Snelflight Hoverfly

Learning to Fly

by Phillip Jermyn, Technical Director, Snelflight Ltd

Why fly model helicopters?

In short, flying model helicopters is great fun! You get to control a little machine which has complete three-dimensional freedom, and make it move in very precise ways. You can swoop and dive, loop and roll, and achieve tremendous speeds. You can hover over a spot and carry out pretend airlift rescues, or any number of other fantasies.

Flight has a magical, even spiritual quality to it, and making it happen yourself feels very special and relaxing. Learning to fly model helicopters also helps with learning the real thing, in my limited experience!

Why choose the Hoverfly?

Learning to fly a model helicopter is not particularly easy. You have to acquire a new sense of balance, letting the aircraft become an extension of yourself. In this respect it is a little like learning to ride a bicycle. To do it at all well, it has to become totally natural for you, without involving conscious thought.

Once learned, either skill becomes very hard to describe to someone else; it is as if you have gained a new sense within your body which other people do not yet have. You can't forget it once you have it. You can't imagine how it's possible until you do!

A bicycle is controlled using the whole body, responding to motion changes detected by a number of the senses simultaneously. A model helicopter, on the other hand, is controlled purely by small movements of the fingers, with feedback coming only through the eyes. Whereas a bicycle can really only fall over sideways, a helicopter can fall over in any direction, and because you are not inside, it can turn to face you, so that your left becomes the helicopter's right, and so on! These factors make helicopters quite challenging to learn, and you will be grateful for all the help you can get.

The Hoverfly is not especially easy to fly compared to other models. This is important, since it is supposed to be a realistic trainer. It's not particularly difficult either. However, it makes the process of learning easier in two major ways.

First of all, the Hoverfly comes ready to fly, which means that you can be confident that it is at least capable of flight when you first take the controls. You have to construct most models yourself, so they do not afford this luxury because there are so many fine details which have to be set right.

To set up a helicopter for flight, you have to be able to fly it, but to learn to fly, you need a helicopter that is properly set up. This catch frustrates many who try, and the only sure solution is to enlist the help of someone who can already do it.

Secondly, the Hoverfly operates indoors, and is amazingly straightforward. You do not have to worry about the weather, finding a field, different grades of fuel and glo-plugs, getting engines to start, keeping numerous batteries charged, and so on. There are no servos, linkages, ball joints, or swash plate. There are no receiver, no battery pack, and no frequencies to worry about. There are hardly any adjustments at all. You just plug it in, and after a few minutes spent initially to configure the Hoverfly to your particular controller, you are ready to go.

It will fly continuously without recharging. You can cover the floor with quilts to crash onto, and if it does break, the spares cost a fraction of the outdoor model equivalents. The cost of crashing an outdoor model can easily exceed £100, whereas you can buy a whole new Hoverfly (excluding the rest of the kit, such as the mains adapter) for £99.95! The majority of individual parts cost just a pound or two.

If you are serious about learning, you should bear in mind that you will get through a few parts, especially thrust propellers, which are the commonest casualties. Lay in a stash of these (a pack of five costs only £7.90). It isn't really worth buying any other parts ahead of time, because it is entirely random as to what else will get broken. You may well get away with little or nothing.

You *will* need a certain degree of practical ability, because the Hoverfly is designed to pop apart in a crash, (which saves things from breaking). You need to be able to get it assembled again, and check that the mechanics run properly. It is mechanically very simple, and does not explode into a million bits in a crash, but the major sub-units (such as the tail) do come dislodged during impacts.

If you feel comfortable carrying out repairs such as replacing bicycle brake blocks, using simple tools and making small adjustments so that things work right, then you will have no major difficulties with the Hoverfly. The manual is very helpful.

There are simulators available which let you fly on a computer, and these can help you learn. However, a lot of crashes are caused by bad panic reactions, and on a simulator you just don't get up a realistic level of adrenaline. In addition, simulators simply don't give you the wonderful feeling of watching a real-life machine overcome gravity and rise into the air. This is what flying is all about!

There are, of course, a number of other small indoor model helicopters. However, battery operation tends to give very short flight times between half-hour re-charges. In addition, they generally have rotors with fixed-pitch blades. This means that in order to increase overall lift to ascend, it is necessary to speed up the entire rotor. This takes time to do, making the machine slow to respond, more difficult to fly and quite unlike an outdoor model. The Hoverfly can respond immediately to a demand for increased lift, making it far more representative of larger helicopters.

Beginning to Fly

Having bought a Hoverfly and configured it to your controller as described in the manual, the following seems to be a good way to start learning to fly.

Choose a room with as much space as possible. Eight feet square is a reasonable minimum. Try to move any furniture as far back as you can. Next, spread out the largest quilt or duvet that you have available, to create a soft surface to crash onto. If you have more quilts, these can be used to cover up air traffic hazards such as brick fireplaces or bulky furnishings.

Place the Hoverfly in the middle of the quilt, making sure that it is standing upright and facing away from you. If you haven't done so, it isn't a bad idea to fit the training undercarriage, since this makes taking off vertically quite a bit easier for beginners. Run the command line to the edge of the quilt, and find a position that is comfortable for you. Switch everything on, and you're ready to go. If you are new to aircraft, you should by now have studied the diagram in the manual which shows what the various controls do. It's important to know!

Rev-up the Hoverfly by slowly advancing the throttle, and be ready to shut it down if it starts to topple over. This will happen if it is not standing vertically on the soft quilt. When it is revved-up and beginning to seem light on its skids, it is ready for take-off. At this point, it is important to give it a slight burst of throttle in order to get airborne quickly. You cannot learn to fly until the aircraft is in the air! If you hesitate too much, the Hoverfly will bounce about until it topples over, or else skitter off at high speed until it bumps into something.

Almost as soon as the Hoverfly is airborne, you will have to back off a little on the throttle to prevent it from rising too far. A height of between one and two feet is perfect, because crashes onto the quilt from this height will do no damage. It will take quite a few goes to get this right, since reducing the throttle too much will cause the Hoverfly to sink back to the ground again.

After each landing, check the Hoverfly over to make sure nothing is loose, then place it back in the middle of the quilt before trying again. This gets to be a bit of a chore, and it will be tempting to take off from wherever the Hoverfly has come to rest if it is still upright. However, you will be closer to hazardous obstacles if you do; I learned this the hard way. Always put the thing back in the middle!

Once in the air, you are going to have to work the *cyclic controls* to guide the Hoverfly around. It will drift off in one direction or another, and you have to move the control stick the opposite way to compensate. Centring the stick will not make the aircraft stop and hover! You have to actively arrest movement by applying just the right amount of opposite control. Too much, or for too long, and the Hoverfly will fly off the other way.

It is important to understand that the Hoverfly moves in the direction in which it is tilted. In order to fly it, you have to learn to notice slight disturbances in tilt, *before* they result in movement. This allows you to correct them instantly, to keep the aircraft still. If you wait until the Hoverfly is moving before applying correction, it will invariably be too late.

Learning cyclic control will take a number of attempts. However, because you are flying over the quilt, you can cut the throttle and drop to the ground as soon as the Hoverfly gets close to the edge of the flying area. Provided that it is not too high it

will be undamaged by this, and you can keep trying again until you begin to get a feel for it.

Before long, flights will last for quite a few seconds (this is actually a long time!), and at this point you will need to begin steering it in the horizontal plane. While learning to fly, you will want to keep the Hoverfly facing away from you, so that the controls are 'the right way round'. If it starts to nose around a bit, you have to use the rudder control to steer it back again. Fortunately, the Hoverfly's gyro is very powerful, so that the aircraft tends to stay pointing in one direction for quite a long time before it drifts.

I hope that this is helpful. Have fun!