MATRIX SOFTWARE
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HOW TO INSTALL THE <u>MATRIX UTILITY CHIP</u>

Enclosed you will the MATRIX UTILITY MODULE or chip which can be plugged directly into your Commodore PET. The installation can be performed in less than 10 minutes and requires no technical experience on your part. Please follow these directions with care:

<u>NOTE</u> PLEASE READ THESE INSTRUCTIONS IN TOTAL BEFORE DOING ANYTHING

<u>THE MATRIX CHIP</u> The enclosed chip contains special programs written in the very-fast 6502 machine language of the PET. These programs result in an increase in program operation of up to 100 time over the PET BASIC. This tiny chip will interface with all MATRIX programs that you order from this time forward. In addition, these valuable utility routines do not use up any of your PET's RAM memory space. They do not have to be loaded into your machine but are available to you on a permanent basis each time you switch on the PET. Another feature made possible by use of the MATRIX chip is the ability to make unlimited back-up copies of your MATRIX programs. You may save your PET programs to either tape or disk whenever you wish. This allows you to make one or many additional copies of your software to be stored in different places- should one become damaged.

<u>HANDLING THE MODULE</u> The module should not be handled any more than is necessary. In particular, it is sensitive to static electricity and magnetic fields of any kind. For example, dont touch it after walking on a wool carpet or while wearing a wool sweater. You dont want to place the chip near electric generators. Treat it with care and touch it as little as possible. You may wish to ground yourself to a metal cabinet or something before you pick up the MATRIX chip. Touching such a ground will drain off any static electricity that you may have accumulated. Try to avoid touching any of the tiny pins during installation. Hold the chip with the ends between thumb and forefinger and with the pins pointing downward. The chip should remain in contact with the material it comes in as much as possible since this material tends to help discharge any electricity that might come from your body while handling it. Should you loose this material, place the chip on some aluminum foil so that the tiny pins penetrate the foil.

INSTALLATION

1) Make sure your PET is turned <u>OFF</u> and <u>unplug</u> it from the wall

outlet.

2) Find the screws under the edge of the PET's cover to the right and left sides of the main keyboard. Figure 4. That is, on either side of the keyboard _and_ underneath the 'lip' of the hard case you will find two (or four) PHILLIPS screws. These screws are locks to hold the cover in place. When these screws are removed, it is possible to raise the cover of the PET (which is hinged) and look inside. Remove these screws.

3) Now raise the cover of the PET which is hinged in the back. When the cover has been raised about 45 degrees, you will find a small prop on the inside of the left-hand side of the top cover. This can be inserted in a small hole in the PET's base to work as a prop- to keep the cover open. NOT ALL PETS HAVE THIS PROP. If your PET does not have a prop, then place some solid object behind the PET (a book or two will work) to lean the open cover against. This will prevent the PET from straining it's hinges.

4) With the cover open you will be able to take a look at what makes your computer work. You are looking at the main LOGIC BOARD. This is where you will install your new MATRIX chip. The question is where. If you will look towards the rear of the logic board you will find a row of eight sockets most of which contain modules or chips about the same size as your MATRIX chip. You will see seven white sockets in a row with an eighth chip to the right of these seven. Here we are only concerned with the leftmost seven sockets. On most PETs the first four of these sockets (counting from your left as you face the machine) will contain chips. The right-most three sockets will be empty. The MATRIX MODULE is to go in the SIXTH socket counting from your left. This is the middle socket of the three empty ones. This is labelled as 'UD4' on the logic board.

5) You are now ready to install the MATRIX chip. Notice that all of the four or so chips that are already installed in the row of sockets have a notch at one of their ends. Notice that the chips are placed in their sockets with the NOTCH FACING TOWARDS THE FRONT of the PET. This is VERY important since you can damage the MATRIX CHIP if you place it in a socket with the notch towards the rear. On 8032 PETS, the notch will be to the left- as you face the PET. The MATRIX CHIP has 24 tiny pins extending down from it. These pins are to go in the 24 matching holes to be found on the 6th socket (UD4).

6) Position the MATRIX CHIP with the notch facing to the front above the correct socket. Very carefully lower the chip into place seeing that the tiny pins are placed above the matching holes on the socket. DONT PRESS DOWNWARD YET. Before you do that, read the following.

It is very easy to damage these tiny pins if you try to push

the chip down into the socket when the pins are not positioned properly. The object is to press the chip into the socket until it is firmly seated. This is very easy to do provided that the tiny legs of the chip dont get bent. You can kind of take a look while you are placing the chip into the socket to see that the pins are going into the holes in the socket. If they are not, then pull it out and try again. If you have trouble, check to see that all of the 24 pins are straight and parallel to one another. Sometimes it is easier to start one side of the chip in the holes (just barely in) and guide the second side into their wholes.

7) When the chip is positioned with all 24 pins started into the 24 corresponding holes <u>AND</u> with the notch on the chip to the front of the PET, then PRESS the chip into the socket until it is firmly seated.
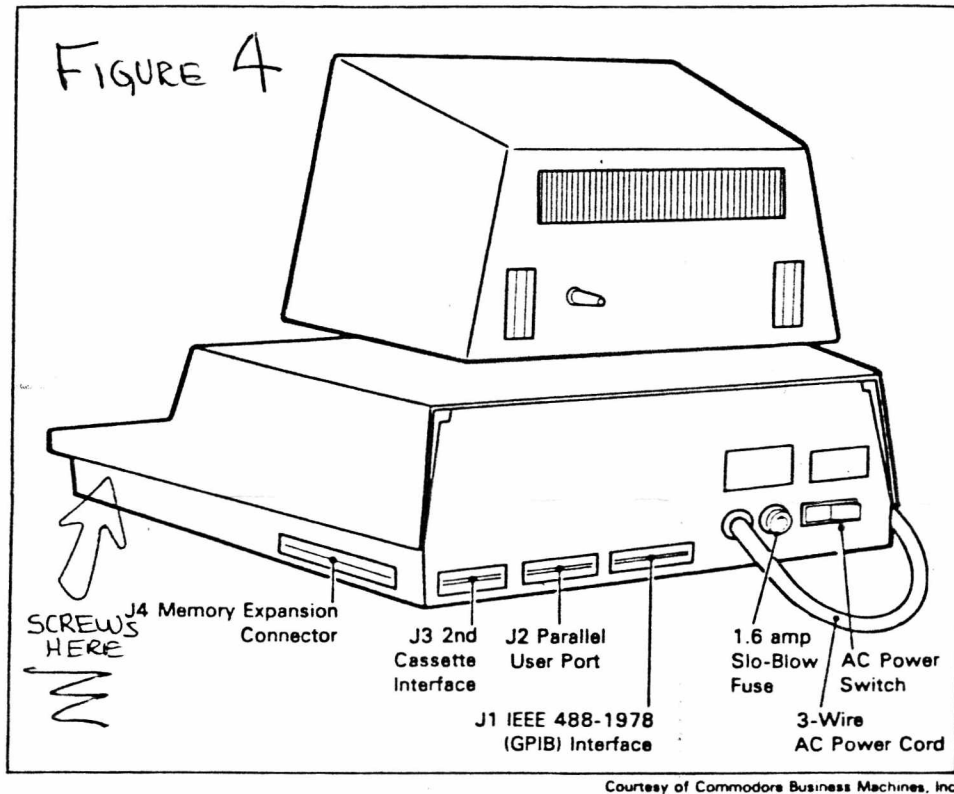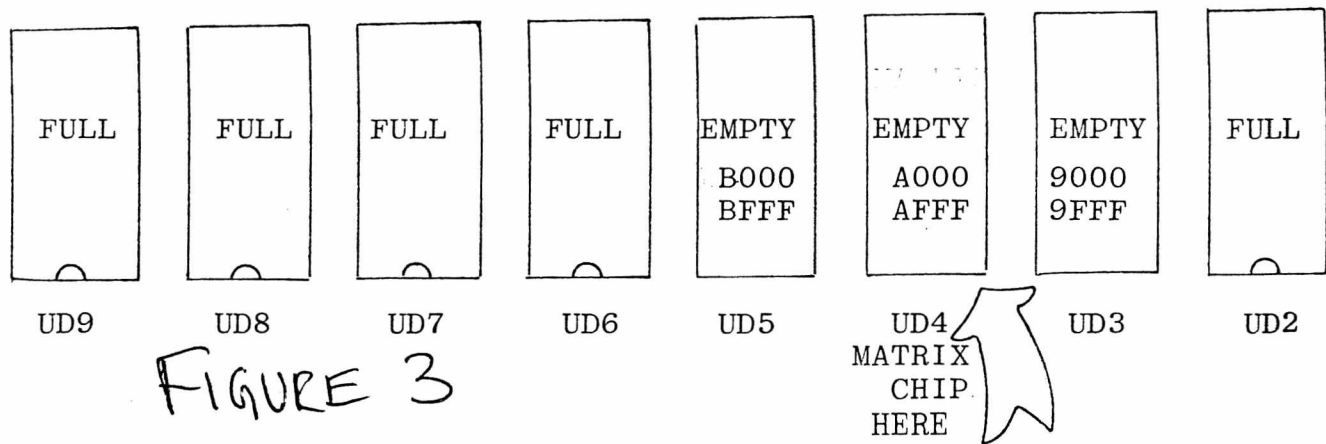
8) Before you close the cover of the PET, check one last time to make sure that the notch on the MATRIX CHIP is to the front of the machine (matching the other chips already installed).

9) CLOSE the cover of the PET and replace the screws to secure the cover.

10) You may now PLUG in the PET and switch it on. Your MATRIX chip is now resident within your PET and ready to work with your new MATRIX programs.

REMOVING THE CHIP

A note about removing the chip should that be necessary. Do not attempt to pull the chip out with your bare fingers. To remove a chip place the blade of a small screwdriver between the socket and the chip. Figure 1. Turn sideways to loosen one end. Do the same for the other end of the chip and gradually, by alternating ends, raise the chip. You may be able to raise the chip by sliding the screwdriver blade all the way under the chip, bit by bit. At some point you will be able to grasp it with your fingers and pick it up. Sometimes it is not possible to insert the screwdriver blade between the socket material and the chip. If this is the case, then use a wide-bladed screwdriver between the main logic board and one end of the chip to raise it up enough to insert the small screwdriver blade. Place a heavy piece of paper between the wide screwdriver blade and the green plastic surface of the logic board to protect the board. These same instructions will serve to guide you should you have to replace any other of your PET chips. There you have it. Call us if you have any questions. (616) 796-2483

FULL	FULL	FULL	FULL	EMPTY B000 BFFF	EMPTY A000 AFFF	EMPTY 9000 9FFF	FULL
UD9	UD8	UD7	UD6	UD5	UD4	UD3	UD2

FIGURE 3

UD4 MATRIX CHIP HERE

FIGURE 4

Courtesy of Commodore Business Machines, Inc.

J4 Memory Expansion Connector

J3 2nd Cassette Interface

J2 Parallel User Port

J1 IEEE 488-1978 (GPIB) Interface

1.6 amp Slo-Blow Fuse

AC Power Switch

3-Wire AC Power Cord

SCREWS HERE

NOTE:

IF YOU HAVE THE 80 COL. SCREEN OR THE LARGE 40 COL. SCREEN, THEN THE EMPTY SOCKETS ARE UD 11 AND UD 12 . PUT THE MATRIX CHIP IN SOCKET UD11 (the notch in the chip should face in the same direction as the notch of the other chips).

ROM

SOCKET

FIGURE 2

NOTCH

ROM

SOCKET

FIGURE 1