



Oxygen sensor tester kit

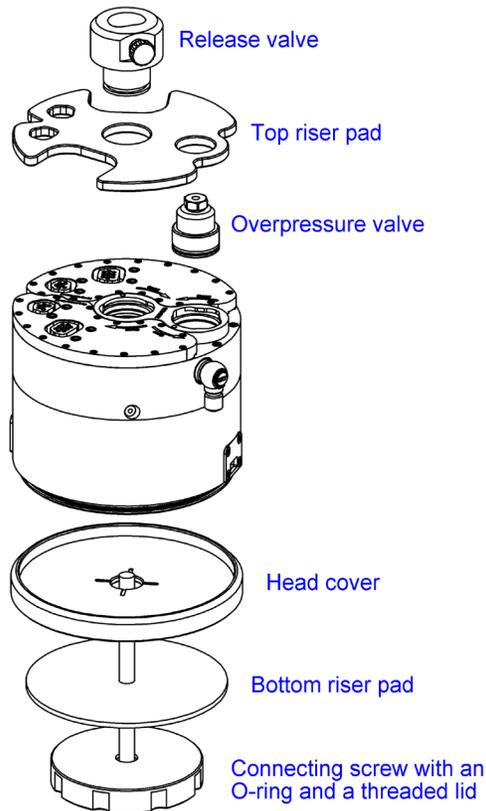
MANUAL

Oxygen sensor tester kit is a tool for checking the functionality, voltage, and current limitation of oxygen sensors. This kit works only when used with a CCR Liberty head

Warning: The kit requires you to work with pure oxygen under high pressure. There is a risk of fire or explosion

O ₂ cell test				
pO ₂	1	2	3	4
bar	%	%	%	%
0.20	-0	-1	+1	+2
0.99	Ref	Ref	Ref	Ref
1.54	-0	-0	+0	-2
2.00	+1	+1	+1	-4
2.52	+0	+1	+0	-9
3.02	-0	+0	-1	-15
3.52	-1	-0	-3	-22

The kit is composed of these individual parts:



Assembly procedure

1. Remove the HUD and buddy display from the CCR Liberty
2. Check that both batteries are connected through jumpers
3. Put the head cover on to the rear side of the head
4. Insert the riser pad into the bottom plate
5. Place the top riser pad onto the top side of the head
6. Turn the head over and hook up the connectors and insert the overpressure valve into the exhale port
7. Put on the top riser pad. Move aside the handset cables, so there is nothing obstructing the pad.
8. Screw on the release valve. Put the head on its side and screw it in by rotating the threaded lid
9. Close the Release valve
10. Connect the oxygen hose but keep the gas supply closed.

Testing

1. Start up at least one handset and make sure both CUs are working
2. Make sure that the release valve and the oxygen valve are closed. The unit will first make a reference measurement from the air
3. Select Menu/Applications/ O₂ cells test
4. When you hear solenoid clicking, open the oxygen valve and watch the handset display
5. Now begins the phase of flushing the chamber with pure oxygen. React immediately to the instructions shown on the screen in the red and green fields. When the text „**Open release valve**“ is shown, open the release valve and when the text „**Close release valve**“ close it immediately. This process is repeated five times to ensure precise flushing of the system
6. The measuring itself is automatic. Oxygen is passed through the solenoid and the chamber is pressurised to 1.5; 2.0; 2.5; 3.0; and 3.5 bar
7. After the measuring is finished the results are displayed at three different screens. The data from each individual sensor is arranged in columns. The first screen shows the deviation from the optimal curve in percentage difference. The second screen shows the continual data in a graph. The third screen shows individual data in mV during each measured pressure.
8. After reading the measured values you can depressurize the head and disassemble the unit

Interpretation of results:

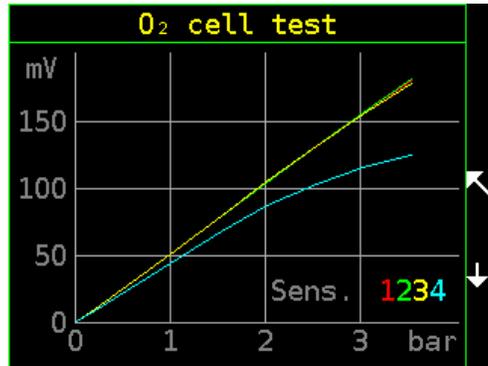
Expression of linearity deviation

The software chooses 1.0 bar as referential pressure and from it, it calculates the deviation in percent. The pressure values 1.5-2.0 should show minimal values, as can be seen on sensors 1-3. At maximum pressure 3.5 bar it is expected to see a deviation of 0 to -7 according to the sensor type. On sensor 4, we can see unacceptable deviation, which indicates a current limited sensor

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Graphical representation

This screen shows the measured value from the sensors with rising pressure. Each sensor is assigned a colour, which you can read in the labels. From this graph it is apparent that sensor 1, 2, and 3 are linear, as expected and sensor 4 is deviant and shows a significant curvature, meaning the sensor is old and current limited



Absolute values

This screen shows the absolute values measured by the sensors in mV

O ₂ cell test				
pO ₂ bar	1 mV	2 mV	3 mV	4 mV
0.20	10.6	10.5	10.8	9.4
0.99	51.4	51.3	51.6	45.0
1.54	79.2	79.1	80.0	68.4
2.00	105	104	105	87.3
2.52	131	131	131	104
3.02	156	156	155	116
3.52	180	181	177	125



OXYGEN SENSOR TESTER KIT USER MANUAL

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