

Vivid Housings Leak Sentinel

by Ron Lucas

If you are like me, you probably carry many thousands of dollars of underwater camera equipment to your dive destinations. I have little room for clothes after my camera outfit and scuba gear are packed. I have no space for a spare set up in case of a flood. The last thing I want to worry about when I dive, but will anyway, is the housing leaking.

I got serious housing envy when I met John on a 2014 vacation to South of Komodo. He had a Nauticam housing with the manufacturer's new pre dive vacuum leak detector fitted. John took pleasure in showing the confirmation light on the back of the housing before dives! It just made so much sense.

In non technical terms pre dive vacuum leak detectors work by registering air pressure before and after vacuuming sufficient air out of a housing. This is possible because housings are sealed to the water and air by O rings. Lights or pressure gauges reflect the two states. So in the case of the Leak Sentinel by following the correct procedure, once it is turned on, a red LED light flashes and then when the correct partial vacuum or underpressure is achieved it flashes green. The housing is then left to ensure the light is still flashing green for 15 or so minutes, following which it is safe to use up to its rated depth. Leak Sentinel has been compressor tested to over 100 meters which is much deeper than recreational dive limits. This replaces dunking in a rinse tank and looking for bubbles. One seldom mentioned benefit is that until the partial vacuum is released, the housing, dome etc are effectively

locked into place. It is quite difficult to accidentally knock of, say a dome, on the surface or underwater. It does not make any operational difference to housing controls but the underpressure must be released before opening the housing.

You may be fortunate to have bought a housing recently with a built in pre dive vacuum leak detector fitted. I missed out on one for my housing by 6 months and a retrofit would mean sending the housing overseas to the distributor before it needs a service with associated courier costs and customs problems - a particular Bermuda nightmare scenario! So when I read about the Leak Sentinel V3 on scuba diving forums I was anxious to try the system for myself and ordered one direct from the manufacturer, Vivid Housings, for 200 Euros including postage. It arrived, was a perfect fit and operated as stated.

I then bought a DeepPro GoPro housing which had a spare bulkhead fitting and wanted a unit for it. DeepPro and Vivid Housing liaised to ensure the correct adapter was manufactured to fit the housing. In discussion with Vivid Housings I relayed concerns I had read about and were of interest to me. The first was battery consumption which would be greater if a housing is prepared some hours before use or in my case usually overnight and the vacuum unit left on. Battery consumption may be 100 hours or so and the battery easily replaced, however if it is left on for 12 hours at a time this is not many dives. Secondly a theoretical problem of expansion of air within a housing related to



Yellow-Mask Angelfish - Nikon D7100 In Nauticam Housing, Inon Z240 Strobes on TTL f8 1/80 sec ISO 200



for Ikelite (short adapter)



for Subal

There are adaptors available for Ikelite (short and long), Nauticam (M14 and M16), Subal and Seacam.

***Nikon D7100 In Nauticam Housing,
Inon Z240 Strobes on TTL f8 1/125 sec
ISO 200***

temperature changes causing false readings by a pre dive vacuum leak detector in the absence of temperature compensation. Pressure of a gas, in this case air, changes with temperature. This could be a potentially important consideration if a housing was put together in a cold, air-conditioned environment and then taken out to a hot dive deck level and onto a very warm water temperature dive.

I was delighted when Vivid housings informed they had listened to users and would redesign their circuit board to incorporate these improvements and provide a test circuit board for me to take on an upcoming trip to Raja Ampat. Further minor refinements have now been completed and Version 4 is on sale from their web site direct and through distributors. Improvements include

temperature compensation, low battery warning, overnight function to save battery and reset function in the event of an (unlikely) electronic problem. So what are my findings?

Installation

Installation is facilitated by removing a bulkhead or accessory port. I found this straight forward for the very different fittings on my Nauticam and DeepPro housings. However on the Nauticam the light was not facing me so it required taking the unit apart and repositioning the circuit board so the flashing LED light faced me when diving. A little allen wrench and spare O rings are provided. This gave me an opportunity to become familiar with how to replace a battery. A User Manual is sent by an email as a PDF and Vivid Housings thoughtfully



provide your first spare CR1632 battery. I also decided to use a permanent silver marker to make small marks on the housing and Leak Sentinel so I can see at a glance they are aligned properly.

Set Up

Achieving an underpressure (partial vacuum) is very straight forward by following the instructions and using the included pump which requires only 20 or so strokes on a normal size housing - a lot less on my DeepPro. If a lot more pumping is required and the green light does not come on then likely one of two

scenarios has occurred - the housing has a leak or the rubber valve in the Leak Sentinel is somehow not properly seated which is easily fixed by following the instructions. The circuit board switch is actually operated by a red button which is atop the rubber valve that seals in the underpressure. I found the switch to be a little temperamental in that sometimes I could not always immediately get the light to stay on and a couple of times I have caused a reset by holding the switch in too long when switching back on after using the overnight function. This is not a major problem as it is easy to release the pressure and re pump some more air out to get the green light steadily blinking.

I used my Nauticam Leak Sentinel V4 on 18 dives in Raja Ampat as well as on a dive at home and took advantage of the overnight function every evening including for a 4 day period when I got the flu and could not dive. It really works and is more convenient as there is no immediate need to carry out the full procedure before the dive as with the Leak Sentinel V3. The evening before my last dive day I got a low battery signal (fast red flashing) when switching the unit on. Replacing the battery took only a few minutes.

There is a little knack to releasing the valve to let the air in but

do not let this put you off. One just has to make sure that the top of the rubber valve/switch is properly seated afterwards.

A very important component is the black protective cap with an O ring that must be screwed on prior to immersing in water as the valve is not waterproof and the circuit board could be damaged. I suggest putting your initials on this in silver marker pen so it is not easily lost. Vivid Housings recommend that you never dive without underpressure achieved although there should be no risk provided the cap is in place.

Operation

I no longer dunk the housing to look for bubbles. I check the green light is still flashing and the protective cap is secure prior to diving. I did find on a very shallow dive in Bermuda on a very bright day with the V3 I could not easily see the green LED light flashing underwater so I decided to black out the spare acrylic window spaces behind the light with a marker pen. This works to make the LED light appear brighter for very shallow tropical diving but is not necessary for deeper or less bright dives. The Leak Sentinel lights are a lot smaller than the one that comes in the back of the Nauticam housing for the standard leak detector but the Leak Sentinel unit is in my line of view on top of the housing which is a bonus. One can leave a traditional leak detector working if fitted to the housing so you could get two alarms in the event of a leak. So long as the LED light in the Leak Sentinel is green there is no leak detected but if it flashes alternately green and red there may be a loss of vacuum and a leak.

Final thoughts

If you are buying a new housing, electronics for a pre dive vacuum unit may well be included with the valve and pump an optional extra. In this case I would recommend you consider the manufacturer's unit. However the Leak Sentinel V4 works really well and is a very good choice if you already own a housing with a regular leak detector or no detector at all. It will probably be about half the price of having a Manufacturer's system installed during a housing service - if one is available - and you can install the Leak Sentinel yourself. Vivid Housings have a range of fittings for most popular housings. Once you have used a pre dive vacuum leak detector you are unlikely to go back. However in case of problems on an overseas trip I would suggest taking the bulkhead fitting supplied with the housing with you and of course you will not need it. However, if you leave it at home and you say mislay the Leak Sentinel cap...

Throughout my trip to Raja Ampat the V4 gave me peace of mind before and during dives and saved me having to dunk the housing to ensure waterproof integrity. I could prepare the housing in an air-conditioned cabin if I wanted the night before diving. The Dewi Nusantara live-aboard has an excellent camera room on the main deck level so I did not need to prepare the camera in my cabin this trip.

If you have an earlier version of the Leak Sentinel and wish to upgrade to V4, Vivid Housings will sell you a new V4 circuit board for 75 Euros, including postage.

If you are interested in considering a Leak Sentinel V4 I do suggest you enquire through the contact email at www.vividhousings.com to see if they have an off the shelf fitting for your housing or

to find out the name of a distributor in your area.

You can see a gallery of my images from this trip and other destinations at www.ronlucasphoto.smugmug.com

Note that although I received a prototype Leak Sentinel V4 Circuit board free of charge for testing I paid full price for my Nauticam Leak Sentinel V3.

Ron Lucas

Ron is the author/photographer of the Bermuda Zoological Society Bermuda Reef Portraits book and Bermuda Reef Life HD app for iOS and Android smartphones and tablets.

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FREE DOWNLOAD

Photographer Ron Lucas

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