

The Basic SwitchTM

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GENERAL DESCRIPTION

The Basic Switch is designed to allow easy access to the original Commodore ROMs and the Retrofit Commodore ROMs. Both Model 14 and Model 15 share a similar design.

Both sets of ROMs are installed on your Basic Switch board, and you simply flip a switch to determine which ROM set you'll run under. Your Basic Switch unit consists of a printed circuit board, connector, wiring harness for connection to your PET's main logic board, and a protective case (Optional on Model 14) selected to provide easy access to the Basic Switch board. Also, an IC puller is supplied to simplify removal of the old ROMs from your PET.

INSTALLATION

The Basic Switch is designed for easy installation. However, removing and inserting the ROMs is a precise task recommended only for experienced users. You can have your PET Dealer install the ROMs and just perform the cable installation yourself. For those who wish to do the ROM installation, directions are given on handling, removing and inserting the ROMs. Our warranty does not cover installation or use of ROMs.

The Basic Switch comes with the cable connector inserted in a piece of conductive black foam. If your unit contains installed ROMs, this foam should not be removed from the connector until instructed to do so.

HANDLING THE ROMS

These ROMs are MOS devices, which means they can be damaged by high voltage from static electricity. If you purchased your Retrofit ROMs separately, they should have come inserted in a piece of black foam, or in individual carriers. Under no circumstances should they come without being inserted in some form of conductive medium. The conductive medium provides an alternate discharge path should the ROM be exposed to some static electricity.

There will be a period of time for each ROM during the installation process where it will not be in contact with a socket, foam, etc. This time should be as short as possible, and during this time you should avoid touching any of the pins on the ROM. You should also avoid conditions which can generate static electricity such as wearing a sweater or doing the installation while standing on a carpet.

REMOVING A ROM

This should be done with the IC puller supplied with your Basic Switch. Grip the ROM firmly as shown in Figure 1 and pull the ROM straight out of the socket. If you encounter difficulty, try "rocking" the ROM slightly while pulling it out of the socket. If the ROM isn't going to be inserted in a socket right away, insert it in a piece of black foam or through a few layers of aluminum foil for protection from static electricity.

INSERTING A ROM

Before a ROM can be inserted into its socket, it may be necessary to straighten some of the pins. This should be done with the ROM inserted in the black foam, with the bent pins barely hanging over one edge of the foam. This allows you to straighten them while they are still in contact with the foam. If some foam is not available, you can straighten the pins while the ROM is inserted through several layers of aluminum foil. If the pins are pointing outward too much to fit into the socket, bend them inward just enough so they will fit. Bending them any further increases the probability that a pin will get bent under the ROM when you try to insert it. If a pin is badly bent, it is best to use a small pair of pliers to straighten it.

To insert a ROM, first set the ROM on the socket with the notched end facing the correct way (toward the switches). The ROM will be damaged if it is plugged in backwards when you turn on your PET. Make sure the ROM is positioned so that each pin will be centered on the corresponding contact in the socket. Now use your thumbs to press downward on both ends of the ROM (see Figure 2). Apply a little more pressure to one end to start that end into the socket first. Then apply a little more pressure to the other end to start that end into the socket. Now apply pressure evenly to insert the ROM the rest of the way into the socket.

A firm pressure will be needed to push the ROM into the socket. If this doesn't seem to be enough, one of the pins may not be aligned correctly. First try repositioning the ROM, then try inserting it again. If that doesn't help, try restraining any pins that look like they aren't quite right. It may take a few tries at straightening the pins before the ROM will slip into the socket.

INSTALLING THE ROMS

The first step is to install the Retrofit ROMs in the sockets numbered U8 through U14. Refer to the drawing inside the cover of The Basic Switch to determine which ROM goes in each socket. Also make sure that the notched end of each ROM is facing TOWARD the side with THE SWITCHES.

Next transfer the old ROMs one at a time from your PET to The Basic Switch. Again refer to the inside cover to determine the proper socket for each ROM. The notched end of these ROMs should also face the switches. Notice, if you turn THE BASIC SWITCH sideways so the side with the switches is toward you, the sockets will be numbered from right to left as in your PET.

INSTALLING THE CABLE

Detail of the cable installation is shown in Figure 3 (All directions assume you are facing your PET from the front with the PET open). First attach the cable clip to the side of the base, adjacent to row H of the circuit board. Now remove the piece of black foam and plug the cable connector into the socket at H1, running the ribbon cable up over the edge of the base and down through the cable clip. Make sure that the pins on the connector line up with the contacts in the socket. Next connect the red, orange, and yellow leads which come out of the connector at the end nearest you. Plug the RED lead into pin 3 of socket H2, the ORANGE lead into pin 3 of socket H3, and the YELLOW lead into pin 3 of socket H4. Now plug the BLUE lead into pin 1 of H4 and the YELLOW lead found at the other end of the connector into pin 12 of H4. Next attach the micro-clip connected to the ORANGE lead to the RIGHT side of resistor R16.

In the Model 15, there are three additional micro-clips. The clip on the BROWN lead should be placed on one of the pins on the 74154 integrated circuit at location G2. The pin you connect to will determine the 4K address block which will access the 15th socket. Detailed information about attaching this clip is given in the section on Operation. Next, connect the clip on the PURPLE lead to pin 13 of the IC at G3. Then connect the clip on the GREEN lead to the far end of the resistor just to the left of G3.

CHECKING OUT THE ROMS

While your PET is still open, push down any connector which may have been pulled up when opening your PET. Now turn your PET on. If the READY message fails to appear, immediately turn the power off. Check to see if the notched end of all ROMs are facing toward the switches. If one was plugged in backwards it may still work since power was supplied for a short period of time. Turn it around and try turning the power on again. If they were all facing the right direction, check or redo the cable installation, and check to make sure the pins on the ROMs line up with the contacts in the sockets. Reinsert any ROM that is not lined up. Also make sure that none of the pins were bent under any ROMs when they were inserted.

Once the READY message appears on power up, flip the toggle switch closest to the front of The Basic Switch to see if the other ROM set will come READY. If the READY message doesn't appear, turn the power off and check the installation of the ROM set next to the LED which was lit.

If you are going to use the 15th socket, you should check its operation before you close the PET. Refer to the section on Operation to see how to operate the socket. Make sure you insert ROMs in this socket facing the switches like the other ROMs. If it fails to operate, recheck the installation of the three micro-clips associated with the 15th socket.

Once your PET will come READY in both ROM sets and a ROM in the 15th socket will operate properly, you have verified that the installation has been done correctly. If possible you should run Commodore's ROM test program for each ROM set to check them for reliable operation. To test the old ROMs use the ROM TEST if you have the 011 ROM at H1, or use the 019 ROM TEST if you have the 019 ROM. Use the GRAPHIC ROM TEST for the Retrofit ROMs. The ROMs should be given 10 minutes to warm up before running the tests.

If you have any question or problem about the installation or checkout, please give us a call (collect).

OPERATION

It is normal for both ROM sets to get fairly warm when the power is turned on, even though only one of the sets is selected. To assist with heat dissipation, you should keep the case open whenever your PET is turned on.

The selection between old and Retrofit ROM sets is controlled by S1, which is the switch closest to the front of The Basic Switch. Pushing the toggle to the right will select the old ROMs and will light the LED on the right side of the board. Pushing it to the left will select the Retrofit ROMs and light the other LED. In addition, whenever the toggle is flipped, the PET will be reset automatically.

For the Model 15, operation of the 15th socket involves two switches. The slide switch next to the 15th socket selects the addressing configuration. For 2316 or 2716 (single 5 volt supply) type ROMs, put the switch in the forward position. For 2332 or 2732 type ROMs, put the switch in the back position.

The middle switch is an enable for the 15th socket. Pushing the toggle to the right enables the socket and pushing the toggle to the left disables the socket. Pushing the toggle to the left also disconnects the 5 volt supply to the socket. The 15th socket should be disabled before removing or inserting ROMs.

ROMs placed in the 15th socket must have the notched end facing the switches, the same as the other ROMs! The 4K address block which will access the 15th socket is selected by the placement of the micro-clip on the brown lead. The clip should be placed on one of the output pins of the 74154 integrated circuit at location G2. Figure 4 shows the 74154 and indicates which pin to attach to for various address ranges.

Whenever the 15th socket is disabled, all devices connected to the memory expansion port should operate normally, including a ROM occupying the same address space as the 15th socket. When the 15th socket is enabled, addressing the 15th socket will cause the READ/WRITE signal on the expansion port to be pulled to the WRITE state (low). This effectively disables any ROM which occupies the same address space. Other devices which occupy the same address space need not be turned off if writing to those addresses won't cause problems.

FIGURE 1

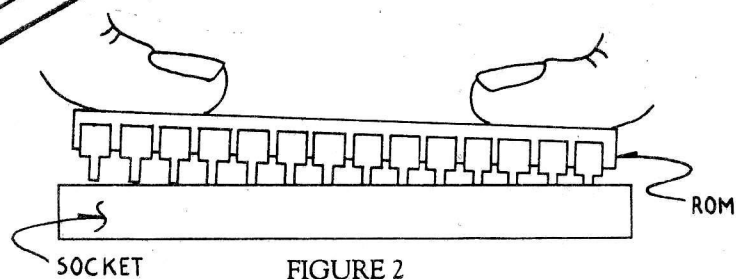
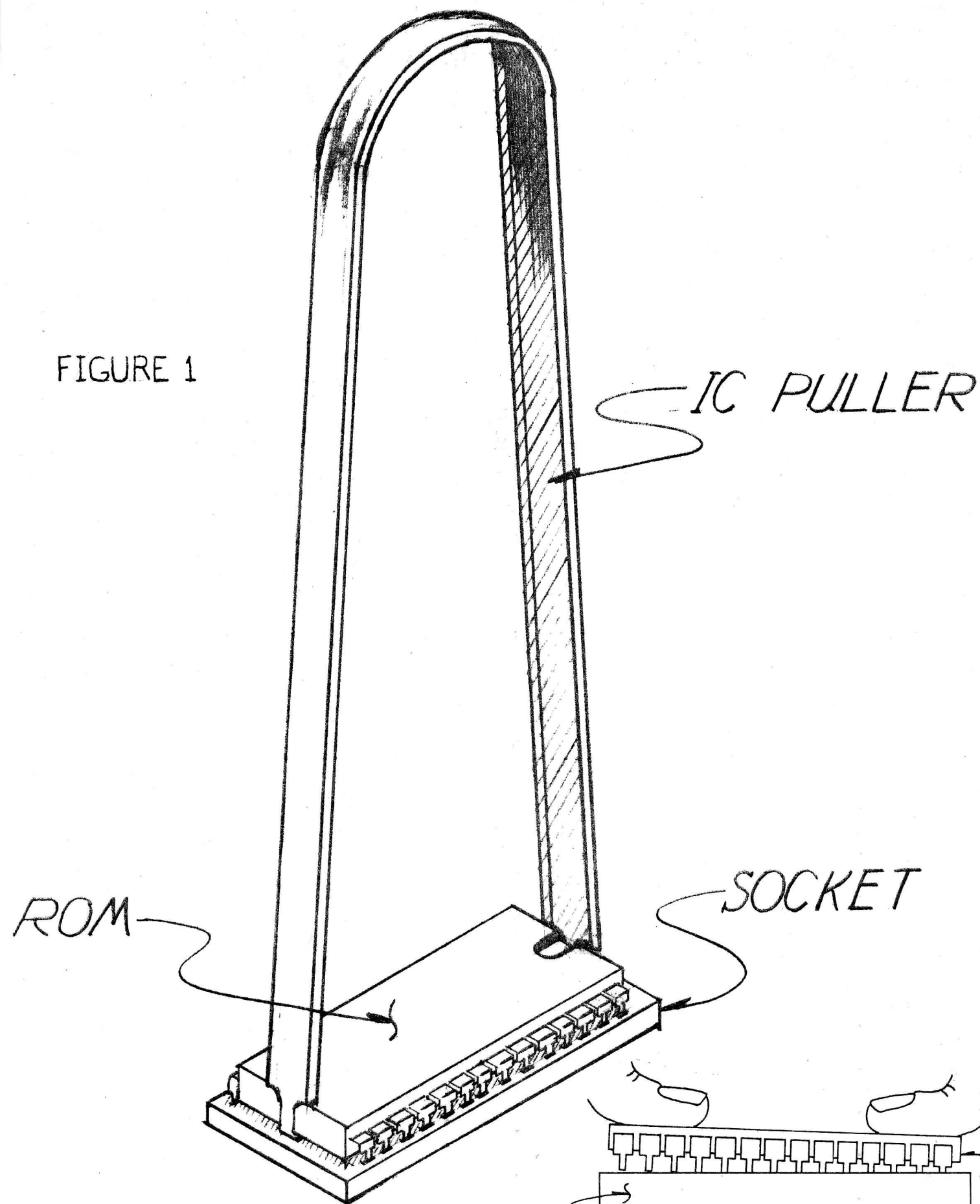
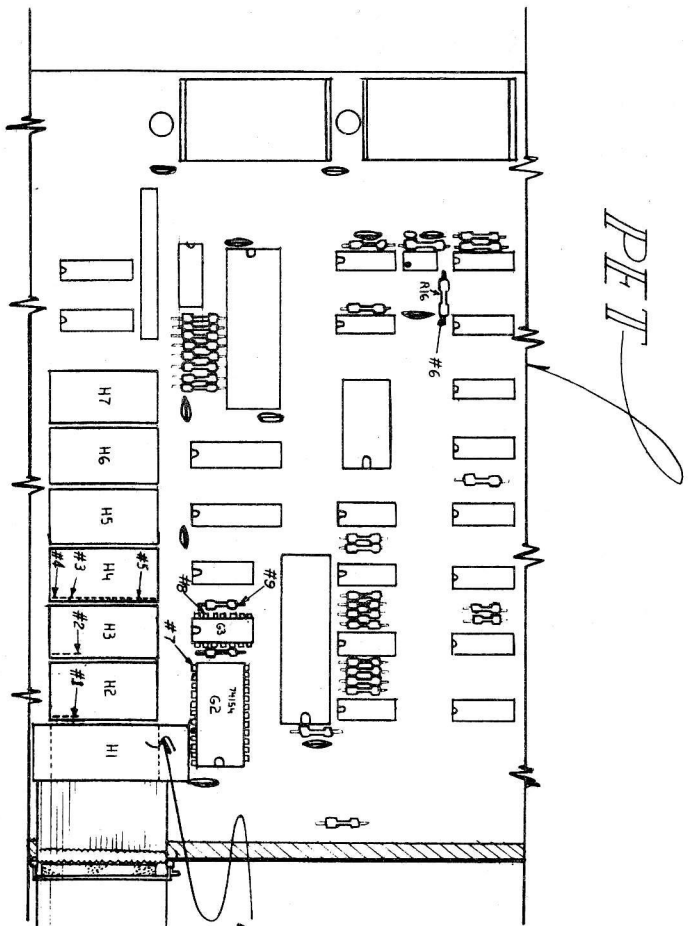


FIGURE 2



NOTE: NUMBERS BESIDE COLOR CODE CORRESPOND WITH CONTACT LOCATIONS ON MAIN DRAWING.

- #8 - (MICROCLIP) PURPLE
- #4 - BLUE
- #9 - (MICROCLIP) GREEN
- #3 - YELLOW
- #2 - ORANGE
- #1 - RED
- #7 - BROWN

#5 - YELLOW ORANGE

DETAIL - IA
BLUE DIP CONNECTOR

BASIC SWITCH

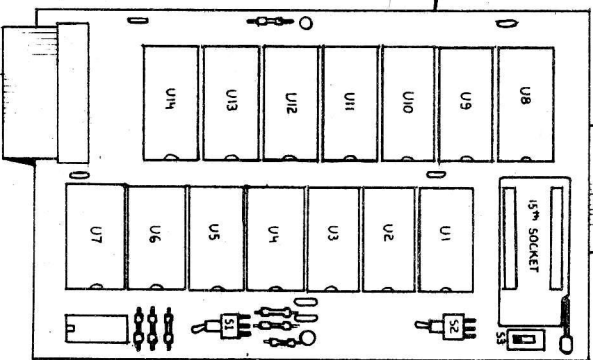
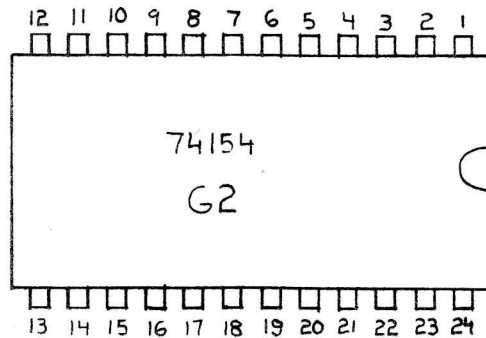


FIGURE 3



ADDRESS RANGE (HEX)	PIN
2000 - 2FFF	3
3000 - 3FFF	4
4000 - 4FFF	5
5000 - 5FFF	6
6000 - 6FFF	7
7000 - 7FFF	8
8000 - 8FFF	DON'T USE - SCREEN MEMORY
9000 - 9FFF	10
A000 - AFFF	11
B000 - BFFF	13

CURRENTLY AVAILABLE ROMS

BASIC PROGRAMMERS TOOLKIT - PIN 13

FIGURE 4