

How to upgrade your Minolta Dimage Scan Multi Pro with Scanhancer IR and Lee 216 diffusion foil

A manual, written by Erik de Goederen © 2004. This instruction is only about "how", not about "why". For that you can use your own brains.

Disclaimer. This should go without saying, but since we are living in a world where lots of people want to hold others responsible for the results of their own actions I have to say this: nobody except you yourself can be held responsible for the results following to the actions described in the manual hereunder. This means that you will usually end up with a much better scanner than you purchased in the first place, but if you unexpectedly screw up you cannot blame it on anyone else except yourself.

Before you start:

You are supposed be a user of the Scanhancer 5LE before upgrading really makes sense. Then, send your family to Disney Land, lock yourself up, unplug the phone and wait until the dust settles. After that the whole operation should cost you no more than two hours (this is an estimation for the slow ones). It will leave you enough time to make some great new scans before the family returns.

What you need:

- a Scanhancer IR strip (you may decide to install this item only, without doing the rest of the upgrading; in that case you only have to work up to step #4);
- a small sheet of LEE 216 white diffusion foil. In case you don't know how to find it you can order it from Erik de Goederen by email;
- some thin household aluminum foil (if you can't find this you probably never cook);
- thin double sided acid-free phototape;
- 3M Scotch Magic tape (green box);
- a small sheet of self-adhesive reflection foil (you can also use the aluminum foil or Mylar with the double-sided phototape in case you can't find it);
- some length of 2.5 cm wide black (acetate) matte velvet ribbon (can be found in shops for buttons, zippers, cords, garments and other sewing accessories);
- a cigarette lighter (not the glow-type, but with a decent flame);
- a pair of tweezers;
- two sizes of cross-hatched screwdrivers (see instruction pics);
- a small mirror (preferably 6cm x 8cm.), or if you don't have that, a piece of clean plastic sheet of the same size;
- a good understanding of mechanical things, patience and utmost concentration.

Here we go.

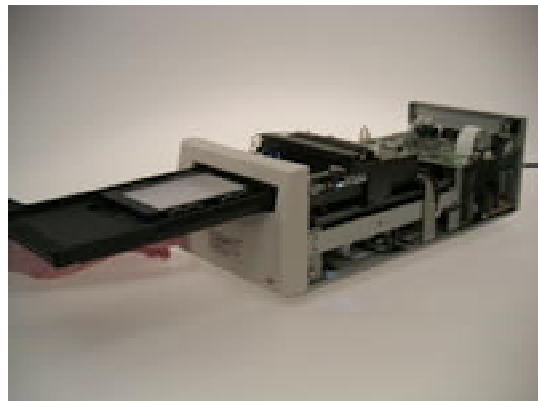
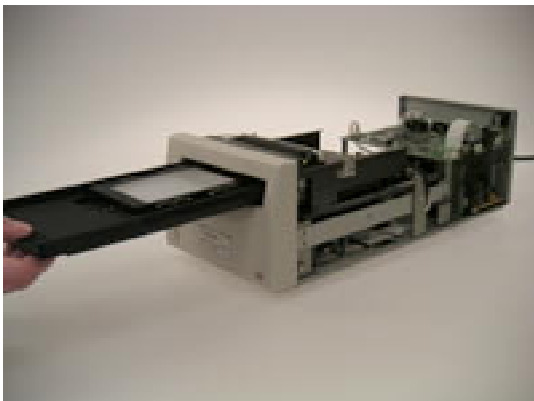
1. Fully unplug the scanner and unscrew the FOUR screws holding its cover. Do not remove any other screws!



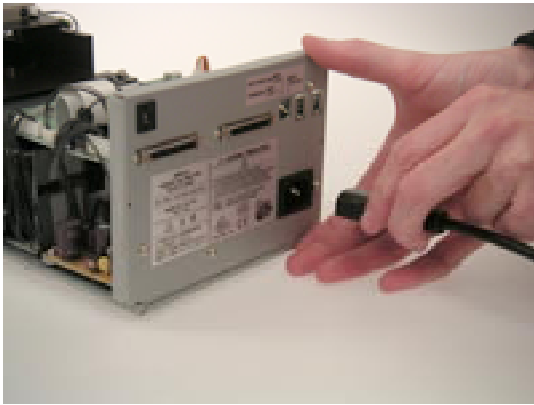
Then slide the cover back.



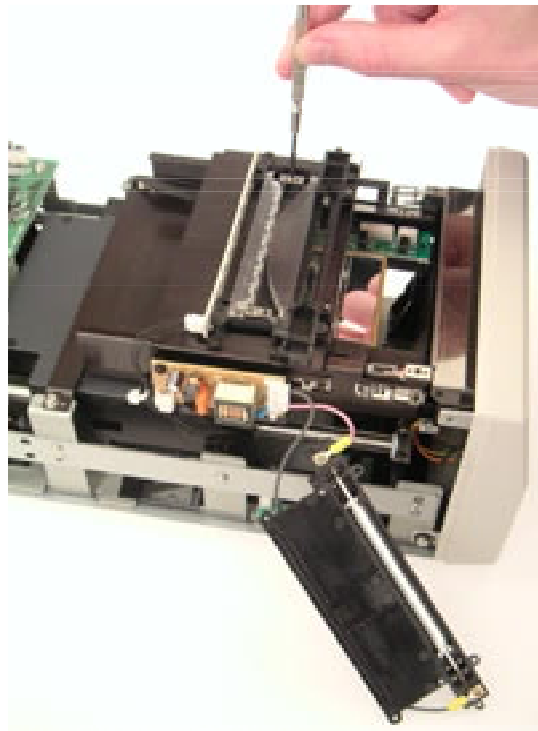
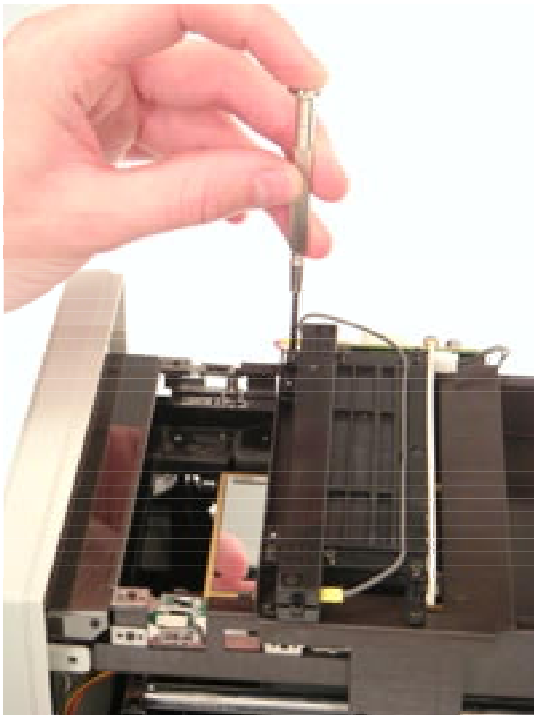
2. Plug the power back in (yes, this is hazardous, so don't touch the non-isolated parts that carry the high voltage). Then put the MF film holder in the scanner mouth (you will feel a light resistance to push through). Turn the scanner on and wait until the scan head has moved past the film holder.



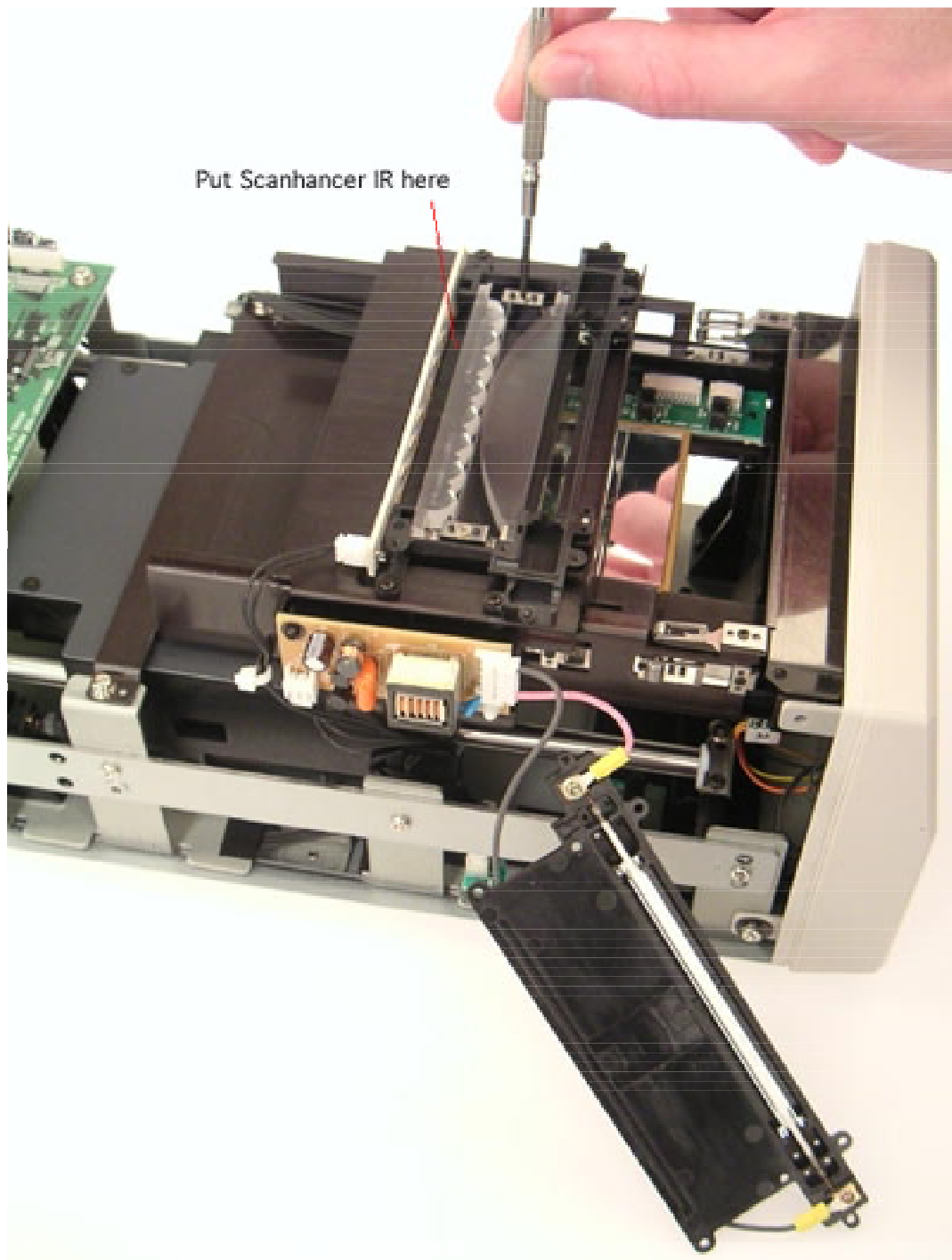
Turn the scanner off and unplug it. Remove the film holder.



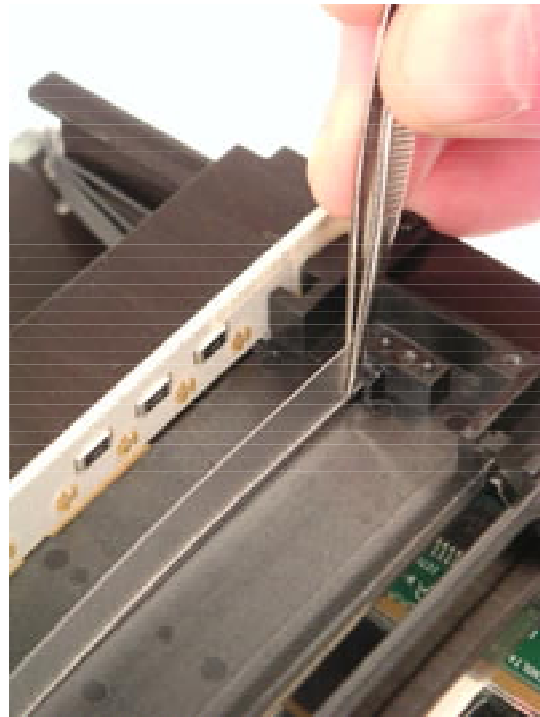
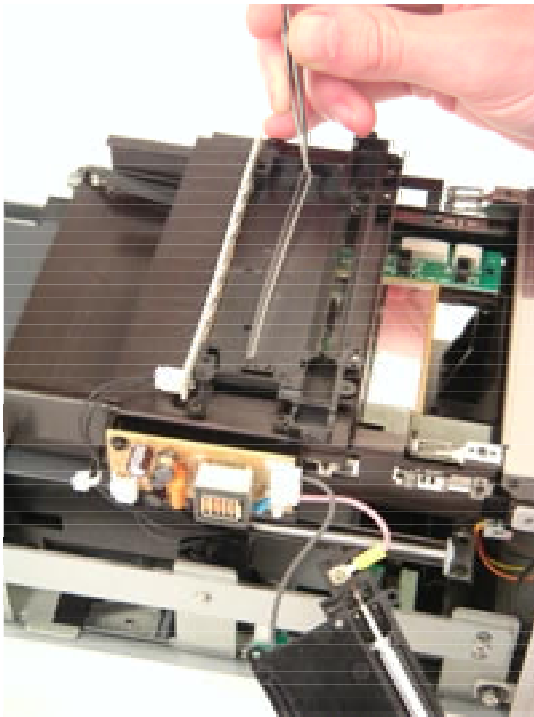
3. Place the mirror over the CCD-housing opening. This is to prevent dust falling into the optical system and later this will turn out to be very handy to be a mirror. If you don't have a mirror place a sheet of clean plastic over the opening. Unscrew the top lid of the lamp housing (6 screws). Open the lid and unscrew the clamps that hold the ICE optics.



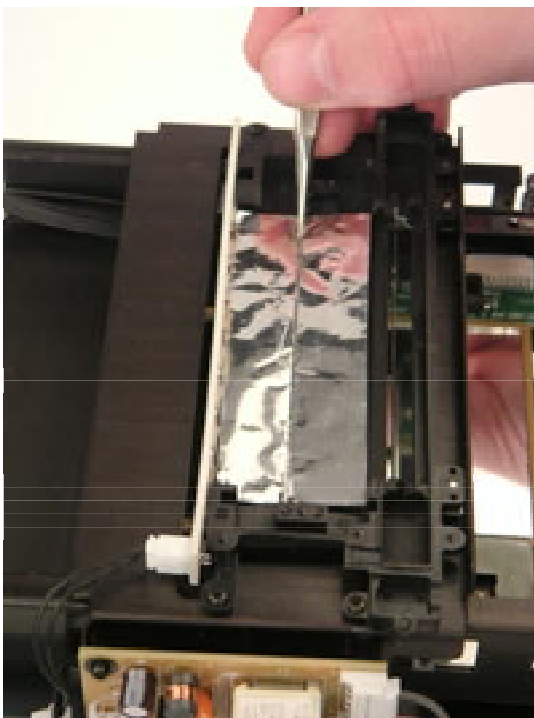
4. If you want to install the Scanhancer IR ONLY, do it now. Otherwise, continue with the next steps first. Drop in the well-cleaned Scanhancer IR with its cut (matte) side up and fix it with a small piece of Scotch Magic tape (green box) to the condensor lens row. This is just to avoid it to move and touch the IR LEDs on the opposite white strip. In the picture below the Scanhancer IR itself is not shown.



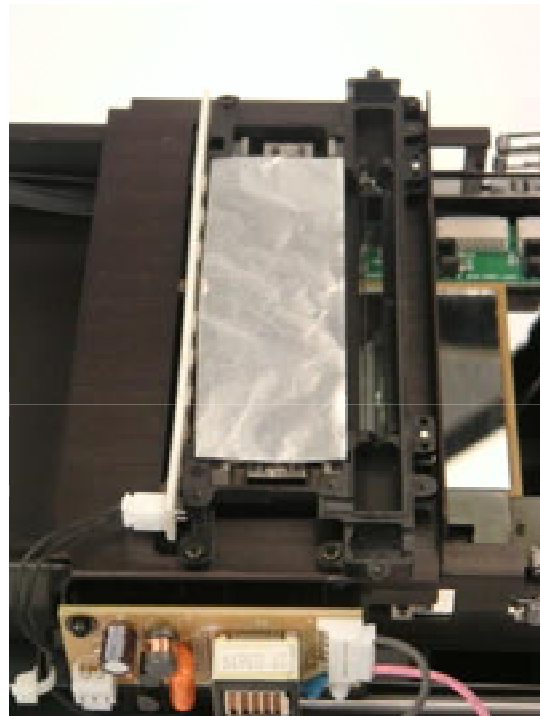
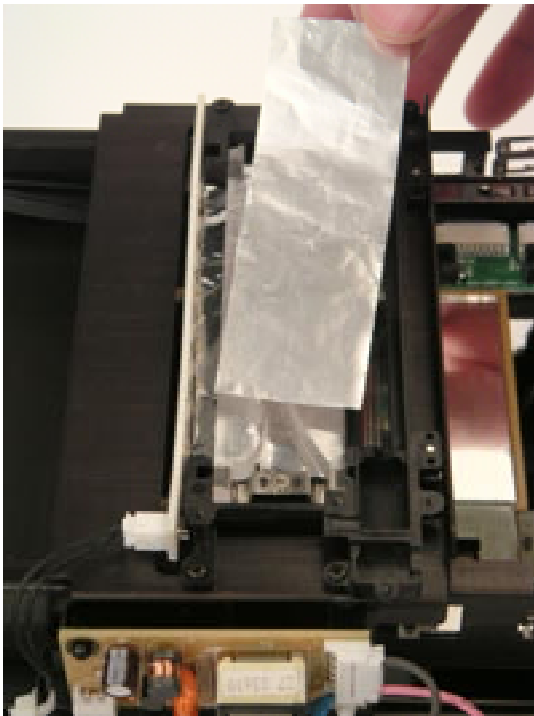
5. Remove all optical parts from the ICE-box. Also carefully pull out the thin strip (with tweezers) which is glued with some silicone. Do not touch the white strip with the IR LEDs or the 45° semi permeable mirror!



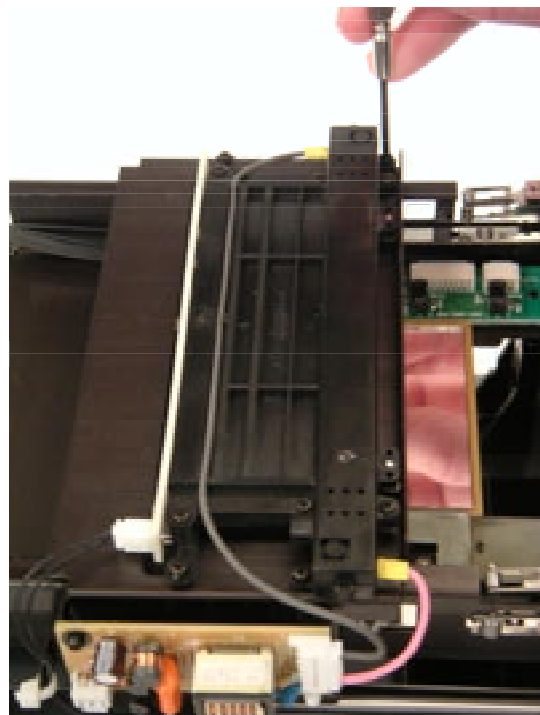
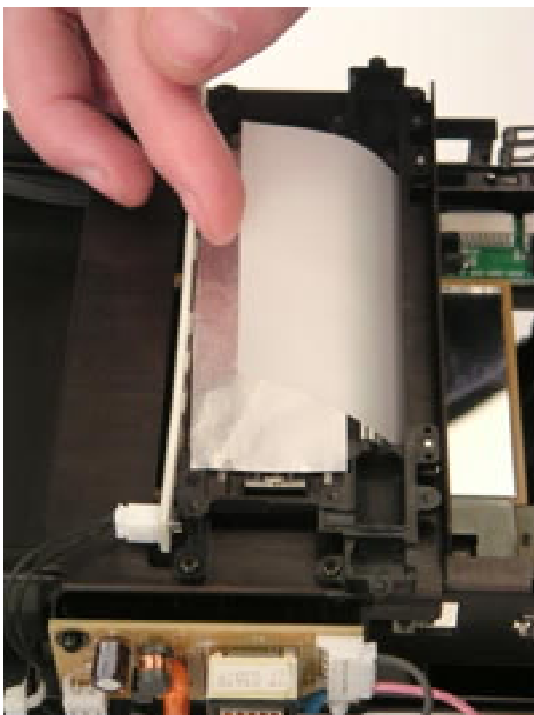
6. Cut a piece of aluminum foil to size (29mm x 84mm) and place it at the bottom of the empty ICE-box. Mark the gutter of the thin optical strip and place all optical parts back (yes, that thin strip too). Fasten them with their special clamps. Now place the Scanhancer IR as described under #4.



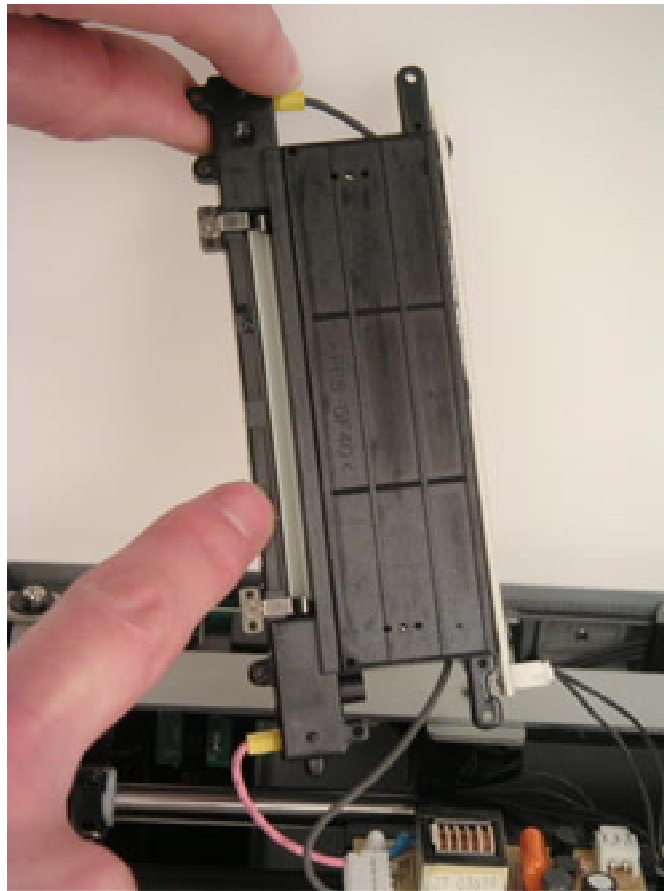
Now place a similar piece of aluminum foil (29mm x 84mm) on top of the optical parts.



7. Cut the LEE 216 foil to size (73mm x 38mm) and place it **over** the semi-permeable 45° mirror of the lamp and over the optical ICE parts. Make very sure that the foil goes into the lowest corner of the 45° mirror! Now carefully close the light unit, clamping the LEE foil in place with the reflector of the lamp. (Don't force anything here; you might break the 45° mirror.) When all fits snap, put back the screws.

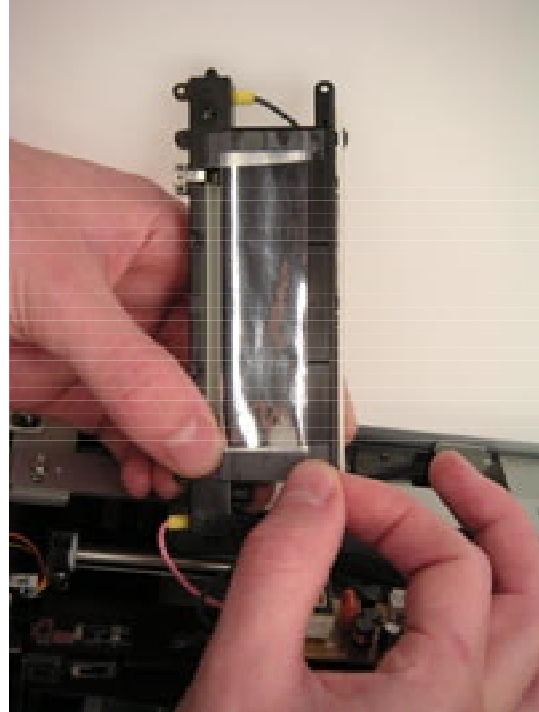
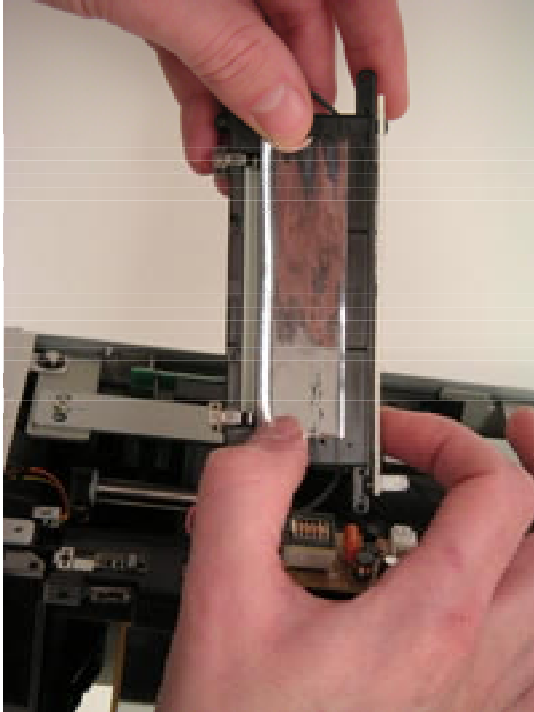


8. Lift the entire light unit from its seat by removing the screws that hold it in place. Now carefully check if the LEE foil is covering the entire 45° mirror nice and tight. There should be absolutely no dust under or on the glass.

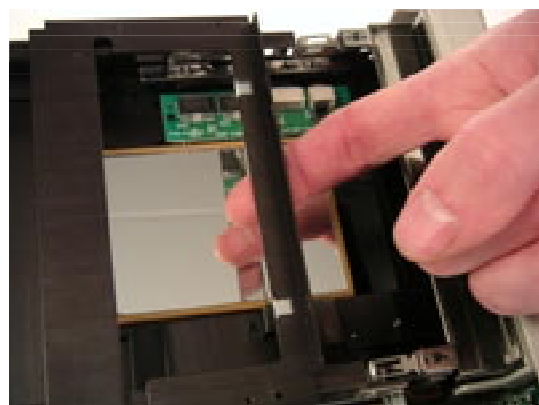
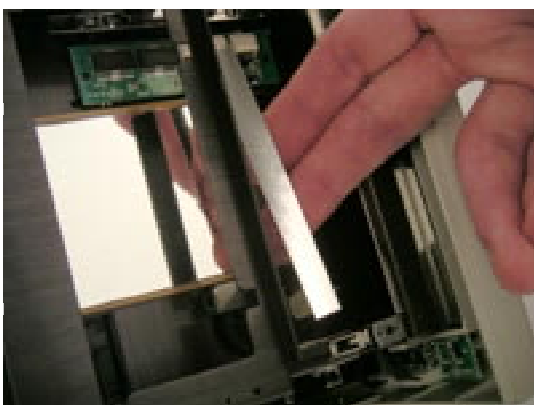


When everything is alright you have now created a light unit that will always emit even and lovely soft light, while the functionality of the ICE system is completely left intact and even improved. Just don't tell Minolta. They can do their own research!

9. Cut the self-adhesive reflection foil to size (25mm x 86mm) and stick it on the underside of the light unit, closely along the lamp opening. Fix the ends with a small piece of Scotch Magic tape. As you can see the long side of the reflective foil bends gently towards the lamp opening. It is very important this is without wrinkles or folds.



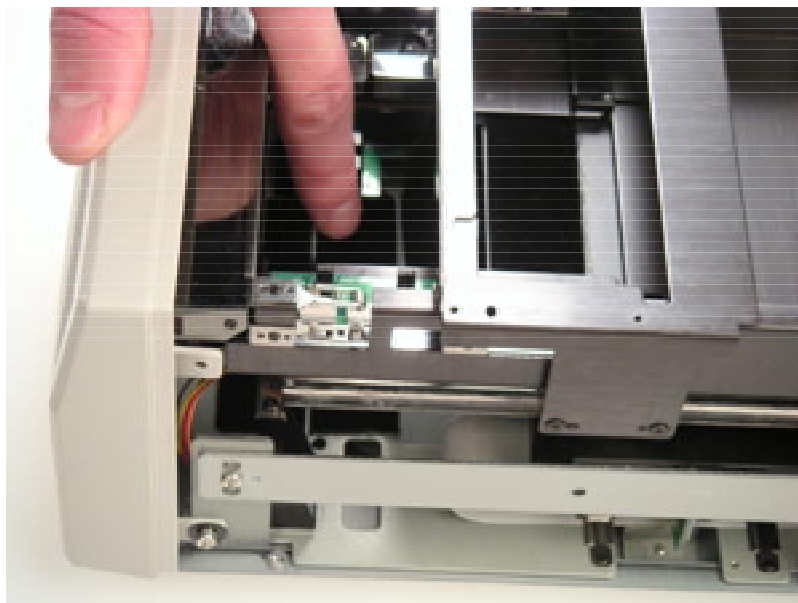
10. Cut another piece of reflection foil to size (8.5mm x 90mm) and place it under the narrow part of the bridge that carries the light unit. For this action the mirror will be very helpful.



11. Cut two strips of black velvet band (60mm long) and quickly melt the ends with a lighter, so that no loose hairs may wander around in your scanner ever. Remove the mirror. Now place two strips of thin double sided photo tape along the CCD-housing opening and firmly press the black velvet on top of that. Altogether the black velvet should still be able to move under the "shutter"-plate at the beginning of the track, so thick double-sided tape or long-haired velvet should be avoided.



12. Place some left-over strips of black velvet (3 pieces of 90mm long) on the bottom of the scanner, over the area where the head-fixing screw is located. This is to avoid light bouncing around under the film to cause unwanted reflections and false contrast alterations.



Put the light unit back in place and close the scanner. You have finished the upgrade of your Multi Pro. Happy scanning! - Erik de Goederen