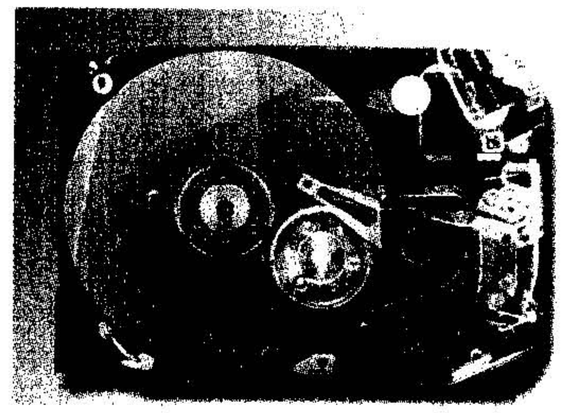
9 Disks and drives

A Magnetic storage

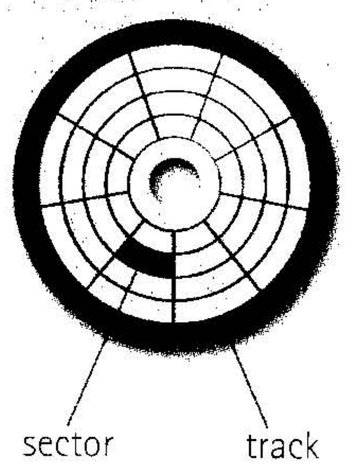


The inside of a hard disk drive

Magnetic devices store data magnetically. A disk drive spins the disk at high speed and reads its data or writes new data onto it.

- **A floppy disk drive** uses 3.5 inch diskettes which can only hold 1.44 MB of data; it's often called A: drive and is relatively slow.
- Most PCs have one internal **hard disk**, usually called C: drive, which can hold several gigabytes of data. It's used to keep the operating system, the programs and the user's files easily available for use.

  When you **format a disk**, or prepare it for use, its surface is divided into concentric circles called **tracks**. Each track is further divided into a number of **sectors**. The computer remembers where information is stored by noting the track and sector numbers in a directory.

  The average time required for the read/write heads to move and find data is called **access time**; it is measured in milliseconds (ms). Don't confuse 'access time' with '**transfer rate**', the rate of transmission of data from the disk to the CPU (e.g. 15 megabytes per second).
- A **portable hard drive** is an external unit with the drive mechanism and the media all in one sealed case. You can use it to **make a backup**, a spare copy of your files, or to transport data between computers.

B Optical storage

Optical drives use a laser to read and write data, so they are not affected by magnetic fields; but they are slower than hard drives. Modern DVD recorders accept all CD and DVD formats.

CDs (compact discs) can store up to 650–700 MB of data.

- **CD-ROMs** (read only memory) are 'read-only' units, so you cannot change data stored on them (e.g. a dictionary or a game).
- **CD-R** (recordable) discs are write-once devices which let you duplicate CDs.
- **CD-RW** (rewritable) discs enable you to write onto them in multiple sessions, like a hard disk.

DVDs (digital versatile discs) are similar in size to CDs (both are 1.2 mm thick), but they differ in structure and capacity. DVDs have more tracks and more pits (tiny holes) per track, and can store from 4.7 GB to 17 GB of data, movies, high-definition sound, etc., so they will probably replace CDs. DVD formats include:

- **DVD-ROM** (read-only memory)
- **DVD-R** or **DVD+R** (recordable only once)
- **DVD-RW** or **DVD+RW** (rewritable, so it can be erased and reused many times).

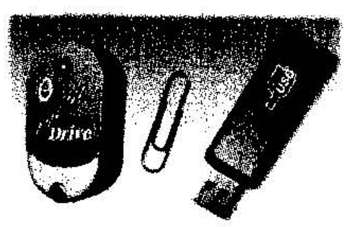
Portable DVD players let you watch movies or TV, play games and listen to music, wherever you are. They usually run on batteries, have a **widescreen** (rectangular 16:9 format) LCD and support **multi-format playback**, allowing you access to many file formats including DVD video, JPEG pictures, MP3 music, etc. They have two built-in stereo speakers, or **headphones** if you don't want to disturb other people.

C Removable flash memory

CompactFlash memory card

Flash memory is solid-state, rewritable memory; it is non-volatile, so it retains data when the power is turned off. This explains its popularity in small devices.

- **Flash memory cards** such as CompactFlash or Secure Digital are found in cameras, PDAs and music players.
- **Flash drives**, also known as thumb or pen drives, are connected to a USB port of the computer. They let you save and transfer data easily.



Mini flash drives