downunderpix

TIPS AND TRICKS NO 14.

Camera System Buoyancy and Trim

Buoyancy can be a big problem for underwater photographers. Not their own buoyancy but the buoyancy of their camera system. A neutrally buoyant and balanced camera system is much easier to use and will help you create better photos. Also, you won't need arms like a body builder to keep the system up or down.

Buoyancy is about whether your camera sinks, floats to the surface or stays beside you when you let it go. Extremely positive or negative camera systems put a huge strain on the arms to keep them in position to take photographs.

Trim is about having the camera lens pointing forward and not to the surface or the bottom.

A properly balanced camera system will be neutrally buoyant with the lens pointing parallel to the water's surface.

As a scuba diver a positive or negative camera system will have an effect on your own buoyancy control, especially if you let the camera go. And significantly positive or neutral systems will give your arms a good work out and possibly increase your air consumption as your physical work rate increases. And as you fatigue, it is harder to keep the camera steady to take photographs and video clips will be severely impacted.

Neutral camera systems are much less fatiguing and far easier to push through the water. For shooting video clips, getting neutral buoyancy and proper trim helps the achievement of smooth camera movements. When the system is right it will float next to you, hands free.

If you have different configurations for your camera system such as for macro and wide angle, ideally you would balance each variant of the system. Note that large dome ports will tend to make your system point towards the surface and balancing it can be quite tricky. I use stick on lead weights (used for car wheel balancing) on the lower side of the dome along with strategically positioned float arms to gain proper buoyancy and trim on my Nikon wide angle system.

There are several options for balancing your system. You can use float arms (sealed air filled tubes) or high density foam floats around your arms. It can be done DIY by using foam / rubber insulation tubes (used on copper hot water piping) available from hardware stores or even cut down hollow pool noodles. The DIY options are cheap but will have to be regularly replaced as they don't last if you are doing a lot of diving.

So how do you balance out your camera system? Well, you weigh your camera system in water. Use either salt or fresh water, the difference is negligible.

1. Completely assemble the camera system, including hardware and lights as you would if you are going diving (including batteries).

2. Tie a cord (strong enough to take the weight) to a suitable part of the system.

3. Turn on your hand-held travel luggage scale and calibrate it to zero.

4. Connect the cord to the scales and lower your system into a suitable container of water. Make sure it is fully submerged and not resting on the bottom.

5. Take a reading from the scale. This is the weight of your system in water.

6. Assuming the system sank, you need to add lift / buoyancy to your system equal to the weight in water (i.e. if the weight in water it is 1.2kg negative you need to add 1.2kg in lift – say 2x 600g float arms).

7. If your system floats when doing the test (it may do so if you are using a large dome port) add some of your dive weights to the system until it is negative and weigh both the system with weights together and the weights separately. The difference will be the how much lift the system has in water. You will then need to add that much weight to the system to make it neutral.

Remember to make sure to weigh your system for each configuration of your camera system.

Also, if you can't weigh the whole system at once then weigh all the component parts and add them together. Just make sure you seal your camera system as you would if you were taking it diving.

Once you have added lift or weight to each configuration to get it close proper buoyancy and trim it is now a matter of tweaking it until you get it perfect.