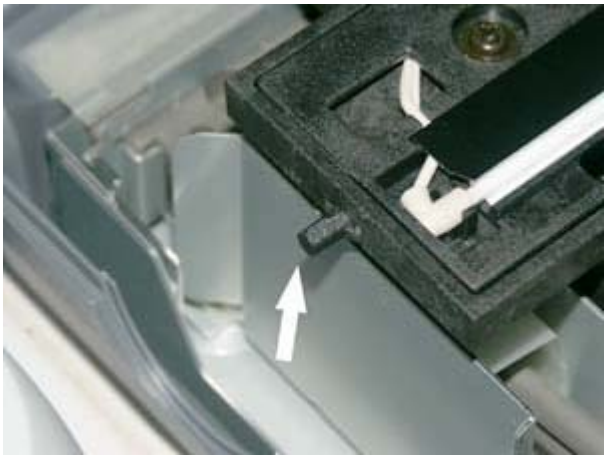
Dismantling the Epson 2450

I decided to open up my scanner to clean the underside of the glass, since there was rather a lot of dust on the underside of the glass (Epson "Desert Storm" would be a more appropriate name for this model, I think). While I ended up, eventually, with a cleaner glass, I lost the function of my front panel button (who cares ...) and introduced - temporarily - a big problem when cleaning fluid got inside the calibration zone. So I thought I'd document my mistakes and discoveries, and also share the photos I took with my digital camera while the cover was off. And since I need to learn Dreamweaver, I figured I'd take a stab at doing this page with that tool!

Disclaimer - This will void your warranty. You could very well make matters worse. Don't do it unless you really feel you need to!

1. First, place the scanner on a clean, flat surface, in a room that is as clean as possible (wait for dust to settle if you just cleaned up!) and make sure there is a scanner-width of free space to the left of the scanner, as you will have to rest the upper half of the frame immediately to the left of the base in order to remove a very tricky cable connector.
2. Disconnect the circular plug (at the rear of the unit) that connects the scanner lid to the base, then lift off completely the scanner lid and set aside, out of the way.
3. Remove the two screws that attach the upper frame to the lower frame. These screws are located at the bottom of the two holes where the scanner lid attached.
4. Raise the rear of the unit up about 2-3 inches - enough so that the bottom of the top frame is higher than the scanner head, as you will shortly be sliding the top forward. NOTE: while raising the upper frame, the 'shipping lock' mechanism on the left hand side will raise the scanner head, and you need to 'de-couple' them. The only way I found to do this was to 'twist' the upper frame so that the lock cleared the pin. This step was a bit difficult for me, and (since I repeated this disassembly several times, due to not getting the glass clean enough the first few times) ultimately I removed the white 'lock' ring completely (see pictures 2 and 7 below).



Picture 1:
Here's the protrusion on the scanner head that catches on the locking mechanism when raising the upper half (see picture 2)

Picture 2:
Scanner locking mechanism (far left of picture) in the upper frame that interferes with the pin shown in picture 1 (also shows the two screw holes that attach top to bottom). See also picture 7.

5. Once you've raised the rear of the upper half of the unit, you need to slide the upper half forward so that the three protrusions in the upper frame clear the three recesses in the base, allowing the upper half to move freely. This was quite a struggle for me; the three protrusions did not cleanly slide out of the recesses; I had to 'wiggle and twist' the top and apply a certain amount of pressure before the protrusions 'popped' out from their receptacles. Other users have reported no problems here, so this could be due to some bad injection moldings.

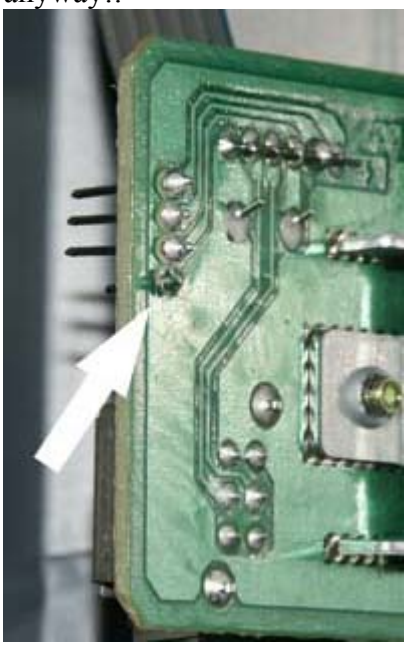
Picture 3:
Here are the three holes in the base, to give you an idea of what you are doing in step 5.

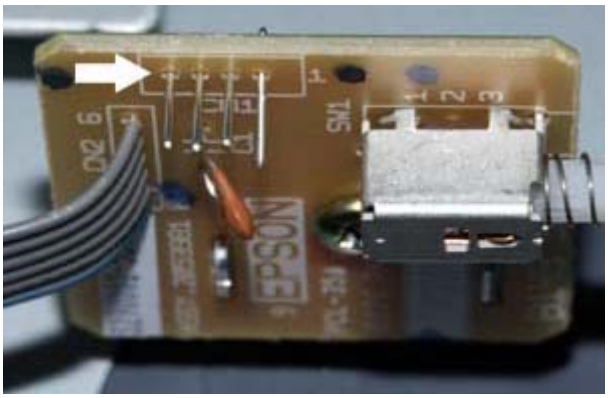
6. Now you've mechanically separated the top from the base, you need disconnect the electrical connector that connects the front-panel 'scan' button and LED to the base.

Picture 4:
This picture shows the wire, and connector, referenced in step 6.

This is where I had a major problem. I did not provide enough space to the left of the scanner to allow me to comfortably set down the top half of the unit (upside down) while disconnecting the connector. It turns out this connector is very tight, and very badly designed, and you really need

two hands to disconnect it. So if you can, lay down the top of the unit, and with both hands, carefully pull off the connector from the base. I failed in this task, and broke the pins, and as a result, my front-panel switch doesn't work - which is no big deal, since I don't use that button anyway!.





Pictures 5 and 6:
These pictures show the connector pins (broken, in my case). Note how the pins are nothing more than plain metal posts fed through the circuit board and held by the solder at the back.

7. Once you've disconnected the cable, the top is free and you can begin the cleaning process. How you clean the glass - what materials, liquids, etc - is beyond the scope of this document, but I will pass on a very important tip - DO NOT apply too much liquid to the glass, otherwise it will seep between the glass and the frame, and cause a major, major problem. Here's why … take a look at the following picture:

Picture 7:
White calibration strip. Each time you scan (or turn the scanner on, not sure which), the scanner 'scans' this strip to determine what 'white' is. As indicated by the rightmost two arrows, cleaning liquid got behind the glass, and discolored the strip.

After re-assembling the scanner, this gave rise to very noticeable 'bands' right in the middle of my scans - hence, I had to disassemble again!

To fix this, I had to pry apart the glass from the frame and blow compressed air into the gap. It takes only a micro-dot of liquid to fill an enormous area of this strip, so be very careful!
If others have tips on how to actually clean the glass - liquids, cloths, etc - it would be good to hear them. I tried 'windex' with paper towels (disaster - deposits lots of paper debris); 99% isopropyl alcohol with a lint-free eyeglass

cleaning cloth (disaster - alcohol leeched out the dye from the cloth).
Some tips I can pass on - Use a flashlight on the glass, against a black background, to see if any dust remains. A laser pointer was also recommended by someone (careful with reflections). Scanning 'nothing' (in a fairly dark room) with the lid open and nothing on the glass will give you a pretty good 'image' of the glass surface - streaks, dust, etc. I did this at 300 dpi before and after to gauge my success.

Tips provided by others (Ralf R)

As long as we're dealing with uncoated glass such as that in the Epson scanners, I still get the best results from a _quality_ window cleaning liquid in combination with a lint-free coth. I use pieces of old linen bedsheets which have been washed many, many times. Kitchen paper rolls also work, and again the better varieties can make all the difference because they're less prone to disintegrate into lots of small fibres.
It may take some testing to find an appropriate window cleaning detergent. The cheaper ones can be quite messy. Some of them contain additives to prevent fogging and for our purposes they do more harm than good by leaving a kind of residue that will hardly be noticed on windows but can be a major problem on optical glas surfaces.

Alcohol is also OK but should be used in a 3:1 dilution with distilled water (3 parts water, 1 part alcohol). The trick here is to use the alcohol as a detergent and the water to hold the dirt in suspension
until you can wipe it up with a piece of clean cloth or kitchen paper. Pure alcohol evaporates before you'll have a chance to remove all the dirt.
One of the best investments I've ever made is an oil-free compressor together with an extra 25 liter pressure vessel. The compressor sits in my basement darkroom and is used while I'm printing. The extra pressure vessel is filled with this compressor and used upstairs for blowing dust off my negs and glass surfaces when I'm scanning. Over the last years, this arrangement has saved me hundreds that would otherwise have been spent on canned air products.
So, any remaining dust particles can easily be blown away using 'real' compressed air and without the danger of causing this awful mess produced by canned air if you happen to spray any of the liquid from the can onto your glass or film.

8. Re-assembly is the reverse of the above. I chose to remove the white locking ring (see the left-most arrow in picture 7 above), to avoid the issue of getting the top half of the frame 'around' the scanner-head pin, but you may decide not to.
Good Luck!