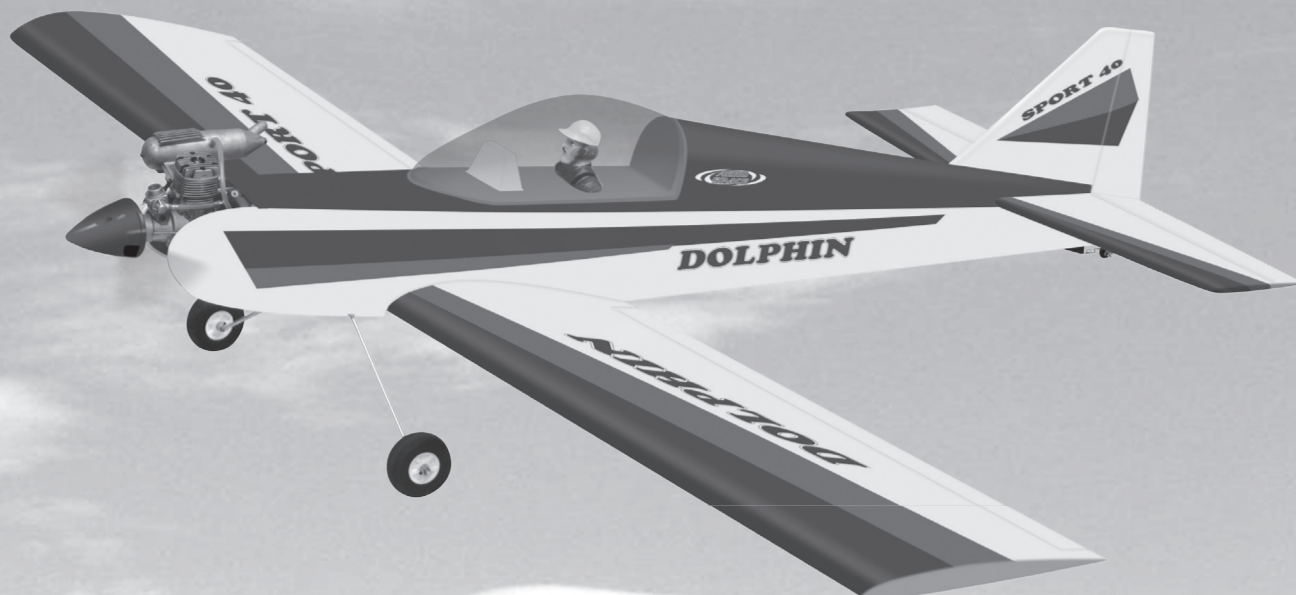


Instruction Manual



DOLPHIN 40

Wing span	: 1556mm [61.25 in]
Length	: 1296mm [51 in]
Wing Area	: 40.5dm ² [628sp.in]
RTF Weight	: 2381g [84oz] 5.25 lbs
Wing Loading	: 73g/dm ² [24 oz / ft ²]
Engine	: 40 - 46 two stroke
Radio require	: 4 channel

INTRODUCTION

Thank you for choosing the new **Dolphin 40** ARF by Phoenix Model. The **Dolphin 40** was designed from the ground up with the intermediate sport flyer in mind. It is a low wing sport aerobatic aircraft that is easy to fly and quick to assemble, yet is capable of aerobatics to please even the best sport pilot. The airframe is conventionally built using balsa, plywood and veneer to make it stronger than the average ARF kit, yet the design allows the aircraft to be built light as well. You will find that most of the work has been done for you already. The pushrods are premade to the correct lengths, the motor mount has been installed and even the hinges are preinstalled and pinned for security. Flying the **Dolphin 40** is simply a joy too. It's constant cord wings make landing a breeze without the bad habits of other aerobatic planes and it's generous stabilizer area keeps it tracking straight and true.

The **Dolphin 40** ARF is an easy flying sport airplane, however, it may not be appropriate for some first time modelers. If you have chosen the **Dolphin 40** ARF as your first airplane, we recommend you seek assistance from an experienced modeler.

We know you'll enjoy flying the **Dolphin 40** ARF as much as we have enjoyed designing it for you. We encourage you to let us know about your successes. Again, thank you for purchasing the **Dolphin 40** ARF by Phoenix Model.

ADDITIONAL ITEMS REQUIRED

- o 40-53 Two Stroke Engine
- o 4 Channel Radio With 4 Servos
- o Glow Plug to Suit Engine
- o Propeller to suit Engine
- o GP foam rubber.
- o Silicon Fuel Line
- o GP stick on lead weight.

TOOLS AND SUPPLIES NEEDED

- o GP thick CA.
- o GP Pro 30 - Minute epoxy
- o GP Pro 6 - Minute epoxy.
- o Hand or Electric Drill
- o Assorted Drill Bits
- o Modeling Knife
- o Straight Edge Ruler
- o 2mm Bondhus Ball Driver # 10654

KIT CONTENTS: We have organized the parts as they come out of the box for better identification during assembly. We recommend that you regroup the parts in the same manner. This will ensure you have all of parts required before you begin assembly.

KIT CONTENTS

AIR FRAME ASSEMBLIES

- (2) Wing halves with ailerons
- (1) Fuselage with canopy.
- (1) Horizontal stabilizer with elevator halves
- (1) Vertical stabilizer with rudder
- (1) Instruction manual

MAIN GEAR ASSEMBLY

- (2) Main gear
- (2) 60mm diameter wheels
- (4) Wheel collars
- (4) 3mm x 4mm set screws
- (2) Nylon plate
- (4) 3mm x 12mm screws

TAIL GEAR ASSEMBLY

- (1) Tail gear
- (1) 25mm diameter wheel
- (1) Wheel collar
- (1) 3mm x 4mm set screw
- (2) Nylon clasps
- (6) 2mm x 10mm set screw

ELEVATOR CONTROL SYSTEM

- (1) Nylon clevises
- (1) Silicon tube
- (1) Nylon snap keeper
- (2) 2mm x 16mm screws
- (1) Nylon control horn w/plate

RUDDER CONTROL SYSTEM

- (1) Nylon clevises
- (1) Silicon tube
- (1) Nylon snap keeper
- (2) 2mm x 16mm screws
- (1) Nylon control horn w/plate

AILERON CONTROL SYSTEM

- (2) Metal pushrod
- (2) Nylon clevises
- (2) Silicon tube
- (2) Nylon snap keeper
- (2) Nylon control horn

MOTOR MOUNT ASSEMBLY

- (4) 3mm x 20mm machine screws
- (4) Lock washer

THROTTLE CONTROL SYSTEM

- (1) 1,3mm x 500mm wire
- (1) 3,5mm x 350mm nylon pushrod housing
- (1) Metal connector
- (1) 4mm x 4mm machine screw

FUEL TANK

- (1) Nylon fuel Tank
- (1) Metal clunk
- (1) Silicone tube / 110mm
- (1) Pre - assembled stopper w / 2 tube
- (1) 165mm x 250mm foam padding

MISCELLANEOUS ITEMS

- (1) Wood dihedral
- (1) 25mm x 600mm trim tape
- (4) 6mm x 45mm nylon screws
- (2) Plate of nylon screw
- (1) Spinner
- (2) Accessary Bag of wood
- (1) Decal sheet
- (1) Set of pushrod

ADDITIONAL ITEMS REQUIRED

- 40 two stroke Engine.
- 4 channel Radio with 4 servos.
- Glow plug to suit Engine.
- Propeller to suit Engine.
- Protective foam Rubber.
- Silicone fuel line.
- Stick on weight for balance.

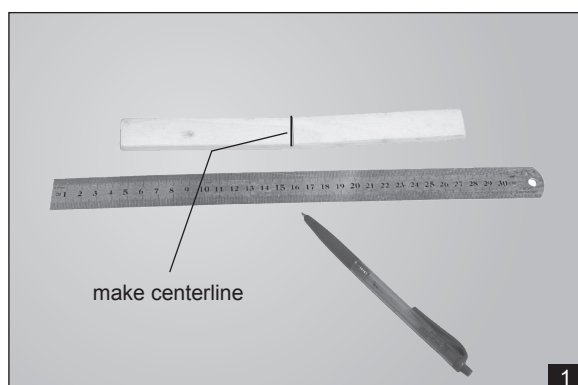
****SUGGESTION**** to avoid scratching your new airplane, do not unwrap the pieces until they are needed for assembly. Cover your workbench with an old towel or brown paper, both to protect the aircraft and to protect the table. Keep a couple of jars or bowls handy to hold the small parts after you open the bags.

****NOTE**** Please trial fit all the parts. Make sure you have the correct parts and that they fit and are aligned properly before gluing! This will assure proper assembly. Since the **Dolphin 40** ARF is hand made from natural materials, every plane is unique and minor adjustments may have to be made. However, you should find the fit superior and assembly simple.

WING ASSEMBLY

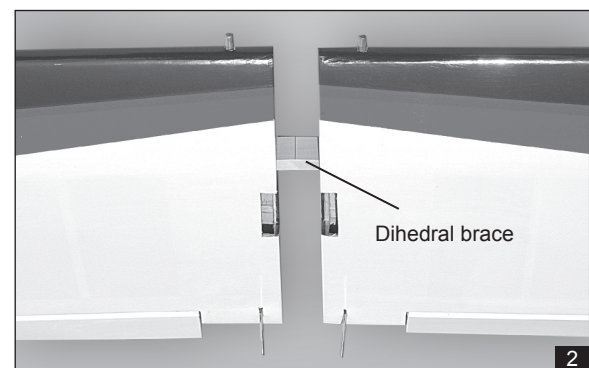
Note We highly recommend using 30 Minute Epoxy over faster curing epoxies for several reasons. First, slower curing epoxy is stronger. It also provides more working time, allowing the builder to properly align the parts. Using fast cure epoxy when joining the wing halves could result in the glue drying before the wing halves are aligned properly, causing damage to the wing assembly. Also, when joining the wing halves, the entire area of both center ribs need to be joined completely with no gaps existing. Not following these steps carefully, may result in failure of the wing center section during flight.

1. Locate the plywood wing dihedral brace. Using a ruler, locate it's center and place a mark. Draw a vertical line at the mark just made.



2. Test fit the dihedral brace into each wing half. The brace should slide in easily up to the centerline you drew. If it does not, use 220 grit sandpaper with a sanding block and sand down the edges and ends of the brace until the proper fit is obtained.

Note the dihedral brace is cut in the shape of a "V". This shape gives the wing the correct dihedral angle. Make sure you don't test fit the brace upside down.



3. When satisfied with the fit of the dihedral brace in each wing half, remove the brace. Mix equal amounts of part A and part B 30 minute epoxy. Coat all sides of the dihedral brace box and half of the wing brace with the epoxy. Make sure to cover the top and bottom as well as the sides. Use enough epoxy to fill any gaps.
4. Insert the dihedral brace into one wing half up to the centerline. Wipe off any excess epoxy that may have squeezed out of the joint using paper towels.

5. Once the epoxy has cured, trial fit both wing halves together. The center gibs should fit flush together with little or no gaps existing. If gaps do exist, use 220 Grit sandpaper and sand down the high spots on the root ribs and the wing joiner until the proper fit is obtained. The amount of dihedral is built into the wings by angling the root ribs the correct amount. With one wing half flat on the table, the other wing tip should be approximately 2" off of the surface of the table. If this needs to be adjusted, you may do so by sanding small amounts from the center ribs or dihedral brace.
6. To protect the covering from the epoxy used to glue the wing halves together, carefully apply masking tape around the edge of the root rib on the top and bottom of each wing half.



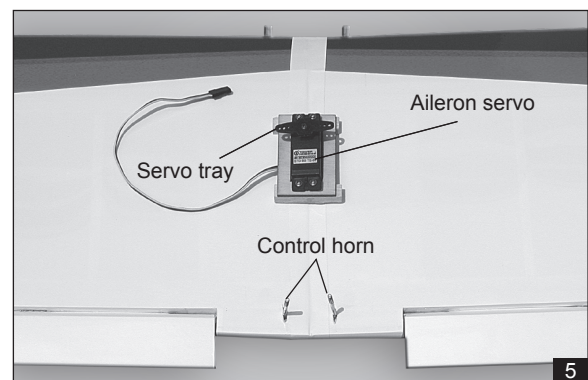
7. Mix a generous amount of 30 minute epoxy. Coat the exposed half of the dihedral brace, the wing joiner box and both root ribs with epoxy. Slide the two wing halves together and carefully align them at the leading and trailing edges. Wipe away any excess epoxy using paper towels. Use masking tape wrapped around the center section to hold the halves in place until the epoxy cures.



8. When the epoxy has cured, carefully remove the masking tape from the wing.
9. Peel off the backing from the self adhesive covering strip used to cover the center section wing joint seam. Apply the strip to the center section of the wing on the bottom first, and the top using the rest of the material.

AILERON SERVO INSTALLATION

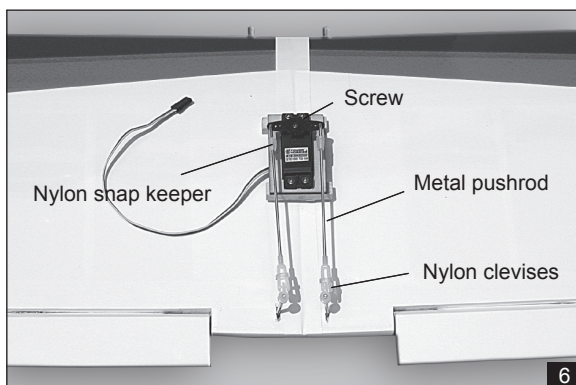
1. Test fit the aileron servo into the ply-wood servo tray. The servo should be mounted with the output shaft towards the leading edge of the wing and the servo wire should run out the top of the wing through a notch cut in the side of the servo tray. Depending on the size of the servo you chose, you may need to trim the in-side edges of the servo tray using a modeling knife to allow the servo to fit properly.



2. When satisfied with the fit, mount the servo using the hardware provided by the radio manufacturer. Drill 1/16" pilot holes through the servo tray at the mounting screw locations before installing the screws. This will prevent the plywood from splitting.
3. Locate two nylon clevises and the two 140mm threaded rods. Carefully thread the clevises onto the rods. To prevent the clevises from coming off the rods in flight, make sure you thread them on completely.
4. Connect the two clevises to the installed adjustable aileron control horns. The two control horns should be adjusted so they are even with the top of the torque rod.

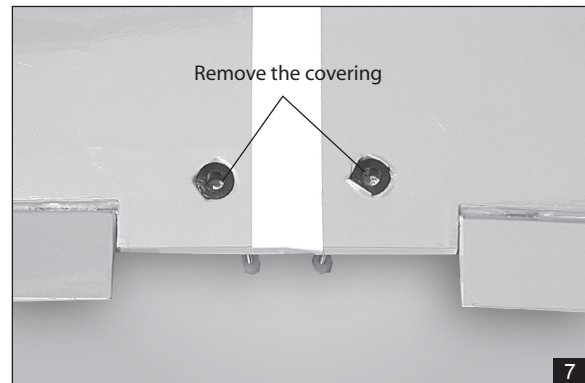
Also, the hole in each control horn may need to be enlarged slightly to allow the nylon clevis pin to be installed without binding.

5. Plug the aileron servo into the receiver and center the servo. Install the servo arm onto the servo. The servo arm should be perpendicular to the servo and point toward the middle of the wing.
6. Center the aileron and hold it in place using a couple of pieces of masking tape.
7. With the aileron and aileron servo centered, carefully place a mark on the aileron pushrod wire where it crosses the hole in the servo arm.
8. Using pliers, carefully make a 90 degree bend down at the mark made. Cut off the excess wire, leaving about 4mm beyond the bend.
9. Insert the 90 degree bend down through the hole in the servo arm. Install one nylon snap keeper over the wire to secure it to the arm. Install the servo arm retaining screw and remove the masking tape from the aileron.
10. Repeat these step to install the second aileron linkage.

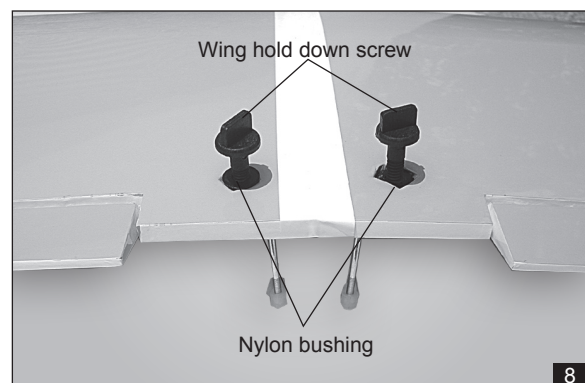


WING INSTALLATION

1. Locate the two predrilled holes in the wing that accept the two nylon wing bolts. Using a modeling knife, remove the covering from over them. This needs to be done on both the top and the bottom of the wing.



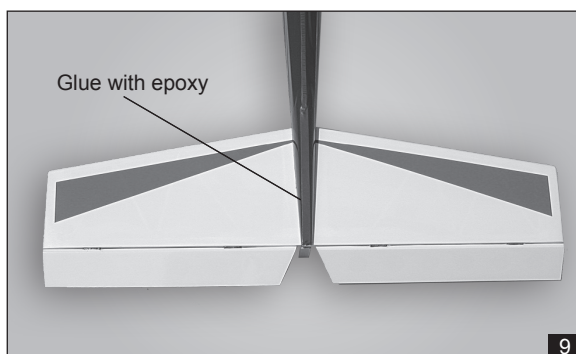
2. Place the wing into the wing saddle. Check the alignment of the predrilled holes in the fuselage bulkhead with the wing dowels installed in the front of the wing. The holes in the fuselage may need to be adjusted slightly to line up perfectly with the dowels. If you need to adjust the holes, a small round file works best for this.
3. Test fit the two nylon wing bolts through the predrilled holes in the wing and into the threaded insert in the wing mounting blocks in the fuselage. You may need to adjust the predrilled holes in the wing to align perfectly with those in the fuselage. If so, use a modeling knife or drill to slightly elongate the holes in the wing until they are aligned with those in the fuselage.
4. When satisfied with the alignment of the holes in the wing, remove the wing and drill out the holes using a 5/16" drill bit. These larger holes will accept the nylon bushings.
5. Place the wing back in the wing saddle and test the fit of the nylon screws and bushings.



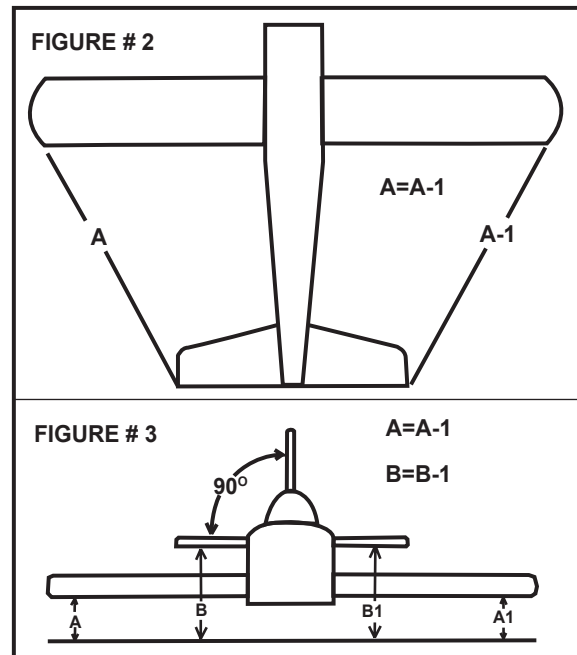
6. With the bushings in place, thread the screws into the nylon inserts in the wing mounting block in the fuselage, but do not tighten the screws completely. When satisfied with the fit of the bushings, apply a small amount of 6 Minute Epoxy to glue the bushings in place. Be careful to not get any glue on the bolts.
7. Once the epoxy has set, remove the screws and apply any additional epoxy needed to completely secure the bushings into the wing.

HORIZONTAL AND VERTICAL STABILIZER INSTALLATION

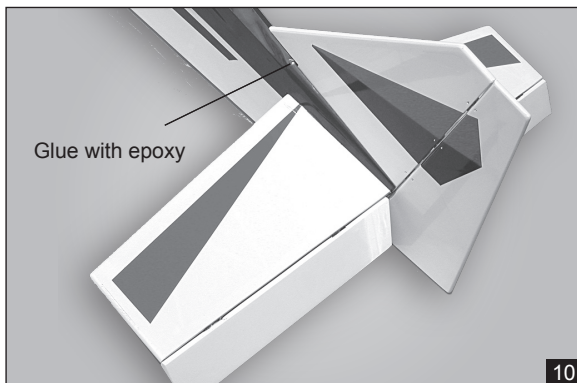
1. Using your ruler, find the centerline of the horizontal stabilizer, at the trailing edge, and place a mark. Use a triangle and extend this mark, from back to front, across the top and bottom of the stabilizer. Also place a mark at the centerline of the fuselage at the front and rear of the stabilizer mounting area. These mark will be used to line up the stabilizer to the fuselage.



2. Bolt the wing to the fuselage. Set the horizontal stabilizer onto the stabilizer mounting platform on the fuselage. To align the horizontal stabilizer with the wing, use figure #2 and # 3. when viewed from the rear, the horizontal stabilizer should be level with the wing. If it is not level, use sandpaper and sand down the high side of the stabilizer mounting platform until the proper alignment is achieved. Measure the distance from each wing tip to each stabilizer tip. These distances should be equal. If they are not, adjust the stabilizer until the measurements are equal.



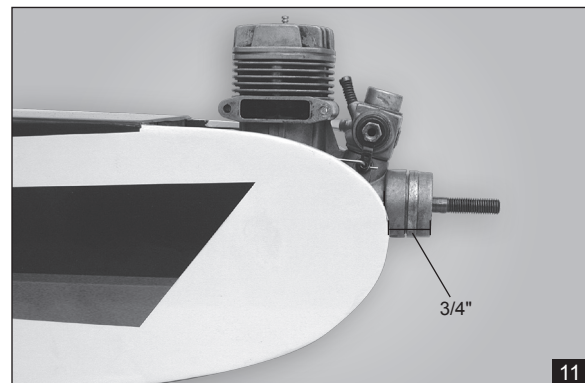
3. When you are satisfied with the alignment, hold the stabilizer in place with T-pins or masking tape, but do not glue at this time.
4. On the bottom of the horizontal stabilizer, draw a line where it and the fuselage meet. Do this on both the right and left sides.
5. Remove the horizontal stabilizer. Using the lines you just drew as a guide, carefully remove the covering from between them, using a modeling knife. This is where the horizontal stabilizer will be glued in place.
6. When you are sure that every thing is aligned correctly, glue the horizontal stabilizer in place using 30Minute Epoxy. Double check all of your measurements once more before the epoxy cures. Hold the stabilizer in place with T-pins or masking tape until the epoxy has cured.
7. Slide the vertical stabilizer into the slot in the mounting platform in the top of the fuselage. Mark the shape of the fuselage on the left and right sides of the vertical stabilizer using a felt-tip pen.
8. Now, remove the vertical stabilizer and using a modeling knife, carefully cut just inside the marked lines and remove the film on both sides of the vertical stabilizer. Just as you did with the horizontal stabilizer, make sure you only press hard enough to cut the film, not the balsa vertical stabilizer.



9. Set the vertical stabilizer back in place. Using a triangle, check to ensure that it is 90° to the horizontal stabilizer.
10. Once you are sure that everything is aligned correctly, glue the vertical stabilizer in place using 30 Minute Epoxy. Double check all of your measurements once more before the epoxy cures. Hold the stabilizer in place with T-pins until the epoxy has cured.

ENGINE MOUNTING

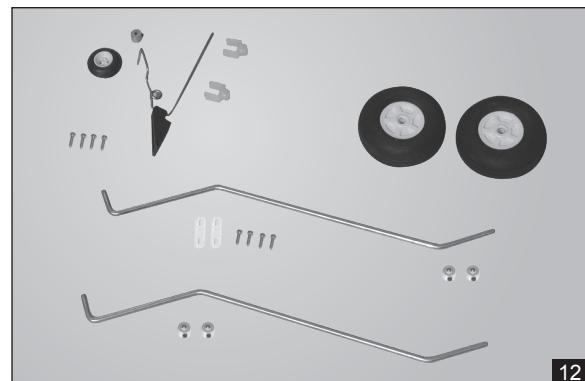
1. Test fit your engine into the engine mount. Because the width of different engines differ, the motor mount may need to be widened to accommodate your engine.
2. Remove the muffler from the engine and set the engine in the mount. Adjust the depth of the engine in the mount. The front of the thrust washer should be 3/4" forward of the front edge of the fuselage sides. This will allow clearance for the propeller.
3. Once satisfied with the fit of the engine, mark the position of the four engine mounting holes onto the mount. Remove the engine and drill out the mounting holes using a 7/64" drill bit. Drill one hole at a time, checking the alignment after each hole is drilled.
4. When reinstalling the engine into the motor mount, connect the carburetor arm to the preinstalled throttle pushrod. The Z-Bend fits into the lower hole in the throttle arm. Mount the engine using the four 3*25mm flat head wood screws.



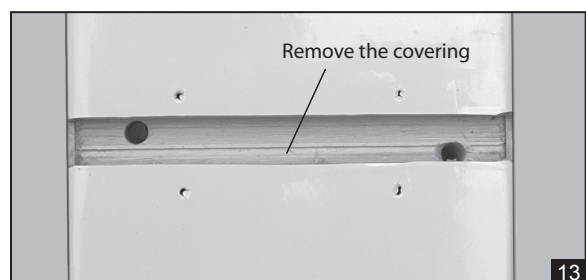
5. Mount the muffler to the engine using the mounting bolts provided with your engine.

LANDING GEAR INSTALLATION

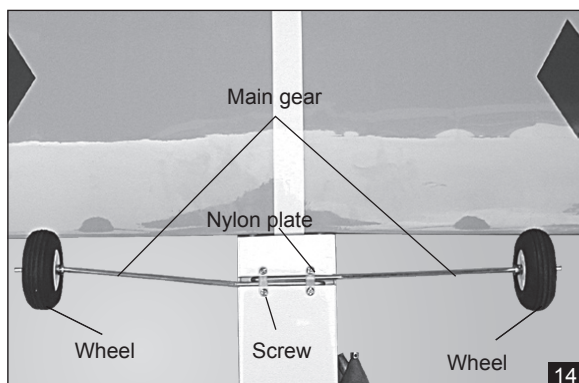
1. Locate the two main landing gear wires, one tail gear wire, two nylon mounting straps, four 3*12mm Phillips head sheet metal screws, three wheels, six wheel collars w/set screws.



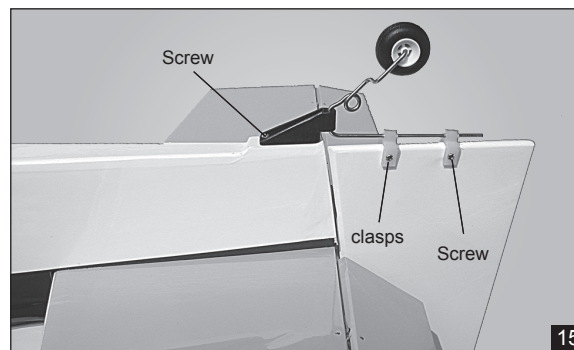
2. There are one hardwood landing gear blocks with one precut channel in the bottom of the fuselage. Using a modeling knife, remove the covering from over the precut channels.



3. Test fit the two main gear wires into the channel. When satisfied with the fit, secure the wires in place using the two nylon straps and four 3*12mm sheet metal screws. If you look closely at the surface surrounding the channel for the wire, you will notice that there are already four pilot holes drilled to accommodate the screws for the straps. Mount the straps at these locations.

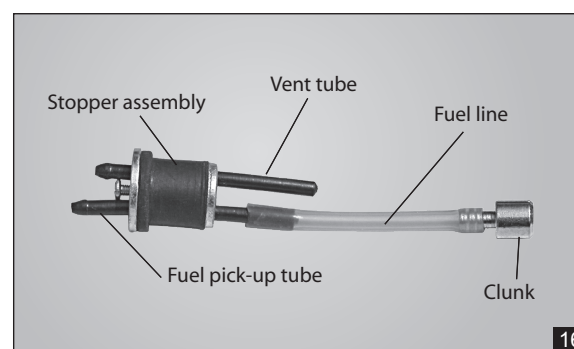


4. Install two of the wheels onto the axles using the four wheel collars and set screws provided. The wheels should be centered on the axles with a wheel collar on each side, holding them in place. Tighten the set screws on the collars to secure them in place. The wheels should rotate freely. You should apply a small drop of lock-Tite thread lock to each set screw to prevent them from coming loose.
5. Set the tail wheel assembly in place on the plywood plate.
6. Drill 2,6mm pilot holes through the plywood plate.
7. Secure the tail wheel bracket in place using two 3mm x 12mm screw.
8. Align the tail wheel wire so that the wire is parallel with the bottom of the rudder. The control clasp has a pre-drilled hole through the top of it. Slide this hole on to the tail wheel wire while sliding the clasp over the bottom of the rudder.
9. Secure the two clasps to the rudder bottom using two 2mm x 10mm screws.



FUEL TANK ASSEMBLY

1. Locate the plastic molded fuel tank, preassembled stopper assembly, weighted pick-up and a length of fuel line about 2-1/2 " long (not included). For steps # 2-4, refer to photo #16 below.



2. Attach the weighted pick-up, more com-momly referred to as the "clunk", to one end of the silicon fuel line.
3. Slide the other end of the silicon fuel line onto the end of one of the tubes coming out of the rear of the stopper assembly. This will be your fuel pickup line. When mounted the clunk should rest 3/8" from the rear of the tank and should move freely within the tank. The silicon tubing should be trimmed to fit.
4. Using your Fingers, gently bend the second tube upwards. This will become the muffler pressure tube. When inside the tank, it should rest just within the bubble in the top of the tank's roof.

5. Push the stopper assembly into the opening in the tank. Adjust the assembly until the muffler pressure tube is resting in the top of the bubble in the tank, but not touching the bubble. The fuel pick-up should also be 3/8" from the back of the tank. When satisfied with the fit, insert the long machine screw through the center hole in the stopper. Tighten the screw to expand the stopper and seal the tank opening. Tighten the stopper only enough to make a good seal. If you over-tighten the stopper, you may accidentally crack the front of the tank.
6. Mix up a batch of 30 Minute Epoxy and using a small pain brush, completely coat the inside of the fuel tank compartment in the forward section of the fuselage. This will seal the wood from any fuel that might accidentally leak from the tank.
7. When the epoxy has cured, connect two lengths of fuel line to the plastic tubes coming out of the tank. Keep track which one is for the fuel pick-up and which one is for the muffler pressure.
8. Run the tubes through the hole in the firewall and slide the tank assembly into place. The tank should rest at the top of the compartment and be up against the back of the firewall. Make sure there are no kinks in the fuel tubing and that the bubble in the tank is towards the top of the airplane.
9. Use pieces of the foam provided to hold the tank in place. Be careful the tank or the foam doesn't interfere with the pushrods.
10. Connect the fuel pick-up line to the carburetor fuel inlet nipple and the muffler pressure line to the pressure nipple on your engine's muffler.

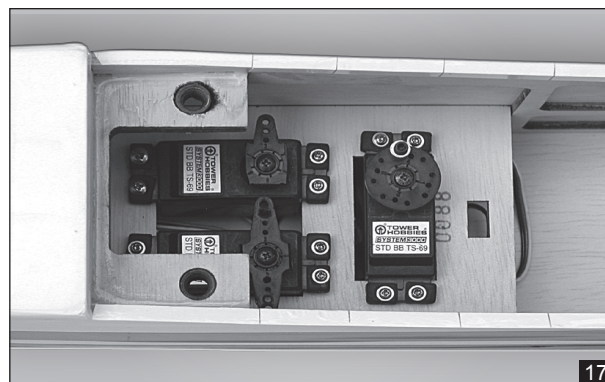
SPINNER INSTALLATION

1. Locate the molded plastic spinner, two 3*12mm Phillips head sheet metal screws and the Propeller to suit your engine (not included).
2. Most .40 size displacement engines use a 1/4" diameter crankshaft. You may need to enlarge the hole in the spinner backplate and the propeller to fit the crankshaft. If you do, enlarge the holes using a prop reamer or a 1/4" size drill bit.
3. Slide the backplate, then the propeller onto the engine and secure in place with the prop washer and nut included with your engine.
4. Install the spinner cone onto the spinner backplate using the two 3*12mm Phillips head sheet metal screws. You will need to trim the openings in the spinner cone to clear the propeller. Trim the opening using a sharp modeling knife until the spinner cone clears the propeller. It is important that no part of the spinner cone touches the propeller.

SERVO INSTALLATION

INSTALLING THE FUSELAGE SERVOS

1. Install the rubber grommets and brass collets into the elevator, rudder and throttle servos. Test fit the servos into the servo tray. Trim the tray if necessary to fit your servos
2. Mount the servos to the tray using the mounting screws provided with your radio system.



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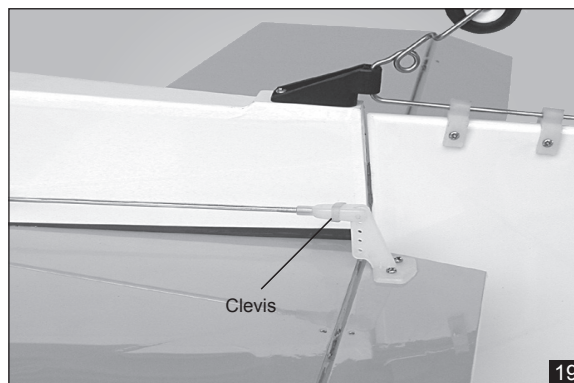
INSTALLING THE ELEVATOR PUSHROD

1. Carefully cut away the covering material from the slot.
2. Working from inside the fuselage, slide the threaded end of the pushrod until it reaches the exit slot. Carefully reach in with a small screw driver and guide the pushrod out of the exit slot.

3. Install the clevis on the elevator pushrod. Make sure 6mm of thread shows inside the clevis.
4. The control horn should be mounted on the bottom, left side of the elevator at the leading edge, in line with the elevator pushrod.
5. Drill two 1,6mm holes through the elevator using the control horn as a guide and screw the control horn in place.
6. Attach clevis to the third hole in the control horn. Install a silicone tube on the clevis.
7. Locate one nylon servo arm, and using wire cutters, remove all but one of the arms. Using a 2mm drill bit, enlarge the third hole out from the center to accommodate the elevator pushrod wire.
8. Plug the elevator servo into the receiver and center the servo. Install the servo arm onto the servo. The servo arm should be perpendicular to the servo and point toward the middle of the fuselage.
9. Be sure both elevator halves are flat. Slightly adjust the wire joiner if necessary. Center both elevator halves and hold them in place using a couple of pieces of masking tape.
10. With the elevator halves and elevator servo centered, carefully place a mark on the elevator pushrod wire where it crosses the hole in the servo arm.
11. Using pliers, carefully make a 90 degree bend up at the mark made. Cut off the excess wire, leaving about 8mm beyond the bend.
12. Insert the 90 degree bend up through the hole in the servo arm, install one nylon snap keeper over the wire to secure it to the arm. Install the servo arm retaining screw and remove the masking tape the elevator halves.



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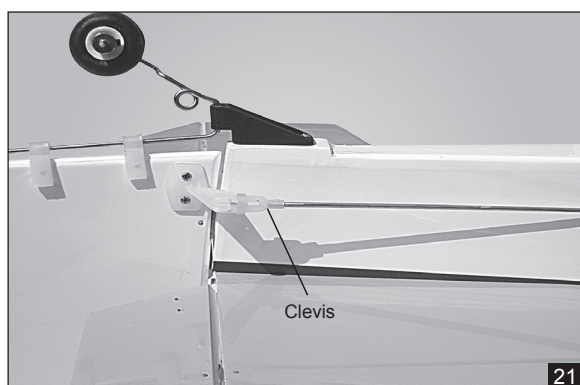
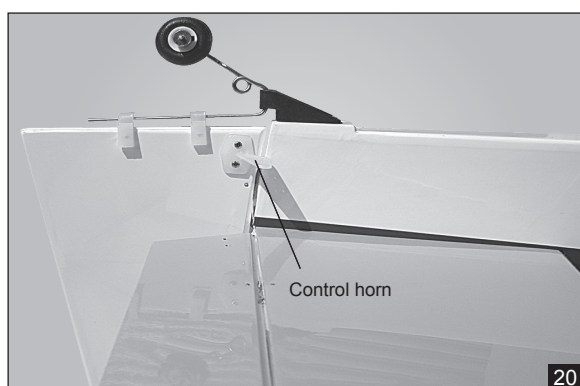


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INSTALLING THE RUDDER PUSHROD

1. Locate the pushrod exit slot on the left of the fuselage.
2. Carefully cut away the covering material from the slot.
3. Working from inside the fuselage, slide the threaded end of the remaining pushrod down the inside of the fuselage until the pushrod reaches the exit slot. Carefully reach in with a small screw driver and guide the pushrod out of the exit slot.
4. Install the clevis on the rudder pushrod. Make sure 6mm of thread shows inside the clevis.
5. The control horn should be mounted on the right side of the rudder at the leading edge, in line with the rudder pushrod.
6. Drill two 1,6mm holes through the rudder using the control horn as a guide and screw the control horn in place.
7. Attach clevis to the third hole in the control horn. Install a silicone tube on the clevis.
8. Locate one nylon servo arm, and using wire cutters, remove all but one of the arms using a 2mm drill bit, enlarge the third hole out from the center to accommodate the rudder pushrod wire.
9. Plug the rudder servo into the receiver and center the servo. Install the servo arm onto the servo.
10. Center the rudder and hold it in place using a piece of masking tape.
11. With the rudder and rudder servo centered, carefully place a mark on the rudder pushrod wire where it crosses the hole in the servo arm.

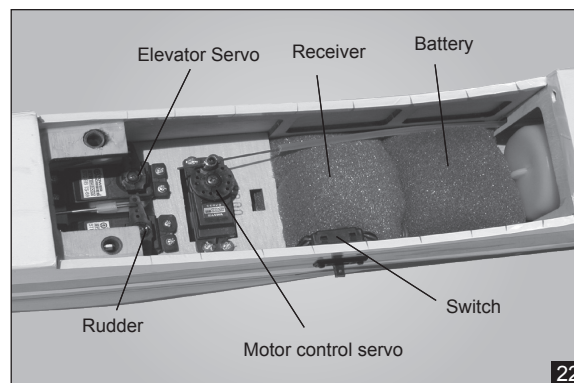
12. Using a pliers, carefully make a 90 degree bend up at the mark made. Cut off excess wire, leaving about 8mm beyond the bend.
13. Insert the 90 degree bend up through the hole in the servo arm. Install one nylon snap keeper over the wire to secure it to the arm. Install the servo arm retaining screw and remove the masking tape from the rudder.



INSTALLING THE THROTTLE

1. Install one adjustable metal connector through the third hole out from the center of one servo arm, enlarge the hole in the servo arm using a 2mm drill bit to accommodate the servo connector. Remove the excess material from the arm.

 *After installing the adjustable metal connector apply a small drop of thin C/A to the bottom nut. This will prevent the connector from loosening during flight.*



2. Plug the throttle servo into the receiver and turn on the radio system. Check to ensure that the throttle servo output shaft is moving in the correct direction. When the throttle stick is moved forward from idle to full throttle, the throttle barrel should also open and close using this motion. If not, reverse the direction of the servo, using the transmitter.
3. Slide the adjustable metal connector / servo arm assembly over the plain end of the pushrod wire. Position the throttle stick and the throttle trim at their lowest positions.
4. Manually push the carburetor barrel fully closed. Angle the arm back about 45 degree from center and attach the servo arm onto the servo. With the carburetor barrel fully closed, tighten the set screw in the adjustable metal connector.
5. Remove the excess throttle pushrod wire using wire cutters and install the servo arm retaining screw.
6. Glue the 1/2" * 1/2" * 1/4" pieces of wood between the fuselage side and the steering pushrod housing to help hold the housing in place and prevent it from flexing. Use the same technique as with the throttle.

RECEIVER & BATTERY INSTALLATION

1. The battery should be wrapped in foam and mounted behind the fuel tank. As the picture 22.
2. The receiver should be wrapped in foam and mounted just behind the battery. As the picture 22.
3. Uncoil the receiver antenna completely and drill a 1/16" hole in the side of the fuselage, opposite the muffler, for the antenna to exit. Secure the end of the antenna to the top the vertical fin using a rubber band or similar method.
4. Install the switch on the side of the fuselage opposite the muffler. Use the faceplate of the switch as a pattern for drilling the holes and the cutout for the switch itself.

BALANCING

1. It is critical that your airplane be balanced correctly. Improper balance will cause your plane to lose control and crash. The center of gravity is located 3-1/2" back from the leading edge of the wing at the fuselage sides. This location is recommended for initial test flying and trimming. There is a 3/8" margin forward and aft, but it is not recommended that the center of gravity be located any further back than 3-7/8". Balance the **Dolphin 40** with the fuel tank empty.
2. Using a couple of pieces of masking tape or a pen, make a mark on each side of the top of the wing 3-1/2" back from the leading edge.
3. Turn the **Dolphin 40** upside down and place your fingers on the marks on top of the wing and carefully lift the plane.
4. If the nose of the plane falls, the plane is nose heavy. To correct this, try moving your battery pack back. If that is not enough change, add a little lead weight to the tail. If the tail of the plane falls, double check that you have mounted the battery pack under the fuel tank. If the airplane is still tail heavy add lead weight to the firewall or even better, use a sufficient heavy hub under the spinner.

CONTROL THROWS

High rate	Low rate
Ailerons: 1/2" up & down	3/8" up & down
Elevator: 5/8" up & down	3/8" up & down
Rudde: 1" right & left	1/2" right & left

**** Note**** Both the center of gravity and the control throws are a good starting place for initial test flying and may be changed to your particular tastes and flying styles once you have become familiar with the **Dolphin 40**. We do recommend initially flying the airplane using the **LOW RATE** settings. Too much throw can force the plane into a high speed stall, so remember, "More is not better".

FLIGHT PREPARATION

- 1) Check the operation and direction of the elevator, rudder, ailerons and throttle.
 - A) Plug in your radio system per the manufacturer's instructions and turn everything on.
 - B) Check the elevator first. Pull back on the elevator stick. The elevator should go up. If it does not, flip the servo reversing switch on your transmitter to change the direction.
 - C) Check the rudder. Looking from behind the airplane, move the rudder stick to the right. The rudder should move to the right. If it does not, flip the servo reversing switch on your transmitter to change the direction.
 - D) Check the throttle. Moving the throttle stick forward should open the carburetor barrel. If it does not, flip the servo reversing switch on your transmitter to change the direction.
 - E) From behind the airplane, look at the aileron on the right wing. Move the aileron stick to the right. The aileron should move up and the other aileron should move down. If it does not, flip the servo reversing switch on your transmitter to change the direction.

2) Check Control Surface Throw.

- A) The rudder should move 1/2" left and 1/2" right from center.
- B) The elevator should move 3/8" up and 3/8" down from center.
- C) The aileron should move 3/8" up and 3/8" down from center. If they move too far, move the adjustable horn away from the aileron a few turns. Do the opposite if there is not enough throw. It is important that both ailerons move the same amount, both up and down.
- D) Once the control throws and movements are set, tubing must be added to the clevises to ensure they do not release in the air. Cut 1/4" lengths of fuel tubing and slide one over each clevis prior to attaching it to the control horn. This will ensure the clevis will not release in flight.

PRE-FLIGHT CHECK

- 1) Completely charge your transmitter and receiver batteries before your first day of flying.
- 2) Check every bolt and every glue join in your Dolphin to ensure everything is tight and well bonded.
- 3) Check that the tubes used for clevis retainers are in place.
- 4) Double check the balance of the airplane. Do this before filling the tank with fuel.
- 5) Check the control surfaces. All should move in the correct direction and not bind in any way.
- 6) Check the receiver antenna. It should be fully extended and not still coiled up in the fuselage.

FLYING THE DOLPHIN 40

If you are unfamiliar with flying low wing sport aircraft, please seek out an experienced pilot to help you with the first few flights of the airplane. The design of the **Dolphin 40** allows the airplane to fly smoothly and stable, yet perform good aerobatics as well. Landings are smooth and predictable, but because this is not a primary trainer, its stall speed is higher and power should be used to bring it in for landings and slow speed flight. It does not have the self-recovery characteristics of a primary R/C trainer, so again, if you don't feel comfortable for the first flight have someone with more experience help you get it in the air.

Although this model has good low speed characteristics with power on, you should always build up as much speed as your runway will permit before lifting off, as this will give you a safety margin in case the engine quits after take off.

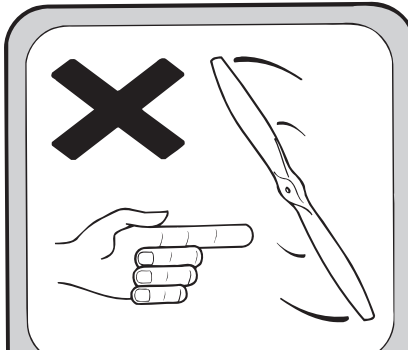
It is important that the plane rolls out on the ground until sufficient airspeed is achieved. Pulling the **Dolphin 40** off the ground too soon could result in a stall and crash. Allow the airplane to pick up speed and gently lift off and climb out gradually. We recommend that you take it easy with your **Dolphin 40** for the first several flights, gradually getting acquainted with the air plane and allowing your engine to fully break-in. Add and practice one maneuver at a time, learning how the airplane behaves in each. For smooth flying and normal maneuvers, we recommend using the low rate settings described earlier. High rate may be required for more crisp aerobatics. Before your first landing, practice landing approaches in the air. This will get you familiar with the stall characteristics of the **Dolphin 40**.

When it's time to land, fly a normal landing pattern and approach decreasing power to about one-quarter. It is important that when power is reduced and flying speed has diminished, do not make high angle turns onto the final approach. Too high an angle of bank with too little power can cause the airplane to stall. When you turn final, reduce power to just a few clicks over idle. When you are a few feet off the ground, reduce power to idle and let the airplane settle onto the runway. Land slightly faster than the stall speed and on the main wheels, as this is the easiest way to land the **Dolphin 40** and will reduce the risk of stalling the airplane.

I/C FLIGHT WARNINGS

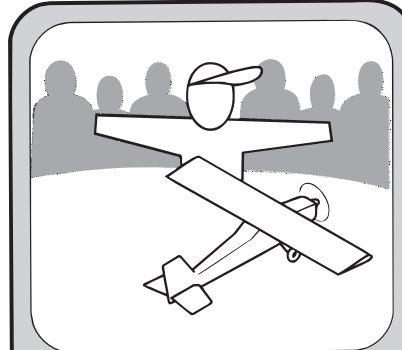


Always operate in open areas, away from factories, hospitals, schools, buildings and houses etc. **NEVER** fly your aircraft close to people or built up areas.

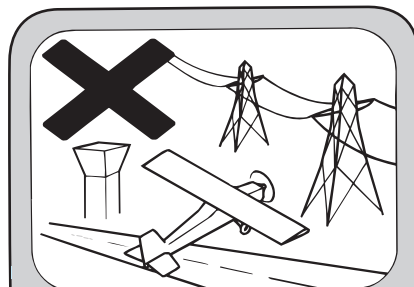


THE PROPELLER IS DANGEROUS

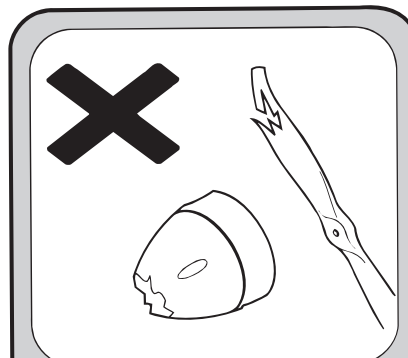
Keep fingers, clothing (ties, shirt sleeves, scarves) or any other loose objects that could be caught or drawn in, away from the propeller. Take care at **ALL** times.



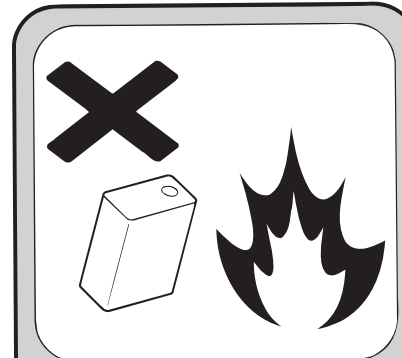
Keep all onlookers (especially small children and animals) well back from the area of operation. This is a flying aircraft, which will cause serious injury in case of impact with a person or animal.



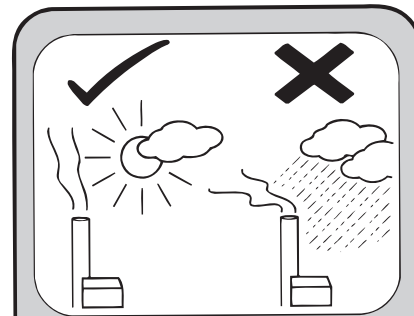
NEVER fly near power lines, aerials or other dangerous areas including airports, motorways etc.



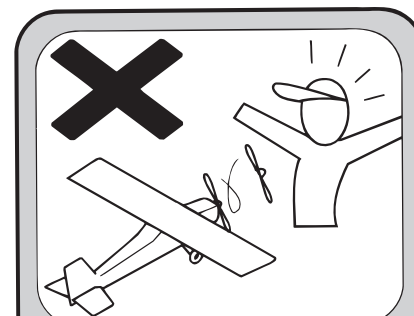
NEVER use damaged or deformed propellers or spinners.



DO NOT dispose of empty fuel containers on a fire, this can lead to an explosion.

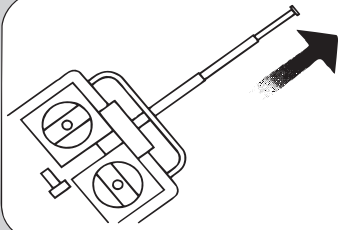


NEVER fly in wet conditions or on windy or stormy days.

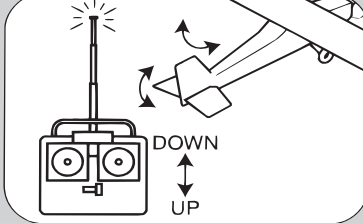


ALWAYS adjust the engine from behind the propeller, and do not allow any part of your body to be in line with the propeller.

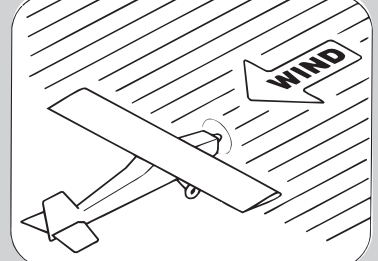
I/C FLIGHT GUIDELINES



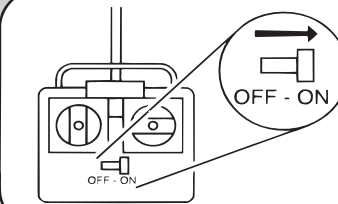
When ready to fly, first extend the transmitter aerial.



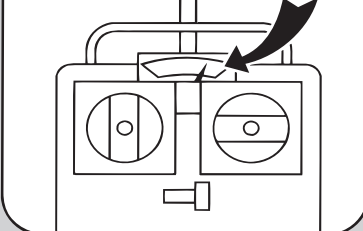
Operate the control sticks on the transmitter and check that the control surfaces move freely and in the **CORRECT** directions.



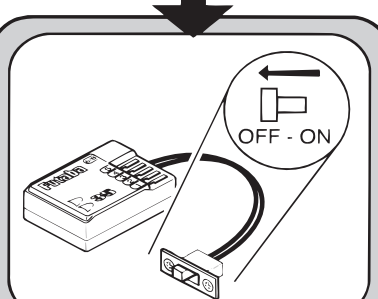
ALWAYS land the model **INTO** the wind, this ensures that the model lands at the slowest possible speed.



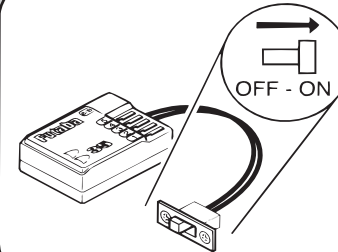
Switch on the transmitter.



Check that the transmitter batteries have adequate power.



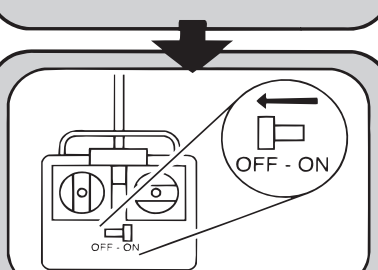
Switch off the receiver.



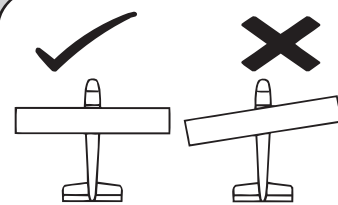
Switch on the receiver.



ALWAYS take off into the wind.



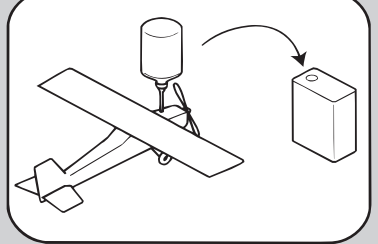
Switch off the transmitter.



Check that the wings are correctly fitted to the fuselage.



If the model does not respond correctly to the controls, land it as soon as possible and correct the fault.



Empty the fuel tank after flying, fuel left in the tank can cause corrosion and lead to engine problems.