

PADI maintains a register of rebreathers that manufacturers specify meet the key features of a Type R (Recreational) or Type T (Technical) rebreather and have successfully undergone recognized third-party testing against an appropriate standard such as EN14143. Only rebreathers included in this register can be used for PADI rebreather courses. PADI Members can find the register on the PADI Pros' Site.

*Note that the PADI organization does not approve, review or endorse the design or manufacturing of scuba equipment, including rebreathers.*

Currently, three manufacturers have registered units and made the following statements:

### **Poseidon**

“Our Poseidon Discovery MK VI rebreather meets the key features of a Type R rebreather and has successfully undergone internationally recognized third-party testing against CE Standards (EN14143). We have checked the Type R requirements against our Poseidon Discovery MK VI rebreather's performance and found that it meets PADI's Type R standards in full.”

### **VR Technology**

“Our Sentinel and Sentinel Expedition rebreathers meet the key features of a Type T CCR and have successfully undergone internationally recognized third-party testing against CE Standards (EN14143). We have checked the Type T requirements against our Sentinel and Sentinel Expedition rebreathers' performance and found that they meet PADI's Type T standards in full.”

### **Ambient Pressure Diving**

“Our Inspiration, Evolution and Evolution Plus Vision rebreathers meet the key features of Type T rebreathers and have successfully undergone internationally recognized third-party testing against CE Standards (EN14143). We have checked the Type T requirements against our Inspiration, Evolution and Evolution Plus Vision rebreathers' performance and found that they meet PADI's Type T standards in full.”

Ambient Pressure Diving have also informed PADI that Vision rebreathers will also meet Type R requirements with some software and hardware adaptations. Expect further information soon.

PADI is currently working with several other manufacturers who plan to register units in the near future. For information on how to register please contact [rebreather@padi.com](mailto:rebreather@padi.com).

### **Type R Rebreather Key Features**

This list may change over time, so consult with your PADI Office for the current requirements.

1. The unit should be of robust design and engineered so that it cannot be assembled incorrectly and/or has systems for identifying incorrect assembly and function.
2. The unit will not operate without a scrubber canister present or will warn\* the diver.
3. The unit can use pre-packed CO<sub>2</sub> scrubber cartridges (pre-assembled by manufacturer approved source or technician).
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 still automatically attempt to sustain life or not permit the user to dive if pre-dive procedures are not followed correctly.
6. The unit self-calibrates its oxygen sensors.
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 has a simple status indicator in the line of sight indicating if all is well or if bail out is required (eg: HUD – Heads 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/gas to the loop as required if the counterlung volume is too low for a normal breath.
11. The diver is warned\* if the diluent/oxygen/gas supply(ies) is(are) not properly turned on, or it will turn the relevant gas on automatically.
12. The diver is provided with an indicator of remaining battery life and is warned\* if it becomes critically low.
13. The diver is warned\* if the diluent/oxygen/gas supply becomes too low.
14. The unit switches setpoints automatically.
15. The unit will function to a depth of 40 metres/130 feet.
16. The unit will maintain a PO<sub>2</sub> close to the target setpoint in normal use.
17. The diver is warned\* if PO<sub>2</sub> is too high.
18. The diver is warned\* if PO<sub>2</sub> is too low.
19. The unit has a system to warn\* the diver if PCO<sub>2</sub> is too high or if it has a system for estimating remaining scrubber duration.
20. The loop includes an automatic overpressure relief valve (OPV).
21. The unit has a provision to fit a second stage that can be used by another diver (e.g. octopus rig).
22. The unit has a “black box” data recorder function.
23. The unit, procedures for using the unit or some other method provides guidelines that guides the diver to remain within the capability of the onboard gas supply to provide reasonably support to the surface using the BOV in an emergency when making no stop dives to 18 metres/60 ft.
24. 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*.

\* 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 located on the unit's back, discernable to other divers, is highly desirable.*

### **Type T Rebreather Key Features**

This list may change over time, so consult with your PADI Office for the current requirements.

1. The unit should be of robust design and engineered so that it cannot be assembled incorrectly by the diver.
2. The diver is prompted to check mouthpiece mushroom-valve function and perform a loop positive/negative pressure check during pre-dive checks.
3. The diver should have a simple status indicator in his line of sight indicating if all is well or that a problem exists (eg: head up display)
4. The diver should be able to switch to open circuit bailout without removing his mouthpiece using a single action with one hand.
5. The diver can monitor the amount of remaining gases carried.
6. The diver is provided with an indicator of remaining battery life and is warned if it is becoming critically low.
7. The unit includes at least one system of redundant electronics.
8. The diver can select the PO<sub>2</sub> setpoint manually.
9. The unit will function to at least 100 metres.
10. The unit will maintain a near constant pO<sub>2</sub> in normal use.
11. The diver is warned\* if PO<sub>2</sub> is too high.
12. The diver is warned\* if PO<sub>2</sub> is too low.
13. The unit has a system to warn\* the diver if PCO<sub>2</sub> is too high or if it has a system for estimating remaining scrubber duration.
14. The loop includes an over-pressurization relief valve.
15. The unit can continue to operate with some water in the loop and includes a method for removing water from the system. The unit can be used in an emergency mode without an oxygen supply (e.g.: using manual diluent only/semi-closed).
16. Where the rebreather interfaces with onboard electronics, the diver is able to indicate whether he is in CC or OC mode.
17. The diver can inject O<sub>2</sub> or diluent into the loop manually.
18. The unit has a 'black box' data recorder function.
19. 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*.

*\* 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 located on the unit's back, discernable to other divers, is highly desirable.*