**Ultimate -120R**

1.20 cu. in. displacement 4-stroke
Requires: 4 channel radio w/5 standard servos

<table>
<thead>
<tr>
<th>Specifications</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Wing Span</td>
<td>53.5 in / 1360 mm</td>
</tr>
<tr>
<td>Wing Area</td>
<td>990 sq in / 64 sq dm</td>
</tr>
<tr>
<td>Flying Weight</td>
<td>10 lbs / 4480 g</td>
</tr>
<tr>
<td>Fuselage Length</td>
<td>56.0 in / 1420 mm</td>
</tr>
</tbody>
</table>

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.

* Specifications are subject to change without notice.*

FACTORY PRE-FABRICATED
ALMOST-READY-TO-FLY (ARF) SERIES
MADE IN CHINA

The World Models Manufacturing Co., LTD.
www.theworldmodels.com
Read through the manual before you begin, so you will have an overall idea of what to do.

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 be difficult to extend to the good parts that are good before gluing to defective parts during assembly. Warranty will not cover any parts modified by customer.

Symbols used throughout this instruction manual comprise of the following:

- **Apply epoxy glue.**
- **Apply instant glue (C.A. glue, super glue.)**
- **Apply thread locker**
- **Must be purchased separately!**
- **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).**
- **Pierce the shaded portion covering film.**
- **Pay close attention here!**
- **Warning! Do not overlook this symbol!**
## Parts List

1. **MAIN WING (Lower)** -- 1 pc.
2. **TRI-HORN M3x14mm (L)** -- 2 sets
3. **CLEVIS** -- 2 pcs
4. **STRAPER** -- 2 pcs
5. **PUSHROD Ø1.8x95mm w/Threads (For Aileron)** -- 2 pcs
6. **FUEL TUBE Ø6x5mm** -- 4 pcs.
7. **SCREW PB2x20mm** -- 6 pcs
8. **SCREW PWA2x8mm** -- 8 pcs
9. **SERVO MOUNTING PANEL (For Aileron Servo)** -- 1 pair
10. **MAIN WING (Upper)** -- 1 pc.
11. **STABILIZER & ELEVATOR** -- 1 set
12. **STABILIZER TUBE D9.5x275mm** -- 1 pc.
13. **WIRE Ø3x156mm** -- 1 pc.
14. **SCREW PWA3x12mm** -- 2 pcs
15. **VERTICAL FIN & RUDDER** -- 1 set
16. **TRI-HORN M3x22mm (L) (w/o-Base For Rudder)** -- 2 sets
17. **CLEVIS** -- 2 pcs
18. **FUEL TUBE Ø6x5mm** -- 2 pcs
19. **RIGGING COUPLER Ø1.8x27mm w/Threads (For Rudder)** -- 2 pcs
20. **COPPER TUBE d2.5xD3.2x8mm (For Rudder)** -- 2 pcs
21. **SCREW PM2x20mm** -- 3 pcs
22. **M2 NUT** -- 3 pcs
23. **WASHER d4xD9mm** -- 3 pcs
24. **WASHER d3xD7mm** -- 3 pcs
25. **WASHER d5xD12mm** -- 3 pcs
26. **COLLAR 5.2mm w/set screw** -- 4 sets
27. **PLATE 1mm** -- 1 pair
28. **ENGINE MOUNT PL5111080** -- 1 set
29. **SOCKET HEAD SCREW M4x30mm** -- 4 pcs
30. **WASHER d4xD12mm** -- 4 pcs
31. **SCREW KM3x20mm** -- 8 pcs
32. **NYLON INSERT LOCK NUT M3** -- 8 pcs
33. **NYLON INSERT LOCK NUT M4** -- 4 pcs
34. **THROTTLE PUSHWIRE Ø1.2x400mm** -- 1 set
35. **W/Plastic tube d2x3x250mm** -- 1 pc.
36. **ALUMINUM PLATE (For Engine Mount)** -- 1 pc.
37. **ANTI-VIBRATION MOUNT PL5214094** -- 1 set
38. **INCLUDE: SOCKET HEAD SCREW M4x35mm** -- 4 pcs
39. **SCREW KM3x20mm** -- 8 pcs
40. **WASHER d4xD12mm** -- 8 pcs
41. **NYLON INSERT LOCK NUT M3** -- 8 pcs
42. **NYLON INSERT LOCK NUT M4** -- 4 pcs
43. **PUSHROD Ø1.8x120mm (For Elevator Servo)** -- 1 pc.
44. **PUSHROD CONNECTOR** -- 1 set
45. **STRAPER** -- 1 pc.
46. **FUEL TUBE Ø6x5mm** -- 1 pc.
47. **COPPER TUBE d2.5xD3.2x8mm (For Rudder Servo)** -- 2 pcs
48. **SPONGE** -- 1 pc.
49. **RIGGING Z BEND Ø1.8x27mm (For Rudder Servo)** -- 2 pcs
50. **PLYWOOD 6x61x136mm (For Rudder Servo)** -- 1 pc.
51. **BASLA 10x10x61mm (For Rudder Servo Stand)** -- 2 pcs
52. **CANOPY** -- 1 pc.
53. **PILOT** -- 1 pc.
54. **DOUBLE-SIDED TAPE** -- 1 pc.
55. **SCREW PWA2.3x8mm** -- 4 pcs
56. **SCREW PWA3x12mm** -- 2 pcs
57. **SILICON GROMMET d1.5xD6.5mm (For Canopy)** -- 4 pcs
58. **COWLING** -- 1 set
59. **TRANSPARENT 3D TEMPLATE** -- 1 pc.
60. **SPINNER Ø70mm (w/aluminum back plate)** -- 1 pc.
61. **SCREW PWA2.6x12mm** -- 4 pcs
62. **SILICON GROMMET d1.5xD6.5mm (For Cowling)** -- 4 pcs
63. **SCREW PM4x45mm** -- 1 pc.
64. **SCREW PM4x35mm** -- 2 pcs
65. **SCREW PM4x35mm** -- 2 pcs
66. **SCREW PM5x35mm** -- 1 pc.
67. **SCREW PM4x35mm** -- 2 pcs
68. **WASHER d3xD7mm** -- 28 pcs
69. **M3 NYLON INSERT LOCK NUT** -- 14 pcs
70. **PLYWOOD 6x147x247mm (Side Cabane)** -- 2 pcs
71. **PLYWOOD 6x22x40mm** -- 4 pcs
72. **PLYWOOD 3x26x331mm (Wing Incidence Angle Template)** -- 2 pcs
73. **CENTER WING CABANE** -- 1 set
74. **SCREW PM3x16mm** -- 13 pcs
75. **SCREW PM3x20mm** -- 1 pc.
76. **M3 NYLON INSERT LOCK NUT** -- 14 pcs
77. **PUSHROD M2x235mm w/Threads (For Aileron)** -- 2 pcs
78. **CLEVIS** -- 4 pcs
79. **FUEL TUBE Ø6x5mm** -- 4 pcs
80. **HORN** -- 4 sets
81. **SCREW PB2x12mm** -- 8 pcs
82. **DECALS A021RDEC** -- 1 set

### Covering:

**Purple Color Scheme:**
- TOUGHLON STL 100 WHITE
- TOUGHLON STL 201 BLACK
- TOUGHLON STL 561 PEARL PURPLE
- TOUGHLON STL 370 SILVER

**Yellow Color Scheme:**
- TOUGHLON STL 100 WHITE
- TOUGHLON STL 201 BLACK
- TOUGHLON STL 330 CADMIUM YELLOW
- TOUGHLON STL 370 SILVER

**COVING:**
1 Main Wing (Lower)

- Aileron Servo (Lower)
- PB2x20mm Screw
- PWA2x8mm Screw

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

- Completed

P. 3
3 Main Wing (Upper)

4 Stabilizer & Elevator

5 Vertical Fin & Rudder
6 Tail Landing Gear

- PA3x12mm Screw 2
- 2.6mm Collar 1
- M3x3mm Set Screw
- PA3x12mm
- 2.6mm Collar

7 Rudder Pullwire

- PM2x20mm Screw 3
- M2 Nut 3
- Ø1mm pilot holes for World Models tri-horn are pre-drilled. Please look for pin-hole marks at under side of control surfaces.

8 Elevator Pushrod

- PB2x20mm Screw 6
- Ø6x5mm Fuel Tube
- Elevator Pushrod Ø1.8x645mm
- Tri-horn M3x22mm (L)
9 Main Landing Gear

- **Fuel Tank 450cc**
  - Install Basa 10x10x144mm (For Fuel Tank Position Fixing)

- **Engine Mount**
  - **M4x30mm Socket Head Screw**
  - **d4xD12mm Washer**
  - **M4x16mm Socket Head Screw**
  - **d4xD9mm Washer**
  - **d5xD12mm Washer**
  - **5.2mm Collar**

- **Apply thread locker to screws.**

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

10 Engine Mount

- **Bottom View**

- **Fuel Tank**
  - **Top View**
  - **Completed**

- **Bottom View**

- **Completed**
12 Servo Set

- 3x3mm Set Screw
- Linkage Connector
- M2 Nut
- 2mm Washer

Included with the radio Set.

Please refer to attached sheet for linkage connector installation.

13 Engine

- M4x35mm SOCKET HEAD SCREW
- M4 NYLON INSERT LOCK NUT
- d4xD12mm Washer

ANTI-VIBRATION MOUNT INSTALLATION

1. Copper Tube d4.1x65x7.2mm
2. KM3x20mm Screw
3. L/R
4. M3 Nylon Insert Lock Nut
5. d4x12mm Washer
6. M4x35mm Socket Head Screw

Make sure the rounded edges are facing the shock absorbing SILICON PAD.

Installed Engine Position

150mm

5.9 in.

Throttle Pushwire Ø1.2x400mm w/Plastic Tube d2xD3x250mm
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

- Please refer to the attached sheet for usage of the transparent 3D template.
- First insert the grommet to the cowling then apply screw.
**Main Wing (Lower)**

- **PM4x45mm Screw**: 1
- **PM4x35mm Screw**: 2
- **d4xD15mm Washer**: 3

**Bottom View**

- **PM4x35mm Screw**: 4
- **d4xD15mm Washer**: 5

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**Main Wing**

- **PM3x16mm Screw**: 13
- **PM3x20mm Screw**: 1
- **d3xD7mm Washer**: 28
- **M3 Nylon Insert Lock Nut**: 14

**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 PM3x16 mm screw and nut.

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**WING INCIDENCE ANGLE TEMPLATE**

**PLYWOOD 3x264x331mm**

**SIDE CABANE**

**PLYWOOD 6x147x247mm**

**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.**

**Outer wing cabane should fit to the outside of outer wing cabane mounts.**

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P. 9
19 Main Wing

- Ø1mm pilot holes for World Models tri-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.
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
- Rudder: 80mm
- Ailerons: 15mm

The ideal C.G. position is 150mm (5.9 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!

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 120R is specially designed to be powered by 4-stroke 1.20 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. Don't use hot iron near the seams or edges, hot iron will melt the glue and shrink the covering at the same time, causing the seams to pull away.

# Check and re-tighten up all factory assembled screws, use thread locker if necessary.
Usage of the transparent 3D template

This transparent 3D template is used for position guidance of the actual cutting of the pre-painted cowling.

Simply cut the transparent 3D template to fit your engine and exhaust pipe, then slide onto the actual cowling and use as template to mark the openings required for final cutting.
After fastening the round nut, make sure that the linkage connector can rotate freely.

Drill 2mm hole at servo horn.

Insert linkage connector into servo horn.

Make sure shoulder of screw is cleared from servo horn. Add washer to reduce play if necessary.

Shoulder

Tighten up the round nut against the shoulder. Apply CA or permanent thread locker.

Product Registration Form (US Customers)

We would like to share with you any relevant information regarding your model, including product news and free upgrade parts when applicable. Please fill in the following and send to AirBorne Models, 4749-K, Bennett Drive, Livermore, CA 94551 USA.

1. Name:________________________________________________________

2. Address:______________________________________________________

3. Phone #:________________________ E-mail:_______________________

4. Model:________________________________________________________

Wing QC#_________ Fuselage QC# _____________________________
(QC numbers are stamped on wing and fuselage)

5. Date of Purchase:____________________________________________

6. Store Name:__________________________________________________

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