SeaLife®

Great Pictures Made Easy

with the **DC2000**™ Camera

Capture the Magic

As a scuba diver, you have encountered coral reefs teaming with strange creatures and vibrant colors that appear as if they were from another planet. You know what it's like to float effortlessly without gravity. You have learned to use your eyes to see and experience the underwater world, one of the greatest miracles on earth.

You capture these treasured moments with your underwater camera to relive the adventure and share your experiences with friends and family. Of course, there is no better way to tell your story than with pictures and videos

As the manufacturers of SeaLife, we believe that an easy to use underwater camera will help millions of divers and non-divers to experience and see a part of our world which is essential to our survival. And we hope that you will enrich and enlighten your life by capturing valuable impressions in the underwater world with your SeaLife Camera.

Over the last 20+ years of developing underwater cameras and lighting systems, we have received countless pictures - many great images that we post on the SeaLife website Photo/Video Gallery, and some not-so-great pictures along with your request for help and advice.

While underwater photography certainly has its challenges, we found that most poor pictures are the result of not following a few simple and basic principles. When you understand and apply these basic principles, your results will greatly improve.

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Photo by Tobias Friedrich

I. Basic Camera Settings

This guide will teach you the basic principles of underwater photography and how to take great underwater pictures with your SeaLife camera. Before you start, you should read through the camera's instruction manual and become familiar with the basic camera settings and button controls.
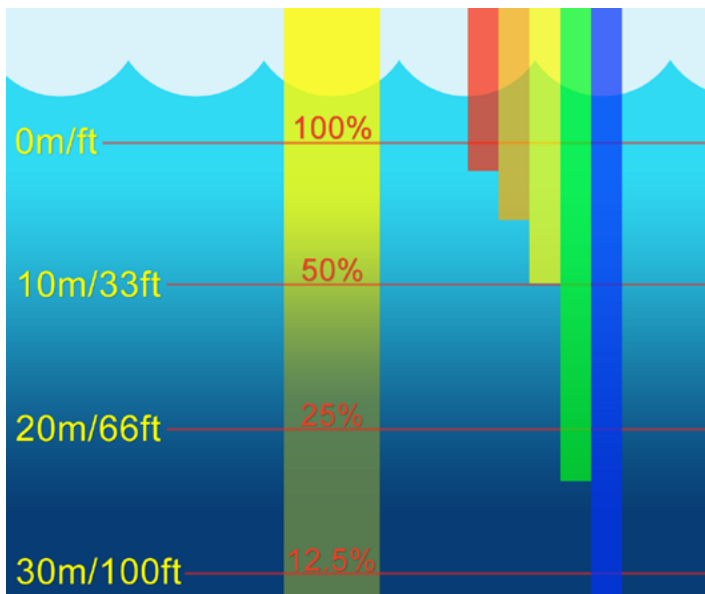
Download the Instruction Manuals Here

Follow this link to a helpful video about the DC2000
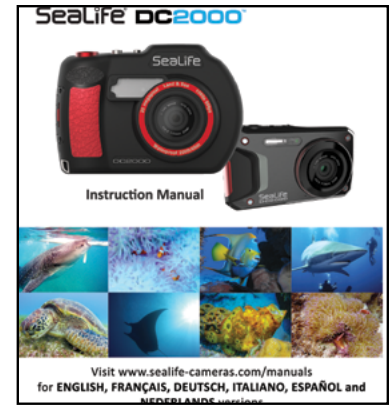
II. Underwater Basics

There are a few important differences between underwater and land photography that you should know.

a. Light and Color

Water is about 800 times denser than air. As you descend deeper into the water, the light conditions become darker. The water absorbs red, orange and yellow color, which makes everything look blue.

The diagram to the left demonstrates the effect water has on light and color as depth increases. That is why many underwater pictures turn out blue. There are a couple of ways to restore lost colors, which are explained later in this guide.

Coral, sponges and most other underwater sea creatures are bursting with colors. Brilliant reds, vivid orange and bright yellows highlight the underwater world. These intense colors help to camouflage the sea creatures. Since red and yellow colors are absorbed by the water, the sea creatures appear colorless unless you bring a light with you and uncover the hidden treasure of colors.

b. Effects of Water Refraction

Water has a magnifying effect. Objects underwater appear 33% larger and closer than they actually are. It tricks you into <u>underestimating</u> your shooting distance. One important rule for achieving colorful and sharp underwater pictures is to keep your shooting distance within 6ft/2m or 4ft/1.5m when using a flash. A handy trick is to remember that every adult's arm is approximately two feet long. If your subject is more than one and a half to two arm lengths away, it's too far for your flash/video light to be effective. Get closer or change the camera to the Dive or Snorkel mode (See Page 9).

This Angelfish appears 2ft/60cm away but is actually 3ft/1m away

This fish appears inside of 6ft/2m, but is actually 8ft/2.4m away

Expand your viewing angle with a SeaLife 0.5x Wide Angle Dome Lens or the 0.75x Wide Angle Conversion Lens that compensates the underwater magnifying effect and allows you to get closer to the subject and still fit everything in the picture. This lens is excellent for still and video images. It can be installed or removed underwater. Using a Wide Angle Lens allows you to get closer to the subject so that you will be within the effective range of your external flash or light.

No matter how clear it may look underwater, there are always plankton and tiny particles suspended in the water. You may not see the particles with your eyes, until you light them up with a flash or photo-video-dive light. The small white dots that appear in your underwater pictures are called "backscatter". The closer the flash or light is positioned to the camera lens, the more backscatter you will see.

The external flash is positioned very close to the camera lens. Notice all the backscatter in the top of the image.

Here, the external flash is positioned away from the camera lens. There is practially no backscatter.

The above two pictures demonstrate why you should not use the camera's internal flash unless you are taking close-up macro (within 12"/30cm) pictures in crystal clear waters. The camera's internal flash is not very powerful and positioned too close to the camera's lens, so it's only useful for close-up pictures.

The DC2000 features a built-in Flash Diffuser into the housing, the same location allows you to mount the inclided flash link adapter and optical cable(s) when shooting with an external flash.

Underwater photography using an external flash (strobe) or photo-video light with a Flex-Connect Arm results in the brightest, sharpest most colorful pictures, with minimal or no backscatter because the light source is positioned away from the camera lens.
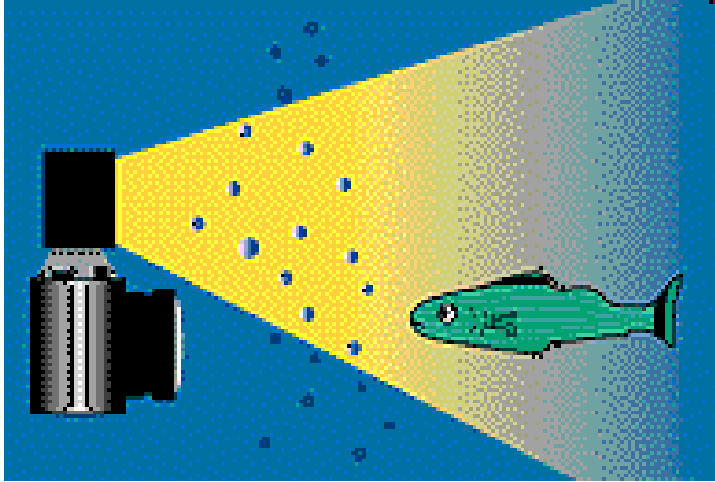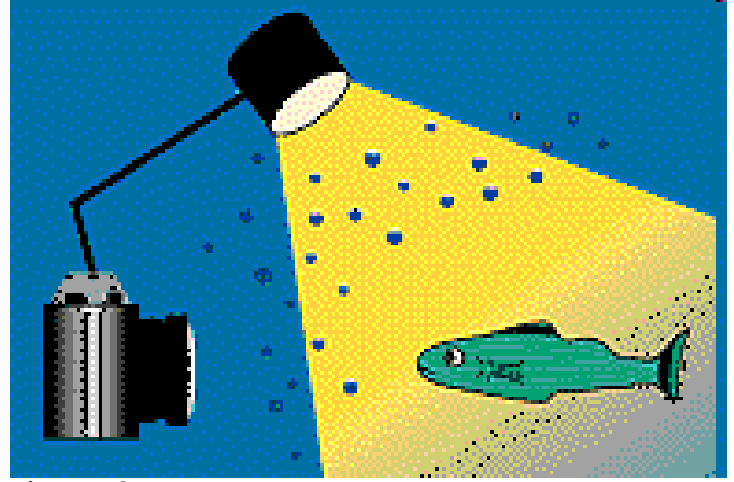
Figure 1

Figure 2

Positioning the flash or light next to the lens (Figure 1) illuminates the front of the particles facing the lens. Positioning strobe away from lens (Figure 2) illuminates the sides of particles not visible to the lens.

How to Avoid Backscatter

- Avoid using the camera's built-in flash unless shooting close-up macro pictures in clear water.

- Use an external flash or photo-video light positioned away from the lens, which produces the brightest, sharpest and most colorful pictures while minimizing backscatter.

- Keep your shooting distance to 10% of your visibility. If the visibility is 30ft/10m, limit your shooting distance to 3ft/1m.

- ISO settings of 200 or higher are much more sensitive to backscatter when using an external flash and/or photo-video light.

- Don't stir up the sand and debris on the bottom. Control your buoyancy.

III. Restoring Lost Colors

Blue pictures are the most common complaint among beginning underwater photographers, but it's easy to improve. Here are two primary methods to bring back the lost colors absorbed by the water:

Method 1
Use the SeaLife Sea Dragon Digital Flash and/or Photo-Video light accessory
(sold separately)

Taken without flash - image lacks color

Taken with flash to reveal the vibrant colors

From left to right: SeaLife DC2000 Pro Flash Set (SL745), SeaLife DC2000 Pro 2500 Set (SL744), SeaLife DC2000 Pro Duo Set (SL746) with flash and 2500 lumen photo-video light mounted on Flex-Connect dual tray.

What's the difference between an external flash and photo-video light?

- **A flash (or strobe)** can only be used for still photos, not video. A photo-video light can be used for photos and videos, as well as viewing in low light.

- An external **flash is typically brighter** and has longer range than a photo-video light. The Sea Dragon Digital Flash has an effective range of about 6-8ft, while the Sea Dragon 2500 Photo-Video light range is about 4ft, depending on visibility and ambient lighting conditions.

- **A photo-video light is easier to use** than a flash because the camera "sees" the effect of the light and automatically adjusts exposure accordingly. What you see is what you get. With a flash, the camera won't see the light until the flash fires, which typically requires some fine-tuning of the flash brightness to optimize image exposure.

- **A photo-video light can also be used as a focusing light** to assist the camera's auto focus system in lower light conditions.

Method 2
Use SeaLife underwater color-correction modes

If you do not have an external flash or photo-video light, you can use the DC2000 camera's **built in color-correction** filter to restore lost colors. Set the camera to Dive Mode for depths greater than 25ft (8m) or Snorkel mode for shallower water. Dive mode will add a little more red and yellow to the image than Snorkel mode. These color correction modes work well in water depths less than about 60ft, where the ambient light conditions are not so dark. At greater depths, there is a complete absence of reds and yellows, so color correction modes/filters are not so effective. An external flash or photo-video light is the most effective way to restore color at any depth or ambient light condition.
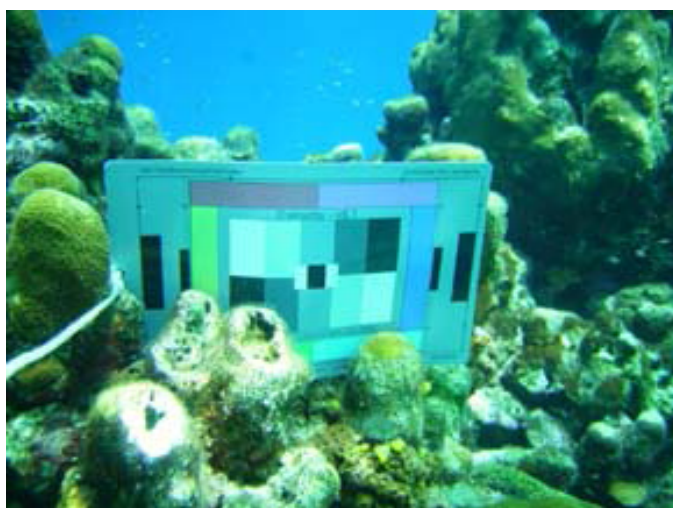
Normal underwater picture at 25ft
without Dive Mode
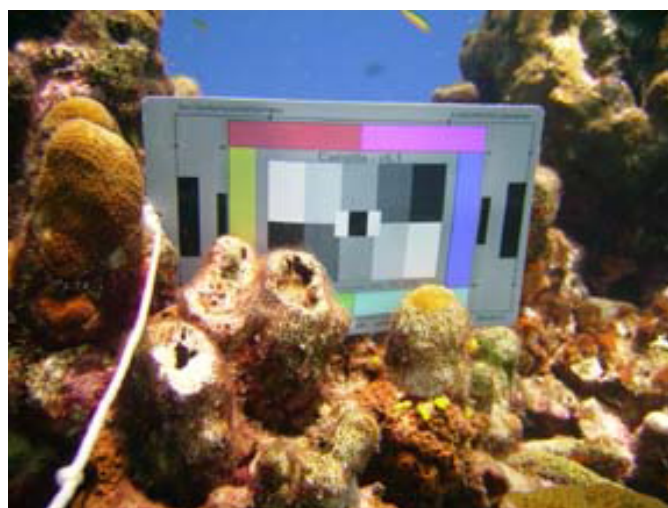
With Dive Mode color correction -
restores lost colors

Photo by Tobias Friedrich

IV. Taking Underwater Photos <u>Without</u> an External Flash or Photo-Video Light

Now that you have learned how water affects underwater pictures and how to restore lost colors, let's learn how to take the best underwater pictures **without** an external light source. Even if you are using are using a SeaLife external flash or photo-video light, this information will be useful for taking photos and video with subjects further away.

1. **Set the camera's scene mode to Dive Mode [or Snorkel Mode]** –

    a. Turn the Mode dial to the 🐟 icon
    b. Push the Menu key
    c. Scroll 1 position down to "Underwater Scene Modes" and push "OK" button
    d. Use the Navigation controls to move through the menu to select Dive (or Snorkel) mode. Scene mode is saved when powering off the camera.
    e. The first thing you will notice is that the viewing image on the LCD display appears red in color. That's the effect of the underwater color correction filter. Underwater, the viewing image will look natural. In Dive/Snorkel mode, the camera automatically turns the Flash off to help avoid backscatter.

Picture taken at 25ft/8m without Dive Mode

Picture taken at 25ft/8m with Dive Mode

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2. **Built-in Flash setting** – We recommend keeping the camera's built-in flash OFF when taking underwater pictures using the Dive or Snorkel modes. Turning the flash ON will increase the backscatter and cancel the color-correction effect.

3. **Fine-tuning the White Balance color-correction Setting** – Adjusting the White balance (WB) setting will compensate for undesirable color casts, so that white objects appear white in your pictures and videos. Selecting the Dive or Snorkel mode allows you to correct for the underwater "blue" effect. The White Balance setting is located in the camera's MENU. Here are some common ones you will find in your SeaLife camera:

Auto White Balance – The camera will do its best to automatically detect what the correct WB balance should be, but this will not work underwater. Only use the Auto WB for land pictures or in very sunny, bright conditions within depths of 10 feet. It offers no color correction for underwater photos.

<25ft/8m – This WB setting is the default used by the Snorkel mode and is referred to as Blue Water Shallow. This setting adds some color correction and is most effective for shallow water at depths less than 25 ft/8m. This setting is ideal for use in clear tropical water.

>25ft/8m – This WB setting is the default used by the Dive mode and is referred to as Blue Water Deep. It adds more color correction and is effective from 25 feet to approximately 60 feet. This setting is ideal for use in clear tropical water. Note: In dark conditions (e.g., underneath a ledge) or at depths greater than about 60ft/18m, the color correction will not be as effective and may result in dark or grainy pictures – consider using an external flash or photo-video light accessory, which works well at any depth.

"Green Water" or "Blue Water" – Ocean and fresh water will take on a greenish color if it contains a high concentration of algae. If the water contains little or no algae, it will take on a blue color tone. Just look at the water from the surface and you should be able to see if the color tone of the water is blue or green. If you are diving in water with a greenish tint, use the color corrected WB setting referred to as Green Water.

Manual white balance – The color tone of water varies depending your depth or local diving conditions. You can achieve near perfect color correction by manually adjusting the camera's white balance. Remember that the color tone will change as you change depth. Your instruction manual will provide detailed instructions. It's really not that difficult once you have done it a few times.

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V. Taking Underwater Photos with an External Flash or External Flash with a Photo-Video Light

Now that you have learned how water affects underwater pictures and how to restore lost colors, let's learn how to take some great pictures. This section covers how to take the best pictures **with** the external flash. If you are using a photo-video light and without external flash, skip to the next section VI.

a. Setting the camera's scene mode to Ext Flash Auto

With the Mode dial set the "Fish" icon, select the Ext Flash Auto Mode. This is a SeaLife exclusive exposure program that takes properly exposed pictures when using one or two external strobes.

NOTE: If you are using an external flash and a photo-video light (pictured above), select [icon] Ext Flash mode and continue on with the following information.

Brightness Control

Turn the Sea Dragon flash on and Select "A" on the brightness control

Take several photos to determine that the flash is automatically exposing images correctly. It is common for a new Sea Dragon flash to over expose images with the DC2000 in the Ext Flash Auto Mode. Use the following instructions to adjust the Auto Bright setting to "1".

Adjusting the Auto bright setting

If the Sea Dragon Auto Brightness setting (A) consistently over- or under-exposes the picture, it can be adjusted to increase or decrease average brightness.

If pictures are consistently over-exposed (white, washed-out), turn power on, set brightness dial to #1 (dot between 2 and "A") and hold the TEST button down for 4 seconds. The flash ready liht will blink a few times indicating the new Auto bright setting is saved in memory. Reset the dial to "A".

If pictures are consistently under-exposed (darker), repeat the above with the brightness dial set to #10.

The Auto bright setting can be adjusted to any level between 1 and 10, with 10 being the highest average brightness. The factory setting is 5.

Remember to reset the dial to "A" after resetting the brightness of the flash.

If you prefer, you can cancel the Auto Brightness setting and make more fine-tuned adjustments to the picture brightness (or darkness) by adjusting your flash.

Adjust the brightness control on the back of the strobe head away from "A" to a number setting.

Turning the brightness control dial to a lower setting will reduce the flash brightness and result in a darker picture. This is very useful to prevent over-flashing the picture.
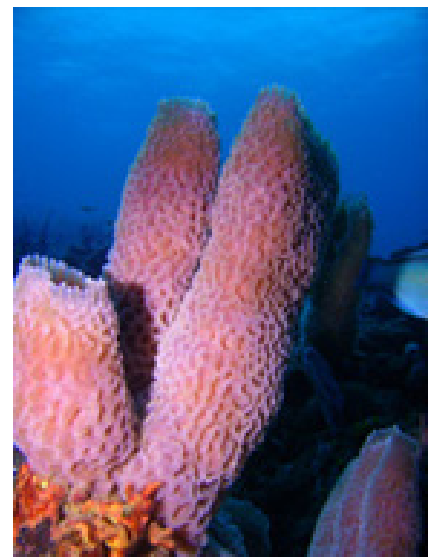
Turning the brightness control dial to a higher setting will increase the flash brightness and result in a brighter picture.

100% Flash Power
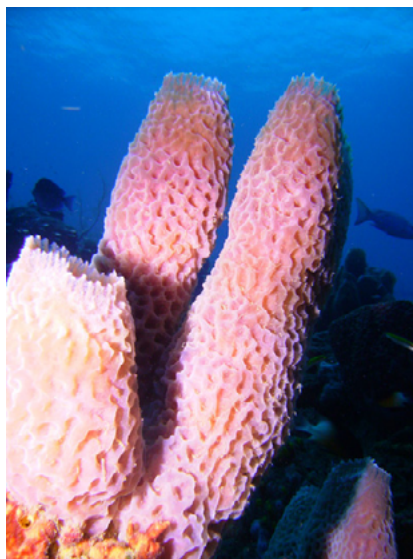
75% Flash Power

50% Flash Power

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A diffuser snaps onto the flash head to help soften the light, prevent over-exposure of close-up subjects, and results in richer color balance of pictures. The Sea Dragon Flash (Item SL963) includes a diffuser. Be sure to remove the diffuser for images of subjects further away.

e. Edge Lighting: Direct flash head slightly away from the subject

Aim the flash head away from the center of the target so just the outer edge of the flash reaches the subject. You can also point the flash at a nearby object and bounce the light towards the subject.

Flash aimed at center of picture frame

Flash aimed at edges of picture frame

f. *Color and White Balance when using an external flash accessory*

There is no need to make any color correction when the camera is set to Ext Flash Mode. The external flash accessory produces "white" light mimicking sunlight. The default white balance when shooting in Ext Flash mode is called "AWB" (Auto White Balance). No matter what setting you choose in the DC2000 White Balance menu, when the flash is turned on, the camera defaults to the AWB white balance setting.

VI. Taking Underwater Photos With a Photo/Video Light

When shooting with one or two Sea Dragon Photo-Video lights (i.e. no external flash), set the camera's scene mode to Ext Light ◢🔦.

In this mode, the camera's flash setting will be turned OFF and the white balance setting will be "AWB" to match the color temperature of the photo-video light. Since the flash is turned off in this mode, you can choose to use Daylight white balance depending on your personal preference. When shooting beyond the effective range of the photo-video light, set the white balance to one of the color-correction modes (See section IV, page 9)

Controlling the image exposure is easier when using photo-video light(s) because the camera automatically adjusts exposure based on the ambient lighting conditions and amount of illumination emitted by the light. What you see on the LCD display before taking the picture is how the picture exposure will turn out. Just make sure to limit your shooting distance to 3ft to 4ft depending on visibility and ambient lighting. The closer your shooting distance the better the results.

Power Button

Battery Status Indicators
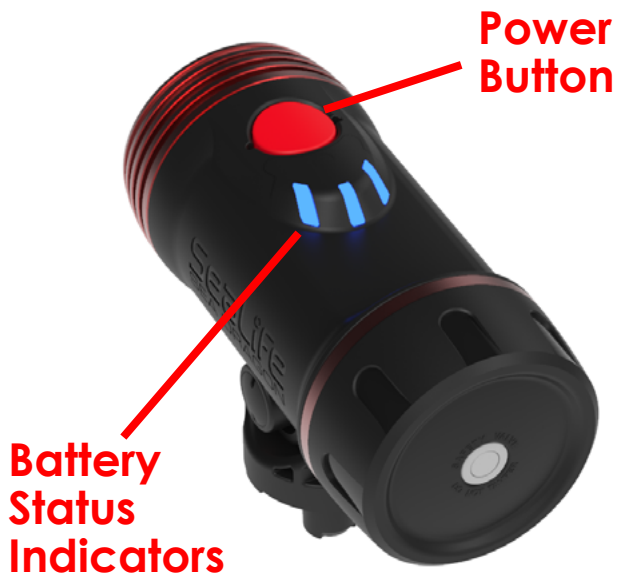
When you take images underwater during the daytime and use an external flash or video light, the ambient or surrounding light often competes with the artificial light. Sea Dragon photo-video lights have multiple settings (full, half power, quarter power) that are accessed by depressing the Power Button repeatedly to adjust light output. For daylight use, we recommend the full power setting. For images created in deeper water where ambient light is not so great, the half power setting works very well. For night dives (and other darker dives where ambient light is reduced), use the quarter power setting. Reduced light settings result in longer battery life.

Photo by Tobias Friedrich

Since photo-video lights are turned on for extended periods of time, it is useful to monitor the battery status indicators. The Sea Dragon photo-video lights feature three battery status indicators. Three solid (blue) indicators represent 100% battery power remaining. Two solid (blue) indicators represent 75% battery power remaining. One solid (blue) indicator represents 50% battery power remaining. One blinking indicator represents 25% battery power remaining.

The Sea Dragon flex arm accessory is a very useful accessory for limiting backscatter in your photos and videos, especially at night. The flex arm can be used by itself as a replacement for the grip or connected to the top of the grip as an extension.

A final word of advice. Remember to use the proper white balance settings. If your DC2000 is set in the Dive or Snorkel mode, the camera is adding color correction. If you use the photo-video light in these modes, the still images and videos will record with a very red tint.

Remember to match your camera's white balance setting to your primary light source. If you are using ambient light, choose the Dive or Snorkel mode to add color correction. If you are using the photo-video light, choose the External flash or External Light mode which turns off the camera's color correction.

VII. Focusing Tips for Taking Sharp Pictures

The second most common cause for "bad" results is out-of-focus or blurred pictures. The DC2000 will automatically focus from 4" (10 cm) to infinity, provided that the correct focus setting is selected and that there is enough light for the camera to "see" the subject. There are four primary focus settings useful for underwater photography and videos:

AUTO **Auto:**   Camera will automatically focus from 6" / 15cm to infinity.
This focus mode is ideal for most underwater applications.

Macro: Camera will automatically focus from 3.5" / 9cm to 20" / 50cm.
This focus mode is ideal for close-up applications.

Super Macro: Camera will automatically focus from 3.5" / 9cm to 20" / 50cm and magnified by 1.7X. This focus mode is ideal for close-up pictures of tiny sea critters. It may also be used when shooting with SL975 Fisheye lens.

∞ **Infinity:**   Camera locks focus at infinity, so anything beyond 2' / 60cm is in focus. The shutter response (lag) time is the fastest when set to Infinity focus. Ideal for shooting larger objects that are farther away. For example, sharks, whales, rays, wrecks, other divers, etc.

Tips on shooting sharp pictures

1. Depending on the Menu item selected under AF Area, the DC2000 camera should focus on the subject located in the center of the picture frame. There are 4 available AF area settings. For underwater photos, select **Center AF area setting**. If you attempt to focus and see multiple focus areas, readjust the camera to the Center AF area setting. Align the focusing square located in the center of the LCD over the subject. Subjects outside this square may not be in focus.

2. Before taking a picture, **push and hold the shutter button half way** to focus the camera on the subject. The focus frame in the center of the LCD display will appear green or red. A green focus frame means the camera accurately determines the focus. A red focus frame means the camera did not accurately determine the correct focus - make sure focus setting is correct and that there is sufficient lighting. When recording videos, it is important to depress the video button gently. The video image will focus and begin recording. The focus frame will not display when recording videos. Be sure that you have selected the appropriate Focus mode for your subject distance.

Photo by Tobias Friedrich

3. In order for the camera to **quickly and accurately focus**, there must be sufficient light to illuminate the subject. The camera cannot focus on something it does not "see". In low light conditions, the SeaLife Sea Dragon Photo-Video Light can be used to help the camera focus in low light conditions.

4. **Using AE/AF Lock**
   This setting allows you to lock and unlock the camera's auto exposure and/ or auto focus by pushing the up [focus] button. This feature has many useful applications. For example, when recording video with continuous AF enabled, the camera frequently checks and adjusts focus throughout the recording, even if the shooting distance has not changed, which can be disruptive. Now you can lock the focus while recording and only unlock it when you are making significant changes to the shooting distance. A same benefit applies to auto exposure – the camera constantly monitors and adjusts exposure during video recording when moving from brighter areas to darker areas. These auto exposure adjustments are noticeable steps caused by the lens iris changing, resulting in some disruption when playing back the video. Locking the auto exposure eliminates these steps and creates smooth video footage.

⚠️ Features mentioned require the latest DC2000 firmware updates.

5. **To set AE-L, AF-L and AE-L & AF-L:**

   a. Go to the AE/AF Lock setting in the main menu and select among the 4 options – Off, AE-L, AF-L or AE-L & AF-L.

   b. Push the focus key to lock the focus and/or exposure. A lock icon will appear on the left side of the display.

   c. Push the focus key again to unlock the focus and/or exposure. The lock icon will disappear from the LCD display.

   d. For faster access, we recommend setting the Shortcut to AE/AF Lock. The Shortcut setting is located in the System menu.

   ⚠ Features mentioned require the latest DC2000 firmware updates.

Photo by Tobias Friedrich

VIII. Basic Tips for Taking Great Pictures

Now that you know the major effects of water on shooting underwater pictures and how to adjust the camera controls, let's learn some basic tips on taking great pictures.

Photo by Stephen Frink

a. **Control your buoyancy** – Be very calm and patient, and let that curious fish get closer and closer. Get up-current from a good spot and just drift motionless along with your camera in ready position. To stay in a camera-ready waiting position, approach your subject facing the current.

Photo by Dan Johnson

b. **Crystal clear water** – No matter what equipment you use, good underwater pictures require crystal clear water. Keep your shooting distance to 1/10 of the visibility. For example, if the visibility is 40ft / 12m, keep your shooting distance inside of 4ft / 1.2m.

c. **Avoid backscatter** - Don't stir up the sand and debris on the bottom. Avoid using the camera's built-in flash. The built-in flash is very close to the camera lens and illuminates all the particles in front of the lens. If using an external flash accessory, aim the flash towards the outer edge of the picture from, not towards, the center of the image.

Photo by Bjorn Harms

d. **Shoot up, not down** - Get some of the blue water in the picture. Colorful coral in the foreground will stand out against a mystic blue background. These color contrasts will add depth to your pictures. Shooting down normally results in poor contrast between the subject and background.

Shooting Up

Photo by Kurt Amsler

Shooting Down

Photo by Liz Logan

Tip: Try and capture rising air bubbles to indicate motion

e. When **taking pictures of your buddy**, he or she should be no more than 6ft / 2m away for a good picture. Use the wide-angle lens accessory for group shots, so you can get everyone in the picture and still keep your shooting distance within 6ft / 2m.

Photo by Dan Johnson

Photo by Mathias Koch

f. A photo without much color, such as a **silhouette against the blue water background,** can make a dramatic image.

IX. Underwater Video

Taking video with your SeaLife digital camera adds the element of motion and action to your underwater adventure.

Photo by Tobias Friedrich

Here are some tips to shooting great video:

a. Hold the camera steady. Hold the video camera steady on a particular scene. Avoid panning left, right, up and down unless you are following a subject. If you must move the camera, do it very slowly. Moving the camera around can make you feel sea sick when viewing the video on your computer or TV. Take note of how Hollywood movie productions rarely move the camera. They normally stop recording, move the camera to another angle and start recording. Later you can edit the two videos together.

b. Push the video button down completely. The camera will automatically focus and then start recording. Once the video begins, the focusing remains locked, so maintain your shooting distance to the subject. Push the video button again to stop recording.

c. Take short video clips. 10 to 15 seconds per video clip is plenty. It's better to shoot a series of shorter video clips than one long one. You can edit the video clips together on your computer.

d. There is a lot of video editing software available. Before you go out and buy anything, check your computer for video editing software that you may already own. Windows Movie Maker or Apple iMovie are two very good video editing tools that are easy to learn.

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X. Using Manual Mode Underwater

1. Using the DC2000 camera with a Sea Dragon flash and/or Sea Dragon Photo Video light with the various settings available in the Underwater Mode allows the user a nearly automatic process at making underwater photos and videos. In the Underwater mode, each U/W scene automatically adjusts the camera settings for a specific shooting condition or camera setup. It's advanced point and shoot and the results are excellent.

2. Some photographers would prefer to exercise more control of their camera system while creating their underwater photos and videos. It is possible to take underwater photos with the DC2000 camera in the Manual Mode. Accessing the Manual mode is achieved by rotating the Mode Selection dial by 1 click from the Fish Icon to M. In the Manual mode, the DC2000 allows full exposure control by manually adjusting the aperture, shutter speed and ISO. As in the Underwater Scene modes, the camera allows access to most menu settings.

Setting Aperture & Shutter Speed

To set Aperture and Shutter speed values:

1. Turn the Mode dial to "M" for Manual mode.

2. Push OK button to enter Aperture Adjustment mode, then, use Up/Down button to select the desired aperture.

3. Push OK button again. This selects your aperture choice and enters Shutter Speed Adjustment mode, Use Up/Down button to select the desired shutter speed, then OK to select.

Aperture Values and What They Mean

In the Manual mode, the DC2000 camera allows aperture settings from f1.8 to f11. An aperture value with a low number allows a greater amount of light to pass through the lens, resulting in a bright photo. Setting progressively larger aperture values results in less light passing through the lens and subsequently darker images.

Photo by Nadia Aly

Shutter Speed Settings

In the Manual mode, the DC2000 camera offers shutter speed settings from 15 seconds to 1/2000 sec. The shutter speed determines how long that the lens is open and allowing light to pass though to the image sensor. A slower shutter speed means that more light will pass through the lens when a photo is exposed.

ISO Setting

The ISO setting controls the light sensitivity of the image sensor for capturing images. A higher ISO value increases the sensor's light sensitivity and allows for photography in low-light environments, but the more pixelated (grainier) the image will appear. A lower ISO value reduces the sensor's light sensitivity and is ideal for brighter environments. Available options are Auto (Default), 125, 200, 400, 800, 1600, 3200, 6400 12800 and 25600.

Photo by Chase Darnell

Selecting Aperture, Shutter Speed, and ISO for Underwater Photography

As outlined above, aperture settings, shutter speed settings and ISO settings all affect the brightness or darkness of images. We also have to add into our decision making process the fact that water absorbs color out of available light, so we also need to consider using the Sea Dragon flash and/or photo video light.

Using the DC2000 camera with Sea Dragon flash in Auto Bright Mode

- Set the ISO to 125 to reduce backscatter issues
- Select a mid-range f stop, i.e. f6
- Select a shutter speed of 1/125 sec
- Turn the Sea Dragon flash on in the Auto brightness mode (A)
- Take a photo and examine the image. If it is too bright, select a higher number f stop. If it is too dark, select a lower number f stop. Shoot another image.
- Continue shooting and adjusting the f stop, up or down, until you are happy with the image.
- There should be no reason to adjust the ISO or shutter speed
- With a little experience, this should become second nature

Photo by Tobias Friedrich

Using the Sea Dagon Flash in the Manual Mode

If you choose to use the Sea Dragon flash in the manual mode, rotate the Brightness Dial to the number of your choice, as an example, "5". Leave the ISO setting at 125 and the shutter speed at 1/125 sec. As above, adjust the f stop settings up or down until you are happy with the

Using the DC2000 in Manual Mode Underwater with a Photo-Video Light

You can use a Sea Dragon or other photo-video light with the DC2000 camera set in the Manual mode. As outlined above, set the ISO to 125, set the shutter speed to 1/125 sec. Adjust the f stop up or down and view the potential image on the camera monitor. Remember, as mentioned above, the camera "sees" the effect of the photo-video light. What you see is what you get. Adjust the f stop to the preferred image brightness and

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XI. Alternative DC2000 Camera Modes

Up until now, this discussion has focused on photos and videos underwater and the various camera modes to create them. The DC2000 camera offers Program, Intelligent Scene, Land Scene modes (25 land modes), Underwater Scene modes (4 underwater modes), Panorama, Manual, Aperture Priority, and Shutter Priority, all of which can be accessed by rotating the Mode dial. We recommend that you consult the DC2000 camera manual for more details about these settings, but here is a brief description of a couple of the modes available.

1. **Program Mode** – the camera automatically adjusts exposure based on ambient lighting conditions.
2. **Intelligent Scene** – the camera detects the shooting conditions and automatically switches to the appropriate scene mode.
3. **Aperture Priority** – This feature lets you manually adjust the aperture value while the camera automatically adjusts shutter speed to insure proper image exposure.
4. **Shutter Priority** – This feature lets you manually adjust shutter speed while the camera automatically adjusts the aperture to insure proper image exposure.

If the camera is in the underwater housing, the Sea Dragon flash can be used in conjunction with the Program, Aperture Priority, and Shutter Priority modes.

⚠️ Features mentioned require the latest DC2000 firmware updates.

XII. Recommended Menu Settings

Most of the DC2000 scene modes will have **default settings** programmed in for many of the menu settings. For example, the White Balance setting for the Underwater Scene mode DIVE will default to the color corrected Blue Water Deep setting and the camera flash is turned off. **As long as you do not alter the default settings, the camera settings will not compete with one another.** If you have the camera set to the DIVE mode and turn on the flash, the images will record very red because the color correction and the flash are incompatible. For best results, it is useful to use the camera menu defaults

With this in mind, there are still some Menu settings that need to be set to get the best results while using the DC2000 above or below water. To access the Menu, press the Menu button and use the 4 way navigation control and OK button to select and enter menu settings. Menu items with an acceptable default will not be mentioned here. For more information, we refer you to the DC2000 camera manual.

DC2000 camera users need to be aware of the following menu items:

- **Focus Mode** – Auto focus (AF), Macro, Super Macro and Infinity. These settings alter the way that the camera views and focuses images and videos. The wrong setting will prevent the camera from correctly focusing.
- **RAW + JPEG** – If you wish to record images in RAW as well as JPEG, turn this feature on.
- **Quality** – If you are using RAW+JPEG, you may leave this setting at Fine. If you are using JPEG images, select the Superfine setting.
- **White Balance** – This setting is usually determined by the camera based on the Scene mode selected, but when the camera flash is turned on, the default is changed to AWB.
- **ISO** – usually a default setting selected by the scene mode. When using an external flash underwater, you may choose to select ISO 125 when using the Ext Flash Auto mode (Underwater Scene Mode) or the Manual mode to help offset backscatter issues.
- **AF Area** – the camera frequently selects the Wide area which allows the focus to shift around in the image. It is best for underwater photos to select Center.
- **Auto Focus Lamp** – when using the camera in a housing, turn this setting off.
- **Date Stamp** – Unless you want the date recorded in your image, turn this off.
- **Continuous AF Photo** – When Continuous AF Photo is on, the camera will check and adjust focus every few seconds without pushing the shutter button. This is useful for land photography of moving subjects at closer range (<3ft/1m)because the camera will pre-focus on the subject shortening the shutter response time. More battery power is used when Continuous AF Photo is turned on.
- **Continuous AF Video** – When Continuous AF Video is on, the camera will check and adjust focus every few seconds while recording video. This is useful when shooting video of moving subjects at closer range (<3ft/1m). One side-effect is that you will see and hear the camera continuously focusing when playing back the video. Disable this setting when shooting video beyond 3 ft. More battery power is used when Continuous AF Video is turned on.

When shooting video with the DC2000, the only menu items to be concerned with are White Balance and Focus. If you are using available light under water, choose a scene mode with the appropriate color corrected WB setting, DIVE or SNORKEL. Do not use a Photo-video light in these modes. Select an appropriate focus mode for your video. Do not look for a color coded focus bracket when shooting videos. All the other menu settings remain at the default settings.

XII. Take Your Photography to the Next Level

Every time you take underwater images, you learn and improve from the experience.   Take advantage of some of the other great resources available that can add a new dimension to underwater photography.

A underwater photography course can be beneficial and enjoyable - Check with your local dive shop about underwater photography experiences and workshops they offer. The major certification agencies, like PADI, NAUI and SSI offer underwater photography courses and teaching materials through your local dive shop.

Photo trips - Ask your dive center about specialized underwater photo trips and guided tours. Many offer "Underwater Photo Safaris" to the world's most beautiful dive spots with a knowledgeable guide and instructor.   Also follow SeaLife's event schedule for underwater imaging events happening around the world.

Photo by Dan Johnson

We hope this information has been helpful. Please feel free to contact us at info@sealife-cameras.com if you have any feedback or suggestions on how we can improve this guide.

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