PRESENTING:

$9.70 per 2k
No PC board required.

OUR RAM STACK

ADD 12K TO THE TEC. OR ANY NUMBER OF 2K BLOCKS FOR RUNNING LARGER PROGRAMS.

Some of the best ideas are discovered by accident while others are over-looked for years because of their sheer simplicity.

Such is the case with our RAM STACK.

We have been thinking of a RAM PACK for a long time but never came up with an idea we really liked. Most ideas revolved around a PC board and trying to simplify the accompanying complexity of track-work.

Due to the parallel wiring requirement of memory chips, it is necessary to have PC tracks running between each of the pins.

This produces a very FINE set of tracks and consequently a number of problems arise. The most troublesome of these is the chance of a land being cut-in-two when the holes are being drilled. This causes a fine break in the track-work which must be repaired with solder when the components are being mounted on the board.

Failure to see any of these breaks will render some of the chips inoperative.

In addition, the closeness of the tracks highlights the need for a solder mask, all contributing to increasing the cost of the project.

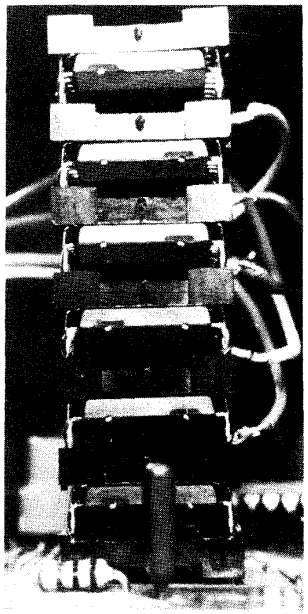
But a PC board can actually be eliminated.

The simplest and best design for a RAM pack requires no more than a set of IC's and sockets.

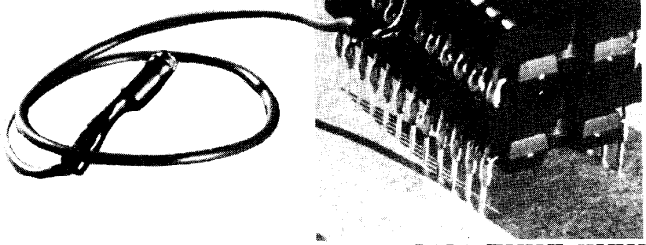
And that's when we struck upon our brilliant idea - a RAM STACK.

Not only is this design the cheapest arrangement possible, but it also incorporates a number of advantages. The best of these is memory can be increased or decreased in blocks of 2k for little more than the cost of an IC and socket. This will enable 2k or 4k to be an economical addition.

With our design, if a fault develops, each chip can be tested individually and removed if found to be defective.



Two 'units' piggy-backed together. The lower chip is accessed via the PC board; the top chip via the jumper lead.



PARTS LIST:

for each 2k:
1 - 6116 or equiv.
1 - 24 pin IC socket
1 - length of hook-up flex
1 - matrix pin & connector.

Putting all these advantages together you can see why we are pleased with this design. The accompanying photos shows how it goes together.

There isn't much to explain about construction. It's just a matter of placing an IC socket over a RAM chip and soldering each of the chip-pins to the socker pins.

Make sure the solder does not flow down any of the IC's pins otherwise you will not be able to insert the chip into a socket when putting the whole thing together.

The only other connection to each of the RAM chips is at pin 18. This is the **CHIP ENABLE** pin and an individual line is taken from one of the outputs of the 74LS 138 (near the oscillator chip), to this pin.

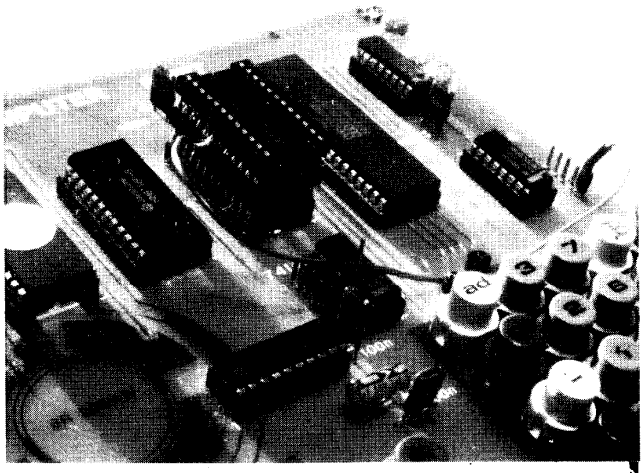
Each pin 18 of a memory chip must be kept separated from the others so that any chip can be individually selected.

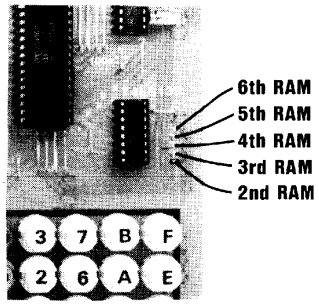
The close-up photos show how this pin is bent away from the rest so that it does not make contact with the lower IC socket.

Only the lowest RAM chip in the stack is selected by the track under the PC board. All others are connected via jumper leads, directly to the relevant output of the 74LS138 mentioned before.

Without any additional decoding, we can add a stack of 6 chips to the EXPANSION PORT SOCKET making a total of 14k for the TEC.

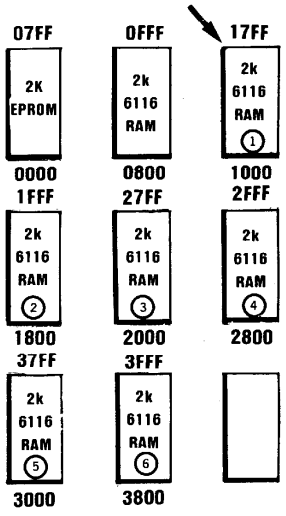
The lowest chip will have address values starting at 1000H to 17FFH. The others will have values as shown in the diagram below.





The first chip in the stack is enabled via the Expansion Port socket wiring. The other chips are enabled by connecting a jumper lead from pin 18 to one of the pins as shown above.

Of course you can **ENABLE** the chips 'out-of-order', by mixing up the jumper leads. This may fill the bottom chip, then the top chip, then number 3, then the fifth etc. No damage will result, it's just not a systematic way to do it.



The start and finish address for the first 6 RAM chips.