# CCR Common Failures Chart – Rebreather Basics

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Causes</th>
<th>Diagnosis</th>
<th>Action</th>
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</thead>
</table>
| 1. Cell Discrepancy      | • Calibration error  
                          • Water on cell  
                          • Slow reacting or failing cell                | i. O2 Sensors read differently                | a) Isolate O2 supply  
b) Consider Bailing out  
c) Diluent flush the loop  
d) Confirm PPO2 at target depth  
e) Having flushed the loop decides to stay bailed out as sensors failed or the Rebreather is now functioning and possible to go back to the loop. |
|                          |                                                      | ii. Compare backup monitoring system          |                                                                        |
| 2. Electronic Failure (Primary) | • Battery connection  
                          • Failed LCD  
                          • Cable cut  
                          • Stuck button in sleep mode  
                          • Frozen display  
                          • Flooded electronics  
                          • Software problem            | i. Activate menu  
                          ii. Listen for O2 injection | a) Try to activate menu display  
b) Switch to secondary,  
c) Manually fly CCR,  
a) End / turn the dive |
| 3. Electronic Failure (Secondary) | • Same as above | Same as above | a) Continue using primary display  
b) End / turn the dive |
| 4. Electronic Failure (Both Handsets) | • Same as above | Same as above | a) Bailout  
b) End the dive |
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<tr>
<td>• Fast decent&lt;br&gt;• Manual injector leak&lt;br&gt;• O2 injection leak&lt;br&gt;• Calibration error</td>
<td>• Out of O2&lt;br&gt;• O2 supply feed blocked or closed&lt;br&gt;• Battery Problems&lt;br&gt;• Fast ascent&lt;br&gt;• Leaking diluent into the loop&lt;br&gt;• Poor planning / gas awareness</td>
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<td>Indicated by high PPPO2 on monitoring system&lt;br&gt; Increase in loop volume&lt;br&gt; Hear gas leaking</td>
<td>i. Monitoring system dropping from target PPO2&lt;br&gt; ii. Continual decrease or increase in loop volume&lt;br&gt; Cannot hear gas injection</td>
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<tr>
<td>a) Isolate the O2 supply&lt;br&gt; b) Bailout&lt;br&gt; c) Perform a diluent flush&lt;br&gt; d) Disconnect manual feeds&lt;br&gt; e) On / off O2 supply&lt;br&gt; Watch O2 pressure gauge&lt;br&gt; a) Needle static - is manual injector failure.&lt;br&gt; b) Needle drop - is O2 feed failure.&lt;br&gt; f) Verify loop O2 is breathable&lt;br&gt; g) If OK Return to the CCR.&lt;br&gt; h) Monitor inspired O2 closely&lt;br&gt; Or plug in off-board O2 supply and manually add O2&lt;br&gt; i) Consider staying on bailout&lt;br&gt; End or Turn the dive</td>
<td>a) Check O2 pressure&lt;br&gt; b) Check tank valve&lt;br&gt; c) Listen for gas addition&lt;br&gt; d) Check feed hoses&lt;br&gt; e) Manual add O2 if available&lt;br&gt; f) May need to isolate diluent supply&lt;br&gt; b) Bailout if no Oxygen</td>
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| 7. Flooding                          | • Breathing loop Counter lung rupture  
|                                      | • Hose connection failure  
|                                      | • Torn mouthpiece  
|                                      | • O-ring failure  
|                                      | i. Work of breathing is difficult 
|                                      | ii. Gurgling in the loop  
|                                      | bubbles leaking  
|                                      | a) Bailout  
|                                      | b) Try to flush the loop with diluent  
|                                      | c) Be cautious if returning to loop  
|                                      | d) Pay close attention to breathing rate when back on the loop  
|                                      | e) Consider staying on bailout  
|                                      | f) End/Turn the dive  
| 8. HP/LP Hose, SPG, 1st stage, tank valve failure | • Burst hose  
|                                      | • Failed O-ring  
|                                      | • OPV  
|                                      | i. Bubbles leaking  
|                                      | ii. Check gauges  
|                                      | a) Close supply valves  
|                                      | b) Look at pressure gauges for drop  
|                                      | c) Bailout if No O2  
|                                      | d) Re-open O2 supply if diluent failure  
|                                      | Note: Lost BC/dry suit/ADV during no diluent ascent  
| 9. Manual O2 addition Open/Close | • Button stuck  
|                                      | • Schrader valve  
|                                      | • Leaking valve  
|                                      | i. High PO2 on monitoring system  
|                                      | ii. Not possible to manual Oxygen  
|                                      | a) Isolate O2 supply  
|                                      | b) May be possible to continue with alternative O2 feed via solenoid or orifice  
|                                      | c) No O2 addition bailout  
|                                      | d) End /turn the dive  
| 10. ADV Failure Open/Close | • Schrader valve  
|                                      | • Pressing on counter lung  
|                                      | • Isolator  
|                                      | • Diver position  
|                                      | i. Rapid increase in loop volume  
|                                      | ii. Drop in pPO2 on monitoring system  
|                                      | a) Isolate diluent supply  
|                                      | b) Isolate ADV  
|                                      | c) Monitor PPO2  
|                                      | d) End the dive  
|                                      | Consider buoyancy devise loss if not able to re-open the supply of diluent  

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<table>
<thead>
<tr>
<th>11. BCD Failure</th>
<th>12. High CO2 / Scrubber Failure</th>
<th>13. Other considerations:</th>
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</table>
| • Loss of buoyancy positive  
• Loss of buoyancy negative  
• Failed power inflator  
• Failed relief valve  
• Hose connection  
• Punctured bladder | • O-rings  
• Over used absorbent  
• Wet scrubber  
• Incorrect packing  
• Working hard  
• Skip breathing  
• DSV valve failure  
• Depth | • Loss of bailout/deco gas  
• Bailout Regulator free flow  
• Loss of dive computer / gauges  
• Fail/loss of SMB  
• Lost mask  
• Loss of fin |
| i. Positive buoyancy  
i.ii. Bubbles leaking  
ii.iii. Negative buoyancy | iv. Increase in breathing rate  
v. Headache  
v.ii. Feeling of anxiety | |
| Positive Failure  
a) Isolate diluent supply  
b) Dump gas form BCD  
c) Use redundant buoyancy device | Bailout and stay out  
End / turn the dive  
Team mate assist | Carry back up life support equipment |
| Negative Failure  
d) Kick Legs to hold position  
e) Move to head up position  
f) Have team mate assist  
g) Switch to back up buoyancy | Note: excessive negative buoyancy ditch equipment. | |

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