

DOOR LATCH: The twist down latch has a pin that eventually works loose and can fall out. That's what has happened if the latch flops around and will not move the mechanism. Hopefully, it's still in the drive (rattling around?) and can be recovered. If allowed to float around in there, it can short something out and cause damage. It's a round silver metal shaft, about 3/4" long and about 1/16" in diameter. If you can't find it after taking the drive apart, the correct sized nail can be cut to fit and installed as a replacement pin. The original, if still there, can be reinserted and secured with a dab of superglue or contact cement... just enough to keep it from sliding back out. It should be inserted just far enough to engage the white plastic part of the latch mechanism... too far forward, and it will scrape the metal part of the latch. Lube the metal-to-metal parts of the latch while you're at it.

HEAD WIRES: The top head moves up and down when a disk is inserted and the door latch is turned. The 5 connecting wires on the top head must be free to move, but such movement will cause them to break eventually. Some drives will have a bit of epoxy where the wires are soldered to act as a strain relief. Note: wires can still break -inside- the insulation where it can't be seen. If you pull -gently- on each one with tweezers, the broken ones will be loose and pull apart easily. Looking down on the drive head, with the front of the drive facing you, the color code of the wires is as follows, from left to right: green, red, white, yellow, black. If any of these wires are broken, the drive will still work in the 1541 mode (bottom head only is used), but in 1571 mode, the top head will not function properly. If any wires are broken, you will need to trim off some insulation from each wire and resolder it. Because the repaired wires will be a bit shorter, you should cut the ties holding the cable to allow more freedom of movement for the remounted wires. Form a small loop in the wires for maximum flexibility. Add a dab of epoxy or silicon sealer to the wire ends to allow them to flex without breaking again. Loosely tie the cable back to the head assembly. Open and close the drive door with a disk inserted to see if the wires have enough slack to allow complete head motion. If the wires are too tight, the head will not come all the way down to the disk surface, and you will create intermittent read/write problems. Also, if there is not enough slack in the wires, they will break again in a short time. When you complete the repair to the wires, tie the cable bundle back to the head with thread or string and a dab of glue.

HEAD MOUNT: In a 1541 disk drive, the disk is pressed against the single read-write head by a felt pad. That spring-loaded pad is lowered onto the disk when the door latch is pressed down. In the 1571, when you insert a disk and lower the door latch, a head lifter mechanism releases, and the spring-loaded top head is gently lowered down onto the disk. Both heads thereby remain in intimate contact with both sides of the disk. The top head is mounted by means of a thin flexible metal strip. This strip is rather fragile and can be damaged by rough handling. Notice that the head has only one "finger" (on the left side) to allow the lifter mechanism to keep it raised. If shipped without a transit card or disk in place, the head mount can be subjected to excessive twisting force because all the weight of the head is on the finger. A downward shock can twist the head mount and can possibly break it. The top head must sit straight and line up with the bottom head. If the mount is bent or torn, the head will not sit straight. You may notice that a spinning disk makes more noise than it should... that's the sound of the top head scratching it. Depending on the severity of the misalignment, the drive may not be able to read the top side of a disk (blocks over 664), the drive may not work even in 1541 mode, and/or disks may be damaged. If the head mount is only slightly bent, it should be possible to straighten it by -gently- bending it back into proper alignment.

Some users put weights (like a penny) on the top head, or increase the tension of the spring to provide more force. This is to be avoided... it will cause increased head and disk wear, and may not solve whatever problem it was meant to, and may cause further damage. Better to find out what is actually wrong, and fix that. See HEAD LIFTER

HEAD LIFTER: This mechanism prevents the top head from lowering except: 1) when a disk is inserted, and 2) the door latch is down. It's there to keep the two heads from banging into each other. When a disk is inserted, it pushes a small lever with a brass cone-shaped end (at the left middle side of the drive) out from under the head lifter and allows the head to come all the way down and press on the disk. The brass cone should slide forward on the tab of the metal plate above it when a disk is inserted all the way, and should move completely out of the way when the door latch is closed.

If the cone does not move far enough or if the metal plate is sticky, the lifter will prevent the top head from being lowered all the way down to the disk. The result may be intermittent operation of the drive in all modes, but especially in the 1571 double-sided mode, when data is accessed on the top side of the disk. It may take longer to read disks (the drive will try several times until it gets a good read), or you may encounter errors on that side of the disk.

Some users indicate that they must "tap on the disk after inserting it" to get the drive to work properly. Some report that they can hear a "click" when they do that and then the drive works fine. This is likely an indication that the lifter mechanism is sticking, and the mechanical action of tapping on the disk causes it to move forward and lets the lifter release.

See if the cone-lever is sticking by pushing on it with a toothpick. It has a spring return and is hidden under the metal lifter plate when no disk is there. When you insert a disk and close the door slowly, see if the cone is pushed all the way back out of the way by the downward pressure of the plate. If not, see if that spring-loaded metal plate is free to move down by itself. Insert a disk, move the cone lever back out of the way and pull up on the plate, then gently release it. It should drop all the way and release the head. If not, the lifter plate probably needs lube (oil) on both ends of the shaft. The cone lever may need cleaning and/or lubrication if the lever itself is sticky, or it needs lube at the contact point of the cone and the tab. I prefer Molytone grease, available at electronics supply houses. It stays where you put it, is -very- slippery, and it will not get gummy like oil or other greases. You should use only a small amount of grease on those parts.

If someone tried to "adjust" the cone lever or the plate, one or both may be bent, and bending may be necessary to straighten them again. The cone should be pointing straight up and should be shiny with no burrs on it. The tab above it should likewise be clean. Examine it's underside (the contact point for the brass cone) for burrs or rough spots. A pencil eraser works well as a polishing tool. If the drive has been "adjusted" by repair attempts, you may need to compare it to a working drive to see how everything -should- line up.

Before you even think about bending anything in an attempt to fix your drive, consider this: the drive worked for years from the factory the way it was designed. Find out why it doesn't work and repair it correctly. An easy way to tell if the head is hanging up on the lifter is to observe the black plastic "finger" on the left side of the top head. With a disk in the drive and the door closed, that finger should -not- be touching the lifter mechanism at all.

OPTICAL SENSORS: The 1571 has three infra-red activated sensors. If these sensors becomes contaminated with dust or smoke residue, it can cause the drive to malfunction. The TRACK ZERO DETECTOR is located at the right rear of the drive head assembly. It is used during disk Formatting, Initialize, and whenever the drive seeks track zero. If out of adjustment, contaminated, or defective, it may cause the drive to "chatter" like a 1541 when the stepper hits the mechanical head stop. The INDEX DETECTOR (just to the left of the spindle collar) checks the disk for the index hole. Although not needed on a Commodore GCR drive, this sensor maintains compatibility with the MFM standard when the drive is used in that mode (the index hole coincides with sector 1). The WRITE-PROTECT SENSOR at the left front side of the drive senses disk change and write-protect status. It should be checked and/or cleaned if the drive will not format or write to a disk, but otherwise works normally. Don't forget to check for a write

protect tab that may have fallen off a disk and got stuck at the sensor.

Sensors can be cleaned with compressed air (to remove dust) and/or a Q-tip moistened (not wet) with alcohol (to remove residue from cigarette smoke). Do not remove the mounting screws to gain access to the sensors... you will upset the alignment. The index and write protect sensors are accessible through the drive door area with the front cover removed from the drive. The zero stop sensor is a tight fit... remove about half the head from a Q-tip and it will work. You'll need to move the head forward to get to the sensor.

DISK EJECTOR: This mechanism should automatically eject the disk when you open the drive door. Normally, when a disk is inserted, it pushes a spring-loaded slide plate back which locks in place. When the drive door is latched down, it triggers the release mechanism, but the plate remains fixed in place until the drive door is opened again. The slide plate then releases, the spring forces it backwards and it ejects the disk for the user to grasp. You can hear each one of these actions if you listen closely. If the drive does not automatically eject disks, check for a bent, misadjusted or sticking slide lever, or a missing, broken, or dislodged spring.

CLEANING AND LUBRICATION: The heads and stepper rails should be cleaned periodically, especially if the drive is running in a smoky or dusty atmosphere, or if old disks are used (shedding oxide onto the heads). Dust can be blown out with compressed air. Since the upper head is on a rather delicate swivel mount, a minimum of force should be used to clean it. Pull the top head up gently (it will not go very far before it hits the stop), just enough to get a Q-tip moistened with alcohol between the two heads. Rotate the Q-tip between your fingers to wipe the heads. The easiest access point is between the rails on the right hand side of the drive. Alcohol works OK for heads, but a stronger solvent should be used on the rails, especially if they are contaminated and sticky. I use paint thinner, but caution must be used not to get any solvent on plastic parts as it may attack the surface. Swab down the rails and move the head gently back and forth to reach further into the tight spots. You can't get everywhere, but with solvent on the rails, just moving the stepper back and forth will dislodge the dirt that can then be wiped off. Let the solvent dry thoroughly and then relube the rails, using a small amount of silicone or graphite lube, or just run them dry. Don't use oil... it will attract dirt and get sticky again.

ROM BUG: If your 1571 takes a long time to access a 1541 formatted disk, suspect the early version drive ROM 3.0 (CBM # 310654-03) as the reason. The latest version from Commodore was V3.1 and was the one CMD used to formulate their JiffyDOS ROM. If you're on the fence regarding adding JiffyDOS to your system, here is one more reason. If you have access to a burner, a ROM image for the upgraded CBM version 3.0 (CBM # 310654-05) is available at <ftp.funet.fi>.

POWER SUPPLY: The power pack inside the 1571 uses a switching type of supply. It runs cool and rarely fails. If it does malfunction, it can be replaced easily (one plug-in connector) or repaired by a competent technician. If you disconnect the power supply, make sure you note how the connector is oriented. If it is installed backwards, it will cause severe damage to the supply and/or the drive electronics package. The four-pin plug of the supply goes to a motherboard socket: CN1. Pin # 1 is marked on the board. The correct orientation of the PS plug is: pin 1 = black, pin 2 = brown, pin 3 = black, pin 4 = red. It's wise to somehow mark any connectors you remove to prevent mistakes when you put them back.

OTHER PROBLEMS: Because it runs cooler than a 1541, the 1571 rarely fails because of chip problems. In the rare event of a malfunction, one thing you can try is reseating the only socketed chip in the drive: the DOS ROM, a 310654-03 at board location U3. The motherboard is under the power supply, by the way. The power supply can be moved out of the way (four screws) without disconnecting it. It will just fold up and over the drive mechanics, but be mindful that the power connector will probably pull out

when you do that. Make sure you know how it goes back... don't get it backwards! If any other chips are socketed (perhaps because the drive was repaired before), try reseating them too. Make sure the connections between the drive and motherboard are properly seated when you're finished. Remove and reinsert them to clean the contacts. The mechanism for the stand-alone 1571 and for the internal drive in the 128D are the same. They can be interchanged if necessary as a diagnostic or to salvage a working mechanism from a bad drive.

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Questions and comments are welcome, especially if you spot a mistake here.

Thanks!