

the Nikonos Lens System

CHOOSING THE RIGHT TOOL

TEXT AND PHOTOGRAPHY
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One question new Nikonos V owners often ask is, "Which lens do I need to take great pictures?" Actually, lens selection depends on the diver's interests. Everyone has favorite subjects. Are you fascinated with colorful fish or are you only interested in taking pictures of your buddy? Maybe you're intrigued by sea slugs or the multitude of animals no bigger than your thumbnail. Are you the type who fantasizes about deteriorating shipwrecks on the ocean floor and longs to capture the days of old on film?

Underwater photography tends to be divided into three interest groups, with each requiring certain camera lenses and accessories. The first group uses close-up and macro equipment and shoots such subjects as nudibranchs, tube worms or small sea anemones. Color, design, patterns and creature behavior usually dominate this type of photography.

The second group of photographers prefer shooting general underwater scenes of large sponges, schools of fish or perhaps their buddies performing bizarre stunts. These are the more common photos seen on the rolls of film shot by beginning underwater photographers.

The third group likes to take wide angle scenes, such as reefscape, a large section of a wreck or maybe the view from a depth of 100 feet looking toward the surface.

For each of these underwater photo groups there are at least two lenses available for the Nikonos V camera. Determine the subjects you want to photograph and we'll attempt to help you choose the proper lenses to capture them on film.

AMPHIBIOUS 35MM NIKKOR

The 35mm generally comes with the camera and is the most versatile of all the lenses in the Nikonos system. With it you can take pictures on land with a depth of field from three feet to infinity, as well as U/W pictures of your dive buddy or maybe

lenses there are two red markers right on the front that change as you change your f/stop. You can easily tell what will be in focus and what will not, by looking at the distance between the two red markers. For example: If you set your lens to focus at six feet and set your aperture at f/11, everything from 4-12 feet would be in focus. The depth of field scale works equally well both topside and U/W.

The 35mm lens can also be used for macro photography U/W, but it requires the use of extension tubes and framers. Before your dive, you remove the lens, attach the extension tube and framer and then reattach the whole assembly to the camera. Once underwater, simply find a subject and place it inside the framer and you are ready to capture the world of small critters.

These extension tubes and framers come in a variety of sizes:

- 1:3 framer 4.5" wide
- 1:2 framer 3" wide
- 1:1 framer 1.5" wide
- 2:1 framer .75" wide

There is a Close-up Outfit for the 35mm that allows for photos of even larger animals close-up. This kit consists of a mounting bracket, supplementary lens, and subject framer. After attaching this kit properly to the lens and camera, you can photograph close-up subjects such as starfish, sea anemones or pufferfish. A strobe must be used with the close-up kit or extension tubes/framers to ensure quality photos.

On land the 35mm lens works great for shots in the rain, surf or a spray covered dive boat bow.

Recently, extension tubes and framers have become available for use with the 35mm lens on land, so photos of land crabs, island flowers and native art work are possible. The same extension tubes are used for both underwater and land, but different framers are required. Although Ni-

kon does not sell these, other accessory manufactures do.

a grouper cruising a reef. The f/stop and focus are on the front of the 35mm lens, controlled by knobs on the side. To a new Nikonos owner, these controls may seem strange, but it won't be long before using them becomes second nature.

One advantage of all the underwater Nikkor lenses is the excellent depth of field scale found on each lens. On a land camera lens this scale consists of a group of lines on the side of the barrel. On the Nikonos

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28MM UNDERWATER NIKKOR

The 28mm UW-Nikkor is for underwater use only. This high quality lens has been designed so the front element is water itself, eliminating some of the distortion and lack of sharpness found on lenses with flat ports. The 28mm has the same type of depth of field scale as the 35mm, except the minimum focus has dropped to two feet. This is extremely helpful for photographs of some coral reef residents.

One advantage of the 28 over the 35mm is wider angle of view, which allows the photographer to get closer to the subject. This is especially helpful when visibility is poor and it is necessary to get close to your subject to obtain quality pictures.

Another advantage of the 28 over the 35mm lens is its increased depth of field. Focusing both lenses at six feet and using an aperture of f/11, we obtain the following results:

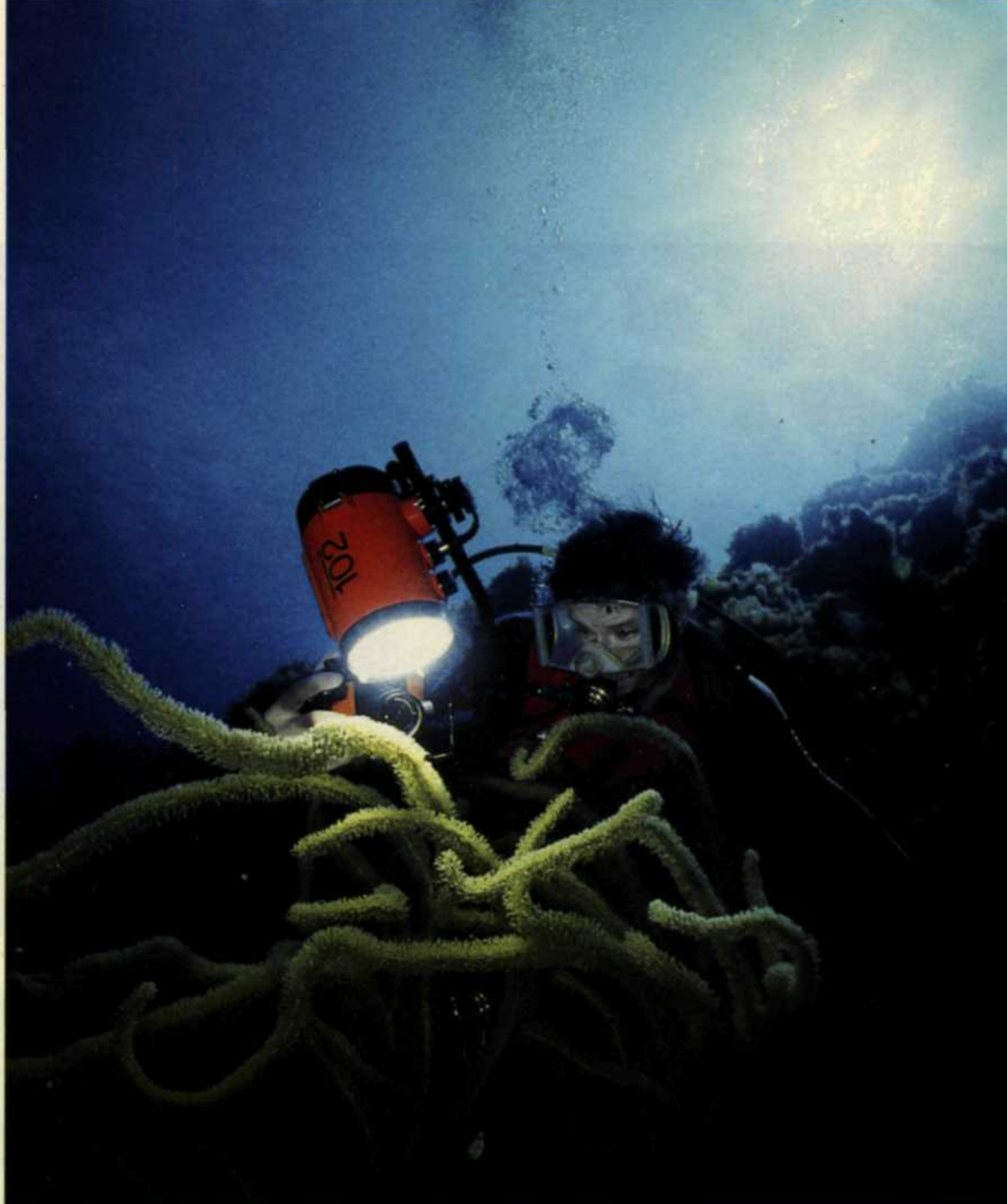
- F/11 at Six Feet
- 35mm depth of field = 4-12 feet
- 28mm depth of field = 3.5-28 feet

"... lens selection depends on the diver's interests."

The same close-up kit can be used with the 28mm as with the 35, although the framer is larger. The same extension tubes used with the 35mm lens can be used with the 28, but different framers are required. When possible, we prefer to use the 28mm and its extension tubes and framers because there is greater depth of field than the 35 and the framers are closer to the lens. This latter reduces the amount of water between the camera and subject, increasing your odds for quality photos.

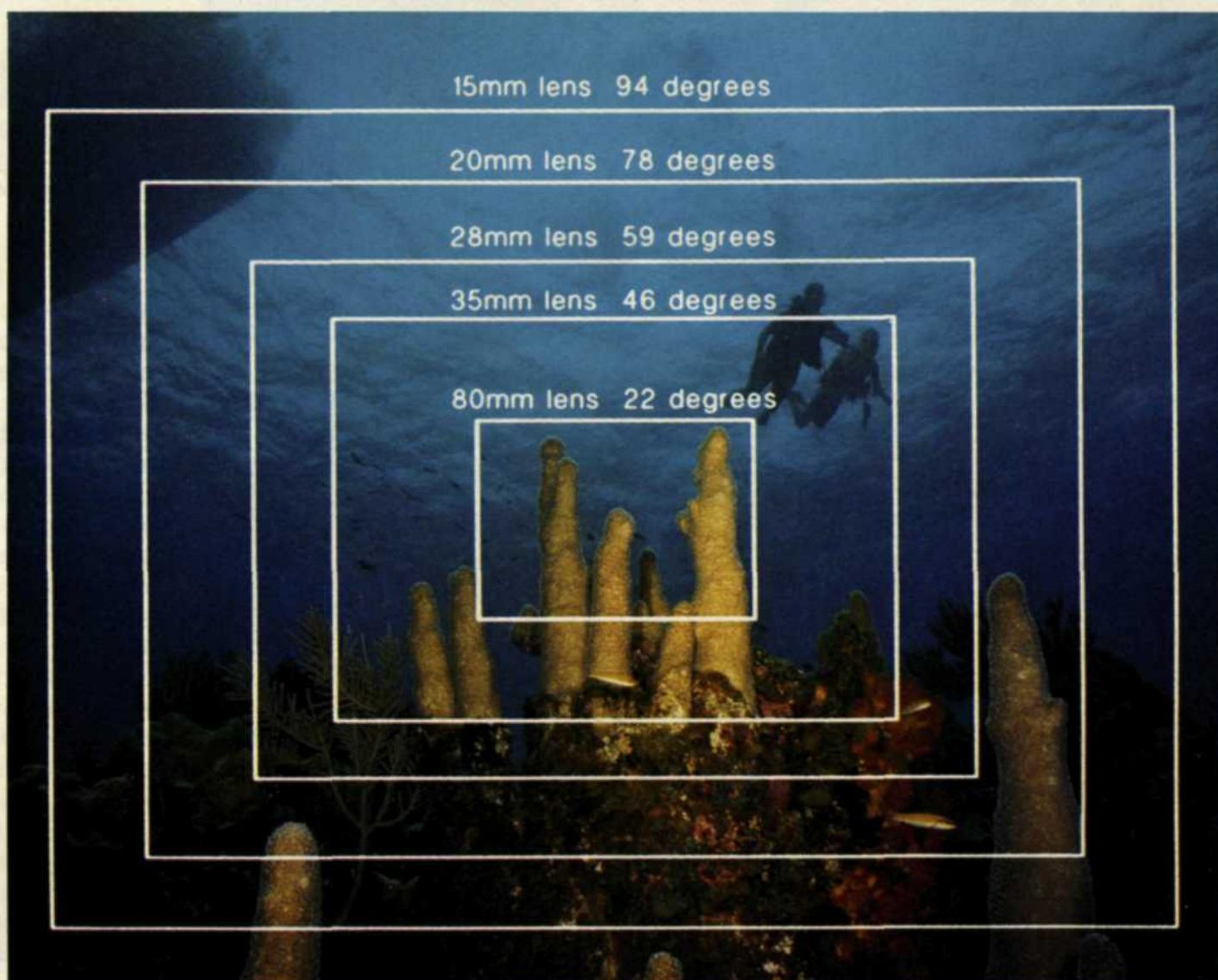
20MM UNDERWATER NIKKOR LENS

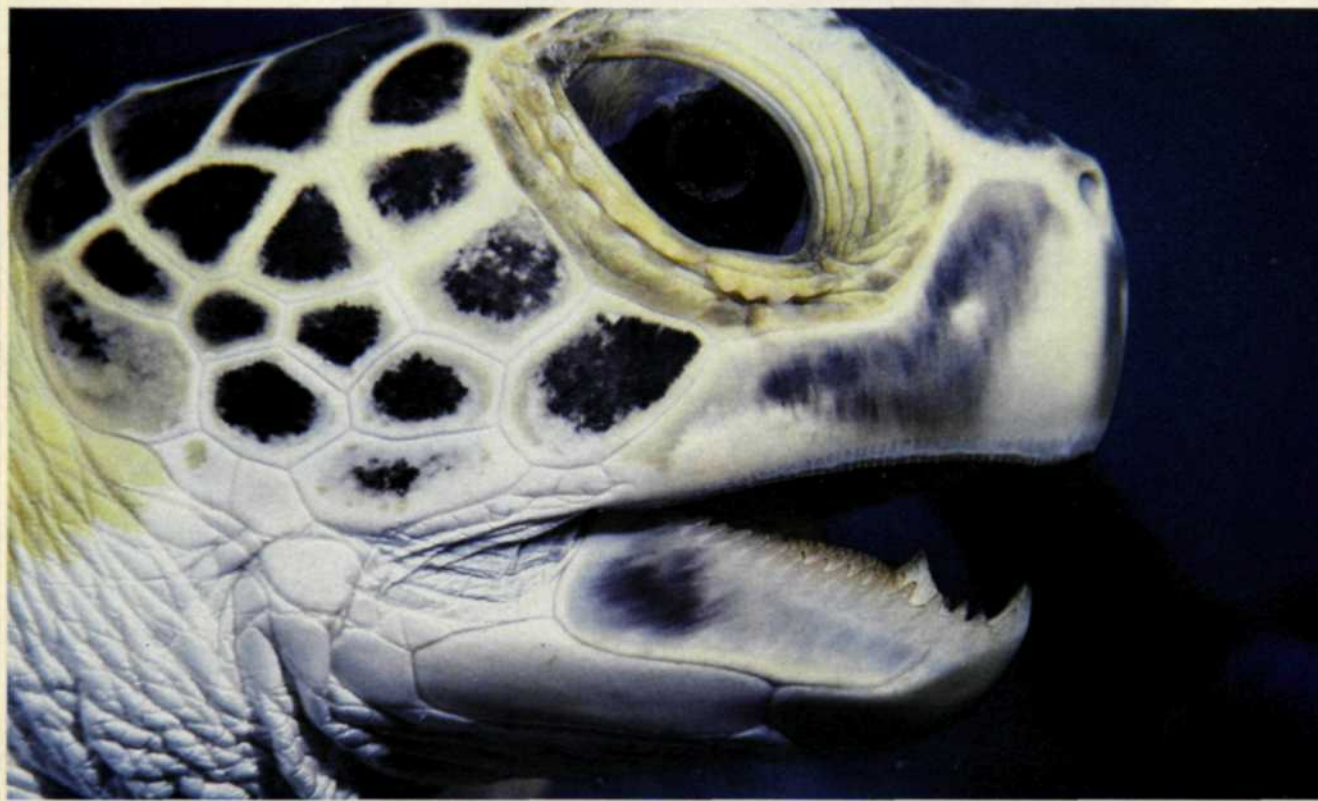
One of the newest additions to the Nikonos lens system is the high quality 20mm. It is similar in appearance to the 35 and 28mm lenses, but that's where the similarity stops. The front of the 20mm lens is watertight glass that is a combination dome port and front element for ultimate image quality. The focus and f/stop scales



The Nikonos lens system provides a great deal of versatility. Some Nikkor lenses are for U/W use only, some are amphibious and one can only be used on land.

Above: The 28mm land Nikkor was used to take this photo of the fall color change. Above Right: Extension tubes and framers for the 28 and 35mm lenses allow them to be used for macro underwater photography. Right: A reef scenic is marked to show the angle of coverage of each underwater Nikkor.





Left: This portrait of a turtle's head was taken with the 35mm lens and the Close-up Outfit. Middle Left: The Nikonos V and the six interchangeable Nikon lenses that can be used with it. Bottom Left: The 28mm land lens was used to take this interesting picture. Below: The Nikonos V with the 20mm lens and viewfinder.



have been moved from the lens front to two side control knobs for easier viewing. On one side you will find a color coded f/stop scale and on the other, a corresponding color coded focus scale. The depth of field scale is a series of lines encompassing the entire diameter of the focus knob.

The 20mm lens is designed for U/W use only and for wide angle pictures. The depth of field of this lens is considerably more than the 35 or 28mm. For example: when it is focused at three feet and the aperture is f/11, the depth of field ranges from 1.6 feet to infinity.

The 20mm lens does focus down to 1.2 feet, allowing you to take photos as close to your subjects as with the close-up kit and the 35 and 28mm lenses. This lens is just the ticket for working in water with poor visibility where you need to be close to your subjects. The less water and dirt between you and your subject, the clearer your photos. Because of the 20mm's close focus ability, its high resolution and wide angle of coverage, you can make 5-10 foot visibility look like 50.

A special bright viewfinder is available for the 20mm lens that allows the diver to place his or her face mask up against the viewer and get a precise indication of the

NIKONOS LENS APPLICATIONS

UNDERWATER

LAND

	EXTENSION TUBES	CLOSE-UP OUTFIT	GENERAL	WIDE ANGLE	TELE-PHOTO	EXTENSION TUBES	GENERAL	WIDE ANGLE	TELE-PHOTO
UW 15mm			YES	YES					
UW 20mm			YES	YES					
UW 28mm	YES	YES	YES	YES					
LW 28mm							YES	YES	
35mm	YES	YES	YES			YES	YES		
80mm		YES			YES				YES

The chart above lists both topside and U/W uses for the six Nikon lenses and the various accessories available for the Nikonos.

picture area. This viewer mounts on top of the Nikonos camera and is held in place with a spring loaded thumb screw. A 28mm viewing mask can be attached to the front of this viewer to allow use with the 28mm lens.

15MM UNDERWATER NIKKOR

For the ultimate in underwater photography, Nikon offers an incredible wide angle lens. Considered the Rolls Royce of underwater lenses, it has a 94 degree angle of view compared to 78 degrees with the 20mm. The depth of field ranges from one foot to infinity at f/11. The depth of field (the same red markers found on the 35 and 28mm lenses) and focus scales are found inside a window on top of the lens. The front of this masterpiece is a large round element that acts as dome port and front element. Care must be taken to avoid scratches on the front lens, so Nikon includes a special screw-on lens cap that fills with water upon descent. It can be removed and stuffed into a pocket when you're ready to shoot. The lens is impressive, consisting of 12 elements in 9 groups.

A special viewfinder similar to that used with the 20mm lens is available for the 15mm lens. Inside it you will find a paral-

lax correction for pictures taken from 1.5 meters down to .3 meters. The viewfinder mounts on top of the camera. With the 15mm lens you can take pictures in poor visibility and the water will look clear.

80MM AMPHIBIOUS NIKKOR LENS

The 80mm lens can be used both underwater and topside. It is a short telephoto and is probably the most difficult Nikonos lens to use. This is because depth of field is shallow even when the lens is stopped down. For example, if the lens is focused at six feet, the depth of field at f/16 is only 5.5 to 7 feet. This means distance from subject estimation must be exact. This is difficult on land and even more so U/W.

Both the f/stop and focus controls are on the front of the lens, as with the 35 and 28mm lenses. The 80mm can be focused from 3.5 feet to infinity, while f/stops range from f/4 to f/22. We recommend the use of high speed films with this lens, so small apertures and high shutter speeds are possible to give the sharpest results.

The Close-up Outfit can also be used with the 80mm and it has its own special framer (included when you buy the Nikonos Close-up Outfit). Using the kit with

the 80mm lens you can photograph fish, moray eels and large tube worms.

On land the 80mm is best suited for photographing from a moving boat, river rafting or in the middle of a hailstorm.

28MM LAND NIKKOR LENS

One of the many problems of traveling to distant dive locations is the weight and bulk of your equipment. One way to cut down on this excess baggage is to leave your land camera home and use your Nikonos for all those topside shots. Especially suited for such photography is the 28mm land lens. Although Nikon has discontinued it, this lens is still available in a few stores.

The 28mm LW has a standard focus ring and f/stops just like a normal land lens, but is O-ring sealed for non-pressurized moisture. Although it is not meant to go U/W it can be used in a moist environment without harm. You can even run water over it to clean it!

The 28 LW Nikkor has a much wider angle of coverage compared to the 35mm, and allows the photographer to capture certain special scenics. It focuses down to 1.5 feet and allows greater depth of field, which helps ensure sharp pictures. 