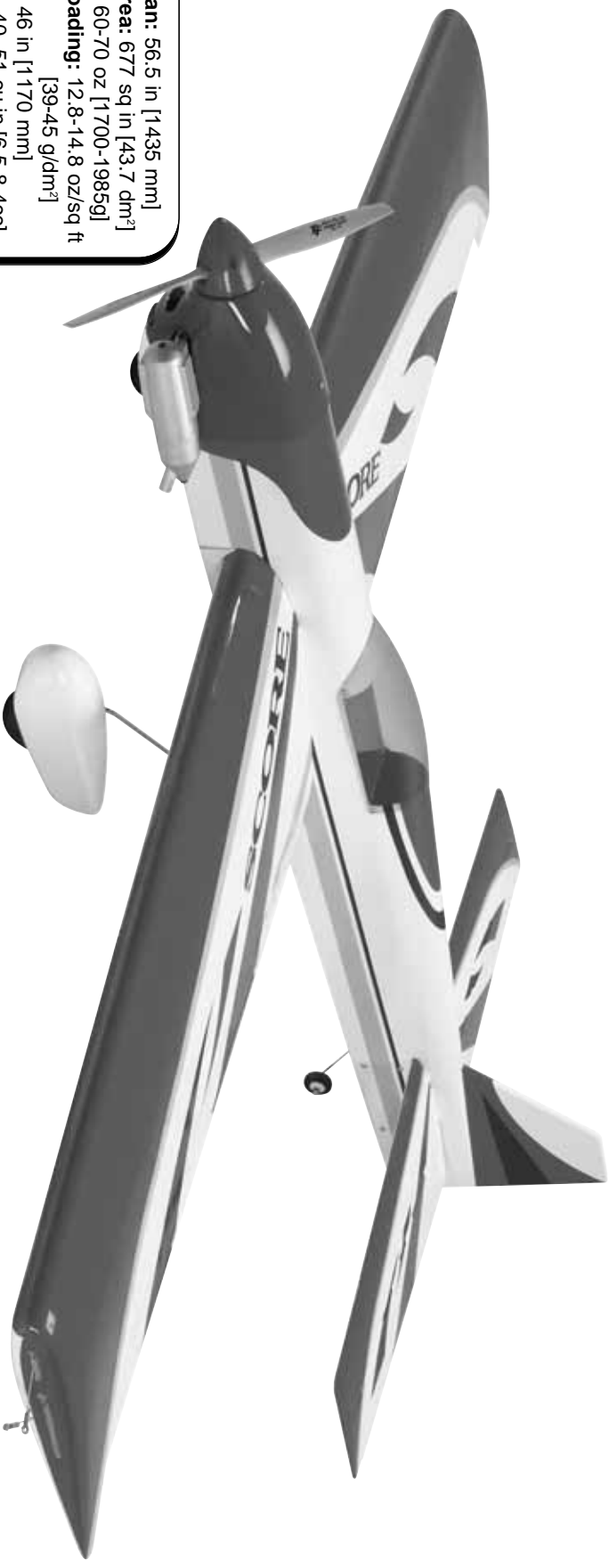![Top Flite logo]

SCORE™

Wingspan: 56.5 in [1435 mm]
Wing Area: 677 sq in [43.7 dm²]
Weight: 60-70 oz [1700-1985g]
Wing Loading: 12.8-14.8 oz/sq ft
[39-45 g/dm²]
Length: 46 in [1170 mm]
Engine: .40-.51 cu in [6.5-8.4cc]
2-stroke glow control line

WARRANTY......

Top Flite Models guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. In no case shall Top Flite's liability exceed the original cost of the purchased kit. Further, Top Flite reserves the right to change or modify this warranty without notice.

In that Top Flite has no control over the final assembly or material used for final assembly, no liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unused condition to the place of purchase.

To make a warranty claim send the defective part or item to Hobby Services at the address:

Hobby Services
3002 N. Apollo Dr. Suite 1
Champaign IL 61822 USA

Include a letter stating your name, return shipping address, as much contact information as possible (daytime telephone number, fax number, e-mail address), a detailed description of the problem and a photocopy of the purchase receipt. Upon receipt of the package the problem will be evaluated as quickly as possible.

READ THROUGH THIS INSTRUCTION BOOK FIRST. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.

Top Flite Models Champaign, IL   **Telephone (217) 398-8970, Ext. 5**   **airsupport@top-flite.com**

TABLE OF CONTENTS

INTRODUCTION

Congratulations and thank you for purchasing the Top Flite Control Line Score ARF. The Score is capable of performing all AMA stunt maneuvers; however, it is also a plane that's suitable even for relative newcomers to control line flight. The pre-covered Score assembles quickly and easily with a bolt-on wing and stabilizer. Access hatches in the tail section allow elevator control throw adjustment at the field, and a removable wing tip weight access hatch allows you to add or subtract tip weight between flights to fine tune the model. The leadouts can even be adjusted by a quick turn of a screwdriver. Whether flown casually or in competition, the Score is sure to provide you with impressive control line performance.

For the latest technical updates or manual corrections to the Score Precision Control Line ARF visit the Top Flite web site at www.top-flite.com. Open the "Airplanes" link, then select the Score Precision Control Line ARF. If there is new technical information or changes to this model, a "tech notice" box will appear in the upper left corner of the page.

If you have not flown a control line stunt model before, we recommend that you get the assistance of an experienced pilot in your club for your first flights. If you're not a member of a club, your local hobby shop has information about clubs in your area whose membership includes experienced pilots.

AMA

In addition to joining a control line club, we strongly recommend you join the AMA (Academy of Model Aeronautics). The AMA is the governing body of model aviation and membership is required to fly at AMA clubs. Though joining the AMA provides many benefits, one of the primary reasons to join is liability protection. Coverage is not limited to flying at contests or on the club field. It even applies to flying at public demonstrations and air shows. Failure to comply with the Safety Code (excerpts printed in the back of the manual) may endanger insurance coverage. Additionally, training programs and instructors are available at AMA club sites to help you get started the right way. There are over 2,500 AMA chartered clubs across the country. Contact the AMA at the address or toll-free phone number below:

PROTECT YOUR MODEL, YOURSELF & OTHERS FOLLOW THESE IMPORTANT SAFETY PRECAUTIONS

1. Your Score Precision Control Line ARF should not be considered a toy, but rather a sophisticated, working model that functions very much like a full-size airplane. Because of its performance capabilities, the Score Precision Control Line ARF, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage to property.

2. You must assemble the model according to the instructions. Do not alter or modify the model, as doing so may result in an unsafe or unflyable model. In a few cases the instructions may differ slightly from the photos. In those instances the written instructions should be considered as correct.

3. You must take time to build **straight, true** and **strong**.

4. You must use lines that are in first-class condition, and a correctly sized engine and components throughout the building process.

5. You must correctly install all pushrods and other components so that the model operates correctly on the ground and in the air.

6. You must check the operation of the model before every flight to insure that all equipment is operating and that the model has remained structurally sound. Be sure to check clevises or other connectors often and replace them if they show any signs of wear or fatigue.

7. If you are not already an experienced control line pilot, you should fly the model only with the help of a competent, experienced control line pilot.

8. While this kit has been flight tested to exceed normal use, if the plane will be used for extremely high stress flying, or if an engine larger than one in the recommended range is used, the modeler is responsible for taking steps to reinforce the high stress points and/or substituting hardware more suitable for the increased stress.

9. **WARNING:** The cowl and wheel pants included in this model are made of fiberglass, the fibers of which may cause eye, skin and respiratory tract irritation. Never blow into a part to remove fiberglass dust, as the dust will blow back into your eyes. Always wear safety goggles, a particle mask and rubber gloves when grinding, drilling and sanding fiberglass parts. Vacuum the parts and the work area thoroughly after working with fiberglass parts.

We, as the kit manufacturer, provide you with a top quality, thoroughly tested kit and instructions, but ultimately the quality and flyability of your finished model depends on how you build it; therefore, we cannot in any way guarantee the performance of your completed model, and no representations are expressed or implied as to the performance or safety of your completed model.

Remember: Take your time and follow the instructions to end up with a well-built model that is straight and true.

Before starting to build, compare the parts in this kit with the Parts List and note any missing parts. Also inspect all parts to make sure they are of acceptable quality. If any parts are missing, broken or defective, or if you have any questions about building or flying this airplane, please contact Top Flite at the address or telephone number below. If requesting replacement parts, please provide the full kit name (Score Precision Control Line ARF) and the part numbers as listed in the Parts List.

Top Flite Product Support:
3002 N Apollo Drive Suite 1
Champaign, IL 61822
Telephone: (217) 398-8970 Fax: (217) 398-7721
E-mail: *productsupport@top-flite.com*

ENGINE & LINE RECOMMENDATIONS

A .40-.51 cu in [6.5-8.4 cc] two-stroke glow engine is recommended for the Top Flite Score Precision Control Line ARF. Our test models performed superbly with the O.S.® Max .46 LA-S and a Top Flite 11 x 4 Power Point® wood prop. This combination provided good line-tension and lap times on 60' lines. A .51 engine could be used as well, but expect faster speeds with this setup. For most engines, .015" [.38 mm] multi-strand lines are recommended, but .018" [.46 mm] multi-strand lines are recommended if flying with a .46 or .51 engine.

#132 .015" x 60' [.38 mm x 18 m] lines (SULP2632)
#135 .018" x 60' [.46 mm x 18 m] lines (SULP2635)

#166 Standard handle (SULP2866)
#148 80 lb. [36 kg] test lie connectors (SULP2948)

ADDITIONAL ITEMS REQUIRED

Adhesives & Building Supplies

In addition to common hobby tools and household tools, this is the "short list" of the most important items required to build the Score Precision Control Line ARF. **Great Planes® Pro™ CA** and **Epoxy** glue are recommended.

☐ 1/2 oz. [15 g] Thin Pro CA (GPMR6001)
☐ Pro 30-minute epoxy (GPMR6047)
☐ R/C-56 canopy glue (JOZR5007)
☐ Threadlocker thread locking cement (GPMR6060)
☐ #1 Hobby knife (HCAR0105)
☐ #11 blades (5-pack, HCAR0211)
☐ Drill bits: #54 [1.4 mm], 1/16" [1.6 mm], 3/32" [2.4 mm]
☐ Stick-on segmented lead weights (GPMQ4485)
☐ Small metal file
☐ Rotary tool such as Dremel with cutting/grinding assortment (for cutting holes in fiberglass cowl)
☐ Denatured alcohol

Optional Supplies & Tools

Here is a list of optional tools that will help you to build the Score Precision Control Line ARF.

☐ 2 oz. [57 g] spray CA activator (GPMR6035)
☐ 4 oz. [113 g] aerosol CA activator (GPMR634)
☐ CA applicator tips (HCAR3780)
☐ CA debonder (GPMR6039)
☐ Epoxy brushes (6, GPMR8060)
☐ Mixing sticks (50, GPMR8055)
☐ Mixing cups (GPMR8056)
☐ Curved-tip canopy scissors for trimming plastic parts (HCAR0667)
☐ Dead Center™ Engine Mount Hole Locator (GPMR8130)
☐ CG Machine™ (GPMR2400)
☐ Precision Magnetic Prop Balancer™ (TOPQ5700)
☐ Prop Reamer (GPMQ5005)
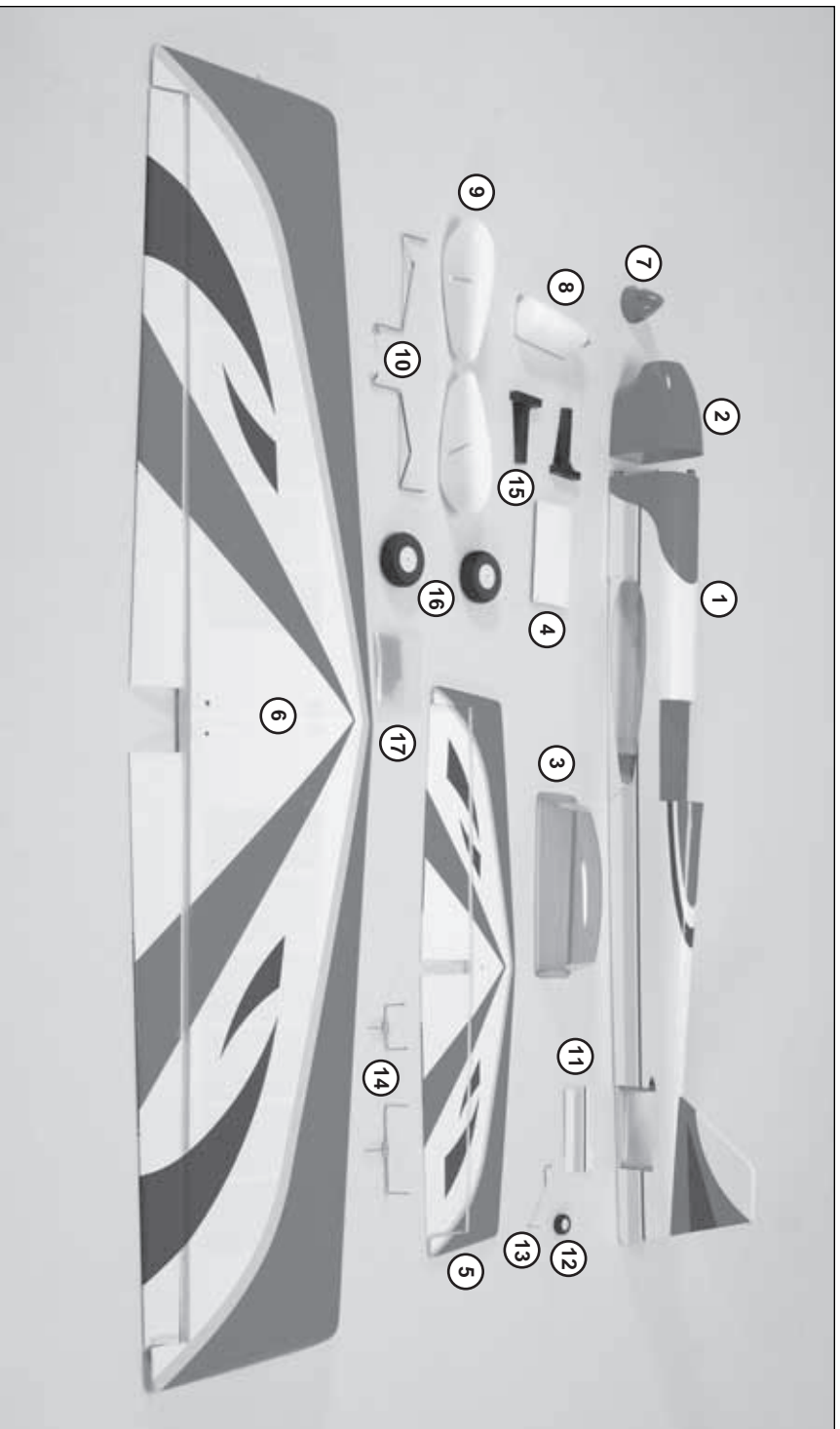
PARTS PHOTOGRAPHED

1. Fuselage
2. Cowl
3. Canopy
4. Fuel Tank Hatch Door
5. Horizontal Stabilizer w/Elevators
6. Wing w/Flaps
7. Spinner
8. Fuel Tank w/Hardware
9. Wheel Pants
10. Landing Gear
11. Elevator Control Horn Access Hatch
12. Tail Wheel
13. Tailgear Wire
14. Elevator and Flap Joiner Wires
15. Engine Mount Halves
16. Main Wheels
17. Steel Shot

PARTS NOT PHOTOGRAPHED

(1) Wing Tip Weight Hatch Access Door
(2) Nylon Tie Straps 395 mm
(14) 2 x 10 mm Self-Tapping Washer Head Screws
(23) 2 x 6 mm Self-Tapping Washer Head Screws
(5) 2 mm Nuts
(3) Silicone Clevis Retainers
(10) 3 mm Washers
(6) 3 x 25 mm Socket Head Machine Screws

(7) Nylon Landing Gear Straps
(3) 2 mm Steel Clevises
(4) 4 mm Blind Nuts
(6) 4 mm Washers
(2) 4 x 55 mm Machine Screws
(4) 4 x 20 mm Machine Screws
(4) 4 mm Lock Washers
(1) CA Hinge Strip
(1) 2 mm Wheel Collar

(4) 4 mm Wheel Collars
(5) 3 mm Set Screws
(1) 3 x 6 mm Machine Screw
(1) 305 mm Silicone Fuel Tubing
(4) 3 mm Nylon Locknuts
(2) Wing Dowels
(1) Aluminum Pushrod
(2) Pushrod Wires
(2) Landing Gear Retainer Plates

To convert inches to millimeters, multiply inches by 25.4

Install Flaps

FLAP JOINER
WIRE GROOVE

CONTROL LINE
BELLCRANK ACCESS

❑ 1. Carefully remove the tape holding the **flaps** to the **wing panels**. Cut the covering from the control line bellcrank access hole as well as the flap joiner wire groove located in the center of the wing trailing edge. If necessary, trim the covering from the two wing bolt holes.


3/4"
1"
1"
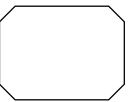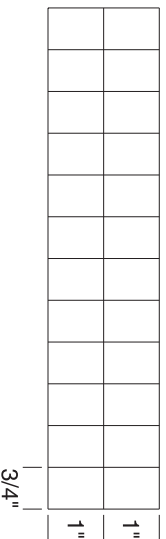
❑ 2. Cut the included 2" x 9" [51 x 229 mm] **CA hinge strip** into 3/4" x 1" [19 x 25 mm] hinges as shown in the drawing. Clip the corners of each hinge to allow them to fit in the hinge slots easier.

FLAPS SHOWN FACE UP

❑ 3. Locate the holes and slots for the **flap joiner wire** at the inside leading edge of both flaps and trim the covering away. Temporarily install CA hinges halfway into each of the pre-cut hinge slots in the flaps. Test fit the flap joiner wire (the larger of the two included joiner wires) into the joiner wire holes with the control horn pointing up.

❑ 4. Temporarily attach the flaps to the wing by sliding the CA hinges into their matching pre-cut slots. View the trailing edges of the flaps from the end of the wing. See if the flaps are parallel with each other (have the same "up" and "down"). If necessary, "tweak", or bend the joiner to align the flaps. Be sure to remove the joiner wire from the flaps before attempting to bend it.


DRILL A 3/32" HOLE
1/2" DEEP IN CENTER
OF HINGE SLOT
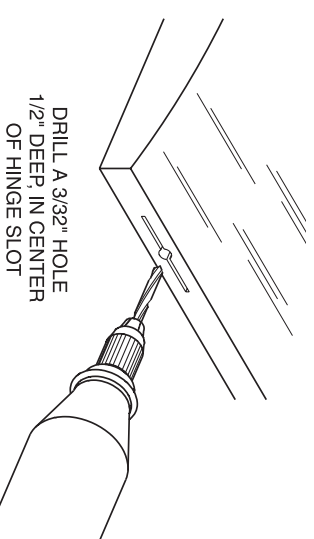
❑ 5. Remove the hinges and trim the covering from the pre-cut CA hinge slots both on the wing and the flaps. Drill a 3/32" [2.4 mm] hole into the center of each hinge slot.

TEMPORARY PIN
TO KEEP HINGE
CENTERED
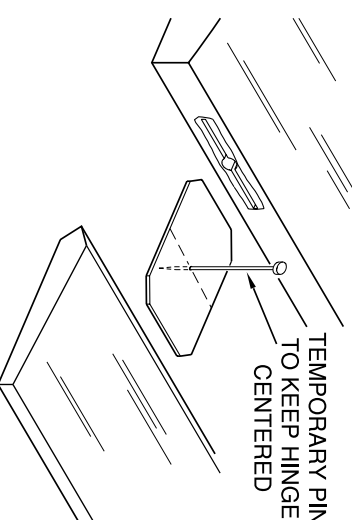
❑ 6. Insert the hinges into the slots in both flaps. Use a T-pin to help keep the hinges centered in the slots during assembly.

ASSEMBLE, THEN APPLY 6 DROPS OF THIN CA TO CENTER OF HINGE, ON BOTH SIDES
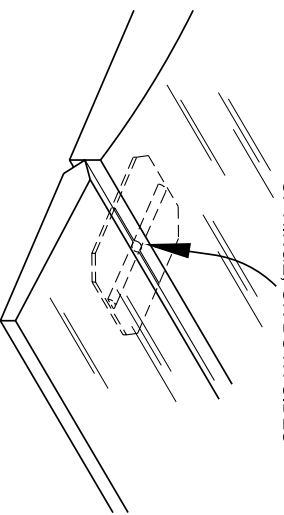
☐ 7. Roughen up the portions of the joiner wire that fit into the flaps with sandpaper. Clean the wire with denatured alcohol. Mix a small batch approximately 7.5 cc [1/4 oz] of 30-minute epoxy. Use a piece of wire or a toothpick to apply epoxy to the holes and grooves in the flaps for the joiner wire. Coat the matching halves of the joiner wire with epoxy, and then insert it into the flaps. Join the flaps to the wing by inserting the hinges into their mating slots in the wing. Apply thin CA to the center of the hinges on both sides. The hinges will secure the flaps in place while the epoxy on the joiner wire cures. Wipe away any excess epoxy with alcohol.

Install Flap Linkage

☐ 1. Thread a 2 mm nut, silicone clevis retainer, and a metal clevis onto the flap pushrod wire.

☐ 3. With the bellcrank in the center position, adjust the clevis until the flaps are neutral when the clevis is connected to the middle hole on the flap joiner control horn. Slide the silicone clevis retainer onto the clevis, add threadlocking compound to the pushrod threads, and tighten the 2 mm nut against the clevis to secure it into place.

☐ 2. Feed the bent end of the pushrod wire through the cutout in the sheeting near the trailing edge of the wing. Connect the pushrod to the outer hole on the control line bellcrank.

LEADING EDGE OF WING

ASSEMBLE THE TAIL SECTION

Install Elevators

TRIM COVERING

☐ 1. Trim the covering from the two mounting holes on the **horizontal stabilizer** and the elevator joiner wire groove located in the center of the stab trailing edge. As you did with the wing and flaps, trim the covering from the pre-cut CA hinge slots both on the stabilizer and the **elevators**.

☐ 2. Locate the holes and slots for the **elevator joiner wire** at the inside leading edge of both elevators and trim the covering away. Temporarily install CA hinges halfway into each of the pre-cut hinge slots in the elevators. Test fit the elevator joiner wire into the joiner wire holes with the control horn pointing down.

☐ 3. Temporarily attach the elevators to the stabilizer by sliding the CA hinges into their matching pre-cut slots. View the trailing edges of the elevators from the end of the stab. See if the elevators are parallel with each other (have the same "up" and "down"). If necessary, "tweak" the joiner to align them. Remove the joiner wire from the elevators to do this.

ELEVATORS SHOWN UPSIDE-DOWN

4. Roughen up the portions of the joiner wire that fit into the elevator with sandpaper. Clean the wire with denatured alcohol. Mix a 7.5 cc [1/4 oz] batch of 30-minute epoxy. Use a piece of wire or a toothpick to apply epoxy in the hole and groove in the elevator for the joiner wire of **only one elevator**. Coat the matching half of the joiner wire with epoxy, and then insert it into the elevator. Secure the joiner wire to the elevator while the epoxy cures.

5. After the epoxy has cured, reinsert the hinges into that elevator and attach it to the stabilizer. Position the elevator so that the elevator joiner control horn is centered in the groove in the trailing edge of the stab. Using the same procedure as the flaps, permanently attach the elevator to the stab.

MOUNTING SCREWS
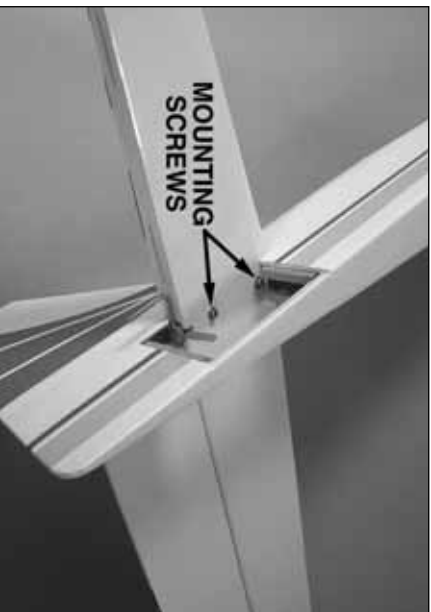
6. Maneuver the partially assembled stabilizer into the **fuselage**. Using two 3 x 25 mm SHCS and two 3 mm washers, permanently mount the stab to the fuselage. To prevent the screws from backing out, use thread-locking compound. You can also glue the stab into place with epoxy.

7. Just as you did with the wing, mix another small batch of 30-minute epoxy and attach the other elevator in the same manner. Before the epoxy cures, secure the hinges with thin CA glue. The hinges will hold the flap in place while the epoxy cures.

Install Elevator Linkage
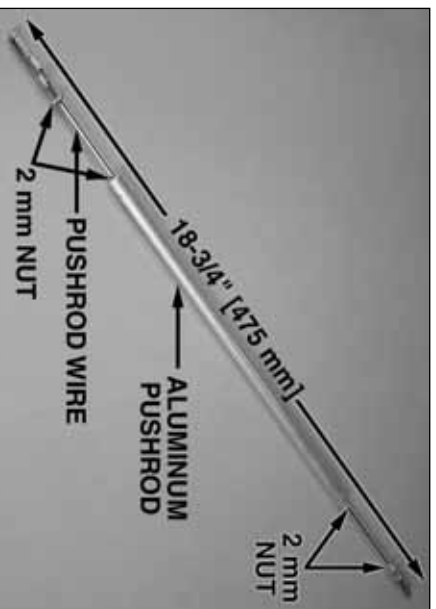
1. Loosely install a 2 mm nut onto each end of the remaining pushrods. Install a metal clevis with silicone retainer onto one end of each remaining pushrod wire. Thread the ends of the pushrod wires that only have a nut installed on them into the ends of the aluminum pushrod. Adjust the clevises and pushrod wires inside the aluminum pushrod so that the **total length** of the assembled pushrod is 18-3/4" [475 mm]. Be sure to use threadlocking compound on the pushrod threads.

18-3/4" [475 mm]
2 mm NUT
PUSHROD WIRE
ALUMINUM PUSHROD
2 mm NUT

2. Slide the assembled pushrod through the fuselage. Temporarily attach the clevis to the middle hole in the elevator control horn.

3. Tighten the nut against the clevis at the other end of the pushrod near the wing saddle. Be sure that the clevis is threaded on about 6mm [1/4"].

4. Install the **elevator control horn access hatches** using eight 2 x 6 mm self-tapping screws.
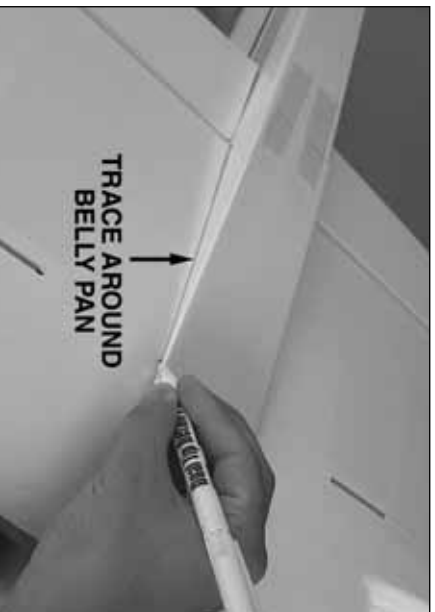
FINISH THE WING

Test Fit the Wing

1. Cut the covering from the holes in the front of the wing and glue in the **wing dowels** with epoxy. Tap the dowels into place as far as they will go into the holes.
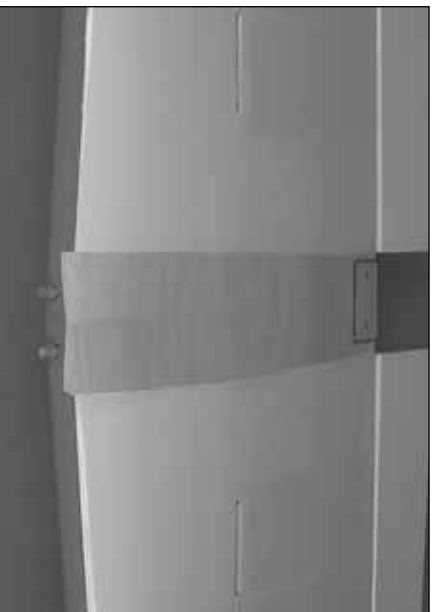

2. Using two 4 x 55 mm screws and two 4 mm washers, test fit the wing to the fuselage.

4 x 55 mm [5/32" x 2-1/8"]

Install the Belly Pan

□ 1. Align the **belly pan** into position and tape it to the fuselage. Use a felt tip pen to trace its shape onto the wing.

TRACE AROUND BELLY PAN

□ 2. Remove the belly pan and wing. Use a sharp, new knife blade or a soldering iron (see "Hot Tip") to cut the covering from the wing 1/16" [2 mm] **inside** the lines. If using a knife, use a **light touch** and **great care** not to cut into the sheeting under the covering or the wing will be weakened. After cutting the covering, use denatured alcohol and a tissue to clean the ink lines from the covering. Then, peel off the covering.
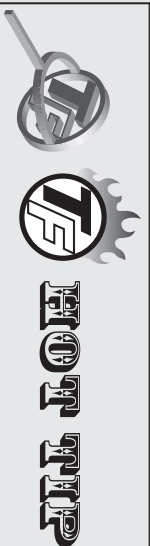
HOW TO CUT COVERING FROM BALSA

Use a soldering iron to cut the covering from the stab. The tip of the soldering iron doesn't have to be sharp, but a fine tip does work best. Allow the iron to heat fully.


Use a straightedge to guide the soldering iron at a rate that will just melt the covering and not burn into the wood. The hotter the soldering iron, the faster it must travel to melt a fine cut. Peel off the covering.

□ 3. Trim the covering from the underside edges of the belly pan. Epoxy the belly pan to the wing and cut away the covering from the wing bolt holes if you have not already done so. Wick thin CA glue into the wing bolt holes to harden the wood in this area.


WING BOLT HOLES

Attach the Wing
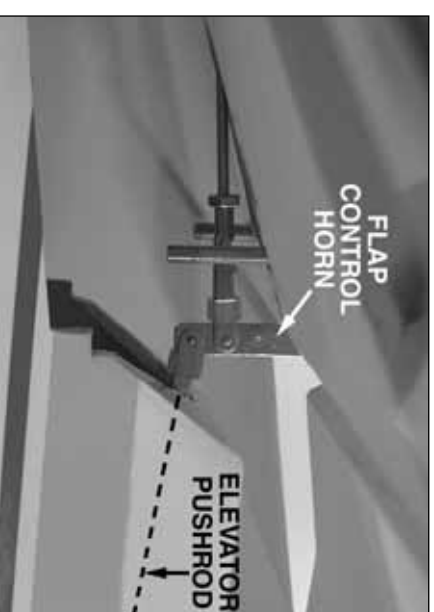
□ 1. Fit the two wing dowels into their mating holes in the fuselage. While fitting the trailing edge of the wing away from the fuselage, use needle nose pliers to connect the elevator pushrod to the outer hole in the flap control horn. Secure the clevis with the silicone retainer.

FLAP CONTROL HORN

ELEVATOR PUSHROD

□ 2. Using the 4 x 55 mm screws and 4 mm washers, secure the wing to the fuselage.

LANDING GEAR

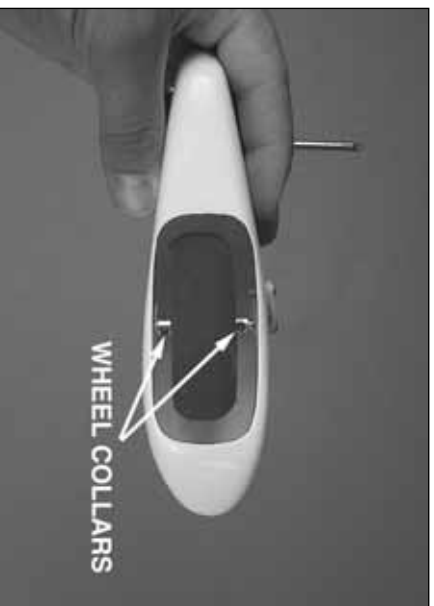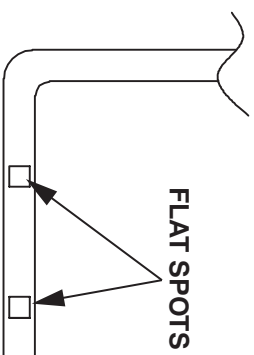## Assemble the Main Gear

2 x 10 mm
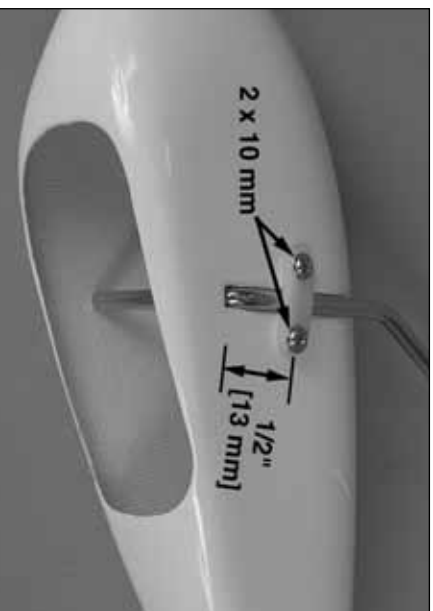
1/2" [13 mm]

❑❑ 1. Slide the **landing gear wire** through the hole in the **wheel pant**. Center a nylon strap over the wire 1/2" [13 mm] above the axle hole and drill 1/16" [1.6 mm] holes through the strap and into the pant for the strap screws. Temporarily secure the strap with two 2 x 10 mm self-tapping screws. Back the screws out and apply a few drops of thin CA to the screw holes. Be sure not to block the holes with too much CA, and allow the glue to dry completely before reinserting the screws.

PETROLEUM JELLY

❑❑ 2. Rough up the inside of the wheel pant with sandpaper. Clean the area with alcohol and test fit the retainer plate. Sand or trim the plate as necessary for

it to lay flat on the pant. Use epoxy to attach the plate to the pant. Dab a bit of petroleum jelly to the end of the landing gear wire and fit it into the retainer plate. The jelly will prevent epoxy from sticking to the wire. The landing gear wire will hold the plate in the correct position while the epoxy cures.

FLAT SPOTS

❑ 5. Test fit the landing gear wire into the wing. Make any necessary adjustments like rounding over the edge at the top of the hole for the gear wire to sit flat. Center two nylon straps over the gear wire and mark the holes for the straps. Drill 1/16" [1.6 mm] at those marks. Use four 2 x 10 mm self-tapping screws to install the gear. Reinforce the holes with thin CA as done in previous steps.

❑❑ 3. Thread 3 mm set screws into two 4 mm wheel collars. Install the wheel into the wheel pant by securing a wheel collar to each side of it as shown in the picture. File a small flat spot on the gear wire where the set screws will be tightened. Be sure that the wheel rotates smoothly on the landing gear wire. Add oil to the gear wire if necessary.

WHEEL COLLARS

❑ 4. Repeat these steps for the other wheel pant.

Assemble the Tail Gear

❑ 1. Thread a 3 mm set screw into the 2 mm wheel collar. Slide the **tail wheel** onto the **tail wheel wire** followed by the wheel collar. Use thread-locking compound to secure the set screw. Be sure the tail wheel rotates freely when the set screw is tightened. Oil the wheel if necessary.


- 9 -

□ 2. Locate the groove for the tail gear wire on the underside of the fuselage and trim the covering away. The hole at the front of the groove for the tail gear wire is approximately 9-1/2" [241 mm] from the aft end of the fuselage. Insert the tail wire into the groove and secure it with a nylon strap and two 2 x 10 mm self-tapping screws.

9-1/2" [241 mm]
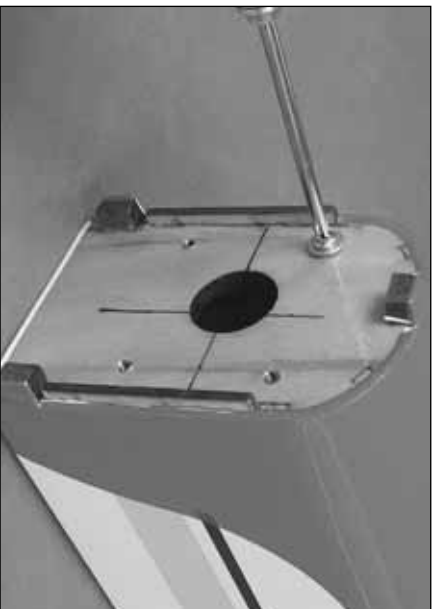
ENGINE AND FUEL SYSTEM

Mount the Engine

There are two engine mounting templates at the back of this manual for the SuperTigre® .51 C/L engine and the O.S. Max .40 LA-S engine. If you are not using either of these engines, you will need to make your own mounting template based on the size of your engine.
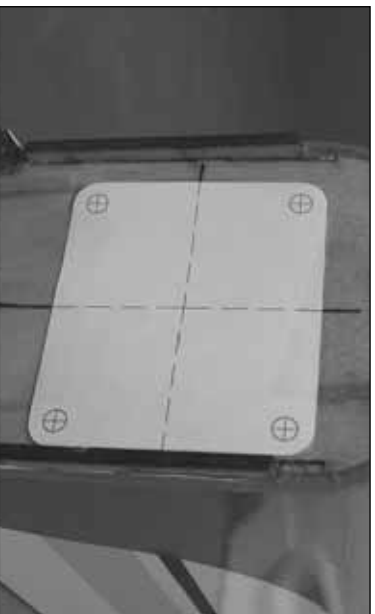
□ 1. Cut out the template from the back of this manual that matches your engine. Align the dashed lines on

the template with the cross-hairs on the firewall and tape the template in place. Use a T-pin or a small drill bit to transfer the location of the four mounting holes to the firewall.


□ 3. Install the engine mount halves inverted to the firewall using four 4 x 20 mm screws, four 4 mm washers, and four 4 mm lock washers.

ENGINE MOUNT HALVES ARE INSTALLED INVERTED

□ 2. Remove the template and drill the mounting holes with a 7/32" [5.6 mm] drill bit. Cut the sides from two 4mm blind nuts as shown. Install four 4 mm blind nuts into the back of the holes. Draw the blind nuts tight into the firewall by threading a 4 x 20 mm screw and 4 mm washer through the engine mount and firewall into the blind nuts and tightening the screw.


□ 4. Position the engine so that the drive washer is 4-1/8" [105 mm] from the firewall. Mark the positions of the engine mounting holes onto the mounting rails (we used a Great Planes Dead Center™ Engine Mount Hole Locator, GPMR8130) and drill the holes with a 1/8" [3.2 mm] drill bit.

4-1/8" [105 mm]
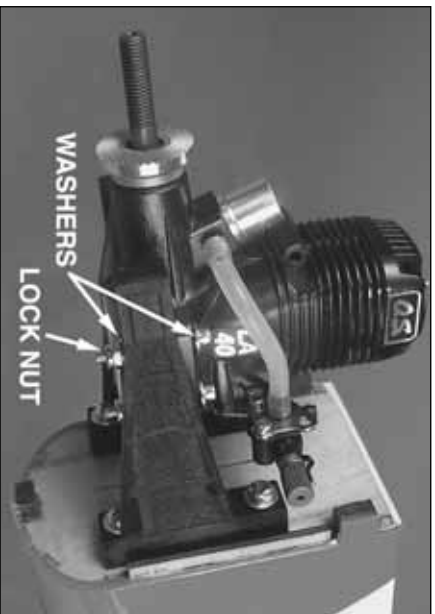
□ 5. Secure the engine to the mount with four 3 mm socket head cap screws, eight 3 mm washers and four 3 mm nylon locknuts.

WASHERS
LOCK NUT

Assemble and Install the Fuel Tank

HUMPED SIDE →
VENT LINE
FILL LINE
FUEL PICKUP (CLUNK)
12 mm [1/2"]
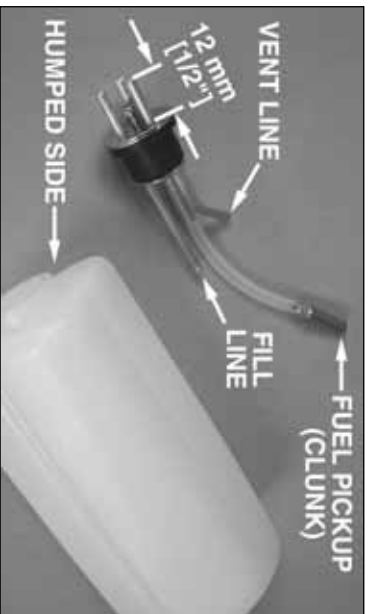
□ 1. Install the three metal tubes into the black stopper. The tubes should protrude about 1/2" [12 mm] from the top of the stopper. Install the two metal plates on the top and bottom of the stopper and secure them loosely with the screw. Cut the fuel tubing for the clunk to 3" [76 mm] and install it onto the shorter tube. The other end of the fuel tubing receives the fuel pickup clunk. Bend one long tube so that the inside end just reaches the **top** of the tank when installed. This will be the vent (pressure) line. The humped side of the tank with the two grooves points **downward** when installed into the fuselage. The other long tube remains straight. This is the line for filling the tank.

□ 2. Press the stopper into the fuel tank and secure it by tightening the screw. Identify the three tubes with a marking if necessary. Confirm that the clunk moves around inside freely and reaches the back of the tank.

□ 3. Use epoxy thinned with denatured alcohol, epoxy or fuel proof paint to fuel proof the fuel tank compartment.
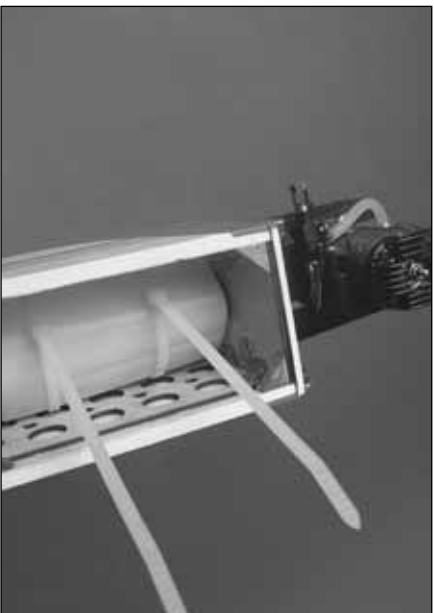
□ 4. Use 1/4" [6 mm] foam rubber (not included) to line the top of the fuel tank where it will be held against the fuel tank mounting plate inside the fuselage. Feed the long tie straps through the rectangular cutouts on the mounting plate. Position the tank inside the hole in the firewall. When you are satisfied with the fit, draw the tie straps tight. Cut away the ends of the tie straps.
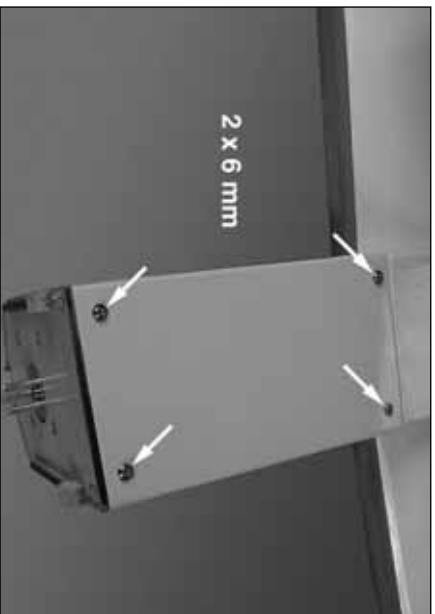
□ 5. Install the fuel tank hatch door with four 2 x 6 mm self-tapping screws. Reinforce the holes with thin CA.

2 x 6 mm

FINISHING THE MODEL

Install the Cowl


CUT FOR CARBURETOR AIR INLET
CUT FOR ENGINE HEAD
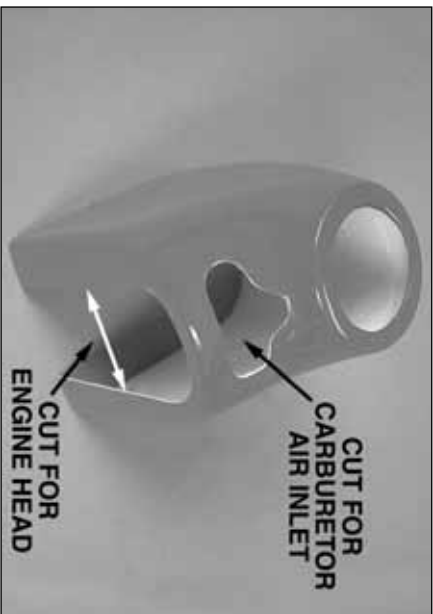
□ 1. Use a high-speed rotary tool with a cutting bit to cut an air inlet hole and an outlet in the cowl that is large enough to accommodate the head of the engine that you are using.

102 mm [4"]

COWL MOUNTING BLOCK
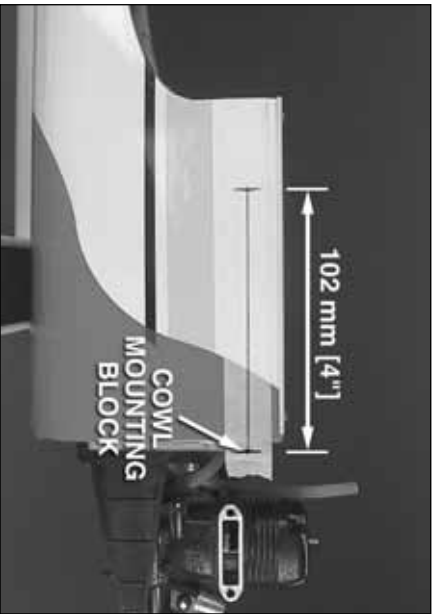
❑ 2. Place a 6" [150 mm] long piece of masking tape onto the fuselage over the three mounting blocks as shown above. Draw a line 4" [102 mm] long starting at the center of the cowl mounting blocks onto each piece of tape.

3/32" [2 mm] GAP

❑ 3. Place the cowl on the fuselage and mount the spinner backplate. There should be approximately 3/32" [2 mm] between the spinner and the cowl. Align the cowl so that the spinner backplate is centered. When satisfied with its position, use tape to hold the cowl in place or ask a helper to hold it steady.
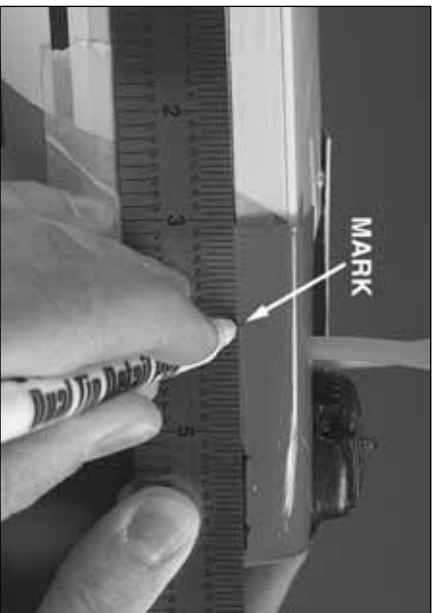
MARK

❑ 4. Using the lines you drew on the masking tape, measure back 4" [100 mm] from the aft ends of the lines and transfer the marks onto the cowl. These marks will be the screw locations for the cowl mounting screws. Drill 1/16" [1.6 mm] holes at the three marks on the cowl into the cowl mounting blocks.

❑ 5. Remove the cowl and take off the masking tape. Replace the cowl onto the fuselage and attach the cowl with three 2 x 6 mm self-tapping screws and reinforce the holes with thin CA glue.

MUFFLER SCREW HEAD

❑ 6. Remove the cowl and insert the muffler screws into the crankcase of the engine. Reinstall the cowl and position the screws so they contact the inside of the cowl and mark their location. Remove the cowl again and cut holes at your marks. Insert the muffler screws through the holes into the engine to confirm that the holes are in the correct position.

❑ 7. Remove the cowl one more time. Line the muffler against the muffler screw holes on the cowl and trace its shape. Carefully cut out a hole for the muffler. Trim the hole until you get a good fit. With the cowl still removed, attach your fuel lines. Also, consider where your needle valve is positioned. For the engine shown in this manual, the remote needle valve was mounted on its side and an access hole was drilled in the cowl at that location.

☐ 8. Reattach the cowl and secure the muffler to the engine. Depending on the engine being used, you may need to drill small access holes into the cowl to tighten the muffler screws. For the engine shown, an allen key was inserted through the hole for the needle valve and the air intake. When filling the tank, fuel will overflow through the vent line when full. A 3 x 6 mm screw is included with the kit to be used as a fill line plug.
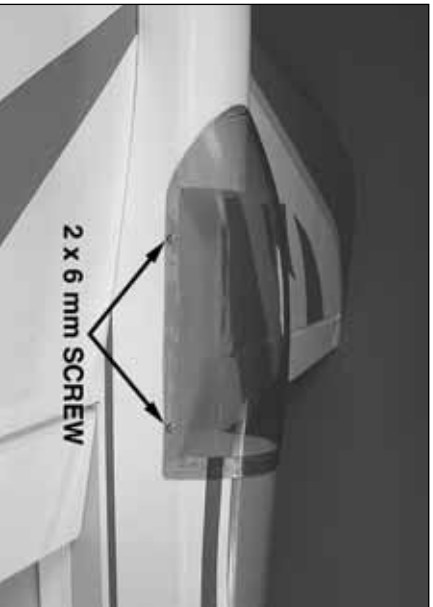
☐ 9. Reinstall the 2" [51 mm] spinner and propeller.

Install the Canopy

☐ 1. Trim the **canopy** along the molded cut lines.

2 x 6 mm SCREW

☐ 2. Use masking tape to temporarily secure the canopy to the fuselage. Drill four 1/16" [1.6 mm] holes, evenly spaced, on the bottom sides of the canopy and into the fuselage. Thread a 2 x 6 mm self-tapping screw into each hole and back it out. Use thin CA glue to harden the screw holes. Attach the canopy to the fuselage using four 2 x 6 mm self-tapping screws.

Apply the Decals

1. Use scissors or a sharp hobby knife to cut the decals from the sheet.

2. Be certain the model is clean and free from oily fingerprints and dust. Prepare a dishpan or small bucket with a mixture of liquid dish soap and warm water–about one teaspoon of soap per gallon of water. Submerse the decal in the soap and water and peel off the paper backing. **Note:** Even though the decals have a "sticky-back" and are not the water transfer type, submersing them in soap and water allows accurate positioning and reduces air bubbles underneath.

3. Position the decal on the model where desired. Holding the decal down, use a paper towel to wipe most of the water away.

4. Use a piece of soft balsa or something similar to squeegee remaining water from under the decal. Apply the rest of the decals the same way.

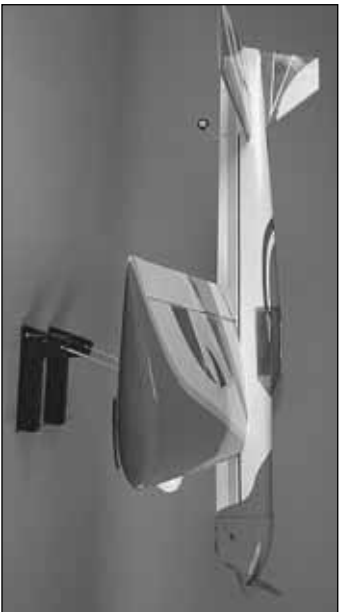## GET THE MODEL READY TO FLY

Balance the Model (C.G.)

More than any other factor, the **C.G.** (balance point) can have the **greatest** effect on how a model flies, and may determine whether or not your first flight will be successful. If you value this model and wish to enjoy it for many flights, **DO NOT OVERLOOK THIS IMPORTANT PROCEDURE.** A model that is not properly balanced will be unstable and possibly unflyable.

At this stage the model should be in ready-to-fly condition with all of the systems in place including the engine, landing gear, and all hardware.

❏ 1. Use a felt-tip pen or 1/8" [3 mm]-wide tape to accurately mark the C.G. on the bottom of the wing on both sides of the fuselage. The C.G. is located 4-1/8" [105 mm] back from the leading edge of the wing.

This is where your model should balance for the first flights. Later, you may wish to experiment by shifting the C.G. up to 3/8" [9.5 mm] forward or 3/8" [9.5 mm] back to change the flying characteristics. Moving the C.G. forward may improve the smoothness and stability, but the model may then require more speed for takeoff and make it more difficult to slow for landing. Moving the C.G. aft makes the model more maneuverable, but could also cause it to become too difficult to control. In any case, **start at the recommended balance point** and do not at any time balance the model outside the specified range.

❏ 2. With the wing attached to the fuselage, all parts of the model installed (ready to fly) and an empty fuel tank, place the model on a Great Planes CG Machine™, or lift it at the balance point you marked.

❏ 3. If the tail drops, the model is "tail heavy," and weight must be added to the nose to balance. If the nose drops, the model is "nose heavy"; weight must be added to the tail to balance. If additional weight is required, nose weight may be easily added by using a "spinner weight" (GPMQ4645 for the 1 oz [28 g] weight, or GPMQ4646 for the 2 oz [57 g] weight). If spinner weight is not practical or is not enough, use Great Planes (GPMQ4485) "stick on" lead. A good place to add stick-on nose weight is to the firewall (don't attach

weight to the cowl—it is not intended to support weight). Begin by placing incrementally increasing amounts of weight on the bottom of the fuse over the firewall until the model balances. Once you have determined the amount of weight required, it can be permanently attached. If required, tail weight may be added by securing it to the inside of the hatch doors.

Note: Do not rely upon the adhesive on the back of the lead weight to permanently hold it in place. Over time, fuel and exhaust residue may soften the adhesive and cause the weight to fall off. Use #2 sheet metal screws, RTV silicone or epoxy to permanently hold the weight in place.

❏ 4. **IMPORTANT:** If you found it necessary to add any weight, recheck the C.G. after the weight has been installed.

Wing Tip Weight

TEMPORARILY ADD
STICK-ON LEAD
WEIGHT HERE

PERMANENTLY
ADD STEEL SHOT
IN TIP WEIGHT HATCH
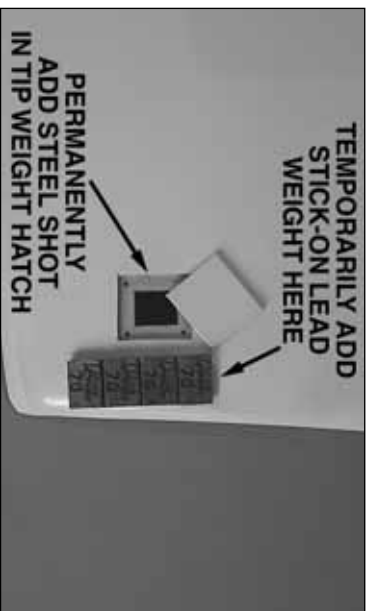
The Score Control Line ARF includes 1-3/4 oz [53 g] of steel shot. We suggest starting out by using 1 oz of stick-on lead weight applied to the underside of the wing at the tip near the tip weight hatch door. Add or subtract weight after test flying the model to determine the final amount needed based on flying preference. You can then permanently add tip weight to the model by mixing the appropriate amount of steel shot with epoxy and pouring it into the tip weight compartment. When the epoxy has cured, screw the tip weight hatch door to the wing using four 2 x 6 mm screws or glue it into place.

PREFLIGHT

Balance Propellers
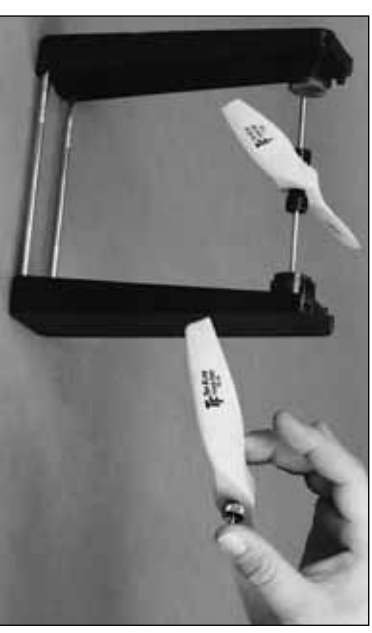
Carefully balance your propeller and spare propellers before you fly. An unbalanced prop can be the single most significant cause of vibration that can damage your model. Not only will engine mounting screws and bolts loosen, possibly with disastrous effect, but vibration can also cause your fuel to foam, which will, in turn, cause your engine to run hot or quit. We use a Top Flite Precision Magnetic Prop Balancer (TOPQ5700) in the workshop and keep a Great Planes Fingertip Prop Balancer (GPMQ5000) in our flight box.

Engine Check

If the engine is new, follow the engine manufacturer's instructions to break-in the engine. After break-in, confirm that the engine idles reliably, and maintains full power-indefinitely. After you run the engine on the model, inspect the model closely to make sure all screws remained tight, the hinges are secure, the prop is secure and all connectors are secure.

Control Check

With the lines connected to the leadouts and your assistant holding the model, operate the controls to make sure they move smoothly. If any binding or hesitation is detected, inspect the model and eliminate the problem.

- 14 -

Adjust Leadouts

ADJUST BY LOOSENING
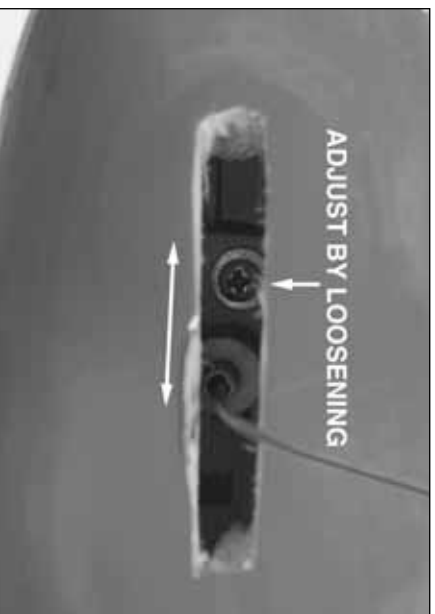
This model is equipped with adjustable leadouts. The lines can be adjusted by means of a Phillips head set screw located inside the slot provided for the leadouts. The leadouts can be loosened, then slid fore and aft. When they are in place, tighten the set screw down to prevent the leadouts from moving back and forth in flight. You should also check the leadouts after each flight, making sure the screw is tight.

As a general guideline, positioning the leadouts further aft makes the plane pull harder on the lines (for windy days), but also makes the plane "handle" or react a little slower. This positioning is recommended for less-powerful engines or longer lines and is also a good way to counter the effect of having not enough wing tip weight.

Further forward makes the plane pull less hard on the lines, thus quickening response. This can be better for calm days, and better for faster, more powerful engines or shorter lines. It is also a way to counter the effect of having too much wing tip weight.

CENTERED IN SLOTS
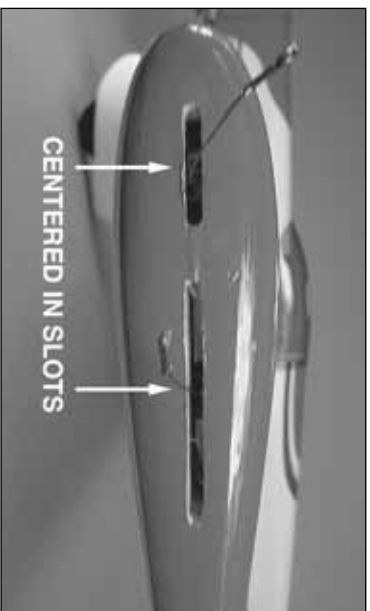
The exact placement of these leadouts will be a matter of experimentation to match your flying style; however, we recommend centering the two leadouts in their slots as a starting point.

ENGINE SAFETY PRECAUTIONS

Failure to follow these safety precautions may result in severe injury to yourself and others.

- Keep all engine fuel in a safe place, away from high heat, sparks or flames, as fuel is very flammable. Do not smoke near the engine or fuel; and remember that engine exhaust gives off a great deal of deadly carbon monoxide. Therefore **do not run the engine in a closed room or garage.**

- Get help from an experienced pilot when learning to operate engines.

- Use safety glasses when starting or running engines.

- Do not run the engine in an area of loose gravel or sand; the propeller may throw such material in your face or eyes.

- Keep your face and body as well as all spectators away from the plane of rotation of the propeller as you start and run the engine.

- Keep these items away from the prop: loose clothing, shirt sleeves, ties, scarfs, long hair or loose objects such as pencils or screwdrivers that may fall out of shirt or jacket pockets into the prop.

- Use a "chicken stick" or electric starter to start the engine. Do not use your fingers to flip the propeller. Make certain the glow plug clip or connector is secure so that it will not pop off or otherwise get into the running propeller.

- Make all engine adjustments from behind the rotating propeller.

- The engine gets hot! Do not touch it during or right after operation. Make sure fuel lines are in good condition so fuel will not leak onto a hot engine, causing a fire.

- To stop a glow engine, cut off the fuel supply by closing off the fuel line or following the engine manufacturer's recommendations. Do not use hands, fingers or any other body part to try to stop the engine. Do not throw anything into the propeller of a running engine.

AMA SAFETY CODE (EXCERPTS)

Read and abide by the following excerpts from the Academy of Model Aeronautics Safety Code. For the complete Safety Code refer to *Model Aviation* magazine, the AMA web site or the Code that came with your AMA license.

General

1. I will not fly my model aircraft in sanctioned events, air shows, or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.

3. Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless and/or dangerous manner.

5. I will not fly my model unless it is identified with my name and address or AMA number, on or in the model. Note: This does not apply to models while being flown indoors.

7. I will not operate models with pyrotechnics (any device that explodes, burns, or propels a projectile of any kind).

8. I will not consume alcoholic beverages prior to, nor during, participation in any model operations.

9. Children under 6 years old are only allowed on the flight line as a pilot or while under flight instruction.

Control Line

1. I will subject my complete control system (including safety thong, where applicable) to an inspection and pull test prior to flying. Pull test will be in accordance with the current Competition Regulations for applicable model category. Models not fitting a specific category as detailed shall use those pull test requirements for Control Line Precision Aerobatics.

2. I will assure that my flying area is safely clear of all utility wires or poles.

3. I will assure that my flying area is safely clear of all non-essential participants and spectators before permitting my engine to be started.

4. I will not fly a model closer than 50 feet [15m] to any electrical power line.

CHECK LIST

During the last few moments of preparation your mind may be elsewhere anticipating the excitement of the first flight. Because of this, you may be more likely to overlook certain checks and procedures that should be performed before the model is flown. To help avoid this, a check list is provided to make sure these important areas are not overlooked. Many are covered in the instruction manual, so where appropriate, refer to the manual for complete instructions. Be sure to check the items off as they are completed.

☐ 1. Fuelproof all areas exposed to fuel or exhaust residue such as the fuel tank compartment.

☐ 2. Check the C.G. according to the measurements provided in the manual.

☐ 3. Use threadlocking compound to secure critical components.

☐ 4. Add a drop of oil to the axles so the wheels will turn freely.

☐ 5. Make sure all hinges are securely glued in place.

☐ 6. Reinforce holes for wood screws with thin CA where appropriate.

☐ 7. Confirm that the flaps and elevators operate freely and smoothly by pulling on the leadouts.

☐ 8. Make sure there are silicone retainers on all the clevises.

☐ 9. Secure the pressure tap (if used) to the muffler with high temp RTV silicone, thread locking compound or J.B. Weld.

☐ 10. Make sure the fuel lines are connected and are not kinked.

☐ 11. Balance your propeller (and spare propellers).

☐ 12. Tighten the propeller nut and spinner.

☐ 13. If you wish to photograph your model, do so before your first flight.

FLYING

Flying Precautions

**Study these flying safety precautions before flying the Score ARF.**

1. Always inspect your equipment before each flight. Make certain the lines, leadouts and handle are in good condition. Make sure there are no kinks in the lines.

2. Fly only in unobstructed areas free from trees, shrubs and bushes, poles, stakes, parking barriers and fences.

3. Be aware of any spectators that may wander into the flying circle. If this is a possibility, have your assistant ready to perform crowd control.

4. The model must NEVER be flown in the vicinity of high-tension lines or any other electrical lines.

5. Never fly when thunder storms or lightning are present.

6. Take any precautions necessary to insure the safety of spectators, the model and property.

7. Never touch the engine during or soon after operation.

8. Keep clear of the rotating propeller and do not let assistants or spectators get in the arc of the propeller.
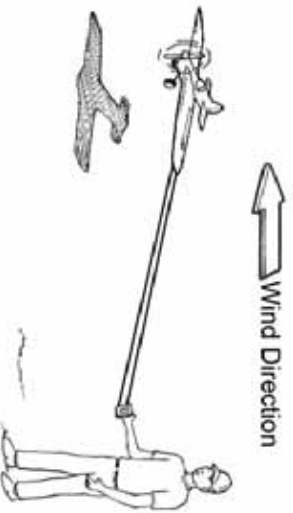
Preflight
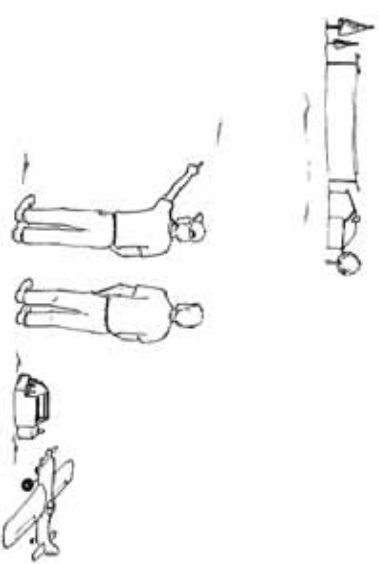
Note: The Top Flite Score ARF is not a beginner's model. It is intended for beginning to advanced stunt pilots who have had some previous control line experience. If you are an inexperienced pilot seek the assistance of a knowledgeable control line pilot who can help you with your first flights.

Beginning stunt pilots should make their first flights in calm or low wind conditions. Stronger winds may blow the model inward which will decrease line tension resulting in loss of control. If the lines ever do go slack, quickly step back to tighten the lines and regain control. Of course, this is most likely to happen, and should be expected, as the model approaches the upwind half of the circle.
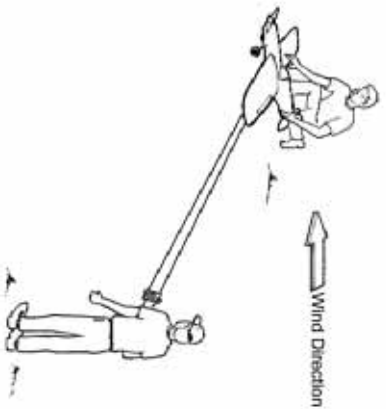
Place the model and starting equipment where the wind will be **behind** the model when it is released for takeoff.

While the pilot is holding the lines, the assistant should walk the model once around the circle to be certain the flight path is clear and to double-check that there are no obstructions that could snag the lines.

The pilot should double-check the operation of the controls by pulling and pushing on the handle and having the assistant signal what the controls are doing ("up" and "down").

Takeoff

Note: A fully cowled engine may run at a higher temperature than an un-cowled engine. Therefore, the fuel mixture should be richened so the engine runs at least 200 RPM below peak speed. By running the engine slightly rich, you will help prevent dead-stick landings caused by overheating. Traditionally, control line pilots intentionally set their engines rich so that during vertical maneuvers, the engine will not "over lean," thus causing overheating. Further, full RPM is usually not desired for stunt flying.

When both the pilot and assistant are ready, the model may be fueled and started. Once the engine is running and the model is ready to be released, the assistant should point the nose of the model slightly away from the circle. This will help keep the lines taut for the first few feet until the model gets going.
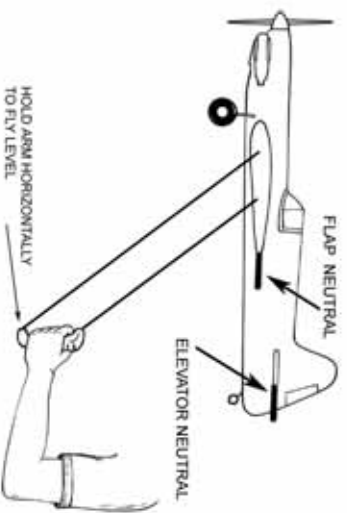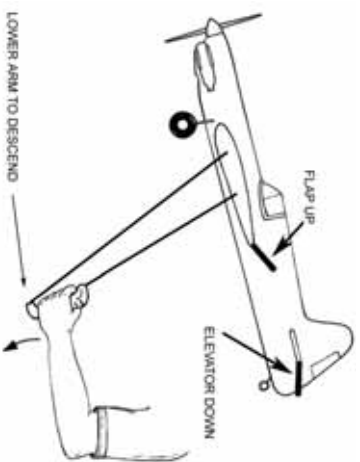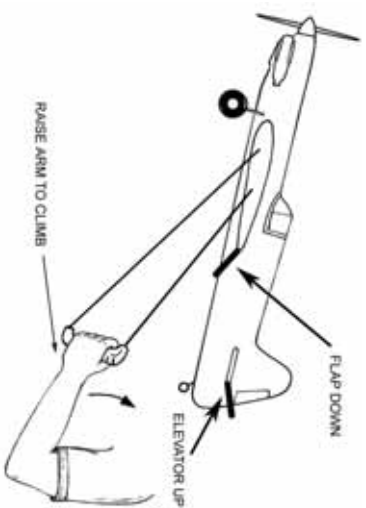
Upon the pilot's signal, the assistant may release the model–never push the model forward as doing so may result in a crash.

For the first half-circle (during the brief period when the pilot has the least control before the model is "up to speed") the wind will push the model outward to maintain line tension.

Mark the center of the flying circle with paint, chalk or a suitable object (such as a shop towel) so you won't wander. This is especially important if the flying area is limited.

With your assistant holding the model, walk from the model toward the handle in the center of the circle while using your fingers to keep the lines separated. This will ensure that the lines are not twisted and are free to operate the controls.

The pilot should be ready–especially during takeoff–to briefly step back to maintain line tension until the model has gained enough air speed to achieve line tension on its own. Allow the model to roll out and gain enough speed to become airborne. When enough speed has been gained the pilot may raise his arm slightly giving "up" elevator command, thus allowing the model to leave the ground.

Once the model has lifted, maintain a slow and steady climb until a comfortable altitude has been reached (usually between "eye-level" and approximately ten feet in the air). The lines must remain taut throughout the entire flight. If the lines ever do go slack the pilot will not have control of the model. During most situations the model's factory built-in features will allow it to maintain good line tension, but on occasions when the wind blows the model inward or the model becomes too slow the modeler must anticipate or notice a decrease in "pull" and quickly step backward to tighten the lines and regain control.

RAISE ARM TO CLIMB
FLAP DOWN
ELEVATOR UP

LOWER ARM TO DESCEND
FLAP UP
ELEVATOR DOWN

HOLD ARM HORIZONTALLY TO FLY LEVEL
FLAP NEUTRAL
ELEVATOR NEUTRAL

be increased to increase control response. All control inputs should be smooth. Continue flying the model in a level attitude, getting used to how the controls react and how the model "feels." Do this until the engine runs out of fuel. Actual flight time depends on several factors, such as the engine size and brand, needle valve setting, propeller size, fuel, atmospheric conditions, etc.

Landing

When the engine starts to sputter and/or speed up, this is an indication that the tank is nearly empty. Continue to fly the model in a level attitude until the engine finally quits. The same as any time the model slows, the pilot should step back to keep the lines taut and maintain control. Allow the model to descend until it is about two feet off the ground. When the model has lost nearly all flying speed and is a foot or two from the ground the pilot should raise his arm to keep the lines taut and apply full up elevator, allowing the model to gently touch down.

After the model has come to a stop the assistant may retrieve the model and return it to the starting area. In doing so the lines should be kept taut so they do not become twisted or entangled.

Clean the model using paper towels and household cleaner to wipe off exhaust residue. Inspect the model thoroughly, looking for loose fasteners and signs of damage or fatigue. Also make sure the prop has not been damaged. Perform any maintenance necessary to prepare the model for the next flight.

To climb, the pilot will slowly raise his arm. To descend, the pilot will slowly lower his arm. To maintain level flight the pilot will hold his arm horizontally. Beginning pilots should control the model by keeping their arm straight and bending at the elbow with little or no wrist movement. Later, when they become more experienced, wrist movement may

At the end of the flying session any residual fuel should be drained from the tank.

After you have become familiar with the way your Score flies and you are ready to begin performing stunts, seek the assistance of an experienced stunt pilot before attempting to learn new maneuvers on your own. Almost any control line stunt maneuvers are started with the model downwind from the pilot, i.e. wind on the pilot's back. Consult the AMA Control Line section for stunt maneuvers.

One final note about flying your model. Have a goal or flight plan in mind for **every** flight. This can be learning a new maneuver(s), improving a maneuver(s) you already know, or learning how the model behaves in certain conditions (such as when testing different propellers or fuel). This is not necessarily to improve your skills (*though it is never a bad idea!*), but more importantly so you do not surprise yourself by impulsively attempting a maneuver and suddenly finding that you've run out of time, altitude or airspeed. Every maneuver should be deliberate, not impulsive. For example, if you're going to do a loop, check your altitude and mind the wind direction. A flight plan greatly reduces the chances of crashing your model just because of poor planning and impulsive moves. **Remember to think!**
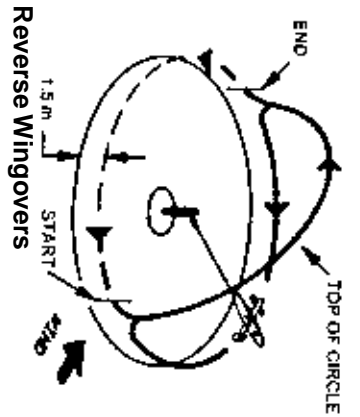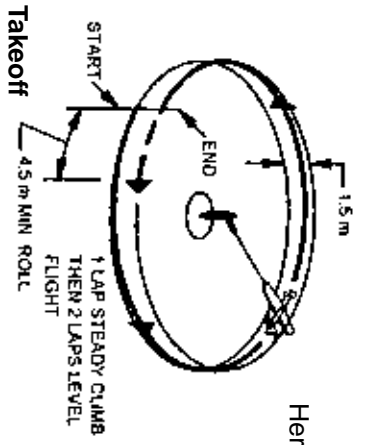
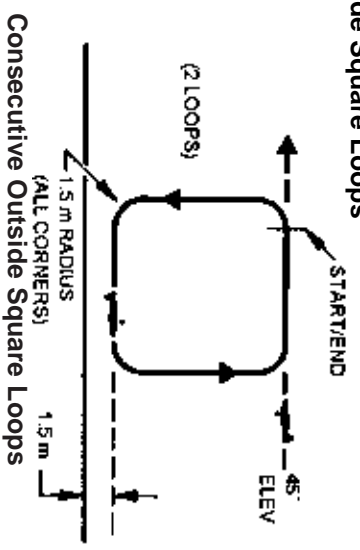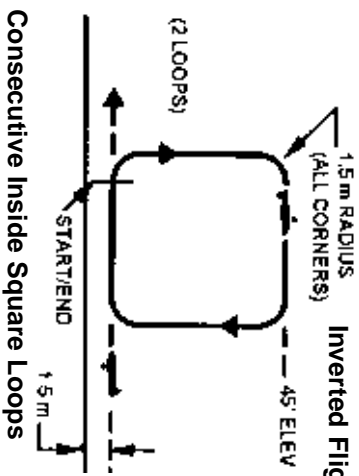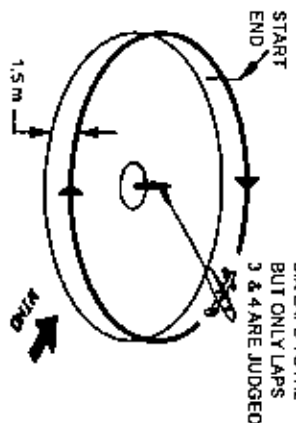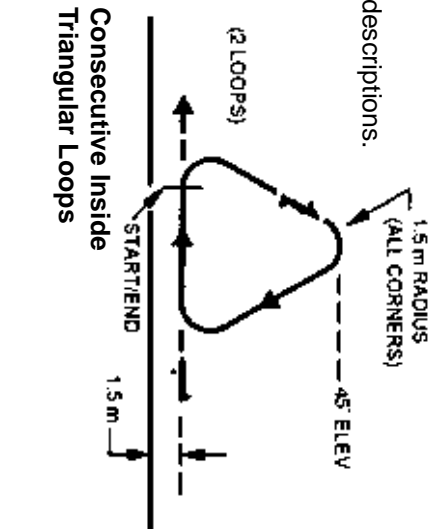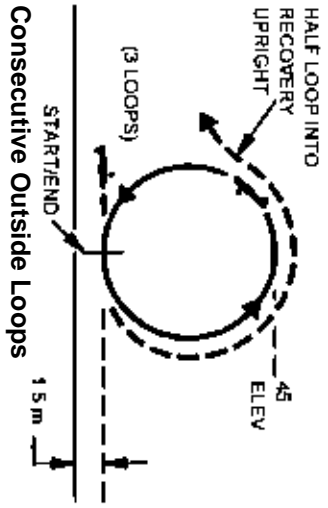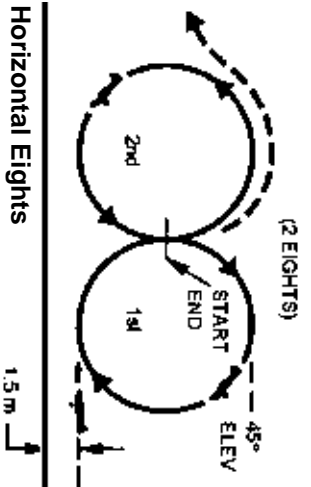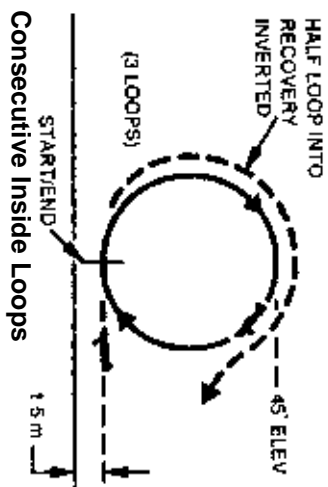*Have a ball, keep the lines taut and always fly in a safe manner.*

GOOD LUCK, GREAT FLYING, AND HAVE FUN!

AMA STUNT MANEUVERS

Here are some of the AMA Stunt Maneuvers. Refer to the AMA Rule Book for full descriptions.

Takeoff

START
END
4.5 m MIN ROLL
1.5 m

1 LAP STEADY CLIMB THEN 2 LAPS LEVEL FLIGHT

Consecutive Inside Loops

(3 LOOPS)

HALF LOOP INTO RECOVERY INVERTED

START/END
45° ELEV
1.5 m

Horizontal Eights

(2 EIGHTS)

2nd
1st
START END
45°
ELEV
1.5 m

Consecutive Outside Loops

(3 LOOPS)

HALF LOOP INTO RECOVERY UPRIGHT

START/END
45°
ELEV
1.5 m

Reverse Wingovers

END
TOP OF CIRCLE
START
1.5 m

Consecutive Inside Square Loops

(2 LOOPS)

1.5 m RADIUS (ALL CORNERS)
START/END
45° ELEV
1.5 m

Inverted Flight

START END
SIX LAPS TOTAL BUT ONLY LAPS 3 & 4 ARE JUDGED
1.5 m

Consecutive Outside Square Loops

(2 LOOPS)

1.5 m RADIUS (ALL CORNERS)
START/END
45°
ELEV
1.5 m

Consecutive Inside Triangular Loops

(2 LOOPS)

1.5 m RADIUS (ALL CORNERS)
START/END
45° ELEV
1.5 m

Engine Mounting Template for SuperTigre .51 C/L

Engine Mounting Template for O.S. .40 LA-S