

## **Beginners' Corner**

*by Walt Wilson*

Frequently people want to get started flying radio-controlled aircraft, but don't know what equipment to get. Hopefully, this column will help answer some of their questions. There are literally hundreds of toy-like electric powered aircraft on the market. Generally they're called park flyers. In our area the City of St. Charles, Missouri has a law prohibiting the operation of radio-controlled vehicles in public parks. In the hands of an experienced pilot, most will fly as advertised, but they frequently differ in control functions from larger, gas-powered aircraft. Because of their small size, light weight and low power, generally, they're less stable and harder to fly than larger aircraft. Frequently, smaller planes may be skittish and require more advanced flying skills than larger ones, even when gas-powered. Bigger is better!

The most popular size training aircraft have wingspans between five and seven feet. Most use engines in the .40 to .50 cubic inch displacement range. You have to decide whether you want to build your planes or just buy something and go fly. There are several Ready To Fly (RTF) kits available. One with which I'm familiar is the [Hobbico NexStar](#). Links to items are provided for the beginner to see what we are talking about. It's well-built and comes with all the "good stuff"; an [O.S. 46 Engine](#), a Futaba 4YBF radio, and an Active Flight Stabilization unit. All are quality products and will perform well. You'll still need a starter, starting battery, fuel, a glow plug igniter, and basic hand tools. Never try to fly your first RC plane without assistance from an experienced instructor. If you do, your first flight will be brief, and possibly the only one with that plane! You'll need a capable flight instructor to check the plane over, before flight, and assist you with learning to fly it. Contact [Bob Gizzie or one of the other Spirits' instructors](#), listed on our web site. If you have limited building skills, but want to put your own plane together, there are dozens of Almost Ready to Fly (ARF) trainers available. They aren't really almost ready to fly, just mostly pre-built and covered, and can be completed with only modest building skills. A good example of an ARF is the Sig Kadet LT-40 ARF. It's well-built, tough, affordable, and much of the required hardware is included in the kit. The wing halves must be joined together and the tail surfaces installed. The control surfaces have to be installed, as well as the fuel tank, landing gear, engine (not included), and radio components (also not included) with all linkages. The Sig Senior Kadet ARF is a fine airplane, too, but more fragile and expensive. The line of engines are fine engines for most types of radio-control flying and will be useful for many

projects beyond training. If funds are limited, a [Super Tigre GS-40](#) is also a great engine. There are many other good engines available, but any without ball bearings on the crankshaft should be avoided.

There are probably more Futaba radios used by the Spirits than any other brand. I would recommend a Futaba 6EX as a first radio. It's a six-channel computer-programmed radio (don't let that scare you) with dual rates, servo reversing, adjustable servo throws, and it can keep adjustments for up to six aircraft in memory. The six channels will serve you in the future when you may want to fly planes with retracts and/or flaps or other functions. [Other Futaba radios](#) are also available. There are other fine radios, such as [JR](#), [Hitec](#), and [Airtronics](#) (at various prices, depending upon what you want), some of which may be preferred by advanced flyers.

Most, not all, hobby shops will match Tower Hobbies prices. When your order directly from Tower Hobbies you have to pay shipping costs, so it comes out about the same as buying locally from your hobby dealer. If you're interested in building your first R/C plane yourself, there are kits available, too. While scale and aerobatic models are very attractive, your first airplane, whether you build it yourself or use a RTF, should always be a trainer. Build-It-Yourself (BIY) kits are available for the [Sig Kadet LT-40](#) and Sig Senior Kadet as well as any other types. Most quality kits have die-cut or sawn parts, speeding construction. There is a great deal of satisfaction to be derived from building a plane from a pile of lumber and flying it.

In the Beginners' Corner we discuss various recommended products. We know they're good from personal experience. There are other planes, engines, radios and ground support equipment that will do the job, in addition to the ones mentioned. The brands recommended there are simply the ones we consider to be the best. Again, engines without ball bearings on the crankshaft should be avoided! They are usually the bottom of the line and frequently do not have features that make good performing, durable engines. The important thing in an airplane for a beginner is to get a high-wing trainer with tricycle landing gear. Tail-draggers are more difficult for the trainee to control while taking off. Low-wing planes generally require more pilot input to fly steadily and are less forgiving of pilot error than those with high wings. Now that you've picked out your plane, engine, radio, and the necessary parts to make it complete, you need to think about ground support equipment.

Glass fiber reinforced plastic or glass fiber reinforced nylon propellers are

the current state of the art, so we'll assume you've selected one for your plane. You'll note that the edges are quite sharp. Model airplane engines can frequently be started by hand, by flipping the prop, but that's not recommended. The edges of the prop are sharp and, even with gloves; a difficult engine can do a lot of damage to your fingers. For the preservation of your hands, I suggest you get an electric starter. It'll save some grief, too, if you ever have trouble getting your engine started. Starters are available with self-contained batteries, if that's your choice. Most modelers choose one with cables and a separate 12-volt battery, which can be used for other purposes, too, like driving an electric fuel pump and/or power panel. A power panel can be used to light up your glow plug, too, but really isn't necessary. Self-contained glow plug igniters are available and preferred by many flyers.

I recommend you get a flying box to transport all your equipment and make flying more convenient. You can build your own, or kits are available starting at about \$20. The sky's the limit for pre-built boxes, which sometimes include part of the ground support equipment you'll need.

The following by Ralph Amelung is well thought-out and all his recommendations are good.

### **Ground Support Equipment**

**Fuel:** Consult your owner's manual for the best fuel for your engine. [Cool Power 10%](#) is a popular fuel. Also, review your manual for the proper "run-in" procedure. Your fuel jug will need "fittings" to extract the contents and fill the fuel tank in your plane. A [Dubro "Fillin Station" #908](#) is one choice and contains a hand-crank pump, plus fittings. Other crank pumps are available separately such as a [Hobbico HCAP3015](#). The fittings sold separately are [Dubro 807](#). Electric fuel pumps are also available. Fuel tubing might be needed depending on the fuel delivery system you choose. [Dubro #197](#) or [Prather Super Fuel Line # 7080](#) are good choices. Get a couple of extra feet. It is a good idea to store some fuel line in your field box for other uses.

**Ignition:** Consult your owner's manual for the proper Glow Plugs. [OS A-3](#) and [OS No. 8](#) are very common. To "light-up" the glow plug you will need a Glo-Plug Igniter. Many are available. Some come with an enclosed Ni-Cad battery and wall charger. A [Dubro DUB666](#) is an example. Other igniters

require "C" batteries (NiCd or NiMh) that are purchased separately. A "four-way" wrench, part number [HCAP 2550](#), designed for changing the glo-plug and as a prop wrench is available.

**Starter:** Starting your engine will require a device to turn the propeller rapidly. A medium range grade starter is the [Hobbico TorqueMaster 180](#). A 12-volt battery will be required to power-up your starter. A [Hobbico battery HCAP0800](#) or any 12-volt garden/motorcycle type battery will work. You will need to charge your battery. The [Hobbico HCAP0200 12-volt charger](#) will do the job.

**Other:** A spare propeller is also a very valuable item to carry with you. A [Master AirScrew 10 x 6](#) will work with many models. Consult your manual for the best prop for your engine. A [Hobbico Deluxe Field Box Combo](#), that contains a lot of equipment, is available and includes almost everything that a beginner would need. However, differences in the quality of the components are readily apparent. You will have to decide what grade of equipment best suits your needs. As always, ask questions and watch other modelers before spending a lot of money on equipment that might not be necessary. Every hobby has its price.

Below are some words of wisdom from Mike Lindsey. Mike is a highly respected helicopter pilot and a national-level winning competitor. His "getting started" article follows;

## **Getting Started in Radio Controlled Helicopters**

*By Mike Lindsey*

### 1. Equipment

a. A new modeler would have to obtain primarily the same equipment as any fixed-wing pilot. A starter motor with a 12-18 volt source battery power panel or glow clip, and plug wrench. Helicopter specific tools would include: 6 mm hex starter adapter, pitch gage, ball link pliers, blade balancer, JIS screwdrivers, metric Allen wrenches, and Loctite (pun intended). Fixed wing flyers need only add the helicopter specific accessories and tools.

### 2. Model Selection (\*\*\*) indicates preference level)

a. Micro Electrics \*\* RTF and ARTF micro electric helicopters yield a good value for some potential pilots. Bearing in mind that, as beginners, any wind over 5 mph will increase flying and hovering difficulty and the odds of a mishap (crash). My opinion is they're better suited to indoor or very calm

day outdoor use.

b. 30/50 Glow \*\*\* More and more of this size/class of helicopters are becoming available as ARTF. This means the machine is built, yet requires a radio and, in some instances, engine installation and final bench setup. These get 3 stars from me as they represent the best value. Fuel cost, repair cost, minimal complexity of setup and durability make these the best bang for the buck in my opinion. For example, models like the Century Hawks and Ravens, Gohbee Stinger, Audacity Tiger 50, Hirobo Evo 30/50, JR Venture 30/50, and the Thunder Tiger Raptor 30/50. The difference between the 30 and 50 models is the engine size increases from .32 to .50 and the blades and boom are usually an inch and half longer.

c. 60/90 Glow \* Much like the 30/50 class helicopters, the 60/90 is basically the same machine with the latter being stretched an inch or two. These 10-12 pound marvels are not to be taken lightly, nor should any R/C model. But with more than three horsepower at 16-18K rpm engine speed and blades spinning two thousand rpm or more, the statement “erring on the side of caution” is just, well, not adequate. Few pilots, or wanna be's like myself, have exhausted the capability of these machines. Many have exhausted bank accounts trying. When set up properly they fly on rails forward or backward, upright and inverted. Albeit this performance level and “WOW” factor come at a substantial price. Figure close to \$2000.00 for one of these and about \$300-\$500 for a mishap (crash).

d. Radios; Airtronics, Futaba, JR, and Hitec all make excellent radio products suitable for helicopter flying. I favor JR's 3 year warranty and fast turnaround. Any of these radios in a six channel, multi-model configuration will work for any model that will fly outdoors or in a club setting. For more equipment info, check out <http://www.RunRyder.com> For videos, check out these sites Helifreak.com and Augustohcli.com. There are numerous how-to and training videos available but the constant and most important principles that come to mind are realistic goals, practice, and discipline will yield the most desirable results. Let's not forget the latest crop of flight simulators. I think they all can be of some help, up to a point. The variable here is that point is different for every pilot. Don't forget that we have some very celebrated and accomplished pilots and one of the oldest helicopter clubs in the country in the St. Louis Metro Area, the Whirlybirds, down south in Imperial, MO. Their web site is at [stlouiswhirlybirds.com](http://stlouiswhirlybirds.com).

Thanks for the opportunity to share my addiction, I mean hobby, with you and if I can direct you to better answers to some of your questions, let me know at one of these addresses <mailto:lindseym@gknstl.com> or <mailto:madgadget@hotmail.com>

# **ANTENNA LENGTH REALLY MATTERS!**

*(Ed. Article provided by George Cooper)*

**During the first 3 initial flights of my new P-51 I noticed some occasional glitching of the ailerons and throttle. They seemed to occur on flights near the runway in one direction and at about the same place every time. Before flight I had run a range check with the transmitter antenna down and it was "satisfactory", but I did notice that I got glitches at about 60 feet out whereas I am used to being able to walk way out, maybe over 100 feet without any glitches. I had a Futaba R127DF receiver that I had bought from a fellow club member last summer in the plane and had previously checked it for operation on the bench.**

**I decided after the flights to change the receiver to see if that eliminated the flight glitches. I installed the new receiver and the antenna extended out the back of the plane by several inches while the one I removed barely cleared the tail post. There was over 10 inches missing from the flight receiver! I noticed it not reaching past the tail during installation, but thought it was due to being a big airplane and mistakenly accepted it.**

**In researching how long the antenna should be, (I found they are 39.75 inches) I ran across a couple of good web sites.**

**The first, <http://www.crompton.com/wa3dsp/hamradio/antcalc.html> provides an antenna length calculation by plugging in the frequency you want. We use one quarter wave antennas and for my channel (57) it came out 38.5 inches, slightly shorter than factory as I am near the top end of the RC channels.**

**I also ran across this web site: [http://www.rc-cam.com/ant\\_exp.htm](http://www.rc-cam.com/ant_exp.htm) under Special Projects on R/C Antenna Experiments in which he ran a very complete test on a receiver using various lengths and styles of receiver antennas to determine the effect of various lengths on received signal. He used very good radio engineering techniques, explained the whole test and tabulated the results which are quite surprising. It is worth reading.**

**For those not on the web, the results show that while the 39.75 inch length does not give the maximum received signal strength, it is a good compromise between length and signal strength. Increasing the length increases the strength with a peak at 62 inches. Above that it falls off. The thing to note is that below that 39.75 inch length the signal strength falls off rapidly. My 10 inch shorter antenna was easily down to one half received signal. Longer antennas, if left trailing out the back, would give increased signal, but probably would not if folded or stuffed inside the plane. Cutting the antenna to the exact quarter wave length for your channel is probably not worth the bother in increasing signal strength. Making it longer than standard would be more beneficial. I usually take my antennas out the tail, run them up the vertical stabilizer and tie them off at the top. This is not as good as having the full length stretched out, but keeps them from dragging and eventually breaking off resulting in one, like mine, being 10 inches short and giving a very bad received signal. I run my antennas inside the fuselage on all planes and if that causes a decreased signal I have never noticed it. I can fly them all at full visual range.**

**Tests on the antenna being wound around a soda straw to fit inside small airplanes showed this is definitely not the way to go. The received signal fell off dramatically, as it also did when just wadded up inside the plane. Tests on the small base loaded whip antennas also gave poor results compared to long wire antennas; probably acceptable for small electrics, but not for glow planes. The small receivers for electric park flyers usually come with 19 inch antennas. This severely limited the received signal, but is by design and more convenient as long range is not needed. Increasing the length to 40 inches greatly increased their received signal.**

**I attribute my glitches occurring at the same spot to being perhaps a null point in the transmitter signal or reflections from something causing a null. With a full antenna and increased received signal I probably would not have seen it at all.**

**My conclusion is that with antennas, as also in sizing propellers, "Keep them as long as you can, for as long as you can". The efficiency of both is increased.**