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VOL.7 No.12

PHOTOWORLD

AUSTRALIA'S MONTHLY MAGAZINE TO DEVELOP YOUR PHOTOGRAPHY.

THOUSANDS OF PRICES, DETAILS AND SPECIFICATIONS ON VIDEO ACCESSORIES!

UNDERWATER MACRO-PHOTOGRAPHY... AWARD WINNING DIVER SHOWS YOU HOW!!

NEW NIKONOS V ...DOES IT REALLY MAKE THE OTHERS OBSOLETE?

CANON MC — HOW SMALL CAN 35MM GO??

WIN A POWERFUL MEADE SPOTTING SCOPE!!

Inside PHOTOKINA REPORT

AN INTIMATE LOOK UNDERWATER

pictures to take your breath away.

by Gary Graf

My Nikonos IV-A with 35mm lens, Dacor 1:1 extension tube and appropriate framer. Notice personal admonition to REMEMBER THE FINDER, DUMMY. More than once I've hopped into the water without screwing it o

Neophyte divers seem to feel they should spend their all-too-brief visits to the magical new world they've just discovered trying to see all the subterrain they can. As if conducting fin tests they sweep across as much underwater acreage (hectarage?) as possible before draining their tanks. Ironically, they're missing most of what the silent world has to offer.

Experienced divers tend to be a bit more discerning. On their subventures most move along a lot slower, often with faceplates only centimetres from the rock or reef surfaces as they inspect the sessile (sedentary) life. Many carry small, watertight torches to penetrate the darkness under ledges and in holes and crevices, and to illuminate the wealth of brilliant colours, delicate forms and intricate designs; the myriad shapes, textures and patterns. Where the neophyte just looks, these divers see. And the more they see, the more fantastic it all seems. So fantastic that many feel they have to record everything on film.

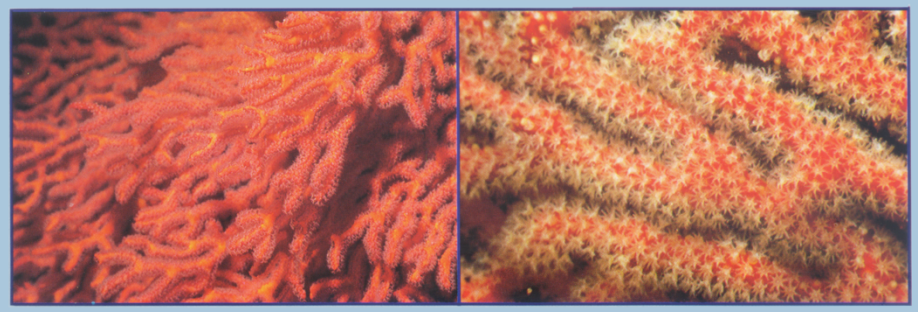
For divers who want merely to take happy snaps to amaze and impress surface-tied friends and relatives, several inexpensive amphibian cameras have lately appeared on the underwater scene. And for those whose overriding concern is money (or, more accurately, the lack thereof), a West German company even manufactures a fairly cheap plastic bag and faceplate arrangement into which normal, everyday cameras can be sealed.

At the other end of the spectrum, for diver-photographers who yearn to be more creative, there are custom housings. These allow reflex viewing for greater control of composition, a choice of quality lenses for more flexibility and improved resolution and perhaps a motor drive for those times when three hands are better than two. Usually made of cast-aluminium or Plexiglas (Perspex) with full external controls, they're available for the better SLR's and large format cameras. The best of these housings feature interchangeable ports, internal lighting systems and water detection circuits. Plus price tags running to a few thousand dollars.

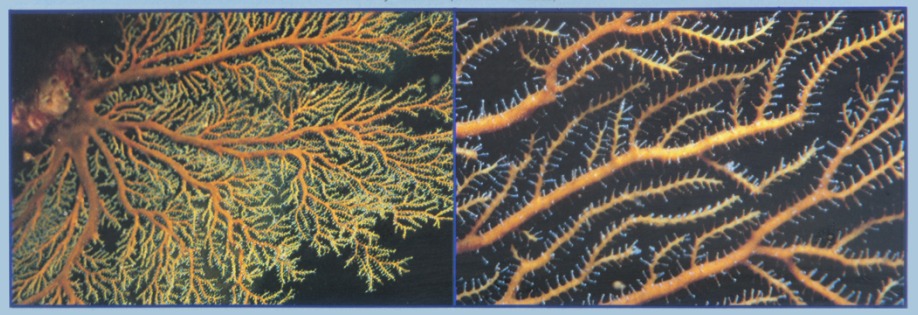
In between, you have the compromise choice of several hundred thousand divers. The Nikonos. Like the preceding four models, the newest Nikonos is completely self-contained and watertight to 50 metres. Although the Nikonos IV-A took a big step forward by introducing a swing-open back and automatic exposure, both features were flawed. The Nikonos V offers a greatly improved O-ring design and a far more flexible exposure system that puts it in the same league with other state-of-the-art cameras. (See the review of the latest Nikonos in this issue).

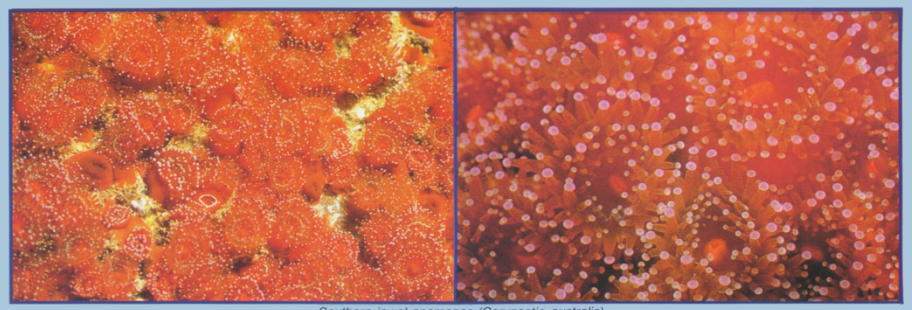
For the past dozen years I've used both a Nikonos and an American aluminium housing with a dome port. Inside the latter I mount a Nikon F with the enlarged action finder and either a 24mm or 55mm micro lens. The main reason for choosing a wide angle is turbidity, a fancy name for the sand, silt, organic matter and what have you normally floating in the water. The 24mm lets me get closer to larger subjects, minimising the clouds of suspended muck, which not only reduce visibility but reflect strobe light. The 24mm also means a shorter light path with less colour filtered out by the water. So I get better saturation.

Ellis's sea fan (Mopsella ellisi)



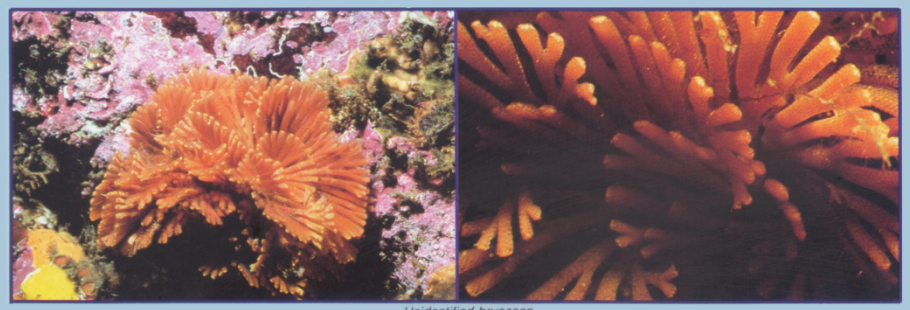
Dusky sea fern (Solanderia fusca)





Southern jewel anemones (Corynactis australis)

Lace bryozoan (Triphyllozoon monolifera)



Unidentified bryozoan

When the water turns *really* dirty, a not uncommon condition around Sydney, the best alternative is shooting close-ups. Even micro close-ups. Fortunately, because of the variety and proliferation of sessile and slow-moving life mentioned earlier, shooting tight doesn't necessarily mean wasting film. Which brings us finally to the main reason for this article.

Although the dome port on my housing comes in very handy for wide-angle work because it reduces refraction, distortion and colour aberrations, a flat port, were it available, would make more sense for close-ups. Because a flat glass surface bends (or refracts) light, thereby effectively increasing the lens's focal length by a factor of 1.3 (the refractive index of water), you get a larger-than-life image on film. For example, a 35mm lens becomes the equivalent of a 47mm beneath the surface. Obviously, this comes in especially handy when you're working very close. Another problem with this particular set-up of mine has been manouevring the strobe near enough to give a high f/stop for maximum depth of field. For instance, when shooting 1:1 even at f/22, the depth of field is a mere five millimetres (3/16-inch).

So after a great deal of experimentation and frustration I opted to switch to a Nikonos for my 1:1 work. (A much cheaper move than forking out for a new, more compact housing with interchangeable ports.) Because a friend drowned my ancient Nikonos I (thereby becoming the instant owner) and at the time I couldn't find a used Nikonos III in good enough condition at a fair enough price, I was forced into buying one of those flawed Nikonos IV-A's. Which I immediately and indefinitely set to Manual.

At the same time, I got a Dacor 1:1 extension tube and a pair of framers to use with my 28mm and 35mm Nikonos lenses. Framers are little gadgets that screw onto the extension tube and project out in front of the lens to *frame* your viewing area. Depending on the accuracy of the framer (and some aren't particularly), what ,you see is pretty much what you get. The key consideration is putting the framer right against your subject because of the minimal depth of field. I had anticipated a loss of sharpness with these lenses, but my first results pleasantly surprised me. Although the photos certainly looked softer, the overall effect was a nice, moody feeling.

A little bit of reading and a whole lot of trial and error has left me in a position to pass on a few pointers for doing micro work with a Nikonos. First, if you're using the Nikonos IV-A, be extra careful with the O-ring and dry everything (the camera, your hands, hair and the top of your nose) before opening it. Use a film that's slow enough to compensate for a certain lack of lens resolution, but fast enough to let you shoot at f/22 or f/16. If your strobe's powerful enough, you can get away with Kodachrome 25. Bear in mind you'll be sacrificing at least one stop, probably two, because of the tube.

Position your strobe slightly to one side of centre to make the lighting as even as possible. (A second slave strobe for fill could help, but I've yet to feel any real need for one.) Once you've experimented and obtained the optimum exposure for your set-up, it need not be changed unless your subject is exceptionally light or dark. Or red. Dark reds absorb a disproportionate amount of light underwater, so you should open up at least one stop to properly expose them.

The framer allows no lee-way. Position it carefully and try to aim slightly upward if possible, both to provide a more dramatic angle and to let extra light into shadow areas. Because of the negligible depth of field, the flatter the plane of the shot, the better. I've actually laid my framer right against certain rather lethargic fish and tameish squid.

Because you're working so close, any wasted picture space or lack of balance becomes much more distracting. You must pay extra attention to detail. (Which shouldn't be all that taxing since you're no longer worrying about focus, f/stop or shutter speed.)

Naturally, you must look harder for picture possibilities. At least a superficial knowledge of marine biology encompassing the inter-relationships between invertebrates can be useful. For instance, knowing that certain tiny, colourful shrimp are often found in the company of certain equally colourful anemones could lead to a pretty spectacular shot.

Then, of course, you can do what I've done with the shots shown here. Think abstract. Rather than making a photograph which is a statement, a way of expressing your point of view about the subject; you become a designer, concerned with such basic elements as shapes, textures, patterns, colour balance and a harmony between lights and darks. Something like Pollock's 'Blue Poles'

A word about artifical light. *Definitely*. Of the thousands of pictures I've taken in the less than crystal clear waters of New South Wales, you can count the times I didn't resort to flash on the fingers of one hand. If you don't bring light with you, all you get is a lot of murky blueness (greenness, yellowness or brownness, depending on what's most contributing to the turbidity). Not only that, the speed of the strobe light tends to negate movement, which becomes even more important when you're working very close.

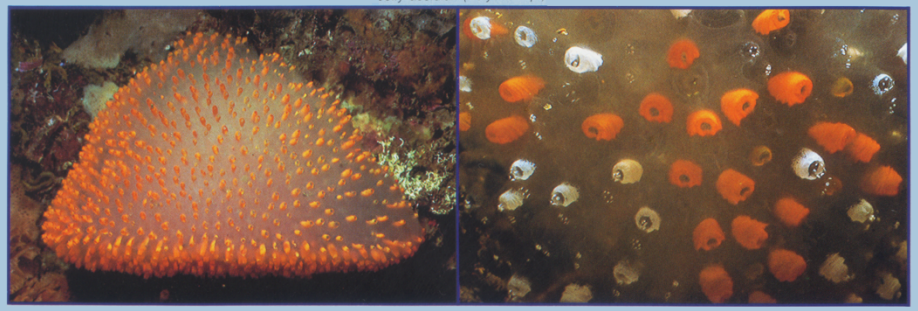
A couple of words of advice on choosing an underwater strobe. *Don't Skimp*. As a category, submersible strobes have always been notoriously unreliable. Whatever trouble you may

Southern feather star (Ptilometra australis)

Firebrick sea star (Asterodiscides truncatus)

Ocellate sea star (Nectria ocellata)

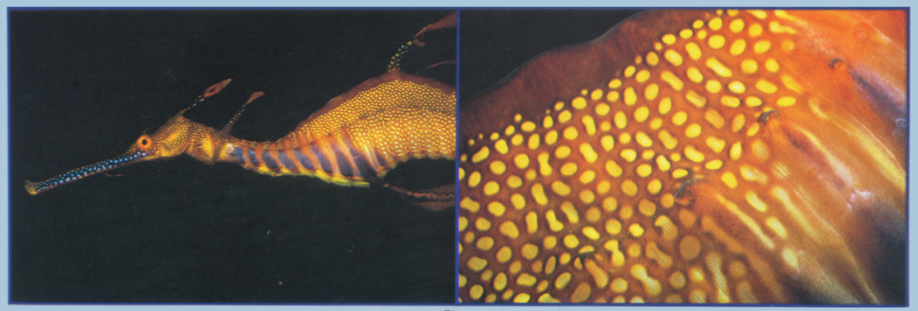
Jelly ascidian (Polycitor sp.)



have experienced on the surface will be multiplied below. When selecting a strobe to take down there, you should look for one that features colour-corrected light so you can shoot daylight film, a beaded reflector to diffuse the light, a wide-angle beam to spread the light across the range of most lenses, a choice of power modes to vary light intensity and a laudable track record.

At this point I'll offer an unsolicited plug. My Subsea Mark 100 enjoys all these features. What's more, I've used it for over 10 years under a variety of difficult conditions. I've taken it to Grand Cayman, Belize, Ponape, Heron and Lord Howe Islands, on a Reef cruise, to nearly 60 metres below on the wrecks in Truk Lagoon, to Jervis Bay uncounted times and all up and down the New South Wales coastline. It's been banged about in small boats and huge aeroplane holds. It's sat in the sun for hours and my fridge for months. It's gone through probably a dozen 300-volt batteries, flashing over 6,000 times. And I've yet to have a problem with it that I couldn't fix in a few minutes with standard tools. Strangely enough, a new one today costs only a little more than what I paid for mine in 1973.

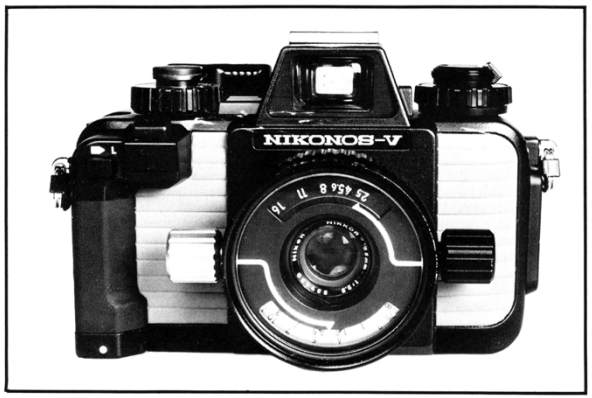
A final few words about shooting close-ups underwater Not only is this a good way to go when confronted with lousy visibility and/or spectacular microscopic creatures, it's also probably the one area of underwater photography offering you the greatest control and opportunity to be truly creative. □



Weedy sea dragon (Phyllopteryx taeniolatus)

EQUIPMENT REVIEW

The New Nikonos-V



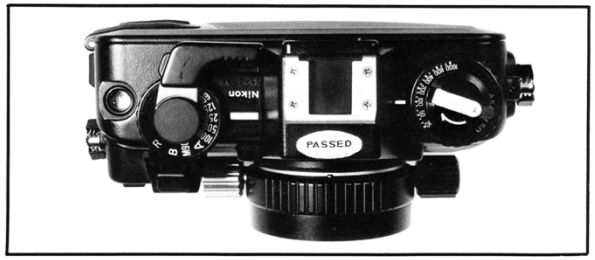
A Worthy Successor to the original Calypso

by Gary Graf

In the press release announcing the newest version of the world's premier amphibious camera, the Nikonos-V is said to *supercede* its predecessor, the Nikonos IV-A. Nikon would have been more accurate in saying the V completely *obsoletes* the IV-A. After a read of the specs, even before using this latest Nikonos, I could imagine 'slightly used' and 'like new' Nikonos IV-As appearing in classified advertisements around the world. The Nikonos has come a long, long way in 25 years.

The very first forerunner of the Nikonos-V was invented in the late fifties by a Belgian optical engineer named Jean Guy Marie de Wouters d'Oplinter. An original crewmember of Captain Cousteau's famed research vessel *Calypso*, de Wouters named his creation after the converted minesweeper. However, even with the efforts of Cousteau and the French scientific organisation Spirotechnique, the picture-taking Calypso met with less than resounding success. So in 1961 they turned to Nippon Kogaku K.K. for a little marketing help. A year later Nikon had acquired the patent rights, made a few minor changes, painted it all black (the Calypso had been a two-toned grey-black) and rechristened it 'Nikonos'. They haven't looked back since.

By August 1968 some 31,00 Calypso/Nikonos models had been sold. Then came the Nikonos II, the first of two permutations featuring several mostly minor design changes. In July 1973, about 93,000 Nikonos II's later, the third Nikonos model appeared. By July 1980 and the advent of the comparatively radical IV-A, the number of Nikonos III's sold had reached 79,000. With the increase of diving enthusiasts worldwide as well as a broader marketing strategy which saw the Nikonos positioned as an all-weather rather than simply an underwater camera, the sales of IV-A's easily eclipsed those of the III model. Now, with the Nikonos-V I have a hunch we ain't seen nothin' yet.



Problems Solved

When the IV-A came out, it boasted two major innovations: a hinged back and automatic exposure. The only trouble was that the back had a diabolical O-ring design a bit too prone to leaking. And the automatic exposure was aperture controlled only, so you didn't have a clue whether your shutter speed was fast enough.

The V solves both these problems. The new bore seal O-ring design is simple, proven and virtually fool-proof. As well, the addition of a locking device helps prevent accidental opening. (It should be noted here that because of the pressure, such accidents are very unlikely underwater.) The big news is now you have a choice of five shutter speeds from 1/1000th sec. to 1/30th sec. Very exact ones too, thanks to a quartz-timed electronic shutter.

What's more, an LED in the viewfinder tells you exactly what you're doing.

In the AUTO mode, little red numbers show the shutter speed the camera has selected to match your aperture choice. If you decide a faster speed is more important than depth of field, you turn the black aperture knob. By the way, it has long been a standard operating ploy of veteran Nikonos users to attach the lens upside down so they only have to flip the camera over to check focus distance and aperture. This might not be a bad idea with the V for another reason as well. By putting the aperture knob to the other side, you can use your left hand to turn it and your right to press the shutter release.

When switching to the MANUAL mode, the shutter speed you opt for lights up and if the camera's silicon brain reckons you've got the f/stop wrong, the LED will blink its choice. Again, you simply turn the black knob to achieve the ideal exposure. Or you can be creative and over- or under-expose by as many stops as you see fit. Red arrows at either end of the display bar tell you which way the camera thinks you should turn. Now, the one drawback to the presentation of all this electronic wizardry is that the viewfinder can be somewhat awkward to use when you're wearing a mask, even though the V, in common with the IV-A, has an enlarged centre viewfinder with integral hot shoe. The best advice is to choose a low displacement model that brings your eyes very close to the faceplate.

A third mode, the M90 setting, puts the shutter speed at 1/90th sec. You can use it either to synchronise your strobe or in case the battery packs up.

Design Outside and Inside

And while the V also shares with the IV-A a smarter, more contemporary appearance, it harkens way back to de Wouter's Calypso for probably its most noticeable cosmetic touch. The Nikonos-V is two-toned. Textured rubber panels front and back, which are meant to improve grip when wet, come in either bright orange or drab khaki.

I continue to find it surprising how many items destined for underwater use are turned out in orange trappings. Orange happens to be the second colour to disappear with depth, right behind red. Yellow fares a bit better and, of course, green and blue tend to blend right in. The one colour

Continued on page 36

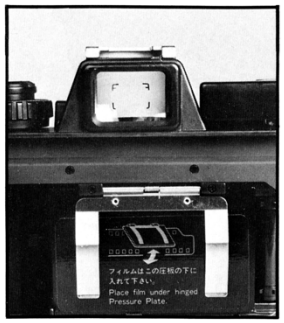
Nikonos-V . . .

I've noticed that stands out best at a distance underwater is white. But then, white is so boring.

I suppose the V's second colour option, also known as moss green, will best suit jungle fighters, big game hunters and others of their ilk who feel a need to camouflage themselves and their equipment. It certainly couldn't be meant for serious nature photographers, at least not until Nikon offers something longer than an 80mm lens.

Aesthetics aside the Nikonos looks like a well-thought-out state-of-the-art little beauty. It apparently owes its development to some officials of Nikon U.S.A. who decided to take up scuba diving several years ago. After shooting their own pictures and talking with other u/w photographers, instructors and a few pros, they flew off to Tokyo to huddle with Nippon Kogaku designers. Makes you wonder why they didn't make this effort before developing the IV-A. Especially when you consider the following tale told by noted u/w photographer Stephen Frink.

When analysing the newly-launched IV-A model, Frink observed that, as with all swing-open 35mm cameras, the photographer tends to lean over the gaping IV-A. He concluded that a diver with wet hair (a not-uncommon situation) could pretty easily drip enough water inside to seriously damage the vulnerable electronic circuitry. When he asked the Nikon technical rep about this, the fellow looked puzzled. According to Frink, after a bit of translating, the Nikon rep explained, 'Ah — not supposed to get water inside camera'. Right. You'll be happy to learn that the V designers have addressed this weakness too, coating the circuit board and shielding the electronic compartment. A total flooding, however, remains a catastrophe.



New Underwater Flash

When the Nikonos IV-A first appeared, Nikon also introduced a companion electronic flash, the Speedlight SB-101. The V, too, has a dedicated strobe, the SB-102, which though a little tardy in its arrival, should prove a particularly welcome addition in murky Australian waters. Where the SB-101 went as far as offering automatic output control and improved synchronisation at 1/90th sec., the V set-up really breaks new ground (or water), becoming the first u/w camera to incorporate the highly-regarded TTL (through the lens) flash control system.

When you shoot, an internal sensor measures the light from the flash instantly and precisely to determine the duration of the flash. This goes for any Nikonos lens as well as extension tubes and close-up attachments. Moreover, the TTL will synchronise no matter which shutter speed has been chosen. The output control simply overrides the faster manual settings of 1/125, 1/500th and 1/1000th sec., reducing them to 1/90th sec. This TTL system also lets you balance the flash's output with ambient light for those tricky sunlight/flash situations near the surface.

The new Speedlight also has an increased land guide number of 32 at ISO/ASA 100. Its larger diameter reflector spreads flash coverage wide enough even for the 15mm lens.

The flash arm is also more versatile and has a right-angle connector for the camera.

The LED in the camera's viewfinder lets you know when the strobe has fully recycled.

A warning in the instruction booklet states: "Connecting other manufacturers' flash units may damage the Nikonos-V's IC circuitry. Also, units with a high voltage sync circuit may adversely affect shutter speed precision." Since, like many other serious u/w photographers, I use Graflex/Subsea strobes powered by 300- and 510-volt batteries, I asked the local distributor, Maxwell Optical Industries, to be a little more specific.

They replied that naturally Nikon would prefer Nikonos-V users to stick to its own accessories. And they understandably don't want to be liable if someone else's equipment causes problems. Since Maxwell went on to point out that thus far they'd yet to encounter any such problems, I decided to attach my larger strobe to the Nikonos-V I had during the testing period. (After all, they supplied the camera.)

The results of testing my MK 150 revealed no black bars in the final results, which might have indicated less than perfect synchronisation. Indeed, I can report no ill effects from using this strobe, but would advise owners of other strobes to be cautious.

Something I've always wondered about the various Nikonos models was how their lenses compared in resolution tests to the regular Nikkor lenses. In all the reviews I've read over the years in various diving publications I've never seen such a comparison. Probably because they weren't photo magazines and couldn't justify the expense of the proper testing equipment. Fortunately, Photoworld has no such excuse. Not only did this magazine compare the Nikonos–V lenses with my standard F-series lenses, just for the heck of it we dredged up a 35mm lens from a 1964 Nikonos I, a 28mm lens circa 1972 and a 35mm lens from an early Nikonos III.

TEST RESULTS: LENS RESOLUTION
LENS : NIKON F 105 MICRO.
SERIAL NO : 255342 (1983)
DATE OF TEST : 10/8/84
AT 1:50 MAGNIFICATION

f/No.	Centre: Lines per mm	Corner: Lines per mm
4	25 Poor	25 Acceptable
11	35 Acceptable	35 Good
32	28 Acceptable	28 Poor

TEST RESULTS: LENS RESOLUTION
LENS : NIKON F 105 MICRO WITH UNDER WATER HOUSING.
SERIAL NO : 255241
DATE OF TEST : 10/8/84
AT 1:50 MAGNIFICATION

f/No.	Centre: Lines per mm	Corner: Lines per mm
4	25 Poor	25 Acceptable
11	35 Acceptable	25 Poor
32	28 Acceptable	26 Poor

EDITORS NOTE: THE RESULTS INDICATE THAT AN UNDERWATER PORT HAS LITTLE EFFECT ON LENS RESOLUTION. THE RATHER MEDIOCRE RESULTS FROM THIS NIKON LENS COULD REFLECT THE MACRO USE FOR WHICH IT WAS INTENDED, AS CLOSE-UPS WERE INVARIABLY PIN-SHARP.

TEST RESULTS: LENS RESOLUTION
LENS : NIKON 24mm
SERIAL NO : 296430 (1972)
DATE OF TEST : 10/8/84
AT 1:50 MAGNIFICATION

f/No.	Centre: Lines per mm	Corner: Lines per mm
2.8	56 Excellent	25 Good
8	56 Excellent	31 Good
16	50 Excellent	35 Good

TEST RESULTS: LENS RESOLUTION
LENS : NIKON 24mm WITH UNDER WATER HOUSING
SERIAL NO : 296430
DATE OF TEST : 10/8/84
AT 1:50 MAGNIFICATION

f/No.	Centre: Lines per mm	Corner: Lines per mm
2.8	56 Excellent	25 Good
8	56 Excellent	31 Good
16	50 Excellent	31 Good

TEST RESULTS: LENS RESOLUTION
LENS : NIKONOS 35mm 20425
SERIAL NO : 20425 c(1965)
DATE OF TEST : 10/8/84
AT 1:50 MAGNIFICATION

f/No.	Centre: Lines per mm	Corner: Lines per mm
2.5	44 Good	12 Poor
8	56 Very Good	31 Acceptable
22	50 Very Good	35 Acceptable

TEST RESULTS: LENS RESOLUTION
LENS : NIKONOS 35mm
SERIAL NO : 372220 c(1976)
DATE OF TEST : 10/8/84
AT 1:50 MAGNIFICATION

f/No.	Centre: Lines per mm	Corner: Lines per mm
2.5	31 Poor	28 Poor
8	44 Acceptable	40 Very Good
22	44 Very Good	40 Very Good

TEST RESULTS: LENS RESOLUTION
LENS : NIKONOS V 35mm
SERIAL NO : 539450 (new)
DATE OF TEST : 10/8/84
AT 1:50 MAGNIFICATION

f/No.	Centre: Lines per mm	Corner: Lines per mm
2.5	50 Very Good	18 Poor
8	50 Very Good	35 Good
22	44 Acceptable	40 Very Good

Accessories

To compete with the extensive line-up of after-market accessories Nikonos offers its own close-up kit for macro work, plus an assortment of viewfinders, including a parallax-correcting job that bears a striking resemblance to a Made-in-Japan product that appeared in last year's Dacor Corp. catalogue. This year the large U.S. Diving Equipment company no longer offers either this or several other Japanese-made, Nikonos-related items.

Unquestionably, the Nikonos-V is vastly superior to any camera that's worn the marque before. Or, for that matter, to any of its would-be competitors. As such, it seems to answer every need of the sport diver-photographer, save one. More accurate viewing and focusing. Twenty-five years later, Nikonos users still have to guess how far away their subjects are and exactly how they're framed. About the time the Nikonos III made its debut I became aware of speculation concerning an SLR Nikonos. Those rumours were probably based on the obvious rangefinder features of the III. At that time it seemed that Nikon was considering some parallax focusing device, a la early Leicas. As that did not eventuate (although it would have been a simple and effective device) the SLR gossip began.

But the folks at Nippon Kogaku continue to protest that such a camera simply isn't practical. Probably just what his shipmates told de Wouters. □

Manufacturer's Specifications:
Selling Price Range: $575 – $700 with lens
Type: 35mm focal plane shutter Viewfinder specialised for underwater use in sealed die-cast aluminium body.
Standard Lens: Special 35mm with knurled knob aperture and distance adjustments.
Lens Mount: Special Nikon underwater mount.
Shutter: Metal vertical travel focal plane, electronically controlled. Aperture priority — plus speeds from 1/30th to 1/1000th Mechanical 1/90th.
Flash Synchronisation: at 1/90th or lower.
Self-Timer: Not applicable.
Viewfinder: Reverse Galilean Albada type.
Film Wind: Single stroke lever. **Film Loading:** Double film guide rails — dual sprocket hinged pressure plate.
Frame Counter: 0 – 36 auto reset.
ISO Film Speed Range: 25 to 1600.
Metering Range: EV 8 to EV 19 at ISO 100
Shutter Release: Mechanical with LED display on position
Exposure Compensation: via film speed dial.
Exposure Memory Lock: Not applicable.
Multiple Exposure Switch: Not applicable.
Camera Back: Die cast aluminium with 'O' ring seal and double lock.
Mirror Lock-Up: Not applicable.
Power Source: 2 x 1.5 V silver oxides
Dimensions: 146x99x58mm without lens.
Weight: 700 grams without lens
Warranty: 12 months
Serial No: 2001320
Distributor: Maxwell Optical Industries . Pty. Limited.

Use Reader Information Card for full details.