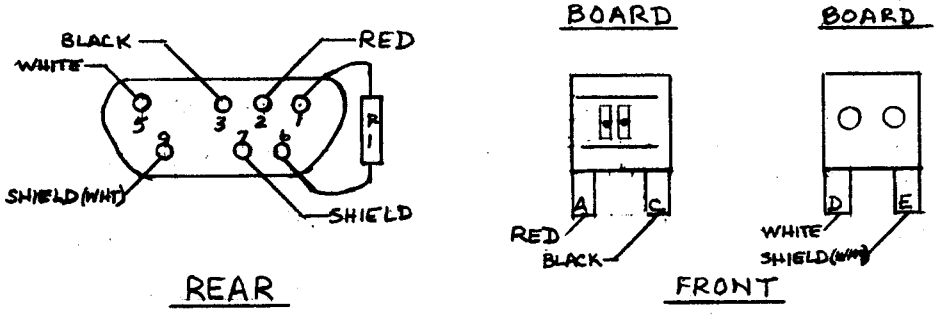
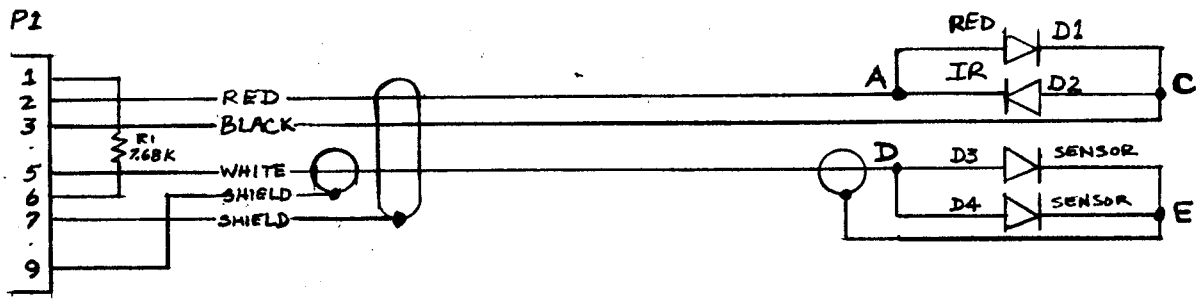
WIRING DIAGRAM



REAR FRONT

SCHEMATIC



PARTS LIST

E100A-101A CABLE

SPECIAL INSTRUCTIONS

1. WHEN REPLACING THE CABLE ASSY, USE EPIC P/N E100A-101A AND FOLLOW THE WIRING DIAGRAM BELOW:
   - RED – PIN 2 TO A
   - YELLOW – 3 TO C
   - WHITE – 5 TO D
   - BLACK – 9 TO E
   - SHIELD – 7 (NC)

EPIC MEDICAL EQUIPMENT SERVICES, INC.
Dallas, Texas

SCALE: N/A	APPROVED BY: GS Worley	DRAWN BY WORLEY
DATE: 1/9/95		REVISED 2/8/96

NELLCOR SaO2 CABLE – DS100A

REPAIR STANDARDS

DRAWING NUMBER NELLCOR1

INTERNATIONAL OXIMETRY SENSORS & CABLES, INC.
DALLAS, TEXAS

QUALITY CONTROL PROCEDURE

REPAIRED SaO2 CABLES

Original Copy - Engineering
Copy #1 - Quality assurance
Copy #2 - Quality Control
Date Initiated 01/09/95 by GW

Rev: ___ Date _____ by _____

MFR: NELLCOR MODEL: DS100A

I. PHYSICAL

A. CONNECTOR
1. Inspect for bent or broken pins.
2. Inspect strain relief.
3. Inspect for proper connector assembly and secure mechanical union.

B. CABLE
1. Inspect for cuts and/or abrasions.
2. Inspect for cleanliness.

C. CLIP
1. Inspect for traces of glue or epoxy.
2. Check for proper assembly of clips, pads, springs and cable retainer.
3. Check that "Company identification" label has been attached.

II. ELECTRICAL

A. LED's

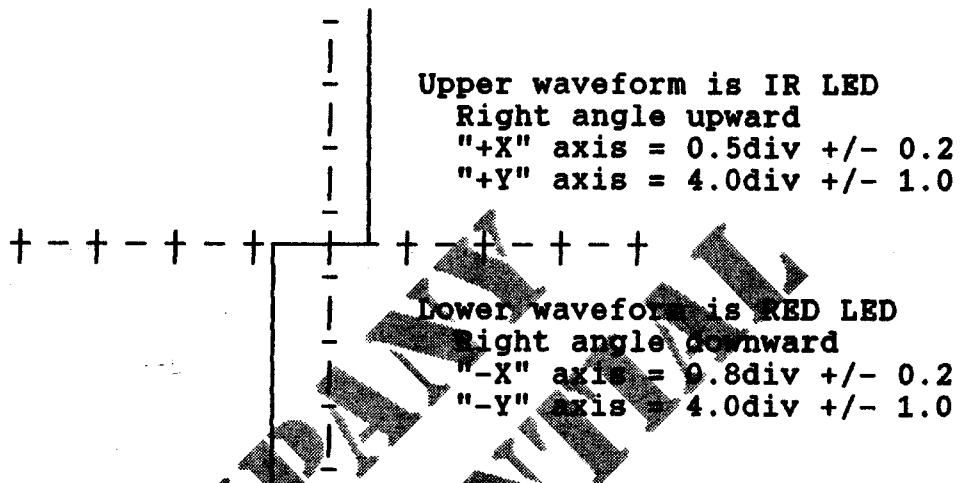
NOTE: Set COMPONENT TESTER to: * - Lo
* - A

1. Connect cable to "A" connector on the text fixture.

II. ELECTRICAL (cont.)

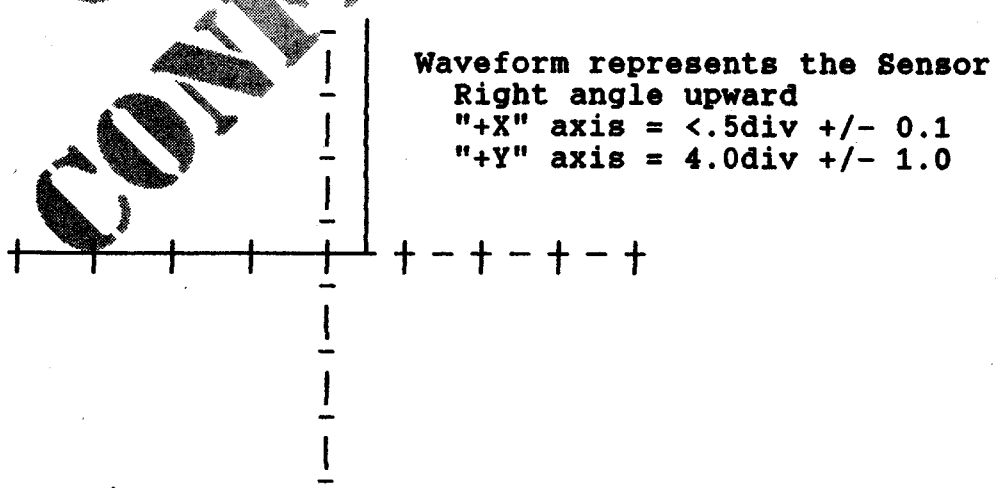
A. LED's (cont.)

2. Place "BLUE (S1)" switch in position "1". The COMPONENT TESTER should indicate the following pattern.



B. SENSOR

1. Place "BLUE (S1)" switch in position "4". The COMPONENT TESTER should indicate the following pattern.



C. CALIBRATION RESISTANCE

NOTE: Set DVM to "20K" ohm range.

1. Place the "GREEN (S1)" switch in position "1". The DVM should indicate "7.4K to 7.7K ohm" +/- 0.10k ohm.

III. PERFORMANCE (record readings on WORKSHEET)

A. CABLE CONNECTOR
1. Connect the cable to the "NELLCOR" Oximeter Monitor.

B. SENSOR CLIP
1. Attach the sensor clip to the "RED" Nonin Saturation Test Unit.
2. Pulse the unit about once per second.
3. The Oximeter should read "98"% SaO2 (+/- 2).
4. Attach the Sensor Clip to the "BLACK" Nonin Saturation Test Unit.
5. Pulse the unit about once per second.
6. The Oximeter should read "83"% SaO2 (+/- 2).

IV. GENERAL

A. Make sure all entries are recorded on worksheet.
B. Indicate "Acceptance" or "Failure".
NOTE: If unit fails, return to repair technician.
C. If accepted, record the date QC was performed.
D. Send the unit, with the worksheet, to shipping for return to the customer.

Repair procedures For Nellcor Finger Probes

Initial Visual Check.

If Case of finger clip is Cracked then the sensor is unrepairable.

If Cable is nicked/damaged then cable is to be replaced.

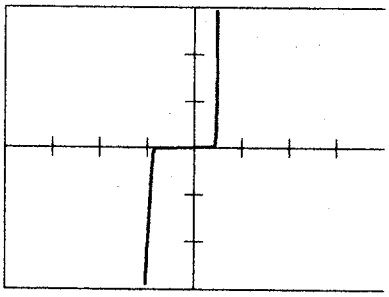


Fig 1

Initial test.

Insert plug into Socket A. .

Meter Should show 7.4 - 7.6 K Ohm

Switch to LED .(1) BLUE S1 See Fig 1.

Twist cable with particular attention to the strain relief's at both ends.
Push and move the finger pads.
Switch to Sensor. (4) BLUE S1

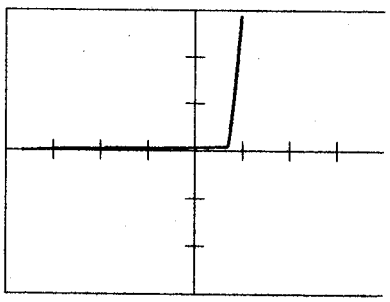


Fig 2

See Fig 2.

Twist cable with particular attention to the strain relief's at both ends.
Push and move the finger pads.

If an intermittent fault is seen then the cable needs replacing.
If a fault is found in the finger pads then resoldering the pads may cure the problem.

Replacing the Cable.

Dismantling finger probe

Cut Cable 10 cm from finger Clip - Discard Cable and Plug

There are 4 holding clips on each finger pad one in each corner.
Unclip pads with a small screwdriver.

Cut Wires from the pads and discard.

Ultra Sonic Clean the finger Clip, The two pads and the two springs.

DC

Prepare New Cable.

Replacement cable P/N E100A-101A

1. Remove sleaving 1/2 cm from strain relief.
2. Cut and bin main shield.
3. Cut and bin Orange wire and the 2 black strings.
4. Remove twisted pair shield.
5. Cut and bin shield.
6. Place over Black and White cables heat shrink 1/16'' Diameter - 2'' Long. Also over red & yellow cables.
7. Cut Red and Yellow cables to be 1/2'' shorter than the end of the heat shrink.
8. Cut Black and White wires to be 1/2'' longer than heat shrink.
9. Strip all remaining wires and Tin.

Removing Sensor and Led.

Clean all parts with alcohol after Ultra Sonic Cleaning.

1. Cut a slice from the rubber where the wires come out.

2. With a scalpel cut above and below the Sensor/Led.

NOTE: Don't slice any rubber except where scalpel is inserted.

3. Pull Sensor or Led out of rubber.

4. Remove any remaining Silicone from the Sensor/Led.

Attaching Led/sensor to new cable.

Desolder old wires from both the led and the sensor.
NOTE Led is heat sensitive - Don't get too hot.

1. With Led facing up and legs towards you.

See fig 3.

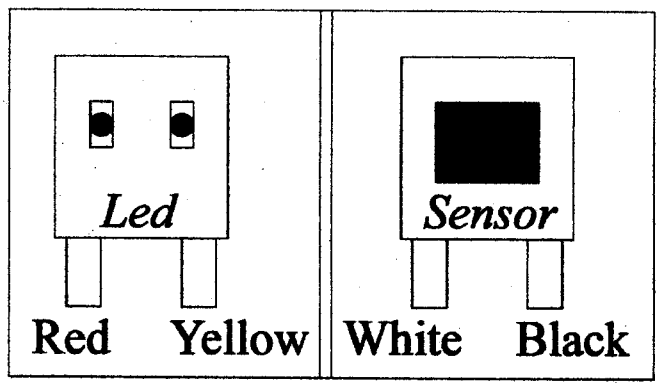


Fig 3.

Solder the red wire to the left
Solder the yellow wire to the right.

2. With Sensor Facing up and legs towards you.

See fig 3.

Solder the white wire to the left.
Solder the Black wire to the right.

Check New cable.
Push the Sensor and Led back into finger pads.
NOTE ensure they face in the correct direction.

Assembling finger clip

Check both pads that the metal rim is not bent. If rim is bent straighten with pliers.

See fig4 . for assistance / orientation.

1. Place pads together with the windows in the same direction.
2. Place Springs around the pads and attach together.
3. Line black heat shrink with groove inside clip.
4. Clip each pad in turn into place. Each corner of each pads should click into place.

NOTE When viewing clip from the back non of the metal rim should be visable.

Recheck Probe.

Glue front corners of both pads (single drop).

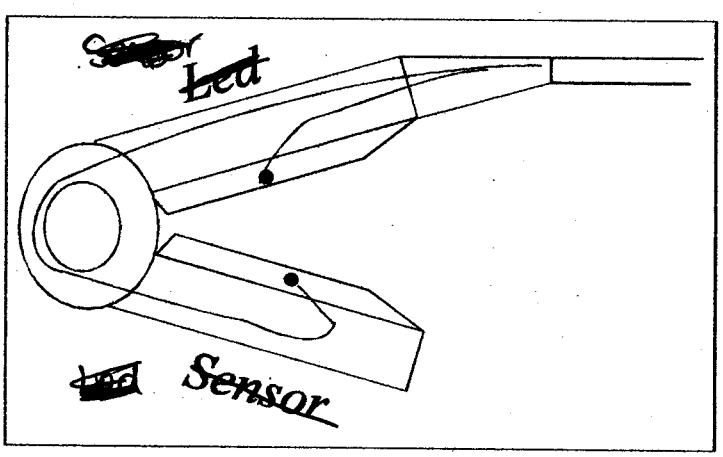


Fig 4

MEDICAL CABLES™

1340 Logan Avenue
Costa Mesa, CA 92626
Phone: (714) 545-3469
(800) 828-1599
Fax: (714) 545-7212

Pulse Oximeter Finger Probe Repair Procedure

Model: P856RA

1.1 P856RA Parts List

Item No.	Description	Quantity	Manufacture	Part Number
	Complete Clip Assembly	1	MCI	MC-P100A
1	Top Shell	1	MCI	MC-P101
2	Bottom Shell	1	MCI	MC-P102
3	Wire Spring	1	MCI	MC-P103
4	Buttons	2	MCI	MC-P104
5	Soft Finger Pad (LED)	1	MCI	MC-P105
6	Hard Finger Pad (Detector)	1	MCI	MC-P106
7	Top Pad Support Frame	1	MCI	MC-P107
8	Bottom Pad Support Frame	1	MCI	MC-P108
9	LED assembly	1	MCI	MC-P856-LED
10	Detector	1	MCI	MC-P856-DET
11	Complete Cable Assembly	1	MCI	MC-P856-CAB
12	Silicone (RTV)			
13	Glue			

Ver. 1.1 AJF 7/97

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Costa Mesa, CA 92626
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(800) 828-1599
Fax: (714) 545-7212

1.2 P856RA Repair Procedure

1.2.1 Probe Disassembly:

1. Inspect cable, shell, pads and connector for damage or cracks. Note any damage and list part that need to be replaced.

2. Cut and discard cable assembly (item 11) at the strain relief to remove from the finger probe clip assembly.

3. Remove top pad support frame (item 7) with soft finger pad (item 5) from top shell. Remove soft finger pad from support frame. Remove bottom pad support frame (item 8) with hard finger pad (item 6) from bottom shell (item 2). Remove hard finger pad from support frame.

4. Separate shells (items 1 & 2) and remove spring (item 3) and buttons (item 4) to disassemble finger probe.

1.2.2 Probe Testing:

5. Remove LED assembly (item 9) from top pad. Inspect for physical damage. Test the individual RED and IR LEDs. The test specifications for the LEDs are listed in Table 1 below.
If item 9 is within test specifications then reuse LED assembly. Replace assembly if Red or IR LED failed to meet test specifications.

6. Remove Detector (item 10) from bottom pad. Inspect detector for physical damage and test the Detector. The test specifications for the LEDs are listed in Table 1 below.
If item 10 is within test specifications then reuse detector. Replace item 10 if detector failed to meet test specifications.

Table 1 LED and Detector Test Specifications

	Test		Typ.	Max.	Range	Units	Test Conditions
Red LED	Forward Voltage	V_F	1.8	2.4	± 0.6	volts	I_F = 20 mA
IR LED	Forward Voltage	V_F				volts	
Detector	Forward Voltage	V_F				volts	

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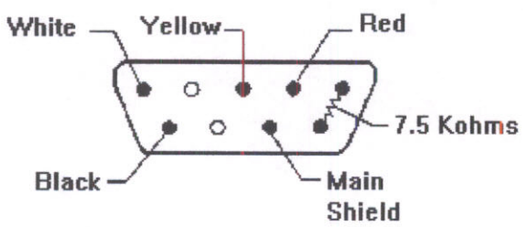
1.2.3 Probe Reassembly:

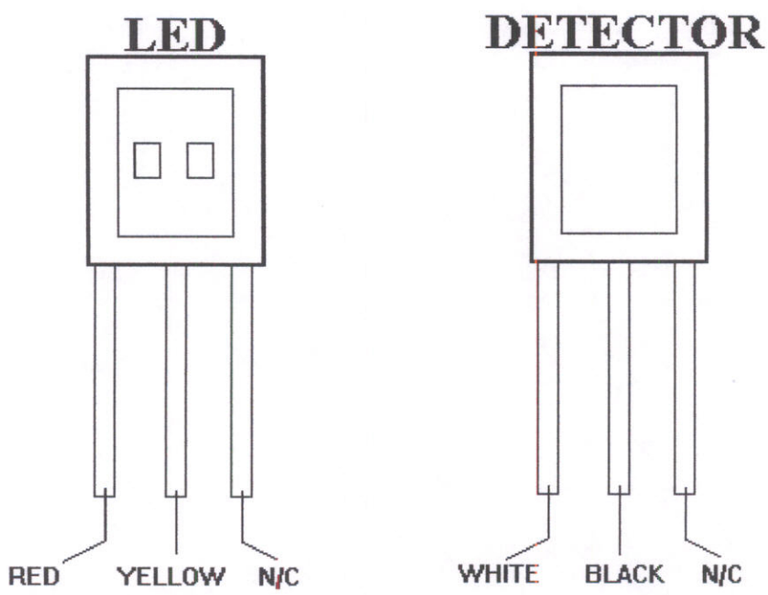
7. Inspect cable, connector and strain relief for damage. Replace cable assembly if damaged or cracked. If cable is damaged then replace cable assembly with the complete cable assembly (item 11).

P856RA

CONNECTOR REAR-VIEW



8. Connect wires (solder) to LED and Detector. Connect the red and yellow wires to the Led terminals. Connect the black and white wires to the Detector terminals. Test continuity.



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P856RA Finger Probe Repair continued

9. Inspect finger pads (item 5 & 6) for damage or cracks. Replace finger pads if damaged or cracked. Slide the LED into the top pad and silicone (item 12) into place. Slide the Detector into the bottom pad and silicone (item 12) into place. Let silicone dry.

10. Inspect top and bottom shell, button, and spring for damage or cracks. Replace items if necessary. Attach spring and buttons to top and bottom shell.

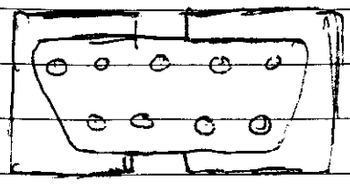
11. Inspect support frames and replace if damaged. Attach the top pad to the top support frame with glue. Attach the bottom pad to the bottom support frame with glue. Snap and glue top and bottom pads into top and bottom shell respectively.

12. Test probe for SpO_2 measurement.

13. Send probe to Quality Control for testing

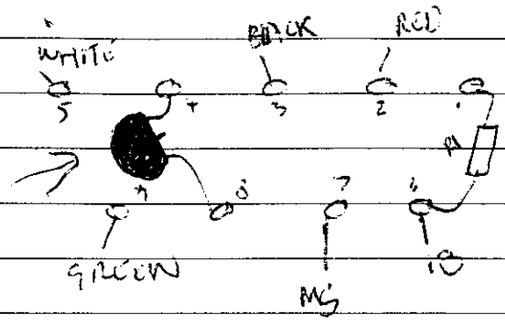
NEW STYLE NEULCOR – PURPLE CONN.

CONN FV



NB. 2 KEYS
ALL PINS PRESENT

CONN RV

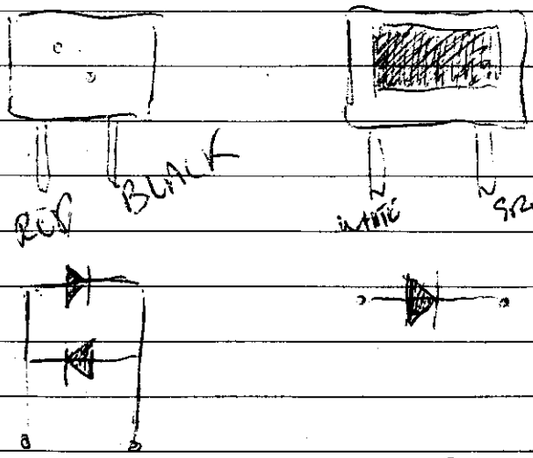


RL-7500 SL 1%

PIN 4
PIN 8

DS7503
9931A2
C77AA

FV



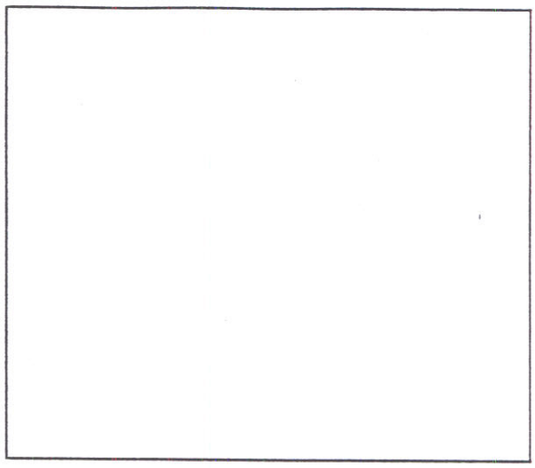
NB. COMPONENTS ARE THE SAME AS ORIGINAL NEULCOR AS PER SPECTROMETER.

NELLCOR

IN SOCKET 'A'

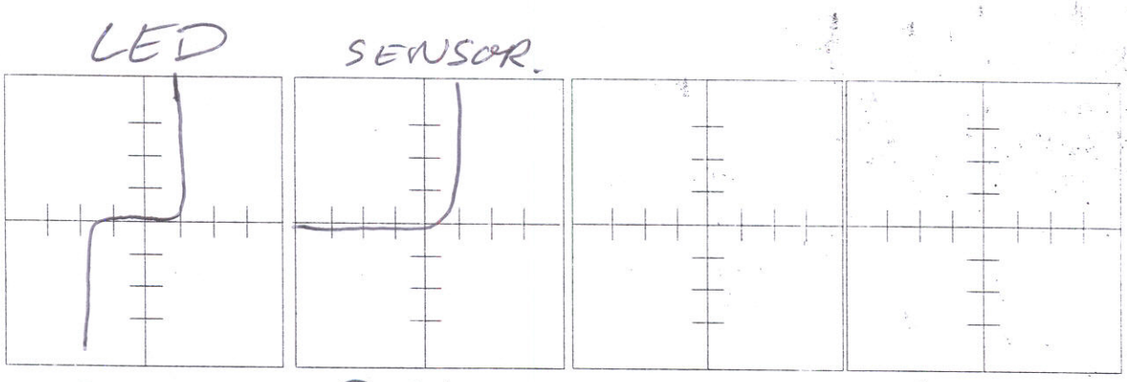
Connector 2 wiring

Pin 1
Pin 2
Pin 3
Pin 4
Pin 5
Pin 6
Pin 7
Pin 8
Pin 9



Test Instructions

Test using Test fixture curve tracer

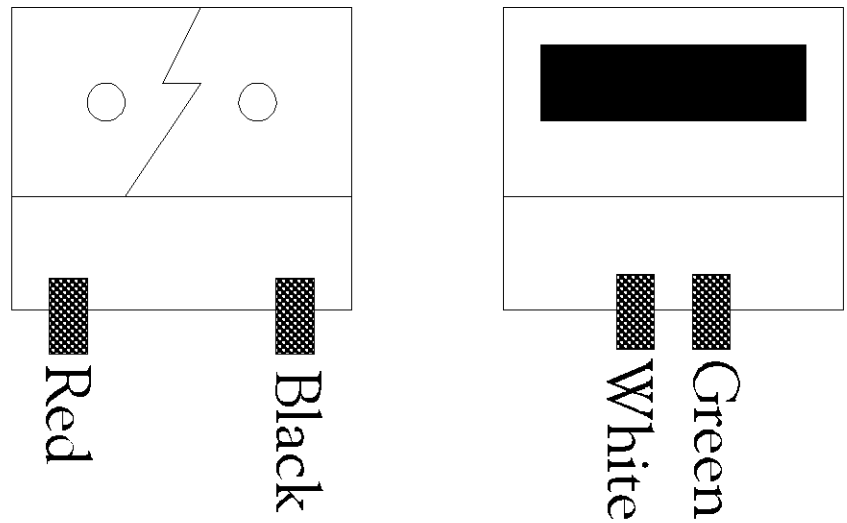


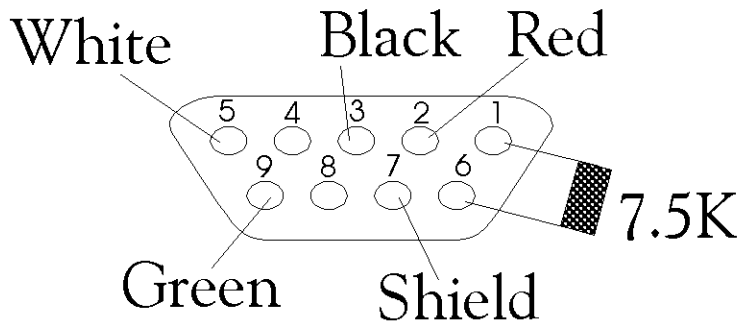
~~SATALITE IRAN. - MONITOR.~~

DN200 - MONITOR.

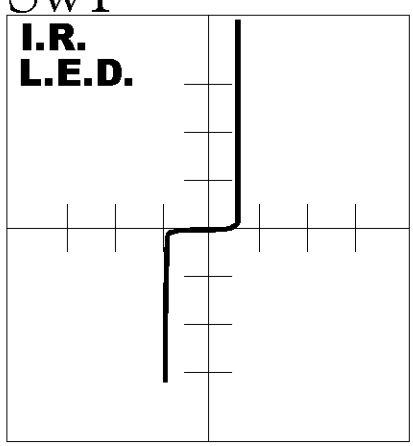
Drawn BY	
Date	
Checked By	
Date	
Revised By	
Revision Date	
Revision number	

Date	24/03/97	Type	Nellcor Original
Nellcor.cmx			

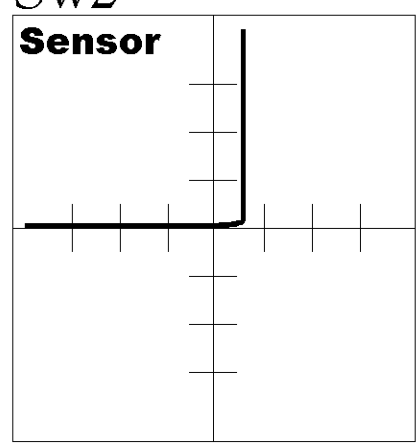




Sw1

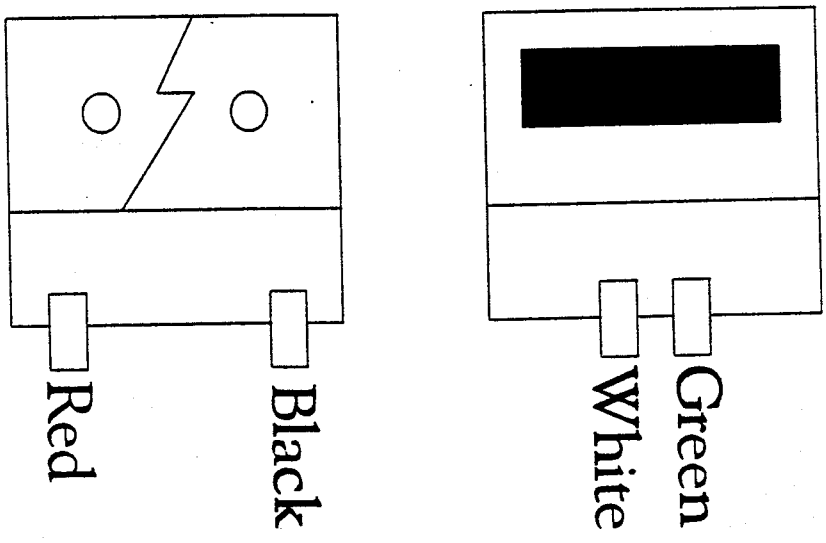


Sw2

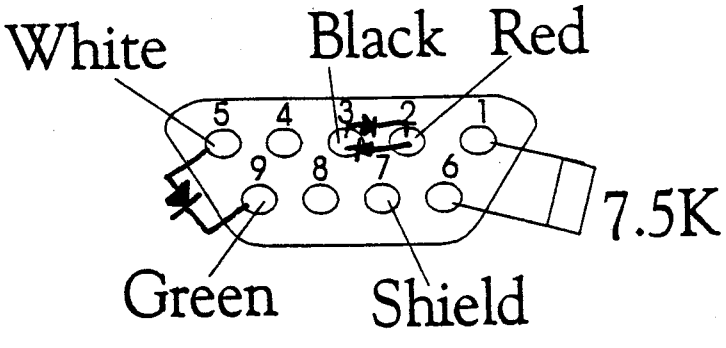


Drawn By	D.Lamb	Signed	

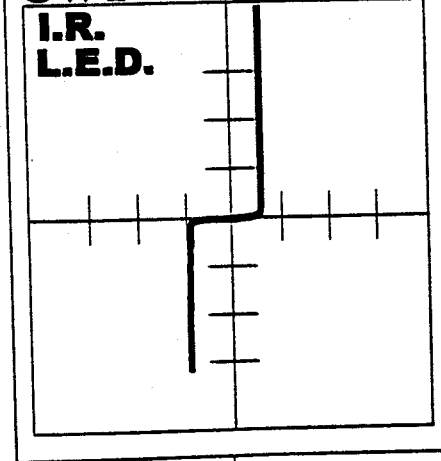
Date	24/03/97	Type	Nellcor Original
Nellcor.cmx		Cable : 3'	



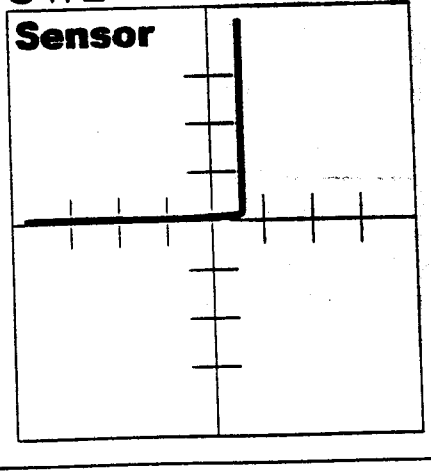
FRONT VIEW



Sw1



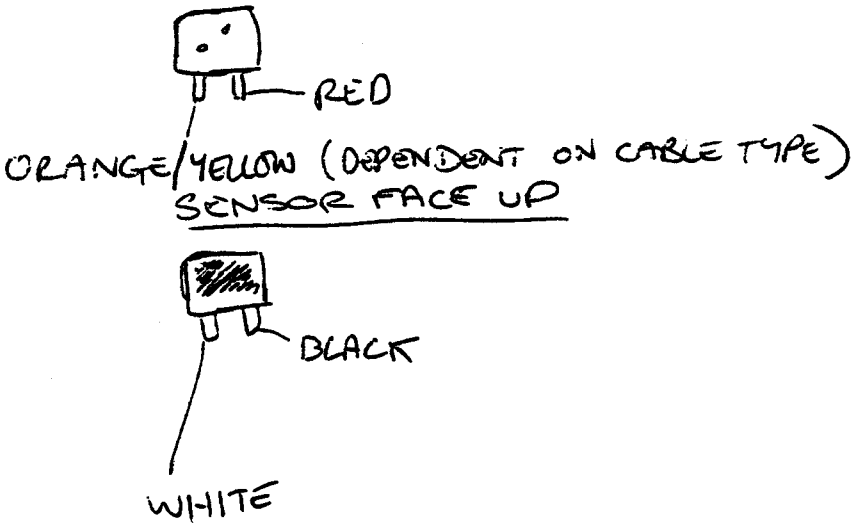
Sw2



Drawn By	D.Lamb	Signed	

Date		Type	ORIGINAL NELLCOR WITH CABLE REPLACED

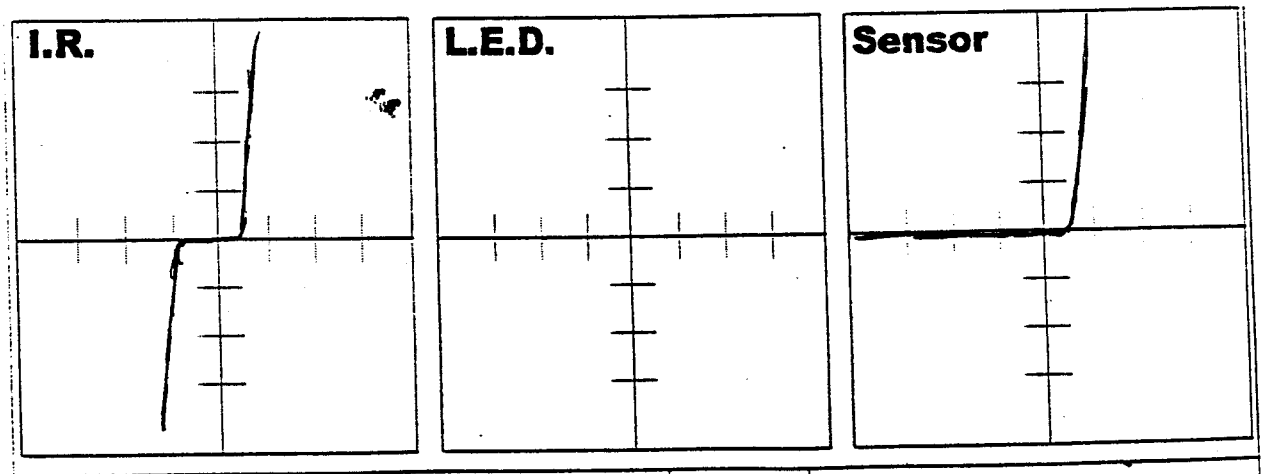
LED FACE UP



NELLCOR ORIGINAL CABLE CAN BE REPLACED WITH

Pn. MC-P856-CAB (1m) - 0018567 (VIAMED)
(MCI)

OR/ Pn. MC-P858-CAB (3m) - 0018587 (VIAMED)
(MCI)



Drawn By:		Signed	

NELLCOR REPAIR

when reusing original Nellcor shells

Soldering iron set to 250 degrees, to prevent heat damage to components.

1/ Determine fault - note that in original and Epic equivalent Nellcor probes, the cable must be replaced, due to the inferior quality of the cable used.

2/ Remove pads from shells using small screwdriver. Remove springs. Separate shells. Thoroughly clean all parts that are to be used, with isopropyl alcohol or foam cleaner.

3/ Cut emitter and detector wires, approximately 1cm from pad housing.

4/ Remove components from pad housing, using small screwdriver to detach silicone around component - note that this should be done delicately so as not to damage surface of window.

5/ Clean excess silicone from components, ensuring that the contacts are as clean as possible.

6/ Desolder old wiring from components.

7/ Prepare new cable as follows:

a/ Remove the strain relief supplied attached to cable "0018567," and replace with strain relief "0010401" - note that a small amount of alcohol or silicone should be used to lubricate the cable when pushing the strain relief on to the cable.

b/ Add cable grip to cable, flush to strain relief, and clamp on using relevant tool.

c/ Cut back shield and paper.

d/ Strip and tin wires to required lengths.

NELLCOR REPAIR

when reusing original Nellcor shells

8/ Resolder wires to components as per relevant diagram.

9/ Replace components into pad housing, taking care to fill pad housing with flowable silicone, as this will remove any irregularities within pad window. Leave for 24 hours to dry.

10/ Reassemble the clip as follows:

a/ Refit original springs around pads.

b/ Apply a drop of superglue on front clip pad retaining lugs - this will reduce the risk of pad popping out of shell housing.

c/ Push pads into position within clip, making sure that the metal pad rim is securely underneath the pad retaining lugs - there are four retaining lugs for each pad.

11/ Attach labels to probe as required.