



Hangar 9<sup>®</sup> F6F Hellcat  
HAN4075

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**COVER STORY**

# Grumman F6F Hellcat

Chris Dickens tests the latest Hangar 9 warbird with an Evolution 1.00NX for extra power, but was it a good combination?



**W**here do you start when writing a kit review? A snappy first line usually helps but I'm gradually running out of ideas, so this time I'll be different and start with the ending!

**Introducing the F6F Hellcat**

The Hangar 9 Hellcat is a great kit and flies like a dream, perfect for the sports pilot who wants a nice semi-scale model. Well that's the beginning and the end of the article now for the middle bit...

The Hellcat was the middle type of the three famous piston-engined 'cat' U.S. Navy fighters of WWII. It first entered service in

1943, replacing the Wildcat and served through the remainder of the war. Its successor, the Bearcat, was just too late to take part in the fighting but served the Navy well in the first years of peace until replaced by the early jets.

Hangar 9's model version is approximately 1:7 scale and suits .60 to .90-size two-strokes and .90 to 1.10-size four-strokes, The UK importers, Helger Distribution, supplied one of their Evo 1.00NX two-stroke engines to fit in the review model.

**About the Model**

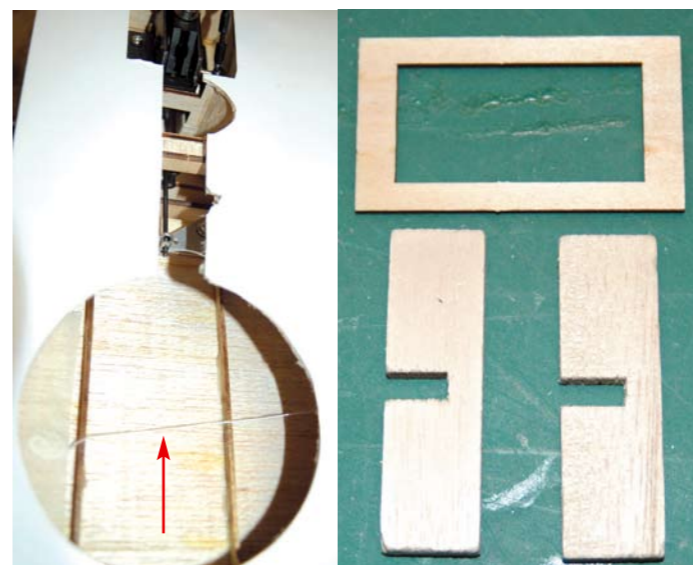
In common with most ARTF models the Hellcat comes in a large box with many pictures of the completed model printed on it. The inside is divided into two layers: The top layer has the three wing panels, the tailplane, elevators and rudder all sealed in plastic bags. The wing centre-section has the 'twist and turn' retracts already fitted along with the actuating linkage. The lower part of the box is mostly taken up with the large fuselage and fin assembly in one section. The cavernous glassfibre cowl, a pre-painted canopy, and the large bag of accessories are all separated from the fuselage and



Wooden parts; radio tray, wing joiners, retract mounts radio mast (not fitted) and undercarriage fairings (I never did find out what the length of square balsa was for!)



Top layer of box



Retract well with pull string for servo lead

Retract servo mount

each other by cardboard dividers, very little danger of anything being damaged in transit here.

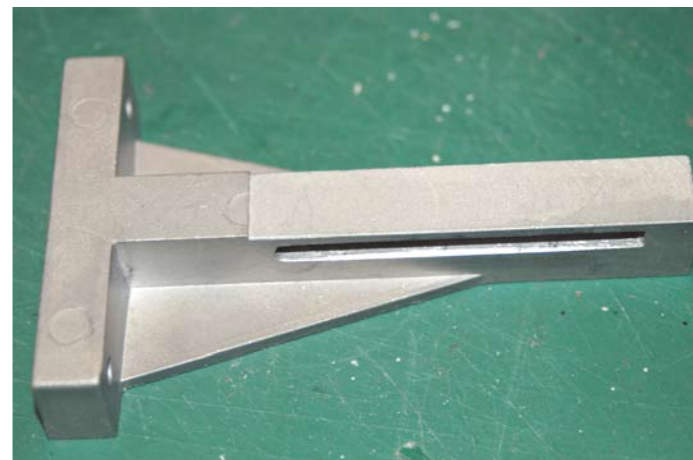
The airframe is covered in two-tone blue and white glossy Ultracote with most of the markings ready applied (the additional decal sheet comprises of the instrument panel and the duck logo that is positioned just in front of the cockpit). The accessory pack contains everything needed to finish the model (apart from engine and radio), and all screws, linkages; horns and clevises are of good quality. Some modellers might want to replace the plastic clevises with metal ones, but the supplied ones are very good quality and perfectly usable on this model.

*'very clear and explicit instruction manual'*

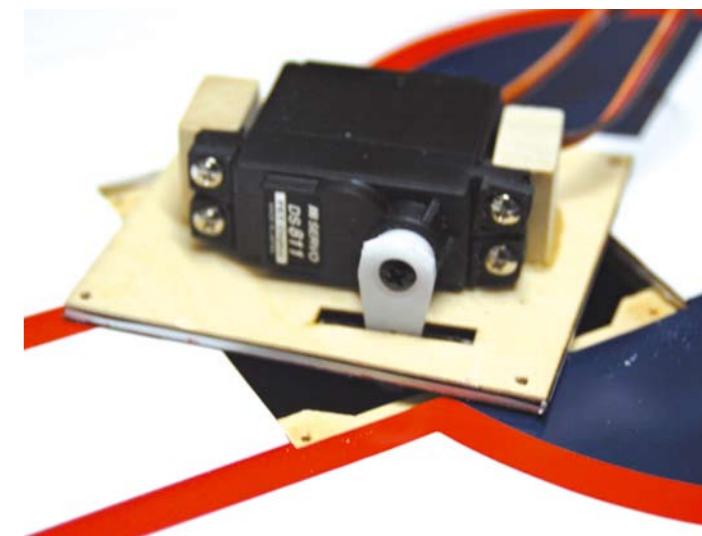
**Assembly Begins Here**

After reading the very clear and explicit instruction manual it became clear that for once I could follow the building instructions to the letter and in the same order. At last somebody involved in putting this kit together has realised that it's much easier to install the heavy oily bits on the front without thin flappy bits dangling off the back of the fuselage and the last bit of construction, before fitting the radio, tailplane, elevators and rudder.

Back to the start: The first assembly to receive attention is the wing centre-section and the retracts. The under-wing fuselage fairing (made of GRP?) comes ready attached and appears to be fixed with what looks like white silicone, a first for me! And the mechanical retract units' linkages and bellcranks are also pre-fitted. The retract servo is fitted to a ply and balsa mount which is epoxied into the centre cut out. The wire pushrods, which are pre-installed



Nice machined metal 'T' engine mounts



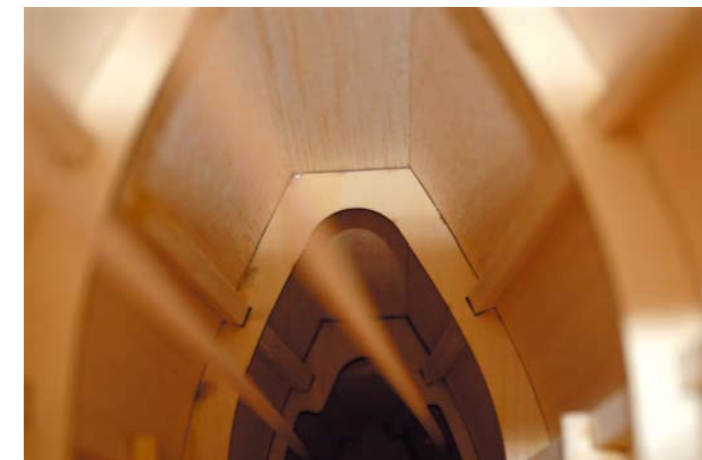
Aileron servo mounted on hatch



Wing joiners were a perfect fit

in the wing, are a trifle too long and need cutting back a bit. I removed the whole linkage to do this but it would be possible to do it in-situ with a cutting disc in a small drill, in fact it is probably not advisable to remove the bellcrank screws as they have been fitted using thread lock to ensure that they do not come loose in use.

The retracts worked perfectly using the specified size servo arm and no further adjustment was needed. The plastic wheel-well liners were next added along with the wheels and doors. The wheel wells and hubs are moulded out of light grey plastic and to really set the model off need a coat of white paint to match the underside. The outer wing panels are again simplicity itself. The ailerons are hinged with fluffy Mylar. Servo mounting blocks are epoxied to the hatches and the servos screwed to them. The horns and linkages for the ailerons are added before joining the three



Inside the rear fuselage; I couldn't spot a bad joint

'the wing fitted virtually perfectly'

parts of the wing together. The wing joiners are a very good fit and there is no confusion as to which way round they fit as the inner ends are forked to fit around the retract mechanism. With the three panels joined together with epoxy the last job on the wings is to iron on strips of covering to hide the joints. In all, the entire wing took no more than an hour and a half to put together.



Tail wheel torque rod has to be bent in-situ

**Engine Installation**

The engine is mounted on two metal 'T' mounts. The mount themselves are slotted for fore and aft adjustment and the front bulkhead has slotted holes for adjusting the width. The only difficult bit is ensuring that the whole assembly is in the right place so that the prop driver comes out of the exact centre of the cowl. The dimensions in the instructions for mounting the engine are spot on, so measure carefully and the prop will be in the right place relative to the front of the cowl and the dummy engine. Most engines (both two and four-stroke) will fit inside the cowl with no problems, but some sort of remote glow and fuelling system will be required. The throttle linkage can now be fitted. I found that the supplied wire rod was a bit stiff as the curves it needed to negotiate to work the front carb on the two-stroke were a bit too much so I replaced it with Bowden cable. With a four-stroke a straighter linkage would mean it would be okay.

The tank comes ready assembled with two lengths of fuel tubing attached. If you like a three-pipe system then you will have to



Dummy engine cut away to give clearance for carb, also gives ample cooling air inlet

modify it, but I think that a third pipe is a waste of time so I used it as it is. Fitting it is simplicity itself. I retained it with a loop of Velcro around the back and some foam where it passed through the former. To keep everything within the cowl I fitted the Evolution 1.00NX engine with a BCM 'Pitts' style silencer and used silicone exhaust deflectors to exit the fuselage.

The dummy engine is a very thin moulding so I filled the back with expanding foam filler which made it rigid without adding much weight. I had to cut away a couple of cylinders to clear the carb which also allowed a good flow of air around the cylinder. The lower cut outs in the cowl direct air over the silencer. The dummy was stuck inside the cowl with silicone sealant and is fitted to the fuselage using four screws into the pre-fitted blocks. Holes need cutting in the cowl to clear the exhaust and give access to the glow and fuelling point. As these are the only way air can get out I made sure that they were much larger than needed. I think that this is a black mark against the instructions as cooling of the engine is more dependant on the air exit area than the entry and no provision for air outlets is made by the kit.



Under the cowl showing the Evo 100NX engine installation, remote glow and refueller

**Final Fitting Out**

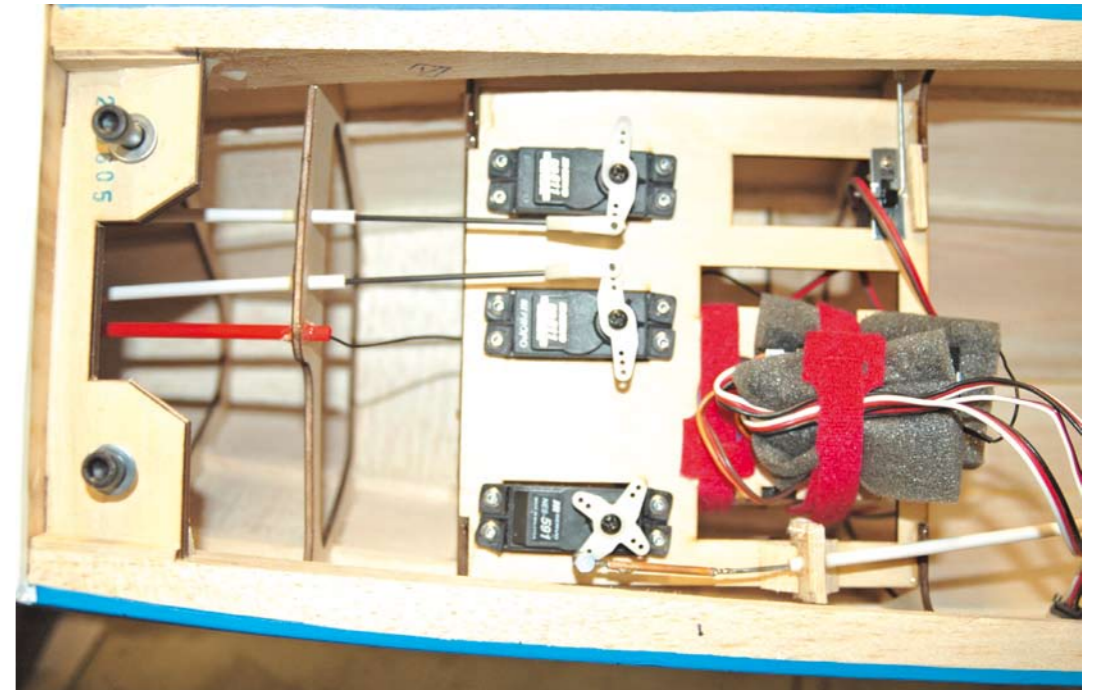
The next section deals with fitting the cockpit and canopy. Again a black mark for the kit as there is a nice instrument panel, a plastic moulding for the pilots seat back and headrest but no pilot is supplied. I fitted a J.Perkins 1:7 scale WWII American pilot. I didn't fit the canopy until after I had dirtied up and sprayed the finished model, but then I stuck it into place with RC Modellers glue. I didn't fit the radio mast as I figured it would last two flying sessions at the most, not that it would get knocked off by flying but would be very vulnerable during transportation and handling.

The last thing to do before fitting the tail surfaces is to fit the wing and check for alignment. You have to fit the blind nuts yourself! No adjustment was needed as the wing fitted virtually perfectly. The only niggle was a step of about 3 mm between the fuselage bottom and the wing fairing.

The fin is built integral with the fuselage but the built up, open structure tailplane fits into a slot in the fuselage. This slot is not just in the fuselage sides but is a fully sheeted box. After checking squareness and alignment, and removing the film from the centre the tailplane is epoxied in place, not forgetting to fit the elevator joining wire. Fitting the elevators was simplicity itself as all the hinge slots and the holes and grooves for the joiner are done for you and all are in exactly the right place. The rudder is similar except that you have to bend the tailwheel-operating rod yourself, but the dimensions and instructions make that an easy task.

The radio installation is again easy as you can fit the three servos, the battery and receiver to the radio tray before installing it into the fuselage. I also fitted the switch to the tray and operated it by a wire rod rather than mounting it externally on the fuselage side. The rudder and elevator are operated by wire rods running in plastic tubes which are again installed for you. Easy to set up and positive in operation unless you cut one too short as I did! I'm still not quite sure how I did it but easy to rectify. I had built the same manufacturer's Corsair a couple of months before and that model had an aerial tube in the fuselage so I was disappointed to find that the Hellcat did not have one, so I had to find a length of plastic tubing and install my own.

The control throws were set up as per the instructions on high rates but I added 30% exponential on all movements and set the low rates to 75%. I also set up a switchable 30% aileron/rudder mix. The balance point was checked after dirtying up and came out 1/4" in front of the recommended position (5/8" behind the leading edge).



Radio installed on mounting plate, battery above and receiver below retained by Velcro



Finished model in its shiny pristine state before weathering

**Making it Look Nice!**

In its standard finish the model is very clean and glossy; probably okay for a model of a museum piece but definitely not representative of a working 1943 aircraft. I decided to spend a few hours to see what could be done to add weathering and wear to the surface.

I started by giving the whole airframe a light rub over with 600 grit wet and dry, used wet. Then all the film areas were lightly coated with 'Prymol' (Solarfilm's etch primer). When dry the



Scale rearward-retracting and rotating undercarriage



Instrument and (not supplied) pilot can be seen through very clear moulding



Simple weathering converts a sports model to scale

panel lines were added using a fine permanent marker pen and flexible plastic ruler/template (I actually used Top-Flite's panel pen and stencil). A 3-view drawing was used as a guide to position the lines. I did not try to replicate every join and rivet, but just enough to give the right impression. All the weathering and dirtying was carried out using an inexpensive single-action airbrush (Badger 200 I think!) and a mixture of Solarlac and Humbrol enamel both thinned with cellulose thinners, i.e. 1 part paint to 5 parts thinners (yes enamel paint and cellulose thinners does work okay). First I masked off the metal portions of the control surfaces and gave the remaining, fabric covered, areas a light dusting of grey, then all the front facing areas (leading edges and cowl) were treated with silver.

Lastly, the rest of the airframe was liberally streaked with various dark greys and black. The trick here is to keep each application very light but gradually build up to a slightly 'over the top' finish. Up close it may look to be too much, but from about 2 meters away it will look right. Finally, the whole model was given a coat of clear matt 2-pack (Aerocote in this instance). This whole process was carried out in approximately 6 hours work over an un-flyable weekend.

Tail end weathering detail



**On the Field**

The test flight took place from our midweek flying site, a 20 acre sports field, being late October the grass on the cricket outfield was a trifle long but was short enough for take off. The engine had been well run-in in my Hangar 9 Corsair and I was now reasonably satisfied that it would be reliable (it had needed the 'pre-set' factory needle settings to be wildly changed, 1 turn open on main and 2-3 turns closed on the idle to get a good throttle response!) but just to make sure initial ground runs were made with the cowl off. All seemed okay, so with the cowl in place the first take off was attempted but the grass proved too long and the Hellcat nosed over without moving. The engine was fired up again and with the tail held down just over half power

was applied and this time success from let go to lift off was only about 5 m (16 ft) and the Hellcat quickly climbed away. A flick of the switch had the gear tucked away, and after throttling back a little only a touch of aileron and elevator trim was required to get it flying straight and level.

There seemed to be no trim changes with power and all the controls were positive but smooth. The ailerons were a bit sharp for my liking but not overly so. I was so happy with it that I flew a loop and a roll on the next two circuits before settling down to the succession of low passes needed for the in flight photos. These could be flown at about one-third power only opening up for the climb out. There was about a 5-10 mph wind blowing but there seemed to be no difference in flying upwind or downwind passes, very nice!

After about 10-minutes flying the Hellcat was set up for a landing. After so many low passes this was no problem and the approach was made with a bit of power on, cutting it completely at about 3 m (10 ft) altitude, the model settled down in a slightly tail high three point attitude and floated for about 20 m (65 ft) at a very low airspeed before touching down. Due to the long grass it soon nosed over into a three-point attitude (cowl and main wheels!) with no damage. With virtually perfect conditions I had



Underside detail clearly shown in this banked turn

*'impeccable flying characteristics'*



A banked flypast shows how realistic this Hellcat really can look

two more flights that day exploring the aerobatic capabilities of the model, some of them not really scale but done in the name of research and to inform you, the reader, of the ultimate capabilities of the model. All the normal sports aerobatic manoeuvres are well within its capabilities plus some more advanced ones such as rolling circuits and avalanches, in fact the Hellcat flies more like a .60-size pattern ship than a scale model.

Over the following weekend I was able to fly it off our 90 m grass runway and even with a 5 mph 90 degree crosswind the Hellcat still took off in less than 20 m and landed in less than half the available length.

**What do I Really Think?**

Whilst I was building the Hangar 9 Corsair for review and being impressed with it I saw the first adverts for the Hellcat, I immediately put my name down with the editor for first refusal if one came up for review. Most of the small niggles with the Corsair have been dealt with in the Hellcat (nice to see manufacturers striving to improve) the only backward step being the aerial tube. I'm not sure which of the two is the better flyer but as they are both virtually vice free I don't think that there is any need to choose, I have not flown any other ARTF warbird with such impeccable flying characteristics.

**SPECIFICATION**

**MODEL INFORMATION**

**Name:** F6F Hellcat 60  
**Manufacturer:** Hangar 9  
**Distributor:** Helger Distribution  
**Price UK:** £209.99  
**OPTIONAL PARTS:**  
**Evolution 1.00NX:** £139.99  
**Model Type:** Sport scale  
**Engine:** 0.61-1.00 2-stroke, .91-1.00 4-stroke  
**Test Engine:** Evolution 1.00NX  
**Construction:** 95% ARTE, Balsa and Ply wood

**R/C FUNCTIONS**

Graupner/JR mx22 Tx, JR PCM RS77s synthesized Rx  
**Rx Battery:** 6 V (5-cell) 1800 mAh  
 1: Ailerons (2 x JR 811)  
 2: Elevator (1 x JR 811)  
 3: Rudder (1 x JR 811)  
 4: Throttle (1 x JR 591)  
 5: Retracts (1 x JR 703)

**MODEL DETAILS**

**Wingspan:** 65 in (1651 mm)  
**Length:** 53 in (1346 mm)  
**Flying Weight:** 8 lb 12 oz (3.98 kg)

**TEST**

**Dislikes**

No engine cooling air outlets  
 No aerial tube in fuselage (unlike previous models in range)  
 No pilot figure  
 Glossy finish

**Likes**

Quality of construction and fittings  
 Excellent flying characteristics

The retract mechanism is very tough but no system will stand up to really hard landings. The Hellcat is very easy to land so as long as you are reasonably competent and have flown a low wing sports aerobatic model before it could be the model for you. I love it but I also love the Corsair so I think that I will be keeping and flying both for quite a while. **RCMW**

**Contact Details**

**Helger Distribution**  
 www.helgerflight.com  
 01279 641097



Wheels down for a gentle landing