

The Twin Star, manufactured by Hobbico, is the first ARF twin engine plane to hit the market. It features a semi-symmetrical wing which is 49.5" long and has a wing loading of 24 oz/sq ft. The wing is a bolt on design. The kit comes with a complete hardware package including tanks and engine mounts. The tanks are rather small for the 40s I decided to install and the engine mounts would not except the 40 size engine. The supplied mounts will work with engine sizes up to 32.

Construction

Wing joining is the first task to be performed. The dihedral spar is constructed by laminating 3 piece of ply together. Once assembled this must be slightly sanded so it will fit snugly into each wing half. There are front and rear root ribs which must be glued to each wing half. The front wing root has a rectangular protrusion which is used as the wing hold down mechanism. I would have much preferred a hard wood dowel as this method seems a little weak. Once the wing roots are attached the aileron opening must cut out of the rear wing root.

Next the engine nacelles must be installed. This is done by stripping away the wing covering and cutting away the leading edge at each installation point. The pre-made nacelles then slip over the wing and are glued into place. Care must be taken to use the correct nacelle, they are not the same. Each nacelle has an right or left engine offset built into it. The nacelle with the right offset must go on the right wing. These nacelles fit nice and snug over the wing. The throttle servo opening is then cut at the rear of the nacelle and the ply servo tray is glued into place. A string should be routed through is throttle servo opening to the aileron opening in each wing half so the throttle servo wires can be easily installed once the wing halves are glued together.

Once the nacelles are installed the wing halves can be glued together using 30 minute epoxy. After this the aileron tray is glued into place. A small slot is cut into this tray to provide access for both throttle servo wires and the aileron servo wire. The wing wold plate is then glued to the rear of the wing. A centerline is drawn on this plate and then slightly scribed to allow it to bend easily over the dihedral of the wing. The wing bolt holes should also be center punched before gluing.

The wing is then fitted onto the fuselage and the wing bolts holes drilled. Care should be taken to drill 90 degrees to the wing surface. After the holes are drilled the holes in the fuselage hold down plate are enlarged and blind nuts installed.

Installation of the horizontal fin start by removing the covering material around the stabilizer slots. A stabilizer mounting plate is then installed. This plate gives the stab a secure mounting surface and strengthens the aft section of the fuselage. Once this plate is glued in the rear section of the fuse is removed to allow the stab to slide into position. As with most ARF's the covering material on both the horizontal and vertical fin must be removed where they contact to the fuselage. Once this covering is removed from the stab it can be securely glued in place making sure it is parallel to the wing. The covering material over the vertical fin slot is then removed and the fin is glued in place. There is a small triangular piece of balsa which is then glued to the front of the fin which finishes off the leading edge. A small piece of covering material (supplied with the kit) is then applied which matches that of the fin.

The landing gear is then installed. The covering material must be removed from the main gear supports to allow the main gear wire to be secured in place. The nose gear mount is preinstall so all that is required is to install the gear wire and a few wheel collars. The nose gear steering push rod must be installed by drilling a 5/32 hole at a 70 degree angle in the bottom of the fuse. A guide tube is then glued in place and sanded flush with the bottom surface of the fuse.

Engine Installation

When installing the tanks I placed foam on the bottom and sides of the nacelle. This helps to cushion the tank to prevent fuel foaming. A top plate is then glued in place to securely hold in the tank. The fuel lines go through the center of the engine mount. This means the engine should be installed as far forward as possible so these lines do not get pinched.

As noted above the engines I used for this kit were two OS 40 LAs. The engine mounts were a little small for these engine so ground out the inner beams. Only a small amount of material was removed which would not effect the strength of the mount. Alternatively, one could purchase the next size up mount which uses the same firewall mounting pattern. The LA engines have rear needle valves so a small notch must be ground into the nacelle side.

Radio Installation

This supplied radio tray houses the rudder and elevator servos and the main switch. The supplied push rods were of good quality. All the control horns were supplied with the kit. The aileron servo and the two throttle servos are installed in the wing. I had a little trouble installing the aileron push rods. One of the torque rods was not threaded properly. I got the horn about 1 cm down and then it would not go any further. It just spun around and around. I could not get it off at this point either. I had to cut the torque rod off a little higher than where the horn was supposed to go and then force the horn on. Luckily this was the only problem I encountered with

the kit. The throttle can be controlled via a Y harness or by having each servo on its own channel. Since I have a computer radio I decided to do the latter. I also programmed a mixer so I could adjust the differential throttle input by a variable aux channel. This is useful when trying to get the engine to run at the same RPM.

The last step is to glue the nose cone together and install it around the nose gear.

Test Flight

After synchronizing the engines and double checking the trims, I taxied to the runway and notices a little nose gear correction was needed. After this adjustment the plane tracked excellent on the ground. With the power of the two 40s, the acceleration on the ground was obvious. Spooling up the engine the plane leaped forward and was airborne in short order. Amazingly no trim adjustments were needed. The plane tracked perfectly. Loops were nice and round, rolls were axial. It was not as fast in the air as I had hoped but it could still hold its own. Landings were easy as the plane slows down quite nice on final approach. The only complaint I had was the rudder was just not quite effective enough. Another inch or two of rudder length would fix this and I plan to make this modification soon. Engine out performance is acceptable. This is the first twin engine plane I have flown so the first engine out experience was little nerve racking. I had not noticed that one of the engine was out and it snap rolled on me. Once I figured out what had happened I could easily gain altitude at 1/2 throttle the coast in at idle.

Conclusion

I am very happy with this plane. I was a little skeptical about purchasing another ARF after my last fiasco with my Champion but this Hobbico kit set me at ease. The quality is impeccable. The strength of the fuselage and wing is incredible considering its weight. The airframe is lighter than anything I have ever built. The flying characteristics are first rate, this planes is very aerobatic. Its not a pattern plane but it will still burn up the sky. I recommend the Hobbico Twin Start to anyone who is thinking of getting into multiple engine aircraft.