

CanoScan 8600F 126 Film Holder Manufacture

Materials: Black, smooth finish, 2^{mm} ABS sheet.
NB. This sheet normally has a protective plastic film on the “finish” surface
(Available in UK from <http://www.ukplastics.co.uk/index.htm>)
Hard Plastics Adhesive – clear solvent based
(Available in UK from <http://www.aldcroftadhesives.com/productdetails.php?ProductID=199>)
25^{mm} Masking tape
Quick drying white paint

Tools: Metal scale & Straightedge
Vernier calipers
Fine scriber
Small router
Flat-ended router bit 6mm dia. – must be sharp!
Drill & drill bits
Small jigsaw with fine-toothed blade
Coping saw and fine blade
Scalpel
Very sharp 15^{mm} Wood Chisel
2 Clamps
Dremel with selection of grinder bits
Smooth flat file
Selection of very fine rat-tailed files
600-grit wet & dry abrasive paper

Manufacturing Method: -

1. Using a fine scriber, mark-out **Upper Laminate** on the “finish” surface (protective film) of 2^{mm} ABS sheet. Mark-out outer profile, including location lugs only. Do not mark out the calibration slot, 28^{mm} scanning slots or the film entry/exit slots at this stage.
2. Mark out **Lower Laminate** on ABS sheet, including outer periphery, 28^{mm} scanning slots, rebate, and Lead-in Ramp (ref. Sectional View B-B), on the side of sheet without protective film. Do not mark-out calibration slot.
3. Rebate **Lower Laminate** with router: -
 - Set cutting depth of router to 1.0^{mm} and test on scrap piece of ABS
 - Clamp ABS sheet to smooth flat work surface and set-up straight router guides for the long cuts (along film slot) – for a suitable routing fixture see Figure 1.
 - Accuracy here is very important to ensure a good fit of the 35^{mm} film stock into the rebate/slot
 - Check position accuracy of router blade path against scribed rebate line before cutting. Also check for cut on correct side of line!
 - Tip - check that router faceplate does not run off edge of ABS sheet to ensure that 1.0^{mm} depth is not exceeded.
 - Turn ABS sheet 90° and set up to rout the short sides (across ends of film slot).

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- Check that the width across the shoulders of the rebate is 35.0^{mm} ($+0.5-0.0$), and that a film strip freely slides along the slot but without excessive play
4. Cut around the outer profile of **Upper** and **Lower Laminates** with jigsaw, and carefully file to size, checking for straightness.
 5. Check fit of **Upper Laminate** in CanoScan 8600F film holder locations.
 6. On **Lower Laminate** accurately scribe the outline of the 28^{mm} scanning slots on the surface of the rebate. Ensure that the slot is accurately marked-out relative to the rebate.
 7. Assemble **Lower Laminate**, rebate upwards, on top of **Upper Laminate** with protective film upwards. The surfaces with protective film should be together in the centre of the lamination sandwich. Temporarily fix together with masking tape around whole periphery, taking care to accurately align **Upper** and **Lower** parts.
 8. Cut out scanning slots with jigsaw, and accurately file the 28^{mm} (± 0.25) slot to scribed line in the rebate, checking for straightness and width.
 9. Separate the **Upper** and **Lower Laminates**.
 10. On **Lower Laminate** cut out Lead-in Ramp. Rough-out with Dremel on slowest speed and finish with 15^{mm} wood chisel and scalpel. Finally, smooth surface with 600 grit paper. A smooth surface is essential to minimise the risk of scratching the negatives.
 11. On **Upper Laminate** mark-out: -
 - Film entry/exit slots, ensuring accurate positioning relative to 28^{mm} scanning slot. Include lines for Ramp-in (ref. Sectional View B-B)
 - Scanner calibration slot, including both lines for the tapered slot ends (ref. Section C-C)
 12. Cut out film entry/exit slots in the **Upper Laminate** with coping saw, and carefully file to size, periodically checking alignment with rebate and Lead-in Ramp on **Lower Laminate**. File the lead-in ramps as shown in the drawing (ref. Sectional View B-B). Clean-up surface finish of lead-in ramps with 600 grit paper.
 13. Temporarily assemble the **Upper** and **Lower Laminates** and check insertion and removal of film into slot formed by rebate (ref. Section A-A).
 14. Disassemble and clean and smooth the surfaces of the rebates and the mating surfaces with 600-grit paper. De-bur all edges. Degrease mating surfaces (use solvent that does not dissolve ABS).
 15. Carefully apply adhesive and bring the two laminations together. Do not use excessive adhesive in order to avoid surplus squeezing out into rebate. It is a good idea to test the spread of adhesive on two scrap pieces of ABS.
 16. Bind the two laminations together with masking tape around outer periphery and along the film slots.
 17. Clamp the assembly between two perfectly flat pieces of wood, and leave to set for 24 hours.

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18. Remove masking tape and cut out scanner calibration slot with coping saw. Cut to smaller of the two slot lengths.
19. Carefully file calibration slot to size, and taper the slot ends as shown on the drawings (ref. Section C-C).
20. Check to ensure no adhesive has squeezed into the film grooves/slots. Any excess adhesive should be removed with a scalpel, rat-tailed file and 600-grit paper.
21. Clean up all edges of scanning slots with very fine files and finally clean up with 600-grit paper, taking care not to remove excessive material.
22. Clean and level-up outer periphery with fine file and 600-grit paper. Round-off the four external corners.
23. Use a 2^{mm} drill to cut a shallow depression, forming the white orientation dot. Fill with quick drying white paint.
24. Remove protective film.
25. Finally clean dust and contamination from film holder, check, try in scanner and test.

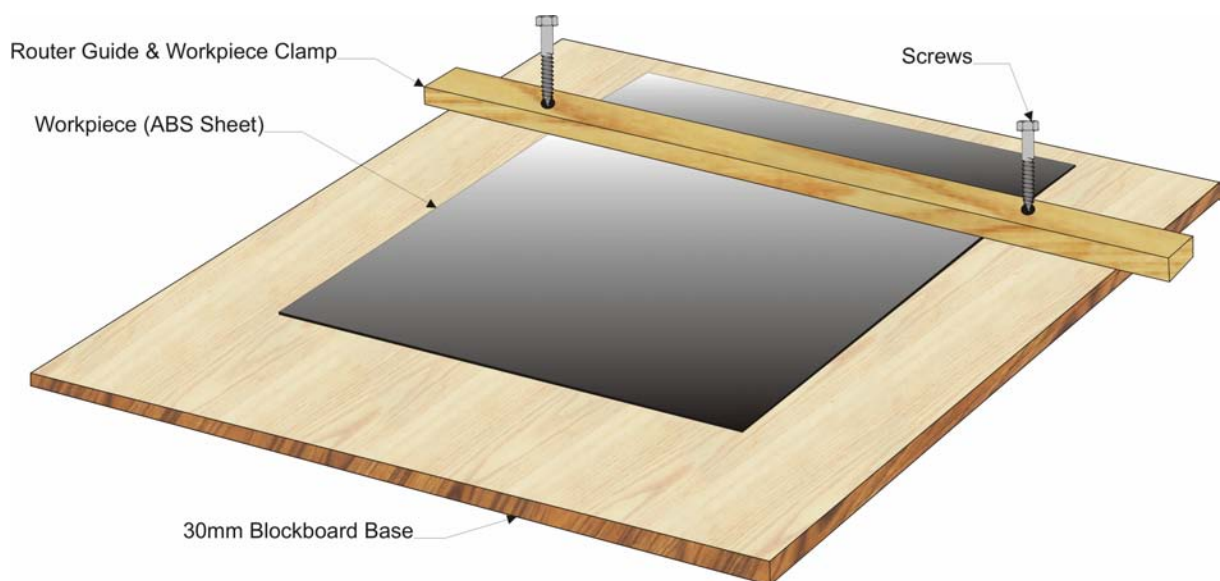


Figure 1 - Routing Fixture