

Dive Computer Evolution



I bought this SOS Decometer in 1987, it had been on the market for 5 years or so and was firmly established as the cutting edge in diver convenience. Over the years I have used literally dozens of dive computers and the latest one is the VR3. The VR3 makes the same miracle device claims as the Decometer did nearly 25 years back. I quickly stopped using the Decometer in favour of an early Aladdin with a digital display and never completed a decompression dive using it until recently.

I thought I would compare the Decometer performance with the VR3 on a fairly deep dive where both computers would be tested against a trusted software plan I had used many times. The dive was to 78m for 20mins to explore a wreck here in Thailand. Setting the gas mixtures into the Decometer could not have been easier, only using air as a choice made using quite simple! The VR3 accepts 10 different gas mixtures (including Trimix) and these can be pre set or even modified underwater. Setting the VR3 took the same amount of time as filling my decompression tanks! It hopefully will get a little faster with practice.

Dropping down to the wreck near 80m, meant changing some settings on the VR3 while descending, while the Decometer simply looked like it wasn't working. The mechanism in the Decometer is a series of small plastic bags which are crushed by increasing pressure. This action acts works through some kind of filter system, which at a prescribed rate starts to register that decompression stops are necessary. The VR3 has a small computer that makes calculations based on breathing gases and time against changes of depth.

After about 10 minutes at depth the Decometer had started to look like it was working and the deco stop slider had begun to move saying that stops where necessary around 6m. The VR3 was suggesting stops were needed at 27m, but these were deep stops mainly to control micro bubbles (a theory not imagined in 1981, when the Decometer was introduced.) The conditions at the bottom were fairly light and the Decometer display was easy to read. The display on the VR3 was a grey dot matrix and its contrast suffered in the dim glow of depth. On pressing the right hand slider of the VR3 the back light came on and this made everything easy to read. After 20 minutes at depth the VR3 was indicating deep stops near 55m for 2 minutes.

I ascended to this stop depth and noticed the time to surface was now 73 minutes. The Decometer does not display the actual time to surface, but rather the decompression stop depth only, in this case 12m. On completing the VR3 stop at 55m, I ascended to the next predicted deep stop, this time 43m for 2 minutes. These deep stops are predicted in a different manner to my software schedule, the deep stop depths cannot be "pre viewed" pre dive, and this can cause a group of ascending divers to become separated, if some are using a software schedule. I followed the ascent plan from the VR3 and this could not have been more different to the Decometer. My software plan

which was worn on a wrist slate was a similar total time to the VR3 (while still at depth), but by doing the 2 minute stops each time, gave a much longer time to the surface than originally predicted.

By the time I reached 15m the Decometer computer was saying a 6m stop was necessary, I switched gases on the VR3 to a 60% deco gas. By 81 minutes the VR3 display indicated that it was safe to surface, the Decometer was still saying that I should stay at 3m for an undisclosed time. The Decometer still actually says that I should be at 3m even 2 weeks after the dive. (I opened it up and it looked like the bag mechanism had flooded) I had lost the instruction booklet almost 17 years ago, I don't think it mentioned a maximum depth!

The two computers gave completely different ascent solutions for this dive, both were also very different from my software decompression plan. The only lesson to be learned from this exercise, is that divers in a buddy team, should use the same schedule for the ascent, either both using a software solution or both a VR3 with a table back up. This will help avoid being forced apart by doing decompression stops in different depths.

Dive computers and decompression methods have certainly changed dramatically over the years. I think that the deeper stops advised in modern methods are a benefit to diver physiology. But also deep stop prediction methods are an emerging science, that need careful consideration, a whole other article

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