

R Type Rebreather - Feature List

This list outlines the features a rebreather will typically require to be used by students undergoing training in the PADI Rebreather Diver and Advanced Rebreather Diver courses. PADI maintains a register of rebreathers that manufacturers have specified meet the key features of a Type R rebreather and have successfully undergone internationally recognized third-party testing against an appropriate standard such as EN14143. Only rebreathers that have been included in this central register may be used for PADI Rebreather Diver and Advanced Rebreather Diver courses.

1. The unit should be of robust design and engineered so that it cannot be assembled incorrectly by the user
2. Without a scrubber installed, the unit will not operate will warn* the diver, or fail pre-dive tests.
3. The unit can be used with pre-packed CO₂ scrubber cartridges (pre-assembled by manufacturer approved source or technician), or has a simple, user-packable scrubber canister engineered so that it cannot be incorrectly assembled by the user.
4. The diver is prompted to check mouthpiece mushroom valve function and perform a loop positive/negative pressure check during pre dive checks
5. The unit should automatically attempt to sustain life and warn the user not to dive if the user attempts to dive without following pre-dive procedures correctly.
6. The unit self calibrates its O₂ cells (sensors) and will not pass a pre-dive test unless calibration is successful.
7. The unit will self initiate or warn* the diver if the electronics are not turned on when the diver starts to use it.
8. The diver should have a simple status indicator in the line of sight indicating if all is well or if a bail out is required (eg: head up display).
9. The diver should be able to switch to open circuit bailout without removing the mouthpiece, using a single action with one hand.
10. The unit automatically adds diluent to the loop as required if the counterlung volume is reduced.
11. The diver is warned* if an attempt is made to dive with any of the gases turned off, or it will turn the relevant gas on automatically.
12. The unit provides with an indicator of remaining battery life and warnings if battery power becomes critically low with ample time to end the dive, and/or has a backup battery system.
13. The diver can read the remaining supply of all gases. The diver is warned* if any gas supply becomes low and/or depleted.

14. The unit has a floating setpoint or pre-set set points and switches or adjusts setpoints automatically throughout the dive.
15. The unit will function to a depth of 40 metres/130 feet.
16. The unit will maintain a pO_2 close to the setpoint in normal use.
17. The diver is warned* if pO_2 is too high.
18. The diver is warned* if pO_2 is too low.
19. The unit has a system to warn* the diver if pCO_2 is too high or it has a system for indicating when the scrubber should be changed.
20. The loop includes an automatic over pressurization relief valve.
21. The unit should have provision to fit an alternate regulator that can be used by another diver (e.g.octopus rig).
22. The unit has a 'black box' data recorder function.
23. The rebreather has undergone nationally or internationally recognized third-party testing against an appropriate standard. Examples would include meeting EN14143 (and having attained CE marking) or meeting the *NOAA Minimum Manufacturing & Performance Requirements for Closed Circuit Mixed Gas Rebreathers*
24. The manufacturer must include an operator's manual that clearly explains how to execute all operations the user will have to perform, how to recognise when any automatic operations have not operated correctly, and the actions to take in such cases. The manufacturer must update the manual if the unit's design evolves over time

** Warnings must be very apparent and not likely to be missed by the diver. A vibrating mouthpiece alarm is ideal, coupled with a visual alarm in the diver's line of sight and/or an audible alarm. A secondary warning discernable to other divers on the back is highly desirable.*