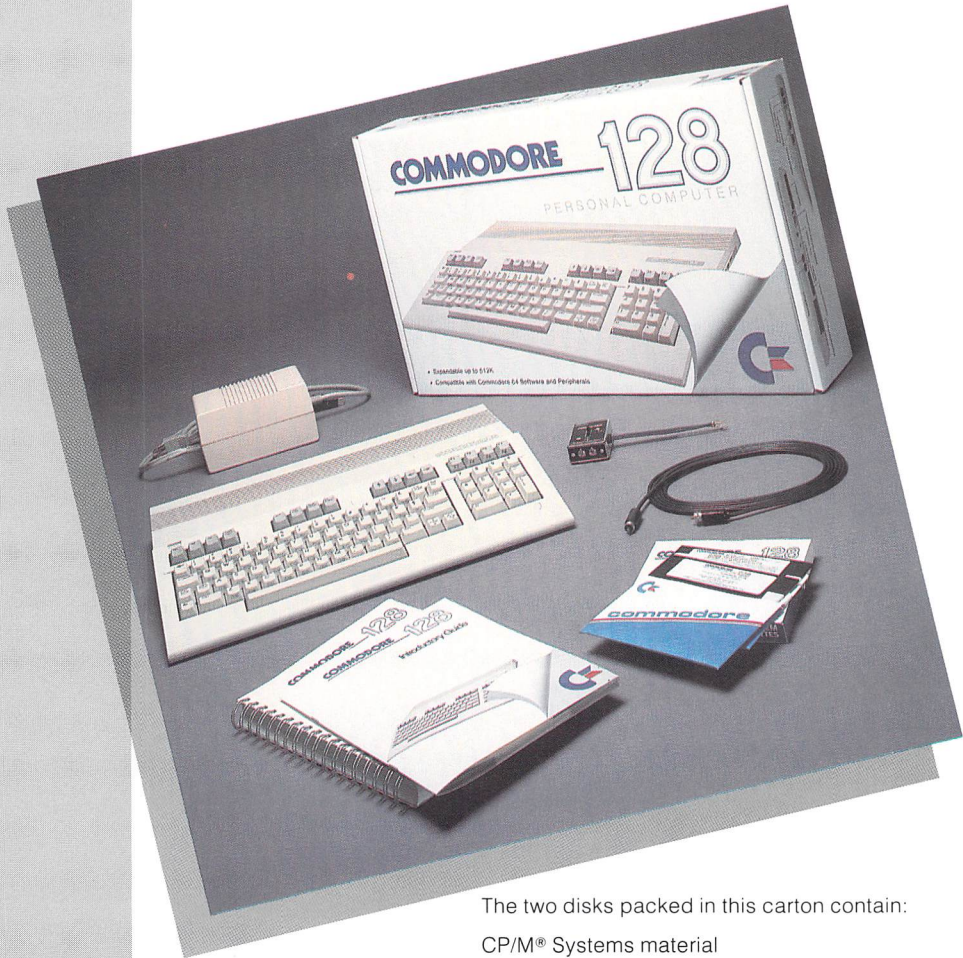
Before You Plug in Anything . . .

By now you're probably anxious to set up your equipment and start computing. But before you do, take a few minutes to read the rest of this booklet, which gives illustrated, step-by-step instructions on the right way to set up your new Commodore 128. The booklet also shows how to connect the computer to the most commonly used peripherals (i.e., accessory equipment), including a video monitor or TV set, a disk drive, a printer, and a modem. Pay special attention to the paragraphs preceded by a large check mark, like this

These paragraphs contain information that will help you avoid possible problems. ✓

The last part of this booklet tells you what software is and shows you how to use prepackaged (i.e., commercial) software programs. Follow the instructions in this booklet carefully and you will find yourself computing almost before you know it.

UNPACKING



The two disks packed in this carton contain:

- CP/M® Systems material
- CP/M® Utilities material
- Commodore 128 Tutorial

To use these disks follow the instructions given under
LOADING AND RUNNING PREPACKAGED SOFTWARE.

What You Should Find in the Box

If any of the items shown above is missing or damaged, contact your dealer immediately. You may want to save the boxes to protect the equipment if you need to move it or return it for service.

A LOOK AT THE COMMODORE 128

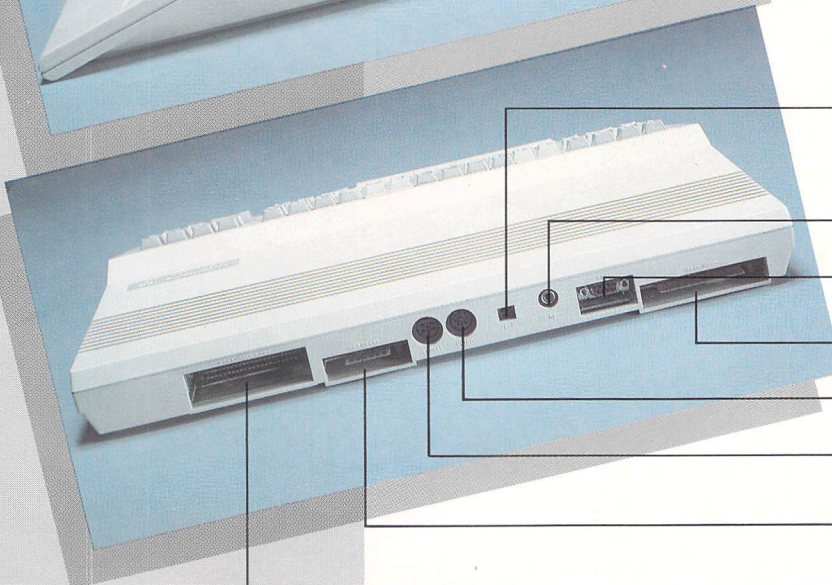
The Computer

Physically, the Commodore 128 resembles a typewriter keyboard enclosed in a light tan case. There are several switches, jacks and plug connections located on the right side and back of the case. This section identifies all these switches, jacks and connections (often called SLOTS or PORTS), and introduces you to the keyboard. For detailed information on using the keyboard, see Section 3 of the Commodore 128 System Guide (the other book packed in the carton with the computer).

The Right Side

- 
- CONTROL PORTS #1 & #2**—Joysticks and other peripherals plug into these openings.
 - RESET SWITCH**—Resets computer without turning it off.
 - ON/OFF SWITCH**—Turns the power on or off.
 - POWER SOCKET**—The POWER SUPPLY plugs in here.

The Back

- 
- CHANNEL SELECTOR SWITCH**—Set television channel for viewing computer display (L = channel 3; H = channel 4)
 - RF SOCKET**—Use this to attach cable from Computer/TV switchbox.
 - RGBI SOCKET**—Plug RGBI monitor cable in this socket.
 - USER PORT**—Accessories, such as modems, plug in here.
 - VIDEO SOCKET**—Plug composite monitor cable in this socket.
 - SERIAL SOCKET**—Connect disk drives and printers here.
 - CASSETTE PORT**—The Datassette tape recorder plugs in here.
 - EXPANSION PORT**—Software cartridges plug in here.

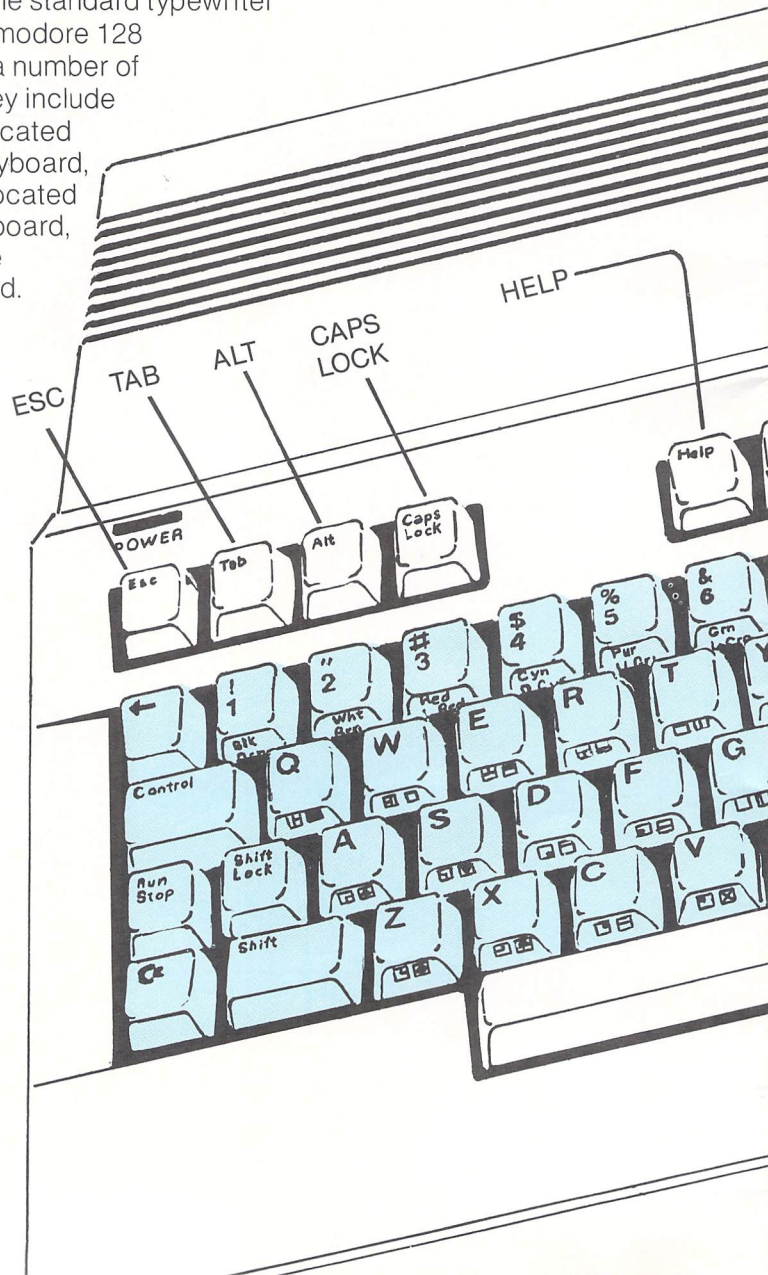
The Keyboard

One way you communicate with your computer is by using the keyboard. The keys let you tell the computer what you want it to do, and let you answer any messages or questions the computer displays on the screen. These messages or questions are called **prompts**.

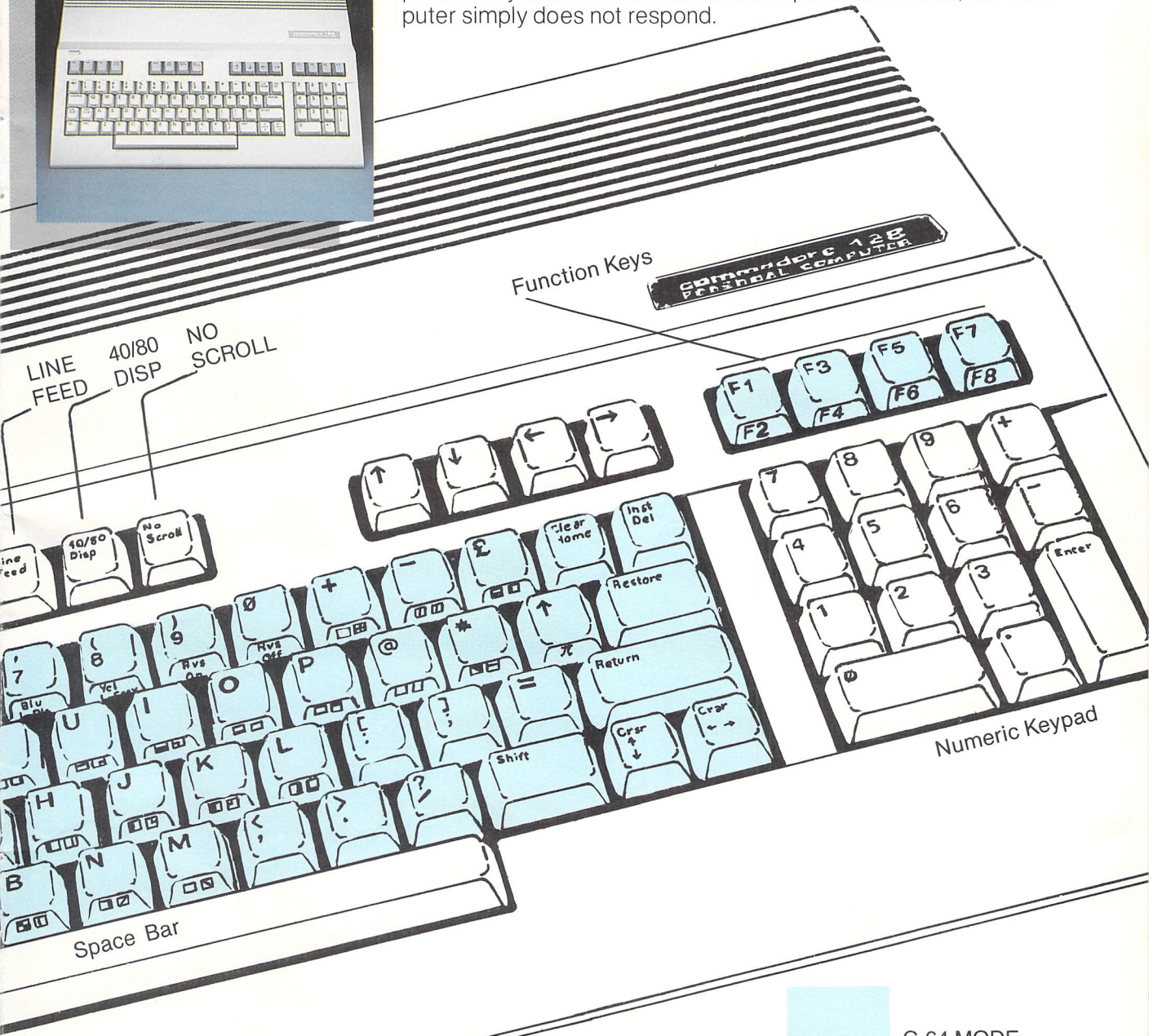
You do not need to be an accomplished typist to use the Commodore 128 keyboard. You only need to know the general keyboard layout.

Work at the keyboard as much as you like. You won't hurt the computer by typing, and you will learn a good deal from the experience.

In addition to the standard typewriter keys, the Commodore 128 keyboard has a number of other keys. They include special keys located on the main keyboard, a row of keys located above the keyboard, and a separate numeric keypad.



On the C128 keyboard, some keys always function, regardless of what mode you are in; other keys can only be used in certain modes. The diagram below shows which keys can be used when. If you press a key that does not function in a particular mode, the computer simply does not respond.



C-64 MODE

SETTING UP

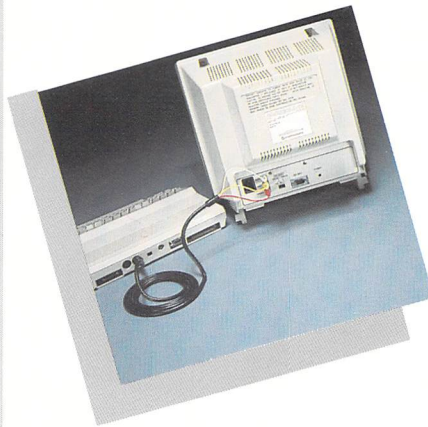
Connecting Your Commodore 128 To a Monitor or Television Set

Setting up your equipment should be easy if you follow the instructions and illustrations closely. Make sure that EVERYTHING is connected properly before you turn on the power.

You can connect either a standard television set (color, or black and white) or a video monitor to display your computer information. A video monitor resembles a TV set; however, the video monitor display has better resolution (sharpness) than a TV display.

Connecting a Monitor

Connecting a monitor is easy—just plug it into the VIDEO port or the RGBI port on the back of the Commodore 128. What port you use depends on the type of monitor you are using—composite, RGBI, or dual.

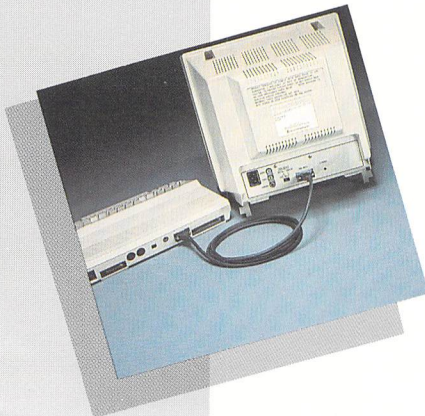


Connecting a Composite Monitor

A composite monitor like the Commodore 1702 provides a 40-column color display. You plug a composite monitor into the 8-pin port labeled VIDEO on the back of the computer.

Connecting an RGBI Monitor

An RGBI monitor provides an 80-column color or monochrome display. (The picture on most TV sets and composite monitors does not have the extra sharpness or resolution required to handle an 80-column display.) You plug an RGBI monitor into the 9-pin port labeled RGBI on the back of the computer.



NOTE: You can connect a composite monitor and an RGBI monitor to the Commodore 128 at the same time. You can switch between the monitors by pressing and releasing the ESCAPE key and then pressing the letter X.



Connecting a Dual Monitor

A dual monitor like the new high-resolution Commodore 1902 can provide either a 40- or 80-column color display. The video switch on the monitor must be set to the operating mode (composite, RGBI) you want.

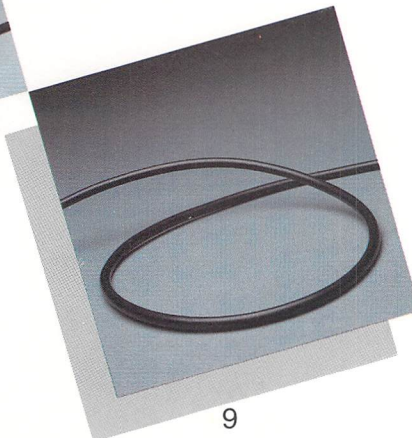
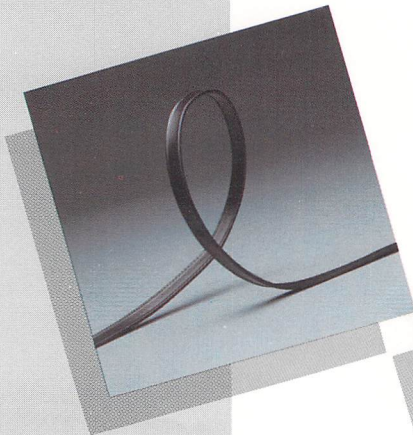
A dual monitor comes with both an 8-pin and a 9-pin cable. You plug the cables into the VIDEO and RGBI ports on the back of the computer.

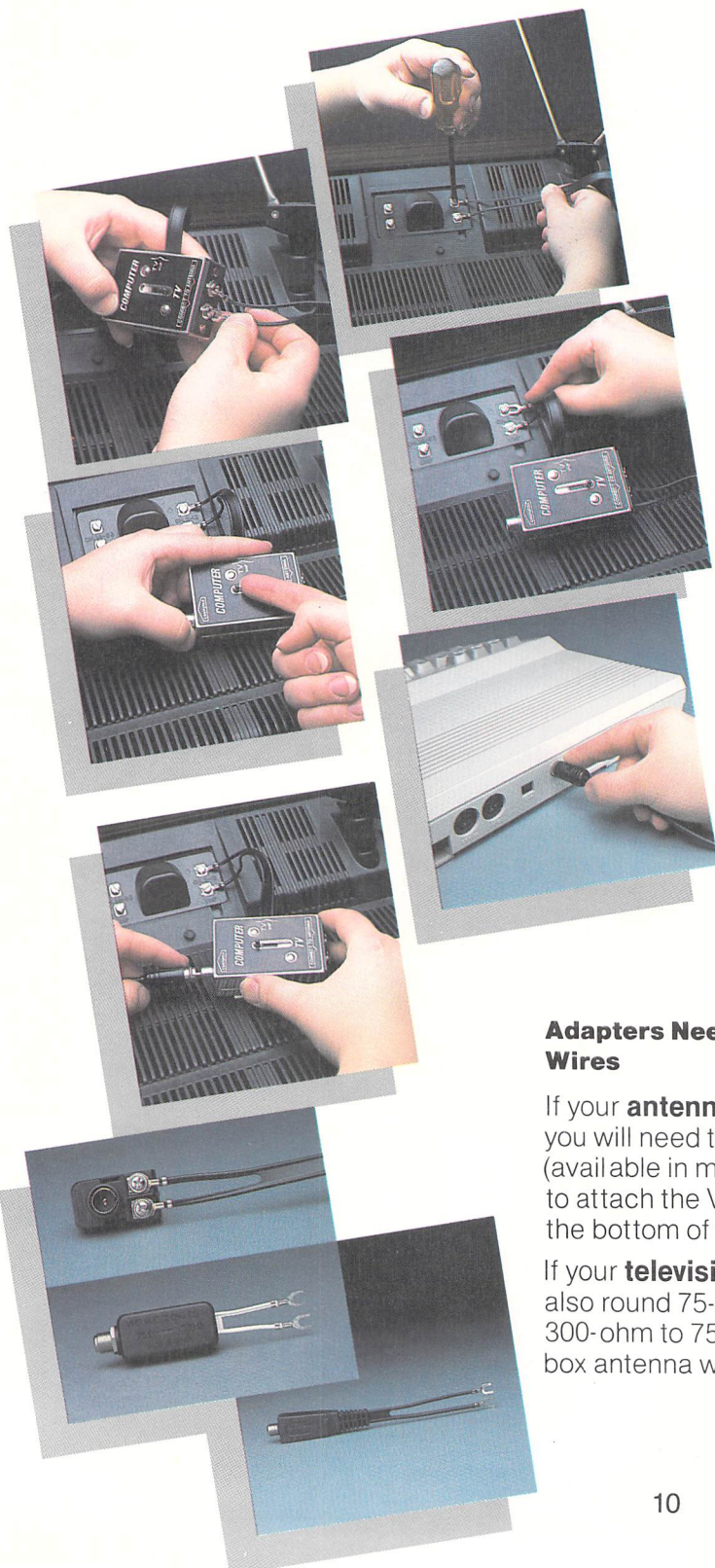
The above instructions should apply to most monitors. If you have a problem making the connection, check the user's manual that came with your monitor.

Connecting a Television Set

How you connect your Commodore 128 to a television set depends on what type of antenna connection your TV has. There are two types of antenna connections:

- Flat 300-ohm wire
- Round 75-ohm coaxial cable





For TVs with 300-ohm Antenna Wires

Disconnect the VHF antenna wires from the VHF terminals of the TV.

Insert these wires under the screws at the bottom of the switch box, at the point marked **Connect to Antenna**.

Connect the two-pronged short wire, from the side of the switch box marked **TV VHF**, to the VHF terminal of the TV.

Slide the selector switch on the switch box to the position marked **Computer**.

Plug one end of the TV connector cable (the black cable with the RCA phono plug at each end) into the TV jack on the back of the Commodore 128.

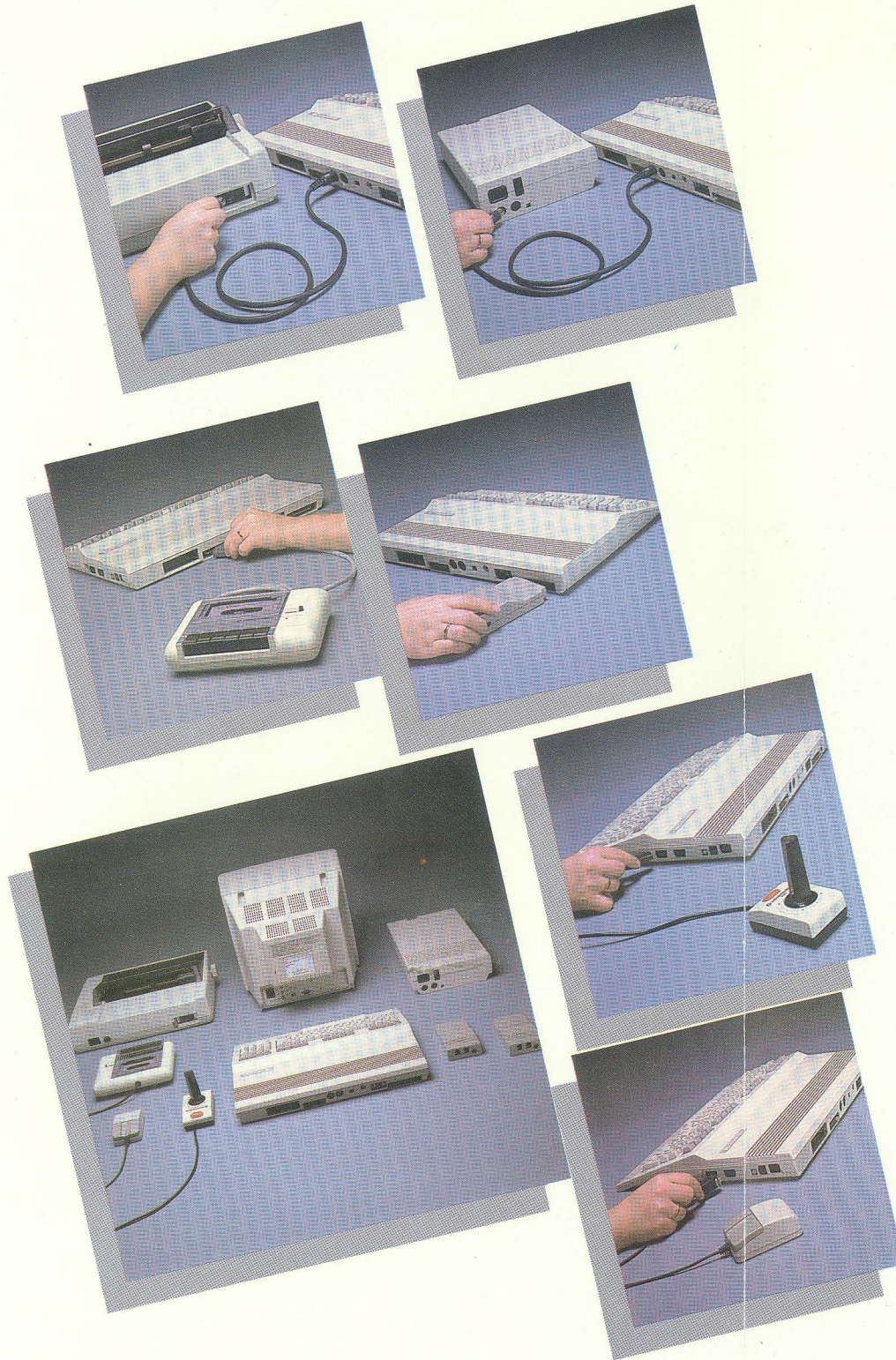
Plug the other end of the TV connector cable into the jack marked **Computer** at the top of the switch box.

Adapters Needed For TVs with 75-ohm Antenna Wires

If your **antenna cable** is the round 75-ohm type, you will need to use a 75-ohm to 300-ohm adapter (available in most electronics or hardware stores) to attach the VHF antenna cable to the screws at the bottom of the switch box.

If your **television set's antenna terminals** are also round 75-ohm types, you will need to use a 300-ohm to 75-ohm adapter to attach the switch box antenna wire to your set's VHF terminals.

Connecting Accessory Equipment (Peripherals)



Disk Drives

A disk drive gives you the ability to save and recall computer information, using storage devices called disks. Thousands of prepackaged programs are available on disk, covering almost any conceivable subject—education, business, music, drawing, communications and more. Disk drives are fast and easy to use, requiring only one cable and an electrical plug to hook up. You connect the disk drive to the Commodore 128 through the SERIAL PORT on the back of the computer.

Printer

A printer can provide a printed copy, known as a “hard copy”, of information that is either contained in the computer, or stored on disk or cassette tape. With a printer you can produce letters, reports, mailing labels—even pictures, if you use a printer having graphic capabilities. A printer can be connected in more than one way. You can either connect a printer directly to the computer’s SERIAL PORT, or you can “chain” the printer to a disk drive that is connected to the computer.

Modem

A **modem** allows you to use your computer to communicate over telephone lines with other computer users and with information services like Compuserve and Dow-Jones, as well as with computerized bulletin boards (BB’s). Information received through your modem can be saved on a disk or tape, or printed as a hard copy. The modem is connected to the Commodore 128 through the USER PORT on the back of the computer.

Datassette Recorder

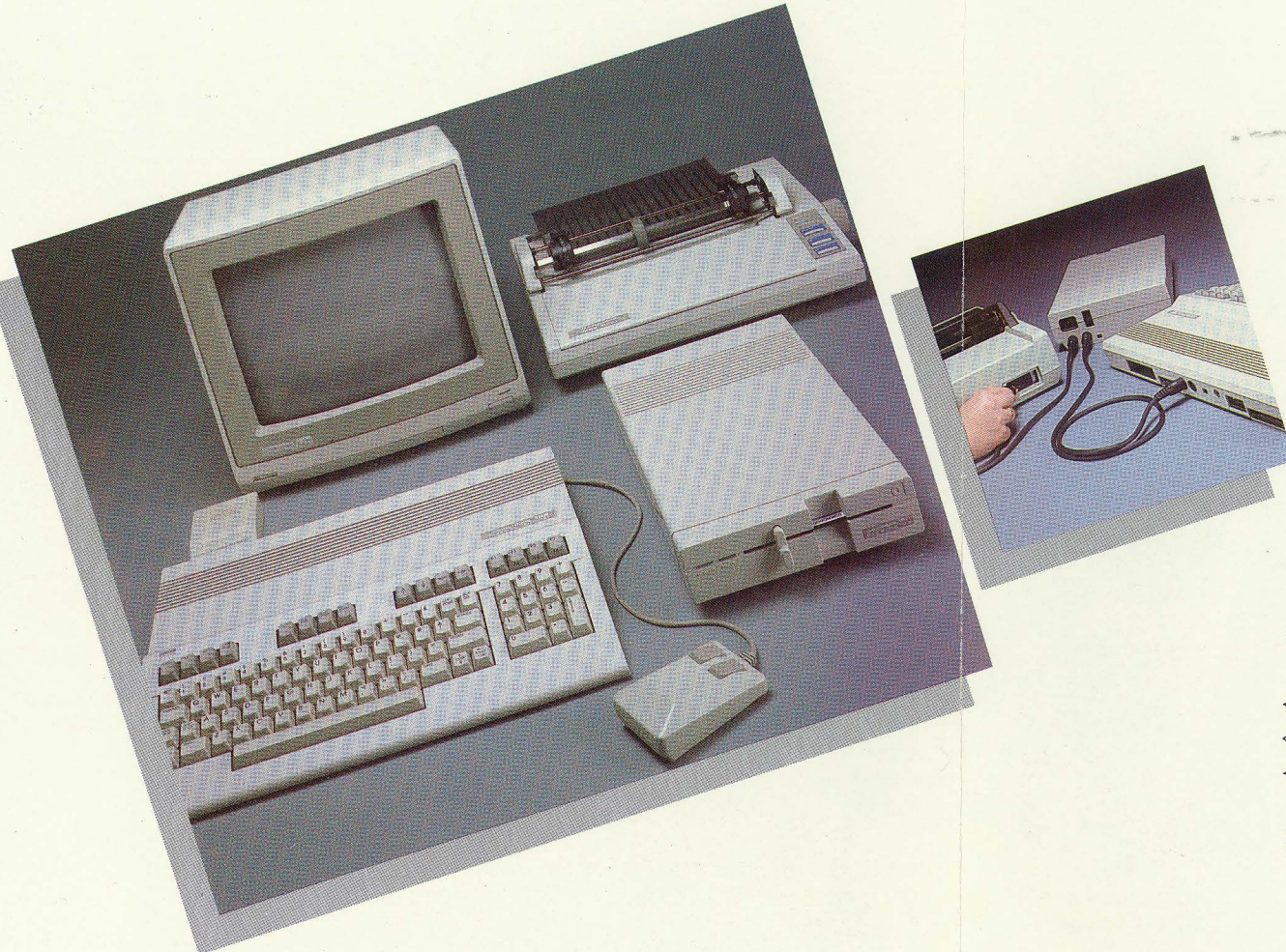
You can also use a Commodore 1530 cassette recorder, called a **Datassette**, as an inexpensive way to store and recall information. The Datassette cord connects directly to the CASSETTE PORT on the back of the Commodore 128.

Joysticks/Mouse

Joysticks plug into the CONTROLLER PORTS on the right side of the computer. Joysticks, once used primarily for games, are now increasingly being used for educational and business software. Joysticks designed for the Commodore 64 are compatible with the Commodore 128.

A **mouse** plugs into either of the CONTROLLER PORTS and allows you to move easily from place to place on the screen. Many programs display a list of choices (called a **menu**) on the screen. With a mouse you can select from the menu without using the keyboard.

In addition to the TV set or video monitor used for the display, you can connect many other accessories, known as **peripherals**, to your computer. Peripherals broaden the scope of what you can do with your Commodore 128. For instance, with the proper peripherals you could use the Commodore 128 to access stock market quotes or airline schedules and print out a copy for reference—all without leaving your home or office. The foldout connection diagram describes some of the most popular peripherals and shows how to connect them to the Commodore 128.

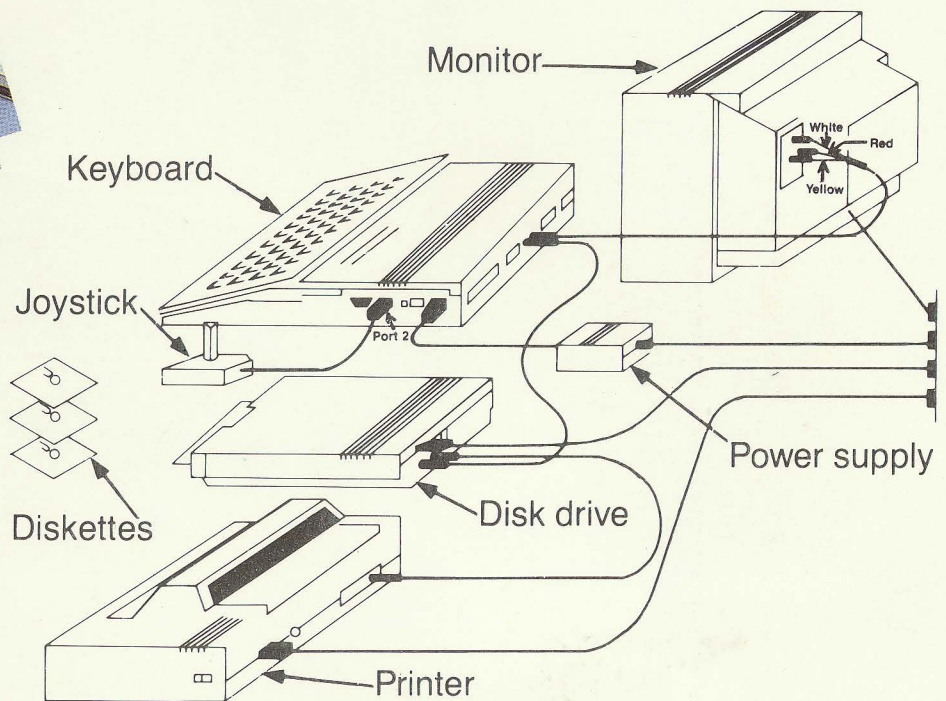


Chaining Disk Drives and Printers

You can use the “chaining” (or “daisy chaining”) technique to connect several disk drives or printers to your Commodore 128 at one time. Using this technique, you connect a cable from one serial port of a printer or disk drive to a serial port of another disk drive. A disk drive must be the item of equipment that is directly connected to the Commodore 128’s serial port. The connection diagram shows a printer and a disk drive connected to the computer by chaining.

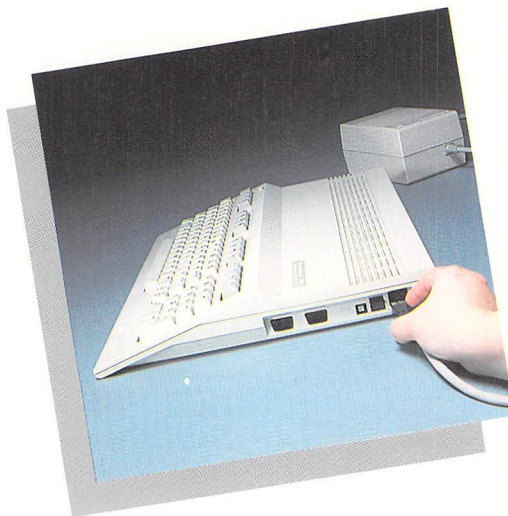
Checking the Connections

Check the equipment connections you make against the connections in this diagram. Note that this diagram shows a **typical** setup for a Commodore system. Connection details may vary for different models of equipment, so be sure to refer to the manuals included with any peripheral equipment you purchase.



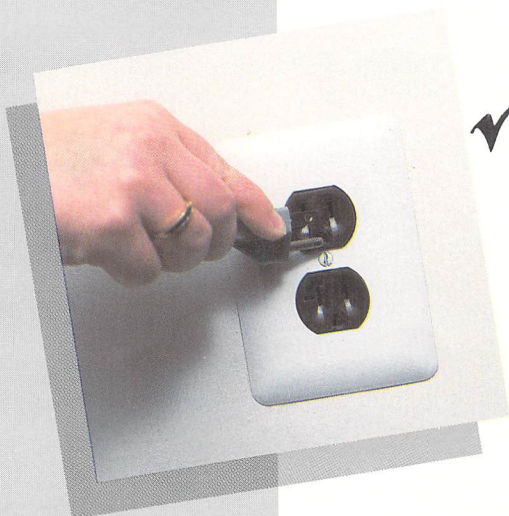
Connecting Your Computer to Electrical Power

To connect your computer to electrical power, plug the end of the POWER SUPPLY cable into the computer POWER SOCKET (the back connection on the right side of the computer). Make sure the computer power switch (located on the right side of the computer, next to the power socket) is set to OFF.



Next, plug the 3-pronged end of the power supply cable into a 3-pronged electrical outlet.

✓ **CAUTION**—If the house AC wall receptacle is not the 3-pronged type, contact an electrician to install the correct 3-pronged receptacle. If a multi-connector box is used to connect the C128 computer and peripherals to the AC line, the AC ground must be common to all units. Contact an electrician if you are not sure if your system is grounded properly.



GETTING STARTED

Turning on the Computer for the First Time

Plug in and turn on the television set or monitor that you have connected to the computer. If you are using a television set, make sure it is tuned to either channel 3 or channel 4—whichever is not used in your area—and make sure the channel selector switch on the back of the computer is set to the same channel. (If you are using a monitor you don't need to set these switches.) Then set the computer power switch (located on the right side of the computer) to ON. The small red light on the left side of the keyboard should come on.

Initial Screen Display

Shortly after you turn on or "power up" your computer, you should see a display on the screen of your television set or monitor. The Commodore 128 is capable of providing various types of screen displays. These displays can either be 40 or 80 columns wide. COLUMNS are the spaces ACROSS the screen (horizontal), as opposed to the vertical ROWS. Both displays feature 25 rows on the screen.

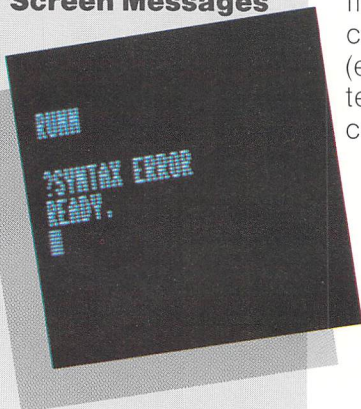
The exact display depends on what operating mode you have selected (C128, C64, CP/M), and in some cases on what type of monitor you are using. See HOW TO SELECT AN OPERATING MODE on page 18 for a description of the initial screen displays for the various operating modes.

The Cursor

When your display appears you will often see a small flashing rectangle somewhere on the screen. This rectangle is called the **cursor**. The cursor marks your position on the screen. When you type in something or when the computer responds to something you have typed in, the cursor usually moves accordingly.

Screen Messages

If you press the RETURN key without having entered an appropriate command you may see any one of several messages on the screen (e.g., SYNTAX ERROR). These messages are the computer's way of telling you that it doesn't have enough information to act on. In most cases the messages are self-explanatory, but in some cases you may need a more detailed explanation of the message. Appendices A and B of the Commodore 128 SYSTEM GUIDE list the error messages for the Commodore 128.



If You Have A Problem . . .

If the screen display is not clear, try adjusting the controls on your television set or monitor. You may not get a picture at all if your control settings or connections are not correct. In such a case you should check all your settings and connections. Often the TV may simply be tuned to the wrong channel, or you may have the brightness turned off.

Make sure that the keys on the keyboard are in the proper position. Normally, the SHIFT LOCK, CAPS LOCK and 40/80 keys should **not** be depressed. If they are depressed you may get no picture at all, or the symbols on the screen may look strange.

The Troubleshooting Chart shown on the following pages lists some of the more common problems and tells how to correct them.

If you check the connections and you still can't get the computer to work, call this HOTLINE:

(215) 436-4200

Commodore CUSTOMER SERVICE personnel at this number will help you find and correct the problem. If the problem cannot be corrected over the phone, you will be given the number of the Commodore service facility nearest you. Commodore has over 750 independent companies, including the RCA Service Company, ready to provide nationwide service and maintenance for your Commodore equipment.

Most set-up and start-up problems are simple and can be diagnosed over the phone. By calling the toll-free HOTLINE, you can probably avoid an unnecessary trip to the service facility. More important, you can continue to use your equipment.

Remember—Call the (215) 436-4200 number before you take any equipment in for warranty service.

TROUBLE-SHOOTING CHART

Symptom

Indicator light not 'ON'

No picture (Monitor)

No picture (TV)

Random pattern on screen with cartridge in place

Picture with poor or no color

Sound with excess background noise

Picture OK, but no sound

Cause

Computer not turned ON

Power supply not plugged into computer

Power supply not plugged into external power

Bad fuse in power supply

Monitor not connected

40/80 column setting incorrect

Incorrect hookup

Cable to TV not plugged in

Computer and/or TV set for wrong channel

40/80 key setting incorrect

Cartridge not properly inserted

Poorly tuned color controls

Volume too high

Volume too low

AUX input on external amplifier not properly connected

Remedy

Make sure power switch is in ON position

Check power socket for loose or disconnected power cable

Check connection with wall outlet

Replace fuse

Check monitor connections

Check 40/80 column switch on computer and/or monitor

Check computer hookup to VHF antenna terminal; see page 10 for details.

Check output cable connection to TV

Set computer to same channel as TV (3 or 4)

Turn off computer. Set 40/80 key to UP position for TV

Turn power OFF and reinsert cartridge

Adjust color controls on TV or monitor

Adjust volume

Adjust volume

Connect sound jack to AUX input on amplifier and select AUX input

Sound OK, but no picture

Computer stuck:
Cursor not flashing

Computer displays garbled symbols on the screen

See "No picture" listings above

Computer inadvertently received instructions to disable keyboard; or the printer, cassette or disk drive is in *listening* mode

Incorrect operating mode setting for monitor

CAPS LOCK key depressed

Overheating

See "No picture" listings above

While depressing the RUN/STOP key press RESTORE key twice; or reset the peripherals by turning off and on; or turn the computer off and on

Press ESCAPE key; release; press X

Release CAPS LOCK key

Pull plug on power supply and allow to cool down (make sure air flow around power supply is not restricted)

HOW TO SELECT AN OPERATING MODE

Each of the three operating modes of the Commodore 128—C128, C64 and CP/M—takes advantage of particular hardware and software features. Two modes—C128 and CP/M—allow you to use both 40- and 80-column screen displays. In effect, then, the Commodore 128 lets you select any of the following five operating options:

- **C128—40 Columns**
- **C128—80 Columns**
- **C64—40 Columns**
- **CP/M—80 Columns**
- **CP/M—40 Columns**

If you are using a composite monitor or a TV set for your display, you can access only the 40- column options. If you are using an RGBI monitor you can access only the 80-column options.

If you are using a dual monitor like the Commodore 1902, you can access all five options. You can also use two separate monitors (one composite, and one RGBI) to access all five options. With a dual monitor or with separate composite and RGBI monitors, you can switch from option to option as desired. This section briefly describes each mode and shows you how to switch from one mode to another.



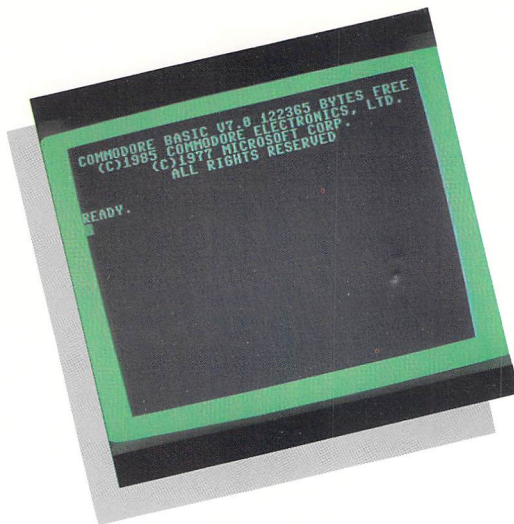
NOTE: When you change modes, the information you are working with in a given mode is not transferred to the mode you change to. If you want to keep that information you should **SAVE** it before changing modes. See page 29 for instructions on **SAVEing** information.

C128 Mode

C128 mode is the default mode for your computer at power-up. This means that if you don't specifically select C64 or CP/M mode, *and* if all disk drive equipment is OFF, you will be in C128 mode when you turn on the computer.

Entering C128 Mode—40 Columns—with the Computer OFF

1. Make sure computer 40/80 key is **not** depressed.
2. Make sure disk drive is OFF.
3. Press computer ON/OFF switch.
4. If you are using a 1902 dual monitor, make sure it is set to **separated chroma/luma**.



When you turn on your computer in C128 mode, using a 40-column display, the screen display should look like this.

Entering C128 Mode—80 Columns—with the Computer OFF

1. Make sure you are using a properly connected RGBI monitor (color or monochrome). If you are using a 1902 dual monitor make sure the monitor screen display is set for RGBI (on the video switch) and POS DIGITAL (on the RGBI switch on the back.)
2. Make sure disk drive is OFF.
3. Depress computer 40/80 key.
4. Press computer ON/OFF switch.

Here is a sample 80-column display:

Switching between 40 and 80 Columns in C128 Mode

With a dual monitor like the Commodore 1902, or with two separate 40- and 80-column monitors you can switch back and forth between 80 and 40 columns, even while the computer is running. To make the change, you press and release the ESC (ESCAPE) key; then press the X key.

Leaving C128 Mode

You can leave C128 mode either by turning off the computer, or by entering C64 or CP/M mode. See "Entering C64 Mode" and "Entering CP/M" for instructions.

Remember—you must SAVE what you're working on in C128 mode before you switch to another mode. If you don't your C128 mode work will be erased when you switch modes.

C64 Mode

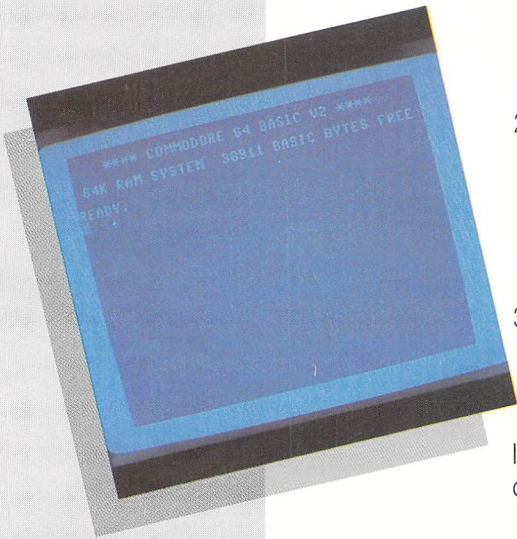
In C64 mode you can use the Commodore 128 just as if it were a Commodore 64 computer. You can use all the Commodore 64 software (in cartridge, tape, or disk format), and all the standard Commodore 64 peripherals. The screen display in C64 mode is 40 columns.

Entering C64 Mode

There are three ways to enter C64 mode:

1. With the power OFF, hold down the **C** key and press the ON/OFF switch. The C64 opening screen display will appear and you will be in C64 mode.
2. With the computer power OFF, insert a software cartridge designed to run on the Commodore 64 in the cartridge slot. Turn power ON. The computer senses that the cartridge is for the Commodore 64, and automatically transfers control to the cartridge software.
3. When the computer is running in C128 mode, type in the BASIC command GO 64 and press RETURN. The computer responds with:
ARE YOU SURE?

If you then press the Y and RETURN keys, the computer automatically enters C64 mode.



Leaving C64 Mode

To leave C64 mode, turn the power OFF. You can then enter either of the other two modes by following the appropriate power-up procedure.

NOTE: If you have a C64 cartridge in the cartridge slot, you must turn off the computer and remove the cartridge when you leave C64 mode; otherwise, when you turn on the power again, the computer will sense the presence of the C64 cartridge and will power up in C64 mode.

CP/M Mode

CP/M is a popular operating system (OS) for microcomputers, developed by Digital Research Incorporated (DRI). Like all operating systems, CP/M is a set of instructions that tells a computer how to manage all the hardware and software elements of the system.

CP/M mode on the Commodore 128 provides you with the capabilities of DRI's CP/M Plus Version 3.0, including 128K of random access memory (RAM), a 40- or 80-column display, programmable function keys, and access to a fast disk drive. In CP/M Mode you can select from the wide variety of commercial software programs available for CP/M 3.0 and other, earlier versions of CP/M (CP/M 2.0, CP/M 2.2, etc.)

Entering CP/M Mode—40 Columns—with the Computer OFF

1. Make sure you are using a properly connected composite monitor (color or monochrome). If you are using a 1902 dual monitor make sure the monitor screen display is set for a 40-column display.
2. Make sure computer 40/80 key is **not** depressed.
3. With the computer off, turn on the disk drive and insert the CP/M 3.0 system disk.
4. Turn on the computer. CP/M 3.0 is **booted** (that is, loaded) automatically.

Entering CP/M Mode—80 Columns—with the Computer OFF

1. Make sure you are using a properly connected RGBI monitor (color or monochrome). If you are using a 1902 dual monitor make sure the monitor screen display is set for RGBI (80 columns).
2. Depress computer 40/80 key.
3. With the computer off, turn on the disk drive and insert the CP/M 3.0 system disk.
4. Turn on the computer. CP/M 3.0 is **booted** (that is, loaded) automatically.

✓ **NOTE:** The power to the disk drive **must** be turned on **before** you turn on the computer.

Entering CP/M Mode from C128 Mode

1. Set the computer 40/80 key and the dual monitor video switch to match the CP/M operating mode you want to enter (40 or 80 column).
2. Type:
BOOT
3. Press **RETURN**

Entering CP/M Mode from C64 Mode

1. Turn off the computer.
2. Turn on the disk drive and insert the CP/M 3.0 System disk.
3. Turn on the computer.

This is essentially the same as entering CP/M with the computer OFF.

Switching between 40 and 80 columns in CP/M Mode

In CP/M, you can choose either a 40- or 80-column screen display. At power-up, the screen display is automatically set to 40 columns unless you specify 80 columns. You can select an 80-column screen display by depressing the 40/80 key before you turn on the computer. Then, when you turn on the computer, the screen display will be set to 80 columns. To change back to 40 columns, you simply release the 40/80 key and press the RESET switch. See Section 14 of the System Guide for information on selecting a 40 or 80 column display (or 40 *and* 80 column displays) by using the DEVICE command.



NOTE: If you are using a dual monitor like the Commodore 1902, make sure the monitor video switch is set for the screen display you are using.

Leaving CP/M Mode

To leave CP/M mode and stop computing, simply turn the power OFF. If you want to go to C128 mode, leave the power on, but remove the CP/M disk from the drive and press RESET. You will then be in C128 mode. If you want to go to C64 mode, turn the power off. Then follow any one of the procedures given under "Entering C64 Mode".

Using the Reset Button

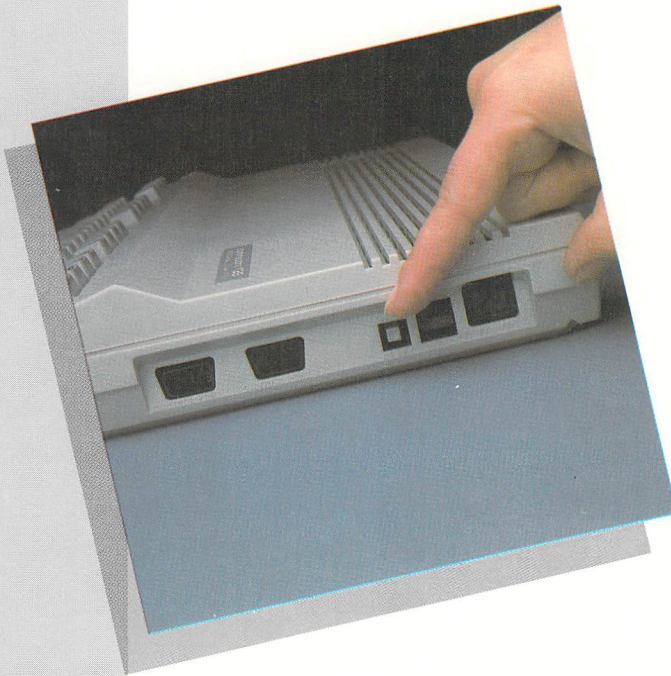
Under certain conditions the computer may “lock up”—that is, it will not accept input from the keyboard. You can use the RESET button (located on the right side of the computer) to free the keyboard.

RESET—C128/64 Modes

When you press RESET in these modes, the screen clears and the initial screen display for whatever mode you are in reappears.

RESET—CP/M Mode

When you press RESET in this mode, CP/M 3.0 reboots, bringing you back to the opening screen display.



MODE SWITCHING CHART

TO	FROM	CP/M 40 COL	CP/M 80 COL
C128 40 COL	<p>OFF</p> <p>C128 80 COL</p> <p>C64</p>	<p>1. Check that 40/80 key is UP.</p> <p>2. Turn computer ON.</p>	<p>1. Press ESC key; release.</p> <p>2. Press X key.</p> <p>OR</p> <p>1. Check that 40/80 key is UP.</p> <p>2. Press RESET button.</p>
C128 80 COL	<p>CP/M 40 COL</p> <p>CP/M 80 COL</p>	<p>1. Press 40/80 key DOWN.</p> <p>2. Turn computer ON.</p>	<p>1. Press ESC key; release.</p> <p>2. Press X key.</p> <p>OR</p> <p>1. Press 40/80 key DOWN.</p> <p>2. Press RESET button.</p>
C64	<p>CP/M 40 COL</p> <p>CP/M 80 COL</p>	<p>1. Hold C key DOWN.</p> <p>2. Turn computer ON.</p> <p>OR</p> <p>1. Insert C64 cartridge.</p> <p>2. Turn computer ON.</p>	<p>1. Type GO 64; press RETURN.</p> <p>2. The computer responds: ARE YOU SURE? Type Y; press RETURN.</p> <p>OR</p> <p>1. Type GO 64; press RETURN.</p> <p>2. The computer responds: ARE YOU SURE? Type Y; press RETURN.</p>
CP/M 40 COL	<p>CP/M 40 COL</p> <p>CP/M 80 COL</p>	<p>1. Turn disk drive ON.</p> <p>2. Insert CP/M system disk in drive.</p> <p>3. Check that 40/80 key is UP.</p> <p>4. Turn computer ON.</p>	<p>1. Turn disk drive ON.</p> <p>2. Insert CP/M system disk in drive.</p> <p>3. Check that 40/80 key is UP.</p> <p>4. Type: BOOT</p> <p>5. Press RETURN</p>
CP/M 80 COL	<p>CP/M 40 COL</p> <p>CP/M 80 COL</p>	<p>1. Turn disk drive ON.</p> <p>2. Insert CP/M system disk in drive.</p> <p>3. Press 40/80 key DOWN.</p> <p>4. Turn computer ON.</p>	<p>1. Turn disk drive ON.</p> <p>2. Insert CP/M system disk in drive.</p> <p>3. Check that 40/80 key is DOWN.</p> <p>4. Type: BOOT</p> <p>5. Press RETURN</p>

NOTE: If you are using a Commodore 1902 dual monitor, remember to move the video switch on the monitor from COMPOSITE or SEPARATED to RGBI when switching from 40-column to 80-column display; reverse this step when switching from 80 to 40 columns. Also, when switching between modes remove any cartridges from the expansion port and any disks from the disk drive.

LOADING AND RUNNING SOFTWARE

What Software Is

SOFTWARE is a set of instructions (also called a PROGRAM) that tells your computer what to do. You can create your own software and you can buy prepackaged (i.e., commercial) programs. You don't need to know all about computing or programming to use prepackaged software programs. There is a wide range of software programs available for your Commodore 128 computer, since the Commodore 128 runs all Commodore 64 software and thousands of CP/M programs as well.

Prepackaged software is available in three different forms: DISK, CARTRIDGE and CASSETTE TAPE.

Disk

Disks (also known as diskettes, floppy disks or "floppies") are about 5 inches in diameter, and resemble a 45-rpm record. Disks provide fast, easy to use storage and retrieval for your computer programs and files. The disk itself is enclosed in a protective plastic sleeve—do not try to remove the disk from this sleeve! To use software on disk, you need a disk drive, like the Commodore 1541 or 1571 disk drives. Before you can store a program on a new disk, you must first FORMAT that disk so it can be used. Section 3 of the SYSTEM

GUIDE tells how to format a disk for use with your own programs. Section 3 of the SYSTEM GUIDE also describes and defines other commands that you will want to know how to use if you plan to create, save and run your own programs.





Cartridge

Cartridge software comes in packages about the size of a deck of cards. Software cartridges are easy to use: with the computer OFF, you simply plug them directly into the cartridge slot on the back of the computer.

Cassette Tape

This type of software comes on standard size cassette tapes, and can be used with a special Commodore cassette recorder called the 1530 DATASSETTE™.

Software Formats for Each Operating Mode

Different types of software are available for the three different operating modes of the Commodore 128. The following chart shows what formats can be used in each of the three operating modes.

SOFTWARE TYPE	OPERATING MODE		
	C128	C64	CP/M
DISK	X	X	X
CARTRIDGE	X	X	
CASSETTE	X	X	

Loading And Running Prepackaged Software

Using prepackaged software is a two-step process:

1. The program must be entered into your computer's memory. This is called **LOADING** the program.
2. Then the computer must carry out, or **RUN**, the program.

Make sure that the cable connecting the disk drive to the C128 is plugged into the six-pin SERIAL port located on the back of your computer. Don't confuse the SERIAL port with the two VIDEO ports, which are also located on the back of the Commodore 128.

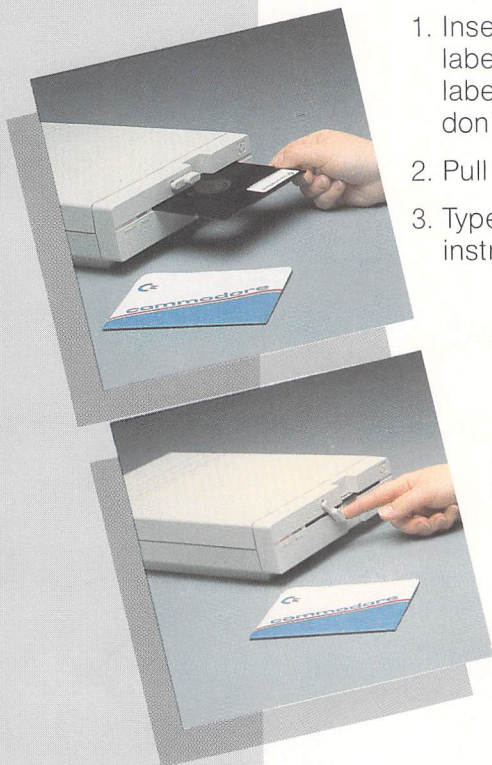
Loading Prepackaged C128 Disk Software

Follow these steps to load prepackaged disk software:

1. Insert the software disk into the disk drive. Make sure the label on the disk is facing up. Put the disk in so that the labeled end goes in last. Be sure the disk is all the way in, but don't force it.
2. Pull down the door or lever on the front of the disk drive.
3. Type the **LOAD** command as specified in the software instructions. In most cases the command will be:

LOAD "PROGRAM NAME",8 RETURN

Note that you **must** enclose the name of the program in quote marks.



In some cases, prepackaged disk software may use some other format of the LOAD command. Always type in the command exactly as specified in the instructions.

4. Press the **RETURN** key. The LOAD command instructs the computer to retrieve the named program from the disk. The cursor disappears, the indicator light on the disk drive goes on, and this message appears on the screen:

SEARCHING FOR PROGRAM NAME LOADING

After a short time the screen displays:
READY

5. When the screen displays **READY** and the cursor reappears, the program has been loaded into the computer. Then type **RUN** and press **RETURN**. This command instructs the computer to perform (i.e., RUN) the program.

Loading Prepackaged C64 Disk Software

In C64 mode you use essentially the same LOAD and RUN procedure used in C128 mode. Again, most programs are loaded using a sequence of commands like this:

1. Type:
LOAD "PROGRAM NAME",8 RETURN
2. After the "SEARCHING" and "LOADING" lines appear, wait for the **READY** message.
3. Then type:
RUN RETURN

When the program is running, follow the instructions given on the screen or in the software instructions.

NOTE: As mentioned above, some prepackaged disk software may have its own special way to load the program. Also, some prepackaged software may have an automatic RUN command built into the program. The instructions that come with commercial software contain specific, detailed instructions for loading and using the particular program. These instructions take precedence over the general instructions given in this booklet.

Saving Your Work to Disk in C128/C64 Modes

If you are using a prepackaged software program, the user's manual that comes with the program will probably tell you how to save your work, if necessary. The SAVE procedure for disk usually involves a command like this in C128 or C64 mode:

SAVE "PROGRAM NAME",8

The program name is the name under which you file your work. The program name can be any combination of alphanumeric characters, up to 16 in all. Note again that the program name must always be enclosed in quote marks.

In C128 mode only, you can use the DSAVE function key to save your work to disk. In this case, you press the F5 key just above the numeric keypad. The computer screen displays:

DSAVE"

You then enter the program name and a closing set of quote marks, and press RETURN. The computer will display a message like this:

SAVING 0: PROGRAM NAME

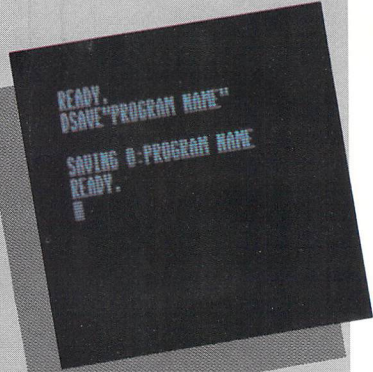
When the program has been saved, the READY message will flash.



```
READY.  
SAVE "PROGRAM NAME",8
```



```
READY.  
DSAVE "PROGRAM NAME"
```

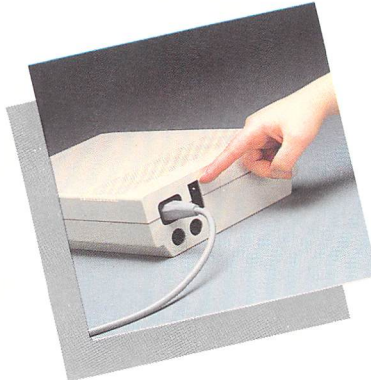
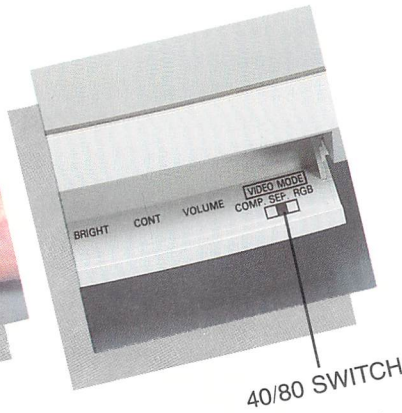


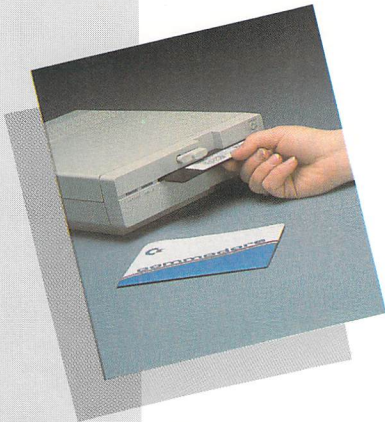
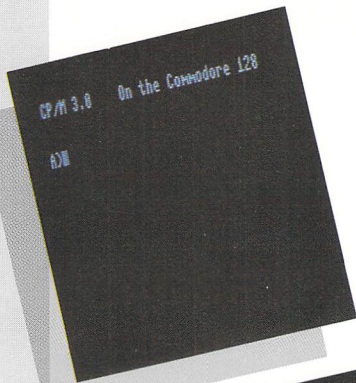
```
READY.  
DSAVE "PROGRAM NAME"  
SAVING 0: PROGRAM NAME  
READY.  
█
```


Loading and Running Software in CP/M Mode

Before you can load a software program in CP/M mode, you must first load the CP/M 3.0 operating system itself. To do this you load a copy of the CP/M 3.0 system from the CP/M System disk into the computer's memory, using this procedure:

1. Make sure the computer is OFF.
2. Make sure that you are using the proper type of monitor. If you are using a dual monitor like the Commodore 902, make sure the VIDEO MODE switch (40/80 column) is set properly.
3. Make sure that the 40/80 key on the computer keyboard is set to the column width you want. In most cases this will be 80 columns, so the 40/80 key should be **depressed**.
4. Turn the disk drive ON. Then insert the CP/M 3.0 System disk into your drive.
5. Turn the computer ON. This automatically loads CP/M 3.0 into the computer's memory. This process is called "booting." This is what the screen looks like during the booting process.





6. After the initial CP/M display, this two-character message appears on your screen:

A>

This is the CP/M system prompt, which tells you that CP/M is ready to accept commands from your keyboard.

7. Remove the CP/M System disk from the disk drive.
8. Insert the CP/M software program disk in the drive.
9. Type in the program name and press **RETURN**.
10. Then follow the instructions given on the screen, or in the manual for the particular software program you are using.

NOTE: For non-Commodore CP/M programs you will probably need to specify the *format* of the CP/M program disk. *Format* in this case refers to a particular way of arranging the data on a disk. These disk formats (referred to as MFM formats) generally are designed to match the specific capabilities of the system for which the particular CP/M program was created.

To widen your choice of CP/M programs, the Commodore 128, when used with the new Commodore 1571 fast disk drive, provides you with the ability to read a variety of non-Commodore CP/M disk formats. Generally you specify the format before you type in the program name and press **RETURN**. You can get instructions on how to specify a non-Commodore CP/M disk format right on your CP/M screen. To do this, just type **HELP C128 MFM** and press **RETURN** following the A> prompt (step 6 above). Printed instructions on specifying an MFM disk format are given at the end of Section 15 of the SYSTEM GUIDE.

See Chapter IV of the SYSTEM GUIDE for an introduction to what CP/M 3.0 software can do, and how to begin using it. To purchase a detailed description of how to use CP/M, 3.0, fill out and mail the coupon included in Chapter IV of the SYSTEM GUIDE. You will receive a complete copy of the CP/M 3.0 User's Guide in return.

Loading Cartridge Software

Saving Your Work in CP/M Mode

To save your work in CP/M mode, follow the instructions given in the manual that accompanies the CP/M program you are using.

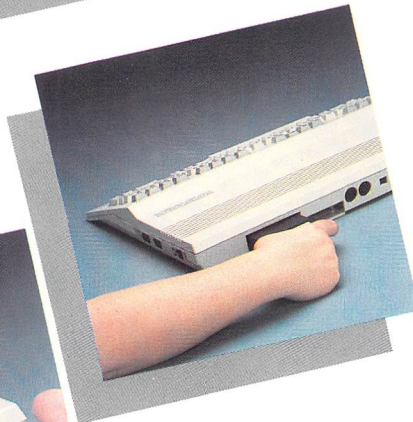
Follow these steps to load cartridge software in C128 and C64 MODES:

1. Make sure your computer is OFF before trying to LOAD a cartridge. The POWER SWITCH is located on the right side of the computer. Check that the POWER LIGHT is not lit.



REMEMBER TO **TURN OFF** YOUR COMPUTER BEFORE YOU INSERT OR REMOVE CARTRIDGES. IF YOU DON'T YOU MAY DAMAGE THE CARTRIDGE AND THE COMPUTER.

2. Insert the cartridge into the slot located on the back of your computer. The cartridge can only be plugged in with the title facing up. Insert the cartridge firmly, but do not force it.



3. Turn ON your Commodore 128.

That's all there is to it. The program loads automatically when you turn the computer on. You don't have to use a LOAD command, and usually you don't need to use the RUN command either. Just follow the directions given on the screen, or in any printed instructions that come with the cartridge.



Using Prepackaged Cassette Tape Software



You can load and run prepackaged cassette software by using a Commodore 1530 Datassette tape recorder. You can also use a Datassette to load, run and save software that you have created yourself. The LOAD, SAVE and RUN instructions for cassette tape software are explained in detail in the **COMMODORE 128 SYSTEM GUIDE**. See your Datassette instruction manual for further information on using cassette software.

Loading and Running Disk Programs You Have Created

You can LOAD and RUN disk software programs that you have created yourself in much the same way that you LOAD and RUN prepackaged disk software.

The general procedure is this:

1. Enter your program in the computer.
2. SAVE your program on disk using the DSAVE or SAVE commands.
3. When you want to use the program, insert the disk containing the program into the disk drive. Then use the LOAD command, like this:

LOAD "PROGRAM NAME",8

4. When you get a READY prompt, type RUN and press RETURN. Your program will then execute.

The **COMMODORE 128 SYSTEM GUIDE** gives you complete instructions on how to use the SAVE/DSAVE, LOAD/DLOAD and RUN commands to save, load and run your own programs.

By following the procedures described in this booklet, you can quickly make use of any of thousands of prepackaged software programs in a variety of categories—including business, home, recreational, educational, scientific—and more.

*Because of the wide capabilities available in these prepackaged programs, you may never want or need to write your own software programs. But if you do, the **SYSTEM GUIDE** provided with your Commodore 128 has been designed to provide you with all the information you will need to create and run your own programs.*

USERS MANUAL STATEMENT

This equipment generates and uses radio frequency energy. If it is not properly installed and used in strict accordance with the manufacturer's instructions, this equipment may interfere with radio and television reception. This machine has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference in a residential installation. If you suspect interference you can test this equipment by turning it off and on. If you determine that there is interference with radio or television reception, try one or more of the following measures to correct it.

- reorient receiving antenna
- move the computer away from the receiver
- change the relative positions of the computer equipment and the receiver
- plug the computer into a different outlet so that the computer and the receiver are on different branch circuits.

If necessary, consult your Commodore dealer or an experienced radio television technician for additional suggestions. You may also wish to consult the following booklet, which was prepared by the Federal Communications Commission:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

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