

Canon 7D Housing Review

By Berkley White

Having spent months underwater with the full frame Canon 5D mark II, I was very eager to try out the crop sensor Canon 7D. I personally shifted my packed bags from Nikon to Canon last year due to the Canon 5D Mark II's ability to shoot broadcast quality video. I primarily shoot stills, but I'm inspired by the ability of these cameras to also shoot pro quality video and create more content to share. Sometimes video is just a better media to capture the moment and better conveys the feeling of being there.

The Canon 7D is quite possibly the best of both worlds for underwater photographers with an interest in video. This crop sensor camera allows use of the Tokina 10-17mm lens which is arguably the greatest wide angle lens ever made for underwater photography. The Canon 7D is not only priced well below \$2000, it also features a pop-up flash and other features that make it a great all around camera for topside use. I made it my primary camera on a recent dive trip to Wakatobi and was very impressed by its performance. Please read on for full details.

Aquatica 7D

The new Aquatica 7D for the Canon 7D digital SLR shares many of the improved features found in the Aquatica 5D Mark II and even a few refinements. Now armed with a 5 axis machine center, Aquatica was able to lighten its housing weight with thinner walls and create a more rounded



The team at Aquatica burned the midnight oil and sent me a prototype housing just in time for our group trip to Wakatobi. The housing ergonomics were impressive, but its small size and lightweight design was a big surprise.

and attractive design. Eliminating the window on top of the housing allowed a further reduction in size. At first I was a little skeptical of this growing trend in housing design, but the large LCD info display is much easier to read at distance and within a few days, I didn't miss the top display panel. Mostly, I was impressed at how small and light this housing is for air travel, when in use underwater and when lugging the camera to the dive site. In an age of increasingly difficult air travel, small and light are the new keywords and Aquatica did a great job at meeting these goals.

Camera Installation and Removal:

Easy camera installation and removal makes your first assembly stress free and is even more important when you're rushed to change camera batteries and flash media between dives. With the Aquatica 7D, camera installation is simple with only



In Photo Mode, the Canon 7D produced beautiful images at ISOs up to 400 and very usable images at ISO 800. I was also impressed by its ability to capture highlights and its very zippy auto focus.

a few housing controls requiring alignment prior to closure. The most troublesome control for me on the Aquatica was the lens release lever. However, Aquatica responded quickly to feedback and all production housings will feature a new design that makes camera removal easier for the user. The prototype design required the lens release lever to be rotated in place while the camera was installed. The new design will allow the user to fully seat the camera and then flip in the lens release. It's difficult for housing manufacturers to make changes when metal is flying on the mill, but it's nice to know Aquatica is willing to listen to users and make small changes that ultimately make our experience more enjoyable.

Ergonomics:

The Canon 7D camera body features new Liveview and On and Off lever placements and the

Aquatica 7D housing features two oversized levers that make it very easy to operate these frequently used controls even with thick cold water diving gloves. However, it's important to align both of these levers prior to sealing the rear housing plate to insure full function and smooth action.

Overall ergonomics on the housing are excellent and I really enjoy the solid grip of the Aquatica handles. All standard controls for photo are within easy reach of the right handle. On the production model housing the set button is being moved closer to the right handle, allowing an easier reach to this often used control. A dual function sliding thumb lever gives easy access to (*) and AF-ON controls and the angled menu and play buttons are a soft touch from the left side. As with all housings, I would prefer larger rotating knobs. I really like the aftermarket XIT404 knobs for focus and zoom. This was the first accessory I added to this test housing as they allow me to rotate a knob with just one finger and are an essential accessory for any diver with gloves.

Viewfinder Selection:

As with all stock housing viewfinders, the Aquatica stock finder allows you to see shooting info and compose the shot, but not easily. A serious shooter will upgrade to the much larger Aquatica Aqua View or another aftermarket viewfinder. When shooting wide angle reef photography or split images, I use the Inon 45 degree viewfinder. This angled viewfinder allows you to keep the camera pointed up without straining your neck and provides a large sharp image. For fast action photography like sharks or dolphins, I prefer a straight viewfinder like the Aquatica Aqua View or the Inon Straight viewfinder. Most of my diving in Wakatobi was



A fast frame rate helps you capture the water line at a preferred position. The 7D offers twice the frame rate of the 5D Mark II which makes a difference when a tenth of a second will hide or show your subjects.

focused on reef scenes, thus I stuck with the Inon 45 for most dives. When shooting video, I usually re-install the stock Aquatica viewfinder as its small size doesn't block the LCD when viewing your composition at arms reach.

Photo Quality and ISO Noise:

The Canon 7D is a very impressive camera. Over the course of my week at Wakatobi, I never felt like the 7D was holding me back. The 5D Mark II does provide much smoother blue water backgrounds above ISO 400, but the 7D is equally as smooth in extreme highlights like water surface or sunballs. The 5D Mark II wins in overall low noise, but the 7D can also capture beautiful contrast in bright light.

Fast Action Shooting and Split Images:

My test dives were mostly focused on reef



Shallow water sunball. f22 | 1/250 | ISO 100 | Full Strobe

scenics, thus I didn't fully utilize the Canon 7D's 8 frames per second potential, but I would have enjoyed such a frame rate for fast action work. The 5D Mark II's 3.9 frames per second feels very slow when the action heats up. I mostly noticed the 7D's fast performance when shooting splits (above / below images). When shooting splits, a fast frame rate allows you more chances at getting the water line to be in the right place. It's much like shooting craps, keep throwing the dice and you'll eventually end up with a scene that best displays both land and sea subjects.

It was great to once again shoot the Tokina 10-17mm lens for split images. At aperture settings of f11 and higher, this lens can provide reasonable focus on both underwater and land objects throughout its 180 - 100 degree zoom range. The Tokina 10-17mm zoom lens allows the flexibility to do a dive and shoot split images while waiting

for the boat to pick you up, but is only compatible with crop sensor Nikon or Canon cameras. If you're primarily a still photographer with an eye for shallow water, the crop sensor Canon 7D armed with the Tokina 10-17 delivers great resolution and flexibility and might be the only system you need for many years to come.

I was very impressed with the Canon 7D's ability to reproduce sharp sunballs free from ugly color banding. In my tests, not all sunballs were perfect, but I believe the Canon color engine and their latest imaging sensors are very forgiving for underwater photography. A few years ago, I much preferred the more punchy colors from Nikon cameras, but the Canon 5D Mark II and now the Canon 7D are less likely to produce harsh banding around the sun and are more forgiving when the sun leaks into the corner of the frame.

If you're interested in shooting sunballs with any digital SLR, it's important to use manual exposure mode and settings close to f22 and 1/250 of a second with the brightest strobes in your arsenal. I did appreciate that the Canon 7D allows for a 1/250th shutter speed when shooting strobes over the Canon 5D Mark II's 1/200th limit. A micro second of difference can actually make a difference. I also found that the Canon 7D was more forgiving in deep water sunballs. When shooting towards the sun at depths below 30 feet, most cameras tend to reproduce the sun with harsh blue bands.

Pop-up Flash and Optical TTL

The prototype Aquatica 7D housing I used was not outfitted for fiber optic TTL, but I did test this optical TTL system on a prototype Nauticam D90 housing with surprisingly accurate results. Unfortunately, the recycle time of the pop-up flash



Sunball. f18 | 1/250 | ISO 200 | Full Strobe

can be as long as 3 seconds which can feel like an eternity for an advanced shooter, but the ease of use and accuracy of optical TTL is a godsend for new or more casual underwater photographers. Thus, a pop-up flash of the Canon 7D is not only convenient for land, but also offers an inexpensive TTL option for underwater use.

Focus in Video Mode

Traditional video cameras can perform autofocus while shooting, but with DSLRs you must set a focus lock prior to hitting record. Video of macro subjects is difficult to perform without a tripod. As tripods are frowned upon at Wakatobi, on this trip I found it most productive to focus on wide angle video. The autofocus system of the Canon 7D is much improved and feels zippy in comparison to the 5D Mark II. The new LCD also seems a touch sharper, but both cameras give good focus confirmation if you use the zoom button to enlarge image detail a few clicks.



Back view of the Aquatica 7D with stock viewfinder installed.



Aquatica 7D housing with the rear plate open and the optional XIT404 Knob.

Video Quality and ISO Noise

The noise or grain produced by high ISO settings is most detrimental to video quality in DSLRs. Unlike still images shot in raw mode, video frames are highly compressed and thus more likely to emphasize blotches and banding in dark tones. In bright underwater conditions, I've found the 5D Mark II to produce clean images up to ISO 800 and the 7D to be limited to ISO 400. In dark underwater conditions such as poor vis or deep reefs, the 5D Mark II is best limited to ISO 400 and the 7D to ISO 200.

As underwater shooters, we frequently use color correction filters such as Magic Filters which cut out two full stops of light. Thus, in video mode we need higher ISO's and the Canon 7D is easily pushed to the limits. Due to the file compression, it's very critical to properly expose DSLR video. If you accidentally underexpose the 7D and have to brighten the footage in post, the noise becomes even more apparent. If you're primarily a video shooter, the Canon 5D Mark II is more forgiving, but even the Canon 7D shoots better image quality than the best prosumer video cameras on the market and even many pro level broadcast rigs.

Frame Rates: 60p / 30p / 24p

Many of our pro video customers are interested in the additional frame rates available on the Canon 7D. These new frame rates offer increased flexibility when blending DSLR footage with more traditional video cameras. Probably the most exciting is the option to shoot the 7D at 60 frames per second and then play it back at 30 frames per second for a slow motion effect. While I tried this setting, I was not presented with good fast action underwater subjects on this trip and will need to test this technique on a future dive. 60p is unfortunately only available at the lower resolution of 720p on the Canon

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7D. NOTE: In 2010, Canon will release new firmware that will provide increased frame rate control on the 5D Mark II.

Choose the Canon 7D if...



I'd recommend the Canon 7D if you're primarily a still photographer or a new underwater photographer looking to add a little HD video to your library. The low light abilities are more limited, but the 7D is a true professional grade photo device with impressive HD video capture. The 7D records highlights in brilliant detail and at 8 frames per second it will keep pace with extreme underwater photo action. The pop-up flash is a handy back-up when you're packing light and minimizes the cost of automatic (TTL) underwater strobe functionality. The crop sensor compatibility with the Tokina 10-17mm lens will seal the deal for most underwater photographers, but its capabilities at

such a low price will likely be the most attractive feature.

Choose the Canon 5d Mark II if...



If you're primarily a video shooter, the low noise Canon 5D Mark II is the clear choice. If you're a pixel perfectionist photographer that always checks image results at 100% zoom and make a great effort to capture the best image quality, the 5D Mark II is the best choice. With its low noise full frame sensor, the 5D Mark II still offers the best image quality on the extremes of low light video and photo. The 3.9 frames per second is tough for high action and overall the 5D Mark II feels a little sluggish, but when image quality is the goal, these limitations are easily overcome.

Berkley White
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