



CCR Common Failures Chart – Rebreather Basics

Problem	Possible Causes	Diagnosis	Action
1. Cell Discrepancy	<ul style="list-style-type: none"> • Calibration error • Water on cell • Slow reacting or failing cell 	<ul style="list-style-type: none"> i. O2 Sensors read differently ii. Compare backup monitoring system 	<ul style="list-style-type: none"> 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.
2. Electronic Failure (Primary)	<ul style="list-style-type: none"> • Battery connection • Failed LCD • Cable cut • Stuck button in sleep mode • Frozen display • Flooded electronics • Software problem 	<ul style="list-style-type: none"> i. Activate menu ii. Listen for O2 injection 	<ul style="list-style-type: none"> a) Try to activate menu display b) Switch to secondary, c) Manually fly CCR. a) End /turn the dive
3. Electronic Failure (Secondary)	<ul style="list-style-type: none"> • Same as above 	Same as above	<ul style="list-style-type: none"> a) Continue using primary display b) End / turn the dive
4. Electronic Failure (Both Handsets)	<ul style="list-style-type: none"> • Same as above 	Same as above	<ul style="list-style-type: none"> a) Bailout b) End the dive



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<p>5. High PPO₂</p>	<ul style="list-style-type: none"> •Fast decent •Manual injector leak •O₂ injection leak •Calibration error 	<p>Indicated by high PPPO₂ on monitoring system</p> <p>Increase in loop volume</p> <p>Hear gas leaking</p>	<p>a) Isolate the O₂ supply b) Bailout c) Perform a diluent flush d) Disconnect manual feeds e) On / off O₂ supply Watch O₂ pressure gauge a) Needle static - is manual injector failure. b) Needle drop - is O₂ feed failure. f) Verify loop O₂ is breathable g) If OK Return to the CCR. h) Monitor inspired O₂ closely Or plug in off-board O₂ supply and manually add O₂ i) Consider staying on bailout</p> <p>End or Turn the dive</p>
<p>6. Low PPO₂</p>	<ul style="list-style-type: none"> •Out of O₂ •O₂ supply feed blocked or closed •Battery Problems •Fast ascent •Leaking diluent into the loop •Poor planning / gas awareness 	<p>i. Monitoring system dropping from target PPO₂</p> <p>ii. Continual decrease or increase in loop volume Cannot hear gas injection</p>	<p>a) Check O₂ pressure b) Check tank valve c) Listen for gas addition d) Check feed hoses e) Manual add O₂ if available F) May need to isolate diluent supply b) Bailout if no Oxygen</p>



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7. Flooding	<ul style="list-style-type: none"> •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	<ul style="list-style-type: none"> •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	<ul style="list-style-type: none"> •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	<ul style="list-style-type: none"> •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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<p>11. BCD Failure</p>	<ul style="list-style-type: none"> •Loss of buoyancy positive •Loss of buoyancy negative •Failed power inflator •Failed relief valve •Hose connection •Punctured bladder 	<p>i. Positive buoyancy ii. Bubbles leaking iii. Negative buoyancy</p>	<p>Positive Failure a) Isolate diluent supply b) Dump gas from BCD c) Use redundant buoyancy device</p> <p>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</p> <p>Note: excessive negative buoyancy ditch equipment.</p>
<p>12. High CO₂ / Scrubber Failure</p>	<ul style="list-style-type: none"> •O-rings •Over used absorbent •Wet scrubber •Incorrect packing •Working hard •Skip breathing •DSV valve failure •Depth 	<p>iv. Increase in breathing rate v. Headache vi. Feeling of anxiety</p>	<p>Bailout and stay out End / turn the dive Team mate assist</p>
<p>13. Other considerations:</p>	<ul style="list-style-type: none"> •Loss of bailout/deco gas •Bailout Regulator free flow •Loss of dive computer / gauges •Fail/loss of SMB •Lost mask •Loss of fin 		<p>Carry back up life support equipment</p>