

# Life With the 1541

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Do you hate your 1541 disk drive with a passion? I mean – do you leave it sitting in the front seat of your car with the windows open, the doors unlocked and a large sign attached reading “STEAL ME”? If so, welcome to the club. I’m sure if Benjamin Franklin were alive today, he’d revise one of his most famous quotes to read: “In this world, nothing is certain but death and taxes. . . and the 1541 developing problems.”

Probably the biggest problem of the 1541 is “going out of alignment”. What this means is that the read/write head is unable to correctly find information on the disk. A major indication of trouble is the red LED on the front of the drive flickering when attempting to read disks, particularly those not formatted on your own drive, or disks which you made several months ago.

The cause of all this is relatively simple. The drive contains a stepper motor which advances the head from one track to the next; no easy task, since the tracks are a fraction of an inch apart. The stepper motor shaft goes up through a pulley which is connected to a metal band, which in turn is attached to the read/write head. Whenever a new disk is formatted or – worse yet, an error is detected on a “copy protected” disk – the pulley knocks up against a head stop which is at the hypothetical track zero. This is the source of the rattling noise which occurs when a disk is “NEWed”.

After X number of knocks against the head stop, the shaft in the middle of the pulley begins to slip ever so slightly, since the two are not permanently attached to each other. The result is that the read/write head slips out of position as well. There is a theory that the heat produced by the drive (which is considerable) may also contribute to this misalignment.

The cures for this malady – aside from using the drive as a speed bump in the alley behind your house – are varied. An alignment disk and oscilloscope are necessary for precision. In some cases,

moving the stepper motor slightly after loosening the screws which hold it to the bottom of the drive may be sufficient. In more extreme cases, a notch has to be carved in the top of the stepper motor shaft to serve as a screw-like slot where the pulley is manually moved back to its correct location.

Other solutions of a permanent nature (after aligning the disk, of course) include using Crazy Glue or some such epoxy substance to hold the pulley to the shaft. This may be done in combination with drilling a hole through the pulley to the central shaft and inserting a pin. (Such a precision job must be done with care, because pieces of metal can find their way down to the inside of the stepper motor, rendering it totally useless.) It should be pointed out that any of these actions will void your warranty, if it’s still in effect.

*Editor's note: While the 1541 does have the bug of occasionally going a bit out of alignment, on the whole it has features that can't be found on much more expensive drives. It's not the fastest thing in the world, but it's extensive ROM code makes it fairly "smart", and gives it lots of features and flexibility. It's ironic, perhaps, to state this after the above article, but the 1541 drive may be one of the best deals for the money in the microcomputing market. –T. Ed.*