

Seacam F100 Operation:

A Field Journal

By Stephen Frink

Congratulations on your purchase of a Seacam Silver housing for your Nikon F100. The combination of optical and electronic innovation in the camera with the precise machining and ergonomic brilliance of the housing should give you many years of creative underwater imaging.



As I write these notes I'm on a live-aboard dive boat in the Maldives using my new F100 housing for the first time. Since these are the kinds of situations where you truly come to know your housing, and I'd like to share my observations with you. Hopefully my experience with my Seacam may shorten your personal learning curve. Take this as a general guideline, and then customize to your own style and needs.

As a point of reference, I've shot a variety of different amphibious and housed cameras over the years, and used the Seacam N90S housing with the swivel 45-degree viewfinder for about 3 years before I bought my F100 version. Even with this level of familiarity with the system, I found there are some special features and issues with the F100 and Seacam housing that may take a few dives to assimilate.

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I. Setting up the camera:

· **Adjust the diopter control on the camera's prism to your own vision.**

This is crucial when using the pro viewfinder, and also important when using an adjustable viewfinder like the Swivel 45 (see S45 section below). With the S45, you have +/- 3 diopter adjustment in the viewfinder, so regardless where the diopter is set on the camera, you could optimize it for your vision. But if the camera diopter is zeroed in for your own vision first, you can use the camera topside without adjustment, and reassure yourself the diopter settings won't have changed when you put your F100 back in the housing. Because there is so much custom control for viewing correction of this S45 viewfinder, someone else's housing might not appear in focus to your eyes, just as you might find it difficult to read through someone else's glasses. When properly calibrated to your eyes the groundglass will be visible corner-to-corner and sharp focus will be easy to discern.

· **Set the custom menu on the F100.**

Here is an area where personal taste is a determining factor. I'll just suggest the custom settings that I have found make the camera work a bit easier in the Seacam

housing. Only those settings that deviate from the factory, plus a couple of optional settings, are noted herein:

1. Auto film rewind at the end of film roll

#1 enabled. Why? Convenience, assurance that you won't accidentally open the camera backs before rewinding, and also you will hear the film rewind underwater. How many times have you struggled to get that one last picture, brought it all in focus, and then discovered you'd already shot your last frame? With this custom function you eliminate that frustration.

6. Focus area selection changed to continuously in the same direction.

Option #1 (preferred)

#0 disabled (factory setting). Why? This setting allows you to set any of the five zones at your discretion, but at first the pattern of switching the knob may appear random and confusing. It is not so once you understand the logic. Remember when you install the back of the housing that the white dot on the knob has to match with the black dot on the housing. Once you do that correctly, the following will apply:

(A) Toggle the knob to the first bit of resistance, up and down, but don't go beyond the point of resistance. This will alternately illuminate the three horizontal red squares in the viewfinder. Move it down and the LEDs to the right light up. Move it up and the LEDs to the left light up. All move sequentially.

(B) If you move just past the point of resistance up, you enter the zone of control for the top and far left LEDs. Move it up to access the top, move it down to access far left.

(C) If you move just past the point of resistance down, you will access zone of control for the bottom and far right LEDs. Move it up to access far right, move it down to access the bottom.

Note - The camera's LED panel needs to be energized when these functions are changed. This is due to the camera electronics and has nothing to do with the housing. Try moving your thumb pad on the camera topside and you'll see nothing happens without the LEDs illuminated. If you try shifting the zones before the LED is powered, the pattern is initially disrupted, but will catch up and continue to function as described above.

Option #2 - #1 enabled.

Why? The AF selector knob on the Seacam housing can be operated to hit all five of the AF targets appearing in the red LEDs in the viewfinder as described above. However, I find in practical shooting situations I am usually concerned with the 3 LEDs along the horizontal axis of the viewfinder. Imagine shooting a fish. You'll probably want to be sharp on the eyeball, and depending on the size of the subject and your negative space considerations you may want left, right, or center as your primary focus. This custom setting makes it very easy to toggle between these 3 settings. If you think you will consistently use all 5 focus LEDs, leave this custom function in the original factory default (#0 disabled) as described in option #1.

8. Film advance when closing the camera back

#1 enabled. Why? Simple. Convenience and speed.

12. Switching command dial operations

#1 enabled. Why? I change the aperture far more often than I do the shutter speed when shooting underwater. So, I prefer the command dial operate the aperture, and the subcommand dial control shutter speed.

The dial for the command dial is quick and easy to change with your right thumb, without ever taking your middle finger off the shutter release. Generally I know what shutter speed I want before I enter the shoot zone, so I can preset that easily with the subcommand dial on the front of the housing. I use this custom function on my F100s for topside use also.

15. Delay time for auto-meter switch off

#16 (16 seconds). Why? At the marginal expense of some battery life, the LED stays illuminated longer, making it easier to effect brackets and confirm settings.

17. LCD illuminator activated by pressing any button (optional)

#1 enabled. Why? Turning on the illuminator switch at the on/off button is the only way to light up the LCD (liquid crystal display) with the factory settings. By enabling this custom function you many of the camera controls to illuminate the LCD. I like to use the bracket compensation switch with my left thumb to turn on the LCD. (Depressing the shutter part way will do it also, but you might accidentally take a picture this way). Obviously, it is distracting to take one's eye from the viewfinder and one's hand from the shutter release to operate the on/off switch, so if the LCD is important to you, this is a viable custom setting. However, using this function does consume batteries more quickly, and for this reason may not be preferable on long, multi-day shoots. Even in the factory setting the LEDs (light emitting diode) in the viewfinder will impart the significant exposure data, so maybe the LCD illumination is not so crucial.

22. Aperture setting with lens' aperture ring

#0 disabled (factory setting ... crucial for housing use). Why? This allows you to use the subcommand dial for either aperture or shutter speed, thereby eliminating the need for an aperture gear on the lens. With the aperture gear out of the way the F100 will fit in the housing easier, and switching lenses via the port orifice is possible because you can hit the lens release button easily.

Note that this refers to "D" series lenses only, which I highly recommend for ease of use with this housing. If you are using older style Nikon lenses you will have to use an aperture gear and set custom function 22 at #1. But you won't be able to see the actual F-stop setting through the camera LED and will be reduced to counting the F-stop clicks to know where you are. I had an old style 18mm lens that I used in my Seacam N90S housing, but it was a constant hassle. I upgraded to a 14mm "D" lens and gained auto focus plus the ability to use all the F100 camera functions.

It is interesting to note that my 14mm AF Nikkor would not work with my N90S Seacam housing. The lens is physically too wide in diameter to fit through the port opening on the older style screw-thread Seacam Minicam housings. These lenses won't work on the Subal housing either, for the same reason. Fortunately, when the F5 and F100 housings were designed with the new and improved bayonet mount, the port opening is significantly wider and modern lenses like the 14mm and 17-35mm Nikkor zoom fit easily.

II. Setting up the housing

Most of this information is included in the housing manual, but to reiterate:

- Remove shoulder strap and viewfinder protection ring from

F100.

- Unscrew the 1/4x20 tripod screw on the housing's camera shelf until the top of the screw is flush with the top of the shelf and does not interfere when installing the camera. Set and tighten the tripod screw securing camera to shelf.
- Note that the back of the camera should be parallel with the back of the shelf and not canted at an angle. You will see a long threaded screw on the left side of the housing with a rubber cap on the end. This is to arrange minute adjustments for the angle of the camera and assure proper registration with each installation. If adjustment is necessary for your particular camera, loosen the set nut at the bottom of the shaft and adjust the screw accordingly up or down.
- Set the camera in the S position (on the S/C/M switch) and the housing in the S position as well. This assures the camera will slide into the housing smoothly, and confirms registration of the switch between camera and housing.
- Make sure the on-off switch on the camera is set in the same position as the on-off lever on the camera.
- Make sure the AF-select knob on the back of the housing (white dot) is aligned with the housing (black dot).
- There is an exposure mode control on the top of the camera prism for program, center-weighted, and spot metering. To assure access to this control, pull the AE-Select lever out until it stops (about 2mm). Place the function on the camera and the switch in the same position. Close the housing back and press the lever down. The control will now be synchronized with the camera.
- Other controls are clearly marked on the housing and require no special consideration when installing the camera in the housing.

Note black flocked material on the inside of the housing. This is a Seacam exclusive and not only blocks extraneous light from bouncing around inside and possibly producing unwanted optical flare, but it traps small amounts of water either accidentally intruding or from hurried film changes while camera or operator is still wet. I've tested this by dropping a teaspoonful of water from on the back of the housing, and incredibly the flocking soaked it all up. Far better than having it sloshing around inside a conventional housing. Then I dried it with a towel and let it air dry for an hour or so and it was totally dry and good to go.

III. Setting up the lens:

- **Zoom lenses** - Mount the gears in order: first the zoom, then the focus, and finally, if using an old style Nikkor lens, mount the aperture gear.



(A) Zoom gear - Turn the zoom to the shortest focal length. Then push on the lens from the back with gear teeth facing to the left side of the camera body. There is a white dot on the gear that needs to be

placed exactly on the scale marking for the zoom. The space between the camera body and the lens gear should be approximately 10mm. Attach the gear via the set screws, taking care not to over tighten. Make sure the gear on the housing mesh with the gear on the zoom before closing the housing.

(B) Focus gear - Most AF zooms are operated in auto-focus in most housings, using one housing control for zoom and one for aperture. However, with the F100 the command or subcommand dial is used for aperture, freeing one control to be used for focus and one for zoom. The Seacam housing offers the option of using manual focus via a focus gear, auto focus, but not both on the same dive. You must make the decision whether to shoot manual or AF before going underwater. Attach focus gear in the same manner as the zoom gear, with the teeth facing to the left side of the camera body. The distance from the focus gear to the zoom gear should be about 1mm.

Important - When shooting AF, make sure the focus gear is either off the lens, or perhaps easier, moved forward enough so the gears do not mesh. If you keep the gearing engaged with operating in AF, the resistance from the two gears could damage your lens or camera body.

AF-MF shift gear/focus gear for macro lenses - For macro lenses (including the 60, 105mm, and 200mm Micro-Nikkors) you'll see a small beveled piece machined on the inside of the AF-MF gear. This has to go over the silver knob on the lens that must be depressed when shifting between AF to MF. Be careful not to hit the full/limit switch when doing so. You'll see a machined clearance area for the limit switch, and proper installation of this gear requires the inner beveled piece hit the knob while the machined indent clears the limit switch. It sounds more complicated than it is, but it might take you a few times to get it right to begin with. The focus gear then goes on, aligning to about 1mm in front of the AF/MF gear, with the teeth for both facing camera left. In practical use, the top left knob on the back of the housing controls AF/MF selection, and the bottom knob is for manual focus. For AF the camera must be set in the C or S focus mode. For manual focus the setting of the S-C-M switch is irrelevant, but the lens must be set to manual focus.

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IV. S-C-M switch

This is an option on the Seacam housing, but I can't imagine why anyone would order a quality housing like this and choose to do without the versatility provided by the S-C-M accessory. Although the S-C-M control is not necessary to shift between AF to MF in lenses that are equipped with the AF/MF control on the lens barrel (like the 60mm and 105mm Micro-Nikkors, and newer lenses like the 14mm Nikkor), the S-C-M is necessary to choose between Single servo and Continuous auto focus. With the 5 zones of AF in the F100, you may prefer to constantly shoot in AF for your wide angle lenses, but again that is a personal preference. It is possible to shoot effectively with the Seacam housing without the S-C-M switch, but you'll find imaging scenarios where it helps, and to me, that's justification enough.

V. Swivel 45 degree viewfinder

There are three viewfinders available for the Seacam F100. The pro viewfinder, the S45 (for swivel 45-degree) and the new, yet-to-be-named

prism finder (similar in function to the S45, offering the same magnified view but without the angled viewing perspective. It will view straight into the camera's viewfinder, effectively functioning much like a DA-30 action finder on an F5). I like the pro viewfinder for quickly moving subjects like sharks and dolphins, but for precise focus and composition, particularly with most wide angle and fish/macro photography, I use the S45.

All viewfinders are equipped with double O-rings and are held in place by a delrin split ring. No tools are required for installation. Simply slip the retaining ring off from inside the housing and push out to remove. When you reinstall the viewfinder you'll notice the retaining ring is very slightly concave. Make sure the curved surface faces into the housing.

Once the viewfinder is removed you'll see a spring with a ball bearing that fits in a socket on the housing. This in turn engages one of four indents on the viewfinder to give confirmation of the 90/180/270/360 degree position. This is for convenience only and is not a necessary part of the viewfinder. Actually I misplaced the spring on my N90S housing and used it for several years without bothering to replace it. The spring is for the S45 viewfinder and is not to be used with the pro viewfinder. The housing protection cap has a small box built-in so you can safely store the spring assembly when not in use.

Remember to fine-tune the S45 for your personal vision. To do so, mount the S45 on the housing and pick a lens that will demonstrate fine focus (like the 105mm Micro-Nikkor). You could use a wide angle, but small deviance in precise focus may not show up as easily. Focus the lens (manually or AF) on a



stationary subject. Obviously the housing has to be stationary as well. Now remove the black knurled end-cap on the viewfinder by turning counterclockwise. You'll see this is a threaded delrin piece with an O ring seal. Inside you'll see the viewfinder optic, which you can adjust by gripping the black aluminum bezel around the glass and turning right or left. If you run it all the way through the range you'll achieve a +3 to -3 diopter correction. Make sure it is exactly focused for you, but remember to hold your eye far enough away from the glass to simulate wearing a facemask. Screw the end-cap back on and you're ready to shoot. By the way, you'll notice that the glass viewfinder wobbles inside once the end-cap is off. This is normal. When you put the end-cap back in place it will be held firmly in position.

Note on S45 for over/unders - The S45 is terrific for over/unders because it allows you to keep your head above the water and you won't even need a facemask. I've used this while laying on my belly on the swim platform to shoot white sharks in South Africa, while kneeling on the shallow sand for photographing stingrays at Grand Cayman's Sandbar, and for shooting fashion over/unders for the Victoria's Secret swimwear catalog. It is a very productive weapon in your creative arsenal, especially when used in conjunction with the 9" Superdome. The Superdome spreads any surface chop over a wider area, thereby making over/unders possible in rougher seas than is possible with a 6" or 8" dome from other manufacturers. Also, water sheets off glass quicker than Plexiglas, so those annoying water droplets on the topside portion of the frame are less likely to appear.

Note on S45 for fish photography - Warning ... The first few times you try the S45 for moving fish you probably won't like it. Your instincts of aiming will need to be relearned. You will have spent years shooting through an SLR with what is essentially a straight-on viewing system. The eyepiece might be a few millimeters above the lens, but you are essentially looking through the camera with your eye and your subject on the same plane. With the S45 you need to bend your head forward slightly and look into the viewfinder. If you keep your head upright and bring the viewfinder to your eye, you'll probably instinctively aim above your subject. In my experience it will take three or four dives

for this to feel right. With greater familiarity the S45 will become instinctive as well, and you'll come to appreciate the magnified field of view and precision of focus.

In my opinion, the S45 is perfect for macro, fish photography, wide-angle reef scenics, and over/unders. What is not good for is blue water photos of swiftly moving pelagics. If I'm shooting sharks or dolphins, anything where the action may be happening fast and furious, I prefer the pro viewfinder. (Also, the S45 will add weight to the housing package since there is a lot of glass and aluminum, with no substantial air pocket inside to provide buoyancy. This too might be a small concern when shooting in the open sea, or breathe-hold diving with spotted dolphins or humpbacks for example.) The fact that viewfinders can easily be changed before the dive, on the boat, without any tools of any kind, is one of the beauties of the Seacam system.

VI. Miscellaneous housing controls

While I don't personally use these controls, for some styles of photography there are other useful external controls on the housing.

- **Off/On LCD Light** - Used to turn the camera on and off. Turn all the way to the left to illuminate the LCD.
- **AE Select** - This moves the three controls on the top of the prism by pushing in and turning (to select spot, center weighted, or matrix metering).
- **+/- comp, mode** - Move switch forward + turn command dial to control exposure compensation. Move switch back + turn the command dial to select mode (P, M, S, A).
- **AF-Lock** - Like holding down part way on the shutter release, this locks focus in single serve AF.
- **Shutter release** - Diagonal lever at housing right.
- **Synch ports** - One or two will be installed at the upper right and left corners of the housing, depending on order specifications.
- **Command dial** - I program camera to operate aperture with the command dial, knob at camera right rear.
- **Subcommand dial** - I program camera to operate shutter speed with subcommand dial, knob at camera right forward.
- **BKT, strobe comp** - Move switch forward + turn command dial to do auto exposure and auto flash bracketing in TTL (see F100 owner's manual, page 57). Move switch back + turn command dial to change flash synch modes (see page 80 of F100 owner's manual).
- **AF Select** - Choose between five zones of AF. See Custom Setting section for use tips.
- **Zoom, AF-MF** - Depending on which lens gear you have installed, this knob on the housing left top will operate the AF-MF switch on a macro lens, or the zoom gear on a zoom optic.

- **Man. Focus** - This knob at housing left bottom is the manual focus control.

- **S-C-M switch** - Shifts between Single Servo AF, Continuous AF, and Manual focus on the camera.

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VII. Maintenance and Service

As with any new housing, even though it will have been pressure tested at the factory, make the first dive without a camera inside. I take a 2 pound weight and wrap in a small towel so it can't scratch or damage the housing interior or ports, and then I dive to a depth of at least 30 feet. The rinse bucket or a swimming pool really isn't deep enough. The factory hydrostatic test will take the housing to a much greater depth, but testing in a pressure pot can not actually operate controls while under pressure. My routine with a new housing is to sit on the bottom and operate all the controls while watching things through the port. If there are bubbles coming out, there is water coming in.

However, in the three Seacam housings I have owned so far, I've never had a leak. Except once (with my very first Minicam housing for my N90S) I was careless reassembling a camera after a dive and had the main O ring pop out of the groove. I put the housing back in the rinse tank for a final rinse and immediately heard the moisture alarm shrieking. I took the housing back out and found most of the fresh water had been absorbed by the black flocking material on the inside of the housing, and fortunately no water ever touched the camera or lens. It did teach me to be more careful about greasing and placing the O rings properly in position, and also reinforced my desire to always have the optional moisture alarm on all my housings.

Obviously the best maintenance will be a thorough fresh water rinse after every dive. Unscrew the handles if you don't intend to use the housing for a long time, just to assure the screws don't seize. You'll note there are two small plates, one under each handle. These are sacrificial anodes. They are just like zincs on the bottom of a boat. Any corrosion will attack here first. Seacam recommends a years change on the anodes, but that will depend on your amount of in-water time with the housing.

Note that electrolysis can occur at the synch port when dissimilar metals are used. Combine the aluminum of the Seacam port with a stainless steel threaded connector, add electricity, and electrolysis can happen in only the course of a few days. If you use the new Ikelite delrin connectors, no problem with corrosion. If you use the Nikonos connectors, you'll have aluminum to aluminum so electrolysis is minimal. But the old Ikelite stainless steel connectors, or stainless E-O connectors like I use, are a problem. You must disconnect and clean the fittings regularly. Actually, it should be done daily to minimize the corrosion.

The factory suggests that "the main O-ring and the port O-ring should be replaced every year. One O-ring set, lubricant and contact oil for the plug will be delivered with the housing. The O-rings at the shaft glands require no maintenance and should be replaced every 3 to 5 years. When adhering to the required operating conditions we recommend a factory service every 3 to 5 years depending on how often the housing is used."

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VIII. Depth of operation

80 meters

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IX. Guarantee

The Seacam guarantee, as per owner's manual and with original translation, is as follows: "For the housing delivered we shall give a year's guarantee for function and tightness from the date of invoice. This guarantee shall not apply in the event of accident damage, negligence, improper handling, damage to cords, water entering at improperly screwed front ports and plugged connections, capacity loss of batteries, disregarding of operating conditions and operating instructions, as well as unauthorized repairs or changes. Seacam shall not be liable for indirect damage, or damage to built-in cameras, and reserves the right to make technical changes and replacements."

For further information on the operation of your housing, contact:

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