

7. THE KEYBOARD

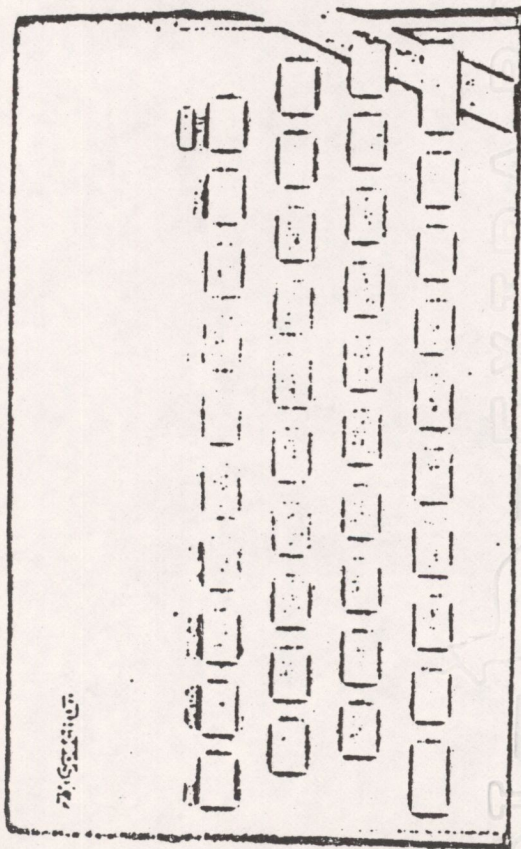


PLATE 6 - PHOTO OF KEYBOARD

The keyboard is basically a five by eight grid of wires, the crossing points of which can be connected by pressing the relevant key (see fig. 6). Each of the eight rows are selected in turn by taking the relevant address line down to logic 0 whilst leaving the rest at logic 1. The five columns are usually held at logic 1 by the resistors in resistor pack one (RP1). If any of the keys on a selected row are operated, that column input to the ULA will be lowered to logic 0 instead of its usual logic 1. The key can therefore be read.

Consider for example that key 'D' is pressed. By doing an 'IN' from an address with all lines at logic 1 except for A9, bit D2 of the input byte would be 0, whilst D0, D1, D3 and D4 would all be at logic 1. The keyboard is scanned 50 times per second to see if any of the keys have been pressed, so that everything you type should be noticed by the Spectrum. A keyboard scan is initiated by the ULA interrupting the CPU at the end of displaying each video frame. The CPU then reads the keyboard.

If you wish to scan the keyboard yourself for some reason, the following addresses can be used. Bear in mind that each of these numbers is simply used to set all of these address lines except for the one being used to scan, to logic level 1. Using this method of input, the reading of keys is no longer restricted to 50 times per second. It can be done as often (within limits) or as infrequently as desired.

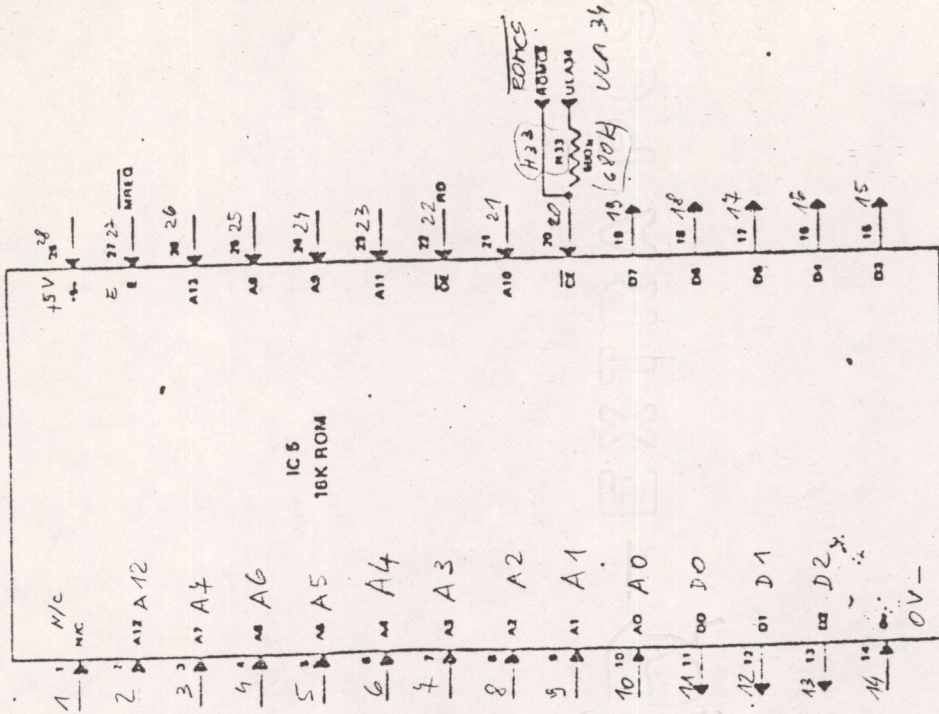


FIG 6 - BASIC READ ONLY MEMORY