

Ripmax

WOT ^{Mk2} 4 XL

BY CHRIS FOSS



A Chris Foss Design



Instruction Manual

Part No: A-CF004

WOT 4 XL - Instructions

The Designer



Chris Foss outside his factory in 1990

Chris Foss

The fascination of flight captured Chris' 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 XL - Instructions

Introduction

Congratulations on your purchase of the WOT 4 XL Mk2 ARTF - the first 'Large' Almost Ready to Fly version of this 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.



STEP 3

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 4

Locate the wing servo apertures through the covering on the underside of the wing. Carefully trim away the covering as shown. Check that your choice of servo fits the servo apertures. Adjust the size of the mounting holes with a sharp knife if required.



STEP 5

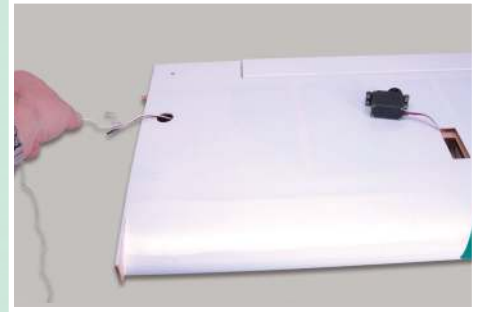
Cut away the covering over the servo lead holes in the underside of the wing panels. Prepare your aileron servos by connecting a suitable extension lead to each. It is a good idea to use a lead-lock, a turn of insulation tape or heatshrink tube over the joint for additional security.



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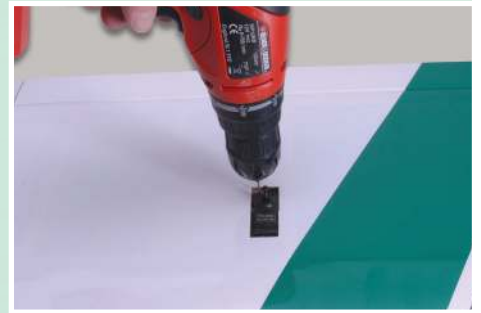
STEP 6

Now tie each aileron servo's lead to the length of cotton already in 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.



STEP 7

Pilot drill the servo mounting plates for your servos using a suitable size drill.



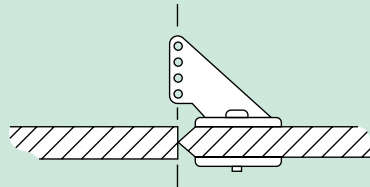
STEP 8

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 9

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 in each aileron.



STEP 10

Now screw the control horns to each aileron. The screws thread into the moulded horn plate on the top surface of the wing.



STEP 11

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.



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STEP 12

Remove any sharp edges from the cut mounting screws using a fine hand file.



STEP 13

Use a small length of tape to hold each of the ailerons at their neutral position. Ensure that both aileron servos are centred. Thread a locknut and clevis onto an aileron pushrod, connect it to the control horn and secure with a short length of fuel tubing.



STEP 14

Thread a locknut and clevis onto the other end of the aileron pushrod. Adjust the rod's length and connect the clevis to the servo horn. Repeat for the second aileron.



STEP 15

Using a sharp knife, prepare the wings for joining by trimming off any excess covering from the wing root ribs as shown. The overlap of covering film must not exceed 1mm over the root rib.



STEP 16

Locate the wing joining brace. Measure and mark a centre-line on the joining brace.



STEP 17

Locate the rear wing locating dowel and glue it mid-way into the pre-drilled hole in one of the wing panels using 5 minute epoxy.



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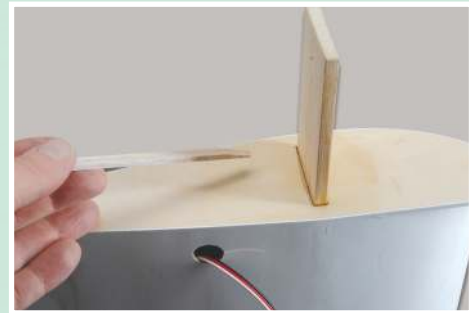
STEP 18

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



STEP 19

Protect the covering with masking tape, then spread sufficient epoxy over the opposite panel joiner slot, wing joiner, root rib and rear locating dowel. Bring the two panels together ensuring the epoxy fills the joint. Use 30 minute or 1 hour Epoxy for this.



STEP 20

Wipe off any excess that squeezes out of the joint, then use tape to hold the panels together as the adhesive cures.



Tailplane and Fin

STEP 21

Prepare the fuselage for fitting the tailplane by carefully trimming the covering away from the pre-cut tailplane slot as well as the slots for elevator pushrod and rudder closed loop.



STEP 22

Prepare the fuselage for fitting the fin by carefully trimming the covering away from the pre-cut fin slot.



STEP 23

Measure and mark a centre-line on the top of the tailplane.



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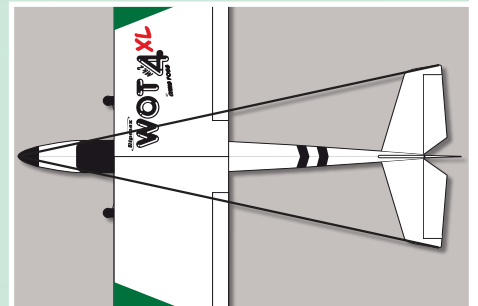
STEP 24

Centred to the line drawn in the step above, mark two further points 18mm apart. These are used to align the tailplane in the fuselage.



STEP 25

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, watersoluble pen.



STEP 26

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.



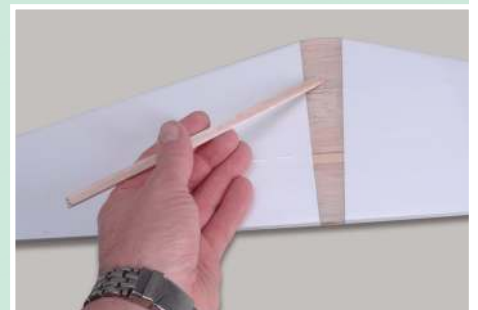
STEP 27

Turn the tailplane over and remove the covering from the underside in exactly the same way.



STEP 28

Using sufficient epoxy applied to the exposed wood, glue the tailplane into its slot. Check that the tailplane is correctly aligned and square to the fuselage. Ensure the tailplane is parallel to the wing by viewing from behind. Use masking tape to protect the covering (removing it as soon as you are satisfied with the alignment and before the epoxy cures).



STEP 29

A small band can be used to hold the rear of the fuselage aligned and in contact with the tail. Any excess epoxy can be wiped from the model before it cures using methylated spirit or methanol.



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STEP 30

Once the epoxy has cured, 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.



STEP 31

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 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 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. Now slide the first elevator into position ensuring their hinges enter their pre-cut slots in the tailplane.



STEP 35

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. Repeat for the second elevator half.



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STEP 36

Locate the pre-bent tailwheel assembly and fit the tailwheel using the collet supplied using a small drop of threadlock to secure the grubscrew.



STEP 37

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



STEP 38

Insert three 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 39

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.



STEP 40

Now slide the rudder in place making sure that all three 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 41

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.



WOT 4 XL - Instructions

Fuselage, Engine & Radio

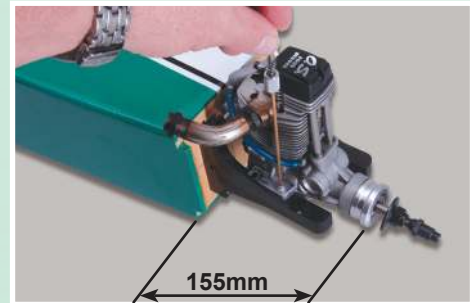
STEP 42

Mount the two halves of the engine mount to the firewall using the bolts supplied into the captive nuts already installed in the bulkhead.



STEP 43

Hold your choice of engine in place on the engine mount ensuring that the distance from the front of the bulkhead to the prop driver is 155mm. Mark the engine mount beams for the mounting screws. A couple of strips of masking tape temporarily stuck to the bearers makes marking the engine mount a simple task.



STEP 44

Drill clearance holes in the engine mount for the engine mounting screws.



STEP 45

If using a pumped four stroke engine, you may find it necessary to trim away a small part of the engine mount away for clearance as shown.



STEP 46

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



STEP 47

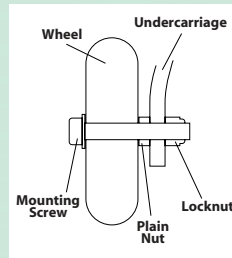
Locate the main undercarriage, the wheels and the mounting hardware (mounting screws, plain and nyloc nuts).



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STEP 48

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 49

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 50

Install the main undercarriage using the two mounting screws supplied. Use a drop of threadlock on each to secure.



STEP 51

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 to allow the clunk to move around the tank without catching on the tank's base.



STEP 52

Install your throttle, rudder and elevator servos in the pre-fitted servo tray. Note the orientation of the servo outputs. Mark the position of the mounting screws and pilot drill the tray.



STEP 53

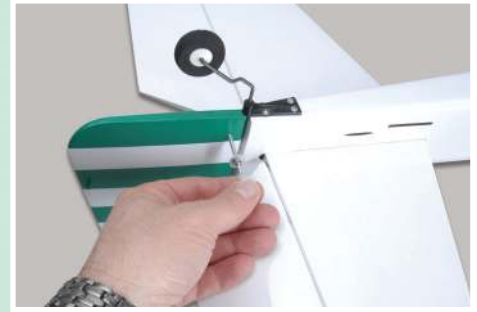
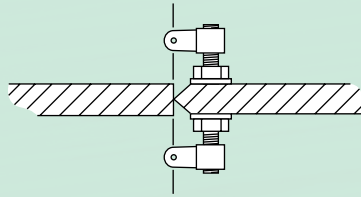
After fitting the brass ferrules and rubber grommets supplied with your servos, screw the servos to the mounting tray.



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STEP 54

Locate the closed loop horn and install it in the pre-drilled hole 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. Ensure that the closed loop horn is aligned to the hinge line as shown.



STEP 55

Cut the supplied single piece of closed loop wire into two equal lengths, then fit a 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. For additional security, we recommend a drop of cyano on each crimp.



STEP 56

Slide the closed loop wires into the fuselage from the rear slots under the tailplane. Ensuring that they remain untwisted, shake the wires down into the radio bay and retain with a couple of strips of tape.



STEP 57

Attach a clevis to each of the closed loop adaptors and connect them to the appropriate sides of the closed loop horn.



STEP 58

Now mark the positions of the two elevator horns on the underside of the tailplane as shown. Ensure each horn is equally spaced and aligned to the hingeline. Mark and pilot drill two mounting holes in each elevator half.



STEP 59

Now screw the control horns to each elevator half. The screws thread into the moulded horn plate on the top surface of the elevators.



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STEP 60

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



STEP 61

Pass the 'Y' shaped elevator pushrod through the fuselage from the radio bay. Feed the ends of the pushrod out of the fuselage sides through their pre-cut slots. Using a couple of lengths of scrap snake tube to help guide the pushrods out of the fuselage makes this a simple task. Attach a locknut and clevis to each pushrod and connect to the elevators ensuring both are level.



STEP 62

Complete the elevator linkage by screwing a locknut and clevis onto the pushrod end in the radio bay. Connect to the servo output horn ensuring the elevators are both level when the elevator servo is at its neutral position. Now complete the closed loop by connecting the 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. Adjust as necessary at the rudder, then tighten the locknuts on the closed loop adaptors.



STEP 63

Locate the outer tube for the throttle pushrod. Install it through the front bulkhead and retain with a drop of cyano.



STEP 64

Form a "Z"-bend in the end of the pushrod for the throttle lever. To fit the pushrod, you will need to temporarily remove the throttle lever from the carburettor.



STEP 65

Slip a pushrod connector over the throttle pushrod and attach to the throttle servo's output horn. Adjust the throttle linkage and tighten the grub screw in the connector to secure.

Check that the throttle opens closes fully and without binding. Adjust the pushrod connector or throttle lever's position as necessary.



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STEP 66

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 fill line. Secure the tank with foam packing.



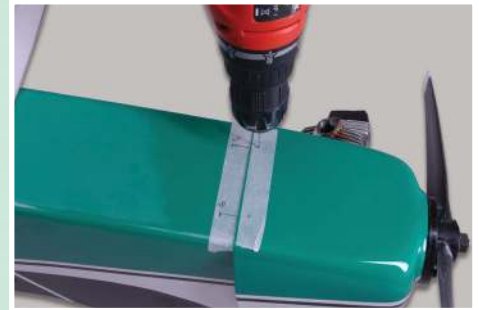
STEP 67

Install your radio switch by cutting an aperture through the left-hand fuselage side, away from the exhaust as shown.



STEP 68

Trim the fibreglass cowl to clear your engine's cylinder head and intake pipe. The cowl should overlap the front of the fuselage by approximately 9-10mm. Temporarily fit the spinner backplate and propeller. Holding the cowl in position to ensure an even gap behind the spinner, pilot drill the cowl for the self-tapping retaining screws.



STEP 69

Attach that cowl with three self-tapping screws - two in the underside and one on the centreline in the top. We suggest using some thin cyanoacrylate glue in the holes to toughen the threads - Allow to cure before fitting the screws.



STEP 70

Note that the sides of the cowl should curve away from the fuselage - they are not supposed to be flush with the fuselage sides. When happy with the fit, tighten the propeller and fit the spinner nosecone.



STEP 71

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



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Control Throws

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

Elevator:	30mm up 30mm down
Rudder:	50mm left 50mm right
Ailerons:	20mm up 20mm down

Balancing the WOT 4 XL

The Centre of Gravity (C/G or Balance Point) should be 100 - 105mm 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 XL!

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 XL'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 XL 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 XL 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 XL

In the air is where the WOT 4 XL 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 XL. Versatile. With reduced throws it's the perfect follow on from a trainer. With the recommended throws it's the perfect sports model with loops, 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 XL 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.

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