

## **Patching Holes in OS Film covering – By Bob Bailey 2015.**

Inevitably, from time to time, covering will get damaged due to hangar rash, hang ups and retrieval therefrom. Patching film covering was a skill that was soon learnt in the days before Ultrafilm, OS Film etc. when microfilm was used for covering light duration models such as F1Ds. The reason was that microfilm, although very light, had very little mechanical strength. One feature I discovered was that thin cyano eats microfilm like an invisible caterpillar, so mending a spar could result in quite a large hole! As would acetone or Ambroid.

Even now, though OS film is much more resistant to damage, the need to effect repairs is still necessary.

### **Equipment Needed**

The most important item required is an atomizer which produces a spray of fine water droplets. Mine came from a chemist, probably Boots for about £1. The other items needed are small brushes, sharp scissors, a pair of tweezers and a pin or piece of thin wire in a holder.

In addition I also use some adhesive consisting of dope thinned to about 15 – 20% which provides a stronger bond than saliva does.

### **Patching Material**

You will realize that the covering film will not support itself for any but the smallest pieces; support for the film during application is normally provided by newspaper or tissue paper.

When covering a component with eg OS film, you will often get some bits left over from preparing the film to go on the covering frame and some smaller pieces cut from around the components.

From days gone by, I have found that a piece about 9" by 4" is usually as large as can be comfortably handled; this is adequate for most purposes.

I always crumple the film by forming the piece into a sausage by folding the sides to the middle to reduce the width to about 20 mm or so. Then the resulting sausage can be gathered up from one end to expel the air from it. The film can then be rolled gently between the hands.

Lay the unrolled film on a smooth surface and brush out as uniformly as possible to remove all wrinkles. Cut out a piece of newspaper to cover the film, leaving a small amount all round. Spray the paper with water from the atomizer until the paper is slightly damp and lay over the film.

Fold the film edges over the paper to enable you to lift the two together off the surface and turn over to lay the two with the paper underneath.

I suggest storing the patching material that you have just made between layers of kitchen roll. I have stapled together several pieces of kitchen roll to form a booklet and enabling a stock to be built up.

### **Patching the holes.**

The technique is basically the same for all holes but there are variations for where

the hole is relative to the structure. Clearly, any structural damage should be fixed first!

### **1 - Hole in middle of a panel.**

This is the simplest case. Cut out a piece of patching film at least 3 mm larger than the hole all round using a pair of sharp scissors. If the film catches on the scissors cutting edges and isn't cleanly cut, you will need to clean the scissors thoroughly with thinners to remove any sticky deposit. Failure to do this has resulted in much patching film being lost!

You may need to brush the film to spread it uniformly on the paper since the adhesion between the two is often poor.

Hold the piece of material film side up either in the palm of the hand or with the tweezers and spray from a distance of 2 to 3 feet with water from the atomizer until damp. This avoids getting large drops on the film.

Gently lay the patch over the hole and touch down to attach the film to the covering. Using the wire, lift the edge of the paper away from the covering. Usually this is straightforward.

If not, you may need to try several locations to start the process. If you see the film starting to pull away from the covering, try wetting the edge of the hole with a brush of saliva and push the patch back on to reattach. Try a different location to separate the paper. Any edges of the patch or the hole can be stuck down with the wet brush.

If the film still won't adhere to the panel, turn the wing/tail over to expose the underside of the hole. Run round the edge of the hole with the wet brush to ensure the patch is stuck on all round.

### **2 - Hole on the side of a panel.**

For holes at a dihedral break see sect. 4 below.

For a hole which has a spar as one border, the procedure is very much the same as for holes in the middle of a panel. The main difference is that before you put the sprayed patch on, it is necessary to wet the length of exposed spar or rib with saliva otherwise the film will not adhere properly.

When removing the paper, lift it from a location inside the structure and rotate about the structural edge so that the structure is uncovered last.

**Note:** If the hole is beside a handling point eg a tube, the film will easily come off, particularly from a small hole (typically less than  $\frac{1}{4}$ " long. In this case, use the thinned dope (referred to in the section on Equipment needed) since the saliva bond isn't strong enough.

### **3 - Large Holes.**

If the hole is a large one with more than about 50mm of structure involved, the weight of the paper is liable to distort the structure. To minimize this effect, set up a flat surface eg the top of a box on which the damaged area can be laid flat.

Lay the patch film side up on the flat surface after spraying and then the damaged

structure on top. Run round the edge of the hole with the wet brush to ensure adhesion. This is particularly important due to the size of the hole.

Carefully turn the structure over using the flat surface as a support if necessary so that the paper is uppermost. This operation can be tricky due to the weight of the paper distorting the structure. Lift the paper from several locations to ensure it hasn't stuck to the film on the edge anywhere. Again, the size of the hole makes this check more important since the film is much more vulnerable to splitting.

#### **4 - Holes at a Dihedral Break.**

These can be the trickiest to repair if the split is more than about 2" long since the film on the side away from the rib tends to pull away from the rib, leaving a large gap.

When this is the case, turn the wing or tail over and set up a flat surface on which the wing/tail can be laid with the undamaged part hanging over the edge.

Prepare a piece of patching film not more than 50 mm long and about 5 mm wider than the gap to be bridged. The strategy is to repair the hole in stages, starting from each end. Trying to use longer pieces is likely to result in failure. Lay the dry patch on the flat surface and the damaged area on top to just overlap the dihedral break by up to 2 mm. Now attach the patch to the main covering using the wet brush as before and turn over to remove the paper starting from the secure end, not the open end. When the paper is removed, stick down the edges of the patch with the wet brush.

Repeat the process starting from the other end of the hole. If necessary, return to the first piece completed and repeat the process.

#### **General Comments.**

The above examples give you the general guidelines on how to approach this operation to avoid some of the pitfalls. Improvisation and adaptation are all part of the job and this definitely improves with practice and experience.

Good luck!