
5000 Series 4-8MB RAM Fitting Instructions

WARNING!



Your computer contains hazardous voltages so before removing any cover, switch off and disconnect from the mains supply as failure to do so may cause injury.

CAUTION!



OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES. Your computer and upgrade can be damaged by careless static discharge. Earth yourself and try to avoid touching any of the electronic circuitry.

Note: The computer board and 4-8Mb RAM upgrade are static sensitive and excessive handling can damage them. It is recommended that the upgrade boards are left in their protective packaging and only removed immediately prior to fitting them to the machine. Precautions should be taken to reduce static by wearing an earthed anti-static strap or by occasionally touching an earthed surface. As the fitting of this upgrade is outside our control, no responsibility can be accepted for any consequential loss or damage caused by its incorrect installation. Original 25Mhz models must have the memory controller desoldered and a socket put in place before the upgrade can be fitted. This process requires specialist desoldering equipment to remove the MEMC without damaging the motherboard and we would recommend that the work is done by ourselves or another surface mount service centre.

Compatibility: Your computer must have a full 4Mb of RAM before it can be upgraded to 8Mb. If your machine is not yet at 4Mb then we would recommend a vertically standing upgrade card rather than one which lays flat. Select one which uses a minimum of chips (4) mounted on a four layer circuit board. The 4-8Mb upgrade has been designed to fit with any existing 2-4Mb upgrade. The following boards have been tested and are known to fit: Acorn horizontal 16 chip, Atomwide horizontal 16 chip 4Mb(8Mb) and 16 chip 4Mb, HCCS vertical 16 chip, Simtec vertical 16 chip, 4 chip and surface mount, Vertical Twist (Greyhound) vertical 16 chip. If you have any difficulties with your 2-4Mb upgrade then please contact us so we can advise on corrective action.

Purpose

To install an extra 4Mb of RAM to a 4Mb machine to give a total of 8Mb. The upgrade consists of two parts, a memory board holding the RAM which fits in the ROM sockets, and a Dual MEMC board which plugs into the MEMC socket. The two parts are connected by a length of cable.

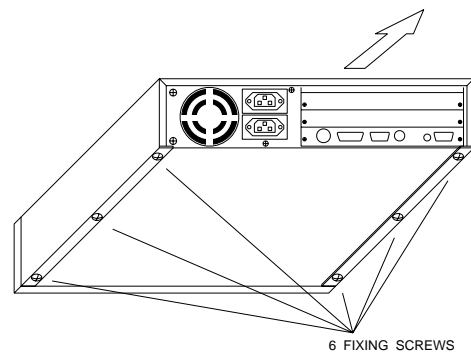
Tools Required

A small cross-head screwdriver for removing the case, a PLCC extractor tool to remove the MEMC from its socket and a DIL extractor or 'Bic' pen top to remove the operating system ROMS.

Fitting

To fit the upgrade, the main printed circuit board (PCB) must be removed to give access to the ROM sockets. This involves the removal of the metal cover, the removal of any podules, the unplugging of the backplane/disk drive tray and the disconnection of the cables from the PCB before it can be slid out of the machine. It may be useful to save your CMOS RAM settings onto floppy using !Configure before you commence as they may be lost when the machine is disassembled.

1) Disconnect the power cable and all other connecting cables from the the computer, placing the monitor and keyboard in a safe place. The cover can now be removed by turning the computer over and, using the cross-head screwdriver, unscrew the six cover screws as shown in the diagram and put them in a safe place. Carefully turn the machine over again and slide the cover off towards the rear. Place the cover in a safe place. When the cover is removed, you may find a metal shield in place over the machine. This can be slid off once the five screws securing it on the left 'speaker' side are removed. Note how the fingers around the edges of the shield clip to the metalwork.



2) Remove any podule cover plates from the rear of the machine and if you have any podules fitted then remove them by following the reverse of the manufacturer's fitting instructions, placing them in a safe place.

3) The two flat ribbon cables connecting the hard disk and floppy drive to the PCB must now be unplugged from their sockets by carefully easing their plugs from the plastic shrouded connectors and curling them out of the way. Next the power plugs from both hard and floppy drives must be detached. Holding on to the the plug body, gently ease each plug from their power sockets.

4) With the drive cables detached, the backplane/disk drive tray is now removed by unscrewing the central fixing screw located between the hard disk and floppy drive at the front of the machine.

With the screw undone, the backplane/tray assembly can be unplugged from the main PCB with cables still attached, by easing it carefully upwards until the backplane connector clears the motherboard at which point it may be lifted out. Being careful of the two cables still attached, rest the backplane/tray assembly safely out of the way.

5) Now detach the speaker and LED connectors, and the six power cables from the board (coloured red(2), black(2), yellow and purple). If fitted, carefully unplug any RAM card from the memory expansion socket.

6) With all connecting cables removed from the PCB, the two small screws securing each end of the rear plate of the board can now be removed allowing the PCB to be slid out of the rear of the machine on its plastic runners. (The board must be kept horizontal or the sharp edges of the case may scratch the underneath of the board as it is withdrawn possibly causing damage.)

Fitting the RAM Board

1) Place the PCB on a compliant, anti-static work surface. The plastic pillars under the board must be removed to allow the PCB to lie flat. On the underneath, use a pen or tape to mark in which holes the pillars were fitted. To fit the upgrade, the existing ROM chips have to be removed, using a DIL extractor or plastic pen top to gently lever up the ends of each chip in turn. It may be useful to label the ROMS before removal.

2) With the PCB on a flat surface, with the rear plate of the motherboard away from you, place the RAM carrier over the four 'left' most sockets so that the pins of the carrier line up with the holes of the sockets. Make sure that the cable connector is pointing towards you as shown in the diagram.

3) Push home the RAM carrier with even pressure so that the legs of the carrier penetrate the sockets to a depth of 3-4mm so that only the wide part of the legs are visible. A small block of wood makes the job easier, but be careful not to damage any of the upgrades connector pins. Check very carefully to make sure that the board is level and not bowed.

4) When refitting the ROMs, make sure that the chips are fitted to the carrier with the notch at the end of each chip orientated to the rear as in their original sockets. If the ROMs are not marked as ROM 1, 2, 3, 4 then the Rom 1 can be identified by the lowest numbered Acorn part number printed on the top of the chip eg 283,022-01 with the other Roms being fitted in ascending order from left to right ie Rom 2 would be 283,023-01 and so on.

Fitting the MEMC Board

The square MEMC chip can now be removed from its socket using the PLCC extractor to make room for the MEMC board. **ONLY** if you have an earlier 25MHz machine which has a soldered memory controller, you will need to have this removed and a socket put in its place. Once the socket has been fitted, the dual MEMC board can be fitted in the normal way.

1) Holding the tool vertically in one hand, both metal hooks of the tool are pushed into the two extraction slots of the socket at diagonally opposite corners of the chip so that the plastic body of the tool rests upon the upper face of the socket. (You should be able to move the hooks of the tool freely up and down slightly in the slots of the socket. If the hooks do not move then they have not cleared the side of the chip and tool must be rocked gently back and fore by a few degrees in line with the slots so that the hooks become free and latch round the underneath of the chip.) Holding the tool upright, gently squeeze the two elbows together. This causes the hooks to pull the chip upwards out of the socket. Under no circumstances should you pull upwards or tilt the tool as this will damage both tool and socket - let the tool do the work! When the extracting action is complete, the chip will be just clear of the top of the socket, being clamped firmly between the hooks and base of the tool and can be lifted clear. **DO NOT** touch the contacts within the socket as the grease on your fingers will cause future connector failure with the socket.

2) Take the MEMC board from the packaging and carefully remove the transit ring from around the adaptor on the underneath of the PCB. With the MEMC board orientated from left to right with its cable connector to the rear as in the diagram overleaf, place the board in position so that the adaptor of the MEMC board sits squarely in the top the socket. Using your thumbs, gently press downwards on the upgrade board above the adaptor with even pressure, trying to keep the upgrade level with the main PCB until the adaptor bottoms out in the socket. The board may be anchored into position using a small double sided adhesive pad between the square chip on the underside of the MEMC board and the top of the chip on the motherboard which lies directly underneath.

3) Carefully fold the cable in the fashion of the diagram and plug one end of it onto the RAM carrier and the other to the MEMC board. The cable stripe should be adjacent to the white triangle mark at the end of each board connector. Be careful not to misregister the ribbon cable with its connector as there is no shroud to aid in its alignment. Check that the RAM carrier has not been disturbed and that the MEMC board is still level.

4) **Refit all support pillars to the motherboard.**

5) The main PCB can now be returned to the chassis. Be careful not to catch the PCB on the rear of the case as it is slid home. The computer can now be reassembled by following the instructions in reverse. Take great care to reconnect all cables making sure that the multi-way connectors are plugged in the right way round without displacing them sideways.

Note: The six power cables are connected to the spade terminals on the PCB in the following way:- RED to the +5v terminals, BLACK to the 0v terminals, YELLOW to the +12v terminal and PURPLE to the -5v terminal.

Permanent damage to your computer will occur if these connections are not correct.

Any backplane and podules should also be replaced but you may choose to fit these later, after the machine has been tested. If you have a colour graphics card then you must either fit this or make sure the Genlock links are fitted or no video picture will be output.

Before replacing the cover check once more that all cables have been reconnected and that all screws have been replaced.

You may wish to take the opportunity to remove any fluff and debris before the computer is fully assembled.

With the machine fully assembled, if possible, allow the monitor to warm up for one minute and then switch on with the <Delete> key pressed until a few seconds after the power on self test (coloured screens going from Magenta to Cyan to black) has completed.

If the colour of the screen does not change within a few seconds of switch-on then turn off and check the orientation of the ROMs and make sure no legs are bent out of the socket. Also check the RAM carrier and plugs are seated correctly and that their pins are not misaligned.

Remember to set the 'Real time clock' and change back the CMOS Ram settings as they are forgotten when the battery connector is removed !

Notes for those who will be soldering a socket to a 25MHz machine:

- 1) Remove the MEMC in one piece if possible to avoid track damage.
- 2) For those familiar with removing ARM2 chips from an A3000 to fit an ARM3, use less heat when removing the 68 pin MEMC to avoid de-laminating the PCB.
- 3) The small surface mount electrolytic capacitor positioned to the front left corner of the MEMC will have to be removed/repositioned to allow the socket to fit correctly. The capacitor can be left off without affecting the operation of the machine.
- 4) All soldering residues must be removed from the socket as any contamination will cause contact problems between the socket and PLCC plug of the dual MEMC board.

