

Thank you for purchasing DH108 Swallow 90mm from www.rbckits.com

For the first time, R/C enthusiasts we have a choice in scale and fun flyer aircraft designs.

Our goal, through computer technology and state-of-the-art production techniques, is to offer aircraft which in the past have not been modelled simply because they weren't popular enough to justify mass production. Our production techniques allow us to produce aircraft which, though not as popular and well known as P-51s and P-47s, still offer historical significance (good or bad!), Good looks and flying characteristics, and a uniqueness that is sure to turn heads wherever you take your airplane!

Your airplane has many unique features in its design:

CAD Design

CAD design allows strength to be built into the airplane without sacrificing weight. Accurate parts design and placement ensures a perfect fit.

CAD Drawn Plans

The plans in this kit are not copied from a master set! They are originals drawn directly from the CAD program where the airplane was designed. We do this because it allows us to use colour, which helps you better visualize the various components of the airplane, and we can use better quality paper, which greatly reduces the possibility of shrinkage.

Since you're going to build directly on the plans, they ought to be the proper size! Also, parts placement is guaranteed to be accurate, so you can build a better, straighter model.

Small and hard-to-produce parts are simply a computer file away, so you get a more accurate airplane.

Lightening Holes

Lightening holes are cut into all ribs and formers where possible and justified. This allows us to keep the weight on each plane to a minimum without sacrificing strength.

The same program that generates the design and plans also drives the cnc cutter, so every part is reproduced exactly as it was designed. Cnc cutting also allows us to fit more parts on each sheet of

wood, reducing the waste, and lowering the cost to you.

Plastics

Several parts are accurately reproduced high quality Polystyrene, the canopy is made from PETG or Lexan

General Building Information

The DH108 Swallow 90MM can be built by a person with experienced building skills. It is not designed for someone who has built a trainer or low wing sport plane. No unusual building techniques are required, although more difficult areas are explained in detail where necessary. Certain steps in the building process must be followed as depicted, or you might find yourself digging back into the structure to redo something. These areas are outlined when necessary. Occasionally hints will be included at certain building steps. These are not required for completion, rather they are tips intended to ease a particular process. The cnc router does cut through the wood, as a result of this, occasionally there will be fraying on the surface of the wood. This is normal, and is only a surface problem and does not affect the wood in any other way. Similarly, the cnc settings are optimized for wood thickness averages, so occasionally, due to variations even in individual sheets, some areas might not cut through completely. Simply use care in cutting the parts from the sheets; most of the time, the parts will break out of the sheets!

Note that due the differences in wood thickness per sheet it is advisable to sand the tabs a bit so they slide in easy , also sand the openings so parts slide in easy , hard pushing parts have a high risk of breaking

Hardware and an edf unit are not included in the kit. There are so many choices for quality hardware that these choices are left to the individual preferences of the builder, rather than include something in the kit that you'll probably throw away anyway.

This aircraft is not a toy. It must be flown in a responsible manner according to the rules set forth by Law. The builder assumes the responsibility for the proper assembly and operation of this product. Rbckits shall have no liability whatsoever, implied or expressed, arising out of the intentional or unintentional neglect, misuse, abuse, or abnormal usage of this product. Rbckits shall have no liability whatsoever arising from the improper or wrongful assembly of the product nor shall it have any liability due to the improper or wrongful use of the assembled product. Rbckits shall have no liability for any and all additions, alterations, and modifications of this product.

Having said that, turn the page and start building the best airplane kits on the market!

Material you might need:

Balsa knife, Stanley knife, straightedge, building board 1500mm, ca glue medium, thin, thick you need approx. for wing and vertical stabilizer sheeting 4 bottles thick and 2 bottles medium for rib gluing,, fuselage 1 medium for formers ... thick for sheeting building nails, tape

Also use white glue, and canopy glue or epoxy for the canopy and cowls
Some drilling and bending tools, wire cutter, safety goggles etc. etc.

For finishing you need:

Glass 25 gram or japan paper 12 gr 3mtr and PU dope or epoxy finish 1 litre, brushes
sanding paper 60,120,180, paint of your choice

Wheels as on the drawing, controls, motor, battery etc.

All vacuumformings should be roughened up before gluing and primed before painting

Check the pictures for additional information; a picture says more as a 1000 words so do
look at the pictures on the cd

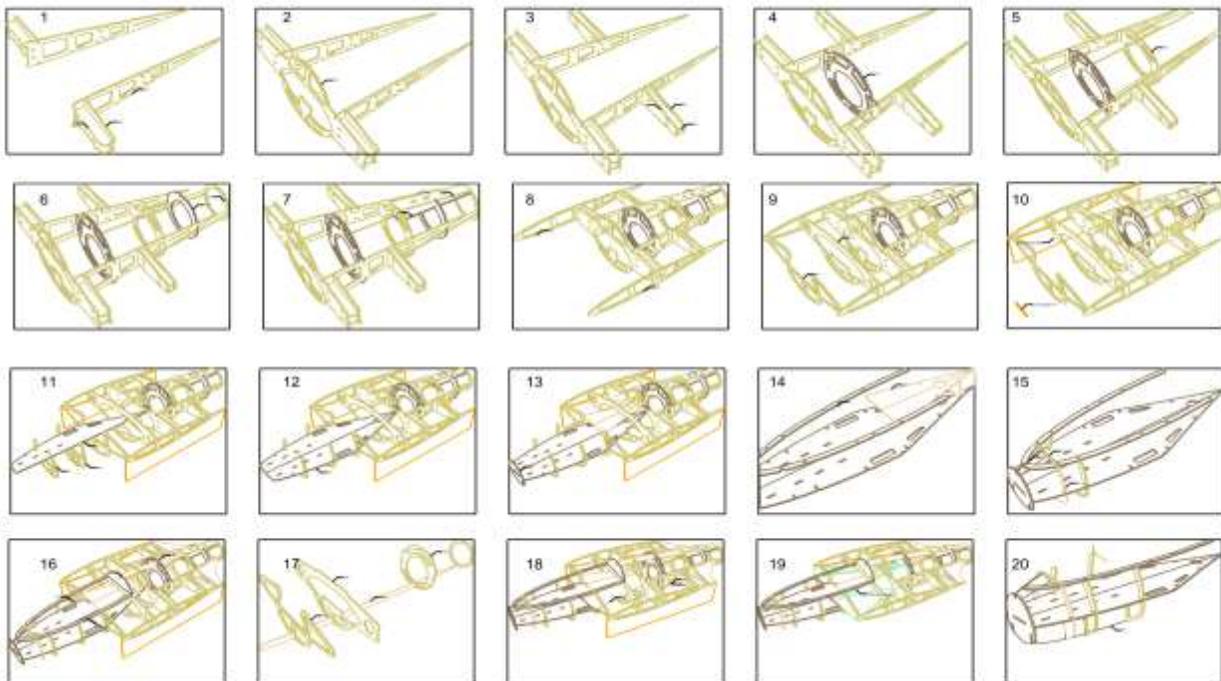
Study the drawing and pictures to understand how the DH108 is build

Important ! Do mark all parts on the cnc sheets as per drawing there are a lot of parts that are looking
similar, so mark them clear

Fuselage:

Number and Take out all parts and clean up the small tabs on the parts .

Start by following the described steps here,(see cd pictures also) , do not glue yet, this is the overview
of all steps for the basic airframe



Try to assemble as much without glue and place fuselage on the build support so it is straight and
level, use the back joiner 14mm in 1 piece sticking trough both sides to get as straight as possible, you

might also place in the split 20mm main joiner to compare with the 14mm back joiner

Step by step glue with thin ca Make Sure not to glue the back joiner to the fuselage, you need it for the wing. Make some strong glue joints with white glue at the wing joiner formers.

Place duct end formers F20 and Place 3x6 stringer on duct side into formers



Now place the duct sheeting and lining ,cut as per plan from thick paper in 2 pieces , it can be done in 1 piece note the cut-outs in the paper you might widen them up a bit for easy placing.



Place duct sheet from stiff paper cut as per plan. Gently push it in and glue to formers



When done place scrap 6x12mm balsa on the intake lips place 3x balsa on the ducts for strengthening as per plan and sand flush to take fairing sheeting.



Place motor wiring and servo leads. Sand top of F23 flush to take fairing sheet, make sure fuselage is straight and level with fuselage build support place build support formers in front and back see pictures on cd, place 3x6 stringers



Cut fairing sheet to size and glue .



Place 2x 2x12 sheet strip to top of fuselage use the centre former for aligning the strips. Sand flat at rudder position and make openings for dowels and (we did not use a rudder but if you like you can add one) servo wire.

Sheet top of fuselage with the 2x12 sheeting strips try to be as precise as possible it just looks nicer.



Turn over fuselage into build support, it will fit at the wing sections use some in between balsa , the fuselage is stiff now

Place wing fasteners, parts , glue in M3 nut into former with epoxy, join formers , and place to F24 and F42 bottom only place scrap fill to front formers to get flush with sheeting, note remember where you placed them, or do all in a later stadium as we did .



Drill holes into former with a 2,5mm drill take out assembly and drill 4mm, place assembly. Place wings and light drill with a 2mm drill at position , drill joiners with 3mm a few mm, so the M3 will hold the joiner, it is only that it does not slide out you might want to shorten the fasteners.



Place bottom fairing sheeting.



Place all wires you need for servo and motor

Now start sheeting the bottom of the fuselage with the 2x12 strip ,

Mark fan unit hatch, the formers F28,F31 andF32 will be ad in when hatch is cut out.

Sand intake sheet flush with former to take 2x12mm sheeting strip



Mark front retract hatch , you can make a working hatch or make a tight fit hatch around the retract leg.

Place 6mm scrap fill to front intake lip and sand to shape.



Clean up at the wing fairings, sand front to Place the nosecone with Dowel.

Make tail cone with F37 Place tail cone and intake diffusors, cut them in a bit at the top section to fit in the intake and flush with the intake lining.



Make canopy frame from formers as per plan, place top sheeting inside canopy from stiff paper. Clean opening in F17 for canopy closing , harden opening with thin ca. Carefully draw canopy edges with a sharpie better a bit too large as to small cut canopy and glue to frame with canopy glue, we use ca (clean up canopy with window cleaner first)



Glue canopy closing with some scrap balsa to canopy , cut out hatch. And place formers.



Make front retract mount from cnc parts and 3x12 strip do place a layer of glass and epoxy or white glue between sheet .(you need to do this for the wing retract formers also)



Glue assembly in fuselage nose section with white glue., place steering servo to floor glue servo to floor use a 1mm steering wire with a z-bend see the drawing



Front hatch is made in 2 pieces . We used springs and rubber bands for closing , we mount the hinges with fasteners and epoxy, and these parts are not in the kit it is all DIY



Cut out main wheel wells in fairings., details for hatch cover are on the drawing, we used thin aluminium, not in kit



Place fan unit place outlet duct cut as per plan.

Make the outlet tube from the supplied pvc sheet as per plan , do fit and try , we use cello tape to join the plastic, make openings for wiring , place tube into exhaust tube in fuselage , then slide forward over fan unit and fasten with tape , we made a large hole into the fan hatch for cooling the controller, The receiver and retract batteries are placed also in the edf room.



Place the servo connector plate into the fuselage to F23 so the servo and retract wire can be connect easy, the wing should slide in easy but not loose, if to tight sand joiners.



Wing:

Place wing drawing under a sheet of clear plastic.

Start by making the wing sheeting from 1,5mm balsa as per plan , see the templates for cutting the sheets and the wing top view for the glue template , and do make oversize !



Take out all parts that are needed for the wings and clean them up with a sanding block from the small holding tabs.

Place small parts on ribs and place 3x6 former to the mainformer,join retract plates with a sheet of glass and epoxy or white glue for strength.



Set up the frame work with ribs and main formers

make sure the parts are sliding in smooth , to tight a fit can warp the parts , so sand if necessary.

Place formers without glue , when all parts are in ad a drop of glue here or there to hold the set.

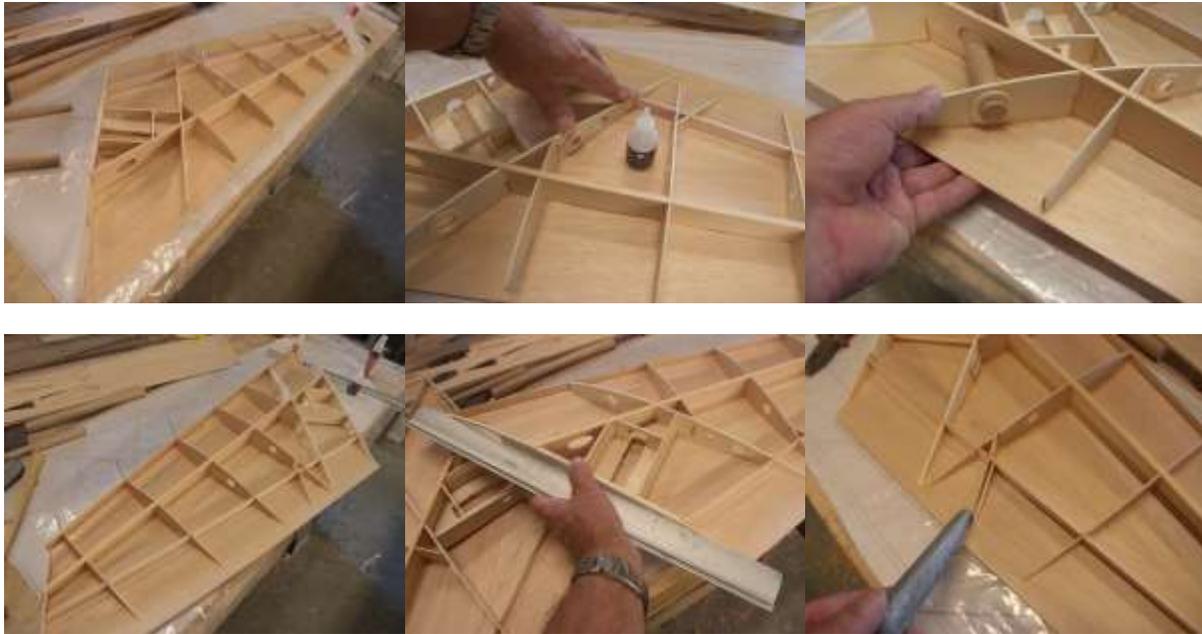
Align all with the drawing , place the 6x12 help former under the set and nail down the parts onto the drawing.



Glue ribs and main formers.

Place retract formers laminate a piece of 200gr glass between them for added strength , use white glue or epoxy for this , place wing joiner as per drawing, Place R18 fill in bottom of retract formers to get a good connection with the bottom sheeting.

Assembly on the sheeting , with the help former as it is a stiff set already , line it out and glue Main former with medium ca to the sheeting as start then glue on till all is glued to the formers, place sub leading edge to rib assembly sheet. Place some scrap balsa to ailevon at hinge position



Take of wing from building board , mark flaps and ailerons with your balsa knife sticking through the bottom sheeting.

Place servos for ailevon we wrap them in cello tape and glue them to the wing sheeting with a 1,5mm balsa doubler on the bottom sheeting and a 6x12 doubler at the top , sand flush with ribs. , cut the servo arm openings and lead the wires through the openings.



sand all so there are no high spots and pin down the inner panel to the building board with help from the 6x12 help former for the correct washout, pin down the wing at the X marked points.



Place wing joiners and glue them into wing with some ca

Cut the top sheeting , mark it with some lines from the inner panel as lead .

And glue top sheeting assembly with thick ca or use slow white glue .

Take of panel, Sand all edges and place leading edge from 6x20 balsa , sand to shape as per plan



Join tip blocks and place to wing at R8 sand tips with course paper and razorplane ,



Take out opening for your retracts, use some scrap ply to fill the mount till the top of the retract unit is flush with the wing sheeting



Now mark trailing edge as per plan and cut clear the trailing edge and sand , you can glass or paper it first , as it is easy to work on , also you can after finishing take out aileron .check disk for pictures. For a close gap between the wing and fuselage , tape inner panel with thin plastic and fill the edge of the outer panel with 5min epoxy , sand flush ..

Place also wing fences at position as per drawing. They can be from ply or polycarbonate, we have them a bit modified in the kit with a few teeth to hold better in the balsa sheet and leading edge, so you have to make tiny cuts.



Vertical Stabilizer:

Start by laying out all parts as on the drawing , you have to build 2 halves place formers and ribs as per drawing , cover drawing with plastic, carefully nail down parts.



Sheet the ribs with a piece of 1,5mm balsa

Take off assembly from the drawing and clean up sides etc. , etc. , make the other half of the vert

stabilizer.

Join them with help from the dowels , do not glue dowels in yet .

Sand leading edge as per plan , place tip , place trailing edge capping, sand all to shape.



Place dowels , cut dowels to size after test fitting to fuselage

Finishing:

The whole wing is covered in 25gr glass and doped with PS100 Pu and filled with some extra talcum powder sands great and smooth, when ready a thinned layer of PS100 is OK

The airframe is filled with lightweight filler thinned down to ad it with a brush , sand with 60grit, then finish with 25gr glass and polyurethane 1K add a bit of talcum powder to get a smooth finish
Now finish with... Vallejo, Humbrol or we used cheap spray cans... take care for the vacuumformings as some paints will not hold as good, or worse will dissolve or make it brittle, use a primer

Canopy:

Cut oversize... And test fit to fuselage, clean with window cleaner , do not add your greasy fingers to it, glue with canopy glue, or ca and make it lively with pilot, radios, etc. The canopy framing can be painted on.

The retract legs are made from bend steel wire that works best on a grass bouncing airfield, the front leg is a commercial product, modified to take a larger wheel, you can use any as long it is not to flex .
The front retract hatch is closed with wiring as per plan do try with a thin plate to close , we also used a wire glued to the front leg for opening and holding the hatch.

Alternative, you can cut out the hatch , place retract , and make a narrow fitted opening around the wheel set place hatch with tape to hold , so no moving hatch then.

Have you found an error in the drawing or parts or instructions, just mail us at info@rbckits.com
I am sure we can find a solution for your build.

Some tips:

We used electric retracts for the DH108 Swallow 90mm, and we used a separate battery for the retracts and receiver this makes it safer, air set is also possible, the weight difference is none

CG: we had to place our retract and receiver battery in the edf room, if you like you can also place your receiver there, it won't give any problems.

This all depends on the battery's you use , 6S5000 no problem 8S500 you need your receiver battery in the back.

Also when flying faster your cg needs to be more forward as flying slow, but take will be more difficult you need more up , if slow flying you need more up trim.it is a flying wing and speed and weight is trim etc. etc. the cg as on the drawing is ok start with the forward position, do not place it more forward as on the drawing that will give problems.

Wing fences: they make for a very sure behaviour, we did not fly without them but you can try, no insurance as airflow can delaminate from ailevons The original had them, another version had slats (that is almost acting the same) there is a info on the disk

Flying:

The DH108 90mm easy lifts of with speed do not yank it from the ground, and is easy to fly and is fast, landing: plan it in and land it as usual but do not make it to slow the DH108 90mm glides very well with wheels in in case of

A 8S battery is powerful enough, or Turbine

Throws of the rudders etc., we like them big, we steer just around the centre of the sticks but it might be too much for you so always, make them large and have a dual rate button in your fingers, to small throws is most of the time problems, to large... it is in your fingers

If you need additional pictures, check the disk or just ask.



Have Fun with the DH108 Swallow 90MM

WWW.RBCKITS.COM

Rontgenweg 16G

2408AB Alphen aan den Rijn

Netherlands

Some items used in the Swallow

Servoless Retract with Metal Trunion 44mm x 41mm Mount (2pcs)

https://hobbyking.com/en_us/servoless-retract-with-metal-trunion-44mm-x-41mm-mount-2pcs.html

Servoless Steerable Nose Retract with Metal Trunion 44mm x 41mm Mount

https://hobbyking.com/en_us/servoless-steerable-nose-retract-with-metal-trunion-44mm-x-41mm-mount.html

Servo Corona DS339

https://hobbyking.com/en_us/corona-ds339mg-digital-metal-gear-servo-4-4kg-0-15sec-32g.html