

POWER MAC G4 CUBE

TROUBLESHOOTING

Startup keys, boot recovery, Open Firmware, resets and practical first-response notes.

MACWORLD NEW YORK 2000 ANNOUNCEMENTS!

ALL NEW!
Power Mac G4 CUBE
Power Mac G4 Dual PowerPC Processor
iMac DV Models

BLOWOUT
Pricing on older models!

NEW
Power Mac G4 CUBE
\$1794⁹⁸

IN STOCK!

NEW
iMac Models
starting at
\$794⁹⁸

ORDER YOURS TODAY!

NEW
Power Mac G4s
starting at
\$1594⁹⁸

Now Available: Gigabit Ethernet and Dual G4 Processor!

Graphite Snow Indigo Ruby Soga

NEW mouse and keyboard with all NEW Apple models!

Cinema Display sold separately.

The advertisement features a central image of the Power Mac G4 Cube with dimensions of 8" by 8" indicated. To the left, a keyboard and mouse are shown. To the right, a Cinema Display is featured. At the bottom, five iMac DV models in different colors (Graphite, Snow, Indigo, Ruby, Soga) are displayed. The background is a vibrant red and yellow gradient.

A little period-correct retail insanity before the troubleshooting begins.
Source MacWorld October 2000 maybe available on eBay.

Change one thing. Test one thing.

Troubleshooting works best as a process of isolation. If several upgrades or changes are planned, perform one at a time so each device or modification can be confirmed before moving forward.

- Back up personal files and original applications before formatting, partitioning or experimenting with a startup drive.
- Use a wired keyboard when startup-key assistance is needed. Wireless keyboards can be unreliable during boot.
- If a problem began immediately after adding or changing hardware, return - physically when practical - to the last known-good configuration.
- Treat unusual or machine-specific commands cautiously. Vintage Macs can behave differently depending on firmware, operating system and installed hardware.

A useful order of attack

- Power and cables.
- Keyboard startup assistance.
- Startup disk / Startup Manager.
- PRAM / NVRAM or Open Firmware only when appropriate.
- Then isolate hardware, display, storage, USB / FireWire and other peripherals.

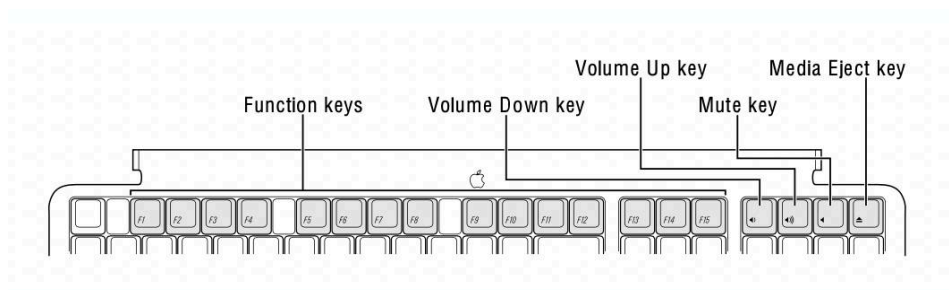


Poster Art available on eBay

The keyboard can change the whole boot.

Hold the appropriate key or chord during startup. A wired Apple-compatible keyboard is the safest choice when diagnosing an older Mac.

C	Forces boot from the CD or DVD disc.
D	Forces boot from the internal default hard drive.
N	Forces NetBoot on compatible New World ROM Macs, looking for a network boot server. <i>Verify for the exact configuration.</i>
T	Boots into FireWire Target Disk Mode. <i>Verify support and setup for the installed system.</i>
X	Boot OS X when the machine had previously booted OS 9 from the same volume.
Option	Opens Startup Manager - the blue multi-boot screen showing available startup volumes.
Mouse button held down	Forces an inserted CD/DVD to eject during startup.
Command-Option-P-R	Resets PRAM. Hold through startup until the computer chimes again.
Command-Option-O-F	Invokes Open Firmware.
Command-S	Boots OS X into Single User Mode. <i>Behavior varies by OS X version.</i>
Command-V	Verbose startup output.

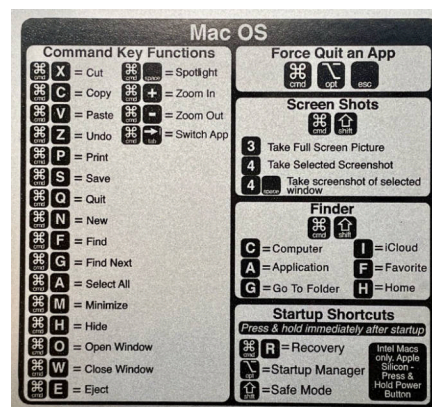


The strange shelf.

These less-common combinations are useful research territory. Some are highly machine-, firmware- or OS-specific, so verify them on the exact Cube configuration before relying on them.

Command-Option-N-V	Erase / reset NVRAM. <i>Verify.</i>
Command-Option-Shift-Delete	Force startup from an alternate internal or external CD/DVD-ROM. <i>Verify.</i>
Command-Option-Shift-Delete + #	Force startup from a corresponding partition number other than the default. <i>Verify.</i>
Command-Option-A-V	Potential display-recognition assistance; associated in workshop notes with yellow/green output after certain graphics-card changes. <i>Verify.</i>
Command-Option-I	Potential disc / ISO-related startup command. <i>Verify - original wording is uncertain.</i>
Command-Option-T-V	Potential television-output startup command. <i>Verify.</i>
Command-Option-X-O	Potential classic Mac ROM startup command. <i>Verify Cube applicability.</i>
R	Potential display-resolution reset during startup. <i>Verify.</i>

LAB NOTE: This is intentionally the experimental shelf. Test first; promote to a dependable procedure only after the exact machine and OS combination confirms it.



User Decal available on eBay

When the operating system itself is the suspect.

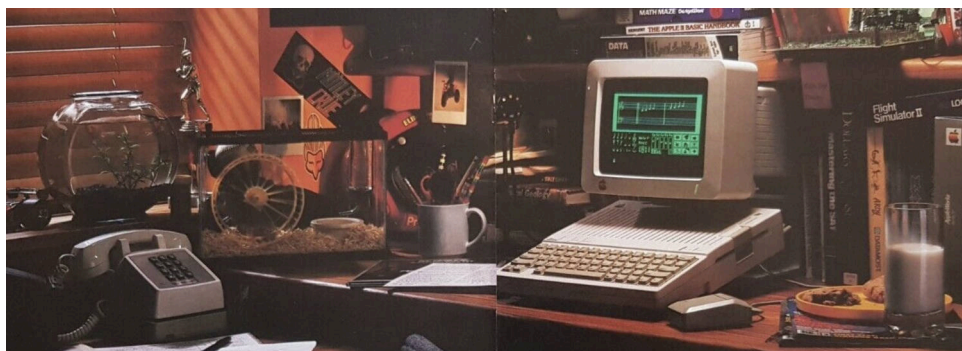
OS 9 / Classic

Shift	Launch with extensions turned off.
Space bar	Launch into Extensions Manager so the extension set can be changed before startup completes.
Command-Option	Rebuild the Desktop / file indexes. <i>Verify timing and exact behavior for the installed system.</i>
Command	Boot with Virtual Memory turned off. <i>Verify.</i>

OS X

Command-S	Single User Mode - a repair / diagnostic startup route.
Shift immediately	Safe Boot. Exact behavior varies by OS X version.
Escape / Command-period	Exit or cancel a dialog where supported.
Option-Command-Escape	Force Quit dialog for a frozen application. Unsaved changes in the forced application can be lost.

Additional auto-login, safe-login and hidden-memory-test combinations remain on the research list until they are confirmed on the intended OS versions.



Magazine art available on eBay

The white screen behind the curtain.

Hold **Command-Option-O-F** during startup to enter Open Firmware. A white screen with a command prompt appears. Type commands carefully.

mac-boot	Continue the default boot process.
shut-down	Turn the computer off.
multi-boot	Go to the blue Startup Manager screen.
eject cd	Eject the CD/DVD.
devalias	Report aliases for devices in the Open Firmware device tree.
reset-nvram	Clear NVRAM.
set-defaults	Restore default settings.
reset-all	Reset settings and restart. <i>Verify exact effect before using as a repair step.</i>

Boot commands

```
boot hd:,\\:tbxi
```

Force boot from the default hard drive.

```
boot cd:,\\:tbxi
```

Force boot from CD/DVD-ROM.

```
set env boot device hd:,\\:tbxi
```

Set the hard drive as the default boot device. *Verify exact syntax before use.*

An Open Firmware screen can also appear unexpectedly after hardware changes or when the normal boot path is disturbed.



Poster Art available on eBay

Quote / Gem / Trivia

A little Apple history, design lore and period fun between the repair notes.



QUOTE

*to create a new standard
it takes something
that's not just a little bit different
it takes something that's **really new** !
and **really captures people's imagination** !
and the Macintosh
of all the machines **i've** ever seen
is the only one
that meets that standard
– Bill Gates 1984 [VintageMacMuseum via YouTube](#)*

TRIVIA

the famous commercial telecast during which event

*NBA Finals Celtics vs Lakers
Super Bowl XVIII Half Time
The Olympics Track & Field
World Series Tigers vs RedSox*

who does big brother represent in the commercial

*Dell
Google
IBM
Microsoft*

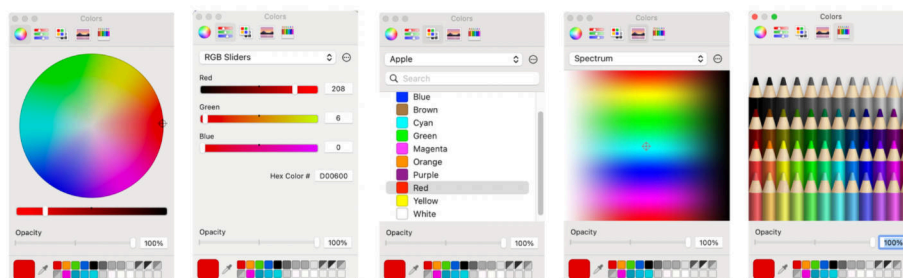
the correct answer is in faint type between these double lines

the correct answer is in faint type between these double lines

Trivia answer: first B, then C.

GEM

Colors selection palette
an often overlooked tool
especially the colored pencils!
full spectrum color wheel
black to white tint level slider
the Opacity slider tool is fantastic
the split colors ■ indicates a transparent color
at the bottom of the Colors dialog
SAVE one's active color (here **red**)
by dragging from left to right
to the pool of blank
color wells to create
one's own palette



Reset only as far as you need.

PRAM, NVRAM, the Cube's reset controls and the PMU are related troubleshooting territory, but they are not interchangeable procedures.

PRAM / NVRAM

Use **Command-Option-P-R** during startup to reset PRAM. This can be useful after changing peripherals or when stored startup settings appear confused.

Power button held while off

Holding the power button for roughly 10 seconds can invoke a programmer-style startup tone on some configurations. The exact purpose and reset behavior should be confirmed before treating this as a standard Cube repair procedure.

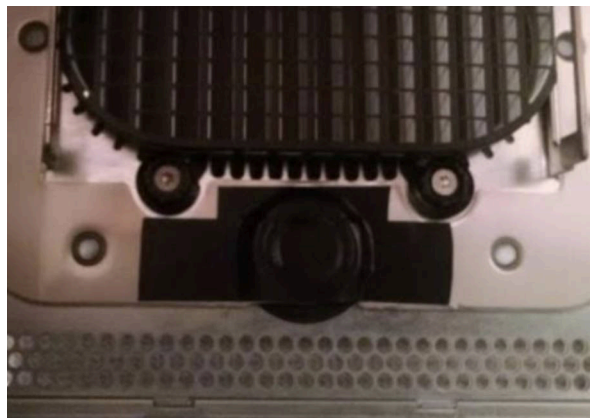
Restart / Reset controls

A forced restart is immediate and can lose unsaved changes. Use it only when normal restart or shutdown is unavailable.

PMU / Cuda

Treat the PMU/reset procedure carefully. If using the PMU-style reset, the working rule is **one press, not repeated presses**. The exact Cube-specific procedure should be confirmed before a final step-by-step version is published.

LAB NOTE: Power-management resets are one of the areas still requiring Cube-specific confirmation.



Flashing question mark? Start with the boot path.

A flashing question mark usually points attention toward the startup disk, its system folder, the selected boot path or drive recognition.

- Certain HDST disk-driver configurations can produce a long flashing-question-mark delay before the normal system finally starts.
- In workshop testing, that delay could run roughly 30-60 seconds.
- A cleaner large-drive workflow has been to establish the disk with Apple Disk Utility / Drive Setup first, then use HDST Extend only where needed rather than installing unnecessary HDST disk drivers.
- Mixing operating-system types on one physical drive can introduce unexpected behavior. Keeping a drive's purpose simple makes diagnosis easier.

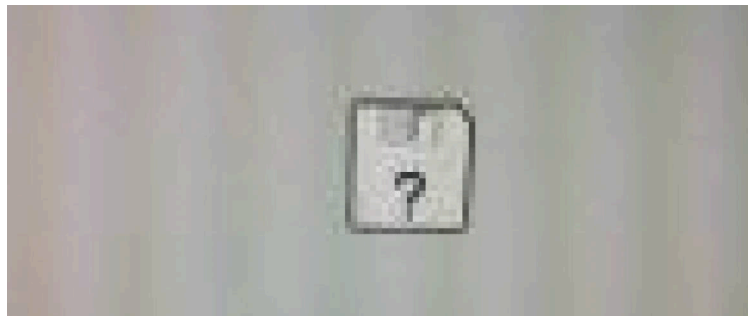
USB startup media

USB startup sticks for OS 9, Leopard and Linux can be finicky on the G4 Cube and other PowerPC Macs. The Cube's USB 1.1 environment is slow, and a failed attempt does not automatically mean the installer itself is bad.

When a disc will not eject

Hold the mouse button during startup or use the keyboard eject key where supported. Avoid operating exposed internal hardware merely to retrieve a disc unless you understand the electrical risks.

64 MB	128 MB	256 MB
DVD-ROM	CD-RW	CD-RW
Rage 128	Rage 128	GeForce2 MX
\$1,299	\$1,599	\$2,199



Strip the problem down.

When the symptom is vague, reduce the number of variables and rebuild the setup one piece at a time.

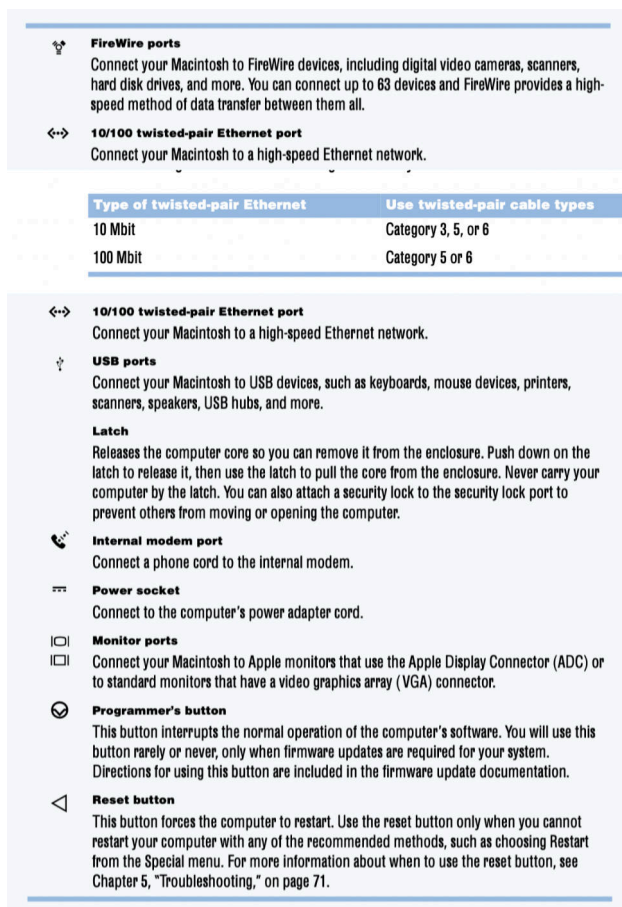
- Use a wired keyboard for startup commands.
- Disconnect nonessential USB devices and hubs when isolating a startup or power problem.
- After adding or changing a peripheral, test before adding the next one.
- For display trouble after a graphics-card change, return to the known-good display/card path before assuming the operating system is damaged.
- For FireWire devices, test the device, cable and port independently when possible.

No startup chime

The Cube has no conventional internal speaker. Startup-sound behavior depends on the audio hardware and connected speakers, so absence of a gong by itself is not enough to diagnose a dead machine.

A frozen application

Before forcing the entire machine off, save work in other applications if possible and use **Option-Command-Escape** to reach Force Quit. A long power-button hold is a last-resort shutdown because unsaved work is lost.



A working map.

This edition is intentionally practical rather than exhaustive. Use the dependable first-response tools first, then move into the experimental or machine-specific material only when the symptom calls for it.

Core tools

- Startup key chords and Startup Manager.
- OS 9 extension-management startup routes.
- OS X Safe Boot / Single User / Force Quit.
- Open Firmware access and basic commands.
- PRAM / NVRAM reset.
- Startup-disk and flashing-question-mark diagnosis.
- USB startup-media caution.
- Optical-disc eject routes and forced-shutdown cautions.

Still in the laboratory

- No-video / distorted-video symptom tree.
- Memory failure symptoms and testing.
- Power supply versus logic-board diagnosis.
- Optical laser / drive failure diagnosis.
- Mouse, modem, sound and USB device-specific symptom trees.
- Authoritative Cube PMU reset procedure.
- Exact applicability of the obscure startup-key combinations.

WORK IN PROGRESS: Vintage hardware, firmware revisions, operating systems and aftermarket upgrades create combinations that do not always behave identically. Back up important data, change one thing at a time, and verify experimental procedures on the exact machine before depending on them.



Vintage Macs, restored with care.