

Macintosh Quadra 900

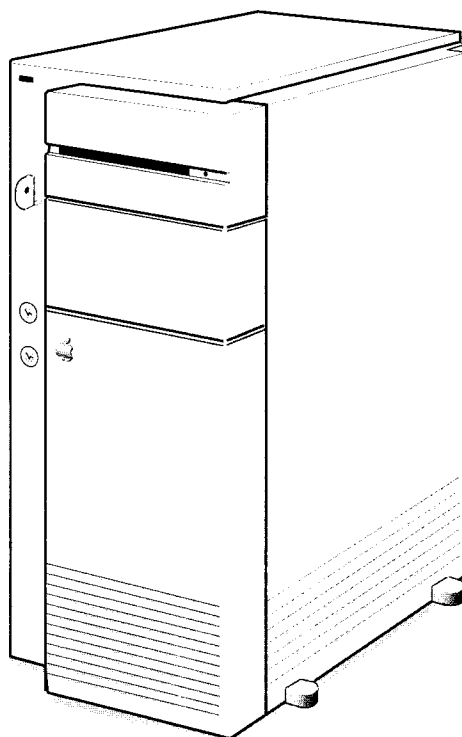
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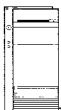


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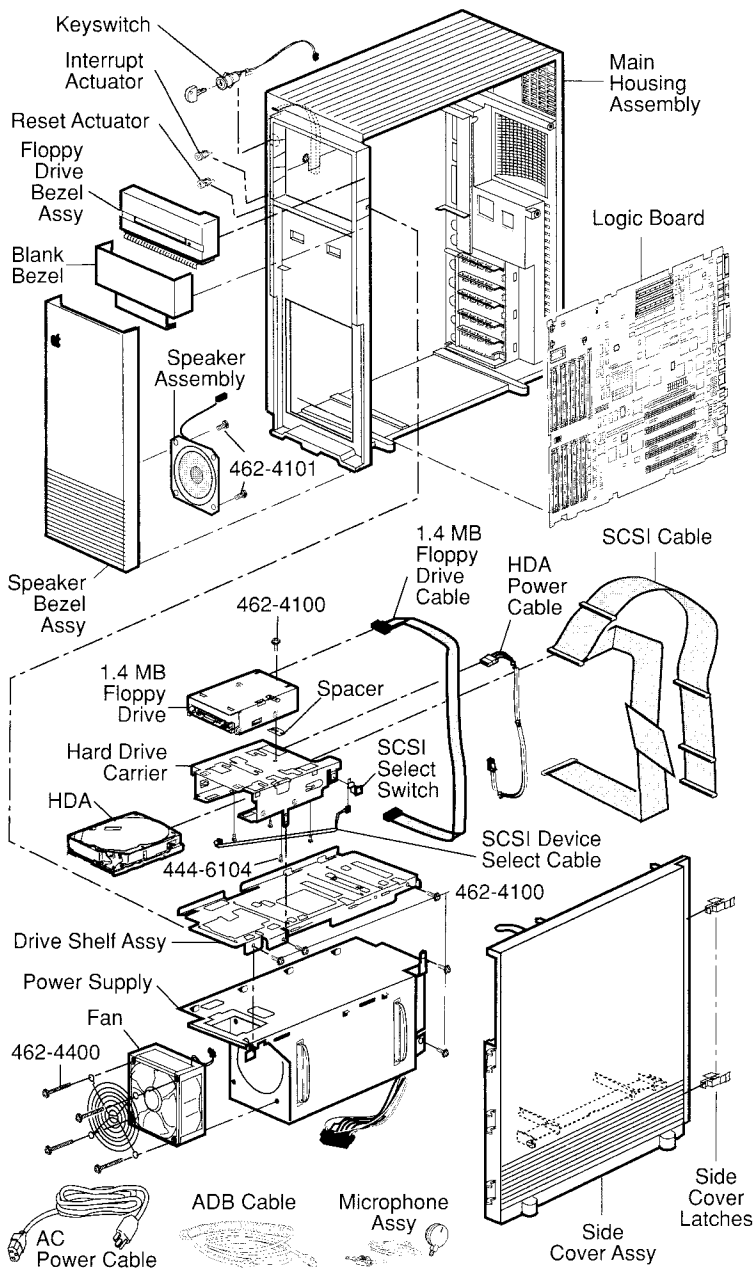
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Exploded View



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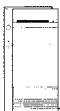
Parts List



Actuators—

Interrupt Actuator	815-6250
Reset Actuator	815-6249
Apple Logo	825-1256
Blank Bezel Assembly	076-0431
Cable, ADB, 2 Meter	590-0152
Cable, Power AC, 110 V	590-0760
Fan, Power Supply	720-0518
Exhaust Vent Cover (included with main housing)	076-0432
Screw, 3.5 x 45 mm, SEM Machine (fan to power supply)	462-4400
Floppy Disk Drive, 1.4 MB Apple SuperDrive	661-0474
Floppy Disk Drive—Accessories	
Spacer, Apple SuperDrive (included in screw kit)	805-5113
Bezel Assembly, Floppy Drive	076-0437
Cable, 1.4 MB Apple SuperDrive, Internal	590-0515
Drive Carrier, Apple SuperDrive (also used as shipping fixture)	805-5050
Dust Shield, 1.4 MB Apple SuperDrive (package of 5)	076-0439
Packing Disk	003-0003
Service Packaging, SuperDrive	602-0210
HDA, 160 MB, 3.5" SCSI (without carrier)	661-1641
HDA, 400 MB, 3.5" SCSI (without carrier)	661-1636
Cable, SCSI (with terminator)	590-0528
Cable, HDA Power	590-0517
Cable, SCSI Device Select (for use with 661-1641)	590-0518
Cable, SCSI Device Select (for use with 661-1636)	590-0790
Drive Shelf Assembly (includes Velcro cable straps)	630-6097
Hard Drive Carrier, Internal 3.5" or 5.25"	805-5106
Screw, 6 - 32 x .25 (hard drive carrier to hard drive)	444-6104
Screw, 3.5 x .6 x .8 mm (drive shelf assembly to power supply)	462-4100
Service Packaging, HDA, 3.5", Half-Height	602-0282
Switch, SCSI Device Select	705-0045
Keyswitch (with two keys)	705-0175
Light Pipe, Power LED (included with main housing)	815-6251
Logic Board (without DRAM/VRAM SIMMs)	661-0665
Logic Board Components—	
Jumper Connector (package of 10)	517-0546
Lithium Battery	742-0011
Battery Holder Cover	520-0344
Main Housing Assembly (includes product label, NuBus slot covers, fan exhaust vent cover, and light pipe)	076-0434
Microphone Assembly	699-5073
Miscellaneous Screw Kit	076-0435
Screw Kit Includes:	
Screw, 3.5 x .610 mm, Self-Tapping	420-1001
Screw, 3.5 x 6 mm, Pan-Head Machine	462-4101
Screw, 3.5 x 45 mm, SEM Machine	462-4400
Apple SuperDrive Spacer	805-5113

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Parts List and Board Diagram

Power Supply (includes fan)	661-0664
Screw, 3.5 x .6 x .8 mm (power supply to case)	462-4100
Side Cover Latch	815-6262
Side Cover Assembly (includes NuBus card guides)	076-0436
SIMMs—	
DRAM SIMM, 1 MB 80 ns	661-0520
DRAM SIMM, 1 MB 80 ns	661-0719
DRAM SIMM, 1 MB 80 ns, Parity	661-0546
Speaker Assembly	630-6011
Screw, 3.5 x 6 mm (speaker to bezel assembly)	462-4101
Speaker Bezel Assembly	076-0433

Board Diagram

The figure below illustrates the internal connectors on the Macintosh Quadra 900.

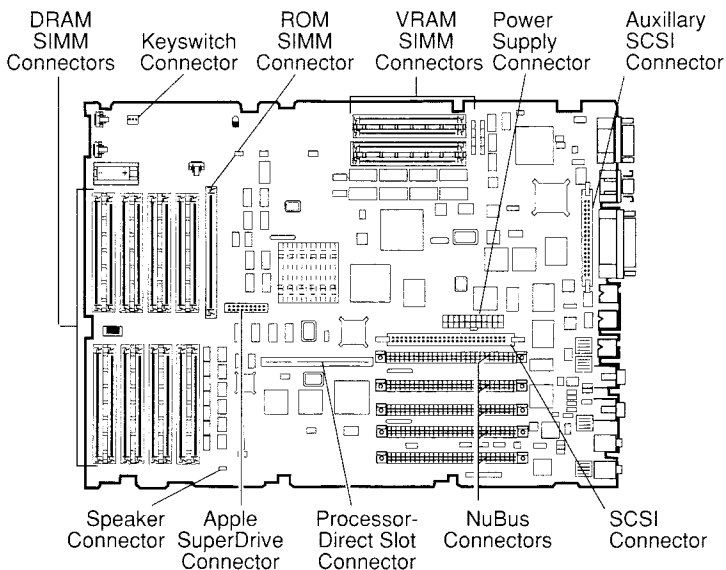
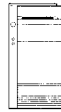


Figure: Board Diagram

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Symptom/Cure Chart



System Problems

Solutions

Four-tone error chord plays at startup

1. If system boots from internal hard drive, disconnect SCSI cable from logic board and restart system. If startup sequence is normal, reinitialize hard drive. If error chord still sounds, replace hard drive.
2. If system boots from internal floppy drive, disconnect floppy drive cable and restart system. If startup sequence is normal, replace floppy drive.
3. If error chord still sounds at startup, replace logic board. Retain customer's SIMMs.

Eight-tone error chord plays at startup

1. Install four known-good DRAM SIMMs in bank A and switch on system. If no error chord sounds, proceed with testing of customer's DRAM SIMMs.
2. Switch system off, replace one known-good SIMM with customer SIMM. Switch system on. If no error chord sounds, customer SIMM is good.
3. Repeat step 2 to test each customer SIMM.

System does not power on—screen black, fan not running, and LED not lit

1. Check power cables.
2. Plug monitor directly into wall socket and verify that monitor has power.
3. Replace power cord.
4. Replace power supply.
5. Replace logic board. Retain customer's SIMMs.

Clicking, chirping, or thumping sound

1. Replace power supply.
2. Replace logic board. Retain customer's SIMMs.
3. Replace floppy drive cable.
4. Replace floppy drive.

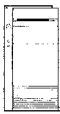
System shuts down intermittently

1. Make sure air vents at rear of system and on side cover are clear. Thermal protection circuitry may shut system down. System should start after 30 to 40 minutes.
2. Replace power cord.
3. Check voltage of lithium battery on logic board. If battery voltage is below 3.2 volts, replace battery.
4. Replace power supply.
5. Replace logic board. Retain customer's SIMMs.

System crashes or hangs intermittently

1. Make sure system software is 7.0.1 or later.
2. Verify that software (applications, INITs, CDEVs, RDEVs, etc.) is compatible with System 7.
3. Identify and replace defective DRAM SIMMs.
4. Replace logic board. Retain customer's SIMMs.
5. Replace power supply.

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Symptom/Cure Chart

System Problems (continued)

Solutions

System does not power on when monitor not attached

1. Attach monitor to system. (Unless system is configured as a server, it will not power on without monitor attached.)
2. If system is a server, install Virtual Monitor Switch Control panel to power-on system.

Video Problems

Solutions

Partial or whole screen bright and audio present, but no video information visible

1. Replace monitor.
2. Replace video cable.
3. Move video interface card (if installed) to a different slot.
4. Replace video interface card (if installed).
5. Replace logic board. Retain customer's SIMMs.

Screen is black, audio and drive operate, fan runs, and LED is lit

1. Adjust brightness on monitor.
2. Replace monitor.
3. Replace video cable.
4. If video interface card is being used with monitor, move card to a different slot.
5. If video interface card is being used with monitor, replace card.
6. Identify and replace defective DRAM SIMMs.
7. Replace logic board. Retain customer's SIMMs.
8. Replace power supply.

Screen is black, audio and drive do not operate, fan runs, and LED is lit

1. Replace video cable.
2. Move video interface card (if installed) to a different slot.
3. Replace video interface card (if installed).
4. Identify and replace defective DRAM SIMMs.
5. Replace logic board. Retain customer's SIMMs.
6. Replace power supply.

Note: If replacing monitor corrects video problem, refer to appropriate *Service Source* manual for monitor troubleshooting information.

Apple SuperDrive Problems

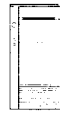
Solutions

Drive does not operate

1. Verify that keyswitch is not on *secure*.
2. Replace floppy disk.
3. Replace floppy drive cable.
4. Replace floppy drive.
5. Replace logic board. Retain customer's SIMMs.
6. Replace power supply.

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Symptom/Cure Chart



Drive runs continuously	1. Replace floppy disk. 2. Replace floppy drive cable. 3. Replace floppy drive. 4. Replace logic board. Retain customer's SIMMs.
During system startup, disk ejects; display shows icon with blinking "x"	1. Replace disk with known-good system disk. 2. Replace floppy drive cable. 3. Replace floppy drive. 4. Replace logic board. Retain customer's SIMMs.
Drive will not eject disk	1. Verify that keyswitch is not on <i>secure</i>. 2. Switch power off and hold mouse button down while switching power back on. 3. Replace floppy drive. 4. Replace floppy drive cable. 5. Replace logic board. Retain customer's SIMMs.
Drive attempts to eject disk, but disk does not eject	1. Reseat floppy drive bezel and/or disk drive so that slot in bezel aligns correctly with disk drive. 2. Eject disk manually with paper clip. 3. Replace floppy drive.
MS-DOS drive does not recognize disk formatted on SuperDrive	— Format all disks with the MS-DOS drive first.

SCSI Hard Drive Problems

Solutions

Single internal SCSI drive does not operate; drive does not spin	1. Replace SCSI cable. 2. Replace SCSI power cable. 3. Replace SCSI drive.
Drive does not appear on desktop	1. Make sure each SCSI device has unique SCSI device address. 2. Use <i>HD SC Setup</i> to initialize drive.
No internal SCSI drives operate	1. Make sure each SCSI device has unique SCSI device address. 2. Verify SCSI device termination. 3. Replace SCSI cable. 4. Replace power supply. 5. Replace logic board. Retain customer's SIMMs.
System works with internal or external SCSI devices, but not with both	1. Make sure each SCSI device has unique SCSI device address. 2. Replace external SCSI terminator. 3. Make sure internal SCSI drives are not terminated. 4. Troubleshoot external device using appropriate <i>Apple Service Technical Procedures</i> manual.



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Symptom/Cure Chart

Peripheral Problems	Solutions
Cursor does not move	1. Make sure keyswitch is not on <i>secure</i>. 2. Check mouse connection. 3. Inspect inside of mouse for buildup of dirt or other contaminants. Clean mouse. 4. If mouse was connected to keyboard, connect mouse to rear ADB port. If mouse now works, replace keyboard. 5. If mouse doesn't work in any ADB port, replace mouse. 6. Replace logic board. Retain customer's SIMMs.
Cursor moves, but clicking mouse button has no effect	1. Replace mouse. 2. Replace logic board. Retain customer's SIMMs.
No response to any key on keyboard	1. Make sure keyswitch is not on <i>secure</i>. 2. Verify keyboard connection to ADB port. 3. Replace keyboard cable. 4. Replace keyboard. 5. Replace logic board. Retain customer's SIMMs.
Cannot double-click to open a disk, application, or server	1. Remove extra system files on hard disk. 2. Clear parameter RAM. Hold down <Option> <Command> <R> and <P> keys during system startup. Reset mouse controls. 3. If mouse was connected to a keyboard, connect mouse to a rear ADB port. If mouse works, replace keyboard. If mouse does not work in any ADB port, replace mouse. 4. Replace logic board. Retain customer's SIMMs.
Known-good serial printer will not print	1. Make sure system software is version 7.01 or later. 2. Make sure Chooser settings are correct. 3. Replace printer interface cable. 4. Replace logic board. Retain customer's SIMMs.
Known-good printer on AppleTalk network does not print	1. Make sure system software is version 7.01 or later. 2. Make sure Chooser settings are correct. 3. Refer to <i>Networks</i> tab in <i>Apple Service Technical Procedures</i>.
Miscellaneous Problems	Solutions
No sound from speaker	1. Make sure speaker volume setting in the Sound control panel is one or above. 2. Replace speaker. 3. Replace logic board. Retain customer's SIMMs.

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Specifications



Microprocessor	MC68040 microprocessor with integrated floating-point unit, memory management unit, and memory cache 25 MHz clock frequency Runs System 7.0.1 or later
Memory	4 MB of DRAM, expandable to 64 MB (80 ns or faster SIMMs) 1 MB of VRAM, expandable to 2 MB 1 MB of ROM
Built-in Video	Built-in 8-bit video circuitry (upgradable to 24-bit) supports all Apple monitors and many non-Apple monitor types (NTSC, PAL, VGA)
Interfaces	Sound-out port (mini phone jack) Sound input port (mini phone jack) Two line input ports (RCA phono jack) Apple Desktop Bus (ADB) port (mini DIN-4) Printer port (mini DIN-8) Modem port (mini DIN-8) SCSI port (DB-25) Ethernet port Video port (DB-13)
Internal Storage	1.4 MB Apple SuperDrive Optional 160 MB or 400 MB SCSI hard drive
Sound	Sound output: built-in speaker and 8-bit or 16-bit stereo sound Sound input: 8-bit monaural sound input with microphone and two line-in connectors (accepting input from CD player, VCR, etc.); real-time decompression hardware
Clock/Calendar	ASIC clock chip with PRAM and DFAC support and with seven-year lithium battery
Electrical	Line voltage: 100 to 120 VAC Frequency: 50 to 60 Hz, single phase Maximum power: 303 watts



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DRAM SIMM Upgrade

The Macintosh Quadra 900 ships with four 1 MB DRAM SIMMs on the logic board. You can increase the amount of memory (up to 64 MB) by installing additional SIMMs in any of the remaining SIMM slots and/or by replacing the original 1 MB SIMMs with larger 4 MB SIMMs.

DRAM Upgrade Procedure

The Macintosh Quadra 900 has four banks of DRAM SIMM sockets (Banks A, B, C, and D). Each bank contains four slots. When installing DRAM SIMMs in the Macintosh Quadra 900, the following rules apply:

- Use DRAM SIMMs that are 80 ns or faster (SIMMs with slower ratings will cause serious timing problems and system crashes).
- Fill each bank with DRAM SIMMs or leave each bank empty.
- A filled bank must have four DRAM SIMMs of the same size (four 1 MB SIMMs or four 4 MB SIMMs).

To install a SIMM, hold it by its edges with the contacts pointing down. Insert the SIMM at an angle (bottom forward) into the SIMM slot. Push back on the top corners of the SIMM. You will hear a click when the SIMM snaps into place.

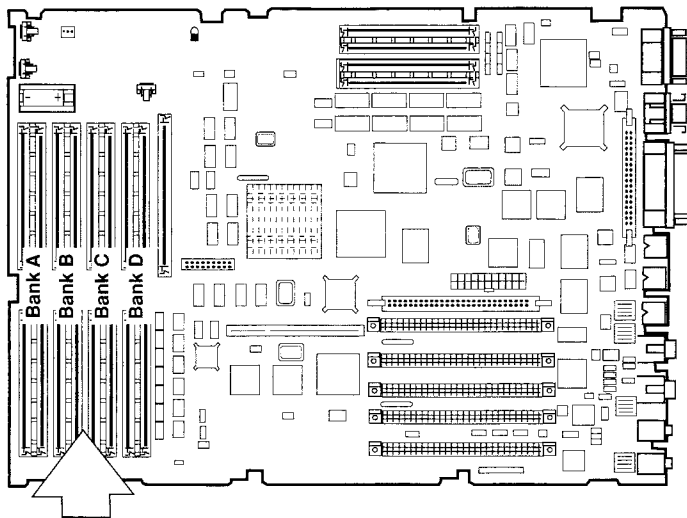
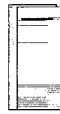


Figure: DRAM SIMM Slots on the Logic Board

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VRAM SIMM Upgrade



The Macintosh Quadra 900 ships with 1 MB of VRAM soldered on the logic board. You can increase the amount of VRAM to 2 MB by installing additional VRAM SIMMs, as the following procedure explains.

VRAM Upgrade Procedure

The Macintosh Quadra 900 has two VRAM SIMM sockets (J3 and J4). Each socket can hold up to two 256K VRAM SIMMs. When installing VRAM SIMMs in the Macintosh Quadra 900, the following rules apply:

- Use VRAM SIMMs that are 100 ns or faster (SIMMs with slower ratings will cause video timing problems).
- Fill both VRAM SIMM sockets or leave both sockets empty.
- Filled SIMM sockets must contain four 256K VRAM SIMMs.

To install a SIMM, hold it by its edges with the contacts pointing down. Insert the SIMM at an angle (bottom forward) into the SIMM slot. Push back on the top corners of the SIMM. You will hear a click when the SIMM snaps into place.

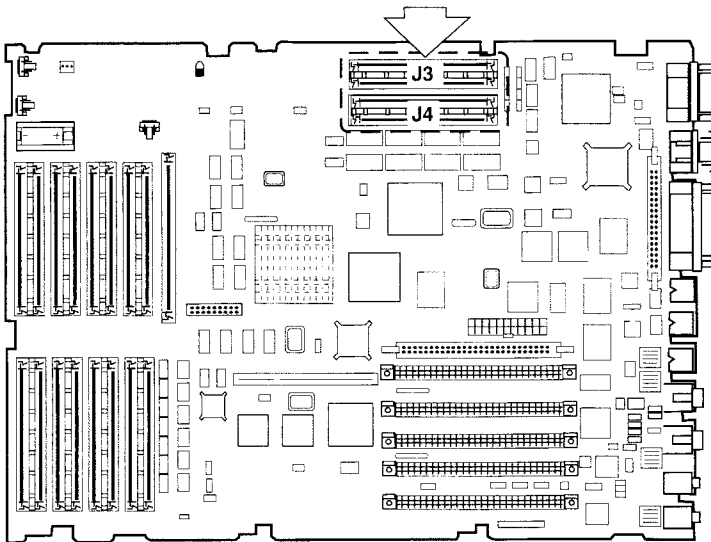


Figure: VRAM SIMM Slots on the Logic Board