

In this third article, we will consider which floppy disks can be safely interchanged, and which cannot.

Many people think that they can format a cheaper, 360k floppy in a 1.2M drive, with no problems. Many times it will actually work, perhaps with a few bad sectors on the disk, but so what? Doing this is flirting with danger - you are likely to lose the data on the disk. Why? Because the data is recorded at twice the recommended density, the magnetic domains in one area will begin to "bleed" over into other areas, especially so because the 360k floppy is actually more sensitive to magnetic fields. The disk will eventually begin to erase itself. Weeks, months, or maybe even longer, but it WILL happen. Furthermore, because you write data at 600 oersteds, the disk may be permanently damaged. How can you remove this recording? With a 360k format? Nope. It is likely that the 360k drive (300 oersted) will not be able to overwrite the image that was written at 600 oersteds. The message? Don't format 360k disks to 1.2M when you get that new high density drive. Break down and buy some 1.2M disks!

What about the other way around? If you put a 1.2M disk in a 360k drive and format it to 360k, it should work, right? Wrong. Remember, 1.2M disks are "high coercivity" disks - it takes a lot of magnetic "coercing" to write data to their magnetic domains. They are simply not very sensitive to magnetic fields, as was pointed out in the last article. The 360k drive writes at only 300 oersteds, not at 600, which is required by the 1.2M floppy media. So, even if you are able to do it, the chance is the data will not read correctly, and even if it does, it won't be there very long. A day, a week, a month...sometime, the data is going to disappear. So, forget it. Use high-density disks when you want to write 1.2M of data, and low-density disks when you want to write 360k. Don't flirt with danger.

Well then, that puts us in a quandary. Most new computers come with a single 1.2M drive, or a 1.2M and a 1.4M 3-1/2-inch drive. How do you put a program on a floppy to give it to a friend with an XT that has only 360k drives? It can be safely done. Here is the trick.

Put a BRAND NEW, PREVIOUSLY UNFORMATTED 360k disk in your 1.2M drive, and format it using the command that tells DOS to put a 360k format on it:

FORMAT A:/u /f:360 (This is an MS-DOS Version 5 or higher command.)

You can then put all the data you want on this disk - programs or whatever, and your friend will be able to read it perfectly in his 360k drive. Assuming there is nothing wrong with your drive or his, it is guaranteed to work every time.

However, this will probably NOT WORK if the 360k floppy has been previously formatted in a 360k drive! If it has, your friend is likely to get that darned ABORT, RETRY, IGNORE error message when he tried to read the floppy. My gosh, why should it work with a new disk, and not an old one?

Remember the last article? When a 360k drive formats a 360k disk, it writes a track that is about twice the width of a track written in a 1.2M drive. If you reformat that disk in a 1.2M drive, the high-density head cannot completely overwrite the track written in the 360k drive. Some of the old tracks remain, including the data that was on them. The read head is confused by this extraneous data, and error messages pop up on your friend's screen. So, prepare your 360k floppies in your 1.2M drive with care, using only brand new disks, and it will work every time. Use old disks, and you flirt with danger.

There IS one way to use old 360k disks. Completely demagnetize them with a bulk eraser, a degaussing tool, or pass a very powerful permanent magnet over them on both sides in a pattern that thoroughly covers the surface several times. This effectively wipes the disk clean, magnetically. After this treatment, the disk is very much like a brand new one and you can safely format it to 360k in your 1.2M drive. By the way, when you do this, the DOS command above causes your 1.2M drive to change to reduced write current - it formats the floppy using 300 oersteds instead of 600. That is another reason why trying to format a 1.2M floppy to 360k in a 1.2M drive is bound to fail.

There are fewer problems when working with 3-1/2 inch drives. Both the 1.4M and 720k formats have the same track width (0.115mm) and spacing (80 tracks per side), so several potential problems are obviated. The 1.4M drive can perfectly emulate the 720k drive. However, the floppies still come in a "high coercivity" (low sensitivity) and "low coercivity" (high sensitivity) form. Fortunately, most 3-1/2 inch drives have a media sensor built-in. They sense high-density disks, either mechanically or through optoelectronics - by shining a light through the extra hole found in the high-density disks. If you try to format a 720k floppy to 1.4m, the sensor can tell you have the wrong type of disk in the drive, and it aborts

with an error message. Some folks think they can save money by drilling or punching an extra hole in a 720k floppy, thus fooling the sensor. You now know that is NOT a good idea, because the media on the floppy really is different in a 720k and 1.4M floppy. The final message is clear: use a floppy at its intended density - never try to beat the system.