2.3 Keyboard

2.3.1 The keyboard interconnection diagram is shown in Figure 4.1. the configuration is a straightforward 8 by 8 matrix. The main objective is to establish whether the fault is on the keyboard or the main board. From a comparison between the keys pressed and the characters displayed it should be possible to isolate a faulty membrane. It should be remembered that it is possible, although a very rare occurrence, that the silicon mat itself is faulty. The keyboard is moisture susceptible.

2.3.2 With any apparent major problem with the keyboard, it is recommended that a known serviceable assembly be substituted in order to isolate the fault.

2.3.3 Faults are most likely to occur on the membrane or the connectors and are likely to fall into one of three categories:

- key on all the time
- wrong character selected
- no selection.

2.3.4 If a given row or column does not respond, the connector is suspect. If a short circuit exists between two keys, the system will not leave the coma state since it will be unable to recognise any key depressions. If a short is suspected, substitute the keyboard for a known good component. Ensure that ribbon connectors are correctly aligned in their sockets.

2.3.5 If a break in a ribbon cable line occurs close to a connector, it may be possible to remove the connector and slice off a short section above the break. The insulation may then be peeled off to expose the connector pins and the cable re-connected.

2.3.6 In order to see what is going on on the keyboard, trigger the oscilloscope from $\overline{\text{IORQ}}$ (SK8, pin 21) and monitor sockets SK6 and SK7.

2.4 128k RAM Packs

2.4.1 Some difficulty was encountered in early 128k RAM packs with the pack drawing more current than it should. If this problem is encountered failures can be reduced by reinforcing the joints on pins 9 and 10 of IC6 by bridging them together with solder. Pins 12 and 13 of IC6 can also be bridged. Since the RAM pack uses surface mounting techniques in its manufacture, the item is not repairable.

2.4.2 Testing the supply current drawn using a 128k RAM pack test jig is the only way to properly test the packs. In order to convert a Z88 into a 128k RAM pack test jig, remove resistor R48. The test rig must have the batteries removed and be powered by a Z88 adaptor with an ammeter connected in series. The batteries must be removed because unloaded batteries can have a higher voltage than an adaptor and would thus provide some or all of the standby current via the adaptor failure protection diode D24. Carry out the test as follows: