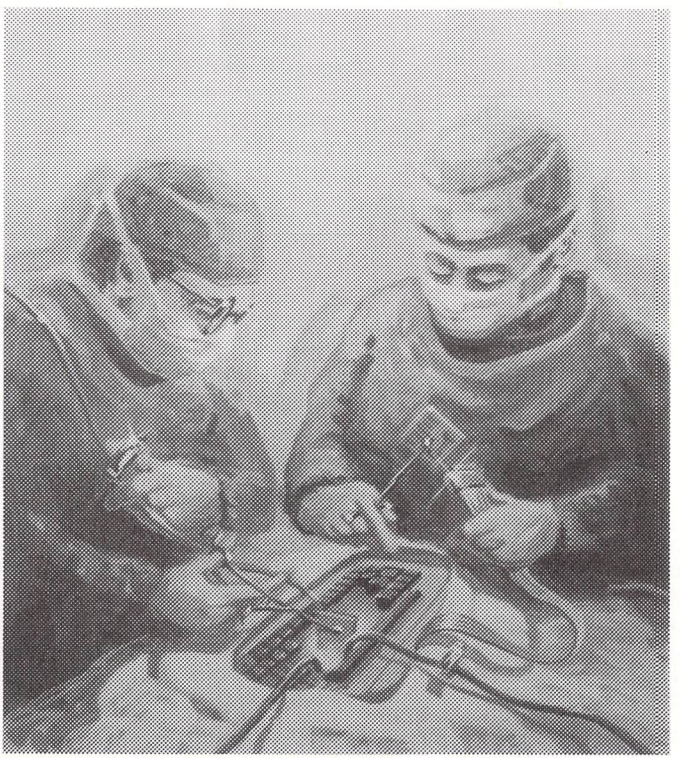
64 DOCTOR

by Eric Berkowitz and David Pollack



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Manual by Kathleen F. Nolan

11/83DP3M REV2/84DP4M REV4/84DP5M

Introduction

Everything's plugged in. Everything's turned on. But why won't your joystick jump or your printer print? Is it the joystick, the printer, the keyboard, or the disk drive?

64 Doctor takes the guesswork out of finding a hardware defect. The program provides short diagnostic tests for the Commdore 64 RAM, keyboard, disk drive, joystick, datasette, printer, audio and video display. By testing each piece separately, you can quickly discern where the problem lies and take the necessary measures to correct it—fast! Because if you bought a computer to save time why should you waste it?

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Loading 64 Doctor

Loading **64 Doctor** is a simple process. Make certain the C-64 and TV are both plugged in and connected to one another by the appropriate cables. Next, plug in the peripherals which you want to test: disk drive, datasette, printer and/or joystick(s).

- To load from tape, type **LOAD"64 DOCTOR"**

  To load from disk, type **LOAD"64 DOCTOR",8**

- Press **RETURN**. When the word READY appears,
- Type **RUN**
- Press **RETURN**. The screen will briefly read INITIALIZING as the hardware to be tested is listed.

The color screen that appears is a picture 'menu' which, instead of listing the hardware, shows a pictorial image of each piece. The piece labelled at the top of the screen and flashing within the picture menu is the item selected to be tested. To select another piece, press the space bar and the flashing piece will change as you move through the menu. When the piece which you want to test is flashing and listed at the top of the screen, press **RETURN** to learn how to test that piece.

Testing the Keyboard

When **64 Doctor** is initially loaded, the keyboard is the first item flashing. To test the keyboard,

- Press **RETURN** when the keyboard flashes in the picture menu.
- Should you have made an error and not wish to test the keyboard, type **E** to exit to the picture menu. If you wish to continue with the keyboard test, read the on-screen instructions carefully.
- Type **B** when you are ready to begin testing the keyboard. A representation of the C-64 keyboard will appear.
- *You may only test the keys which are represented in the diagram, e.g., you cannot test the RUN/STOP key.* To test a key, press the key and see if the counterpart on the screen is underlined. If the key is pressed a second time, the character will appear in reverse. A third time and it will again be underlined.

– If a key is not working, either 1) the letter on the screen will remain unchanged when you press the key, or 2) the letter will be reversed rather than underlined the first time the key is pressed. A key which is suspected of being defective should be tested several times to determine if it is, in fact, defective. The C-64 can mark a test as *complete*, but *cannot* pass or fail the Commodore keyboard. Therefore, watch the screen carefully to be certain that each key you touch changes the appearance of the corresponding character on the screen.

– When finished testing the keyboard, press the **space bar** to exit to the picture menu.

Until a piece of hardware is tested, it is labelled **N** (not tested) at the bottom of the picture menu screen. After testing, some pieces will be marked **C** for completion. These pieces require the judgment of the user to discern a malfunction. **64 Doctor** can only note that the test was being executed. The program can test and decide on the fitness of other pieces itself. These pieces are marked after testing, with a **check mark** (pass) or **F** (fail).

Testing the Video Display

64 Doctor's test for the video display is another which requires the user's judgment. The program supplies you with the color and monochrome spectrums with which you can fine-tune the color of your monitor. To test the video,

– Press the **space bar** so that the picture of the monitor is flashing.

– Press **RETURN** and read the on-screen instructions.

– If you do not wish to test the video, type **E** to exit.

If you wish to start the video test, type **B** to begin.

– Three spectrums will appear. Adjust the controls on your monitor (fine tuning, tint, contrast, etc., if you have them) to achieve the sharpest and most accurate image. Pressing the **space bar** will change the background color so you can check the contrast with different screens.

– If you cannot achieve the desired colors or if the picture is fuzzy the difficulty lies within the monitor (or television). When you are finished adjusting and testing the video display, type **E** to exit.

Testing the Audio

The audio test plays a scale through each of the computer's three "voices". To test the audio,

- Move the space bar in the picture menu so that the audio symbol (marked with a speaker and a musical note) is flashing. Press **RETURN**.
- Read the on-screen instructions. If you do not want to perform the audio test, type **E** to exit. If you are ready to perform the audio test, type **B** to begin.
- At any time during the audio test you may type **E** to end the test. If you run through all three voices to completion, type **E** to return to the picture menu.

Should you have a video monitor and not hear any sounds at all make sure you have connected the monitor correctly. Next, check the switches and finally, check the owner's manual for the video monitor—not all monitors have a speaker!

Testing the Joystick(s)

64 Doctor will test joysticks as well as the control ports of the C-64. To test the joysticks,

- With the space bar, select the joystick character from the picture menu so that it is flashing.
- Press **RETURN**.
- To halt the joystick test, type **E**.

  To continue with the test, type **B**.
- Use the space bar to select which port you will be using to test the first joystick.
- Press **RETURN** to start the test.
- An eight-directional arrow will appear with a colored dot in the center. Using the joystick which is being tested, move the dot into the end of each arrow. If the dot will *not* move in each direction, exit the test by typing **E**, move the joystick to the other port, and perform the test in the other port. If the joystick now works, there is most likely a malfunction within the computer. If the joystick does not work in either port, try another joystick and check the connecting cables. If the second joystick works, then the problem lies with the first joystick tested. If different joysticks do not work in either port, the problem is within the C-64. Use both ports and different joysticks to determine where the problem lies.
- When finished testing the joystick(s), type **E** to end.

Testing the Disk Drive

Before starting the test for the disk drive make sure you have a blank 'scratch' diskette on hand whose information is of no value to you. To start the test,

- Move the space bar until the picture of the disk drive is flashing on the menu.
- Press **RETURN**.
- To exit the test without performing it, type **E**.
- To continue the test, turn the disk drive on and connect it to the C-64.
- Insert a scratch diskette into the drive.
- If your disk drive has a device number of 8, type **B** to start the test.

  If your disk drive has a device number other than 8, type **SHIFT** and **B**. The screen will read:

```
Enter device number or press RETURN  8
```

  Type the appropriate number and press **RETURN**

- The screen will read at different intervals:

```
Clearing the disk.
Now testing 'SAVE' function.
Now checking the Save.
Now checking the DOS internal functions.
Writing Tracks 1-35.
```

  Between the appearance of each of these indicators, there may be a pause for as long as one minute while the test is executed. At the conclusion of the test, the screen will read:

```
Disk unit has PASSED (or FAILED) the performance test.
Press C to continue.
```

  If the disk drive failed the test, a reason will be listed on the screen showing where the test procedure encountered difficulty.

- Type **C** to exit to the picture menu.

The test for the disk drive can also be used to test a storage disk to determine if it is worn out. If you have a disk for storage and wish to test its ability to still safely store data, test the disk following the steps outlined above. If the test is 'passed', both the disk and the drive are good. If the test is 'failed', try another disk. If the test is 'failed' again, the disk drive is possibly at fault. If the third attempt is 'passed', then the difficulty rests with the disk.

Note: You should use a 'scratch diskette' for testing the disk drive. Should you try to use the scratch diskette for storing data it must be reformatted, since the test procedure formats the disk with its own format.

Testing the Printer

With so many printers on the market and each using different device numbers, controls and special character modes, **64 Doctor** simply tests for upper and lower case letters, numbers and punctuation. Connect your printer to the back of the C-64 or to the disk drive (which must be ON). To execute the printer test,

- Use the space bar to select the printer on the picture menu.
- When the image of the printer flashes in the menu, press **RETURN**.
- If you wish to stop the printer test, type **E** to end. If you are using a Commodore printer or a parallel printer with a compatible interface, type **B** to begin the printer test.

  If you are using an RS232 printer or any printer with a device number other than four, type **B** and **SHIFT**. The screen will read:

```
Enter device number or press RETURN 4
```

1. Enter the correct number and press **RETURN**. If 4, simply press **RETURN**

   Note: To do an on-screen printing test, type # and press **RETURN**

2. The screen will show a list of baud rates. Using the space bar move the arrow to point at the correct baud rate. Press **RETURN** when the correct baud rate has been selected.

3. The screen will read:

```
Number of Stop Bits: 1
```

4. Enter the correct number of stop bits and press **RETURN**

5. The screen will read:

```
Handshake Type (3 or X) : 3
```

Type the appropriate response and press **RETURN**. The screen will read:

```
Now setting RS-232 printer options.
```

– At the completion of the test, type **E** to return to the picture menu.

The printer test can be marked as completed, passed or failed. The printer must be plugged into the disk drive or directly into the Commodore 64. It is possible to 'trick' the program so that it will pass the printer test without actually having a printer connected. Graphic characters are only printed by a printer with a compatible interface. The true test of the printer is determined by its ability to print all the ASCII characters three times.

Testing the Memory

64 Doctor includes a test which will check *each* byte of memory in the C-64. To perform the memory test,

– Select the item marked RAM from the picture menu by pressing the space bar.

– Press **RETURN**.

– Type **E** if you wish to exit before starting the RAM test.

– To execute the RAM test read the instructions carefully. Press **B** to begin.

– You can choose to perform a single test or continuous testing. Use the space bar to make your selection. If you use the continuous test to test the RAM overnight, turn off the monitor. At the conclusion of an overnight test, turn the monitor on. If a problem was encountered during the night an error message will be displayed.

– When the screen reads "Press 'E' to Exit", type **E** and the picture menu will return to the screen.

Testing the Cassette Player

64 Doctor checks the ability of your datasette to record and play back stored data. Before starting this test insert a blank or scratch cassette tape into the datasette, connect the datasette to the C-64, and advance the cassette past the 'leader' (the different colored tape at the start of the cassette). To start the datasette test,

– Move the space bar so that the datasette is flashing in the menu.

– Press **RETURN**.

– To exit, type **E**.

– To continue with the test, type **B**.

– Follow the on-screen instructions as they appear on the screen:

```
1. Insert and rewind the scratch tape.
2. Press RECORD and PLAY.
3. Type C to continue.
```

Various indicators will appear. The screen will read:

```
4. Rewind tape.
5. Press PLAY.
6. Type C to continue
```

– At the conclusion of the test, type **C** when indicated to do so on the screen.

Executing the Auto-Test

64 Doctor is equipped with an auto-test mode which will check the disk drive, RAM and printer. At the end of the test Pass/Fail results are displayed on the screen.

Before starting the auto-test insert a blank diskette into the drive. Turn on the printer and make certain the paper supply is properly fed into the printer. Then,

- Type **T** when the picture menu is on the screen regardless of which unit is flashing.
- Type **E** to stop the auto-test. To continue with the auto-test read the instructions and type **B** to begin.
- When the auto-test finishes the picture menu returns to the screen. To see the results, type **T**.
- After reading the results, type **C** to continue. The instructions for auto-test will reappear.
- If you wish to re-test with the auto-test, type **B**.

  To return to the picture menu, type **E**.

This marks the completion of the **64 Doctor** manual. The program is intended to help isolate a trouble spot in your Commodore 64 system. Should a piece of your hardware not be in operating order refer to the owner's manual for service information. Never attempt to repair a piece of equipment yourself, for in many cases it will invalidate any warranty that may have accompanied the product.

Notes

Technical Support

Questions regarding this program are encouraged and welcome. For technical assistance, please call:

(617) 332-6916 or 332-6917
between 9 a.m. and 5 p.m. (Eastern Time)

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