

# SafeAir M-30

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ASTM F3322-18 Compliant\*

USER MANUAL

\*Pending

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## Important Notice

ParaZero's SafeAir M-30 Pro (ASTM F3322-22 compliant (**\*pending**)) is a drone safety system that, when used properly, mitigates operational risk and aims to lower potential ground impact kinetic energy in case of an emergency. ParaZero's drone safety system is not intended to eliminate all damages to people or property and ParaZero cannot guarantee this or hold any liability of any type. ParaZero's SafeAir M-30 Pro is a parachute system that uses a spring-based, ballistic deployment mechanism to instigate parachute deployment. Please note, you must read, comply with, and apply all written information in this manual. The responsibility for proper use of the drone safety system is placed solely on the user.

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**Attention:** Visit your product page at (<https://parazero.com/>) on a regular basis for the latest information and updates. It is imperative to perform system updates on a regular basis through the desktop application

**Register your Device!** ParaZero's SafeAir systems are professional safety devices. As such, it is important that we are able to contact you in case there are important updates, safety alerts, or recalls. In order to support ParaZero's ability to quickly reach you in case of a safety alert, please register your system with your contact information at: <https://parazero.com/product-registration/>

## Document Information

SafeAir M-30 Installation Guide

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## About This Guide

This user guide describes the installation and proper use of the ParaZero SafeAir M-30 (ASTM F3322-22 compliant (**\*pending**)) drone safety system, compatible with the following Matrice versions:

- Matrice 30T
- Matrice 30



# General information

## 1.1 Introduction

### Caution



- The SafeAir M-30 Pro is not intended for use in **Sport Mode**
- The **CSC function** (Combination Stick Command) is not supported

The ParaZero SafeAir M-30 Pro is a smart-parachute system that deploys autonomously after detecting a critical failure in your drone. When deployed, the parachute slows the descent rate of your drone and reduces the potential ground impact kinetic energy. The system incorporates the following main components:

- 1 A unique, spring-based ballistic parachute deployment system for near zero-time deployment, designed for operations at very low altitudes, across a range of flight envelopes, including zero speed (hover) and full forward speed.
- 2 A completely autonomous identification and activation capability, using the dedicated SmartAir™ autonomous triggering system (ATS).
- 3 A DJI M30 dedicated, independent flight termination system (FTS), called TerminateAir™. The M30 TerminateAir™ controls the motors of the drone for emergency shutdown scenarios.

The system is designed for fast assembly and detachment using only four tool-free screws. The SafeAir™ M-30 Pro drone safety system incorporates the following features:

- 1 Deployment in a fraction of a second.
- 2 Independent, autonomous detection of critical failures in a DJI M30 drone, including XYZ acceleration, critical angles, and extreme maneuvers.
- 3 Effectiveness at low altitudes and zero speed.
- 4 Effectiveness at extreme roll angles and at maximum speed.
- 5 Audio and visual warnings.
- 6 Easy, user-friendly Installation process.
- 7 Access to data logs via the [desktop application](#).

## 1.2 Technical Specifications

The SafeAir™ M-30 system should only be operated in open air and in steady weather conditions.

### Technical Specifications

Criterion	Specification
Expected Reaction Time	Up to 50ms
Minimum safe altitude	30.39m (99.7ft) AGL
Average descent rate at maximum takeoff weight 9kg (19.84lbs)	4.41m/s (14.46ft/s)
Total system weight	215g (0.474lbs)
Temperature Range	-10°C to +50°C (14°F to +122°F) when the system is fully charged
Maximum Wind Speed	12m/s (39.37f/s)
Humidity	90% @ 35°C (95°F)
Parachute repack cycle	1 years
Maximum number of deployments	5
Service life	5 years
Maximum Takeoff Weight	4,069g (8.97lbs)
Maximum altitude above mean sea level	3,000m (9,842ft)

\*ISA, at zero wind and stabilized vertical speed.

## 1.3 Maintenance

**The SafeAir™ M-30 Pro system should undergo periodic maintenance procedures once every year.** The first periodic maintenance schedule is set for once a year from the manufacturing date and appears printed on the system itself and on its box.

The maintenance should be performed by ParaZero, or a designated certified agent.

For more information, please contact [support@parazero.com](mailto:support@parazero.com).



## Safety Instructions

**Caution** Before you begin the installation process, read these safety instructions carefully!



Follow the instructions in this guide in the exact order in which they are presented, in order to ensure your own safety as well as the safety of others.

The Parazero SafeAir M-30 Pro is a safety system designed to deploy almost instantaneously by using a spring-based ballistic deployment mechanism which must be handled with caution.

The current version number is found on the product webpage: [www.parazero.com/m30](http://www.parazero.com/m30) under the [software tab](#). **A new device must be updated prior to first flight.**



SafeAir M-30 System

The SafeAir system incorporates a safety catch insert, which prevents unintended activation of the system.

**Do not remove the safety catch insert until specifically instructed to do so in this guide. Use the safety catch insert whenever the system is not installed on the drone.**

This manual explains how to properly install the SafeAir M-30, a description of the system's functionalities, and how to properly operate the system on the ground and in the air. Be sure to take the time to read this manual carefully in order to increase your safety and the safety of those around you.

**Note** – Using the SafeAir M-30 system does not eliminate all risks associated with drone operations. Please fly responsibly and in accordance with the rules and regulations defined by authorities in the area(s) where you are operating.



# Package Contents

The SafeAir M-30 package includes the following parts:

**Table 1 – SafeAir M-30 Package Contents**

#	Description
1	SafeAir M-30 unit
<b>Tools and cables bag</b>	
2	USB-C cable
3	4 thumb screws for fast connection of the system
4	4 mounting screws and an Allen key
5	2 long strings, 2 short strings
6	Carabiner and a carabiner holder
7	Spring Key
<b>The Remote Controller</b>	
8	Remote Controller (RC) – Optional



## SafeAir System Ports & Switches







# Installation

## 5.1 Preparations

- 1 The SafeAir should be charged using the provided USB-C cable for at least three hours prior to the first flight, using a USB power supply. Because the SafeAir interfaces with the drone's power supply via FTS connectivity, the system is automatically charged during flight, resulting in limitless SafeAir battery operation. If the system is not used often, it should be charged before flight for three hours.

Charge the SafeAir when the safety pin is all the way in.

- 2 (Optional) Charge the RC using the provided USB cable, using a USB power supply, for at least one hour before first use. Charging should be made while the RC is turned off.

**Caution**



When the RC is turned off or there is no link between the RC and the receiver, manual triggering capability is not available

- 3 Using the desktop application allows for firmware updates, automatic download of flight logs, and system configuration. Make sure to update your device using the desktop application. Connect the SafeAir to your computer using the provided USB-C cable. The desktop application installation and operational instructions are found [here](#).

**Warning**



Please do not connect the FTS cable to the drone to prevent inadvertent activation during the firmware update process

- 4 Perform the self-test assessment found [here](#)

## 5.2 Connecting the SafeAir system to the drone

- 1 Unfold the drone's arms and locate the four threaded holes at the front, on top of the drone



- 2 Position the parachute system on top of the four threaded holes, in the depicted orientation



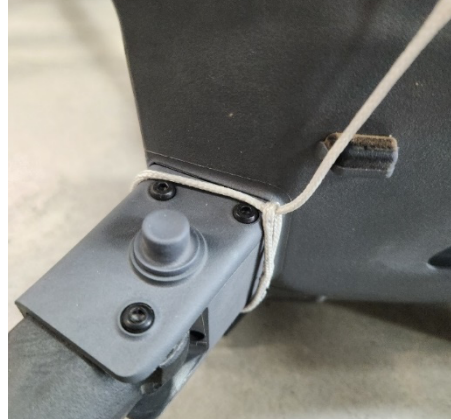
- 3 Operators who follow Max Takeoff Weight of 3,998g should attach four mounting screws, and tightly secure them using the Allen key. Otherwise, tightly secure the four thumb screws



- 4 Connect the TerminateAir cable to the PSDK Port of the drone



- 5 Connect the four parachute strings to the base of each of the four drone's arms by wrapping the string around each arm and inserting one end into the string's loop and tightening it as shown in photo. The two longer strings belong to the two rear arms, the shorter strings belong to the two front arms. Please note that the two longer strings are marked in the center (see image below)



- 6 Insert each loop to the carabiner of the parachute and secure the carabiner.



- 7 Remove the sticker cover from the carabiner holder and stick it just above the drone's power button. Connect the carabiner to its holder, to avoid freedom of movement



- 8 Verify that the rotors can rotate freely

**Caution**



**Do not lift the drone from the SafeAir System as this may harm the system!** Gently wiggle the drone to confirm that the system is securely in place.

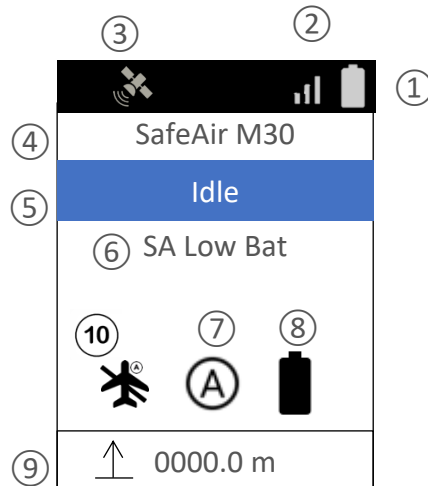


## Remote Controller (optional)














### 6.1 RC 2.0 System Ports & Switches



## 6.2 RC 2.0 Main Screen Messages



Category	Icon/Label	Buzzer indication	Meaning
① RC battery level			RC is charging
			Battery is at 80-100%
			Battery is at 60-80%
		Short beep every 20 seconds	Battery is at 20-60%
			Battery is critically low 0-20%
② RC Signal strength			Signal is at 75-100%
			Signal is at 50-75%
		3 long beeps every 5 seconds	Signal exists and below 50%
		3 short beeps every 5 seconds	No signal
③ GPS Signal			GPS Connected

④ Paired SafeAir system	SafeAir Mavic EU SafeAir Phantom EU SafeAir System Tail number		Indicates which system is paired to the RC. It's possible to assign the tail number for the SafeAir system via the desktop application.
Category	Icon/Label	Buzzer indication	Meaning
⑤ SafeAir State		Short beep at power up, 2 short beeps when entering idle	Systems is in Idle state, ready to operate
		Long beep when system enters arm state	System is armed and monitoring flight
		Chirp sound for 5 seconds	System was deployed due to freefall detection
		Chirp sound for 5 seconds	System was deployed due to critical angle breach
		Chirp sound for 5 seconds	System was deployed manually
⑥ SafeAir/ RC messages			
	SA Orientation		System is not level
	SA Critical Bat		SafeAir battery is critically low
	SA Low Bat		SafeAir battery is low
	SA Flash Error		SafeAir flash storage error detected
	RC Low Bat		RC battery is low
⑦ SafeAir Triggering Mode			Auto detection and triggering
			Manual triggering only
⑧ SafeAir battery level			Battery is at 80-100%
			Battery is at 60-80%
			Battery is at 20-60%
			Battery is critically low
			System is connected to a power source
⑨ Current SafeAir Altitude	0000.0 m		The current altitude relative to the takeoff point. The display only updates when the system is armed. Refresh interval may vary.
⑩ Autopilot			Drone Autopilot Connected

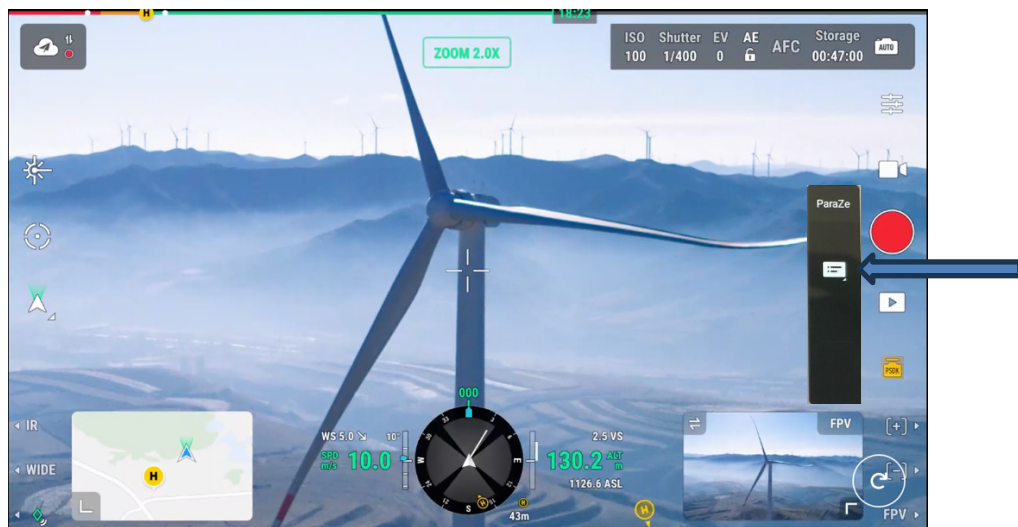
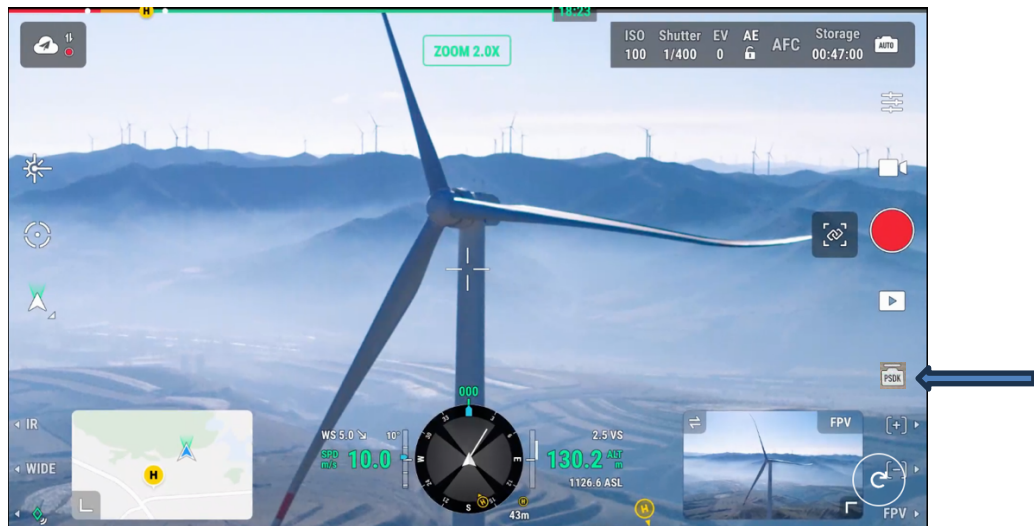
## 6.3 SafeAir M30 Drone Remote Screen Messages

While the SafeAir M30 is connected to the M30 drone via the SDK cable, the SafeAir M30 unit will display notifications and live data directly on the screen of the Drone's RC unit.

The data can be accessed via the PSDK ICON that appears at the middle part of the right-hand side of the drone's RC monitor when switching to **Camera view**.

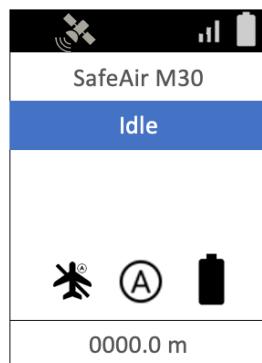
Pressing the **PSDK icon** will reveal a "chat bubble" icon that when pressed, opens a **data box** at the top left-hand side of the drone's RC monitor.

This allows the user to directly stream all relevant data directly from the SafeAir M30 unit to the Drone's RC monitor and have the data on one main screen. (See images below).







## 6.4 RC 2.0 Idle Screen



## 6.5 RC 2.0 Charging Indications

Turn the power switch is off and plug the RC to a 5V power source via the USB C cable.

<p>The main screen shows the charging status. Note: the percentage updates every 60 seconds</p>	<p>The following indication means low power. Charge the RC when this indication shows</p>
<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Charging</p>  <p>079%</p> <p>●●●●●</p> </div>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Charging</p>  </div>



















## 6.6 RC 2.0 System Specifications

- **Range** – 1 km or line sight
- **Battery capacity** – 1.5 hours
- **Frequency** – 868 MHz or 915 MHz, depending on region



## System LED indications

Stage	LED	Buzzer	Indication	Required action
Init	Solid White 	NA	System is initializing	None
	(*) Flickering Yellow x1 	NA	RC channel is disconnected or in active state	<ol style="list-style-type: none"> <li>1. Check RC is on</li> <li>2. Check that RC button is not pressed</li> <li>3. Check RC is paired to device</li> </ol>
	Flickering Yellow x2 	NA	System is not leveled	Check system is positioned on a leveled surface
	Flickering Yellow x3 	NA	System storage error	Format storage with ParaZero Desktop App
	Flickering Mgta/yellow x2  	Repeating 3 beep pattern	IMU error	<ol style="list-style-type: none"> <li>1. Restart system</li> <li>2. Contact support</li> </ol>
	Pulsing Magenta 	None	Autopilot connection in process	None
	After init	Solid blue (Idle) 	Init finish: Single beep System disarm: two beeps	System is ready to be armed. Will not trigger the parachute.
Solid Green (Armed) 		Single beep	System is armed, will deploy the parachute if necessary	None
(*) Flickering Yellow x1 		NA	RC channel is disconnected or inactive state	<ol style="list-style-type: none"> <li>1. Check RC is on</li> <li>2. Check that RC button is not pressed</li> <li>3. Check RC is paired to device</li> </ol>
Flickering Yellow x2 (Only when system is in Idle) 		NA	System is not leveled	Check system is positioned on a level surface
Solid Red (Triggered) 		Repeating beeping pattern with increasing frequency	System was triggered and parachute deployed	None

No light indication 	Repeating 3 beep pattern	System battery is low	Finish mission and charge system. If system is armed, it will continue to operate, however if power decreases further, the system will cease to function due to inadequate battery level
Flickering Cyan & magenta 	None	Autopilot - No connection	Try and reinforce SDK cable connection. If not working contact support.
Flickering Magenta 2x Yellow 	None	Sensor Malfunction	Contact Support
Solid Orange 	None	General Hardware Malfunction	Contact Support

(\*) ParaZero Remote Controller (RC) is an optional add-on and provides manual triggering capability.  
The LED indication is applicable for RC equipped systems.



# Operating Guidelines

## 8.1 Preflight

Finalize all preflight procedures to your drone and payload. The following tasks are included in addition to the regular preflight tasks –

- Ensure that the four mounting screws/ thumb screws are firmly closed.
- Make sure that the carabiner is secured using the carabiner holder and the latter is well attached to the drone.
- Verify that the TerminateAir cable is connected to the drone's PSDK port (the port on the right).
- Ensure that the fully extended propellers are able to freely spin without any existing or potential contact with the parachute system, and that the cable, strings, carabiner and carabiner holder do not obstruct any sensor.
- Turn on the SafeAir, then turn on the RC (optional). At the end of the initialization process, the SafeAir LED should be **BLUE** and the RC 2.0 should display the Idle Screen.
- Turn on the power to the drone
- For RC-equipped systems – perform the FTS test as outlined on [item 8.5](#) below
- Go back to a recommended safe distance of a minimum of 5 meters

### Caution



Flight in Sport Mode is not permitted while using the SafeAir system

## 8.2 Takeoff

- When ascending, you must climb to approximately 7 meters before the system will achieve an 'armed' status. Climb until you hear a single, long beep, and the LED turns **GREEN**, to ensure the system is armed. The state will be displayed on the RC 2.0 as well.
- The system is now armed and fully ready for activation in case of an emergency.

## 8.3 Before Landing

When approaching landing, descend the drone slowly while keeping it level. Three seconds after the rotors are stopped on the ground, the parachute system automatically disarms. At this point, a long double-beep indicates the system is now disarmed, and the LED turns **BLUE**

### Caution



Rough maneuvers in close proximity to the ground may result in inadvertent parachute deployment. Exercise caution during the landing process. As a precaution, always turn the SafeAir off before moving it. Failure to do so could initiate system deployment.

## 8.4 After Landing

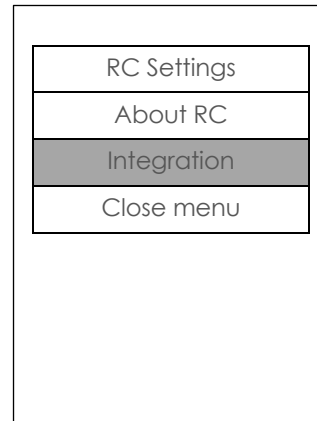
Turn the SafeAir off and turn off the RC (optional).

## 8.5 FTS Test (for RC equipped systems)

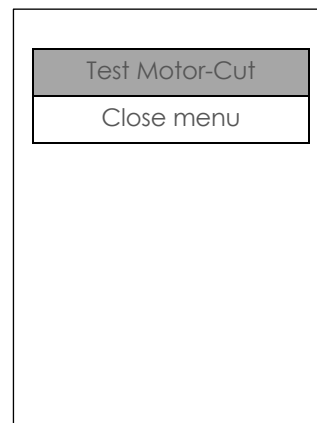
Applicable for RC 2.0 version 1.03 build 1.03 and later

In order to verify proper function of the FTS function perform the following steps. Make sure not to power the motors during the test. This checklist assumes that the preflight checks are complete.

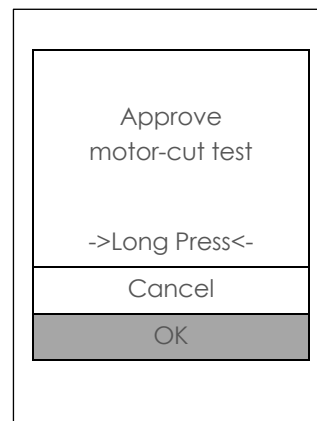
- 1 Press the middle button on the RC. The main menu will be displayed. Scroll down using the downward facing arrow button to "Integration" and press the middle button to select



- 2 Select "Test Motor-cut" using the middle button



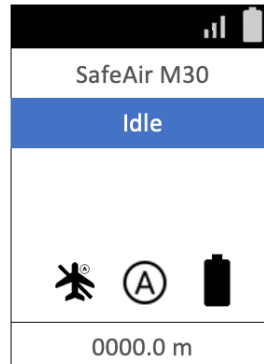
- 3 Scroll down using the downward facing arrow button to "OK" and long press the middle button to select



- 4 The following screen will be displayed on the RC, the drone will power down. Once the SafeAir is turned off, the drone will power up again. Turn the RC off as well



- 5 Turn the SafeAir on, then turn on the RC. At the end of the initialization process, the SafeAir LED should be **BLUE** and the RC 2.0 should display the Idle Screen



**Warning**



If the FTS test is not successful, do not use the SafeAir system and contact ParaZero support at [support@parazero.com](mailto:support@parazero.com)



# Deployment

## 9.1 General

For professional operators that comply with ASTM F3322-22 and are intended for flight over people, parachutes must be packed and repacked by ParaZero (or by an entity that has been certified and designated by ParaZero).

The SafeAir M-30 includes an Autonomous Triggering System (ATS) that identifies most of the known critical failures and triggers the system autonomously. Should an emergency situation occur, the system deploys the parachute, stops the rotors and reduces impact energy upon landing.

In addition to the ATS, the [SafeAir system may also be triggered manually by the RC signal](#) (optional). In order to manually trigger the system, press and hold the RC Trigger switch until the parachute deploys. See [video manual deployment](#).

The system can only deploy when it is in 'Armed' mode (Green LED). Following a deployment, the LED turns RED. Turn the SafeAir off to deactivate it.

Contact support at [support@parazero.com](mailto:support@parazero.com) for the deployment analysis.

## 9.2 Repacking the parachute

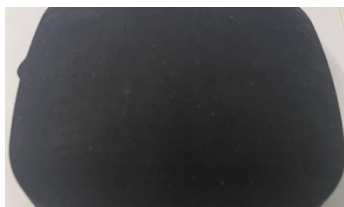
Inspect the parachute and ensure there is no damage to the parachute, lines, or the main parachute strap. Inspect the SafeAir system and the TerminateAir cable to make sure there is no apparent damage.

If there are tears, other suspected damage, or any uncertainty, please contact us at [support@parazero.com](mailto:support@parazero.com).

You will require all system components for the repack process, a few small weights will greatly assist you. Disconnect the SafeAir from the drone and disconnect the parachute main line from the carabiner. . Make sure you have found the inner stage and the top cover after the deployment (can be purchased here) and place all components on a clean dry surface large enough for the parachute. Note: **You will also need to use the customized Spring key to lock the springs (see image).**



Inner Stage

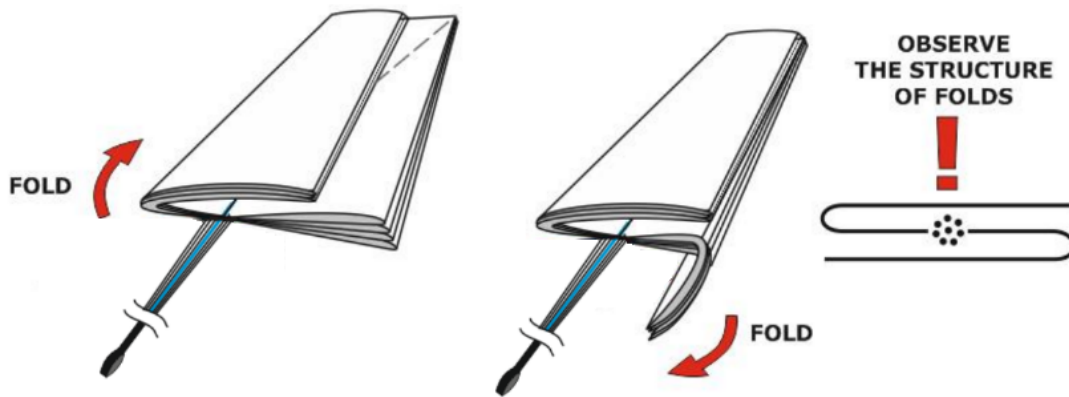


Top Cover



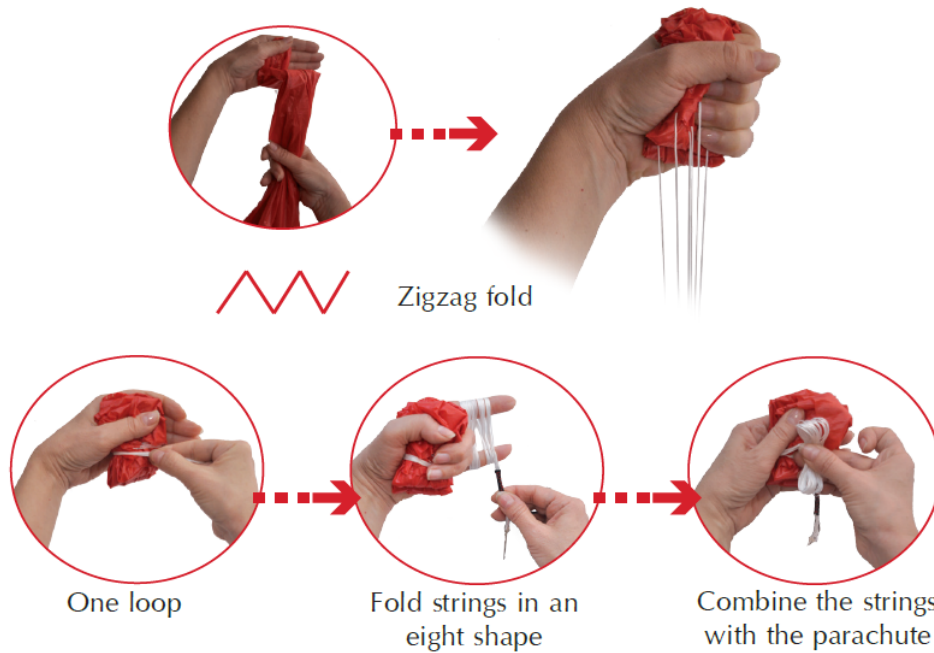
Spring Key

- 1 To lock the spring hooks in place, While holding the main system in the upright position, insert the spring key in the designates path at the bottom of the SafeAir system. Rotate the key counterclockwise until you hear a “click” sound and the base is now in its new position.
- 2 Push down the two main springs and secure them in place on the hooks at the base of the system.
- 3 Place the inner stage on top of the folded springs.
- 4 Place the parachute on the surface to ensure that the lines do not cross each other or are entangled, and that the lines are at the same length.
- 5 The parachute has 8 gores, fold all of them in half so that all the lines come out of the same place.
- 6 Divide the gores so there are 4 on one side of the lines and 4 in the other side.
- 7 Fold 2/3 of the left cells towards the center of the parachute (so that the gores reach to the middle of the right folds).
- 8 Fold the 2/3 of the right gores under the folded parachute. Use weights to keep the parachute depressed and folded, as you move along the length of the parachute.





- 9 With one hand, hold the parachute from its apex and use the other hand to fold it in an accordion shape into the holding hand until you reach the strings.
- 10 Hold the lines adjacent to the parachute, make a single loop around the folded parachute and continue folding them in a figure 8 shape using two fingers, all the way to the main strap (the main strap should fold once into the figure 8 shape).  
For any doubts, contact [support@parazero.com](mailto:support@parazero.com)



- 11 Place the folded parachute inside the inner stage with the strings facing downwards. Keep the parachute compressed tightly in the platform.
- 12 Verify the cover's orientation based on the label underneath. Begin with inserting the two corners on the parachute side. This will allow you to keep the parachute compressed in place using your other hand. The main line of the parachute should exit the system from the designated location on the cover.
- 13 While removing your hand that was compressing the parachute, fully close the cover.
- 14 Ensure that the parachute fabric is not sticking out of the system.



Install the safety catch whenever the system is not installed on the drone.



## CE and FCC Compliance information

### 1 FCC Compliance Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The FCC Compliance Statement is available online at [parazero.com/FCC-compliance](https://parazero.com/FCC-compliance)

### 2 EU Compliance Statement

The EU Declaration of Conformity is available online at [parazero.com/EU-compliance](https://parazero.com/EU-compliance)

### **Fly Safely!**

Should you have questions, contact our support team at – [support@parazero.com](mailto:support@parazero.com)



*Operate Drones Everywhere, Safely*

Telephone: +972-36885252

Email: [support@parazero.com](mailto:support@parazero.com)

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