**Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wing Span</td>
<td>49 in / 1240mm</td>
</tr>
<tr>
<td>Wing Area</td>
<td>818 sq in / 52.8 sq dm</td>
</tr>
<tr>
<td>Flying Weight</td>
<td>8.1 lbs / 3700 g</td>
</tr>
<tr>
<td>Fuselage Length</td>
<td>52.5 in / 1330 mm</td>
</tr>
</tbody>
</table>

*Specifications are subject to change without notice.*

**Warning**! This model is not a toy.
It is designed for maximum performance. Please seek advice if one is not familiar with this kind of engine powered precision model. Operating this model without prior preparation may cause injuries. Remember, safety is the most important thing. Always keep this instruction manual at hand for quick reference.

**FACTORY PRE-FABRICATED**
**ALMOST-READY-TO-FLY (ARF) SERIES**
**MADE IN CHINA**
BEFORE YOU BEGIN

1. Read through the manual before you begin, so you will have an overall idea of what to do.

2. Check all parts. If you find any defective or missing parts contact your local dealer. Please DRY FIT and check for defects for all parts that will require CA or Epoxy for final assembly. Any parts you find to be defective after the gluing process may be difficult to remove for warranty replacement. The manufacturer will replace any defective parts, but will not extend to the parts that are good before gluing to defective parts during assembly.

3. Symbols used throughout this instruction manual comprise of the following:

- **Apply epoxy glue.**
- **Apply instant glue (C.A.glue, super glue.)**
- **Assemble left and right sides the same way.**
- **Ensure smooth non-binding movement while assembling.**
- **Peel off shaded portion covering film.**
- **Cut off shaded portion.**
- **Drill holes with the specified diameter (here: 3mm).**
- **Must be purchased separately!**
- **Pay close attention here!**
- **Warning! Do not overlook this symbol!**
- **Pierce the shaded portion covering film.**
1 Main Wing (Lower)

- Aileron Servo
- Main Wing (Lower)
- CABANE MOUNT
- Aileron Servo Lead

2 Aileron Servo (Lower)

- PM2x20mm Screw

- Ø1mm pilot holes for World Models tri-horn are pre-drilled. Please look for pin-hole marks at under side of control surfaces.

- Pushrod Ø1.8x70mm

- Completed
3 Main Wing (Upper)

![Main Wing (Upper) diagram]

4 Stabilizer & Elevator

![Stabilizer & Elevator diagram]

5 Vertical Fin & Rudder

![Vertical Fin & Rudder diagram]
6 Tail Landing Gear

PA3x12mm Screw  
2.6mm Collar  

M3x3mm Set Screw

7 Rudder Pullwire

PM2x20mm Screw  
M2 Nut  

Ø1mm pilot holes for World Models tri-horn are pre-drilled. Please look for pin-hole marks at side of control surfaces.

8 Elevator Pushrod

PM2x20mm Screw  

Ø1mm pilot holes for World Models tri-horn are pre-drilled. Please look for pin-hole marks at under side of control surfaces.
9 Main Landing Gear

- PM5x50 mm Screw (2)
- M5 Nut (2)
- PM4x16 mm Screw (4)
- d4xD12 mm Washer (4)
- d5xD12 mm Washer (2)
- 5.1 mm Collar (4)
- M3x18 mm NYLON BOLT (2)
- M3 Nut (2)

- Blind nuts are off-centered to keep the spinner at the fuselage axis.

10 Engine Mount

- PM4x30 mm Screw (4)
- d4xD12 mm Washer (4)
- Apply thread locker to screws.

11 Fuel Tank

- Install Balsa 8x8x129 mm (For Fixing Fuel Tank)
- Fuel Tank 450 cc

- Install Balsa 8x8x129 mm
- Fuel Tank 450 cc
12 Servo Set

Please refer to attached sheet for linkage connector installation.

13 Engine

<table>
<thead>
<tr>
<th>M4x35mm SOCKET HEAD SCREW</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>M4 NYLON INSERT LOCK NUT</td>
<td>4</td>
</tr>
<tr>
<td>d4xD12mm Washer</td>
<td>8</td>
</tr>
</tbody>
</table>

ANTIVIBRATION MOUNT INSTALLATION

1. Copper Tube d4.1xD5x7.2mm
2. KM3x20mm Screw
3. Copper Tube d4.1xD5x7.2mm
4. M3 Nylon Insert Lock Nut
5. 4mm Nylon Insert Lock Nut
6. d4x12mm Washer
7. 6x12mm Washer
8. M4x35mm Socket Head Screw

Install Engine position

- Throttle Pushwire
  - Ø1.2x480mm
  - w/Plastic Tube d2xD3x370mm

- 137mm
  - 5.39 in.
14 Radio Equipment

- Install and arrange the servo as shown in the diagram.

15 Canopy

- First insert the grommet to the canopy then apply screw.

16 Cowling & Spinner

- First insert the grommet to the cowling then apply screw.
17 Main Wing (Lower)

- PM4x40mm Screw: 1
- PM4x30mm Screw: 2
- d4x15mm Washer: 3

![Bottom View](image)

18 Main Wing

- PM3x16mm Screw: 13
- PM3x20mm Screw: 1
- d3x7mm Washer: 28
- M3 Nylon Insert Lock Nut: 14

![Image]

Pierce the two pre-drill holes at upper wing center cabane mount and fasten the center cabanes with PM3x16mm & PM3x20mm screw and nut. With the lower wing fastened to the fuselage, insert the wing incidence angle templates to both sides of upper and lower wing to hold the upper wing in position. Drill and fasten the center wing cabane with PM3x16mm & PM3x20mm screw and nut.

With the wing incidence angle template still in place, position the side cabanes, mark and drill the side cabane mounts and fasten with PM3x16mm screw and nut.

![Image]

Outer wing cabane should fit to the outside of outer wing cabane mounts.
19 Main Wing

- Ø1mm pilot holes for World Models horn are pre-drilled. Please look for pin-hole marks at under side of control surfaces.

20 Wing Setting

- Adjust the wing and fuselage configuration as in the diagrams.
**Important Safety Precautions**

# First time flyer should never fly by himself / herself. Assistance from experienced flyer is absolutely necessary.

# Pre-flight adjustment must be done before flying, it is very dangerous to fly a badly pre-adjusted aircraft.

# **Ultimate - 90** is specially designed to be powered by 4-stroke 0.91 engine using a more powerful engine does not mean better performance. In fact, over powered engine may cause severe damage and injuries.

# Make sure the air field is spacious, never fly the plane too close to people and never get too close to a running propeller.

# If you find wrinkles on the covering as a result of weather changes, you can use hot iron to remove the wrinkles. Please begin with lower temperature setting and gradually raise the temperature until the wrinkles are gone. Too hot an iron may damage the covering.

# Check and re-tighten up all factory assembled screws, use thread locker if applicable.

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**21 Control Throws**

Adjust the control throws as shown in the diagram. These throws are good for general flying. You can adjust according to your personal preference.

- **Elevator**
  - 50mm
  - 50mm

- **Rudder**
  - 80mm
  - 80mm

- **Ailerons**
  - 15mm
  - 15mm

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**22 C.G.**

The ideal C.G. position is 120mm (4.72 in.) behind the leading edge measured at top wing center line. In order to obtain the C.G. specified, add weight to the fuselage or move the battery position. Check the C.G. before flying.

---

**Warning!**

The ideal C.G. position is 120mm (4.72 in.) behind the leading edge measured at top wing center line. In order to obtain the C.G. specified, add weight to the fuselage or move the battery position. Check the C.G. before flying.

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**A2240512**

P.11