Lighten Up

by Kevin Palmer

Underwater imaging gear should be comfortable, right?

20 years ago, most of us never used float arms. Underwater housings were bigger and "floatier". Dome ports were usually acrylic and frankly we just thought struggling was part of the underwater photography ethos. Fast forward to today, with modern compact housings, glass domes, heavy water contact optics and one of the most common questions we get at Reef is how can I make my rig lighter in the water?

Enter floats and float arms. A brief mention to those who are of a do-it-yourself nature: It can seem reasonable to tie-wrap pool noodles or PVC pipe with endcaps to your aluminum arms, but we can assure you this is not a very effective idea and will be regretted soon after.

So, what is a good idea to try? First, start with finding out how negative your equipment is in water.

How To Determine Your System's In-Water Weight

In the age of modern underwater photography we are often asked, "how much does my system weigh underwater?" or "Which float arms do I need?"

Unfortunately, these questions don't have straight-forward answers due to different ports, lights, and mounting systems having different buoyancies underwater. Fortunately, we have found a wonderful solution to this dilemma...

Sounds easy enough right? And it is! All you need is water deep enough to submerge your entire system and a fish/luggage scale.

You can use any water for this, it does not need to be saltwater or fresh because the difference in salt densities differ across the seven seas anyways, so we're just looking for a ballpark here.

If you are lucky enough to live near a body of water that you feel comfortable submerging your underwater system in then you can simply use that, and if not then you can create your own. We use a large garbage; it works great as it is deep enough to fully submerge the system but also narrow enough to not use too much water.

Because each item has a different weight in the water, it is best to assemble your system fully minus the arms that you plan to replace with float arms. This will give you the most accurate weight of your system.

If you are simply looking to determine your system's in water weight without any plans to purchase float arms then you can weigh your system fully assembled.

It is also important to remember that if you dive with different ports or configurations it is necessary to weigh your system with each port intact. So if you sometimes dive with a macro port and an external wet lens and sometimes dive without a wet lens, then you should weigh your system each way- the same goes for domes and other accessories.

Make sure you have the ability to keep the scale above water while keeping the rest of the housing, arms, clamps, and lights underwater. We will usually attach it to a clamp, arm, or part of a tray. You can also tie a piece of fishing line from the housing to the scale if you need more space.

In submerging the system

it is important to make sure that everything is underwater and not touching the sides or bottom of the tub. Hold the luggage scale right above the water, only allowing the hook to get wet and no other parts of the scale if it is not waterproof.

If it is under a pound negative, a good place to start is adding Stix Floats to your aluminum arms. For most people the “Large” are not very useful as they offer limited flotation. Nine times out of ten, “Jumbo” floats are a better way to go.

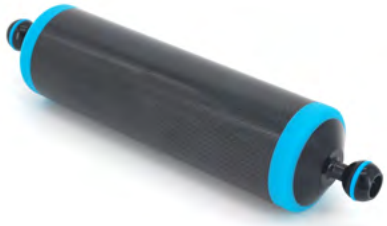
If you use shorter 5” arms, there is not a lot of room for these floats. But you can cut them in half with a serrated kitchen knife to get more on there. These are made from foam that is much harder and better at resisting pressure than a pool noodle. But they will lose a little flotation over time.

If you need more than 1 pound of compensation it is time to start looking at float arms. Why? Because they are generally more efficient than foam floats and offer more options for creating a profile that fits your style of use. There are many, many styles of float arms from many manufacturers. Be a bit cautious of brands you have never heard of. They may be very effective initially, but we have seen more than a few fall apart over the long haul.

Ultralight has been around almost as long as there have been underwater housings. They make a 1” and 2” diameter float arm in many lengths. While they are fine durable arms, they do not have a lot of “float” in spite of the name. Basically, these will float the weight of the arm and that is about it. So, not really appropriate for over a pound of compensation. If you have the 1” ULCS float arms it is possible to force the Stix Floats on to them and makes them more effective.

Kraken makes a unique and innovative float arm that is adjustable in the amount of flotation they offer making them somewhat customizable. On the surface this sounds great and while it may make a good solution for some people who have changing needs, there are some caveats. The first is that these are a bit heavier and less efficient as they are little more complicated and have more parts. The second thing to understand is that the way these adjust is by flooding part of them with water. That is fine when underwater, but out of the water, they are going to get noticeably heavier with the seawater inside of them. An example is here.

Inon was one of the first manufacturers of float arms for underwater use and they are still one of the best. Their fiber reinforced construction is extremely durable, and in fact, we have never seen one fail. They also have a variety of shapes and sizes and are fairly efficient. Not quite as efficient as the best carbon fiber arms, but pretty good. Add in that they are an extremely affordable price and you have a lot of bang for the buck with these arms.



Nauticam perfected their carbon fiber arms over many years and several generations. They offer the highest flotation efficiency of any arm with a multitude diameters and lengths to choose from. Not the least expensive, but highly effective and should offer many years of use. Important to know is that Nauticam wet lens holders are only designed to fit Nauticam float arm diameters. The extensive collection is here.

Short & Chubby, Longer & Narrower, How to Decide?

The first step is to find out how much flotation you need using the technique described in the article linked above. Once you know how negative you are in water, you can start your calculations.

Most people will still want to have their rig slightly negative so it can be placed safely on the bottom, and you are not fighting it. When you have it right, you should be able to take a picture with one hand or balance your whole rig with lighting on one finger underwater without any struggle. So somewhere between 100gm and 150gm negative is a good place to start.

We can say from experience

that a lot of people look at the chubbier arms and go “no”. We get it. Somehow it seems awkward to have large float arms. But it is important to understand that you get a lot more efficiency from diameter than length. Sometimes shorter chubbier arms are easier to deal with than longer skinnier arms. Nauticam 90 X 170 and Inon Small Mega Arms are great solutions when wanting to keep your arms short and manageable.

A good example of when long arms are not ideal is someone who primarily shoots still photography and likes to shoot a lot of macro. Longer float arms means the flotation is higher above the housing. This can make it difficult to rotate the housing downward at an angle to shoot a small subject. It can feel like you are fighting the housing wanting to rotate level.

Conversely, video shooters who primarily want to keep their housing pretty level will often do just fine with longer float arms. So 250mm or 300mm arms can work well for this.

There is no one-size-fits-all approach, but we would suggest keeping an open mind about sizing when analyzing your needs. When looking at the different sizes, almost all manufacturers offer some flotation guidance in grams. Just remember that if you are removing standard aluminum arms and replacing them

with float arms, you are gaining both the flotation of the new arm plus the in-water weight of the old arm you are removing. Of course, we are here to help walk through the pros and cons of how to make your rig more comfortable. We ALL use float arms on our imaging rigs.

A final note: When you start adding floats or float arms to your set up, most of your existing clamps will work, but we recommend replacing the standard clamp at the “elbow” of your arms with a long clamp so your larger arms can still fold parallel to each other. Your wrists and arms will thank you when you get your system perfect!

Kevin Palmer
www.reefphoto.com