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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wing Span</td>
<td>98 in / 2490mm</td>
</tr>
<tr>
<td>Wing Area</td>
<td>3300 sq in / 213 sq dm</td>
</tr>
<tr>
<td>Flying Weight</td>
<td>38-40 lbs / 17250-18160 g</td>
</tr>
<tr>
<td>Fuselage Length</td>
<td>104 in / 2640mm</td>
</tr>
</tbody>
</table>

* Specifications are subject to change without notice.*
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. Warranty will not cover any parts modified by customer.

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

- Apply epoxy glue.
- Assemble left and right sides the same way.
- Peel off shaded portion covering film.
- Drill holes with the specified diameter (here: 3mm).
- Pay close attention here!
- Pierce the shaded portion covering film.

- Apply instant glue (C.A.glue, super glue.)
- Ensure smooth non-binding movement while assembling.
- Cut off shaded portion.
- Must be purchased separately!

- Warning! Do not overlook this symbol!
- Apply thread locker

P.1
### Parts List

1. **MAIN WING (Upper Wing)** — 1 pair
   MAIN WING (Lower Wing) — 1 pair
   METAL HINGES — 32 pcs

2. **HEAVY DUTY SERVO HORN PL4120350** — 4 sets
   SCREW PM3x12mm — 4 pcs
   WASHER 0.5xD7mm — 4 pcs
   COLLAR 0.5mm x/with screw — 4 sets
   M5 NYLON INSERT LOCK NUT — 2 pcs
   MAIN WHEEL Ø128mm PL31113127 — 2 pcs
   WHEEL PANTS — 1 pair
   ALUMINUM PLATE — 2 pcs

3. **HEAVY DUTY SERVO HORN PL4120300** — 2 sets
   SCREW M4x130mm — 1 pc.
   SCREW PM2.5x30mm — 1 pc.
   M2.5 NYLON INSERT LOCK NUT — 1 pc.
   M4 NYLON INSERT LOCK NUT — 4 pcs
   HEAVY DUTY HORN BRACKET PL4610010 — 4 sets
   PUSHROD Ø2.5x110mm w/Threads (For Elevator) — 4 pcs
   WOODEN 6x10x21mm (For Elevator Servo Stand) — 8 pcs

4. **Upper Engine Box Side Plate**
   8x127x581mm (F8L) — 1 pc.

5. **FUSELAGE** — 1 pc.
   STABILIZER & ELEVATOR — 1 set
   HEAVY DUTY HORN BRACKET PL4112400 — 2 sets
   SCREW M4x10mm — 4 pcs
   HEAVY DUTY SERVO HORN PL4120300 — 2 sets
   METAL HINGES — 6 pcs
   HEAVY DUTY SERVO HORN PL4610010 — 8 sets
   HEAVY DUTY CLEVIS PL4112200 — 8 sets
   HEAVY DUTY CLEVIS PL4112400 — 2 sets
   SWIVEL CLEVIS HORN FAIRING PL4610020 — 1 set
   HEAVY DUTY CLEVIS HORN FAIRING PL4610020 — 1 set

6. **FUEL TANK**
   1500cc (Gasoline Fuel) PL1121500G — 1 set
   FUEL TANK HOLD DOWN PLATE 3x130x239mm (F15A) — 1 pc.
   FUEL TANK HANGER PL31113127 — 2 pcs
   SOCKET HEAD SCREW M3x6mm — 4 pcs
   WASHER d3xD7mm — 2 pcs
   SPONGE Ø10x5x200mm — 1 pc.
   CABLE TIE 400mm — 2 pcs

7. **BLIND NUT M5** — 4 pcs
   SOCKET HEAD SCREW M6x50mm — 4 pcs
   WASHER Ø6x10mm — 4 pcs
   WIRE Ø1.2x800mm — 1 pc.
   THRUST PUSHiRE Ø1.2x800mm — 1 pc.
   PLASTIC TUBE d24x3x600mm — 1 pc.
   SPONGE 10x8x200mm — 1 pc.
   150mm PH22W1500 — 1 pc.

8. **WING TUBE**
   1.2x800mm — 1 pc.
   1.5x8000mm — 1 pc.

9. **MAIN LANDING GEAR** — 1 set
   SOCKET HEAD SCREW M6x20mm — 4 pcs
   AXLE SHAFT Ø15x47mm — 2 pcs
   SCREW PM3x19mm — 4 pcs
   WASHER Ø3xD7mm — 4 pcs
   COLLAR Ø5.1mm w/setting screw — 4 sets
   M5 NYLON INSERT LOCK NUT — 2 pcs
   MAIN WHEEL Ø128mm PL31113127 — 2 pcs
   WHEEL PANTS — 1 pair
   ALUMINUM PLATE — 2 pcs

10. **PUSHROD Ø2.5x180mm with Threads (For Rudder)** — 2 pcs
    PUSHROD M3x35mm w/Threads (For Rudder) — 2 pcs
    HEAVY DUTY SERVO HORN PL4120300 — 2 sets
    M4 NYLON INSERT LOCK NUT — 4 pcs
    HEAVY DUTY HORN BRACKET PL4610010 — 4 sets
    PUSHROD Ø2.5x100mm w/Threads (For Elevator) — 4 pcs
    WOODEN 6x1x10mm (For Elevator Servo Stand) — 8 pcs

11. **WIRE 0.1x5x50mm** — 2 pcs
    WIRE 0.1x5x50mm — 2 pcs
    COLLAR Ø3.6mm with screw — 4 sets
    COPPER TUBE Ø5.9x5.9x4.1mm — 10 mm — 4 sets
    PLATE (For Stays 1) 5.1x15mm — 1 pc.
    PLATE (For Stays) 1.5mm — 6 pcs

12. **FUEL TANK**
    1500cc (Gasoline Fuel) PL1121500G — 1 set
    FUEL TANK HOLD DOWN PLATE 3x130x239mm (F15A) — 1 pc.
    FUEL TANK HANGER PL31113127 — 2 pcs
    SOCKET HEAD SCREW M6x20mm — 2 pcs
    WASHER d3xD7mm — 2 pcs
    SPONGE Ø10x5x200mm — 1 pc.
    CABLE TIE 400mm — 2 pcs

13. **COWLING**
    1 pc.
    SILICON GROMMET d1.5xD6.5mm — 4 pcs
    SCREW PM2.5x30mm — 4 pcs
    ALUMINUM PLATE — 2 pcs

14. **DECALS**
    1 set
    SILICON GROMMET d2.5xD8.5mm — 6 pcs
    SCREW PWA3x12mm — 6 pcs

15. **FUSelage**
    1 pc.
    SILICON GROMMET d1.5xD6.5mm — 4 pcs
    SCREW PM3x12mm — 4 pcs
    ALUMINUM PLATE — 2 pcs

16. **Landing Gear**
    1 set
    WIRE Ø1.2x800mm — 1 pc.
    THRUST PUSHiRE Ø1.2x800mm — 1 pc.
    PLASTIC TUBE d24x3x600mm — 1 pc.
    SPONGE 10x8x200mm — 1 pc.
    150mm PH22W1500 — 1 pc.

17. **Blind Nut M6** — 4 pcs
    SOCKET HEAD SCREW M6x50mm — 4 pcs
    WASHER Ø6x10mm — 4 pcs
    WIRE Ø1.2x800mm — 1 pc.
    THRUST PUSHiRE Ø1.2x800mm — 1 pc.
    PLASTIC TUBE d24x3x600mm — 1 pc.
    SPONGE 10x8x200mm — 1 pc.
    150mm PH22W1500 — 1 pc.

18. **WING TUBE**
    1.2x800mm — 1 pc.
    1.5x8000mm — 1 pc.

19. **Cockpit**
    1 pc.

20. **Center Wing Cabane** — 1 set
    ALUMINUM PLATE — 2 pcs
    SCREW PM3x16mm — 2 pcs
    WASHER d3xD7mm — 16 pcs
    PLYWOOD 6x20x205mm (F3B) — 4 pcs
    ENGINE BOX SIDE PLATE 8x127x573.4mm (FBR) — 1 pc.
    ENGINE BOX SIDE PLATE 8x127x518mm (FBL) — 1 pc.

21. **Fire Wall**
    12x199x184mm (F9) — 1 pc.

22. **Upper Plate**
    3x159x211mm (F9A) — 1 pc.
    LOWER PLATE 3x159x210mm (F9B) — 1 pc.
    BALSA 9x9x213mm (F9C) — 2 pcs
    BALSA 9x9x109mm (F9E) — 2 pcs
    BALSA 9x9x109mm (F9F) — 1 pc.
    BALSA 9x9x109mm (F9G) — 1 pc.
    BALSA 9x9x70mm (F9H) — 2 pcs
    BALSA 9x9x90mm (F9J) — 2 pcs
    WOOD 6.6x25x210mm (F10) — 4 pcs
    Balsa 10x10x143mm (F63C) — 1 pc.

23. **Center Wing Cabane** — 1 set
    ALUMINUM PLATE — 2 pcs
    SCREW PM3x16mm — 2 pcs
    WASHER d3xD7mm — 4 pcs
    WIRE Ø1.2x800mm — 1 pc.
    THRUST PUSHiRE Ø1.2x800mm — 1 pc.
    PLASTIC TUBE d24x3x600mm — 1 pc.
    SPONGE 10x8x200mm — 1 pc.
    150mm PH22W1500 — 1 pc.
    ALUMINUM PLATE — 2 pcs
    SILICON GROMMET d1.5xD6.5mm — 4 pcs

24. **Center Wing Cabane** — 1 set
    ALUMINUM PLATE — 2 pcs
    SILICON GROMMET d1.5xD6.5mm — 4 pcs

25. **DECALS**
    1 set

---

**COVERING:**

- **PURPLE COLOR SCHEME:**
  - TOUGHLON STL 100 WHITE
  - TOUGHLON STL 201 BLACK
  - TOUGHLON STL 370 SILVER

- **YELLOW COLOR SCHEME:**
  - TOUGHLON STL 100 WHITE
  - TOUGHLON STL 201 BLACK
  - TOUGHLON STL 370 SILVER
**1 Main Wing**

- Replace CA hinges by metal hinges. Glue the metal hinges to wing and aileron by epoxy.

**Main Wing (Lower)**

**Main Wing (Upper)**

**2 Aileron Servo (Upper Wing)**

- **PM4x50mm Screw**: 4
- **M4 Nylon Insert Lock Nut**: 4

Drill and tap the swivel clevis horn locations for M4 machine screw.

- **Heavy Duty Horn Bracket**
- **M4 Nylon Insert Lock Nut**
- **Heavy Duty Clevis**
- **Pushrod**
- **Wood 6X10X21mm**
- **PM2x8mm**
- **M2 Nut**

**Outer wing cabane mounts**
3 Aileron Servo (Lower Wing)

- **Stabilizer & Elevator**

- **Stabilizer Tube**
  - Ø 22x514mm
  - 2mm
  - 203mm
  - 76mm

- **Wire**
  - Ø 3x192mm

- **Wood**
  - 6x10x21mm

- **M2 Nut**
  - PM2x8mm
  - M2 Nut
  - Heavy Duty Clevis

- **Heavy Duty Horn Bracket**
  - M4 Nylon Insert Lock Nut
  - PWA3x14mm

- **Pushrod**
  - PM4x65mm
  - PA1.7x8mm

- **M3x6mm set screw**
  - Heavy Duty Clevis
  - Wire Ø3x192mm

- **M3x6mm set screw**
  - Stabilizer Tube Ø22x514mm

- **PM4x50mm Screw**
  - 4

- **PM4x65mm Screw**
  - 4

- **M4 Nylon Insert Lock Nut**
  - 4

- **Heavy Duty**
  - Wire Ø3x192mm

- **Drill and tap the swivel clevis horn locations for M4 machine screw.**

- **Replace CA hinges by metal hinges. Glue the metal hinges to stabilizer and elevator by epoxy.**

- **Similar installation as upper wing.**
5 Vertical Fin & Rudder

- Replace CA hinges by metal hinges. Glue the metal hinges to vertical and rudder by epoxy.

6 Tail Landing Gear

- PA3, 5x16mm Screw x 4
- PWA2, 5x12mm Screw x 4
7 Engine Box

PM3x16mm Screw 8
M3 Nylon Insert Lock Nut 8
d3xD7mm Washer 16

! Please note right thrust angle of firewall.

- Use epoxy to glue all parts together.
8 Wing Cabane

- PM3x16mm Screw x 6
- M3 Nylon Insert Lock Nut x 6
- d3x7mm Washer x 12

9 Main Landing Gear

- Ø5x54.5mm Axle Shaft x 2
- M6x20mm SOCKET HEAD SCREW x 4
- PM3x16mm Screw x 4
- d3x7mm Washer x 4
- PA3x12mm Screw x 4
- M8 Nylon Inert Lock Nut x 2
- 5.1mm Collar x 4
10 Rudder Pushrod

- **M4x130mm Screw**
- **M4 Nylon Insert Lock Nut**
- **PM2x10mm Screw**
- **M4 Nylon Insert Lock Nut**

Bottom View

Completed

11 Flying Wire

- **3mm Set Screw**
- **d3.6mm Collar**
- **PM 3x30mm Screw**
- **M3 NYLON INSERT LOCK NUT**

PM 3x30mm

M3x3mm Set Screw

Copper Tube

Press down the center 1/3 portion
12 Fuel Tank

- Install and arrange the fuel tank as shown in the diagram.

13 Engine

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

14 Radio Equipment

- Install and arrange the receiver and battery as shown in the diagram.
Step 1. Insert the aluminum wing tube (Ø22x865.5mm) with the pre-drilled hole end into the right wing (lower). Align the lines marked at the wing root and wing tube, then apply the PM3x22mm machine screw through the pre-drilled hole on top of the wing. (Please confirm the alignment of the hole by putting a 2.5mm diameter rod through the pre-drilled wing hole before applying the screw.) The hole on the wing tube is pre-thread, do not over-tighten the PM3 screw, the set up is for future removal of the wing.

Step 2. Install the right wing to the fuselage by inserting the wing tube (now attached to the right wing) through the fuselage, then install the left wing.

Step 3. Make sure the wings are resting against the fuselage tightly. Locate the pre-drilled 2mm hole at top of left wing, and drill along with 2.5mm drill bit until it passes through the wing tube. Apply the PA3x22mm self-tapping screw.

Note: It is recommended that the wing tube stays with the left wing. Removal of the wings could be achieved by removing the right wing machine screw, the right wing then the left wing with wing tube. If removal of wing tube from left wing is also required, it is recommended that instead of applying self-tapping screw in step 3, you pre-tap with M3 thread cutter and apply M3 machine screw.
Step 1. Insert the aluminum wing tube (Ø22x817mm) with the pre-drilled hole end into the right wing (upper). Align the lines marked at the wing root and wing tube, then apply the PM3x22mm machine screw through the pre-drilled hole on top of the wing. (Please confirm the alignment of the hole by putting a 2.5mm diameter rod through the pre-drilled wing hole before applying the screw.) The hole on the wing tube is pre-thread, do not over tighten the PM3 screw, the set up is for future removal of the wing.

Step 2. Install the right wing to the center wing cabane by inserting the wing tube (now attached to the right wing) through the cabane, then install the left wing.

Step 3. Make sure the wings are resting against the center wing cabane tightly. Locate the pre-drilled 2mm hole at top of left wing, and drill along with 2.5mm drill bit until it passes through the wing tube. Apply the PA3x22mm self-tapping screw.

Note: It is recommended that the wing tube stays with the left wing. Removal of the wings could be achieved by removing the right wing machine screw, the right wing then the left wing with wing tube. If removal of wing tube from left wing is also required, it is recommended that instead of applying self-tapping screw in step 3, you pre-tap with M3 thread cutter and apply M3 machine screw.
Outer Wing Cabanes & Flying Wire

- Cut slot to fit wire and install the dowels so they run parallel with the fuselage sides. Glue the dowels to the wires using CA.
- Outer wing cabane should fit to the outside of outer wing cabane mounts.

18 Canopy

- First insert the grommet to the canopy then apply screw.
Step 1. Insert the aluminum wing tube (Ø22x817mm) with the pre-drilled hole end into the right wing (upper). Align the lines marked at the wing root and wing tube, then apply the PM3x22mm machine screw through the pre-drilled hole on top of the wing. (Please confirm the alignment of the hole by putting a 2.5mm diameter rod through the pre-drilled wing hole before applying the screw.) The hole on the wing tube is pre-thread, do not over tighten the PM3 screw, the setup is for future removal of the wing.

Step 2. Install the right wing to the center wing cabane by inserting the wing tube (now attached to the right wing) through the cabane, then install the left wing.

Step 3. Make sure the wings are resting against the center wing cabane tightly. Locate the pre-drilled 2mm hole at top of left wing, and drill along with 2.5mm drill bit until it passes through the wing tube. Apply the PA3x22mm self-tapping screw.

Note: It is recommended that the wing tube stays with the left wing. Removal of the wings could be achieved by removing the right wing machine screw, the right wing then the left wing with wing tube. If removal of wing tube from left wing is also required, it is recommended that instead of applying self-tapping screw in step 3, you pre-tap with M3 thread cutter and apply M3 machine screw.
17 Outer Wing Cabanes & Flying Wire

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

![Diagram of outer wing cabane and flying wire]

- Cut slot to fit wire and install the dowels so they run parallel with the fuselage sides. Glue the dowels to the wires using CA.
- With the wing incidence angle template still in place, position the side cabanes, mark and drill the side cabane mounts and fasten with PM3x18mm screw and nut.

18 Canopy

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

![Diagram of canopy installation]

- PM3x25mm Screw 4
- PWA2.3x8mm Screw 4
- d3 x D7mm Washer 4
- d1.5 x D6.5 mm Silicon Grommet 4
- Pilot
- d1.5xD6.5 Silicon Grommet
- PWA2.3x8mm
- d3xD7mm Washer
- PM3x25mm
- L/R
19 **Cowling & Spinner**

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

- Adjust the wing and fuselage configuration as shown in the diagrams.

---

**Wing Setting**

- Adjust the wing and fuselage configuration as shown in the diagrams.
**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**
  - 40mm
  - 40mm

- **Rudder**
  - 85mm
  - 85mm

- **Ailerons**
  - 30mm
  - 30mm

---

**22 C.G.**

The ideal C.G. position is at center of top wing tube. You can check the C.G. by hanging the plane with wire around the top wing tube. Unscrew the right wing bolt will leave a gap for the wire. 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.

# **42% Ultimate** is specially designed to be powered by 150cc-200cc gasoline engine, using a more powerful engine does not mean better performance. In fact, overpowered 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.
Ducted Fan
Warbirds
Scale
Sports
Trainer
Boat
Pattern
Funfly
Electric
Glider
Accessories
Covering
(Lightex / Toughlon)