

How to make a dummy prop for scale models

George Kandylakis, 2010

Coming close to finishing the model I am currently building, I had to make a dummy propeller for the static judging process.

The task sequence was documented in a series of photographs, which, together with this short test can serve as a short tutorial to anyone who might need/want try to do something similar.

A scale model always looks nicer with the corresponding dummy scale prop, compared to the normal flying propeller, during static judging or photographing.

As can be seen from the photographs, it is not something particularly difficult to do, as long as the proper steps are followed. The same technique can be used for any size of prop, the only changes being the type of wood chosen and the tools that will be needed, as well as the completion time.

For the specific model, at 1/20 scale I chose to use basswood. It is ideal because of its very fine and uniform grain as well as its carving ease.

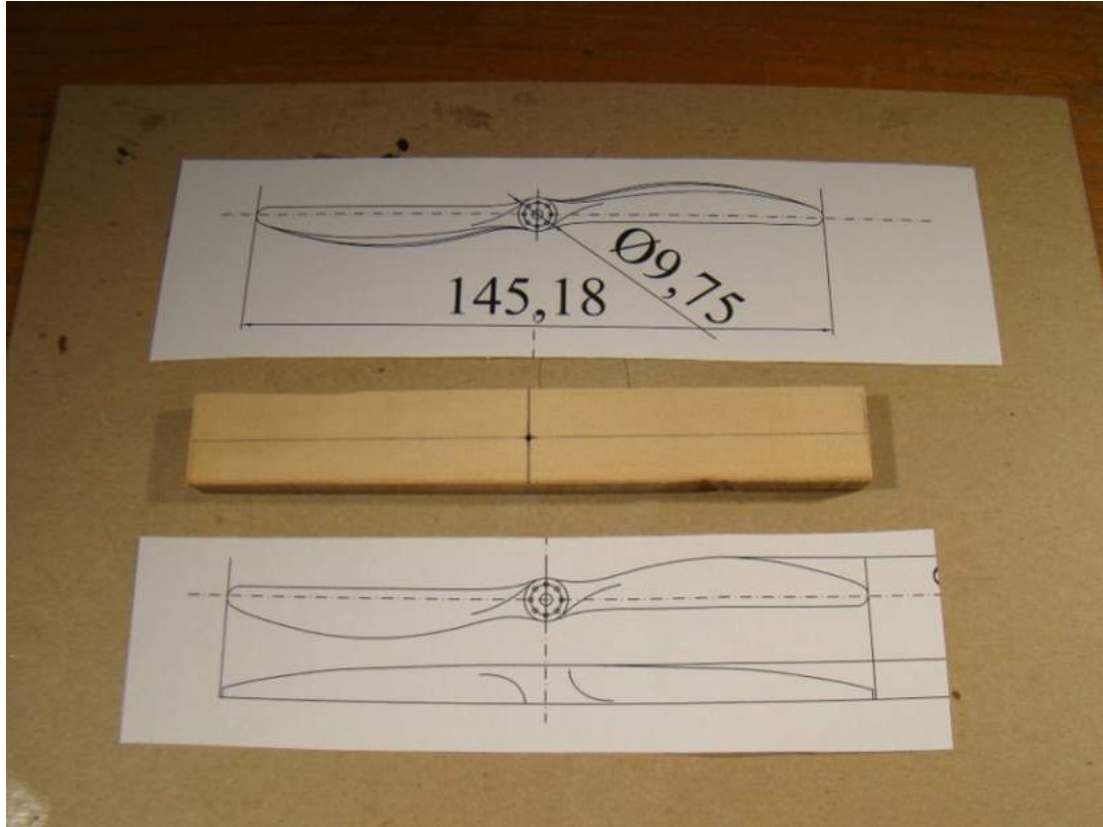
For smaller models such as peanuts, balsa can also be used. For larger models other wood types can also be used, as long as in the end the wood grain looks correct for the scale chosen, in the case of a wooden original propeller.

The same technique can be used for prototype aircraft with metal propellers, where of course the corresponding grain filling and painting is needed.

Instead of a block, it is also possible to laminate sheets of wood, of alternating type or colour, in order to arrive at a WW1 aircraft propeller look, which is most pleasing to see.

To start, we need a drawing of the front and side view of the propeller to make, which can be found with some research.

We also need a basswood block, slightly larger than the final dimensions.



A perpendicular hole is drilled at the center of the block and reference lines are drawn on the top and bottom, making sure all lines are properly perpendicular to each other.

These lines will serve as the reference to draw the outline to the block.

The first task is to draw the front outline to the top of the block. The side outline will have to wait until the front outline is done.

For absolute symmetry and accuracy it is advisable to use a plywood template for each side of the propeller, by rotating it 180 degrees.

We copy the outline to the bottom face as well, making sure it is correctly orientated, same projection as the top face (wonder how I know that?). This of course requires that the center hole is as perpendicular to the faces as possible.



After about 30 minutes and the use of simple hand tools (and sore hands) we have the rough cut of the outline. With normal machine tools this can take less than 5 minutes.

We do not have to go exactly to the line with the knife, there is the risk of cutting inside it.

Instead, it is quite easy to finish the outline with sandpapers fixed on wooden blocks



Basswood is somewhat hard, so this will also take about 10-15 minutes.

Having completed the front outline, it is time to move to the side outline.



Again we transfer the outline to both sides. This particular propeller, from a WW1 aeroplane is easier, since the bottom outline is a straight line. So, we only need to cut/shape the top side.

The material to remove is far less now, so this step proceeds much quicker



So, the main outlines of the propeller are done.

And next comes the actual carving process. And the hardest one, as it is based on eye, hand and experience. But it is not really that hard.

First we work on the rear blade sides which are mostly flat in cross-section. Following the front and rear outlines of each blade we remove material so that a triangular cross-section is created along the propeller length. First with a knife, then with sandpaper. As we get closer to the propeller hub, the cross-section changes slightly to blend to the hub cylindrical shape.



It helps a lot to have seen some real propellers in advance, live or in photographs, to have an idea about what we are trying to create.

We do not have to perfectly finish these sides yet. It can be done later when the front ones are completed too.