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.
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:

- **AB**: Apply epoxy glue.
- **CA**: Apply instant glue (C.A.glue, super glue.)
- **N.L.**: Must be purchased separately!
- **L/R**: Assemble left and right sides the same way.
- **N.I.**: Ensure smooth non-binding movement while assembling.
- **Peel off shaded portion covering film.**
- **Cut off shaded portion.**
- **3mm**: Drill holes with the specified diameter (here: 3mm).
- **Pay close attention here!**
- **Warning**: Do not overlook this symbol!
A122PO31681704

Parts List

1. MAIN WING -- 1 pair
2. SCREW PWA2x8mm -- 16 pcs
   SCREW PB2x22mm -- 4 pcs
   SCREW PB2x20mm -- 2 pcs
   SCREW PB2x25mm -- 4 pcs
   SCREW PB2x22mm -- 2 pcs
   CLEVIS -- 4 pcs
   STRAPER -- 4 pcs
   FUEL TUBE Ø6x5mm -- 8 pcs
   TRI-HORN M3x14mm(For Aileron & Flap)(L) -- 4 sets
   PUSHROD Ø1.8x137mm w/ Threads(For Aileron Servo) -- 2 pcs
   PUSHROD Ø1.8x115mm w/ Threads(For Flap Servo) -- 2 pcs
   SERVO MOUNTING PANEL 22x68x78mm -- 4 pcs
3. RETRACTABLE LANDING GEAR -- 1 set
   RETRACTABLE LANDING GEAR COVER -- 1 set
   SCREW PM2x8mm -- 12 pcs
   WASHER d2xD5mm -- 24 pcs
   M2 NUT -- 12 pcs
   COVERING FILM 45x80mm -- 2 pcs
   PLYWOOD 3x261x60mm -- 1 pc.
4. FUSELAGE -- 1 pc.
   SCREW PA3x15mm -- 1 pc.
   WASHER d3.2xD12mm -- 1 pc.
5. ENGINE MOUNT PL5911120 -- 1 set
   SOCKET HEAD SCREW M6x30mm -- 4 pcs
   WASHER d6xD15mm -- 4 pcs
   BLIND NUT M6xD18mm -- 4 pcs
6. FUEL TANK 800cc -- 1 set
   DOUBLE-SIDED TAPE 40x160mm -- 1 pc.
   CABLE TIE 1.5x8x500mm -- 1 pc.
   PLYWOOD 6x61x133(For Throttle Servo) -- 1 pc.
   Balsa 6x6x41mm(For Throttle Servo Stand) -- 2 pcs
7. STABILIZER & ELEVATOR -- 1 set
   SOCKET HEAD SCREW M3x18mm -- 2 pcs
   SOCKET PA3x12mm -- 2 pcs
   TAIL WHEEL Ø30mm -- 1 pc.
   COLLAR Ø2.6mm w/ set screw -- 1 set
   SCREW PA3x12mm -- 2 pcs
8. VERTICAL FIN & RUDDER -- 1 set
   SCREW PB2x30mm -- 3 pcs
   FUEL TUBE Ø6x5mm -- 1 pc.
   CLEVIS -- 1 pc.
9. AIR SCOOP -- 1 pc.
   SCREW PB2x30mm -- 3 pcs
   SCREW PB2x20mm -- 4 pcs
   SCREW PB2x25mm -- 4 pcs
   FUEL TUBE Ø6x5mm -- 2 pcs
10. CANOPY -- 1 pc.
    SCREW PWA2.3x8mm -- 8 pcs
    SILICON GROMMET D1.5xD6.5mm -- 8 pcs
    DOUBLE SIDED TAPE 8x1230mm -- 1 pc.
    DOUBLE SIDED TAPE 8x125mm -- 1 pc.
    SPONGE 10x80x200mm(For Radio Equipment) -- 2 pcs
11. SPONGE 10x10x40mm(For Canopy) -- 1 pc.
12. DECALS: A122DEC -- 1 set

covering:
TOUGHON STL 203 LIGHT GRAY
TOUGHON STL 331 CUB YELLOW
TOUGHON STL 340 OLIVE DRAB
1 Flap & Aileron

- Pre-glued

L/R

2 Flap & Aileron Servos

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

- Bottom View

- Completed

L/R

- PWA2x8mm Screw
- PB2x25mm Screw
- PB2x22mm Screw
- PB2x22mm Screw
- PB2x20mm Screw

- Fuel Tube Ø6x5mm
- Pushrod Ø1.8x115mm
- Tri-horn M3x14mm(L)

- Straper
- Fuel Tube d2xD4x4mm
- Clevis
- Pushrod Ø1.8x137mm

- Completed
### 3 Landing Gear & Retract Servos

- **PM2x8mm Screw**: 12
- **d2xD5mm Washer**: 24
- **M2 Nut**: 12

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**Retract Servos**

- **Wheel Down**: Pushrod Travel 32mm
- **Wheel up**: Pushrod Travel 32mm

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**L/R**

- **L**: d2xD5mm Washer
- **R**: PM2x8mm

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### 4 Fueslage

- **PA3x15mm Screw**: 1
- **d3.2xD12mm Washer**: 1

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- **Make sure no glue gets near the pushrod guide sleeves.**
**5 Engine Mount**

| M6x30mm Screw | 4 |
| d6xD15mm Washer | 4 |
| M6x D18mm Blind Nut | 4 |

- Apply thread locker to screws.

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

![Engine Mount PL5911120](image)

**A**: Inverted mount with Pitts type muffler.

**B**: Inverted mount for stock muffler installation.

**6 Fuel Tank**

- Double-side Tape 40x160mm
- Cable Tie 1.5x8x500mm

![Fuel Tank 800cc](image)

- Completed
7 Stabilizer & Elevator

Temporary install the main wing, adjust leveling of the stabilizer to make it as parallel to the main wing as possible.

8 Tail Landing Gear

[L/R]
9 Vertical Fin & Rudder

Pre-glued

C = C'

10 Rudder Pushrod

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

PB2x30mm Screw

PB2x30mm Fuel Tube D6x5mm

Pushrod Ø1.8x970mm

Clevis

TWM PL8210010 CLEVIS WRENCH

2mm Pushrod Ø1.8x970mm

PB2x30mm

11 Elevator Pushrod

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

PB2x20mm Screw

PB2x18mm Screw

Fuel Tube D6x5mm

Pushrod Ø1.8x745mm

Clevis

PB2x20mm

PB2x18mm

Tri-horn M3 x 14mm

L/R
12 Servo Set

Included with the radio Set.

3 x 3mm Set Screw

Linkage Connector

M2 Nut

2mm Washer

Throttle Pushwire

2mm Washer

M2 Nut

(Linkage Connector)

Servo Set

12

3 x 3mm

Set Screw

2mm Washer

3 x 3mm Set Screw

N.I.

Throttle Servo.

Please refer to the attached sheet for linkage connector installation.

13 Servos

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

Front

Bottom View

Charge Receptacles

KP0041300

Pushrod Ø1.8x970mm

Rudder Servo

Throttle Servo

Elevator Servo

Fuel Tube Ø6x9mm

Straper

Receiver

Sponge 10x80x200mm

Plywood 6x6x41mm

Elevator Servo

Pushrod Ø1.8x120mm

Pushrod Connector

KM 2x8mm

Elevator Pushrod Ø1.8x120mm

M2 Nut

J1(Pushrod Ø1.8x120mm)

J2
14 Engine

- M4 x 35mm Screw
- KM3 x 20mm Screw
- PA3 x 12mm Screw
- PM3 x 10mm Screw
- M4 Nylon Insert Lock Nut
- M3 Nylon Insert Lock Nut
- Pastry 4
- d4 x D12mm Washer

**Illustration is for inverted mounting. You can mount the engine upright or sideways simply by rotation the engine mount. Thrust angles will not be affected.**

- Install Engine position

15 Cowling

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

**PM3 x 10mm Screw**
- M3 Nylon Insert Lock Nut
- d2.5 x D8.5mm Silicon Grommet
- PA3 x 12mm Screw
- d3 x D7mm Washer
- Aluminum Plate

**PA3 x 12mm Screw**
- M3 Nylon Insert Lock Nut
- d2.5 x D8.5mm Silicon Grommet

**M3 Nylon Insert Lock Nut**
- PM3 x 10mm
- d2.5 x D8.5mm Silicon Grommet

**Washer d3 x D7mm**
- M3

**Washer d3 x D7mm**
- PM3 x 10mm

**Washer d3 x D7mm**
- Spinner Ø89mm

**Fuel Filler PL8110030**

A122PO31681704 P.9
Installation of the optional drop tank.
17 Canopy

- First insert the grommet the cowling then apply screw.

Apply double-sided tape

18 Wing Setting

- Adjust the wing and fuselage configuration as shown in the diagrams.
19 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
- 18mm
- 18mm

Rudder
- 41mm
- 41mm

Flaps (near fuselage)
- 50mm

Ailerons (away from fuselage)
- 12mm
- 12mm

20 C.G.

The ideal C.G. position is 140mm (5.51 in) behind the leading edge measured at where the wing meets the fuselage. In order to obtain the C.G. specified, add weight to the fuselage or move the battery position. Check the C.G. before flying. If you are converting this model to electric, please move the C.G. forward 10% of current C.G. distance from leading edge to compensate for weight of fuel.

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.

# ZERO 6.5-160 is specially designed to be powered by 1.60 2 stroke glow 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.

ADDENDUM

LINKAGE CONNECTOR
HW7111050 & HW7111060

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.

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

After fastening the round nut, make sure that the linkage connector can rotate freely.

Landing Gear
Should you need to bend the landing gear wire, use the radio control to open or close the gear to 25% from fully retracted position and switch off the receiver. It is safe to bend the wire in this position. Bending the wire in fully open position may damage the supporting structure.
Should you require to bend the landing gear wire, please insert a round metal bar into the spring coil and apply force there as leverage. Bending the wire directly may damage the mounting block structure.
For Engine Mount (PL5911120)

1. KM3x20mm Screw
2. Copper Tube
3. M3 Nylon Insert Lock Nut
4. M4 Nylon Insert Lock Nut
5. 4mm Washer
6. M4x35mm Screw

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

180mm Extension

**Code No.**: KW0011800  **Size**: 180mm  **Package**: 1 set

180mm Y-Cord

**Code No.**: KW0021800  **Size**: 180mm  **Package**: 1 pc

Charge Receptacles

**Code No.**: KP0041300

Field Stand

**Code No.**: MS9111430  **Size**: 600 x 240 x 310mm  **Package**: 1 pc

Fuel Filler

**Code No.**: PL8110030  **Size**: 15 x 22 x 49mm  **Package**: 1 x 1 pc

Clevis Wrench

**Code No.**: PL8210010  **Package**: 1 set

Special tool for clevis installation. Suitable for standard and small (EP) clevis.

Standard Servo

**Code No.**: SV4031

- **Speed**: 0.17 sec / 60° @4.8V  
  0.14 sec / 60° @6.0V
- **Torque**: 3.2kg.cm / 44.8 oz-in @4.8V  
  4.1kg.cm / 57.4 oz-in @6.0V
- **Size**: 40.6 x 20 x 37mm /  
  1.60 x 0.79 x 1.46 in
- **Weight**: 39.4 g / 1.39 oz
Ducted Fan

Pattern

Warbirds

Funfly

Scale

Electric

Sports

Glider

Trainer

Boat

Accessories

Covering
(Lightex / Toughlon)