

A How-To Tutorial

## Checking Out an Old Computer

In our *Computer Recycling Project*, we get the strangest machines. Many modified by well wishing owners, others messed up by the professionals. Every one is an adventure as each machine donated must be checked out completely and made as functional as possible.

With every rebuild, we learn something new. The biggest lesson is that there are no short cuts ... it must be done systematically. Let's show you how we do it!

**TIP #1:** To eliminate peripheral problems, make sure you have a keyboard, a monitor and a mouse that are known to work. Connect your good equipment to the unknown computer and turn it on.



If it does not work, strip it down to the motherboard, the memory chips, the video card & a keyboard. You must remove everything else from the motherboard.



When you open the case, give it a good cleanout with compressed air. Dust and residues cause stray currents that interfere with operation.

Now that you have clear access to the motherboard, press every removable chip against its socket as they work loose over time. Make sure the video card is also seated firmly in its slot.

Turn the machine on again. Check that the power supply fan is running. If it is not, you have a power problem in the switchable power supply, the On/Off switch or the electricity supply itself. Replace the offending item and try again.

If you get a series of beeps instead of a picture, you have a faulty video card or uncooperative RAM (Random Access Memory) chips. Replace the video card with one that you know will work. The same may be required of the memory chips.

Once you have a picture, you need to note what happens. As the computer starts, it follows the instructions in the "Power On Self Test" (POST).

As POST starts, it identifies the video card and the manufacturer of the BIOS (Basic Input/Output System). You must identify the Manufacturer to know how to access the BIOS Setup Program.



**Bios Manufacturer Key Command(s)** Each manufacturer uses a different key stroke to enter the Setup program. Here are some common ones:

ALR Advanced Logic Research PC / PCI	F2
ALR PC non / PCI	CTRL+ALT+ESC
AMD® (Advanced Micro Devices)	F1
AMI (American Megatrends, Inc.)	DEL
Award™ BIOS	CTRL+ALT+ESC
Award BIOS	DEL
DTK® (Datatech)	ESC
Phoenix™ BIOS	CTRL+ALT+ESC
Phoenix BIOS	CTRL+ALT+S
Phoenix BIOS	CTRL+ALT+INS

After the POST checks the memory, it reads the BIOS setup defaults. At this point, you can check the setup by accessing the BIOS Setup Program.

Once we get into the BIOS Setup program we need to tell the BIOS that we have stripped the machine otherwise it will just keep searching for the missing components and never get much further.

First we chose the option to set the BIOS Setup defaults. Next we check the standard screen (the first one) and make sure that it is not trying to access a hard drive or a floppy drive. Save the changes and exit the program. The computer will attempt to start but cannot because there is no operating system available.

Turn the machine off and connect the floppy drive. Put a system disk in the drive and start it again. Enter the BIOS Setup program and, in the first screen, activate the floppy drive. Save the changes and the computer should boot into DOS.

**TIP #2:** When you switch the machine on, check that the floppy drive light does not stay on all the time. If it does, you have the ribbon cable around the wrong way. Turn it off and turn it around.



If the floppy drive will not operate, try a different ribbon cable as they are rather flimsy and deteriorate over time. If this does not work, the floppy drive may well have reached the end of its useful life.

When you can boot from a floppy disk, the next task is to reinstall the hard drive. With the power turned off, connect the cables to the mother board and the drive and then switch the machine on again and go back into the BIOS Setup program.

Chose the automatic Hard Disk Installation option. If the cables are connected the right way around, this will identify the hard drive and its location as primary or secondary IDE channel and as master or slave. Once again, worn cables can prevent recognition. Reversed cables will prevent the screen from operating.

When it is recognised, save the Setup and reboot from the floppy disk. When you are at the DOS prompt, go to the C: drive to make sure it is accessible.

If the hard drive has an operating system installed, you can now boot without the help of the floppy disk.

You can now connect the CDROM and/or a sound card if they were present and you have a working computer.

By this process, you have tested each component independently of the others and you have found any that were preventing the machine from operating.

## In the Next Installment ...

- We identify all components in the computer
- We diagnose all of these components
- We repartition the Hard Drive
- We format the Hard Drive
- We install an operating system