Assembling The Pakon F135

I can't leave anything alone!

I wanted to take a look inside my Pakon F135 to see what I could maintain at home and what I should leave alone.

The parts of the Pakon F135 that shouldn't be touched are the Focus Bar, Lens Assembly and the CCD Assembly.

Other maintenance resources are the Purchase Source, Facebook "Kodak / Pakon F135 Scanner" group, AES and the various YouTube videos and online PDF manuals.

The LED Board

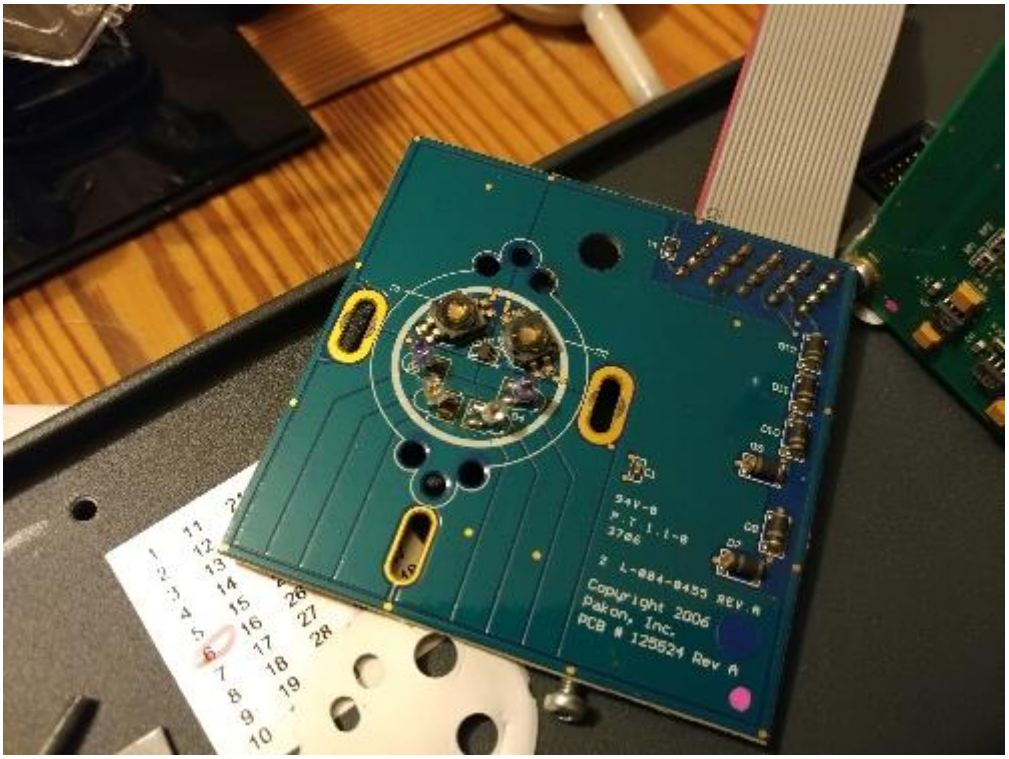

Figure 1 Bare LED Board

This is the starting point of reassembly as it's the deepest part of disassembly without requiring calibration tools. The bare LED board comprises of 6 LEDs, BLUE, GREEN, 2x IR and 2x RED. The slots indicate the sweep of focus adjustment available and the two slots with fastener wear show relative fixing position to chassis if not a replacement part. The Focus Bar is factory set and will provide alignment of parts during reassembly. The Heat Pad was left attached to the chassis. It is loosely adhered with a sticky paste.

When fastening parts together, care should be taken not to over tighten. Cleaning materials and methods are down to the individual, again taking care with their use. There are several fastener types specific to each part. The correct fastener and driving tool should be used.

I couldn't add a second image to this page so babbled for a bit. That should do the trick.

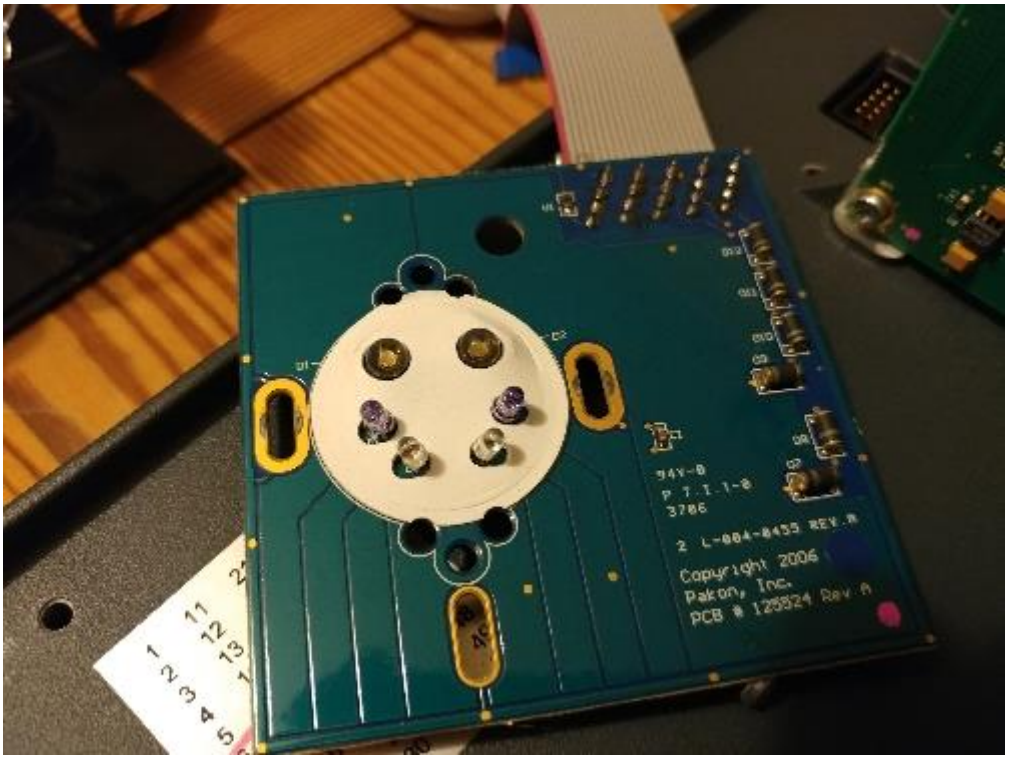

Figure 2 LED Reflector

The LED reflector in position ready for the LED Shroud to be fitted.

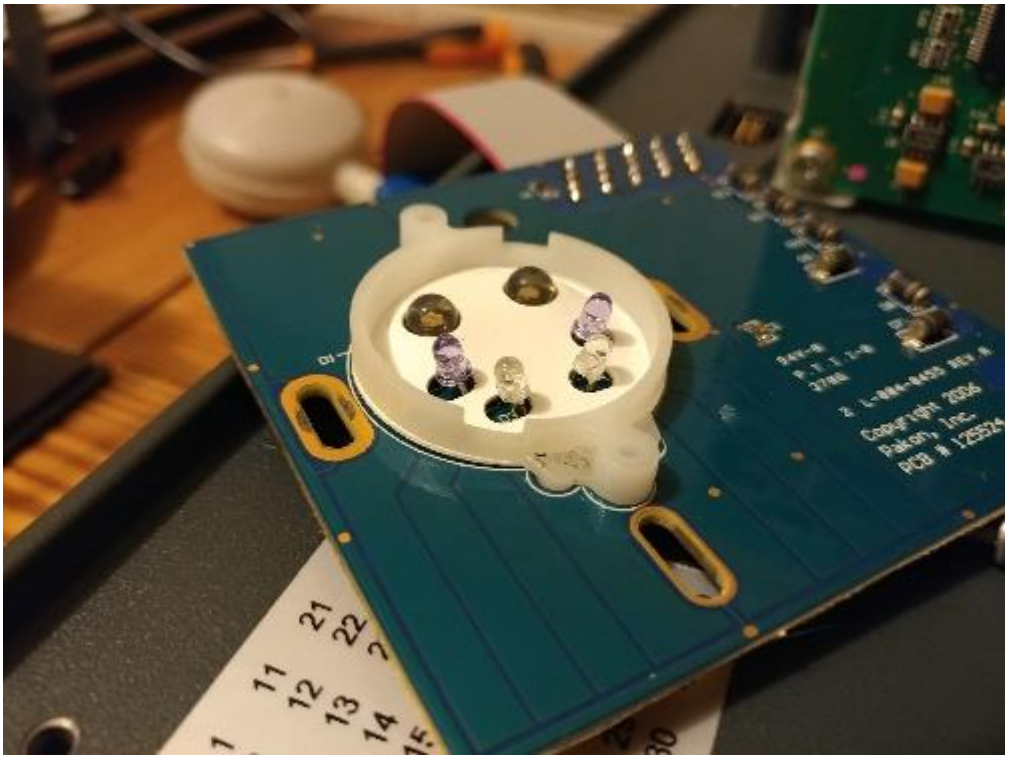

Figure 3 LED Shroud

The LED Shroud can be placed correctly either at 0° or 180°. The slight discolouration to the shroud left fastener shoulder is debris. Originally on the opposite side (180° rotation) near the ribbon connection and is possibly due to the Heat Pad effects.

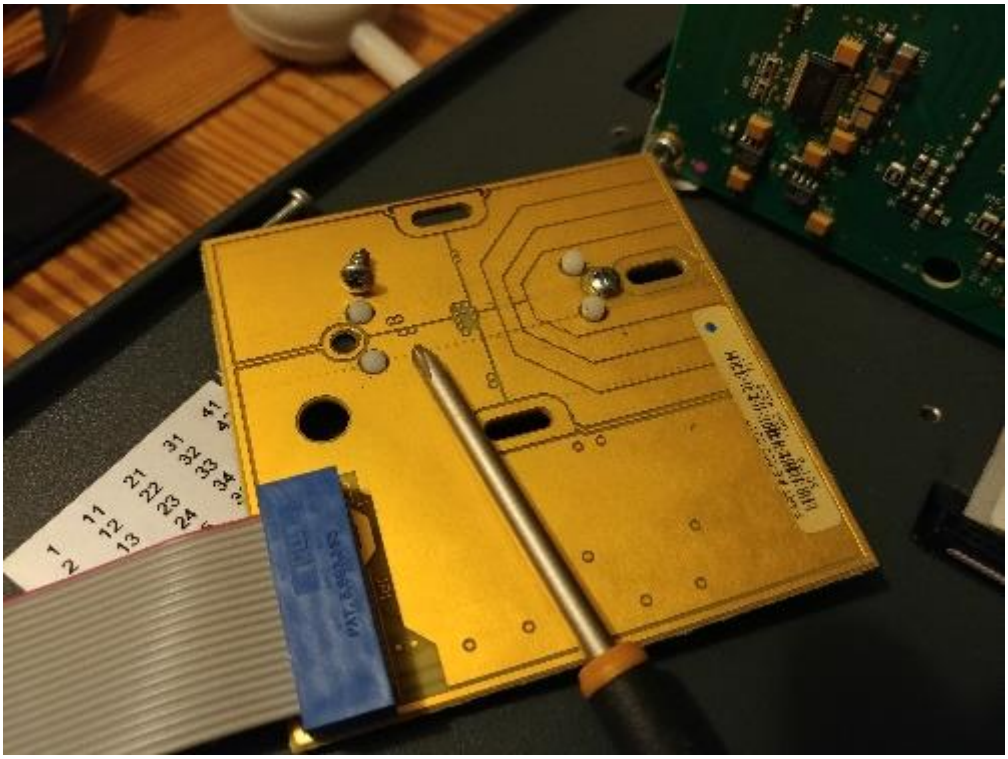

Figure 4 Fastening the Shroud to the LED Board

The underside of the LED board attaches to the Heat Pad via a thermal pad. Some light cleaning of the LED board prior to placement may be required.

Figure 5 Lightly Positioned in Chassis

Seen, are the red and black wires from the Heat Pad extending from under the LED Board. The LED Board lightly placed in position allowing the ribbon cable to be connected. The picture (Fig 5) also show the Focus Bar with Anti-Tamper warnings. The Lens is cemented and covered by a bracket. This assembly should not be touched.

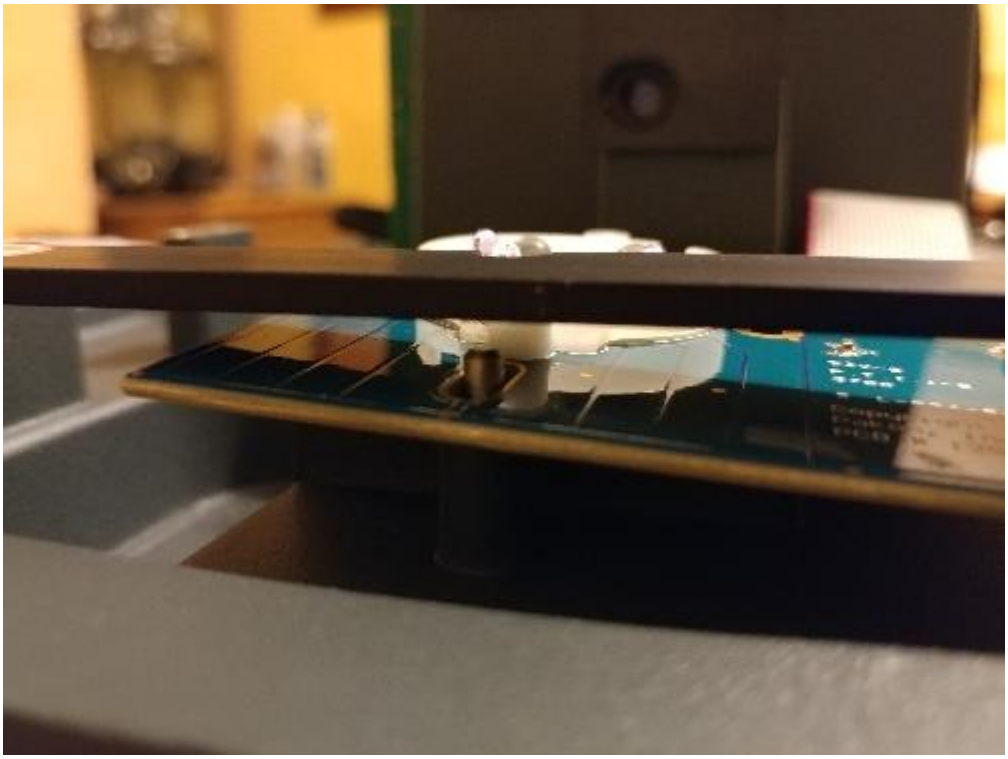

Figure 6 LED Board Location Pin

Hidden under the Focus Bar is the LED Location Pin or Alignment Pin. Lightly locate the LED Board in position as further adjustment is needed when the Transport Assembly is positioned.

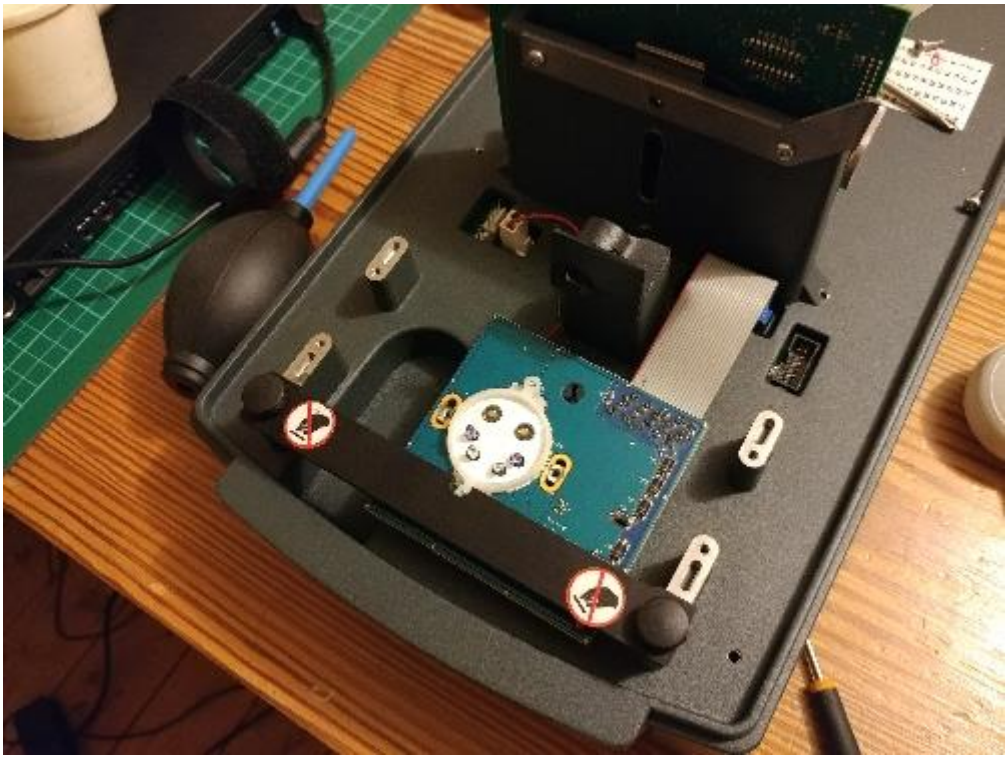

Figure 7 Waiting for Transport Assembly

The LED Board needs to be loosely located as the Transport Assembly will determine its final focused position. The LED Shroud locates the Light Tube of the Transport Assembly. Once partially loosely assembled, the Transport Assembly and LED Board move together due to being connected via the Shroud/Light Tube. The Transport Assembly will butt up against the Focus Bar and this in turn will locate the LED Board. Lightly pushing down on the Transport Assemble will help *stick* the LED Board to the Heat Pads thermal pad. Remove the Transport Assembly and then fasten the LED Board in place.

The Transport Assembly

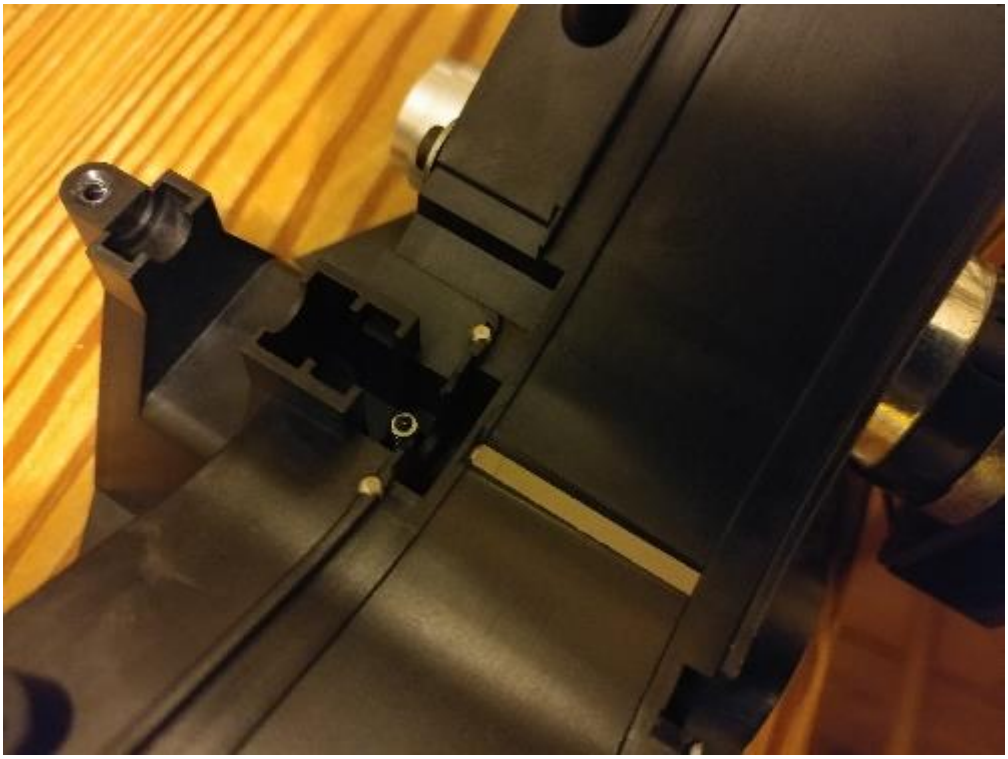

Figure 8 The Little Spring

We can leave the LED Board for a bit and start to reassemble the Transport Assembly. The Motor wasn't removed but note that to do so would require access to the pulley gears grub screw. All components are clean and lubricated if needed. The little spring is the first part and is located in a square peg hole. Go figure! Figure 8.

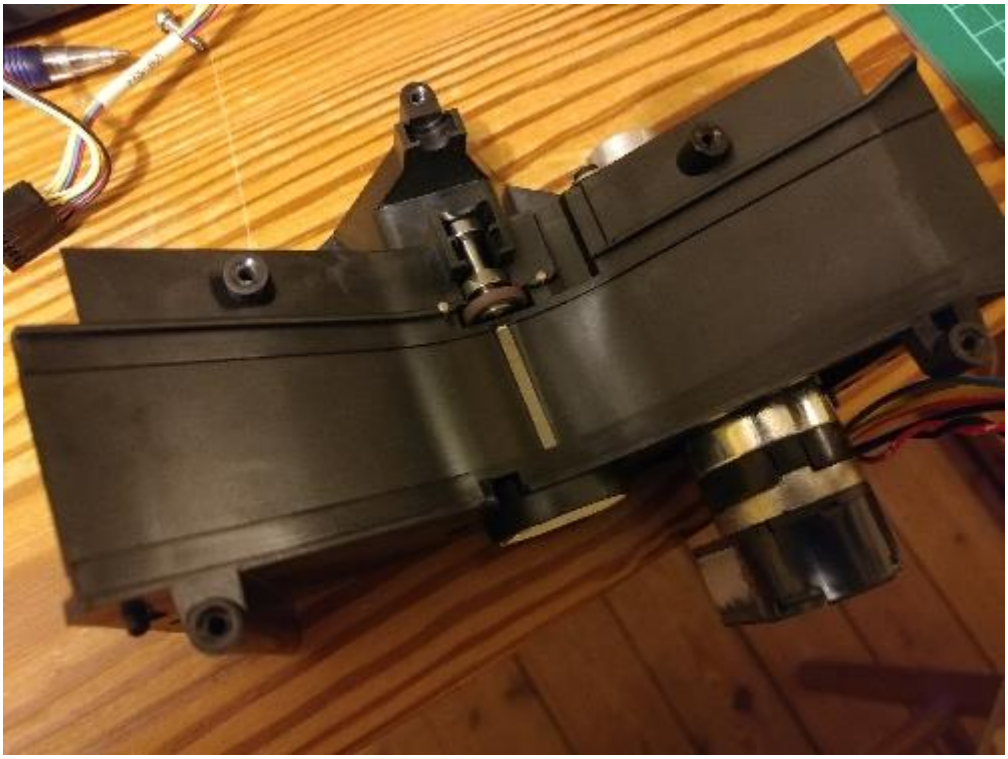

Figure 9 Lower Pinch Wheel

Here can be seen the method and location of film transport. Note the position of bearings into the Assembly cast. No excess grease, just a dab and all excess removed. The Motor connection is positioned over the edge of the table not to add stress to the wires and to level the assembly. Be aware during later assembly and disassembly, the Pinch Wheel Spring does add some force that separates the two plastic halves.

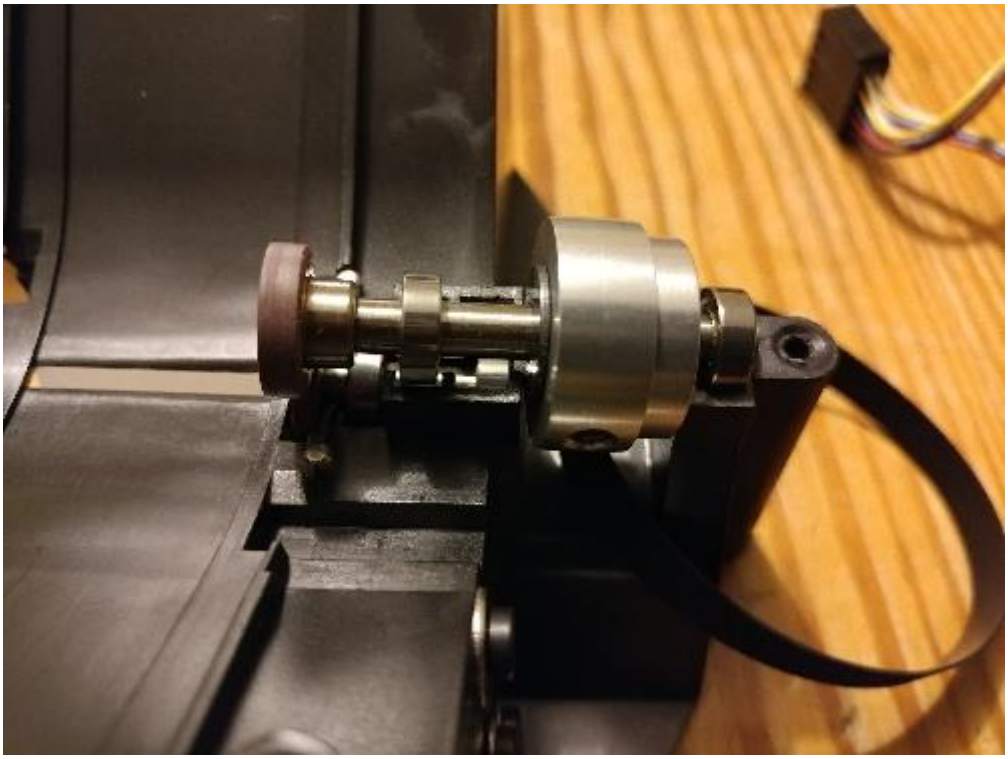

Figure 10 Main Pinch Gear and Belt

The Main Pinch Gear also has two bearings. Note their position and also the bar/shaft and belt. There are two washer/friction plates that locate flush with the pulley/Gear, one either side. Although the bearings of the Lower Pinch Wheel could be removed I found the top bearing of the Main Pinch Gear unable to slide off the end of the bar. Debris was the cause I suspect. I left the Main Pinch Gear assembly together to clean and lubricate. Pulley location important if disassembled, so saved myself a job.

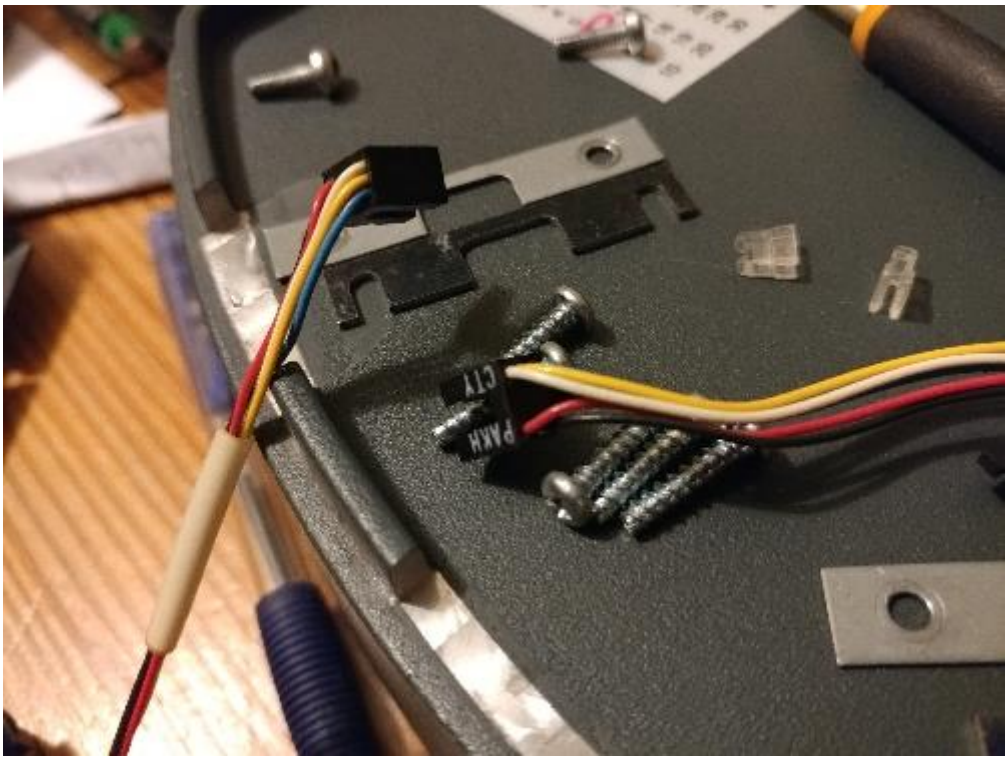

Figure 11 DX Sensors

My bugbear, the DX Sensors. Here, the DX Sensor lenses are removed and both located in the right top quarter of the image (Fig 11). I have removed the lenses and stored them which has improved DX performance. The DX Sensors do not need to be removed to disassemble the two halves of the Transport Assembly. The DX Sensors can be removed whilst the Transport Assembly is in one piece but it is fiddly. The Red/Black wires are the LED side. The Blue/Yellow/White are the two sensor side.

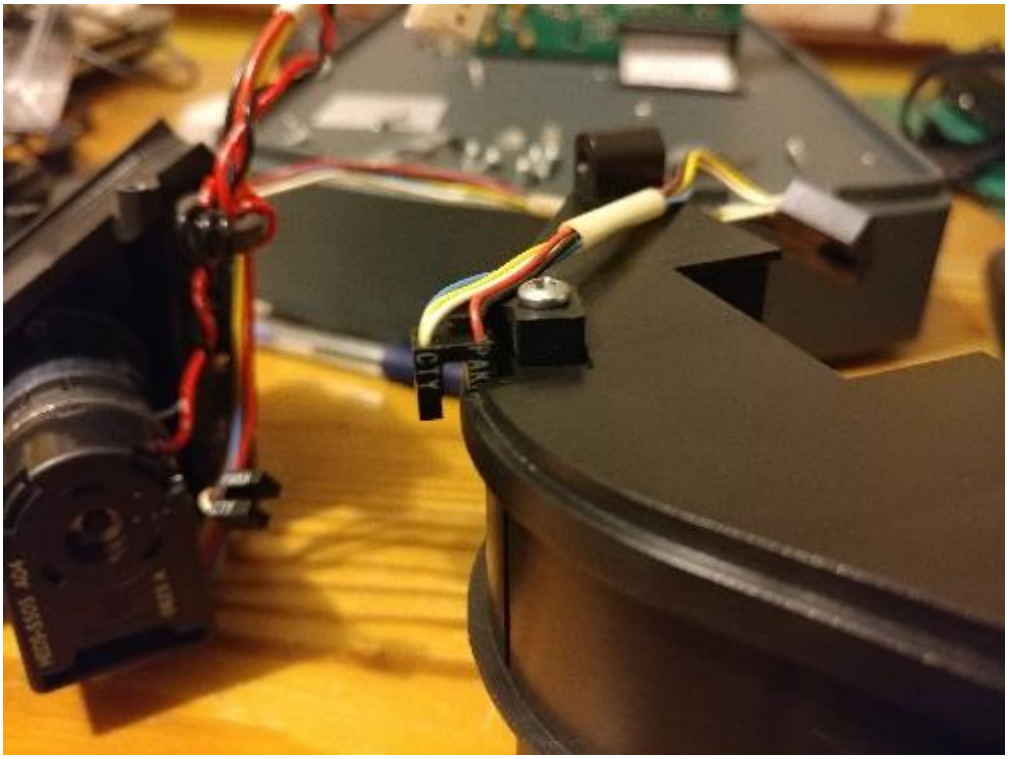

Figure 12 Exit DX Sensor

I've chosen to have the LED of the DX Sensor screw side (Red/Black wires). There should be no difference, so if the sensors are screw side and working fine, leave as is, as rearranging the wires may weaken them.

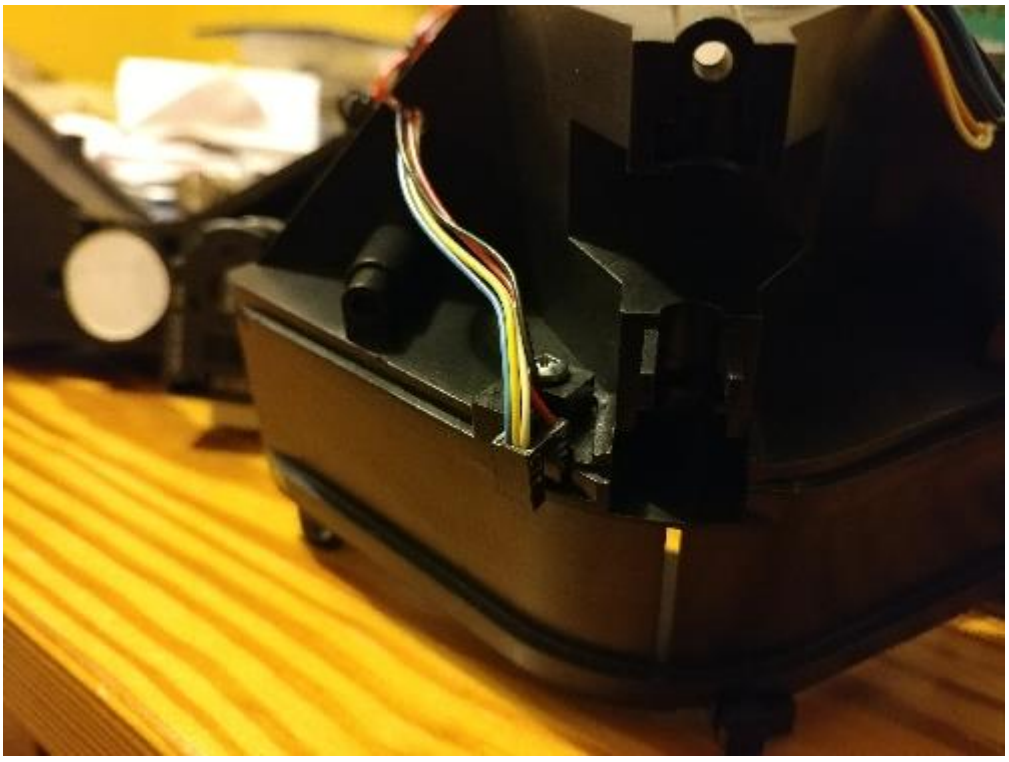

Figure 13 Entrance DX Sensor

The top DX Sensor is quite hard to reach when the Transport Assembly is together. Note the cable management. Again, the LED is screw side with the sensors facing us in this image (Blue/Yellow/White). The Lens is also removed from this sensor too.

Figure 14 DX Sensors and Track

Both DX Sensors visible in Figure 14. The track shows some clearance when film is transported along it and how the perforated edges are points of contact. Keeping the perforated edges clean is important for trouble free scanning. Debris can build up and as the track is quite tight (film thickness), friction can cause errors in scans. Humidity and film condition also play a part. Although canned air is recommended, I prefer a Rocket Blower. Any debris blown through either projection slot will only add to internal contaminants that may land on the LED, Lens or CCD.

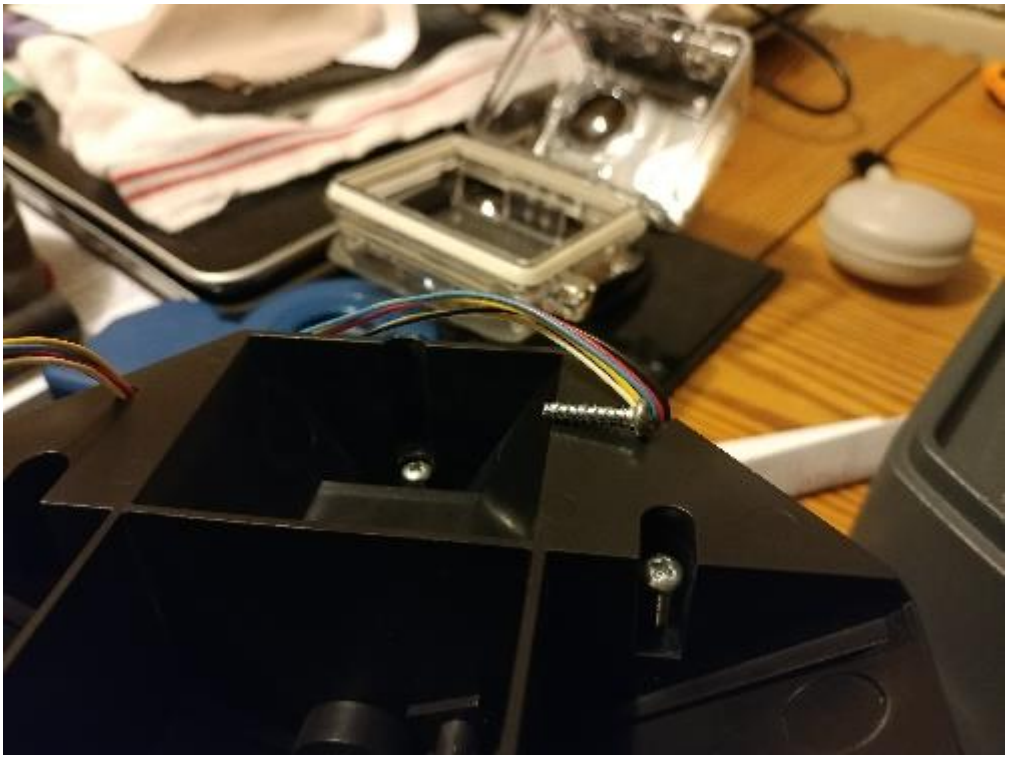

Figure 15 Preparing to Assemble the Halves

Prepare the five screws in position prior to mating the halves of the Transport Assembly and have your driver ready. Lightly place the front half on top remembering the belt, Pinch Wheel Assembly and the spring effect separating the two halves.

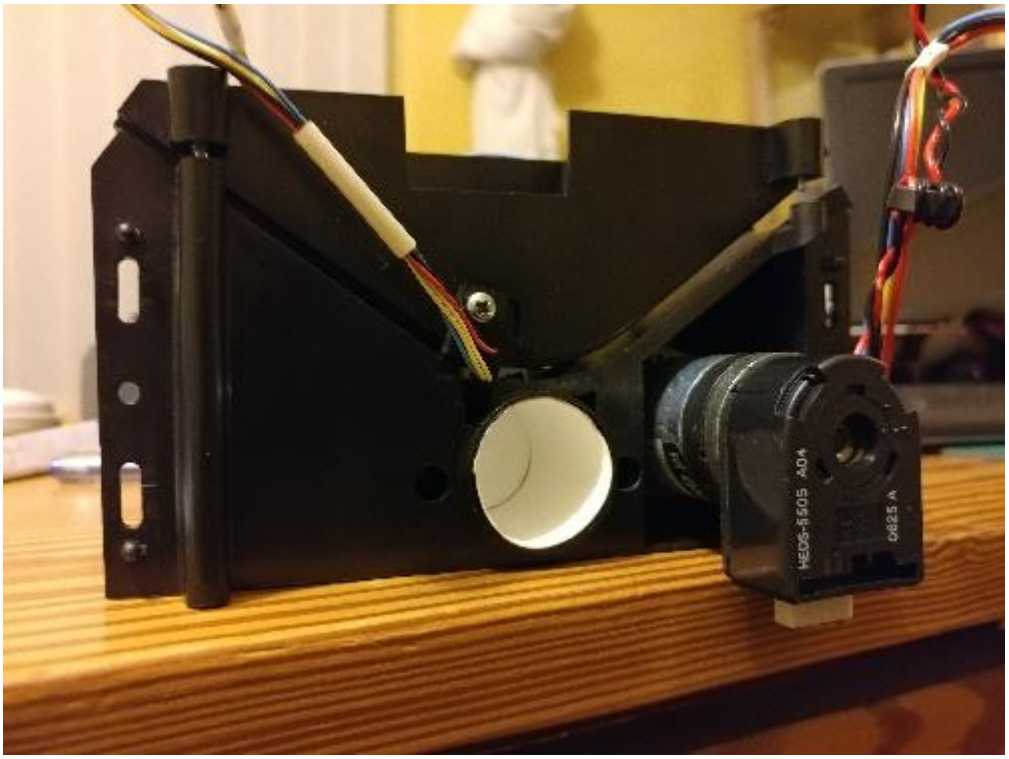

Figure 16 Front Half on top with slight separation

The small amount of spring effect separation can be seen in Figure 16. With the belt correctly positioned and all other parts clear of the gap, lightly push down on the front half and fasten together remembering not to over tighten. Pinch tight is enough. The Motor Gear will not turn by hand without undue force. Leave the belt connection for later.

Figure 17 Belt in correct position

The top side prior to fastening. Belt in correct position inside the cage and all parts clear of the gap ready to lightly push down and fasten together. Note how the top DX Sensor wires are managed.

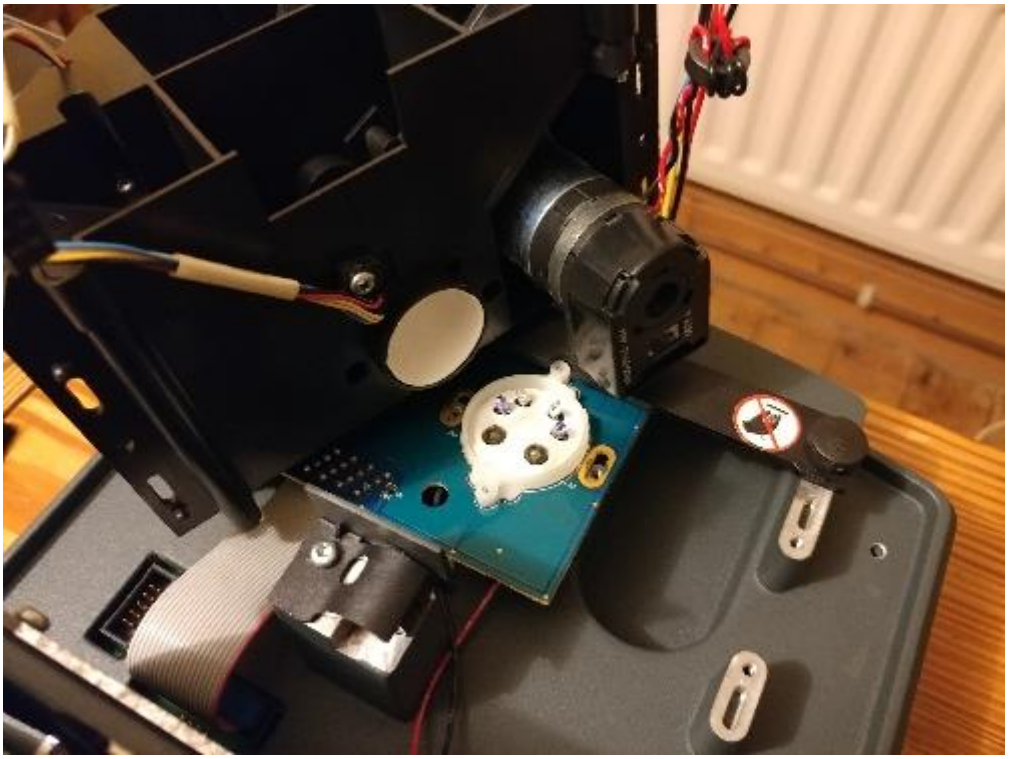

Figure 18 Light Tube with LED Shroud

Now that the Transport Assembly is complete, offer it up to the LED Board and locate the Light Tube inside the LED Shroud. Lightly locate the Transport Assembly up flush with the Focus Bar. If you choose to add fasteners to the LED Board ensure they are down far enough to clear the bottom of the Transport Assembly but lose enough to allow movement of the LED Board.

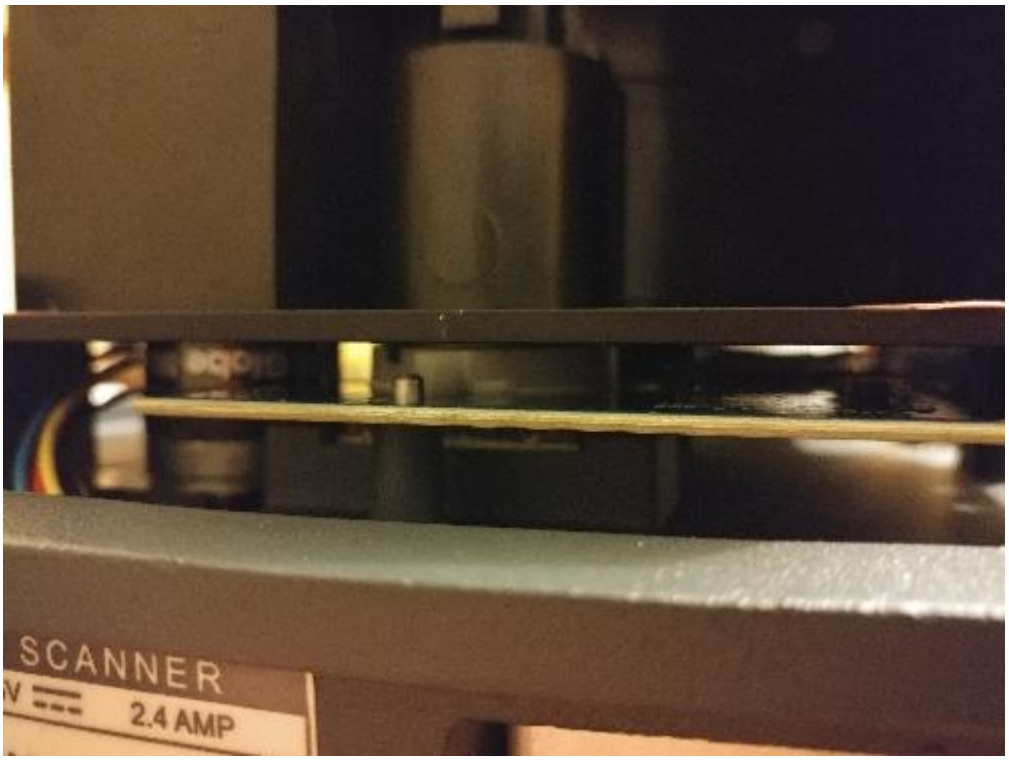

Figure 19 Alignment Pin

The Light Tube is inside the LED Shroud and the LED Board is aligned with the Pin. Once flush with the Focus Bar, lightly press down on the Transport Assembly to slightly adhere the LED Board in place, ready to be fastened.

Figure 20 Positioning the Transport Assembly

Now the Transport Assembly is flush with the Focus Bar, as mentioned, press down to help fix the position of the LED Board. No shims are needed. If the LED Board has fasteners in place, care not to damage the underside or other components.

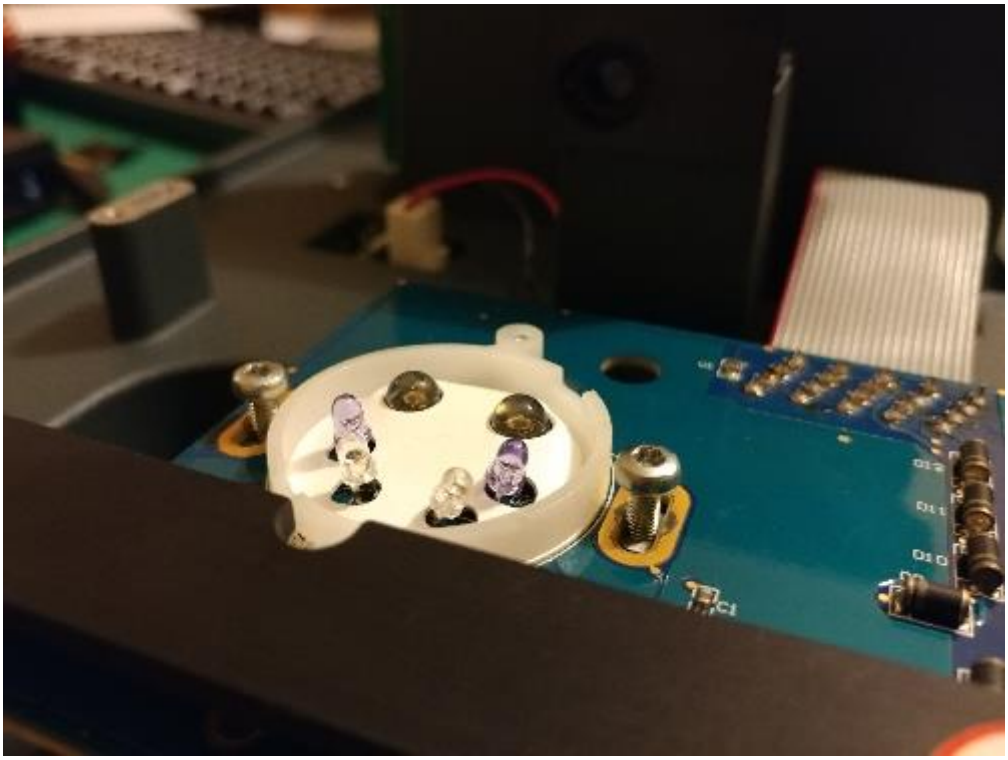

Figure 21 with Fasteners

Carefully remove the Transport Assembly not to dislodge the LED Board and then fasten down the LED Board in place. The LED Board and Focus Bar are now synced with the Transport Assembly.

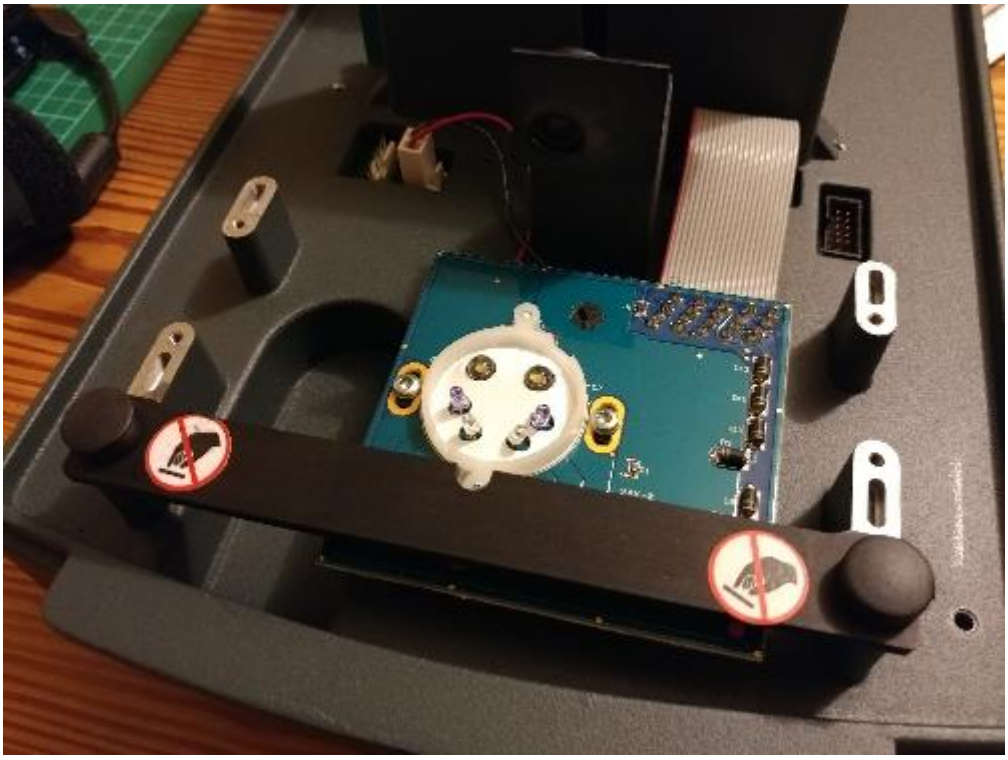

Figure 22 LED Board and Focus Bar Synced

The Transport Assembly can now be positioned with confidence.

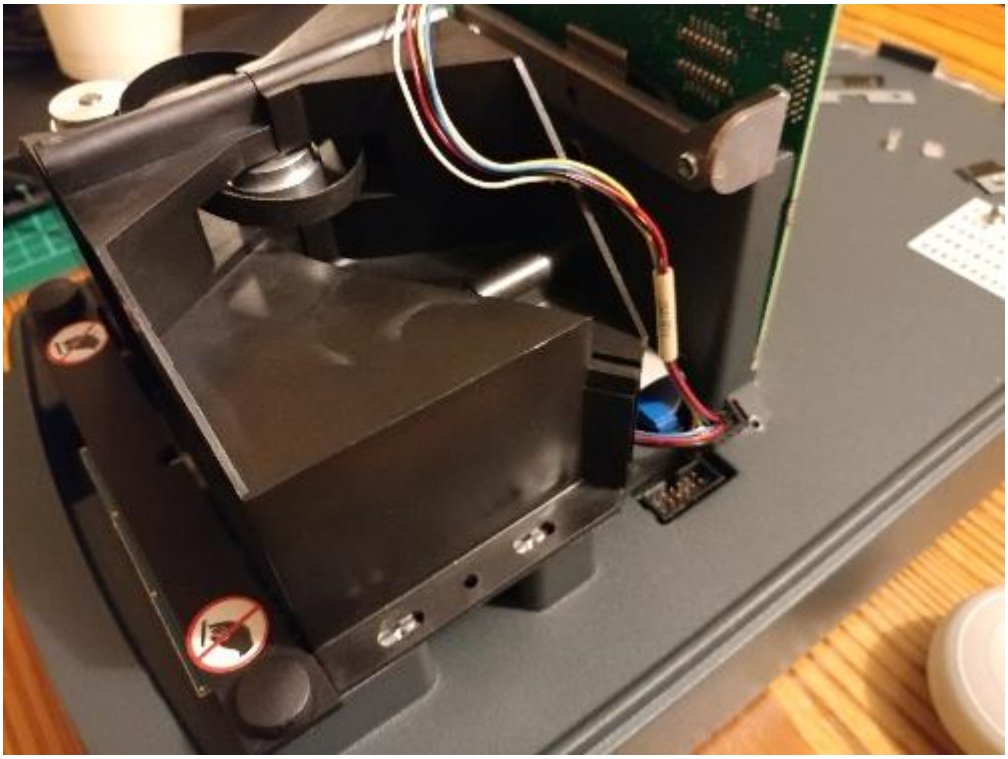

Figure 23 Transport Assembly Ready to Connect

With the Transport Assembly positioned, all electrical connection can be completed ready for a quick test. This side (Fig 23) shows the DX connector. With power and PC connected, the transmission Belt can be attached by powering the motor gear. You could slide the belt over the gears too. A focus and DX test can be carried out by scanning a film. PTS can also be used for some test.

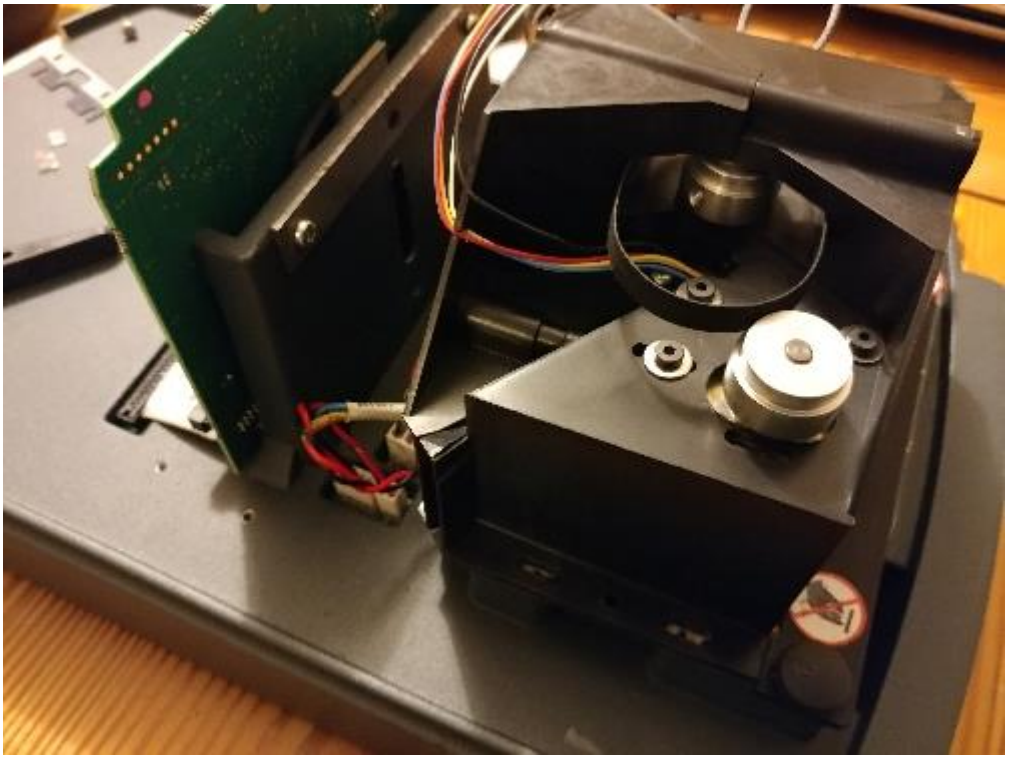

Figure 24 Belt and Connections

This side shows the motor connections and the Heat Pad connector. The belt still requires connecting. I prefer to use the turning motor to slip the belt on.

Figure 25 Power Up for Test

Once safely connected it's time to test. The Transport Assembly isn't fastened and the shims are not in place. Don't move the Pakon in this state.

Figure 26 Quick Test

With the Pakon F135 powered and connected to a PC with the Pakon Software installed I can power the motor which allows me to connect the belt smoothly. I can also run a film through with PSI or TLXClientDemo and check results.

Figure 27 Fastening the Transport Assembly

Prior to placing the cover on, replace the shims and fasteners to secure down the Transport Assembly. The shims alter the Transport Assembly height which should match the covers track. Adjust if needed. With all test complete the cover and rest of the casing can be attached.

Figure 28 DX Sensor Lenses Stored

The DX Lenses that were removed, possibly due to surface wear, are stored inside the case.

Figure 29 Done

Cover and casing back together, it's time for feet up and a brew. I don't think I've missed anything but will mention that you proceed at your own risk.

I haven't had need to fiddle with the Focus Bar, Lens or CCD. Nor have I removed the motherboard. I have not had to deal with any Firmware issues either.

Some parts are not worth tampering with and there are service centres for the Pakon.