

**UPZ80-HL
ASSEMBLY
INSTRUCTIONS
MANUAL**

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UPZ80-HL ASSEMBLY INSTRUCTIONS MANUAL

1st Edition

January 1981

DO NOT START TO UNPACK YOUR UPZ80-HL UNTIL YOU HAVE READ THESE INSTRUCTIONS

This kit contains MOS memories which are sensitive to static electricity. If the following precautions are not observed you risk damaging them:

1. Ensure that you are statically discharged immediately before touching the device. You can do this by rubbing your hands on any conductive material.
2. Avoid touching the pins.
3. Prevent pin contact with any material likely to hold a static charge. For example nylon overalls, carpets etc.
4. If it is necessary to move the memories any distance (even across a room) they should be on conductive foam. The foam the memories arrive in is specially designed for this purpose.
5. Ensure that the memories are mounted correctly in their sockets paying particular attention to these points:
 - (a) pin one on the memory goes to pin one on the socket.
 - (b) the pins do not miss the socket (you may find that the pins are splayed out a little when you receive them). If this is the case observing all the precautions previously mentioned bend them in a little one side at a time.

Now you can start to unpack your UPZ80-HL checking each part as you do it.

UNPACKING LIST

1. Unpacking Instructions []
2. Assembly Instructions []
3. 8xM4116 or equivalent 16k RAM memories []
4. REZ80 Board with BASIC on EPROM []
5. KBZ80 containing-Keyboard-VDZ80-Power Supply []
6. Parts box containing:
 - 3 pin jumper []
 - Power lead []
 - 4 spacers []
 - 2 64 pin sockets []
7. Documentation:
 - Nanocomputer Manual
(with schematic diagrams) []
 - DN 368 SGS-ATES 8k BAS-Z/N []
 - VDZ80 Data Sheet []
 - REZ80 schematic diagram []

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1. ASSEMBLY INSTRUCTIONS

To carry out the upgrade procedures described here you will need in addition to the tools described below the following system components:

SGS-ATES NANOCOMPUTER NBZ80-S
SGS-ATES UPZ80-HL UPGRADE KIT
SGS-ATES TVZ80 BLACK AND WHITE MONITOR
(OR OTHER SUITABLE DISPLAY)

1.1 Recommended tools required

Insulated screwdriver
Crosspoint screwdriver
Soldering iron
Solder sucker or Solder wick
Multimeter

Words to the wise

Before commencing the upgrade of your NANOCOMPUTER and after each change it is advisable to carry out a functional check. In this way if you make a mistake it will be much easier to find and rectify.

When you are working on any board out of its card cage try to work with it on a piece of conductive foam.

Read the precautions on handling MOS devices.

Notes on changing links

To open links remove bridging solder using either a solder sucker or solder wick. To make links bridge the gap between printed circuit pads with a small amount of solder. In either case do not apply excessive heat or you may lift the pads and track.

1.2 Changing links on CLZ80-NC

Switch off power to and remove CLZ80-NC board from card frame.

(a) Changing transmission type

If your NANOCOMPUTER is set up for a TTY interface it is necessary to change the transmission type from TTY to RS232 standard, to do this carry out the following actions:

- remove links 65,58
- make links 60,59
- (see Figs 2 and 3)

(b) Changing to 16k RAM addressing and partitioning

If your NANOCOMPUTER has 4k RAMS (that's as it comes) you must change to 16k, RAMS the following actions are required:

- remove links 22,39,40,41
- make links 31,42,43,44
- (see Figs 2 and 3)

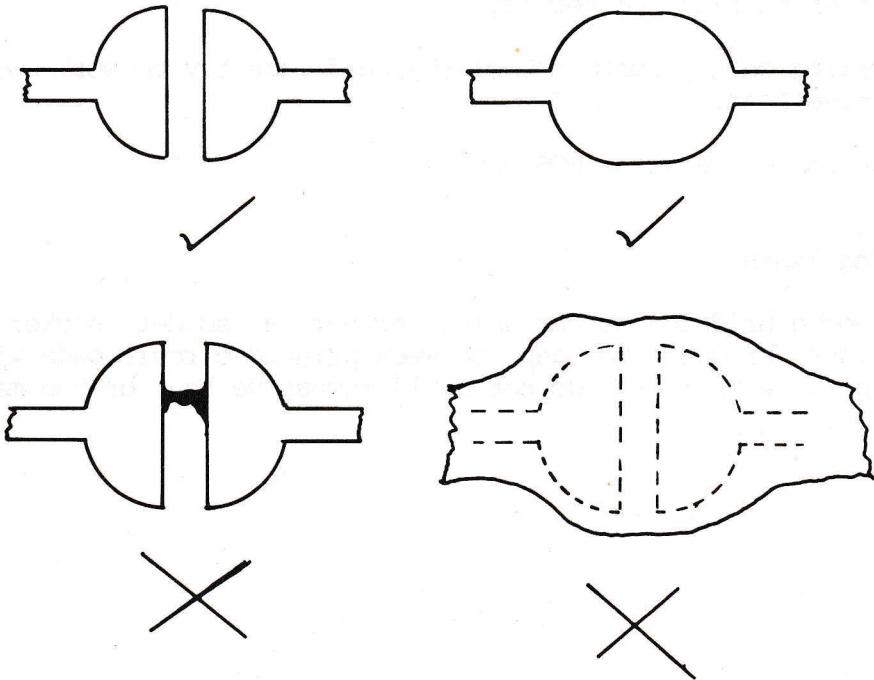


Fig 1. The right way and wrong way of making and breaking links

Link check tables

FUNCTION	MADE	OPEN
EPROM select (2708)	1-3-6	2-4-5-7-8-68
EPROM partition (60-64k)	9-18-23-30	10-15-16-17-24-25-26-27-28-29
RAM connection (4116)	42,43,44	39-40-41
RAM partition (0-16k)	11,31	12-13-14-19-20-21-22
Transmission (RS232)	54-59-60	53-58-65
Baud rate (600)	51-45	46-47-48-49-50-52

Note 1 Links 32-33-34-35-36-37-38-62 are for initial device select code and are normally in the condition 32-36-37 made rest all open

Note 2 The link tables shown only apply for the conditions shown in brackets. If your machine has different conditions set refer to the relevant table on sheet 2 of the CLZ80-NC schematic diagrams.

Link check table (numeric)

CLOSED

1-3-6-9-11-18-23-30-31-32-36-37-42-43-44-45-51-54-59-60

OPEN

2-4-5-7-8-10-12-13-14-15-16-17-19-20-21-22-24-25-26-27-28-29-33-34-35
38-39-40-41-46-47-48-49-50-52-53-58-62-65-68

NOTE: LINK 65 IS ON
THE UNDERSIDE OF THE
BOARD.

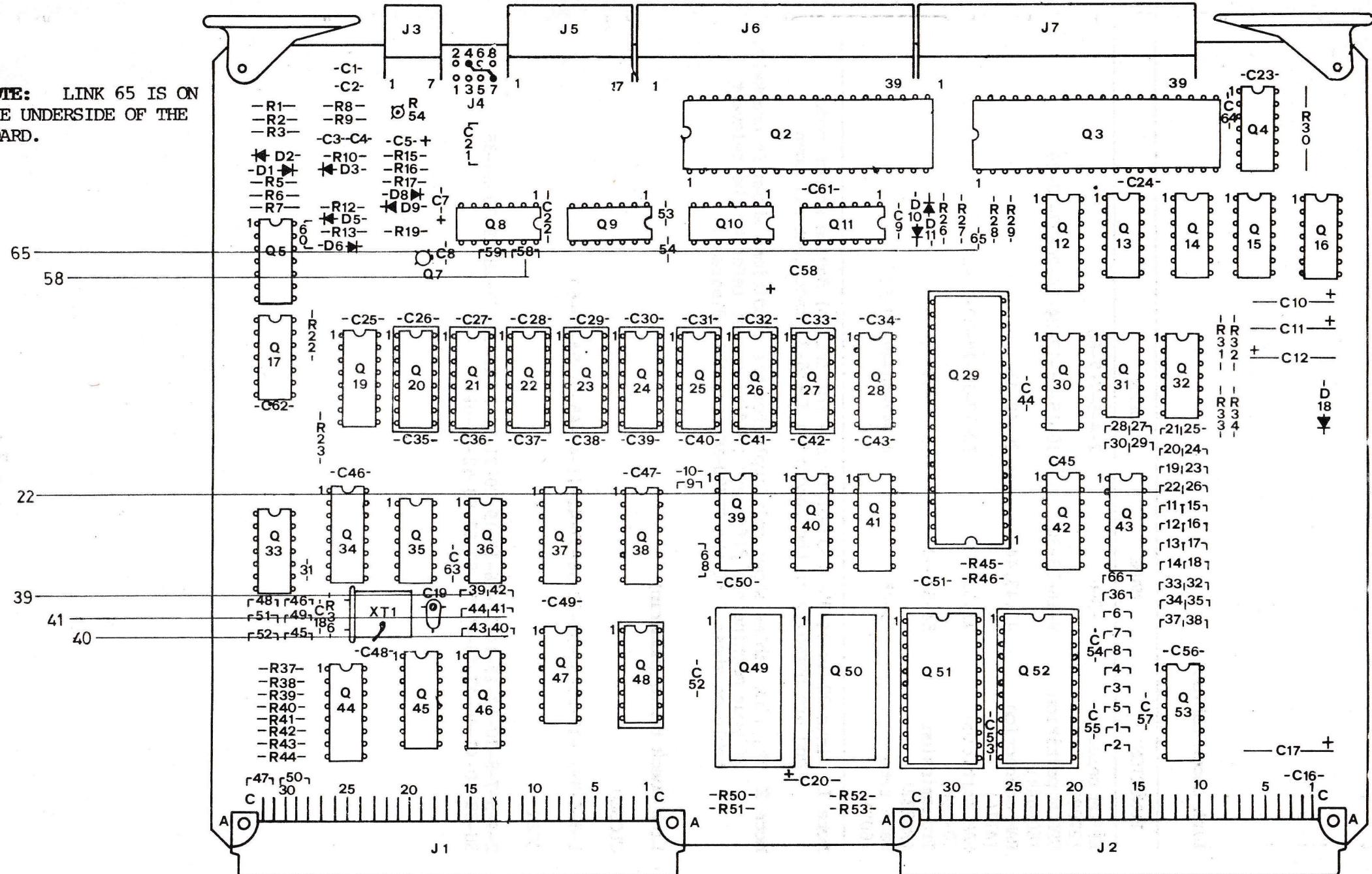
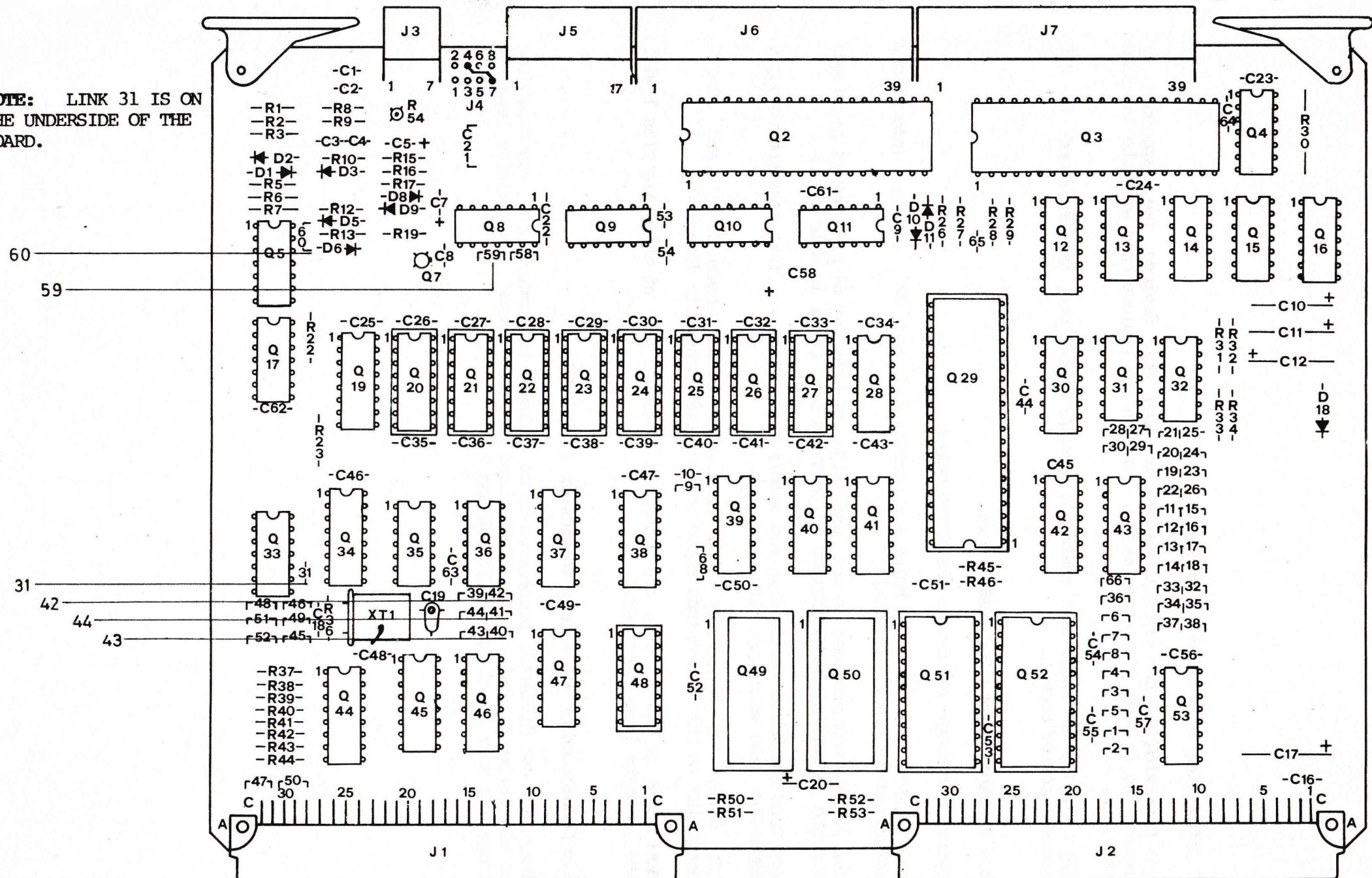


FIG 2. CLZ80-NC SHOWING LINKS TO BE REMOVED.

NOTE: LINK 31 IS ON
THE UNDERSIDE OF THE
BOARD.



1.3 Changing from 4k to 16k RAM

- (a) **Observing all the precautions on handling MOS devices** (see appendix A) remove the 4k RAMS from the memory sockets and replace them with the 16k RAMs provided.
- (b) Now do a functional check for example memory test as described in z80 Microprocessor book 1.

1.4 Fitting sockets for NEZ80 board

Switch off power and remove the NEZ80 board.

- (a) Ensure that pretinned holes for sockets J1' and J2' are open (use either solder sucker or solder wick).
- (b) Fit spacers provided to the underside of the two 64 pin sockets provided. Fit the sockets with the correct orientation i.e. pin 1 in hole 1.
- (c) Turn the board upside down and solder the sockets in. Take care not to apply excessive heat which can lift the track.
- (d) Carry out continuity and insulation checks between J1-J1' and J2-J2' according to the connections shown in the NEZ80 schematic diagram

Note most of the "a" pins are connected to ground and at this time pins 1 will still not be interconnected.

1.5 Connection of +5V supply to sockets J1' and J2'

There are two different procedures to be followed to connect the +5V depending on the revision level of your NEZ80 board so first check the revision level by comparing your board against Figs 4 and 5.

For boards at revision 2 or 3

Note You may find two connecting pins in position L1&L2.

- (a) Solder in a link between points L1 and L2
- (b) Solder the 22uF capacitor into position L1/L3.

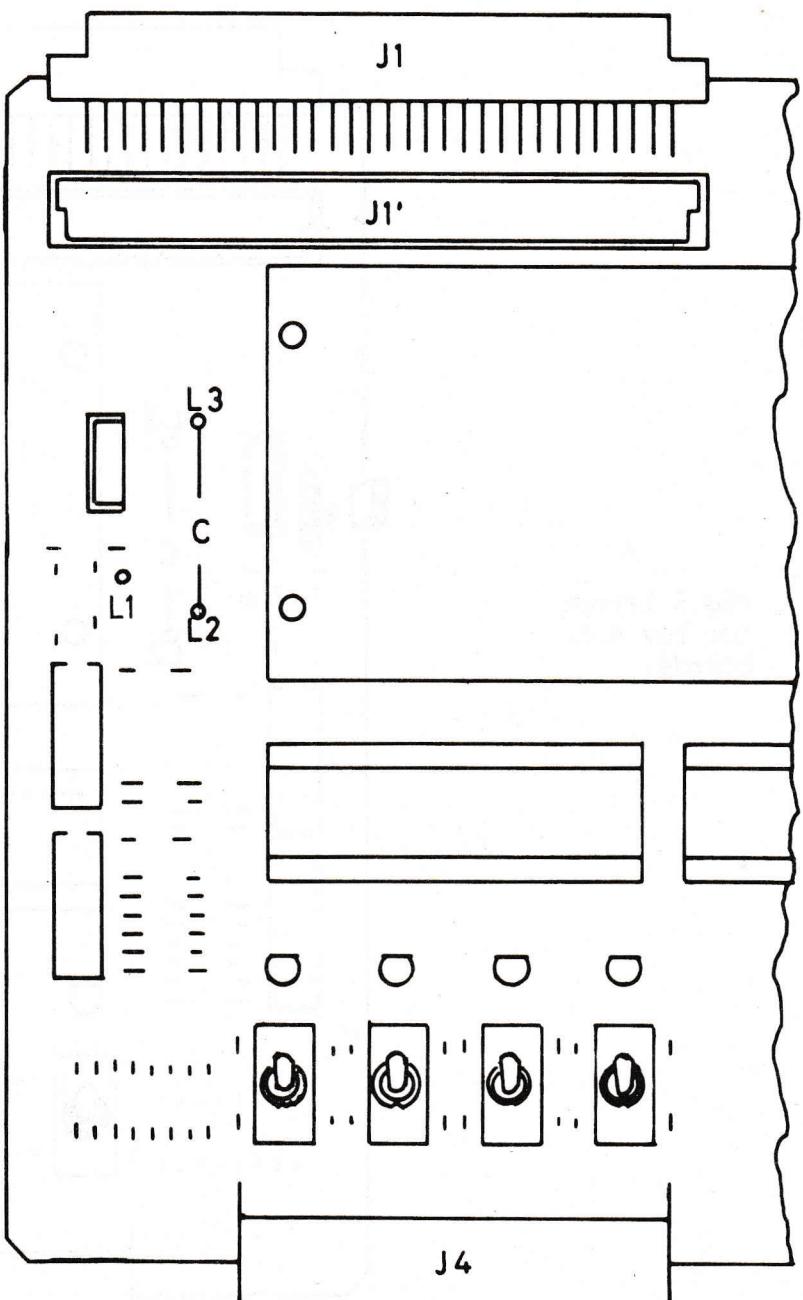


Fig 4. Layout
for rev 2 and
3 boards.

For boards from revision 4 on

- (a) Solder in the 3 pin connector ABC as shown.
- (b) Put the shorting socket provided onto pins B and C.
- (c) Solder the 22uF capacitor into position L2/L3.
- (d) Do continuity check between pins 1 on J1 and J1'.

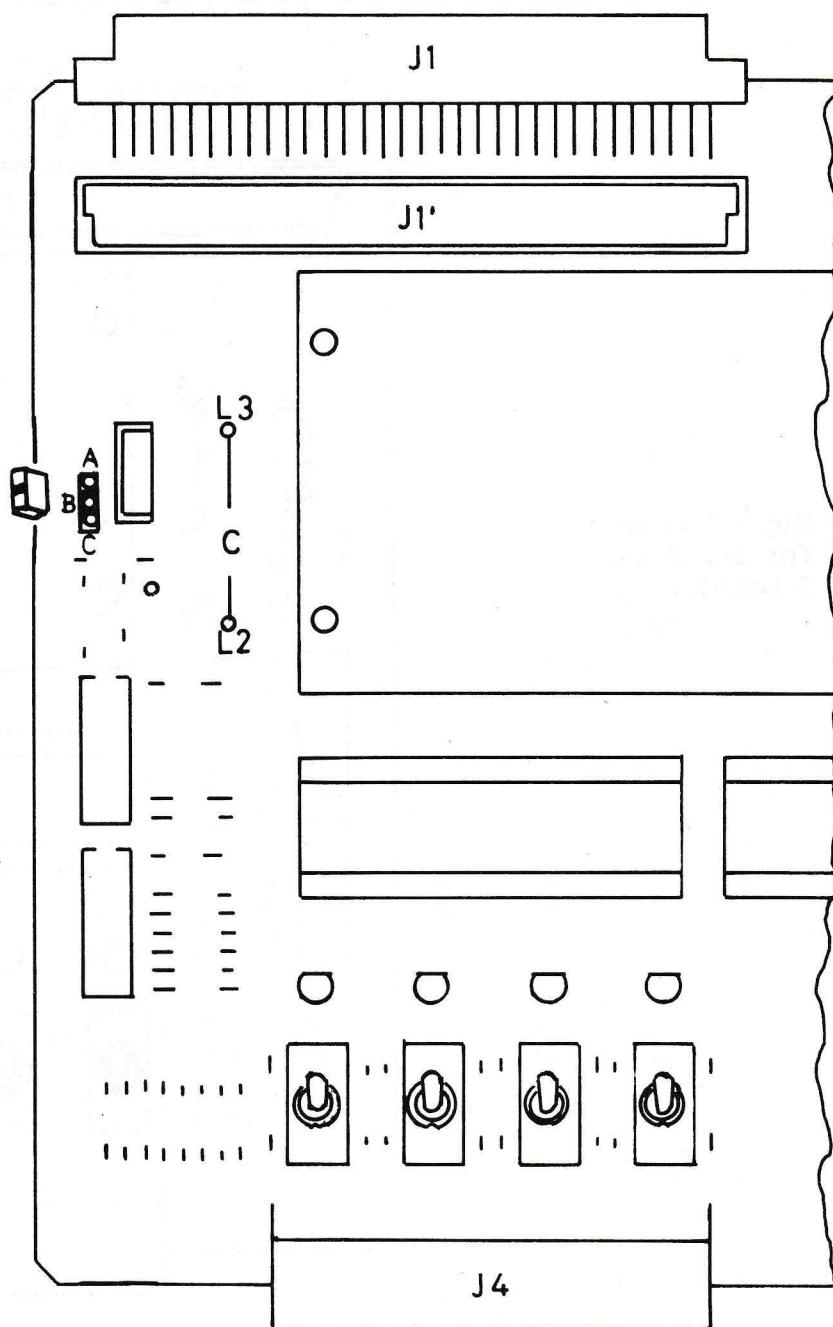


Fig 5 layout
for rev 4 on
boards.

1.6 Reassembly of NANOCOMPUTER HL

(a) Refit NEZ80 board and CLZ80-NC board.

(b) Connect PC061 board (the board with the BASIC-MONITOR or ON-OFF switch on it) to the interface cable coming from the NKZ80 Hex key pad. **Note.** The switch legend depends on the revision number of the PC061.

See Fig 6 for correct orientation.

(c) Fit PC061 board to socket J6 on the CLZ80-NC board. Switch in the "BASIC" or "ON" position.

(d) Fit REZ80 board into sockets J1' and J2'.

(e) Refit the interface cable into J7 on the CLZ80-NC board.

(f) Carry out a functional check.

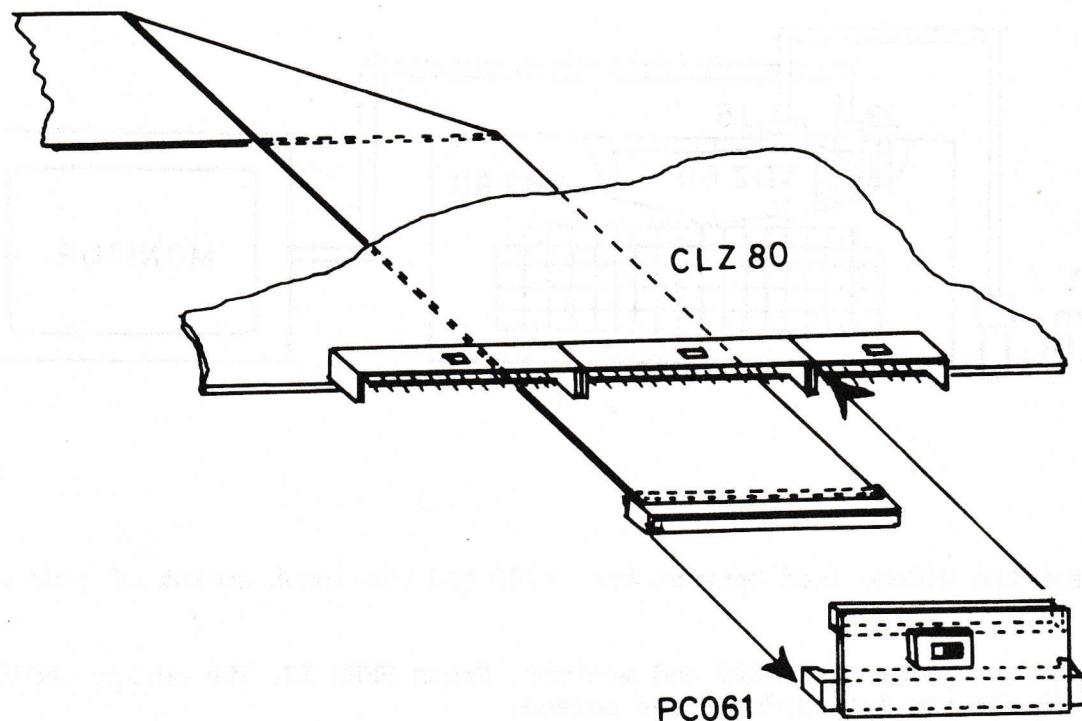


Fig 6. Connection of PC061 to CLZ80-NC

2 PREPARING AND TESTING THE VDZ80 AND VIDEO MONITOR

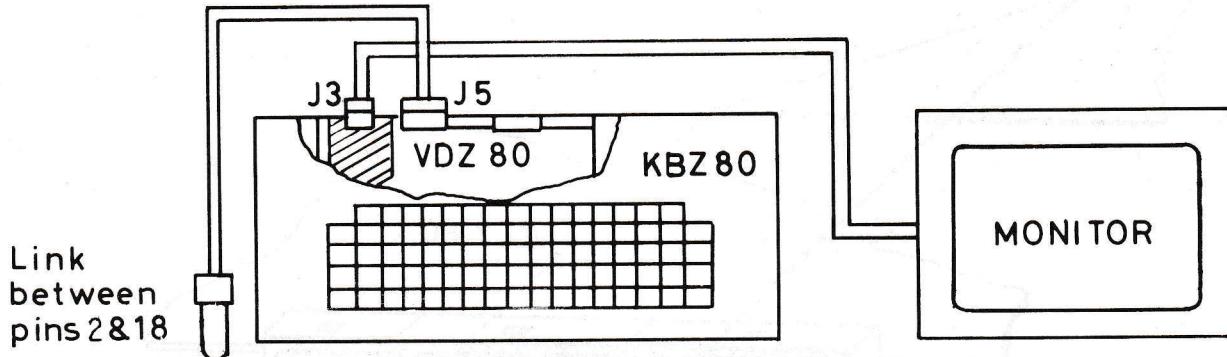
Note 1 The following instructions apply to systems using a video monitor. If you are using a domestic TV receiver it must be VHF and the output signal wire must be swapped from pin 7 to pin 1 on the lead coming from J3 on the VDZ80 board. The receiver should be tuned in between 60 to 80MHz.

Note 2 With this test the VDZ80 is acting as a dummy display echoing signals from its serial output to its serial input.

2.1 Initial test

(a) Check that the interface cable (J5) has pin 1 connected to pin 16 (RS232 standard).

(b) Connect pin 2 to pin 18 of the serial interface lead coming from J5 on the VDZ80.



(c) Connect the video lead between the VDZ80 and the input socket of your video monitor.

(d) Switch on power to VDZ80 and monitor. Press HERE IS. The cursor should be flashing in the top left side of the screen.

(e) Test the VDZ80 and keyboard by exercising the cursor control functions as described in the VDZ80 data sheet or appendix B.

(f) Remove the link between pins 2 and 18.

2.2 Setting baud rate links on VDZ80

Switch off power and remove mains lead.

- (a) Unscrew and remove the top of the keyboard case to expose the VDZ80 board
- (b) Set the baud rate links (6,7,8 & 9) to give the same baud rate as that set on the CLZ80-NC board (normally 600).

Table of VDZ80 Baud Links

Baud	Links	
	open	closed
110	-	-
300	9,6	8,7
600	8,7	9,6
1200	-	6,7,8,9

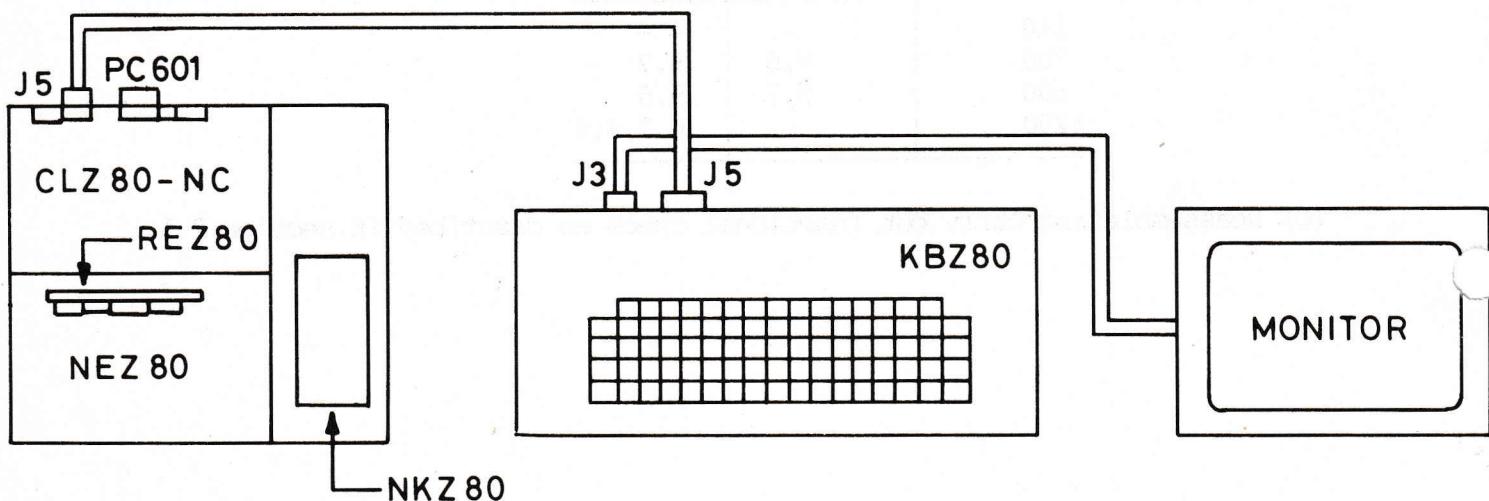
- (c) Reassemble and carry out functional check as described in section 2.1.

3 CONNECTION AND TESTING OF NANOCOMPUTER HL

If both sections 1 and 2 have been completed successfully you can now interconnect all the elements of the system.

3.1 Connecting up the system

- (a) If you have not already done so remove the link between pins 2 and 18 of the serial interface cable (used when testing the VDZ80).
- (b) Connect the serial interface cable to J5 on the CLZ80 board.
- (c) Connect the video signal cable from VDZ80 to the input socket of the video monitor.



3.2 Initial switch on and test.

- (a) Put the "TTY-CAS" switch on the **NKZ 80** (Hex keyboard) to CASS.
- (b) Make sure the switch on board **PC061** (**J6** of **CLZ80-NC**) is in the BASIC or ON position.
- (c) Switch on the power to each system element (NANOCOMPUTER S - VDZ80-Video monitor).

The cursor (a flashing " - ") should now be visible in the top left side of the screen. If you get a screen full of flashing characters press **HERE IS** on the alpha numeric keyboard, the screen should then clear and the cursor appear. If the cursor does not appear then carry out the checks in the trouble shooting chart.

(d) Press RESET on the NKZ80 and then enter C000 on the NKZ80.

(e) Press GO on the NKZ80. The NKZ80 display should go blank. If not check out the points in the trouble shooting chart.

(f) Press SPACE BAR on the alphanumeric keyboard. The following should be displayed:

SGS/ATES BAS-Z/N REL.X.X (X.X depends on the revision level of your BASIC)
TTY WIDTH? -

(g) Press RETURN on the alphanumeric keyboard. The following should be displayed:

SGS/ATES BAS-Z/N REL.X.X
TTY WIDTH
MEMORY TOP? -

(h) Press RETURN again. The display should now read:

SGS/ATES BAS-Z/N REL.X.X
TTY WIDTH
MEMORY TOP
XXXXX BYTES FREE (XXXXX depends on BASIC revision level)
>
-

If every thing checks out your system is up and running. Good luck and good programming.

TROUBLE SHOOTING CHART

FAULT	SYMPTOMS	CAUSE/CURE
1 NO CURSOR	[a] Raster on	(a/a) VDZ80 not switched on ** SWITCH VDZ80 ON ** (a/b) Video signal open cct or not connected. ** FIT VIDEO CABLE ** ** CHECK CONTINUITY ** (a/c) VDZ80 fuse blown. ** WITH VDZ80 DISCONNECTED FROM MAINS BUT WITH ON/OFF SWICH ON CHECK FOR CONTINUITY BETWEEN LIVE AND NEUTRAL PINS OF MAINS PLUG (100 OHMS IS OK) IF OPEN CCT REMOVE COVER AND CHANGE FUSE ** (a/d) A domestic TV is being used without the modifications detailed in section 2.1 note 1 being carried out or TV is UHF. ** CHECK NOTE 1 SECTION 2.1 ** (a/e) System fault. ** RETURN FOR REPAIR **
	[b] No raster	(b/a) Monitor not switched on ** SWITCH MONITOR ON ** (b/b) Brightness/Contrast controls incorrectly set. ** SET CONTROLS TO GET RASTER ** (b/c) Monitor fault. ** RETURN FOR REPAIR **
2 HEX DISPLAY DOES NOT GO BLANK WHEN C000 IS INPUT AND GO PRESSED		(a) C000 was not entered properly ** RESET AND TRY AGAIN ** (b) Key other than GO pressed ** RESET AND TRY AGAIN **

(c) REZ80 not fitted into sockets J1', J2' properly.

** SWITCH OFF AND REFIT REZ80 **

(d) Sockets J1', J2' not soldered in properly.

** SWITCH OFF AND CHECK ALL CONNECTIONS
LOOK FOR SOLDER BRIDGING ADJACENT PINS **

(e) No power to REZ80 board.

** WITH POWER ON CHECK FOR +5V ON PIN 1
OF J1', J2' IF NO POWER RECHECK CONNECTIONS
MADE IN SECTION 1.5 **

(f) System fault.

** RETURN FOR REPAIR **

3 DISPLAY GOES
BLANK BUT
SPACE BAR HAS
NO EFFECT

[a] No cursor

(a) VDZ80 or Monitor.

** CARRY OUT CHECKS IN ITEM 1 **

[b] Cursor ok

(b/a) Dump key pressed instead of GO.

** RESET THEN TRY AGAIN **

(b/b) Serial interface cable not connected properly or faulty cable.

** SWITCH OFF AND MAKE SURE CABLE IS
FITTED PROPERLY IF STILL NOGO THEN
CHECK CABLE SERVICEABILITY **

(b/c) BASIC-MONITOR Switch is in the MONITOR position.

** SWITCH TO BASIC AND TRY AGAIN **

(b/d) System fault (impossible !!!).

** RETURN FOR REPAIR **

Appendix A

This kit contains MOS memories which are sensitive to static electricity. If the following precautions are not observed you risk damaging them:

1. Ensure that you are statically discharged immediately before touching the device. You can do this by rubbing your hands on any conductive material.
2. Avoid touching the pins.
3. Prevent pin contact with any material likely to hold a static charge. For example nylon overalls, carpets etc.
4. If it is necessary to move the memories any distance (even across a room) they should be on conductive foam. The foam the memories arrive in is specially designed for this purpose.
5. Ensure that the memories are mounted correctly in their sockets paying particular attention to these points:
 - (a) pin one on the memory goes to pin one on the socket.
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Appendix B

VDZ80 Cursor control

The cursor can be controlled with the following commands:

ESC+A	cursor up
ESC+B	cursor down
ESC+C	cursor right
ESC+D	cursor left
ESC+H	cursor home (top left)
ESC+Y	cursor jumps to an addressed location A,B A=line number between 0 and 15 (20H to 2FH) B=column number between 0 and 63 (20H to 5FH)
ESC+K	cancel all characters on a line from cursor to end of line
ESC+J	cancel all characters on page from cursor to end of page

Beside these the following functions are included:

HERE IS KEY	clears the screen and sets the cursor to the top left position (home)
REPEAT KEY	when this key is held down together with another code key the character is repeated
CTRL+H	back spaces and cancels the first character to the left of the cursor.

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