

## The Balsa Builder's Basic Toolbox

by Paul Kohlmann

I heard from *Model Aviation* Editor-in-Chief Jay Smith regarding some feedback he had received since redesigning this magazine. He explained that *Model Aviation* readers had been randomly polled each month to get their opinions on the magazine. Surprising to both Jay and me, an overwhelming response was that many readers wanted more building-related content. In fact, the October 2013 build-themed issue was frequently cited as the most popular in recent memory.

As our discussion continued, Jay offered me an opportunity to write a series of articles introducing basic building techniques. The target audience would be those readers contemplating their first balsa build, but we plan to provide enough content to make it interesting for more experienced builders, too.

This was music to my ears because I am a better builder than a flier. That's not to say that I have a Scale Masters trophy on my mantle—I don't. But I've built a

respectable number of kits throughout the years, from Guillows through my own creations.

Along the way, I have learned two things. The first is that when it comes to building, there is always more than one way to get the job done. With that in mind, I'll offer a range of ideas on the topics I take on but there will always be room for other solutions. I will also avoid rehashing subjects that were recently covered in *Model Aviation* by referring readers to past articles, now that the magazine is easily searchable online.

The second thing that I've learned is that like many builders, I am cheap. I get a thrill out of figuring out how to make do with tools at hand or household products from my local hardware store. After all, that's part of the fun of building from scratch!

So with these two points in mind, let's start by filling a basic toolbox that we will use to make our first balsa build a reality.

### Selecting a Building Board

Most wood-framed models are built by pinning parts to a flat board. In some cases, a fuselage is built on an upright jig, but even then the wing and tail are often built on a board. In a sense, the building board is the foundation of the workshop. As such, it should be large enough to fit the types of models that you intend to build on its surface.

It's almost impossible to build a warp-free structure on a warped board, so flatness is a must. The surface of a good board should be soft enough to allow you to stick pins into it to hold parts down. If you don't have a dedicated work area, it may also be good for it to be easily transportable.

Building boards made from softwood or balsa can be purchased from Great Planes and other vendors, but to get started, many builders begin with an acoustic ceiling tile from a hardware

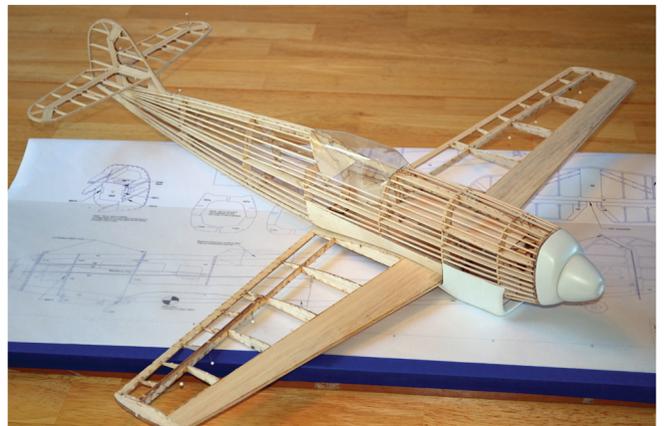
store. These are inexpensive, flat, and commonly found in lengths of up to 48 inches. The size can easily be adjusted by joining or trimming the tiles.

In my case, I picked up a flat particle board shelf from the lumberyard and covered it with a sheet of 1/4-inch-thick cork using 3M spray adhesive. A quick pass with a sanding bar between projects has kept it going strong for many years.

A more advanced strategy is to use

a magnetic building board. A common construction technique is to cover a workbench or wooden board with a steel panel. This enables strong magnets

The author designed and built this Messerschmitt Bf 109. The short kits are available in 30-inch and 45-inch wingspans at Manzano Laser Works.





# Toolbox basics

## Building board

### Balsa

- Flat, soft, lightweight
- Available from Great Planes

### Acoustic ceiling tile

- Flat, soft, lightweight, inexpensive
- Available at The Home Depot or scavenge them

### Shelf/cork covering

- Flat, soft, lightweight, inexpensive
- Available at The Home Depot or McMaster-Carr



## Pins

### T-pins

- Available from Great Planes, Tower Hobbies, Micro-Mark

### Pushpins

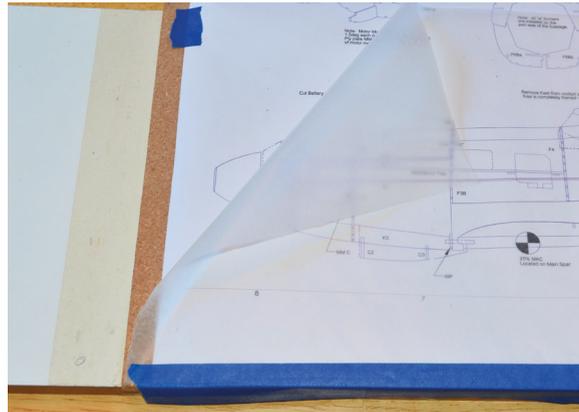
- Barrelhead
- Available from Tower Hobbies

### Dressmaker pins

- Fine wire, long
- Available at fabric and craft stores

to square up and hold down parts instead of pins. A thorough explanation was provided by Mark Freeland in the “Top Five Building Tips” article in the October 2014 issue of *Model Aviation*. These systems cost slightly more to set up, but the ability to create fixtures and jigs is a significant advantage.

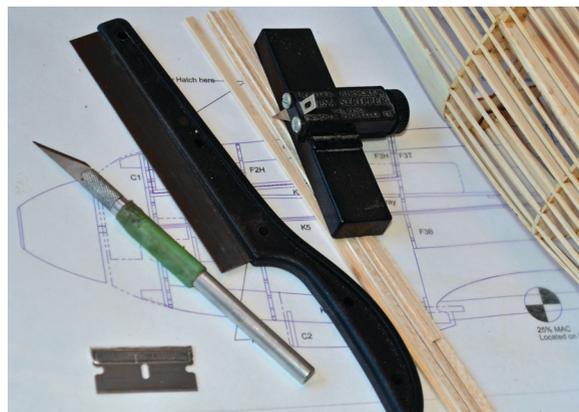
After you have selected your board, it is time to mount the plans. It may be necessary to fold them to fit onto the board. Tape the plans down with low-tack tape and then cover it with waxed or parchment paper to keep it clean. The waxed paper also allows parts to easily be removed after gluing.



The author’s board is a shelf covered with a sheet of 1/4-inch cork. When the plans are in place, they are covered with waxed paper to protect them.



Some of the uses for pins include holding parts to the board (crossed T-pins and trailing edges) and sticking parts to other parts (wingtips). Squares keep parts true.



Cutting tools include single-edge blades, a #11 X-Acto knife, a razor saw, and a balsa stripper. A triangular sleeve to keep the knife from rolling is a must!

This is a good time for reflection. I like to pause over the clean plans to think through my goals for the project and to plan its path.

## Tools of the Trade

Parts are typically held in position with pins while the glue cures. T-pins are often used because they are easy to handle. Tower Hobbies offers barrelhead pushpins that are thinner than T-pins. My preference is dressmaker sewing pins because of their availability and fine wire size. I go through many pins because I discard them after they are contaminated by glue.

Clamps are used for joining assemblies such as wing panels. Light structures require light clamping forces, and cheap clamps are perfect for this application. Clothespins work well, particularly if they are modified as shown. Small, plastic spring clamps are also handy.

In my shop there are three cutting tools that I can't do without: a #11 X-Acto blade, a box of single-edge razor blades, and a razor saw. Like the pins, the X-Acto knife blades and razor blades are frequently replaced. A simple balsa stripper is also worth the minimal investment.

Sanding is as important as cutting. I use 60-grit sandpaper for rough shaping and sizing, 150-grit for fitting parts, and 220-grit for finish sanding structures and sheeting. Sanding bars are used for finish sanding and to keep parts square.

A small square ensures that wing ribs and fuselage formers are properly positioned. I use several steel machinist's blocks as squares or to weigh down parts. In the odds-and-ends category, a pin vise, an assortment of small bits, and a collection of small, shaped files are invaluable.

Adhesives deserve an article of their own, and fortunately, Terry Dunn wrote an excellent piece on the subject, which can be found in the October 2013 issue of *Model Aviation*.

### Wrapping It Up

If I were to find myself marooned on a balsa tree-studded island, I would consider myself well prepared to pass the time with this toolbox. Of course, builders accumulate many more tools as they go along, but this will give a new builder a solid start. This information has been condensed into sidebars for your convenience.

Until next time! 🛩️

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#### SOURCES:

Tower Hobbies  
(800) 637-6050  
www.towerhobbies.com

McMaster-Carr  
(330) 342-6100  
www.mcmaster.com

Micro-Mark  
(800) 225-1066  
www.micromark.com

Great Planes  
(800) 637-7660  
www.greatplanes.com

Manzano Laser Works  
(505) 286-2640  
www.manzanolaser.com



## Cutting

### X-Acto knife

- #11 blade
- Available from Micro-Mark, Tower Hobbies

### Razor blades

- Single-edge, inexpensive
- Available at The Home Depot

### Razor Saw

- Available from Micro-Mark, Tower Hobbies

### Balsa stripper

- Available from Micro-Mark, Tower Hobbies



Sanding supplies include 60-, 150-, and 220-grit sandpapers. The short bar on top is fitted with 60-grit sandpaper, while the longer one below has 150-grit sandpaper.



A collection of jeweler's files, clamps, and a pin vise with bits rounds out the basic balsa builder's toolbox. Note that the clothespin's spring has been reversed.



## Sanding

### Paper

- 60, 150, and 220 grit

### Bars

- 6 inches and 12 inches
- Available from Micro-Mark, Tower Hobbies



## Odds and ends Clamps, files, pin vice, bits

- Available from Micro-Mark