

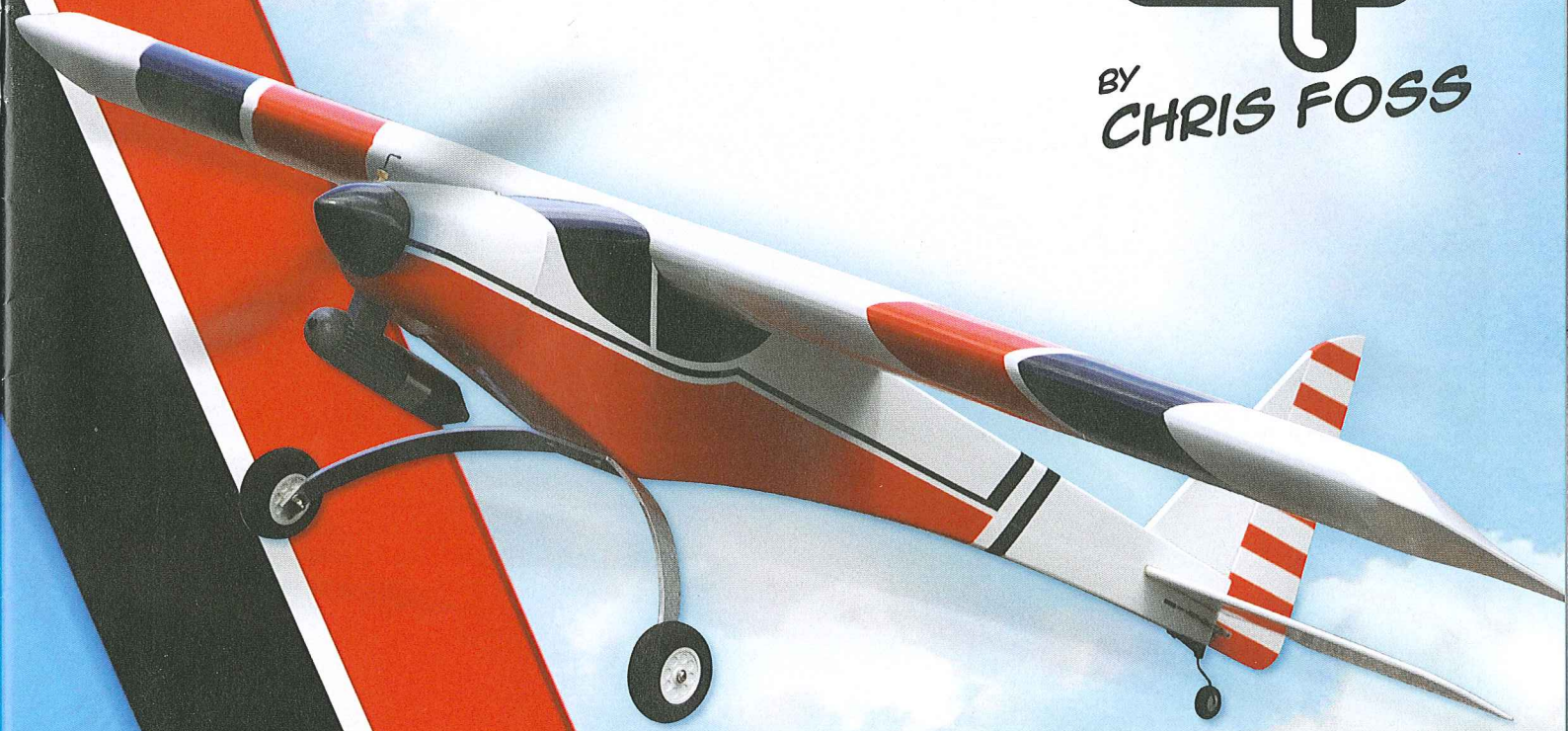
Ripmax

WOT^{MK2} 4

BY
CHRIS FOSS

A
Chris Foss Design

**Instruction
Manual**



The Designer



Chris Foss outside his factory in 1990

Chris Foss

The fascination of flight captured Chris's imagination early on in his life when he started building, from kits and plans, simple free flight gliders and rubber powered models. By his early teens, Chris was already experimenting with his own designs, several of which have been featured as constructional plans in various aeromodelling magazines.

It wasn't long before his fiercely competitive nature started to show itself, with Chris channelling his energies into competing at national level with his own high performance free flight gliders.

In due course, Chris became tempted by the affordability of simple and fairly reliable radio control equipment, so by 1967 he had already designed, built and flown his first radio controlled glider. By 1976 his career in the architectural profession came to an end when he decided to channel his knowledge and experience into a full time kit manufacturing business, 'Chris Foss Designs'. It soon developed into one of the UK's most successful and respected R/C model businesses, offering a range of stylish and quality products.

With the advent of reliable and advanced radio control systems, Chris was able to expand his competition flying with considerable success. His competition highlights include becoming 1977 British National Thermal Soaring Champion, 1986 British National Scale Champion, placing 4th at the 1986 World Scale Championships in Norway, placing 6th at the 1992 World Scale Championships in the USA, and winning both 1992 and 1993 'Radioglide' National Thermal Soaring Championships.

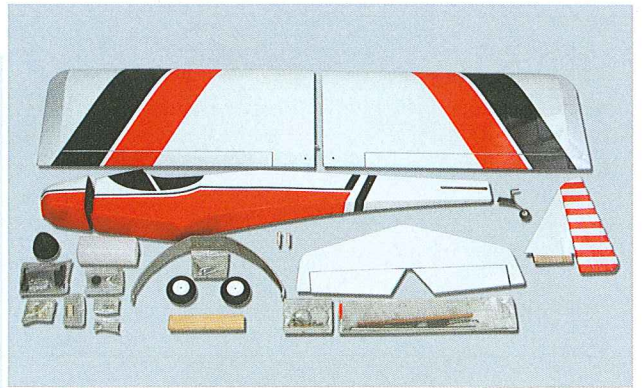
In the late 70s Chris joined the local gliding club and achieved his ambition to actually fly himself! A few years later he expanded into powered flight and qualified for his Private Pilot's Licence. By 2007 Chris had accumulated 2000 flying hours in a wide variety of light aeroplanes, including a vintage Piper Cub, Jungmann aerobatic biplane, various glider tow planes and his favourite, a Vans RV8 American aerobatic kitplane.

WOT 4 - Instructions

Introduction

Congratulations on your purchase of the WOT 4 Mk2 ARTF - the first Almost Ready to Fly version of his timeless classic. Described as the most exciting sports aerobatic models of all time, it can be assembled in the minimum of time.

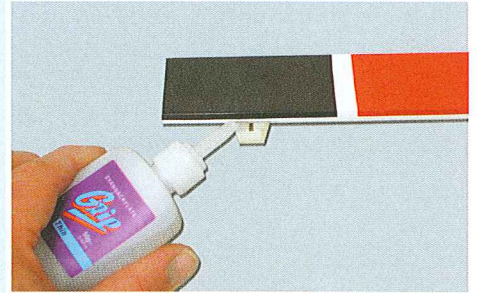
Before commencing construction, please ensure that you read these instructions in their entirety.



Fitting the Ailerons and Completing Wing

STEP 1

The wings and ailerons are supplied with the hinges loose fitted, ready for installation. Remove both ailerons and ensure that the hinges are inserted mid-way in their slots. 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.



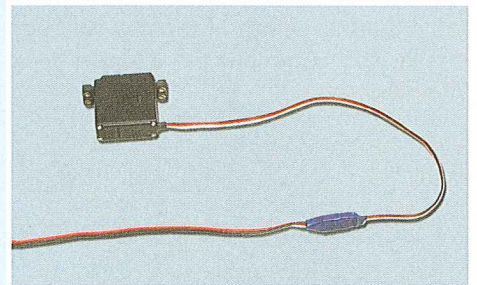
STEP 2

Carefully slide each aileron into position, ensuring a gap-free hinge line. Make sure that each aileron lines up with the wing tips and that they are free to move through their entire travel. Centre each aileron between the root and tip so that there is an equal gap at both ends. Minimise any hinge gap, 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 wing. Turn the wing over and drop more cyano onto each hinge from the other side.



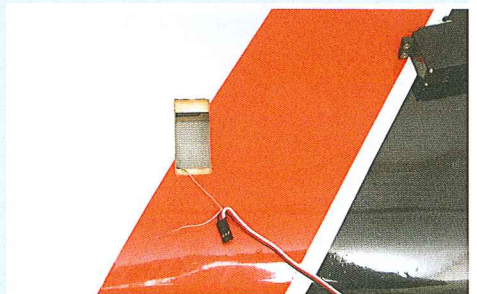
STEP 3

Prepare your aileron servos by connecting a suitable 300mm extension lead to each. It is a good idea to use a lead-lock, a turn of insulation tape or heatshrink tube over the joint for additional security.



STEP 4

Check that your choice of servo fits the servo apertures in the underside of the wing. Adjust the size of the mounting holes with a sharp knife if required. Carefully tie each aileron servo's lead to the lead to the length of cotton already in the wing panels.



STEP 5

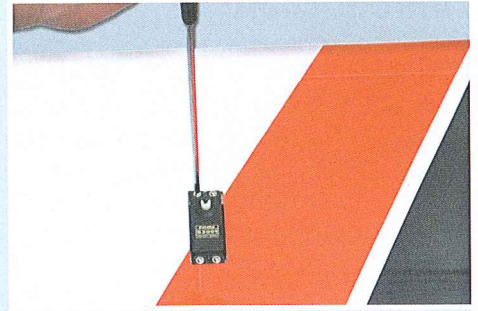
Cut away the covering over the servo lead holes in the underside of the wing panels, and carefully pull the leads through to the centre of the wing using the cotton thread. Lift out the servo connector through the hole then retain the servo lead with a short length of tape to stop the lead pulling back into the wing.



WOT 4 - Instructions

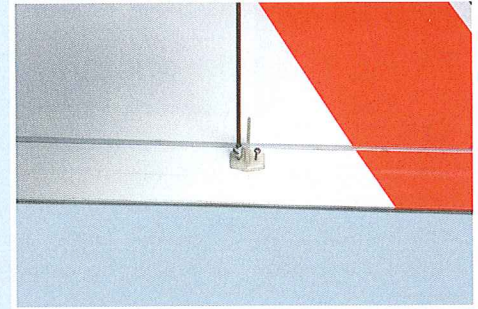
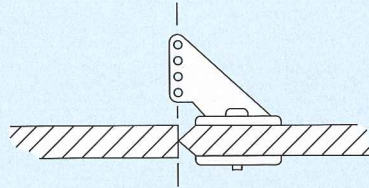
STEP 6

Screw the aileron servos in position using the mounting screws, rubber grommets and ferrules supplied with your radio. Note that the output arms face towards the rear of the wing.



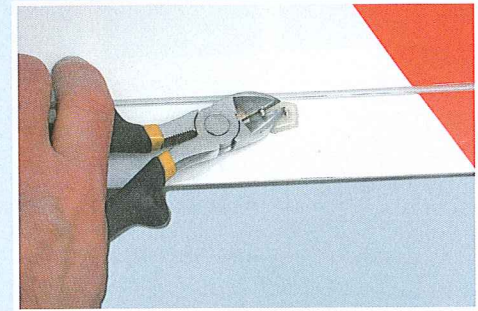
STEP 7

Locate the aileron control horns. They are screwed in position on the ailerons in line with the aileron servo's output arm. Align the row of holes in the horn with the hingeline. Mark and pilot drill two mounting holes then screw the horn to the aileron. The screws thread into the moulded horn plate on the top surface of the wing.



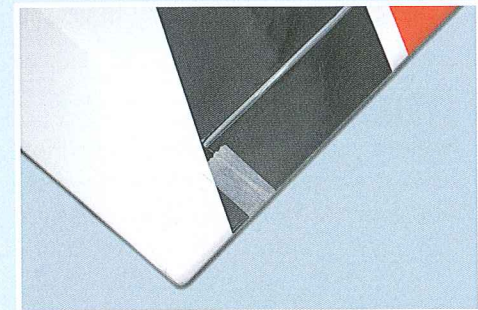
STEP 8

Do not overtighten the control horn mounting screws - you don't want to crush the aileron. Turn the model over and trim off any excess thread using side cutters.



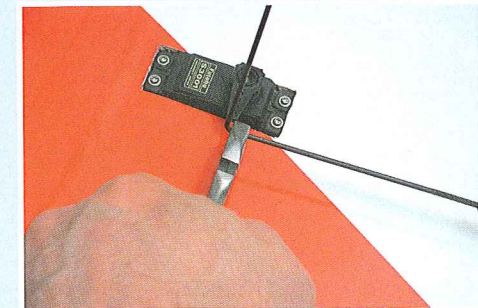
STEP 9

Use a small length of tape to hold each of the ailerons at their neutral position while you complete the aileron linkages. Ensure that both aileron servos are centred.



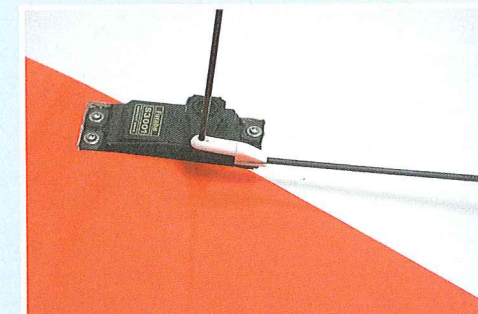
STEP 10

Locate a threaded wire aileron pushrod and attach a nylon clevis to the end. Connect it to the aileron horn and mark the position the control rod passes over the servo's output arm. Bend the pushrod up at 90° at this point.



STEP 11

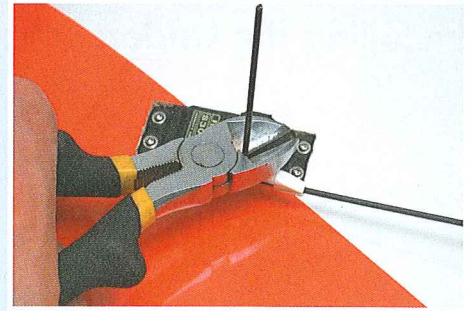
Slide the aileron servo horn over the wire, re-fit to the servo and snap a moulded keeper onto the pushrod to retain it as shown.



WOT 4 - Instructions

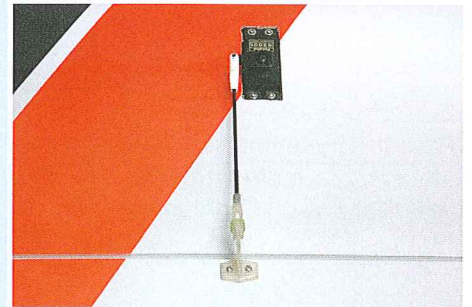
STEP 12

Trim off the excess pushrod wire using side cutters. Repeat the procedure for the second aileron in exactly the same way.



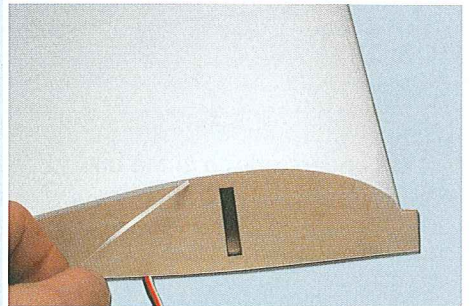
STEP 13

Adjust the pushrods to ensure that the ailerons are centred with the aileron servos at their neutral position. Test to ensure that both ailerons move freely across their entire throw. Note that we have fitted short lengths of fuel tube over the clevis to ensure it cannot open under flight loads.



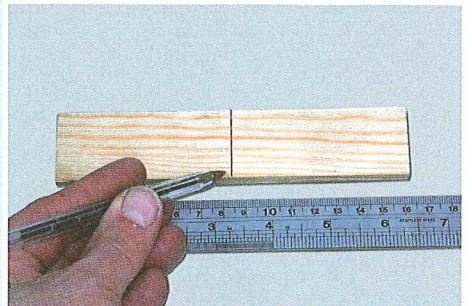
STEP 14

Using a sharp knife, prepare the wings for joining by trimming off any excess film that has overlapped the root ribs during manufacture.



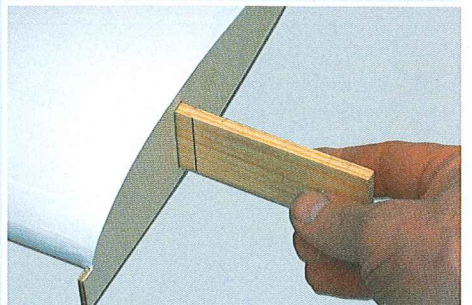
STEP 15

Locate the wing joining brace. Measure and mark a centre-line on the joining brace. Coat the inside of the corresponding slot in the wing panel and one half of the brace with rapid setting epoxy. Ensure that adequate epoxy is used to fully cover all surfaces.



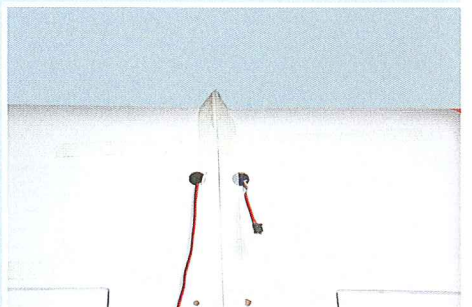
STEP 16

Insert the brace half-way into one wing panel using the centre-line as a guide. Wipe off any excess epoxy.



STEP 17

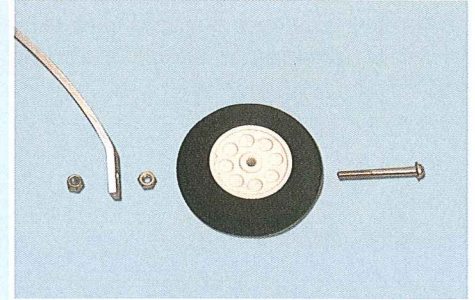
Protect the covering with masking tape, then spread sufficient epoxy over the opposite panel joiner slot, wing joiner and root rib. Bring the two panels together ensuring the epoxy fills the joint. Wipe off any excess that squeezes out of the joint, then use tape to hold the panels together as the adhesive cures.



Installing the Undercarriage

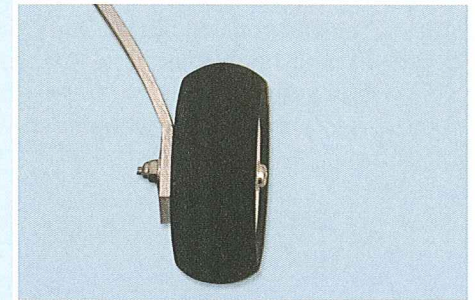
STEP 18

Locate the aluminium main undercarriage, wheels and wheel mounting hardware (mounting screws, plain and nyloc nuts).



STEP 19

Pass the mounting screw through the wheel, screw on a plain nut, then pass through the main undercarriage. Now fit a nyloc nut on the inside. Hold the inner nut still and tighten the nyloc nut. Check the wheel rotates freely. Repeat for the second wheel.



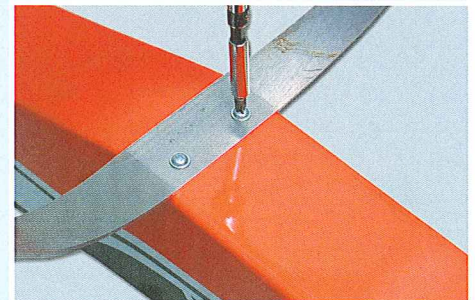
STEP 20

Using a sharp knife, locate the position of the captive nuts already installed for the undercarriage in the underside of the fuselage. Carefully trim away the covering with a sharp knife.



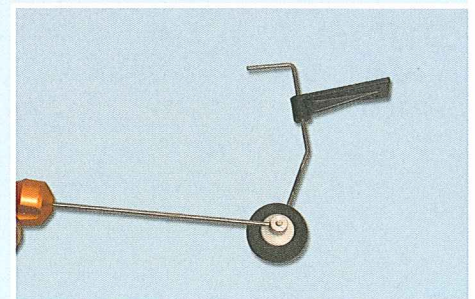
STEP 21

Install the main undercarriage using the two mounting screws supplied.



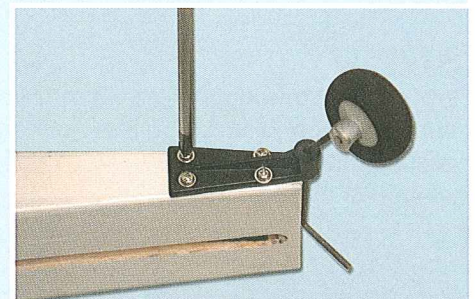
STEP 22

Locate the pre-bent tailwheel assembly and fit the tailwheel using the collet supplied.



STEP 23

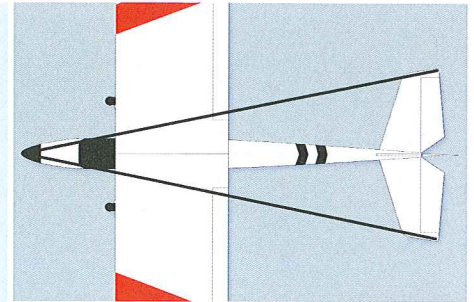
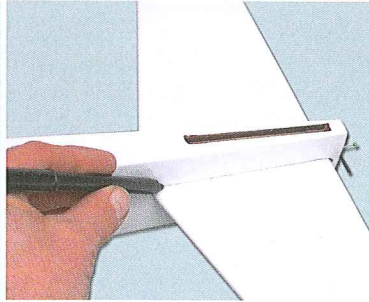
Screw the tailwheel assembly in position with the tailwheel wire inline with the rear of the fuselage.



Tailplane and Fin

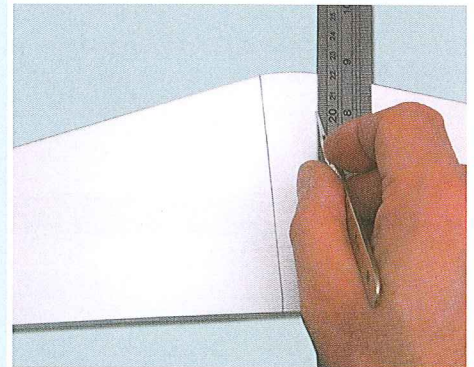
STEP 24

Slide the tailplane into its pre-cut slot in the rear of the fuselage. Ensure that it is square to the fuselage and centred in its slot using a long ruler or string as shown in the diagram on the right. Mark the tailplane on the top and bottom where it enters the fuselage using a soft, water-soluble pen.



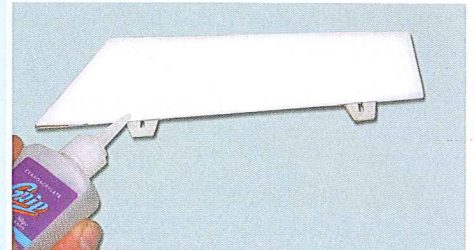
STEP 25

Remove the tailplane and cut away the covering from just inside the marked lines to give a film-free surface for the glue to bond. **IMPORTANT:** Ensure that only the film is cut - not the tailplane - as this will seriously weaken the structure. Roughen the wire elevator joiner to increase the bond strength in the next step. Now loosely position the joiner at the rear of the tailplane slot. Using epoxy applied to the exposed wood, glue the tailplane into its slot. Check that the tailplane is correctly aligned and square to the fuselage. Use masking tape to protect the covering whilst you do this (removing it as soon as you are satisfied with the alignment and before the epoxy cures). Any excess epoxy can be wiped from the model before it cures using methylated spirit or methanol.



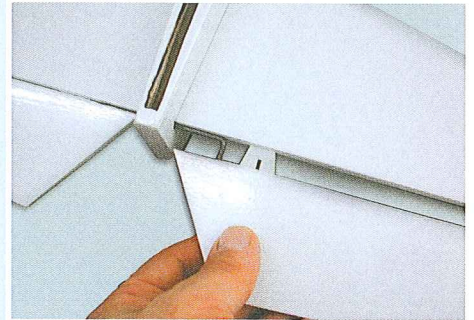
STEP 26

Insert two hinges in each elevator half, ensuring they are located mid-way in their slots. 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 27

Protecting the rear of the tailplane with a strip of masking tape, apply epoxy to one half of the wire elevator joiner and force it into the corresponding slot and hole in the elevator half. Now slide the first elevator into position ensuring that the joiner and both hinges enter their pre-cut slots/hole in the tailplane/elevator. Ensuring a gap-free hinge line and a 1mm gap between the elevator and tip, add a couple of drops of thin cyano to the top and bottom of each hinge. Make sure that the glue does not run through the hinge line onto the bottom of the tail.



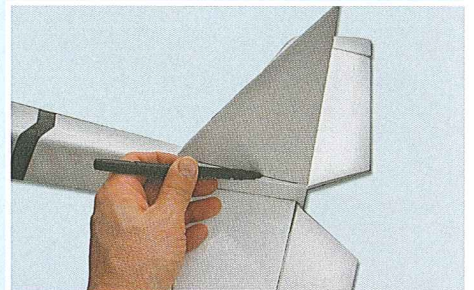
STEP 28

Turn the model over and drop more cyano onto each hinge from the other side. Repeat for the second elevator half.



STEP 29

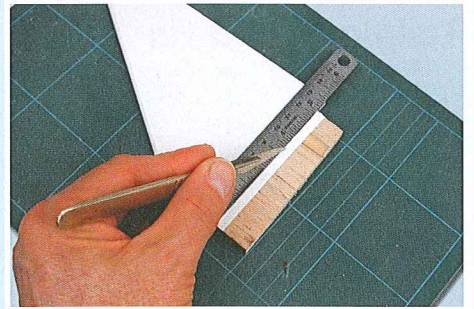
Slide the fin into its pre-cut slot in the top of the fuselage. Ensure that it is pushed down far enough to touch the top of the tailplane. Mark the fin on both sides where it enters the fuselage using a soft, water-soluble pen.



WOT 4 - Instructions

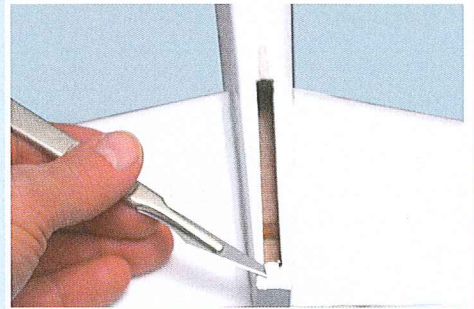
STEP 30

Remove the fin and cut away the covering from just below the marked lines to give a film-free surface for the glue to bond. **IMPORTANT NOTE:** Ensure that only the film is cut - not the fin - as this will seriously weaken the structure.



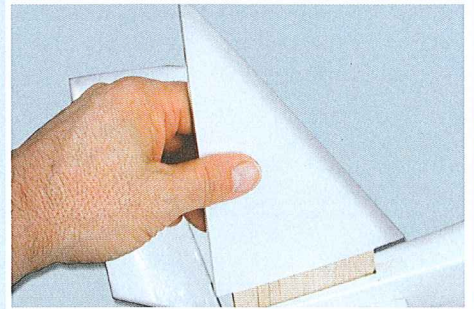
STEP 31

Using a sharp knife, carefully remove the film from the fuselage from just in front and behind the fin mounting slot as shown so that the fin has a completely film-free surface to bond to.



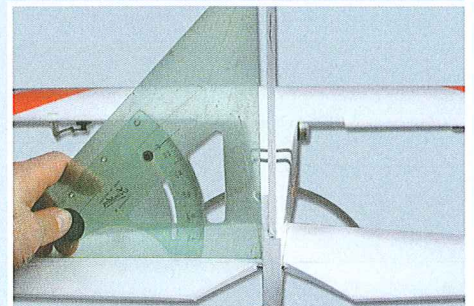
STEP 32

Using epoxy, glue the fin in its slot. Use masking tape to protect the covering whilst you do this (removing it as soon as you are satisfied with the alignment and before the epoxy cures).



STEP 33

Before the glue cures, check that the fin is pushed down fully into its slot in the top of the fuselage and ensure that it is perpendicular to the tailplane using a set square. Any excess epoxy can be wiped from the model before it cures using methylated spirit or methanol.



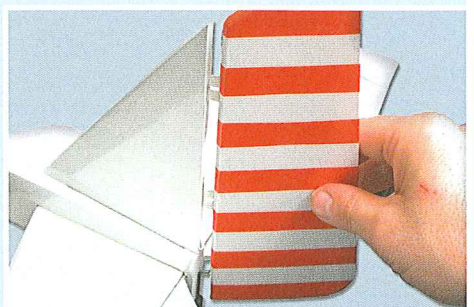
STEP 34

Insert two hinges into the rudder, ensuring they are located mid-way in their slots. 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 35

Protecting the rear of the fuselage with a strip of masking tape, mix and apply a small quantity of epoxy to the tailwheel wire. Force some into the slot and hole in the rudder then slide the rudder in place making sure that both hinges are located in their slots in the fin and that the tailwheel wire fits neatly into its recess in the rudder. Wipe off any excess epoxy.



STEP 36

Ensure that the rudder is aligned to the top of the fin and there is free movement left and right plus a gap-free hinge line. Now apply a couple of drops of thin cyano to each side of each hinge taking care not to allow the adhesive to run through the gap onto the other side of the model.



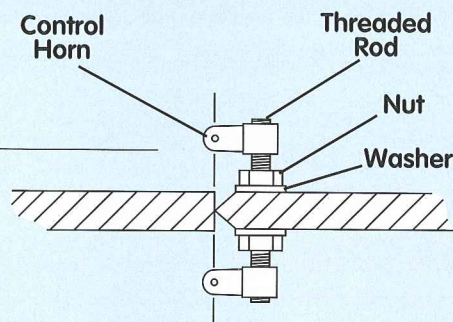
STEP 37

Locate the closed loop exit slots on each side of the fuselage under the tailplane. Use a sharp knife to carefully remove the covering from the slots.



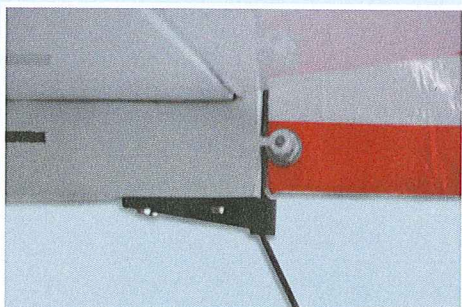
STEP 38

Locate the closed loop horn and install it in the rudder in line with the slots in the fuselage using the nuts and washers as shown. Use a threadlocking compound on the nuts to ensure they do not loosen due to engine vibration.



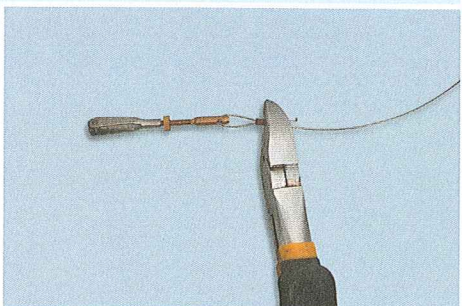
STEP 39

Ensure that the closed loop horn is aligned to the hinge line as shown.



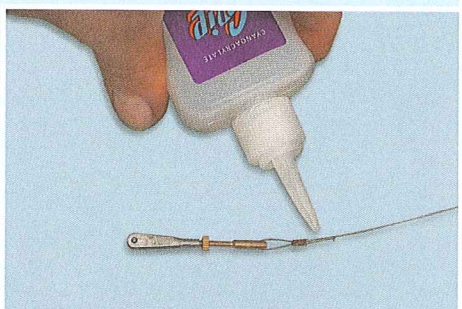
STEP 40

Cut the supplied single piece of closed loop wire into two equal lengths, then fit a clevis and locking nut onto the closed loop adaptor. Now loop one piece of the closed loop wire through the adaptor, and slip the brass tube supplied over the join. Crimp carefully with pliers or side cutters. Repeat for the second length of wire.



STEP 41

For additional security, we recommend a drop of cyano on each crimp. Once this has cured connect one of the clevises to the rudder horn, and feed the wire through the slot in the fuselage and forward to the servo bay. Repeat for the second wire, connecting this to the other side of the rudder horn.

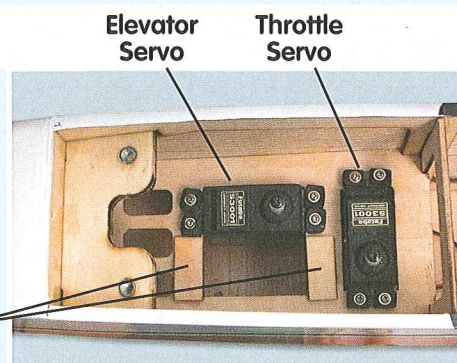


Radio Installation

STEP 42

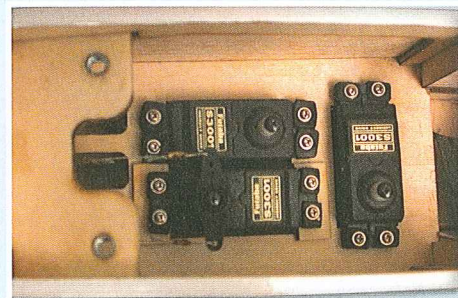
Install your throttle and elevator servos in the pre-fitted servo tray. Note the orientation of the servo outputs. Now glue the two servo spacers to the tray. These raise the height of the rudder servo for additional clearance of the elevator servo.

Servo Spacers



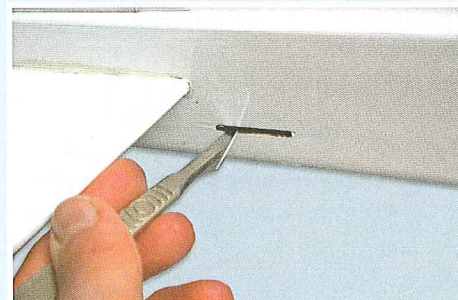
STEP 43

Install the rudder servo and with the servo and rudder centred, connect the closed loop wires to the servo horn. Slip brass tubing over the wires, ensure that both wires are tight without being stretched, then crimp and add a drop of cyano to secure.



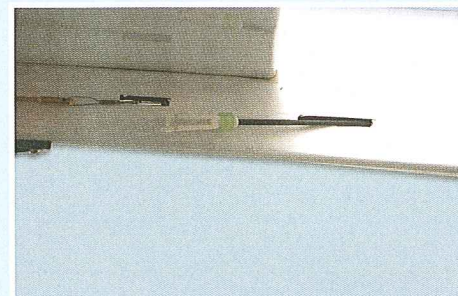
STEP 44

Locate the elevator pushrod exit slot on the right hand side of the fuselage (looking from the rear). Use a sharp knife to carefully remove the covering from the slot.



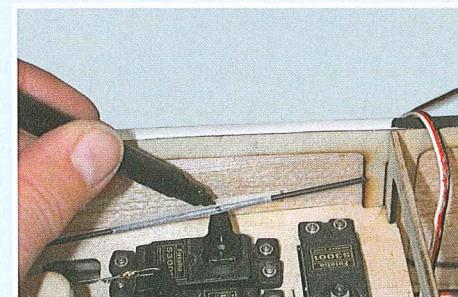
STEP 45

Locate the factory assembled elevator pushrod and slide it into position from the radio bay and out through the exit slot. Screw a nylon clevis onto the rod as shown.



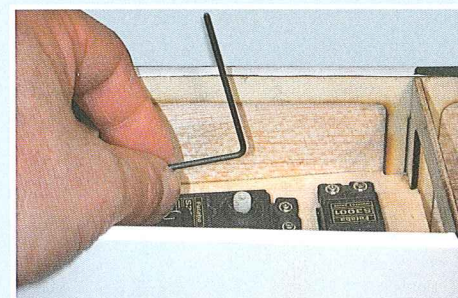
STEP 46

Connect the clevis to the elevator horn and with the elevator and servo centred, mark the point that the pushrod passes the servo output arm. Use a wrap of masking tape on the rod to make marking it easier.



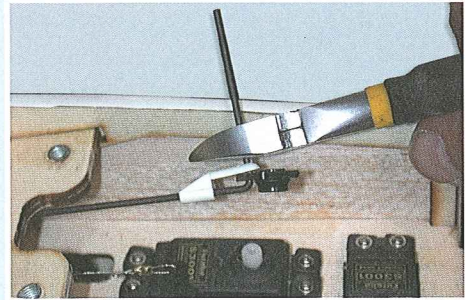
STEP 47

Form a 90° bend in the pushrod at this point using a pair of pliers.



STEP 48

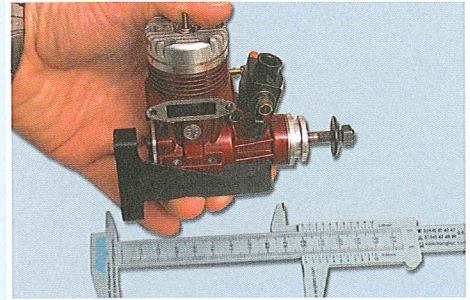
Slip the bent pushrod through the servo horn and fit a moulded swing-in keeper. Now trim off the excess length of wire, refit the horn and test the operation of the elevator.



Engine Fitting and Throttle Linkage

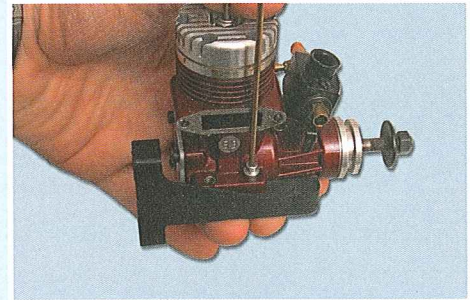
STEP 49

The engine mount supplied with the WOT 4 is a two part design. Offer the engine up to one of the mounts, moving the engine forwards or backwards until the front of the prop driver is exactly 100 mm in front of the rear face of the mount.



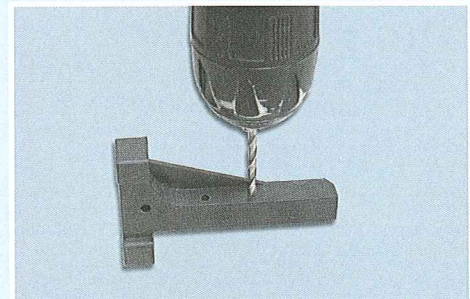
STEP 50

Holding the engine steady, mark the position of the two mounting holes the mount as shown. Carefully transfer these marks onto the second engine mount. Important: Take care to ensure that the marks are accurately made as any discrepancy here will induce undesirable engine thrust.



STEP 51

Drill four clearance holes through the engine mounting beams to suit the bolts supplied.



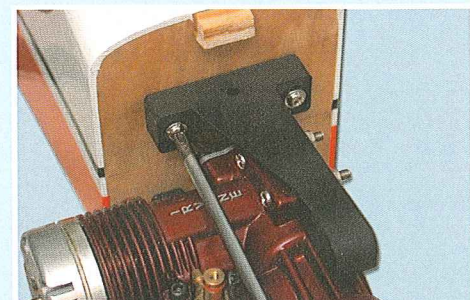
STEP 52

Screw the engine to the mount using the four bolts, washers and nuts supplied.



STEP 53

Now mount the engine mounts to the firewall using the bolts supplied into the captive nuts already installed in the bulkhead.



WOT 4 - Instructions

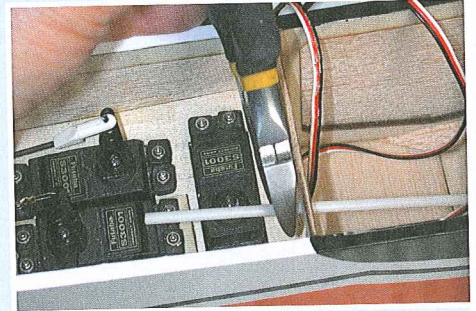
STEP 54

Locate the throttle pushrod outer sleeve. Install the tube with a drop of cyano to secure.



STEP 55

Trim off the excess length of tube inside the radio bay as shown.



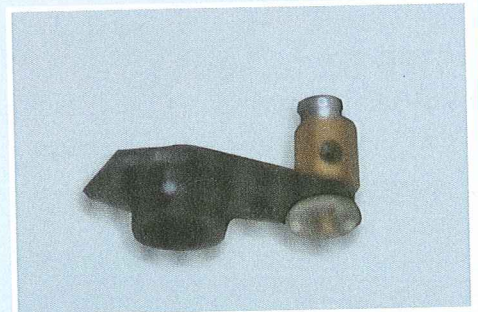
STEP 56

Form a 'Z' bend in the throttle pushrod. Fit to the carburettor throttle lever and slide the pushrod into its outer.



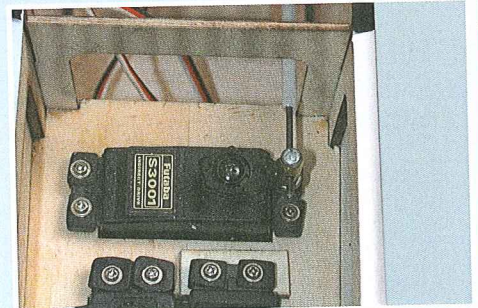
STEP 57

Prepare your throttle servo horn by assembling a pushrod connector as shown. Slip the connector onto the pushrod and refit the servo control horn.



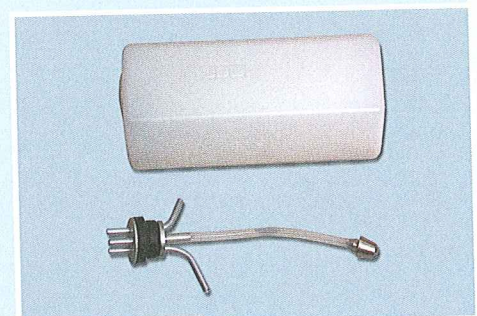
STEP 58

Adjust the length of the linkage so that mid-throttle stick position corresponds to the carburettor being open 50%. Tighten the screw in the connector and adjust the high and low throttle positions.



STEP 59

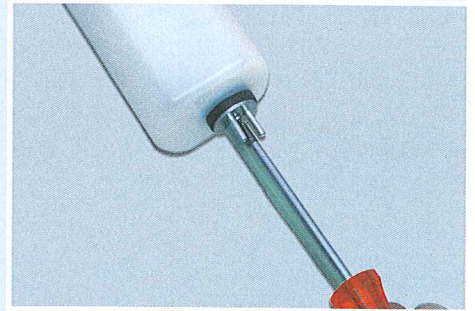
Prepare the fuel tank for fitting by assembling the tank stopper with the feed, vent and fuel pipes. Ensure the clunk tube length is cut allow the clunk to move around the tank without catching on the tank's base.



WOT 4 - Instructions

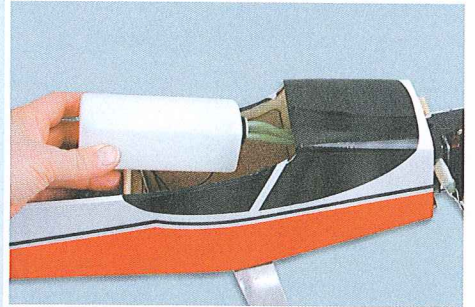
STEP 60

Fit the assembled tank bung and tighten the retaining screw. Take care not to over-tighten this screw. Test that the tank is leak-proof.



STEP 61

The tank is installed in its bay via the radio bay. Fit and identify your fuel tubes, then feed the tank into position, drawing the fuel tubes out through the hole in the centre of the firewall. Connect the fuel line to the engine, pressure to the exhaust and block the vent line.



STEP 62

To complete the model, cut a suitable aperture and fit your radio's switch to the left hand side of the fuselage.



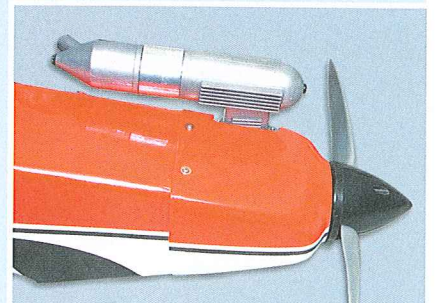
STEP 63

Connect and install your receiver in the radio bay with plenty of shock absorbing foam. Temporarily install your radio's battery in the radio bay. Its final position is determined after balancing the model.



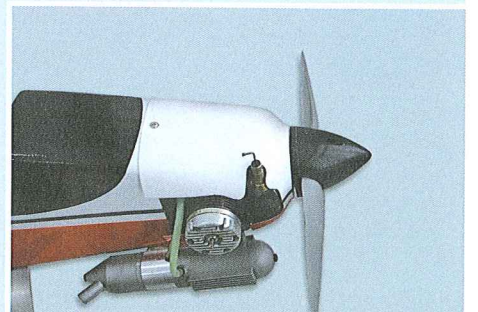
STEP 64

Trim the fibreglass cowl to clear the engine and silencer. The cowl should overlap the front of the fuselage by approximately 6mm. Pilot drill the cowl and retain with three self tapping screws. Note that the sides of the cowl should curve away from the fuselage - they are not supposed to be flush with the fuselage sides.



STEP 65

The cowl is retained with two screws in the underside and one in the top. Fit propeller and spinner. The model is complete and ready for balancing and setting up the control throws.



WOT 4 - Instructions

Control Throws

For initial flights, we recommend the following control throws - each measured at the widest point of the surface:

Elevator:	9~15mm up 9~15mm down
Rudder:	45mm left 45mm right
Ailerons:	6~9mm up 6~9mm down

Balancing the WOT 4

The Centre of Gravity (C/G or Balance Point) should be 82mm (3-1/4") back from the leading edge of the wing at the root. This should be measured with the fuel tank empty. Support the completed model under the wing either side of the fuselage at this point and add weight or adjust the position of the radio battery in its bay as necessary to achieve a slightly nose down attitude. A model that is not correctly balanced will not perform as it should and, at worst, be unstable or unflyable, leading to damage to the model or injury to yourself or others. Do not miss out this step in completing your WOT 4!

Pre-Flight checks

- Completely charge your transmitter and receiver batteries before flying.
- Carefully check your model over to ensure that all screws are tight and everything is well bonded.
- Double-check the WOT 4's Centre of Gravity.
- Check the control surfaces for both the correct throw and direction. Ensure that each surface moves freely, without any binding.
- Check the receiver aerial is fully extended.
- Ensure the wing bolts are tight.

While the WOT 4 is not a trainer, it does make an excellent first aileron model with reduced control throws and an engine from the lower end of the range. In this case, we recommend that your completed model is checked over and test flown by a competent pilot first. Subsequent flights should also be supervised, and assisted where necessary, by an experienced pilot. Always fly the WOT 4 in a safe location at a recognised club. For further information on flying in the UK, please contact:
British Model Flying Association (BMFA)
Chacksfield House,
31 St Andrews Road,
Leicester. LE2 8RE.
Tel: (+44) 116 2440028 Fax: (+44) 116 2440645
www.bmfa.org

Flying the WOT 4

In the air is where the WOT 4 excels... it can be flown at little more than walking pace under full control and then push the throttle open and you're rewarded with a sparkling aerobatic performance. One word best describes the WOT 4. Versatile. With reduced throws it's the perfect follow on from a trainer. With the recommended throws it's the perfect sports model with looks, rolls, flicks and spins being well within its repertoire. Experienced pilots will want to increase the throws further and, when fitted with a powerful engine at the top end of the recommended range, the sky really is the limit! With terrific vertical performance this highly aerobatic model will satisfy the most demanding pilot. Is there a better stunt model? We don't think so!

Spare Parts and Service

Spare parts are available for the WOT 4 ARTF from all Ripmax stocked model shops. In case of any difficulty, any product queries, or to locate your local Ripmax stockist, please write to the address below or visit www.ripmax.com

Always fly responsibly and safely.

Made in China

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WOT 4 - Instructions



