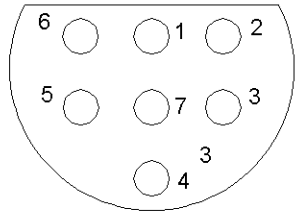
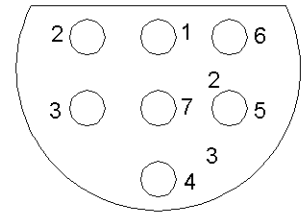
Date	02/10/96	Type	Novametrics / Spacelabs Conversion Cable

Schematic's

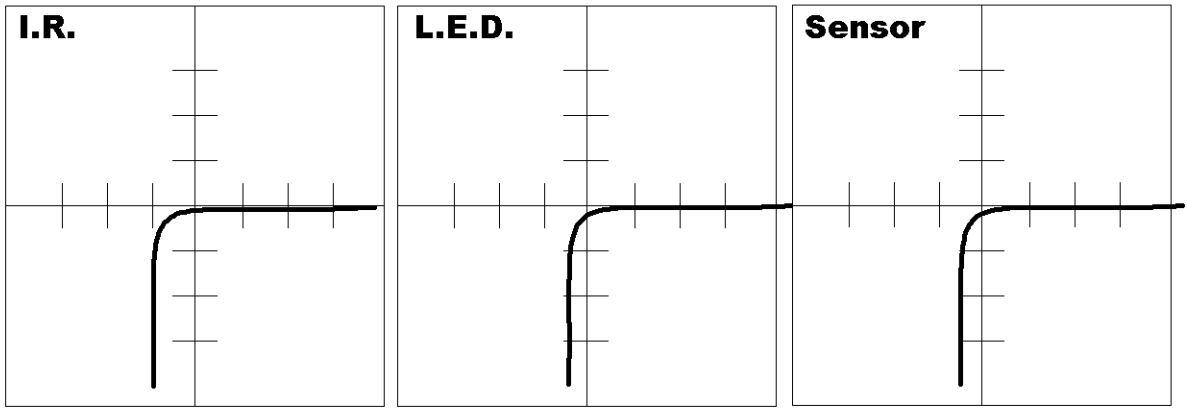
SOCKET
(Rear View)



1 - Blue	→	1 - Blue
2 - Red	→	2 - Red
3 - White	→	3 - Black
4 - Black	→	4 - White
5 - Shield	→	5 - Shield
6 - Green	→	6 - Green
7 - Not Used	→	7 - Not Used



PLUG



Drawn By:	Derek L:amb (unchecked)	Signed	

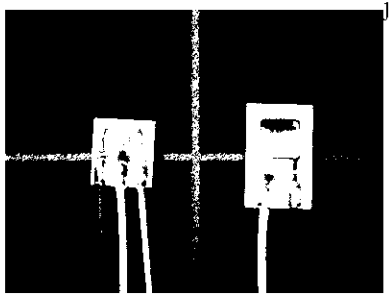
Equipment type: Finger probe	Part Number:	
Batch Size		
Nos	**Viamed Part number**	**Description**
1	0010101	Viamed SpO2 finger probe service kit(black pads)
1	0010603	7 pin cable plug kit,black(includes connector/cable clamp/strain relief)
3m	0030513	SpO2 cable - version D (production)
30mm	0032331	Heatshrink tubing - clear, 6.0mm, 7m reel
50	0010186	Button (yellow) pack of 50

Assembly Clip

1. Prepare Clip end of cable as follows
   a. Attach strain relief "0010150," to relevant replacement cable, and glue in position.
   b. Strip back outer cable cover of exposed end 1mm from end of strain relief.
   c. Remove outer shield and paper, and cut off Kevlar fibres and any unused wires.
   d. Strip and tin relevant coloured wires (from red, yellow, blue, orange) to 13mm from end of cable cover. Strip and tin last 1mm of each wire.
   e. Cut inner white cable to 78mm from end of outer cable cover, strip last 8mm of inner cable cover, strip and tin last 1mm of black and white wires, cut off inner shield and discard
   f. Strip and tin ends of black and white wires.
2. Solder wires to components as per relevant diagram
3. Fit components into pads as follows
   a. Position components in drying rack.
   b. Place a small amount of flowable non-corrosive silicone sealant onto the face of the components.
   c. Place pads onto components, ensuring that both emitter and detector are central in pad windows. Also note that the silicone on the outside of the pad must run to the contour of the pad to make a smooth window - there should be no doming or sinking of the window. Any excess can be removed with a small screwdriver, also any deficit can be topped up with small amounts of silicone from a screwdriver tip - however these steps should be taken within 2 minutes of the pad being placed on the component, before the silicone has had time to become tacky, so that it is still flowing enough to ensure that the window will return to a smooth flat surface
   d. Leave pads to set for 24 hours.

Drawn BY	MFG&DB
Date	26/04/01
Checked By	
Date	
Revised By	

4. Assemble the clip as follows
   a. Glue white inner cable into channel in detector pad
   b. Fill around component with silicone
   c. Glue pad support onto back of detector pad.
   d. Glue pad support onto back of emitter pad.
   e. Glue white inner cable into channel in emitter pad.
   f. Fill around component with silicone
   g. Refit replacement springs "0010140," around pads.
   h. Push pads into position within clip, making sure that the pad support rim is securely underneath the pad retaining lugs - there are four retaining lugs for each pad. If any lugs are not holding the pad support securely, then add a drop of superglue to the relevant lug.
   i. Glue strain relief into position in clip body.
   j. Add labels as required.



Assembly Connector

5. a/ Check that all the relevant parts are in the connector kit - the kit should contain:
1 x backnut (black), 1 x collet (black), 1 x 7 pin hole insert (black), 1 x barrel (black), 6 pins,
1 x cable clamp (0030500), 1 x strain relief (from multipack 0010618).
b/ Add a 30mm length of heatshrink (0032331) to the cable.
c/ Add the backnut to the cable.
d/ Add the collet to the cable.
e/ Push the strain relief (from multipack 0010618) on to the cable, using isopropyl alcohol as a lubricant.
f/ Strip the outer cable cover back by 30mm, using the cable stripper (0060031).
g/ Unwind, but do not remove, the outer shield. Remove the paper layer, and the Kevlar strands, using flush cutter (0060020), cutting them flush to the end of the cable cover. Also remove the unused wires, using the flush cutter, flush to the end of the cable cover.
h/ Strip the inner cable cover back, using the cable stripper, as close to the end of the outer cable cover as possible. Unwind, but do not remove, the inner shield.

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Checked By	
Date	
Revised By	

i/ Twist together the outer and inner shields, and tin this between 12-18mm from the cable cover.

j/ Cut both of these twisted shields at 15mm from the outer cable cover using the flush cutter. Trim off any loose strands of shield flush to the cable cover.

k/ Cut the emitter and detector wires to 15mm from the outer cable cover. Strip and tin the last 2mm of each wire. Add the cable clamp (0030500) to the cable.

l/ Solder pins to both detector wires, all emitter wires, and the twisted shield.

m/ Fit the pins into the relevant pin holes as per the wiring diagram, ensuring they click into place.

n/ Clamp the cable clamp onto the cable, using the cable crimp tool (0010501), 2mm from the end of the outer cable cover. Slide the strain relief up so that it is flush to the cable clamp.

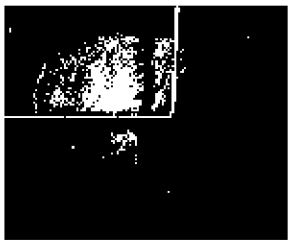
o/ Slide the collet up so that it is flush to the insert, then slide this into the barrel. Fasten the backnut to the barrel, and screw on until it is finger tight

Connector rear view:

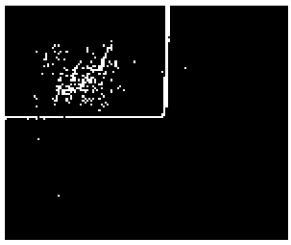
1. Orange
2. Red
3. Black
4. White
5. Main + inner shield
6. Yellow
7. No pin

Test using component tester and test box:

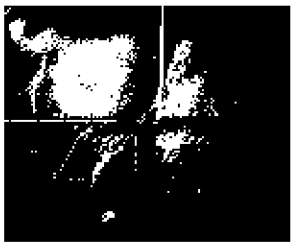
Position 1:Red emitter



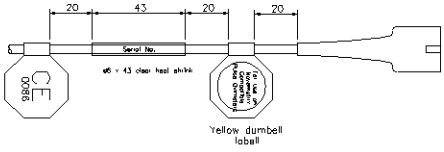
Position 2:IR emitter



Position 3:Photo-diode

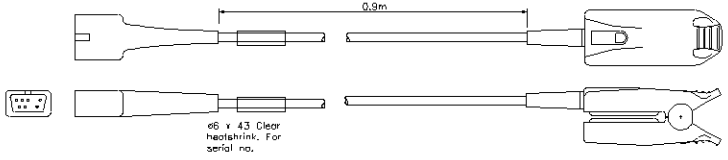


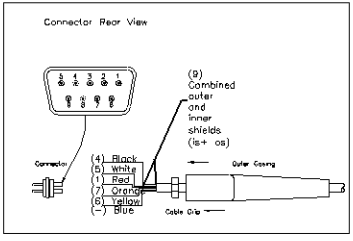
Drawn By	MFG&DB
Date	26/04/01
Checked By	
Date	
Revised By	

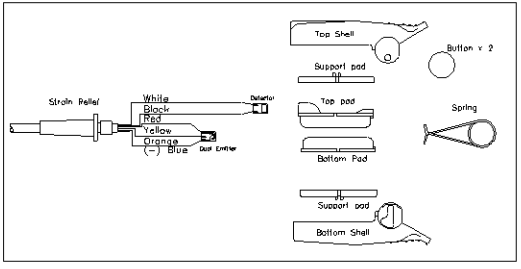


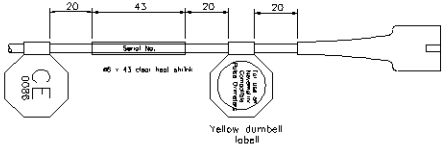
D-Type Male 9 Pin

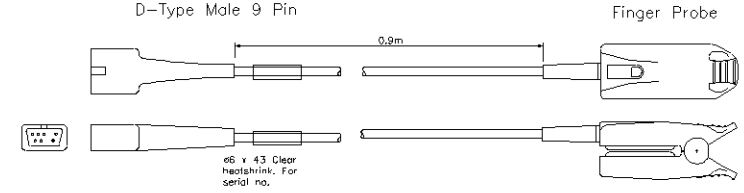
Finger Probe

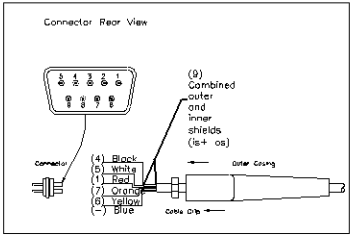


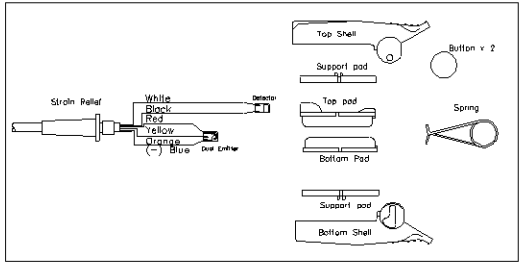





20
43
20
20
Serial No.
ø6 x 43 clear heat shrink
CE
0086
Yellow dumbell
label

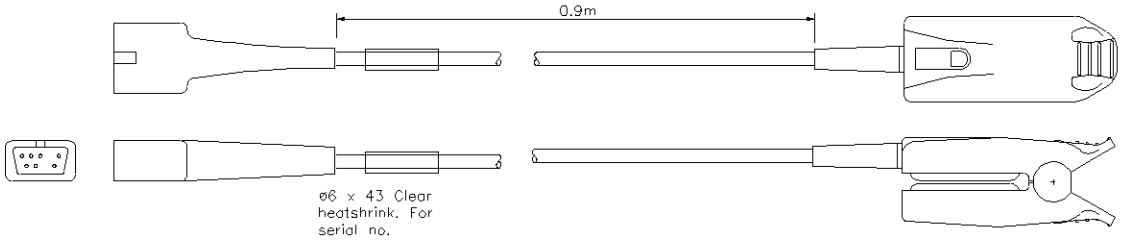

D-Type Male 9 Pin
Finger Probe
0.9m
ø6 x 43 Clear
heatshrink. For
serial no.

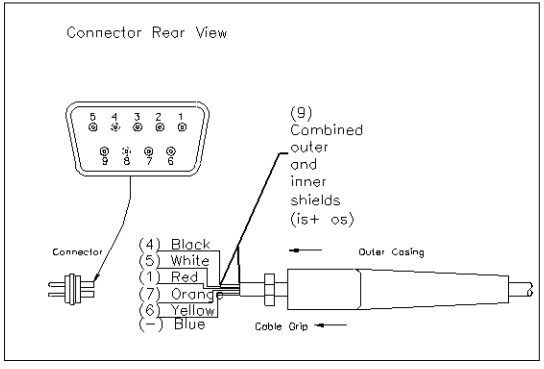

Connector Rear View
5 4 3 2 1
9 8 7 6
(9)
Combined
outer
and
inner
shields
(is+ os)
Connector
(4) Black
(5) White
(1) Red
(7) Orange
(6) Yellow
(-) Blue
Outer Casing
Cable Grip

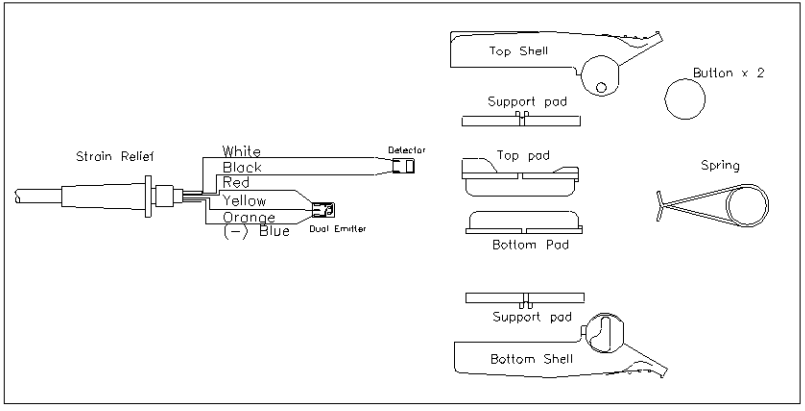

Top Shell
Button x 2
Support pad
Strain Relief
White
Black
Red
Yellow
Orange
(-) Blue
Detector
Dual Emitter
Top pad
Spring
Bottom Pad
Support pad
Bottom Shell

D-Type Male 9 Pin

Finger Probe







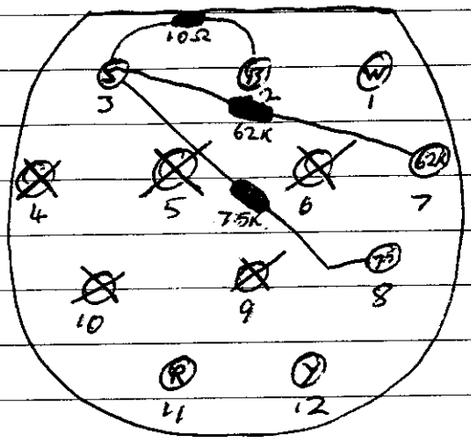
					Material :	Title	P885RA Novamatrix	Dim in	mm
								Tol	± 0.2
						Scale	Not To Scale	Drawn	J.Nirwan
REV	Date	N°	Drawn	Approv	Part No. 0018850	Date	30/01/02	Dwg No.	SPF-885

VIAMED Ltd.
15 Station Rd
Cross Hills, Keighley
West Yorkshire
BD20 7DT

P857RA (SPACELAB)

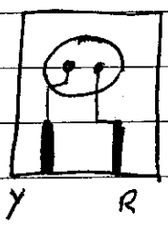
12' CABLE.

1 = WHITE
2 = BLACK - 10Ω RES.
3 = BOTH SHIELDS + ALL RES.
4 = N/C
5 = N/C
6 = N/C
7 = 62KΩ RES
8 = 7.5KΩ RES.

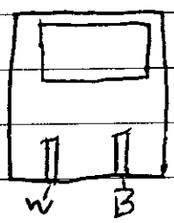


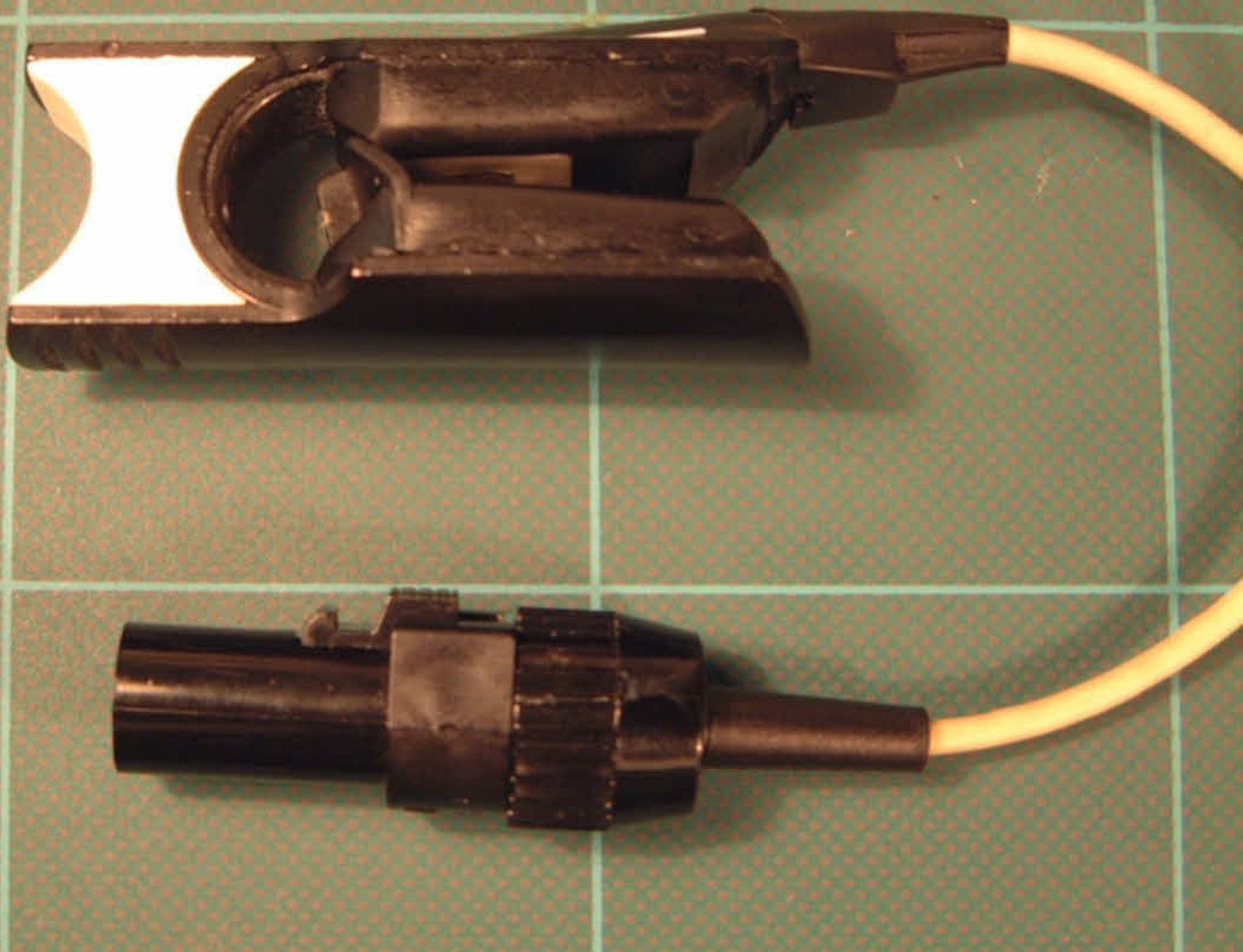
9 = N/C
10 = N/C
11 = RED
12 = YELLOW.

LED



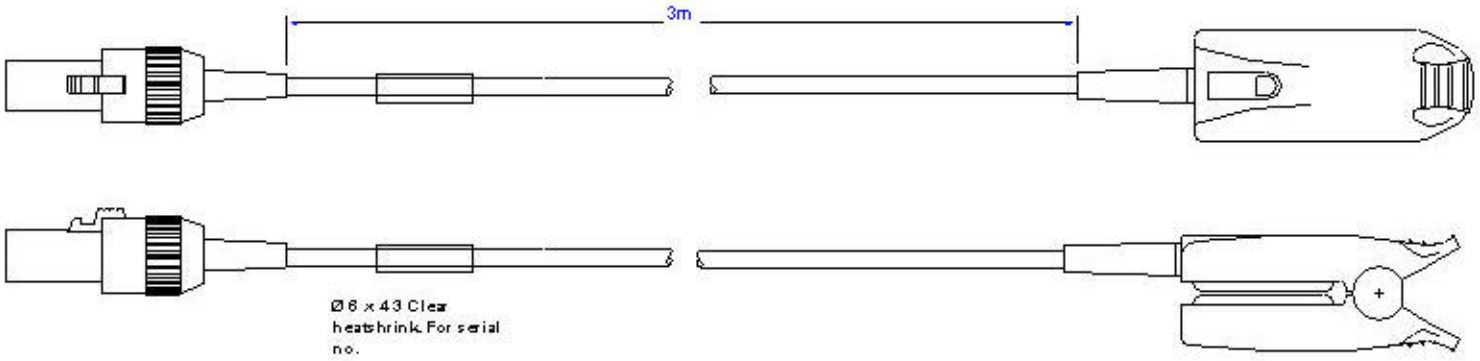
SENSOR.



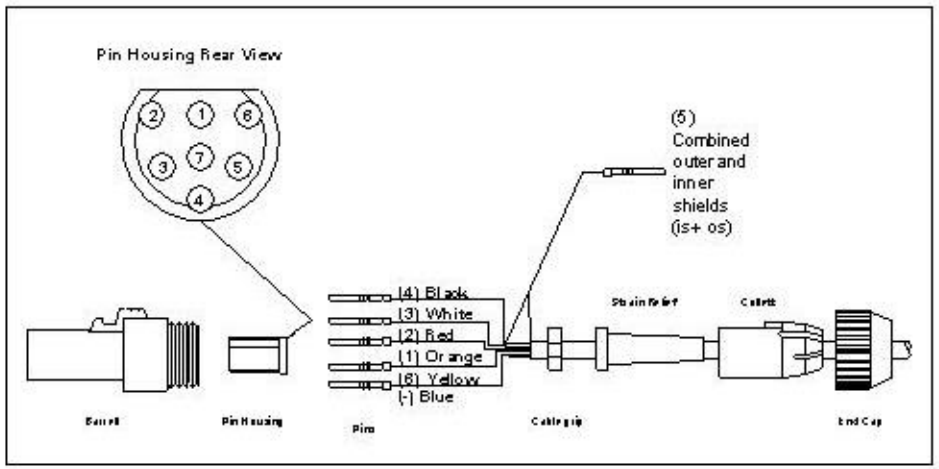


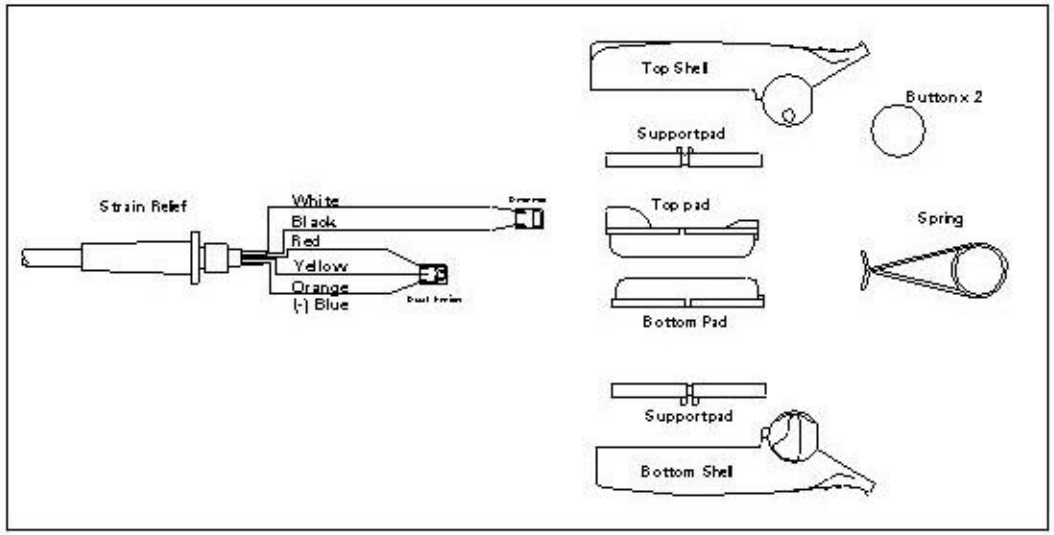
Hypertronics Male 7 Pin

Finger Probe



Enlarged front view





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								Tol	± 0.2
REV	Date	N°	Drawn	Approv	Part No. 0018750	Scale	Not To Scale	Drawn	J.Nirwan
						Date	30/01/02	Dwg No.	SPF-875

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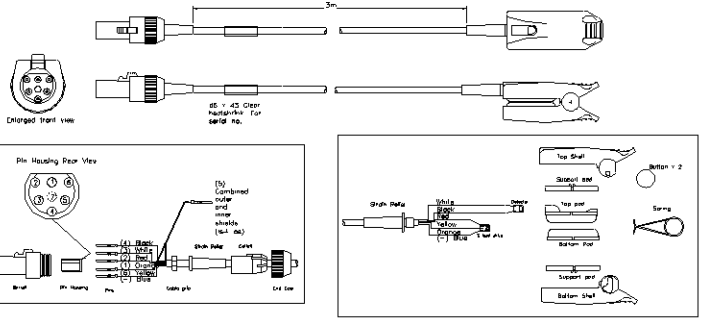
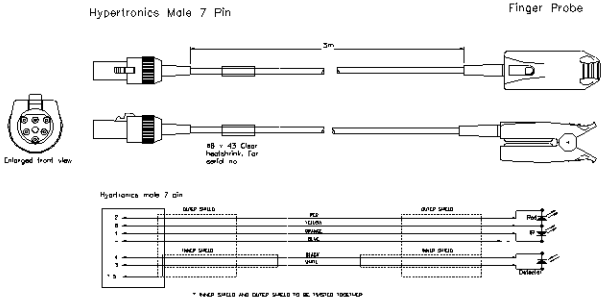
Hypertronics Male 7 Pin

Finger Probe



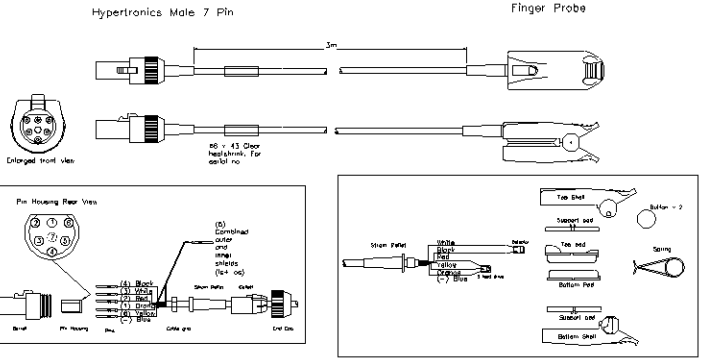
Hypertronics Male 7 Pin

Finger Probe



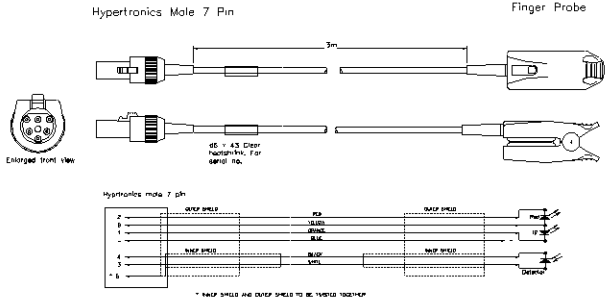
Hypertronics Male 7 Pin

Finger Probe



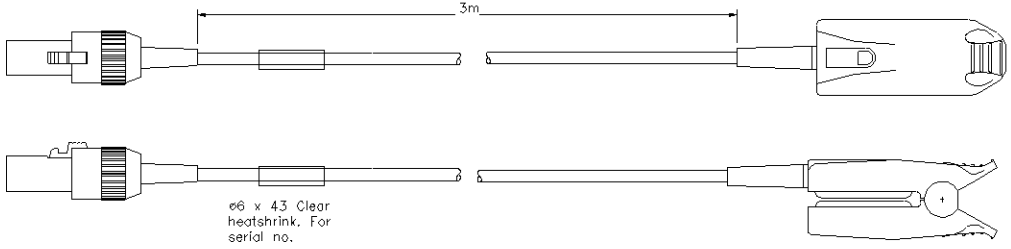
Hypertronics Male 7 Pin

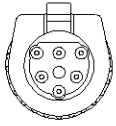
Finger Probe



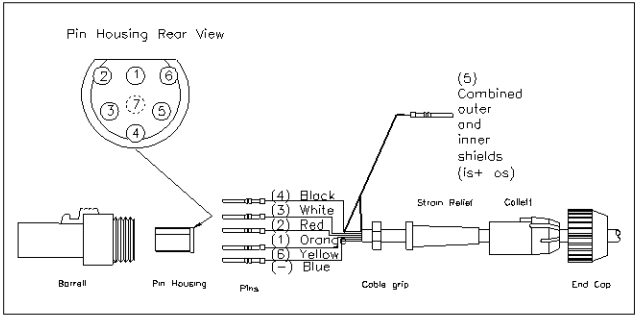
Hypertronics Male 7 Pin

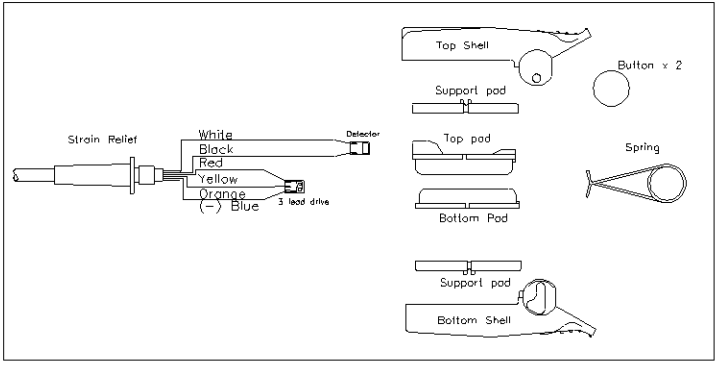
Finger Probe





Enlarged front view





					Material :
REV	Date	N°	Drawn	Approv	Part No. 0018750

Title	P875RA Novametrix		
		Dim in	mm
		Tol	± 0.2
Scale	Not To Scale	Drawn	J.Nirwan
Date	30/01/02	Dwg No.	SPF–875

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Cross Hills, Keighley
West Yorkshire
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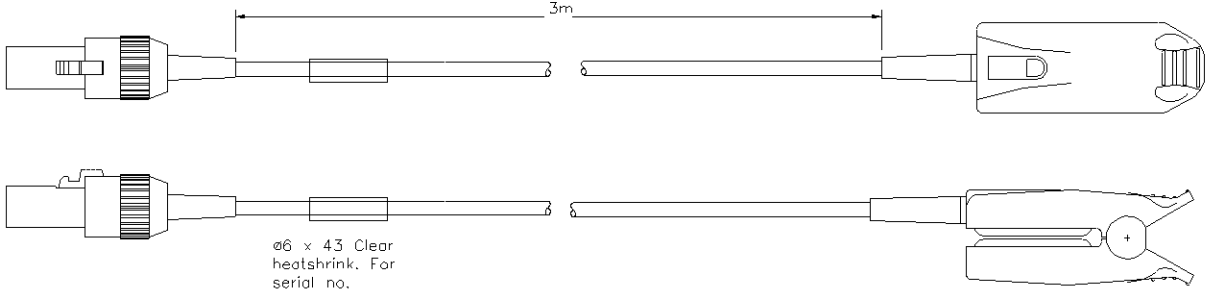
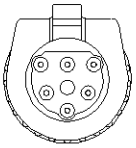
Hypertronics Male 7 Pin

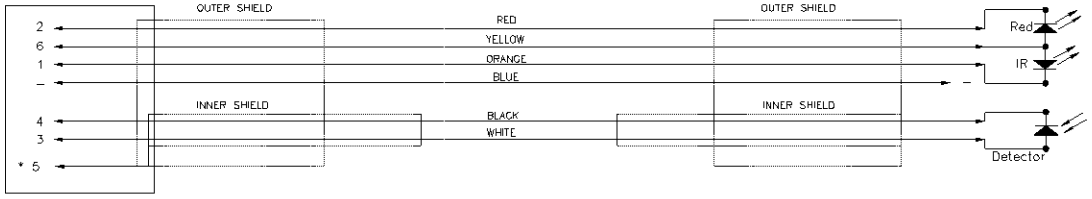
Finger Probe





Enlarged front view

Hyprtronics male 7 pin



* INNER SHIELD AND OUTER SHIELD TO BE TWISTED TOGETHER.

					Material :	Title	P875RA Novametrix	Dim in	mm
								Tol	± 0.2
						Scale	Not To Scale	Drawn	J.Nirwan
REV	Date	N°	Drawn	Approv	Part No. 0018750	Date	18/02/03	Dwg No.	SPF-875.1

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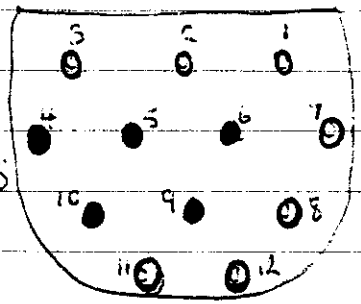
West Yorkshire
BD20 7DT

28/4/00 P P858 to P857 SPACELABS (test cable)

1/ take orange off, both shields together. Top of connector. black strain relief, cable grip



1/ white
2/ Black - 10Ω res
3/ Both shields + all 3 res
4/ N/C
5/ N/C
6/ N/C
7/ 62KΩ res
8/ 75KΩ res

7/
8/
9/ N/C
10/ N/C
11/ Red
12/ yellow

x Black on short leg of 10K

7 pins.

white, yellow, red.

15 DEC 1997

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: [redacted] P875RA

1.1 [redacted] Parts List P875RA

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-[redacted] P875-LED
10	Detector	1	MCI	MC-[redacted] P875-DET
	Cable Assembly Kit		MCI	MC-[redacted] P875-CAB
11	Cable	1	MCI	MC-[redacted] P875-111
12	Connector Strain Relief	1	MCI	MC-[redacted] P875-112
13	Back Nut	1	MCI	MC-[redacted] P875-113
14	Plastic Collet	1	MCI	MC-[redacted] P875-114
15	7 - pin insert (male)	1	MCI	MC-[redacted] P875-115
16	Shell	1	MCI	MC-[redacted] P875-116
17	Pins	7	MCI	MC-[redacted] P875-117
18	Probe Strain Relief	1	MCI	MC-[redacted] P875-118
19	Silicone (RTV)			
20	Glue			

MEDICAL CABLES™

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

1.2 [redacted] Repair Procedure P875 RA.

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 (item 11) at the probe strain relief (item 18) 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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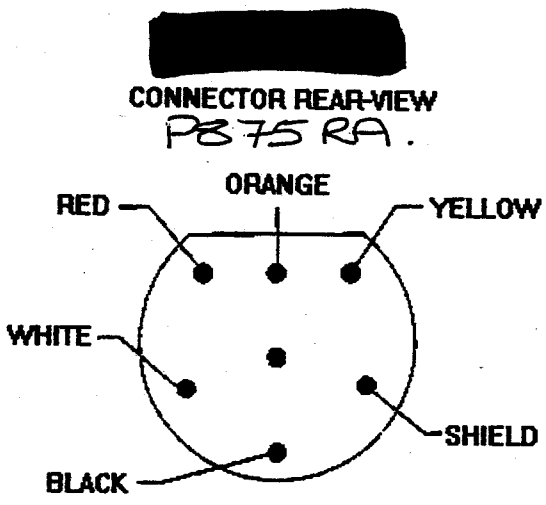
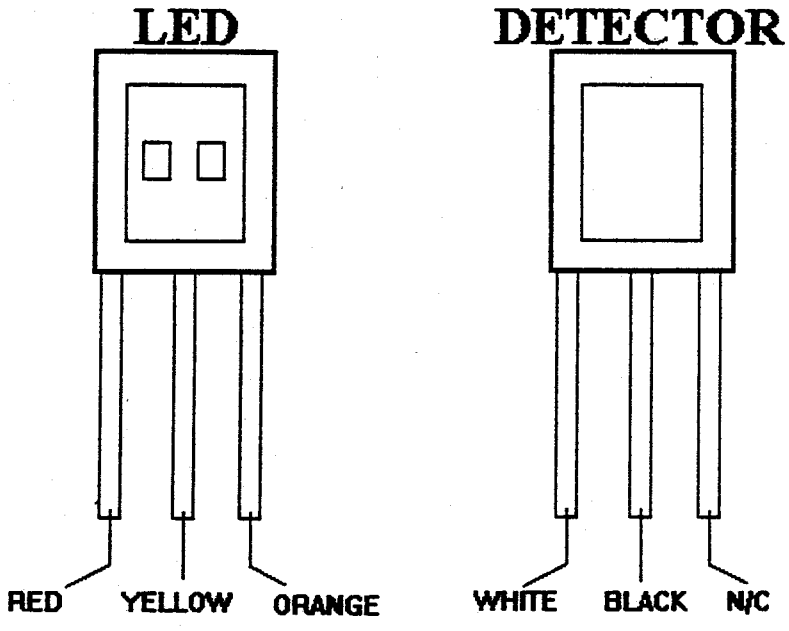
1.2.3 Probe Reassembly:

7. Replace cable. Attach back nut (item 13), plastic collet (item 14) and connector strain relief (item 12) onto cable. Attach wires (solder) onto pins (item 17). Solder main shield to pin. Place pins in insert (item 15) according to cable assembly drawing. Slide items 12, 14, and 15 into shell (item 16). Attach back nut (item 13) to shell.



8. Attach probe strain relief (item 18) to cable (item 11). Strip wires back. Connect wires (solder) to LED and Detector. Connect the red, yellow and orange wires to the Led terminals. Connect the black and white wires to the Detector terminals. Test continuity.



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[redacted] Finger Probe Repair continued P875RA

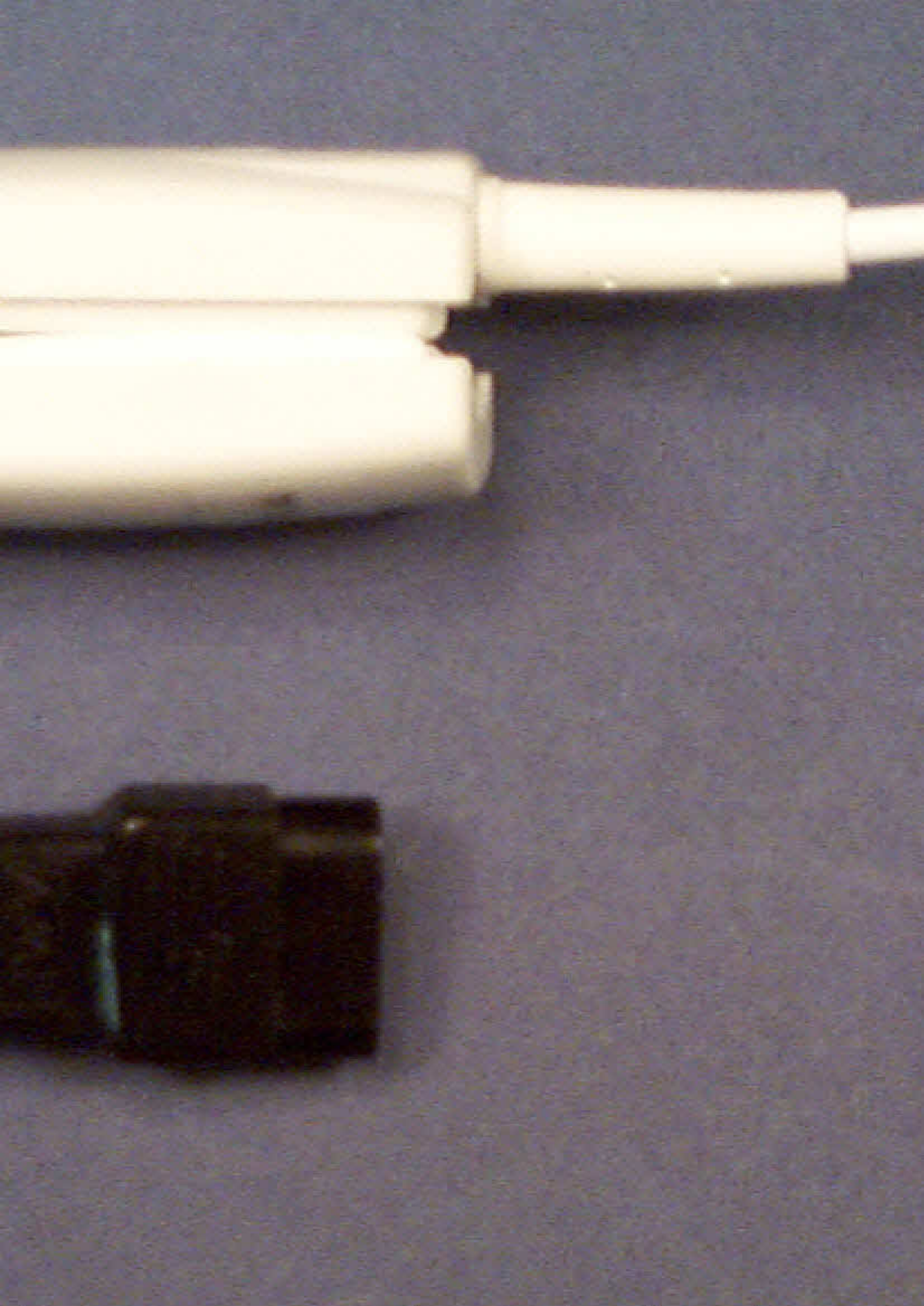
9. Inspect finger pads (item 5 & 6) for damage or cracks. Replace finger pads if damaged or cracked. Slide the LED into the top pad and silicone (item 19) into place. Slide the Detector into the bottom pad and silicone (item 19) into place. Let silicone dry.

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 (item 20). 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



Equipment type: Finger probe	Part Number:	
Batch Size		
Nos	**Viamed Part number**	**Description**
1	0010101	Viamed SpO2 finger probe service kit(black pads)
1	0010603	7 pin cable plug kit,black(includes connector/cable clamp/strain relief)
3m	0030513	SpO2 cable - version D (production)
30mm	0032331	Heatshrink tubing - clear, 6.0mm, 7m reel
50	0010186	Button (yellow) pack of 50

Assembly Clip

1. Prepare Clip end of cable as follows
   a. Attach strain relief "0010150," to relevant replacement cable, and glue in position.
   b. Strip back outer cable cover of exposed end 1mm from end of strain relief.
   c. Remove outer shield and paper, and cut off Kevlar fibres and any unused wires.
   d. Strip and tin relevant coloured wires (from red, yellow, blue, orange) to 13mm from end of cable cover. Strip and tin last 1mm of each wire.
   e. Cut inner white cable to 78mm from end of outer cable cover, strip last 8mm of inner cable cover, strip and tin last 1mm of black and white wires, cut off inner shield and discard
   f. Strip and tin ends of black and white wires.
2. Solder wires to components as per relevant diagram
3. Fit components into pads as follows
   a. Position components in drying rack.
   b. Place a small amount of flowable non-corrosive silicone sealant onto the face of the components.
   c. Place pads onto components, ensuring that both emitter and detector are central in pad windows. Also note that the silicone on the outside of the pad must run to the contour of the pad to make a smooth window - there should be no doming or sinking of the window. Any excess can be removed with a small screwdriver, also any deficit can be topped up with small amounts of silicone from a screwdriver tip - however these steps should be taken within 2 minutes of the pad being placed on the component, before the silicone has had time to become tacky, so that it is still flowing enough to ensure that the window will return to a smooth flat surface
   d. Leave pads to set for 24 hours.

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4. Assemble the clip as follows
   a. Glue white inner cable into channel in detector pad
   b. Fill around component with silicone
   c. Glue pad support onto back of detector pad.
   d. Glue pad support onto back of emitter pad.
   e. Glue white inner cable into channel in emitter pad.
   f. Fill around component with silicone
   g. Refit replacement springs "0010140," around pads.
   h. Push pads into position within clip, making sure that the pad support rim is securely underneath the pad retaining lugs - there are four retaining lugs for each pad. If any lugs are not holding the pad support securely, then add a drop of superglue to the relevant lug.
   i. Glue strain relief into position in clip body.

   j. Add labels as required.

Assembly Connector

5. a/ Check that all the relevant parts are in the connector kit - the kit should contain:
1 x backnut (black), 1 x collet (black), 1 x 7 pin hole insert (black), 1 x barrel (black), 6 pins,
1 x cable clamp (0030500), 1 x strain relief (from multipack 0010618).

b/ Add a 30mm length of heatshrink (0032331) to the cable.

c/ Add the backnut to the cable.

d/ Add the collet to the cable.

e/ Push the strain relief (from multipack 0010618) on to the cable, using isopropyl alcohol as a lubricant.

f/ Strip the outer cable cover back by 30mm, using the cable stripper (0060031).

g/ Unwind, but do not remove, the outer shield. Remove the paper layer, and the Kevlar strands, using flush cutter (0060020), cutting them flush to the end of the cable cover. Also remove the unused wires, using the flush cutter, flush to the end of the cable cover.

h/ Strip the inner cable cover back, using the cable stripper, as close to the end of the outer cable cover as possible. Unwind, but do not remove, the inner shield.

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i/ Twist together the outer and inner shields, and tin this between 12-18mm from the cable cover.

j/ Cut both of these twisted shields at 15mm from the outer cable cover using the flush cutter. Trim off any loose strands of shield flush to the cable cover.

k/ Cut the emitter and detector wires to 15mm from the outer cable cover. Strip and tin the last 2mm of each wire. Add the cable clamp (0030500) to the cable.

l/ Solder pins to both detector wires, all emitter wires, and the twisted shield.

m/ Fit the pins into the relevant pin holes as per the wiring diagram, ensuring they click into place.

n/ Clamp the cable clamp onto the cable, using the cable crimp tool (0010501), 2mm from the end of the outer cable cover. Slide the strain relief up so that it is flush to the cable clamp.

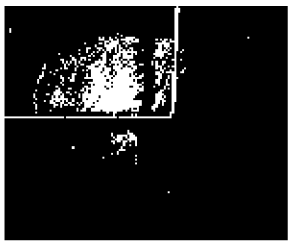
o/ Slide the collet up so that it is flush to the insert, then slide this into the barrel. Fasten the backnut to the barrel, and screw on until it is finger tight

Connector rear view:

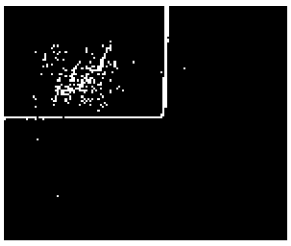
1. Orange
2. Red
3. White
4. Black
5. Main + inner shield
6. Yellow
7. No pin

Test using component tester and test box:

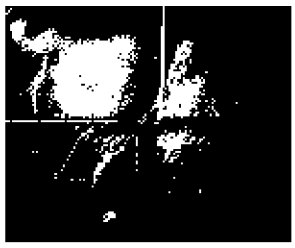
Position 1:Red emitter



Position 2:IR emitter



Position 3:Photo-diode



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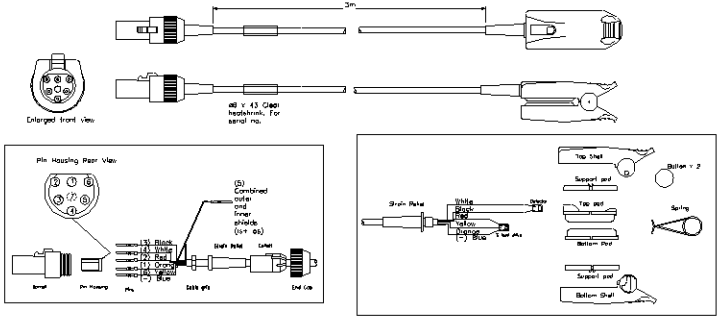
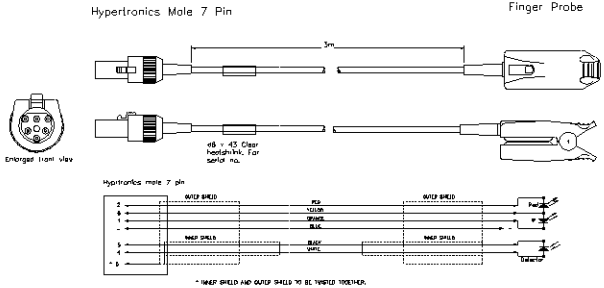
Hypertronics Male 7 Pin

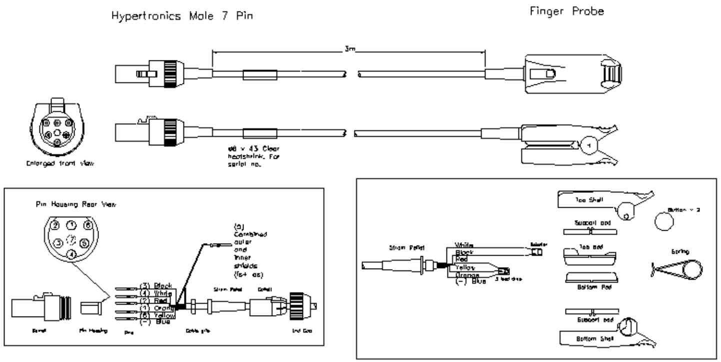
Finger Probe



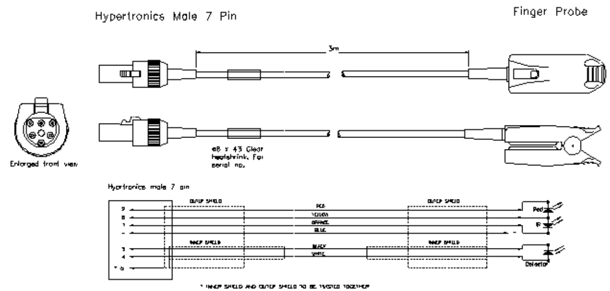
Hypertronics Male 7 Pin

Finger Probe





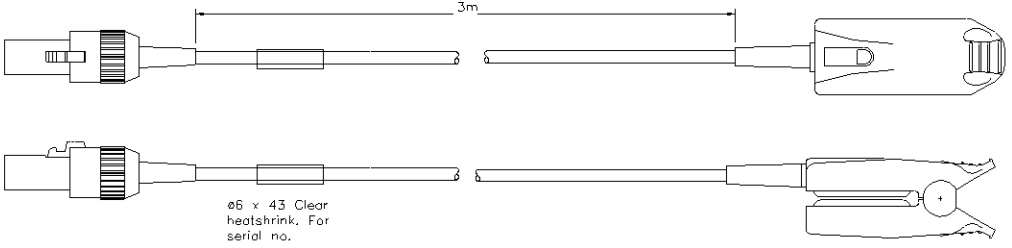
Hypertronics Male 7 Pin
Finger Probe
3m
Enlarged front view
ø8 x 43 Clear heatshrink. For serial no.
Pin Housing Rear View
(3) Black
(4) White
(2) Red
(1) Orange
(5) Yellow
(-) Blue
(ø) Combined outer and inner shields (fit as)
Strain Relief
White
Black
Red
Yellow
Orange
(-) Blue
Top Shell
Support pad
Top pad
Bottom Pad
Support pad
Bottom Shell
Spring

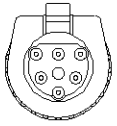


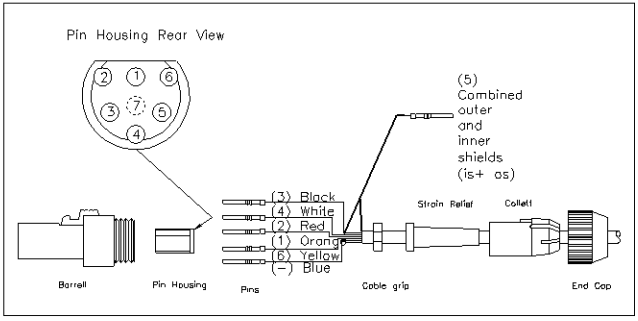
Hypertronics Male 7 Pin
Finger Probe
3m
Enlarged front view
ø8 x 43 Clear heatshrink. For serial no.
Hypertronics male 7 pin
Red
IR
Detector

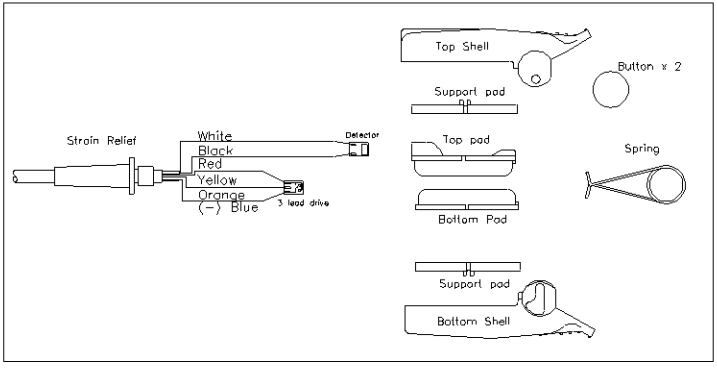
Hypertronics Male 7 Pin

Finger Probe




Enlarged front view





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								Tol	± 0.2
						Scale	Not To Scale	Drawn	J.Nirwan
REV	Date	N°	Drawn	Approv	Part No. 0018760	Date	30/01/02	Dwg No.	SPF–876

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West Yorkshire
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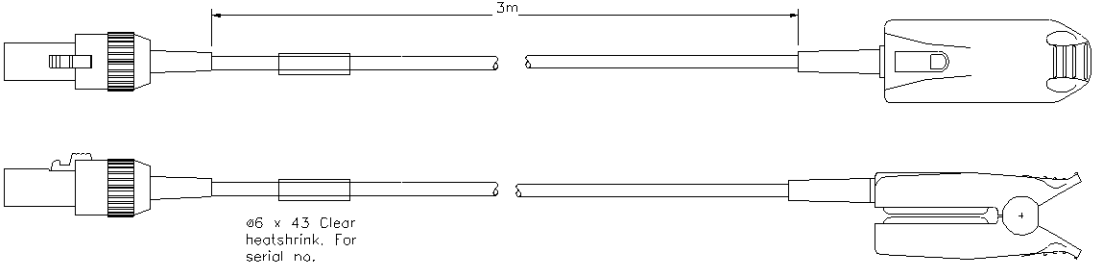
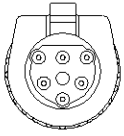
Hypertronics Male 7 Pin

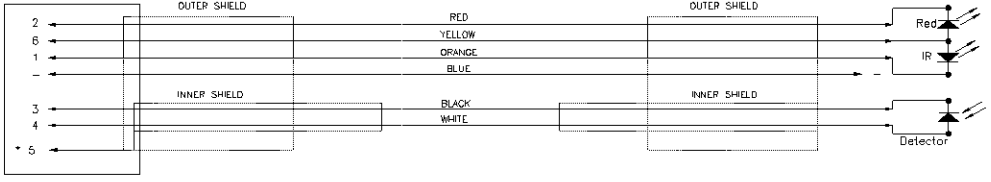
Finger Probe





Enlarged front view

Hyprtronics male 7 pin



* INNER SHIELD AND OUTER SHIELD TO BE TWISTED TOGETHER.

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								Tol	± 0.2
						Scale	Not To Scale	Drawn	J.Nirwan
REV	Date	N°	Drawn	Approv	Part No. 0018760	Date	24/02/03	Dwg No.	SPF-876.1

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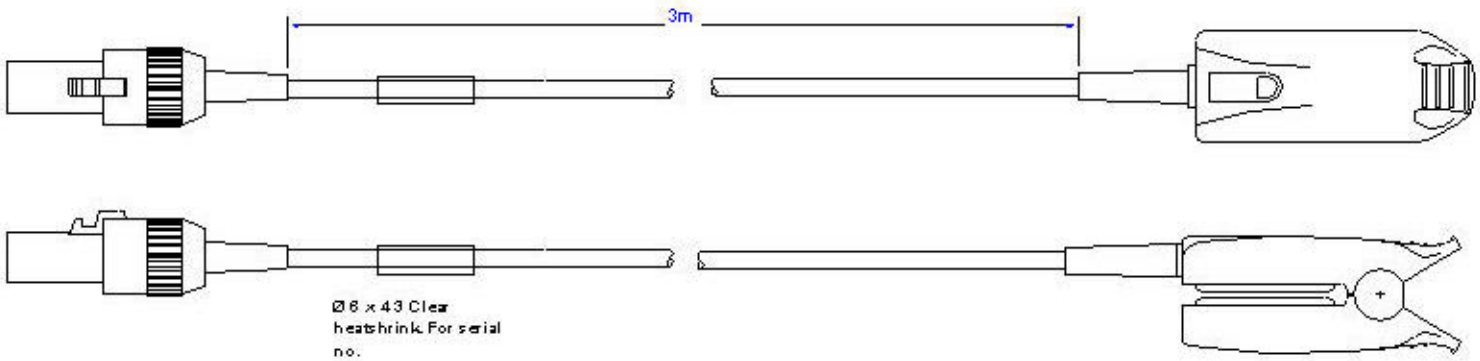
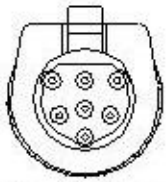
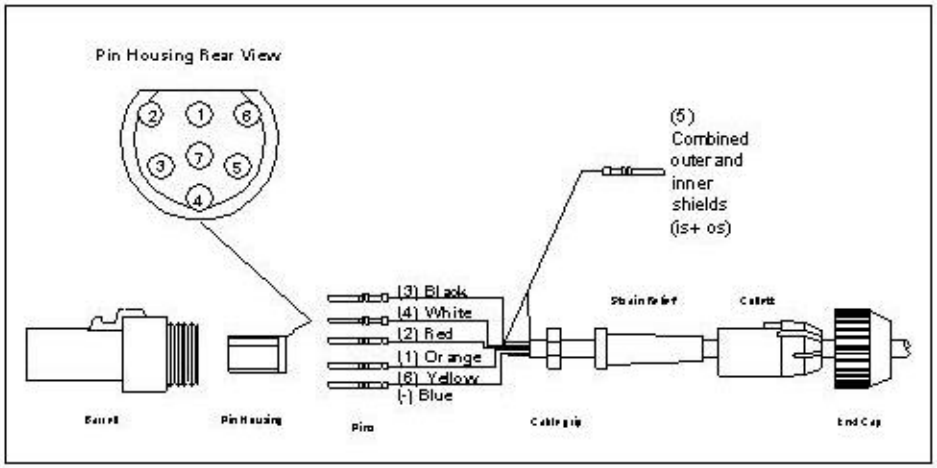
Hypertronics Male 7 Pin

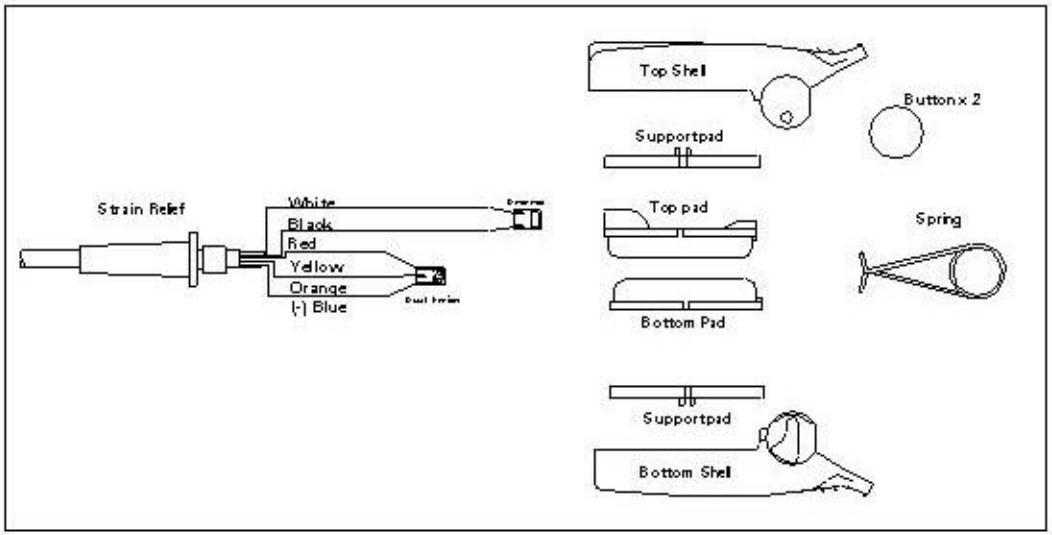
Finger Probe





Enlarged front view





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REV	Date	N°	Drawn	Approv	Part No. 0018760	Scale	Not To Scale	Drawn	J.Nirwan
						Date	30/01/02	Dwg No.	SPF-876

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