

Drive Removal and Testing

Introduction:

When a damaged external hard drive out-lives its warranty, it is occasionally necessary to troubleshoot the various drive-components separately before you can repair or replace any damaged parts. In order to do this effectively, you must first remove the internally-mounted hard disk drive from inside of the Cavalry enclosure.

Most Cavalry 'desktop external' drives will have a 3.5" internal hard drive installed within their enclosures; exactly like the SATA II hard drives installed within your PC or Mac. Some of our smaller portable external drives will have 2.5" laptop drives within. This guide will necessarily focus on the 3.5" desktop external format as it is designed specifically for easy user-servicing.

Drive Removal Warning!

Before we get started, we must first deliver our standard-warning on opening and servicing any out-of-warranty Cavalry product: while the risk is usually small, there is always the possibility of mild electrocution or static-discharge occurring whenever a user opens the case of a Cavalry 3.5" desktop external hard drive. Thankfully, the voltage and current used in our circuit-boards is very low. But, we ask that any user attempting to self-service a Cavalry hard drive first unplug power and USB cables from the drive (as well as the wall outlet) and let it sit on an anti-static work-surface for at least 45 minutes to safely discharge any voltage that may have built-up inside of the case due to latent capacitance. Users with pace-makers or children under the age of 18 should refrain from performing any of the procedures listed below:

Opening the Enclosure:

With the exception of our budget-line plastic enclosures, all of our 3.5" desktop single-disk units have a similar easy-to-service aluminum enclosure.

1. After following the above preparations, start by unscrewing the 2-4 screws holding on the rear-plate. Once these screws are removed, you can easily remove the plastic rear-plate.
2. Slide the metal sleeve towards the rear until you are able to remove it from the chassis completely.
3. Next, remove the plastic front faceplate from the chassis. In some models it is held on with two lateral clips. With other models there will be a screw securing each lateral clip to the metal chassis.
4. Now remove the 2-4 drive retainer-screws from the metal chassis. This will allow you to freely remove the internal 3.5" hard disk drive which will be presently attached to the logic board.
5. Carefully yet firmly remove the hard disk drive from the logic board, being aware not to displace any small cables, or bend the connector.

6. Place the screws, plates and other chassis-components in a plastic-bag for safe-keeping. You might want to take a moment to label it with a permanent-marker.
7. Take a second to write-down the model and serial number of your newly-removed internal hard-disk drive.

Now Install Your Internal HDD Inside of Your Desktop Computer

The next step is really the crux of this whole troubleshooting operation. That is to say, by testing your internal bare-drive outside of its Cavalry case, you can determine once and for all if the data on it is still accessible and whether or not you need a new metal enclosure and power-supply. To do this, we will connect the bare-drive directly to a desktop PC with an open SATA II port. Thankfully if you have purchased your computer anytime after 2005, open SATA II ports will be pretty easy to locate for most people.

Here's what SATA cables look like. On the left is a standard SATA II data cable. On the right is the standard SATA II power-supply cable. The power-supply cable can usually be found dangling from the power-supply inside of your desktop computer. Some computers will have a spare SATA II data cable. For other users, you may need to go down to your local electronics store and purchase a SATA data cable. Be careful not to buy an eSATA cable! eSATA cables have a different shape and will not fit your internal disk-drive!

(insert photos of sata data and power-cables)

With your computer powered-off and unplugged from the wall-socket, you will need to open the case and inspect the motherboard. Make sure you use anti-static wrist-straps whenever you endeavor to open up your computer. Static-shock can instantly ruin your expensive electronics! Look for an unused SATA socket. If you need to, attach a SATA cable to the empty socket. Now, mount your Cavalry internal hard-disk-drive inside of your computer-case. Find any open bay where you can secure the drive with a retainer-screw. You will only need one as this will be a short test. Now, connect the SATA data and power-cables you located and prepared before. Double-check that your drive is secured to a stable and flat surface within the case.

Booting-Up:

Now that the Cavalry drive is connected and securely attached inside of your computer, we can plug the computer back into the wall-socket and power-it on. If you are familiar with your motherboard's BIOS, you can quickly check to see if your newly-mounted drive is sending a signal to the computer. With most BIOS, you will see the model number of the drive, as well as the port number it is connected to, within the 'Main' page of your BIOS. If you are not comfortable navigating your BIOS, you can continue booting into your Operating System and look for the drive there.

Error-Checking Your Drive With Your Disk Management Utility:

First you will need to navigate to your Disk Management Utility and look for your disk there. For a complete guide to using your Disk Management Utility, please go to <http://www.CavalryStorage.com/manuals.aspx>.

In Windows, right-click on the long horizontal box to the right of the correct disk number. Select Properties >Tools >Error-Check Now. This will scan the disk for file-system errors or physical defects like a "Bad Sector". If you read the pop-up windows that ensue, you will also be given the option to repair certain types of errors. Or, if the drive is unrecoverable, you may be given an error indicating that the error-checking application itself has failed. Disk Defragmenter is also available under this tab and is very effective at repairing a slow or unresponsive drive.

In Mac, select the top-most entry for your drive on the left-hand column of Disk Utility. Open the "First Aid" tab in the center row of Disk Utility. Choose "Verify Disk" in order to scan the disk for errors. Choose "Repair Permissions" in order to fix any found errors or in order to repair a slow or unresponsive drive. For a complete detailed explanation of all the functions and procedures needed use your Cavalry drive, go online to: <http://www.cavalrystorage.com/manuals.aspx>

Where's My Disk?

If you successfully locate your disk and it passes the error-check procedure, you can attempt to open it (within (My) Computer) and make sure your data is present and accounted-for. If your data is intact that means that the drive failure must have been caused by either an enclosure or power-supply problem. If this is the case, please Cavalry Customer Support and we can help you find a replacement enclosure at a competitive price.

But, if your disk fails to appear in either your BIOS or your Disk Management Utility and you know you've connected the data and power cables securely, you can be certain that the disk is damaged and needs to be replaced.

Wait, My Disk is Damaged?!

Unfortunately, hard drives are particularly fragile devices. When they break, they tend to do so in a catastrophic manor. For this reason, *and we can't stress this enough*, we strongly recommend that our customers keep their most valuable data on more than one drive at any given time. For artists, media collectors or small business owners, the price of a 2-disk RAID 1 array (like the Cavalry CADA series) is vanishingly small compared to the price of a Data Recovery Service.

If you absolutely *must* retrieve the data from a damaged disk, a Data Recovery Specialist is your last option. Unfortunately, Cavalry Storage does not have the equipment to perform such repairs. But in our experience, a good Data Recovery Specialist can retrieve data from massively damaged—even burnt—drives. The issue is always price. For this reason we recommend that our customers talk to as many Data Recovery Specialists as they have time to before making a decision to perform the

service. In the end, it's always cheaper to keep your data in more than one place than to take a dead drive to a Data Recovery Specialist!

My Disk Appears But I Can't Access the Data!

Sometimes a disk can have *damaged data*. That is, the disk is in perfect mechanical order, but the data does not appear in your browser. With these kinds of disks, the disk will appear within your Disk Management Utility as "Raw" or "Unallocated". This usually means that the file-system is damaged. This can occur as a result of virus-damage, but also occurs when upgrading to a different OS or importing incomplete and damaged files. Thankfully, this issue is much cheaper to fix.

There are a number of free and open-source software companies who are producing programs that automatically fix damaged file-systems and, almost magically, restore corrupted or missing data. The only thing these programs will cost you is time. It takes time to understand how they work and it takes days or even weeks to successfully run these types of programs. Cavalry Storage does not currently endorse any recovery programs. But, some of our customers have had luck with CGSecurity.Org's "Test Disk" suite. Just make sure you take time to read the online documentation and understand the risks involved.*

Similarly, if you already have backups of the data on the disk in question and merely wish to get your drive back up and running again, you could re-format the drive using your Disk Management Utility and our online formatting guides. However, this will erase all of the data remaining in the disk. So you will need to verify that you don't need said data before you format.

*Cavalry Storage will not be held responsible for lost data or damage caused by using third-party software like Test Disk.

If you have any questions, feel free to contact us at

www.CavalryStorage.com/contact.aspx