

# Your Own Owner's Manual

*Are you recording project accomplishments in a logical fashion for future reference?*

*Your latest project has been completed, and all the planning, painting, and soldering were well worth it. The newest addition to your Homebrew Ham Shack takes its place for all to see. I can see you beaming with pride, even from over here!*

**B**ut, you know what? You aren't finished with the project — not just yet!

When was the last time, when purchasing anything of an equipment nature, you weren't given a pamphlet explaining all about the "widget" just purchased? I'll bet you've gotten an "Owners Manual" with just about everything of value for as long as you can remember. They do come in handy from time to time, like when you need replacement parts and such.

So why not create one for your latest endeavor! No, I don't expect that you would rival Homer's *Iliad*, but a binder containing the important documents, etc., from which the project evolved is a valuable asset.

Let me explain how I preserve the items relating to my endeavors, and what the benefits are from doing this.

When considering a project for construction, I gather the necessary schematics and written articles at my desk. I then photocopy the schematic, ENLARGED, for my use during construction and place the original in a three-ring binder for safekeeping. The written article joins the schematic also at this time. There's a pocket on the

inside cover of the three-ring binder for holding the magazine presently being utilized.

My reasons for doing this are:

1. I am going to "misplace" the schematic and will have to make a second copy to continue building. This is the unwritten #1 law of building at my bench.

2. Drawings of electronic circuits develop a "charge" from the positive and negative circuits on the page, thereby attracting coffee, soda, and other beverages, covering the circuits and rendering the page useless. This is a little known fact of schematicology, but requires yet another copy of the original to be created.

3. The art of using red pencil to identify connections completed and components installed sometimes renders the schematic illegible. Yet another copy would prove to be a bonus.

4. Magazines are shy creatures, evading the sharpest of eyes when being hunted. Better to confine the desired edition before it decides to hide amongst the sofa cushions. This is also a healthy approach to homebrewing, in that it (a) keeps your blood pressure down, inasmuch as you know that the

original is right where you left it and, (b) allows you to refrain from shouting, "Where's my copy of 73?" all the time, thereby avoiding a sore throat, etc.

So now the project has been decided upon and is underway. Parts are either gathered from supplies you already have, or are placed on order.

Place a copy of the order document in the binder also. I have often thought that I ordered a specific part, when in fact I hadn't. Keeping a copy of the "shopping list" enables you to know exactly what you requested, how many, how much, and when it should arrive. Six months from now, I doubt you will remember accurately all of the facts surrounding the purchase.

I sense that you disagree with me, and that your memory is unequalled! OK, to disagree is good — but I can prove my point of view!

Answer the following question, please:

What is the part number and catalog number, cost, and page number from the catalog, of the last electronic part you purchased by mail? From which company? What is their toll-free ordering number?

Can't remember, huh?! Guess a copy of the order would be a good thing to put in the folder should you need parts later on. It saves a lot of time not having to do the research all over again.

As the project progresses, you'll find that changes to the parts are sometimes necessary, either to accommodate a different frequency range, to include another added circuit, etc. Include a page in the binder for "as built" notes. The changes entered, along with any needed formula data, can prove invaluable for future reference. Difficulties encountered and the remedy are useful.

On one page I always describe the finish used on the cabinet and/or chassis. Sounds somewhat trite, but I have found it to be one of the most beneficial items in the folder. The reasons for this are because of the variations between manufacturers and types of primer and paint used, and their names and colors. There can also be a huge difference, depending on which manufacturer you use, between the types of clear spray used to protectively coat the finished panel and its lettering. Not all paints from one manufacturer will accept the clear protective coating of another. The products can interact, making a perfect front panel into a metal plate covered with a soggy, sticky mess. Then you not only get to clean the mess, but you get to repaint and letter the panel again. By logging the primer and color, I can match the color scheme *exactly* when I decide to build the matching power supply and speaker at some later date. Black from the XYZ company isn't exactly like black from the ABC company.

Now your project is complete! You can add any information you desire to Your Own Owner's Manual.

Something nice I've seen are pictures taken during the construction phase. Digital cameras are very useful for this. The pictures can be printed on regular paper and stored in the binder as a "historical document." Visitors to the shack will undoubtedly be impressed by your finished work, and the Owner's Manual allows them to appreciate your efforts during construction.

WARNING! This manual does have the capability of becoming reproductive.

One project leads to another, and to another, etc., etc. Plan for future endeavors by leaving enough room in the binder for the next construction item. Dividing the binder into sections, e.g., Receivers, Transceivers, Transmitters, Power Supplies, as your building adventures continue, is a good idea. The binder becomes a history of your building efforts.

Once again, congratulations on your accomplishment! 73

## Weather Sat Tracking is Awesome!

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NASA engineers settling some technical point over a cup of coffee.

On the downside however, a number of parents, for some reason, just don't seem to "get it." I believe that perhaps too many of today's activities — such as this project — are just put in a mental overload garbage pile with all the Internet, computer games, and other things of mystery, with no actual effort to try to understand. The concept that there is no "magical" Internet connection and an antenna pointing at the sky seem to be meaningless. A demo was put on at one school open day with only minor interest from the visiting parents, although the roaming kids wouldn't stay away. One parent was even worried that we wouldn't be able to see the satellite through the overcast! There must be a message there somewhere.

All in all, it has been a wonderful experience for me. I started out not knowing what would be possible with the first group of Year 6 students around 11 or 12 years old, but the last group was the youngest yet, a combined class of Year 3/4 at 8 or 9 years old. The photos are of this younger group and are from Glenorie Public School here north of Sydney.

Although this project was not directly linked to amateur radio, there were plenty of opportunities to explain the hobby. I usually have a handheld with me, and after answering the usual question, "What kind of CB is that?", the door is open to talk about why amateur radio is different. I guarantee that any amateur will find volunteer

technical projects such as this a lot more satisfying than any paid job. Primary school students need ham volunteers with their practical, hands-on way of making high-tech things happen. My very first class will be of university age next year. I wonder if our earlier projects will have any impact on their future ... 73

## Direct-Mount "J" Antenna for 440 MHz HTs

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rotating collar, and you probably will need to cement the two together. E-6000 clear adhesive works fine. This antenna is not difficult to build, but it does require care and neatness in construction. To duplicate the antenna, just be sure you do in fact do a duplicate and don't deviate. For example, on the coax assembly, don't substitute a different kind or type of coax or alter the specified dimensions.

In doing your final trimming, you will find that the length of the matching section has a greater effect on the resonant frequency of the system than does the length of the radiating element. Plug a small UHF SWR meter (such as Radio Shack #940-0866) directly into the transceiver antenna socket. Plug the antenna PL-259 into the SWR meter without any intervening coax, and use the fewest adapters possible. Obviously, the antenna should be inside the PVC housing while making SWR meter readings.

I have built more than a dozen of these antennas, and an SWR of 1.2:1 or less across the voice-repeater band from 442 to 450 MHz is typical. Outside the band the SWR rises rather rapidly, reaching 1.5:1 at about 439 MHz and 453 MHz. 73

## LOPs to Think About

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that provided great satisfaction upon completion. After completing this project I was thinking how it might be of use to the computer hams of today.

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