

## 2gRC Radio Control Batteries

1. Insert eight (8) AA (Double A) batteries (not included) into the transmitter while taking careful note of proper polarity clearly marked in the transmitter's battery compartment.
2. Turn switch on to ensure the batteries have been installed correctly. When this is confirmed, turn radio off.

## Charging the Aircraft Battery

Battery Capacity: 11.1 V, 1,000 mAh, Lithium Polymer

**Typical Charge Time: One hour**

1. Read the warnings and directions very carefully.
2. Following the guidelines, connect the battery pack to the charger.
3. The charger light turns from red to green when battery is fully charged.



**NOTE: The lithium polymer battery included with this plane can be recharged 30-40 times. Thereafter it should be disposed of safely.**



**2gRC**  
RADIO CONTROL  
*To The Next Power*

**Mako**  
Jet™

|                                |                    |                                 |                        |
|--------------------------------|--------------------|---------------------------------|------------------------|
| 1 Throttle Stick               | 7 Speaker          | 13 Throttle Trim                | 19 Ducted Fan Unit     |
| 2 Attack Button (Thrust Boost) | 8 Elevon Stick     | 14 Internal Wing                | 20 Battery Compartment |
| 3 Power LED                    | 9 Aileron Trim     | 15 Elevon Control Surface       | 21 High-Impact Nose    |
| 4 Antenna                      | 10 Elevator Trim   | 16 Duct                         |                        |
| 5 Attack Button Engaged LED    | 11 Neck Strap Hook | 17 Outboard Vertical Stabilizer |                        |
| 6 Dual Rate Switch             | 12 Power Switch    | 18 Coanda                       |                        |

## SAFETY NOTES

To help ensure a safe charge every time, you **MUST** read the following safety instructions and warnings before handling, charging or using the Li-Po battery pack. Lithium Polymer batteries are significantly more volatile than the alkaline, Ni-Cd or Ni-MH batteries used in RC applications. Mishandling of Li-Po batteries can result in fire. By handling, charging or using the included Li-Po battery, you assume all risks associated with lithium batteries.

If you cannot comply with the safe handling of Polymer cells, then do not use them.

If you do not understand the characteristics of Polymer cells or assemblies, then do not use them.

## SAFE CHARGING

- Lithium Polymer cells have very strict charging requirements. Always charge Lithium Polymer cells or packs with recommended PCM (Protective Control Module) or great damage may occur.
- Always use chargers specifically approved for Lithium Polymer cells or packs.
- Always test your charger to assure it is functioning properly.
- Always charge your Lithium Polymer cells or packs outdoors and in a fire-proof container.
- Always store Lithium Polymer cells or packs in a fire-proof container.
- Always have sand or dry fire extinguisher handy in the event of fire.
- Always keep any battery out of the reach of children.
- Always handle Lithium Polymer cells and packs with great care.
- Always purchase a factory-authorized built pack instead of building your own.
- Always observe the correct polarity when connecting cells or packs to charger or application.
- Always seek medical attention if electrolyte gets in your eyes (flush with cold water immediately).
- Always scrub with soap and water if electrolyte comes in contact with your skin.
- Never charge Lithium Polymer cells or packs unattended.
- Never charge Lithium Polymer beyond factory specifications.
- Never charge Lithium Polymer in your car, home or garage or where other physical damage can occur.
- Never charge Lithium Polymer while in the application, as the hot pack may ignite certain materials.
- Never charge Lithium Polymer on flammable materials such as wood, foam or plastic.
- Never extinguish a Lithium Polymer fire with water.
- Never disassemble a Lithium Polymer cell or pack (see "Damaged" notes below).
- Never short circuit Lithium Polymer cells or packs.
- Never use a Lithium Polymer cell or pack that has been damaged (see "Damaged" notes below).
- Never put loose cells with uncovered terminals in your pocket, purse, bag, desk drawer, etc.
- Never keep cells or packs in temperatures that exceed 60C/140F.
- Never exceed the factory's maximum allowed discharge rates.
- Never combine different cell sizes or capacities together in the same pack.

## DAMAGED CELLS OR PACKS

In the event your cells or packs were involved in a crash:

- Totally inspect the cells, wire leads and connections for possible short circuit. If there is any doubt, completely cut all wires from the cells and pack. If any cells are dented or deformed, do not use the pack again, ever. Follow disposal notes below.

## DISPOSAL OF CELLS OR PACKS

- Discharge all cells individually to recommended cut-off voltage of 3.0 volts per cell.
- Caution! Cells may be warm or hot as usual during this discharge process. After cooling, puncture small hole in cells and immerse in salt water for several hours. Apply tape over one terminal and dispose of in trash.

## • Motor Test

1. Move the throttle slider ① to the **OFF** position. **PIC 3**
2. Turn on transmitter. **PIC 5**
3. Remove battery compartment cover (hatch) ②0 from bottom of fuselage.
4. Plug the aircraft battery into the socket in the battery compartment.
5. Secure battery inside of battery compartment and secure hatch to fuselage.

## • Elevon Test

**WARNING** Keep everything clear of the ducted fan intakes and propeller blades located on top and bottom near mid-fuselage before beginning the control test, in the event you accidentally turn on the motor.

Your **MAKO Jet** is equipped with **two sets of elevons** located on the upper and lower trailing edges of both aft (rear) airfoils, providing excellent directional control. To test the elevons and be certain that they function properly, follow the steps listed below:

1. Turn on the transmitter. **PIC 5**
2. Install and plug in a fully charged aircraft battery. With the stick ① at neutral and trim levers centered, ⑯ the elevons should be in the neutral position, aligned straight with the trailing edges of both aft airfoils. If this is not the case, gradually move the trim levers until the back tips of the elevons align straight with the trailing edges of the airfoils.
3. Hold the aircraft with wings level so that you have a centered, straight-on view of the tail.
4. Move the elevon stick ⑧ on the transmitter fully to the right until it stops. The elevons should be pointing upward on the right side and downward on the left side.
5. Move the elevon stick fully to the left until it stops. The elevons should be pointing upward on the left side and downward on the right side.
6. Move the elevon stick fully to the back until it stops. The elevons should be pointing upward equally on both sides.
7. Move the elevon stick fully to the front until it stops. The elevons should be pointing downward equally on both sides.
8. If you detect any problems with the control surfaces responding to the transmitter inputs during the test, do not fly your **MAKO Jet**. Call **Shark Jaw** Product Support staff at **888-492-8697**.

## • Dual-Rate Flight Control ⑥ ⑥

The transmitter has a switch located on the top that allows the operator to change the amount of "throw," or travel, of the elevon surfaces. This affects the rate at which steering maneuvers can be made.

The switch is pre-set in the factory at the **NOVICE** mode position. The **NOVICE** rate setting should be used when first learning to fly the **MAKO Jet** and while becoming more familiar with properly controlling the aircraft.

For more advanced pilots, the **EXPERT** rate setting can be used to increase the amount of control surface deflection for faster turn, climb, and dive rates. The **EXPERT** setting is used for more extreme flight control and extreme aerobatic maneuvering.

**IMPORTANT:** **Keep in mind that it is easier to crash the aircraft when using the EXPERT rate setting. Only use the EXPERT rate setting when you have gained enough confidence in your abilities to consistently maintain control of the aircraft in all possible attitudes.**

**NOTE:** **You may switch flight modes during flight, but it is important to remember that this should be done only at high altitudes, above 50 feet.**

# Your First Flight

## • Choose a Large, Open Grassy Field

To ensure safe flying, you should select a large, open grassy field that is **free of obstructions for at least 500 feet in all directions** from the spot you choose to stand while piloting your aircraft. **PIC 1**

The **MAKO Jet** is capable of reaching speeds up to **80 MPH** and can quickly go out of radio range without your undivided attention. The maximum range of the radio transmitter is **900 feet**, but it is important to always remain alert and keep the **MAKO Jet** well within radio range by **ensuring it does not exceed a distance over 500 feet away from you in any direction**. This will give you added time to safely steer the aircraft toward your ground position should the battery be nearing the end of its charge. **PIC 1**

**NOTE:** As the battery charge gets weaker, the range of control operability is diminished proportionally.

**IMPORTANT:** Make certain that you do not fly near bystanders, trees, buildings, automobiles, telephone wires, animals or any other object that can interfere with flight or obstruct your view of the aircraft. Always maintain a clear line of sight with the **MAKO Jet** throughout each flight.

## • Choose Calm Days When Learning to Fly

For your initial flights, please choose calm days. Your best choice for optimum performance and safety is to fly on completely still days with no wind at all. A mild, steady breeze that maintains stable direction is acceptable.

### How to Check Wind Conditions:

1. Determine the direction of the wind by tying a ribbon onto the transmitter antenna **4** or simply release a few grass clippings from above your head and observe how the wind blows them. Take note of the direction of the wind. **PIC 2**
2. If the ribbon or grass clippings are blown or scattered about in different directions, making it difficult to determine a particular wind direction, the wind may be too gusty or changeable and you should wait until conditions settle and the wind direction can be positively determined.

## Wind Velocity and the Advanced **MAKO Jet** Capabilities

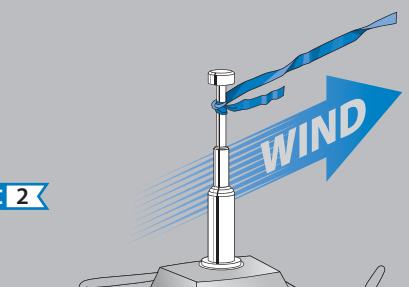
The unique **MAKO Jet** design and airfoil arrangement provides exceptionally good stability and ease of pilot control during flight. The **MAKO Jet** is also capable of flying in considerably higher wind speeds compared to conventionally designed aircraft of its same size, weight, and thrust classification.

Amazingly, the **MAKO Jet** has been successfully flight tested in wind speeds in excess of 40 knots and can recover more easily from crosswind gusts than less stable designs.

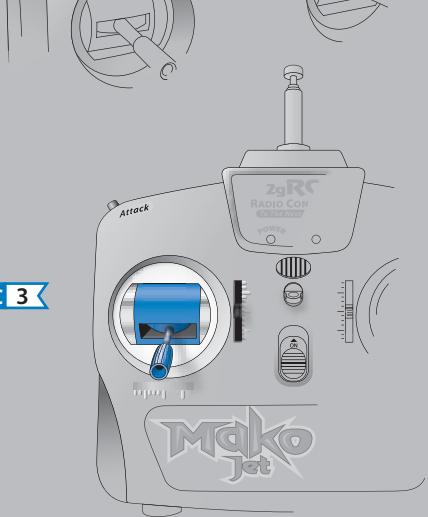
PIC 1



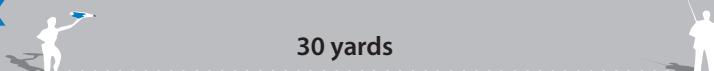
PIC 2



PIC 3



PIC 4



30 yards

**NOTE: Unless you are a thoroughly experienced and highly skilled pilot, we DO NOT recommend that you attempt to fly the MAKO Jet on windy days, despite its impressive capabilities to slice through winds that would typically ground other conventional aircraft.**

Flying in excessive wind speeds will accelerate consumption of battery charge, shorten flight time and presents a much greater challenge to launching and maintaining proper flight control.

## Range Test

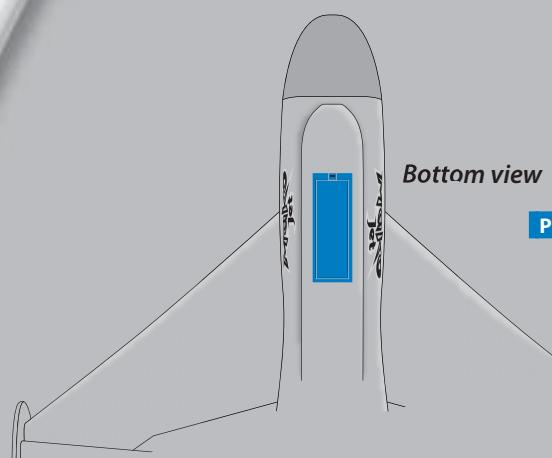
Two people are required to perform the range test; one person to hold the plane and the other to apply input to the radio transmitter.

**W A R N I N G** The person holding the airplane must at all times be certain that the propeller 19 does not contact any part of their body or clothing. Long hair should be tied, pinned back or tucked under a cap to prevent the hair from accidentally entering the ducted fan intakes and becoming entangled in the propeller.

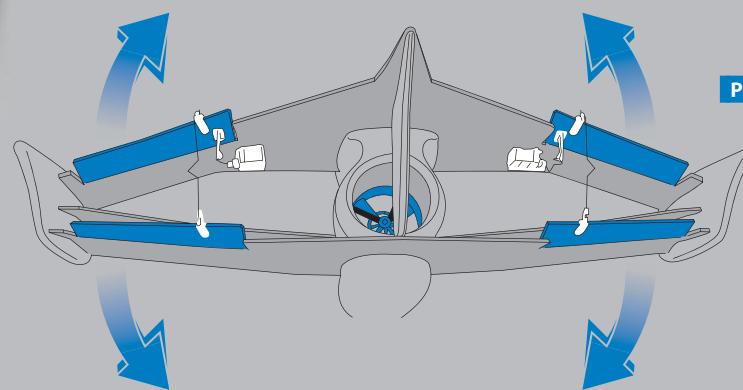
1. Be sure the throttle 1 is in the OFF position. **PIC 3**
2. Keeping the transmitter antenna down, turn the transmitter **ON**. **PIC 5** Plug the aircraft battery into the socket inside the battery compartment and secure the hatch cover to the fuselage. **PIC 6**
3. The person holding the transmitter should walk a minimum of 30 paces away from the person holding the plane. **PIC 4**
4. Move the controls on the transmitter smoothly to see if there is any interference. While the transmitter controls are moved, the other person observes the airplane's elevon control surfaces 15 to make sure they operate correctly. Do not turn on the throttle! **PIC 7**
5. Walk back, then check throttle while the aircraft is held firmly. When the throttle is advanced, the propeller 19 should immediately spin.
6. While the throttle is running, move the controls again to ensure there is no interference between the running motor and the control surfaces.
7. **Afterburner Attack Button 2** Test this special feature by pressing the button located on the top of transmitter. You will feel immediate extra thrust that will help you perform amazing aerobatics as you gain experience as a pilot.
8. Now you are ready to fly. If any interference occurs during the test, first try a different location (park, field) before calling for a replacement. Be advised that some areas will have unavoidable interference due to hospitals, CB antennas, TV stations, radio stations and similar sources of radio transmissions.



PIC 5



PIC 6



PIC 7

## • Launching the MAKO Jet

1. Make sure that the aircraft battery is fully charged and the hatch cover is securely fastened. **PIC 6**

2. Be certain the throttle **1** is in the **OFF** position before turning on the transmitter.

3. Turn on the transmitter and check the dual-mode toggle switch. **6**

**REMINDER: When first learning to fly, you should select the NOVICE position, with the switch pointing to the back of the transmitter. The EXPERT setting, with the switch pointed to the front, should only be used by experienced RC pilots.**

4. Grasp the bottom of the fuselage between the lower ducted fan intakes and the leading edge of the lower wing while ensuring that no part of your body is near the ducted fan intakes and propeller blades. Be sure the plane feels balanced in a firm grasp. **PIC 8**

5. Be sure the throttle position is set to **OFF**, **PIC 3** but continue to maintain finger contact with the throttle slider during launch.

6. Hold the plane above your head. **PIC 8** Aim the airplane directly into the wind with wings level, while making sure that all parts of your body are clear of the airplane during launch and release. **PIC 9**

7. Advance to full throttle and lightly toss aircraft into headwind.

8. Continue to steer directly into the wind, giving small up elevator (back on the stick) inputs to the transmitter until you have reached an altitude of approximately 100 feet.

9. At or above 100 feet, it is safe to steer in the desired direction and to make throttle adjustments to maintain altitude and speed. You may also make trim adjustments.

## • Flying the MAKO Jet

1. Once flying at safe altitude, it is important to quickly check and adjust trim settings to maintain level flight with the elevon stick **8** in the neutral position and the throttle **1** set for normal cruise speed at slightly above the half-way mark on the throttle slider. **It is easier to make trim adjustments while the plane is facing into the wind.**

2. Do not let the plane get too far away from you. **Remember, the safe range is 900 feet.** The farther away the plane is from your ground position, the harder it is to determine both the plane's altitude and its orientation.

3. Keep the plane upwind of your ground position to prevent it from being carried away by the wind. Should you begin to lose power unexpectedly, **the plane will be much easier to recover if it is blown toward your position rather than away.**

**PIC 8**



**PIC 9**



4. Flying in too much wind is the greatest cause of crashes, as well as accidentally flying out of transmitter range. Keep your attention focused on the plane at all times. Remain constantly aware of its range from your ground position. Again, avoid flying on windy days to help prevent mishaps.

5. Try to fly smoothly when adjusting all transmitter flight controls. Avoid jerky control inputs.

Climbing too quickly with up elevator and insufficient power may cause the wings to stall and force the airplane into a nosedive. Give small inputs to the elevons to maintain controlled flight, particularly when correcting problems with the airplane's pitch. Overcorrections may cause pilot confusion, loss of plane orientation, and may possibly lead to loss of control or crashes.

## • Making Sharp Turns and Throttle Input

Steer or roll the airplane in the desired direction (left or right on elevon stick) ⑧ while pulling back on the stick to give the airplane more up elevator. This will turn the airplane more rapidly and allow for sharper turns to be made. The airplane is also more responsive in sharper turns if you give it additional throttle. **PIC 10** **PIC 11** Remember, when gliding without power, your control inputs will have less effect on aircraft steering. Practice maintaining balance between throttle settings and stick movements during various steering maneuvers.

## • Throttle, Altitude and Stall Recovery

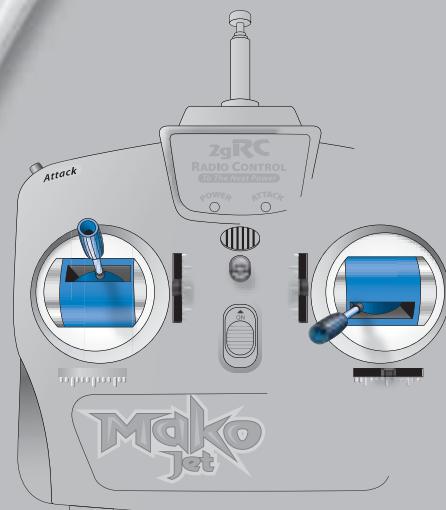
1. The throttle control is proportional, which allows you to finely adjust power settings to the desired level.

2. Apply more power to climb.

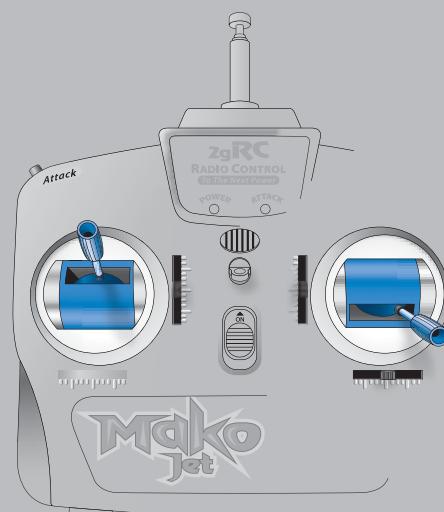
3. Reduce power to descend.

4. Always give yourself and your **MAKO Jet** plenty of time and distance from the ground to recover from a possible stall by maintaining enough altitude for a safe recovery. To properly recover from a stall, it is necessary that you build enough airspeed in a nose-down, dive attitude before applying small increments of up elevator to regain level flight. Giving too much up elevator input before gathering enough speed can induce another stall and shorten the time and distance for safe recovery, possibly resulting in a crash.

5. As you gain more flight experience, it is good to practice recovering from stalls only at altitudes above 200 feet so that you will become more familiar with the amount of time and distance required to properly recover from possible stall emergencies occurring at lower altitudes. Get to know the limits of your aircraft, as well as the limits of your flying skills.



Sharp LEFT turn

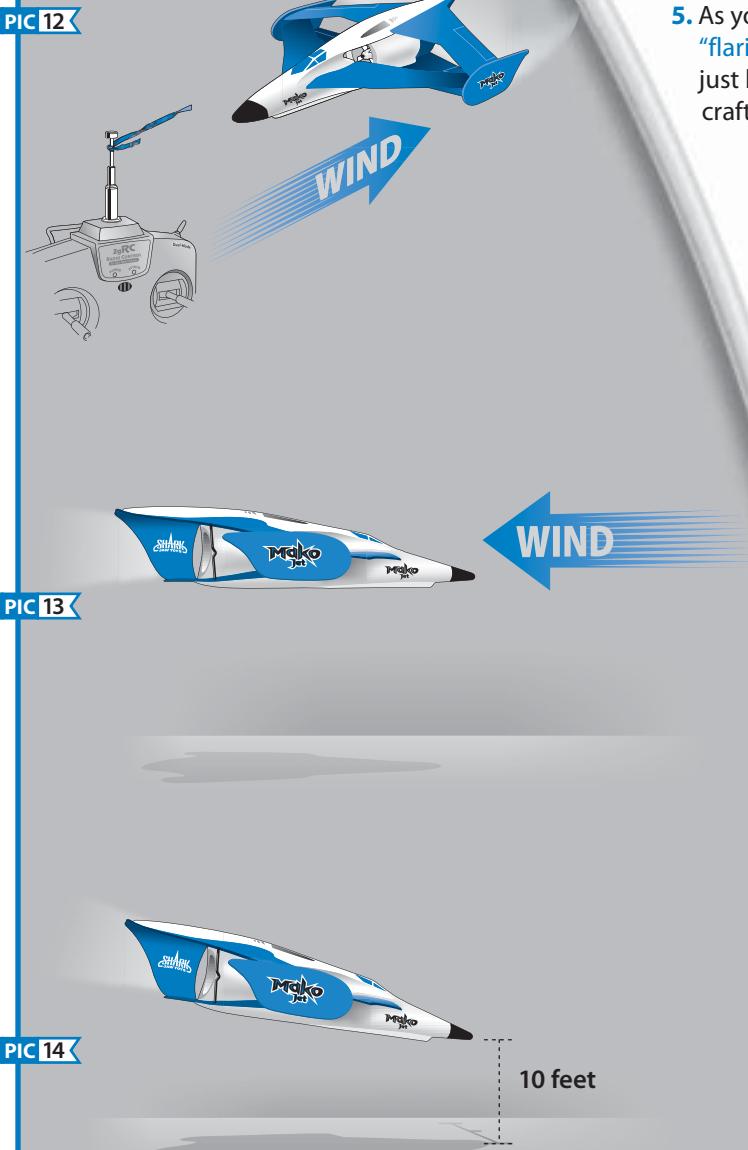


Sharp RIGHT turn

## Landing Your MAKO Jet

After approximately 8-10 minutes of flying, you may begin to notice that your **MAKO Jet** is not climbing well when full throttle is applied. This is the **LOW VOLTAGE CUTOFF FEATURE** – the circuit board automatically reduces power setting to 30% to remind you to land while you still have enough battery power to maneuver.

1. Aim the **MAKO Jet** directly into the wind as you steer it toward your desired landing zone. **PIC 12**
2. Reduce the throttle gradually to 30% and descend to about 10 feet above the ground with the nose still aimed straight into the wind. **PIC 13**
3. Reduce throttle to 15% until the airplane descends on a gradual glide slope angled slightly toward the ground while keeping the wings level with the horizon. **PIC 14**
4. Just before the airplane makes contact with the ground, shut **OFF** the throttle **PIC 3** and allow your plane to settle smoothly to a soft landing.
5. As you gain more experience with landing, you may want to try “flaring” your **MAKO Jet** by giving the stick a little up elevator input just before contact with the ground. Flaring will rapidly slow the craft and help soften landings. **PIC 16**



**NOTE:** Turning the motor **OFF** before landings will prevent debris from being sucked into the intakes and help keep the blades free of damage. Carefully examine the intakes and propeller blades after every landing to ensure that they are free of debris and that no damage such as chips or cracks in the blades has occurred.

**WARNING** NEVER attempt to turn the motor on if your post- or pre-flight inspections detect missing pieces, chips or cracks in the ducted fan blades, as doing so may expose you to bodily injury. The ducted fan blades are carefully balanced for smooth operation and if you detect unusual vibrations coming from the aircraft, land it immediately and perform an inspection, paying particular attention to the ducted fan propeller blades. Always stay clear of the blades.

**DO NOT** attempt to catch the **MAKO Jet** in flight, as this may lead to possible injury.

**REMEMBER:** Safety should always remain your first consideration and primary focus at all times.

## • Aerobic Maneuvers and the Dual-Rate Settings

Your **MAKO Jet** aircraft is fully capable of performing spectacular aerobatic stunts without requiring physical modifications or adjustments to the control linkages.

All linkages are pre-set at the factory and should not be altered. The dual-mode control switch **6** located on the back of the transmitter can be set on **NOVICE** or **EXPERT** during flight to increase or decrease the amount of deflection or “throw” of the control surfaces, commonly known as elevons. **15**

As discussed in the “Launch” section, we recommend that the **EXPERT** control rate setting be used **only by experienced pilots** because the speed of roll and pitch movements are significantly accelerated, making it much easier to crash the airplane. You will have less time to determine the attitude of the aircraft, as well as less time to recover from emergencies when using the **EXPERT** rate setting.

**NOTE:** As mentioned, it is best to seek the guidance of an experienced RC pilot during your first few flights, and this is even more important when learning to perform aerobatic stunts with your **MAKO Jet**.

## • Aerobic Tips

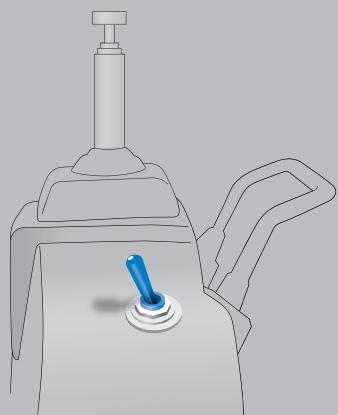
1. Climb to approximately 200 feet altitude before attempting aerobatic maneuvers.
2. Before attempting a loop, apply full power or in a steep climb engage the “**Afterburner Attack Button**” **2** to ensure that you have enough speed to complete the loop.
3. Before attempting a roll, position the nose of the aircraft slightly upwards to overcome the loss of altitude that will normally occur during a roll maneuver. **PIC 16**
4. Be sure you apply power both into and out of turns, to keep airspeed up and air flowing over the wings to maintain control.
5. If you decide to try inverted flight (upside down), be sure the power is near or at full throttle, and apply down elevator to achieve level flight.
6. Be sure you have the dual-mode switch set to **EXPERT** mode when attempting aerobatic maneuvers. This will allow you to over-control the airplane to achieve aerobatic flight. **PIC 17**
7. Before aerobatic flight, be sure you understand and know the color difference between the top and bottom of the jet; this is crucial to recovering stable flight.



PIC 15



PIC 16



PIC 17

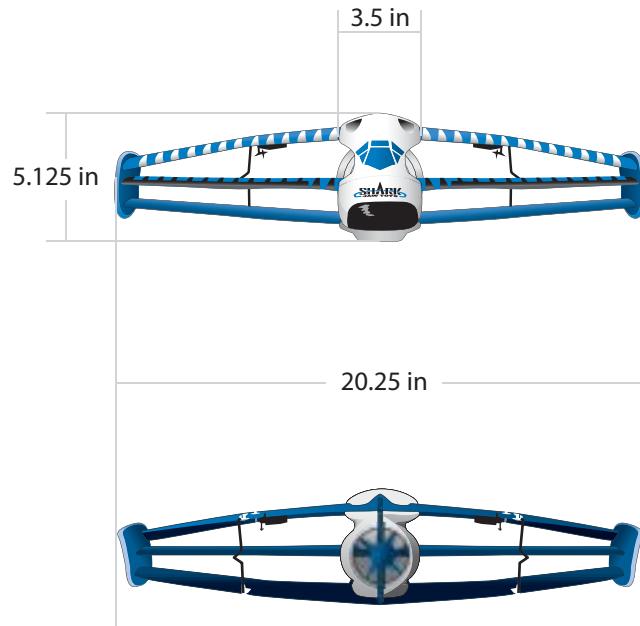
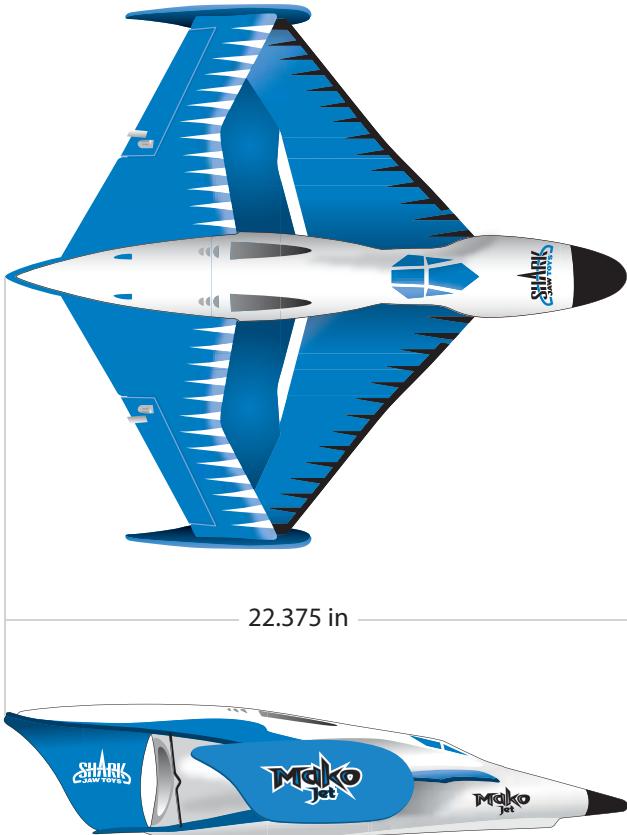
## • Troubleshooting

|          | <b>Problem</b>   | <b>Solution</b>   |
|----------|--|---|
| <b>1</b> | Your <b>MAKO Jet</b> is turning toward one direction or another.           | Check your trim tabs and be sure that the control surface is neutral to the wing.   |
| <b>2</b> | Your <b>MAKO Jet</b> is "chattering" when you turn it on.                  | Ensure you are in a designated flying area and that nobody else nearby is on the same frequency. It is very easy to crash other craft if they are within range of you and on the same frequency.  |
| <b>3</b> | Your <b>MAKO Jet</b> is pitching up or down rapidly.                       | Be sure that the balance of the aircraft has not changed. All <b>MAKO Jets</b> are pre-balanced from the factory to ensure proper center of gravity.  |
| <b>4</b> | Your <b>MAKO Jet</b> is not flying for as long as it once was.             | Your <b>MAKO Jet</b> is supplied with a lithium polymer battery that can develop a "memory." Be sure the battery is close to fully discharged before attempting to recharge it. This is called "cycling the battery" and is done to help extend battery life. |
| <b>5</b> | Your <b>MAKO Jet</b> is getting interference toward the end of the flight. | Make sure your transmitter batteries are charged at all times. Dead batteries can cause you to crash your airplane or possibly hurt somebody who may be nearby. Change the batteries after every five (5) flights.  |
| <b>6</b> | Your <b>MAKO Jet</b> motor will not turn.                                  | Visually check to ensure that all wires are connected to the correct spots. If you see a loose wire, contact <b>Shark Jaw Toys</b> for further details.   |
| <b>7</b> | The servo is not working.  | Contact <b>Shark Jaw Toys</b> for further details.  |

## • Damage Repair

In the event your **MAKO Jet** suffers crash damage, "Foam-Safe" CA or epoxy can be used to make minor repairs.

Fractured or sheared foam parts will bond together nicely if the two parts to be joined are not badly distorted by excessive stretching or buckling of the foam near or on the damaged area.



## • Warranty and Follow-Up Procedures

**WARRANTY:** **Shark Jaw Toys** guarantees this product to be free of defects in material and workmanship. If you detect defects during the very first preflight testing (see Range Test, p. 4), please call our Product Support staff toll-free at **888-492-8697**.

If you are directed by our staff to return the airplane, you will be provided with an RA (Return Authorization) number and an address to ship it to. Please follow these steps:

1. Unplug the battery from the airplane.
2. Pack the complete **MAKO Jet** (all components in the original box) and place in a sturdy shipping carton for protection.
3. Include your complete name and address information inside the carton, as well as clearly writing it on the outer label/return address area. Include detailed information explaining the nature of the problem(s) encountered.
4. Please date your correspondence and be sure your complete name, address and daytime phone number appear on this enclosure. Please include your original dated sales receipt.

If, after inspecting the product, we determine it to be defective, we will repair or replace it at our discretion.

### FCC NOTE:

THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.)

**Shark Jaw Toys**

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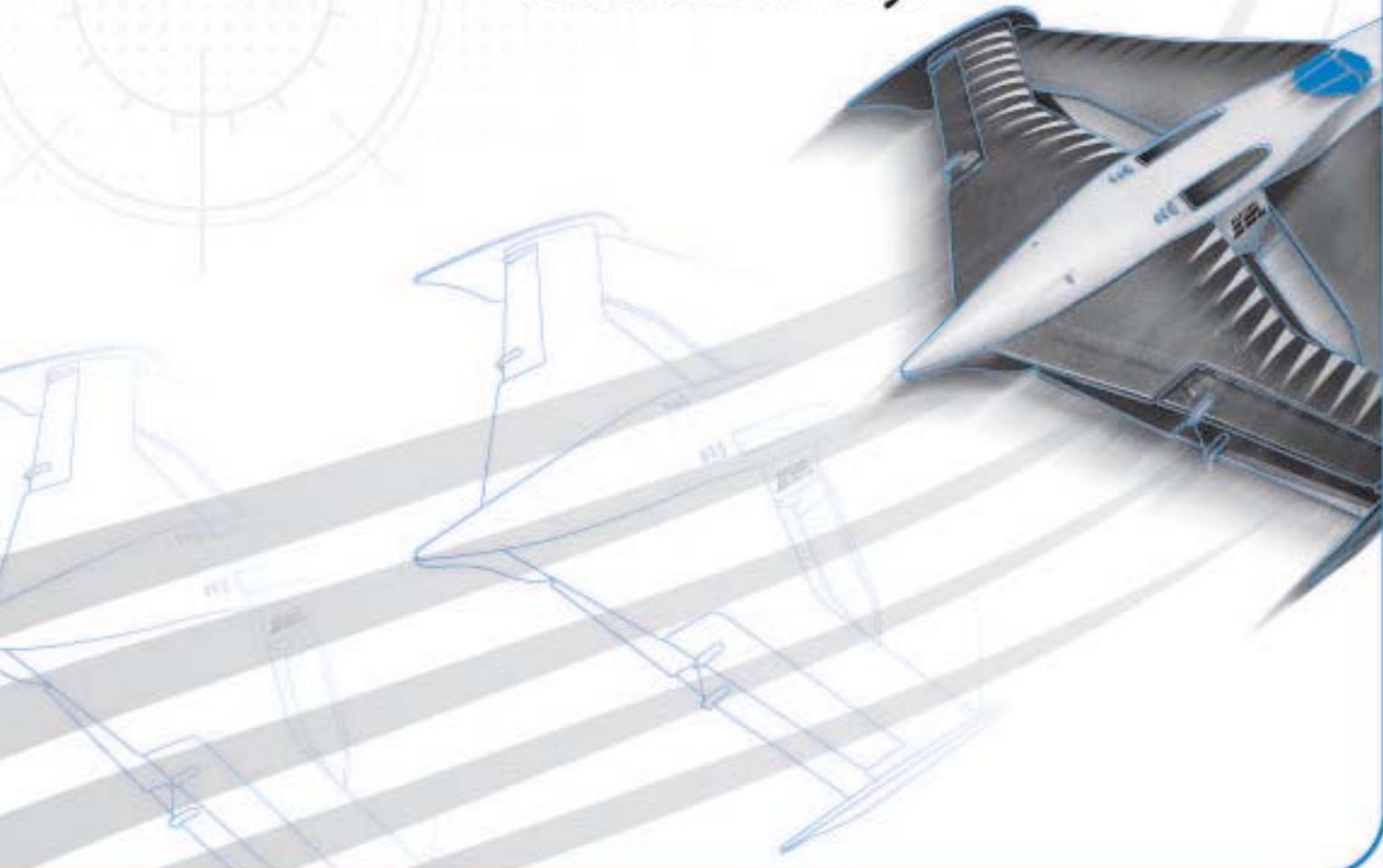
SKY SPORT



# MOKO Jet

## INSTRUCTION MANUAL

*How to  
Attack The Sky!*



# Get Ready For A Jet-Powered Experience Like No Other

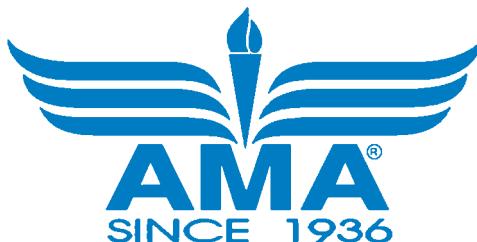
At **Shark Jaw Toys**, we're committed to breaking through the barriers of traditional aircraft design and providing you with revolutionary flight performance – and the explosive action of the **MAKO Jet** is no exception.

To ensure safe and successful piloting, we recommend that you thoroughly read ***all*** of the **MAKO JET INSTRUCTION MANUAL** before flying your aircraft.

Your **MAKO Jet** comes complete with everything you need to "**Attack the Sky.**" There is nothing to assemble. You will only need to charge the battery and do a preflight inspection before takeoff.

Your 2gRC radio control system gives you precision control and stunning aerobatic capabilities. Importantly, if you are not familiar with flying radio-controlled aircraft, we recommend you seek the guidance of an experienced radio control pilot during your beginning flights.

**PLEASE NOTE:** Crash damage is not covered under the warranty.



The **Academy of Model Aeronautics** welcomes you to the exciting world of Radio Control (RC) model aviation. As the world's largest sport aviation organization, we invite you to visit our website and see the tremendous variety of aircraft and events that are open to you, along with a wealth of helpful information and tips. We also hope you will consider becoming a member of the AMA and join the thousands of enthusiasts with access to our club-supported flying sites all over the country.

Just go to [www.modelaircraft.org](http://www.modelaircraft.org) and click on the "Join The AMA Now!" tab.

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