

DIGITAL PHOTOGRAPHY

+ THERE'S NOTHING SO DISHEARTENING AS FINDING WATER IN YOUR CAMERA, EXCEPT MAYBE FINDING A LOT OF DISAPPOINTING PHOTOS AFTER A RATHER EXPENSIVE DIVE TRIP. THIS ISSUE WILL HELP YOU KEEP YOUR FILM OR DIGITAL CAMERA DRY AND YOUR SHOTS IN THE 'KEEPER' FILE.

: © KELVIN AITKEN 2006

Don't Blow A Seal.

If a camera housing leaks, there are two causes: A seal has failed to do its job or the housing material is cracked or has a fault. In almost all situations where a camera "flood" has occurred (ranging from a few drops to a complete inundation) the cause has been the seals that are found in every opening in the housing which include the strobe connectors, control dials and the major camera access seal.

All housings have two types of seals; user serviceable seals and "hidden" seals that are best accessed by a service technician. The good old Nikonos camera has about 24 O-rings but when you buy a replacement set you only get 4. The other 20 are supposed to be serviced by a professional camera technician who will also pressure test the camera after the service. Camera housings are similar. My housings come with almost 40 seal points but only two O-rings in the replacement kit.

What this means is that an important step to keeping your camera in good order is regular servicing, just like the service you have done to your regulator each year. Right? OK. In the real world, most regulators are serviced when you either can no longer breath through them or they leak like a Russian submarine or you are about to go on your annual dive trip and the chrome has gone all green and yucky and nothing happens when you connect it to a full scuba tank.

Camera housings are not that forgiving. OK, maybe you can skimp on the service for a year or three but when it does fail (and the laws of physics do assure that occurrence) then you are up for a whole lot more than just a few regulator innards. With today's cameras relying almost totally on electronics even a minor flood will destroy the camera. In the bad old days, cameras were mechanical. The shutter, film winder and trigger were all mechanical. There was no light meter. A camera flood was usually cured by a good soak in fresh water then drying it out in an oven or shoe box with a hair dryer running hot air over the soggy beast. Many a camera was rescued and dive trip salvaged by the good old hum of a hair dryer at night.

Yes, those were the days. and may they never come back. Auto focus, matrix metering, high speed drives, TTL strobe control, digital capture, instant feedback and much more make photography so much easier and fun today. The price is higher housing maintenance, or should I say "proper and correct maintenance".

When you unwrap your new housing the first step is to read the instructions. Yes, I know. You want to go out and play but you should find out first what O-rings need regular user maintenance. Some housing manufacturers, such as Nexus, insist that the main O-ring is never removed. Check the instructions. So lets look at basic O-ring maintenance for new and used camera housings.

Keeping It Clean

I've cleaned and serviced cameras by torch light on uninhabited islands, on floating pads of sea ice, in sweaty mosquito humming jungle huts, small open boats, wind swept beaches, in rain storms, even hail storms. It's no fun. However in normal circumstances you should perform your maintenance in a closed cool room on a sturdy flat table with a good strong light in stress free conditions. Rushing to clean an O-ring on the back deck of a dive boat while the mating whale sharks swim past is a sure way to flood your camera.

If you need to service your camera on a dive trip do it immediately after you've dried yourself. Don't put it off until after lunch, as the next dive will bring it's own stresses. If you don't open the housing between dives you probably will not need to touch any of the seals. If you've done a

blue water dive you may not need to do any re-greasing either. A shore dive in a sandy or silty area will guarantee the need to clean at least the main O-ring.

Rinse off your housing and dry any drops that will, (Murphy's Law) get into your camera. Clear your work surface, arrange your tools, turn off the music, tell your buddies to leave you alone, take a deep breath and open your housing. First remove the O-ring. Don't gouge it out with your trusty dive knife. Both the rubber seal and the seat it sits in are fragile. No matter how new and well lubed an O-ring may be, a scratched sealing surface will never seal correctly. Use a soft wood toothpick or smooth plastic edge (such as the corner of your abused credit card) to lift the O-ring out of its groove. Grip the ring with your fingers and gently peel it out. Small O-rings like those on strobe connectors are best removed by rolling an edge out over the sealing lip then use your fingers to roll out the rest of the ring.

Use a lint-free piece of cloth to clean the seat of all sand, grease and debris. Check – then check again – there's no hair, lint, fluff, crud and gunk left in the seat. I use old handkerchiefs, T-shirts, sheets or other absorbent cotton fabric that have had the lint washed out of them. Other devices like eyeliner applicators and cotton buds can also be used – just make sure nothing is left behind. Then clean the O-ring with a lint free cloth. Remove all traces of grease, sand and crud. When clean the ring should be dull and smooth with no cuts or nicks in the outer skin. Run it through your fingers – it's surprising how sensitive fingers are at picking up specks of sand or surface nicks.

Place a small dab of grease on the O-ring and run it around through your fingers spreading the grease evenly. The amount of grease used varies on the size of the O-ring. A large O-ring such as the main seal of a camera housing for an SLR may take 3 or 4 daubs. A strobe connector may take just half a dab. Practice and experience will give you the right amount. The ring should now be shiny without any heavy streaks of grease. Place it back into its



Use a soft wooden toothpick or smooth plastic edge to lift the O-ring out of its groove. Check your instructions to find out which O-rings can be serviced.



Murphy's Law states that disaster is just waiting for you to get out of bed. Tape down your hotshoe connection. You don't want it moving at that critical moment.



Small sync cord rings should be gently rolled out of their groove. This O-ring is coloured blue as it requires a special type of grease. Make sure that you are using the correct type of grease if you have coloured rings. Black O-rings use standard non water soluble grease.

groove, checking once again for hair or lint sticking to the ring.

O-rings are dynamic. They are designed to move. As you dive deeper they are compressed or a control rod may move against them. The grease enables the ring to move against the sealing seat without catching. The seal may be broken if the housing is used beyond its depth rating (check that pesky instruction manual) or if sand or grit becomes caught by excess grease and moved between the ring and the sealing seat. Lint or hair may also cross between the ring and seat allowing anything from a few drops to a rush of high pressure water into your camera.

While your housing's open, wipe out any loose bits of lint and grit that seem to migrate into sealed spaces. When you opened your housing a small vacuum

created by the parting probably sucked in all sorts of gunk and dirt. Do not rub the inside of the lens port, you will scratch it. Use a blower brush to gently clean away any dirt or dust.

If you find you're having problems with water leaks or if you want to (wisely) test your new housing or newly-serviced housing, remove the camera, attach a weight belt and lower it on a rope down to about five metres and leave it there for 10 minutes. If you have an elusive leak, stuff it with tissues so that you can see where the water is coming from.



Direction: The shark has some negative space to swim into, giving it a more dynamic feeling as opposed to having its snout shoved up against the edge of frame.

Crystal Clear.

How you protect your camera after the dive depends on whether you're on a liveaboard or on a day trip. In either case, the problem that arises from diving in the ocean isn't salt water. It is the salt crystals which come from salt water. When your housing dries off, minute sharp-edged salt crystals form. When you next operate a control, the sharp little nasty crystals gouge away at your rubber O-rings, or build up and are pushed into and around the ring on

your next dives, or cause corrosion which produces powdery oxides which also get between the seal seat and the rubber seal or cause pitting on the sealing surface.

The answer is to use fresh water to absorb and dilute any salt water and put any crystals back into solution. A quick rinse under fresh water will remove almost all salt and a soak in a fresh water tub will take care of the rest. An alternative is to keep the housing wet or damp so the salt water doesn't evaporate, leaving behind the slicing crystals. This may be as simple as keeping your housing in a bucket of salt water or wrapped in a wet towel. Obviously the hotter the air conditions the quicker the crystals will form.

On a liveaboard your housing is being used regularly each day, so a rinse and one to two hour soak at day's end should be more than enough to keep things crystal free. If the boat crew is worth their salt, at least one large, regularly refilled wash tank (with all dive gear banned from the tank, especially rinsing of dive computers with the associated flood of salt water running out of wetsuit sleeves) should be provided.

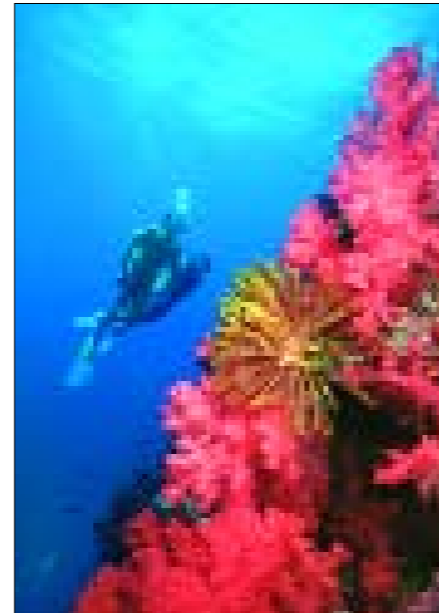
A lot of floods occur in wash tanks. This is usually caused by a bunch of divers jamming their gear into one tank with dome ports and strobe arms and strobe connectors and lots of other pokey parts knocking and bumping around. Not to mention scratches to dome ports by knurled knobs and metal pointy bits. Multiply by 10 in rough weather. If you can't have two sets of gear in one tank without them touching then the tank is either too small so



Framing: The divers are framed by the deep ledge, the sea bed and the gorgonian sea fan. The divers are also 1/3 inside the frame though I'd have preferred them swimming to the left and not out of the frame.



The 'S' Factor: The sinuous 'S' shape of the snake is mirrored in the sand ridge. Western humans tend to read from left to right and the human brain is geared to be attracted by light areas as well as the eyes of people or animals. The brightest part of the frame is in the bottom right hand corner so the eye naturally rolls from left to right, the brightest area also holds the head and eyes of the snake so the strong diagonal, dark to light, eye contact composition with the 'S' shape makes for a strong composition.



Colour contrast: The warm reds, oranges and yellows of the soft corals and crinoid contrast with the cool cyan blues of the ocean. The very strong diagonal helps to make this a strong composition.



Rule of Thirds: Divide your frame into three. An item of importance is placed on or near one of those lines. Divide it into three horizontally as well and the intersection points are places to put your important bits. In this case, it is the eye of the Freshwater Crocodile 1/3 in from the left while the vertical front leg lies on the other line.



Lines: In this case the lines are the flipper marks of the baby Green Turtle in the sand. From the top the lines allow the eye to roll from left to right then down to the left, all natural reading actions for we Western humans. The lines also take us to the darkest part of the frame where our main subject lies, something that would normally feel unnatural or awkward.

you need more tanks or you need to wait until it's empty.

Never, ever, let anyone else rinse and soak your gear. Especially those well meaning dive crew who have had "20 years experience doing this" or "have always looked after the cameras. Hey, I even have one myself". You're far better off rinsing your camera in salt water and wrapping it in a wet towel than having a well-meaning individual drop their entire kit onto your strobe connector or have their sync cord pop one of your back catches. A salt crystal on an O-ring is far less damaging than a litre of fresh water inside your housing!

During a day trip wrap your housing to keep it cool and out of the sun. Half a litre of drinking water sprinkled over it will rinse off most external salt so that you can work on it without salt drops getting inside. After the days diving, give it a rinse in fresh water or keep it wrapped in your towel or wetsuit on the journey home. Even if it does dry out you can minimise any minor crystal damage by not operating any of the controls until you have it immersed in fresh water.

After a liveaboard trip or day trip, soak the entire outfit in fresh water for 24 hours. Give it a gentle swirl around to make sure the fresh water is penetrating into all the little air pockets around the controls.

Reality Check.

So there you are on Turtle Reef or in Shark Alley with a waterproof, working camera. The light is perfect, the animals are thick and in swims a pair of mating white sharks. You raise your camera to your eye, push the shutter and nothing happens. Well something does – you begin screaming and bashing yourself over your head with your well maintained camera housing. What went wrong? Probably something that could have



Foreground/Background: The small divers and their cage compared to the larger shark in the foreground tell a story of size, adventure and fear. The composition would probably be improved by taking the shot half a second later, swinging the camera a touch to follow. That would put the shark's eye 1/3 into the frame on the left, the cage 1/3 into the frame on the right and a visual diagonal line between the shark's head and the divers.

been easily fixed by performing the pre dive buddy check. Not your dive buddy. They either know you and don't care if you live or die as long as the car keys are accessible after the dive or they're complete strangers and have their own car so they don't care.

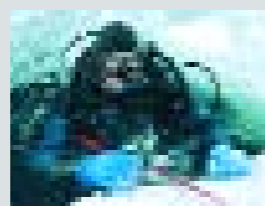
Checking your camera buddy is important. Before you slip on that tank or swing on that weightbelt, pick up your camera kit, turn on the strobes and take a test shot, probably of your dive buddy so you have something to show their insurance company. Things that can go wrong (and will) are usually simple and easily fixed. Lens cap still on, camera not on, strobes not on, flat batteries, bad strobe connections, no film or card in the camera, lens gears not meshed, sync cord not connected to camera, housing clamps not closed, wrong lens, no lens, no camera, etc. We professionals never get these things wrong ... very often!

Keeping Composed

Composition is the placement of subjects within the photographic frame of reference. There are rules to composition, just as there are rules to food combinations in cooking and colour co-ordination in fashion. When a photograph is composed according to those rules, the image becomes more acceptable or pleasant to a viewer. Of course breaking those rules can also make a 'good' or even a 'great' photograph, much like a sweet and sour dish can work quite well,

but it's better to break the rules with knowledge and intent rather than relying on lottery luck to strike it rich.

You'll never learn more than when out shooting and later editing and working on your shots at the computer. Unlike exposure, focus and the manual work of using your camera, composition doesn't have a right and wrong, an on/off switch. A well composed image with all technical necessities taken care of will produce a great image that is your creation and unique in the world.



Kelvin Aitken is a Melbourne-based professional photographer and diver passionate about the big blue and the big sea creatures to be found out there. He's dived from the Arctic to the extremes of the South Pacific and if there's a new marine dive adventure to be experienced or invented, he's always the first to put up his hand. He's also dived the southeastern Australian continental shelf and photographed shark species nobody knew would be found out there. Kelvin is a BBC Wildlife Photographer of the Year marine category winner and his unique work is on www.marinethemes.com

SOME OF THE COMPOSITION 'RULES' CAN BE DESCRIBED AS:

1 The Visual Centre What is the main subject in your photo? Is there a centre of interest? If there are two or more items of equal visual "weight" then the image becomes confusing. A shark, diver and fish all appearing at the same size and distance from the camera will be confusing. What is the image saying? If the fish is close to the camera, the shark in the middle distance and the diver in the far distance (where all good divers should be) then immediately the image tells a story of a fish being pursued by a shark which in turn is being observed by a diver. The fish, being the largest part of the image becomes the centre of interest.

2 Fill the frame Get close to your subject. Fill the frame to at least 50% of the area, 80% is even better.

3 Lines There are not too many lines underwater. Shipwrecks and other man made objects can have lines that lead the eye to parts of the frame. The edge of a reef or sand line can also be used to divide the frame or lead the eye to a subject which may be weak by itself.

4 Rhythm and Flow Lines, bright areas, dark areas, bright colours, dull colours. All catch the eye and can be used to direct the viewers attention around the frame to different parts of the visual story.

5 Direction Why are racing cars so hard to photograph? Because by the time you stop the motion of the car the image looks like a parked car on a showroom floor. Sports photographers overcome this by tilting the frame or introducing blur to the background. The car then seems to be going somewhere. Leaving space for a fish to swim into will give it direction. Panning with a slow shutter speed to blur the background will also give direction.

6 Repetition One butterflyfish may look static and rather boring, Two, three or four in the same frame suddenly adds interest and visual rhythm.

7 Colours There are warm colours and cold colours. Warm reds, oranges and yellows will tend to draw closer to the viewer or look larger. Cool colours such as cyan, blue and green, will recede. Warm on cold can produce startling effects and provide additional visual contrast.

8 Rule of 3rds Divide your frame up into three vertical and three horizontal lines. Place the eyes of the subject or the brightest area or the convergence of lines onto one of those intersecting points.

9 Snakes and Ladders The "S" shape is everywhere. It can inspire fear, such as in the shape of a snake, or draw the viewer through the frame, such as the shape of a road or footpath. It is found in the shape of graphs and the curve of a female body. A very powerful shape to use in composition

10 Negative Space The area in the frame with no subject matter is considered to be negative space. Giving it a shape or allowing it to become dark or light will allow the viewer to draw conclusions or imagine events or scenarios. Too much can be a bad thing, not enough may feel stifling.

11 Background vs Foreground Having just one subject in the frame may work in some situations or may be irritating in others. If you are telling a story then using the main subject in the foreground and the secondary subjects in the background will make a strong image. A diver holding an artefact, such as a cup, with a shipwreck in the background is far more powerful in telling a story than just a tight shot of the cup.

12 The Frame. Watch the edges of your frame. A bit of whip coral poking in may destroy the image, someone's fin tip, your finger, camera strap. All nasty. A crab sitting on coral with fish faces poking into the frame suddenly works. The frame tells the viewer that this part of reality is the important bit. Anything creeping into the frame had better be adding something positive. You can also use objects to frame your subject. The entrance to a cave, a coral grotto, the edge of the reef.

These are not necessarily the full list of composition 'rules' but it will give you a good start. Practice will allow you to learn and grow photographically. Study photographs in magazines and figure out why one worked and another did not. Look to see what type of composition is being used (either consciously or unconsciously by the photographer) and what you could have done to make it better. Then go out and do it.