

The Villages Scuba Club



Ascending Safely

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Every dive is a decompression dive

- Every dive involves the compression and absorption of nitrogen and the decompression and elimination of nitrogen upon ascent and surfacing.
 - Underwater, the air a diver breathes is compressed by the pressure of the water and the atmosphere above. Body tissues absorb compressed nitrogen from the air (or other breathing gas).
 - Depth, Time, Breathing Rate (work load)
 - The absorbed nitrogen decompresses during ascent, through a decrease in pressure. Under normal circumstances, a diver's body will eliminate the expanding nitrogen as the diver ascends.
 - Some nitrogen remains in the diver's system after surfacing, and it is eliminated for hours after the dive (No Fly Time).
 - Recreational diving involves decompression of nitrogen during the ascent and safety stop - without decompression stops.
 - Diving within No Decompression Limits (NDL) or No Stop Time
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Why should you care?

- Since even shallow, recreational dives technically involve decompression it is important to
 - maintain a slow, safe ascent rate, and
 - make a safety stop on every dive.
 - Violating safe diving guidelines, even on dives that do not exceed or approach the no-decompression limits, can increase a diver's risk of decompression sickness because every dive involves the absorption of nitrogen.
 - A quick ascent or violating other safe diving guidelines can lead to the nitrogen in decompressing rapidly.
 - This can result in the forming of bubbles in body tissues (decompression sickness (DCS)) or arteries (arterial gas embolism (AGE)).
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Ascent Rate

- How fast of an ascent is too fast? That depends -
 - Old school answer states MAXIMUM is 60 feet/minute below 60 feet and 30 feet/minute above 60 feet.
 - Nowadays, most organizations recommend a MAXIMUM ascent rate of 30 feet/minute.
- The final ascent from safety stop should be the slowest -
 - The greatest pressure change is near the surface. The more shallow a diver is, the more rapidly the surrounding pressure changes as he ascends.
 - A diver should ascend very slowly from the safety stop to the surface, even more slowly than the maximum of 30 feet per a minute.
- Many dive computers use a variable ascent rate, depending on current depth:

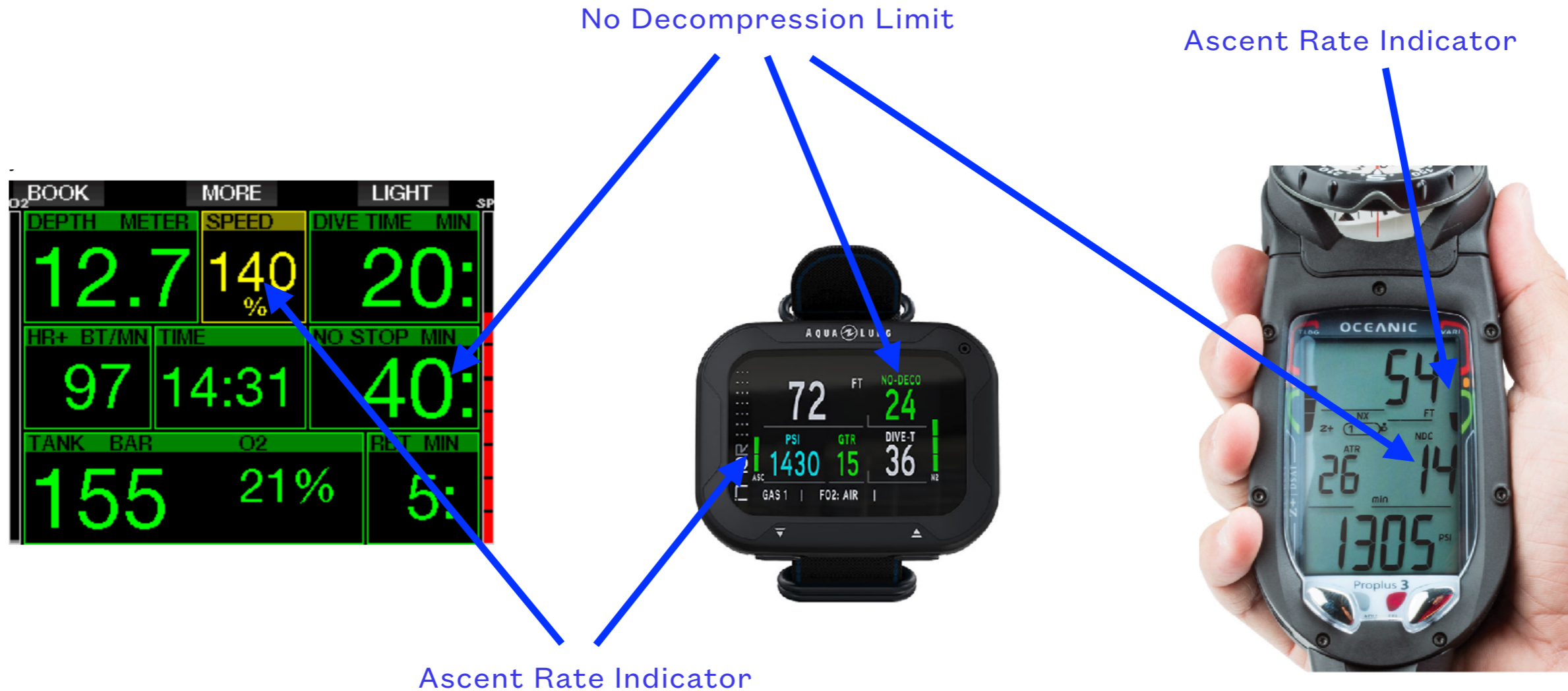
Scubapro (Ideal Ascent Rate)

DEPTH		ASC SPEED	
m	ft	m/min	ft/min
0	0	3	10
2.5	8	5.5	18
6	20	7	23
12	40	7.7	25
18	60	8.2	27
23	75	8.6	28
31	101	8.9	29

Oceanic (Segment 2 is Ideal Ascent Rate)

<u>Deeper than 60 FT (18 M)</u>			<u>60 FT (18 M) & Shallower</u>		
VARI	Ascent Rate		VARI	Ascent Rate	
Segments	FPM	MPM	Segments	FPM	MPM
0	0 - 20	0 - 6	0	0 - 10	0 - 3
1	21 - 30	6.1 - 9	1	11 - 15	3.1 - 4.5
2	31 - 40	9.1 - 12	2	16 - 20	4.6 - 6
3	41 - 50	12.1 - 15	3	21 - 25	6.1 - 7.5
4	51 - 60	15.1 - 18	4	26 - 30	7.6 - 9
5	60 +	18 +	5	30 +	9 +

Ascent Rate Indicators on Dive Computers



Best Practices for Ascending Safely

- Prepare to ascend at bottom -
 - Clip off your gear so you are not task loaded during ascent.
 - Prepare and deploy your DSMB, if required.
 - Adjust your buoyancy so that you are swimming up.
 - Ascent -
 - Ascend SLOWLY
 - Swim up at an angle - your BCD is not an elevator!
 - Use ascent line/chain if available.
 - Spooling DSMB line is a great way to slow down.
 - Monitor Ascent Rate on your dive computer.
 - Reduce Ascent Rate as you rise in water column.
 - Safety Stop -
 - Approach Safety Stop Depth (15 feet) slowly so you don't blow past it.
 - Stay at or below 15 feet during stop - neutral buoyancy is key.
 - Try to relax at Safety Stop - higher work load reduces off-gassing.
 - Ascending from Safety Stop -
 - Make sure surface is clear.
 - SLOW DOWN!
 - Don't inflate BCD until on surface.
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Final Thoughts

- It is easier to ascend safely if you can maintain neutral buoyancy.
 - Consider a Buoyancy speciality, e.g. -
 - PADI Peak Performance Buoyancy
 - SDI Advanced Buoyancy Diver
 - Practice your ascents at the springs.
- Slow is good, slower is better.
- Ascend slower as your depth decreases.
- Do not exceed your No Decompression Limits/No Stop Times.
- Remember - **S**afely **A**scend **F**rom **E**very Dive

