ANGELWING DESIGNS

Micro Dammit E

The Micro Dammit is designed for intermediate to advanced pilots. Whilst not a difficult model to fly please bear in mind that it is very small, very fast, and extremely agile.

Building is very quick and simple, but again some building experience or the assistance of a skilled model maker is suggested. Small models need to be built carefully and accurately to get the best flying performance possible.

Only lightweight covering should be used in order to reduce the risk of twisting the airframe out of shape when shrinking the film. We used Oracover Oralight on our prototypes. Our feather cover is ideal but as it is totally clear a high visibility sticker scheme would be required unless flown slowly and close.

Balancing a flying wing is very important. The CG is shown on the plan and should not be any further back than indicated, especially for test flights. Launching is easy at 1/3rd throttle with a gentle overarm launch. Once your familiar with the behaviour of the model you can launch from a wing tip with a very gentle side are launch if preferred.

Recommended additional items

2 x Kingmax 4g Micro Digital servo (2.5g to 5g Servo, max thickness 9.5mm)
1 x 4-6 Channel end pin Receiver (eg Spektrum AR6110E)
1 x 1404 Brushless motor 3000kv - 4600kv (we used iFlight Xing 1404 4600kv from HobbyRC)
1 x 6-12 amp Brushless esc with BEC (we used TMotor AT12amp Fixed wing esc from Hobby RC)
1 x 4030 Prop (we used Nazgul T4030 (1.5mm) 2 Blade prop from Hobby RC)
1 x 2s 350mah Lipo (we used GNB 350mAh 2S 70C LiHV Battery (PH2.0 Cabled) from Hobby RC)

Covering Materials

We used Oracover Oralight. Other suitable coverings are Angelwingdesigns Feather cover, Solarfilm Solite (now discontinued) Hangar 9 Ultracote parklite (freely available is USA)

Adhesives

Thin / medium CA for Carbon to Balsa, Balsa to Balsa
Superphatic for wood to wood joins
Contact adhesive to mount the servos

Misc

Velcro for battery mounting
1.5mm / 2mm Heatshrink sleeving for motor to esc leads
Small Cable tie to mount esc
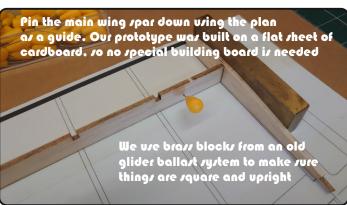M2 x 3mm Screws to mount the motor

Important Notes

Make sure the motor bolts do not protrude into the motor windings.
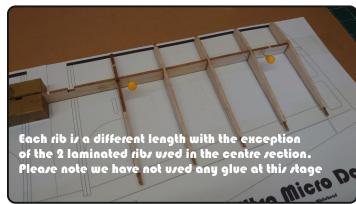
Make sure the motor rotates freely, enlarge the hole in the plywood motor mount it the circlip cathes

Make sure you install the motor mount correctly. The mounting holes are offset
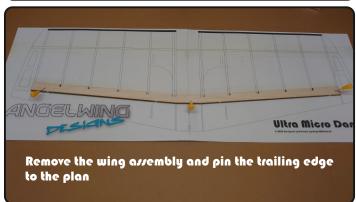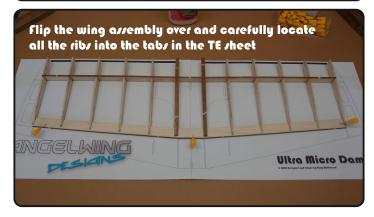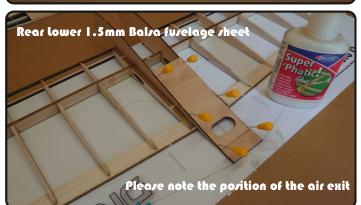
Carefully Cut and join the plan

Ultra Micro Dammit

Use the main spar, and trailing edge sheet to check the plan for alignment before joining with clear tape.

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Ultra Micro Dammit
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Pin the main wing spar down using the plan as a guide. Our prototype was built on a flat sheet of cardboard, so no special building board is needed

We use brass blocks from an old glider ballast system to make sure things are square and upright

Each rib is a different length with the exception of the 2 laminated ribs used in the centre section. Please note we have not used any glue at this stage

laminate the centre ribs

Super Phatic! Glue
DELUXE

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Use the spar to help align the laminated ribs while the glue is still wet

Dry fit the remaining ribs.once your happy glue all the ribs to the main spar using Superphatic or thin CA

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Remove the wing assembly and pin the trailing edge to the plan

Flip the wing assembly over and carefully locate all the ribs into the tabs in the TE sheet

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The ribs don't quite make the rear of the trailing edge sheet. This is correct and prevents the trailing edge looking wavy when viewd from below after covering

The Carbon tube leading edge has a release agent on the outer as part of the manufacturing process lightly sand the tube to a matt finish using wet n dry paper or similar.

Glue the leading edge to the ribs using thin CA.

ANGELWING DESIGNS
Ultra Micro Da

Add both fuselage sides and the rear 1.5mm Balsa Sheet

Rear lower 1.5mm Balsa fuselage sheet

Please note the position of the air exit

locate the plywood spar doubler.
N.B. you may need to trim this on early kits to fit between the fuselage sides

Note the orientation of the plywood motor mount. The motor is offset from the centre line and need to be installed as shown

Bottom front 1.5mm Balsa sheet

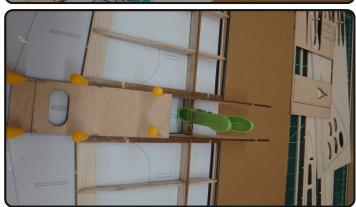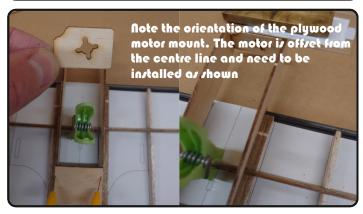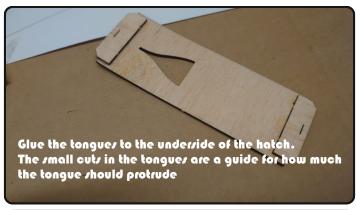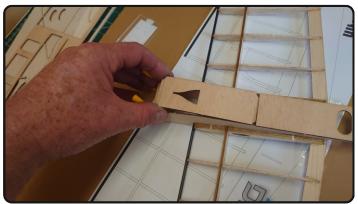Reinforce the motor mount joint with Superphatic PVA or similar.

You can of course use some of the scrap 2.5mm balsa sheet to create fillets to strengthen the motor mount joint. We chose not to as we would prefer to knock the motor mount out in the event of a crash than damage the fuselage. "Yes" we have tested the theory. More than once :)
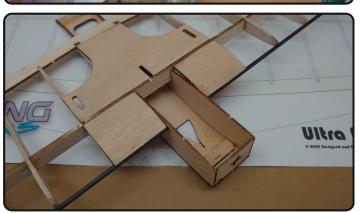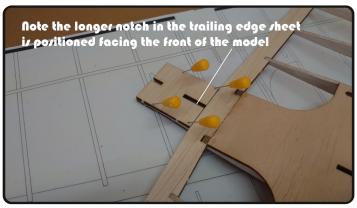
Glue the tongues to the underside of the hatch. The small cuts in the tongues are a guide for how much the tongue should protrude

Trim the fuselage sheet, not the hatch if the hatch is too tight. a gap of approx 1mm front and rear is ideal

Trim the top centre sheet to fit

Sand a bevel (or cut the bevel) onto the centre leading edge sheet. This gives a much nicer fit against the tube leading edge

The Top fuselage sheet is made from 2 separate pieces

Note the longer notch in the trailing edge sheet is positioned facing the front of the model

Do not glue the fin into place. this is done after covering.

Score. along the dotted lines but do not cut all the way through.

Study this image carefully! The rear edge of the wing tip is bent upwards by 1mm. This is not essential but matches the elevon neutral position

Glue the tip gusset onto the wing tip

Glue the tip into place. Make sure both leading edge and trailing edges are aligned

Cut a bevel on each elevon. Don't forget to make a left and right hand elevon
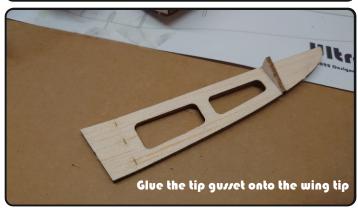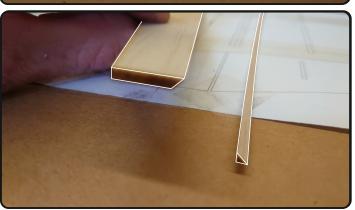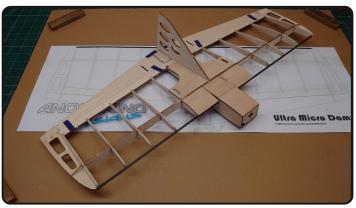
Only a tiny amount of final sanding is needed. The fin should be rounded on the leading edge only. The tips can be lightly rounded on the perimeter DO NOT SAND A RADIUS ON THE ELEVON TRAILING EDGES AS THIS CAN CAUSE FLUTTER

If using a slightly larger servo you may need to remove one of the mounting lugs
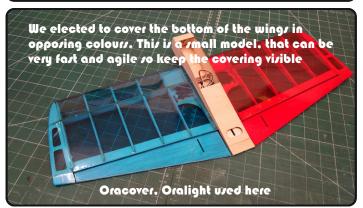
Pictured here is a Kingmax 4g servo

Before mounting any servos into the wing you need to ensure that they are centred and the servo arms are perpendicular to the servo body.

We prefer to do a dry run and set out TX to elevon, make sure the servos are operating in the correct direction.
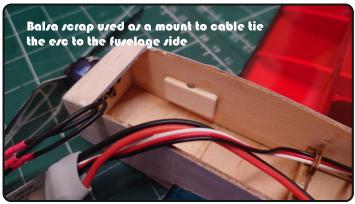
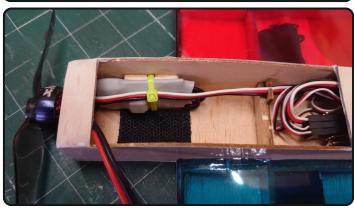De-grease the servo body with an alcohol cleaning wipe or similar before fixing.

UHU Por or similar contact adhesive is idea to affix the servo to the balsa sheet. You can use epoxy if you wish, if using epoxy we suggest you wrap the servo in masking tape first

We also added a small fillet of Superphatic where shown

We elected to cover the bottom of the wings in opposing colours. This is a small model, that can be very fast and agile so keep the covering visible

Oracover. Oralight used here

Here we have one option shown on the plan. The Pushrod joined by using a brass sleeve and soldered

Balsa scrap used as a mount to cable tie the esc to the fuselage side

Battery mounted to one side of the esc using Velcro

Control Throws

Elevator : 7mm Up and down 50% expo - High Rate
5mm Up and down 40% expo - Low Rates

Aileron : 14mm Up and down 60% expo - High Rate
10mm Up and down 40% expo - Low Rate

CG as indicated on the plan. Balance on spikes such as upturned pencils as fingers are not accurate enough