

Ripmax

# WOT *trainer*



A  
**Chris  
Foss**  
Design

**Instruction  
Manual**

## The designer



## 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.

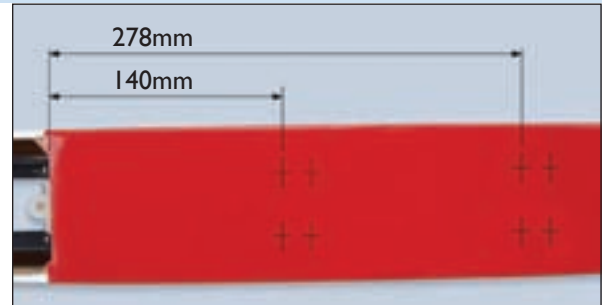
In due course, Chris became tempted by the affordability of simple and fairly reliable radio control equipment, so by 1967 he had already designed, built and flown his first radio controlled glider. By 1976 his career in the architectural profession came to an end when he decided to channel his knowledge 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.

## Assembling the Wot Trainer

The Wot Trainer can be assembled in one of two formats - with a tricycle undercarriage, or as a 'tail-dragger'. The main undercarriage position changes depending on which version you choose. For the tricycle version, the main undercarriage mounts in the rearward position and for the tail-dragger version, it mounts in the forward position. Use the diagram on the right to locate the positions of the pre-fitted captive mounting points under the covering - both measurements are taken from the front of the main engine bulkhead - then pierce the covering for each of the four mounting bolts.



## Fitting the Undercarriage and Engine

### STEP 1

Locate the pre-bent dural undercarriage and main wheels. Slide a wheel mounting bolt through one of the wheels and fit a plain nut to retain the wheel. Only tighten sufficiently to stop the wheel wobbling on its bolt 'axle' and ensuring that it is free to spin. Now slide the axle through the undercarriage, fit a Nyloc nut and tighten against the previously fitted plain nut. Repeat for the second wheel. Check that both spin freely.



### STEP 2

If assembling the tricycle version, locate the nosewheel and pre-bent wire noseleg. Slide the wheel on the noseleg as shown and note the position of the recess already machined on the noseleg.



### STEP 3

Slide a wheel collet over the axle and tighten the screw using threadlocking compound on the screw, ensuring that it locates in the recess in the axle. Check that the wheel spins freely.



### STEP 4

Now place your engine into its mount, ensuring that the front of the propeller driver is 5mm in front of the fuselage to give adequate clearance for the propeller. Now mark the position of the engine mounting holes using a suitable scribe or Hole Locator tool. If necessary, enlarge the cut-outs in the nose for the needle valve and silencer, taking care to fuel proof any exposed wood. Remove the engine.



### STEP 5

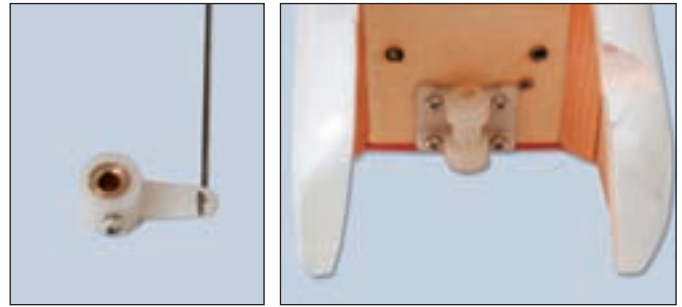
Pilot drill the engine mount for the self-tapping engine mounting screws. You may find it easier to spot drill the two halves of the engine mount, then remove them from the bulkhead to drill them accurately all the way through.



# Wot Trainer - Instructions

## STEP 6

If assembling the tricycle version, locate the noseleg steering arm and slide the 'z-bend' end through it as shown. Now bolt the noseleg nylon bearing block onto the pre-drilled bulkhead as shown. Captive nuts are already fitted in the bulkhead.



## STEP 7

Slide a nylon spacer onto the noseleg and partially insert the leg into the bearing block. Slide the steering pushrod into its pre-fitted tube in the fuselage as shown and then slide the noseleg wire through the hole in the steering arm. Ensuring that the spring coil in the noseleg points towards the rear of the model, tighten the retaining screw in the steering arm using thread locking compound on the screw. You may now refit the engine mount, connect the 'z-bend' end of the throttle pushrod to the engine's throttle lever, and screw the engine into position using the self-tapping screws supplied.



## STEP 8

Locate the pre-drilled holes in the underside of the model for the dural main undercarriage. The tricycle version uses the rearward set of holes, the tail-dragger version uses the forward set. Carefully remove the covering from the pre-drilled mounting holes using a sharp knife or suitable awl.



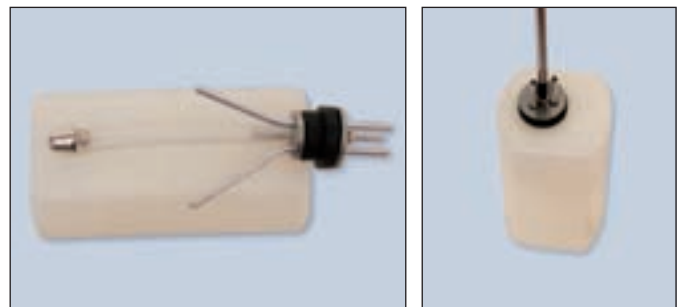
## STEP 9

Hold the undercarriage in position, then bolt it in place using the four bolts supplied. Note that captive nuts have already been installed in the fuselage for these. Ensure that you do not over-tighten the mounting screws.



## STEP 10

Prepare the fuel tank as shown. The weighted 'clunk' must be free to move around the tank during the flight to ensure that fuel pick-up is reliable. Bend and position the other two aluminium tubes as shown - one to the top of the tank to vent and the other to the bottom to fill. Slide the bung into the tank and tighten the screw to form a leak-free seal. Do not overtighten. Check the clunk is free to move around the tank.



## STEP 11

Remove the tank bay hatch by removing the rear retaining screw. Line the base of the fuel tank bay with a piece of foam as shown. Connect three lengths of fuel tubing to the fuel, fill and vent pipes on the tank. Install the tank in the tank bay, sliding the tubing through the large hole in the bulkhead.



## STEP 12

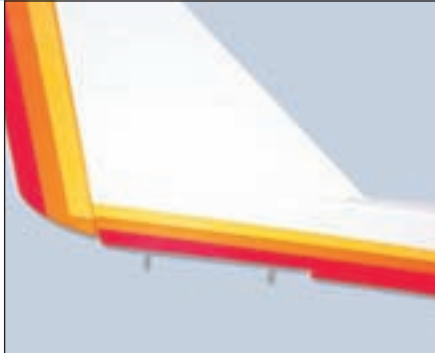
Use more foam to pack around the tank to hold it in position, then re-fit the tank hatch locating the dowel on the front of the hatch in the rear of the bulkhead, and re-fitting the retaining screw.



## Assembling the Tail

## STEP 13

Locate the fin and slot it in position at the rear of the fuselage, ensuring the two pre-fitted retaining studs pass through the fuselage as shown. Now turn the model over and slide the tailplane over the studs.



## STEP 14

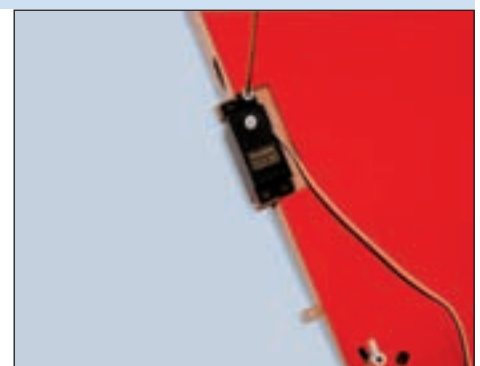
The tailplane and fin are retained using the aluminium rear skid on both the tail-dragger and tricycle versions. Hold the fin and tail correctly in position, slide the tail skid over the exposed studs and fit the two nyloc retaining nuts using a suitable spanner to tighten. Check the tailplane and fin are square to each other and the fuselage. Do not overtighten.



## Assembling the Wings

## STEP 15

Prepare your aileron servo by fitting the rubber grommets and brass ferrules supplied with it. Slide it into its ply mounting tray on the wing panel and mark the positions of its mounting holes.



## STEP 16

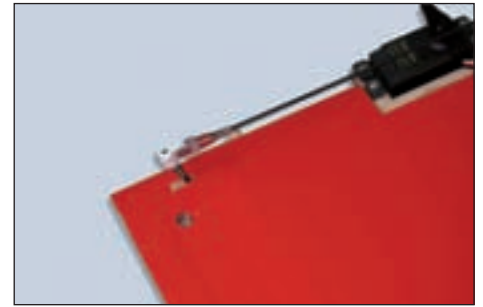
Pilot drill the plywood tray and fit the servo using the mounting screws supplied with your radio. Note the orientation of the servo - the output should be towards the front (leading edge) of the wing.



# Wot Trainer - Instructions

## STEP 17

Centre the aileron servo and fit a servo arm as shown. Locate the aileron pushrods, metal clevises and silicon tube retainers. Screw a clevis onto the threaded end of the pushrod so that threads protrude 2mm inside the open area of the clevis. Slide on a tube retainer and connect the clevis to the aileron torque rod as shown.



## STEP 18

Holding the aileron centred, mark the position where the pushrod crosses the holes in the servo output arm. Now form a 90° bend in the pushrod at this point.



## STEP 19

Slide the servo output arm over the wire, snap on a moulded nylon swing-in keeper as shown and cut off any excess pushrod with a pair of side cutters or suitable pliers.



## STEP 20

Locate the aluminium wing joining tube. Slide half of it into the wing panel as shown. Now slide on the second wing panel, ensuring that the dowel in the rear of one wing panel locates into the pre-drilled hole in the other.



## STEP 21

You can now complete the second aileron linkage in exactly the same way as the first. Once complete, ensure that the ailerons are centred at their neutral position and that both ailerons move freely without binding through their entire range of travel.



## Installing the Radio and Linkages

## STEP 22

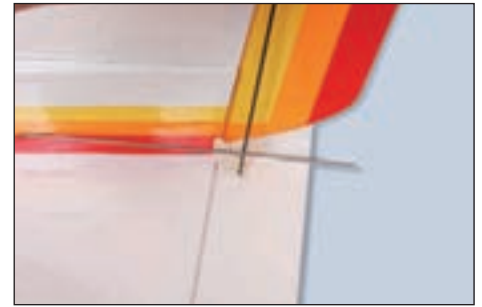
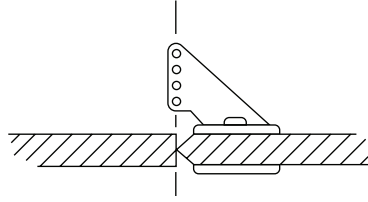
Fit the rubber grommets and ferrules to your elevator, rudder and throttle servos. Locate the servos in the plywood radio tray as shown, noting the orientation of the outputs. Mark the positions of their mounting holes, pilot drill and retain using the mounting screws supplied with your servos.



# Wot Trainer - Instructions

## STEP 23

Locate the nylon elevator control horn. Using the elevator pushrod as a guide to its position on the top of the left hand elevator (looking from the rear) mark and pilot drill its mounting hole positions. The holes in the control horn must be aligned with the hinge line as shown in the diagram below.



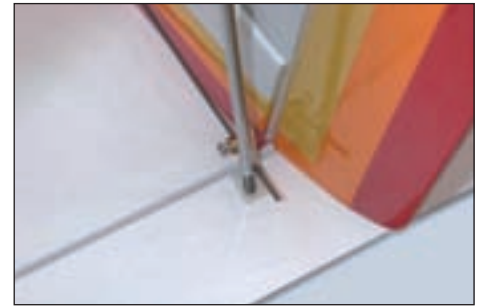
## STEP 24

Now locate a pushrod connector, slide it through the elevator control horn as shown and, using a pair of pliers, carefully fit its retaining star washer. Push it down firmly so that the connector cannot wobble, but is still able to turn.



## STEP 25

Slide the connector over the elevator pushrod as shown, then screw the control horn in place on the elevator. The screws pass through the control horn, then the elevator, then terminate in the nylon retaining plate on the underside.



## STEP 26

Centre the elevator servo and elevator. Now apply threadlocking compound to the pushrod connector's screw and tighten it to lock the pushrod in position. Test to ensure the elevator moves through its entire range of travel without binding.



## STEP 27

Fit a pushrod connector to the inner hole on the rudder servo's output arm. Now connect the rudder pushrod's 'z'-bend' end to the outer hole on the same output arm. Slide the connector over the noseleg steering pushrod and refit the output arm. Centre the servo and the noseleg, then tighten the connector.



## STEP 28

In exactly the same way as the elevator and referring to the diagram in STEP 23, fit a control horn and servo connector onto the right hand side of the rudder (looking from the rear). Centre the rudder servo and rudder. Now apply threadlocking compound to the pushrod connector's screw and tighten it to lock the pushrod in position. Test to ensure the rudder moves through its entire range of travel without binding.



# Wot Trainer - Instructions

## STEP 29

Using a pair of side cutters or suitable pliers, cut off any excess elevator or rudder pushrod as shown.



## STEP 30

Fit a further pushrod connector to the throttle servo's output arm. Slide it over the throttle pushrod. Centre the carburettor barrel and the throttle servo and tighten the pushrod connector's screw. Test that the throttle opens from idle to full power without binding.



## Final Installation

## STEP 31

Fit your switch in a convenient position. The left hand side of the fuselage (looking from the rear) on the opposite side to the exhaust is recommended.



## STEP 32

Pack the radio equipment in front of the servo tray with dense foam and locate the battery at the front, with the receiver immediately behind, under the servo tray. The final positions of these two items are determined once the model has been balanced.



## STEP 33

Fit the engine's silencer and connect the fuel line to the carburettor. The fill line is normally plugged once the model has been fuelled up and the vent line connects to the pressure nipple on the silencer. Fit a suitable propeller and tighten the propeller nut.



## STEP 34

Drill a small hole in the rear deck as shown. Pass the aerial through (after tying a security knot in it) and retain it to the top of the fin using a suitable pin and elastic band. Locate the 'peg' at the front of the wing in the slot in the forward bulkhead. Connect the aileron extension lead and bolt the wing in position using the two nylon bolts supplied. **Do not over-tighten.** The assembly is now complete!





# Wot Trainer - Instructions

## Control throws

For initial flights, we recommend the following:

Elevator:	10mm up 10mm down
Rudder:	25mm left 25mm right
Ailerons:	8mm up 8mm down

## Balancing the model

The Centre of Gravity (C/G or Balance Point) should be 89mm (3.5") back from the leading edge of the wing at the root, this being the centreline of the wing joining tube. 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 Trainer!

## 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 Trainer'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.

We recommend that your completed model is checked over and test flown by a competent pilot. All subsequent flights should also be supervised, and assisted where necessary, by an experienced pilot until you are considered safe to fly the model unsupervised. Always fly the Wot Trainer 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](http://www.bmfa.org)

***Always fly responsibly and safely.***



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