

## Release notes – MkVI Firmware version 50

This document enumerates the changes implemented in firmware version 50 compared to version V48P7. It's recommended that all MkVI divers carefully read through these notes and then download the MkVI user guide version 2.5, where these updates are explained in more details.

1. During pre-dive, the audio tone used to indicate that a mouthpiece switch is required has been changed. This was done to help the diver understand the required action.
2. A new pseudo test (test 39) has been added prior to the tissue tension test. This test prompts the user to place the mouthpiece in the CC position. The purpose of this test is to ensure that any residual vacuum left over from a NPLT has been released. This is necessary because under certain circumstances the vacuum in the loop can cause other tests to fail when they should not, or vice versa. The user has two minutes to complete this test before failure is declared.
3. The OC regulator test is now much better in that it no longer sometimes passes without the diver breathing on the OC regulator.
4. Some rigs would regularly fail the Buddy LED test only to pass it on the next test. This problem has been fixed. (Note this fix was in V48P09)
5. If the Tissue Tension test fails soft (typically because of a battery switch), then instead of forcing a rig restart, the system scrolls 'dECO rESEt' through the PO2 field. The diver is then prompted to acknowledge that this has occurred. After acknowledgement, PST continues.
6. If any test fails, instead of the rig powering down after 8 seconds, it will instead do the following:
  - a. Power down after 5 minutes
  - b. Power down if the user goes through the wet/dry confirmation sequence. This change should allow the user to see what an error code is before the rig powers down.
  - c. Reset the five minute timeout timer if an IrDA message is received.
  - d. Periodically sound the audio alarm to alert the diver of the failure. The audio alarm is suppressed if the rig is connected to a PC via the IrDA link.
7. After pre-dive has completed, the diver will be prompted to perform a prebreathe. This is done by alternately displaying 'Pb' and the remaining prebreathe time in seconds in the depth field. When the user switches the mouthpiece to CC mode, the remaining prebreathe counter will count down from 300 seconds. If the user switches out of CC then the counter will pause. Once the counter has counted down to zero, the rig enters ready to dive mode. It will stay in this state for 30 minutes. If the dive is not started in this time, then it goes back to prebreathe mode. Prebreathe mode is not mandatory and can be terminated without penalty by starting the dive. 30 minutes after the end of a dive then the rig will once again enter prebreathe mode. Note that during prebreathe mode, the rig will fire the diluent and oxygen solenoids for 2 seconds close to the start of each prebreathe session. The reason for this is:
  - a. For divers that turned off their cylinders, this will result in a big pressure drop which should hopefully prompt the diver to turn the cylinder on.
8. OTU values are now data logged so that a diver can keep track of them.
9. The TTS calculation previously used the current PO2 as the basis for predicting the TTS. The algorithm now uses the current setpoint and predicted setpoint as a function of depth. This should give a more stable and also more conservative TTS.
10. The accumulated dive time is no longer zeroed at the end of a dive. Rather it is displayed on the LCD and will remain until the rig is powered down or the user re-enters dive mode.
11. The temperature compensation of the LCD has been changed such that it is much more visible in hot temperatures.
12. The minimum allowed setpoint has been increased to 0.5 bar.

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13. A new canister confirmation test (test #41) has been added. The diver has two minutes to complete the test. The word 'CA<sup>n</sup>iStEr' is scrolled through the PO<sub>2</sub> field. At the same time the standard confirmation sequence is flashed. By issuing a confirmation the diver is affirming that:
    - a. A canister is installed
    - b. The sponge trap is installed.
    - c. The canister contains enough unused absorbent to safely complete the dive.
  14. Setpoint in decompression is now limited to 75% FO<sub>2</sub> as opposed to 85% FO<sub>2</sub>.
  15. The absolute PO<sub>2</sub> low limit has been increased from 0.25 to 0.30 Bar.
  16. The system will now alarm if the absolute HPO<sub>2</sub> or HPDIL pressures drop below 26 Bar (oxygen) or 40 Bar (diluent). These correspond to 20% of nominal full scale. These limits have been doubled from the previous limits. Furthermore these limits only previously applied in non-dive mode. They now apply in all modes.
  17. PC Config tool 1.31 now must be used for correct functionality.