

INSTRUCTION MANUAL

Building Instructions

Before the beginning of WW2 and the Battle of Britain, the BF-109 was without doubt one of the greatest single-seat fighters. The first of the 109E series was completed in 1938 and by the end of the following year, over 1500 had been built. Used extensively until early in 1942 when it was superseded by the Bf-109F, it had certainly made its mark in the Luftwaffe's history.

Easy to assemble and straightforward to fly, the Ripmax Bf-109E is suitable for any pilot who has experience with aileron-equipped models.

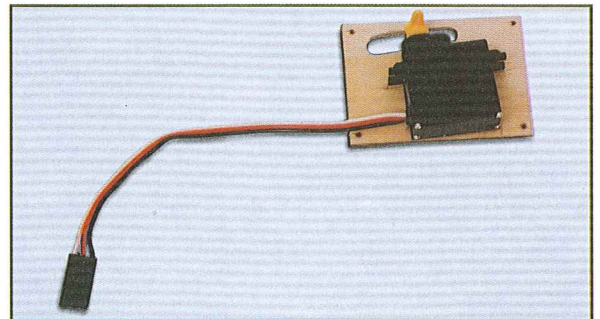
Many combinations of 600 class motor, propeller, speed controller (ESC) and 8 cell battery pack are possible for the Bf-109E, but brushless outrunner motors and Li-Po batteries are recommended for even higher performance. You can simply pick the components that best suit your performance requirements and budget.

While the final assembly is simple and straightforward, we recommend that you read and fully understand these instructions before commencing assembly.

The Wings

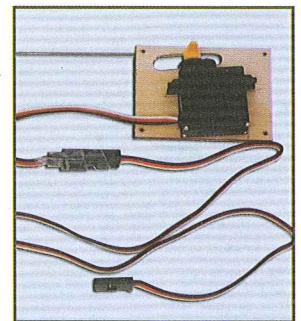
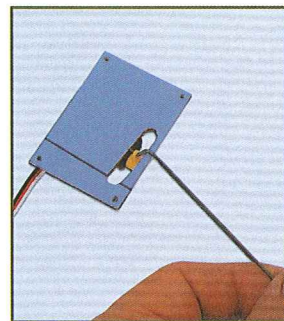
STEP 1

Locate the aileron servo hatch covers. We recommend that your micro servos are attached to the hatch covers using servo tape, or cyano (super glue) having roughened each servo case or wrapping each servo in masking tape first if they are to be re-used. Ensure that the servo output arms are centralised over the pre-cut slots as shown.



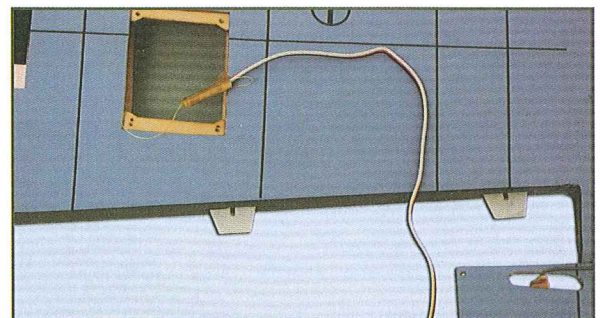
STEP 2

Locate the two pre-bent aileron pushrods and push the z-bent ends through the servo output arms' outermost hole. Attach a suitable servo extension lead to each of the aileron servo and tape the connections so that cannot pull apart as the leads are pulled through the wings in the next step.



STEP 3

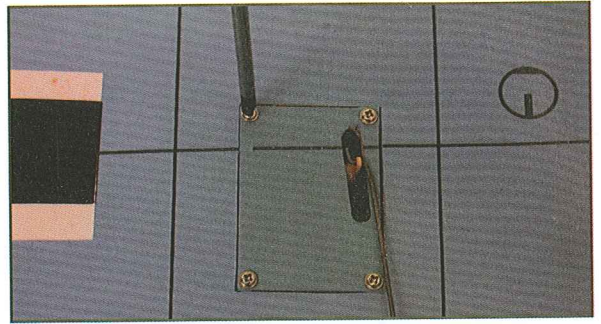
To aid drawing the extended aileron servo leads through the wing, thread has been installed in the wing during manufacture. Tie this to each extension lead and gently pull them through the wing so that they exit through the access holes in the wing's upper surface. Secure the leads with tape so they cannot pull back into the wing.



The Wings

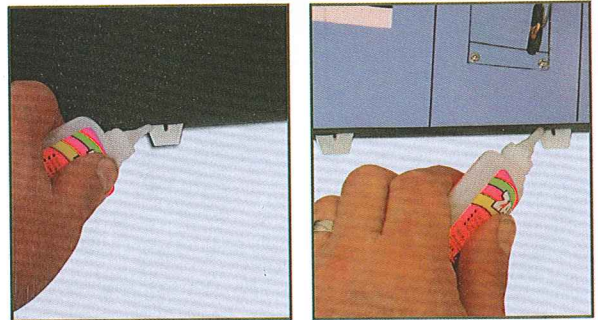
STEP 4

Fit the servo hatch covers using four self-tapping screws for each cover. Note the orientation of the hatch and the servo output arm which should be positioned towards the wing's trailing edge.



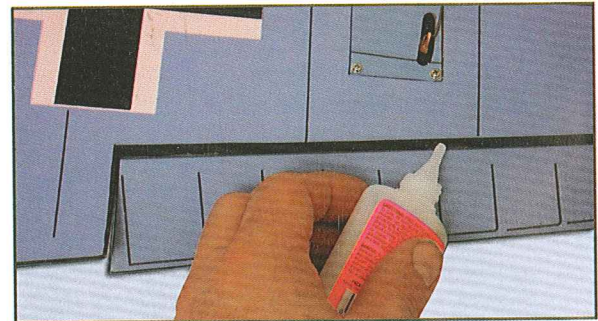
STEP 5

The aileron hinge slots have been pre-cut but the hinges need to be glued in position. Check the hinges are inserted mid-way in their slots then, using thin cyano, pour a couple of drops onto each hinge - above and below - ensuring the glue soaks into the hinge and the surrounding wood.



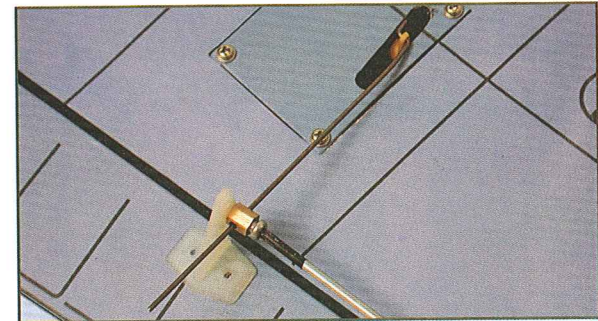
STEP 6

Slide the ailerons into position and ensuring gap-free hinge lines make sure the ailerons are centred between the root and tip. Carefully add a couple of drops of thin cyano to the top and bottom of each hinge ensuring that the glue does not run through the hinge line onto the bottom of the wing. Turn the wing over and drop more cyano onto each hinge from the other side.



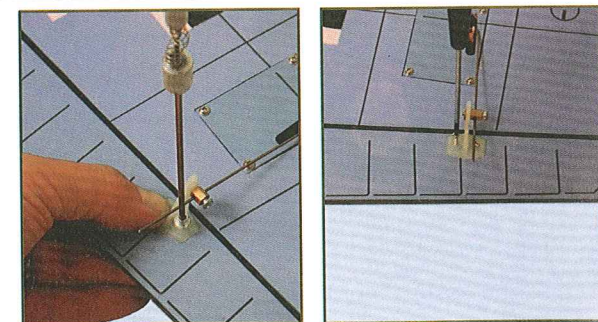
STEP 7

Fit a pushrod connector to the aileron control horn as shown and slip it over the aileron pushrod wire. Centre the aileron and align the horn with the aileron's leading edge and nip the screw tight to retain the pushrod.



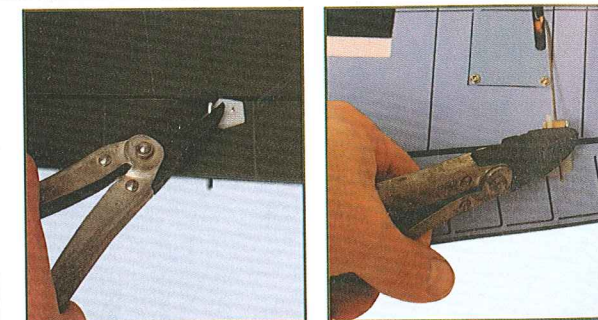
STEP 8

Holding the horn in position, mark the position of the two mounting holes, pilot drill and screw the horn in place. The mounting screws pass through the horn and the aileron and terminate in a nylon retaining plate on the top of the aileron. Do not overtighten the screws and crush the aileron.



STEP 9

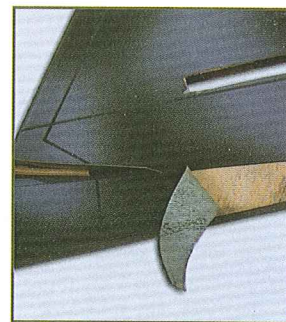
Turn the wing over and trim off any excess mounting screw if it is protruding through the retaining plate using side cutters or suitable pliers. Check the operation of the ailerons and re-centre if necessary. Now carefully trim off any excess wire from the aileron pushrods.



The Tail

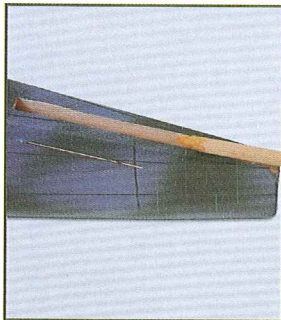
STEP 10

Slide the fin into position ensuring it is firmly pushed down in its slot. Mark the position of the fuselage sides onto both sides of the fin with a felt pen and remove the fin. Trim off the covering below the lines you just marked. It is essential that you do not cut into the wood otherwise the fin will be severely weakened.



STEP 11

Using 5 minute epoxy or cyano, glue the fin in position, carefully checking that it is square to the fuselage and that the rear of the fuselage and the rudder post are aligned. Wipe off any excess glue that is squeezed out of the mounting slot.



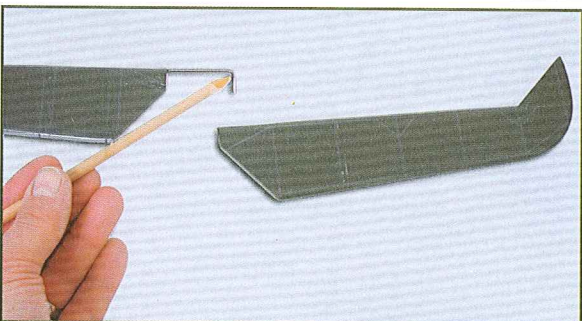
STEP 12

Locate the 4 elevator hinges and insert them mid-way into the tailplane. Using thin cyano, pour a couple of drops onto each hinge - above and below - ensuring the glue soaks into the hinge and the surrounding wood.



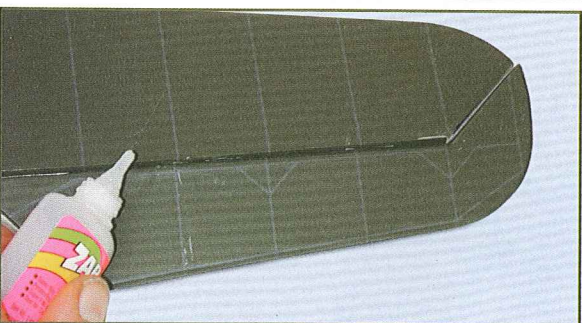
STEP 13

Apply a small amount of 5 minute epoxy to the pre-bent wire elevator joiner and slide it into position in the elevator halves. Using a sheet of polythene to protect your workbench, ensure that the two elevators are held flat and that the hinge line is straight while the glue dries cures.



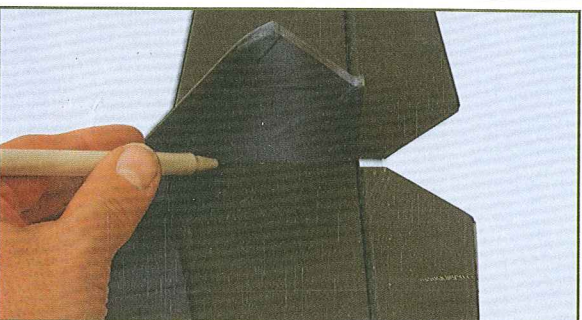
STEP 14

Once the glue has completely cured, slide the elevators into position, ensuring a gap-free hinge line. Make sure the elevator is centred between the tailplane tips and that it is free to move through its entire travel, then carefully add a couple of drops of thin cyano to the top and bottom of each hinge ensuring that the glue does not run through the hinge line onto the bottom of the tail.



STEP 15

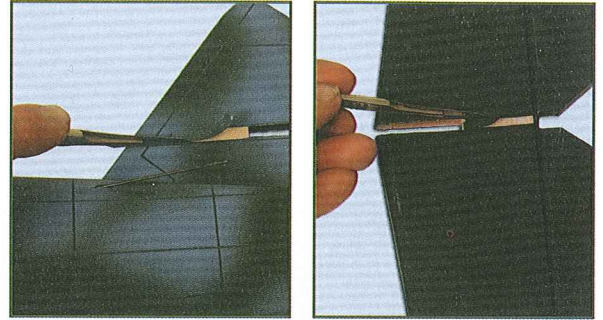
Slide the tailplane into position on the fin ensuring it is firmly pushed forward in its slot. Mark the position of the fin on both sides of the tailplane and the position of the tailplane on both sides of the fin using a felt-tipped pen. Now remove the tailplane.



The Tail

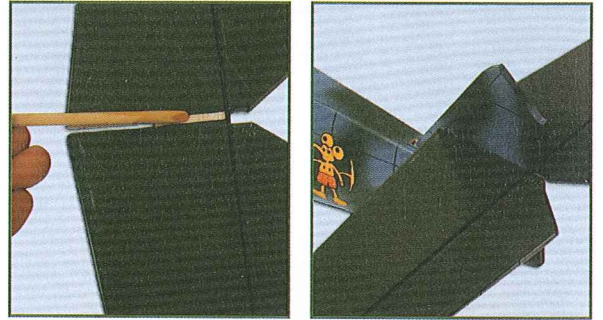
STEP 16

Trim off the covering from the fin and the centre of the tailplane between the lines you just marked. It is essential that you do not cut into the wood otherwise both the fin and the tailplane will be severely weakened.



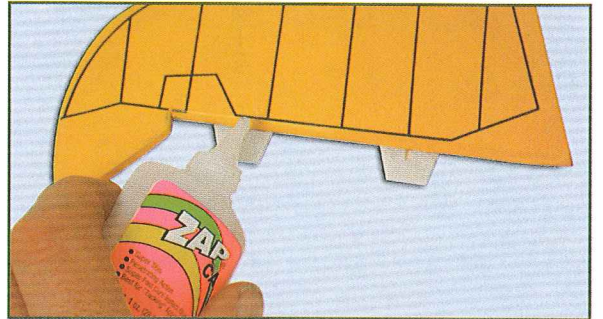
STEP 17

Using 5 minute epoxy or cyano, glue the tailplane in position, carefully checking that it is at 90° to the fin and square to the fuselage. Hold the tailplane securely in position with tape while the glue cures.



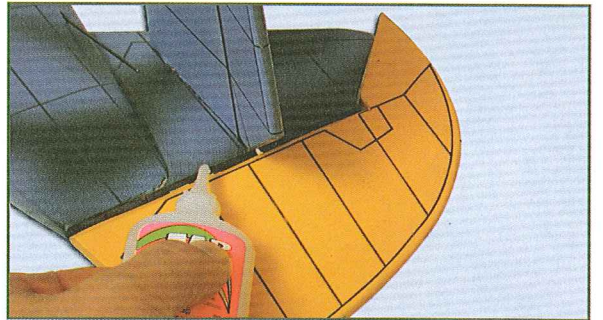
STEP 18

Locate the 2 rudder hinges and insert them mid-way into the rudder. Using thin cyano, pour a couple of drops onto each hinge - above and below - ensuring the glue soaks into the hinge and the surrounding wood.



STEP 19

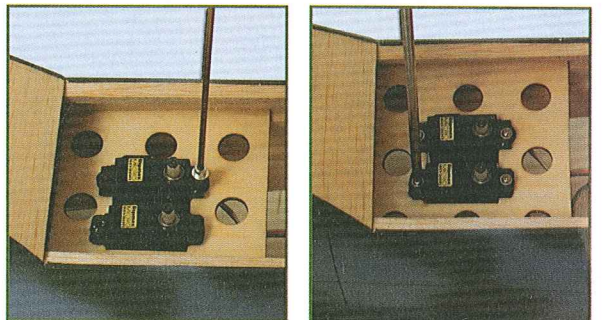
Slide the rudder into position, ensuring a gap-free hinge line. Make sure the rudder is correctly aligned to the base of the fuselage and that there is clearance between the rudder's tip and the top of the fin. Ensuring that the rudder is free to move through its entire travel, carefully add a couple of drops of thin cyano to the top and bottom of each hinge ensuring that the glue does not run through the hinge line onto the other side.



Radio Installation

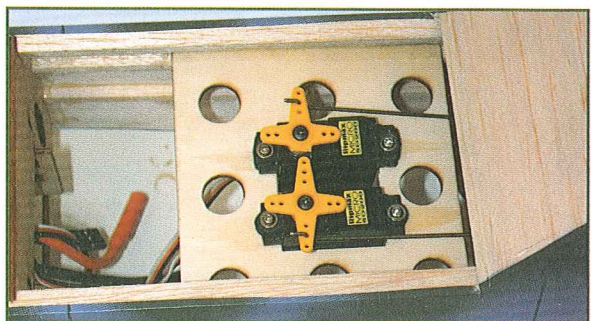
STEP 20

Fit the rubber grommets and brass ferrules supplied with your rudder and elevator servos. After pilot drilling the mounting holes, screw the two servos in position with their output arms orientated to the front of the model as shown. If necessary, enlarge the mounting holes in the servo tray with a sharp knife.



STEP 21

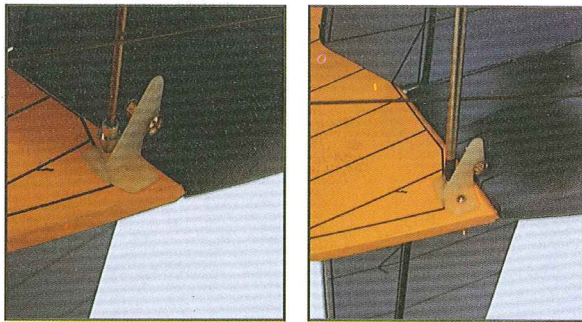
Working from inside the radio bay, connect the two z-bent ends of the rudder and elevator pushrods onto their servo output arms choosing the middle hole in each as shown. Ensure both servos are centred and the servos can travel over their entire range without the pre-fitted pushrods binding.



Radio Installation

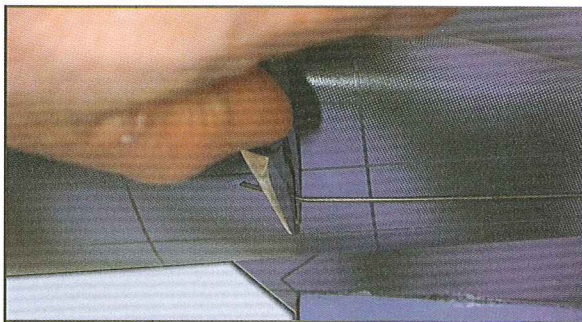
STEP 22

Fit a pushrod connector to the rudder control horn as shown and mark its position on the bottom of the rudder. Note it mounts on the right hand side of the rudder looking from the rear. Aligning it with the rudder hinge line, mark the horn's mounting holes, pilot drill then screw it in position using the screws provided, into the nylon backing plate.



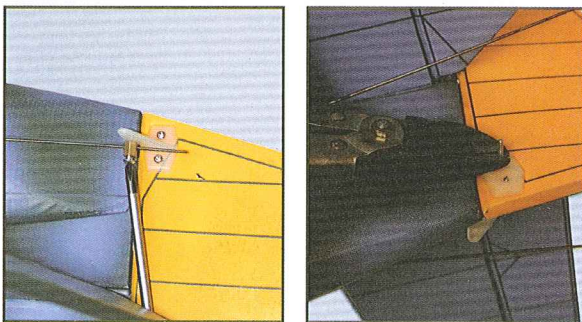
STEP 23

Using a pair of pliers, gently bend the rudder pushrod after it exits the fuselage on the right hand side of the model (looking from the rear) so that it aligns with the rudder control horn.



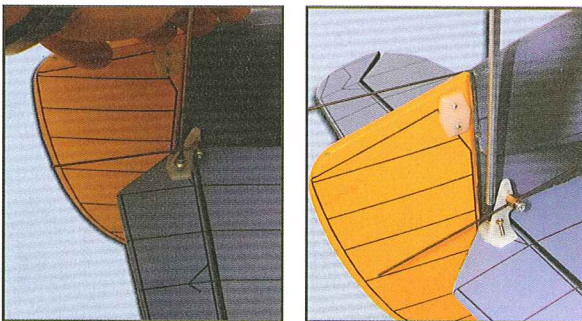
STEP 24

Slide the rudder pushrod through its connector and with the rudder servo centred, hold the rudder neutral and tighten the retaining screw as shown. Check the operation of the rudder and re-centre if necessary. Now carefully trim off any excess wire from the pushrod and the rudder horn's mounting screws.



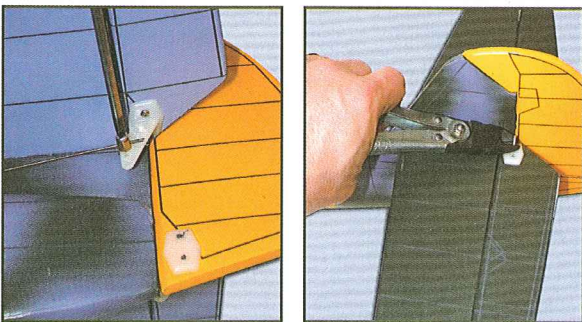
STEP 25

Fit a pushrod connector to the elevator control horn and slide it over the elevator pushrod. Note that the horn mounts under the left hand elevator looking from the rear. Aligning it with the elevator hinge line, mark the horn's mounting holes, pilot drill then screw it in position using the screws provided, into the nylon backing plate.



STEP 26

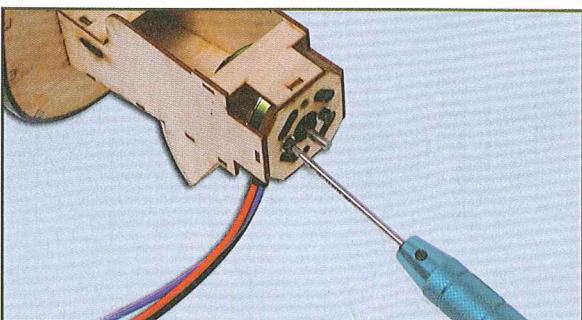
With the elevator servo centred, hold the elevator neutral and tighten the connector retaining screw as shown. Check the operation of the elevator and re-centre if necessary. Now carefully trim off any excess wire from the pushrod and the elevator horn's mounting screws.



Motor/Cowl Installation

STEP 27

Screw your choice of motor to the front bulkhead using the mounting screws supplied with your motor. The Bf-109E is suitable for 600 class ferrite motors or for even better performance a brushless outrunner as shown here.



Motor/Cowl Installation

STEP 28

Draw the motor's wires through to the radio bay and connect to your ESC. Use a short strip of Velcro (hook and loop) to secure the ESC to the fuselage as shown. Mount the switch through the fuselage side or so that it is accessible through the battery access hatch on the top of the fuselage.



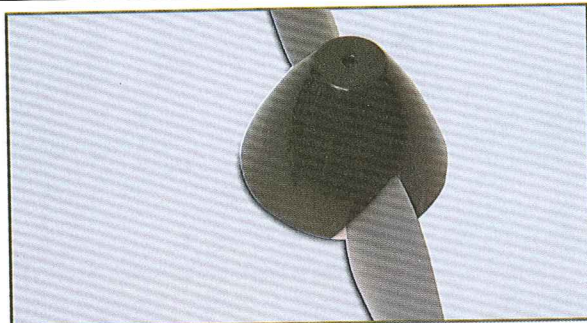
STEP 29

The spinner is made up of two ply discs and a moulded nosecone. Commence assembly by enlarging the holes in the centre of the two ply discs using a prop reamer so they are a snug fit on your propeller adaptor. If necessary, glue the additional smaller plywood disc on top to act as a spacer. Now thread the backplate discs onto the adaptor followed by the propeller, washer and retaining nut. Tighten securely.



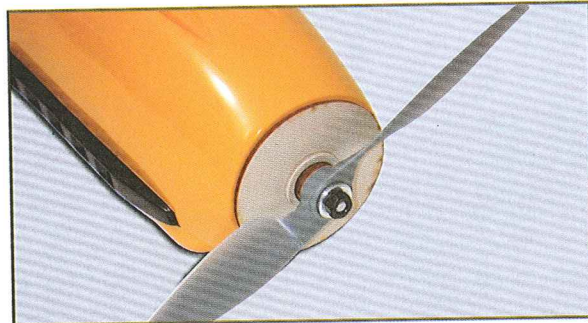
STEP 30

Cut away the spinner moulding to clear the propeller and test its fit on to the backplate, ensuring that the assembly rotates concentrically. This is best accomplished by spinning the assembly on the motor shaft but without tightening the adaptor grub screw.



STEP 31

Slide the cowl onto the front of the model. Use the spinner as a guide to ensure the cowl is square. Mark the positions for the three cowling retaining screws. Use scraps of masking tape to reduce the risk of the drill slipping. Pilot drill the cowling and retaining blocks.



STEP 32

Secure the cowl in position with the self tapping screws supplied. Thin cyano can be run into the holes to toughen the threads. Ensure it is fully cured before fitting the cowl.



STEP 33

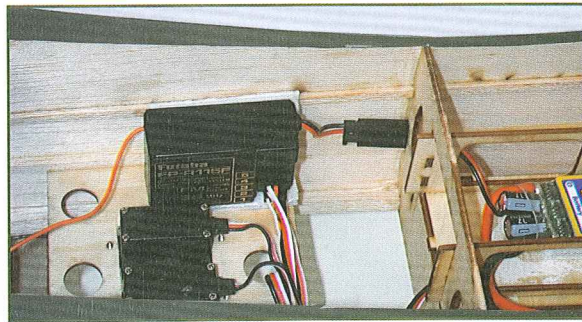
Glue the spinner to the backplate, ensuring that the assembly rotates concentrically by spinning the assembly on the motor shaft. Drill a clearance hole in the front of the cowl to allow the propeller adaptor's grub screw to be tightened. Slide the propeller/spinner assembly in place on the motor and tighten the grub screw.



Final Assembly

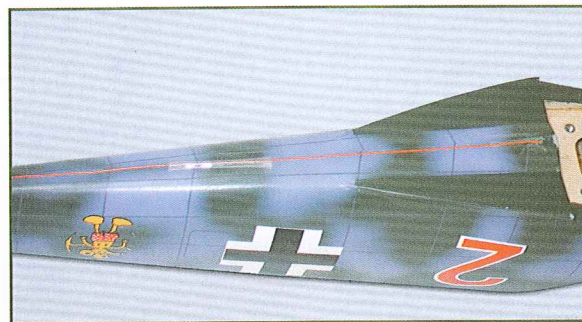
STEP 34

Install the receiver in the fuselage securing it in place with Velcro or double-sided tape. Connect the flight battery and thoroughly check all the control surfaces for correct movement direction and amounts. Ensure the motor runs with minimum vibration over the entire speed range.



STEP 35

Lead the aerial out through the bottom of the fuselage behind the wing. Secure it to the underside and the rear of the model with small strips of clear tape.



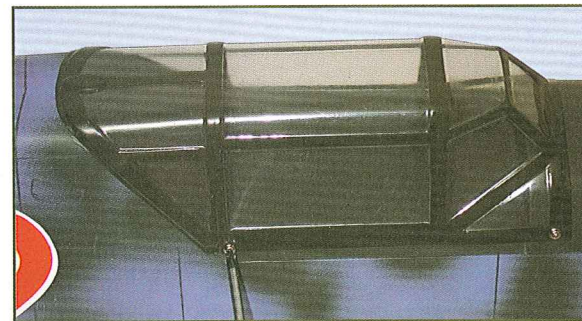
STEP 36

The flight battery is located under the main hatch for easy removal when charging. Use Velcro to retain it as shown. Its final position is determined when the model is correctly balanced.



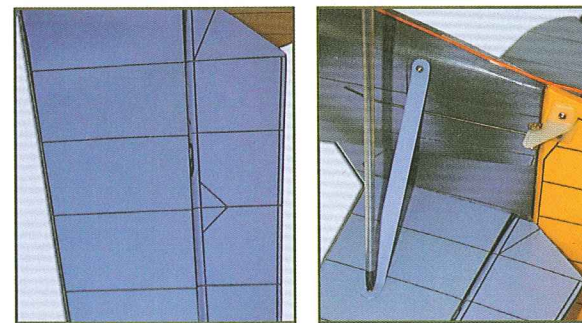
STEP 37

Tape the canopy in position on the fuselage/hatch, checking that the canopy frame is centred. Pilot drill and screw the canopy in position using the four self tapping screws supplied.



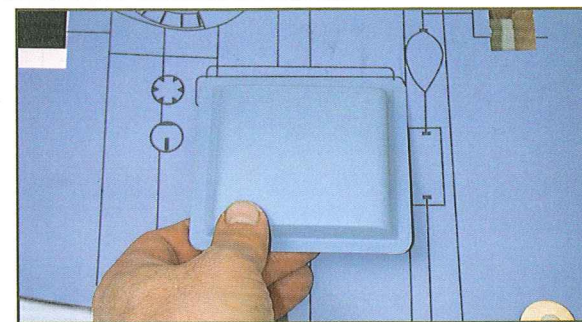
STEP 38

Locate the pre-bent tailplane supports and attach to the tailplane using the small self tapping screws supplied. Ensure that the tailplane remains square to the fin and fuselage while the supports are fitted.



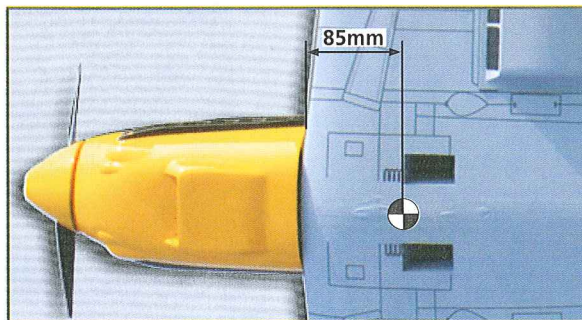
STEP 39

Fit the two radiator mouldings to the underside of the wings as shown with 5 minute epoxy or cyano. Use the panel lines as a guide to their positions.



Balancing

Check the balance point which should be 85mm back from the leading edge at the centre section. Adjust the position of the flight battery to achieve this balance point if necessary.



Control Surface Movements

Aileron: 15mm each way Exponential: Ailerons: -30%
Elevator: 8mm each way Elevator: -20%
Rudder: 25mm each way
All measured at the widest point of the control surface.

Pre-Flight Checks

Before every flying session you MUST check the control range of your R/C system.

Have a helper hold the model ensuring that they are clear of the propeller. With the transmitter and model switched on, retract the transmitter aerial and walk away moving the elevator stick on the transmitter.

Run the motor to full power and repeat the elevator movements. You should be able to walk between 25-30 metres without interference or losing control. If you lose control or the radio appears to have interference do not attempt to fly.

General Flying Tips

For anyone with aileron experience, the Bf-109E is not a difficult model to fly and possesses a wide speed range capability. Choose a bright, calm day for the first test flights enlisting the help of a friend to launch the model for you.

Grip the model using the hand launch pockets in the wing. With the wings level and nose slightly high apply full power, allowing a couple of seconds for the motor to attain maximum rpm before launching the model directly into any wind. Allow the model to climb to a safe height before attempting to trim the model.

Become accustomed to the model's available flying time by introducing more and more advanced manoeuvres over several flights. All conventional aerobatic manoeuvres are possible with the Bf-109E including loops, rolls and stall turns and combinations of these from level flight.

For greater realism convert height into speed before beginning larger and more graceful manoeuvres.
Happy and Safe Flying!

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Guarantee

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The above guarantee in no way affects your statutory rights as a consumer.

Made in China.

Recommended Power Systems

Standard:

Motor -

M-KMSQ2814/06
KMS Quantum 2814/06
Brushless Motor

ESC -

P-KMSSE040 KMS Sentry 40
Brushless Speed Controller

Li-Po Battery Pack:

O-IM3S1P400020C
Impulse Power 11.1v 4000mAh

High Power:

Motor -

M-KMSQ2820/05
KMS Quantum 2820/05
Brushless Motor

ESC -

P-KMSSE040 KMS Sentry 40
Brushless Speed Controller

Li-Po Battery Pack -

O-IM4S1P320020C
Impulse Power 14.8v 3200mAh