

# INSTALLATION INSTRUCTIONS FOR THE HR40 HIGH RESOLUTION GRAPHICS BOARD.

## (1) PREPARATION.

Gain access to the PET's main logic board by removing the two (or four) screws either side of the keyboard. Lift the lid of the PET like a car bonnet and support by the staybar provided. For ease of installation it is recommended that the lid of the PET be raised further to its fullest extent, removing the keyboard connector at J5 if the wires are too tight, and lean the top part of the PET against a wall to prevent strain on the case hinges. This will allow maximum visibility when fitting the various plugs onto the PET's main board, thereby reducing the chances of incorrect connections.

Remove the video plug from J7.

Remove the character generator chip from its socket at UF10. Great care must be exercised in removing chips from their sockets evenly to prevent bending or breaking off the pins. Use a small electrical screw driver and lever between the chip and its socket, a little at a time alternately from each end until loose.

Remove the BASIC ROM from its socket at UD8 in the same way.

If your PET I.C. sockets are not marked on your board then the character generator occupies the leftmost socket in row five (counting from front), and the BASIC ROM is in row seven second from the left.

The HR40 is supplied complete with a new character generator chip and a new BASIC ROM, which includes the utility software, therefore the two chips removed should be kept for future use should the HR40 board be removed again. (N.B. BASIC ROM not supplied with kit version).

## (2) PREPARING THE BOARD.

Two sockets are provided on the HR40 board marked UD3 and UD4. If you have any additional ROMs in your PET, such as Superchip, Arrow, Pic-chip etc., at UD3 or UD4 (2nd. & 3rd. row 7) then these must be removed and refitted in the corresponding sockets on the HR40 (N.B. If your HR40 is the kit version then the BASIC ROM previously removed from the UD8 socket must be fitted in the position marked IC16).

All chips removed are of the 24 pin type and any fitted onto the HR40 board must be orientated such that the notch or pin 1 dot marker at one end of the ROM is towards the front of the PET.

WARNING!!! FAILURE TO OBSERVE THIS POINT WILL ALMOST CERTAINLY DAMAGE THE ROM OR THE PET.

### (3) CONNECTIONS.

I.C. pins are numbered counting from the notch end (front) in an anti-clockwise direction. All connections to the PET's IC's are in the 'UF' or 5th. row.

Attach the three coloured probe hooks to I.C. pins as follows:-

RED..... UF9 pin 11. 2nd. chip from left, rear lefthand pin.

YELLOW... UF3 pin 1. 3rd. chip from right, front righthand pin.

BLUE..... UF1 pin 12. 1st. chip on right, 3rd. on left from front.

Next the ribbon cable terminated with a special plug, that looks similar to an I.C. itself, should be connected to the chip marked UF8 (3rd. from left, row 5). Before attaching this plug remove the white backing paper from the adhesive underside. N.B. This special plug has four pins less than the UF8 chip itself. Therefore fit plug towards the front of the UF8 chip making no connection to the rear four pins, 8 to 11, of UF8.

Gently push plug over the UF8 chip 'piggy-back' style. Note that the position of the notch (or dot) on the plug is in line with the notch on the front of the UF8 chip. Check that all 14 of the pins on the special plug are centred and are making a good connection to the UF8 chips pins and not lodged in between them! If necessary remove the plug again and straighten any bent pins with tweezers. When all pins are O.K. push plug down firmly.

Remove the white backing paper from the bottom of the three nylon support pillars. Remove the protection from the 24 pin plug that is mounted on the underside corner of the HR40 board. Now holding the HR40 board horizontally insert this plug into the leftmost socket previously vacated by the character generator chip at UF10. Locate all 24 pins in the socket and push down gently on the area above the UF10 socket and on the three pillars to secure the HR40 board firmly to the PET's main board. Refit video plug on J7.

At the right hand edge towards the rear of the PET's logic board are two columns in line of 25 pin pairs. The front group are J4 and the rear are J9. These pins, numbered from 1 (front) to 25 (rear), are to have the 6 way ribbon cable attached.

All pins on the right hand edges are ground pins and are not connected. The small flying sockets are spaced out on the ribbon cable and should be connected to the pins on the inner edge as follows:-

1st. plug (3 holes) J4:-	brown : pin 16
	red : pin 17
	orange: pin 18
2nd. plug (1 hole) J9:-	yellow: pin 14
3rd. plug (2 holes) J9:-	green : pin 21
	blue : pin 22

The last ribbon cable, with a 24 pin header plug attached, should be plugged into the BASIC ROM socket UD8. The white arrow head on the top of the plug signifies pin one and should be towards the front of the UD8 socket.

Lower the PET's lid back down and support by the staybar. Refit the keyboard plug, if previously removed, to J5.

#### (4) TESTING.

Connect the PET's mains lead to a suitable wall socket and switch on. The PET should power up in the normal way displaying the usual COMMODORE BASIC message with BYTES FREE and a flashing cursor.

If you do not have this, or the screen is filled with random characters, then SWITCH OFF IMMEDIATELY and check over all your connections as per these instructions.

Note that no damage can result to the PET or the HR40 board through wrong connection of plugs or probe hooks, only if I.C's are plugged in the wrong way round or displaced in their sockets by two pins, can damage result.

Having achieved normal power up conditions type this line to test the basic functions of the board:-

```
POKE35000,5:WAIT158,1:SYS59650,C
```

You should now have a screen full of vertical stripes with random dashes scattered over it. This is the normal state of the additional 8K RAM at power up. Now hit any key and the display should clear from top to bottom leaving the normal PET's display. If the screen is not clear at this point, but filled with rows of fine dots and dashes separated by thin clear rows, then you have omitted to remove any chips from the UD3 & UD4 slots on the PET's board, in this case check over section (2) again.

No response at all or a quick flash of stripes is possibly wrong connections to the J4 or J9 pins. Count the pins again, starting from pin 1 at front working back, as in section (3). A screen full of random areas with streaking horizontal lines indicates a problem with the special plug on UF8.

This concludes the fitting instructions for the SUPERSOFT HR40 High Resolution graphics board.

---