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**Bell Boeing**

# Instruction Manual

# V-22 OSPREY



7 channel outdoor TILT ROTOR VTOL

**Specifications:**

|                        |   |
|------------------------|---|
| <b>Motors:</b>         | 2x 3000KV 400 Watt brushless outrunner                  |
| <b>ESC:</b>            | 2x 45A brushless with governor mode                     |
| <b>Battery:</b>        | 2x 4S1P 2200mAh 30C LIPO                                |
| <b>Gyro:</b>           | 3x AVCS – Heading Hold Gyro                             |
| <b>Transmitter:</b>    | 7ch digital proportional aux channel for tilt           |
| <b>Rotor diameter:</b> | 25.3 in / 645mm   |
| <b>Length:</b>         | 38.6 in / 980mm   |
| <b>Height:</b>         | helicopter: 12.6in / 320mm, airplane: 7.1in / 180mm     |
| <b>Weight:</b>         | standard profile version 5.5lbs / 2.5kg take off weight |
| <b>Servo:</b>          | 4x Rotormast 5085MG cyclic, 2x Rotormast 5085MG tilt    |
| <b>Controller:</b>     | Rotormast V-22 Controller                               |



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## **Introduction**

Based on a unique control unit, the ROTORMAST V-22 OSPREY profits from an outstanding design as well as from perfect outdoor usability due to the 7 channel control system. With acrobatic flight capability and a fully gyro stabilized controller, the ROTORMAST V-22 OSPREY is intended for intermediate helicopter pilots or intermediate airplane pilots. And although the ROTORMAST V-22 OSPREY is easy to control right out of the box, please take the time to read through this manual completely in order to assure you are getting the maximum out of this stunning and technically top edge product.

## **Warning**

A RC aircraft is not a toy! If misused, it can cause serious bodily harm and damage to property. Fly only in open areas, preferably at AMA (Academy of Model Aeronautics) approved flying sites, following all instructions included with your radio. Keep loose items that can get entangled in the rotor blades away from the main blades, including loose clothing, or other objects such as pencils and screwdrivers. Especially keep your hands away from the rotor blades. Have in mind that the V-22 propeller diameter in relation to its wingspan, other than common aircraft, is large. Rotors become invisible once spinning.

## **Before Starting Assembly**

Before starting any assembly and preparing your ROTORMAST V-22 OSPREY for flight, remove each component from the box for inspection. Closely inspect all components for damage. If you find any damaged or missing parts, contact the place of purchase.

## **Note on Lithium Polymer Batteries**

Lithium Polymer batteries are significantly more volatile than alkaline or Ni-Cd/Ni-MH batteries used in RC applications. All manufacturer's instructions and warnings must be followed closely. Mishandling of Li-Po batteries can result in fire. Always follow your local waste disposal instructions when disposing of Lithium Polymer batteries.

## **Using the Manual**

This manual is divided into sections to help make assembly, adjustment and preparing for flight easier to understand, and to provide breaks between each major section. Remember to take your time and follow all directions.

## **Safety Precautions**

This is a sophisticated hobby product and not a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision.



The product manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or injury.

### **Safety, Precautions and Warnings**

As the user of this product you are solely responsible for operating it in manner that does not endanger yourself and others or result in damage to the product or the property of others. This model is controlled by a radio signal that is subject to interference from many sources outside your control. This interference can cause momentary loss of control so it is advisable to always keep a safe distance in all directions around your model, as this margin will help to avoid collisions or injury.

- Never operate your model with low transmitter batteries.
- Always operate your model in an open area away from cars, traffic, or people.
- Avoid operating your model in the street where injury or damage can occur.
- Never operate the model out into the street or populated areas for any reason.
- Carefully follow the directions and warnings for this and any optional support equipment that you use.
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.
- Never lick or place any portion of your ROTORMAST V-22 OSPREY in your mouth as it could cause serious injury or even death.

### **Locking**

As with any RC model helicopter, all fasteners installed into metal parts must use blue loctite® #222 and all bearings installed in holders must use red loctite® #641.

### **ROTORMAST V-22 OSPREY STANDARD PROFILE ARF KIT Contents**

|      |  |
|------|--|
| No.: | Intro Sheet                            |
| 1.   | Profile Fuselage, Wings and Tail group |
| 2.   | Mechanics Sets                         |
| 3.   | Blades                                 |
| 4.   | ROTORMAST V-22 VTOL Controller         |
| 5.   | Wiring set                             |
| 6.   | Conversion servos                      |
| 7.   | USB PC adapter cable                   |
| 8.   | Rotormast Box Wrench                   |
| 9.   | Accessories                            |

### **ROTORMAST V-22 OSPREY SCALE ARF KIT Contents (in addition to above)**

|     |   |
|-----|---|
| 10. | Scale Fuselage, Wings and Tail group        |
| 11. | Scale Spinner set with mounts and screws    |
| 12. | Scale nacelle covers with mounts and screws |
| 13. | Scale conversion servo covers               |



**Required Consumables:**

- Blue thread lock
- Red thread lock
- 30 minute epoxy
- CA or Supper Glue
- Foam backed tape
- Sandpaper
- Light oil
- Tape

**Tools:**

- Hobby knife
- Hex screw driver set
- Phillips screw driver set
- Needle nose pliers
- Diagonal cutting pliers
- Soldering equipment
- Wire strippers

**Tilt Rotor Terms and Definitions**

**Conversion** - going between helicopter mode and airplane mode

**Nacelle**- the tilting part of the aircraft that houses the motors and transmission

**Conversion Spindle**- tilting axis for the nacelle

**Conversion Servo**- multi turn servo used to drive nacelle position

**Pitch**- rotating the aircraft around the pitch axis (elevator, nick)

**Yaw**- rotating the aircraft around the vertical axis (rudder)

**Roll**- rotating the aircraft around longitudinal axis (aileron)

**Collective pitch**- changing all the blades pitch the same amount

**Cyclic**-Changing the blades pitch by tilting the swash plate

**TX**- transmitter

**RX** receiver

**Battery elimination circuit**- (BEC) Used to power components with 5V from your main battery instead of using a separate receiver battery

**Electronic Speed Controller**- (ESC)

Term: Pitch, Elevator, Fore/Aft cyclic or Nic, have the same meaning

Term: Collective Pitch is not the same as Pitch

Term: Yaw and Rudder, have the same meaning

Term: Roll and Aileron, have the same meaning

The Throttle and Collective Pitch stick are combined; this is typical for model helicopters