



WITH POLYCOTE ECS ENHANCED GRAPHICS SYSTEM

AERO SUBARU 40-52 ARF ECS SEMI SCALE MODEL

#VMA-S140B
(blue as
shown)
#VMA-S140R
(red)



This model may be produced in a number of different graphic schemes and/or colors. The last character of the part number will vary according to the model. This Assembly and Operations Manual is pertinent to all graphic schemes of the VMAR Aero Subaru 40-52 ARF ECS.

ASSEMBLY & OPERATIONS MANUAL

Please review this manual thoroughly before assembling or operating this model.

Proceeding with assembly and use of this product indicates Agreement With & Acceptance of the following Liability Disclaimer.

Model airplanes, model engines, model engine fuel, propellers and related accessories, tools and equipment can be hazardous if improperly used. Be cautious and follow all safety recommendations when using your VMAR model airplane. 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.

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.

Don't fly until it's right!

POLYCOTE™ ECS
ENHANCED COVERING SYSTEM

This model is covered with our ULTRA TOUGH POLYCOTE ECS Enhanced Covering System. Please see the Important Information sheet for this model on how to care for & clean POLYCOTE ECS. For more POLYCOTE info... www.richmondrc.com/polycote.htm

Stage 1 – WING ASSEMBLY.

JOINING THE WING HALVES

Parts needed

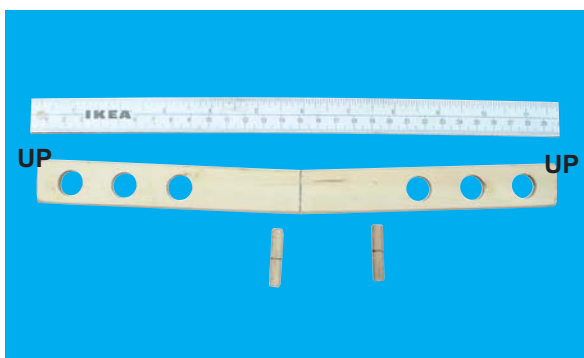
- Right and left wing panel
- Wing joiner (also called dihedral brace)
- Two short dowel guides

Tools and Adhesives needed

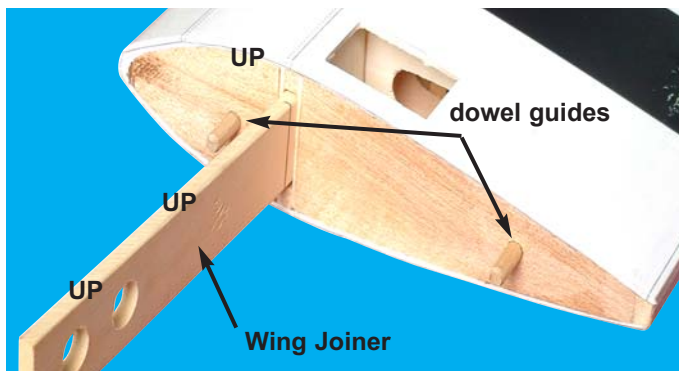
- Rolled trim strip (supplied with kit)
- 30 minute epoxy (Do NOT use CA or 5 minute epoxy)
- Epoxy brush or stir sticks
- Disposable mixing dish for the epoxy
- Sandpaper (Coarse 240 grit recommended)
- Low tack masking tape
- Pencil
- Knife
- Ruler
- Paper towels.

1.1 Locate the wing joiner (also called Dihedral brace). Using the ruler, determine the center of the wing joiner and mark it with a pencil as illustrated in 1A. Also mark a centre line on each of the dowel guides.

1.2 Trial fit the wing joiner into the wing panels. It should insert smoothly up to the center line as illustrated in 1B. Now slide the other wing panel onto the wing joiner until the wing panels meet. If the fit is overly tight, sand the wing joiner slightly and try again. Mark the joiner to indicate which way is UP.



1A - Orientation of wing joiner and dowel guide



1B - Trial fit the wing joiner and dowel guides

1.3 Insert the dowel guides into one of the wing panels all the way to the center lines. Apply CA glue to secure the dowels into their places as illustrated in 1B and 1C.

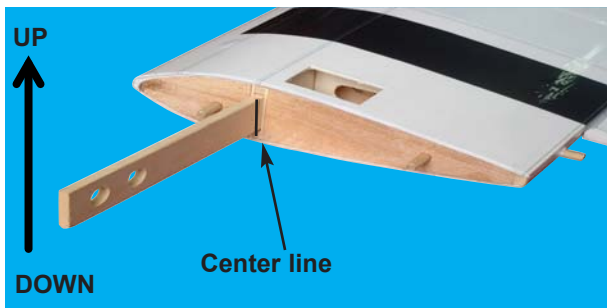
1.4 Apply plenty of 30 minute epoxy to one end of the wing joiner, using a stir stick or epoxy brush. Carefully insert the joiner into the first wing panel as illustrated in 1D, 1E and 1F, then wipe off the excess glue that squeezes out of the joint with a cloth or tissue. Repeat this process several times to ensure that the wing joiner and cavity are well coated in epoxy. When the wing joiner & cavity are well coated with 30 minute epoxy, insert the joiner to the centre line, wipe away any excess epoxy and let dry. (Note: Do NOT use 5 minute epoxy or CA to join the wings)



1C - Apply CA glue to secure dowels into their places



1D - Apply plenty of epoxy glue to the wing joiner.



1E - Carefully insert the joiner all the way to the center line



1F - Wipe off the excess epoxy then allow to cure.

Stage 2



2A - Apply plenty of 30 minute epoxy glue to all surfaces.

2.1 When the epoxy has cured in Stage 1, trial fit the second wing panel onto the wing joiner first to ensure that the two panels fit without an excessive gap.

2.2 Now apply plenty of epoxy to the wing joiner and wing root ribs of both wing panels. Use only 30 minute epoxy to ensure a strong bond and give yourself plenty of working time. As with the wing joiner, the epoxy should ooze from joint and the excess should be cleaned off with a rag or tissue before it cures.

2.3 Use low tack masking tape to hold the two panels together until the epoxy cures.



2B - Align the two wing panels



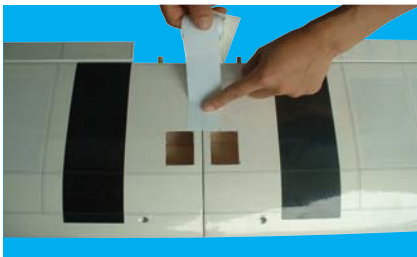
2C - Slowly close the gap



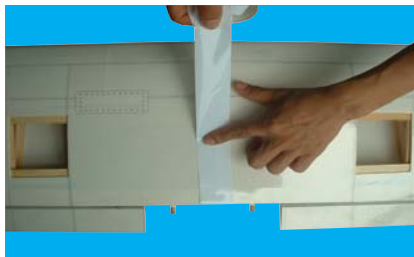
2D - Use tape to hold tightly together

Stage 3

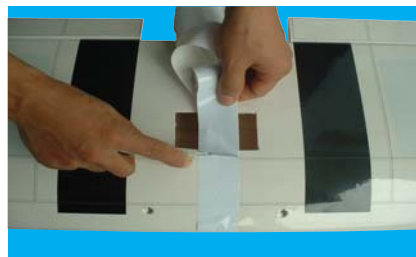
3.1 Once the epoxy has cured completely (allow several hours at least), the tape can be removed from the wing. To cover the joint in the wings, a length of wing joiner tape is supplied. Starting from the upper side, stick the tape centrally over the joint ensuring that it is pressed down firmly as you work around the wing. Wrap the tape all the way around the wing joint in one piece, starting and finishing at the wiring harness cavities at the bottom of the wing.



3A - Apply tape over the joint, starting on the top as shown.



3B - Carry on over the bottom of the wing & press down firmly as you go



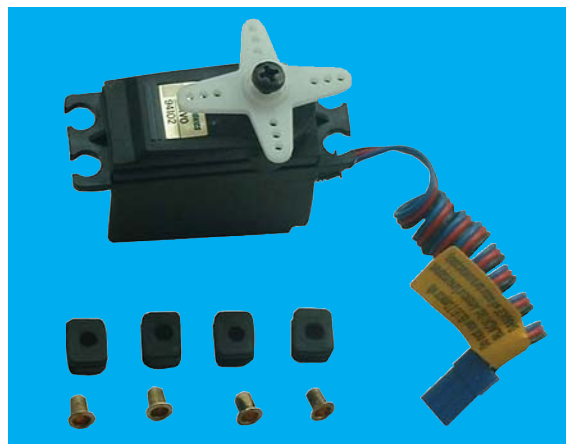
3C - Trim off the excess here

FITTING AILERON SERVOS

Stage 4

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

- 2 servos
- Servo mounting screws and grommets as supplied with the 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 one end.
- Low tack masking tape.
- 2 aileron control horn assemblies
- 1 servo Y connection wire (not required for computer radios)



4A - Prepare the servos by fitting the rubber grommets & ferrules supplied with your radio

4.1 Carefully remove the white 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 white cover plates and retain the mounting screws. Notice that there are wooden servo rails pre-installed onto each cover plate. Locate the wiring harness tubes that are protruding slightly into each aileron servo cavity. The tubes are free floating.

4.2 Install a servo on each servo cavity plate & connect the servo to the servo extension wires & run the extension wires through the wiring harness tubes to the centre of the wing.

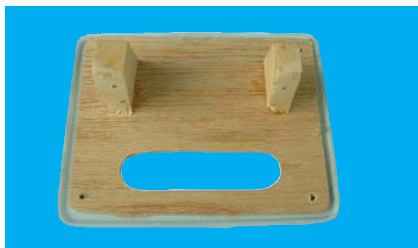
4.3 Trial fit the servos & servo plates back into the wing cavities and ensure the wiring, servo, and tubes fit properly.

4.4 Tack the wiring harness tubes in place with CA or silicone.

4.5 Screw down the servo plates & install the aileron control horns.



4B - Aileron servo location



4C - Aileron servo mount



4D - Screw servo in position



4E - Install aileron control horn

Stage 5

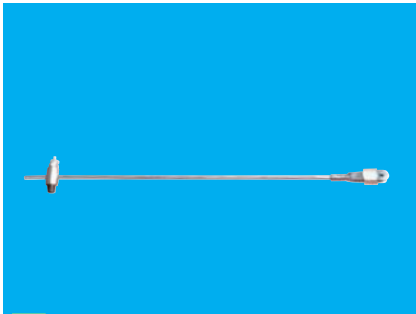
5.1 Consult your radio instruction manual and center each aileron servo by plugging it into the aileron channel in the receiver. Turn on the transmitter and then the receiver. Center the aileron trim lever on the transmitter. Remove the servo arm mounting screw and the servo arm.

5.2 Mount the servo arm back on the servo so that the arm is perpendicular to the surface of the wing. Screw the servo arm into place with the servo arm mounting screw supplied with the servo.

5.3 Locate the two aileron control rods in the hardware bag (see 5A). 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.

5.4 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. Use low tack masking tape.

- 5.5** 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.
- 5.6** Connect the aileron servo rods to the aileron control horns. The end with the clevis should be attached to the servo output arm as illustrated in 5C.
- 5.7** Connect the other end of the rod to the control horn pre-installed with an EZ connector as illustrated in 5B.
- 5.8** Remove the masking tape holding the ailerons.
- 5.9** In the case of computer radios, connect the servos together by connecting them to the appropriate receiver channels. In the case of analog radios couple the servos together using a Y harness.
- 5.10** Turn on your radio and activate the ailerons, using the aileron stick and ensure a smooth full motion can be achieved.
- 5.11** 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).
- 5.12** 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. (Clockwise roll of the wing when viewed from the back)



5A - Aileron control rod assembly



5B - Aileron control horn assembly



5C - Aileron control installed

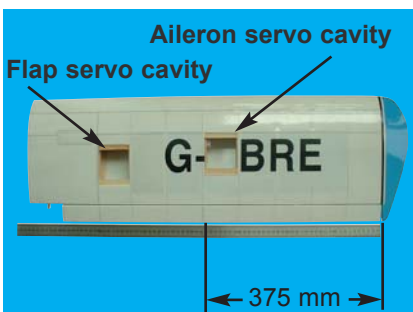
FITTING FLAP SERVOS (Option)

The AERO SUBARU comes with full span ailerons. **ONLY PERFORM THIS STAGE if and when you want to be able to use the optional flaps.**

Stage 6

To install the flap control system, you will need the following items :

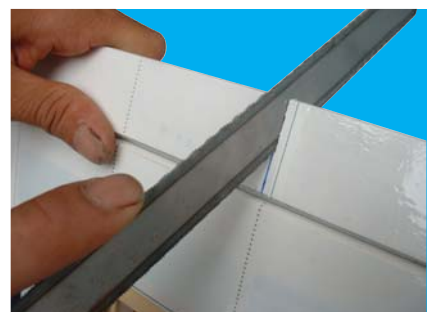
- 2 servos
- Servo mounting screws and grommets as supplied with the servos.
- Servo control arms as supplied with the servos.
- Two flap control rod assemblies
- Low tack masking tape.
- Ruler
- Hacksaw blade or similar thin fine tooth blade.



6A - Measure the aileron length to be 14-3/4" (375mm) inboard from the wing tip.



6B - Mark a line at 14-3/4" (375mm) from the wing-tip using a water soluble non-permanent felt-tip pen



6C - Carefully cut completely thru the aileron following the marked line using a hacksaw or other fine blade.



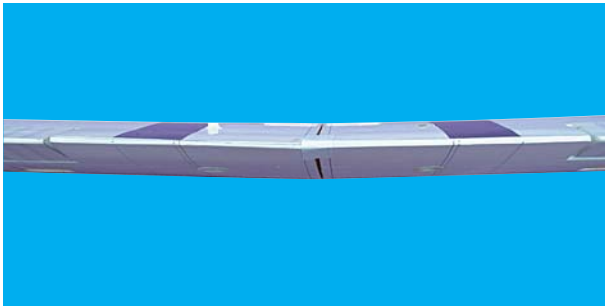
6D - Install flap servo to the servo mount



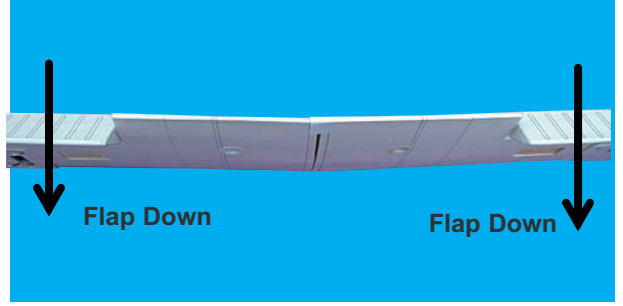
6E - Install the control horn assembly to the flap



6F - Final flap installation



6G - Flap up position



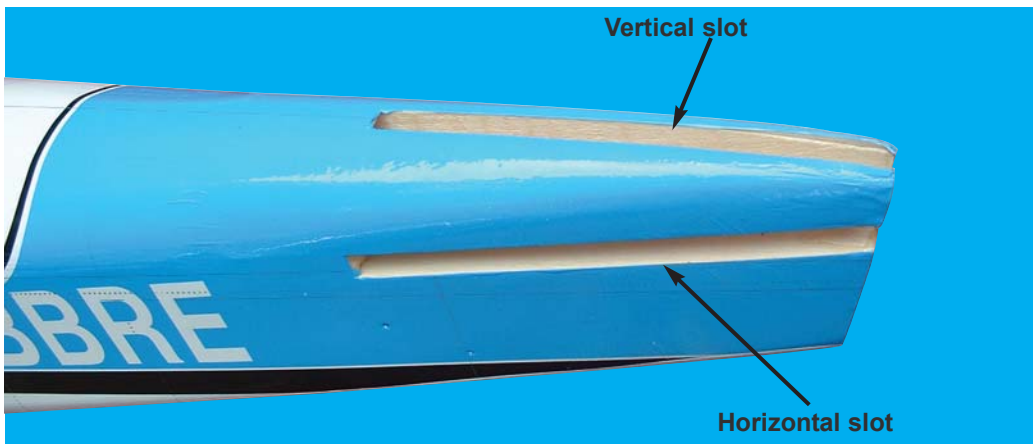
6H - Flap down position

FITTING THE HORIZONTAL AND VERTICAL STABILIZERS

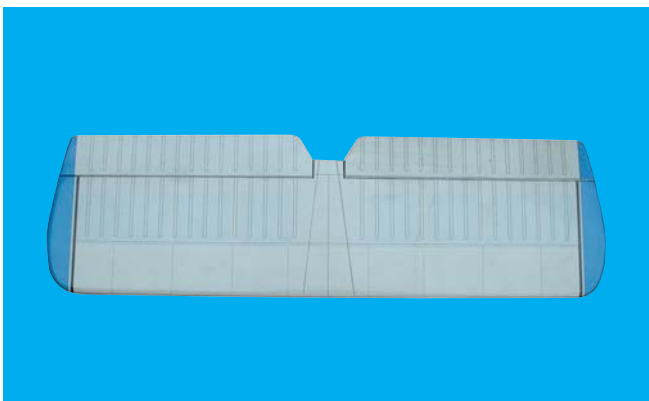
Stage 7

To install the stabilizers to the fuselage you will need:

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



7A The fuselage slots for the Vertical & Horizontal Stabilizers



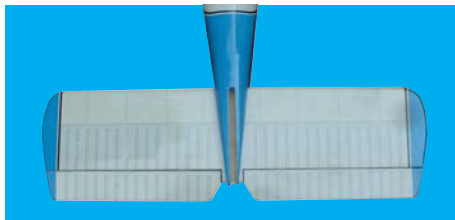
7B - Horizontal stabilizer with pre-installed elevators



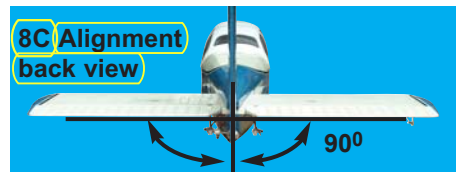
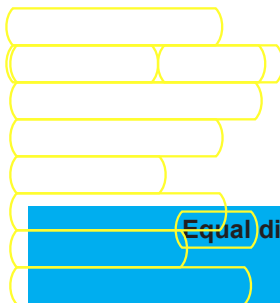
7C - Vertical stabilizer with pre-installed rudder

Stage 8

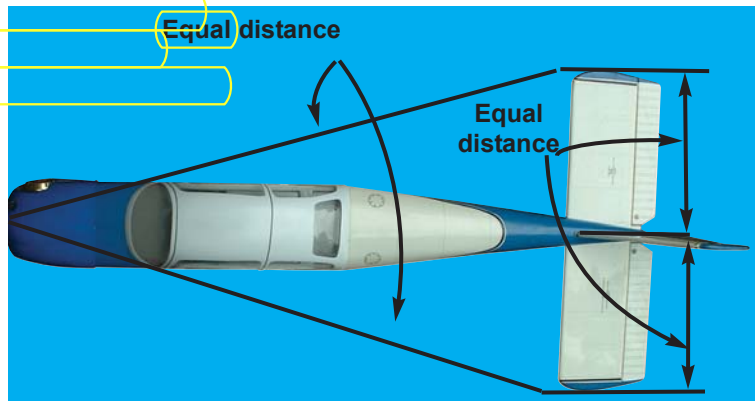
8.1 Check the fit of the horizontal stabilizer in its slot. Make sure the tail is square and centred to the fuselage by taking measurements as shown in the diagrams on the right, but **do** not glue anything yet.



8A Trial fit the horizontal stabilizer in its slot



8C Alignment back view



8B Alignment of horizontal stabilizer top view.

Stage 9

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



9A Mark the top of the horizontal stabilizer ...



9B ... and the bottom

Stage 10

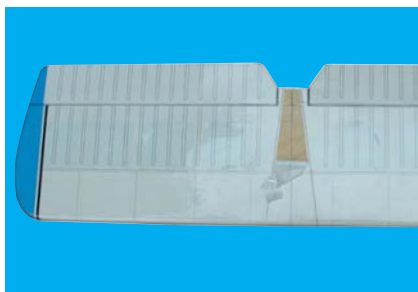
10.1 Now remove the horizontal stabilizer & using a sharp knife & a ruler **CAREFULLY cut 1/8" (3 mm) inside the marked lines** & remove the covering on the **top & bottom** of the tail as illustrated. Make sure you **only cut the film & not the wood**, otherwise the horizontal stabilizer will be **severely weakened & fail**.



10A - Mark lines on horizontal stab



10B - Cut 1/8" inside the lines



10C - Remove covering from top surface



10D - Do the same on the bottom

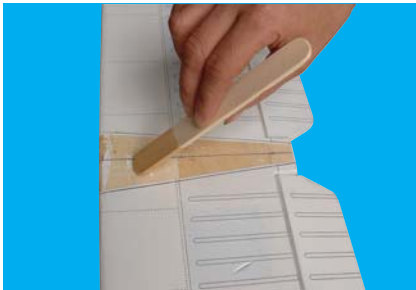


10E - Clean off any traces of pen

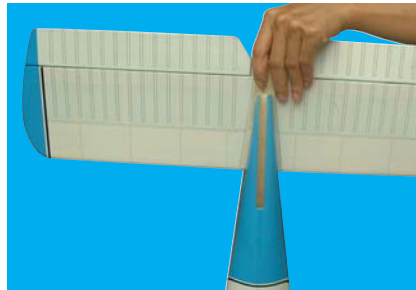
Stage 11

11.1 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. Excess epoxy should be cleaned off with a rag or tissue before it cures.



11A - Apply plenty of epoxy



11B - Slide the horizontal stabilizer into place



11C Wipe off excess epoxy

FITTING THE VERTICAL STABILIZER WITH RUDDER

Stage 12

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



12A - Trial fit the vertical stabilizer into fuselage slot.

Stage 13

13.1 Mark the shape of the fuselage on the left & right sides of the vertical stabilizer using a felt-tip pen. Now remove the vertical stabilizer, using a sharp knife & ruler, CAREFULLY cut just $\frac{1}{8}$ " (3mm) inside the marked

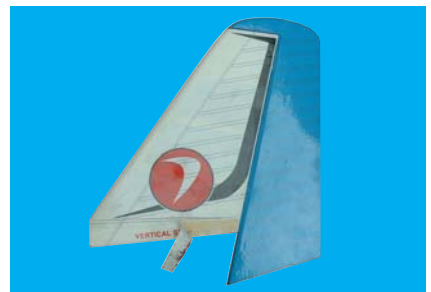
lines and remove the covering on both sides of the fin, just as you did with the horizontal stabilizer, making sure you only press hard enough to cut the covering, not the vertical stabilizer. Do NOT cut the wood.



13A - Mark both sides of the vertical stabilizer



13B - Carefully cut through the covering... NOT into the wood.



13C - Remove covering from both sides

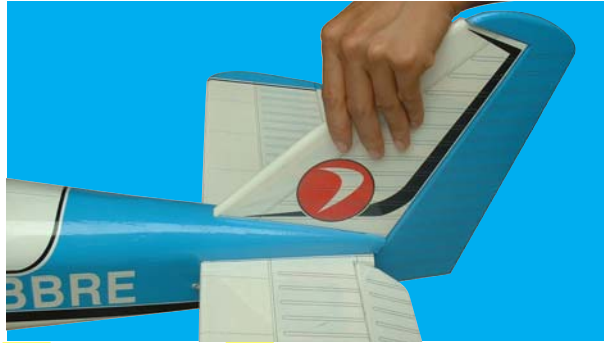
Stage 14

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



14A - Apply plenty of epoxy

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.



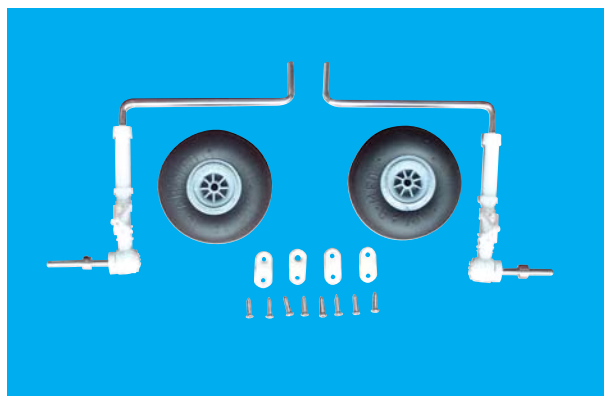
14B - Slide the stab into place & remove excess epoxy

FITTING THE MAIN LANDING GEAR

Stage 15

Identify the main landing gear components shown below

- 2 main landing gear assemblies
- 2 main wheels (2-7/16" (60mm))
- 8 sheet metal screws and 4 straps
- 2 wheel collars



15A - Main landing gear components

Pre-drilled main landing gear mounting holes



15B - Turn over the wing to locate the pre-drilled main landing gear mounting holes.



15C - Main landing gear assembly



15D - Use 4 sheet metal screws and 2 straps to mount the main landing gear onto the wing

FITTING THE FUEL TANK

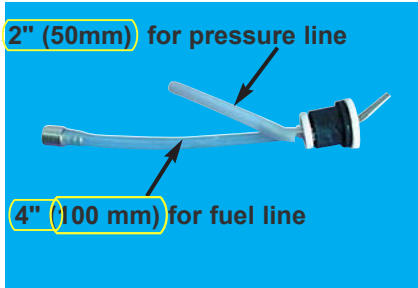
Stage 16

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

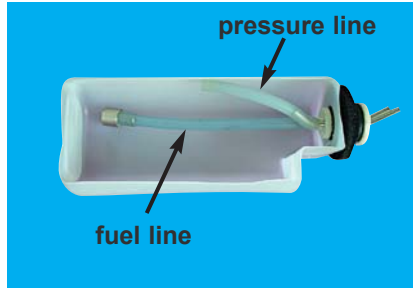
- The fuel tank and fuel stopper assembly (supplied)
- The clunk (supplied)
- About 7" (20 cm) of medium ID silicone fuel line (Dubro #DUB-197 or #DUB-222 or similar)
- Cross head Phillips screw driver



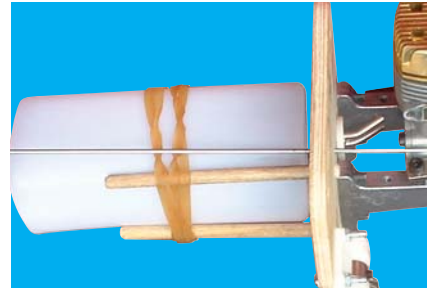
16A - Fuel tank & stopper assembly.



16B - Use 4" (100 mm) for fuel line and 2" (50mm) for pressure line



16C - Illustration of fuel line positioning inside cutaway of the tank

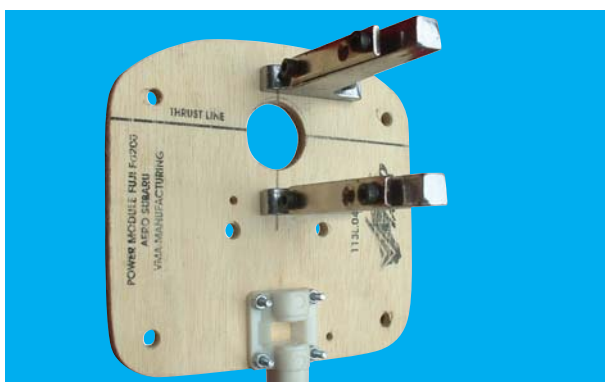


16D - Fuel tank installed on the back side of the power module

INSTALLING THE ENGINE

Stage 17

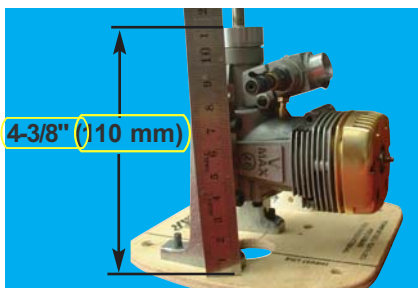
17.1 The engine and the fuel tank are installed onto the power module. First remove the power module from the fuselage by removing the 4 retaining nuts & washers



17A - Power module with pre-installed engine mount and nose gear bearing



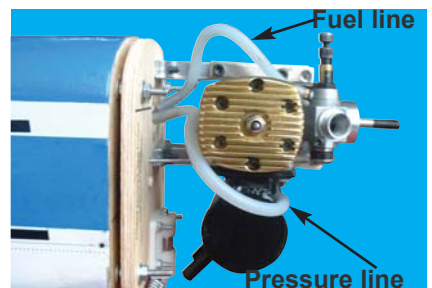
17B - VMAX .46 (#VMX-46PRO) recommended. VMAX .52 (#VMX-52PRO) for more power.



17C - Fit the engine to the pre-installed engine mount



17D - Pitts type muffler suitable for VMAX .46 and VMAX .52



17E - Install the muffler to the engine and connect both lines

INSTALLING THE NOSE GEAR

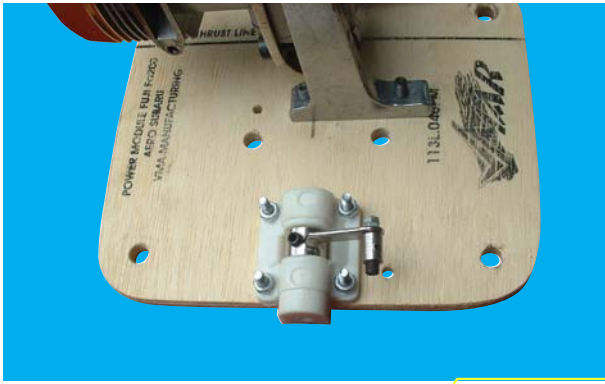
Stage 18

Identify the steerable nose gear components per illustration 18A.

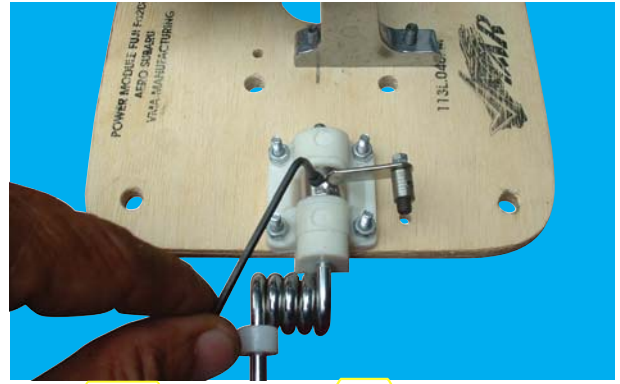
- 1 nose gear with strut
- 1 steering arm
- 1 wheel collar
- 1 wheel (2-7/16" (60mm))



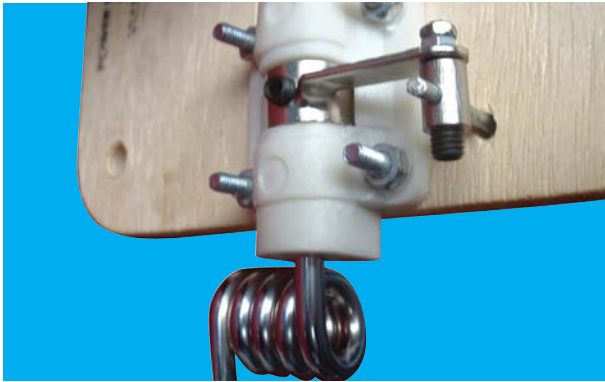
18A - Nose gear components



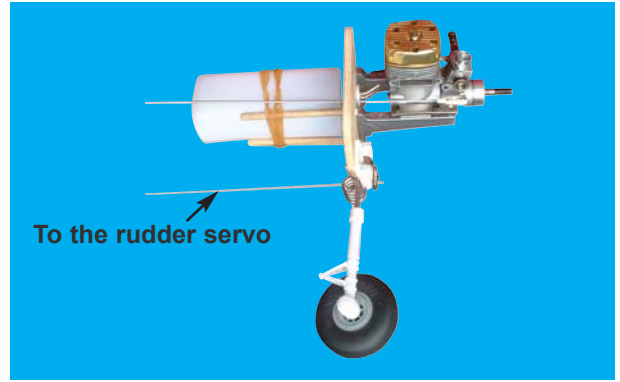
18B - Place the steering arm with pre-installed EZ connector into the nylon nose gear bearing



18C - Insert the nose gear into the bearing, passing through the steering arm. Secure the steering arm to the nose gear by tightening the set screw at the mark or groove on the nose gear wire.



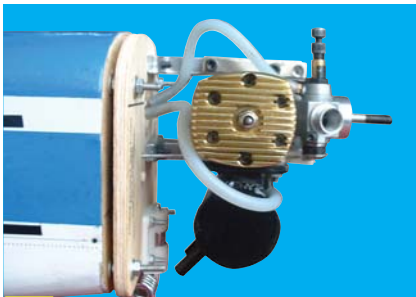
18D - Insert the nose gear push rod into the EZ Connector & tighten the set screw.



18E - Typical nosegear installation

INSTALLING THE COWL

Stage 19



19A - Power module mounted on the fuselage



19B - Aero Subaru cowl pre-cut & decorated, suitable for VMAX 46PRO or 52PRO engine.



19C - Install suitable Propeller and spinner after finishing the cowl installation.

FITTING ELEVATOR AND RUDDER CONTROL HORN

Stage 20

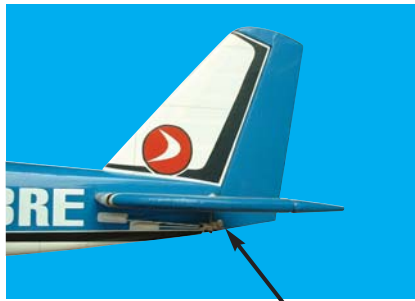
20.1 The elevator control horns are fitted on the underside of both the right and left elevators. Pierce the covering over the pre-drilled hole and install the control horns as shown.



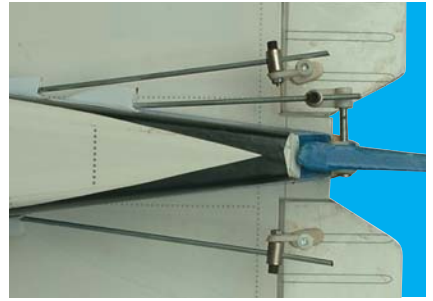
20A - Control horn



Elevator control horn locations



20C - Rudder control horn location.

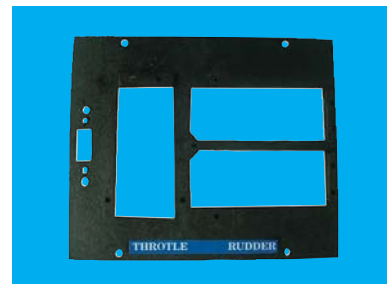


20D - Elevator and rudder control horns connected to the control rods

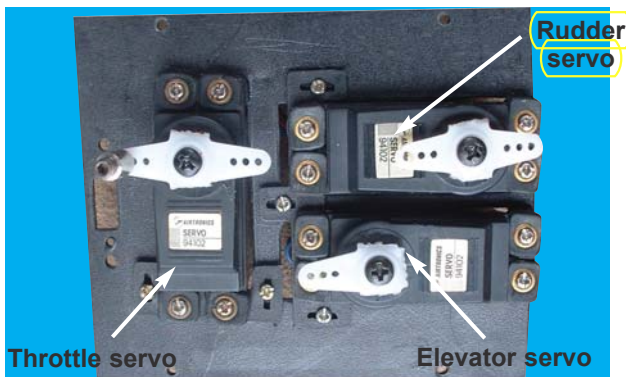
INSTALLING THE SERVOS

Stage 21

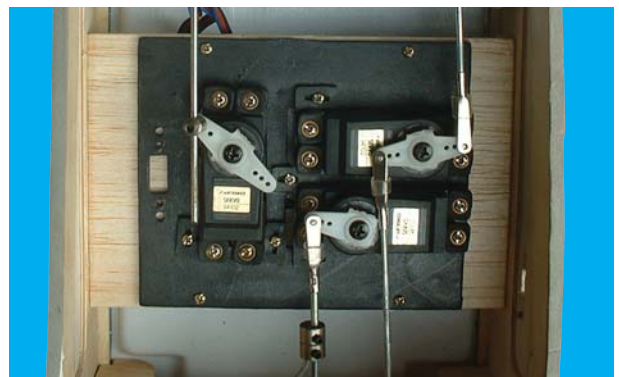
21.1 Install the rubber servo grommets & brass ferrules supplied with your radio equipment. The three servos that control the elevator, rudder and throttle are to be installed in the servo tray mounted in the fuselage. Remove the servo tray from the fuselage, mounting the servos to the servo tray as shown.



21A - Universal servo tray.



21B - Note the orientation and positions of the three servos in the servo tray

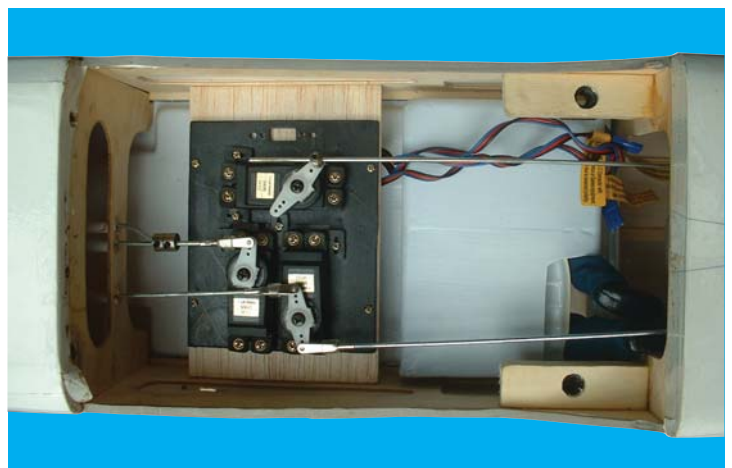


21C - Throttle, elevator and rudder servos connected to their pushrods as referenced left to right.

CONNECTING THE PUSHRODS TO THE THROTTLE, RUDDER AND ELEVATOR SERVOS

Stage 22

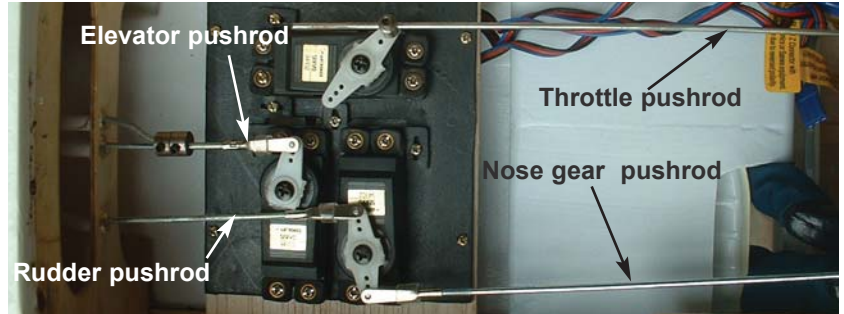
22.1 Consult illustrations 21C & 22A-C showing how the throttle, rudder and elevator servos are positioned and connected to the pushrods.



22A - Throttle (top), elevator (middle) & rudder (bottom) servos connected to their respective pushrods.



22B - Pre-installed elevator, throttle and rudder pushrod

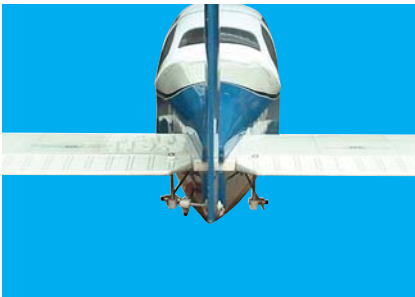


22C - Centre the servos, control surfaces & throttle (carburetor) and then connect the control rods to the servos.

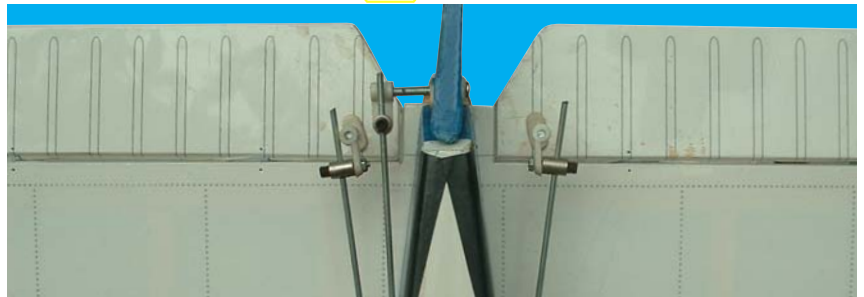
CONNECTING THE PUSHRODS TO THE ELEVATOR

Stage 23

23.1 Connect the elevator servo to the receiver and turn on your transmitter. Confirm that the neutral positions of the elevator servo are sustained as per illustration **22C**



23A - 2 independent elevator control horns shown in position



23B - Loosen the set screws to connect the elevator pushrods to the control horns, align the elevator surfaces, then tighten set screws securely.

CONNECTING THE PUSHRODS TO THE RUDDER

Stage 24

24.1 Connect the rudder servo to the receiver & turn on your transmitter. Confirm that the neutral positions of the rudder servo are sustained as per illustration **22C**

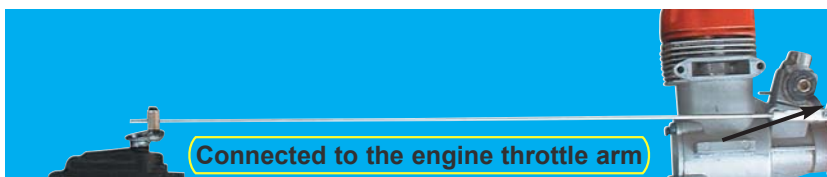


24A - The rudder pushrod is connected to the rudder control horn

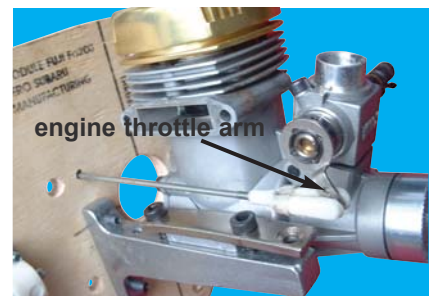
CONNECTING THE THROTTLE CONTROL

Stage 25

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



25A - Throttle control rod



25B - Throttle control rod connected to the engine throttle arm

ADJUST CONTROL SURFACE THROW LIMITS.

Stage 26

26.1 Adjust the deflection of the control surfaces to match the specifications on page 15

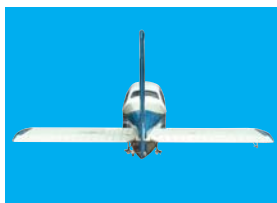
You can reduce the amount of throw by doing either or both of the following:

- 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.

FINAL R/C SET-UP

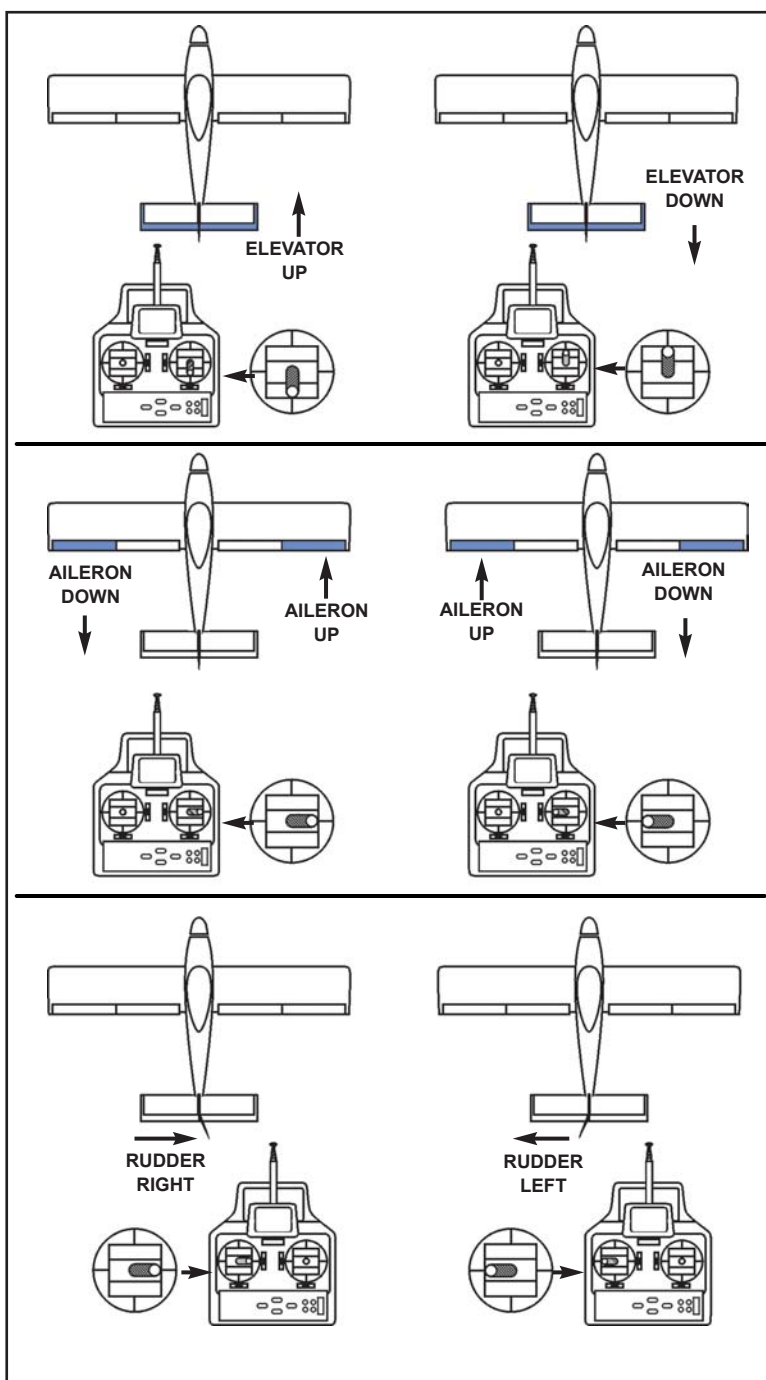
Stage 27

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 clevis and turning it clockwise to shorten the linkage or counter-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)



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 28



Stage 29

INSTALLING THE RECEIVER BATTERY

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

29.2 Wrap the battery pack securely in foam suitable for RC equipment and wrap the foam insulated pack in a plastic bag or cling wrap. Position the battery pack under the fuel tank or nearby.

29.3 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 or beneath the fuel tank.

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

Stage 30

INSTALLING THE RECEIVER

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

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

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

30.4 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 31

CONFIRM RADIO OPERATION

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

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

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

Stage 32

BALANCING THE AIRCRAFT.

The CG for your AERO SUBARU is located at 3-1/8" to 3-3/8" (80-85 mm) back from the leading edge of the wing when the wing has been attached to the fuselage as per illustration 33A.

For the initial flight, the CG should be located at 3 1/8" (80mm) 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 at the wrong location will likely lead to loss of control causing a crash and destruction of your model.

If you discover that after you have assembled your model and installed your radio and engine that the CG of your model 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 33

CONFIRM MECHANICAL INTEGRITY

33.1 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!!

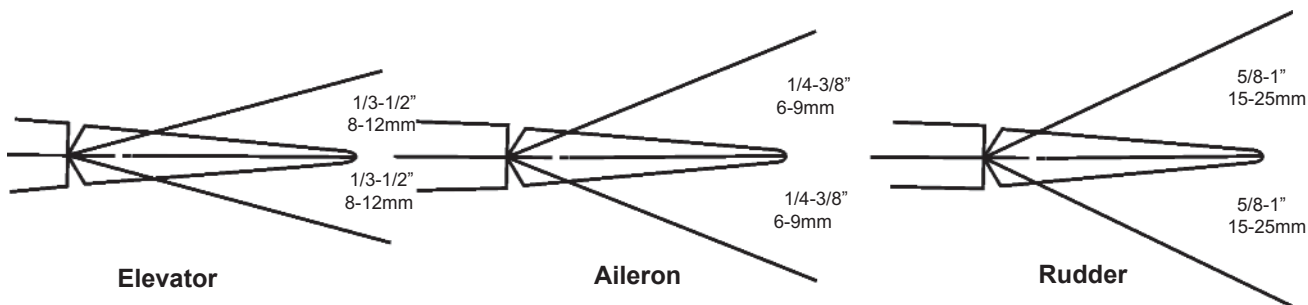
33.2 Before your first flight, have an experienced flyer review your work. Do not fly your model until it has been checked out by a third party who knows how to fly and how to set up a model aircraft

33.3 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!



CONTROL SURFACE THROW SPECIFICATIONS: The throws are measured at the widest part of the control surface. Adjust the position of the pushrods at the control and/or servo horns to control the amount of throw. You may also use ATV's if you radio has them but the mechanical linkages should still be set so that the ATV's are near 100% for best servo resolution.

	Low rate	High rate
ELEVATOR	1/3" (8mm) up 1/3" (8mm) down	1/2" (12mm) up 1/2" (12mm) down
RUDDER	5/8" (15mm) right 5/8" (15mm) left	1" (25mm) right 1" (25mm) left
AILERON	1/4" (6mm) up 1/4" (6mm) down	3/8" (9mm) up 3/8" (9mm) down.



Parts for this VMAR Model

In the event that you require replacement parts for your VMAR - AERO SUBARU 40-52 ARF, you can order parts from your retailer or from the VMAR On - line store at www.richmondrc.com.

Please see the IMPORTANT INFORMATION sheet for parts & part numbers related to this model.

For aftermarket parts and other information related to this model see the VMAR On - Line store at www.richmondrc.com