

## VGM implementation in the VRx dive computer

### Automatic tissue tolerance adjustments

To allow the VR to give realistic decompression and no stop times across the 10m to 120m range the VGM algorithm automatically modifies tissue tolerances in line with accepted decompression schedules based on stochastic data.

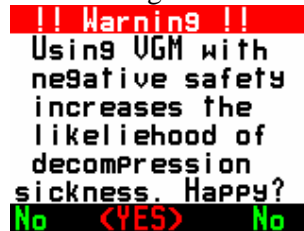
Tissue over pressure tolerances (M values) begin to be modified from standard VR Buhlmann settings above 30m bottom depth and 30min bottom time.

### User adjustments

Extra changes to the default values can be achieved using the Fast, Mid and Slow tissue tolerance percentages. Positive percentages give more stop time. Negative percentages reduce stop times.



A warning screen is displayed when exiting this screen if negative values are set:



Choosing the YES option confirms you are happy with the increased decompression sickness risk. Choosing the No option will reset the tissue conservatism to the default values and take you back to the adjustment screen.

Divers can change conservatism up or down, based on their own knowledge of what suits their body chemistry and physical ailments or attributes. The Normal or Default value is 0%. Negative percentage is less safe. Positive percentage is more safe. The Bar Graph of tissue over pressure tolerance compares the current values to the standard default settings. The bar graph transitions from Fast tissues to the left (mainly relevant to deep stops) through to Slow tissues to the right (mainly relevant to shallow stops). Mid range tissues are in the middle!

Fast Tissues can be adjusted between -20% to +40%. The effect of the fast safety setting reduces linearly from Fast to Mid range tissues.

Mid range Tissues can be adjusted between -20% to +40%. The effect of the Mid setting reduces linearly from both mid range to fast, and from mid range to slow.

Slow tissues can be adjusted between -20% to +40%. The effect of the Slow setting reduces linearly from slow to mid range.

To achieve the same setting for all tissues use the same percentage setting for Fast, Mid and Slow.

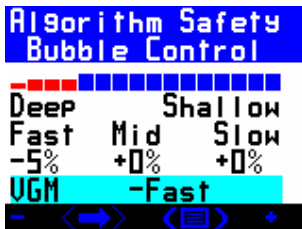
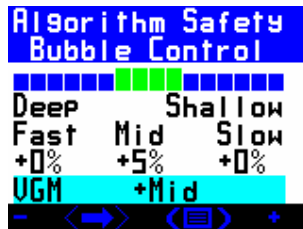
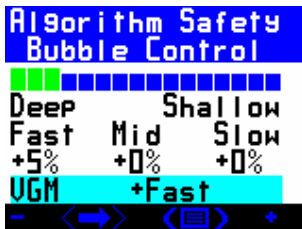
Custom settings allow precise decompression matching to users known requirements or expectation for the next planned dive.

Mid range tissue adjustment is an extra feature compared to standard gradient factor adjustments. From stochastic dive data, Mid range tissues appear to require longer decompression after prolonged bottom time and/or extreme depths. VGM has a built in system for adjusting this, but the diver may wish to adjust the setting manually as well.



Use Diveplan to check settings for next dive. Fine tuning of Fast, Mid and Slow tissues can be used to achieve user specific decompression profiles.

#### Preset conservatism settings (0% = normal standard safety value)

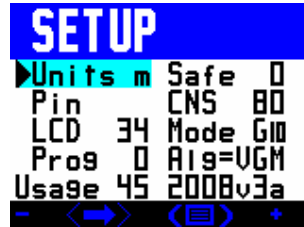


#### Extreme exposure dives

VGM also modifies mid range tissues separately to fast and slow tissues, achieving adaptation of mid range stops separately to deep or shallow stops. Extended mid range stops are a common technique used on deep dives to allow surfacing with a lower bubble count than would otherwise be expected – Britannic 1998 exploration is an early example of this technique.

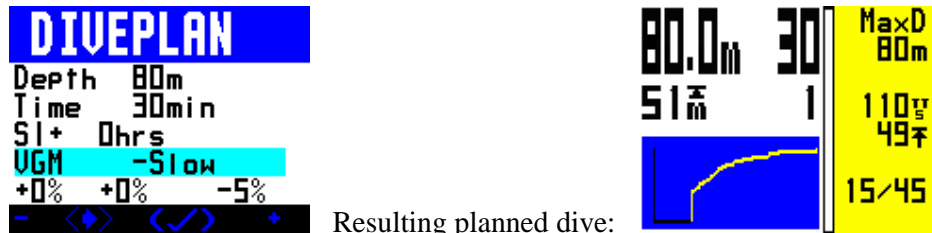
### Algorithm Selection

The Setup screen shows the active algorithm and allows it to be changed from VGM, Buhlmann with micro bubble stops, and VPMB with Buhlmann. If changed to VGM, then when exiting setup the user is shown the Algorithm Safety Bubble Control screen above.



### Diveplan and diving

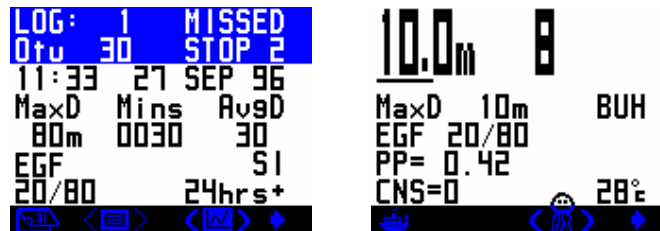
Diveplan screen allows change of preset settings for VGM if VGM algorithm active.



When exiting the dive plan, the equivalent gradient factor is displayed:



The Equivalent Gradient Factor (EGF) is also displayed in the Dive Log and the Dive summary data:



## VR Technology Ltd – VRx VGM implementation

As an extra warning, the wave on the main dry screen goes red if negative conservatism set:

