

FLOPPY DISK 101

This paper describes the parts of a floppy disk and how it works.

Parts of the Floppy Disk

The floppy disk stores information from computers and has two main parts: the protective components and recording components.

Protective Components

The protective components consist of the housing and shutter/spring.

Housing

A square protective outer plastic shell with two halves protects the inner contents of the floppy.



Shutter and Spring

The shutter and the spring protect the information recorded on the disk. The shutter is a piece of metal over the housing. It slides over when inserted into the floppy drive, allowing access to the floppy and its contents. The spring closes the shutter once the disk is removed to keep fingerprints and dust off the floppy.

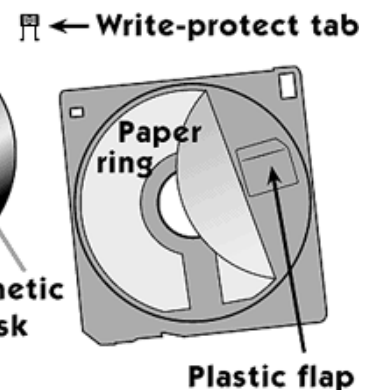
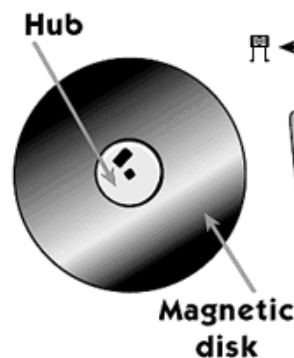
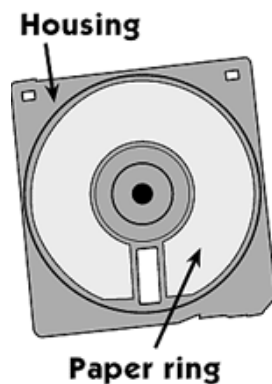


Recording Components

Several components inside the floppy relate to the recording process.

Magnetic Disk

The magnetic disk is a round piece of plastic coated with iron oxide, which can be magnetized. When you save information to a



disk, a recording head creates a magnetic pattern on the iron oxide. This pattern stores your words or pictures in a form that the computer can read the next time you put the disk in. However, if the write-protect tab is open, you cannot save data.

Write-Protect Tab

This little plastic rectangle is in the upper right corner of most disks. It slides up to reveal a square hole in the housing (or slides down, to cover the hole). When the hole is open, the disk is locked. Your computer won't allow you to add anything to the disk.

Hub

The center of the magnetic disk contains a metal hub containing holes. These holes fit over spindles inside the computer and hold the disk in place while it spins.

Paper Rings

The magnetic disk is sandwiched between two white paper rings. The two rings are glued down to the plastic housing and stay still while the disk spins. They clean the disk by removing microscopic bits of dust.

Plastic Flap

Under one of the paper rings is a plastic flap. One end is glued down, and the plastic is bent a little. Like a simple spring, it pushes the paper ring tight against the surface of the magnetic disk.

How a Floppy Disk Works

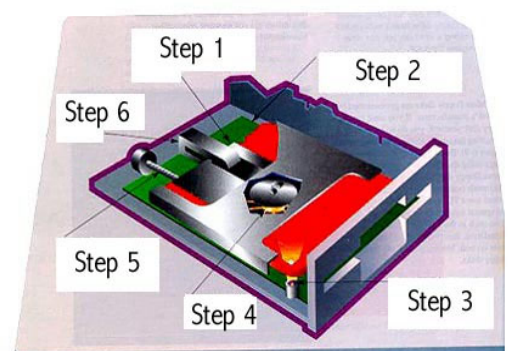
The following six steps explain how these parts of a floppy disk work to record data.

Step 1: Exposing the Recording Surface:

When you insert the floppy disk into the drive, the shutter moves to the side to expose the magnetic recording surface on the disk.

Step 2: Sending Signals From the Circuit Board

Next, levers and gears move two read/write heads until they almost touch the magnetic disk on either side. These heads, which are tiny electromagnets, use magnetic pulses to change the orientation of metallic particles embedded in the disk's coating.



The floppy drive's controller board sends signals to the drive's circuit board, including data and instructions for writing data to disk. The circuit board then translates the instructions into signals to control the movement of the disk and the read/write heads.

Step 3: Checking for Write Protection

Next, the circuit board checks if the disk is write protected. If disk access is a write instruction, the circuit board verifies that light is not visible through the write-protect notch. If the notch is open and a beam from a light emitting diode can be detected, the drive knows the disk is write-protected and refuses to record new data.

Step 4: Spinning the Disk

Once the circuit board verifies that data can be written, a motor located beneath the disk in the drive spins a shaft. The shaft then engages a notch on the disk's hub, causing the disk to spin.

Step 5: Positioning the Read/Write Heads

Signals from the circuit board then direct a stepper motor, which can turn a specific amount in either direction. This motor positions the read/write heads over the correct location on the recording surface of the disk.

Step 6: Writing the Data

When the heads are in the correct position, electrical impulses create a magnetic field in one of the heads. Data is written to either the top or bottom surface of the disk.