Before commencing assembly, please read these instructions thoroughly.

**SZD-45 Ogar** (GM048XM)

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.*

**Specifications**

- Wing Span: 98.5 in / 2500 mm
- Wing Area: 667 sq in / 43 sq dm
- Flying Weight: 48 oz / 1360 g
- Fuselage Length: 45 in / 1145 mm
- Requires: 4-channel radio w/ 4 micro servos. Outrunner Motor KM0283010 w/ Propeller Adaptor HW2340100 20A Brushless ESC, 3 cells 11.1V 15C 1800 mAh Li-Po battery & charger.
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.
- **C.A.** Apply instant glue (C.A.glue, super glue.)
- **N.I.** Must be purchased separately!
- **L/R** Assemble left and right sides the same way.
- **!** Pay close attention here!
- **Warning!** Do not overlook this symbol!
- **3mm** Drill holes with the specified diameter (here: 3mm).
- **!** Cut off shaded portion.
- **!** Pierce the shaded portion covering film.
- **!** Ensure smooth non-binding movement while assembling.
- **!** Drill holes with the specified diameter.
Parts List

1. MAIN WING -- 1 pair
   MICRO AILERON SERVO MOUNT PL5310020 -- 1 pair
   STRAPER PL4112106 -- 2 pcs
   CLEVIS PL4112105 -- 2 pcs
   FUEL TUBE d2xD4x4mm -- 4 pcs
   HORN PL4113103 -- 2 pcs
   PUSHROD Ø1.4x60mm w/ Threads (For Aileron) -- 2 pcs
   SCREW PA1.7x8mm -- 8 pcs
   FIBRE TAPE 17x435mm -- 2 pcs
   PLYWOOD 36.5x36.5x2mm -- 2 pcs

2. FUSELAGE -- 1 set
   STABILIZER & ELEVATOR -- 1 set
   FIBRE TAPE 17x525mm -- 1 pc.
   SCREW PA1.7x8mm -- 4 pcs
   MICRO AILERON SERVO MOUNT PL5310020(R) -- 1 pc.
   STRAPER PL4112106 -- 1 pc.
   CLEVIS PL4112105 -- 1 pc.
   FUEL TUBE d2xD4x4mm -- 2 pcs
   HORN PL4113103 -- 1 pc.
   PUSHROD Ø1.4x33mm w/ Threads (For Elevator) -- 1 pc.
   PLYWOOD 36.5x36.5x2mm -- 1 pc.
   NYLON BOLT M3x25mm PL6510202 -- 2 pcs
   NYLON WASHER d3.1XD11mm PL6610202 -- 2 pcs
   TUBES -- 2 pcs

3. FIBRE TAPE 17x185mm -- 1 pc.
   SCREW PA1.7x8mm -- 4 pcs
   MICRO AILERON SERVO MOUNT PL5310020(L) -- 1 pc.
   STRAPER PL4112106 -- 1 pc.
   CLEVIS PL4112105 -- 1 pc.
   FUEL TUBE d2xD4x4mm -- 2 pcs
   HORN PL4113103 -- 1 pc.
   PUSHROD Ø1.4x22mm w/ Threads (For Rudder) -- 1 pc.
   PLYWOOD 36.5x36.5x2mm -- 1 pc.

4. TAIL LANDING GEAR PL3410030 -- 1 set
   SCREW PA2x8mm -- 2 pcs

5. MAIN LANDING GEAR -- 1 pc.
   MAIN WHEEL Ø50mm PL3111500 -- 1 pc.
   PLASTIC COLLAR d4xD8x3mm -- 1 pc.
   COLLAR Ø3.1mm w/ Set Screw -- 1 set
   SCREW PA3x10mm -- 2 pcs
   SOCKET HEAD SCREW M3x30mm -- 1 pc.
   WASHER d3.2xD12mm -- 2 pcs
   M3 NYLON INSERT LOCK NUT -- 1 pc.

6. MOTOR MOUNT PL5440000 -- 1 pc.
   SOCKET HEAD SCREW M3x8mm -- 4 pcs
   SOCKET HEAD SCREW M2.5x8mm -- 4 pcs
   SCREW PM2x12mm -- 3 pcs
   SCREW PA1.7x8mm -- 3 pcs
   WASHER d3xD7mm -- 4 pcs
   WASHER d2.5xD6mm -- 4 pcs
   SPINNER Ø36mm SP28036WH0 -- 1 set
   9x6 FOLDING PROPELLER(3 BLADE) PL6314051 -- 1 set

7. WING TUBE Ø8x900mm -- 1 pc.
   RUBBER BAND 2.5x4mm -- 2 pcs
   HOOK -- 1 pc.

8. BATTERY MAT 2x50x150mm (For Radio Equipment & Battery) -- 2 pcs
   BATTERY TIE 200mm -- 1 pc.
   RECEIVER TIE 160mm -- 1 pc.
   CABLE TIE 150mm(For Brushless ESC) -- 1 pc.

9. COCKPIT -- 1 pc.
   CANOPY -- 1 pc.
   PILOT PC101050A -- 1 set

10. DECALS: GM048 DEC -- 1 set

11. FIELD STAND -- 1 set
Please choose either (02L&02R) or (03L&03R) or (04L&04R) that suits your servo.
2 Stabilizer & Elevator

- Please choose either (02L&02R) or (03L&03R) or (04L&04R) that suits your servo.

- Don’t over tighten screws, too much force will deform the foam.

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

- Please choose either (02L&02R) or (03L&03R) or (04L&04R) that suits your servo.

4 Tail Landing Gear

- Bottom View
5 Main Landing Gear

- **PA3x10 mm Screw**
- **M3x30 mm Socket Head Screw**
- **M3 Nylon Insert Lock Nut**
- **d3.2xD12 mm Washer**

6 Outrunner Motor / Spinner

- **M2.5x8 mm Socket Head Screw**
- **M3x8 mm Socket Head Screw**
- **PM2x12 mm Screw**
- **PA1.7x8 mm Screw**
- **d2.5x6 mm Washer**
- **d3.2xD12 mm Washer**

Optional Parts

- Outrunner Motor 28/30 KM0283010
- Propeller Adaptor (d3xD5) HW2340100
- 9x6 Folding Propeller (3 Blade) PL6314051
- PM2x12 mm
- M5 Nut
- PA1.7x8 mm
- Spinne Ø36 mm

- **EZ Connector**

- **PROPELLER ADAPTOR WRENCH**

- **TWM HW3111400**

- **Wheel Ø50 mm**
- **d4xD8x3 mm Plastic Collar**
- **d3.2xD12 mm Washer**
- **M3 Nylon Insert Lock Nut**
- **d4xD8x3 mm Plastic Collar**

- **Outrunner Motor M3x8 mm**
- **Motor Mount PL5440000**
- **M2.5x8 mm**
- **PA1.7x8 mm**
- **d2.5xD6 mm Washer**
- **d3xD7 mm Washer**

If you notice that the three propeller blades have not aligned themselves in one plane before flying, align them visually and advance the throttle slowly to full throttle. The propeller blades will be self-aligned.

- **Don’t over-tighten the M2.5 screws, too much stress on the screws could split the firewall.**
7 Main Wing

- Rubber Band

8 Radio Equipment

- Install and arrange the equipment as shown in the picture.

- Aileron Servo Lead
- Wing Tube Ø8x900mm
- Hook

- Receiver Tie
- Battery Tie
- ESC Connector
- Brushless ESC
- Iron
- Battery Mat
- Receiver
- ESC Motor
- Motor
- Solder
- TWM KP0011310

9 Canopy

- Double Sided Tape
- Pilot

- Completed
The field stand can be used as a launching-pad if you are flying on paved runways. Place the **SZD-45 Ogar** on the stand, point it into the wind, check your controls and advance the throttle. When the **SZD-45 Ogar** gets enough air speed, pull the elevator gently and the **SZD-45 Ogar** will fly off the field stand and get airborne gracefully.
**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: 12mm, 12mm
- Rudder: 30mm, 30mm
- Ailerons: 15mm, 15mm

**C.G.**

The ideal C.G. position is 65mm (2.56in.) 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.

# **SZD-45 Ogar** is specially designed to be powered by KM0283010 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. Extreme caution should be exercised when working with electric powered models. Make sure the propeller is cleared of all objects, especially your hands before connecting the battery to the model. Make sure you understand the operation of the ESC (Electronic Speed Control) by studying the ESC manual. Once you plug in the battery for electric powered model, always treat the propeller as a rotating one, as accidental movement of the throttle stick will spin the propeller and could cause injuries.

# Check and re-tighten up all factory assembled screws, use thread locker if necessary.
Optional Parts

(3WM ACCESSORIES)

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

Clevis Wrench

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI8210010</td>
<td>1 set</td>
<td></td>
</tr>
</tbody>
</table>

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

Propeller Adaptor Wrench

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW3111400</td>
<td>1 pc</td>
<td></td>
</tr>
</tbody>
</table>

Brushless ESC

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Size</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>KC2025A02A</td>
<td>24x45x11mm</td>
<td>1 pc</td>
</tr>
</tbody>
</table>

- Voltage Range: 5.6 ~ 16.8V
- Current: 25A continuous
- Current (Burst, >10 seconds): 35A
- Weight: 24 g
  (with wires and connector)
- BEC: 5V / 2A
- Low Voltage Cut-off: /
- Light weight with low internal resistance
- for high current operation
- BEC function for Li-ion / Li-poly
- 2 ~ 4 cells; Nimh / Nicd 5 ~ 12 cells operation.
- Low battery voltage auto cut off to reserve power to the servos.
- Safe start up motor.

Outrunner 28/30

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>KM0283010</td>
<td>1 pc</td>
</tr>
</tbody>
</table>

- Max speed: 12000 rpm
- Kv (rpm/V): 1015
- Operating Power: 180W
- Operating Voltage: 6~12V
- Operating Current: 15A
- Peak Current: 20A (max. 15 sec.)
- Internal Resistance: 95 m ohms
- Diameter: 28mm
- Length: 30mm
- Weight: 60g
- Shaft Diameter: 3mm
- Shaft Length: 14.8 mm
- Mounting Screw: M3
- Distance of Mounting Holes:
  Front (16mm and 19mm)

Outrunner 28/32 Deluxe (25% higher power)

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>KM02832R1</td>
<td>1 pc</td>
</tr>
</tbody>
</table>

- Kv (rpm/V): 1010
- Operating Power: 225W
- Operating Voltage: 6-15V
- Operating Current: 15A
- Peak Current: 20A (max. 15 sec.)
- Internal Resistance: 102 m ohms
- Diameter: 28mm
- Length: 32mm
- Weight: 60g
- Shaft Diameter: 3mm
- Shaft Length: 15mm
- Mounting Screw:
  M3 (Front) and M2 (Back)
- Distance of Mounting Holes:
  16mm and 19mm (Front),
  12mm (Back)

Propeller Adaptor

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW2340100</td>
<td>d3xD5</td>
</tr>
</tbody>
</table>