



## ***Banding on Imacon/Hasselblad Scanners***

To understand how to troubleshoot the scanner you need to understand how it works. The scanner contains a CCD with 3 rows of 8,000 pixels. Each row is filtered Red, Green or Blue. That is a single row of red, a single row of green and a single row of blue pixels. As the drum rotates, it captures a stripe of info containing the three rows, groups the data into RGB pixels and transfers those to the computer, rotates the drum, captures another row etc.

The first step of troubleshooting is to determine the direction of the band. Was it in the direction of travel, vertical band or across the image, horizontal band.

Horizontal bands are the result of data lost in transfer to the computer. If you look carefully at your scan and zoom in, you will see the missing row of pixels. Most of these occurred on the SCSI machines and could be cured by unplugging and replugging the cables. That works because it tends to wipe the cable connections clean. In more stubborn cases polishing the contacts with an eraser should do the trick. If that doesn't work try another cable. The most severe case would be a defective motherboard not transferring the data.

Vertical bands can be more complex. Is the band in focus? Most often the artifact (band) is caused by something blocking the light from the reaching the CCD. This could be dust on lamp, dust on lens, dust on CCD (rare) or dust on film. One of the things I like to do is to scan an empty frame both as a positive and as a negative. You can also scan a piece of neutral density filter or a colored gel. This will generally let me see the band and eliminates the film as the cause. If it's dust on the lamp or lens it would be out of focus. If on the CCD it will be more sharply focused. Cleaning the lamp is straightforward, make sure the reflector is properly aligned so that the maximum amount of light is reaching the lens and CCD.

The lens is just like your camera lens as far as cleaning it. Most lenses had an acetate filter that corrected the color temperature of the lamp to optimum color temperature the CCD likes. These filters are acetate and some warped with age or deteriorated in some fashion. They were cut from squares to fit the lens. Various ones were used at different times, maybe to match a bath of CCD's,

which were made by Kodak. The filter stock is still available at some pro camera stores and scientific suppliers. Some users on this thread have removed them altogether. This could cause a color shift that needs correcting. This can be done with a custom setup.

The CCD rarely need cleaning as it is mounted pointing down and dust usually falls off. If yours should need cleaned, treat it like a camera lens.

The very worst vertical band is caused by a dead pixel in the CCD. this will show up as a colored stripe always in the exact same place in the image. You can zoom into 100% and see it. The fix is a new CCD. This is not generally a do it yourself job.

Problems with drum rotation can cause an artifact in your image. Generally this is a blurred section where the drum jumped or slowed down. The best test is to remove the drive belts and rotate the drum by hand. See the Tutorial on Drive Belts and Bearings.

There is a calibration procedure for the CCD. Again I don't recommend this as a do it yourself procedure. This will usually show up in dense areas on positives and light areas on negatives. The CCD is not producing enough gain from the light reaching it. This is a rare situation.

The one calibration procedure you should do is for scanning reflective originals. This procedure is in the users manual. If you don't have the factory target you can use a sheet of white paper. This procedure evens out the light from the lamp. As lamps age they darken on the ends and you lose light output.

Your scanner is a very rugged machine and with a little care will last many years. Parts that were manufactured by Imacon/Hasselblad are getting scarce. Those items that were 3rd party, for the most part are still readily available. Give it a little TLC and you will be happy.

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