

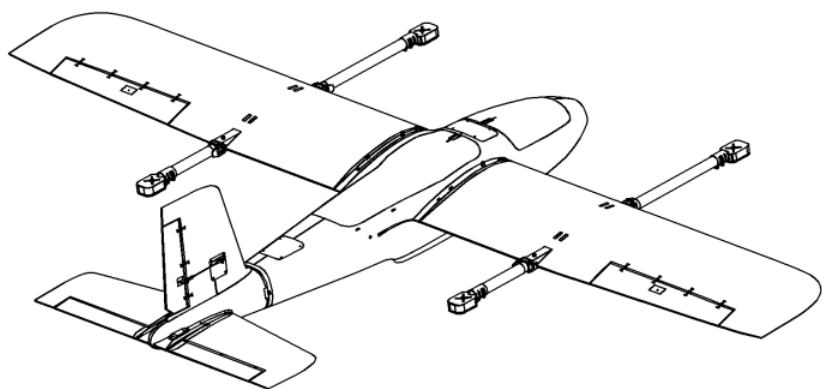
奋斗者 (垂起版)

FIGHTER

用户手册 v5.0

User Manual V5.0

2026.03



mfe
makeflyeasy

产品概述 Product Overviews

简介 Introduction

奋斗者是一款 EPO 材质垂直起降固定翼飞机壳体，具有携带易用，操作友好，稳定耐用等特点。模块化设计理念让飞机组装工作简单快捷，可快拆机翼、可折叠机臂，可快拆尾翼、使飞机具有实用的便携性和友好的用户体验。

The Fighter is a VTOL fixed-wing aircraft shell made of EPO material. It features easy portability, user-friendly operation, outstanding stability and durability. Adopting a modular design concept, the aircraft allows simple and rapid assembly. It is equipped with quick-detachable wings, foldable arms and quick-detachable tail fins, delivering excellent portability and an optimized user experience.

免责声明 Disclaimer

Makeflyeasy 系列产品为通用航模/无人机零配件，任何理由引起的直接，间接衍生性意外伤害造成的后果，厂家不承担任何责任。

禁止用于军事相关用途，禁止用于涉密及违禁飞行场景，严禁擅自闯入机场、军事管理区、禁飞区飞行，使用者承担全部飞行责任。

请把飞行器放置儿童触及范围之外，确保飞行器飞行时远离人群及危险物品，切勿在饮酒，疲劳或精神不佳情况下进行任何飞行器操作。

All products of the Makeflyeasy series are general model aircraft and UAV spare parts. The manufacturer shall not be held liable for any consequences arising from direct, indirect or consequential personal injury caused by any reason.

This product is prohibited for military-related purposes, confidential operations and prohibited flight scenarios. Unauthorized flight into airports,

military restricted areas and no-fly zones is strictly prohibited. The end user shall bear full responsibility for all flight activities.

Keep the aircraft out of the reach of children. Always operate it away from crowds and hazardous objects. Do not operate the aircraft under the influence of alcohol, when fatigued, or in poor mental condition.

产品规格 Products specifications

材质 Material	EPO、EVA、碳纤维、PC、工程塑料等 EPO,EVA,carbon fiber,PC,engineering plastics etc.
翼展 Wing Span	2430mm
机身高 Fuselage height	180mm
机身长 Fuselage length	1450mm
翼面积 Wing area	72.5dm ²
产品净重 Net Weight	2.7 Kg/VTOL
装箱重量 Gross Weight	7.7 Kg/VTOL
包装箱尺寸 Transport case size	1.26m×0.35m×0.495m

产品使用注意事项 Usage Attentions

安装注意 Installation Attentions

1. 在焊接大电流连接器时，焊接线序一一对应，避免烧毁电调、舵机。
1. When soldering high-current connectors, ensure the wiring sequence is correctly matched to avoid burning ESC and servos.

2. 副翼和尾翼推荐使用 **MFE3054** 数字舵机, 或者其他相同尺寸的舵机, 便于快拆装置的安装。

2. We recommend the MFE3054 metal digital servo, or other same size servo for the easy installing of servo and tail wings quick release devices.

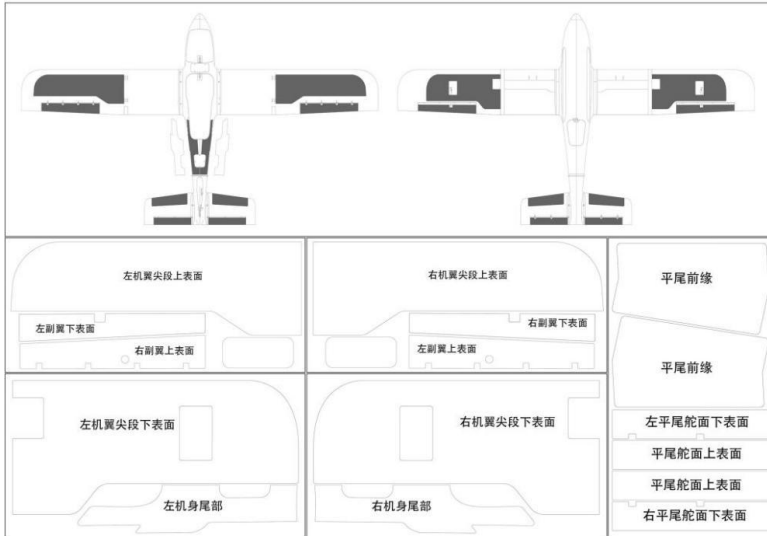
3. 在安装电机座时注意调至水平。

3. Please adjust the front and rear motor frame to the level during installation.

4. 请按下图所示用贴纸对飞机进行加强。

4. Please reinforce the aircraft with stickers as shown below.

奋斗者加强贴纸示意图



飞行注意 Flying Attentions

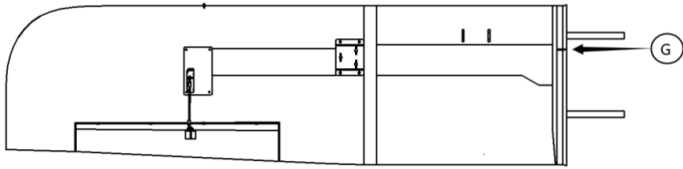
1. 请避免在 10m/s 以下的速度飞行转弯, 以免飞机失速。

1. Do not turn at speeds below 10 m/s to avoid stalling.

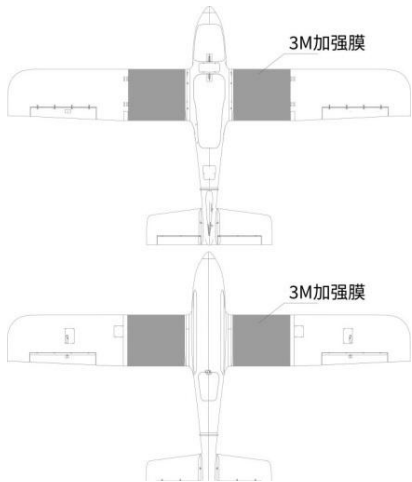
2. 飞行前请务必检查电机、螺旋桨安装正确稳固, 电调信号线和电源线插头连接紧固可靠。

2. Ensure the motor and propeller were installed correctly and securely before flying, inspecting the ESC signal wires and power wires plug, ensure they were connected toughly.

3. 飞行时远离不安全因数，如障碍物、人群、儿童、建筑物、高压线等。
3. Away from the unsafe factors such as barrier, crowd, children, buildings, high-voltage wires and etc while flying.
4. 务必在安全起飞重量下飞行，切勿在机场净空区范围飞行。
4. Takeoff under the safety weight and never flying in the area of airfield clearance zone.
5. 请按标识重心位置配重（位于机翼翼根塑料件下凸起处）。
5. Conduct the counterweight at the marked center of gravity position. (Located under the plastic part of the wing root)

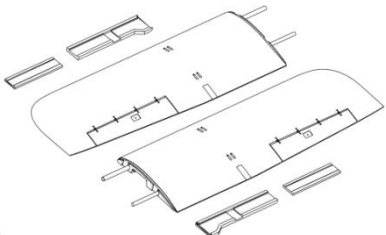
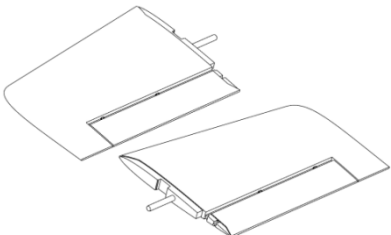
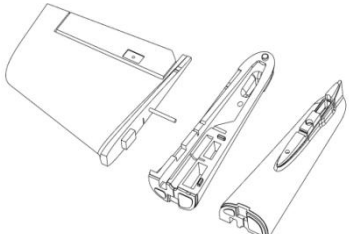
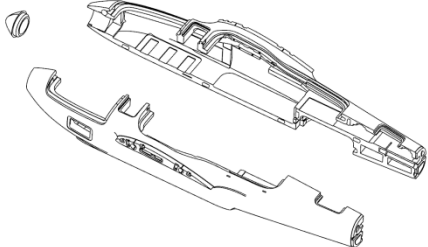
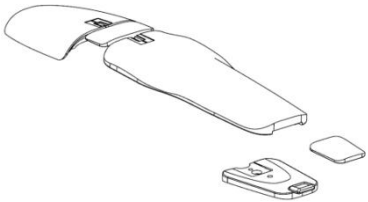
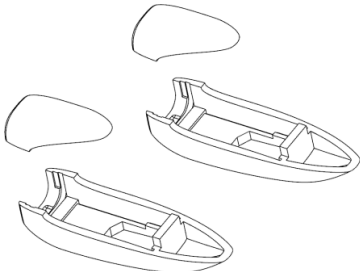


警告 (Warning) : 垂直起降版本请使用配套的背胶加强贴膜对机翼进行加强。For VTOL versions, please reinforce the wings with the supplied adhesive reinforcement film.


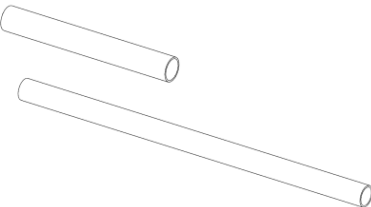



盒内物品清单 Contents in the box

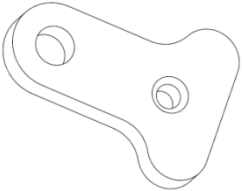
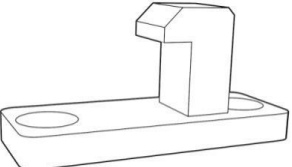
EPO 部件 EPO Parts

<p>1.左右机翼 left & right wing</p> 	<p>2.水平尾翼 horizontal tails</p> 
<p>3.垂直尾翼 vertical tail</p> 	<p>4.左右机身 left & right fuselage</p> 
<p>5.机舱盖 Cabin cover</p> 	<p>6.双发电机座 Motor mount on wing</p> 

碳管部件 Carbon tube parts

<p>1. 机身支撑碳管 Fuselage supporting carbon tube 16*14*260mm 14*12*260mm</p> 	<p>2. 机身尾翼连接碳管 Fuselage&tail-fin carbon tube 16*14*120mm 14*12*250mm</p> 
<p>3. 平尾对插碳管 horizontal tail carbon tube 10*8*97.4mm</p> 	

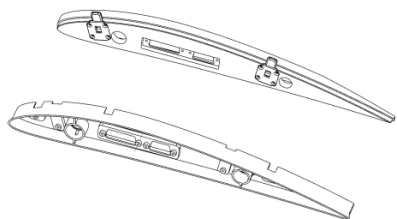
金属部件 Metal parts

<p>1. 金属挂钩*6 Metal Hooks *6</p> 	<p>2. 金属锁钩*8 Metal latching hook*8</p> 
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塑料部件 Plastic parts

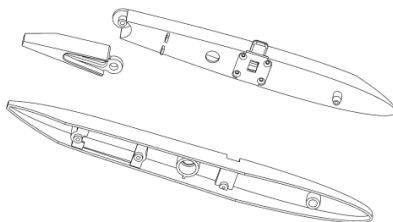
1.机翼连接件*2

Wings connecting parts*2



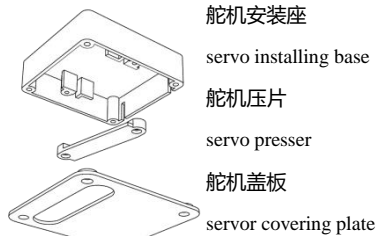
2.尾翼连接件*2

tailsconnecting parts*2



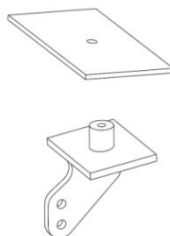
3.舵机固定件*3

Servo fixing parts*3



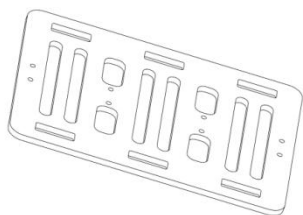
4.舵角*3

Helmangle *3



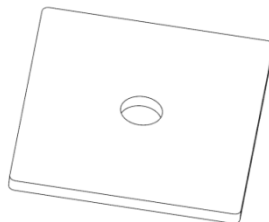
5.电池固定板

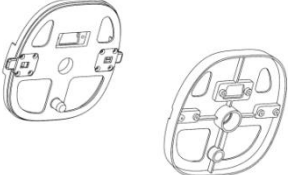
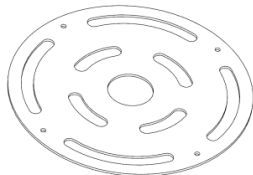
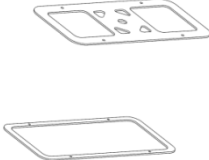
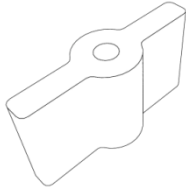

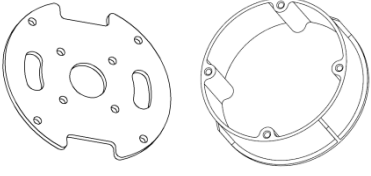
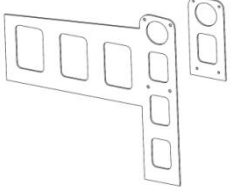
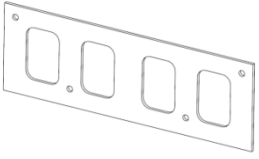
Battery fixing board

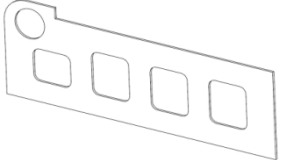


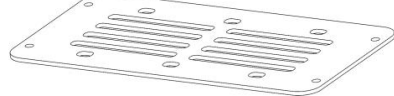

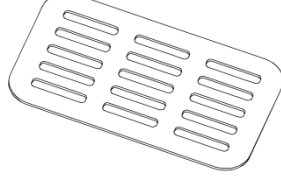


6.天线固定板*2

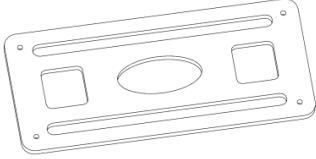
Antenna fixing board*2

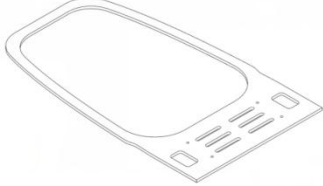

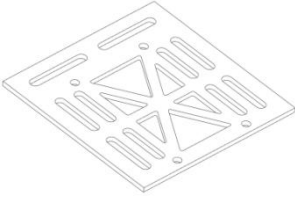
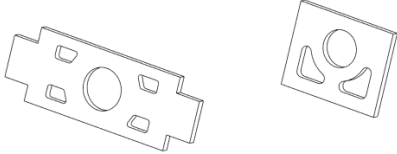
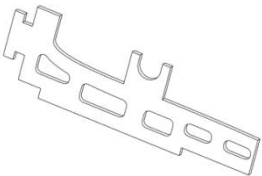


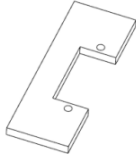


<p>7.机身连接件 Fuselage connecting parts</p> 	<p>8.GPS 固定板 GPS fixing board</p> 
<p>9.舱盖 (分电舱) 固定板 Cabin cover fixing board (Distribution room)</p> 	<p>10.螺丝柱*14 Stud*14</p> 
<p>11.舱盖 (GPS 舱) 固定板 Cabin cover fixing board (GPS cabin)</p> 	<p>12.巡航电机安装座 Head motor mounting mount</p> 
<p>13.机身主碳管加强件*2 Fuselage main carbon tube stiffener*2</p> 	<p>14.机身线材固定板*2 Fuselage wire plate *2</p> 

<p>15.机身副碳管加强件*2 Fuselage carbon tube stiffener*2</p> 	<p>16.机翼舵机盖板*2 Wing servo cover</p> 
<p>17.机翼接线舱盖板*2 Wing wiring hatch cover*2</p> 	<p>18.双发电调舱盖板*2 Wing ESC hatch cover*2</p> 
<p>19.机头电调固定安装板*2 Head ESC fixed mounting plate*2</p> 	<p>20.电调盖板 20 Head ESC hatch cover</p> 

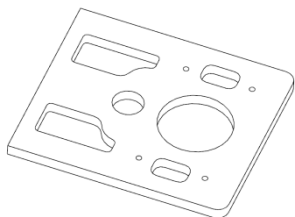
木板部件 Wooden parts

<p>1.机头电调固定板 Cruise motor ESC mounting plate</p> 

<p>2. 电池舱口加强件 Battery hatch stiffener</p> 	<p>3. 载荷舱口加强板 Payload hatch stiffeners</p> 
<p>4. 飞控放置板*1 Autopilot locating board*1</p> 	<p>5. 机身尾翼连接加强层板 Fuselage tail joint stiffener</p> 
<p>6. 双发电机座加强件*4 Wing motor mounting seat stiffener*4</p> 	<p>7. 双发电机安装座*2*2 Wing motor mounting mount*2*2</p> 
<p>8. GPS 放置板 GPS locating board</p> 	<p>9. 伞舱舵机座 Parachute Servo Base</p> 

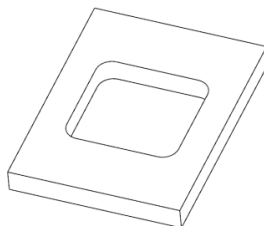
10.伞舱盖木板

Wooden plate of parachute hatch cover



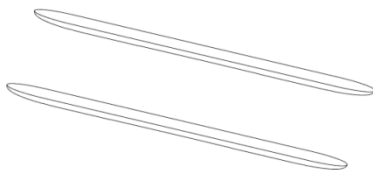
11.伞舱盖加强板

Stiffer of parachute hatch cover



EVA 部件 EVA parts

电池区缓冲垫 Fuselage cushion

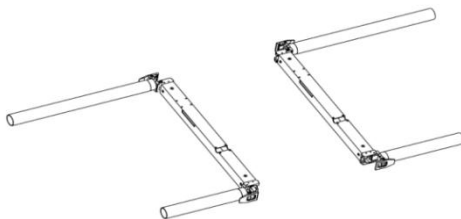


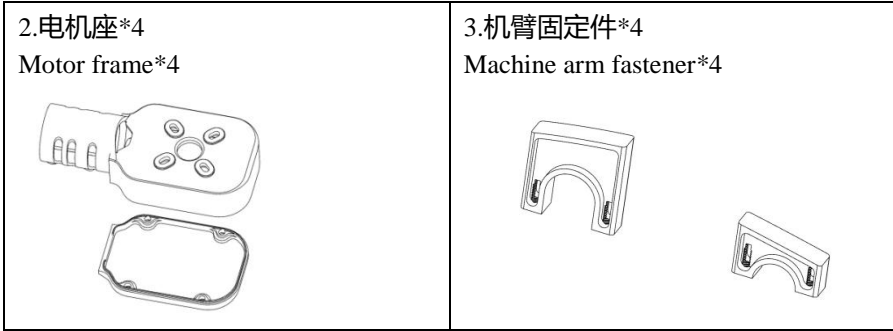
垂起配件

VTOL parts

1.左右可拆式折叠机臂

Detachable folding machine arm





动力部件

编号 NO.	名称及型号 Name & Model	数量 Qty	规格		备注 Notes
			重量 Weight	尺寸 Size	
1	定制电机 Motor 5120S kv190	1	重量 Weight	324g	
			尺寸 Size	56.8*43.5mm	
			额定电压	44.4v	
			运行功率	约 0.38kw	
			最大功率	约 2.15kw	
2	定制电机 Motor 5015S kv220		重量 Weight	221g	
			尺寸 Size	56*32.5mm	
			额定电压	44.4v	
			运行功率	约 0.37kw	
			最大功率	约 1.74kw	
3	螺旋桨 18 英寸正反桨 Propeller 18in E&EP	2	重量 Weight	39g	
			尺寸 Size	457mm	
4	螺旋桨 19 英寸正桨 Propeller 19in E	2	重量 Weight	83g	
			尺寸 Size	482.6mm	
5	电调 ESC MFE1260 12S 100A	2	重量 Weight	85g	
			尺寸 Size	74*37*16mm	
6	舵机 Servo	5	重量 Weight	23g	

	MFE3054		尺寸 Size	38.4*13*31.1mm	
7	舵机 Servo MFE08MD	1	重量 Weight	12g	
			尺寸 Size	23*11.5*24mm	
8	UBEC 14S 10A	1	重量 Weight	57g	
			尺寸 Size	55*33*13mm	

其他配件 Other fittings

编号 NO.	名称及型号 Name & Model	数量 Qty	备注 Notes
1	割尾圆头螺丝 M2*4 Round head flat tail screw M2*4	22	
2	割尾圆头螺丝 M2*8 Round head flat tail screw M2*8	70	
3	割尾圆头螺丝 M2*10 Round head flat tail screw M2*10	8	
4	带垫螺丝 M2.6*8 Gasket screw M2.6*8	35	
5	内六角螺钉 M3*10 Socket head cap screw M3*10	10	
6	金属挂钩 Metal hanger	6	挂降落伞和提重心 Mounted parachute & Measuring the center of gravity
7	一字螺柱 Plastic stud	16	
	尼龙螺柱 Hexagon nylon stud	28	
8	平尾传动螺柱 4.2-M2*8 Horizontal tail drive stud 4.2-M2*8	2	平尾部分 The part of the horizontal tail

	圆头螺钉 Button head screw M2*10		3	
	平尾传动舵角 The transmission leg of the horizontal tail		2	
9	热缩管 heat shrink tubing	直径 5mm*15mm	12	
		直径 2mm*15mm	80	
10	球头 Ball head		6	球头连杆 Ball link rod
	连杆 Link rod		3	
	圆头螺钉 Button head screw M2*10		7	
	自锁螺母 Block nut M2		7	
11	舱盖锁扣 Plastic latch		2	
12	铰链 Hinge		17	
13	大电流连接器 7W2 Large electronic current connector 7W2		2	
	D-SUB 连接器 DB9P D-SUB connector DB9P		3	
14	魔术扎带 Magic tie straps		2	与电池固定板搭配 使用 Matching the battery fixing board
15	硅胶线 Silicone wire	14 AWG 红色 1.5 米 14 AWG Silicone wire (red) 1.5M	1	
		14 AWG 黑色 1.5 米 14 AWG Silicone wire (black) 1.5M	1	
16	舵机线材 The servo	舵机延长线 10cm Servo extending wire 10cm	2	机翼部分 wing section

wire	单端公头线 35cm Single head servo wire(male) 35cm	3	尾翼部分 Tails section
	单端公头线 45cm Single head servo wire(male) 45cm	4	机翼部分 wing section
	单端母头线 45cm Single head servo wire(Female)45cm	7	机身部分 fuselage section

辅助安装工具和材料 (自备) Auxiliary installation tools and materials (Self-contained)

工具 Tools	用途 Usage
3.0mm 十字螺丝刀 3.0mm cross screwdriver	安装螺丝 Installing the screws
1.5mm-3mm 内六角 1.5mm-3mm Hexagon socket head cap screw	电机座安装 Installing the motor frame
电烙铁、焊锡丝 Electric iron,solder wire	焊接电源、舵机线 Welding the power line and servowire
打火机 Lighter	固定热缩管 Fixed heat shrink tube
小刀 Knife	剥线 Wire stripping tool
纸胶、透明胶、纤维胶带(Transparent) adhesive tape,fabric adhesive tape	飞机粘合辅助定位、飞机局部加强 Aircraft bonding and auxiliary positioning,local reinforce

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