



# HOBBY-SIZED POWER TOOLS

## Get these Tools to make your Modeling More FUN!

BY: **Mike MacFarland**

There's something amazing and wonderful about building scale airplanes with your hands. The wonder begins with unrolling a new set of plans on a freshly cleaned workbench. If you're like me, you take awhile to study not only the detail of the lines that grace the page, but also marvel at how much table area you actually have for building when there aren't bits and tools strewn about. The clean shop is but a novelty to enjoy for a fleeting moment as the first sticks are attached over the plan. As time and care are invested into the project, the lines of paper and ink are transformed into wood and fiber. A two-dimensional airplane plan ultimately becomes a three-dimensional object, which exists now only because your

hands created it. To think that a small stack of lightweight woods became a stunning airplane, which travels hundreds of feet into the air at many miles per hour in speed and returns safely home unscathed is nothing short of amazing. Is there any wonder why we love our hobby of building scale remote-control (RC) airplanes?

If you've been following the column this year, a few months back we looked at the tools that every workshop should contain. Today we will look at some of the optional tools that are available to those with hobby budgets which stretches to accommodate their purchase. In my opinion, some of the ones that we are looking at today are right on the borderline of optional and mandatory, since



they make building much more efficient and enjoyable. With that said, my grandfather has built thousands of model airplanes over 77 years without any of these tools—and within a very modest budget. So, I will leave it up to you to decide which tools you think would benefit your projects while leaving enough money in your budget to complete them. Please also take note that I am not trying to endorse a particular brand or model of these tools, but rather to discuss my experiences with my own purchases and what has worked for me. So, let's all raise our heads and do our best "Tim the tool-man" grunts as we check out some cool "man-toys".

The hardest working power tool in my shop, hands down, is my 10 in. variable speed disc sander.

The Aeronca Champ plan calls for a short piece of 3/16 x 3/8 in. spruce as a rear strut reinforcement. A table saw can do the job well, and the process begins with marking the location of the dado and the length of the piece.

Using a T-square, the marks are extended across the face of the piece, and the material to be removed is marked with an "x".

The piece is now marked and ready to be transferred to the table saw.

With the saw turned off, locate your marked piece on the far side of the blade, and sight down across the top of the blade while adjusting the cut depth to the marks you made. Using the miter fence, turn on the saw and make slow careful passes to remove the material.

is very quiet, and the automatic operation of the system keeps the amount of dust in my workroom to a minimum. The sander also comes standard with an adjustable table, as well as a sliding miter gauge and you will use both regularly. I've found, over years of using mine, that the 120-grit sandpaper discs work best since they are fine enough to sand smooth, yet coarse enough to remove material quickly. The discs are self adhesive and they are easily removed and replaced, with minimal effort, as they wear out.

Since this sander will receive almost constant use as you

build, I recommend locating it adjacent to your work surface. My standard technique is to mark my pieces to length and angle with a mechanical pencil or razor blade, then cut them slightly past the mark with a blade or razor saw. A quick touch of the spinning disc, with the help of the miter fence, removes the material to the line and the part will mate accurately as a result. When a part needs further adjustment, a tap or two to the foot pedal, with the part resting against a stationary disc, will "pulse" the disc and remove just that slight bit that is hindering joint perfection.

The rotary tool that needs no introduction is the venerable Dremel® tool. I'm fortunate to have two that are rechargeable and battery powered and I prefer and use these more than my older, flexible-shaft "corded" model. The straight, "standard" Dremel® sits upright on its battery base and offers more power than the smaller, "pistol grip" model, which fits more comfortably in my hand. A convenience difference between the two, the pistol grip one stores and charges in its cradle, which is better than the other that requires removing the battery for charging. As far as the attachments go, the ones



Here you can see that all of the material has been removed from the notch using back and forth motions. Note that the protective guard has been removed from this saw to show the cutting process clearly.



The next step is to cut the piece to length. This is easily done by setting the saw blade slightly higher than the thickness of the material being cut and passing it through on the proper side of the line. TIP: Always leave your line!



▲ The finished dado slot receives the modified nylon hinge and the hinge sits flush with the surface of the piece.

▲ The rear strut support has been glued against a wing rib with just the tip of the modified hinge showing through the slot. It will be glued into place permanently after covering.



▲ This is my well-used, 10 in. Micro Mark variable speed disc sander. On the left side is the bevel adjustment for both positive and negative fence angles, and the sliding miter fence sits in a slot on the table top.



▲ The variable speed disc sander is one of the handiest tools in my workshop because of this foot pedal. By plugging in line with the 120V power cord of the sander, a slight press controls the sander for quick adjustments to sticks and parts.



▲ The variable-speed table mini-table saw from Micro-Mark® is at home on my metal work top. The knob on the front left controls the speed of the blade and the other knob, to the right, adjusts the blade height. A larger knob, behind the height knob, adjusts the blade angle.



▲ This is a close-up of the upgraded T-square table saw fence with the Vernier scale. By loosening the brass knob on the top of the fence, the user can make adjustments of .005 inches by the graduated lines, and approximate close to .001 inch changes by reading between the lines.

that get the most use are the sanding drum, cut-off wheel, and adjustable drill mandrel. I like to keep different attachments in each so I don't have to change the attachments as often. The sanding drums come in two sizes, and I tend to use the larger drum most. Hollowing out balsa blocks, making and enlarging holes in balsa, plywood, plastic and fiberglass, and smoothing ends of wire and metals are the typical ways I use the sanding attachment. Last year, I upgraded the cut-off wheels to the new, more durable type, the discs that can be attached to the mandrel without a screwdriver. These fiber-reinforced discs buzz

through the music wire and bits of brass that I feed them, and I love the convenience of the quick-change attachment. And as far as drilling holes that are less than 1/8-in. diameter, my smaller Dremel® does a precise job without the crushing weight and bulk of a cordless drill. One of the tools that I only recently added to my workspace is a miniature table saw. The one I bought is a MicroLux tilting arbor saw from the Micro-Mark® tool company. I'll warn you up front that this is an expensive saw, but I haven't found anything else that is as nice as this tool for less money. Its small size (10 x 12-in. footprint) makes it a perfect

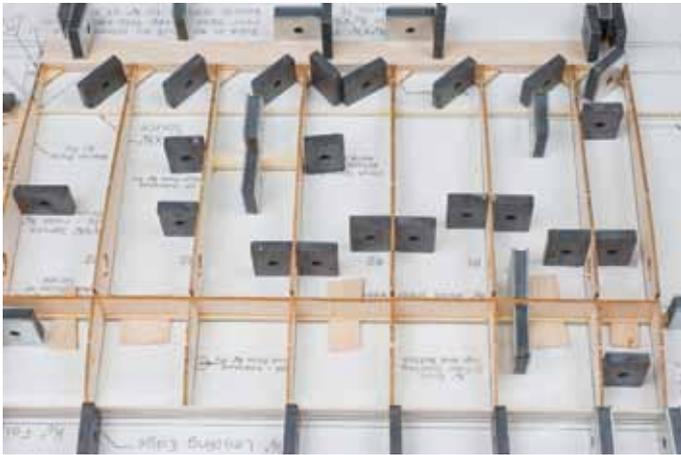
addition to my building table, and strong magnets at each corner fix it firmly where I want. The motor is variable speed controlled, spinning the 3-1/4-in. fine tooth blade through wood and plastic with precision. The included steel blade has a nice, thin kerf, and I now use mine to rip balsa sticks and sheets to width instead of the balsa stripper method. I've also run Spruce sticks up to 3/8-in. thick through this blade with good results, and just a touch from a sanding block removes the fine blade marks on the cut edge. If you decide to buy this table saw, an upgrade that you will want to make right away is to the fence. The one that comes with the saw

is pretty crude and I don't think it really belongs with a saw like this one, which is marketed for its precision. Instead, I think they should include the sixty dollar fence that I bought to replace it, which is the "Accuriser II" adjustable fence. This fence has a nice, self-aligning "T-square" design that you adjust to your saw when you set it up the first time. The really cool part about this fence is the sliding Vernier scale with graduations at .005 inches. I've found that I set up the cut using a 6-in. machinist rule, then run a scrap piece through it and measure the test piece with simple calipers. The difference between the actual dimension and desired one is easily adjusted by loosening the brass knob on the top of the scale and moving the sliding scale the proper amount. The material is then ripped to width and the result is a quickly produced, and very accurate, piece of stock. Plan on buying this fence along with

your table saw purchase in order to get the most enjoyment out of the saw. A "budget friendly" suggestion—sign up, online, for their electronic mail newsletter to be notified of future sales and product specials. Another use for the table saw, often overlooked initially, is using it as a cut-off saw. By removing the adjustable fence and installing the sliding miter

▲ These two Dremel® workhorses get constant workouts during building projects. The one on the left is the newer, pistol grip model, which has a cut-off wheel chucked into its adjustable mandrel. The one on the right offers more power and is better suited to jobs requiring a bit more power such as sanding with the larger drum (mounted).





A close-up view, these magnets secure each part into place on this Aeronca Champ wing as the glue dries. The main wing spar is an "I-beam shear web" type with 1/8 in. square spruce strips on bottom, 1/16 in. balsa webs, and a (soon to be glued in) 1/8 in. spruce top strip.

Here is an almost finished framework on the 60 in. wingspan Aeronca 7AC Champ, and I'm now working on many of the scale detailing parts of the framework. In addition to that, I'm designing some scale floats to make it into a floatplane for summer water fun.

fence, the table saw becomes a versatile cut-off saw. Balsa and hardwood pieces and sticks of various sizes can be cut to length, to a miter angle, and/or to a beveled angle by using the miter fence. Another very helpful use of the table saw, which many may not realize, is the dado, the cutting of notches into the surface of pieces. While working on my Aeronca Champ project this month, I needed a short piece of hardwood to be cut and notched for a modified, flat nylon hinge to become a scale strut attachment point on the wing. Using the included miter fence and with the blade set to project just slightly above the table base, the notches were cut by making multiple passes over the notch sections, removing the material easily and accurately. The blade was then raised about 1/16 in. thicker than the stock, and the piece was cut to length. The result was four hardwood strut reinforcements that only took about five minutes to make.

As we close the column this month, I would again like to reiterate that the three power tools we explored this month won't fit into everyone's budget

or needs. If you are only building small models and/or are just getting started in the hobby, keep your hobby expense down, like my grandfather does, by using just the simple hand tools. As your model sizes and budgets stretch, like mine has over the course of building for years, you can add one or all of these great tools to your shop.

In closing, I received a very helpful note from a reader, Dave Dahlke, who commented about the May 2009 column on using magnetic building fixtures. Dave wrote, "I read where you were concerned about rust on the flat steel building board and that you recommended the use of automobile wax to stop the rust. Auto waxes and most polishes contain silicone, which if bare wood comes in contact with will interfere with gluing and finishing. Those of us who are into woodworking have the same rust problem without cast iron parts to our saws, jointers, etc. The use of the old fashion Johnson and Johnson Paste Floor Wax (in the yellow and red can) is widely used to prevent rust and it contains no silicone. It does not interfere with glue-ups and doesn't affect finishing. It has a ton of uses

around the shop, last forever and is cheap."

Thanks, Dave, for sharing your experience with us, and I plan on coating my table between plan changes! If you, like Dave, have some wisdom to share with us, I hope you'll take a moment to contact me through the magazine editor, Wil Byers (wil@rc-sf.com). Until next time, I look forward to seeing you on the Scale Scene! 

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