ACCUFUSION (PTY) LTD

COPY NO : 2

ISSUE : 1
APRIL 1998

SPECIFICATION OF MATERIALS

CONTROLLED

AUTHORISED BY : [signature]
DESIGNATION : Director Operations
DATE : April 1998

Attached is the Bill of Materials for the TED 191 Portable Oxygen Monitor - Part Number TM10A0000193.

Further specifications on the various components used in assembly are detailed in the Purchasing File for each component, located in the Purchasing Department. These records are available for review.

Full detail Exploded Bill of Material
Item: TM 10A0000193 Description: TED 191 OXYGEN MONITOR PACKED BOM Yield: 1.00

Item or Sub-Item (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 (level))	Description/Reference	Qty/Cost	Unit	Days	Auto Build
TM 79C0000120	COVERING BOX LABEL	1.00 0.3500	EA	0	
~~TM 79C0000300~~	~~CE LABEL FOR PACKING~~	~~1.00~~ 0.0000	~~EA~~	0	
TM 79E0000010	PLASTIC BAG	1.00 0.0500	EA	0	
TM 79C0000230	SERIAL NUMBER ON PACKING BOX	1.00 0.1000	EA	0	
TM 79F0000110	TELEDYNE WARRANTY CARD	1.00 0.0200	EA	0	
TM 79F0000180	PACKING LIST LABEL	1.00 0.1000	EA	0	
TM 79E0000020	CARTON BOX	1.00 1.7100	EA	0	
TM 79E0000030	INSERTS FOR ACCUROX BOX	1.00 28.0000	EA	0	
TM 79F0000100	TELEDYNE OPERATORS MANUAL	1.00 13.8900	EA	0	
TM LABOUR	LABOUR PER MINUTE	5.00 2.3000	MIN	0	
TM 10B0000193	TED 191 OXYGEN MONITOR N/P	1.00 609.6151	EA	0	Never
~~TM 79C0000310~~	~~C E LABEL~~	~~1.00~~ 2.3100	~~EA~~	0	
TM 24C0000170	M3X8MM CHD S/S SCREW	2.00 0.2200	EA	0	
15B0000111	BOX TOP ASSY SCREENED ACCUROX	1.00 25.5057	EA	0	Never
TM 22C0000670	ACCUROX BOX TOP SCRN GREY	1.00 11.9883	EA	0	Never
TM 22C0000440	ACCUROX BOX TOP GREY	1.00 3.0000	EA	0	
TM 0100000090	SCREENING OF O2 MONITOR BOX T	1.00 9.0000	EA	0	
TM 79C0000080	CALIBRATION INSTRUCTION DECAL	1.00 1.2600	EA	0	
TM 24-0000040	M3 TREADED INSETS PLK-B-M3	2.00 0.3787	EA	0	
TM LABOUR	LABOUR PER MINUTE	5.00 2.3000	MIN	0	
TM 36C0000020	1.5V SIZE AA ALKALINE BATTERY	4.00 1.6900	EA	0	
TM 79C0000220	SERIAL NUMBER LOGO TELEDYNE	1.00 2.0200	EA	0	
TM 16B0000122	BOX BOTTOM ASSEMBLY TELEDYNE	1.00 56.1611	EA	0	Never
TM 22C0000680	ACCUROX BOX BOTTOM SCRN GREY	1.00 12.0000	EA	0	Never
TM 22C0000450	ACCUROX BOX BOTTOM GREY	1.00 3.0000	EA	0	
TM 0100000100	SCREENING OF O2 MONITOR BOX B	1.00 9.0000	EA	0	
M 76-0000410	CLEAR BUMPON 8X3MM SJ5302 3M	4.00 0.0000	EA	0	
TM 22D0000690	1/4 BY 20 UNC THREAD INSERT	1.00 3.1000	EA	0	
TM 21B0000031	BUZZER ASSEMBLY	1.00 34.1611	EA	0	Never
TM 39-0000020	SONITRON SMA-17 PIEZO BUZZER	1.00 12.8800	EA	0	
TM 40-0000570	6471-021 0.1KK HOUSING 2 WAY	1.00 0.4000	EA	0	
TM 26D0000020	HEATSHRINK 2.4MM ID	35.00 0.0100	MM	0	
TM 25G0000060	PVC STRANDED WIRE - BLACK	80.00 0.0022	MM	0	
TM 25G0000030	PVC STRANDED WIRE - RED	80.00 0.0022	MM	0	
TM 79D0000020	DOUBLE COATED FOAM TAPE	2.00 6.5500	MM	0	
TM 40-0000560	0.1 KK TERMINAL 4809-TL	2.00 0.0900	EA	0	
TM LABOUR	LABOUR PER MINUTE	3.00 2.3000	MIN	0	

Full detail Exploded Bill of Material
Item: TM 10A0000193 Description: TED 191 OXYGEN MONITOR PACKED BOM Yield: 1.00

Item or Sub-Item 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 (level)	Description/Reference	Qty/Cost	Unit	Days	Auto Build
TM LABOUR	LABOUR PER MINUTE	3.00 2.3000	MIN	0	
TM 16B0000141	REAR PANEL ASSY TELEDYNE	1.00 110.5819	EA	0	Never
TM 16B0000440	GREY REAR PANEL +PCB SCREENED	1.00 29.4800	EA	0	Never
TM 0100000070	SCREENING OF REAR PANEL	1.00 6.0000	EA	0	
TM 16B0000430	GREY REAR PANEL + PCB	1.00 16.5600	EA	0	Never
TM 22C0000470	ACCUROX REAR PANEL GREY	1.00 2.0000	EA	0	
TM 20B0000200	BATTERY BOX PCB ASSEMBLY	1.00 12.2800	EA	0	Never
TM 22C0000310	CONICAL COMPRESSION SPRING	2.00 0.6400	EA	0	
TM 22C0000640	DIMPLED BATTERY CONTACT	2.00 0.0500	EA	0	
TM 20-0000200	BATTERY BOX PCB	1.00 4.0000	EA	0	
TM LABOUR	LABOUR PER MINUTE	3.00 2.3000	MIN	0	
TM LABOUR	LABOUR PER MINUTE	1.00 2.3000	MIN	0	
TM LABOUR	LABOUR PER MINUTE	3.00 2.3000	MIN	0	
TM 22C0000480	ACCUROX BATTERY DRAWER GREY	1.00 1.0000	EA	0	
TM 20B0000190	BATTERY DRAWER PCB ASSEMBLY	1.00 14.5900	EA	0	Never
TM 20-0000190	BATTERY DRAWER PCB	1.00 3.0500	EA	0	
TM 22C0000310	CONICAL COMPRESSION SPRING	2.00 0.6400	EA	0	
TM 79C0000240	BATTERY DRAWER LABEL	1.00 0.9600	EA	0	
TM 22C0000640	DIMPLED BATTERY CONTACT	2.00 0.0500	EA	0	
TM LABOUR	LABOUR PER MINUTE	4.00 2.3000	MIN	0	
TM 79D0000030	48MM WIDE ALUMINIUM FOIL TAPE	100.00 0.0014	MM	0	
TM 40-0000570	6471-021 0.1KK HOUSING 2 WAY	1.00 0.4000	EA	0	
TM 40-0000560	0.1 KK TERMINAL 4809-TL	2.00 0.0900	EA	0	
TM 79C0000240	BATTERY DRAWER LABEL	1.00 0.9600	EA	0	
TM 25G0000030	PVC STRANDED WIRE - RED	300.00 0.0022	MM	0	
TM 25G0000060	PVC STRANDED WIRE - BLACK	300.00 0.0022	MM	0	
TM 21B0000181	SENSOR HARNESS ASSY TELE	1.00 44.1122	EA	0	Never
TM 20-0000180	EMI FILTER PCB	1.00 1.0000	EA	0	
TM 80C0000020	EMI FILTER	3.00 0.8000	EA	0	
TM 40-0000550	6471-051 0.1KK HOUSING 5 WAY	1.00 0.4797	EA	0	
TM 40-0000340	MOLEX MODULAR JACK TYPE 623K	1.00 5.1945	EA	0	
TM 25L0000070	40MM ID/9.5MM OD FLEXIBLE	1.00 1.1900	EA	0	
TM 40-0000330	RJ11/RJ12 TO RJ9 INSERT	1.00 0.3500	EA	0	
TM 25G0000050	PVC STRANDED WIRE - YELLOW	180.00 0.0022	MM	0	
TM 25G0000040	PVC STRANDED WIRE - GREEN	180.00 0.0022	MM	0	
TM 25G0000030	PVC STRANDED WIRE - RED	180.00 0.0022	MM	0	
TM 25G0000110	1.25MM DIA PVC WIRE ORANGE	190.00 0.0210	MM	0	

Full detail Exploded Bill of Material

Item: TM 10A0000193 Description: TED 191 OXYGEN MONITOR PACKED BOM Yield: 1.00

Item or Sub-Item (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 (level))	Description/Reference	Qty/Cost	Unit	Days	Auto Build
TM 25G0000060	PVC STRANDED WIRE - BLACK	270.00 0.0022	MM	0	
TM 22C0000211	H.F SHEILD (FOR ACCURX SENSOR)	1.00 11.3560	EA	0	
TM 40-0000560	0.1 KK TERMINAL 4809-TL	3.00 0.0900	EA	0	
TM LABOUR	LABOUR PER MINUTE	7.00 2.3000	MIN	0	
TM LABOUR	LABOUR PER MINUTE	8.00 2.3000	MIN	0	
TM LABOUR	LABOUR PER MINUTE	5.00 2.3000	MIN	0	
TM 16B0000152	ELECTRONIC UNIT ASSY	1.00 394.5364	EA	0	Never
TM 41-0000010	KNOB 14.5MM 021-3425	2.00 5.2000	EA	0	
TM 41C0000030	CAP BLACK TO FIT 14.5MM KNOB	2.00 1.0600	EA	0	
TM 24C0000070	M2X8MM CHD S/S	4.00 0.1316	EA	0	
TM 24F0000030	M2 FLAT WASHER S/S	4.00 0.0515	EA	0	
TM 24F0000110	M2 S/S SPRING WASHER	4.00 0.0452	EA	0	
TM 16B0000051	MUTE SWITCH ASSEMBLY	1.00 43.5351	EA	0	Never
TM 67C0000010	RED LENS TRANSPARENT	1.00 3.3500	EA	0	
TM 54D0000010	LED TYPE HLMP-1340	1.00 1.3100	EA	0	
TM 66G0000010	PUSH BUTTON SNAP ACTION	1.00 24.2000	EA	0	
TM 25G0000020	PVC STRANDED WIRE - BLUE	80.00 0.0022	MM	0	
TM 25G0000030	PVC STRANDED WIRE - RED	80.00 0.0022	MM	0	
TM 25G0000050	PVC STRANDED WIRE - YELLOW	80.00 0.0022	MM	0	
TM 26D0000020	HEATSHRINK 2.4MM ID	30.00 0.0100	MM	0	
TM 22D0000021	NYLON SPACER	1.00 1.6000	EA	0	
TM 40-0000380	6471-031 0.1KK HOUSING 3 WAY	1.00 0.4779	EA	0	
TM 40-0000560	0.1 KK TERMINAL 4809-TL	3.00 0.0900	EA	0	
TM LABOUR	LABOUR PER MINUTE	5.00 2.3000	MIN	0	
TM 20B0000172	ACCUROX SINGLE PCB ASSY	1.00 204.0860	EA	0	Never
TM 20-0000172	PRINTED CIRCUIT BOARD	1.00 23.2438	EA	0	
TM 43D0000030	BC 327 PNP TRANSISTOR Q1	1.00 0.2487	EA	0	
TM 62D0000460	18K 0.25 WATT 1% METAL FILM R37	1.00 0.0427	EA	0	
TM 45C0000230	MC 33171 OP AMP U1U3	2.00 4.0985	EA	0	
TM 45C0000250	MC 33174 OP AMP U2U6	2.00 5.2356	EA	0	
TM 47C0000030	LM 385Z-1.2 VOLTAGE REFERENCE D1	1.00 3.1191	EA	0	
TM 45E0000010	LOW POWER 3.5 DIGIT A/D U4	1.00 22.5951	EA	0	
TM 60C0000010	3.5 DIGIT LCD LCD1	1.00 16.2900	EA	0	
TM 45D0000190	IC 4071 QUAD 2 INPUT OR GATE U7	1.00 1.0537	EA	0	
TM 45D0000200	IC 4013 DUAL 'D'DUAL FLIP FLOP U8	1.00 1.1336	EA	0	
TM 45D0000210	IC 4020 14 STAGE RIPPLE BINARY U9	1.00 1.6059	EA	0	
TM 45D0000220	IC 4081 QUAD 2 INPUT 'AND' U10	1.00 1.0000	EA	0	

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 (level) Item or Sub-Item	Description/Reference	Qty/Cost	Unit	Days	Auto Build
TM 45D0000230	IC 4030 QUAD 2 INPUT EXCLUSIVE U5	1.00 1.2200	EA	0	
TM 43C0000060	BC 337 'NPN' SMALL SIGNAL Q2Q3	2.00 0.1877	EA	0	
TM 46C0000010	1N4148 SMALL SIGNAL DIODE D2D3	2.00 0.0600	EA	0	
TM 47C0000040	LM 385Z-2.5V VOLTAGE REFERANCE D4	1.00 3.7504	EA	0	
TM 46E0000030	9.1V ZENER DIODE 500MW D5	1.00 0.1300	EA	0	
TM 58D0000040	INF METALLIZED POLYESTER C9	1.00 0.3400	EA	0	
TM 58E0000020	WIMA MKC2 0.1UF 63Vdc LEAD C1C2C7	0.00 1.0201	EA	0	
TM 58E0000020	WIMA MKC2 0.1UF 63Vdc LEAD C8C13	0.00 1.0201	EA	0	
TM 58E0000020	WIMA MKC2 0.1UF 63Vdc LEAD C14C15	0.00 1.0201	EA	0	
TM 58E0000020	WIMA MKC2 0.1UF 63Vdc LEAD C16C17	0.00 1.0201	EA	0	
TM 58E0000020	WIMA MKC2 0.1UF 63Vdc LEAD C23	0.00 1.0201	EA	0	
TM 58E0000020	WIMA MKC2 0.1UF 63Vdc LEAD C18C19	12.00 1.0201	EA	0	
TM 58E0000040	0.47 MFD 63V DC 5MM PCM WIMA C10C4	2.00 2.3000	EA	0	
TM 58J0000100	22UF16V RADIAL ELECTROLYTIC C6	1.00 0.1326	EA	0	
TM 58L0000050	47PF DISC CERAMIC CAP 2.5MM C5C11	0.00 0.1025	EA	0	
TM 58L0000050	47PF DISC CERAMIC CAP 2.5MM C12C20	4.00 0.1025	EA	0	
TM 58E0000030	0.047MFD MKC2 POLYCARBONATE C3	1.00 0.9800	EA	0	
TM 70G0000020	0.125A AMP PICOFUSE F1	1.00 1.5000	EA	0	
TM 62D0000440	51K 0.250 WATT 1% METAL FILM R3	1.00 0.0400	EA	0	
TM 62D0000450	750K 0.250 WATT 1% METAL FILM R2	1.00 0.0400	EA	0	
TM 62D0000010	27K 0.250 WATT 1% PRECISION R5	1.00 0.0355	EA	0	
TM 62D0000430	30K 0.250 WATT 1% METAL FILM R6R8	2.00 0.0400	EA	0	
TM 62D0000290	120K 0.250 WATT 1% METAL FILM R21	1.00 0.0290	EA	0	
TM 62D0000390	100K 0.250 WATT 1% METAL FILM R12R13	0.00 0.0400	EA	0	
TM 62D0000390	100K 0.250 WATT 1% METAL FILM R16R19	0.00 0.0400	EA	0	
TM 62D0000390	100K 0.250 WATT 1% METAL FILM R24R44	0.00 0.0400	EA	0	
TM 62D0000390	100K 0.250 WATT 1% METAL FILM R45R50	0.00 0.0400	EA	0	
TM 62D0000390	100K 0.250 WATT 1% METAL FILM R51R52	0.00 0.0400	EA	0	
TM 62D0000390	100K 0.250 WATT 1% METAL FILM R27R31	0.00 0.0400	EA	0	
TM 62D0000390	100K 0.250 WATT 1% METAL FILM R26N/F	12.00 0.0400	EA	0	
TM 62D0000370	1M 0.250 WATT 1% METAL FILM R17R30	0.00 0.0290	EA	0	
TM 62D0000370	1M 0.250 WATT 1% METAL FILM R42	3.00 0.0290	EA	0	
TM 62D0000320	220K 0.250 WATT 1% METAL FILM R14R22	2.00 0.0353	EA	0	
TM 62D0000140	12K 0.250 WATT 1% METAL FILM R4	1.00 0.0371	EA	0	
TM 62D0000380	10K 0.250 WATT 1% METAL FILM R9	1.00 0.0329	EA	0	
TM 62D0000240	470K 0.250 WATT 1% METAL FILM R18	1.00 0.0412	EA	0	
TM 62D0000200	1K 0.250 WATT 1% METAL FILM R29R34	0.00 0.0400	EA	0	

Full detail Exploded Bill of Material
Item: TM 10A0000193 Description: TED 191 OXYGEN MONITOR PACKED BOM Yield. 1.00

Item or Sub-Item (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 (level))	Description/Reference	Qty/Cost	Unit	Days	Auto Build
TM 62D0000200	1K 0.250 WATT 1% METAL FILM R35R38	0.00 0.0400	EA	0	
TM 62D0000200	1K 0.250 WATT 1% METAL FILM R39R40	0.00 0.0400	EA	0	
TM 62D0000200	1K 0.250 WATT 1% METAL FILM R41R46	0.00 0.0400	EA	0	
TM 62D0000200	1K 0.250 WATT 1% METAL FILM R49	0.00 0.0400	EA	0	
TM 62D0000250	5K6 0.250 WATT 1% METAL FILM R1	1.00 0.0440	EA	0	
TM 62D0000220	47K 0.250 WATT 1% METAL FILM R11	1.00 0.0406	EA	0	
TM 62D0000150	180K 0.250 WATT 1% METAL FILM R20	1.00 0.0290	EA	0	
TM 62D0000160	2K2 0.250 WATT 1% METAL FILM R25	1.00 0.0325	EA	0	
TM 62D0000040	33K 0.250 WATT 1% METAL FILM R23	1.00 0.0400	EA	0	
TM 62D0000120	22K 0.250 WATT 1% METAL FILM R36	1.00 0.0290	EA	0	
TM 62D0000110	10M 0.250 WATT 1% METAL FILM R43	1.00 0.0356	EA	0	
TM 62D0000230	4K7 0.250 WATT 1% METAL FILM R15R47	2.00 0.0357	EA	0	
TM 62D0000050	330K 0.250 WATT 1% METAL FILM R28	1.00 0.0400	EA	0	
TM 40-0000190	5 PIN HEADER STRAIGHT J5N/F	0.00 0.6667	EA	0	
TM 40-0000190	5 PIN HEADER STRAIGHT J1	1.00 0.6667	EA	0	
TM 40-0000180	4 PIN HEADER STRAIGHT J7N/F	0.00 0.3491	EA	0	
TM 40-0000170	3 PIN HEADER STRAIGHT J4J8	2.00 0.5296	EA	0	
TM 40-0000160	2 PIN HEADER STRAIGHT J2J3J6	3.00 0.3975	EA	0	
TM 40C0000010	40 PIN IC TULIP IC U4	1.00 3.6500	EA	0	
TM 56F0000050	10K TRIMPOT SIDE ADJUST P2P5	2.00 2.7476	EA	0	
TM 56F0000060	100K TRIMPOT SIDE ADJUST P6P7	2.00 3.0104	EA	0	
TM 82C0000010	PRODUCTION TAGS FOR PCB	1.00 0.2000	EA	0	
TM 58E0000050	0.47 MFD MKS02 WIMA CAP 2.5MM C21C22	2.00 1.7768	EA	0	
TM 62D0000360	82K 0.250 WATT 1% METAL FILM R7	1.00 0.0331	EA	0	
TM 62D0000170	150K 0.250 WATT 1% METAL FILM R10	1.00 0.0350	EA	0	
TM 40T0000020	CONTACT STRIP AW127-20/Z DISS	2.00 2.1543	EA	0	
TM 55C0000020	JOB 100K AZ POTENTIOMETER P3P4	2.00 7.1300	EA	0	
TM LABOUR	LABOUR PER MINUTE	20.49 2.3000	MIN	0	
TM 16B0000132	FRONT PANEL ASSY TELEDYNE	1.00 115.0821	EA	0	Never
TM 22C0000650	SCREENED FRONT PANEL GREY	1.00 7.0000	EA	0	Never
TM 22C0000460	ACCUROX FRONT PANEL GREY	1.00 2.0000	EA	0	
TM 0100000110	SCREENING OF FRONT ACCUROX BOX	1.00 5.0000	EA	0	
TM 24E0000040	ROUND NUT M10 X 0.75	1.00 2.0300	EA	0	
TM 79G0000060	TELEDYNE FASCIA ACCUROX	1.00 8.9700	EA	0	
TM 41-0000040	LOCKABLE KNOB	1.00 64.4510	EA	0	
TM 24-0000050	M2 TREADED INSERTS PLK-B-M2	4.00 0.5049	EA	0	
TM 21B0000012	ROCKER SWITCH ASSEMBLY	1.00 12.9230	EA	0	Never

Full detail Exploded Bill of Material

Item: TM 10A0000193 Description: TED 191 OXYGEN MONITOR PACKED BOM Yield: 1.00

Item or Sub-Item (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 (level))	Description/Reference	Qty/Cost	Unit	Days	Auto Build
TM 66L0000010	EN 865/19011-1102 SLIM LINE	1.00 4.5600	EA	0	
TM 26D0000030	HEATSHRINK 4.8MM ID	30.00 0.0100	MM	0	
TM 40-0000570	6471-021 0.1KK HOUSING 2 WAY	1.00 0.4000	EA	0	
TM 40-0000560	0.1 KK TERMINAL 4809-TL	2.00 0.0900	EA	0	
TM 25G0000030	PVC STRANDED WIRE - RED	220.00 0.0022	MM	0	
TM 26D0000010	3.2MM HEATSHRINK	10.00 0.0100	MM	0	
TM LABOUR	LABOUR PER MINUTE	3.00 2.3000	MIN	0	
TM 16B0000211	CALIBRATION POT ASSEMBLY	1.00 10.7885	EA	0	Never
TM 55L0000080	MACHINED 55L0000070 SHORTER	1.00 4.1000	EA	0	Never
TM 55L0000070	100K 6MM DIAMETER SHAFT 36MM	1.00 4.0000	EA	0	
TM 0100000020	MACHINING OF POT 55L0000070	1.00 0.1000	EA	0	
TM 40-0000560	0.1 KK TERMINAL 4809-TL	3.00 0.0900	EA	0	
TM 40-0000380	6471-031 0.1KK HOUSING 3 WAY	1.00 0.4779	EA	0	
TM 25G0000030	PVC STRANDED WIRE - RED	120.00 0.0022	MM	0	
TM 25G0000050	PVC STRANDED WIRE - YELLOW	120.00 0.0022	MM	0	
TM 25G0000060	PVC STRANDED WIRE - BLACK	120.00 0.0022	MM	0	
TM 26D0000020	HEATSHRINK 2.4MM ID	55.00 0.0100	MM	0	
TM LABOUR	LABOUR PER MINUTE	2.00 2.3000	MIN	0	
TM LABOUR	LABOUR PER MINUTE	3.00 2.3000	MIN	0	
TM LABOUR	LABOUR PER MINUTE	8.00 2.3000	MIN	0	
TM AMORT	AMORTISATION OF MOULD COSTS	1.00 12.1000	EA	0	

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INDEX OF TECHNICAL DRAWINGS

CONTROLLED

AUTHORISED BY : [signature]
DESIGNATION : Director Operations
DATE : April 1998

DESCRIPTION	REFERENCE PART NUMBER	REV. NO.
FAMILY TREE	TM FT10A0000194	4
COVERING BOX LABEL	TM LD79C0000120	0
SERIAL NUMBER ON PACKING BOX	TM LD79C0000230	0
WHITE BOX	TM PM79E0000020	0
FOAM INSERTS	TM PM79E0000030	0
WARRANTY CARD	TM WC79F0000110	0
CALIBRATION INSTRUCTION STICKER	TM LD79C0000080	0
BOX TOP SCREENED	TM ED22C0000670	0
TELEDYNE SERIAL NUMBER LOGO	TM LD79C0000220	0
BOX BOTTOM ASSEMBLY SCREENED	TM MA16B0000122	2
BOX BOTTOM SCREENED	TM ED22C0000680	0
BUZZER ASSEMBLY	TM EA21B0000031	1
REAR PANEL AND PCB	TM MA16B0000430	1
REAR PANEL SCREENED	TM ED22C0000660	1
SENSOR HARNESS ASSEMBLY - SHEET 1 SENSOR HARNESS ASSEMBLED - SHEET 2	TM EA21B0000181 TM MA21B0000181	1 1
HF SHIELD	TM ED22C0000211	2
REAR PANEL ASSEMBLY SCREENED	TM MA16B0000141	1
TELEDYNE ELECTRONIC UNIT ASSEMBLY	TM MA16B0000153	3
ACCUROX SINGLE PCB CIRCUIT DIAGRAM	TM CD20B0000172	2
ACCUROX SINGLE PCB ASSEMBLY OVERLAY	TM CO20B0000172	2
MUTE SWITCH ASSEMBLY	TM EA16B0000051	0
TELEDYNE FRONT PANEL ASSEMBLY	TM AD16B0000133	3
FRONT PANEL SCREENED	TM ED22C0000620	0
CALIBRATION POT NUT	TM ED22D0000010	0
ROCKER SWITCH ASSEMBLY	TM EA21B0000012	0
TELEDYNE FRONT FASCIA	TM FD79G0000060	0
CALIBRATION POT ASSEMBLY	TM EA16B0000211	0
CALIBRATION POT SHAFT MODIFICATION	TM ED55L0000080	0
BATTERY DRAWER LABEL	TM LD79C0000240	0
ASSEMBLY OF MUTE SWITCH TO OXYGEN MONITOR PCB	TM AD82D0000080	1
FASCIA SHOWING DIMENSIONS	TM ED79G0000021	1
SPACER (MUTE SWITCH)	TM ED22D0000021	1
OXYGEN MONITOR SINGLE PCB ASSEMBLY	TM MA20B0000172	0
TELEDYNE OXYGEN MONITOR FINAL ASSEMBLY	TM FA10B0000194	4
SERIAL NO. LOGO TO OXYGEN MONITOR BOX BOTTOM	TM AD82D0000110	0
BOX TOP ASSEMBLY SCREENED	TM MA15B0000111	1
ACCUROX FRONT PANEL	TM ED22C0000461	1

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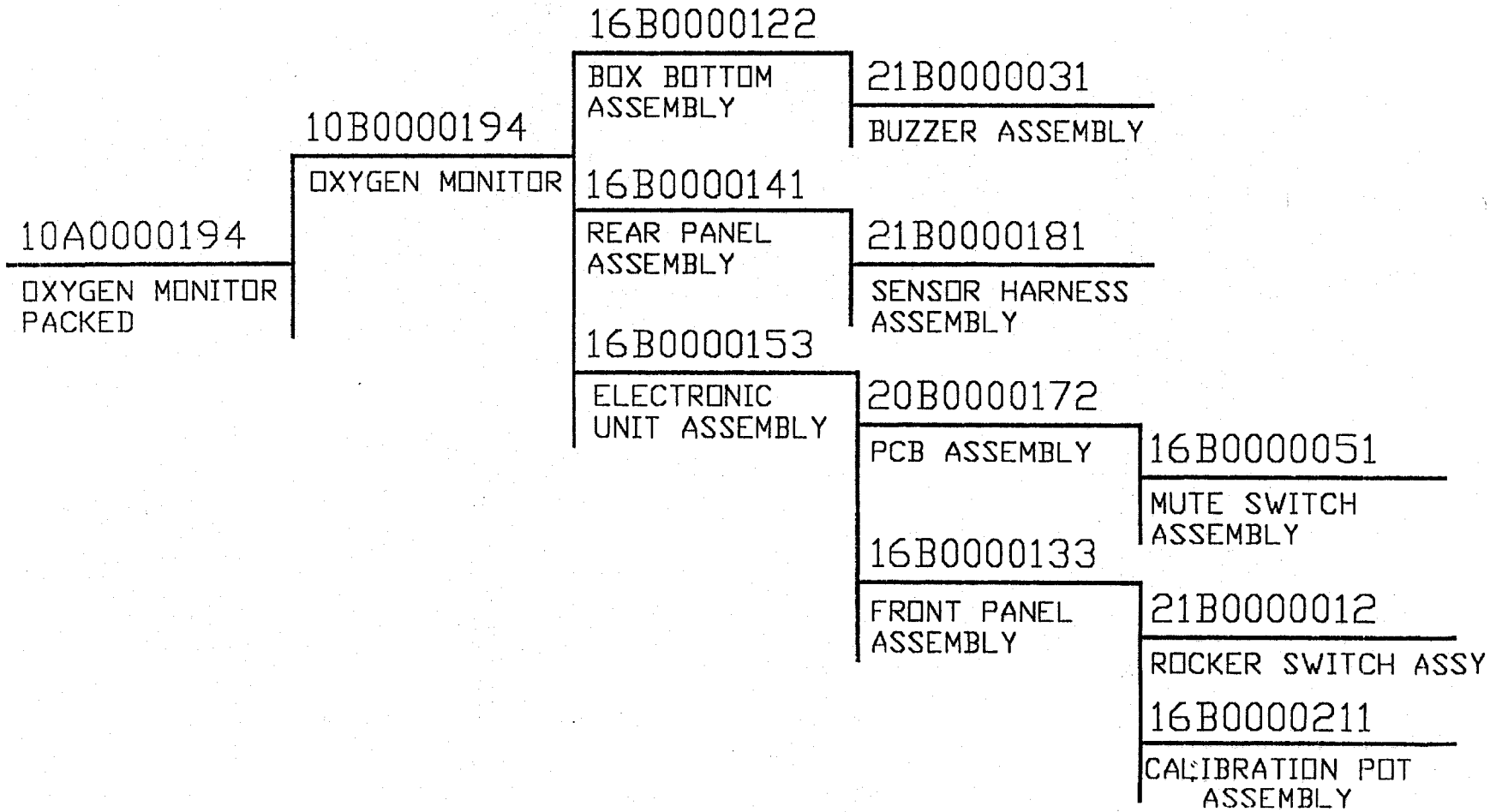
DATE : April 1998

DESCRIPTION	REFERENCE PART NUMBER
ACCUROX BOX TOP GREY	TM ED22C0000440
ACCUROX REAR PANEL GREY	TM ED22C0000470
ACCUROX BOX BOTTOM GREY	TM ED 22C0000450
ACCUROX BATTERY DRAWER	TM ED22C0000480



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

CLASSIFICATION QTY
CRITICAL
MAJOR A
MAJOR B
MINOR

REV	DATE	DRAWN	CHKD	APPR	DCN/ECR NUMBER
4	3/4/98	W.F.	AN	VM	T3/98
3	6/3/98	W.F.			T2/98
2	26/2/98	BG			T1/98
0	07/08/97	SG			

± mm ± deg
original scale unspecified tol

TITLE : TELEDYNE OXYGEN MONITOR FAMILY TREE

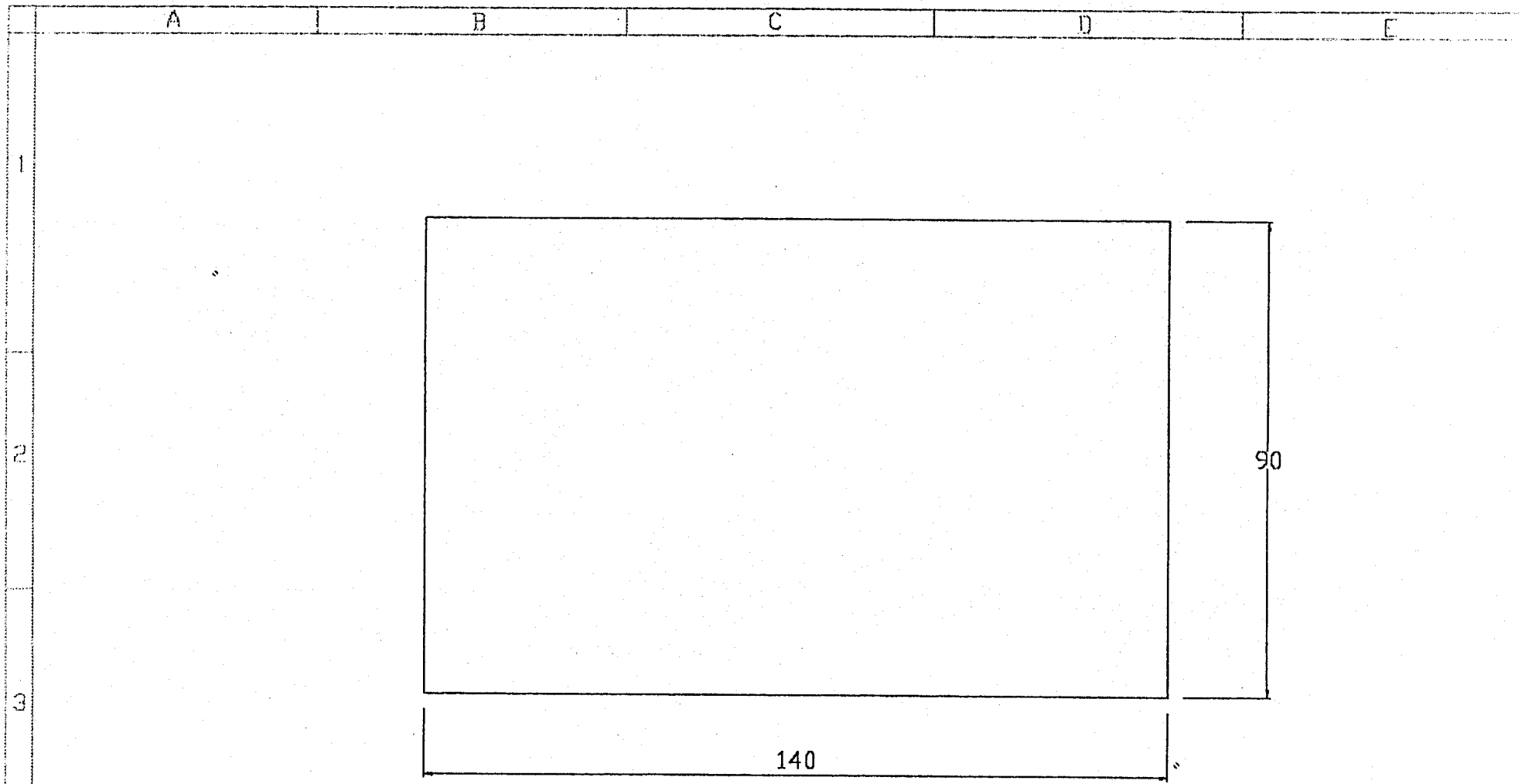
SHEET OF

TRIGATE (PTY) LTD

DRAWING No
FT10A0000194

CAD REF : FT10A194

CONTROLLED



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERVISE INDICATED	MATERIAL AND CONDITION						
	ASSOCIATED DOCUMENTS						
CLASSIFICATION QTY CRITICAL (C) MAJOR A (MA) MAJOR B (MB) MINOR (M)	TOOLS JIGS GAUGES						
		0	07/02/97	W.F.	AN	LAM	
		REV	DATE	DRAWN	CHKD	APPR	CHANGE NUMBER

	± mm	± deg
original scale	unspecified tol	

TITLE : COVERING BOX LABEL

SHEET | | OF

TRIGATE

DRAWING No

LD79C0000120

CAD REF : LD79C120

TELEDYNE

TED-191

OXYGEN MONITOR

SERIAL NO:

SENSOR SERIAL NO:

CONTROLLED

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION
CLASSIFICATION QTY: CRITICAL (C), MAJOR A (A), MAJOR B (B), MINOR (D)	ASSOCIATED DOCUMENTS
	TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	CHANGE NUMBER
0	07/02/97	W.F.			

original scale | ± mm | ± deg unspecified tol

TITLE : SERIAL NO ON PACKING BOX

SHEET | OF

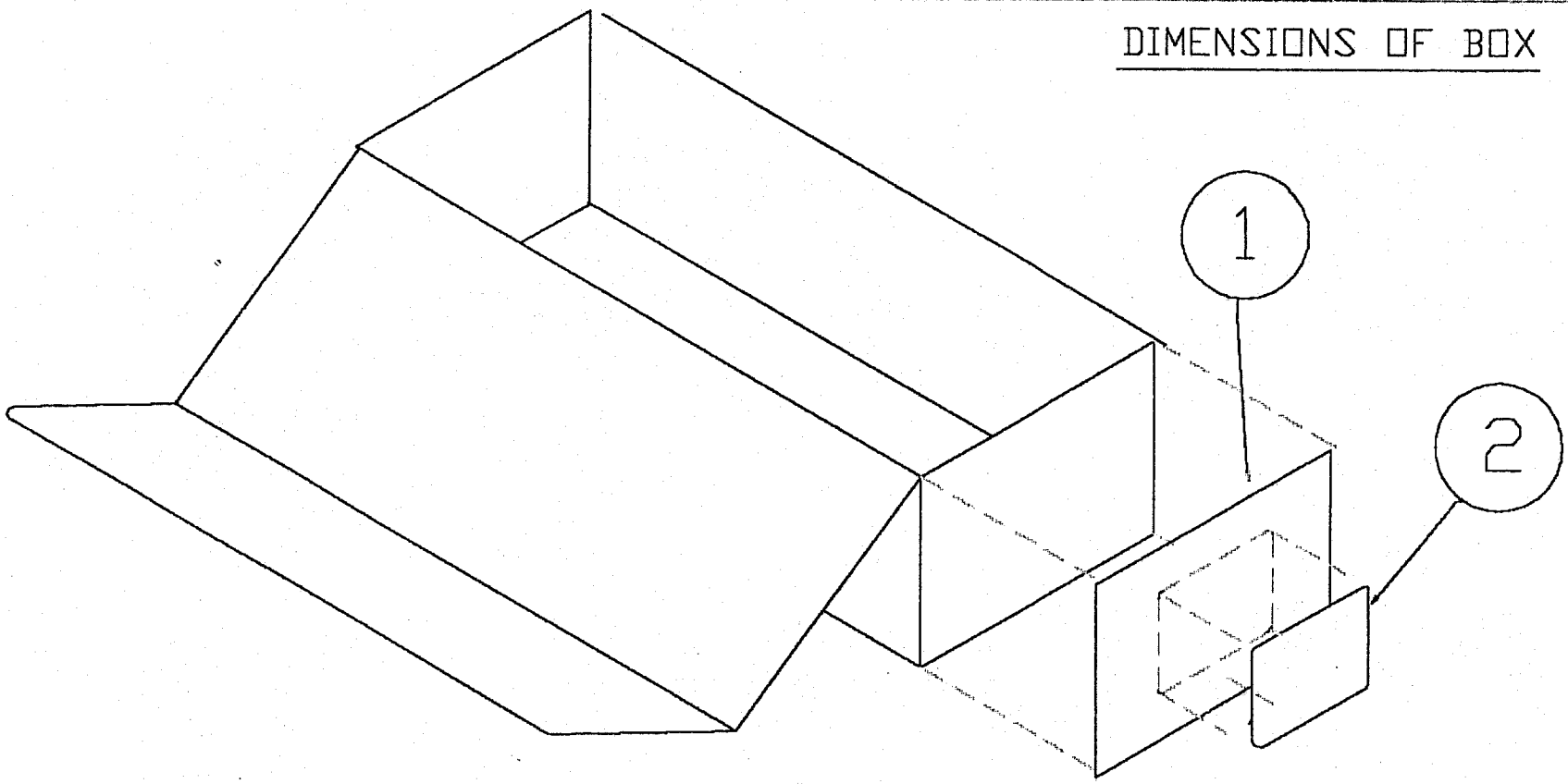
TRIGATE

DRAWING No.

LD79C0000230

CAD REF: LD79C230

DIMENSIONS OF BOX L 353mm
W 147mm
H 106mm



NO	PART NUMBER	DESCRIPTION	QTY
1	LD79C0000120	WHITE BOX COVERING LABEL	1
2		SERIAL NO ON PACKING BOX	1

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION QTY
CRITICAL (F)
MAJOR A (MA)
MAJOR B (MB)
MINOR (P)

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	CHANGE NUMBER
0	11/02/97	W.F.	AN	[illegible]	

original scale | ± mm | ± (deg) unspecified tol

TITLE :
WHITE BOX FOR ACCUROX

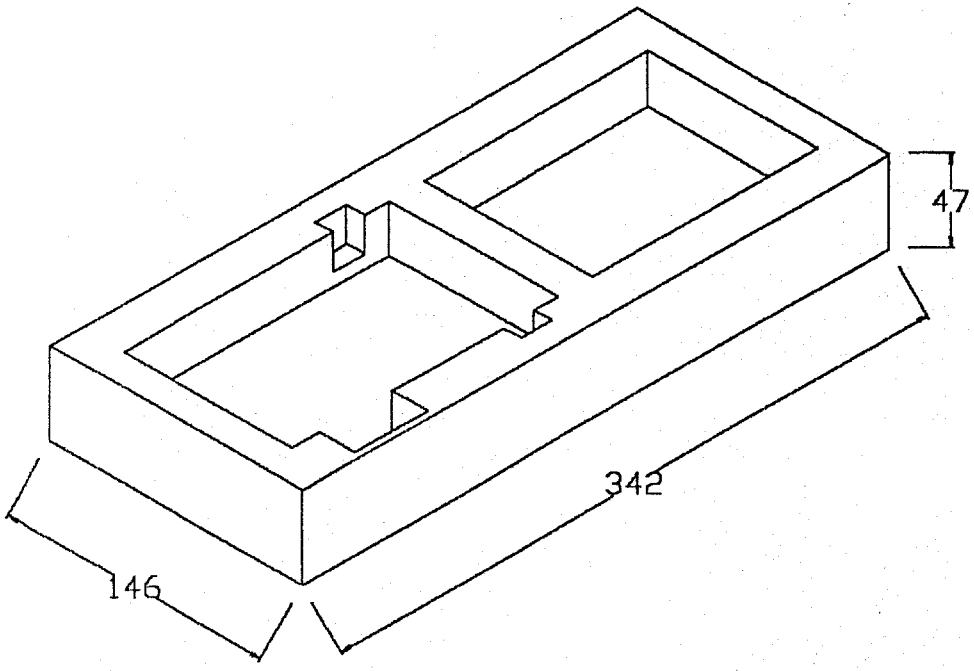
SHEET | OF

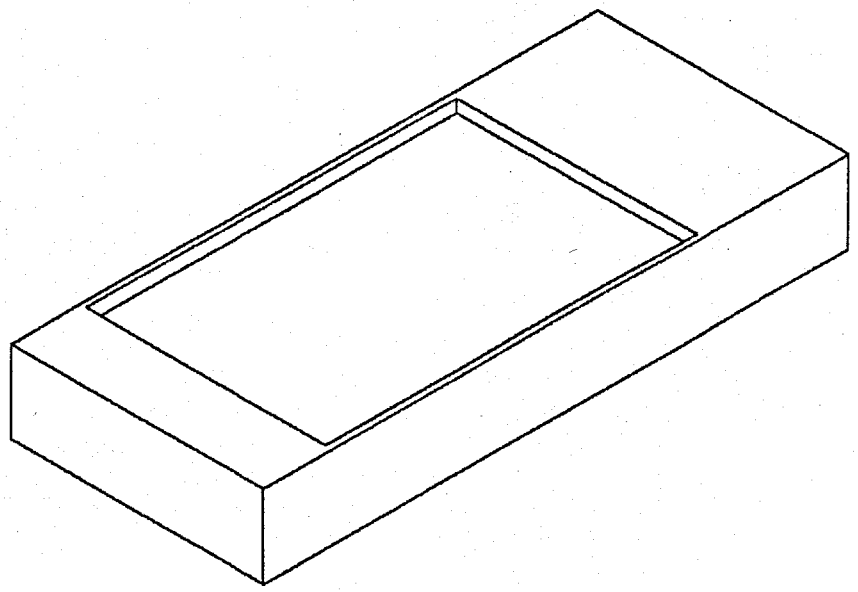
TRIGATE

DRAWING No
PM79E0000020

CAD REF : PM79E020

CONTROLLED





NOTE: TOP AND BOTTOM HALVES OF FOAM INSERTS ARE IDENTICAL

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION							original scale	± mm ± deg unspecified tol	TRIGATE (PTY) LTD
	ASSOCIATED DOCUMENTS							TITLE : FOAM INSERT		DRAWING No PM79E0000030
CLASSIFICATION / QTY: CRITICAL, MAJOR A, MAJOR B, MINOR	TOOLS JIGS GAUGES	0 REV	11/02/97 DATE	W.F. DRAWN	AN CHKD	UA APPR	ECR NOTE NUMBER	SHEET	OF	CAD REF : PM79E030

CONTROLLED

TELEDYNE TED-191
Portable Oxygen Monitor
WARRANTY REGISTRATION CARD

SERIAL NUMBER : _____ DATE PURCHASED : _____

NAME OF COMPANY FROM WHICH PURCHASED : _____

PURCHASER DETAILS

NAME : _____

DEPARTMENT : _____

PHYSICAL ADDRESS : _____

_____

POSTAL ADDRESS : _____

_____

CONTROLLED

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION							± mm	± deg
	ASSOCIATED DOCUMENTS							original scale	unspecified tol
CLASSIFICATION QTY								TITLE : TELEDYNE WARRANTY CARD	
CRITICAL (C)	TOOLS JIGS GAUGES								
MAJOR A (SA)		0	10/02/97	w.f.	AN	VH			
MAJOR B (SB)		REV	DATE	DRAWN	CHKD	APPR	CIT NOTE NUMBER	SHEET	OF
MINOR (C)									

TRIGATE

DRAWING NO. WC79F0000110

CAD REF : WC79F110

A	B	C	D	E

ABBREVIATED INSTRUCTIONS

NORMAL OPERATION	Switch the monitor ON. Validate calibration by checking that the displayed value reads 21% in ambient air. Calibration should be effected once per day. Place the sensor tip within the gas stream or local environment to be monitored. The monitor will now display the measured oxygen concentration (0 to 100%).
SETTING ALARMS	The HI & LO alarm controls provide set alarm thresholds in the range of 18-102%. In the event of an alarm, the audible tone can be muted for 60 seconds by depressing the alarm mute button (red lamp).
CALIBRATION	1. Expose the sensor tip to pure free flowing oxygen. 2. Allow the displayed value to stabilise. 3. Release the CAL. knob and rotate in order to align the displayed value to 100%. 4. Expose the sensor tip to normal ambient air (free from any oxygen contamination). The displayed value should settle at 21% (± 1%). 5. If the display does not settle at 21% - please re-calibrate, change the sensor cell, or check the purity of the calibration oxygen.
CLEANING	Wipe the instrument with a damp cloth. A mild alcohol solution may be used. Do not rinse with water or other fluid. Do not autoclave or gas sterilise.

CONTROLLED

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION

CRITICAL
MAJOR A
MAJOR B
MINOR

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	CO NOTE NUMBER
0	2/12/96	W.F.			

original scale

± mm ± deg unspecified tol

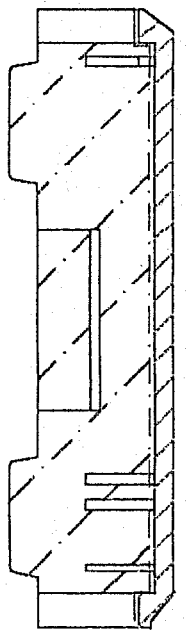
TITLE :
CALIBRATION INSTRUCTION STICKER

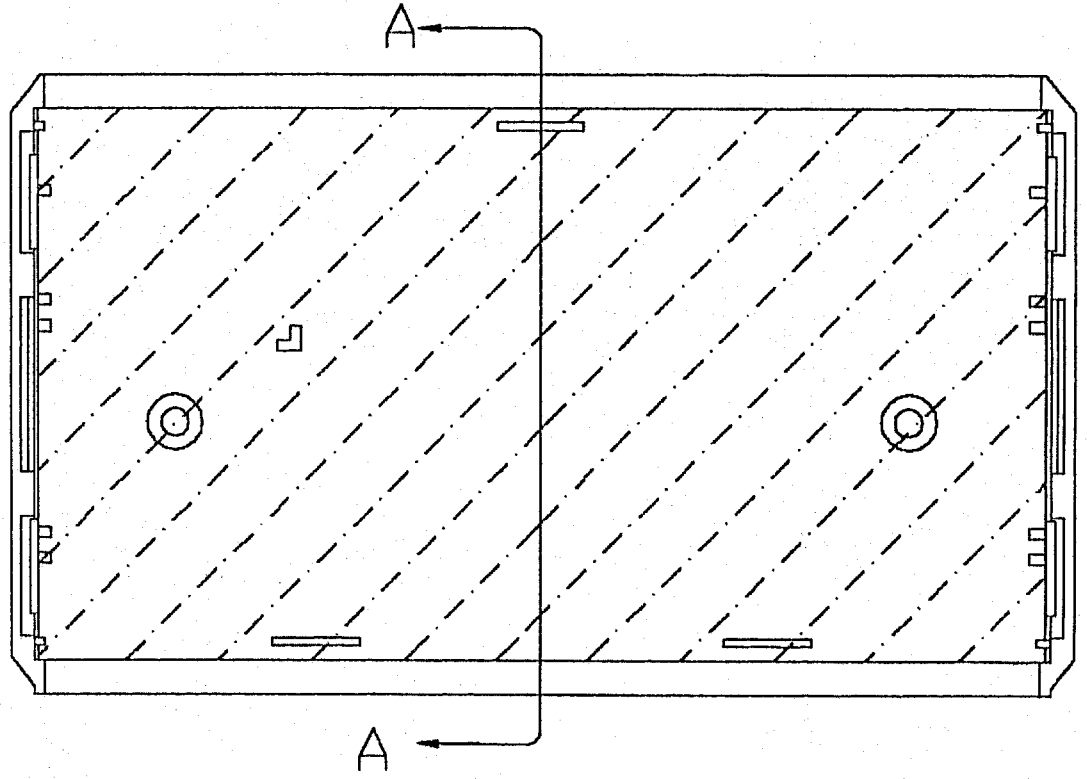
TRIGATE (PTY) LTD

DRAWING No
LD79C0000080

CAD REF LD79C080

SECTION A-A



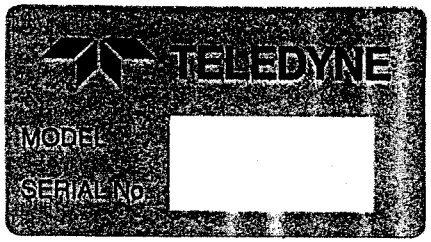


NOTE:

SPRAY/PAINT INSIDE OF MOULDING WITH CONDUCTIVE PAINT
AS PER ATTACHED SPECIFICATION

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION						1 : 1 original scale	±0.1 mm	± deg unspecified tol	TRIGATE (PTY) LTD
	ASSOCIATED DOCUMENTS						TITLE : BOX TOP SCREENED			DRAWING No ED22C0000670
CLASSIFICATION STY: CRITICAL, MAJOR A, MAJOR B, MINOR	TOOLS JIGS GAUGES	0 REV	07/08/97 DATE	SG DRAWN	AN CHKD	APPR	SHEET	OF		CAD REF : ED22C670

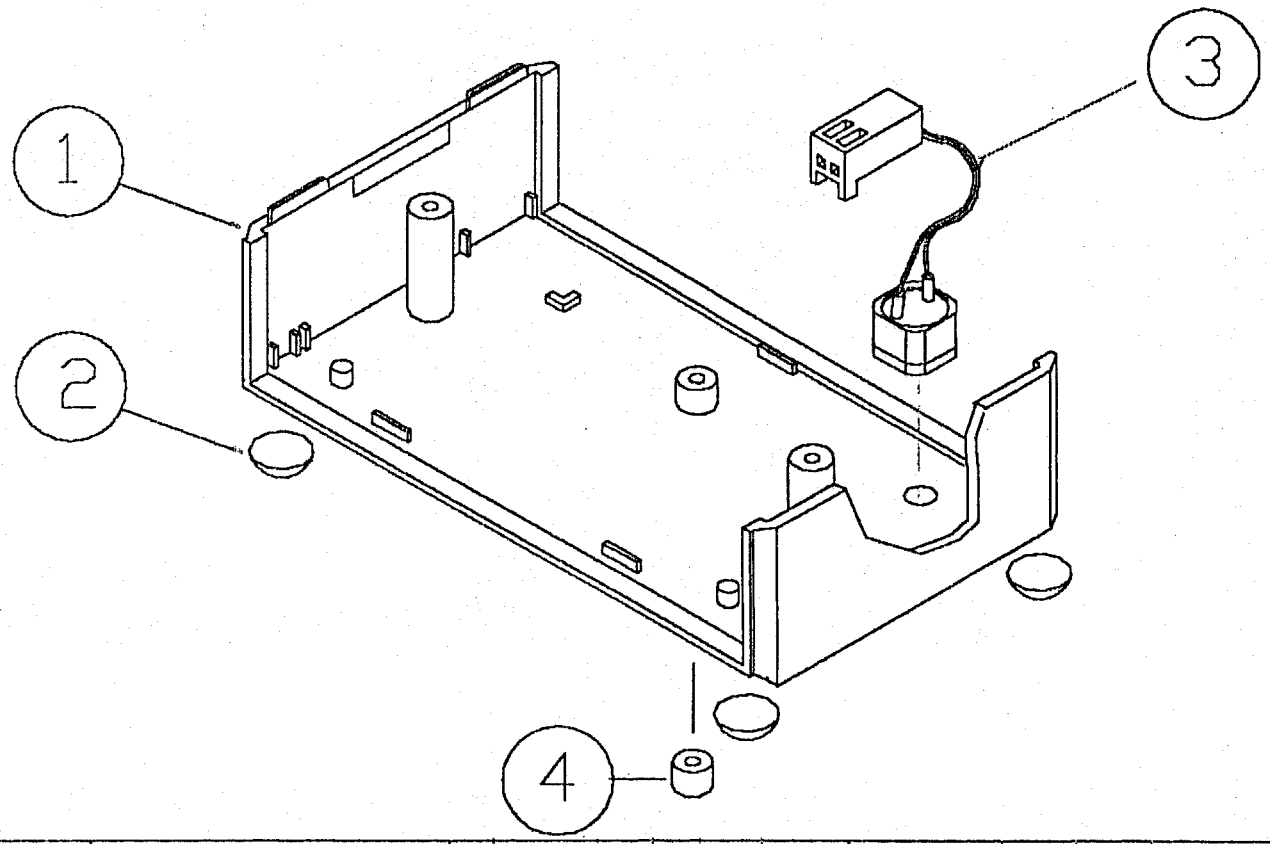
CONTROLLED



CONTROLED

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION								± mm	± deg	
	ASSOCIATED DOCUMENTS								original scale	unspecified tol	
CLASSIFICATION QTY									TITLE : TELEDYNE SERIALNO LOGO		TRIGATE
CRITICAL (CR)	TOOLS JIGS GAUGES										DRAWING No.
MAJOR A (MA)											LD79C0000220
MAJOR B (MB)											
MINOR (MI)		0	05/02/97	W.F.					SHEET	OF	CAD FILE : LD79C220
		REV	DATE	DRAWN	CHKD	APPR	CUSTOMER APPROVED				

NO	PART NUMBER	DESCRIPTION	QTY
1	22C0000680	BOX BOTTOM GREY SCREENED	1
2	76-0000410	(FEET) CLEAR BUMPAN 8 X 3mm	4
3	21B0000031	BUZZER ASSEMBLY	1
4	22D0000690	1/4 by 20 UNC INSERT	1



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION QTY
CRITICAL (C)
MAJOR A (A)
MAJOR B (B)
MINOR (S)

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	CUSTOMER NUMBER
2	26/2/98	BG	A.N		T1/98
0	07/08/97	SG			

original scale | ± mm | ± deg | unspecified tol

TITLE : BOX BOTTOM ASSY SCREENED

SHEET OF

TRIGATE

DRAWING NO

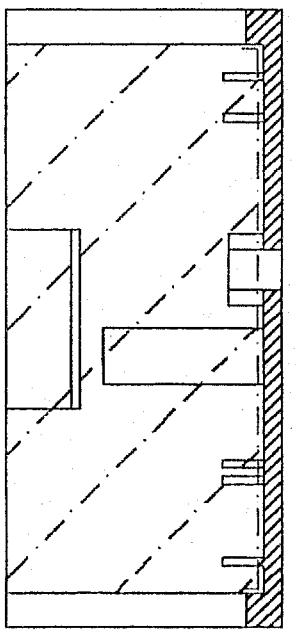
MA16B0000122

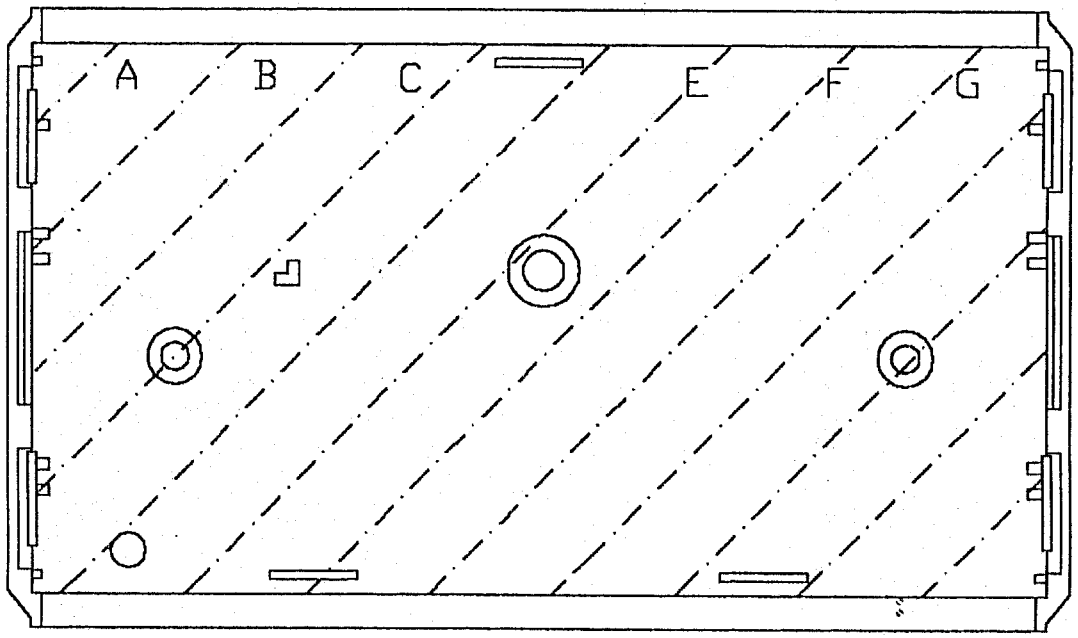
CAD REF MA16B122

CONTROLLED

NOTE: SPRAY / PAINT INSIDE OF MOULDING WITH CONDUCTIVE PAINT AS PER ATTACHED SPECIFICATION

ALL EXTERNAL FACES TO BE FREE OF PAINT





ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION							1 : 1 original scale	±0.2 mm ± deg unspecified tol
	ASSOCIATED DOCUMENTS							TITLE : BOX BOTTOM SCREENED	
CLASSIFICATION DTI: CRITICAL, MAJOR A, MAJOR B, MINOR	TOOLS JIGS GAUGES	0 REV	07/08/97 DATE	SG DRAWN	AN CHKD	AM APPR	CR NOTE NUMBER	SHEET	OF

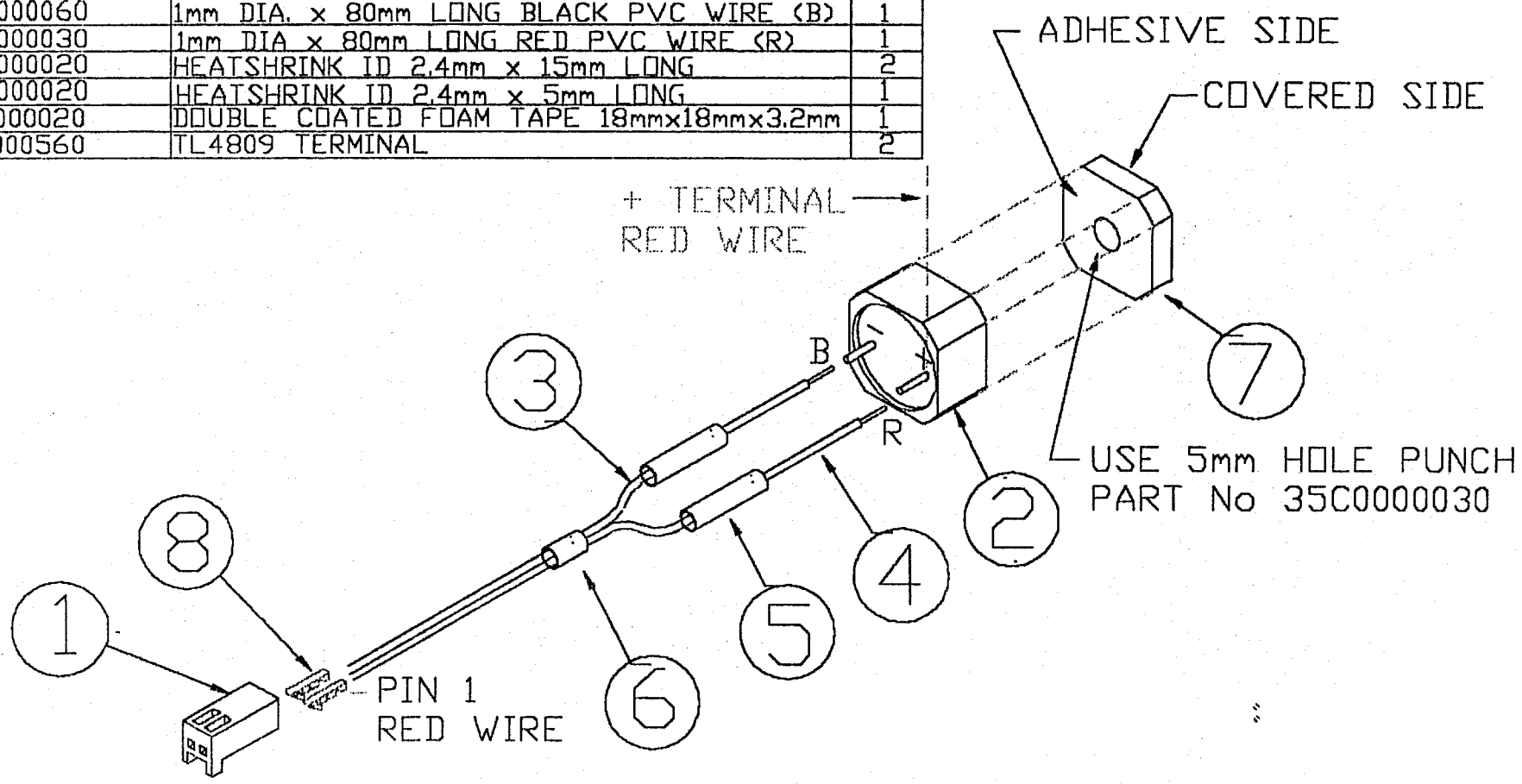
TRIGATE (PTY) LTD

DRAWING No ED22C0000680

CAD REF ED22C680

CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1	40-0000570	6471-021 0.1KK HOUSING 2 WAY	1
2	39-0000020	PIEZO BUZZER 3900Hz	1
3	25G0000060	1mm DIA. x 80mm LONG BLACK PVC WIRE (B)	1
4	25G0000030	1mm DIA x 80mm LONG RED PVC WIRE (R)	1
5	26D0000020	HEATSHRINK ID 2.4mm x 15mm LONG	2
6	26D0000020	HEATSHRINK ID 2.4mm x 5mm LONG	1
7	79D0000020	DOUBLE COATED FOAM TAPE 18mmx18mmx3.2mm	1
8	40-0000560	TL4809 TERMINAL	2



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

CLASSIFICATION	QTY
CRITICAL	(C)
MAJOR A	(A)
MAJOR B	(B)
MINOR	(-)

REV	DATE	DRAWN	CHKD	APPR	CR NOTE NUMBER
1	14/5/98	W.F.	AN		
0	02/01/97	W.F.			

original scale | ± mm | ± deg | unspecified tol

TITLE : BUZZER ASSEMBLY

SHEET | | OF |

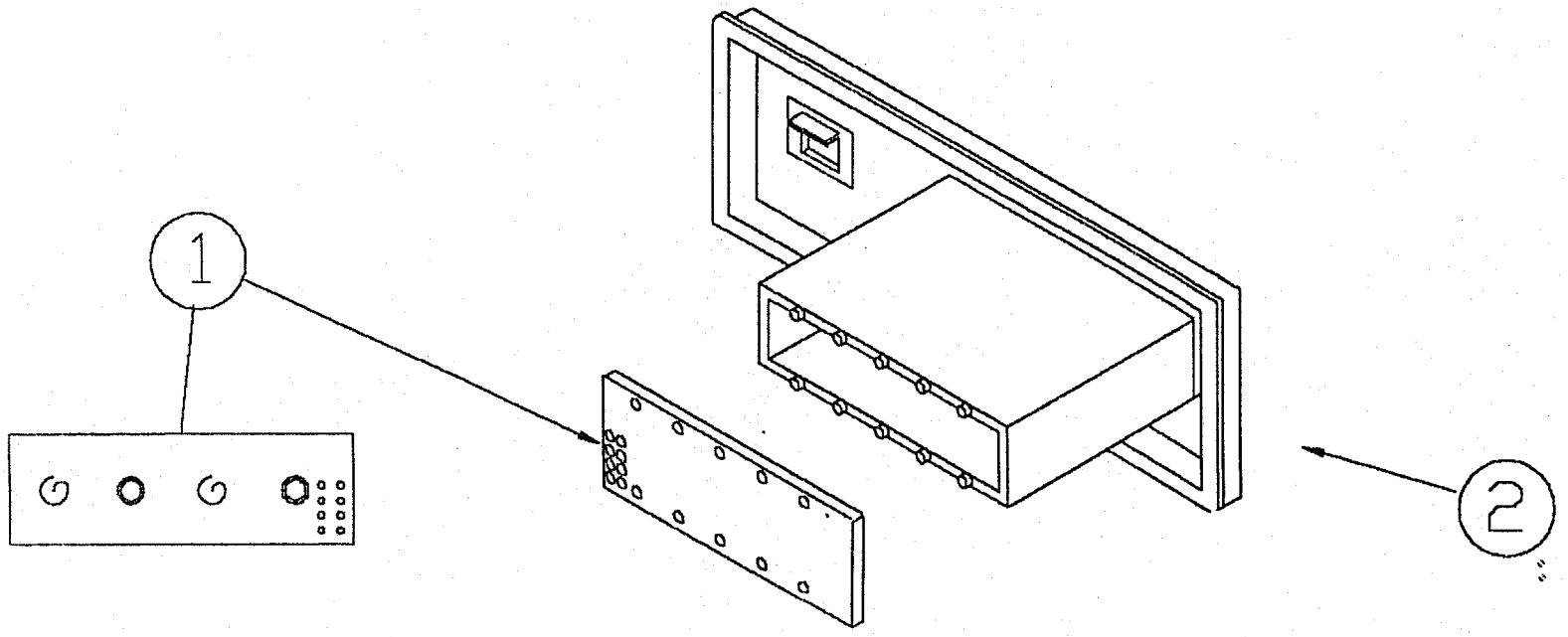
TRIGATE (PTY) LTD

DRAWING No EA21B0000031

CAD REF : EA21B031

CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1	20B0000200	BATT BOX PCB ASSY	1
2	22C0000470	REAR PANEL	1



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION QTY
CRITICAL
MAJOR A
MAJOR B
MINOR

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	CR NOTE NUMBER
1	14/5/98	WF	AN	VM	
0	07/08/97	SG			

original scale | ± mm | ± deg | unspecified tol

TITLE :
REAR PANEL
AND PCB

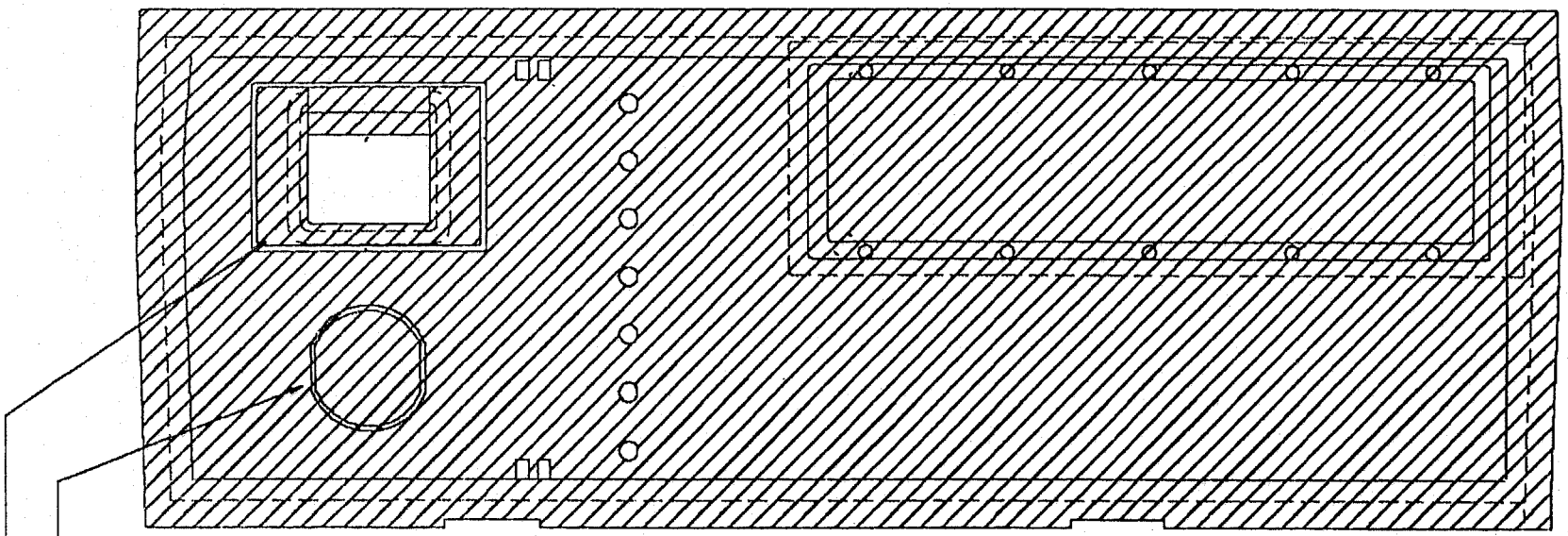
SHEET | OF

TRIGATE (PTY) LTD

DRAWING No
MA16B0000430

CAD REF : MA16B430

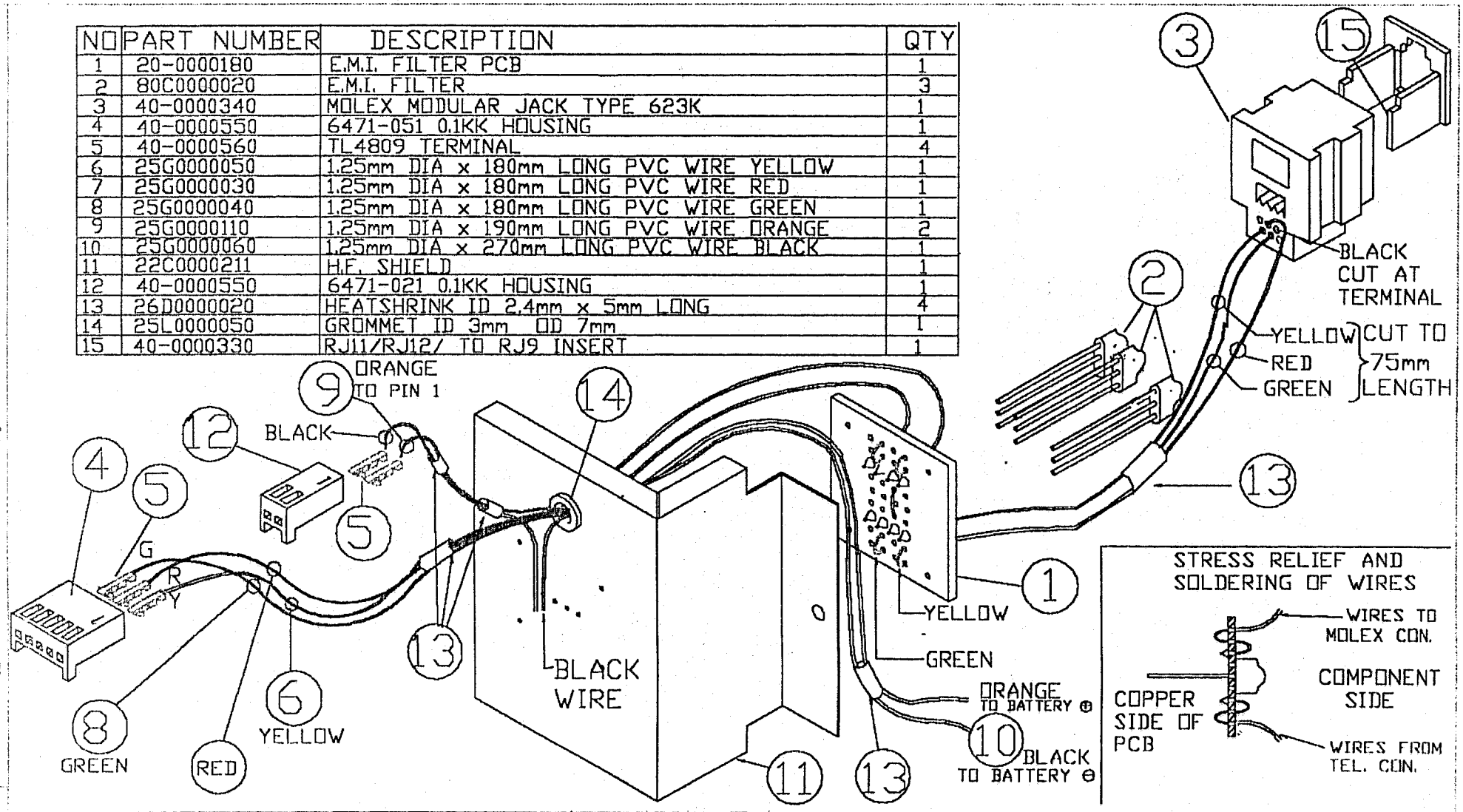
CONTROLLED



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION: ABS GREY INJECTION MOULDED								± mm / ± deg	TRIGATE OPTICS LTD
	ASSOCIATED DOCUMENTS							original scale	unspecified tol	TITLE : ACCUROX REAR PANEL GREY SCREENED.
CLASSIFICATION QTY: CRITICAL (CR) MAJOR A (MJA) MAJOR B (MJB) MINOR (MI)	TOOLS JIGS GAUGES	REV	DATE	DRAWN	CHKD	APPR	CH NOTE NUMBER			DRAWING No: ED22C0000660
		1	18/01/98	WF	AN	VM				
		0	16/08/97	SG				SHEET	OF	CAD REF : ED22C660

CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1	20-0000180	E.M.I. FILTER PCB	1
2	80C0000020	E.M.I. FILTER	3
3	40-0000340	MOLEX MODULAR JACK TYPE 623K	1
4	40-0000550	6471-051 0.1KK HOUSING	1
5	40-0000560	TL4809 TERMINAL	4
6	25G0000050	1.25mm DIA x 180mm LONG PVC WIRE YELLOW	1
7	25G0000030	1.25mm DIA x 180mm LONG PVC WIRE RED	1
8	25G0000040	1.25mm DIA x 180mm LONG PVC WIRE GREEN	1
9	25G0000110	1.25mm DIA x 190mm LONG PVC WIRE ORANGE	2
10	25G0000060	1.25mm DIA x 270mm LONG PVC WIRE BLACK	1
11	22C0000211	H.F. SHIELD	1
12	40-0000550	6471-021 0.1KK HOUSING	1
13	26D0000020	HEATSHRINK ID 2.4mm x 5mm LONG	4
14	25L0000050	GROMMET ID 3mm OD 7mm	1
15	40-0000330	RJ11/RJ12/ TO RJ9 INSERT	1



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION	QTY
CRITICAL	
MAJOR A	
MAJOR B	
MINOR	

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

ECN	DATE	DRAWN	CHKD	APPR	CT NOTE NUMBER
1	06/08/97	SG	AN	DW	

original scale | ± mm | ± deg | unspecified fall

TITLE: SENSOR HARNESS ASSEMBLY

SHEET 1 OF 2

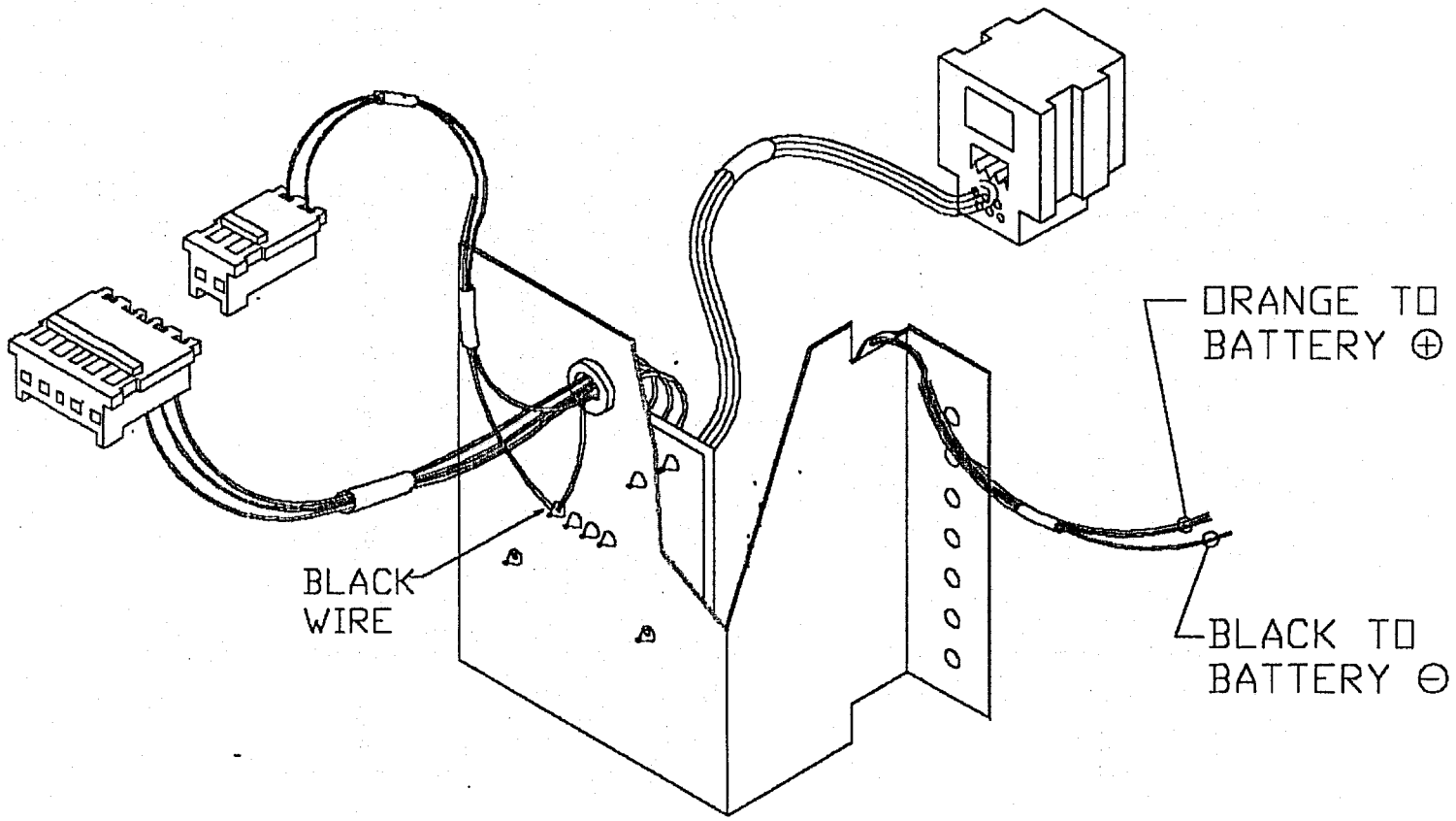
TRIGATE LTD

DRAWING No

EA21B0000181

CAD REF: EA21B181

CONTROLLED



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION							± mm	± deg
	ASSOCIATED DOCUMENTS							original scale	unspecified tol
CLASSIFICATION QTY								TITLE : SENSOR HARNESS ASSEMBLED	
CRITICAL (1)	TOOLS JIGS GAUGES	1	07/08/97	SG	AN				
MAJOR A (2)		0	24/01/97	W.F.					
MAJOR B (3)		REV	DATE	DRAWN	CHKD	APPR	CR NOTE NUMBER	SHEET 2 OF 2	
MINOR (4)									

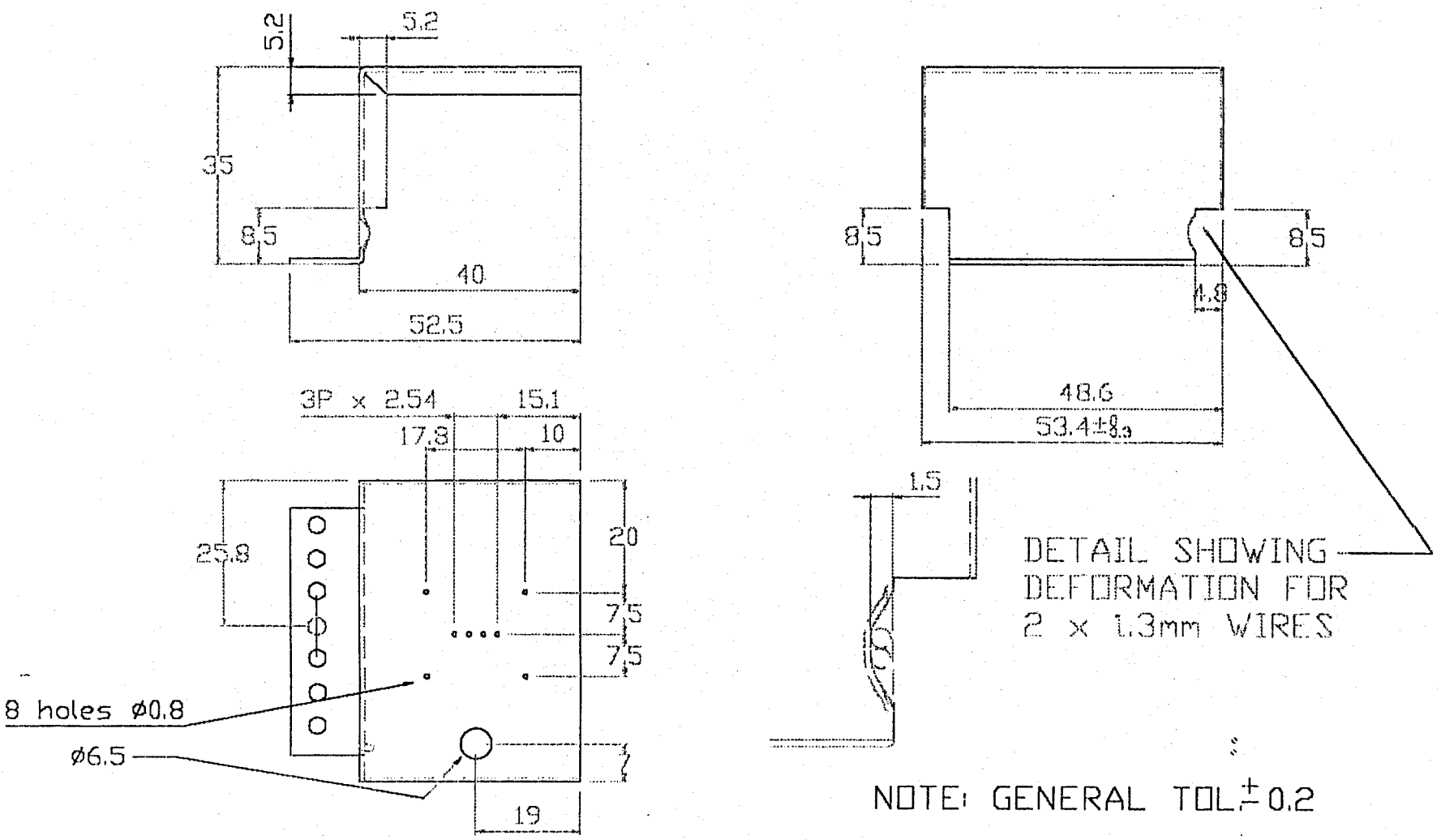
TRIGATE (PTY) LTD

DRAWING No

MA21B0000181

CAD REF : MA21B181

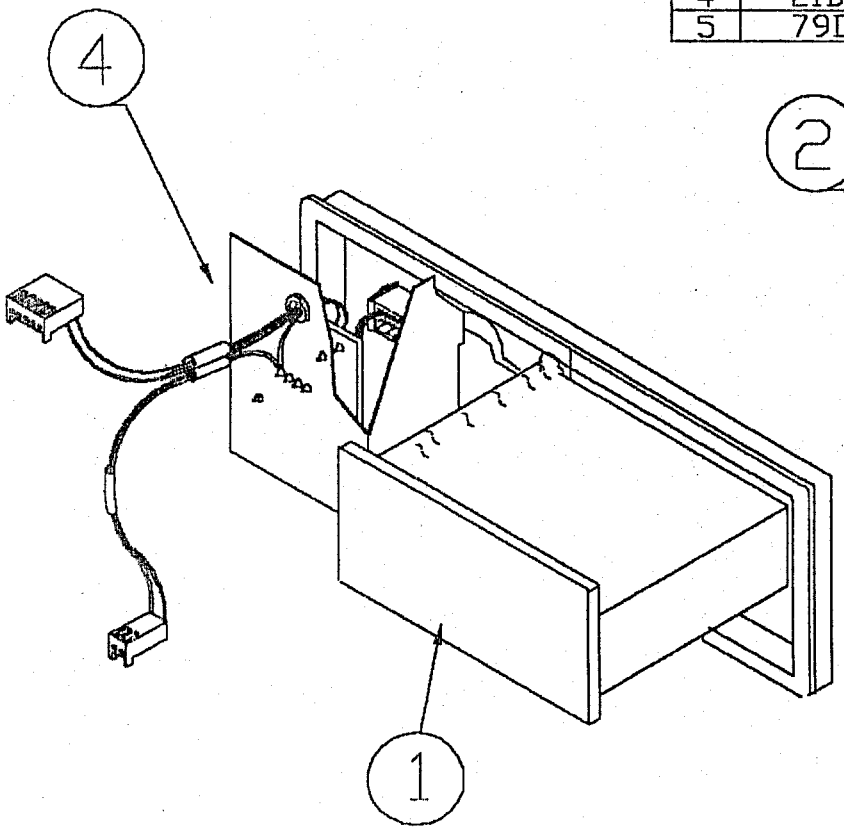
CONTROLLED

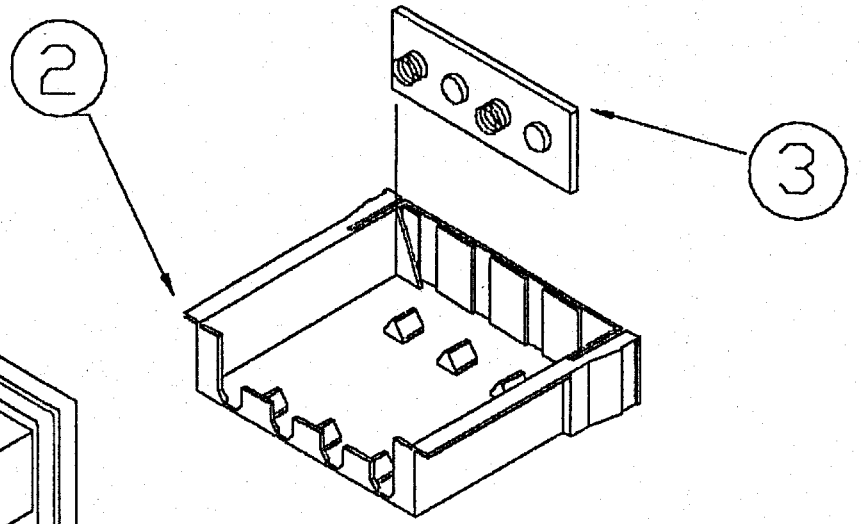


ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION: 0.3mm TIN							1 : 1 original scale	±0.2 mm ± deg unspecified tol	TRIGATE (PTY) LTD	
	ASSOCIATED DOCUMENTS							TITLE: H.F. SHIELD (FOR ACCUROX SENSOR)		DRAWING No: ED22C0000211	
CLASSIFICATION QTY: CRITICAL (C), MAJOR A (A), MAJOR B (B), MINOR (M)	TOOLS JIGS GAUGES	REV	DATE	DRAWN	CHKD	APPR	CR NOTE NUMBER		SHEET 1 OF 1	CAD REF: ED22C211	
		2	15/4/98	W.F.	AN		IDLE 69				
		1	14/04/27	W.F.			RE-DESIGN				
		0	97/29	W.F.							

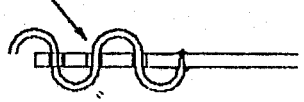
CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1	16B0000440	GREY REAR PANEL + PCB SCREENED	1
2	22C0000480	GREY BATT DRAWER	1
3	20B0000190	BATTERY DRAWER PCB ASSY	1
4	21B0000181	SENSOR HARNESS ASSY	1
5	79D0000030	48mm WIDE ALUMINIUM FOIL TAPE	





DETAIL OF WIRE INTO PCB
THROUGH STRAIN RELIEF HOLES



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

CLASSIFICATION | QTY
CRITICAL
MAJOR A
MAJOR B
MINOR

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	CHANGE NUMBER
1	14/5/98	WF	A.N.	V.M	
0	07/08/97	SG			

original scale | ± mm | ± deg | unspecified tol

TITLE : REAR PANEL ASSEMBLY SCREENED

SHEET | OF

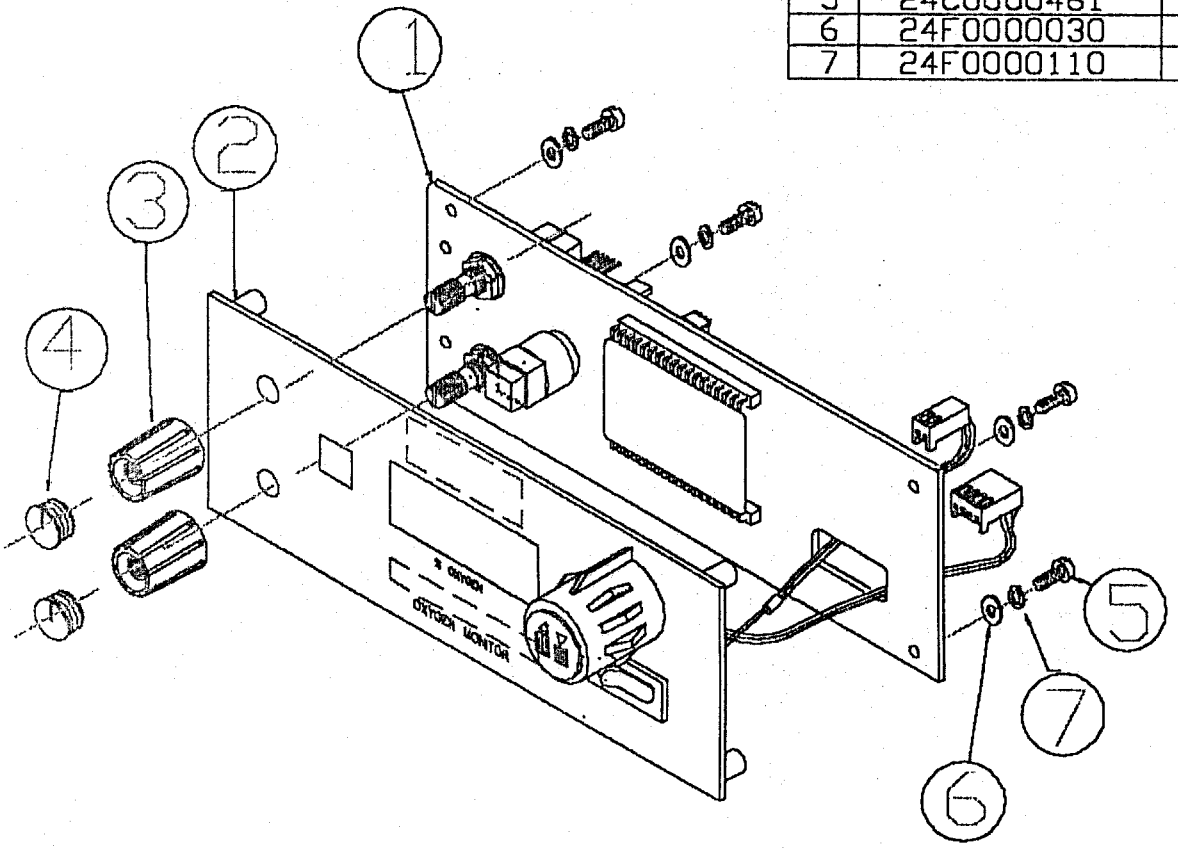
TRIGATE (PTY) LTD

DRAWING No
MA16B0000141

CAD REF : MA16B141

CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1	20B0000172	OXYGEN MONITOR PCB ASSY.	1
2	16B0000133	TELEDYNE FRONT PANEL ASSY.	1
3	41-0000010	KNOB 14.5 mm 021-3420	2
4	41C0000030	CAP BLACK TO FIT ITEM NO 3	2
5	24C0000461	M2 x 16 S/S CH/HD SCREWS	4
6	24F0000030	M2 S/S FLAT WASHER	4
7	24F0000110	M2 S/S SPRING WASHER	4



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

CLASSIFICATION	QTY
CRITICAL	(C)
MAJOR A	(MA)
MAJOR B	(MB)
MINOR	(N)

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	CR/RIDE NUMBER
3	6/4/98	W.F.			T3/98
2	5/3/98	W.F.			T2/98
1	07/08/97	SG			

original scale | ± mm | ± deg | unspecified tol

TITLE : TELEDYNE ELECTRONIC UNIT ASSEMBLY

SHEET | OF

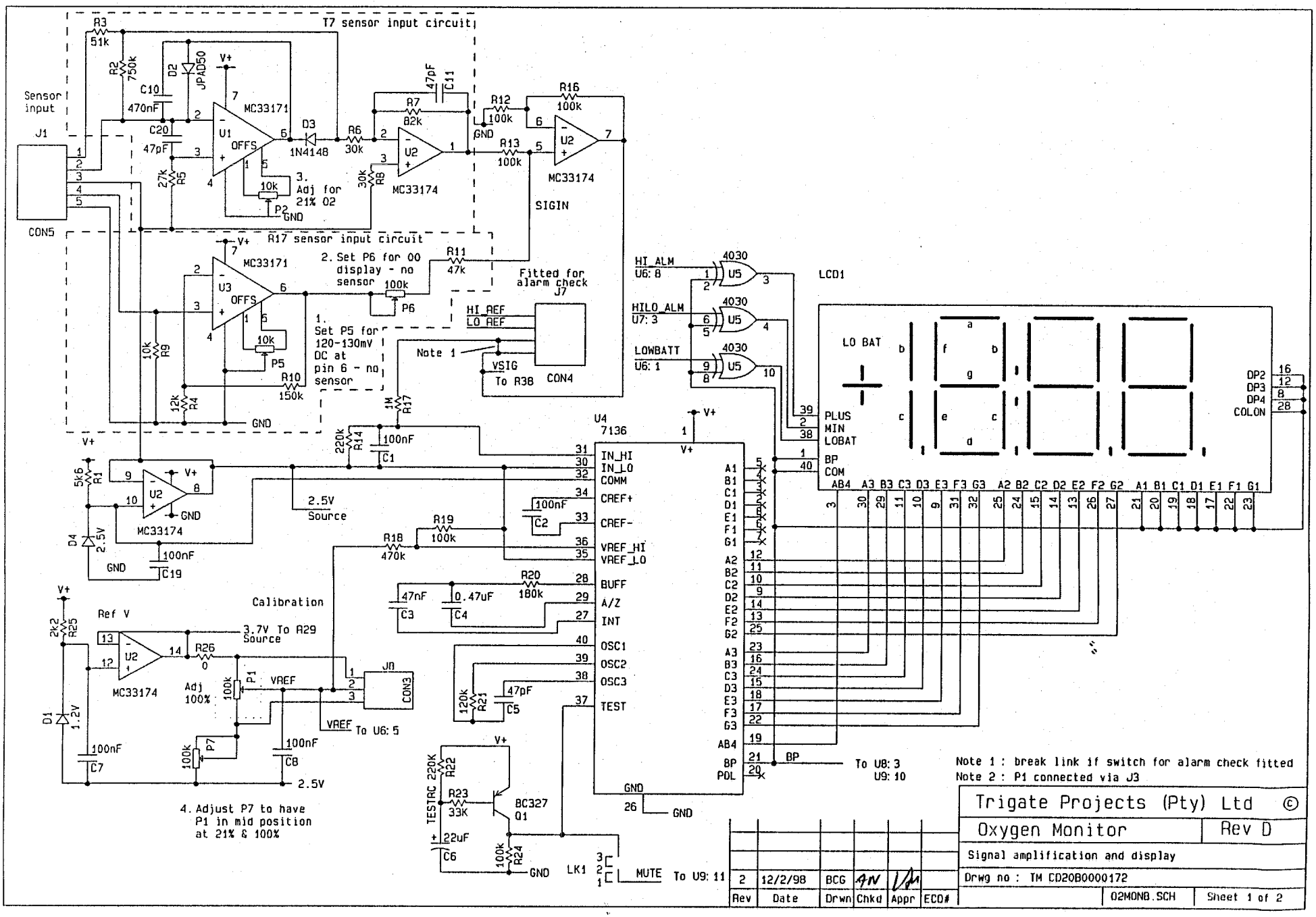
TRIGATE PTY LTD

DRAWING No

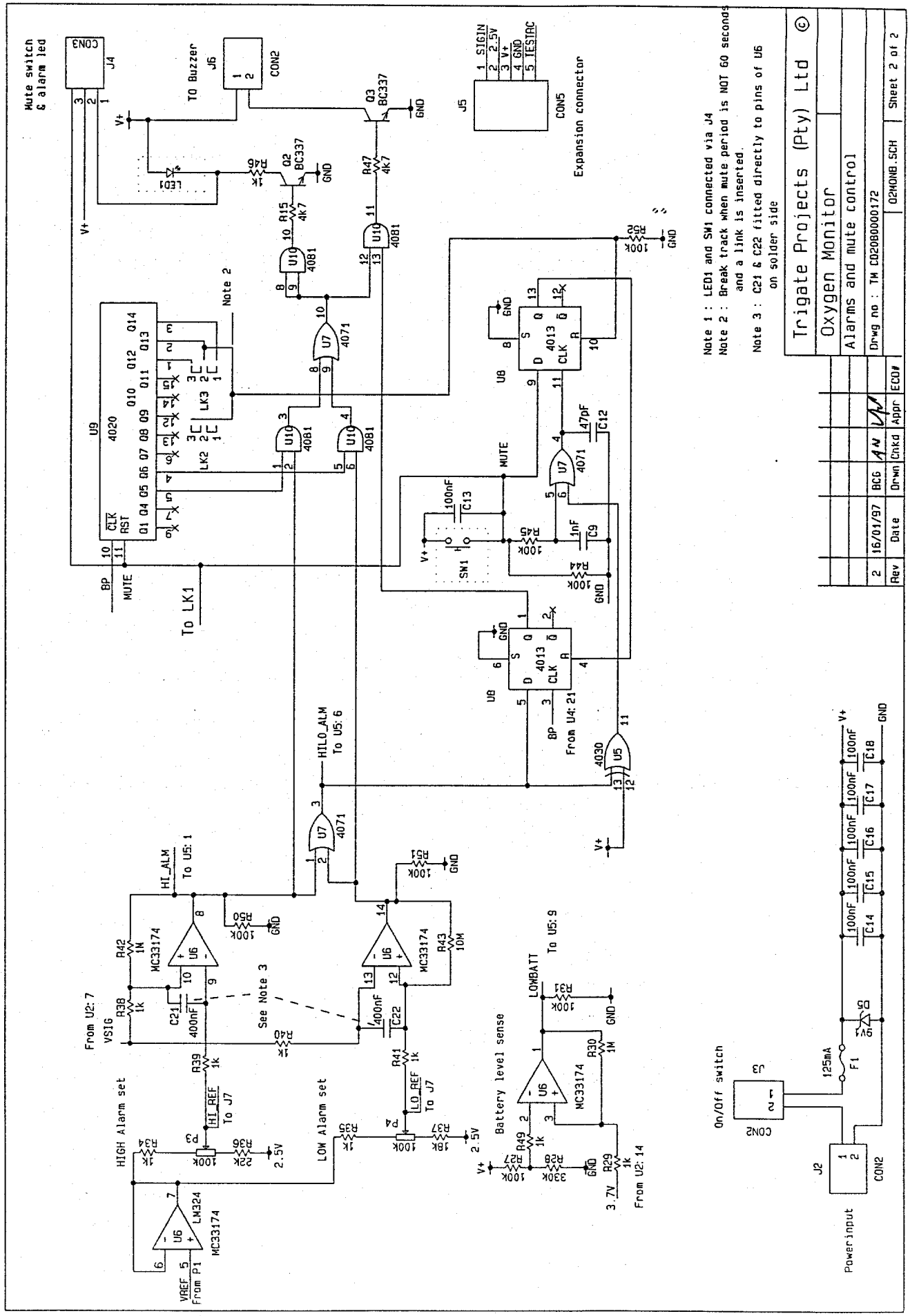
MA16B0000153

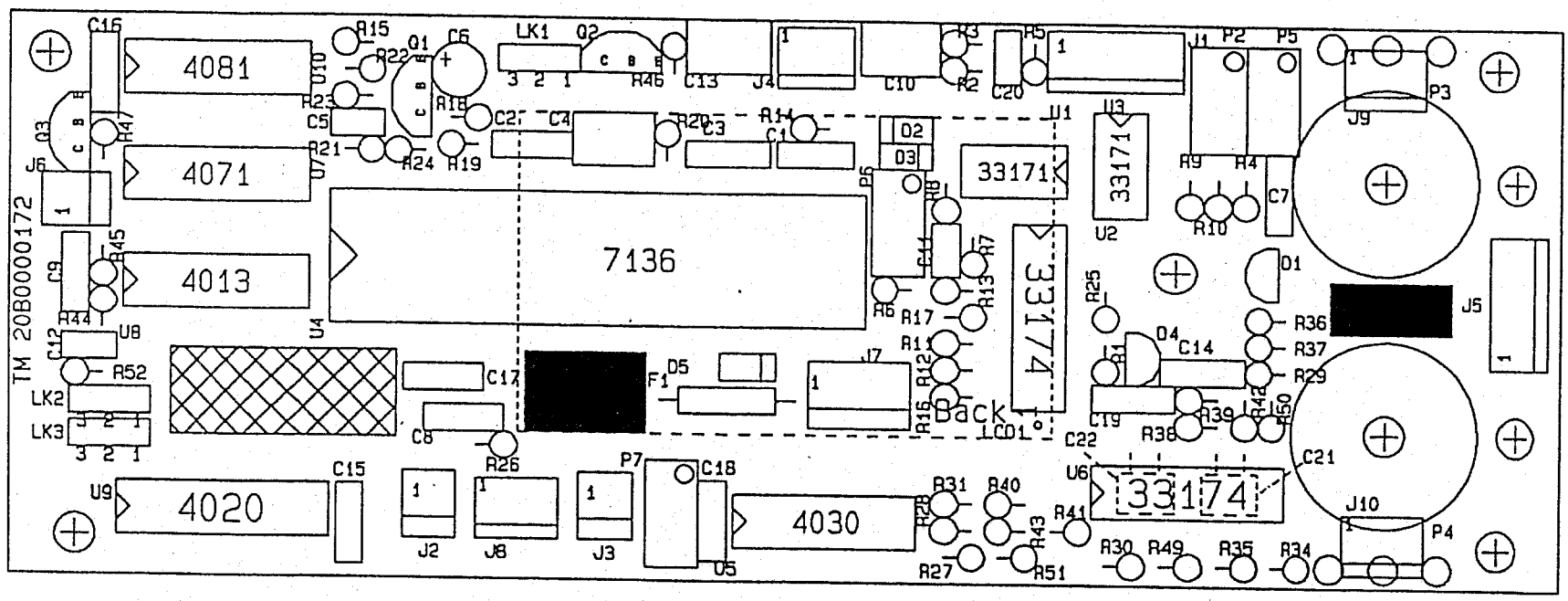
CAD REF : MA16B153

CONTROLLED


T7 sensor input circuit
R17 sensor input circuit
Sensor input
J1
CON5
MC33171
MC33174
OFFS
1N4148
JPAD50
SIGIN
GND
V+
2. Set P6 for 00 display - no sensor
1. Set P5 for 120-130mV DC at pin 6 - no sensor
3. Adj for 21% 02
Fitted for alarm check
HI_AEF
LO_AEF
VSIG
To R38
CON4
Note 1
HI_ALM
U6: 8
HILO_ALM
U7: 3
LOWBATT
U6: 1
4030
LCD1
LO BAT
PLUS
MIN
LOBAT
BP
COM
DP2
DP3
DP4
COLON
U4
7136
IN_HI
IN_LO
COMM
CREF+
CREF-
VREF_HI
VREF_LO
BUFF
A/Z
INT
OSC1
OSC2
OSC3
TEST
2.5V Source
Calibration
Ref V
3.7V To A29 Source
Adj 100%
VREF
To U6: 5
TESTRC
MUTE
To U9: 11
LK1
BC327
Q1
To U8: 3
U9: 10
4. Adjust P7 to have P1 in mid position at 21% & 100%
Note 1 : break link if switch for alarm check fitted
Note 2 : P1 connected via J3
Trigate Projects (Pty) Ltd ©
Oxygen Monitor
Rev D
Signal amplification and display
Drwg no : TM CD20B0000172
02MON8.SCH
Sheet 1 of 2
Rev
Date
Drwn
Chkd
Appr
ECO#
2
12/2/98
BCG
AN

CONTROLLED

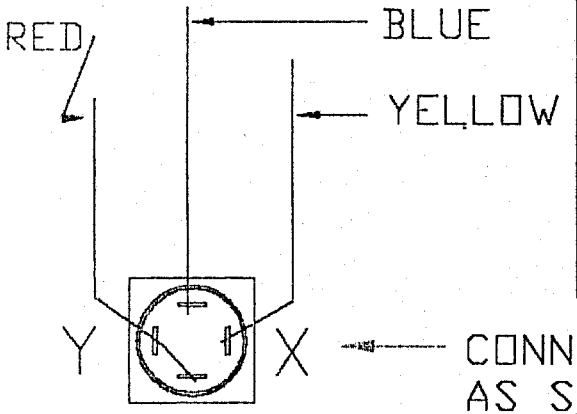

Mute switch & alarm led
CON3
J4
TO Buzzer
J6
CON2
LED1
R46
Q2
BC337
R15
4k7
Q3
BC337
R47
4k7
GND
V+
J5
CON5
Expansion connector
1 SIGIN
2 2.5V
3 V+
4 GND
5 TESTAC
U10
4081
U7
4071
U9
4020
Note 2
LK3
LK2
BP
MUTE
To LK1
U8
4013
R48
100K
47pF
C12
100nF
C13
SW1
R45
100K
1nF
C9
R44
100K
Note 1 : LED1 and SW1 connected via J4
Note 2 : Break track when mute period is NOT 60 seconds and a link is inserted.
Note 3 : C21 & C22 fitted directly to pins of U6 on solder side
Trigate Projects (Pty) Ltd ©
Oxygen Monitor
Alarms and mute control
Drwg no : TM C02080000172
02MONB.SCH
Sheet 2 of 2
Rev
Date
Drwn
Chkd
Appr
ECO#
2
16/01/97
BCG
HI_ALM
To U5: 1
HI/LO_ALM
To U5: 6
From U4: 21
4030
U5
R42
1M
MC33174
U6
R38
1k
C21
400nF
R39
1k
R40
2k
See Note 3
From U2: 7
VSIG
R50
100K
R51
100K
R43
10M
C22
400nF
R41
1k
LO_REF
To J7
HI_REF
To J7
HIGH Alarm set
LOW Alarm set
R34
R36
100R
22k
2.5V
R35
1k
R37
18k
LM324
MC33174
VREF
From P1
LOWBATT
To U5: 9
R31
100K
R30
1M
Battery level sense
R49
1k
R27
100K
R28
330K
R29
1k
3.7V
From U2: 14
On/Off switch
J3
CON2
125mA
F1
D5
6V2
J2
CON2
Powerinput
100nF
C14
C15
C16
C17
C18
V+
GND

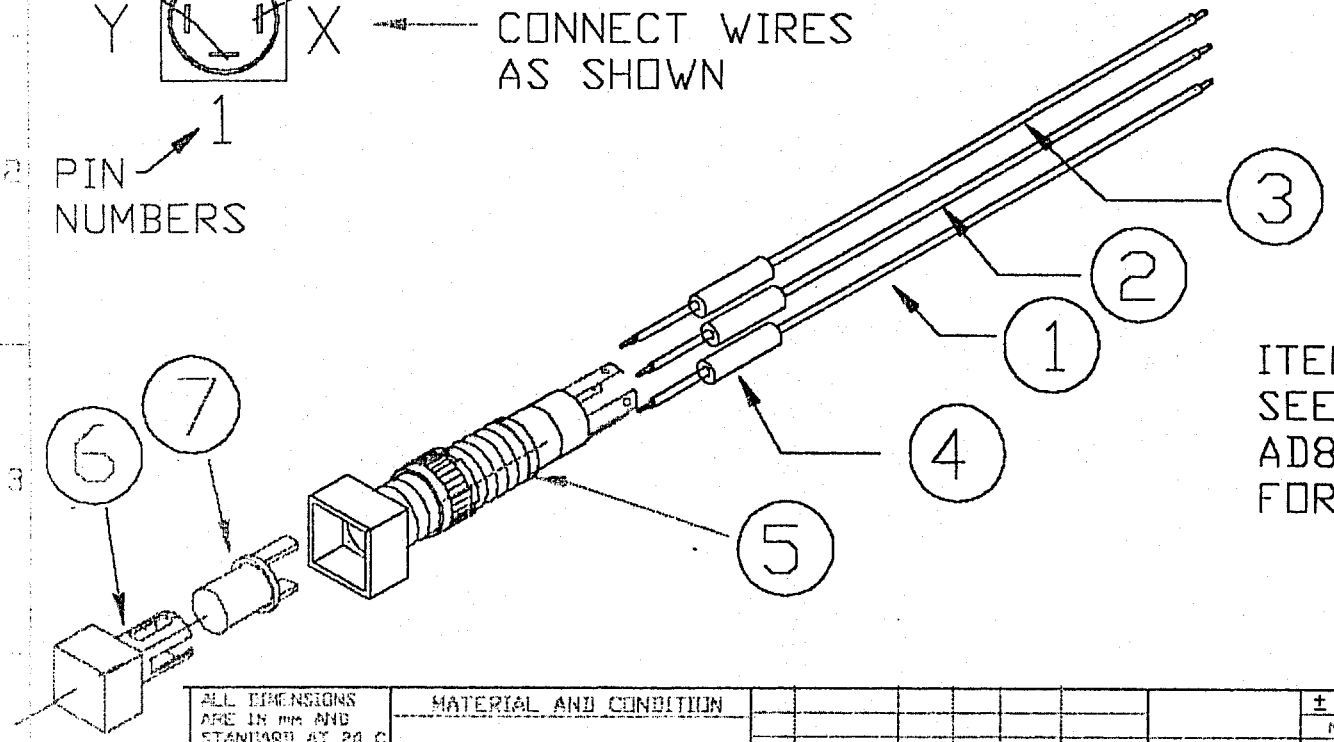


Notes : LCD1, C21, C22 mounted on solder side
: C21 to pins 9&10 of U6, C22 to pins 12&13
: P3 & P4 bodies on component side
: Hatched area routed to corners marked by vias

						Trigate Projects (Pty) Ltd ©	
						Oxygen Monitor	
Released	2	16/1/97	BCG			Component Overlay	Page 1 of 1
	Rev.	Date	Drawn	Chkd	Appr	ECO no.	Drg no. TM C020B0000172	02MONCA.PCB

NO	PART NUMBER	DESCRIPTION	QTY
1	25G0000020	1mm DIA x 80mm LONG BLUE PVC STRANDED WIRE	1
2	25G0000030	1mm DIA x 80mm LONG RED PVC STRANDED WIRE	1
3	25G0000050	1mm DIA x 80mm LONG YELLOW PVC STRANDED WIRE	1
4	26D0000020	2.4mm ID x 10mm LONG HEATSHRINK SLEEVING	3
5	66G0000010	PUSH BUTTON SNAP ACTION SWITCH	1
6	67C0000010	RED LENS TRANSPARENT	1
7	54D0000010	LED TYPE HLMP-1340	1
8	22D0000021	NYLON SPACER	1
9	40-0000380	6471-031 0.1KK HOUSING 3 WAY.	1
10	40-0000560	0.1KK TERMINAL 4809 TL.	3





NOTE:

ITEM NO'S 8,9 AND 10.
SEE DRAWING No
AD82D0000080
FOR ASSEMBLY

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION | QTY
CRITICAL (C)
MAJOR A (A)
MAJOR B (B)
MINOR (S)

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	REVISION NUMBER
0	18/12/96	W.F.	AN		

original scale | ± mm | ± deg | unspecified tol

TITLE :
MUTE SWITCH ASSEMBLY

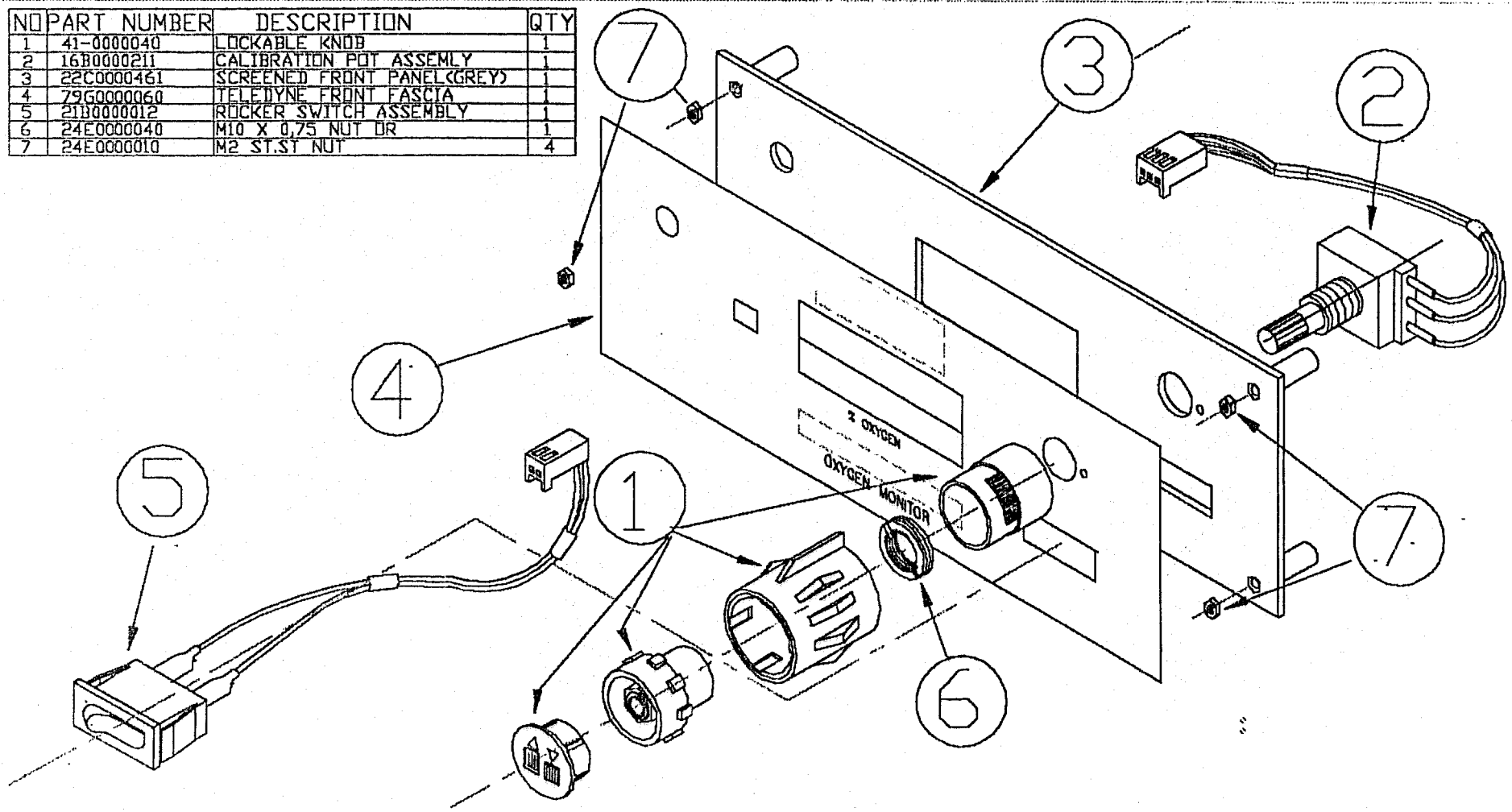
TRIGATE PTY LTD

DRAWING No
EA16B0000051

CAD REF : EA16B051

CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1	41-0000040	LOCKABLE KNOB	1
2	16B0000211	CALIBRATION POT ASSEMLY	1
3	22C0000461	SCREENED FRONT PANEL(GREY)	1
4	79G0000060	TELEDYNE FRONT FASCIA	1
5	21B0000012	ROCKER SWITCH ASSEMBLY	1
6	24E0000040	M10 X 0,75 NUT DR	1
7	24E0000010	M2 ST.ST NUT	4



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION QTY
CRITICAL
MAJOR A
MAJOR B
MINOR

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	CR NOTE NUMBER
3	6/4/98	W.F.			T3/98
2	5/3/98	W.F.			T2/98
1	07/08/97	SG			

original scale ± mm ± deg unspecified tol

TITLE TELEDYNE FRONT PANEL ASSEMBLY

SHEET OF

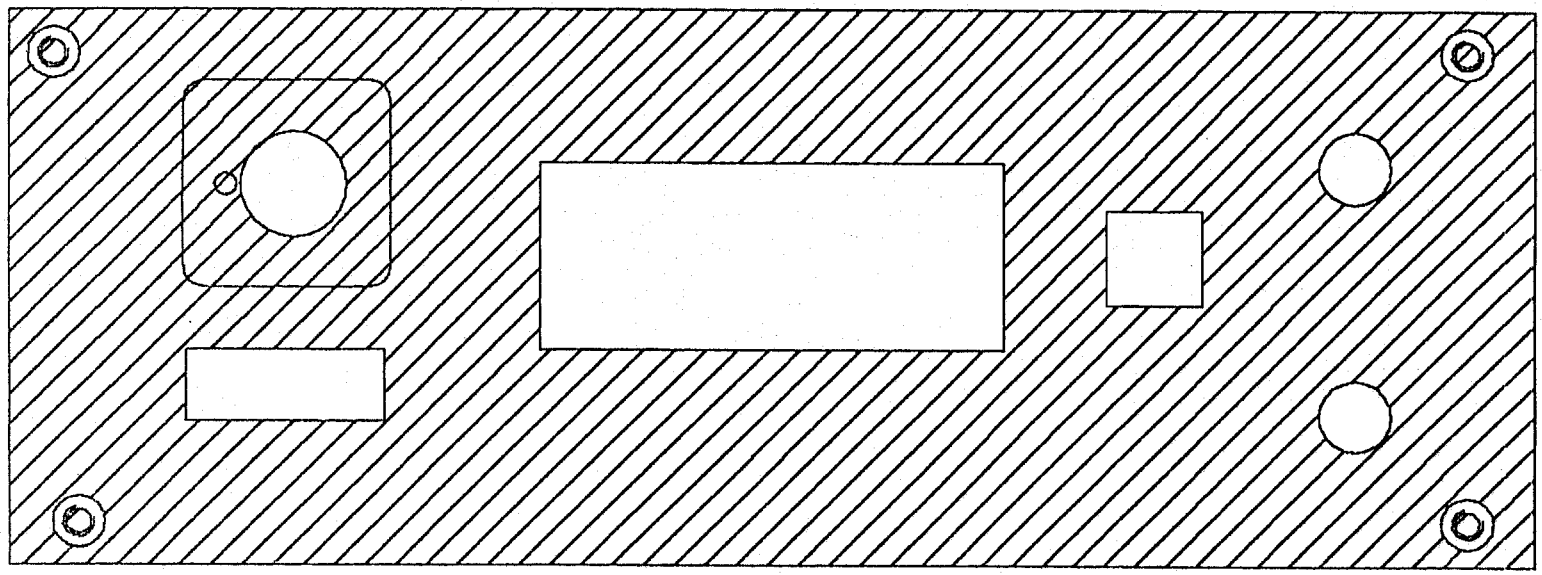
TRIGATE LTD

DRAWING NO

AD16B0000133

CAD REF AD16B133

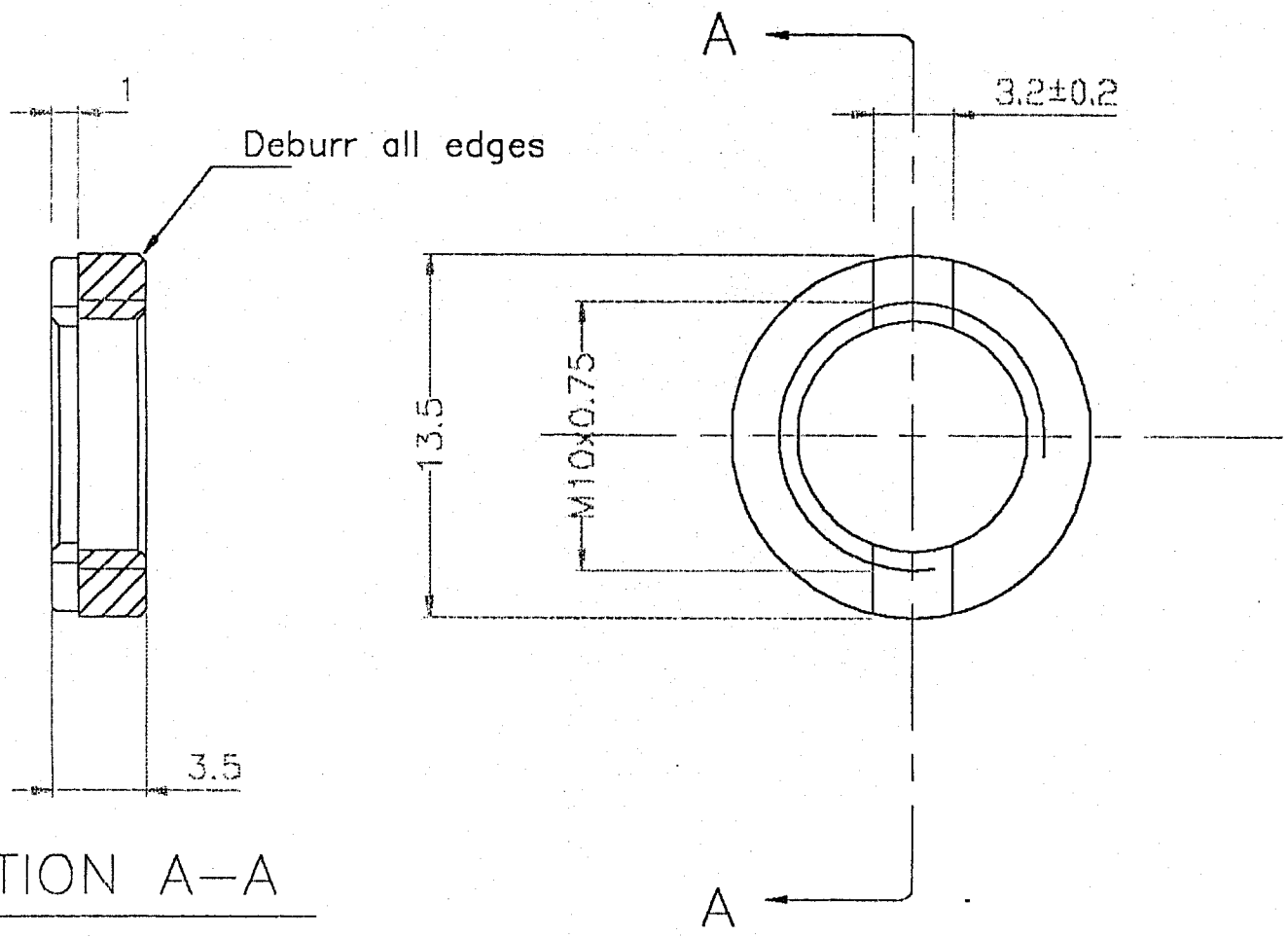
CONTROLLED



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION: ABS GREY INJECTION MOULDED							1 : 1 original scale	±0.2 mm ± deg unspecified tol	TRIGATE (PTY) LTD
	ASSOCIATED DOCUMENTS							TITLE: ACCUROX FRONT PANEL SCREENED.		DRAWING No: ED22C0000620
CLASSIFICATION: CRITICAL, MAJOR A, MAJOR B, MINOR	TOOLS JIGS GAUGES	REF	DATE	DRAWN	CHKD	APPR	DT NOTE NUMBER	SHEET	OF	CAD REF: ED22C620
		0	23/07/97	SG	AN	AM				

CONTROLED

A3

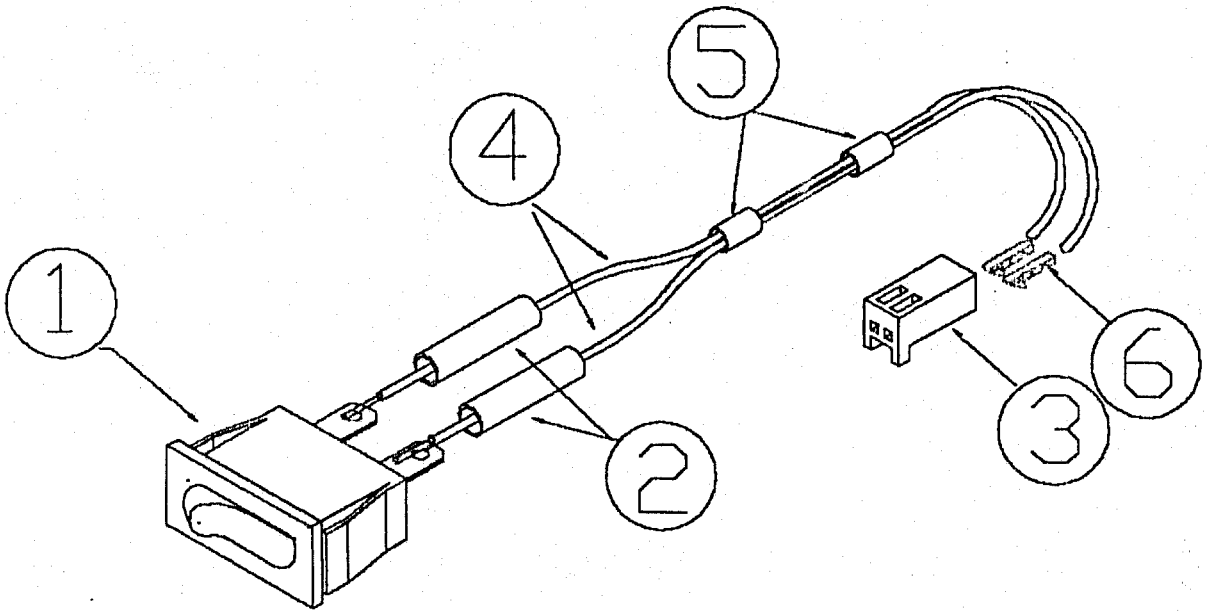


SECTION A–A

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION: BRASS–PASSIVATED							4 : 1 original scale	±0.2 mm ± deg unspecified tol	TRIGATE (PTY) LTD	
	ASSOCIATED DOCUMENTS							TITLE : CALIBRATION – POT NUT		DRAWING No: ED22D0000010	
CLASSIFICATION: CRITICAL, MAJOR A, MAJOR B, MINOR	TOOLS JIGS GAUGES	REV	DATE	DRAWN	CHKD	APPR	CR NOTE NUMBER			CAD REF : ED22D10	
		A	19-1-96	W.C.	AN	CM					

CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1	66L0000010	SLIMLINE ROCKERSWITCH	1
2	26D0000030	ID 4.8mm x 15mm LONG HEATSHRINK	2
3	40-0000570	6471-021 0.1KK HOUSING	1
4	25G0000030	1mm DIA x 110mm LONG PVC WIRE RED	2
5	26D0000010	ID 3.2mm x 5mm LONG HEATSHRINK	2
6	40-0000560	TL4809 TERMINAL	2



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION	QTY
CRITICAL	
MAJOR A	
MAJOR B	
MINOR	

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	CR NOTE NUMBER
0	16/07/97	SG	AN	VM	

original scale | ± mm | ± deg unspecified tol

TITLE :

ROCKER SWITCH ASSEMBLY

TRIGATE PTY LTD

DRAWING No

EA21B0000012

CAD REF : EA21B012

CONTROLLED

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION							original scale	± mm unspecified tol. ± deg
	ASSOCIATED DOCUMENTS							TITLE : TELEDYNE FASCIA	
CLASSIFICATION / QTY: CRITICAL, MAJOR A, MAJOR B, MINOR	TOOLS JIGS GAUGES							SHEET	OF
		REV	DATE	DRAWN	CHKD	APPR	DR NOTE NUMBER		
		0	05/02/97	W.F.					

TRICATE

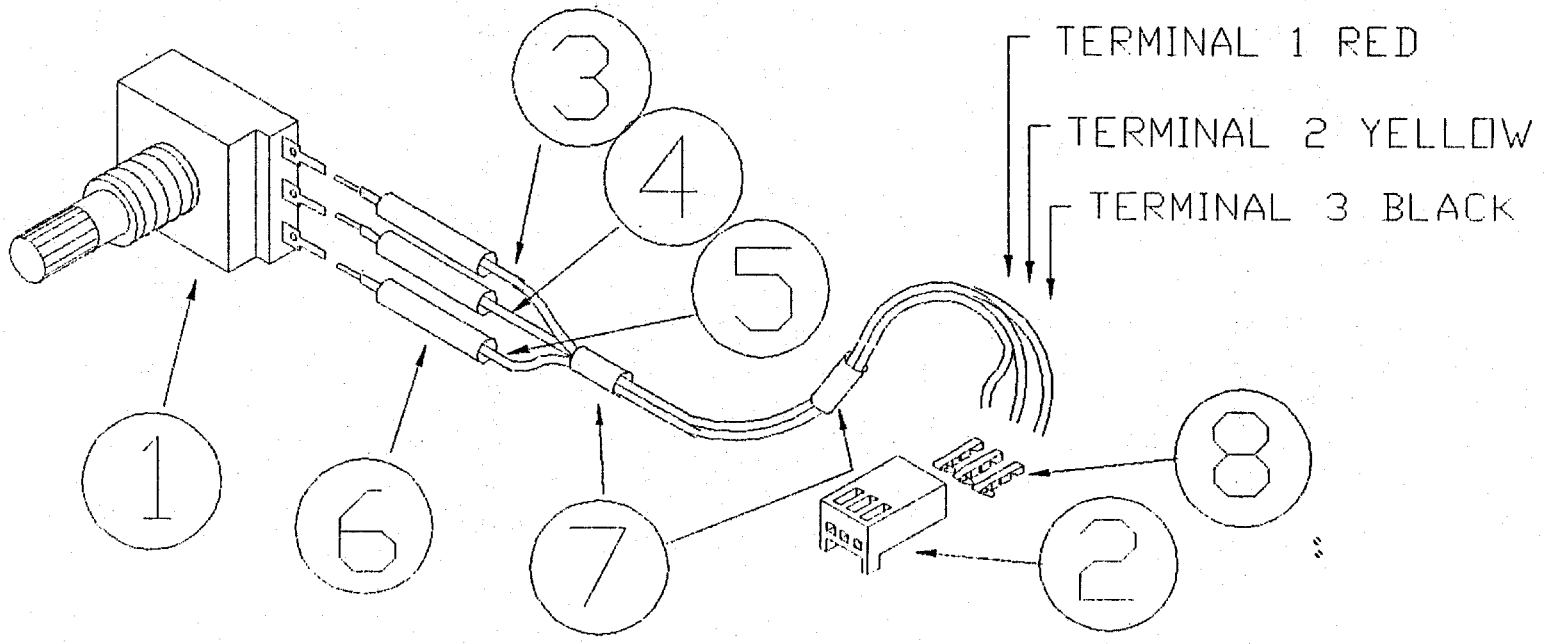
DRAWING NO.

FD79G0000060

CAD REF : FD79G060

CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1	55L0000080	100k POT'6mmDIA x 10mm LONG SHAFT	1
2	40-0000380	6471-031 0.1KK HOUSING	1
3	25G0000030	1mm DIA x 120mm LONG PVC WIRE RED	1
4	25G0000050	1mm DIA x 120mm LONG PVC WIRE YELLOW	1
5	25G0000060	1mm DIA x 120mm LONG PVC WIRE BLACK	1
6	26D0000020	HEATSHRINK ID 2.4mm x 15mm LONG	3
7	26D0000020	HEATSHRINK ID 2.4mm x 5mm LONG	2
8	40-0000560	TL4809 TERMINAL	3



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

CLASSIFICATION	QTY
CRITICAL	(C)
MAJOR A	(MA)
MAJOR B	(MB)
MINOR	(n)

REV	DATE	DRAWN	CHKD	APPR	CR NOTE NUMBER
0	24/12/98	W.F.	AN		

original scale | ± mm | ± deg | unspecified tol

TITLE :
CALIBRATION
POT. ASSEMBLY

SHEET | OF

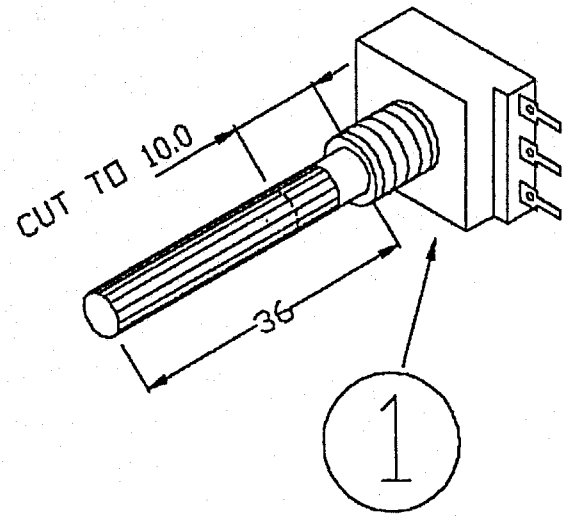
TRIGATE (PROTO) LTD

DRAWING No
EA16B0000211

CAD REF EA16B211

CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1	55L0000070	100k POT 6mm x 36mm LONG SHAFT	1



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION QTY
CRITICAL
MAJOR A
MAJOR B
MINOR

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	CR NOTE NUMBER
0	02/01/97	W.E.	AN		

original scale | ± mm | ± deg | unspecified tol

TITLE CALIBRATION POT SHAFT MODIFICATION

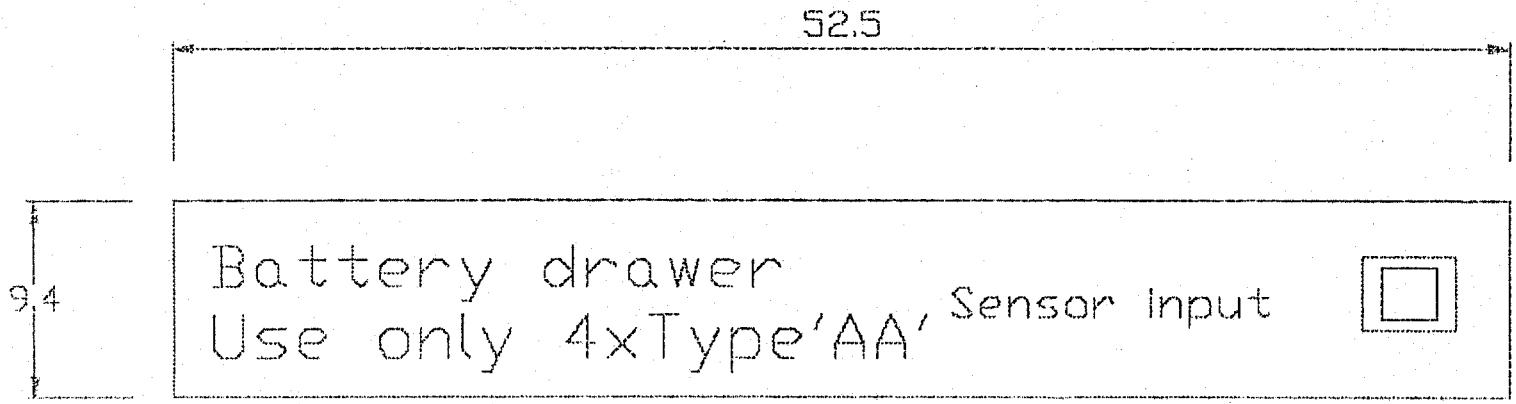
SHEET | OF

TRIGATE

DRAWING No: ED55L0000080

CAD REF ED55L080

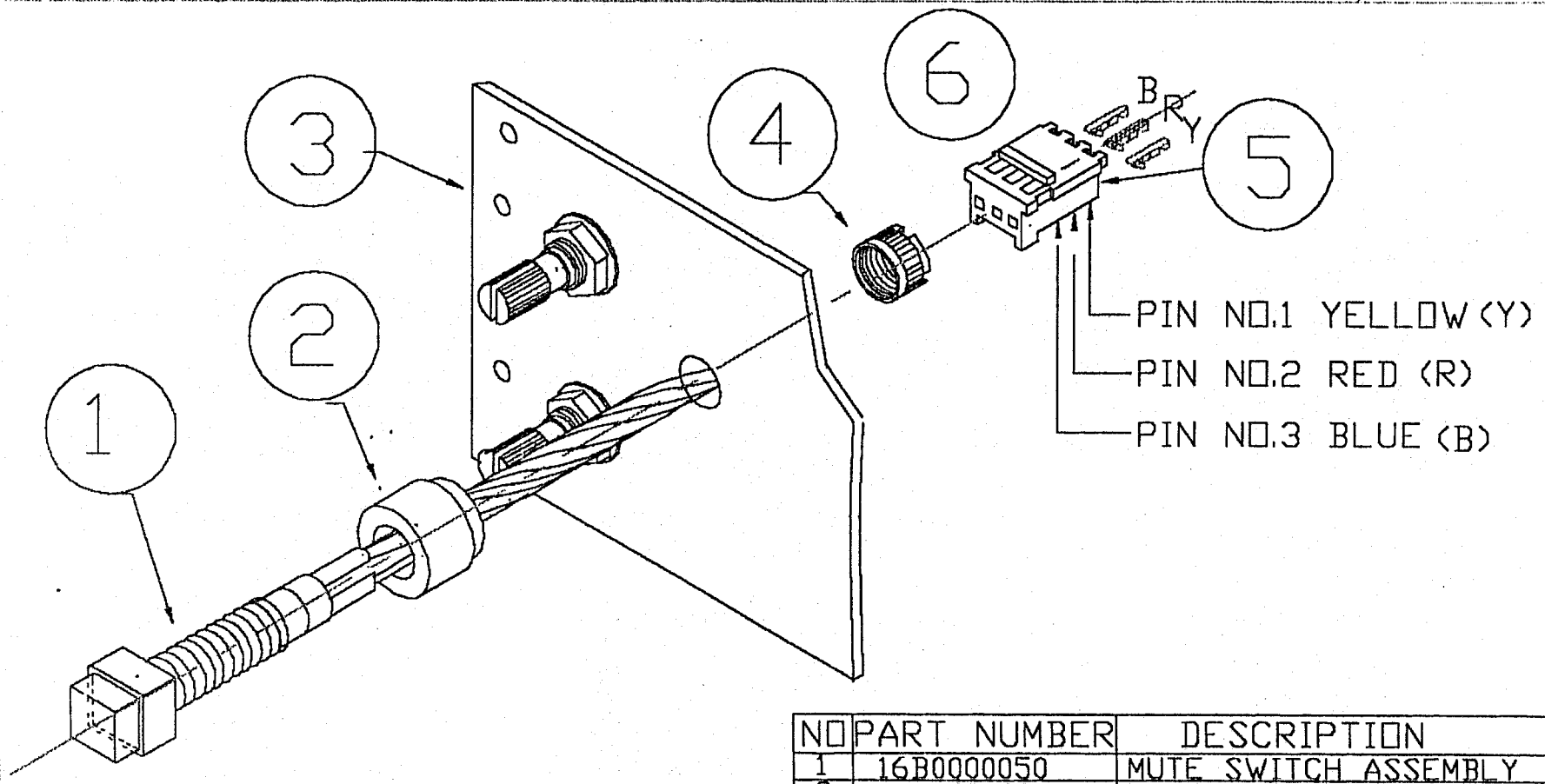
CONTROLLED



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION							3 : 1 original scale	± mm ± deg unspecified tol
	ASSOCIATED DOCUMENTS							TITLE : BATTERY DRAW LABEL	TRIGATE PTY LTD
CLASSIFICATION QTY CRITICAL MAJOR A MAJOR B MINOR	TOOLS JIGS GAUGES	REV	DATE	DRAWN	CHKR	APPR	CIT NOTE NUMBER	SHEET 1 OF 1	DRAWING No LD79C000024 0 CAD REF LD79C240
		0	09/12/90	W.F.	AN	VM			

CONTROLLED

A-1



NO	PART NUMBER	DESCRIPTION	QTY
1	16B0000050	MUTE SWITCH ASSEMBLY	1
2	22D0000021	NYLON SPACER	1
3	20B0000172	OXYGEN MONITOR PCB	1
4		NUT OF ITEM 1	1
5	40-0000100	3WAY I.D.C. CONNECTOR	1
6	40-0000560	TL4809 TERMINAL	3

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION QTY
CRITICAL (C)
MAJOR A (A)
MAJOR B (B)
MINOR (N)

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPR	CR NOTE NUMBER
1	13/5/98	V.F.	AN	VM	
0	19/12/96	W.F.			

original scale

± mm ± deg unspecified tol

TITLE ASSEMBLY OF MUTE SWITCH TO OXYGEN MONITOR PCB

SHEET | | OF

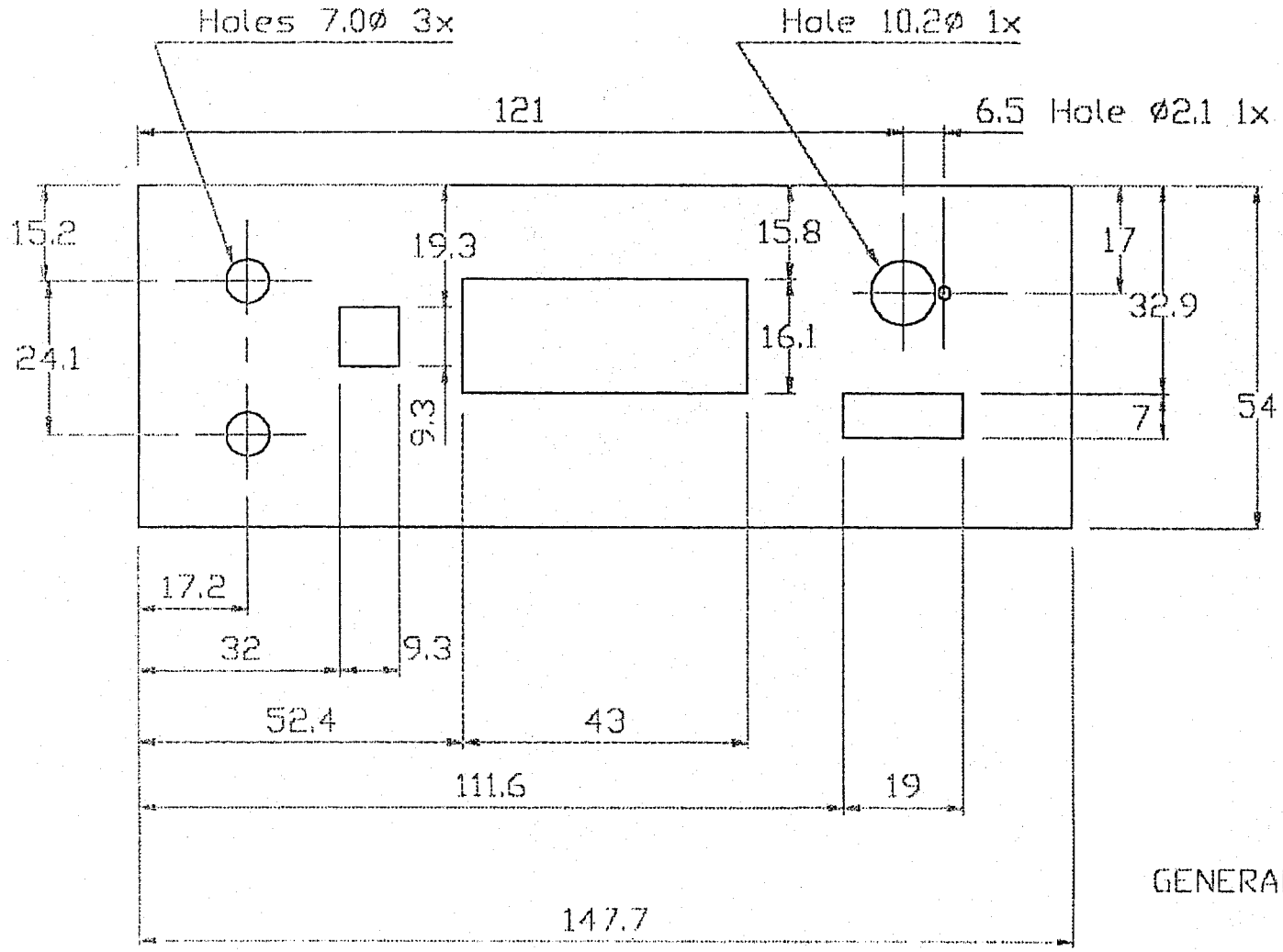
TRIGATE

DRAWING NO

AD82D0000080

CAD REF : AD82D080

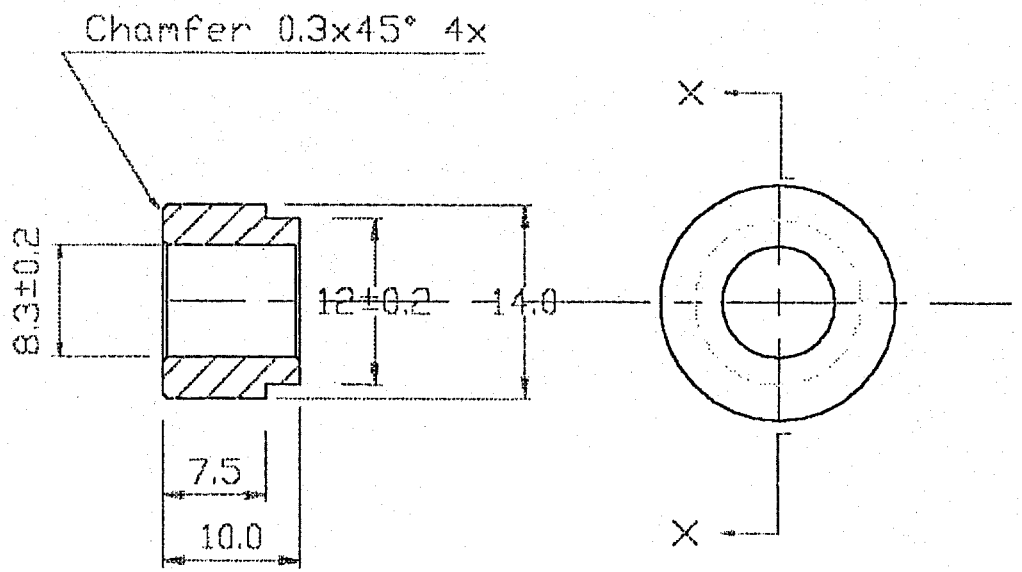
CONTROLLED



GENERAL TOLERANCE ±0.2

CONTROLLED

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION: POLYCARBONATE							1 : 1 original scale	±0.2 mm, ± deg unspecified tol
	ASSOCIATED DOCUMENTS							TITLE : FASCIA	TRIGATE (PTY) LTD
CLASSIFICATION QTY: CRITICAL, MAJOR A, MAJOR B, MINOR	TOOLS JIGS GAUGES	1	06/12/96	W.E.	AN		0003		DRAWING No: ED79G0000021
		0	21/8/96	W.E.					CAD REF: ED79G021
		REV	DATE	DRAWN	CHKD	APPR	ECN NOTE NUMBER		

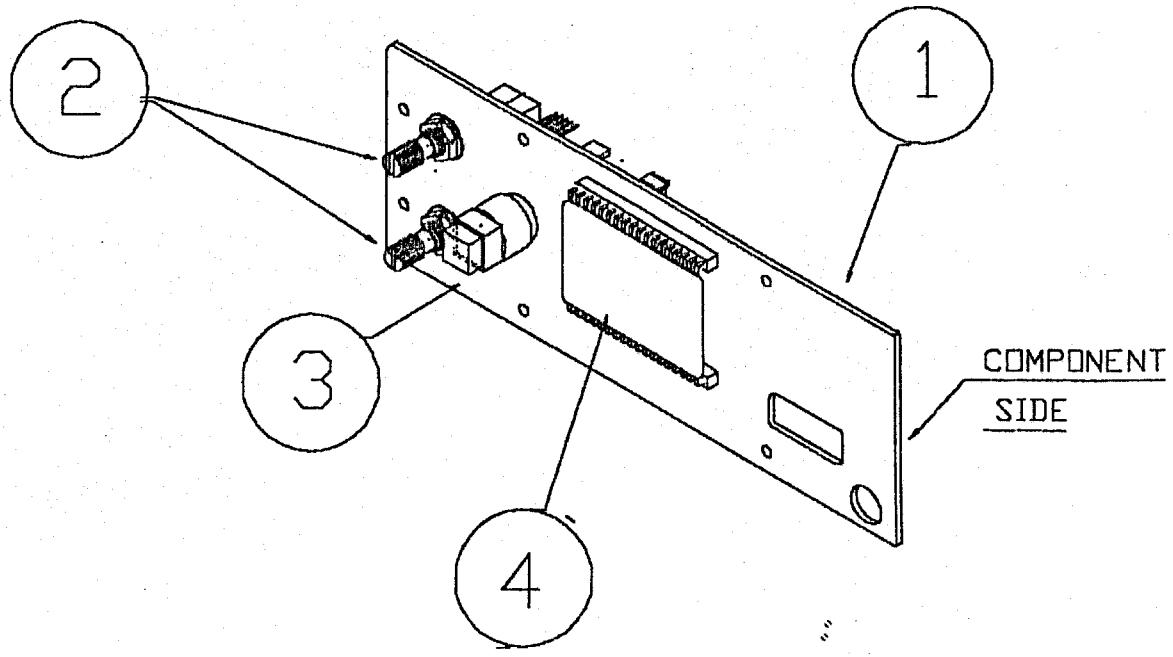


Section x-x

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION							2 : 1 original scale	±0.2 mm unspecified tol	± deg	TRIGATE
	NYLON BLACK							TITLE :			
	ASSOCIATED DOCUMENTS							SPACER			DRAWING No
CLASSIFICATION QTY											ED22D0000021
CRITICAL (1)	TOOLS JIGS GAUGES	1	6/12/96	W.F.	AN	Up	0002				CAD REF ED22D021
MAJOR A (2)		0	7-2-96	W.F.							
MAJOR B (3)		REF	DATE	DRAWN	CHKD	APPR	QT NOTE NUMBER				
MINOR (4)											

CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1	20B0000172	OXYGEN MONITOR SINGLE PCB	1
2	55C0000020	100K POTS - (P3/P4)	2
3	16B0000050	MUTE SWITCH ASSEMBLY	1
4	60C0000010	DISPLAY	1



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION QTY
CRITICAL
MAJOR A
MAJOR B
MINOR

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPD	CHANGE NUMBER
0	03/02/97	W.F.	AN		

original scale | ± mm | ± deg | unspecified tol

TITLE : OXYGEN MONITOR SINGLE PCB ASSEMBLY

SHEET | OF

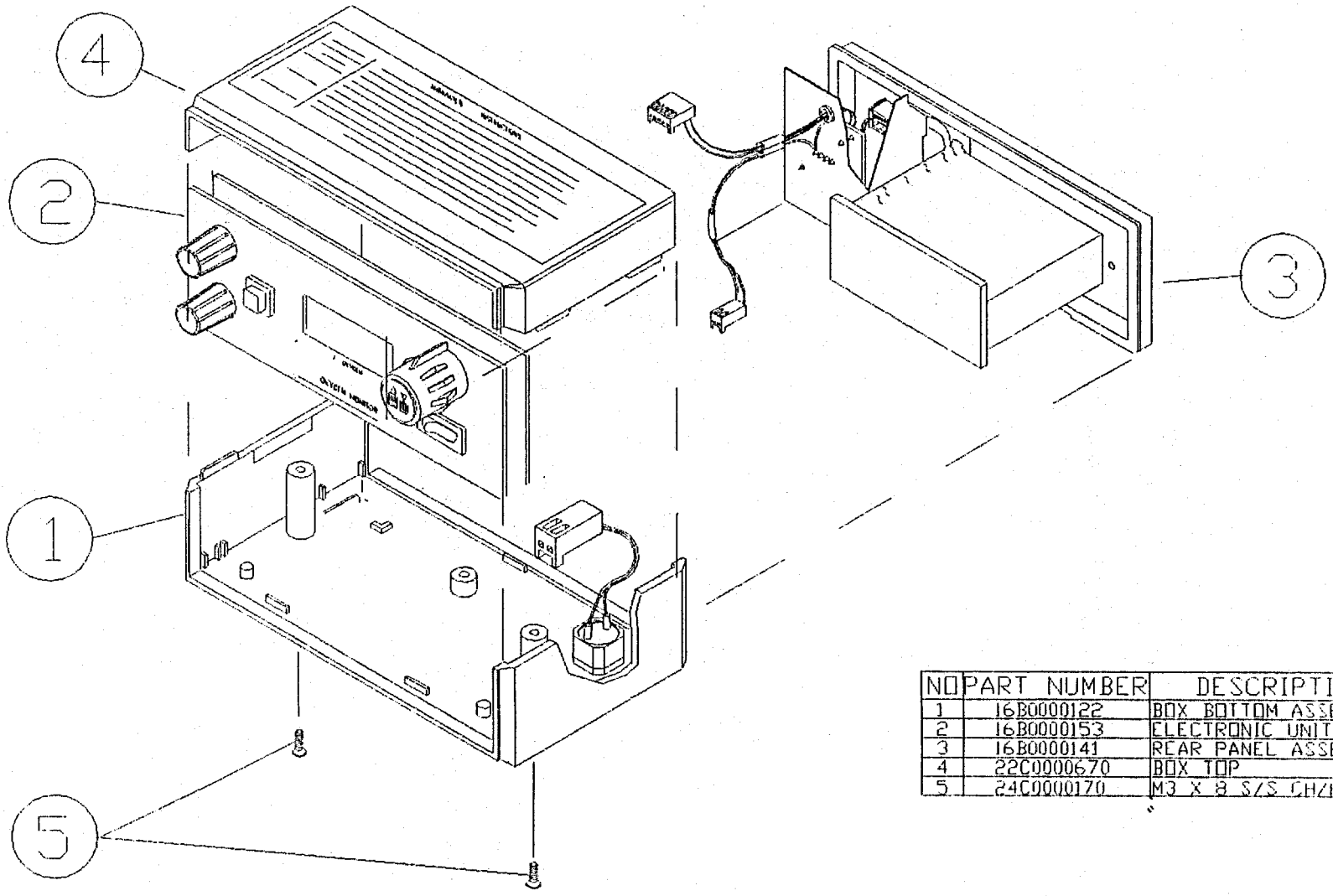
TRIGATE

DRAWING No

MA20B0000172

CAD REF MA20B172

CONTROLLED



NO	PART NUMBER	DESCRIPTION	QTY
1	16B0000122	BOX BOTTOM ASSEMBLY	1
2	16B0000153	ELECTRONIC UNIT ASSEMBLY	1
3	16B0000141	REAR PANEL ASSEMBLY	1
4	22C0000670	BOX TOP	1
5	24C0000170	M3 X 8 S/S CH/HD SCREWS	2

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

CLASSIFICATION QTY

CRITICAL (C)
MAJOR A (MA)
MAJOR B (MB)
MINOR (m)

REV	DATE	DRAWN	CHKD	APPR	CR NOTE NUMBER
4	6/4/98	W.F.	A.N.		T3/98
3	26/2/98	W.F.			T2/98
2	26/2/98	BG			T1/98
0	16/07/97	W.F.	S.G.		

original scale | ± mm | ± deg unspecified tol

TITLE :
TELEDYNE OXYGEN MONITOR FINAL ASSY

SHEET 1 OF 1

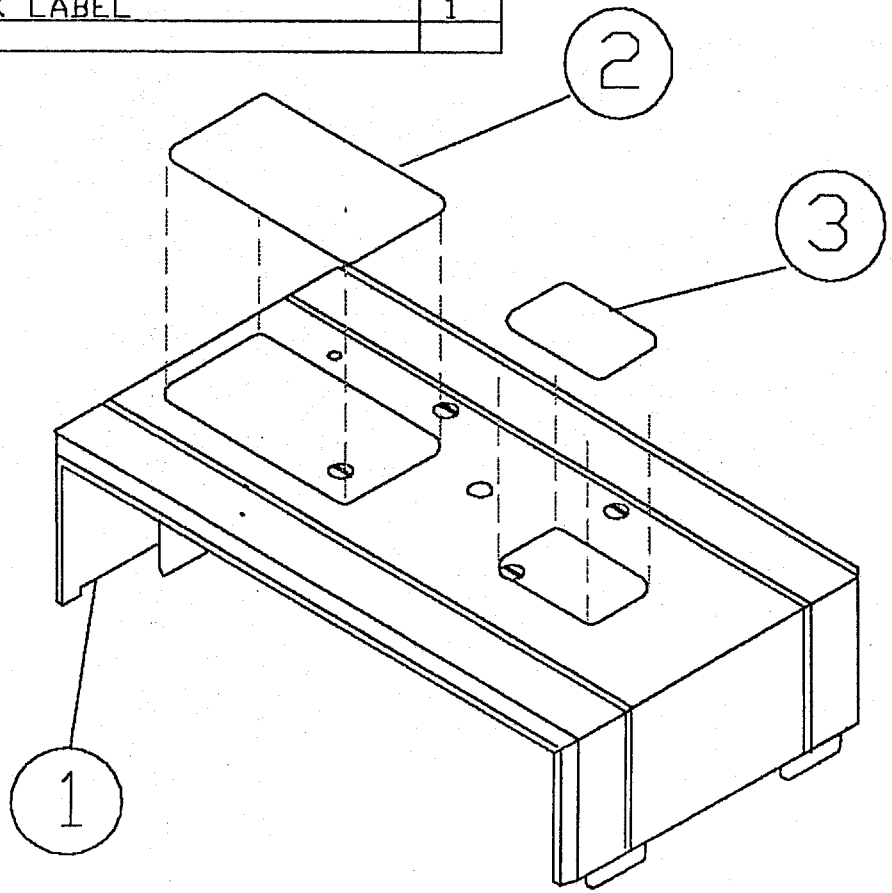
TRIGATE

DRAWING NO
FA10B0000194

CAD REF FA10B194

CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1		OXYGEN MONITOR BOX BOTTOM	1
2		LOGO AND SERIAL NO LABEL	1
3		CE MARK LABEL	1



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

CLASSIFICATION ITY
CRITICAL
MAJOR A
MAJOR B
MINOR

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

REV	DATE	DRAWN	CHKD	APPD	CERTIFICATE NUMBER
0	11/02/97	W.F.	AN	VM	

original scale | ± mm | ± deg | unspecified tol

TITLE SERIAL NO LOGO AND CE MARK LABELS TO OXYGEN MONITOR BOX BOTTOM

SHEET | OF

TRIGATE PTY LTD

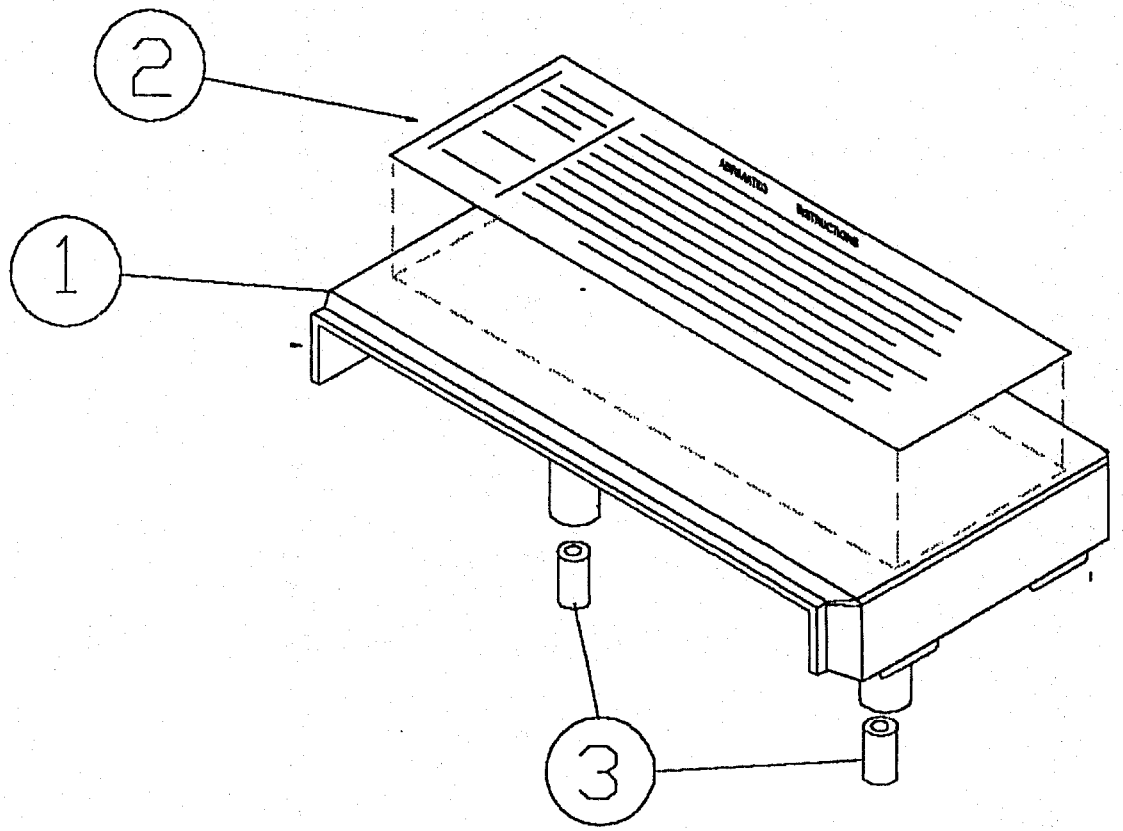
DRAWING No

AD82D0000110

CAD REF : AD82D110

CONTROLLED

NO	PART NUMBER	DESCRIPTION	QTY
1	22C0000670	BOX TOP GREY SCREENED.	1
2	79C0000080	CALIBRATION INSTRUCTION DECAL	1
3	24-0000040	M3 INSERT PLK-B-M3.	2



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED

MATERIAL AND CONDITION

ASSOCIATED DOCUMENTS

TOOLS JIGS GAUGES

CLASSIFICATION	QTY
CRITICAL	(C)
MAJOR A	(MA)
MAJOR B	(MB)
MINOR	(N)

REV	DATE	DRAWN	CHKD	APPR	DT NOTE NUMBER
1	5/3/98	W.F.	AN	VM	T2/98
0	18/08/97	SG			

original scale | ± mm | ± deg unspecified tol

TITLE: BOX TOP ASS' SCREENED ACCUROX

SHEET | OF

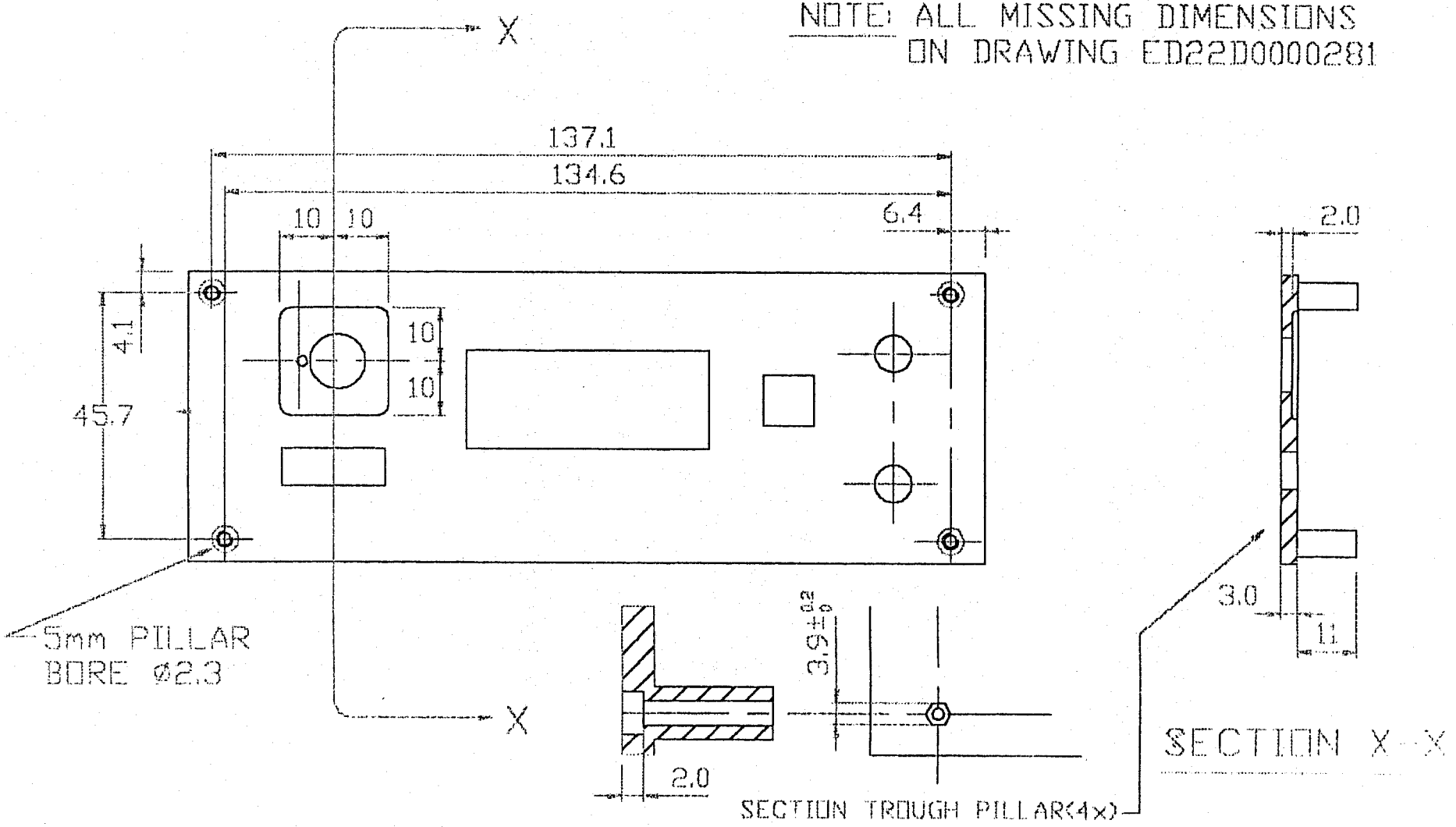
TRIGATE

DRAWING No MA15B0000111

CAD REF MA15B111

CONTROLLED

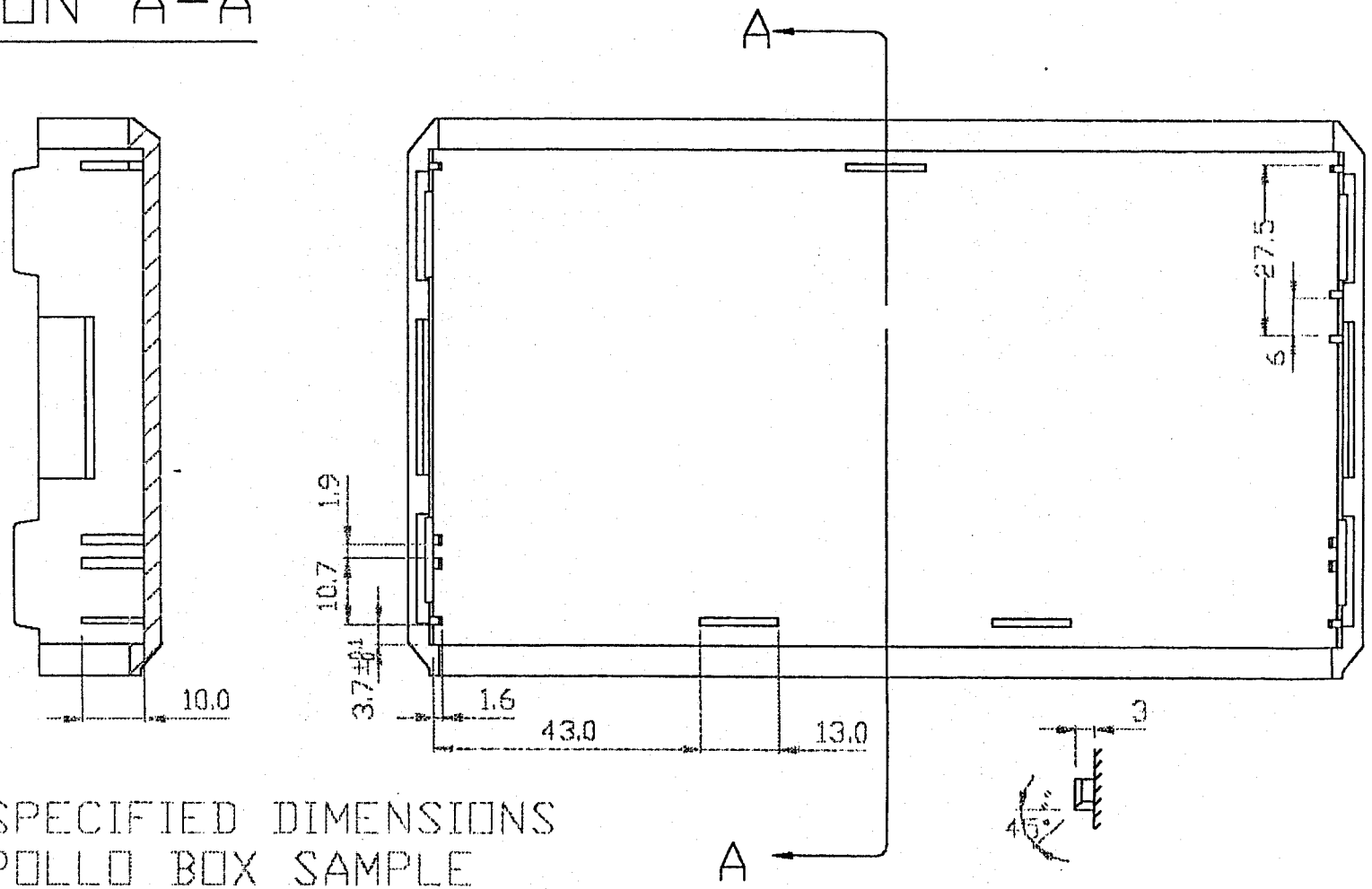
NOTE: ALL MISSING DIMENSIONS ON DRAWING ED22D0000281



ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION: ABS GREY INJECTION MOULDED							1 : 1 original scale	± 0.2 mm ± deg unspecified tol	TRIGATE (PTY) LTD	
	ASSOCIATED DOCUMENTS							TITLE : ACCUROX FRONT PANEL		DRAWING No ED22C0000461	
CLASSIFICATION QTY: CRITICAL (C), MAJOR A (MA), MAJOR B (MB), MINOR (MI)	TOOLS JIGS GAUGES	REF	DATE	DRAWN	CHKD	APPR	CUT NOTE NUMBER	SHEET	OF	CAD REF ED22C461	
		1	3/3/98	W.F.	AN						
		0	13/12/97	W.F.							

CONTROLLED

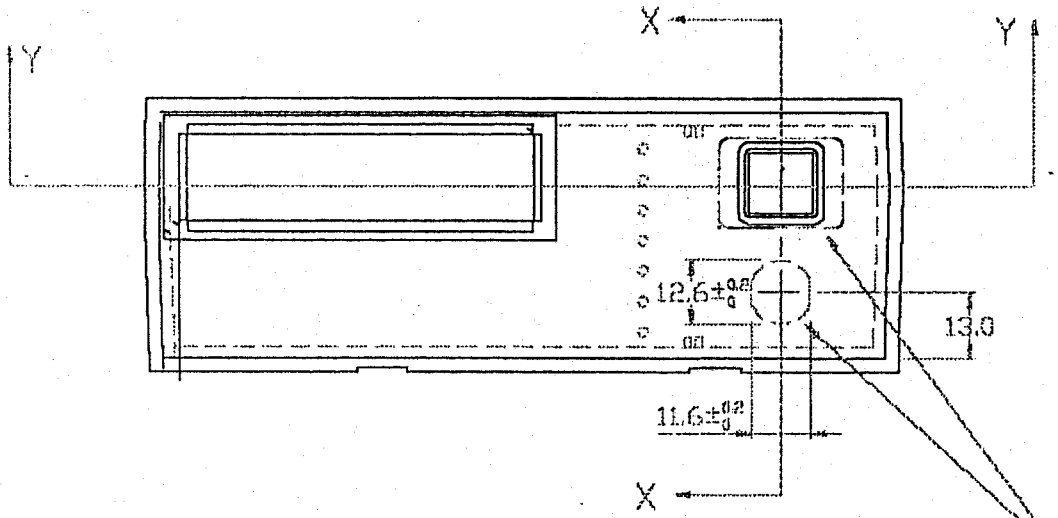
SECTION A-A



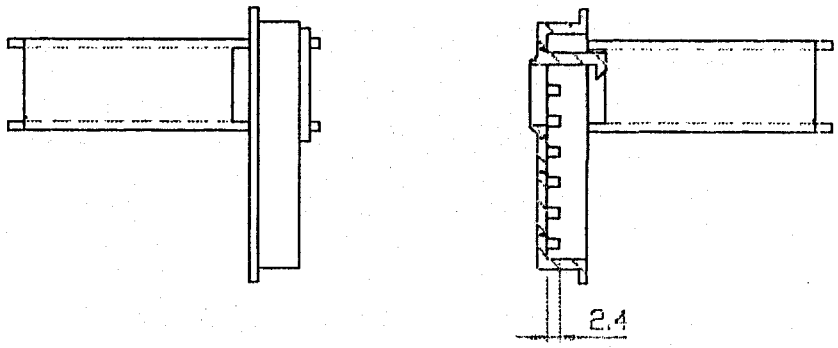
ALL UNSPECIFIED DIMENSIONS
FROM APOLLO BOX SAMPLE

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION: ABS GREY INJECTION MOULDED						1 : 1 original scale	±0.1 mm ± deg unspecified tol	TRIGATE
	ASSOCIATED DOCUMENTS						TITLE : ACCUROX BOX TOP GREY		DRAWING No ED22C0000440
CLASSIFICATION QTY: CRITICAL (C), MAJOR A (MA), MAJOR B (MB), MINOR (R)	TOOLS JIGS GAUGES	0 REV	13/1/98 DATE	W.E. DRAWN	AN CHKD	APPR	DFT NOTIC NUMBER	SHEET	OF	CAD REF : ED22C440

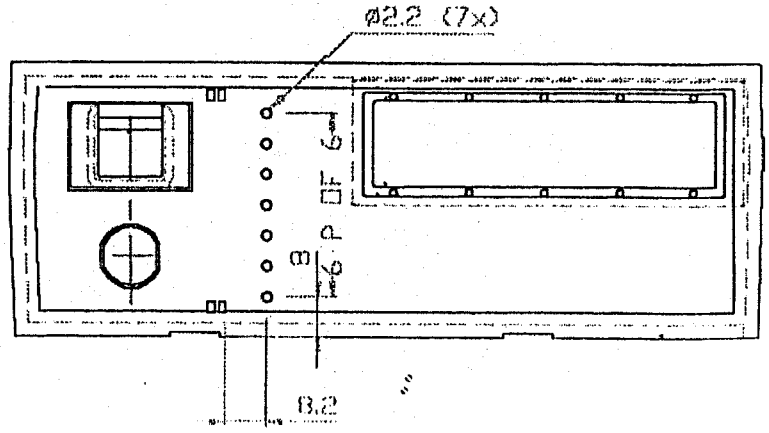
CONTROLLED

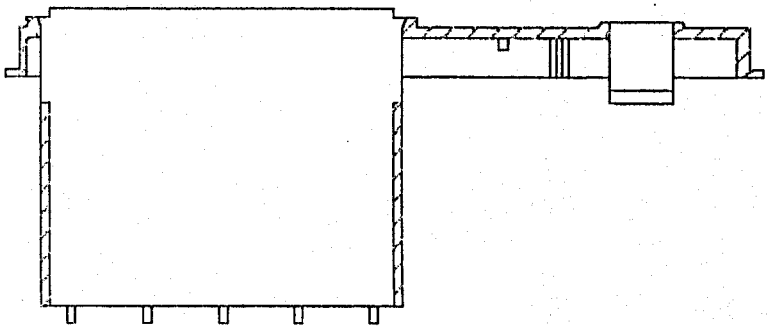


SECTION X-X



ADDITIONAL INSTRUMENT PORTS
IN KNOCK OUT CONDITION





SECTION Y-Y

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION: ABS GREY INJECTION MOULDED						original scale	± mm: unspecified tol	± deg
	ASSOCIATED DOCUMENTS						TITLE : ACCUROX REAR PANEL GREY		
CLASSIFICATION RTY: CRITICAL (C), MAJOR A (MA), MAJOR B (MB), MINOR (A)	TOOLS JIGS GAUGES								
		REV: 4	DATE: 3/9/17	DRAWN: WF	CHKD: AN	APPR:	DR NOTE NUMBER	SHEET	OF

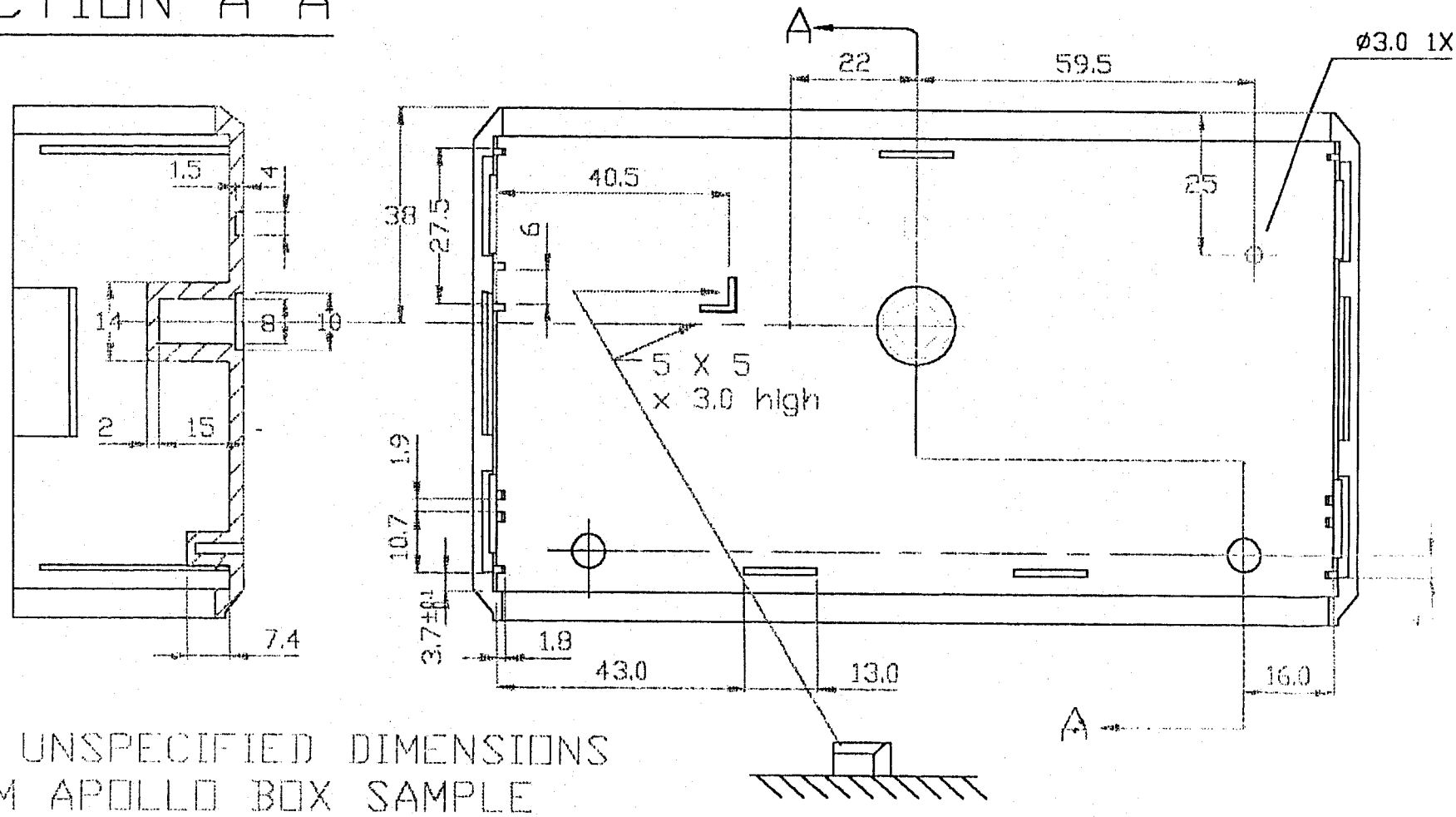
TRIGATE

DRAWING No: ED22C0000170

CAD REF : ED22C470

CONTROLLED

SECTION A-A

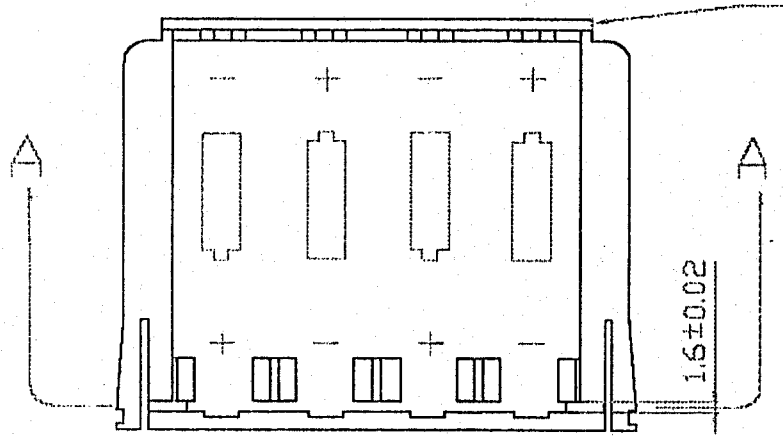


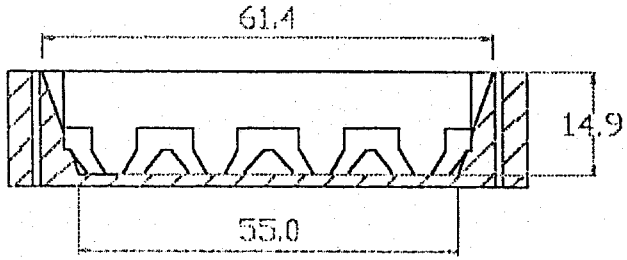
ALL UNSPECIFIED DIMENSIONS
FROM APOLLO BOX SAMPLE

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION: ABS GREY INJECTION MOULDED							1 : 1 original scale	±0.1 mm ± deg unspecified tol	TRIGATE
CLASSIFICATION QTY: CRITICAL (C), MAJOR A (MA), MAJOR B (MB), MINOR (MI)	ASSOCIATED DOCUMENTS							TITLE: ACCUROX BOX "BOTTOM" GREY		DRAWING No: ED22C0000450
	TOOLS JIGS GAUGES									CAD REF: ED22C450
		REV: 0	DATE: 18/07/97	DRAWN: W.E.	CHKD: BN	APPR:	DR NOTE NUMBER			

CONTROLLED

P.C.B. IN BATTERY BOX





SECTION A-A

ALL DIMENSIONS ARE IN mm AND STANDARD AT 20 C UNLESS OTHERWISE INDICATED	MATERIAL AND CONDITION: ABS GREY INJECTION MOULDED									original scale	± mm ± deg unspecified tol
	ASSOCIATED DOCUMENTS									TITLE: ACCUROX BATTERY DRAWER GREY	TRIGATE
CLASSIFICATION: CRITICAL, MAJOR A, MAJOR B, MINOR	QTY	TOOLS JIGS GAUGES									DRAWING No: ED22C000048D
			L	15/05/98	V.E.	AN	VM			SHEET	OF
			D	26/6/02	V.E.						CAD REF: ED22C048D
			REV	DATE	DRAWN	CHKD	APPR	DETAILS CHANGED			

CONTROLLED

ACCUFUSION (PTY) LTD

COPY NO : 2

ISSUE : 1
APRIL 1998

PURCHASE SPECIFICATIONS

CONTROLLED

AUTHORISED BY :
DESIGNATION : Director Operations
DATE : April 1998

All components used in the manufacture of the TED 191 Portable Oxygen Monitor have been identified and approved for use in the design process. Purchasing Files in respect of each of these components have been compiled, containing a data sheet for that particular component, and a list of approved suppliers from whom the component may be sourced.

These purchasing files are located in the purchasing department, and are available for inspection.

ACCUFUSION (PTY) LTD

COPY NO : 2

ISSUE : 1
APRIL 1998

INDEX
OF WORK INSTRUCTIONS FOR TEST PROCEDURES AND RESULTS

CONTROLLED

AUTHORISED BY : E Copeland
DESIGNATION : Director Operations
DATE : April 1998

	TITLE	DOCUMENT NUMBER
1	Oxygen Monitor Qualification Test Procedure	TTS-WI 01-01
2	Oxygen Monitor Qualification Test Procedure Results	TTS-TR 01-01
3	Oxygen Monitor Acceptance Test Procedure	TTS-WI 01-02
4	Oxygen Monitor Acceptance Test Procedure Results	TTS-TR 01-02
5	Oxygen Monitor PCB Assembly Test Procedure	TTS-WI 01-03
6	Oxygen Monitor PCB Assembly Test Procedure Results	TTS-TR 01-03
7	Oxygen Monitor Electronic Unit Test Procedure	TTS-WI 01-04
8	Oxygen Monitor Electronic Unit Test Procedure Results	TTS-TR 01-04
9	Oxygen Monitor Final Test Procedure	TTS-WI 01-05
10	Oxygen Monitor Final Test Procedure Results	TTS-TR 01-05

WORK INSTRUCTION

OXYGEN MONITOR QUALIFICATION TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000190)

CONTROLLED

AUTHORISED BY : [signature]
DESIGNATION : Director Operations
DATE : February 1997

OXYGEN MONITOR QUALIFICATION TEST PROCEDURE

1. SCOPE

1.1 INTRODUCTION

The qualification test procedure is designed to verify the design of the product against its specifications.

1.2 PURPOSE

To verify the design of the Oxygen Monitor, as manufactured by the production team, in accordance with the Production Data Pack of the product, produced by Trigate Projects.

1.3 AUDIENCE

The audience for this document are as follows :

* Accufusion Quality Control Personnel
* Trigate Projects Design Personnel
* Trigate Directors

1.4 APPLICABLE DOCUMENTS

The Oxygen Monitor is to comply with the following standards :

* IEC 601 Part 1
* ISO 7767

1.5 REQUIREMENTS TRACEABILITY

ISO 9001:1994(E) Part 4.4.8

WORK INSTRUCTION

OXYGEN MONITOR QUALIFICATION TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000190)

CONTROLLED

AUTHORISED BY : [signature]
DESIGNATION : Director Operations
DATE : February 1997

2. TEST PROCEDURE

2.1 TEST EQUIPMENT REQUIRED

2.1.1 Metric scale (resolution 1g, capacity 1000g)
2.1.2 Vernier Calipers (resolution 1mm, up to 600mm)
2.1.3 Stopwatch (resolution 0.1 sec, up to 200 hours)
2.1.4 Voltmeter

2.2 PROCEDURE

The tests described below are to be executed, as described, on a single production line unit, and the results noted on the Oxygen Monitor Qualification Test Results Sheet (Reference TTS-TR 01-01).

The test equipment serial numbers are to be recorded in the spaces provided in the Test Results Sheet, and the person performing the test is to sign and date the result sheet.

2.2.1 POWER SOURCE

2.2.1.1 Insert 4 AA size cells in the battery drawer.

2.2.1.2 Verify that the unit operates, and measure the voltage supplied to the circuit on the connector which connects the battery drawer to the PCB.

2.2.2 MASS

Weigh the complete unit with sensor and sensor cable.

2.2.3 DIMENSIONS

Measure the height, width and depth of the monitor unit.

2.2.4 BATTERY DURATION

2.2.4.1 Insert fresh batteries, power the unit on, and leave the unit on.

2.2.4.2 Record the hours elapsed until the low battery indicator is shown, and the hours elapsed until the oxygen reading changes by more than 2% within a minute period.

2.2.5 DISPLAY RESPONSE TIME

With the sensor measuring room air, and displaying 21%, disconnect the sensor, and measure the time to the display of "00". Note that the time to an audible alarm will be shorter, but the display response time is the parameter to be measured.

WORK INSTRUCTION

OXYGEN MONITOR QUALIFICATION TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000190)

CONTROLLED

AUTHORISED BY :
DESIGNATION : Director Operations
DATE : February 1997

3. QUALIFICATION TEST RESULTS

The Qualification Test Results are to be recorded on the Oxygen Monitor Qualification Test Results Sheet (Reference TTS-TR 01-01).

4. RESPONSIBILITIES

It is the responsibility of the Engineering Manager to ensure that each model of the Oxygen Monitor is subjected to this Qualification Test Procedure, prior to the commencement of production of that particular model.

It is the responsibility of the Accufusion Quality Controller to conduct the Qualification Test Procedure and record all test information accurately on the Test Results Sheet.

Should any non-conformancies be identified, then the procedures as detailed in the Quality Management Manual in respect of the Control of Non-Conforming Products, as well as those detailed in the Corrective and Preventive Action Procedure are to be followed.
(Reference Quality Management Manual : Procedures TTS 13-01 and TTS 14-01)

5. RECORDS

It is the Production Manager's responsibility to file and maintain all Oxygen Monitor Qualification Test Results Sheets, Non-Conformance reports and any detailed instructions following therefrom, as envisaged in Point 4 above, in terms of the Control of Quality Records Procedure, contained in the Quality Management Manual (Reference Procedure TTS 17-01).

ACCUFUSION (PTY) LTD

COPY NO : 2

TEST RESULTS

OXYGEN MONITOR QUALIFICATION TEST PROCEDURE RESULTS (REFERENCE : PART NO. TM 10B0000190)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : February 1997

OXYGEN MONITOR QUALIFICATION TEST PROCEDURE RESULTS

REFER TO WORK INSTRUCTION TTS-WI 01-01:OXYGEN MONITOR QUALIFICATION TEST PROCEDURE

TEST EQUIPMENT USED

EQUIPMENT	SERIAL NO.	COMMENT

RESULTS

PARAMETER	DATA	UNIT
Voltage from batteries		V
Mass		g
Dimension : Height		mm
Dimension : Width		mm
Dimension : Depth		mm
Battery duration (to low bat)		hours
Battery duration (to reading change)		hours
Display response time		seconds

TESTED BY : NAME _____

DESIGNATION _____

SIGNATURE _____

DATE _____

WORK INSTRUCTION

OXYGEN MONITOR ACCEPTANCE TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000190)

CONTROLLED

AUTHORISED BY :
DESIGNATION : Director Operations
DATE : February 1997

OXYGEN MONITOR ACCEPTANCE TEST PROCEDURE

1. SCOPE

1.1 INTRODUCTION

The acceptance test procedure is used to verify the functionality of each unit produced.

1.2 PURPOSE

To enable the test personnel to verify the functionality of each Oxygen Monitor produced.

1.3 AUDIENCE

The audience for this document are as follows :

* Accufusion Quality Control Personnel
* Trigate Directors

1.4 APPLICABLE DOCUMENTS

The Oxygen Monitor is to comply with the following standards :

* IEC 601 Part 1
* ISO 7767

1.5 REQUIREMENTS TRACEABILITY

This test partly fulfils the requirements of ISO 9002:1994(E) part 4.10.3.

WORK INSTRUCTION

OXYGEN MONITOR ACCEPTANCE TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000190)

CONTROLLED

AUTHORISED BY :
DESIGNATION : Director Operations
DATE : February 1997

2. TEST PROCEDURE

2.1 TEST EQUIPMENT REQUIRED

2.1.1 Stopwatch (resolution 0.1 sec, up to 100 seconds)
2.1.2 Test battery drawer (for low battery test)

2.2 PROCEDURE

The tests described below are to be executed as described on a sample of each production batch, where the sample is 1% (minimum 1 unit) of the batch for the first unit tested. If any of the first sample fail the test, 2% (minimum a second unit) of the batch will be tested, and if 2% (or 2 units) fail, the entire batch is returned to production for rework and retest. The procedures as detailed in the Quality Management Manual in respect of the Control of Non-Conforming Products, as well as those detailed in the Corrective and Preventive Action Procedure are to be followed in respect of non-conforming products. (Reference Quality Management Manual : Procedures TTS 13-01 and TTS 14-01)

Test results must be noted on Acceptance Test Results Sheet (Reference TTS-TR 01-02).

2.2.1 PACKAGING
Verify the following :

2.2.1.1 Unit is packed in a white box which is undamaged and clean.

2.2.1.2 The serial number, model number and device information is given on a sticker, which is firmly secured, and correctly aligned.

2.2.1.3 The CE sticker is secured and straight.

2.2.1.4 On opening the box, verify that the user manual, and warranty card are in place on top of the packaging insert.

2.2.1.5 The oxygen monitor is in its recess between the two package inserts, with the knobs toward the opening of the box, in a plastic bag folded under.

2.2.1.6 The sensor and the cable (which is neatly coiled) are in the second recess.

WORK INSTRUCTION

OXYGEN MONITOR ACCEPTANCE TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000190)

CONTROLLED

AUTHORISED BY :
DESIGNATION : Director Operations
DATE : February 1997

2.2.2 OXYGEN MONITOR EXTERIOR

Removing the monitor from its plastic bag, verify the following :

2.2.2.1 Unit is clean with no signs of damage.

2.2.2.2 Serial number decal is placed on underside of unit, and aligned straight.

2.2.2.3 CE decal is placed on underside of unit, and aligned straight.

2.2.2.4 Battery and sensor decal is placed on rear panel, and aligned straight.

2.2.2.5 User instructions decal on top of unit is securely placed, aligned straight and read from the front of the unit.

2.2.2.6 Alarm knobs secure, with line on caps aligned to line on knobs.

2.2.2.7 Calibration knob secure.

2.2.2.8 Front panel decal is neat, with alarm knobs no more than 1mm off centre from the surrounding scale at any point.

2.2.3 POWER ON AND DISPLAY TEST

With no sensor connected, switch the unit on and observe the following.

2.2.3.1 Audible alarm sounds immediately, pulsed at 1 Hz.

2.2.3.2 Red lamp in Mute button starts blinking immediatley at 1Hz.

2.2.3.3 Display shows "188" for at least 1 second.

2.2.3.4 Minus sign "-" is shown on display.

2.2.3.5 Press the Mute button, verifying that the audible alarm ceases, and connect the sensor.

2.2.3.6 Verify that once the sensor is connected, the display shows 21 (+/- 5), and that the visual alarm goes off.

WORK INSTRUCTION

OXYGEN MONITOR ACCEPTANCE TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000190)

CONTROLLED

AUTHORISED BY :
DESIGNATION : Director Operations
DATE : February 1997

2.2.4 CALIBRATION

2.2.4.1 Expose the sensor to 100% oxygen, release the lock knob and adjust to achieve a stable display of 100%, then lock the knob.

2.2.4.2 Expose the sensor to room air, and verify that the reading settles to less than 28% within 6 seconds.

2.2.4.3 Verify that the reading settles to 21% (+/- 2%) within a further 10 seconds.

2.2.5 ALARMS AND MUTE

2.2.5.1 Turn the high alarm down until the high alarm is triggered at no more than 29%.

2.2.5.2 Verify that both the audible alarm sounds and visual alarm blinks at 2Hz.

2.2.5.3 Verify that "+" is shown on the display.

2.2.5.4 Press the Mute button, and measure the mute period to be 60 seconds (+/- 5 seconds).

2.2.5.5 Press the Mute button again, then back off the high alarm to clear the high alarm, and turn the low alarm up to trigger the low alarm within 60 seconds

2.2.5.6 Verify that the audible and visual alarms are immediately active.

2.2.5.7 Verify that the low alarm is triggered at no less than 22%.

2.2.5.8 Back off the low alarm setting to cancel the alarm.

2.2.6 LOW BATTTERY DETECTION

2.2.6.1 Remove the battery drawer, and insert the test battery drawer.

2.2.6.2 Verify that the unit operates.

2.2.6.3 Verify that the "LO BAT" symbol is displayed.

WORK INSTRUCTION

OXYGEN MONITOR ACCEPTANCE TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000190)

CONTROLLED

AUTHORISED BY :
DESIGNATION : Director Operations
DATE : February 1997

3. ACCEPTANCE TEST RESULTS

The AcceptanceTest Results are to be recorded on the Oxygen Monitor Acceptance Test Results Sheet (Reference TTS-TR 01-02).

4. RESPONSIBILITIES

It is the responsibility of the Accufusion Quality Controller to conduct the Acceptance Test Procedure and record all test information accurately on the Test Results Sheet.

Should any non-conformancies be identified, then the procedures as detailed in the Quality Management Manual in respect of the Control of Non-Conforming Products, as well as those detailed in the Corrective and Preventive Action Procedure are to be followed.
(Reference Quality Management Manual : Procedures TTS 13-01 and TTS 14-01)

5. RECORDS

It is the Production Manager's responsibility to file and maintain all Oxygen Monitor Acceptance Test Results Sheets, Non-Conformance reports and any detailed instructions following therefrom, as envisaged in Point 4 above, in terms of the Control of Quality Records Procedure, contained in the Quality Management Manual (Reference Procedure TTS 17-01).

ACCUFUSION (PTY) LTD

COPY NO : 2

TEST RESULTS

OXYGEN MONITOR ACCEPTANCE TEST PROCEDURE RESULTS (REFERENCE : PART NO. TM 10A0000190)

CONTROLLED

AUTHORISED BY : [signature]
DESIGNATION : Director Operations
DATE : February 1997

OXYGEN MONITOR ACCEPTANCE TEST PROCEDURE RESULTS

REFER TO WORK INSTRUCTION TTS-WI 01-02 : OXYGEN MONITOR ACCEPTANCE TEST PROCEDURE

UNIT SERIAL NUMBER :		DATE :	
W/O NUMBER :		NUMBER UNITS IN W/O :	

STEP NO.	TEST	PASS	FAIL	READING
2.2.1	**Packaging**			
2.2.1.1	White box clean and undamaged			
2.2.1.2	Model & Serial number on sticker which is straight			
2.2.1.3	CE sticker is secure and straight			
2.2.1.4	User manual & warranty card in place (on top of packaging insert)			
2.2.1.5	Oxygen monitor in place, in plastic bag, knobs toward open edge of box			
2.2.1.6	Sensor & cable neatly placed in recess			
2.2.2	**Oxygen Monitor Exterior**			
2.2.2.1	Oxygen monitor clean & undamaged			
2.2.2.2	Serial number decal on underside & straight			
2.2.2.3	CE label secured and straight			
2.2.2.4	Battery & sensor decal on rear panel & straight			
2.2.2.5	User instructions decal on topside, straight, & read from front of unit			
2.2.2.6	Alarm set knobs secure, with line on caps aligned to line on knobs			
2.2.2.7	Calibration knob secure			
2.2.2.8	Front panel decal neat, with alarm knobs no more than 1mm off centre from surrounding scale			
2.2.3	**Power on and Display Test** Switch unit on			
2.2.3.1	Audible alarm sounds immediately, pulsed at 1 Hz.			
2.2.3.2	Red lamp in Mute button (visual alarm)starts blinking immediately at 1Hz			
2.2.3.3	Display shows "188" for at least 2 seconds			
2.2.3.4	Minus sign "-" is displayed			
2.2.3.5	Press Mute button - Audible alarm is silenced			
2.2.3.6	Connect sensor - visual alarm is cancelled and display shows 21 (+/- 5)			

TEST RESULTS

OXYGEN MONITOR ACCEPTANCE TEST PROCEDURE RESULTS (REFERENCE : PART NO. TM 10A0000190)

CONTROLLED

AUTHORISED BY : Kopeland
DESIGNATION : Director Operations
DATE : February 1997

STEP NO.	TEST	PASS	FAIL	READING
2.2.4	**Calibration**			
2.2.4.1	Expose sensor to 100% oxygen. Release lock knob and adjust to achieve reading of 100%, then lock knob.			
2.2.4.2	Expose sensor to room air - display settles to less than 28% within 6 seconds.			
2.2.4.3	Display settles to 21% (+/- 2%) within a further 10 seconds.			
2.2.5	**Alarms and Mute**			
2.2.5.1	Turn the high alarm down until the high alarm is triggered at no more than 29%. Note trigger point			
2.2.5.2	Audible and visual alarms active at 2 Hz			
2.2.5.3	Plus sign "+" shown on display			
2.2.5.4	Press Mute button : Note mute period (60 seconds +/- 5)			
2.2.5.5	Press the Mute button again, then back off the high alarm to clear the high alarm, and turn the low alarm up to trigger the low alarm, within 60 seconds.			
2.2.5.6	Audible and visual alarms are immediately active			
2.2.5.7	Low alarm is triggered at no less than 22%. Note trigger point.			
2.2.5.8	Back off the low alarm setting to cancel the alarm.			
2.2.6	**Low Battery Detection**			
2.2.6.2	Verify that the unit operates.			
2.2.6.3	"LO BAT" symbol is displayed.			

Test Result (no failures permitted) :

TESTED BY : **NAME (PRINT)** _____

DESIGNATION _____

SIGNATURE _____

DATE _____

ACCUFUSION (PTY) LTD

COPY NO : 2

WORK INSTRUCTION

OXYGEN MONITOR PCB ASSEMBLY TEST PROCEDURE
(REFERENCE : PART NO. TM 20B0000172)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

OXYGEN MONITOR PCB ASSEMBLY TEST PROCEDURE

1. SCOPE

1.1 INTRODUCTION

This Procedure outlines the test's to be conducted to ensure the correct functionality of the assembly.

1.2 DEFINITIONS.

1.2.1. 10mV = 21%.
1.2.2. 50mV = 100%.

1.3 AUDIENCE

The audience for this document are as follows :
1.3.1. Accufusion Production Personnel
1.3.2. Approved Sub-Contractors

1.4 APPLICABLE DOCUMENTS

The Oxygen Monitor is to comply with the following standards and Documetation :-
1.4.1. IEC 601 Part 1
1.4.2. ISO 7767
1.4.3. ISO 9002 (E) part 4.10.3.
1.4.4. (Accurox Test Jig) :- Drawing No TM CD35F0000010.
1.4.5. Circuit Diagram :- TM CD20B0000172.
1.4 6. Component overlay :- TM CO20B0000172.
1.4.7. Test Procedure Results Sheet :- TTS-TR-01-03.
1.4 8. Quality Management Manual Procedures :-
1.4.5.1. Control of Non-Conforming Products : - TTS 13-01.
1.4.5.2 Corrective and Preventive action : - TTS 14-01.
1.4.5.3. Purchasing Procedure : - TTS 06-01.
1.4.5.4. Quality Records Procedure : - TTS 17-01.

WORK INSTRUCTION

OXYGEN MONITOR PCB ASSEMBLY TEST PROCEDURE
(REFERENCE : PART NO. TM 20B0000172)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

1.5 **ASSUMPTIONS**

The electronic unit has been manufactured according to the drawings :

1.5.1 TM CD20B0000172 - Circuit diagrams

1.5.2 TM CO20B0000172 - Component overlays

1.6 **REQUIREMENTS TRACEABILITY**

This test partly fulfils the requirements of ISO 9002:1994(E) part 4.10.3

2. TEST PROCEDURE

2.1 TEST EQUIPMENT REQUIRED

2.1.1 Accurox (20B0000172) Test Jig :- (Part No : TM 35F0000010)

2.1.2 Stopwatch.

2.1.3. R17 and T7 Sensor :- Simulator.

2.1.4. Digital multimeter.

2.2 PROCEDURE

The steps described below are to be executed on each PCB assembly, using the Accurox Test jig, part No TM 35F0000010.The test results are to be noted on the Oxygen Monitor PCB Assembly Test Procedure Results Sheet (Reference TTS-TR 01-03).

Should any non-conformancies of assembled PCB's be identified, then the procedures as detailed in the Quality Management Manual in respect of the Control of Non-Conforming Products, as well as those detailed in the Corrective and Preventive Action Procedure are to be followed. (Reference Quality Management Manual : Procedures TTS 13-01 and TTS 14-01).

2.2.1 Mount PCB assembly on test jig.

2.2.2 Turn P3 (high alarm) fully clockwise, P4 (low alarm) fully anti-clockwise, and place calibration knob in centre position of its travel.

2.2.3 Switch unit on.

WORK INSTRUCTION

OXYGEN MONITOR PCB ASSEMBLY TEST PROCEDURE
(REFERENCE : PART NO. TM 20B0000172)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

2.2.4 Display should show "188" - all segments should be clearly visible for a short duration after switch on.

2.2.5 With no (simulator) conneced adjust P5 for 125mV +/- 5mV DC at pin 6 of U3.

2.2.6 Adjust P6 for display of "00".

2.2.7 '-' (minus sign) should be shown on the display.

2.2.8 Buzzer should sound, pulsed at 1Hz, and mute led should flash, also at 1 Hz.

2.2.9 Press mute button. Buzzer should be silenced, and led should continue flashing.

2.2.10 Measure mute period of buzzer - should be 60 secs (+/- 5secs)

2.2.11 Place the front panel calibration knob in the centre position of it's travel and lock in place.

2.2.12. Connect (Sensor simulator) to the input connector of the PCB under test, set the simulator for the R17 sensor and 21%and adjust P7 for a reading of 21% on the display.

2.2.13. Set (Sensor simulator) for the R17 sensor and 100% and adjust the front panel calibration knob for a reading of 100% on the display.

2.2.14. With the sensor simulator still set at 100%,turn the front panel calibration knob fully clockwise and adjust P7 for a reading of 190%.

2.2.15. With the sensor simulator still set at 100%, re-adjust the front panel calibration knob for a reading of 100%.

2.2.16. With a reading of 100% displayed, turn P3 anti-clockwise. Buzzer should sound after no more than one quarter of a turn. Led should blink, and '+' should be shown on the display. Buzzer and led should pulse at 2Hz.

2.2.17. Set the " Sensor simulator " to 21% and check the display for a reading of between 20% and 22%.

WORK INSTRUCTION

OXYGEN MONITOR PCB ASSEMBLY TEST PROCEDURE
(REFERENCE : PART NO. TM 20B0000172)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

2.2.18. Set the " Sensor simulator " to 'T7'.

2.2.19. Adjust P2 until the "display" display's 21%.

2.2.20. Turn P4 clockwise. Buzzer should sound after no more than one quarter of a turn, pulsed at 1Hz.

2.2.21. Apply low battery voltage (4.8V) to unit and verify that the "LO BAT" indicator is shown.

3. ACCEPTANCE TEST RESULTS

The AcceptanceTest Results are to be recorded on the Oxygen Monitor PCB Assembly Test Procedure Results Sheet (Reference TTS-TR 01-03).

4. RESPONSIBILITIES

In the event of the PCB's being assembled in house by Accufusion Production Personnel, it will be the responsibility of these Personnel to conduct the Acceptance Test Procedure and record all test information accurately on the Test Results Sheet (TTS-TR 01-03).

Should any non-conformancies of in-house assembled PCB's be identified, then the procedures as detailed in the Quality Management Manual in respect of the Control of Non-Conforming Products, as well as those detailed in the Corrective and Preventive Action Procedure are to be followed. (Reference Quality Management Manual : Procedures TTS 13-01 and TTS 14-01)

Where the assembly of the PCB's is contracted out to approved and qualified suppliers listed in the Qualified Suppliers File (Reference Quality Management Manual : Purchasing Procedures TTS 06-01), the supplier shall be required to perform this PCB Assembly Test Procedure, and record all test information accurately, addressing each element as per the Test Results Sheet (TTS-TR 01-03) on a record sheet, and submit it to Accufusion, together with the product.

WORK INSTRUCTION

OXYGEN MONITOR PCB ASSEMBLY TEST PROCEDURE
(REFERENCE : PART NO. TM 20B0000172)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

5. RECORDS

It is the Production Manager's responsibility to file and maintain all Oxygen Monitor PCB Assembly Test Procedure Results Sheets, Non-Conformance reports and any detailed instructions following therefrom, as envisaged in Point 4 above, in terms of the Control of Quality Records Procedure, contained in the Quality Management Manual (Reference Procedure TTS 17-01).

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COPY NO : 2

TEST RESULTS

OXYGEN MONITOR PCB TEST PROCEDURE RESULTS
(REFERENCE : PART NO. TM 20B0000172)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

OXYGEN MONITOR PCB TEST PROCEDURE RESULTS

REFER TO WORK INSTRUCTION TTS-WI 01-03 : OXYGEN MONITOR PCB TEST PROCEDURE

PCB SERIAL NUMBER :		DATE :	
W/O NUMBER :			

STEP NO.	TEST	PASS	FAIL	READING
2.2.4	Display should show "188" - all segments should be clearly visible for a short duration after switch on.			
2.2.5	With NO Simulator connected, adjust P5 for 120mV to 130mV DC at pin 6 of U3.			
2.2.6	Adjust P6 for display of "00".			
2.2.7	'-' should be shown on display.			
2.2.8	Buzzer should sound, pulsed at 1Hz, and mute LED should flash, also at 1 Hz.			
2.2.9	Press mute button. Buzzer should be silenced, and LED continue flashing.			
2.2.10	Measure mute period of buzzer - should be 60 secs (+/- 5secs)			
2.2.12	Set Simulator for the R17 sensor and 21% and adjust P7 for a reading of 21%			
2.2.13	Set Simulator for the R17 sensor and 100% and adjust the front panel calibration knob for a reading of 100% on the display.			
2.2.14	With the sensor simulator still set at 100% turn the front panel calibration knob fully clockwise and adjust P7 for a reading of 190%			
2.2.15	With the sensor simulator still set at 100% re-adjust the front panel calibration knob for a reading of 100%.			
2.2.16	With reading of 100 displayed, turn P3 anti-clockwise. Buzzer should sound after no more than one quarter of a turn. Led should blink, and '+' should be shown on display. Buzzer and led should pulse at 2Hz.			
2.2.17	Set the sensor simulator to 21% and check the display for a reading of between 20% and 22%.			
2.2.19.	Adjust P2 until the "display" display's 21%.			
2.2.20.	Turn P4 clockwise. Buzzer should sound after no more than one quarter of a turn, pulsed at 1Hz			
2.2.21.	Apply low battery voltage (4.8V) to unit and verify that "LO BAT" indicator on the display is shown			

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COPY NO : 2

TEST RESULTS

OXYGEN MONITOR PCB TEST PROCEDURE RESULTS (REFERENCE : PART NO. TM 20B0000172)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

Test Result (no failures permitted):

TESTED BY : **NAME (PRINT)** _____

DESIGNATION _____

SIGNATURE _____

DATE _____

ACCUFUSION (PTY) LTD

COPY NO : 2

WORK INSTRUCTION

OXYGEN MONITOR ELECTRONIC UNIT TEST PROCEDURE
(REFERENCE : PART NO. TM 16B0000150)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

OXYGEN MONITOR ELECTRONIC UNIT TEST PROCEDURE

1. SCOPE

1.1 INTRODUCTION

This Procedure outlines the test's and adjustments that must be performed for the correct functionality of the assembly.

1.2 DEFINITIONS

Not applicable.

1.3 AUDIENCE

The audience for this document are as follows :

1.3.1. Production personnel

1.4 APPLICABLE DOCUMENTS

The Oxygen Monitor is to comply with the following standards :

1.4.1. IEC 601 Part 1
1.4.2. ISO 7767.
1.4.3. ISO 9002:1994(E) part 4.10.3.
1.4.4. Circuit diagram. TM CD20B0000172.
1.4.5. Component overlay. TM CO20B0000172.
1.4.6. PCB Assembly Test Procedure.TTS-W1 01-03.
1.4.7. ElectronicUnit Test Procedure Results Sheet :- TTS-TR 01-04
1.4.8 Quality Management Manual Procedures :-
  1.4.8.1. Control of Non-Conforming Products :- TTS 13-01.
  1.4.8.2. Corrective and Preventive Action :- TTS 14-01.
  1.4.8.3. Control of Quality Records :- TTS 17-01.

WORK INSTRUCTION

OXYGEN MONITOR ELECTRONIC UNIT TEST PROCEDURE (REFERENCE : PART NO. TM 16B0000150)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

1.5 **ASSUMPTIONS**

The electronic unit has been manufactured according to the following documents :

1.5.1. Circuit diagram :- TM CD20B0000172.
1.5.2. Component overlays :- TM CO20B0000172.
1.5.3. PCB Assembly Test Procedure :- TTS-WI 01-03.

1.6 **REQUIREMENTS TRACEABILITY**

This test partly fulfils the requirements of ISO 9002:1994(E) part 4.10.3.

2. TEST PROCEDURE

2.1 TEST EQUIPMENT REQUIRED

2.1.1 R17 and T7 :- Simulator

2.2 PROCEDURE

The steps described below are to be executed as described on each electronic unit assembly. The test results are noted on the Oxygen Monitor Electronic Unit Test Procedure Results Sheet (Reference TTS-TR 01-04)

Should any non-conformancies be identified, then the procedures as detailed in the Quality Management Manual in respect of the Control of Non-Conforming Products, as well as those detailed in the Corrective and Preventive Action Procedure are to be followed. (Reference Quality Management Manual : Procedures TTS 13-01 and TTS 14-01).

2.2.1 Turn P3 (high alarm) fully clockwise, P4 (low alarm) fully anti-clockwise.

2.2.2 Place the front panel calibration knob in centre position (of its travel).

2.2.3 Switch unit on.

2.2.4 With NO sensor connected, adjust P5 for 125mV ± 5mV DC at pin 6 of U3.

2.2.5 Adjust P6 for display of "00".

WORK INSTRUCTION

OXYGEN MONITOR ELECTRONIC UNIT TEST PROCEDURE
(REFERENCE : PART NO. TM 16B0000150)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

2.2.6. Set the Simulator for the R17 sensor, and 21%.

2.2.7. Connect the simulator to the unit under test, and adjust P7 for a reading of 21% on the display .

2.2.8. Turn P4 clockwise slowly until the low alarm is triggered (the buzzer will sound, and the Mute lamp will flash).

2.2.9. While the alarm is sounding, loosen the low alarm knob, align the white marker on the knob to the 21% line on the scale, and secure the knob in position.

2.2.10. Set the % switch on the simulator to it's centre position 0% and set the calibration switch to R17. Adjust the calibration knob on the simulator until you obtain a reading on the display of the unit under test of 30%.

2.2.11. Turn the low alarm pot clockwise until the low alarm sounds to verify that the knob is correctly aligned. The white line of the knob should indicate between 29 and 31%.

2.2.12. Set the calibration switch on the simulator to it's centre position (off).and set the % switch to 100%.Adjust the front panel calibration knob for a reading of 100% on the display.

2.2.13. With the sensor simulator still set at 100%, turn the front panel calibration knob fully clockwise and adjust P7 for a reading of 190% on the display.

2.2.14. With the sensor simulator still set at 100% re-adjust the front panel calibration knob for a reading of 100% on the display.

2.2.15. While the alarm is sounding, loosen the high alarm knob, align the edge of the white marker on the knob with the edge of the 102% line on the scale, and secure the knob in position. Note : the white marker and 102% line should not line up directly - the white line should be to the right edge of the 102% line.

WORK INSTRUCTION

OXYGEN MONITOR ELECTRONIC UNIT TEST PROCEDURE
(REFERENCE : PART NO. TM 16B0000150)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

2.2.16. Set the % switch on the simulator to it's centre position 0% and set the calibration switch to R17. Adjust the calibration knob on the simulator until you obtain a reading on the display of the unit under test of 90%.

2.2.17. Turn the High alarm knob anti-clockwise until the alarm sounds again to verify that the knob is correctly aligned. The white line of the knob should indicate between 91 and 89%.

2.2.18. Set the calibration switch on the simulator to it's centre position (off).and set the % switch to 21% .Adjust the front panel calibration knob for a reading of 21% on the display.

2.2.19. Switch the simulator from the R17 sensor to the T7 sensor.

2.2.20. Adjust P2 for a display of 21%.

2.2.21. Clip knob caps in place, ensuring that the line on the cap is aligned with the line on the knob.

3. ACCEPTANCE TEST RESULTS

The AcceptanceTest Results are to be recorded on the Oxygen Monitor Electronic Unit Test Procedure Results Sheet (Reference TTS-TR 01-04).

4. RESPONSIBILITIES

In the event of the PCB's being assembled in house by Accufusion Production Personnel, it will be the responsibility of these Personnel to conduct the Acceptance Test Procedure and record all test information accurately on the Test Results Sheet (TTS-TR 01-04).

Should any non-conformancies be identified, then the procedures as detailed in the Quality Management Manual in respect of the Control of Non-Conforming Products, as well as those detailed in the Corrective and Preventive Action Procedure are to be followed. (Reference Quality Management Manual : Procedures TTS 13-01 and TTS 14-01)

WORK INSTRUCTION

OXYGEN MONITOR ELECTRONIC UNIT TEST PROCEDURE
(REFERENCE : PART NO. TM 16B0000150)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

5. RECORDS

It is the Production Manager's responsibility to file and maintain all Oxygen Monitor Electronic Unit Test Procedure Results Sheets, Non-Conformance reports and any detailed instructions following therefrom, as envisaged in Point 4 above, in terms of the Control of Quality Records Procedure, contained in the Quality Management Manual (Reference Procedure TTS 17-01).

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TEST RESULTS

OXYGEN MONITOR ELECTRONIC UNIT TEST PROCEDURE RESULTS (REFERENCE : PART NO. TM 16B0000150)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

OXYGEN MONITOR ELECTRONIC UNIT TEST PROCEDURE RESULTS

REFER WORK INSTRUCTION TTS-WI 01-04 : OXYGEN MONITOR ELECTRONIC UNIT TEST PROCEDURE

STEP NO.	TEST	PASS	FAIL	READING
2.2.4	With NO sensor connected, adjust P5 for 120mV to 130mV DC at pin 6 of U3.			
2.2.5	Adjust P6 for display of "00".			
2.2.7.	Connect the simulator to the unit under test, and adjust P7 for a reading of 21% on the display.			
2.2.11.	Low alarm setting when alarm sounds with display of 30% (between 29 & 31%)			
2.2.12.	Set the calibration swith on the simulator to it's centre position (off) and set the % switch to 100%. Adjust the front panel calibration knob for a reading of 100% on the display.			
2.2.17.	High alarm setting when alarm sounds with display of 90% (between 91 and 89%).			
2.2.20.	Adjust P2 for display of 21%			

Test Result (no failures permitted) :

TESTED BY : **NAME (PRINT)** _____

DESIGNATION _____

SIGNATURE _____

DATE _____

ACCUFUSION (PTY) LTD

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WORK INSTRUCTION

OXYGEN MONITOR FINAL TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000191)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

OXYGEN MONITOR FINAL TEST PROCEDURE

1. SCOPE

1.1 INTRODUCTION

The final test procedure is used to enable the test personnel to verify the functionality of each Oxygen Monitor produced.

1.2 DEFINITIONS

1.2.1. LOW BAT :- Low Battery = 4.7V to 4.8V.

1.3 AUDIENCE

The audience for this document are as follows :
1.3.1. Test personnel

1.4 APPLICABLE DOCUMENTS

The Oxygen Monitor is to comply with the following standards :
1.4.1. IEC 601 Part 1
1.4.2. ISO 7767.
1.4.3. ISO 9002(E) part 4.10.3.
1.4.4. Oxygen MonitorFinalTest Procedure Results Sheet :- TTS-TR 01-05.
1.4.5. Quality Management Manual Procedures :-
- 1.4.5.1. Control of Non-Conforming Products :- TTS 13-01.
- 1.4.5.2. Corrective and Preventive Action :- TTS 14-01.
- 1.4.5.3. Quality Records Procedure :- TTS 17-01.

1.5 ASSUMPTIONS

The unit to be tested has been manufactured, setup and tested according to the following documents :
1.5.1. Component Overlay :- TM CO20B0000172.
1.5.2. PCB Assembly Test Procedure :- TTS WI 01-03.
1.5.3. Electronic Unit Test Procedure :- TTS WI 01-04.

WORK INSTRUCTION

OXYGEN MONITOR FINAL TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000191)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

1.6 **REQUIREMENTS TRACEABILITY**

This test partly fulfils the requirements of ISO 9002:1994(E) part 4.10.3.

2. FINAL TEST PROCEDURE

2.1 TEST EQUIPMENT REQUIRED

2.1.1 Stopwatch (resolution 0.1 sec, up to 100 seconds)
2.1.2 Test battery drawer (for low batt test)
2.1.3. R17 and T7 Simulator.

2.2 PROCEDURE

The tests described below are to be executed on each oxygen monitor produced. The test results are noted on the Oxygen Monitor Final Test Procedure Results Sheet (Reference TTS-TR 01-05).

Should any non-conformancies be identified, then the procedures as detailed in the Quality Management Manual in respect of the Control of Non-Conforming Products, as well as those detailed in the Corrective and Preventive Action Procedure are to be followed. (Reference Quality Management Manual :Procedures TTS 13-01 and TTS 14-01).

2.2.1 The unit will be complete, but the lid will be loose.

2.2.2 Note the PCB serial number of each respective unit against it's serial number.

2.2.3 Verify that the buzzer is securely fixed to box bottom.

2.2.4 Verify that all connectors are in place.

2.2.5 Verify that the PCB is secured to the front panel by four screws.

2.2.6 Clip the lid into place, closing the box.

WORK INSTRUCTION

OXYGEN MONITOR FINAL TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000191)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

2.2.7 Verify that alarm knobs and caps are fitted and that the caps are aligned to the knobs.

2.2.8 Verify that the alarm knobs are no more than 1mm off centre from the surrounding scale (visual assessment).

2.2.9 Verify that the calibration knob is fitted and secure.

2.2.10 Verify that the front panel is clean and neat.

2.2.11 Verify that the instructions decal on the top of the unit is securely fitted, clean, straight and has the title "Operating Instructions" toward the rear of the unit.

2.2.12 Verify that the serial number decal is secured on the underside of the unit, is straight, clean and undamaged, and that the serial and model number are straight within the decal.

2.2.13 Verify that the sensor connector is secure, straight and neat.

2.2.14 Verify that the battery drawer is secure, straight and neat.

2.2.15 Verify that the battery and sensor decal is secured on the rear panel, and is clean, neat and straight.

2.2.16 Power unit on - with no sensor attached.

2.2.17 Verify that audible & visual alarms are immediately active.

2.2.18 Ensure that display test period (time that "188" is displayed) is greater than 1 second.

2.2.19 Verify that the minus sign, "-" is displayed.

2.2.20 Connect the simulator and set it for the R17sensor (which is set to 21%) and verify that display settles at 21% (+/- 20 - may need calibration), and that the alarm is cancelled.

WORK INSTRUCTION

OXYGEN MONITOR FINAL TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000191)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

2.2.21 Record range of cal pot (max to min).

2.2.22 Set the simulator to 100%. Release Cal knob and adjust to achieve display of 100%.

2.2.23 Set the simulator to 21%, and measure time to update display from 100% to 21% +/- 2% (time should be +/- 1 second).

2.2.24 If display does not settle to 21% +/- 2%, repeat calibration at 100% once. If reading of 21% +/-2% is still not achieved, fail the test.

2.2.25 Trigger a High alarm by adjusting the High alarm knob, and verify that the audible and visual alarms are activated and that the plus sign -'+', is displayed.

2.2.26 Set High alarm to first value in alarm activation table on results sheet . Adjust dummy sensor down from 102 until high alarm is triggered. Record reading on display at which high alarm is triggered. Repeat this process for each value in table.

2.2.27 Repeat previous step for the Low alarm, adjusting the dummy sensor up from 18.

2.2.28 Trigger a low alarm by setting the low alarm at 30% when the display indicates 21%, press the mute button and measure the alarm mute period.

2.2.29 Verify that the audible alarm sounds at the end of the mute period.

2.2.30 Verify that the visual alarm lamp blinks at the same rate as the audible alarm sounds.

2.2.31 Verify that audible alarm is pulsed, at a high rate (approximately 2Hz) and a low rate (approximately 1Hz), for High & Low alarms respectively.

2.2.32 Insert test battery drawer and verify that LO BAT symbol is displayed.

WORK INSTRUCTION

OXYGEN MONITOR FINAL TEST PROCEDURE
(REFERENCE : PART NO. TM 10B0000191)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

3. ACCEPTANCE TEST RESULTS

The Acceptance Test Results are to be recorded on the Oxygen Monitor Final Test Procedure Results Sheet (Reference TTS-TR 01-05).

4. RESPONSIBILITIES

It is the responsibility of the Accufusion Production Personnel to conduct the Final Test Procedure and record all test information accurately on the Test Results Sheet (TTS-TR 01-05).

Should any non-conformancies be identified, then the procedures as detailed in the Quality Management Manual in respect of the Control of Non-Conforming Products, as well as those detailed in the Corrective and Preventive Action Procedure are to be followed. (Reference Quality Management Manual : Procedures TTS 13-01 and TTS 14-01)

5. RECORDS

It is the Production Manager's responsibility to file and maintain all Oxygen Monitor Final Test Procedure Results Sheets, Non-Conformance reports and any detailed instructions following therefrom, as envisaged in Point 4 above, in terms of the Control of Quality Records Procedure, contained in the Quality Management Manual (Reference Procedure TTS 17-01).

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COPY NO : 2

TEST RESULTS

OXYGEN MONITOR FINAL TEST PROCEDURE RESULTS (REFERENCE : PART NO. TM 10B0000191)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

OXYGEN MONITOR FINAL TEST PROCEDURE RESULTS

REFER WORK INSTRUCTION TTS-WI 01-05 : OXYGEN MONITOR FINAL TEST PROCEDURE

STEP NO.	UNIT SERIAL NUMBER	PCB SERIAL NUMBER
2.2.2		

STEP NO.	TEST	PASS	FAIL	READING
2.2.3	Buzzer is secure			
2.2.4	All connectors secure			
2.2.5	PCB secured to front panel			
2.2.7	Alarm knobs & caps fitted - caps aligned to knobs			
2.2.8	Alarm knobs at max of 1mm off centre from surrounding scale (visual check)			
2.2.9	Calibration knob is secure			
2.2.10	Front panel is clean and neat			
2.2.11	Instructions decal is clean, neat, secure with title to box rear			
2.2.12	Serial number decal casing bottom and Model & Serial number straight in decal			
2.2.13	Sensor connector is straight, secure and neat			
2.2.14	Battery drawer is straight, secure and neat			
2.2.15	Battery and sensor decal is secure, neat and straight			
2.2.17	Audible alarm sounds immediately, visual alarm active, pulsed at 1 Hz.			
2.2.18	Verify that period during which "188" is displayed is greater than 1 second.			
2.2.19	Minus sign, "-" is displayed			
2.2.20	Connect and set simulator to R17 and 21% - alarm is cancelled and display shows 21% (+/- 20) (calibration might be required). Note reading :			
2.2.21	Record range of cal pot (max to min) **(12 to >80)**			
2.2.23	Connect and set simulator to R17and 21% - Measure time for display to settle to 21%(+/-2%) **(max 2 seconds)**			
2.2.24	If 21% (+/- 2%) is not achieved, repeat calibration once. If still not achieved FAIL			
2.2.25	Verify that audible and visual alarms are triggered, and that '+' is displayed.			

	Alarm activation levels table Note reading when alarm is triggered with alarm set at given value			
2.2.26	High Alarm 21 (approximately 28)			
	High Alarm 30 (approximately 37)			
	High Alarm 40 (approximately 46)			
	High Alarm 50 (approximately 55)			

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COPY NO : 2

TEST RESULTS

OXYGEN MONITOR FINAL TEST PROCEDURE RESULTS (REFERENCE : PART NO. TM 10B0000191)

CONTROLLED

AUTHORISED BY : _____
DESIGNATION : Director Operations
DATE : July 1997

STEP NO.	TEST	PASS	FAIL	READING
	High Alarm 60 (approximately 64)			
	High Alarm 70 (approximately 73)			
	High Alarm 80 (approximately 82)			
	High Alarm 90 (approximately 91)			
	High Alarm 100 (approximately 101)			
2.2.27	Low Alarm 21 (approximately 21)			
	Low Alarm 30 (approximately 29)			
	Low Alarm 40 (approximately 38)			
	Low Alarm 50 (approximately 47)			
	Low Alarm 60 (approximately 56)			
	Low Alarm 70 (approximately 65)			
	Low Alarm 80 (approximately 74)			
	Low Alarm 90 (approximately 83)			
	Low Alarm 100 (approximately 92)			
2.2.28	Alarm Mute period **(55 to 65 seconds)**			
2.2.30	Audible alarm sounds at end of mute period			
2.2.31	Audible and visual alarms pulsed simultaneously			
2.2.32	Audible and visual alarms pulsed at low rate (approx 1Hz) and high rate (approx 2Hz) (for Low & High alarms resp.)			
2.2.33	Insert test battery drawer - LO BAT shown ?			

Test Result (no failures permitted) :

TESTED BY : **NAME (PRINT)** _____

DESIGNATION _____

SIGNATURE _____

DATE _____

ACCUFUSION (PTY) LTD

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APRIL 1998

MANUFACTURING ROUTE

CONTROLLED

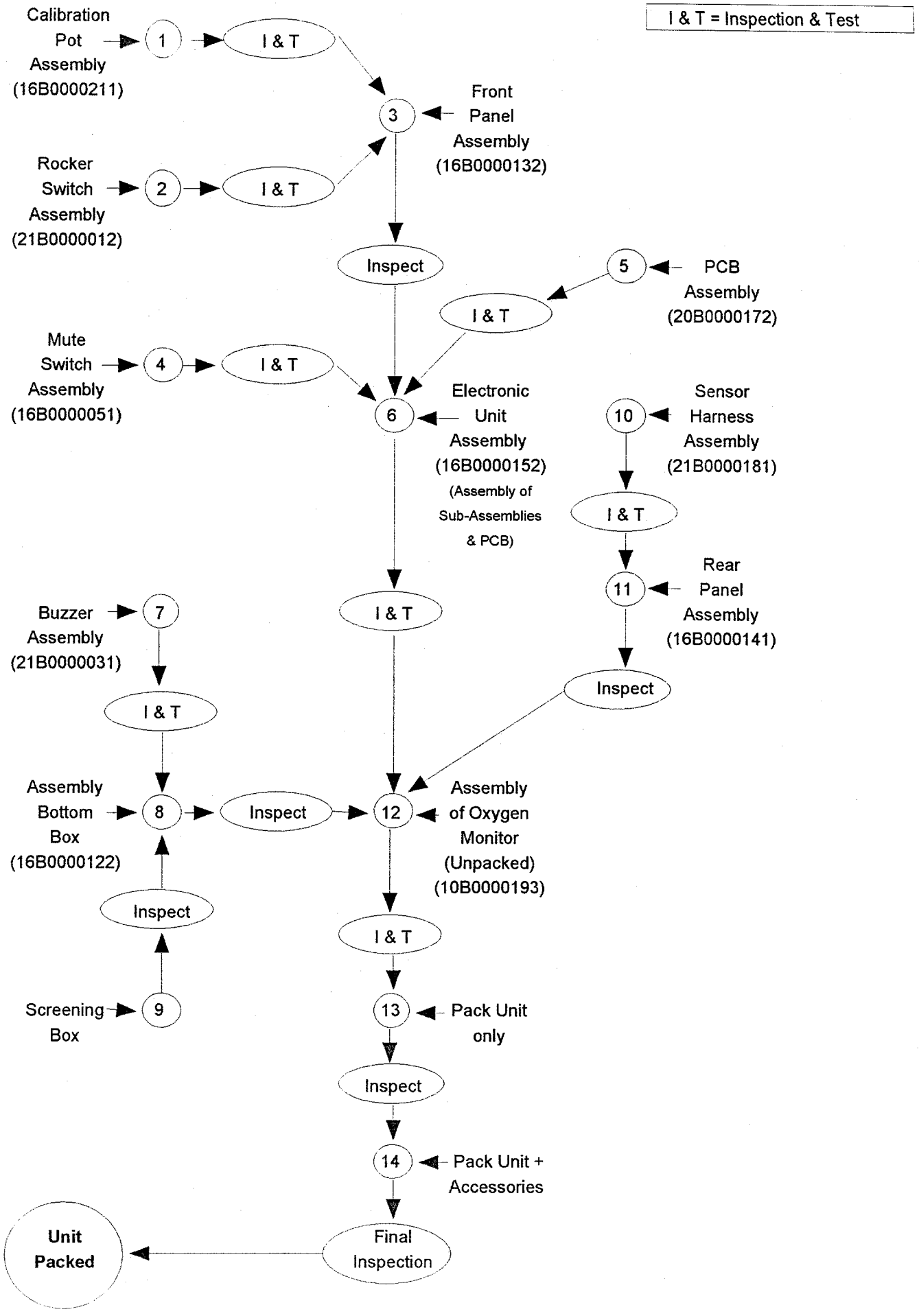
AUTHORISED BY : [signature]
DESIGNATION : Director Operations
DATE : April 1998

Please see attached Diagram

MANUFACTURING ROUTE

OXYGEN MONITOR PRODUCTION

I & T = Inspection & Test



ACCUFUSION (PTY) LTD

COPY NO : 2

ISSUE : 1
APRIL 1998

PACKAGING SPECIFICATIONS

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All packaging materials used for the TED 191 Portable Oxygen Monitor have been identified and approved for use in the design process, to ensure that no damage is done to the unit during transportation or storage. Purchasing Files in respect of each of these materials have been compiled, containing a data sheet for that particular materials, and a list of approved suppliers from whom the materials may be sourced.

These purchasing files are located in the purchasing department, and are available for inspection.

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INSTRUCTION LABELS

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ABBREVIATED INSTRUCTIONS

NORMAL OPERATION	Switch the monitor ON. Validate calibration by checking that the displayed value reads 21% in ambient air. Calibration should be effected once per day. Place the sensor tip within the gas stream or local environment to be monitored. The monitor will now display the measured oxygen concentration (0 to 100%).
SETTING ALARMS	The HI & LO alarm controls provide set alarm thresholds in the range of 18-102%. In the event of an alarm, the audible tone can be muted for 60 seconds by depressing the alarm mute button (red lamp).
CALIBRATION	1. Expose the sensor tip to pure free flowing oxygen. 2. Allow the displayed value to stabilise. 3. Release the CAL. knob and rotate in order to align the displayed value to 100%. 4. Expose the sensor tip to normal ambient air (free from any oxygen contamination). The displayed value should settle at 21% (± 1%). 5. If the display does not settle at 21% - please re-calibrate, change the sensor cell, or check the purity of the calibration oxygen.
CLEANING	Wipe the instrument with a damp cloth. A mild alcohol solution may be used. Do not rinse with water or other fluid. Do not autoclave or gas sterilise.

BATTERY DRAWER
USE ONLY 4 X TYPE 'AA' CELLS
DEPRESS ENDS TO REMOVE DRAWER

SENSOR INPUT

Issued By : Egerland Designation : Director Operations Date : 15/05/98

PRODUCTION QUALITY PLANNING