SPITFIRE - 60

0.60-0.75 cubic inch displacement 2-stroke (glow)
0.70-0.81 cubic inch displacement 4-stroke (glow)
Requires: 6-channel radio w/ 6 standard servos
and 1 low profile retract servo

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wing Span</td>
<td>63.0 in / 1600 mm</td>
</tr>
<tr>
<td>Wing Area</td>
<td>704 sq in / 45.5 sq dm</td>
</tr>
<tr>
<td>Flying Weight</td>
<td>7.5 lb / 3300 g</td>
</tr>
<tr>
<td>Fuselage Length</td>
<td>53.5 in / 1350 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.
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.)
   - **NI**: Apply thread locker
   - **L/R**: Must be purchased separately!
   - **N.I.**: Ensure smooth non-binding movement while assembling.
   - **3mm**: Cut off shaded portion.
   - **Drill holes with the specified diameter (here: 3mm)**.
   - **Peel off shaded portion covering film.**
   - **Pierce the shaded portion covering film.**
   - **Pay close attention here!**
   - **Warning!** Do not overlook this symbol!
Parts List

1. MAIN WING -- 1 pair
   PLYWOOD 2x58x84mm (For Aileron Servo) -- 1 pair
   BALSA 8x18x21mm (For Aileron Servo Stand) -- 4 pcs
   STRAPER -- 2 pcs
   TRI-HORN M3x14mm (S) -- 2 sets
   FUEL TUBE Ø6x5mm -- 4 pcs
   CLEVIS -- 2 pcs
   PUSHROD Ø1.8x85mm w/ Threads (For Aileron) -- 2 pcs
   SCREW PWA2x8mm -- 8 pcs
   SCREW PB2x12mm -- 8 pcs
   AL. REINFORCEMENT PLATE -- 1 pc.
   COLLAR 4.6mm w/ set screw -- 2 sets
   MAIN WHEEL Ø76mm -- 2 pcs
   M2 NUT -- 8 pcs
   WASHER d2xD5mm -- 16 pcs
   SCREW PM2x6mm -- 8 pcs
   SCREW PWA2.3x8mm -- 8 pcs
   1mm PVC PLATE -- 2 pcs
   1mm PVC PLATE -- 2 pcs

2. PLYWOOD 2x58x84mm (For Aileron Servo) -- 1 pair
   BALSA 8x18x21mm (For Aileron Servo Stand) -- 4 pcs
   STRAPER -- 2 pcs
   TRI-HORN M3x14mm (L) -- 1 set
   FUEL TUBE Ø6x5mm -- 2 pcs
   SCREW PWA2x8mm -- 8 pcs
   SCREW PB2x12mm -- 8 pcs
   AL. REINFORCEMENT PLATE -- 1 pc.
   COLLAR 4.6mm w/ set screw -- 2 sets
   MAIN WHEEL Ø76mm -- 2 pcs
   M2 NUT -- 8 pcs
   WASHER d2xD5mm -- 16 pcs
   SCREW PM2x6mm -- 8 pcs
   SCREW PWA2.3x8mm -- 8 pcs
   1mm PVC PLATE -- 2 pcs
   1mm PVC PLATE -- 2 pcs

3. WING TUBE Ø16x404mm -- 1 pc.
   Y-TYPE PUSHROD Ø1.8x110mm (For Flap) -- 1 pc.
   STRAPER -- 1 pc.
   CLEVIS -- 2 pc.
   RING Ø2.5mm -- 2 pcs
   FUEL TUBE Ø6x5mm -- 3 pcs

4. RETRACTABLE LANDING GEAR -- 1 pair
   MAIN LANDING GEAR COVER -- 1 pair
   RETRACTABLE LANDING GEAR COVER -- 1 pair
   1mm PVC PLATE -- 2 pcs
   SCREW PWA2.3x8mm -- 8 pcs
   SCREW PM2x6mm -- 8 pcs
   WASHER d2xD5mm -- 16 pcs
   M2 NUT -- 8 pcs
   MAIN WHEEL Ø76mm -- 2 pcs
   COLLAR 4.6mm w/ set screw -- 2 sets

5. STABILIZER & ELEVATOR -- 1 set
   FUSETAGE -- 1 pc.
   PLYWOOD 2.7x37x99mm (For Fuel Tank Position Fixing ) -- 1 pc.
   SOCKET HEAD SCREW M3.5x30mm -- 4 pcs
   M3.5 NUT -- 8 pcs
   SPINNER Ø89mm (w/ alu. back plate) -- 1 set
   SPINNER Ø89mm (w/ alu. back plate) -- 1 set
   TRANSVERSE 3D TEMPLATE -- 1 pc.
   SILICON GROMMET d1.5x6.5mm (For Canopy) -- 4 pcs
   SPINNER Ø89mm (w/ alu. back plate) -- 1 set

6. VERTICAL FIN & RUDDER -- 1 set
   PLYWOOD 2x58x84mm (For Aileron Servo) -- 1 pair
   BALSA 8x18x21mm (For Aileron Servo Stand) -- 4 pcs
   STRAPER -- 2 pcs
   TRI-HORN M3x14mm (L) -- 2 sets
   CLEVIS -- 2 pcs
   FUEL TUBE Ø6x5mm -- 2 pcs
   SCREW PWA2x8mm -- 8 pcs
   SCREW PB2x12mm -- 8 pcs
   AL. REINFORCEMENT PLATE -- 1 pc.
   COLLAR 4.6mm w/ set screw -- 2 sets

7. PUSHROD Ø1.8x645mm w/ Threads (For Elevator) -- 2 pcs
   TRI-HORN M3x14mm (L) -- 2 sets
   CLEVIS -- 2 pcs
   FUEL TUBE Ø6x5mm -- 2 pcs
   SCREW PWA2x8mm -- 8 pcs
   SCREW PB2x12mm -- 8 pcs
   AL. REINFORCEMENT PLATE -- 1 pc.
   COLLAR Ø2.1mm w/ set screw -- 1 set

8. PUSHROD Ø1.8x725mm w/ Threads (For Rudder) -- 1 pc.
   TRI-HORN M3x14mm (L) -- 1 set
   CLEVIS -- 1 pc.
   FUEL TUBE Ø6x5mm -- 1 pc.
   SCREW PM2x12mm -- 1 pc.
   SCREW PA3x14mm -- 2 pcs
   SCREW PB2x16mm -- 3 pcs
   AL. REINFORCEMENT PLATE -- 1 pc.
   M2 NUT -- 1 pc.
   COLLAR Ø2.1mm w/ set screw -- 1 set

9. FUEL TANK 380cc -- 1 set
   PLYWOOD 2.7x37x99mm (For Fuel Tank Position Fixing ) -- 1 pc.

10. ENGINE MOUNT PL5111070 -- 1 set
    SOCKET HEAD SCREW M4x25mm -- 4 pcs
    WASHER d4xD12mm -- 4 pcs

11. SOCKET HEAD SCREW M3.5x30mm -- 4 pcs
    WASHER d3.5xD8mm -- 8 pcs
    M3.5 NUT -- 8 pcs
    THROTTLE PUSHWIRE Ø1.2x290mm -- 1 pc.
    Plastic tube d2xD3x120mm -- 1 pc.

12. COWLING -- 1 pc.
    TRANSPARENT 3D TEMPLATE -- 1 pc.
    SCREW PWA2.6x12mm -- 4 pcs
    SILICON GROMMET d1.5x6.5mm (For Cowling) -- 4 pcs
    SPINNER Ø89mm (w/ alu. back plate) -- 1 set

13. LINKAGE CONNECTOR Ø2.1mm -- 3 sets

14. PUSHROD CONNECTOR 4x9x20mm -- 1 set
    PUSHROD Ø1.8x85mm (For Elevator) -- 1 pc.
    BALSA 5x5x37mm (For Throttle Servo Stand) -- 2 pcs
    STRAPER -- 2 pcs
    FUEL TUBE Ø6x5mm -- 2 pcs
    SPONGE 60x70x90mm -- 1 pc.

15. WING PROTECTION 16.2x80x103mm -- 1 pc.
    SOAKER 60x70x90mm -- 1 pc.
    THROTTLE PUSHWIRE Ø1.2x290mm -- 1 pc.
    BALSA 5x5x37mm (For Throttle Servo Stand) -- 2 pcs
    PULLER (PC13057A3) -- 1 pc.

16. CANOPY -- 1 pc.
    SCREW PWA2.3x8mm -- 4 pcs
    SILICON GROMMET d1.5x6.5mm (For Canopy) -- 4 pcs
    DOUBLE-SIDED TAPE 800mm -- 1 pc.

17. DECALS -- 1 set

COVERING:
TOUCHEL STL203 LIGHT GRAY
TOUCHEL STL340 OLIVE DRAB
TOUCHEL STL351 DARK BLUE
TOUCHEL STL100 WHITE
1. Aileron

- Pre-glued markings
- PB 2 x 20mm Screw
- PWA 2 x 8mm Screw

2. Aileron Servo

- Balsa 8 x 18 x 21mm
- Plywood 2 x 58 x 84 mm
- Pushrod Ø1.8 x 85mm
- Lead to Aileron Servo
- Straper

- Ø1 mm pilot holes for World Models control horn are pre-drilled. Please look for pin-hole marks at under side of control surfaces.
3 Flap and Retract Servos

- Please apply glue to all surfaces of wing joiner

- Select the servo horn that will give 26mm travel when rotates through 180°.

- Please refer to attached sheet for linkage connector installation

Wing Tube Ø16 x 404mm

Lead to retract servo

Wheels up Position  Wheels down Position

Lead to Flap Servo

Lead to Aileron Servo

Flaps up Flaps Down

Straper

Fuel Tube Ø6 x 5mm

Y-Type Pushrod Ø1.8 x 110mm

Ring

Clevis
4 Retractable Landing Gear Cover

PWA 2.3 x 8mm Screw
PM 2 x 6mm Screw
d2x5mm Washer
M2 Nut

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

5 Stabilizer / Elevator

Temporary install the main wing, adjust leveling of the stabilizer to make it as parallel to the main wing as possible.
6 Vertical Fin / Rudder

- Completed

7 Elevator Pushrod

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

8 Rudder Pushrod / Tail Gear

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

Plywood 2.7 x 37 x 99mm (For fuel tank position fixing)

Fuel Tank 380cc

Bottom View

10 Engine Mount

M4 x 25mm Socket Head Screw 4

d4 x D12mm Washer 4

M4 x 25mm

d4 x D12mm Washer

Engine Mount PL5111070

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

P.7
11 Engine

- M3.5 x 30mm Socket Head Screw
- d3.5xD8mm Washer
- M3.5 Nut

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.

- Installed Engine position
- 138mm
- 5.43 in

12 Cowling

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

- Please refer to the attached sheet for usage of the transparent 3D template.

- Spinner Ø89mm
- Silicon Grommet d1.5xD6.5mm
Please refer to attached sheet for linkage connector installation.

14 Servos

Install and arrange the servo as shown in the diagram.

Bottom View

- Balsa 5 x 5 x 37mm
- Plywood 2.7 x 37 x 99mm
- Throttle Servo

Bottom View

- Pushrod Connector
- Elevator Servo
- Fuel Tube Ø6 x 5mm
- Sponge
- Elevator Servo
- Straper
- Pushrod Ø1.8 x 725mm
- Pushrod Ø1.8 x 645mm
- Elevator Pushrod Ø1.8 x 85mm
- KM2 Nut
- M2 Nut
**Main Wing**

- **d4 x D15mm Washer**
- **M4x40mm Socket Head Screw**
- **Balsa 16.2 x 80 x 103 mm**

**Canopy**

- **PWA 2.3 x 8mm Screw**
- **d1.5xD6.5mm Silicon Grommet**

- Place canopy on fuselage and drill pilot holes.

- Apply double-sided tape

- First insert the grommet to the canopy then apply screw
17 Wing Setting

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

C.G.

The ideal C.G. Position is 102mm (4 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.

- Measure C.G. with the wheels in retracted position.

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.

# SPITFIRE - 60 is specially designed to be powered by 0.60-0.75 2 stroke or 0.70-0.81 4 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 necessary.

When Flaps are lowered, nose of model will rise. The nose-up varies with the speed at which the models is flying when you lower the flaps and the extent to which they are lowered. Check effect of flaps at higher altitude to avoid surprises during landing. You may apply down trim of the elevator to compensate for the nose-up effect when lowering the flaps. Taking off with flaps lowered is not recommended, as the increased drag may require a longer runway and more engine power for the model.
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.

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.
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, 2403 Research Drive, Livermore, CA 94550 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: __________________________________________

Please call AirBorne Models at 925 371 0922 for any assistance in filling this form. Thank you very much for purchasing our product.
Usage of the transparent 3D template

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

1

2

3

4

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.
Optional Parts

**ACCESSORIES**

180mm Extension For Park Flyer

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
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<tbody>
<tr>
<td>KW0011800</td>
<td>180mm</td>
<td>1 set</td>
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Fuel Filler

<table>
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<th>Code No.</th>
<th>Size</th>
<th>Package</th>
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</thead>
<tbody>
<tr>
<td>PL8110030</td>
<td>15 x 22 x 49mm</td>
<td>1 x 1 pc</td>
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180mm Y-Cord For Park Flyer

<table>
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<th>Code No.</th>
<th>Size</th>
<th>Package</th>
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</thead>
<tbody>
<tr>
<td>KW0021800</td>
<td>180mm</td>
<td>1 pc</td>
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For park flyers of small electric models

Charge Receptacles

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<td>KP0041300</td>
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Clevis Wrench

<table>
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<th>Size</th>
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<tbody>
<tr>
<td>PL8210010</td>
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<td>1 set</td>
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</table>

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

Field Stand

<table>
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<th>Code No.</th>
<th>Size</th>
<th>Package</th>
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<tbody>
<tr>
<td>MS9111430</td>
<td>600 x 240 x 310mm</td>
<td>1 pc</td>
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</table>

Standard Servo

<table>
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<tr>
<th>Code No.</th>
<th>Size</th>
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<tbody>
<tr>
<td>SV4031</td>
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</tr>
</tbody>
</table>

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

Warbirds

Scale

Sports

Trainer

Boat

Pattern

Funfly

Electric

Glider

Accessories

Covering

(Lightex / Toughlon)

The World Models Manufacturing Co., LTD.
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