



Troubleshooting Flowcharts

Desktop Computers





Desktop Computer Startup Problems

Isolating a Hardware Problem

- **System Self-Tests**—Start up the customer's system, and listen for diagnostic error chords.
- **Diagnostic Software**—If the system passes the self-tests but the problem persists, try running the appropriate MacTest Pro program. If you suspect a hard drive problem, you should also run the Macintosh Hard Drive Test program.
- **Symptom Charts**—If the customer's system (or MacTest Pro) does not boot or MacTest Pro fails to find the problem, refer to the symptom charts in the manual that covers your customer's computer. If you think you recognize the problem and you have the necessary replacement module with you, try module swapping.





- Troubleshooting Flowcharts—If the customer's system (or MacTest Pro) does not boot or MacTest Pro fails to find the problem and the problem is not clearly defined or not listed in the symptom charts, refer to the flowcharts in this section. These flowcharts present a step-by-step procedure for isolating the problem.





Hardware Troubleshooting Guidelines

- 1 Use only known-good test equipment and diagnostic programs.
- 2 The troubleshooting tools are designed to test a system in its minimum configuration. Disconnect external peripherals and remove all NuBus cards. After verifying that the computer is fully operational, reinstall or reconnect and test each expansion card and external device one at a time.
- 3 When using the symptom charts in the manual that covers your customer's computer, always try the solutions one at a time, in sequence, until you fix the problem. If the problem remains, reinstall the original module before trying the next solution.
- 4 The hardware troubleshooting flowcharts verify each repair action by looping back to the start (Flowchart 1).





If a repair does not fix the problem, reinstall the original module, return to the flowblock of origin, and perform the next repair action on the list.

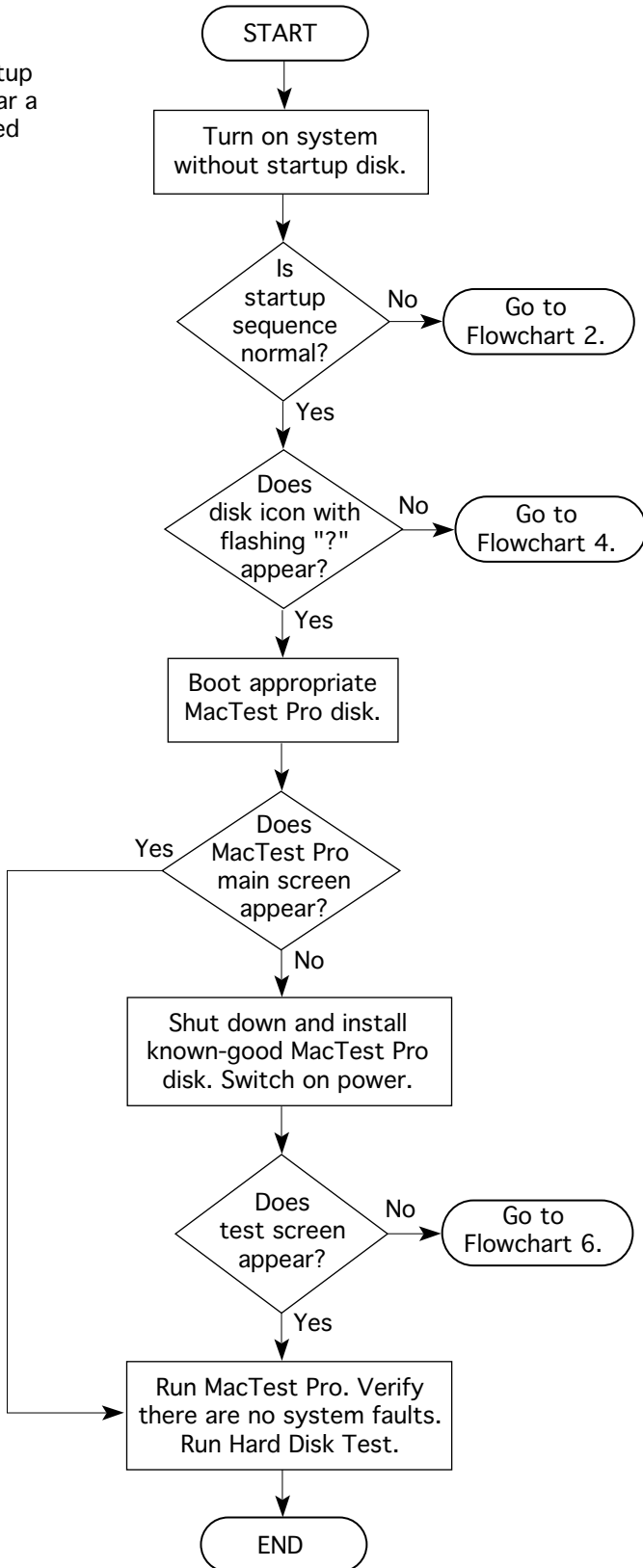
- 5 When instructed to replace the logic board only, place the customer's SIMMs on the replacement logic board. There is never a need to move the ROM SIMM from one logic board to another. Certain logic boards, built early in production, use a ROM SIMM. Boards produced later have ROMs mounted directly on the logic board. Moving the ROM SIMM will cause the board to be rejected by Apple.
- 6 Always verify that the original problem has been fixed. To verify that the original problem is fixed, duplicate the conditions under which it appeared. To verify that there are no additional faults, run MacTest Pro.





Flowchart 1 Startup Problems

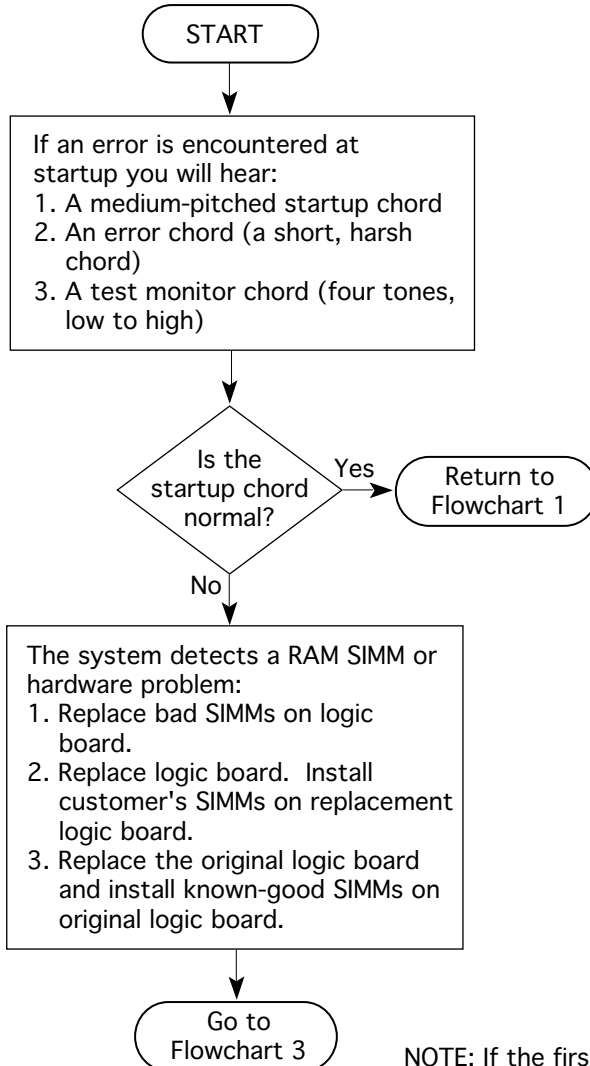
NOTE: At startup you should hear a medium-pitched soft chord.





Flowchart 2 Startup Problems

NOTE: During a normal chord sequence, you'll hear a single, medium-pitched startup chord only.



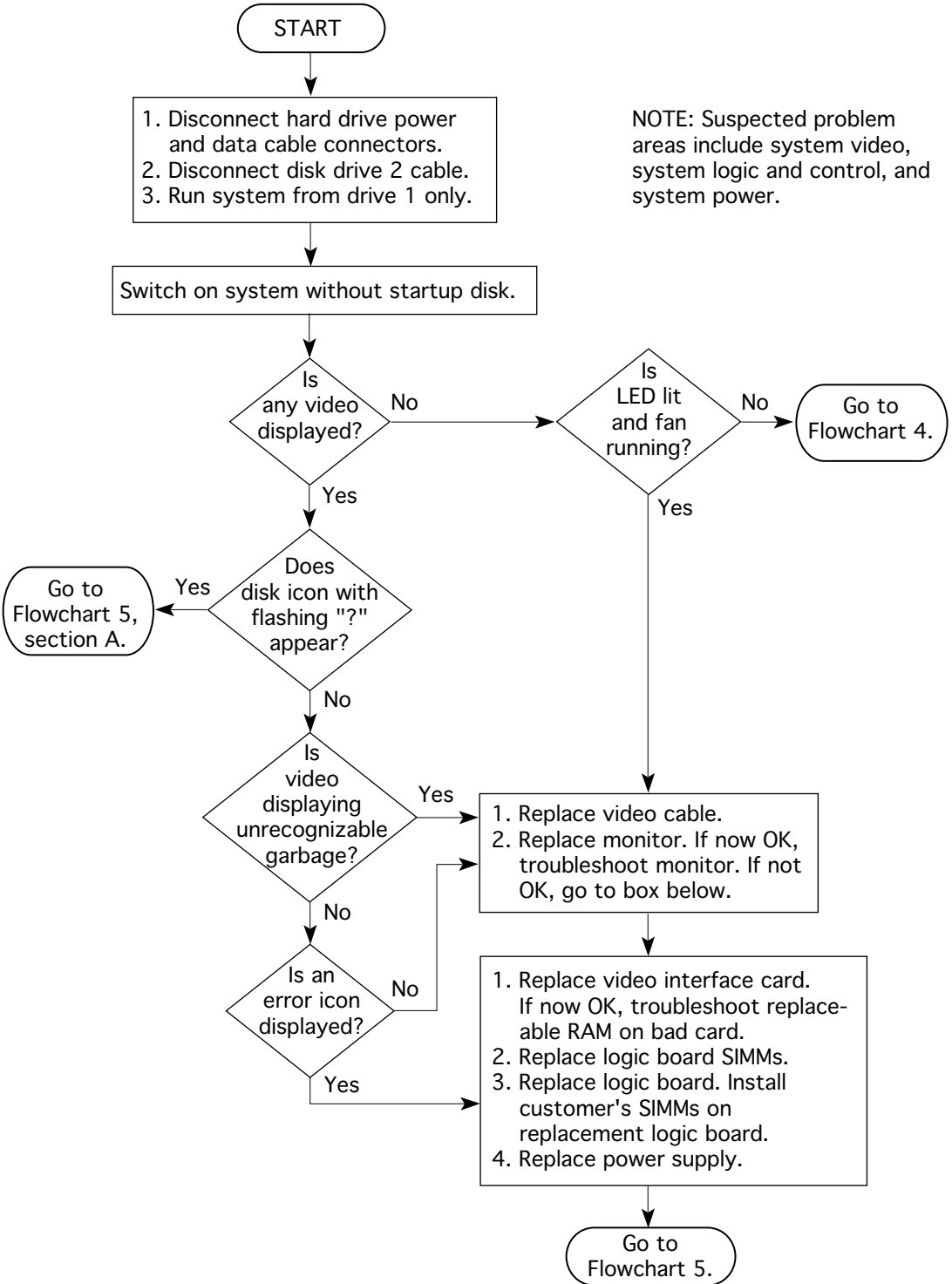
NOTE: If the first corrective action doesn't fix the problem, return the system to its original condition and perform the next action.





Flowchart 3 Startup Problems

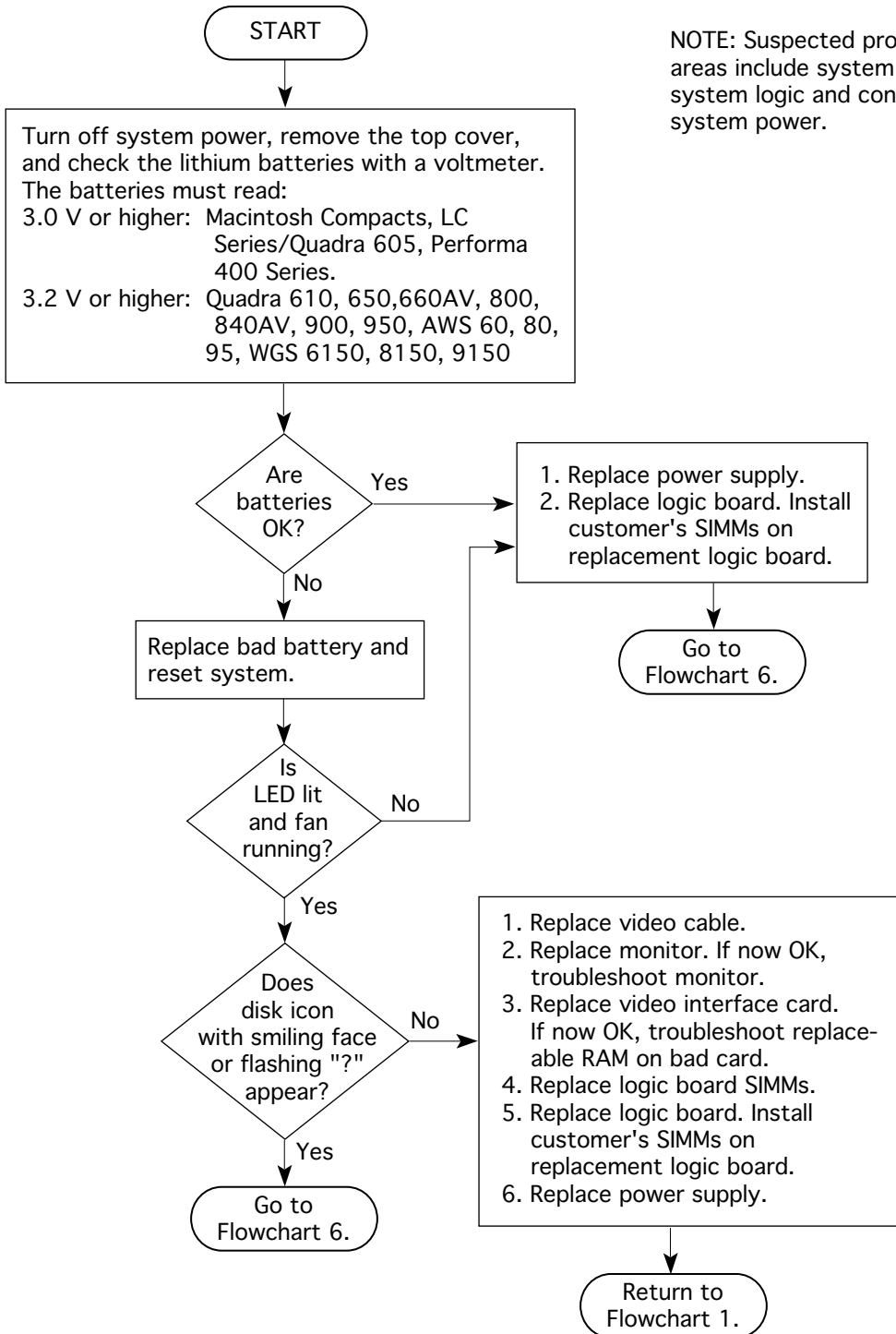
NOTE: Suspected problem areas include system video, system logic and control, and system power.





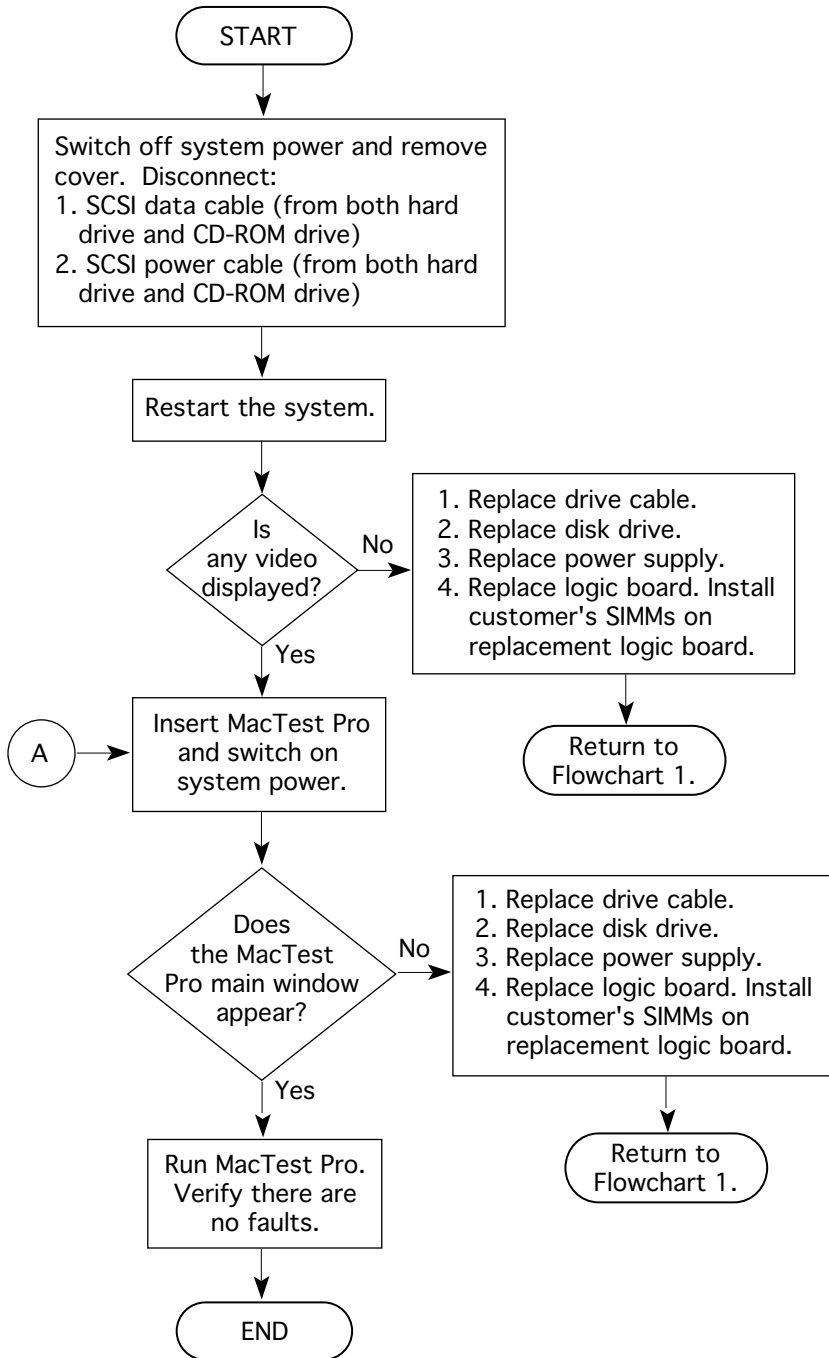
Flowchart 4 Startup Problems

NOTE: Suspected problem areas include system video, system logic and control, and system power.





Flowchart 5 Startup Problems





Flowchart 6 Startup Problems

