

EXTRA - 330L SEMI SCALE SPORT MODEL



EXTRA - 330

Assembly and Operations Manual

Please review this manual thoroughly
Before assembling or Operating
The
VMAR EXTRA - 330L
Semi scale sport model

We've used our ULTRA TOUGH POLYCOTE ECS Enhanced Covering System for this Model



POLYCOTE™ ECS
ENHANCED COVERING SYSTEM

POLYCOTE
ECS
ENHANCED
COVERING
SYSTEM

INDEX

	Stage No.	Page No.
Liability Disclaimer and Caution		2
Introduction		3
Review Packing List, gather your tools & shop materials		4
Installing the wing	1	5
Fitting aileron servo	2-3	6-7
Installing the horizontal & vertical stabilizer	4-11	7-10
Installing the main landing gear	12	10
Installing the tail wheel	13	11
Installing the fuel tank	14	11
Installing the engine	15	11-12
Fitting rudder and elevator control horns	16	12
Installing the servos	17	13
Connecting the pushrods	18-20	13-14
Connecting the throttle control	21	14
Adjust control surface throw limits	22	14
Final RC setup	23-24	14
Installing radio equipment	25-27	15
Balancing the aircraft	28	15
Confirm mechanical integrity	29	15
CG and throw specifications	29	16

Liability Disclaimer

It is important that the following liability disclaimer be

READ BEFORE ASSEMBLING OR USING THIS PRODUCT.

Model airplanes, model engines, model engine fuel, propellers and products such as the EXTRA-330L semi scale sport model can be hazardous if improperly used. Be cautious and follow all safety recommendations when using your Model . Keep hands, tools, clothing and all foreign objects well clear of engines when they are operating. Take particular care to safeguard and protect your eyes and fingers and the eyes and fingers of other persons who may be nearby. Use only a good quality propeller that has no cracks or flaws . Stay clear of the propeller and stay clear of the plane of rotation defined by the propeller.

The Manufacturer, Distributor, Retailer and/or other suppliers of this product expressly disclaim any

warranties or representations, either expressed or implied, including but not limited to implied warranties of fitness for the purposes of achieving and sustaining remotely controlled flight.

In no event will the Manufacturer, Distributor, Retailer and/or other suppliers of this product have any obligation arising from contract or tort, or for loss of revenue or profit, or for indirect, special, incidental, consequential or other damages arising from the use of this product.

In purchasing and/or using this product, the user accepts all responsibility for its use and accepts all liability associated with such use.

Proceeding with assembly and use of this product Indicates Agreement With and Acceptance of the Liability Disclaimer .

CAUTION.

A Remote Control Model Aircraft is not a toy. It is a flying model that functions much like a full size airplane. If you do not assemble and operate this product properly you can cause injury to yourself and others and damage property. DO NOT FLY this model if you are not qualified.

You are ultimately responsible for the mechanical, aeronautical and electrical integrity of this model and it's structure, control surfaces, hinges, linkages, covering, engine, radio, wiring, battery and all other components check all components before and after each flight. Do not fly until it's right!



INTRODUCTION

Thank you for purchasing a VMAR product. VMAR Manufacturing is committed to delivering superior value to the RC modeler. Your new EXTRA - 330L is the market leader in features, ease of use and flexibility. Please review these instructions before beginning the simple assembly procedure.

We've used metric measurements throughout these instructions. We know that some of you like metric while others think that furlongs per fortnight makes a nifty velocity indicator. If you are in the furlong camp, bear with us....

It's not a big deal...3 millimeters is stated as 3mm and 3mm is about 1/8 of an inch. Fire up your calculator and you will find that 25.4 mm makes an inch. In places where you have to actually set up something according to a recommended measurement, we've listed an approximate imperial measurement in inches in brackets.

Whenever we've used the directional terms left or right, they are with respect to the model when viewed as you would when sitting in the cockpit...that is when viewed from the back looking forward.

REVIEW PACKING LIST, GATHER YOUR TOOLS & SHOP MATERIALS.

You've taken the lid off the box and grabbed the instruction booklet...you are about 6-8 hours away being ready to go flying! Now is the time to look over what's in the box. Please see the attached Packing List and review the contents and make sure nothing has been damaged in shipping. Damage or missing components must be reported to your vendor BEFORE any assembly begins.

Please DO NOT START if something is damaged or missing. As you can imagine, once you join the wing halves attach the stabilizers or install your radio or engine your options for returns are very limited. Your vendor will not be able to provide you with exchanges or replacements of parts that have been assembled. DO NOT START UNLESS IT'S RIGHT!

CHECK OFF COMPONENTS AND PARTS INCLUDED.

Major components and sub-assemblies

- 01 Fuselage
- 02 Wing halves (left and right)
- 01 Vertical stabilizer with pre-installed rudder.
- 01 Horizontal stabilizer with pre-installed elevator .
- 01 Fiber glass cowl
- 01 Landing gear (6061 T6 Aluminum)
- 01 Documentation set including instruction booklet
- 01 Set of patch and/or trim sheets if required
- 01 Master bag

Contents of master bag

- 02 Engine mount T-beams with allen screws
- 02 Ultralight treaded wheels
- 01 Fibreglass main landing gear
- 01 Landing gear (6061 T6 Aluminum)
- 01 Wheel pants and landing gear cover
- 01 Wing parts bag
- 01 Spinner parts bag
- 01 Control horn parts bag
- 01 Tail wheel parts bag
- 01 Miscellaneous parts bag
- 01 Spare parts bag

Contents of main landing gear parts bag

- 04 mounting screws
- 02 Axle assemblies with wheel collars

Contents of wing parts bag

- 02 Aluminum tubes wing joiner
- 02 Aileron control rod assemblies with clevises
- 02 wing mouting butterfly nuts & washer.

Contents of spinner parts bag

- 01 spinner with allen screws
- 01 Allen wrench
- 01 Spinner shaft collet set

Contents of control horn parts bag

- 05 Metal bolts 3mm x 35-40mm
- 05 Metal nuts 3mm
- 05 Plastic control horns
- 05 Plastic T - nuts
- 05 Plastic beveled washers

Contents of tail wheel parts bag

- 01 Pre-assembled wire, wheel and bracked assembly
- 02 Mounting screws

Contents of miscellaneous parts bag

- 01 Allen wrench for control rod EZ connector of fitted

Contents of spare parts bag

Assortment of extra spare parts that are not required but may come in handy in service

In addition to the items in the parts bags the following items have been pre-installed or placed into the fuselage at the factory.

- 01 Fuel tank assembly with stopper, clunk and pre-bent metal tubing
- 01 Universal adjustable servo tray with mounting screws and slider plates control rod assemblies including connecting hardware.



CHECK OFF TOOLS AND SHOP MATERIALS NEEDED.

These tools and shop materials are not included and are required to complete and operate your EXTRA - 330L and most other remote control aircraft. For some specific recommendations and part numbers please see the attached listing of tools and materials available in your market area.

- Clean and flat table or work surface approximately 600 x 1800 mm (24 x 72 in)
- 2.5 mm ball socket screw driver or Allen wrench
- 3.0 mm ball socket screw driver or Allen wrench
- 4.0 mm ball socket screw driver or Allen wrench
- Phillips (cross head) screw driver small size
- Phillips (cross head) screw driver medium size
- Flat blade screw driver medium size
- Low tack masking tape, ruler or tape measure
- Side ("wire") cutters
- Pencil, pliers, hobby knife with #11 blade
- 30 minute Epoxy and 240 grit sandpaper
- Silicon Based Sealant (Dap - A - Goo)
- Epoxy mixing dishes, brushes and sticks
- Paper towels
- Rubbing alcohol
- Crescent wrench (optional)
- Heat gun and heat iron for covering (optional for covering touch up)

CHECK OFF OTHER ITEMS NEEDED TO COMPLETE EXTRA-330L SEMI SCALE SPORT MODEL

- These items are not included and are required to complete and operate your VMAR MODEL and most other remote control aircraft.
- Medium fuel tubing appropriate for your choice of engine and fuel. 500 - 750 mm (24-36 in.)
- Liquid thread locker
- RC FM radio with at least four channels of control and on a frequency appropriate for your market area.
- Five servos compatible with the RC FM Radio. Servos generally are sold with new radio systems
- External Switch Actuator appropriate for your radio system (optional)
- Engine and muffler suitable for use in a remote control model aircraft. A two stroke glow fuel .40 - .53 cubic inch engine is recommended.
- Propeller suitable for the engine. See the engine instruction manual recommendation for diameter and pitch.
- Engine glow plug
- Engine glow plug igniter
- Engine 4 way wrench
- Fuel for the engine
- "After run" oil for engine
- RC Foam sheeting for wrapping radio receiver and battery pack.

CHECK OFF OPTIONAL EQUIPMENT AND ACCESSORIES.

- These items are not included and are not required but make the operation of your EXTRA - 330L and most other remote control aircraft easier & more enjoyable.
- Power Tote Deluxe field box # VMA-PT109D
- Fuel pump and connecting tubing
- Fueling valve
- Chicken stick or electric starter
- Stick on weights
- Battery to power electric starter
- Battery charger
- Power Panel to manage starter and pump if electric.
- Extra propellers
- Extra Glow Plugs
- Misc Tools
- Engine test stand # VMA - ETS120



Stage 1

INSTALLING THE PLUG - IN WING OF THE EEXTRA - 330L

To install the plug-in wing of the EXTRA-330L to the fuselage you will need the following parts.

- Right & left wing panels.
- 1 front aluminum tube spar joiner 19 1/3 in. (490mm) long and 2/3 inch (16mm) diameter
- 1 rear aluminum tube spar joiner 20 in. (510mm) long and 2/3 inch (16mm) diameter
- 2 metal washer.
- 2 steel butterfly nuts (4mm)

Step 1.

Turn over the fuselage and remove the hatch cover. See 1.B.

Step 2.

Insert the front wing spar joiner and then the rear spar joiner. See 1.D.

Step 3.

Remove the butterfly nuts and washer from the wing root (the end opposite the wing tip)

Step 4.

Carefully slide each wing on to the wing spar joiner tubes while threading the servo wiring harness through the side of the fuselage.

Step 5.

Install the washer on the metal wing bolts and then the wing nuts. Tighten the wing nuts.



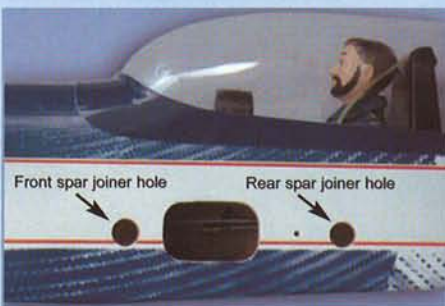
EXTRA - 330L



1.A Aluminum wings joiner



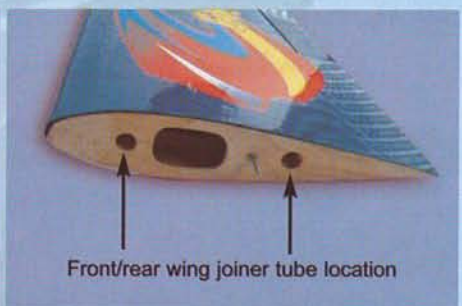
1.B Hatch cover removed



1.C Wing spar joiner location



1.D Insert the wing spar joiner tubes into the fuselage.



1.E Wing Panel



1.F Plug-in both wing panels



1.G Install the metal washer then tighten the butterfly wing nuts



1.H Hatch cover installed

Stage 2

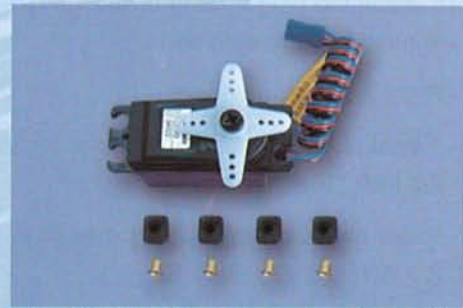
FITTING AILERON SERVOS

To install the aileron servos into the wing you will need the following items:

- Servos
- Servo mounting screws and grommets as supplied with servos.
- Servo control arms as supplied with the servos.
- Two aileron control rod assemblies supplied with the kit. The assemblies consist of a metal rod with a clevis screwed onto both ends.
- Low tack masking tape.
- 2 aileron control horn assemblies

Carefully remove the cover plates from the aileron servo cavities. Ensure you know which cover plate is for the right wing and which is for the left. Remove the cover plates and retain the mounting screws. Notice that there are wooden servo rails pre-installed into each servo cavity end. The tube can be moved slightly at this point. Check out the other end of each tube for a clean position and then using C/A glue secure the wiring harness tubes at the aileron servo cavity end.

Install a servo in each aileron servo cavity and connect the servo wire to the servo extension wires and run the extension wires, install the aileron control horns.



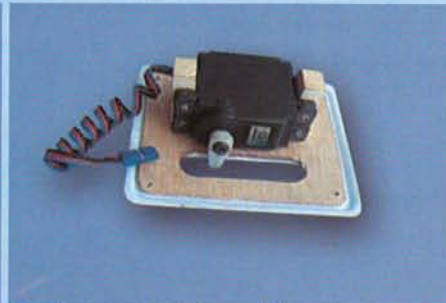
2.A Prepare the servos by fitting the rubber grommets & ferrules supplied with your radio



2.B Aileron servo location



2.C Aileron servo mount



2.D Srew servo into position



2.E Install aileron control horn

Stage 3

FITTING SERVOS

Step 1

Consult your radio instruction manual and center each aileron servos by plugging it into the aileron channel in the receiver. Turn on the transmitter and then the receiver. Center the aileron trim lever on the transmitter. Remove the servo arm mounting screw and the servo arm.

Step 2

Mount the servo arm back on the servo. Position the arm to be parallel with the back edge of the wing. Screw the arm into place with the servo arm mounting screw supplied with the servo.

Locate the two aileron control rods in the hardware bag. Ensure the clevises are screwed well onto the threaded portion of the rod. Rotate and tug aggressively on the clevises and ensure that they are not loose on the rods.

Tape the ailerons into their neutral position so that they are even with the trailing edge of the wing and not pointing either up or down.

Step 3

Ensure that the aileron control horns are screwed onto the threaded aileron control horn bolts and that both control horns are in approximately the same place on their respective bolts.

Step 4

Connect the aileron servo rods to the aileron control horns. If one of the two clevises on each rod has a metal pin or screw, attach that clevis to the servo output arm.

Step 5

Connect the other clevis to the servo output arm

Step 6

Remove the masking tape holding the ailerons.

Step 7

In the case of computer radios couple the servos together by connecting them to the appropriate receiver channel. In the case of analog radios couple the servos together using a Y harness.

Step 8

Turn on your radio and activate the ailerons, using the aileron stick and ensure a smooth full motion can be achieved.

Step 9

With the wing top side up and viewed from the back, ensure that moving the transmitter aileron stick to the left raises the left aileron and lowers the right aileron. Movement of the stick to the left will roll the aircraft to the left. (Counterclockwise roll of the wing when viewed from the back).

Step 10

With the wing top side up and viewed from the back, ensure that moving the transmitter aileron stick to the right raises the right aileron and lowers the left aileron. Movement of the stick to the right will roll the aircraft to the right.



3.A Aileron control rod assembly

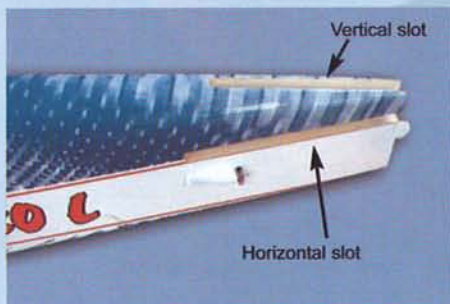


3.B Aileron control horn assembly



3.C Aileron control installed

Stage 4 FITTING THE HORIZONTAL AND VERTICAL STABILIZERS



4.A The completed fuselage slot should look like this



4.B Horizontal stabilizers with pre-installed elevator



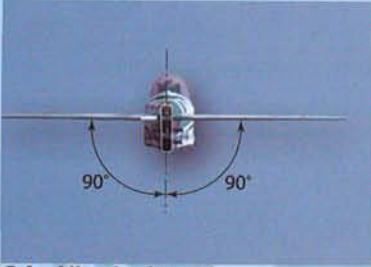
4.C Vertical stabilizers with pre-installed rudder

To install the stabilizer to the fuselage you will need.

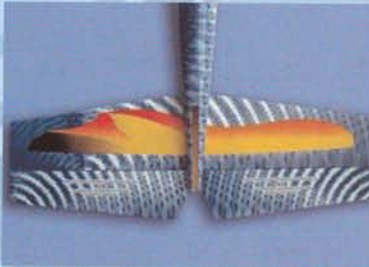
- Fuselage
- Vertical stabilizer with pre-installed rudder
- Horizontal stabilizer with pre-installed elevator

Stage 5 ALIGN THE HORIZONTAL STABILIZER

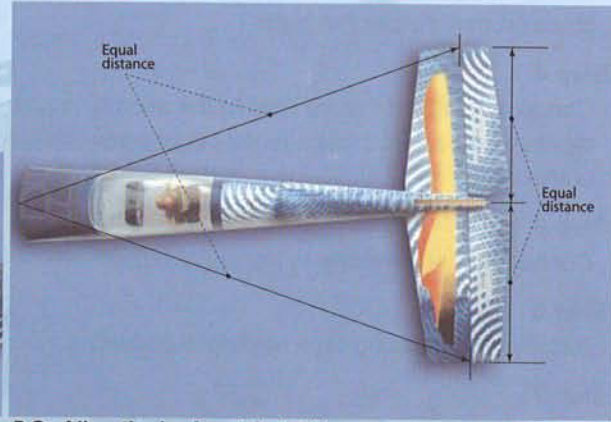
Check the fit of the horizontal stabilizer in its slot. Make sure the tail is square and centred to the fuselage by taking measurements as shown in the diagrams on the right, but don't glue anything yet.



5.A Align horizontal stabilizer



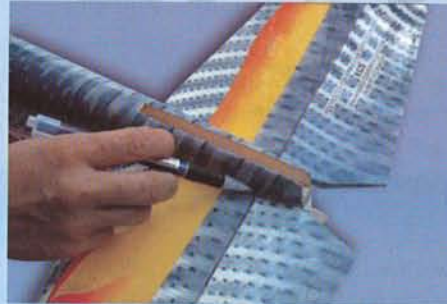
5.B Trial fit the horizontal stabilizer in its slot



5.C Align the horizontal stabilizer in its slot

Stage 6 MARK ON HORIZONTAL STABILIZER

With the horizontal stabilizer correctly aligned, mark the shape of the fuselage on the top and bottom of the tailplane using a water soluble non-permanent felt tip pen as shown here.



6.A Mark the top of the horizontal stabilizer



6.B Mark the bottom of the horizontal stabilizer

Stage 7 CUT AND REMOVE THE COVERING OF HOR. STABILIZER

Now remove the horizontal stabilizer and, using a sharp knife and a ruler CAREFULLY cut 2mm inside the marked lines and remove the covering on the top and bottom of the tail as shown. Make sure you only cut the film and not the wood, otherwise the horizontal stabilizer will be severely weakened.



7.A Lines marked on the horizontal stabilizer



7.B Carefully cut inside the lines



7.C Remove covering



7.D Remove covering from the bottom surface



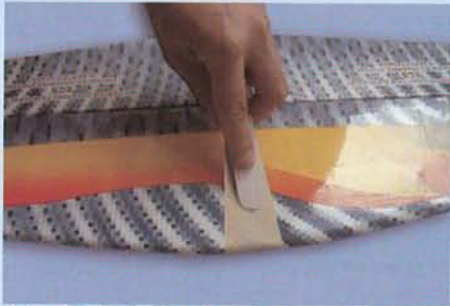
7.E Clean off any traces of pen

Stage 8

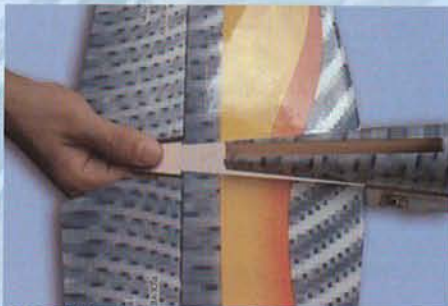
INSTALL HORIZONTAL STABILIZER

Apply sufficient epoxy to the top and bottom of the horizontal stabilizer. Use 30 minute epoxy to ensure a strong bond and give yourself plenty of working time.

Insert the horizontal stabilizer in its slot in the fuselage and re-check the alignment as per illustration 5.B. Excess epoxy should be cleaned off with a rag or tissue before it cures.



8.A Apply plenty of epoxy



8.B Slide the horizontal stabilizer into place



8.C Wipe off excess epoxy

Stage 9

FITTING THE VERTICAL STABILIZER WITH RUDDER

Check the fit of the vertical stabilizer in its slot. Make sure that it is glued square to the horizontal stabilizer and fuselage.



9.A Trial fit the vertical stabilizer onto fuselage.

Stage 10

FITTING THE VERTICAL STABILIZER WITH RUDDER

Mark the shape of the fuselage on the left and right sides of the vertical stabilizer using a felt-tip pen. Now remove the vertical stabilizer and, using a sharp knife & ruler, CAREFULLY cut just 2mm inside the marked lines and

remove the covering on both sides of the fin, just as you did with the horizontal stabilizer, making sure you only press hard enough to cut the covering, not the vertical stabilizer.



10.A Mark both sides of the vertical stabilizer



10.B Carefully cut through the covering



10.C Remove covering from both sides

Stage 11

FITTING VERTICAL STABILIZER

Apply sufficient epoxy to both sides and the bottom of the vertical stabilizer. Use 30 minute epoxy to ensure a strong bond and give yourself plenty of working time.

Insert the vertical stabilizer in its slot in the fuselage and re-check the alignment. Excess adhesive should be cleaned off with a rag or tissue before it cures.



11.A Apply plenty of epoxy



11.B Slide the fin in place



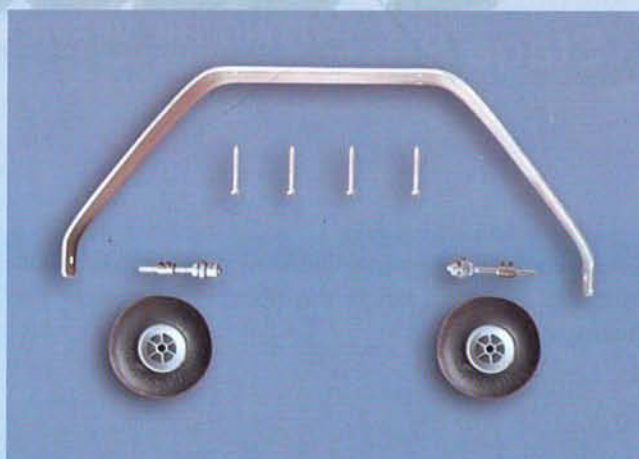
11.C Insert the pre-installed hinge to the rudder

Stage 12

FITTING THE MAIN LANDING GEAR

Identify the main landing gear components shown below

- 1 fiberglass main landing gear
- 2 axle assembly
- 2 main wheels (60mm x 20mm)
- 2 wheels pants
- 1 Landing gear cover
- 4 sheet metal screws 5 x 35 mm with washers
- 1 tail wheel assembly with 2 (3 x 15mm) sheet metal screws.



12.A Main landing gear components



12.B Turn over the fuselage to locate the 4 pre-drilled main landing gear mounting holes



12.C Install the axle and wheel



12.D Install the wheel pant and wheel to the main landing gear



12.E Use 4 metal sheet screws (5 x 35mm) to mount the main landing gear onto the fuselage

Stage 13 FITTING THE TAIL WHEEL

Install the tail wheel assembly. Note that the tail wheel assembly has a loose wire end. Slide the loose wire end into the sleeve tube that has been installed into bottom of the rudder. Position the plastic bracket on the bottom of

the fuselage. Mark the location of the screw holes. Tap the holes with the screws and then fasten the plastic bracket to the fuselage. See the illustration below.



13.A Insert the tail wheel steering wire into the steering guide tube



13.B Screw the tail wheel assembly to the fuselage



13.C Trim off the excess tail steering wire

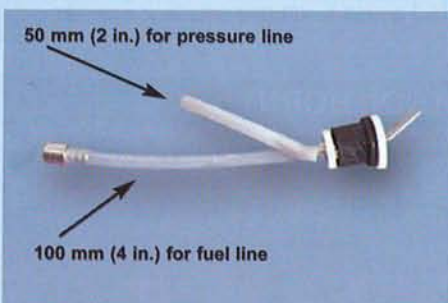
Stage 14 FITTING THE FUEL TANK

To assemble the fuel tank you will need the following items:

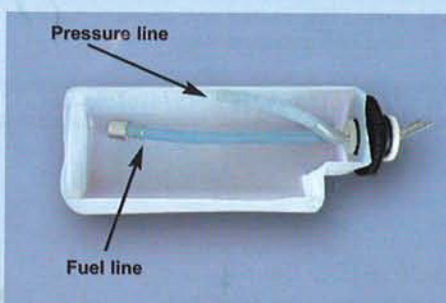
- The fuel tank and fuel stopper assembly (supplied)
- The clunk (supplied)
- About 7" (20 cm) of medium ID silicone fuel line (DUB 197 or similar)
- Cross head Philips screw driver



14.A Fuel tank



14.B Use 100 mm (4 in) for fuel line and 50 mm (2 in) for pressure line



14.C Illustration of fuel line positioning inside the tank



14.D Fuel tank installed on the power module

Stage 15 INSTALLING THE ENGINE

The engine and the fuel tank are installed onto the power module. First remove the power module from the fuselage by removing the 4 nuts & washers



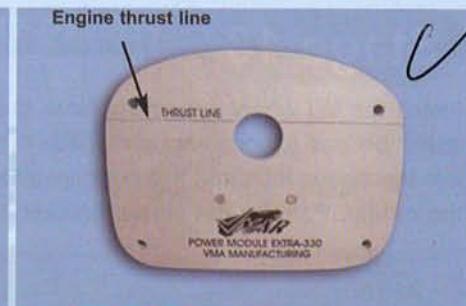
15.A Power module



15.B Aluminum engine mount



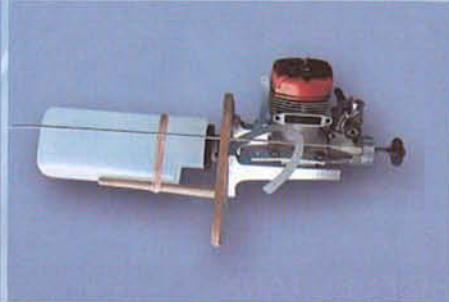
15.C Power module assembly



15.D Engine thrust line



15.E Engine and engine mount recommendation orientation.



15.F Engine and fuel tank positioned on the power module



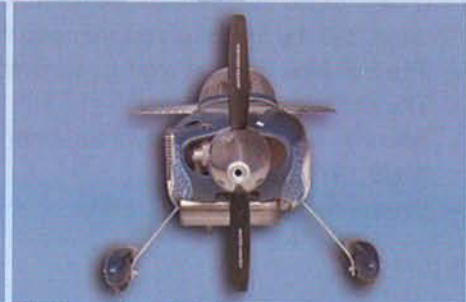
15.G Throttle control connect to the engine



15.H See cowl installation tips on page 20 & 21



15.I Install the muffer and connect the fuel and pressure line



15.J Install a suitable prop and spinner

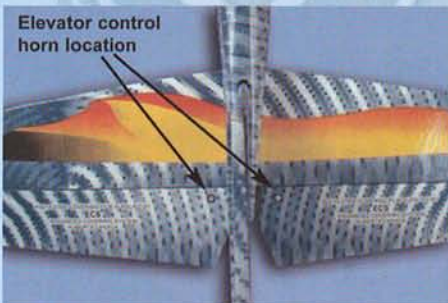
Stage 16

FITTING ELEVATOR AND RUDDER CONTROL HORN

The elevator control is fitted to the underside of both the right and the left elevator halves. Pierce the covering over the pre-drilled hole for the control horns installation as shown.



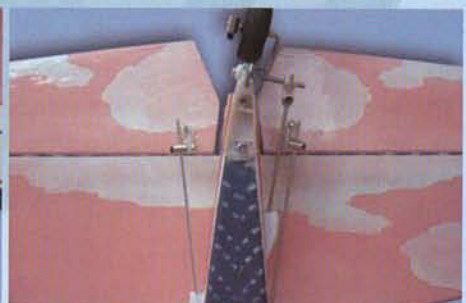
16.A Control horn assembly



16.B Elevator control horn location



16.C Rudder control horn location



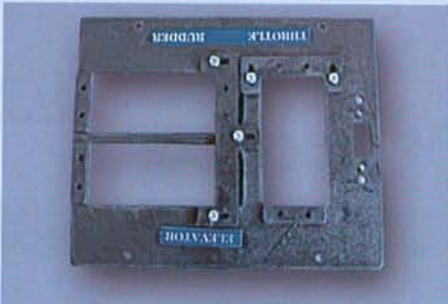
16.D Elevator and rudder control horn connected to the control rod

Stage 17

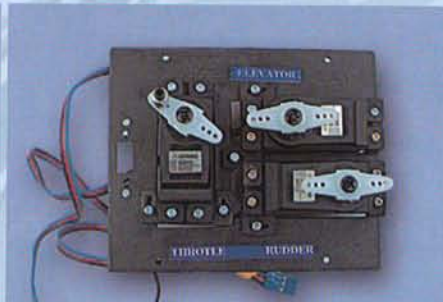
INSTALLING THE SERVOS

Install the rubber servo grommets and brass ferrules supplied with your radio equipment. The three servos that control the elevator, rudder and throttle are installed in the

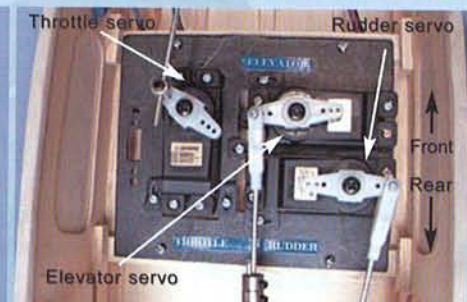
servo tray mounted in the fuselage. Remove the servo tray from the fuselage and mount the servos to the servo tray as shown.



17.A Universal servo tray.



17.B Note the orientation and positions of the three servos in the servo tray.



17.C Throttle, elevator and rudder servos connected to their respective push rod.

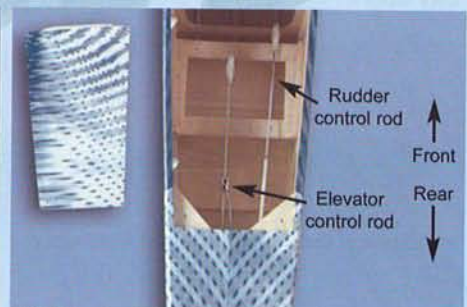
Stage 18

CONNECTING THE PUSHRODS TO THE THROTTLE, RUDDER AND ELEVATOR SERVOS

Consult the pictures showing how the throttle, rudder and elevator servos are positioned and connected to the pushrods.



18.A Position of throttle, rudder and elevator servos and connected to the pushrods.



18.B Pre-installed elevator and rudder pushrod



18.C Connecting clevis to the servo arm



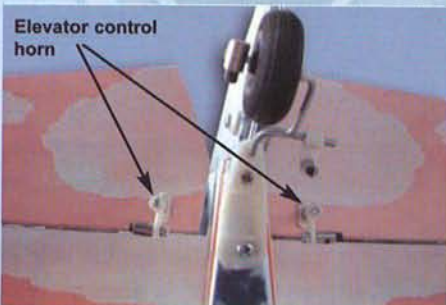
18.D Connecting the elevator pushrod to the elevator servo arm

Stage 19

CONNECTING THE PUSHRODS TO THE ELEVATOR

Connect the elevator servo to the receiver and turn on your transmitter. Confirm that the neutral positions of the

elevator servo are sustained.



19.A Two independent elevator control horns shown in position



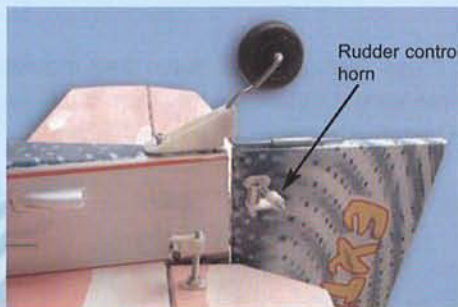
19.B Connecting the elevator pushrods to the control horns



19.C Loosen collars to align elevator surfaces. Tighten collars securely

Stage 20 CONNECTING THE PUSHRODS TO THE RUDDER

Connect the rudder servo to the receiver and turn on your transmitter. Confirm that the neutral positions of the rudder servo are sustained.



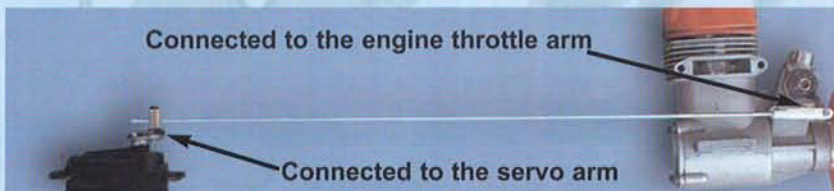
20.A Rudder control horn installed and shown in position



20.B Connecting the rudder pushrod to the rudder control horn

Stage 21 CONNECTING THE THROTTLE CONTROL

Connect the clevis to the engine throttle arm at roughly half throttle. Look into the throat of the engine carburettor as you rotate the throttle arm and select a position where the throttle opening is about half what it is when fully open.



21.A Typical throttle control rod connection



21.B Throttle control rod connected to the engine throttle arm

Stage 22 ADJUST CONTROL SURFACE THROW LIMITS.

Adjust the deflection of the control surfaces to match the specifications on page 19

You can reduce the amount of throw by doing either or both of the following:

From the servo end, move the clevis or EZ connector to a hole in the servo arm that is closer to the servo output shaft.

From the control horn end, move the horn out further on the threaded bolts. Always confirm that the horn is still thoroughly engaged with the threaded bolt after you have adjusted it.

Stage 23 FINAL R/C SET-UP

Before starting the final set-up of the model, switch on the radio and ensure that all trims are in their neutral positions. Check that the ailerons, elevator and rudder are centred. If any adjustments are needed, do these by uncoupling the relevant control and turning it clockwise to shorten the

linkage or coupler - clockwise to lengthen it. Only when each control surface has been centred mechanically in this way should you begin adjusting the surface movement (or throw)

Stage 24

Now confirm that the control surfaces are moving in the correct direction. Use the servo reversing switches on your transmitter to reverse the direction of a servo if necessary.

The most popular transmitter mode (with the throttle on the left, with ailerons and elevator on the right) is shown here.

Stage 25 INSTALLING THE RECEIVER BATTERY

25.1 Consult your radio manual for instructions about hooking up your receiver battery, receiver and switch harness.

25.2 Wrap the battery pack securely in foam suitable for RC equipment and wrap the foam insulated pack in a plastic bag or cling wrap.

25.3 Thread the battery pack connector back through from beneath the fuel tank to the radio compartment by passing the battery connector through an opening beside the fuel tank.

25.4 Connect the battery connector to your radio system according to the radio manual.

Stage 26 INSTALLING THE RECEIVER

26.1 Consult your radio manual for instructions about hooking up your receiver.

26.2 Plan where you are going to put the receiver with consideration for routing the antenna safely.

26.3 Wrap the receiver securely in foam suitable for RC equipment and wrap the foam insulated receiver in a plastic bag or cling wrap.

26.4 Generally in the absence of specific instructions from the radio manufacturer, it is recommended that the receiver should be placed where it is least likely to have impact during a crash. Keep the battery pack and other heavy loose items ahead of the receiver.

Stage 27 CONFIRM RADIO OPERATION

27.1 Consult your radio manual for instructions about testing and operating your radio system.

27.2 Pay particular attention to charging your radio system batteries and range testing the system before and after each flight.

27.3 Check that all controls are working correctly before and after each flight.

Stage 28 BALANCING THE AIRCRAFT.

The CG for your EXTRA - 330L is located at 120 - 130 mm (4 3/4" to 5 1/4") back from the leading edge of the wing when the wing has been attached to the fuselage.

For the initial flight, the CG should be located at 4 3/4" (120mm) back from the leading edge of the wing when the wing has been attached to the fuselage.

The CG is measured with the engine, radio gear and all other components installed but WITH NO FUEL IN THE TANK.

Set up the CG as it will be when you fly it BUT WITH NO FUEL IN THE TANK.

It is very important to have the CG correct. Flying your model with the CG too far will likely lead to loss control and a crash.

If you discover that after you have assembled your model and installed your radio and engine that the CG is incorrect you must bring the CG to the correct location by doing the following BEFORE FLYING :

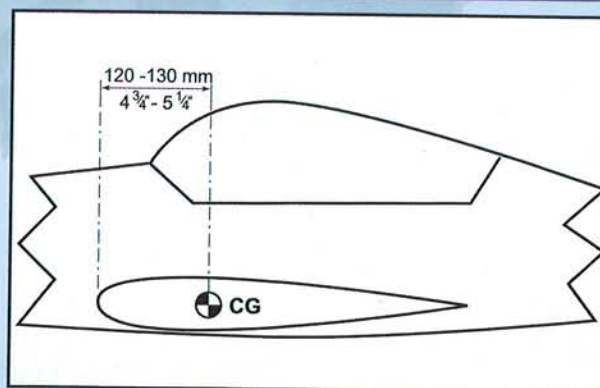
- Move the battery pack fore or aft.
- Move other components fore or aft.
- Change engine to a lighter or heavier model.
- Add weight to the nose or tail. If adding it to the nose, try to make it useful by going to a heavier duty engine or adding a spinner with a heavy metal backing plate. As a last resort, add stick on "dead" weight where appropriate.

Stage 29 CONFIRM MECHANICAL INTEGRITY

29.1 Once you have confirmed that the CG is correct, you should do a thorough review of the entire model before your first flight. Check everything twice! Every hook up, every coupling, everything! Do it twice!!

29.2 Before your first flight, have an experienced flyer review your work. Do not fly your model until it has been checked out by a third party who knows how to fly and how to set up a model aircraft

29.3 Once you have completed your first flight, get in the habit of checking your model over before and after each flight! Don't fly if you find something that is not right!

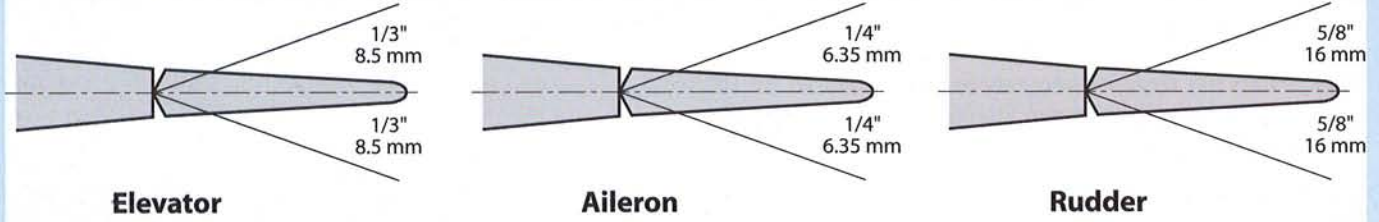


NOTE : The throws are measured at the widest part of the elevator, rudder and aileron. Adjust the position of the pushrods at the control/servo horns to control the amount of throw. You may also use the ATV's if your transmitter has them but the mechanical linkages should still be set so that the ATV's are near 100% for best servo resolution.



	High rate	Low rate
ELEVATOR	1/2" (12.6 mm) up 1/2" (12.6 mm) down	1/3" (8.5 mm) up 1/3" (8.5 mm) down
RUDDER	1" (25.4 mm) right 1" (25.4 mm) left	5/8" (16 mm) right 5/8" (16 mm) left
AILERON	3/8" (9.5 mm) up 3/8" (9.5 mm) down	1/4" (6.35 mm) up 1/4" (6.35 mm) down.

Note: If your radio does not have dual rates, then set the control surfaces to move at the low rate throws.



Note

