

VectorSave™

50

Manual for VectorSave™ 50

DJI Matrice 300 series



v0.9

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Introduction to VectorSave™ rescue parachute system

Purpose of a rescue parachute system

VectorSave™ rescue parachute system is designed to reduce and protect possible damage that may be caused by impact energy of free falling drone hitting people, objects or ground. This is achieved by deploying parachute at sufficient altitude allowing the parachute to open before impact.

Ways to deploy parachute

VectorSave™ systems support multiple ways of deployment depending on the system you selected. Deployment can be automatic, external radio or system radio based.

Automatic parachute deployment is based on sensing free fall or tilt. Special software in the VectorSave™ system computes acceleration condition and angle of the aircraft compared to level condition in the gravity field. If free fall is detected for over defined time parachute will be deployed. Angle detection is also set so that the defined angle deviation needs to occur for over a period of time before it is considered unusual and the deployment will occur. It is also possible to disable one or both of the automatic conditions.

VectorSave™ systems equipped with internal Rx-option can deploy parachutes by separate external RadioSave™ unit or servo signal by drone flight controller or radio system (your drone must have a dedicated output function/ free channel to do so). Those deployment options that you choose to have active can be configured separately.

No transport limitations

VectorSave™ systems utilize special patented technology that makes it reliable and reusable. You can safely transport it in an airplane or any other type of transportation.

VectorSave™ has NO explosives - NO compressed gas - NO burning wires.

What is in the package ?

Scope of delivery

In the VectorSave™10 basic package you will receive

1. VectorSave™ 50 launcher
2. Parachute with shock cord and tube cap
3. USB Charger
4. m300 series mounting kit
5. m300 harness kit

Technical specifications

Launcher tube

diameter 98 mm

length 190 mm

weight 290g

full system weight 540g

Connector

micro USB to JST

Parachute

weight 250g

Shock cord/harness

tension strength 420 kg

Operating temperature range

lower limit - 15 deg C
higher limit + 55 deg C

Installing the System

Installing the vs50 m300 mount



The VectorSave 50 m300 mount is designed to be mounted on the back arms of the m300 copters frame. Make sure to install the mount so that the locking hinge folds open to the left. Use the tighter rubber bands to fasten the mount.



Make sure to put the tube to this height so that the top is on the same level as the hinge which holds the drones batteries in place. This way the VS50 tube doesn't interfere with the drones sensors.

Changing the batteries with the system mounted

You can change the batteries on your m300 without removing the system or mount. Open the lock on the mount and lower the launcher tube to the height shown in this picture. Before lowering the unit please disarm the unit so that it doesn't accidentally launch the parachute while you are changing the batteries.



After changing the batteries, remember to lift the launcher unit to the height where the top cap is on the same level as the batteries locking hinge and before continuing flying remember to arm the launcher unit again.



Installing the harness on the DJI m300



The m300 kit comes with four clips which are used to keep the harness ropes from covering the drones sensors and cameras. The clips are fastened to the copter with very strong two sided tape, before installing the clips remember to clean the are on the drone with a degreaser so that the tape will stick properly. After 24 hours the tape will hold on very strongly and is almost impossible to remove.

When installed correctly and your drone is mounted with a camera the drones center of gravity while falling with a parachute is in the middle of the drone. This way the drones legs will be taking most of the impact when landing with the parachute. This way even if you are flying low and the parachute doesn't have much time to slow the fall your drone and camera will stay intact and you might just lose the landing gear.

The following pictures will show you how to install them properly and how to put on the harness ropes.



The clips should be installed on both sides of the drone as seen here



Loop the harness ropes from below the drones arms and legs, take them through the clip to the top of the drone. Make sure to put the rope from the launcher unit through one of the back clips and attach all harness ends with the shackle provided in the kit.



Here you can see how the harness rope should be fastened in the clip.



Fasten the loose ropes with the small rubber bands provided in the harness kit.

VIDEO TUTORIAL FOR MOUNTING THE HARNESS ROPE [LINK HERE](#)

Packing the parachute

General ideas about packing a parachute

Parachute packing aims to flawless opening of the chute when deployed. There are many ways to pack your parachute and it will function in a correct way when opened. It is also imperative that you pack your parachute in a small volume so it takes as little space as possible when packed.

With use of the VectorSave™50 launcher you also need to pack it to the right shape and size to fit into the tube correctly. Tube has only a small space for it and if it is pushed in so that it spreads increasing the diameter it may cause the parachute to get stuck into the tube instead of shooting out nicely.

Therefore we like to suggest you follow our recommendations when packing and after some practice you will get it right every time.

Links to youtube parachute packing and testing videos

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Do not store the parachute packed in the tube

If you store your VectorSave™50 system for a longer time do not leave the parachute packed in the tube. In our testing parachutes that have been packed inside the tube for days will take much more time to open fully once deployed. Best practice is to test the launch tube after the last flight of the day and store it by hanging it from the shock cord.

Big benefit of the VectorSave™50 launcher is that it can be reused over and over again without extra cost. We recommend you take most out of it since it can be done without consumables.

If the tube cap is becoming loose over time

Should the cap fitting become loose over time you can use a piece of film tape or apply a thin layer of ca glue to the fitting to increase diameter just a bit to regain a nice snug fit.

Picture guide for packing the parachute

In the following pictures we show you the recommended way to pack your VectorSave™ parachute. You will start by making sure lines are untangled. In our tests we find that this is possibly the best way to pack parachutes in the right shape so that it shoots out nicely every time.

If your package is too thick and it required a lot of power to push in you did not make it right. Bad packing may jam the parachute in the tube and cause deployment failure.

Please be careful here - practice and do a tilt test to get it right.

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VectorSave™ 50 launcher



Before first use

Before first use, charge your parachute tube via the charger for about 2 hours.
When the battery is fully loaded you should be able to fly with it for approximately 8 hours.

Testing the tube by tilting

Once you have charged the launch unit it is time to test it is working correctly. Do not press the piston down yet. hold the tube vertically and press the button at the end of the tube once, you will see green light indicating the tube is powered on. Green light will stay on for 10 seconds before the tube will shut down its power. Now press the tube button again (slightly longer) so that light turns into blinking blue. Blinking blue indicates that the tube has registered level position and is ready to sense tilt and free fall. After you arm sensors and have blinking blue you may tilt the tube to any direction by 90degrees and the blinking blue will turn solid blue indicating that deployment was activated. Blue light will remain on until you press the button again and get green light for reset indication. If you arm tube by mistake you can reset back to green by pressing the button.

Now that your sensor test is done you can load the spring. To do this you need to use your fist. Holding the launcher unit end in the palm of your hand, use your fist and press it down against the piston until you hear click and the piston is locked to the down position. You may now repeat the tilt test while blocking the open tube end by hand to create some resistance for the piston. Without resistance the piston may pop out and some damage may occur.

[Video tutorial on how to test the unit](#)

Test flight

It is important you also fly multiple test flights in normal conditions with parachute electronics armed (blue light blinking) and confirm that blue light will not become solid blue while flying. While doing these flights DO NOT push the piston down and do not pack the parachute inside yet. Purpose of this is to test that your parachute will not be too sensitive for your used setup.

[Should you encounter too sensitive launch contact us for support](#)

Operating the VectorSave™ 50 launcher button - modes

1. Solid green - you get it when the button is pressed. Green is on for 20s before automatic shut down.

2. Blinking blue - tube is armed and gravity is registered when the button is pressed.
3. Solid blue - launch event has occurred and blue remains on until reset.
Remember to reset so you will not lose charge of your battery.

[Video tutorial on how to use the unit](#)

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FAQ

Frequently Asked Questions

Q: How do I know how much battery charge remains in the unit? A: When you switch on power you will get a red light blinking if the charge is too low. We recommend also to do a test launch in hand (hold one hand to block the open end to avoid piston popping out). If the battery is too low you will get a red light blinking instead of launching.

Q: Will it damage it if it is almost out of power and charged for more than 2 hours? A: Tube unit has a built-in charge controller so it will not damage if you leave it charging for a longer time. 15-20 minutes is about what it takes to achieve full charge.

Q: How long do you estimate the unit will likely operate on a full charge? A: With current latest firmware the battery lasts for 5.5 hours of operation for basic system and 2 hours of operation for system with built in radio.

Q: Is the position of the cap where the small opening is important to the unit's operation? Same question with the tube rotation, should it always be with a label as shown in your photos or? A: Cap positioning is meaningful only in the sense that the cap should not open by mistake, so try to figure out a good safe way to have cap on and harness fitting nicely. We recommend the rubber band to hold the harness and I prefer the cap hole on top so that the rope makes tight turns. The only case where the tube rotation matters is once it is armed. Same moment the tube is armed it will

register the direction of gravity and you may no longer rotate the tube. Tube can be in any rotational position when it is armed. Arming will define the level position for using the tube each time tube is armed.

Limited Product Warranty

VectorSave warrants products against defects in materials and workmanship for a one (1) year period from the date of purchase provided an original receipt is supplied for authentic-purchase verification.

VectorSave's sole obligation under this Limited Warranty is to repair or replace, at VectorSave's sole option, any Warranty Products that are returned to VectorSave during the Warranty Period and that VectorSave determines are defective.

This limited Warranty is VOID if VectorSave finds any signs of crash, damage, abuse, overloading, incorrect component matching, incorrect wiring, reverse polarity or negligence by the user.

Return Merchandise Authorization (RMA) number will be issued for your request via email, and must be placed on the return shipment label (or clearly marked on the box) for proper processing. Please refer to manuals and product video instructables (YouTube) for proper use, requirements, storage and maintenance.

If proper maintenance and storing is not performed as required, items may not be covered under the terms of this Limited Warranty. This Limited Warranty is VOID for all purchases from non authorized resellers or third-party sales (second-hand owners). Refunds are not granted under this Limited Warranty.