ARCHER RESIN RIVETS FOR MODEL AIRPLANES

An airplane modeler’s guide to working with Archer resin rivets

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**AIRCRAFT RIVETING BASICS FOR MODEL BUILDERS**

**INTRODUCTION:** During my four years in the USAF I was an Airframe Repairman working on several types of military and civilian aircraft including F4 Phantoms, B-52’s, KC-135’s and SR-71’s. As an aircraft model builder I’ve seen some glaring oversights in the way modern kits are “riveted” so I’m providing a basic overview of typical ways aircraft are assembled. This is not meant to be a doctoral thesis on aircraft assembly, but rather a general guide for correcting model aircraft riveting.

**BUTT JOINT**
Most panels on aircraft are sheets of aluminum butted together. In this configuration there is a row of rivets on both sides of the seam fastening the panels to the structural member. Note that the rivets are close to the edge.

**LAP JOINT**
In some rare instances aircraft skin panels overlap with the trailing edge of forward panel overlapping the leading edge of the trailing panel. In this case a single row of rivets fastens both skin panels to the structural member. Note again that the rivets are close to the edge.

**PANELS and DZUS FASTENERS**
Panels that are frequently removed to allow access to engines, etc. are held in place by quick release fasteners. Depending on the type of aircraft, different types of quick release fasteners are used. In most WWII aircraft Dzus fasteners are common.

**Note:** The top illustration shows the position of the slot parallel to the panel edge indicating the fastener is latched. The bottom illustration shows the position perpendicular to the panel edge indicating the fastener is not latched.

**ACCESS PANEL BASICS**
If an access panel is within a skin panel the corners are radiused to prevent stress points and cracking. Panels that are bounded on all sides by skin panels are squared off.
There are two options for working with Archer rivets, a “pay-me-now” or “pay-me-later” process.

The pay-me-now Option #1 is more work at the beginning involving filling in the kit rivets, but it is the preferred method and what we recommend. Although this may seen like a daunting task, we have developed a technique that involves little or no sanding and is actually quite easy.

The pay-me-now Option #2 is acrylic based and everything cleans up with water. This method requires some sanding to remove the excess filler, takes longer to dry and is difficult to remove from fine kit details although it is easily removed from panel lines.

The pay-me-later Option #3 involves little preparation at the beginning but more at the end. No rivet hole filling but tedious detailing with setting solutions at the end.

**PAY-ME-NOW OPTION 1: FILLING IN KIT RIVETS WITH A LACQUER BASED FILLER**

**Basic tools you’ll need:**

1. Tamiya White Putty (or a similar lacquer based filler)
2. Lacquer thinner
3. Zinc White or Titanium White artist pigment
4. An old brush is for mixing
5. MicroBrush brand applicator.
6. A short bristle brush and cocktail stick sharpened to a chisel point

**STEP 1**

Put a small amount of Tamiya filler in a artist paint paellet or something similar.

**STEP 2**

With a dropper, add lacquer thinner and mix to a consistency similar to milk or thinner, it’s not that critical, just so it’s thin.

**STEP 3**

Add the artist pigment and mix until it becomes lumpy. Again, it’s not critical, just keep adding and mixing. Dryer is better than wetter.

**STEP 4**

Using a dropper, add lacquer thinner and mix back to a watery consistency.

**STEP 5**

Load your MicroBrush applicator until there is a ball of filler on the tip. Don’t be too concerned that it will drip, it won’t and more is better than less.

**STEP 6**

Apply the filler so that it appears opaque. The best results are obtained if the only thing touching the model is the drop of filler. When you feel the applicator touch the model, reload your brush. Dragging the applicator over the model will not deposit enough filler and if you have to add more it will pull up what you’ve already applied.

Wait a few minutes (This stuff dries very quickly) and look at the surface of the filler. If the surface of the filler is glossy, there is too much putty. Add more pigment and lacquer thinner. The surface of the filler should appear matt/flat.

Lacquer thinner dries quickly and the applicator will load up with dry filler and will have to be cleaned frequently. Twisting the applicator in a paper towel will clean the dry filler chunks off the applicator.

The filler will also thicken in the palette and will need more lacquer thinner frequently.

You can let the filler dry out in the palette or on your tools completely. Simply add lacquer thinner and mix until it becomes liquid again. Clean your tools with lacquer thinner.
WORKING WITH ARCHER RIVETS

STEP 7
After waiting only a few minutes wipe away the excess with a paper towel. If you have to rub hard your filler needs more pigment and lacquer thinner. If rubbing hard doesn't work, scrape the excess off with your fingernail or something similar that will not mar the surface of the model. If this happens add more pigment and lacquer thinner.

STEP 8
This is what to expect after wiping away the excess filler. Because lacquer thinner etches into styrene you will see some “ghosting” around the edge of where the filler was. This is easily removed with a FINE sanding stick or 3200 micro mesh.

STEP 9
Any excess in the panel lines or other details can be easily brushed away with your small, stiff brush or the cocktail stick. At this point you can assemble your model or proceed to Step 10, apply the rivet decals and assemble the model as mentioned on the last page.

STEP 10
Highlight the panel lines with a pencil to help guide the rivet application and then clear coat and apply the rivet decals. We highly recommend using Alclad Aqua Gloss for its durability and it’s very thin after curing. It doesn’t look like plastic with a gloss clear coat, it just looks like shiny plastic.

PAY-ME-NOW OPTION 2: FILLING KIT RIVETS WITH AN ACRYLIC BASED FILLER

To make the filler you'll need:
1: Future or gloss clear acrylic (not shown).
2: Any white artist pigment.
3: Isopropyl alcohol (IPA)
4: Water
5: An old brush for mixing and applying.
6: A cocktail stick sharpened to a chisel point

STEP 1
Mix 1 part Future (or acrylic) with two parts IPA and two parts water together and then add pigment until you have a mixture consistency similar to cream. Whether you use Future or acrylic makes little difference. There is no “formula” for the ratio, just be sure to check how easily the excess is removed after it dries and adjust your mix accordingly.

STEP 2
Using the same brush you for mixing, spread the mixture over the kit rivets with a scrubbing motion. If the mix beads up, add IPA. Do your best to avoid delicate details like piano hinges, etc. because this mixture is not as easy to remove as the lacquer based mix.

STEP 3
Begin cleaning the DRY filler off by rubbing with a paper towel. Removes what remains with MicroMesh 2400. Using your sharpened cocktail stick remove any filler from panel lines etc. Proceed to Step 10 on the previous page.

STEP 4
To highlight the panel lines with a pencil to help guide the rivet application and then clear coat and apply the rivet decals. We highly recommend using Alclad Aqua Gloss for its durability and it’s very thin after curing. It doesn’t look like plastic with a gloss clear coat, it just looks like shiny plastic.

PROS and CONS OF OPTION 1 and OPTION 2

OPTION 1 (LACQUER BASED FILLER)
PROS:
- Easy to remove any excess around delicate kit details.
- Easily cleaned from tools.
- Dry filler can be stored for use later by adding lacquer thinner.

CONS:
- Some modelers may be allergic to lacquer thinner.
- Lacquer thinner evaporates quickly and will have to be added frequently to the filler mix. It will also load up in your appiclator and mixing brush requiring frequent cleaning.

OPTION 2 (ACRYLIC BASED FILLER)
PROS:
- Uses no harsh solvents
- Same results as lacquer based filler
- Water clean up

CONS:
- Difficult to remove from fine kit details
- Dries slowly
- Unused filler cannot be re-used after it dries.

OUR RECOMMENDATION: Use Option 1 around delicate kit details and Option 2 elsewhere.
PAY-ME-LATER OPTION 3: NOT FILLING IN KIT RIVETS (NO LONGER RECOMMENDED)

The biggest misconception about Archer rivets is that the edge of the clear film will show after painting. Archer has been selling rivet decals to model railroaders since 1997 and we have never received a complaint of this nature. So no, the edge of the clear film will not show after painting.

Aircraft modelers using this option should be careful that the clear film does not snuggle into the kit rivets. To avoid this take care that the clear film completely covers the recessed kit rivets.

Begin by applying a wash made with thinned matt white enamel to highlight the kit rivets and panel lines before assembly. Learn from my mistake and do not use a dark wash shown because it makes it very difficult to distinguish between the wash and the Archer rivets during positioning.

When you’re finished assembly and are ready to rivet, apply a gloss coat over the model and apply the rivet decals using water only. Our testing has shown that this method results in a strong bond and the clear film will bridge over the kit rivet holes, a big advantage if you want to correct certain rivet placement errors on the kit without filling them.

Where the clear film bridges any panel lines, use a sharp hobby knife to slice through the clear film and carefully apply a coat of setting solution over the panel line until the clear film has settled into the panel line. Care should be taken not to get the setting solution into the kit rivet holes.

Inspect for any silvering along the edges of the clear and where one clear film overlaps another. This is tedious and time consuming.

Carefully apply setting solution to these areas until careful inspection reveals no spots of silvering.

Prime and paint.

PROS and CONS OF OPTION 3

PROS:
- No need to fill the kit rivets.

CONS:
- Extremely time consuming and tedious
- Decal adhesion is much less than Options 1 and 2 meaning that any masking could pull up the rivet decals.

IN CONCLUSION:
Considering how easy Options 1 and 2 are, we recommend against this method. Even though it does work and proves the edge of the clear film does not show, why bother?
WORKING WITH ARCHER RIVETS

TIPS FOR APPLYING ARCHER RIVETS

TOOLS YOU’LL NEED
Top to bottom:
Self clamping tweezers
A scale/ruler. The one shown here is included with any Archer purchase.
Sharp hobby knife
Ball of “blue tac” or equivalent to keep parts from moving around during application.
#6 synthetic flat artist brush

FOR OPTION 3: If the strip will be placed directly over a single row of kits rivets cut down the center between rows. When applying on the edge of a panel cut close on one side so the clear film does not hang over the edge.

FOR EITHER OPTION: Cut a full strip of rivets from the sheet. Measure the length you will need and using a sharp hobby knife slice through the clear film at that point. DO NOT cut all the way through.

Count two rivets beyond the slice and cut there. The length between the slice and the cut will act as a handle.

Using clamping tweezers, hold the strip by the “handle” and dip it in water for about 20 seconds. After about 20 more seconds remove moisture until you see the texture of the carrier paper. Excess moisture impedes application.

Roughly position, hold with a brush, slide the rivet decal off the end and hold while pulling the carrier paper away lengthwise.

Use the brush to fine tune into position.

APPLY BEFORE ASSEMBLY
It’s a lot easier to work with the rivet decals if you apply them to the kit parts before assembly. We have learned when using Option 1 and Option 2 (filling the kit rivets), gloss coat and use a setting solution the rivet decals bonds strongly enough to tape over them without pulling them off the model.

STARTING THE APPLICATION
Apply the longest runs of rivets first then fill in the short runs between them. Do not overlap. Start on the areas least likely to be seen until you get the hang of applying them.

Trim close to the rivets that go next to a panel line, otherwise the clear film will catch on the edge of the panel line making close adjustments difficult.

When applying long runs, sight down the row from the end to assure the run is straight. Use the #6 shader brush to gently correct any deviation.

When you start to apply the rivet decals and there is too much water on the underside of the paper there will be a tendency for the rivet decal to fold over onto the bottom of the paper. If this happens pull the rivet decal back over until the folded over portion is back on top. It’s nearly impossible to fix a folded strip of rivet decals after they are on the kit.

SETTING FLUIDS and GLOSS COAT
A gloss coat, and a prep and setting solution is ideal for maximum adhesion, however the use of a prep fluid like Micro Set can be problematic because it slightly softens the clear film and can make adjusting the position of the rivets tricky if you don’t work quickly.

However, you can add Micro Set after the rivets are applied but still wet. Use a small brush and apply drops along the edge of the clear film and it will go under the clear film. Ignore any wrinkling when doing this - once it dries the decal film will settle down.

Always follow with an application of Micro Sol (or equivalent) after the decals have dried.

MICROBRUSH® APPLICATOR
Use a MicroBrush® brand applicator. Generic brand brushes detach from the handle when using the lacquer based filler.

ADJUSTING THE RIVET DECALS
Always pull on the rivet decal lengthwise rather than trying to push it to avoid kinking it. A cocktail stick is a good tool for this.

Carefully follow the kit rivet lines to avoid making them look crooked. Even being off half a rivet diameter is too much. Be patient.