

# SCALE MATTERS: ARTICLE 6

**SOPWITH PUP 1/3 Scale  
Adding Scale Detail and painting techniques.**

**By John Armarego**

This 6<sup>th</sup> article featuring additional Sopwith Pup **covering and detailing techniques** using Acetate fabric and includes painting techniques for this covering material.



**Insert Photo 1 here**

**Some Acetate covered aircraft at the National Aeromodelling and Aviators' field (NAAS) in the NAAS valley in Canberra ACT.**

'Scale Matters' article 6, is a continuation of the previous article and explains the techniques I have developed to cover model aircraft in a scale and realistic way. This article also covers the techniques I use to paint the covering to produce a scale and authentic finish on your model aircraft, when the original aircraft was fabric covered. Again I have used my 1/3 scale Sopwith Pup as the example in this article. This aircraft was presented in my introductory article in a previous edition of *Airborne*.

## COVERING THE FUSELAGE

Covering the fuselage follows the same process as covering the wings as described in the last Scale Matters article 5. Place the covering over the structure that has had white wood glue applied to it, gently pull the

covering to reduce any slack in the covering. Once dried, trim the edges with a sharp scalpel blade and then apply the dope. Apply two to three coats of dope in the same way as previously described for the wings.



**Insert Photo 2**

Covering wrapped over glue



**Insert Photo 3**

Covering wrapped over glue and then pulled in all directions to reduce any slack in the fabric





Insert Photo 4  
Doping the fuselage

## FUSELAGE SIDE LACING.

On many WW1 aircraft, one side of the fuselage had the covering laced to the fuselage, this allow easy access for maintenance. The lacing can be simulated quite easily, however I decided to make my lacing fully functional so that I could gain easy access to the elevator servo and control cables if required. The elevator servo in my Sopwith Pup is mounted in the mid-section of the fuselage. The servo was located in this position so that the elevator control cables enter the fuselage in the correct scale positions without the complexity, and added the weight of an idler horn arrangement.



Insert Photo 5  
The elevator servo can be seen mounted in the mid-section of the fuselage.



Insert Photo 6



Insert Photo 7

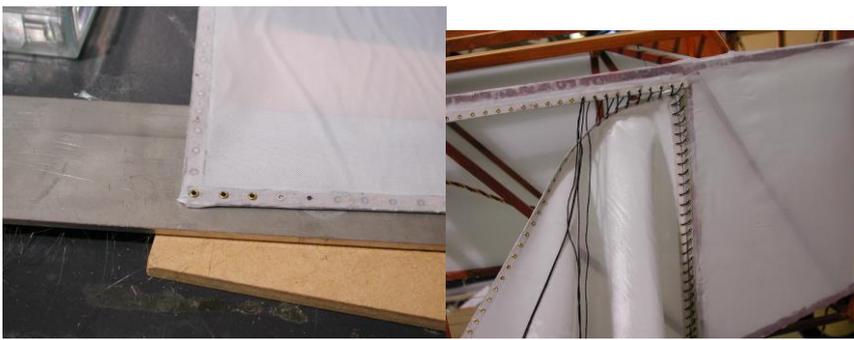
Acetate covered ply forming the frame for the fuselage side.

The technique I used was to cut strips of 0.3 mm ply. These strips were used to provide a frame to support the lacing. Holes of the correct size were made in the ply strips for the miniature eyelets (The holes in the ply strips can be drilled or laser-cut to the correct size). The Acetate fabric that has been cut to the correct size is then glued to the ply strips. The miniature eyelets are inserted and pressed into position. The Acetate fabric is then glued to the fuselage where required. Once dried, the lacing can then be performed using Presencia No:8 thread from Spotlight stores for the thread. The miniature eyelets can be purchased from <http://www.eyeletoutlet.com/tiny-eyelets.html> and are available in a range of different sizes and lengths, and are great for a range of scale applications. The eyelet setter and punch (7 Piece Eyelet Tool Kit Includes 3 whole bits 2mm, 3mm, 4mm, and included 3 setting bits) is also available from this website.



Insert Photo 8

Presencia No:8 thread from Spotlight stores.



Insert 9 , 9a

Miniature eyelets pressed into the ply strips.



Insert Photo 10

Completed lacing on the right hand side of the fuselage.



Insert Photo 11

Detail of lacing at the tail end of the fuselage

## **FUSELAGE SIDE LACING.**

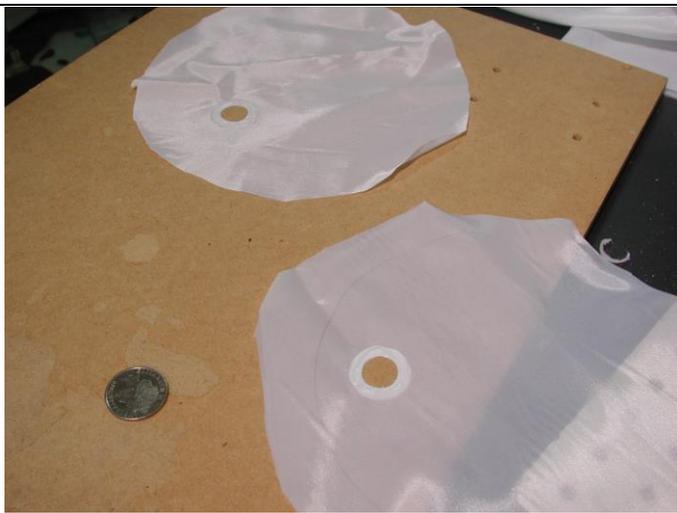
For this model I used DU-BRO Vintage wheels Cat number 933v, with 1/3 scale 9.33" diameter wheels and I added scale detail to generate quite an effective result. I first searched the web for images of WW1 aircraft wheels and then I set out to replicate the detail. I drilled a hole in the plastic wheel in the position of the air valve and then glued in place a miniature brass bolt and nut to simulate the air valve. Two steel rods with nuts glued to them were then glued to either side of the air valve to simulate the spokes.



**Insert Photo 12**

Air valve and spokes can be seen through the access hole.

Acetate cloth was then cut to form a disk just bigger than the wheel hubs. I marked out the position of the air valve and cut out the appropriate size access hole in the cloth. A disk was cut out of some more Acetate cloth to form the strengthening ring around the air valve access hole which was then fixed in place using dope.



**Insert Photo 13**

Acetate cut out to the correct diameter for the wheel hub. Note the strengthening ring added to the air valve access hole

I apply the acetate wheel cover to the rim using a small screwdriver by pulling the tyre a small distance from the rim, the acetate cloth is pushed onto the inside of the rim between the tyre. This is done the whole way around the rim.



**Insert Photo 14**

Acetate disk inserted under the tyre the whole way around the rim.



**Insert Photo 15**

Lettering painted onto the tyre.

I painted the labelling on the rim of the rubber tyres using a steady hand, fine brush and Tamia acrylic paint to replicate the original lettering.

The acetate cloth then had two coats of dope applied to it, before it was spray-painted using natural linen color.

I then generated the artwork for the PALMER tyre lettering using the Coral Draw computer program. Once I was happy with the size, font and fit of the artwork I printed the artwork on an A4 laser decal sheet. This generated water slide on sticker transfers that were ideal for this type of detail.



Insert Photo 16

Completed wheel. Note: the water slide-on PLAMER transfer.

## **PAINTING ACETATE COVERING.**

I use Dulux Weather shield self-priming low sheen acrylic paint to colour my acetate covered aircraft.

There are several reasons why I used this paint,

- Providing UV protection; the pigments are very dense which enables the paint to be thinned down considerably and still hold a solid colour. This helps to keep the weight down.
- Self-Priming
- It has Maxiflex stretch technology which gives a tough, flexible finish.
- Can be tinted to any colour you like.
- Water soluble so it is easy to wash up when finished.
- Is available in a range of different gloss levels.

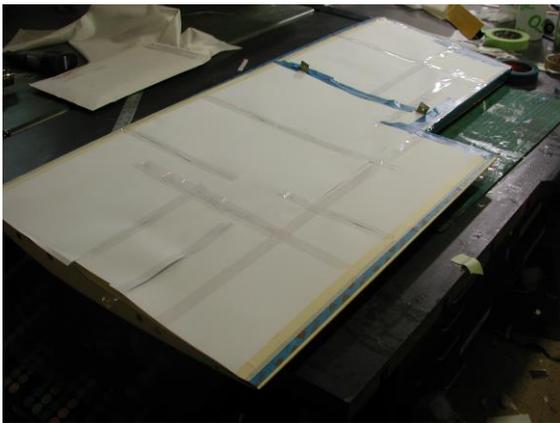
The main thing to remember when painting an aircraft is to put down *just enjoy* paint to get the colour even. The best way to ruin an aircraft is to add too much paint. I usually thin my paint down as far as possible, I prefer to put many light coats down that flow, than a heavy coat. With *thinned down* coats, you can get a good flow with most of the paint solvent material evaporating off. The trick when using laid down coats is not to get *runs*.

I spray paint my aircraft using an automotive touch up gun and run at about 30 psi pressure. I thin down the weather shield paint with about 15 % Floetrol. Floetrol is an acrylic paint conditioner and it makes water based paints flow and cover like oil paint. It allows the paint to flow more smoothly and generally with less pressure. I also add about 30-40% water along with the 15% Floetrol. This works well in the hot weather, but in cold weather I use 15-20% Tamiya X-20 thinners (N-Propanol and Butyl alcohol) instead of water. The thinners evaporates off much quicker, so they lets the paint flow onto the surface well and dry very quickly to prevent runs. I tend to mist the paint onto the surface rather than have a full flow on effect. One coat may constitute several passes along the piece. I allow the paint to semi-dry between coats and allow each coat to blends into the next. I usual apply up to three coats.

The best advice I can give is: these are all variables, the gun you use, the pressure you use, the humidity, the temperature, the viscosity of the paint, the cleanliness and texture of your surface, how far away you hold your gun, and how fast you move your gun. Many combinations of these will work just fine and many combinations will not work. Once your paint is mixed and your gun is loaded, always practice on several pieces of paper, I use A4 printer paper. Practice until you are very happy with the way the paint is flowing. If the paint is not flowing well, it will not get any better once you start spraying your precious parts, it usually gets worse. Learn to read and anticipate the variables and try considered courses of action until you can lay the paint down consistently well.



**Insert Photo 17,18**  
Covering wrapped over glue



**Insert Photo 19**  
Masking the wing between colours



**Insert Photo 20**  
Olive drab sprayed onto top surface of the wing, the gloss is due to the paint still being wet and not fully dried.



Insert Photo 21

Glad wrap being used to protect the cockpit from over spray as the top wing is sprayed.



Insert Photo 22

Dimension ratios for the roundels. 1:3:5

## SPRAYING ROUNDELS

I used the laser cutter to draw the templates for the roundels, they can also be cut out by hand using a compass and scissors. I use a range of pin-tapes which are available from automotive spray painting shops and are very easy to lay around corners and are low tack. The tape will not rip the paint off from underneath when removing it and will give you a nice line if removed correctly. I also use low-tack vinyl which comes on rolls. I use the template to mark out the roundels using a pencil and then followed the line with the pin-tape. For the smaller circles I draw the roundel using 'Roland studio cut software' and then cut them out on low-tack vinyl using a Roland Sticker cutter. Roland do a range of Desktop digital Cutters, SV-8, SV-12, SV-15. I purchased my Roland cutter over 20 years ago second hand and it is still going strong. Get your club to purchase one, or a bunch of your mates, as the cutter has many uses.

Note the Top wing roundel has an additional white ring. WW1 aircraft used the white outer ring when the roundel was on a dark camouflage background, the bottom wing lighter colour did not have the outer ring.

I use Tamiya acrylic Red no: X-7, Blue No:X-4, White No:X-2 Paints when spraying the roundels.

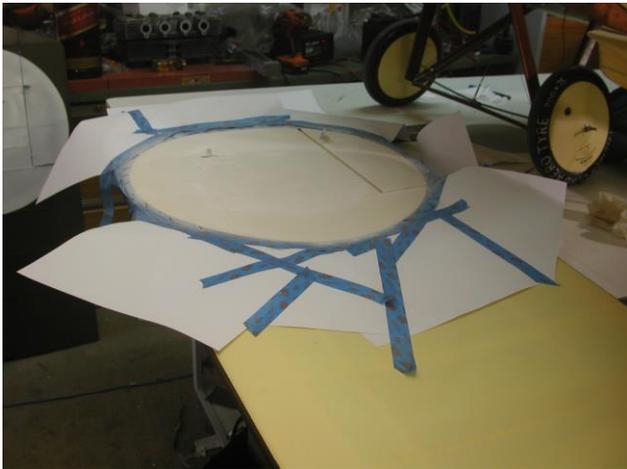
I spray the roundels using a small airbrush. I use the Tamiya paints because they never fails me, which is what you want at this stage because it creates a lot of work if you mess-up. In my air brush, I mix straight Tamia paint with approximately 50% Tamiya X-20 thinners. I spray the masked up roundels using a very

dry application of the paint, especially around the masked edges of the tape to reduce the chances of the paint bleeding under the tape. The dry application comes from using plenty of air and just a little feed of paint. This is easily achieved with a dual action airbrush, as the first coat dries, subsequent coats can be laid down thicker and this helps prevent the paint bleeding under the tape. Also be mindful not to direct the airbrush directly at the tape edge. It is important to remove the low-tack tape and or low-tack vinyl before the paint is dry if you want a nice edge. Be very careful to collect up the tape and vinyl as you remove it because if it sticks back down on wet paint it will create a terrible mess.



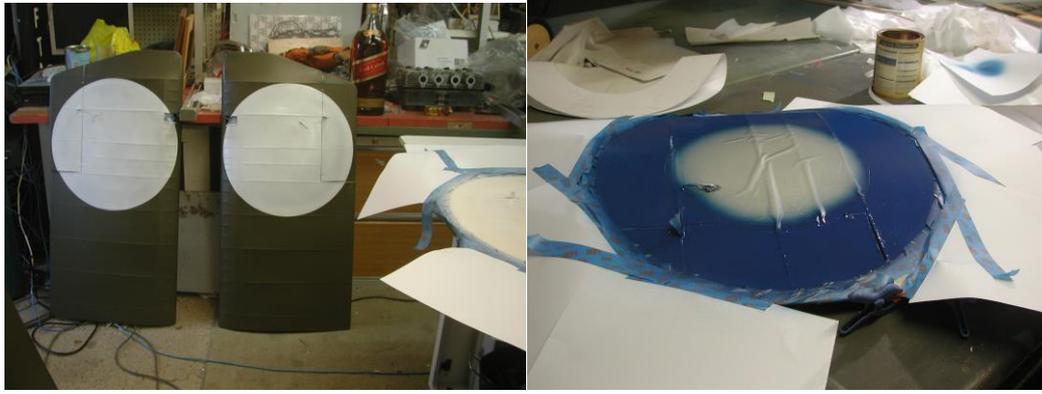
Insert Photo, 23

Laser cutting the roundel templates out of card paper.



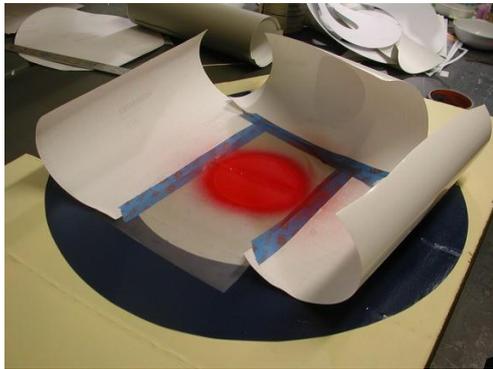
Insert Photo 24

Masking and spraying the white roundel section



**Insert Photo 25, 26**

Wings ready for blue roundel section to be added. Blue roundel just having been masked and sprayed



**Insert Photo 27**

Low-tack tape and centre red dot being applied.



**Insert Photo 28**

Finished top wing roundel with outer white ring



**Insert Photo 29.**

Final roundels after spraying process.

If you have specific questions about any of the Scale Matters articles you can email me [aeromodeller@outlook.com](mailto:aeromodeller@outlook.com) and I will do my best to answer any questions.

You may also find some interesting “build information” at [www.nitrodude.forumer.com](http://www.nitrodude.forumer.com)

The web site for the National Aeromodelling and Aviators’ Society (NAAS) can be found at [www.naas.org.au](http://www.naas.org.au). or on facebook. [www.facebook.com/naasact/](http://www.facebook.com/naasact/)

Until then, happy building and plenty of flying.

