



airflo M Uno Plus

4th Axis Stabilizer

User Guide

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# Getting Started with your 4th Axis Stabilizer

Handheld gimbals are the biggest game-changer in the past few years for independent filmmakers! - You turn it on and out comes the magic footage! But they do have their (bumpy) limitations which is why you're here.

Our 4th Axis Stabilizers are designed to reduce that bounce that you typically see when someone is walking with a gimbal. That vertical bounce from your steps transferred to your hands can be mostly absorbed before it gets to the camera. But it doesn't stop at walking, you can go from softer motion all the way to jumping around like crazy.



## Initial Warnings



### ***Proper storage when not being regularly used***

*For the best working life of the stabilizer make sure that during periods of no use, that you take the tension off the suspension modules. This is achieved by turning the Spring Adjuster Knob anti-clockwise toward higher tension until there is no tension on the spring and the stabilizer arms move freely for a short distance.*

## Pinching Hazards

	<p>As there are moving parts in the stabilizer there are a number of pinching hazards that you will need to take care of so as not to injure yourself.</p> 
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*The best Steadicam support arm operators usually take years before they truly master their trade, but with our 4th Axis Stabilizers and a handheld gimbal, the learning curve is vastly quicker to get smooth results. You might be a natural right out of the box but most of us will need to dedicate time to getting your technique and settings right for each shooting scenario. Follow this guide to get up to speed as quickly as possible and you'll soon understand the finer points about how to get lovely smooth footage!*

## Let's get your new Stabilizer out!

Your 4th axis stabilizer (also called a Z-axis stabilizer) comes to you almost fully assembled with little more than adding the connector arms and handles and mounting your gimbal.

You'll also find this printed guide, a small lithium grease tube and a M2.5 Allen key for spring changes, additional Light (black) and Heavy (red) springs - (Medium Springs are pre-installed).



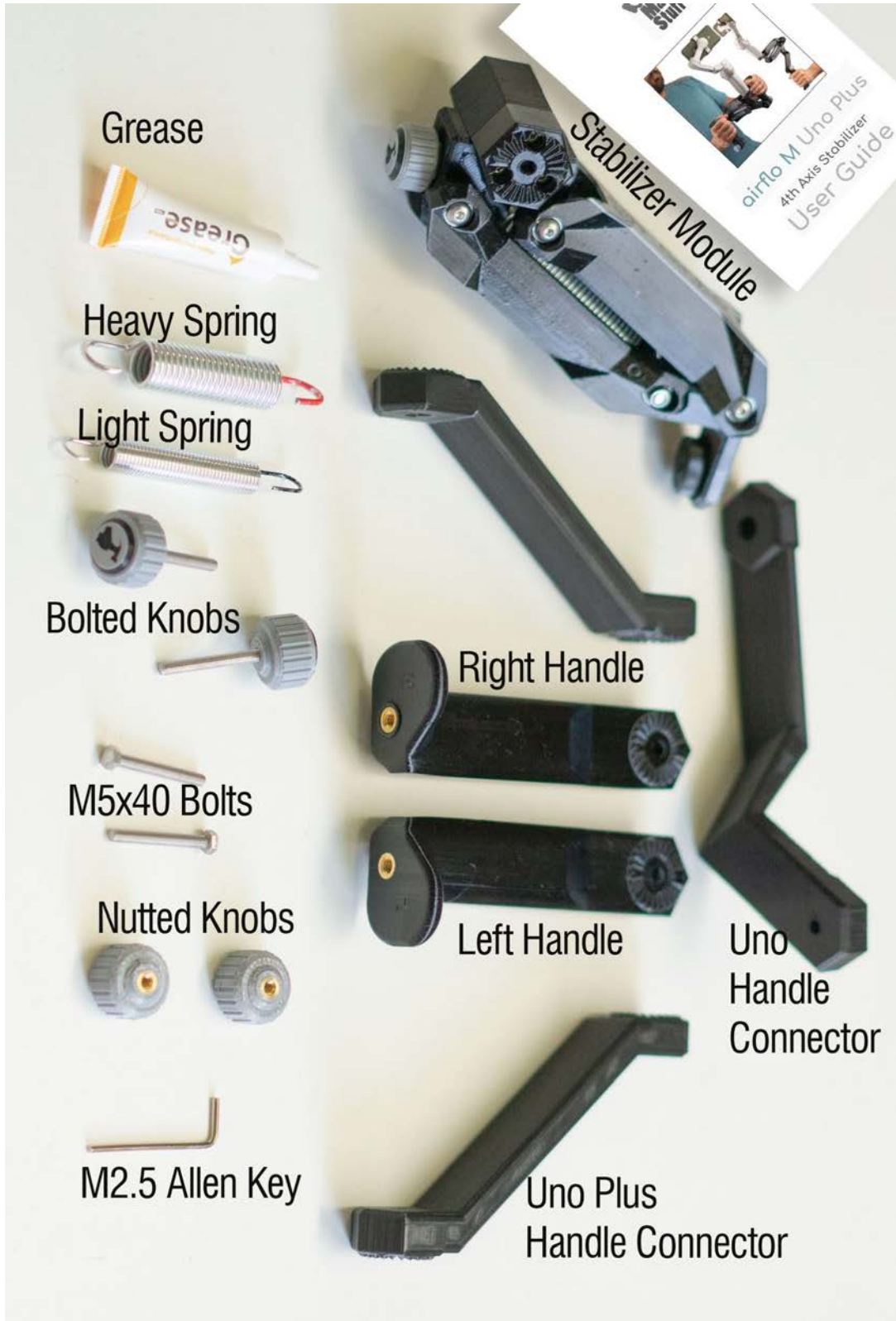
The handles, payload adjusters, fluid damping adjusters are all tool-less too! Although your stabilizer is 'tough as old boots' extremely high temperatures can cause permanent damage so please remember:-



**Note:** *Unless you release the spring tension, the stabilizer modules will be under tension. Just as you wouldn't leave your expensive cameras in a car on a very hot day, don't do likewise with your AirFlo M Duo as the combination of heat and the tension in the module means that temperatures exceeding 65°C (150°F) can cause permanent deformation!*

## Now for a quick once over

### What's in the Bag?



## Configurations for AirFlo M Uno and Uno Plus

We designed the AirFlo M Uno's to be versatile due to the 360 degree rotatable rosettes with positions from the standard 'Upright Mode' to 'Low Mode' for that dog's eye view of the world.

### Uno Setup

The single handle assembly for the Uno has one handle connector section and two rosette knobs for holding the assembly in many different positions. The arms can pivot around the rosettes and can then be locked down with the rosette knobs.



### Uno Plus Additional Setup

For the dual handle Uno Plus you get the control of the two handed form factor. This uses the two handle connectors attached to the two handles using the four 360 degree rotatable rosettes for a multitude of positions for a wide range of filming set-ups. With the connecting arms on either side of the stabilizer assembly, this is actually a more compact rig as well as giving greater control with two hands.



## Variable Bounce Damping Controllers



On the side of the gimbal base is a small adjuster knob for the variable bounce damping adjuster. The suspension springs, by their nature when stretched and released, will bounce back and forth until the springs initial energy or bounce is lost in the system via friction.

That bounce can be reduced and absorbed in the bounce damping system by setting the damping knob; turn it anti-clockwise to increase the strength of the damping and clockwise to lighten the damping. There is a bit more to it than that and it's a concept that's easy to misunderstand.





## Suspension System

### Suspension Module

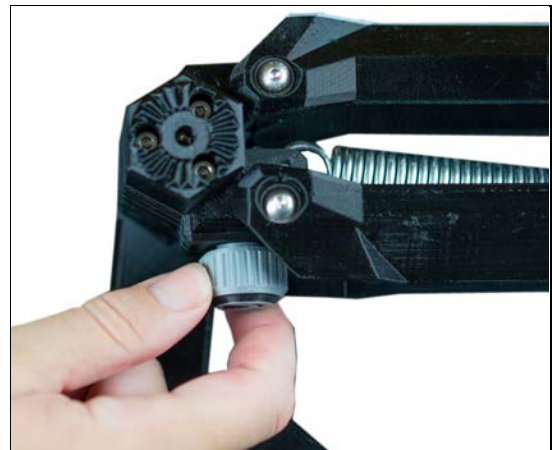
The suspension module connects the spring adjuster to the gimbal mount and holds the sprung system in tension in a 'McPherson Strut' arrangement.



This geometry is what gives you the range of support for different weight rigs. It's also mostly responsible for the very soft up to the more firm elastic suspension.

### Payload Spring Adjusters

The payload spring adjuster assembly is on one end of the suspension module and the other side attaches to the handle connector/s via the rosette mount/s. The main purpose though is to adjust the spring tension so that you can balance your rig (payload) properly.



The spring adjustment knob turns anti-clockwise to increase the spring tension and the bolt runner moves closer to the top. This will support an increased payload weight while at the same time decreasing the iso-elasticity.

Turn it clockwise and the bolt runner moves closer to the bottom. This will decrease the spring tension (also increasing the iso-elasticity). In most cases, you want to be using the most 'Iso-Elastic' setting for your rig but please read the 'Balancing' section to find out more about this as there's reasons to break these rules too!



### ***It's all about control and how much you can do without!***

*In other words when the payload is adjusted towards;*

- ***the firmest end*** allows enough control to frame the shot easier at the expense of more vertical movement in the footage and;
- ***the softest end*** has the potential to give you a shot that looks 'like it's on rails' but until you master it you likely find it too hard to control and you'll lose your framing easily - It usually takes some practice with the rig to master it - but if a guy like me with a bung knee can do it then you can too!

*Think of it in the same way that car suspension smooths out a bumpy road. So too our suspension system does the same to your bumps.*

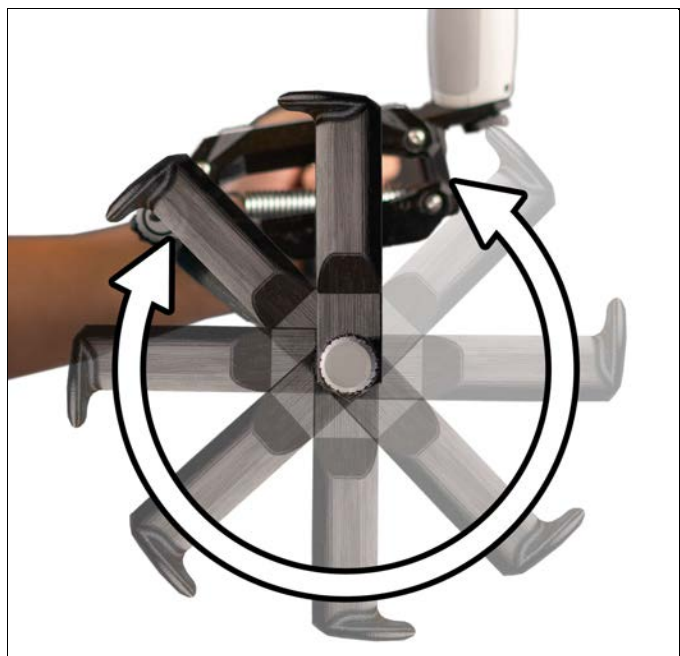
*Now consider the difference between the super-soft suspension of a luxury limo and the very rigid suspension of an off-roader.*

*In a luxury limo, you barely feel any bumps and this is 'Iso-Elastic' suspension. With the stiff suspension of the off-roader, you feel the bumps a lot more and this is more 'Elastic' or 'springy' suspension.*

### **Handles**

Both Uno and Uno Plus have their own specific handle connectors.

These attach via a 'Rosette Knob' that gives a full 360 degree range of possible positioning at both ends of the handle connector.



# Initial Setup

## Handle Position

For the sake of simplicity, start with the Uno single handed setup. Now you'll start with the module in 'Upright' mode as pictured. Even if you're planning on using your stabilizer predominantly with the camera inverted you'll find it easier to set up and balance in 'Upright' mode first before moving to 'Inverted' mode.



## Attaching the gimbal mount to your gimbal

Before you add your gimbal to the stabilizer you first need to balance your camera/phone on your gimbal as you normally do.

1. Then mount your stabilizer in the upright position.
2. screw the stabilizer firmly onto the base mount with the camera facing forward, away from you.
3. Turn on the gimbal and check that the stabilizer is firmly attached and then balance your payload as follows.



## Balancing Your Payload

### 1. Turn off bounce dampening

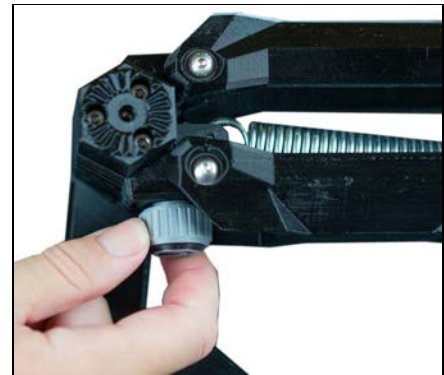
First, fully tighten the Bounce Damping Knob. Now adjust the Bounce Damping Knob anti-clockwise up to 5 revolutions or until the small compression spring becomes almost loose. This is so that the damping doesn't affect your balancing process.



### 2. Initial Payload Adjustment

We start by getting to a baseline loading where the support arm is roughly horizontal.

When you hold the stabilizer with the rig loaded you'll notice that the support arms either point up towards the centre or down. The most common use is for typical walking shots and the angle of the support arms is not as important as the setting for the most optimal smoothing as the vertical movement tends to be small. As long as your stabilizer doesn't 'bottom out' during your shot then you can go as low as you like with the support arms pointing down in the middle. The lower you go the more iso-elastic the stabilizer will behave.



## Holding your stabilizer with a soft touch

Before you start testing you first need to perfect your grip technique. Many of us that come from using either a gimbal handle grip or rigid dual handles which tend to be the 'power grip of death' ;-)

The biggest key to transitioning to the AirFlo M Uno 4th axis is to relax that strong grip and start using '**soft hands**' instead. There's an art to 'soft hands' so please read on?

It may be hard to 'un-learn' the techniques you've learnt but the silky smooth footage you get will be worth it!

## Holding your stabilizer with a soft touch

Although holding your AirFlo M Uno Stabilizer with soft hands is not as critical as with the Duo it's still a good technique to use as it will aid in your overall smoothing.

It takes time but there's one very easy way to practice this technique so you can get a feel for it fairly quickly. It might remind you of that weird 'jerking exercise gadget' on tv but bouncing the arm up and down repetitively will quickly teach you whether you are doing it right or not. The aim is to bounce the hands while keeping the gimbal as steady as possible. At first you'll find it may be hard to keep it steady but not before too you'll get the hang of it!



***We each move and shoot differently for our various filming movements. This guide is a good starting point but you each need to find the range of damping to suit your own shooting styles.***

# Testing

## Payload -> Shoot, Analyse, Adjust, Repeat

You'll start your testing by finding the best settings for your payload and your current level of ability.

The easiest way to do this is to practise the same short filming movement and analyse it to find the best settings for you.

What works best is if you repeat a short 15 to 30 second shot that involves walking on hard and soft surfaces, with some changes in direction and if possible also on an uneven surface such as that found on a lawn.

1. Start with the Payload Spring Adjuster set all the way to the bottom - make sure you stop when you feel the resistance at the bottom.
2. Set the damping adjustment knob so that it's turned off (Fully tighten the knob at first and then loosen it 5 revolutions to turn off the damping). This may give you some uncontrolled bouncing during the test but that will be fixed in the next section when we adjust the variable damping.
3. Rotate in full revolutions the Payload Spring Adjuster until it's high enough not to bottom out on your practise shoot. (This is now the minimum setting for the weight of your rig)
4. Let's be optimistic and start at this low setting! Film the movement with this setting and if possible look at the results on a monitor to see 1) how well bounce was controlled and 2) if you lost your framing or not. If you're not there yet then increase the Payload Spring Adjustment Knob a few revolutions, and then shoot again and repeat until you find the optimal balance (*pun intended!*) for your own style of filming.



## Variable Damping System

Your stabilizer has an independently adjustable damping system using PTFE (AKA Teflon) to give 'fluid like' bounce damping. This can be adjusted to smooth out a large range of spring bounce in your stabilizer.

The range of damping goes from zero to 100%. At 100% the small compression spring is fully compressed and can't be easily screwed in further. Loosening the damping knob 5 full rotations will give you zero damping. Each clockwise rotation increases the damping by 20%.



***We each move and shoot differently for our various filming movements. This guide is a good starting point but you each need to find the range of damping to suit your own shooting styles.***



### **Understanding how to set the damping**

*When you set the damping to a certain level you are actually setting the dampening range i.e. Setting the damping to 100% will not dampen out all vertical motion. Max damping will only dampen the most extreme vertical motion and light to medium motion will not be damped out.*

*You need to think of this setting as more of a range - For instance, if I set the damping to around 20% I find that motion from slow walking thru to walking downstairs will be smoothed out but any harder or softer motion won't be smoothed out.*

### **Damping Settings:**

To give you an idea of where to set the damping here's a range of filming movements with the level of fluid damping that I use for each.

- The most gentle camera movement - for this I tend to use from 0% damping up to 20% damping. (e.g. slow walking, all the faux slider shots, dolly/pans, faux crane shots, Push-In and Pull-Out)
- For walking or vertical or rotational motion (tilts, orbits or rotates) and stairs, I'll have it set roughly between 15% and 30%.
- For brisk walking or sudden changes in camera direction - (20%-40%).
- For walking backwards or light jogging (follow /Lead) - (30%-45%).
- For medium-pace jogging - (30%-60%).
- For running pace thru to hard running - (40%-70%).
- For jumping about or with very hard action on uneven surfaces - (60%-100%).



# Common Rig Configurations

## Upright Mode

The most common is the Upright Mode which gives the viewer the 'person's eye view' that they're already very familiar with. I tend to use it 80% of the time (e.g. walking head-shots or head to waist shots, over the shoulder, high to low shots and all the common moves such as push-ins out outs)



## Mid Mode

Now you unlatch your gimbal quick-lock and invert your gimbal and then re-attach the module. **Note:** Make sure your gimbals full range of motion isn't impaired by the handle. You can get some interesting creative angles such as a tilted-up 'Child's eye view' or moving along lower objects such as cars, railings, plants that's great for B-roll. It's also a good height for capturing smaller children.



## Low Mode

Now with the gimbal in the Mid Mode you re-adjust the handles to the top to get to the Low Mode (also called Briefcase Mode). It's great for those 'dog's eye view' of the world shots and the toe to head shot tilting up or a following behind legs or feet shots. Of all the stabilizer positions this is the easiest mode to operate as the lower centre of gravity keeps the gimbal nice and smooth with minimal effort.

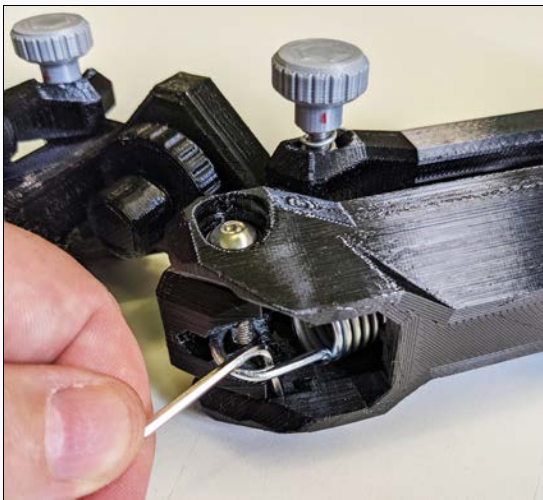


## Changing Springs

Changing the spring is a simple and straightforward process that can take just a few minutes. You may find it easier to follow the **AirFlo M Spring Change** video on our Scotty Makes Stuff YouTube channel:- <https://www.youtube.com/c/ScottyMakesStuff>

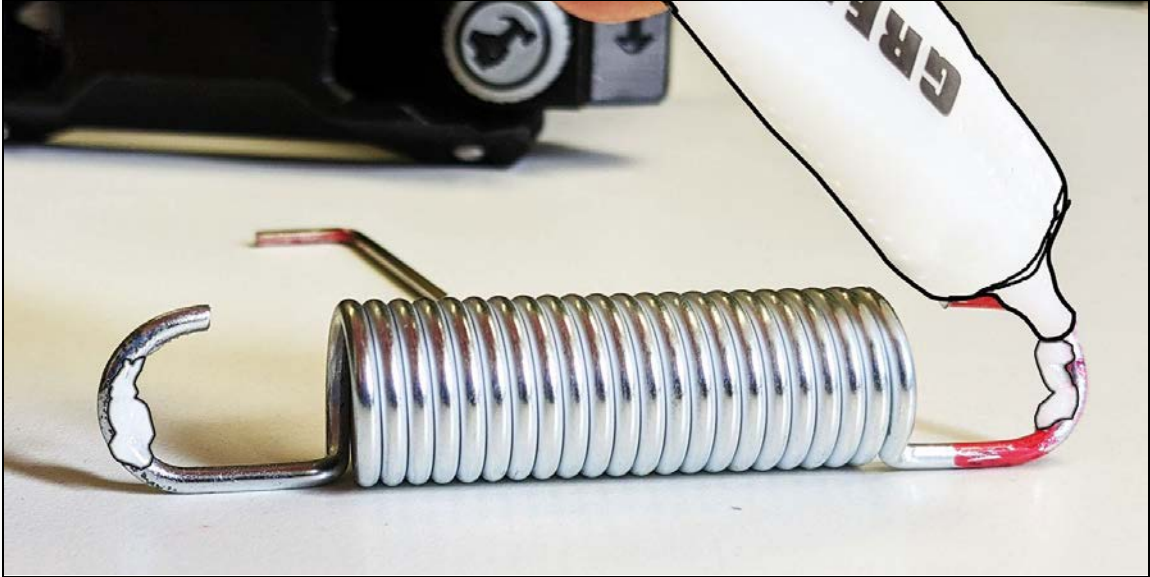
### Remove Spring

1. Turn your spring adjuster knob anti-clockwise until the spring is no longer under tension.
2. Take the Allen Key and unscrew the bolt runner screw until the spring comes out. If you place a bit of tension on the spring while unscrewing, it will pop out. Unscrew one more turn and stop.
3. Take the Allen key and hook onto the spring at the gimbal end and pull out the spring.



## Add New Spring

1. Take your lithium grease tube and snip the tip open before placing grease on the inside of the hooks.



2. Push the suspension arm up and then insert the new spring in the same way you removed the previous spring and make sure the hook goes onto the large bolt.
3. Place your finger on the end of the spring and then take the suspension arm from pointing up and slowly pull down until the spring hook lines up with the bolt runner and then push the spring hook into the bolt runner.
4. While still pushing from the other end, take the Allen key and screw down the small bolt until the bolt head just sits flush with the surface. Do not tighten this bolt further.



## Advanced Usage

As you get more and more familiar with the 4th Axis Stabilizer you'll uncover your own little tips and tricks to make your stabilizer do more. Here's one that I use on occasion;

### Monopod

The humble monopod can turn your 4th axis into something special with practice. It's easy to apply lateral forces to your rig so this will take some practice to get it perfect.

#### High Shots

Get above the crowd for a shot that conveys the extent of the scene. Take it further by walking with it for those faux drone shots at Weddings, Events and Trade Shows.

#### Faux Crane Shot

Slowly lift the monopod from head-height up for a big reveal while standing still or moving. Conversely, take it from high to establish the shot before coming down to a shot following your talent.

#### Low Shots

This is perhaps the easiest monopod shot to get great results with the quickest.

Invert your Uno and you can get right down to the height of a chihuahua. Since the monopod is hanging this will be naturally easier to get smooth results with.

### Autonomous Control

We have a number of mounts for autonomous mounting using the rosette or the ¼-20 for attachment. Think bikes, scooters, helmets, you name it! We've got solutions for so many attachments that can be used creatively!

## General Care

Here are a few pointers that you should be aware of if you want to take the best care of your stabilizer.



**Note:** *Your stabilizer is fully tuned out of the box so don't be tempted to go and tighten any bolts - The only changes you'll be making is adjusting the load and dampenings knobs, and also when changing to the different weighted springs.*

### Proper storing when not being regularly used

For the best working life of the stabilizer make sure that during periods of no use, or when subjected to extreme heat that you take the tension off the suspension modules. This is achieved by turning the Spring Adjuster Knobs anti-clockwise until there is no tension on the spring and the stabilizer arms move freely for a short distance.

### Temperature range

You should keep your stabilizer under 65°C (150°F) as some of the polymers will begin to soften after this point and if the stabilizer is under tension, it can potentially warp out of shape. **Don't leave it in a car on an extremely hot day!** Think of it like any other camera gear as you wouldn't leave your expensive camera gear in a hot car.

### Rain, Dust and moisture

You should avoid situations where the sealed bearings are subjected to water or dust ingress. Your stabilizer can withstand light rain but heavy driving rain could force water or dust particles into the bearings. **Do not immerse your stabilizer in water or spray pressurised water at it!**

## Cleaning, Maintenance, Care and Precautions

After any use where your stabilizer is subjected to dust or moisture, you should wipe with a dry or slightly moist cloth.

The lubricated bearings are sealed so no lubrication is required to the bearings or any other part of the stabilizer.



**Note:** *We build our stabilizers extremely tough but occasionally under certain movements there can be exceptional forces inadvertently applied to the stabilizer. Although unlikely this can possibly lead to breaking forces being applied to components of the stabilizer possibly causing catastrophic failure. This is especially important during autonomous use where the stabilizer is mounted to an object such as a car. In these types of scenarios, it's important to protect your rig with a safety line in the event of a catastrophic failure.*

## OK, that's it! Congratulations! :)

Now you have all the knowledge you need to get started. Just remember that at first, you will need to practise those techniques before you use it on a shoot. You might be a complete natural but I generally suggest you dedicate at least a few hours shooting and reviewing footage to find the right settings for you. Then you can go out with confidence and make all your very own silky smooth footage!

And one last thing, if you post some footage online then we'd love to see it so please shoot me off a link?

Thanks again!

Scotty McPherson