Aquatica AD7000 Review

by Keri Wilk

Aquatica phoned me here at ReefNet at the end of December 2010, and asked me if I'd be willing to field test and publicly review a prototype of their AD7000 housing for the newly-released Nikon D7000. The review was to be honest, candid, and to include all positive and negative aspects of the system. It was clear to me that Aquatica was more interested in honest user feedback and constructive criticism than an overly positive advertorial.

I accepted their offer and booked a trip to Dominica to put the system through its paces. Aquatica generously covered my trip expenses, and I (reluctantly) sent back the prototype upon my return.

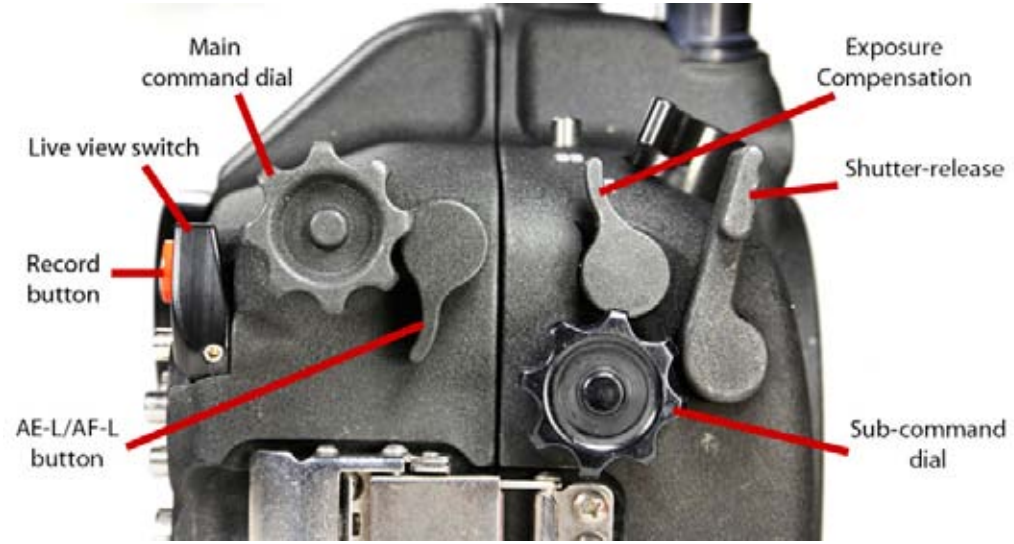
Aquatica uses an in-house state-of-the-art 5-axis CNC milling machine that can produce very smoothly-contoured surfaces, overhanging internal features, and can eliminate more excess material than ever before, creating lighter housings without compromising strength. The machined-aluminum bodies are anodized black, and then have a hard powder-coating baked on for increased durability, scratch-resistance, and corrosion prevention.

The redesigned camera saddle slides along two guide-rods into the housing, and locks firmly in place. Memory cards are easily accessible with the backplate of the housing removed, but the battery compartment is partially blocked, so the camera needs to be slid out a few inches to access it. Although the backplate o-ring can be sufficiently cleaned while in its groove, I recommend that more care be given to the port o-rings. The handles have Aquatica's standard exaggerated finger contours to allow a firm grip.

In the following, I will discuss all of the AD7000's controls, pointing out their strengths and weaknesses.

Shutter release lever

Some would classify the shutter-release as a hair-trigger. When in "Ch" mode (continuous high-speed, 6 FPS), I would occasionally squeeze out an extra couple of exposures accidentally. Switching to "Cl" (continuous low-speed) set to 3FPS, eliminated this problem.



Right side view of the AD7000, with all major control positions indicated.

Both my middle and index fingers could access this vital lever while solidly gripping the right handle.

Main command and sub-command dial knobs

Deep ridges, knurled edges, and textured powder-coating combine to give these knobs enough grip for single-finger control. Their large diameter heads require very little torque to rotate, but this sometimes made it difficult to feel the characteristic "snaps" associated with the changing of camera settings.

With my index finger on the shutter release, my thumb and middle finger had no difficulty reaching and rotating these knobs, allowing me to quickly adjust exposure settings when shooting moving subjects.

+/- EV control lever

This spring-loaded lever is positioned just behind the shutter-release, and can be held down with either the middle or index finger. While it's depressed, your thumb can easily rotate the main command dial knob to set the EV compensation.

AE-L/AF-L button lever

Located just in front of the main command dial knob, this customizable button can be triggered with your right thumb to lock focus and exposure settings. I usually kept it assigned as an AF-ON button (which simultaneously de-activates the shutter-release's AF function) for shooting supermacro.

On this prototype, nothing prevented this lever from being rotated indefinitely, so there was no physical indication of when my thumb had pressed it far enough. Within days of hearing about this, Aquatica sent CAD drawings of a solution to restrict rotation to a 30 degree arc. This revised design is being incorporated into production models.

On/Off lever

Situated on the top surface of the housing, its two-pronged internal mechanism must be properly oriented before installing the camera. Otherwise, the ON/OFF switch might not engage enough to function.

Record button and Live View lever

They have been moved a significant distance from their locations on the camera body, making them more accessible than if they had been directly transposed from the body to the housing.

The record button was further from the handle than I would've preferred.

A missing return-spring on the live view lever forced me to manually swing it back and forth to switch between modes - production models will not have this issue. I could easily switch in and out of live view without releasing my grip on the handle.

The record button was further from the handle than I would've preferred. To reach it, I had to slightly uncurl my grip, adding some wobble to the end of videos. Pressing this button to stop recording also added a little shake, since it's relatively stiff. A lever would've been preferable. However, this corner of the housing is so tightly packed that adding another lever may have required a complete re-design.

The record button occasionally wouldn't spring back up after being depressed. Aquatica pinpointed this problem to the button-hole walls not being masked properly before painting. This narrowed and textured the hole, producing sticking from frictional resistance. New masking plugs have been designed to prevent this from occurring in production models.

D-Pad/OK buttons

At the extreme right of the backplate there is a circle of 5 buttons corresponding to the camera's UP, DOWN, LEFT, RIGHT, and OK buttons.

Reaching the leftmost button without uncurling my fingers from the handle required a bit of a stretch. The other two functions of these buttons (reviewing images and accessing menu items) are used exclusively before or after shooting, when taking your hand away from the shutter release lever and command dial knobs

is not an issue.

This prototype had a slight clearance issue with the live view lever. When at rest, it prevented the UP button from being depressed, and partially restricted the LEFT button. Aquatica already had this problem solved before this prototype hit the water.

INFO button

Just under the D-pad is the INFO button which displays shooting information and gives access to numerous shooting options. Although also a bit of a stretch to reach, it's not an issue since you'd never need to press it while shooting. This button became stuck occasionally, so Aquatica implemented the same solution as for the record button.

Metering method button

This is on top of the housing, just behind the ON/OFF button. A little dexterity is needed for this one, since the main command dial has to be rotated while the button is held down. You can either remove your right hand from the grip to perform both tasks at once, or you can reach over to press the button with your left hand, while rotating the command dial with your right. A little awkward, but I wouldn't have complained if this button wasn't even included in the housing.

UPDATE: This useful piece of information was brought to my attention by Jean Bruneau (Aquatica's technical advisor) when I sent him my list of issues with the housing. Normally, the WB, ISO, +/- EV, QUAL, AF servo, and metering method buttons must be held down while adjustments are made with the main or sub-command dials. However, "hidden" in the custom settings menu is a function that changes how these buttons operate (Custom Settings Menu>Controls>Release button to use dial). When this menu item is in its ON state, these buttons no longer need to be held down to be adjusted. Instead, if you remove your finger from them once they've been pressed, the command dials can be used separately. This way, all of these buttons can essentially be operated with one hand (at a time).

Zoom/focus knob

I could easily reach and rotate the zoom/focus knob with my index finger alone, but I preferred a two-finger approach, using my thumb to pinch it. It rotates very smoothly, and is large and textured enough to enable a secure grip.

It consists of two parts – a knurled section connected to the internal gears, and a smooth section that, when rotated, disengages the internal gearing assembly from the lens' zoom/focus gear. This is a helpful feature for safely installing geared lenses, since it eliminates the possibility of gear interference.

Mode dial knob and release mode dial knob

The mode dial knob is the same as the main and sub-command dial knobs – deep-ridged with a knurled perimeter. There isn't a viewing window on the housing to see which mode you're in, but pressing the INFO button displays this information in the top-left corner of the rear LCD. I could reach and rotate it with my left thumb with my hand still on the handle.

The release mode dial knob is slightly smaller and requires two hands to operate – one to hold down the lock release, another to rotate the knob.

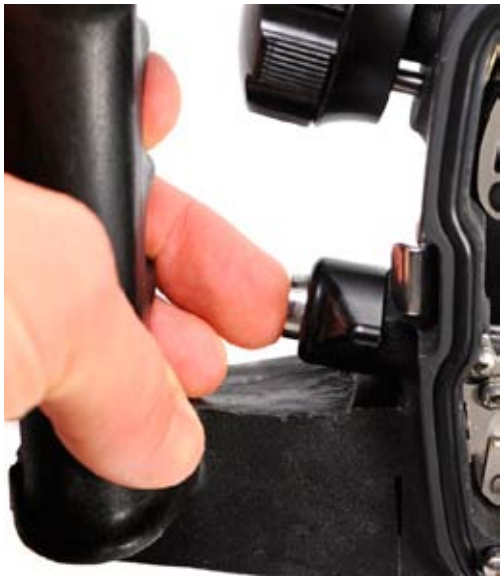
There's no easy way of doing this accurately with one hand but, fortunately, this is a dial that is rarely used (at least for me).

Pop-up flash opener/closer

This is a two-way lever located on the top-left corner of the housing, well within reach of your left thumb. Pressing it down or up will open or close the camera's pop-up flash, respectively. Useless when shooting with electronic sync cords, it can be very useful when using fiber optics to trigger strobes. Instead of manually turning off your strobes to shoot solely with ambient light, the pop-up flash can be closed instead.

M/AF switch lever and AF-servo/focus area button

The M/AF switch lever and concentric AF-servo/focus-area button are cleverly combined into a



single unit, just below the zoom knob. The M/AF lever rotates smoothly and easily, but it always took me a few moments to blindly locate the camera's switch with its 2-prong mechanism. Once in place, I had no problems, and could switch back and forth freely.

Trying to press the AF-servo/focus area button was a little awkward. With my hand on the grip, it is directly in line with my ring finger, but was too stiff for me to press down comfortably with it. To use my (stronger) middle finger required bending it somewhat unnaturally. I found that removing my hand from the handle and depressing it with my thumb was the best option.

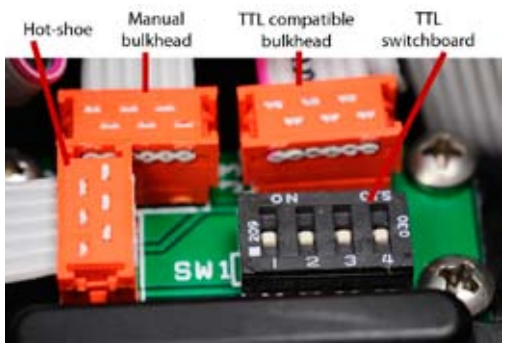
Menu, WB, ISO/ZOOM IN, QUAL/ZOOM OUT, Playback, Delete

Located just left of the LCD screen in a vertical line, these buttons are all within reach of my thumb (the delete button took a little stretching though). I never had to fiddle around to adjust WB or ISO settings - I was able to easily locate and use them with my eye to the viewfinder.

Bulkhead

A pair of TTL-enabling optical bulkheads is standard, but, if you prefer, you can opt for a pair of traditional electrical bulkheads (Ikelite, Nikonos, or a combination). In the latter case, one is strictly manual, while the other can be switched between manual and TTL (if you have compatible strobes).

Excess soldering flux on my hot-shoe made my strobes go haywire near the beginning of my trip. Wiping the contacts clean and letting them dry



overnight fixed the problem. Aquatica informed me that they're now using a mechanical crimping process instead of solder to connect wires together in the hot-shoe, thereby eliminating short circuits due to flux.

Port lock and lens-release mechanism

Internally, Aquatica's port lock is elaborate and complicated, but all of the gears, springs, shafts, and cams are controlled by a single external lever, left of the port. Rotated far enough away from the lens, it unlocks. Then, you install a port, press the lever like you would a button, and the lock springs into place.

With the mechanism in its "locked" state, pressing the lever like a button depresses the camera's lens-release button. The camera body does not have to be removed from the housing to change lenses.

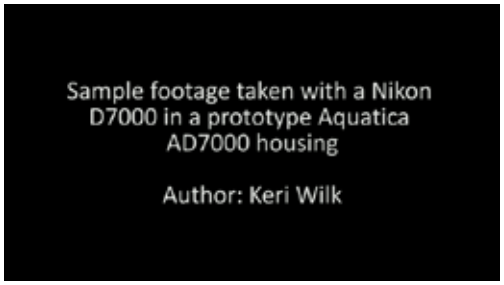
Moisture alarm

Consisting primarily of a battery, an LED, a speaker, and wires, Aquatica's moisture alarm is a very simple and effective tool that, in my opinion, is essential to any underwater camera system. Apparently, Aquatica feels the same way, since they've included one as a standard housing feature.

Hydrophone

Aquatica is the only DSLR housing manufacturer that provides a hydrophone as a housing option – let alone as a standard feature on the AD7000. The cable coming from it has a stereo microphone jack (despite providing only mono audio recording) and connects to the camera through an access panel on its left side. When the access panel is open, it interferes with the housing's main o-ring, so extra care must be taken when closing the housing.

Audio captured with and without the hydrophone is very different – but not in the way that I expected.



When the hydrophone is connected, the sensitivity level remains constant, and a broad range of underwater sounds is recorded without any abrupt spikes in volume. The sound of exhaled bubbles is recorded as a faint gurgle, inhalations as whispers, and the autofocus motor is almost inaudible, but the crackling sounds of the reef can still be heard. It was even sensitive enough to pick up the hiss of my leaky first-stage. Although sound levels are much more balanced and smooth with the hydrophone than with the camera's microphone, they are also slightly less intense.

Missing controls

Three housing buttons that have been excluded: the bracketing button, the programmable function button ("Fn"), and the programmable preview button ("Pv"). I didn't miss any of these.

Conclusion

There is only so much that 3D modeling programs can simulate and predict, so prototypes are never perfect. That's why it is so important to thoroughly test a prototype before production begins, especially for an expensive piece of equipment like an underwater camera housing.

The design problems that I encountered with the prototype AD7000 were immediately addressed and rectified by Aquatica's design team, which demonstrated the kind of dedication to quality that is essential for a company's survival in this highly competitive industry. Of the few minor inconveniences that I mentioned, related to button placement, stiffness, and type, they were all based on my personal preferences, and were rather insignificant. Overall, I was very happy with the AD7000's performance.

Including a moisture alarm and a hydrophone as standard housing features was a very generous gesture, which I'm sure users will appreciate. And if the multifunctional port-lock/lens-release is any indication of the capability of Aquatica's engineering team, they have a bright and innovative future ahead of them.

Acknowledgements

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Keri Wilk
www.reefnet.ca

Although only 26 years old, Keri has already accumulated close to 16 years of underwater photography experience. Educated as a mechanical engineer, he currently designs and develops products for ReefNet and is part of DivePhotoGuide.com's editorial team. Over the years, his work has appeared in countless magazines, scientific journals, field guides, books, and museums, and he's won over 70 awards in major international underwater photography competitions.