

## COMPANY OPERATING PROCEDURE

### TEK-OX Assembly Procedure VM3/COP/42.01

Date: 11-Aug-2008	Revision Date: 13-Apr-11	Issue: 2
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Quantity	Description	Part No.	
1	TEK-OX Main Body Insert Black	9530003	
1	TEK-OX Black Front Cover	9530005	
1	TEK-OX Black Bottom cover	9530004	
1	TEK-OX PC Lens	9530009	
1	TEK-OX Black Shell left	9530012	
1	TEK-OX Black Shell Right	9530013	
1	Blu-Ox Base Seal	9530002	
1	Blu-Ox Front gasket	9530006	
1	Blu-Ox switch	9730036	
1	Blu-Ox Cal contro	9730040	
1	Blu-Ox Photo thread	9530010	
1	Blu-Ox key ring	9530008	
1	Blu-Ox Inside label	9530007	
1	Blu-Ox Instruction manual	9590001	
1	Vandagraph Logo round	9530001	
1	TEX-OX Front Label Black	9530002	
1	Blu-Ox switch waterproof kit	9730037	
1	Blu-Ox battery terminals right	9730064	
1	Blu-Ox battery terminals left	9730063	
1	Blu-Ox battery terminal common	9730062	
1	LCD assembly	3501002	
1	PCB assembly	9530015	
1	Jack plug - plastic 750 1/8"	9071007	
1	5/16" UNF Nuts	9520001	
1	Cable assembly	9070004	
2	Blu-Ox batteries AA	9060005	
1	R-17VAN		
2	Screws Black M2 x 5 mm	9730061	
5	Screws Black M2 x 10 mm	9730060	
1	Double sided tape	9711017	
1	Locktite	9073005	
1	Silicon grease	9711018	
1	Quick setting adhesive (UHU)	9711020	
1	Slicone rubber black non corrosive CAF10	9711000	
1	Conformal coating RS 714-462		
1	Blu-Tac or equivalent		

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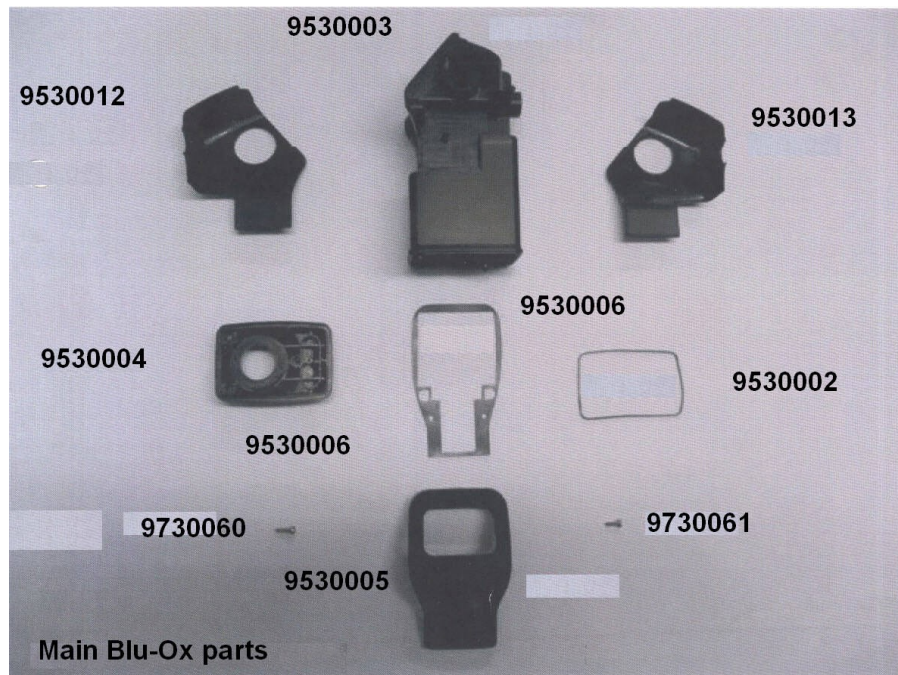
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#### Equipment Required:

Soldering Iron: side cutters: Spanner; Long nose pliers. Tweezers, solder tools, carver set



#### Assembly:

1. Programme the PCB ( See Appendix A)
2. Locate the Battery cover on the plastic pillar with the pips on top and ensure the cut-out faces the screw hole. Remove plastic pip leaving 2mm . Using hot iron melt the pip to seal in the contacts
3. Clean the terminals with Isopropyl Alcohol.
4. Lubricate the battery compartment seal and insert into the battery compartment cover
5. Tin the battery terminals
6. Locate the battery springs correctly the springs are offset "Left to left" & "Right to right".
7. Glue into position applying glue to the both parts of the right angle bend of connector, inside face . Glue / silicone or another compound can be used. The criteria is to seal the battery compartment from the electronics without surplus compound covering the spring terminals In the centre of the connector spring is a hole which locates on a pip in the case
8. The battery terminals inside the case should be sealed with black CAF 10.or equivalent . NB This is non corrosive.



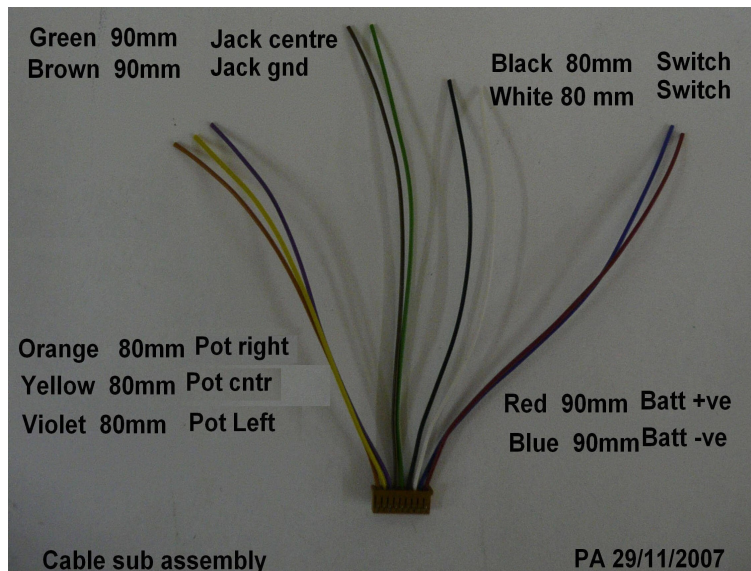
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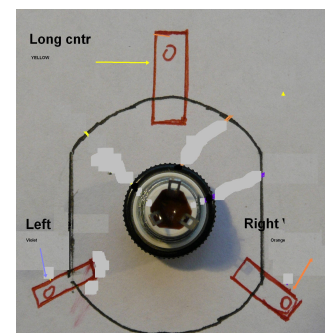
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9. The switch should then be fitted 1<sup>st</sup>
10. Add switch into the enclosure: mate the locating peg and add the bridge sealing kit,
11. This has to be tightened through the right hand enclosure aperture
12. Add O ring to the potentiometer and feed pot into enclosure body .
13. The White spot on the pot should be at the top when the pot is half turned.
14. Add Locking washer ,Permabond (Loctite) or glue and tighten nut.  
NB If the nut is difficult to locate turn it over **NB some nuts are problematical**
15. Tin both contacts of the Jack plug. Try the nut to ensure it screws to the end. **NB some nuts are problematical**
16. Add glue to the Jack plug and insert into the body. Ensure the plug is in the centre and the large terminal ( screen) is preferably at the back. Fasten with the nut and use loctite. This nut should be siliconed to stop vibration breaking the seal. If silicone is added to the outside of the enclosure it should be black and must not impeded the sensor making contact.
17. Cut, strip & tin cable assembly wires to approximately the correct lengths . These can be shortened as production technique improves.



18. Solder Red & Blue wires to battery terminals. This is best done first
  1. Red to Right looking into enclosure right way up
  2. Blue to left
  3. Batteries only work one way.
19. Solder Green to centre of Jack and Brown to outside.
20. Solder wires to switch (Black & White)
21. Solder wires to the pot see Diagram
  1. Orange Right
  2. Yellow Centre
  3. Violet Left



22. Add Battery labels

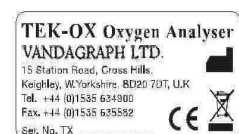
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1. +ve Inward Right -ve on the visible edge
2. -ve Inward left. +ve on the visible edge.
23. Using test battery ( Two batteries shorted at one end).
24. Check the unit functions using a test LCD/PCB
25. Installation of PCB & LCD
26. The excess pips on the side of the PCB may need removing
27. NB If the PCB has a serial number. This must be recorded for traceability. If not record the batch number. **IMPORTANT**
28. Plug the LCD lead into the PCB socket
29. Connect the LCD to the PCB with a small amount of double-sided tape e.g 2.0 cm x 1.0cm (this allows removal without damaging the LCD)
30. Take care the LCD input cable is very fragile. It breaks just after the connector
31. Take care not to bend the ribbon cable too sharply
32. Add two small amounts of Blu-Tack (or equivalent )one on either corner of the LCD mounting. This is to help alignment of the PCB in the front panel.
33. Introduce the PCB into the enclosure.
34. The connectors should be at the top of the instrument..
35. Ensure alignment is good and the LCD lies level. The Blu-Tack allows the LCD to be aligned & levelled correctly
36. Remove the LCD protective cover
37. Add an extra Polycarbonate lens( until the new panels with thicker lens are available
38. Locate with Blu-Tac or equivalent. See separate procedure VM3COP42.05
39. Ensure the faces of the LCD & both faces of the extra lens are dust free **IMPORTANT**
40. Locate the seal on the back of the front panel ensure it fits under the locking lugs
41. Offer the front panel up to the enclosure
42. It locates with small fragile lugs on each side and a lock on the top.
43. Ensure LCD alignment
44. The front panel can be removed without damage if very great care is taken. **The top should be released first. Then the bottoms gently prised over the plastic hooks.**
45. Screw the front panel on with 2 size M2x10 screws from the rear. **IMPORTANT**
46. Add the two outer side covers and fix with M2 x 5 screws. Use loc-tite Take care not to over tighten . **IMPORTANT**
47. Add serial number label White to inside
48. Add same serial number Black Label to rear of Instrument
49. Check serial numbers are identical **IMPORTANT**
50. Using Test Battery and
51. Using Test box or mV source 100% = 50mV Air =21% 10.5 mV approx. +/- 1%
52. Add Sensor ; note serial number
53. Rotate to ensure no contamination on connectors
54. Add batteries and fix cover with three M2 x 10 screws
55. Check the unit functions
56. Add the front labels
57. Switch On

Sensor R-17 VAN  
Batt: MN1500 x2  
Ser. No. TX .....





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- 58. Check correct software version
- 59. Check correct title
- 60. Check the correct colour switch
- 61. Yellow auto switch off .Green no auto switch off
- 62. Set Calibration knob to read 20.9%
- 63. Add labels to box
- 64. Add Quick-OX ;
- 65. Leave the Flow divertor attached
- 66. NB DINKIT needs to be supplied separately
- 67. Add user guides



#### **Appendix A**

##### **Software:**

The current main software is :-

Version 4.0

Legend; Vandagraph TEK-OX alternating  
Auto switch-off

Auto-switch off can be disabled by breaking the shorting link on the PCB

The software can be changed to Derived Nitrogen by breaking a link on the PCB

By using the Logo maker programme the Legends can be changed to two 10 letter words.

More letters will reduce the size and the quality of the print

##### **Carrying case**

An alternative case is the Otter Extreme 9000.

The Quick-ox fits in the lid and the analyser in the main part.

Labels should be fitted

A User sheet should be placed in the box



##### **ERRORS:**

**E1:** LCD socket not 100% aligned or faulty LCD

**No Reading:** Remove battery to reset software ( mainly when using test unit)

Check batteries are in correct. Faulty LCD, bad battery contact

**OO With sensor:** Rotate sensor to ensure Jack plug is clean