Before commencing assembly, please read these instructions thoroughly.

**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 electric 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.*

**THE WINGS MAKER**
FACTORY PRE-FABRICATED
ALMOST-READY-TO-FLY (ARF) SERIES
MADE IN CHINA
www.thewingemaker.com

Wing Span: 33 in / 850 mm
Wing Area: 299 sq in / 19.3 sq dm
Flying Weight: 24 oz / 680 g
Fuselage Length: 26.5 in / 675 mm
Requires: 3-channel “mixing radio” (elevator and aileron) w/ 2 micro servos, 30A (burst 35A) Brushless ESC and 3 cells 11.1V 20C 2100 mAh battery and charger
Be sure to 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 not extend to the parts that are good before gluing to defective parts during assembly. Warranty will not cover any parts modified by customer. For pre-assembled kits, please check proper functions of all servos on the ground before flying. Servo gears could be damaged when control surfaces are hit during transportation of models. The manufacturer will replace any servos due to manufacturer’s defect, but will not cover plane crashes due to damaged servos not detected before flying.

Symbols used throughout this instruction manual comprise of the following:

- **AB**: Apply epoxy glue.
- **CA**: Apply instant glue (C.A.glue, super glue.)
- **N.I.**: Must be purchased separately!
- **L/R**: Assemble left and right sides the same way.
- **Pierce the shaded portion covering film.**
- **Drill holes with the specified diameter (here: 3mm).**
- **Pay close attention here!**
- **Warning!** Do not overlook this symbol!
Parts List

1. MAIN WING -- 1 pair
   WING TIP -- 1 pair
   FIBRE TAPE 17x300mm -- 2 pcs

2. SCREW PA1.7x8mm -- 8 pcs
   SERVO MOUNTING PANEL PL5310020 -- 1 pair
   PLYWOOD 2x36x36mm (For Aileron Servo) -- 2 pcs
   STRAPER PL4112106 -- 2 pcs
   CLEVIS PL4112105 -- 2 pcs
   FUEL TUBE d2xD4x4mm -- 4 pcs
   HORN PL4113103 -- 2 pcs
   PUSHROD Ø1.4x55mm w/Threads (For Aileron) -- 2 pcs

3. FUSELAGE -- 1 pc.
   CANOPY / BATTERY COVER -- 1 pc.
   PLYWOOD&MAGNET "-" 11x12mm -- 2 pcs
   PLYWOOD&MAGNET "+" Ø12mm -- 2 pcs
   PLYWOOD 2x66x182mm (For Battery) -- 1 pc.
   PLYWOOD 3x38x86mm (For Fuselage) -- 1 pc.
   DUMMY COWLING -- 1 pc.
   BATTERY TIE 200mm -- 1 pc.

4. VERTICAL FIN -- 1 set

5. PLYWOOD 4x10x35mm (For Ducted Fan) -- 2 pcs
   SCREW PM2.5x8mm -- 4 pcs
   WASHER d3xD7mm -- 4 pcs
   PLYWOOD&MAGNET "-" 11x12mm -- 2 pcs
   PLYWOOD&MAGNET "+" Ø12mm -- 2 pcs
   DUCTED FAN COVER -- 1 pc.

6. CARBON FIBER TUBE Ø5x450mm -- 1 pc.

7. BATTERY MAT 50x150mm -- 2 pcs
   DOUBLE-SIDED TAPE 30x35mm -- 1 pc.

8. DECALS: GM032SDEC -- 1 set

GM032SXMP027851203
1. **Main Wing**

- **Bottom View**
  - 17x300mm Fibre Tape

- **Completed**

2. **Aileron Servo**

- **Bottom View**
  - Plywood 2x36x36

- **Completed**
  - 17x300mm Fibre Tape

- **Please choose either 02L & 02R or 03L & 03R or 04L & 04R that suits your servo.**
3 Fuselage

- Plywood 182x66x2mm
- Plywood 3x38x86mm
- Battery Tie 200mm
- Dummy Cowling
- Plywood&Magnet "-" 11x12mm
- Plywood&Magnet "+" Ø12mm

4 Vertical Fin

- Completed
Ducted Fan Propulsion Unit with 28/31 Motor

- Make sure rotating motor casing is not in contact with wirings or anything.

Apply a drop of CA to each notch will hold the intake cone in place, pry the notch with screw driver to remove the cone for impeller or motor replacement.

- Make sure TWM logo on ducted fan stay on bottom of fuselage.
6 Main Wing

Install and arrange the equipment as shown in the picture.

- Battery
- Battery Tie
- Battery Mat 50x150mm
- Carbon Fiber Tube Ø5x450mm
- Aileron Servo Lead

7 Battery & ESC

Install and arrange the equipment as shown in the picture.

- Battery
- Receiver
- Double-Sided tape
- Battery Mat 50x150mm
- Aileron Servo Lead
- 30A Brushless ESC
- Ducted Fan
- TWM KP0011310
8 Decals

Bottom View

GM032XMPO27851203
The field stand can be used as a launching-pad if you are flying on paved runways. Place the DF-032 on the stand, point it into the wind, check your controls and advance the throttle. When the DF-032 gets enough air speed, pull the elevator gently and the DF-032 will fly off the field stand and get airborne gracefully.

If you are flying on grass fields and could not use the field stand as a launching pad, you will need to hand launch the DF-032.

For the first hand launch flight, we recommend having an assistant to hand launch the DF-032 for you. Ask your assistant to hold the DF-032 by the fuselage, pointed into the wind, while you check the correct control surface response. Fully advance the throttle to start the motor and once the ducted fan is at full power, the hand launcher should gently push the plane into the air at a level attitude. Don’t use excessive force as it is not necessary, and don’t throw the model up the sky as it will cause the model to stall before gaining air speed. Make sure the DF-032 is being launched into the wind and be alert to make corrections to keep the model flying straight and level into the wind.

When the DF-032 has gained enough air speed, gently pull the elevator and let the DF-032 climb to a higher safe altitude. Reduce the throttle to slow the DF-032 while maintaining altitude. The DF-032 should fly well about half throttle. You may add power when turning, climbing or doing loops. Learn how the DF-032 behaves and adjust the trims for level flight.

To avoid overheating of ducted fan motor and battery, we recommend you use full power intermittently. This will also give you longer flying time and extend the battery life.
10 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.

Ailerons / Elevator

- Please note that the mixing function of your radio will add up the control throws of aileron and elevator input. A control throw of 10mm for the aileron or elevator alone will give you up to 20mm throw if you input aileron and elevator throw at the same time.

11 C.G.

The ideal C.G. position is 70mm (2.76 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.

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.
# DF-032 is specially designed to be powered by KM0283110 Outrunner Motor.
# Make sure the air field is spacious, never fly the plane too close to people and never get too close to a running propeller.
# Check and re-tighten up all factory assembled screws, use thread locker if necessary.

Warning!


GM032SXMP027851203 P.9
Optional Parts

**Ducted Fan Propulsion Unit without Motor**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL6800010</td>
<td>D28 x 31 mm</td>
<td>1 set</td>
</tr>
</tbody>
</table>

- Operating Voltage / Current: 12V / 30A (35A Burst)
- Thrust: Approx. 560g
- Weight: 60g (without motor)
- Rotor diameter: 67 mm
- Outer casing diameter: 74 mm
- Color: Black

**Outrunner 28 / 31 (for ducted fan)**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>KM0283110</td>
<td>D28 x 31 mm</td>
<td>1 set</td>
</tr>
</tbody>
</table>

- Kv (rpm / V): 3600
- Operating Power: 375W
- Operating Voltage: 5 - 15V
- Operating Current: 30A
- Peak Current: 35A (max. 15 sec.)
- Internal Resistance: 25 m ohms
- Diameter: 28 mm
- Length: 31 mm
- Weight: 58 g
- Shaft Diameter: 3 mm
- Shaft Length: 14.8 mm
- Mounting Screw: M3 (Front) and M2 (Back)
- Distance of Mounting Holes: 16 mm and 19 mm

**30A Brushless ESC**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>KC2030A02</td>
<td>24 x 45 x11mm</td>
<td>1 pc</td>
</tr>
</tbody>
</table>

- Current: 30A continuous
- Burst current (< 10 seconds): 40A
- Weight: 25g (with wires)
- BEC output: 2A
- Input:
  - Li - ion / Li - poly 2 - 4 cells;
  - Nimh / Nicd 5 - 12 cells

**Silicon Wire**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW2110101</td>
<td>D4.0mm</td>
<td>1 set</td>
</tr>
</tbody>
</table>

- 1 M black & 1 M red / pkg

**Clevis Wrench**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL8210010</td>
<td>40A Max. Current</td>
<td>1 set</td>
</tr>
</tbody>
</table>

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

**2 - Pin EZ Connector**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>KP0011210</td>
<td>40A Max. Current</td>
<td>1 set</td>
</tr>
</tbody>
</table>

- Ideal for electric models

**3 - Pin EZ Connector**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>KP0011310</td>
<td>40A Max. Current</td>
<td>1 set</td>
</tr>
</tbody>
</table>

- Ideal for electric models

**180mm Extension**

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

**Heat Shrink Tube**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT1115050</td>
<td>D5mm x 10cm</td>
<td>2 pcs x 3 colors</td>
</tr>
</tbody>
</table>

- Three colors (Black, Red, Yellow)

**Micro Servo**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV2031</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Speed: 0.1 sec / 60° @ 4.8V
- Torque: 16kg.cm / 22.2 oz - in @ 4.8V
- Size: 22.4 x 11.4 x 20.0mm /
  0.88 x 0.45 x 0.79in
- Weight: 7.8 g / 0.28 oz