

# **1 to 3K byte memory expansion RAM PACK for the Sinclair ZX80**

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## **INTRODUCTION**

**1**

The ZX80 RAM pack can hold between 1K and 3K bytes of memory. Depending on how many bytes of memory you may have purchased initially – you may wish to expand the memory at a later date. We suggest that you store these instructions safely for such a date.

The RAM pack simply slots into the elongated housing provided at the rear of the ZX80. Care should be taken whilst fitting or removing. The RAM pack should be held around the casing behind the connector to avoid any chance of excessive leverage breaking the plastic connector. Always disconnect the power supply prior to fitting or removing the RAM pack.

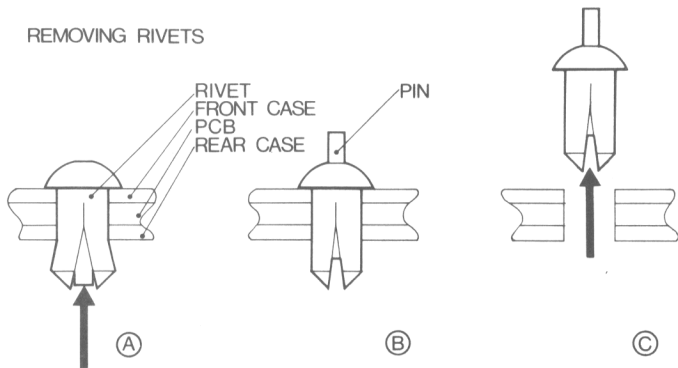
## **TECHNICAL**

**2**

The Ram pack is powered from the stabilised 5v obtained from the ZX80.

For 1K, 2K and 3K bytes of RAM the supply current to the RAM pack is approximately 70, 130 and 190 mA respectively. The 74LS138 IC selects which 1K byte of memory is being addressed at any one time.

Should you wish to expand your RAM pack to its full 3K bytes of memory (assuming you have purchased only 1K or 2K bytes of memory), it will be necessary to separate the two moulded case halves of the RAM pack in order to expose the printed circuit board and then add the extra IC's.



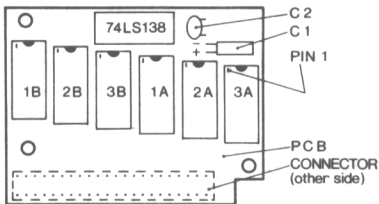
The moulded case halves of the RAM pack are held together by three re-usable nylon rivets. These are removed by inserting a narrow implement (small screw driver blade) into the back of the rivet between its four "prongs" and pushing the central pin upwards. It is not necessary to push the pin right out of the rivet in order to remove the rivet from its hole.

Having removed each of the three rivets, the RAM pack case halves will fall apart, thus exposing the printed circuit board. Fit the new IC's into the IC sockets concerned (see below) and re-assemble the RAM pack by fitting the case halves around the printed circuit board. Before re-inserting the rivets, make sure that the central pin on each rivet is exposed from the rivet head by no less than 4mm.

Holding the RAM pack flat on a table top with the connector facing up, insert a rivet into any one of the three holes provided. Making sure that the rivet is as far down as it will go, press the central pin right down into the rivet until it is flush with the top of the rivet head. Repeat this procedure for the remaining rivets. It is advisable to push the rivet pins home using the flat side of a screw driver blade or similar implement.

| RAM   | ZX80 MEMORY LOCATION |
|-------|----------------------|
| 1A 1B | 17408 - 18431        |
| 2A 2B | 18432 - 19455        |
| 3A 3B | 19456 - 20479        |

Note: The 1K byte of RAM inside the ZX80 is at memory location - 16384 - 17407.



No soldering is necessary with the ZX80 RAM pack.

Each 1K byte requires 2 IC's. The first 1K byte of memory is put in positions 1A and 1B, the second 1K byte in 2A and 2B and the third in 3A and 3C. The IC's marked 2114L are put in 'A' positions and the IC's marked 2114L-1 are put in the 'B' positions.

Make sure that the IC's are put in the right way round. Pin 1 of all the RAM IC's should be facing away from the connector.

Pin 1 is next to the semicircle cut-out at the end of the IC's plastic package. Take care not to get the IC pins bent under the IC when inserting into the IC socket. The RAM pack will already have a 74LS138 IC.