

A

A

B

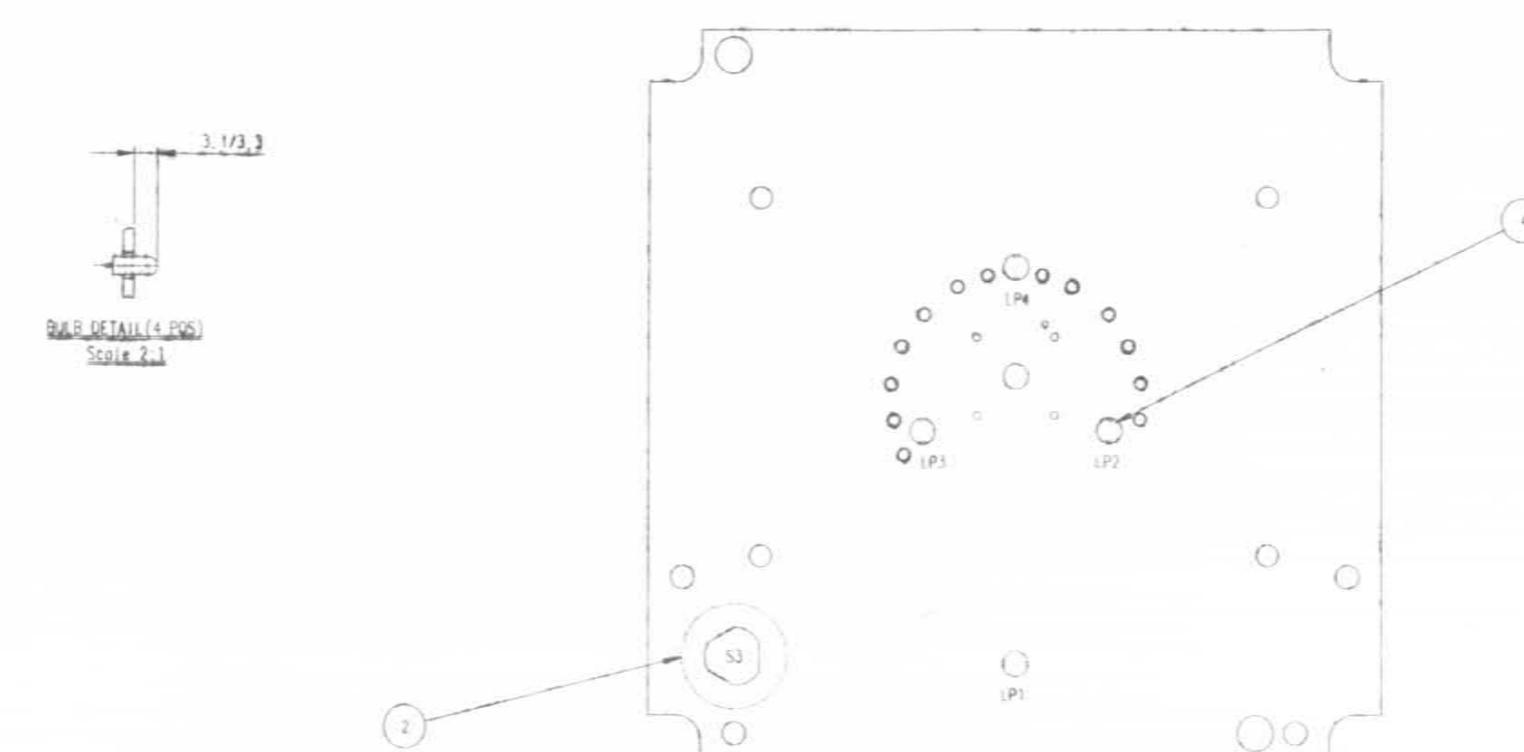
B

C

C

D

D



41	15127	1	CERAMIC RESONATOR CERALOCK CST 11.0MT(3 LEGS)	X11
40	15085	0	CERAMIC RESONATOR 11MHz CERALOCK CSA 11.0MT	(X12)
39	930133P	0	CAPACITOR 33pF 5x 50V AVX-0805-5A-330-JN3-TR	(C17,C18)
38	940074HC4051	1	ANALOG SWITCH CD74HC4051M 8 CHANNEL	(IC5)
37	940374373	0	LATCH 8 BIT PC74HC3731	(IC9)
36	940427C256	0	EPROM 32K X 8 27C256 PLCC32 200NS 12.5V PROGRAMMED	(IC10)
35	9400L272D	2	DUAL OP-AMP L272D STM	(IC1,2)
34	9400CA3130	1	SINGLE OP-AMP CA3130 RCA	(IC11)
33	940093061	1	EEPROM M9306MI STM(SGS)	(IC7)
32	9400LM2931AM	1	REGULATOR LM2931AM 5V SO8	(IC4)
31	9408SB0C52	1	MICROCONTROLLER 80C52 12MHz PLCC CMOS 8K MASK MATRA HARRIS	(IC8)
30	9401RLA80	1	AUTOHELM ASIC RLA80	(IC6)
29	9501BC868	1	TRANSISTOR SOT189 BC868 MULLARD	TR4
28	9500BC807	1	TRANSISTOR SOT23 BC807 MULLARD	TR7
27	9500BC817	2	TRANSISTOR SOT23 BC817 MULLARD	TR5,6
26	93091U	2	CAPACITOR TANT 1uF 10x 16V 2930-105-X9-016-A-2	C11,29
25	93070U1	10	CAPACITOR 0.1uF 20x 50V AVX-1206-50-104-MN3-TR X7R	C3,4,5,7,8,10,12,14,(15,21),24,25
24	03067	1	CAPACITOR TANT 100uF 6V3 +/-20%	C6
23	9302470P	1	CAPACITOR 470uF 20x 50V 0805	C13
22	93001000P	2	CAPACITOR 1000uF 0805 2%	C9,27
21	9204D1F10	2	DIODE RECTIFIER D1F10 1A 100V	04,6
20	9108VC180400	1	TRANSIENT VOLTAGE SUPPRESSOR VC180400	V2
19	9600L1	7	SOLID CHIP INDUCTOR	L1,2,3,5,7,9,10
18	9106100K	2	RESISTOR WCR 1206 100K 5± 0.125W	R6,7
17	910333K	2	RESISTOR WCR 1206 33K 5± 0.125W	R5,9
16	91068R2	2	RESISTOR WCR 1206 8R2 5± 0.125W	R21,(56),71
15	910639K	2	RESISTOR WCR 1206 39K 5± 0.125W	R17,33
14	91062K2	2	RESISTOR WCR 1206 2K2 5± 0.125W	R28,36
13	91064K7	1	RESISTOR WCR 1206 4K7 5± 0.125W	R31
12	910610K	3	RESISTOR WCR 1206 10K 5± 0.125W	R1,3,32
11	91061R0	1	RESISTOR WCR 1206 1R0 5± 0.125W	R74
10	91031M	1	RESISTOR WCR 1206 1M0 5± 0.125W	R75
9	91031K2	2	RESISTOR WCR 1206 1K2 5± 0.125W	R12,24
8	910382R	1	RESISTOR WCR 1206 82R 5± 0.125W	R18
7	91035K6	1	RESISTOR WCR 1206 5K6 5± 0.125W	R30
6	910310R	1	RESISTOR WCR 1206 10R 5± 0.125W	R34
5	910313R	1	RESISTOR WCR 1206 13R 5± 0.125W	R35
4	15167	4	MINIATURE LAMP (OM683 INT)	LP1,2,3,4
3	3010-036	1	CLICKER SEAL	
2	06025	1	CONTACT CLICKER BAB01T	S3
1	3015-076	1	PCB RUDDER ANGLE INDICATOR/COMPASS/TRIM METER	
	ITEM No.	DRG/PART No.	QTY	DESCRIPTION
				PARTS LIST

NOTES :-

1. BOARD CURRENT ISSUE LEVEL TO BE MARKED ON COLOUR IDENT LABEL ITEM 57.

Autohelm

© THE INFORMATION CONTAINED HEREIN
SHALL NOT BE REPRODUCED, IN WHOLE
OR IN PART, WITHOUT THE PRIOR
WRITTEN PERMISSION OF AUTOHELM.

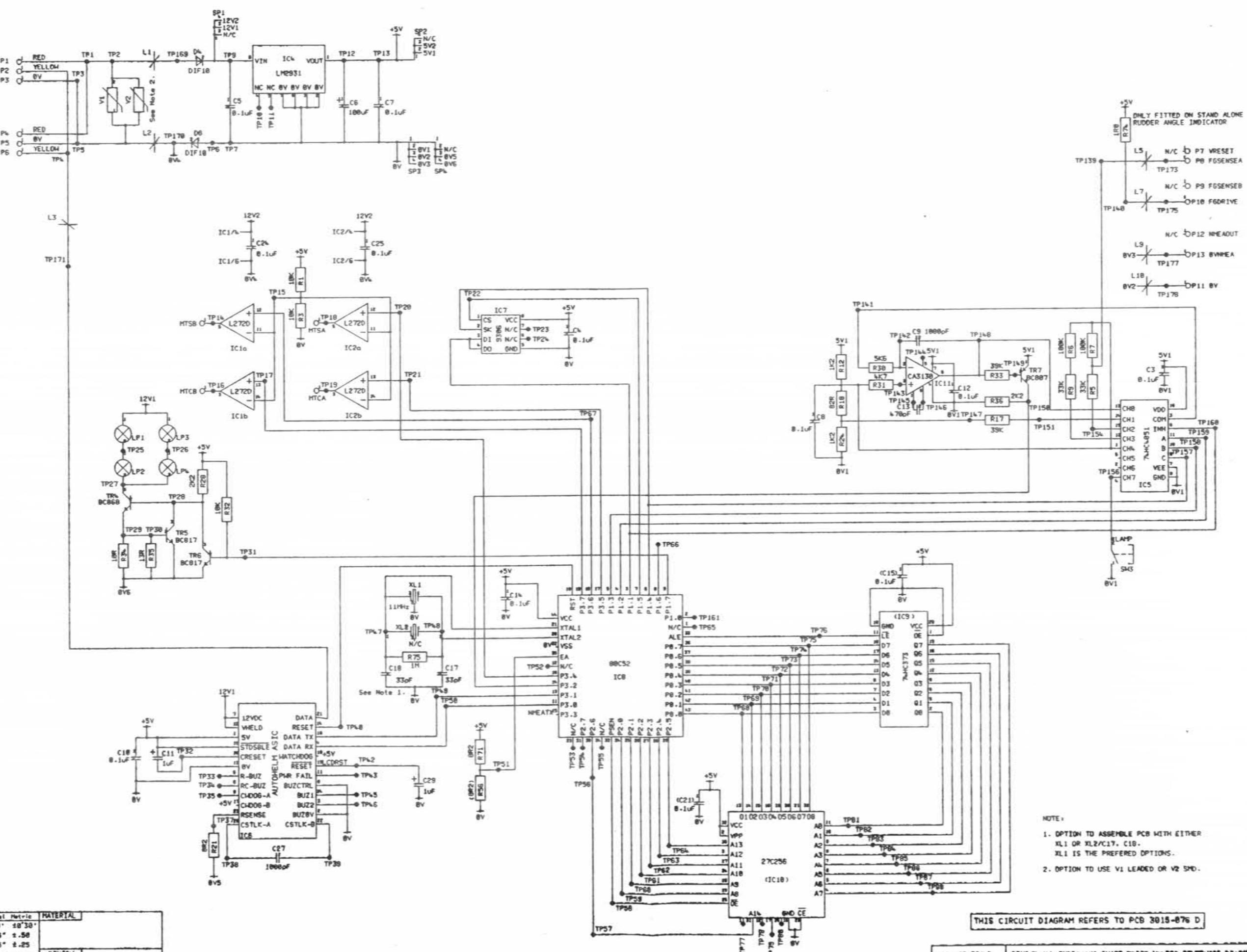
TOLERANCES UNLESS OTHERWISE STATED
DIMENSIONS IN MMDRAWN TO BS306 DO NOT SCALE - IF IN DOUBT ASK
AS PARTS LIST
FROZEN DATE/ISSUE BY: 29.06.94 J. SHU APP'DMACHINING: SURFACE
SHARP INTERNAL CORNERS
TO HAVE RADII 0.4MM
OVER ALL EDGES FINISHDRAWING NO: 5750 RUDDER ANGLE INDICATOR PCB
PAGE 8
4092-006DATE: 18.10.93
DRAFTED: 07.07.93
CHECKED: 10.07.93
REVIEWED: 10.07.93

SMT 1 OF 1

Used on: Autohelm

MODIFICATION/AMENDMENT

ISS	DATE	CHANGES
A	18-08-92	NEW ISSUE
B	23-08-92	Addition of R8-T & S.
C	24-03-94	Change CR from conventional to Surface Mount Type Cap.
	24-07-94	FROZEN

D 06-11-95 Modifications per D/C.
Change CR to MC3347A
Replaced IC1A#71 to MC3347A
DO NOT DELETE.
DP- 95-456-71

- NOTE:
- OPTION TO ASSEMBLE PCB WITH EITHER XL1 OR XL2/C17, C18. XL1 IS THE PREFERRED OPTION.
 - OPTION TO USE V1 LEADED OR V2 SMD.

THIS CIRCUIT DIAGRAM REFERS TO PCB 3015-876 D

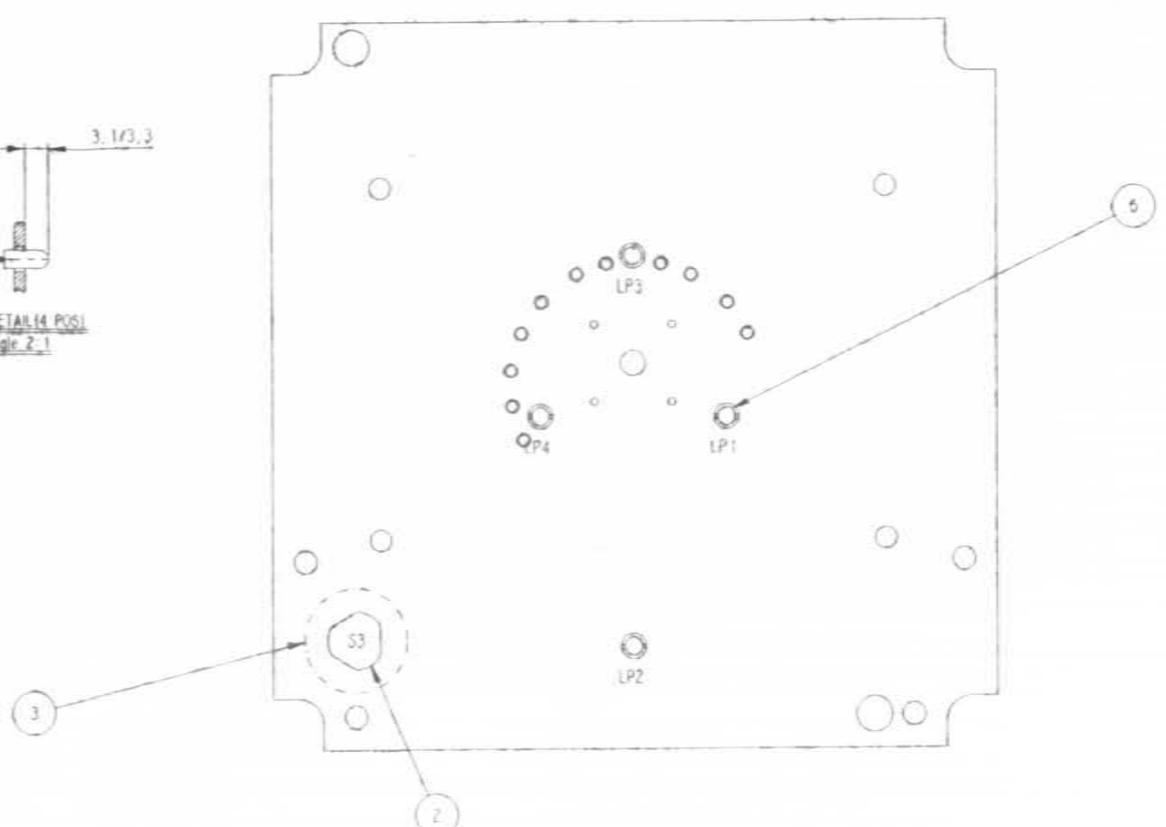
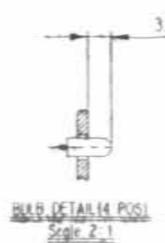
DO NOT SCALE	REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE STATED	DRAWN BY	ICRD	DATE
PROT	TITLE: ST58 RUDDER ANGLE INDICATOR.			DRAWING NO.: 4255002D

TOLERANCES	Imperial	Metric	MATERIAL
ANGLES	10°30'	±0°30'	
NO DECIMAL	.11/16"	.56	
DECIMAL .0	.015"	.25	
DECIMAL .00	.010"	.10	
DECIMAL .000	.005"	.05	
CONCENTRICITY	.005"	.10	
T.T.R. MAXIMUM	.005"	.10	
FINISH			

USED ON
4091-002
4091-005

Autohelm

ITEMS	DR/G/PART N°	QTY	DESCRIPTION
56	15120	1	COLOUR IDENT LABEL (GREEN)
55	15156	1	CRYSTAL TYPE HC49/4H- 12MHz
54	01051	1	VARISTOR GE TYPE V22ZA1
53	940374374	1	LATCH 8 BIT PC74HC374T
52	940374373	1	LATCH 8 BIT PC74HC373T
51	940027C64	0	EPROM 8Kx8 27C64
50	94014066	0	QUAD SWITCH HEF4066BT MULLARD
49	04011	1	TO-220 MC7806 ACT MOTOROLA
48	9400L272D	2	DUAL OP-AMP L272D STM
47	94077225G	0	LCD DRIVER upd7225G-00 NEC
46	9400CA3130	0	SINGLE OP-AMP CA3130 RCA
45	940093061	1	EEPROM M9306M1 STMSGS
44	9400HC04	1	HEX-INVERTING BUFFER SOT 108A (SO14) 74HC04
43	9400LM339	1	QUAD OP-AMP LM339D NAT. SEMI
42	04050	1	TO-220 LM2931AT-5.0
41	9409580C52	1	MICROCONTROLLER 580C52
40	9501BC868	1	TRANSISTOR SOT89 BC868 MULLARD
39	9500BC807	1	TRANSISTOR SOT23 BC807 MULLARD
38	9500BC817	7	TRANSISTOR SOT23 BCB17 MULLARD
37	9302100P	0	CAPACITOR 100pF 10% 50V AVX-0805-5A-101-KN3-TR
36	93041000P	1	CAPACITOR 1000pF 10% 50V AVX-0805-5C-102-KN3-TR
35	93080001	0	CAPACITOR 0.01uF 5% 100V COG VB2220 VITRAMON
34	930133P	2	CAPACITOR 33pF 5% 50V AVX-0805-5A-330-JN3-TR
33	93091U	1	CAPACITOR 1uF 10% 16V SIZE CODE A 293D-105-X9-016-A-2
32	93070U1	8	CAPACITOR 0.1uF 20% 50V AVX-1206-5C-104-MN3-TR
			C1,6,9,10,11,12,(13),(15),(16),(18),19, 20,(22),(23),(26),(27),(28)
31	03065	2	CAPACITOR RAD ELECTROLYTIC 100uF +80%/-20% 16V ECE-A-1C-K-101
30	03068	2	CAPACITOR RAD ELECTROLYTIC 330uF +80%/-20% 16V ECE-A-1C-U-331
29	9200BAS16	3	DIODE SOT23 BAS16 MULLARD
28	9204D1F10	2	DIODE RECTIFIER D1F10 1A 100V
27	91031M	0	RESISTOR WCR 1206 1% 0.125W 200PPM
26	9103180K	0	RESISTOR WCR 1206 180K 1% 0.125W 200PPM
25	9103560K	0	RESISTOR WCR 1206 560K 1% 0.125W 200PPM
24	91031K6	0	RESISTOR WCR 1206 1K6 1% 0.125W 200PPM
23	91031K5	1	RESISTOR WCR 1206 1K5 1% 0.125W 200PPM
22	9103100R	0	RESISTOR WCR 1206 100R 1% 0.125W 200PPM
21	91063R3	2	RESISTOR WCR 1206 3R3 5% 0.125W
20	9106390R	1	RESISTOR WCR 1206 390R 5% 0.125W
19	91068R2	1	RESISTOR WCR 1206 8R2 5% 0.125W
18	910639K	4	RESISTOR WCR 1206 39K 5% 0.125W
17	91062K2	2	RESISTOR WCR 1206 2K2 5% 0.125W
16	91063K3	1	RESISTOR WCR 1206 3K3 5% 0.125W
15	91031K	2	RESISTOR WCR 1206 1K 1% 0.125W
14	91064K7	4	RESISTOR WCR 1206 4K7 5% 0.125W
13	9106100K	4	RESISTOR WCR 1206 100K 5% 0.125W
12	910610K	4	RESISTOR WCR 1206 10K 5% 0.125W
11	910622K	8	RESISTOR WCR 1206 22K 5% 0.125W
10	910612K	4	RESISTOR WCR 1206 12K 5% 0.125W
9	9106820K	2	RESISTOR WCR 1206 820K 5% 0.125W
8	910647K	2	RESISTOR WCR 1206 47K 5% 0.125W
7	910615K	2	RESISTOR WCR 1206 15K 5% 0.125W
6	910310R	2	RESISTOR WCR 1206 10R 1% 0.125W
5	910313R	1	RESISTOR WCR 1206 13R 1% 0.125W
4	15167	4	MINIATURE LAMP (CM683 INT)
3	3010-036	1	CLICKER SEAL
2	06025	1	CONTACT CLICKER BAB01T
1	3015-057	1	PCB DETAIL
			S(1),(2),3



NOTES -
1. BOARD CURRENT ISSUE LEVEL TO BE MARKED ON
COLOUR IDENT LABEL ITEM 56.

2. DO NOT FIT FOLLOWING COMPONENTS - (SHOWN IN PARENTHESIS)

I6,7,11,12,13

S1,2

R6,7,8,9,10

D5

C13,14,15,16,18,22,23,25,26,27,28

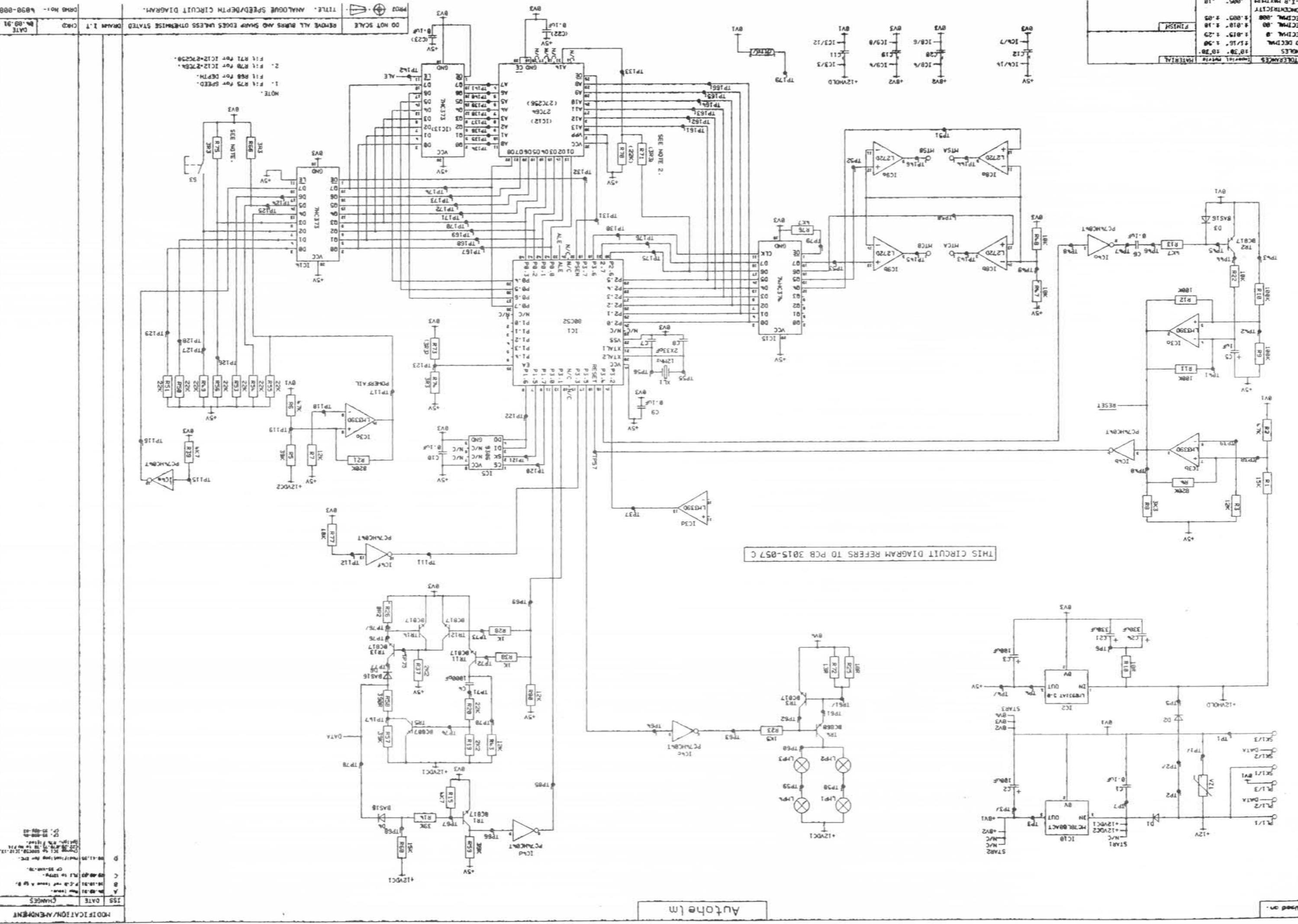
R16,17,27,29,30,31,32,33,34,35,36,40,41,

42,46,51,62,63,64,65,66,67,70,71,74

3. FOR PCB TESTING REFER TO TEST SPEC T4091-001

MODIFICATION/AMENDMENT		
485	DATE	CHANGES
A	31.05.91	NEW ISSUE
B	02.01.92	BOARD ISSUE CHANGED A.P. No 91-VAR-300 A.5
C	29.05.92	ITEM 4 BULB WAS 15051 E.P. No 92-VAR-071 A.5
D	05.08.92	NEW 55 MM 15132 E.P. No 92-VAR-70 A.5
E	02.11.92	IC1 ITEM 41 WAS 140080520 IC12 ITEM 51 AND IC13 ITEM 52 DELETED R70 ITEM 111 DELETED C22 AND C23 ITEM 321 DELETED R1 R11, R12 R70 ITEM 211 CP 15-091-061

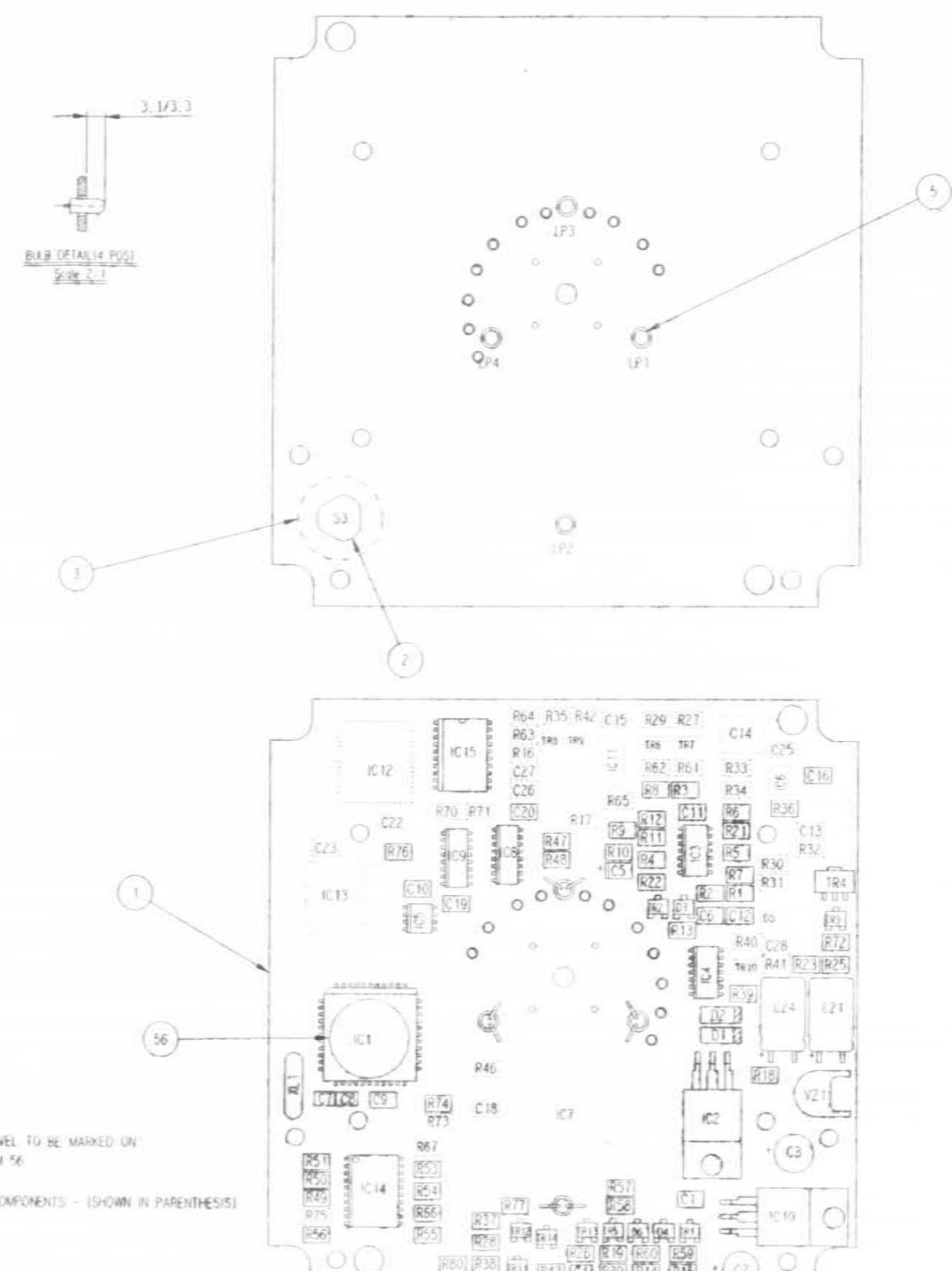
DO NOT SCALE	REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE STATED	DR. N. A.S	CKD 88	DATE 31.05.91
PROJ. NO.	TITLE ANALOGUE SPEED 1ST STAGE P.C.B ASSY	SCALE 2:1	DR.G.N°	4091-001



Autodesk 1M

Autohelm

ITEM NO.	DRG/PART N°	QTY	DESCRIPTION
56	15120	1	COLOUR IDENT LABEL (GREEN)
55	15156	1	CRYSTAL TYPE HC49/4H- 12MHz
54	01051	1	VARISTOR GE TYPE V22Z1
53	940374374	1	LATCH 8-BIT PC74HC3741
52	940374373	1	LATCH 8-BIT PC74HC3731
51	940027064	0	EPROM 8Kx8 27C64
50	94014066	0	QUAD SWITCH HEF4066BT MULLARD
49	04011	1	TO-220 MC7808 ACT MOTOROLA
48	9400L272D	2	DUAL OP-AMP L272D STM
47	940772256	0	LCD DRIVER 4972256-00 NEC
46	9400CA3130	0	SINGLE OP-AMP CA3130 RCA
45	940093061	1	EEPROM M9306M1 STM(SGS)
44	9400HC04	1	HEX-INVERTING BUFFER SOT-108A (SO14) 74HC04
43	9400LM339	1	QUAD OP-AMP LM339N NAT SEMI
42	04050	1	TO-220 LM2931AT-5.0
41	9409S80C52	1	MICROCONTROLLER S80C52
40	9501BC868	1	TRANSISTOR SOT89 BC868 MULLARD
39	9500BC807	1	TRANSISTOR SOT23 BC807 MULLARD
38	9500BC817	7	TRANSISTOR SOT23 BC817 MULLARD
37	9302100P	0	CAPACITOR 100pF 10% 50V AVX-0805-5A-101-KN3-TR
36	9304100P	1	CAPACITOR 1000pF 10% 50V AVX-0805-5C-102-KN3-TR
35	93080U01	0	CAPACITOR 0.01uF 5% 100V COG VB2220 VITRAMON
34	930133P	2	CAPACITOR 33pF 5% 50V AVX-0805-5A-330-JN3-TR
33	93091U	1	CAPACITOR 1uF 10% 16V SIZE CODE A 2930-105-X9-016-A-2
32	93070U1	8	CAPACITOR 0.1uF 20% 50V AVX-1206-5C-104-MN3-TR
			C1,6,9,10,11,12,[13],[15],[16],[18],19, C20,[22],[23],[26],[27],[28]
31	03065	2	CAPACITOR RAD ELECTROLYTIC 100uF +80%/-20% 16V ECE-A-1C-K-101
30	03068	2	CAPACITOR RAD ELECTROLYTIC 330uF +80%/-20% 16V ECE-A-1C-U-331
29	9200BAS16	3	DIODE SOT23 BAS16 MULLARD
28	9204D1F10	2	DIODE RECTIFIER D1F10 1A 100V
27	91031M	0	RESISTOR WCR 1206 1M 1% 0.125W 200PPM
26	9103180K	0	RESISTOR WCR 1206 180K 1% 0.125W 200PPM
25	9103560K	0	RESISTOR WCR 1206 560K 1% 0.125W 200PPM
24	91031K6	0	RESISTOR WCR 1206 1K6 1% 0.125W 200PPM
23	91031K5	1	RESISTOR WCR 1206 1K5 1% 0.125W 200PPM
22	9103100R	0	RESISTOR WCR 1206 100R 1% 0.125W 200PPM
21	91063R3	2	RESISTOR WCR 1206 3R3 5% 0.125W
20	9106390R	1	RESISTOR WCR 1206 390R 5% 0.125W
19	91068R2	1	RESISTOR WCR 1206 8R2 5% 0.125W
18	910639K	4	RESISTOR WCR 1206 39K 5% 0.125W
17	91062K2	2	RESISTOR WCR 1206 2K2 5% 0.125W
16	91063K3	1	RESISTOR WCR 1206 3K3 5% 0.125W
15	91031K	2	RESISTOR WCR 1206 1K 1% 0.125W
14	91064K7	4	RESISTOR WCR 1206 4K7 5% 0.125W
13	9106100K	4	RESISTOR WCR 1206 100K 5% 0.125W
12	910610K	4	RESISTOR WCR 1206 10K 5% 0.125W
11	910622K	8	RESISTOR WCR 1206 22K 5% 0.125W
10	910612K	4	RESISTOR WCR 1206 12K 5% 0.125W
9	9106820K	2	RESISTOR WCR 1206 820K 5% 0.125W
8	910647K	2	RESISTOR WCR 1206 47K 5% 0.125W
7	910615K	2	RESISTOR WCR 1206 15K 5% 0.125W
6	910310R	2	RESISTOR WCR 1206 10R 1% 0.125W
5	910313R	1	RESISTOR WCR 1206 13R 1% 0.125W
4	15167	4	MINIATURE LAMP (CM683 INT)
3	3010-036	1	CLICKER SEAL
2	06025	1	CONTACT CLICKER BA801T
1	3015-057	1	PCB DETAIL



NOTES -

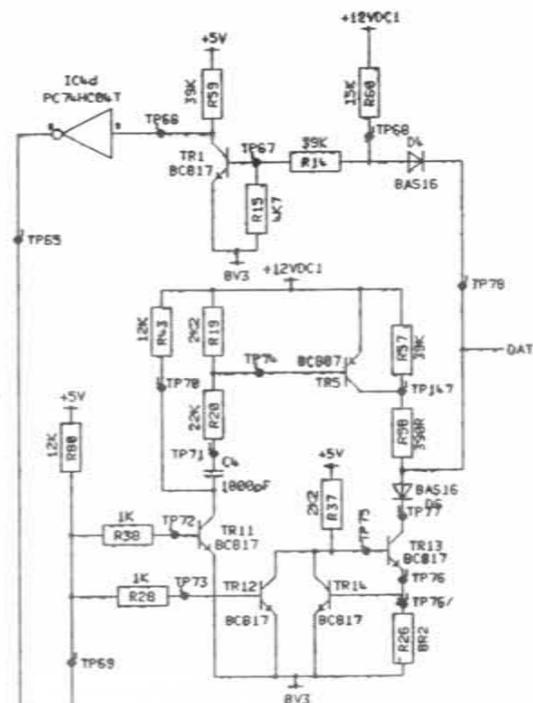
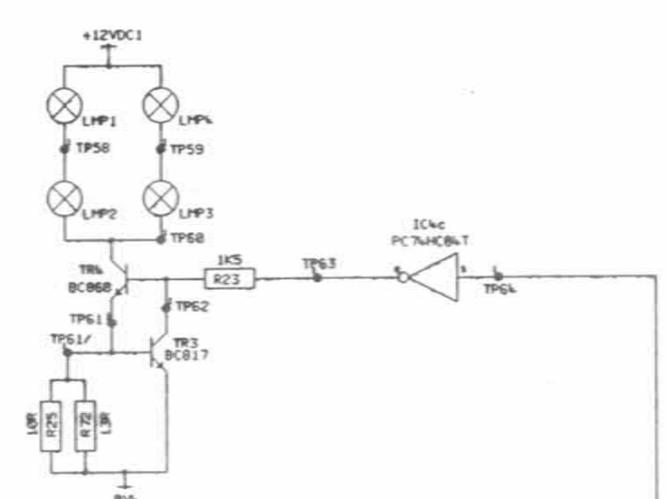
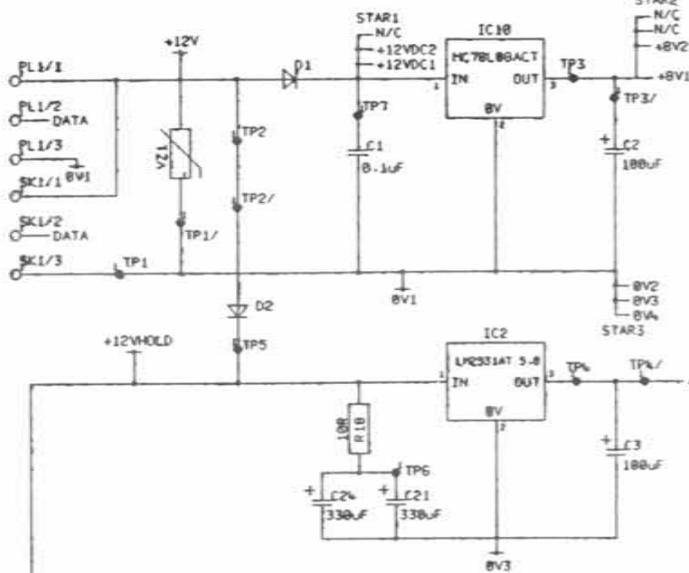
- 1 BOARD CURRENT ISSUE LEVEL TO BE MARKED ON COLOUR IDENT LABEL ITEM 56
- 2 DO NOT FIT FOLLOWING COMPONENTS - (SHOWN IN PARENTHESIS)
106,7,11,12,13
51,2
R6,7,8,9,10
D5,
C13,14,15,16,18,22,23,25,26,27,28.
R16,17,27,29,30,31,32,33,34,35,36,40,41,
42,48,61,62,63,64,65,67,70,71,73,75
- 3 FOR PCB TESTING REFER TO TEST SPEC. F4090-001

DO NOT SCALE	REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE STATED	DRG N. A.S. C.R.D. 88	DATE 31/05/01
PROJ. 10	TITLE ANALOGUE DEPTH 1ST STAGE P.C.B ASSY	SCALE 2:1	DRG N. 4090-001

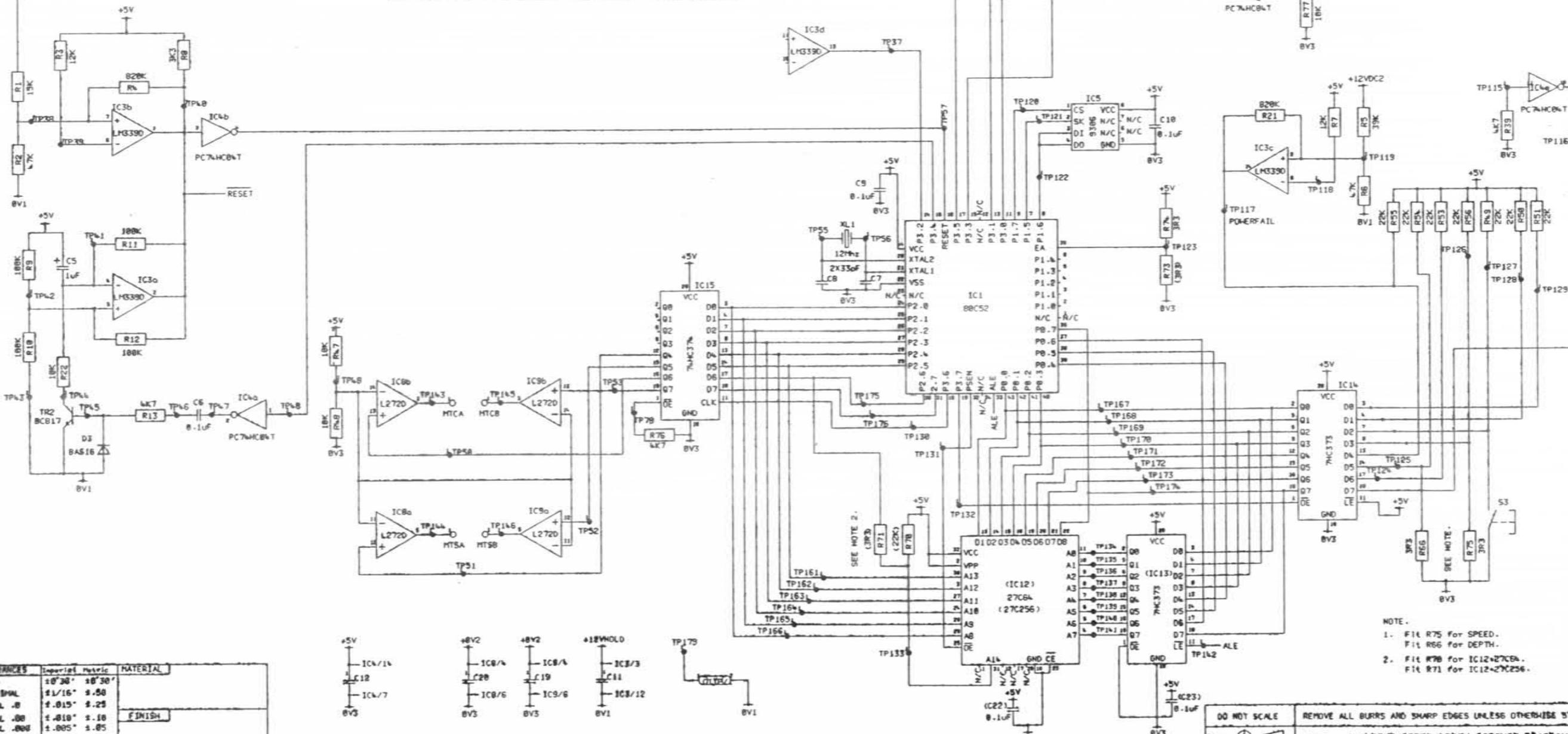
MODIFICATION/AMENDMENT		
ISS	DATE	CHANGES
A	31.05.91	NEW ISSUE
B	02.01.92	BOARD ISSUE CHANGED ICP No. 91-VAR-300 A.5
C	29.05.92	ITEM 4 BULB WAS 15051 ICP No. 92-VAR-071 A.5
D	08.09.93	ITEM 50 WAS 15132 ICP No. 93-VAR-70 G.7
E	06.11.95	IC1 ITEM 411 WAS ADDED IC12 ITEM 511 AND IC13 ITEM 521 SELECTED. R70 ITEM 111 DELETED C22 AND C23 ITEM 521 DELETED FIT 404 903, 413 TO NO FIT OPTION IC15 404 904

Used on:

Autohelm



THIS CIRCUIT DIAGRAM REFERS TO PCB 3015-057 C



- NOTE:
 1. FIT R75 FOR SPEED.
 FIT R66 FOR DEPTH.
 2. FIT R78 FOR IC12+27C512.
 FIT R71 FOR IC12+27C256.

MODIFICATION/AMENDMENT		
ISS	DATE	CHANGES
A	08-09-95	New layout.
B	16-10-95	PCB ref Issue A 1st B.
C	29-09-95	R1 to 12VDC1. CP 95-YAT-78.
D	08-11-95	Modifications for EMC. Change IC1 to 54HC08-XC12-12. C22-23-R79, 71-72 to No Fit. Option A/B Fitted. CP 95-008-06 CP 95-001-03

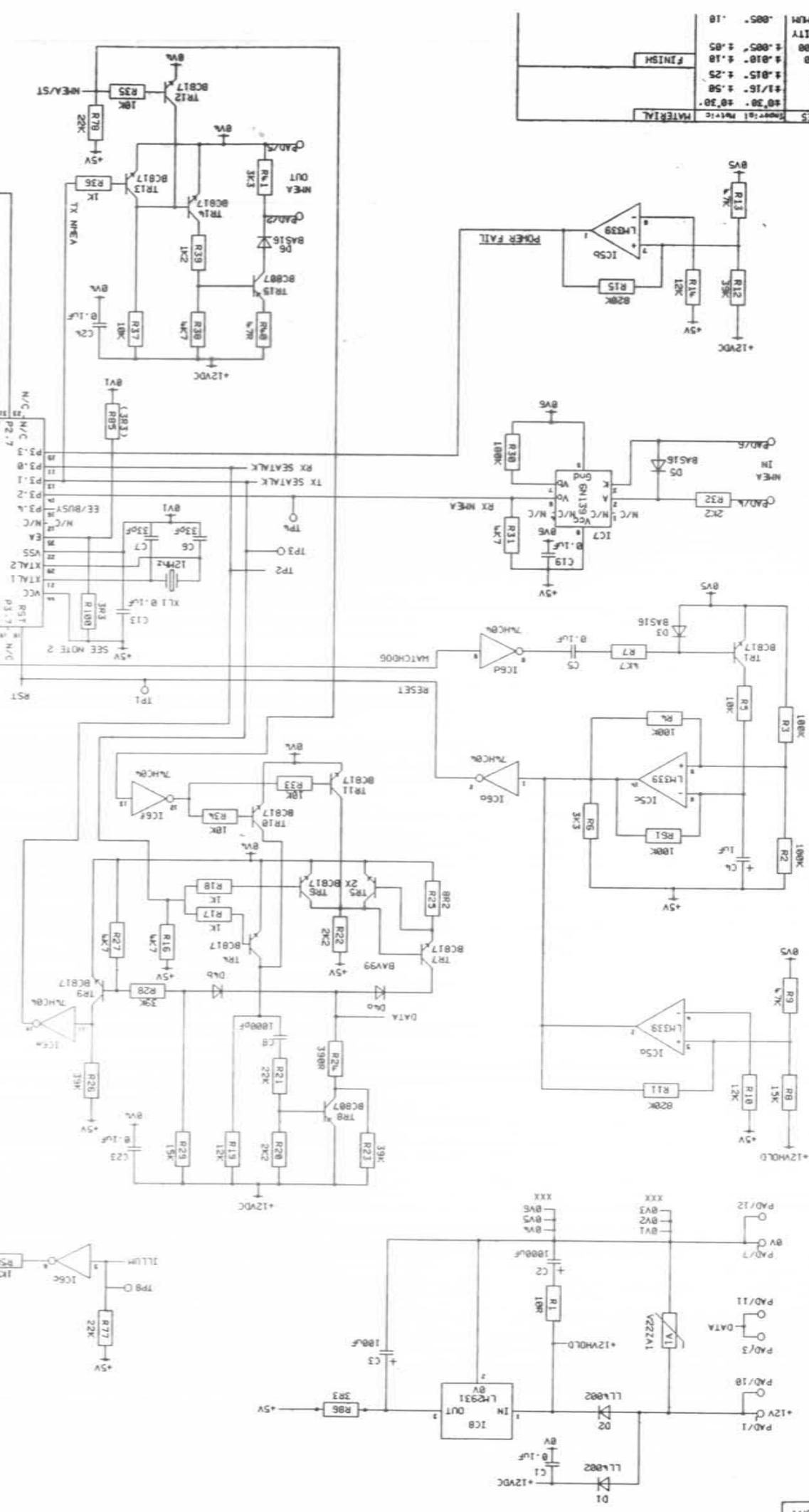
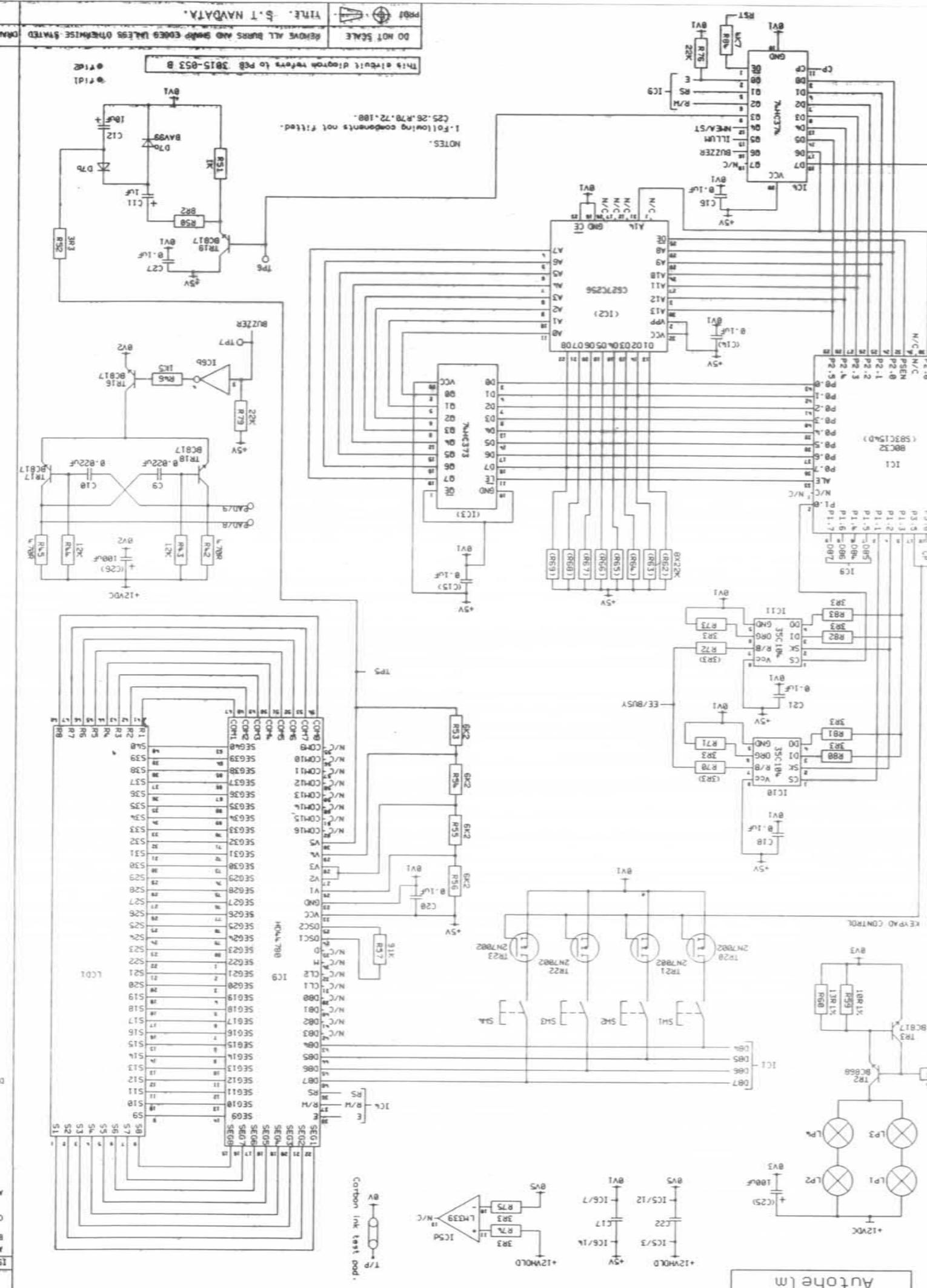
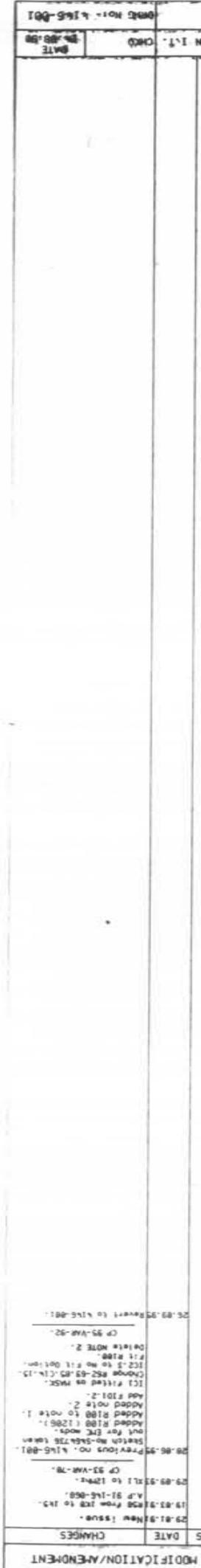
TOLERANCES	Preferred Metric	MATERIAL
ANGLES	$\pm 0^\circ 30'$	$\pm 0^\circ 30'$
NO DECIMAL	$\pm 1/16$	$\pm .06$
DECIMAL .08	$\pm .015$	$\pm .05$
DECIMAL .00	$\pm .010$	$\pm .04$
DECIMAL .000	$\pm .005$	$\pm .03$
CONCENTRICITY	$.005$	$.18$
T.I.R. MAX/MIN		
FINISH		

Autohelm

USED ON				MODIFICATION/AMENDMENT
DR/G/PART N°	Q'TY	DESCRIPTION		ISS DATE CHANGES
4146-003				A 15.10.90 NEW CODE
				B1 24.05.91 ITEM 45 WAS 94001404. AP 91-047-048 GUT
				B 29.05.92 ITEM 4 94001405 C 29.05.92 9400140-011 A 3
				C 30.05.93 SOFTWARE ISSUE LEVEL WAS ADL OF 93-047-048 GUT
				D 10.09.95 ITEM 54 WAS 10102 OF 93-047-048 GUT
				E 14.09.95 ADD FIG TO ITEM 14 DELETE NOTES CHANGE 95-047-048 C4 15.10.95 95-047-048 C4 15.10.95 95-047-048 C4 15.10.95
56	07219-	8	PCB FORMED PIN	
55	15092	1	EPROM LABEL	
54	15156	1	CRYSTAL TYPE HC49/4H-12MHZ	X1
53	01051	1	VARISTOR CL TYPE V222A1	
52	940035C104	2	EEPROM 512 x 8 CAT35C104 CATALYST	I01,11
51	9408HD44780	1	LCD DISPLAY DRIVER HD44780	C9
50	04050	1	TD-220 LM391AE 5.0	C8
49	94066N139	1	OPTO ISOLATOR BN119	C7
48	94007HC04	1	HEX INVERTING BUFFER SOT108A(SOT14) 74H004	C6
47	9400LM339	1	QUAD OP AMP LM339	C5
46	940374374	1	OCTAL D-TYPE K16F FLOP LATCH 8 BITS PC74HC174	C4
45	940374373	0	OCTAL D-TYPE 8 BITS 74HC373	C3
44	940427256	0	EROM 128x8 PLD032 200NS 42-5V PROG	C2
43	9417583C154	1	MICROCONTROLLER 583C1540 32K MASK 44-PIN PLCC	C1
42	95002N7002	4	TRANSISTOR 2N7002 MOSFET SILICONIX ZETEX	I20,21,22,23
41	9500BC807	2	TRANSISTOR SOT23 BC807 MULLARD	I8,15
40	9500BC817	16	TRANSISTOR SOT23 BC817 MULLARD	I8,3,4,5,6,7,9,10,11,12,13,14,16,17,18,19
39	9501BC868	1	TRANSISTOR SOT89 BC868 MULLARD	I2
38	03066	1	CAPACITOR RAD ELECTROLYTIC 1000uF +80%/-20% 16V ECE-A-10-H-107	C2
37	931110U	1	CAPACITOR 10uF 10% 6V3 SOLID SIZE C 4890-X-106 X0-016-D	C12
36	93022N	2	CAPACITOR 0.022uF 5% 50V AVX-1206-5C-223-JN3-TR	C9,10
35	93041000P	1	CAPACITOR 1000uF 10% 50V AVX-0805-5C-102-KN3-TR	C8
34	930133P	2	CAPACITOR 33pF 5% 50V AVX-0805-5A-330-JN3-TR	C6,7
33	93091U	2	CAPACITOR 1uF 10% 16V SIZE CODE A 293D-105-X9-016-A-2	C4,11
32	03065	3	CAPACITOR RAD ELECTROLYTIC 100uF +80%/-20% 16V ECE-A-10-H-101	C3,125,126
31	93070U1	13	CAPACITOR 0.1uF 10% 50V AVX-1206-5C-104-MN3-TR C1,5,13,14,15,16,17,18,19,20,21,22,23,24,25	C4,1
30	9200BAV99	2	DIODE SOT23 BAV99	C4,3
29	9200BA516	3	DIODE SOT23 BA516 MULLARD	C3,5,6
28	9202L14002	2	DIODE 1L4002 1N5402 MULLARD	C1,2
27	910591K	1	RESISTOR WCR 1206 3K 2% 0.125W	R57
26	9106K2	4	RESISTOR WCR 1206 6K2 5% 0.125W	R53,54,55,56
25	91061K5	2	RESISTOR WCR 1206 1K5 5% 0.125W	R46,58
24	9106470R	2	RESISTOR WCR 1206 47R 5% 0.125W	R42,45
23	910647R	1	RESISTOR WCR 1206 47R 5% 0.125W	R40
22	9106390R	1	RESISTOR WCR 1206 190R 5% 0.125W	R24
21	910688R2	2	RESISTOR WCR 1206 882 5% 0.125W	R25,50
20	910639K	4	RESISTOR WCR 1206 39K 5% 0.125W	R12,23,26,28
19	91031K2	1	RESISTOR WCR 1206 1K2 1% 0.125W	R34
18	91062K2	3	RESISTOR WCR 1206 2K2 5% 0.125W	R20,22,32
17	91063K3	2	RESISTOR WCR 1206 3K3 5% 0.125W	R6,41
16	91031K	4	RESISTOR WCR 1206 1K 1% 0.125W	R17,18,36,51
15	91064K7	6	RESISTOR WCR 1206 4K7 5% 0.125W	R7,16,27,31,38,84
14	91063R3	11	RESISTOR WCR 1206 3R3 5% 0.125W	R52,(70),(71),(72),(73),(74),(75),(80),(81),(82),(83),(85),(86),(100)
13	9106100K	5	RESISTOR WCR 1206 100K 5% 0.125W	R2,3,4,30,61
12	910610K	5	RESISTOR WCR 1206 10K 5% 0.125W	R5,33,34,35,37
11	910622K	5	RESISTOR WCR 1206 22K 5% 0.125W	R21,(62),(63),(64),(65),(66),(67),(68),(69),(76),(77),(78),(79)
10	910612K	5	RESISTOR WCR 1206 12K 5% 0.125W	R10,14,19,43,44
9	9106820K	2	RESISTOR WCR 1206 820K 5% 0.125W	R11,15
8	910647K	2	RESISTOR WCR 1206 47K 5% 0.125W	R8,13
7	910615K	2	RESISTOR WCR 1206 15K 5% 0.125W	R8,29
6	910310R	2	RESISTOR WCR 1206 10R 1% 0.125W	R1,59
5	910313R	1	RESISTOR WCR 1206 13R 1% 0.125W	R60
4	15167	4	MINIATURE (CM683 INT)	I1,2,3,4
3	3010-036	4	CLICKER SEAL	
2	06025	4	CONTACT CLICKER BAB01T	S1,2,3,4
1	3015-053	1	PCB DETAIL	



COMPONENT SIDE	DO NOT SCALE	REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE STATED	DR/NR S.A	OK/D	DATE 15.10.90
PROJ.	TITLE	NAVDATA 1ST STAGE P.C.B.S ASSY	SCALE 2:1	DR.G.N° 4146-001	PAGE 11



USED ON
4049-003

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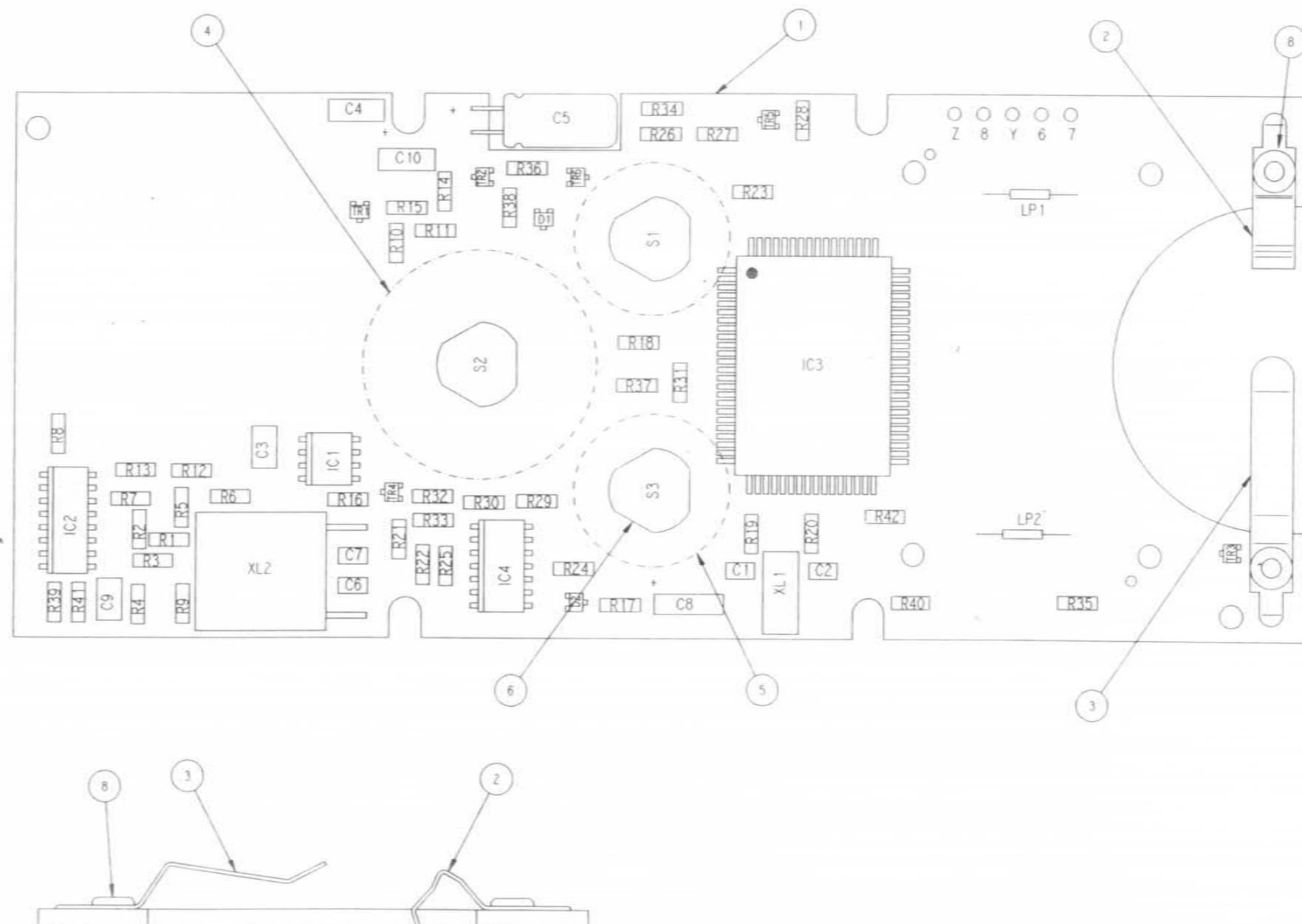
MODIFICATION/AMENDMENT		
ISS	DATE	CHANGES
A	09.11.90	NEW ISSUE.
A1	27.02.91	COMPONENTS ADDED TO DRAWING. ITEM 39 WAS 931447N A.P. No 31-YAR-918 A.5

NOTES :-

1. ALL ELECTRICAL COMPONENTS TO BE WITHIN THE PERIMETER OF P.C.B. (ITEM 1).
2. BOARDS TO BE CLEANED.
3. BOARDS TO BE TESTED.
4. RIVETS (ITEM 8) TO BE FITTED AS SHOWN WITH FLAT HEAD ON NON-COMPONENT SIDE AND DEFORMING HEAD ON COMPONENT SIDE.
5. CLICKERS (ITEM 5) TO BE ALIGNED CENTRALLY TO CLICKER SEALS (ITEMS 4 AND 5) AND POSITIONED TO ALIGN WITH CARBON SCREENED PADS ON P.C.B.
6. DO NOT FIT ITEMS R40, 42.

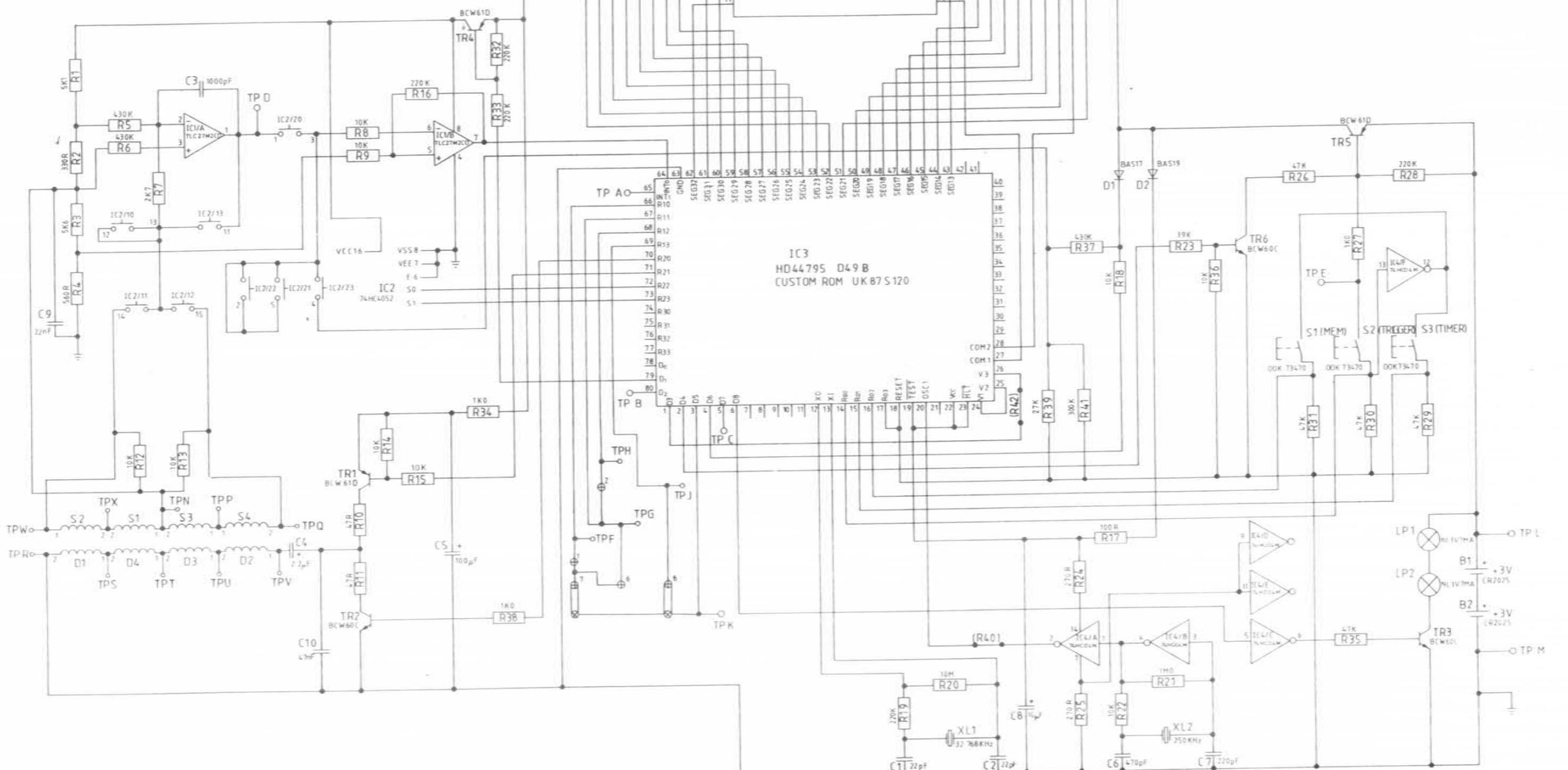
THIS P.C.B. ASSY RELATES TO THE CURRENT BUILD STANDARD OF 3015-054 ISSUE A.

ITEM	REF	DESCRIPTION	
1	3015-054	P.C.B. DETAIL	
2	3028-012	+ BATTERY CONNECTION	
3	3028-013	- BATTERY CONNECTION	
4	3010-035	CLICKER SEAL 'L'	
5	3010-036	CLICKER SEAL 'S'	
6	06025	CONTACT CLICKER 00K-73470 S1, S2, S3	
7	15129	NEEDLE LAMP NL3V7MA (HERO) LP1, LP2	
8	26007	EYELET L892 BRIGHT DIPPED	
9	91015K1	0805 RESISTOR 5K1 2% 0.1W R1	
10	9101330R	0805 RESISTOR 330R 2% 0.1W R2	
11	91035K6	1206 RESISTOR 5K6 1% 0.125W R3	
12	9101300K	0805 RESISTOR 300K 2% 0.1W R41	
13	9103430K	1206 RESISTOR 430K 1% 0.125W R37	
14	910327K	1206 RESISTOR 27K 1% 0.125W R39	
15	9103560R	1206 RESISTOR 560R 1% 0.125W R4	
16	9101430K	0805 RESISTOR 430K 2% 0.1W R5, R6	
17	91012K7	0805 RESISTOR 2K7 2% 0.1W R7	
18	910610K	1206 RESISTOR 10K 5% 0.125W R15, R12, R11, R14 R15, R18, R22, R24	
19	910647R	1206 RESISTOR 47R 5% 0.125W R10, R11	
20	9102220K	0805 RESISTOR 220K 5% 0.1W R16, R19, R20, R23	
21	9102100R	0805 RESISTOR 100R 5% 0.1W R17	
22	9103270R	1206 RESISTOR 270R 1% 0.125W R24, R25	
23	910247R	0805 RESISTOR 47R 5% 0.1W (R40, R42)	
24	910210M	0805 RESISTOR 10M 5% 0.1W R20	
25	91021M	0805 RESISTOR 1M0 5% 0.1W R21	
26	910639K	1206 RESISTOR 39K 5% 0.125W R23	
27	910647K	1206 RESISTOR 47K 5% 0.125W R26, R29, R30, R31, R35	
28	91031K	1206 RESISTOR 1K0 1% 0.125W R27, R34, R38	
29	92008AS17	DIODE SOT23 BAS17 LOW VOLTAGE STABISTER D1	
30	92008AS19	DIODE SOT23 BAS19 SILICONE DIODE D2	
31	930122P	0805 CAPACITOR 22pF ±5% COG 50V C1, C2	
32	93161000P	1206 CAPACITOR 1000pF ±2% COG 50V C3	
33	93102U2	CAPACITOR SOLID TANT. 2u2 ±20% 6V3 SIZE A C4	
34	03062	CAPACITOR ELECTROLYTIC 100uF ±20% 6V3 min C5	
		RADIAL CASE Ø5.5mm MAX	
35	9302470P	0805 CAPACITOR 470pF ±10% COG 50V C6	
36	9302220P	0805 CAPACITOR 220pF ±10% COG 50V C7	
37	931110U	CAPACITOR SOLID TANT. 10uF ±20% 6V3 min SIZE C C8	
38	930522N	1206 CAPACITOR 22nF 5% X7R 50V C9	
39	930600U47	1206 CAPACITOR 47nF ±10% X7R 50V C10	
40	9400TLC27M2C	I.C. S08 TEXAS TLC27M2CDLIn CMOS DUAL OP AMP IC1	
41	940074HC4052	I.C. SOT109A(S016) 74HC4052 DUAL 4 CHANNEL ANALOGUE MULTIPLEXER IC2	
42	9400HD44795	I.C. FP80 HITACHI HD44795 MICROPROCESSOR TO CUSTOM ROM UK875120 (D498) IC3	
43	940074HC04	I.C. SOT108A(S014) 74HC04 HEX INVERTING BUFFER IC4	
44	9500BCW61D	TRANSISTOR SOT23 BCW61D PNP TR1, TR4, TR5	
45	9500BCW60C	TRANSISTOR SOT23 BCW60C NPN TR2, TR3, TR6	
46	15130	WATCH CRYSTAL 32.768 KHz ±50ppm MAX HEIGHT 1.9mm XL1	
47	15131	CERAMIC RESONATOR 250 KHz (Murata CSB2500)	
		MAX HEIGHT 4.3mm XL2	
ITEMS	DR'G/PART N°	O'TY	DESCRIPTION



DO NOT SCALE	REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE STATED	DR.NR.S.A.	CK.D.	DATE 08.11.90
PROJ	TITLE PERSONAL COMPASS V.E 1st STAGE ASSY	SCALE 4:1	DR'G N° 4049-015	

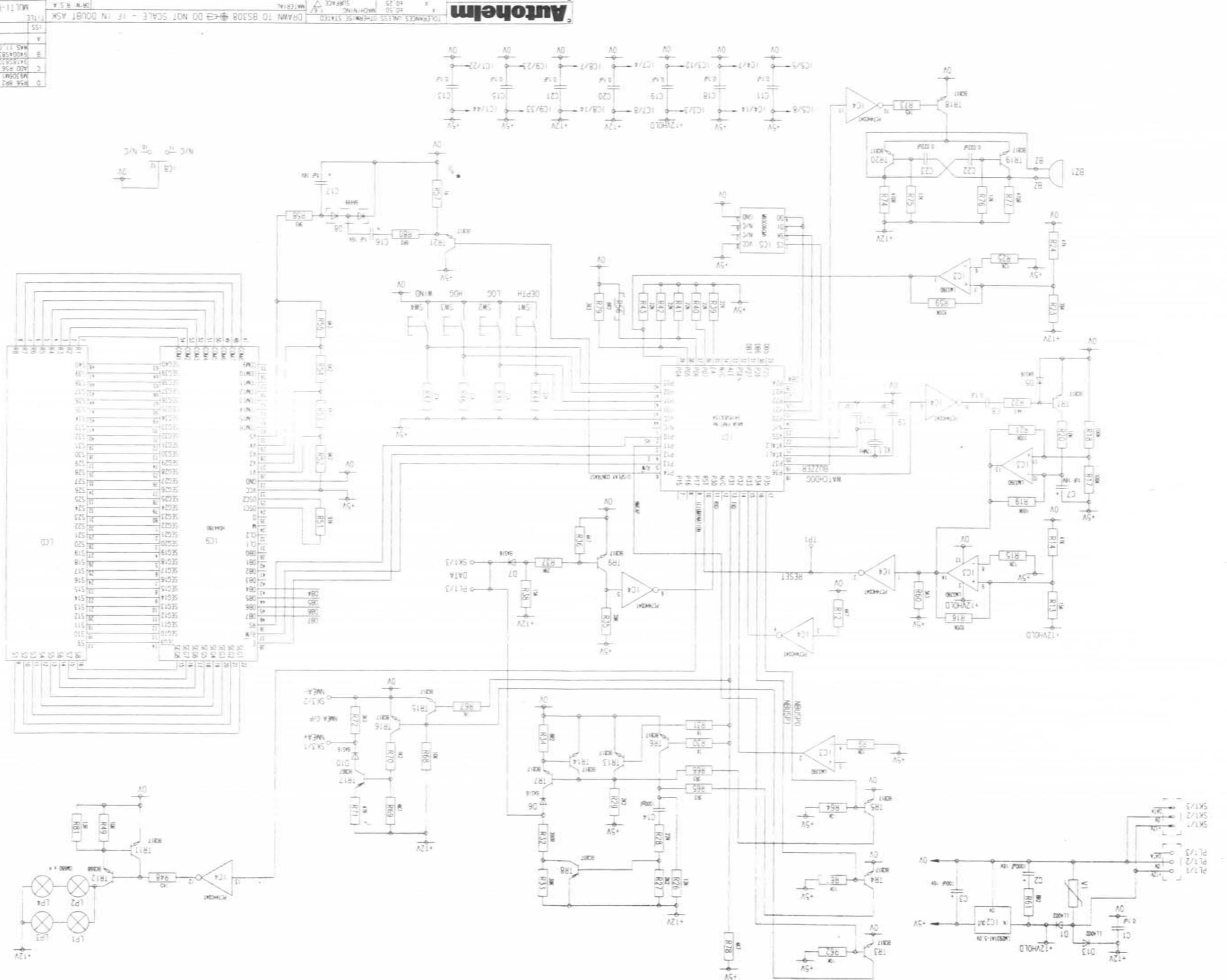
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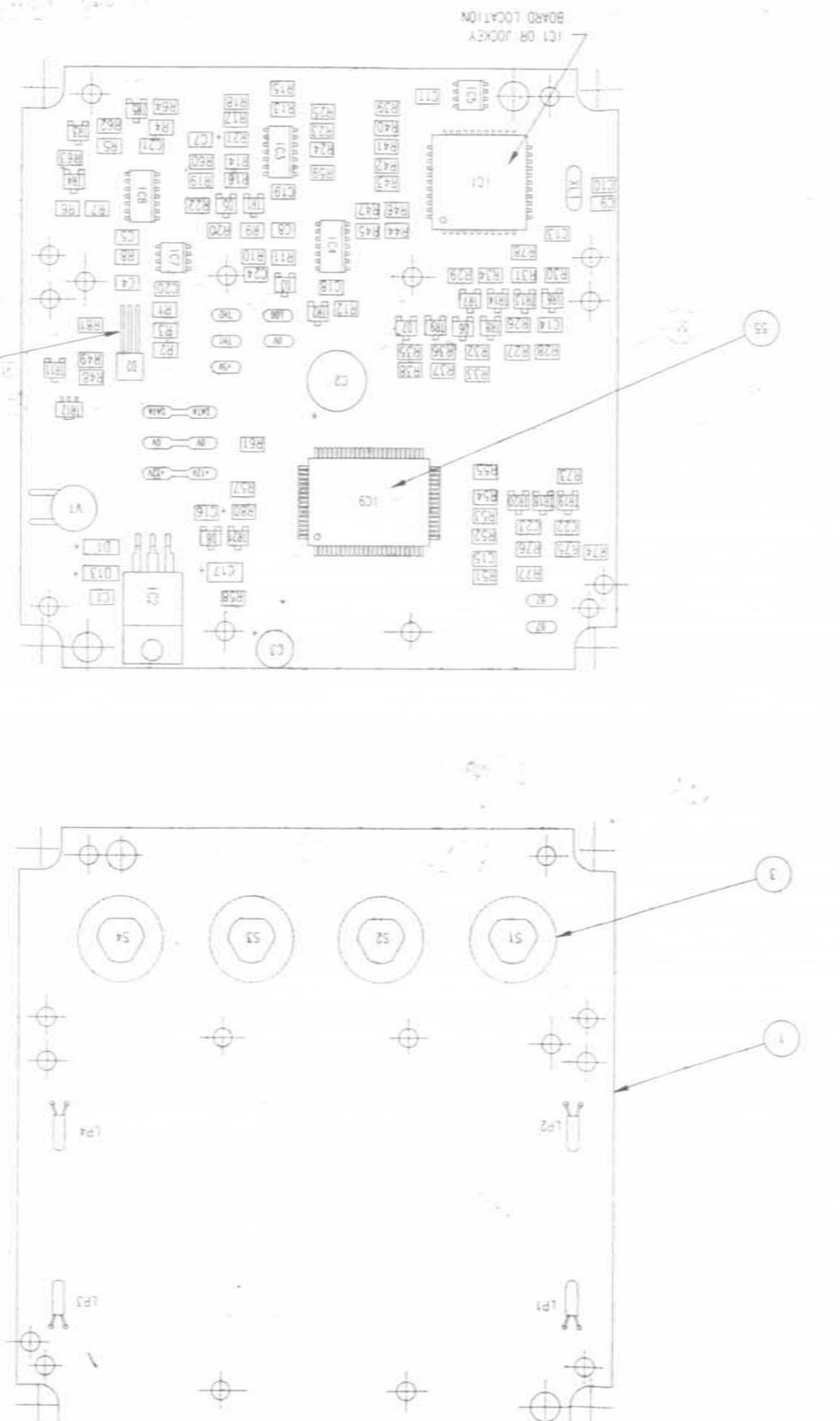


MODIFICATION/AMENDMENT		
ISS	DATE	CHANGES
A	10/8/87	NEW ISSUE
B	17/09/87	IC4 D & TP E REPOSED TP F, TPG, TP H, TP J, TP L & TP M ADDED IDENTIFICATIONS MEM, TR & TIMER ADDED TO SWITC PPM
C	1/10/87	R15 VALUE AMENDED FROM 1K TO 10K AP No 87-5-9-126
D	21/10/87	IC4 FF WAS IC470 & IC PIN No 9 WAS 13, 12 WAS 13 WAS 9 PPM
E	27/11/87	R7 2K7 WAS 4K7 AP 87-4049-150
F	18/1/88	TP N TO X ADDED MODIFICATION TO CALIB RATION DETAIL ACTION AP 87-3015-151
G	16/03/88	CALIBRATION PADS 6 & 7 FRAMESWORK AMENDED FOR 6-7-10-8-12-15 PPM
H	22/03/88	RESISTOR VALUE R4 & 7 430K AP No 88-4049-030
I	17/05/88	IC3 PIN Nos 9 & 11 DIS CONNECTED FROM BATTERY & ACTIVE AND RECONNECTED PIN No 7 ON IC4 CALIBRATION PADS Z WEL Y WAS 5.9 & 8 WAS 8.9 AP No 88-3015-062
K	24/06/88	IC3 NAUTECH SOFTWARE LOAD AMENDED FROM D TO D49B PPM No 88-4049-082

TOLERANCES	IMPERIAL/METRIC	MATERIAL
ANGLES NO DECIMAL	± 0°30'	± 0°30'
DECIMAL 0	± 1/16"	± .50
DECIMAL 00	± 015"	± .25
DECIMAL 000	± 0010"	± .10
CONCENTRICITY	± .005"	± .05
T.I.R. MAXIMUM	.005	.10

4077-007



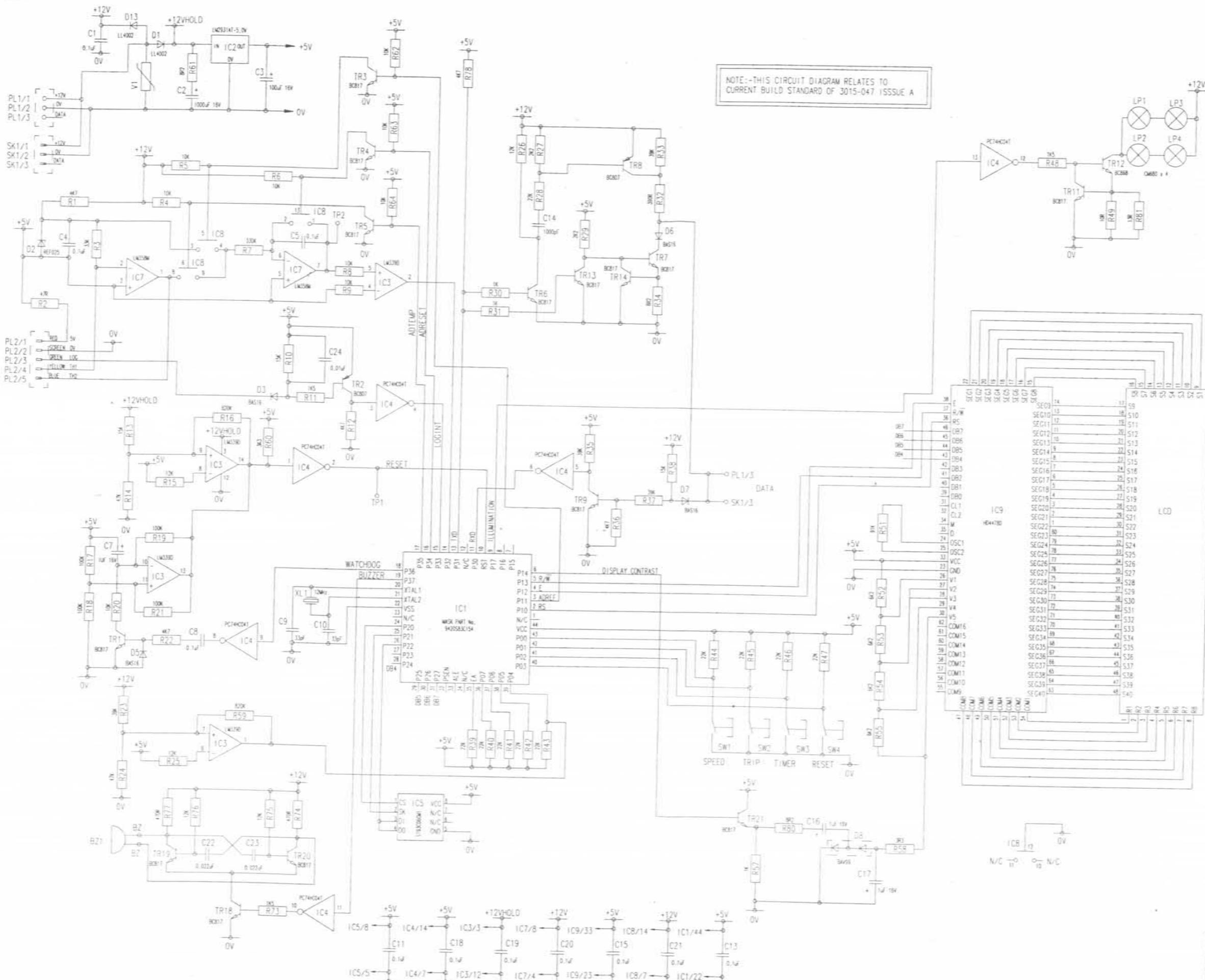


FCC ID: 2ABDQ-14070-01

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4070-010

ITEM NO	DESCRIPTION	QTY	DESCRIPTION	QTY
1	3015-047	1	PKG DELTA	1
2	06025	4	CONTACT CLIP/CLKR BAG/BLT	4
3	3010-036	4	CLIP/CLKR SEAL	4
4	15167	4	MINTLITE LAMP (CY 683 IN1) 5V 60mA	4
5	01051	1	WIRELESS CHIP TYPE V222AT	1
6	9103138	1	RESISTOR WCR 1206 1K 0.125W	1
7	91056708	2	RESISTOR WCR 1206 1K 0.125W	2
8	91056434	4	RESISTOR WCR 1206 1K 0.125W	4
9	91056624	4	RESISTOR WCR 1206 1K 0.125W	4
10	9105911X	1	RESISTOR WCR 1206 1K 0.125W	1
11	9103139	1	RESISTOR WCR 1206 1K 0.125W	1
12	9106882	3	RESISTOR WCR 1206 1K 0.125W	3
13	9106339	3	RESISTOR WCR 1206 1K 0.125W	3
14	91063399	3	RESISTOR WCR 1206 1K 0.125W	3
15	9106116	3	RESISTOR WCR 1206 1K 0.125W	3
16	9106226	10	RESISTOR WCR 1206 1K 0.125W	10
17	9106242	3	RESISTOR WCR 1206 1K 0.125W	3
18	9106100	4	RESISTOR WCR 1206 1K 0.125W	4
19	9106280	2	RESISTOR WCR 1206 1K 0.125W	2
20	910612X	5	RESISTOR WCR 1206 1K 0.125W	5
21	9106426	3	RESISTOR WCR 1206 1K 0.125W	3
22	9106115	1	RESISTOR WCR 1206 1K 0.125W	1
23	9106156	1	RESISTOR WCR 1206 1K 0.125W	1
24	9106330	3	RESISTOR WCR 1206 1K 0.125W	3
25	9106106	3	RESISTOR WCR 1206 1K 0.125W	3
26	9106339	3	RESISTOR WCR 1206 1K 0.125W	3
27	9106428	1	RESISTOR WCR 1206 1K 0.125W	1
28	910642X	1	RESISTOR WCR 1206 1K 0.125W	1
29	9106338	1	CPLD 10V 84D 16V 10100000 800/15V 15V ECL-A-1C-U-102	1
30	03085	1	CPLD 10V 84D 16V 10100000 800/15V 15V ECL-A-1C-U-102	1
31	9302020	2	CAPACITOR 100PF 10V 50V MAX-0.05+5C-102-MUN-1H	2
32	9301100P	1	CAPACITOR 100PF 10V 50V MAX-0.05+5C-102-MUN-1H	1
33	9301510	2	CAPACITOR RAD ELECTROLYTIC 100PF 10V 50V-XG-Q16-C-101	2
34	03053	1	CAPACITOR RAD ELECTROLYTIC 100PF 10V 50V-XG-Q16-C-101	1
35	93001001	11	CAPACITOR 0.01UF 20V 50V MAX-0.05+5C-102-MUN-1H	11
36	9301139	1	CAPACITOR 33PF 5V 50V MAX-0.05+5C-102-MUN-1H	1
37	9301110	1	CAPACITOR 10UF 10V 50V MAX-0.05+5C-102-MUN-1H	1
38	93040001	4	CAPACITOR 0.01UF 10V 50V MAX-0.05+5C-102-MUN-1H	4
39	930084199	4	SHOKE BAV99 S0212 MLLADP	4
40	00059	100	SHOKE 10-93 SHF 252 FEBRANT1	100
41	930564516	1	SHOKE 0.01UF 252 MLLADP	1
42	93024114002	1	SHOKE 1140202 TURGEON MLLADP	1
43	9300918C86	1	TRANSFORMER 50-50-125 8607 MLLADP	1
44	930060007	1	TRANSFORMER 50-50-125 8607 MLLADP	1
45	930080077	1	TRANSFORMER 50-50-125 8607 MLLADP	1
46	930205001542004	1	DISCONNECTOR 10-30-125 8607 MLLADP	1
47	04050	1	DISLOCATOR 10-30-125 8607 MLLADP	1
48	9400MLM59	1	DISLOCATOR 10-30-125 8607 MLLADP	1
49	940044004	1	DISLOCATOR 10-30-125 8607 MLLADP	1
50	9400930601	1	DISLOCATOR 50-50-125 8607 MLLADP	1
51	940011565	1	DISLOCATOR 10-30-125 8607 MLLADP	1
52	94011406	1	DISLOCATOR 10-30-125 8607 MLLADP	1
53	9306041780	1	DISLOCATOR 10-30-125 8607 MLLADP	1
54	15151	35	DISLOCATOR 10-30-125 8607 MLLADP	35



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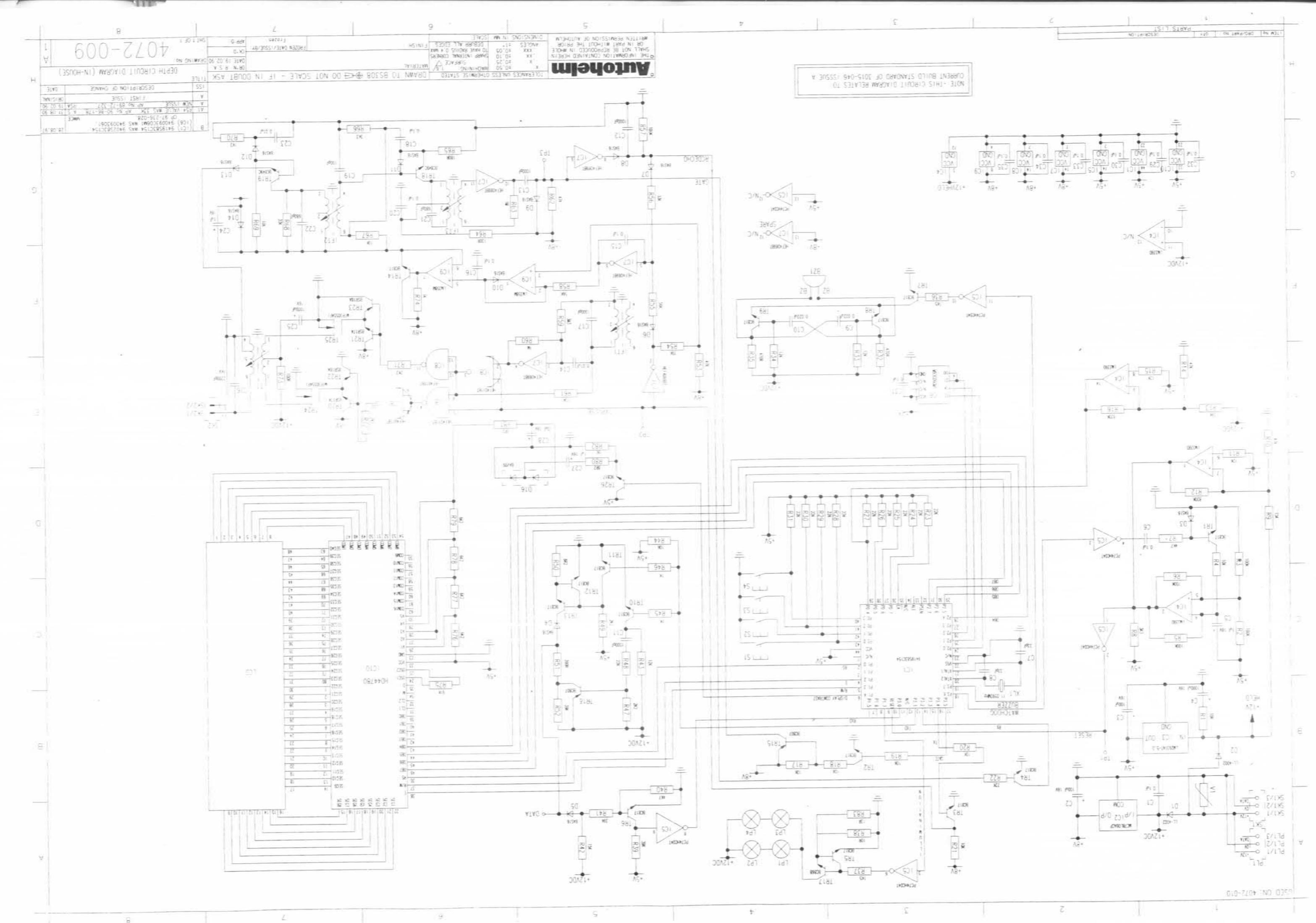
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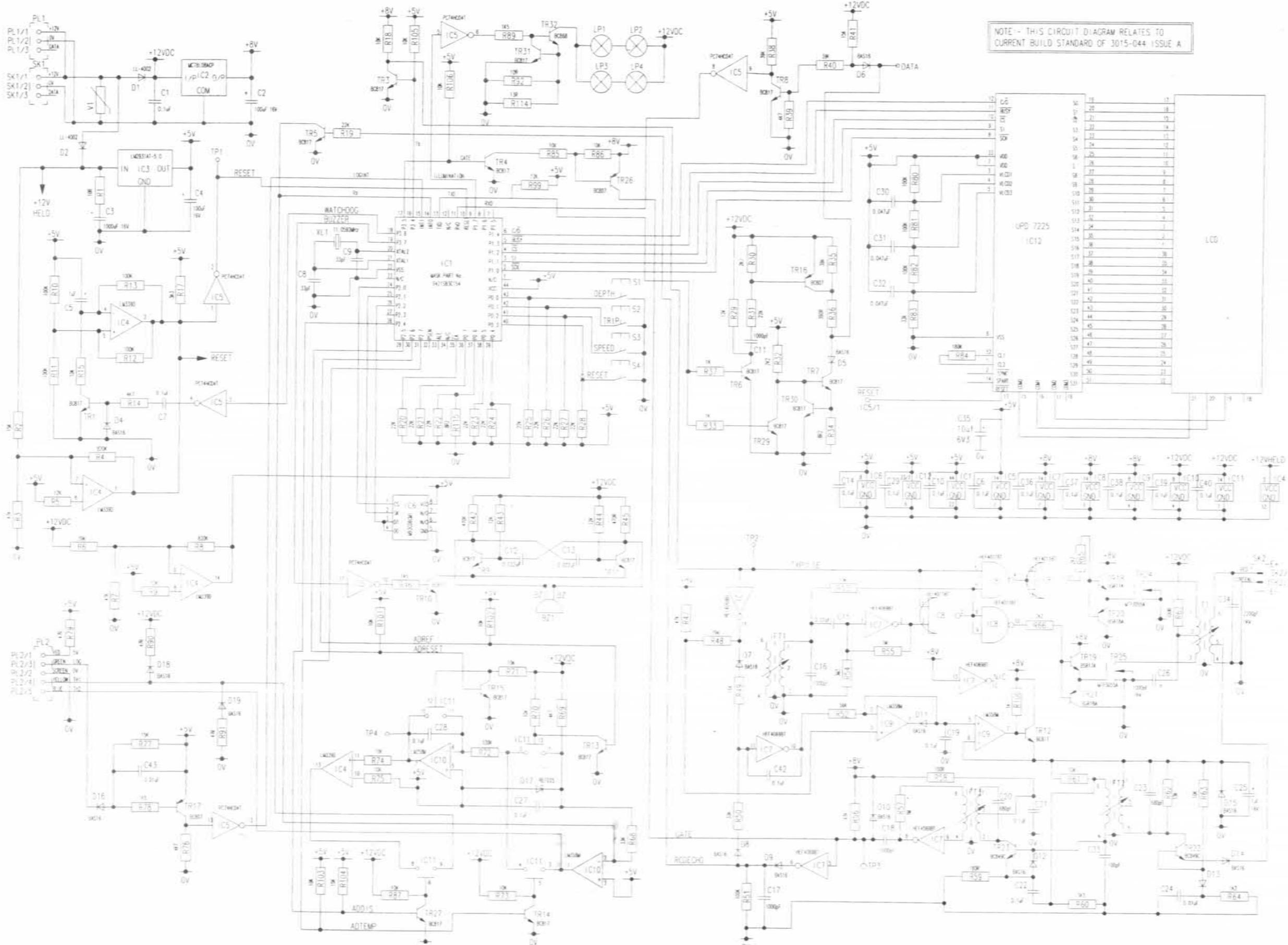
C	(C1) 94205B3C154 WAS 94035B3C154 (C5) ST93060MT WAS M3061MT CP 97-237-032	MNCE	27.08.97
B	94035B3C154 WAS 94025B80C52, XLT VALUE WAS 11.0592MHz CP 93-Var-70, GUT		01.10.93
A	FIRST ISSUE	ORIGINAL	
ISS	DESCRIPTION OF CHANGE	DATE	
TITLE	SPEED CIRCUIT DIAGRAM ((IN-HOUSE))		
DRAWING NO.	4070-009		A
SHT 1 OF 1			1

NOTE -

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Autohelm		DRAWN TO BS308 & DO NOT SCALE - IF IN DOUBT ASK		TITLE		PAGE	
				DEPTH T51 STAGE PCB ASSY (IN-HOUSE)		15	
TOLERANCES UNLESS OTHERWISE STATED		MATERIAL		DRAWN R.S.A.		DRAWING NO.	
X	+0.50 -0.45	MACHINING	SURFACE	DATE 02-04-90			
X	+0.45	SHARP INTERNAL CORNERS		FROZEN DATE/ISSUE/BY			
XXX	+0.65	TO HAVE RADIUS 0.4 MAX		Fraser	APP'D	SHT 1 OF 1	
ANGLES 21°		DEBurr ALL EDGES				4072-010	
DIMENSIONS IN MM		SCALE 1:1				8	





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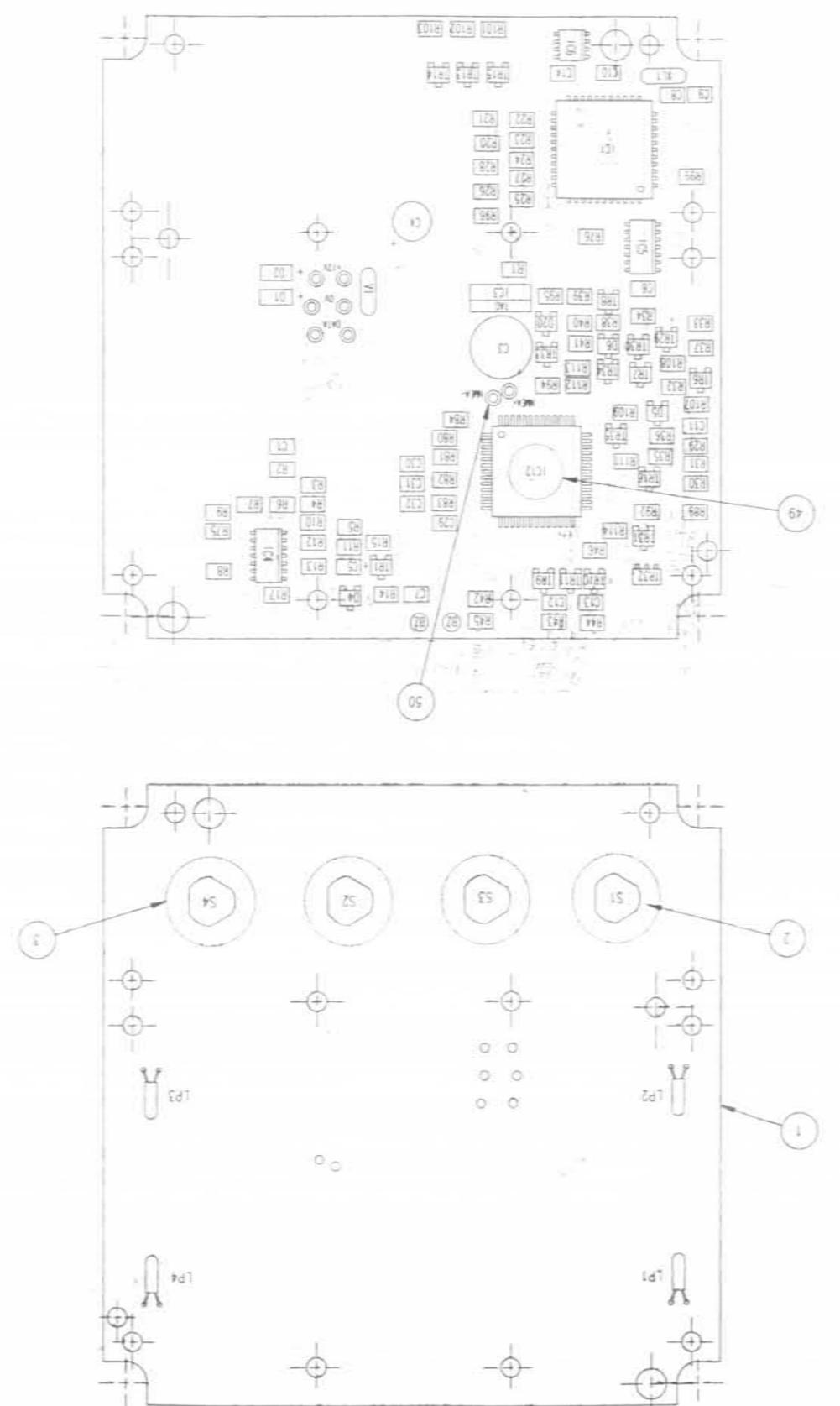
TOLERANCES UNLESS OTHERWISE STATED
DRAWN TO BS308 @ $\frac{1}{2}$ DO NOT SCALE - IF IN DOUBT ASK
X ± 0.50 MACHINING L/S
XX ± 0.10 SURFACE L/S
XXX ± 0.05 MATERIAL
ANGLES TO HAVE RADIUS 0.4 MAX
DEBurr ALL EDGES FINISH

01/09/91
(IC) 64215830154 WAS 9400580292
(IC) 93-078-029
(C) ADD REFERENCE C56 TO 10UF BY 5V ABOVE ADD 01/08/91
R115 R92 CP 93-VAR-086
(H) CAPACITOR OUT BY 5V ADDED (SEE BOTTOM LEFT) 06/01/91
CP C121 CP 93-VAR-088
(A) R49 VALUE WAS 354
AP No 90-086-178 A.S. 01/08/91
FIRST ISSUE ORIGINAL
55 DESCRIPTION OF CHANGE DATE

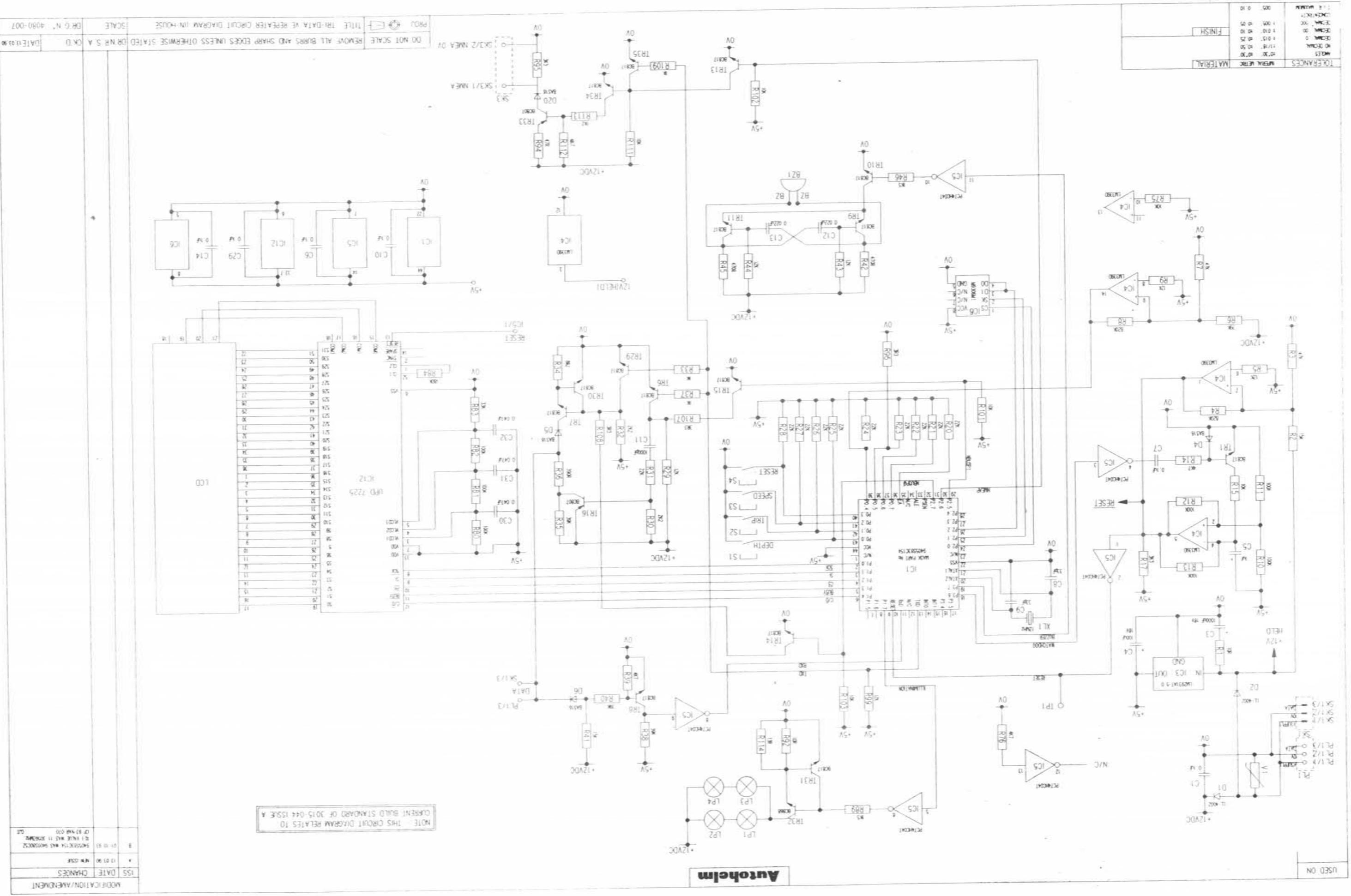
TRI-DATA V.E. CIRCUIT DIAGRAM

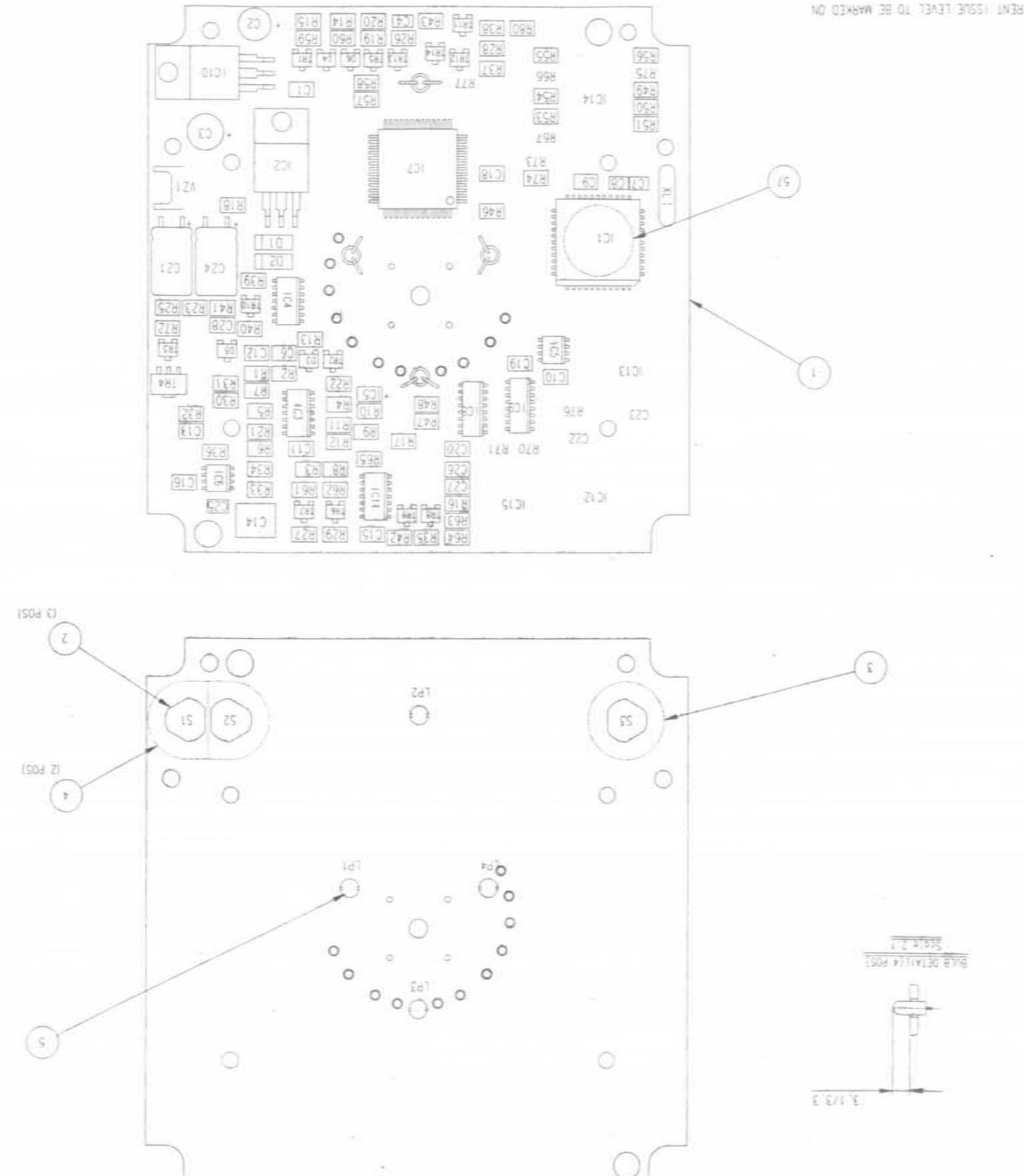
DRAWING NO. 4086-001

A 1

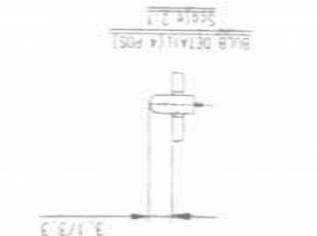


FO8 PC8 TESTING REFER TO IEST SPEC. NO. 1408D-008.



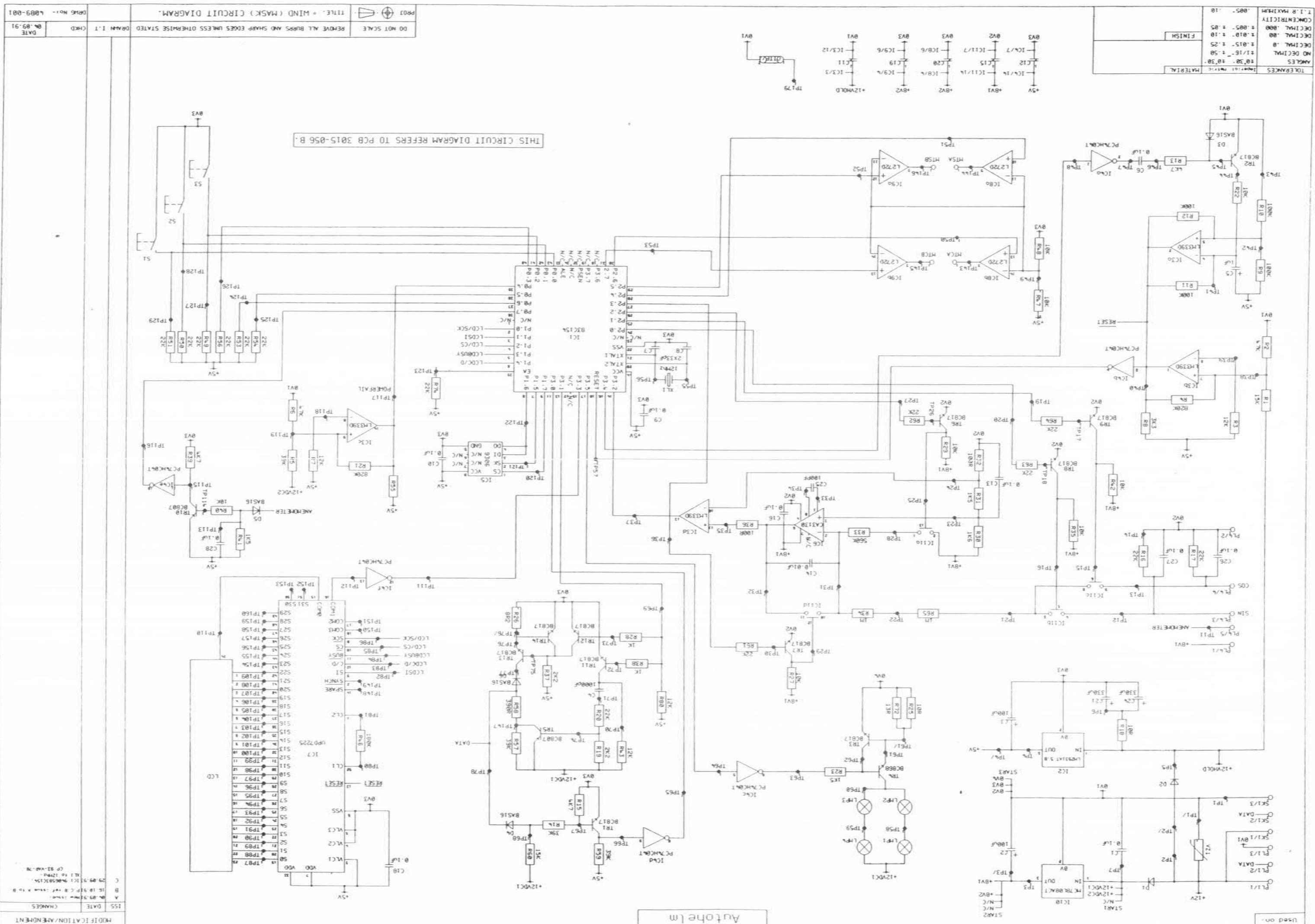


ITEM NO.	DESCRIPTION	QTY	REF ID	NOTES
1	PCB DETAIL	1	4089-003	
2	CONTACT CLIPPER SEAL	1	4089-003	
3	DOUBLE CLOTH SEAL	1	4089-003	
4	MINIATURE LAMP (QW63 1IN)	1	4089-003	
5	15167 3 FOIG PGS TESTING REFER TO SPEC. NO. 14089-002	1	4089-003	
6	910310A 1 RESISTOR WCR 1206 1K 10% ±0.125W	1	4089-003	
7	910310B 2 RESISTOR WCR 1206 1K 10% ±0.125W	2	4089-003	
8	910310C 2 RESISTOR WCR 1206 47K 10% ±0.125W	2	4089-003	
9	910647 2 RESISTOR WCR 1206 820K 10% ±0.125W	2	4089-003	
10	910620C 2 RESISTOR WCR 1206 820K 10% ±0.125W	2	4089-003	
11	910612A 4 RESISTOR WCR 1206 22K 10% ±0.125W	4	4089-003	
12	910622A 15 RESISTOR WCR 1206 56K 10% ±0.125W	15	4089-003	
13	910610H 8 RESISTOR WCR 1206 10K 5% ±0.125W	8	4089-003	
14	910610K 4 RESISTOR WCR 1206 56K 10% ±0.125W	4	4089-003	
15	910647 3 RESISTOR WCR 1206 39K 5% ±0.125W	3	4089-003	
16	910621K 2 RESISTOR WCR 1206 39K 5% ±0.125W	2	4089-003	
17	910603A 1 RESISTOR WCR 1206 3K 5% ±0.125W	1	4089-003	
18	910622L 2 RESISTOR WCR 1206 3K 5% ±0.125W	2	4089-003	
19	910638C 4 RESISTOR WCR 1206 82K 5% ±0.125W	4	4089-003	
20	9106882 1 RESISTOR WCR 1206 82K 5% ±0.125W	1	4089-003	
21	9106390 1 RESISTOR WCR 1206 5K 10% ±0.125W	1	4089-003	
22	910300H 2 RESISTOR WCR 1206 10K 10% ±0.125W	2	4089-003	
23	910310S 3 RESISTOR WCR 1206 1K 10% ±0.125W	3	4089-003	
24	910310H 1 RESISTOR WCR 1206 56K 10% ±0.125W	1	4089-003	
25	910356H 1 RESISTOR WCR 1206 56K 10% ±0.125W	1	4089-003	
26	910318H 1 RESISTOR WCR 1206 1K 10% ±0.125W	1	4089-003	
27	910310M 2 RESISTOR WCR 1206 10K 10% ±0.125W	2	4089-003	
28	910240T10 2 DIODE RECTIFIER GTF10 TA 100V	2	4089-003	
29	910208516 4 DIODE 0.012A 50V MILLED	4	4089-003	
30	9107011P 2 CAPACITOR RAD ELECTROLYTIC 300UF +80V= -20V 16V EEC-A-1G-U-331	2	4089-003	
31	910686 2 CAPACITOR RAD ELECTROLYTIC 100UF +80V= -20V 16V EEC-A-1G-K-101	2	4089-003	
32	9107011 1 CAPACITOR 0.01UF 20V 50V AX-1206-5C-104-MNA-1R	1	4089-003	
33	9107011P 2 CAPACITOR 100UF 10V 50V AX-1206-5C-104-MNA-1R	2	4089-003	
34	910611P 2 CAPACITOR 0.01UF 5 100V CGC VZ2220 VILATRON	2	4089-003	
35	910610P 1 CAPACITOR 100UF 10V 50V AX-0805-5C-102-XN3-1R	1	4089-003	
36	9105200P 1 TRANSISTOR 100UF 10V 50V AX-0805-5A-101-XN3-1R	1	4089-003	
37	910610P 1 CAPACITOR 100UF 10V 50V AX-0805-5C-102-XN3-1R	1	4089-003	
38	950088C7 1 TRANSISTOR SOT123 B087 MILLED	1	4089-003	
39	950088C7 2 TRANSISTOR SOT123 B087 MILLED	2	4089-003	
40	950088C7 1 TRANSISTOR SOT123 B088 MILLED	1	4089-003	
41	950088C7 1 MICROCONTROLLER SOT123 SMD	1	4089-003	
42	9422258415 1 MICROCONTROLLER SOT123 SMD	1	4089-003	
43	91020 L0231AT-5.0	1	4089-003	
44	940001M39 1 QUAD OP-AMP LM339 NTE SEMI	1	4089-003	
45	940074HOM 1 HEMT-INVERTING BUFFER SOT108A(SOT14) 74HC04	1	4089-003	
46	940053C60DM 1 EEPROM M93C60M51T	1	4089-003	
47	940003130 1 SMD DEQ-AMP OA3130 RCA	1	4089-003	
48	91077250 1 QUAD OP-AMP LM2225 SMD	1	4089-003	
49	940027270 2 QUAD SWITCH HFE668 MILLED	2	4089-003	
50	940011 10-220 MW7088 AC1 MOTOROLA	1	4089-003	
51	94002766 1 QUAD SWITCH HFE668 MILLED	1	4089-003	
52	94002764 0 EEPROM E2X8 27256	0	4089-003	
53	94037473 0 LATCH 8 BIT PC74H273	0	4089-003	
54	94037474 0 VARISTAL TYPE HC49/H49-10WHE	0	4089-003	
55	15156 1 QRSATL TYPE HC49/H49-10WHE	1	4089-003	
56	15120 1 QDQ1A 100% LENT LABLE (QEEEN)	1	4089-003	
57	ASSEMBLY NOTES	1	4089-003	
		1	4089-003	



3.1/3.3

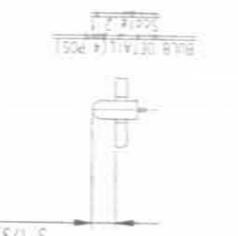
3.1/3.3

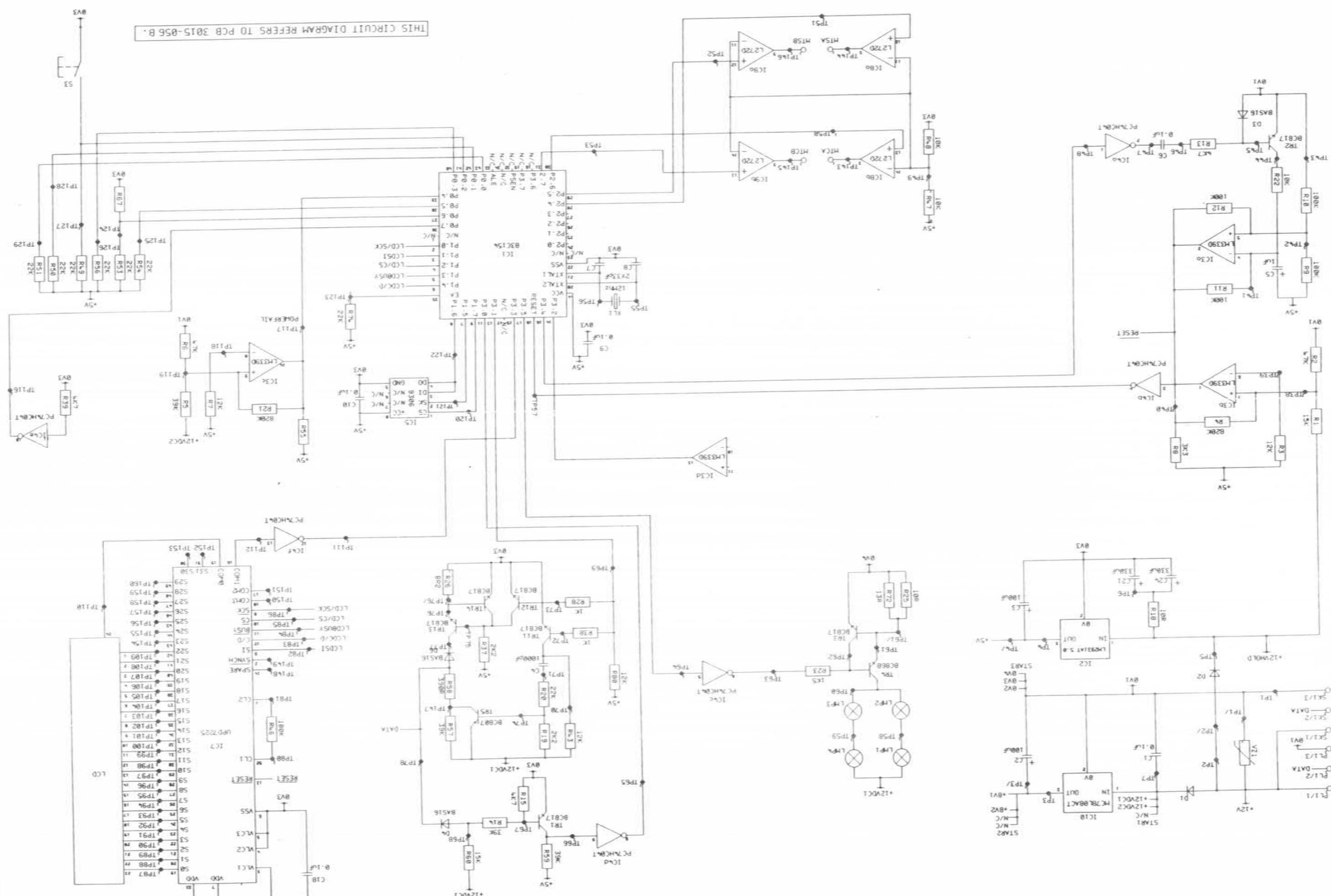
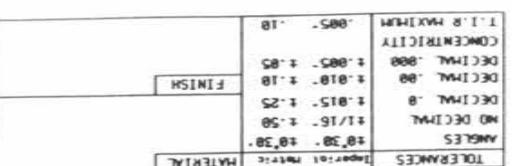


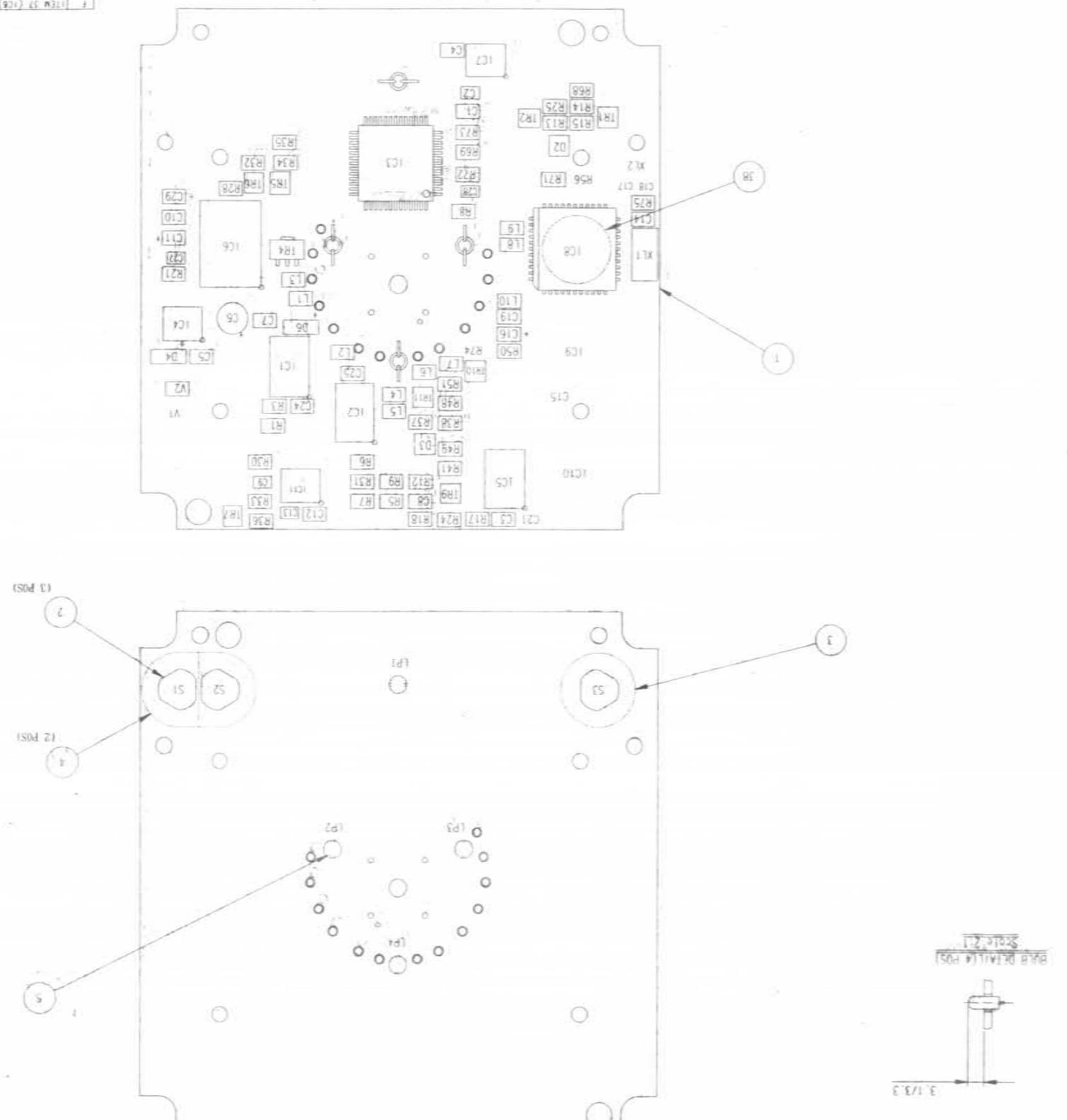
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21	PAGE	REVISION OF THE FIRING SUSPENSION	AS
		K-4 ND 19-06-06	A
		L15T PEGATRON F90 NIN NIN USED SUSPENSION	B
		W74 PEG (0510-050) NIN USED SUSPENSION	C
		W74 PEG (0510-050) NIN USED SUSPENSION	D
		W74 PEG (0510-050) NIN USED SUSPENSION	E
		W74 PEG (0510-050) NIN USED SUSPENSION	F
		W74 PEG (0510-050) NIN USED SUSPENSION	G
		W74 PEG (0510-050) NIN USED SUSPENSION	H
		W74 PEG (0510-050) NIN USED SUSPENSION	I
		W74 PEG (0510-050) NIN USED SUSPENSION	J
		W74 PEG (0510-050) NIN USED SUSPENSION	K
		W74 PEG (0510-050) NIN USED SUSPENSION	L
		W74 PEG (0510-050) NIN USED SUSPENSION	M
		W74 PEG (0510-050) NIN USED SUSPENSION	N
		W74 PEG (0510-050) NIN USED SUSPENSION	O
		W74 PEG (0510-050) NIN USED SUSPENSION	P
		W74 PEG (0510-050) NIN USED SUSPENSION	Q
		W74 PEG (0510-050) NIN USED SUSPENSION	R
		W74 PEG (0510-050) NIN USED SUSPENSION	S
		W74 PEG (0510-050) NIN USED SUSPENSION	T
		W74 PEG (0510-050) NIN USED SUSPENSION	U
		W74 PEG (0510-050) NIN USED SUSPENSION	V
		W74 PEG (0510-050) NIN USED SUSPENSION	W
		W74 PEG (0510-050) NIN USED SUSPENSION	X
		W74 PEG (0510-050) NIN USED SUSPENSION	Y
		W74 PEG (0510-050) NIN USED SUSPENSION	Z

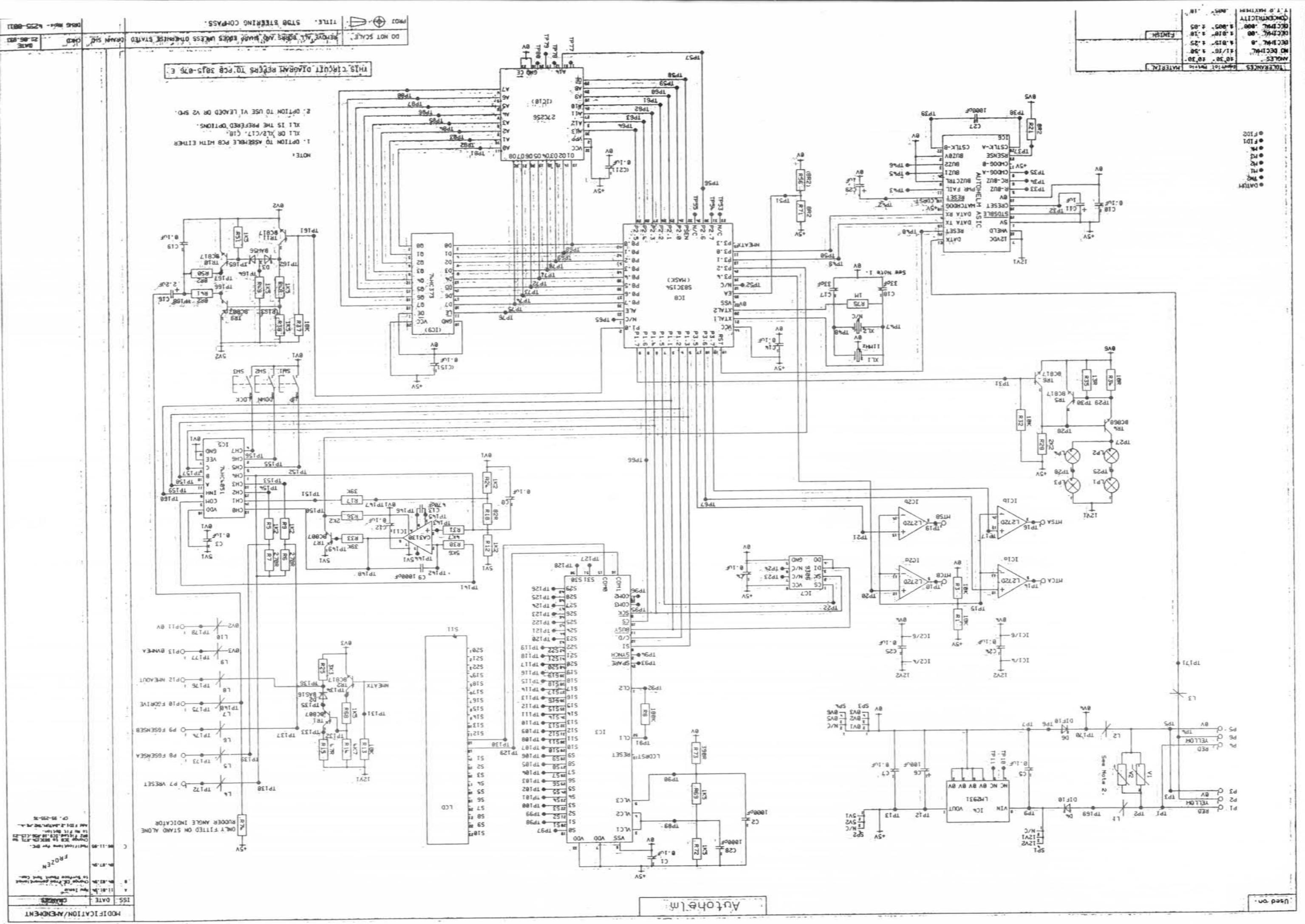
A detailed layout diagram of a printed circuit board (PCB). The board features various electronic components such as integrated circuits (ICs), resistors (R), capacitors (C), and inductors (L). Components are arranged in a grid-like pattern across the board. Each component is labeled with a reference designator consisting of a letter and a two-digit number. For example, IC10 is at the top left, C21 is near the bottom left, and L1Y is on the right side. A large central component, likely a microcontroller or processor, is labeled IC17. Numerous small circular pads and vias are also visible throughout the layout.



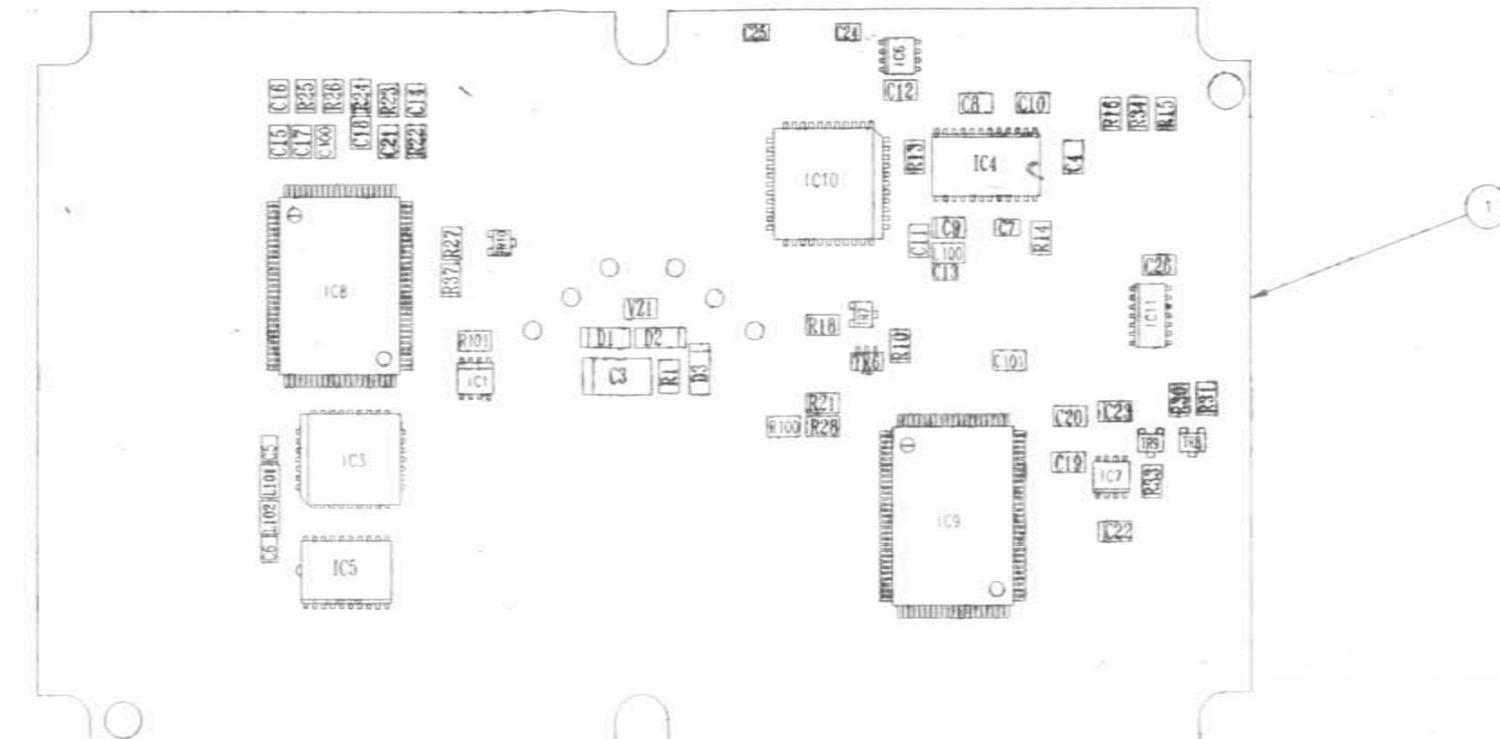




1. BOARD CURRENT ISSUE LEVEL TO BE MARKED ON
COLOUR IDENT LABEL ITEM 57



SURFACE MOUNT COMPONENT DETAIL



SURFACE MOUNT COMPONENT DETAIL 4105-001SM

1	3015-068	1	P.C.B.
2	910310R	1	RESISTOR 1206 10R 1± 0.125W R21
3	910315K	1	RESISTOR 1206 15K 1± 0.125W R13
4	91062K2	5	RESISTOR 1206 2K2 5± 0.125W R22,23,24,25,26
5	9106470R	3	RESISTOR 1206 470R 5± 0.125W R15,16,33
6	9106220R	1	RESISTOR 1206 220R 5± 0.125W R34
7	91064K7	3	RESISTOR 1206 4K7 5± 0.125W R10,30,37
8	910647R	1	RESISTOR 1206 47R 5± 0.125W R31
9	9106820K	1	RESISTOR 1206 820K 5± 0.125W R27
10	91068R2	4	RESISTOR 1206 8R2 5± 0.125W R1,14,18,28
11	9108VC180400	1	TRANSIENT VOLTAGE SUPPRESSOR VZ1
12	9204DF10	3	DIODE RECTIFIER 1A/100V D1,2,3
13	930133P	2	CAPACITOR 0805 COG 33pF Ø5± 50V C24,25,(27)
14	93041000P	4	CAPACITOR 0805 X7R 1000pF 10± 50V C5,6,7,13
15	930522N	1	CAPACITOR 1206 X7R 22nF Ø5± 50V C11
16	93070U1	15	CAPACITOR 1206 X7R 0.1uF Ø20±50V C4,8, 10,11,14,15,16,17,18,19,20,21,26,100,101
17	9309TU	3	CAPACITOR TANT. 293 1uF 10± 16V C9,22,23
18	9320100U	1	CAPACITOR TANT. 100uF 20± 7V C3
19	940093061	1	EEPROM ST93C06M1 IC1
20	9400LM78L05	1	VOLTAGE REGULATOR LM78L05ACM IC1
21	9401RLAB0	1	AUTOHELM ASIC IC4
22	940074HC00	1	QUAD NAND 74HC00 IC11
23	9400SED1520	1	CONTROLLER DRIVER SED1520F IC8
24	9400SED1521	1	DRIVER SED1521F IC9
25	9400S17660	1	VOLTAGE CONVERTOR IC7
26	940374373	1	LATCH 74HC373 IC5
27	940027C512	1	EPROM 27C512 PLCC 150/200ns 12.5V IC3
28	940680C32	1	MICROCONTROLLER 80C32 12MHz IC10
29	9500BC807	2	TRANSISTOR SOT23 PNP BC807 IR8,9
30	9500BC817	2	TRANSISTOR SOT23 NPN BC817 IR7,10
31	9501BC868	1	TRANSISTOR SOT89 NPN BC868 IR6
39	9106180R	1	RESISTOR 1206 180R 5± 0.125W R100
40	9106680R	1	RESISTOR 1206 680R 5± 0.125W R101
41	9600L1	3	SOLID CHIP INDUCTORS L100,101,102

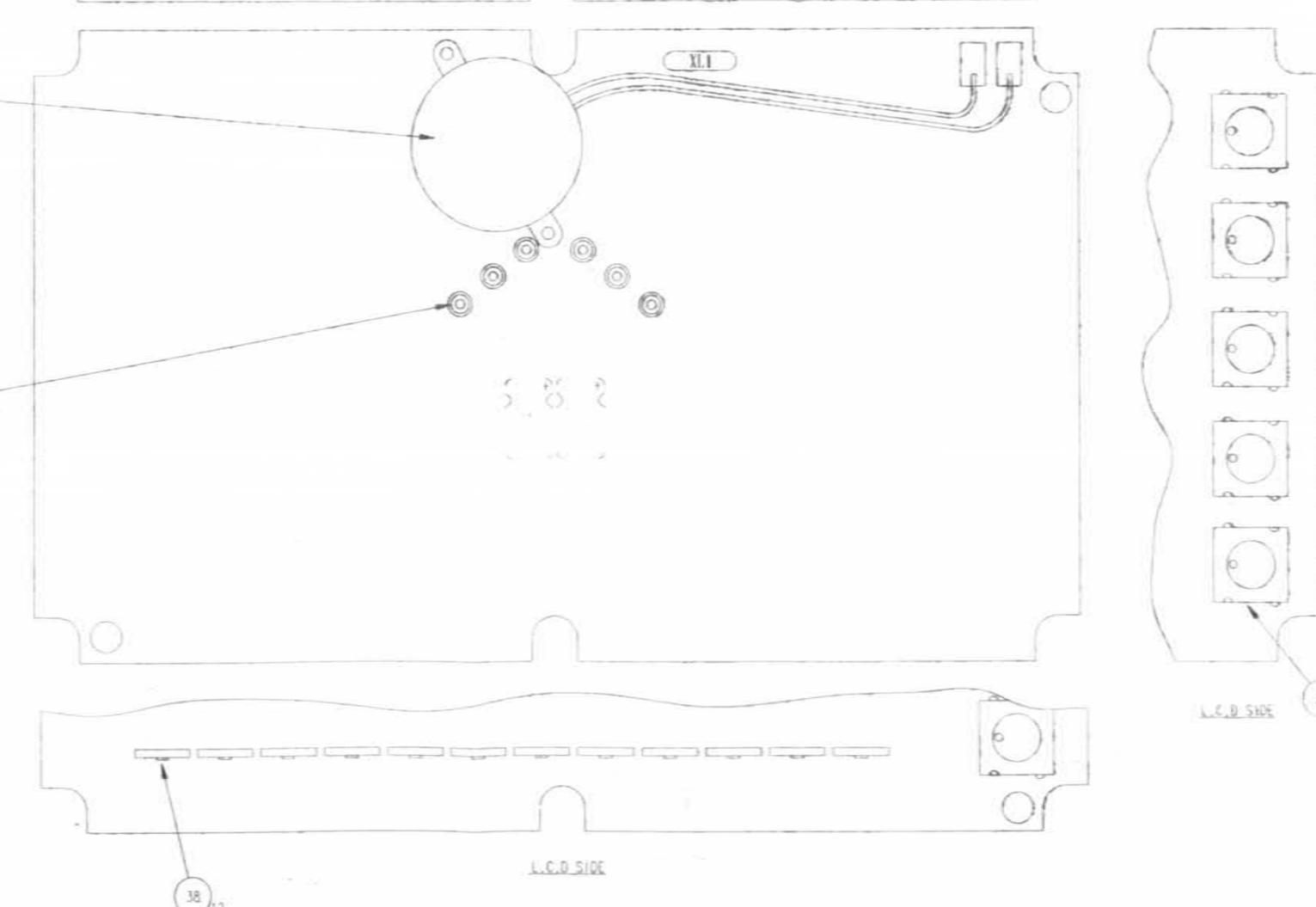
CONVENTIONAL COMPONENT DETAIL 4105-001

32	3030-035	6	SOLDER SOCKET
33	3026-014	2	MOUNTING PADS
34	03068	2	CAPACITOR 330uF 80/20 16V C1,2
35	06026	5	ALP SWITCH
36	15108	1	BUZZER BZ1
37	15156	1	XTAL 12 MHz XT1
38	15165	12	L.E.D.

ITEM NO. DRG/PART NO. QTY. DESCRIPTION

PARTS LIST

CONVENTIONAL COMPONENT DETAIL

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SHALL NOT BE REPRODUCED IN WHOLE
OR IN PART WITHOUT THE PRIOR
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TOLERANCES UNLESS OTHERWISE STATED

X ±0.50

XX ±0.10

XXX ±0.05

ANGLES ±1°

DRAWN TO BS308

DO NOT SCALE - IF IN DOUBT ASK

AS PARTS LIST

DIMENSIONS IN MM

SCALE: 1:1

MATERIAL

SURFACE

SHARP INTERNAL CORNERS

TO HAVE RADIUS 0.4 MM

DEBUR ALL EDGES

FINISH

PAINT

FROZEN DRAWING NUMBER

DRAWING NO.

04.06.93

DRAWN BY A.S.

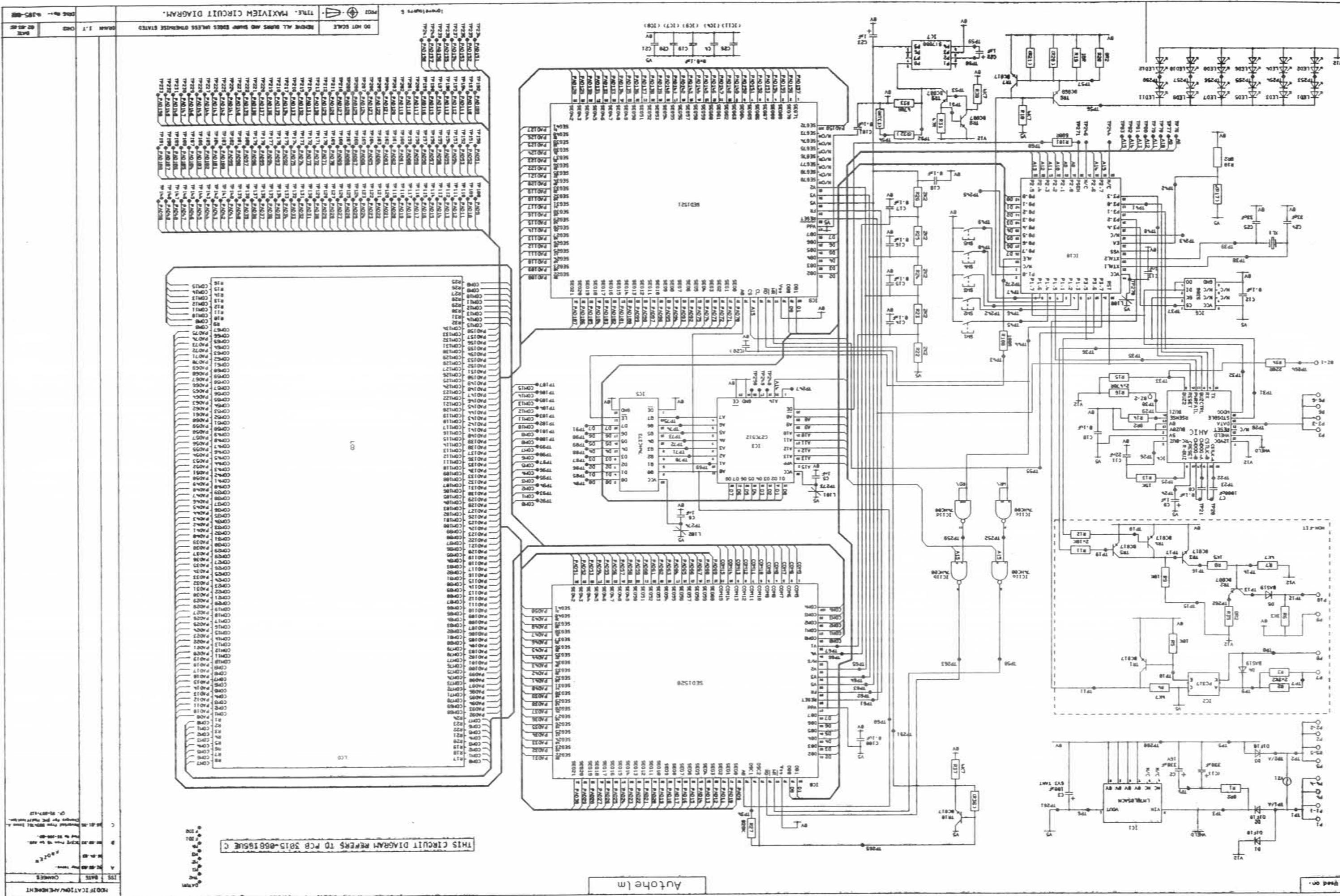
DATE: 11.02.93

SKETCHED BY A.S.

APPROVED BY A.S.

SHEET 1 OF 1

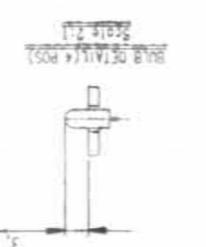
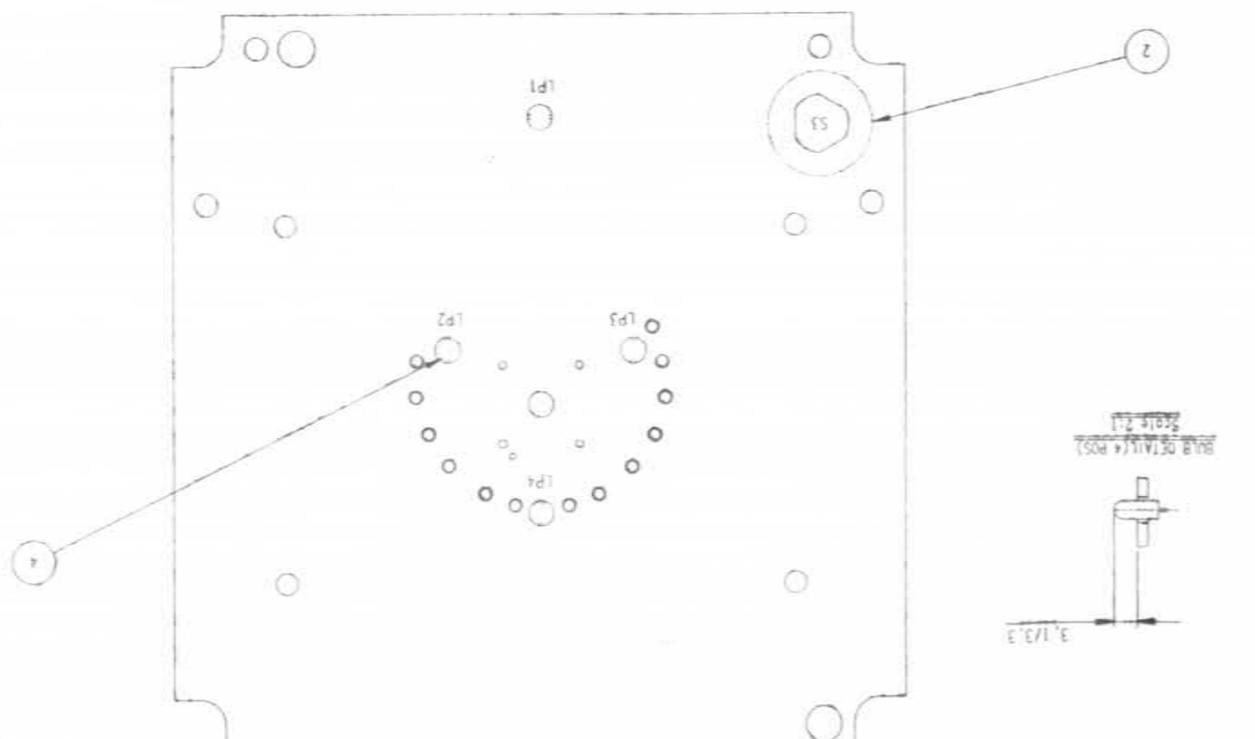
H 1. IC10 (TOP) WAS SHOULDERED
CP 93-105-0251. UNCLIP
2. POSITION BETWEEN BUZZER AND P.C.B.
3. ADD 1.5MM TO 2.5MM TO THE CIRCUIT BOARD. DELETED C29. SKU 11-34.
CHANGES REFER TO THE 2853. AMMENDMENT DETAIL
CP 93-105-0260. SKU
4. IC3 WAS 34042012261
CP 93-105-0261. GUY 33-34-33
5. IC3 WAS PREVIOUSLY SMD. PROS TO REWORK
BUZZER ADDED. A.S. 33-34-33
6. BUZZER WAS PREVIOUSLY X10087. A.S. 29-33-33
7. 130, 160, 180 RESISTORS DELETED. THE BUZZER STOP 23-33-33
DELETED. R20 WAS 130, R33 WAS 120. A.S.
FIRST ISSUE 29-33-33
HSS DESCRIPTION OF CHANGES DATE
TITLE MAXIVIEW P.C.B. S'ASSY
DRAWING NO. 4105-0 PAGE 36
SHEET 1 OF 1

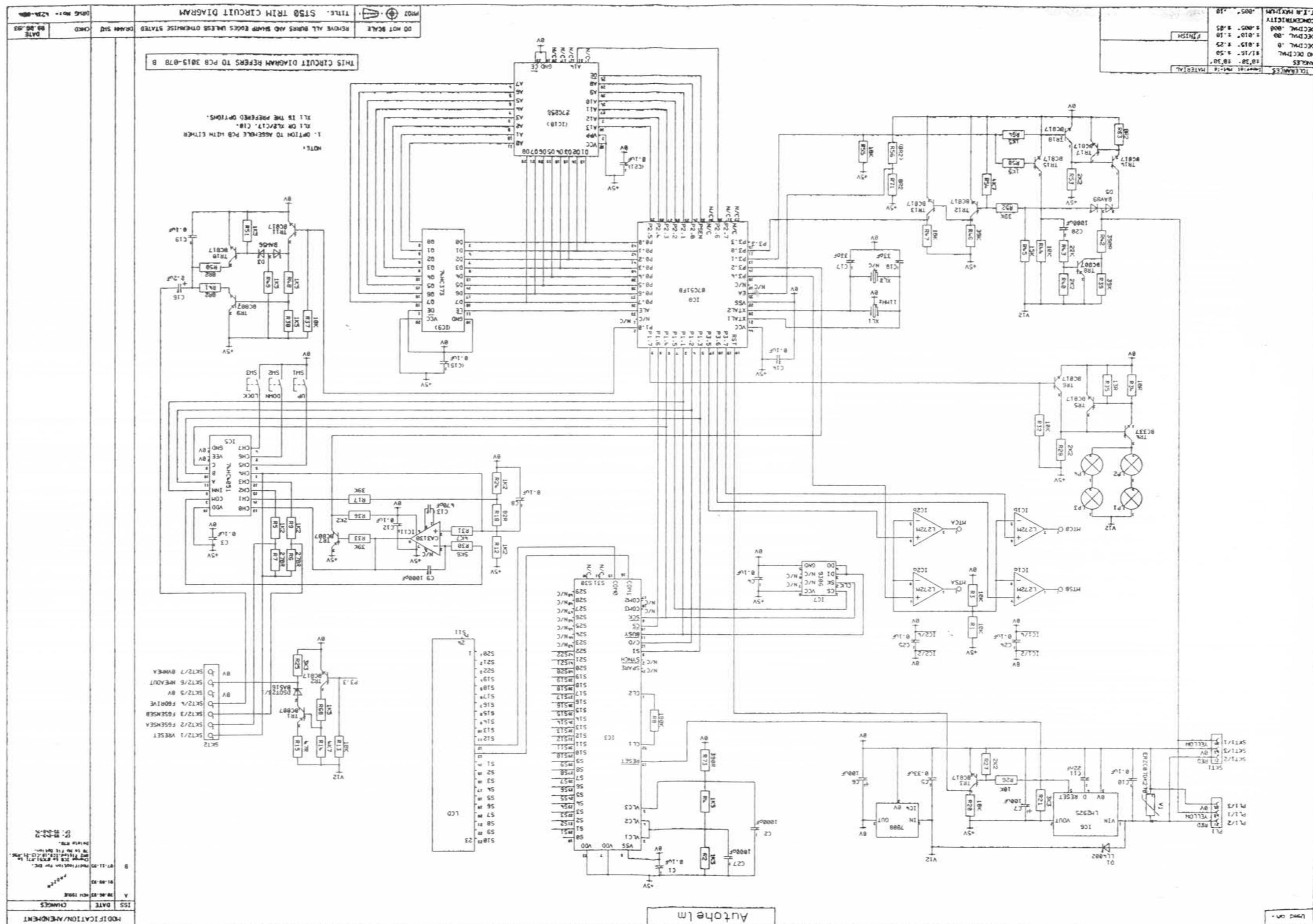


4234-008

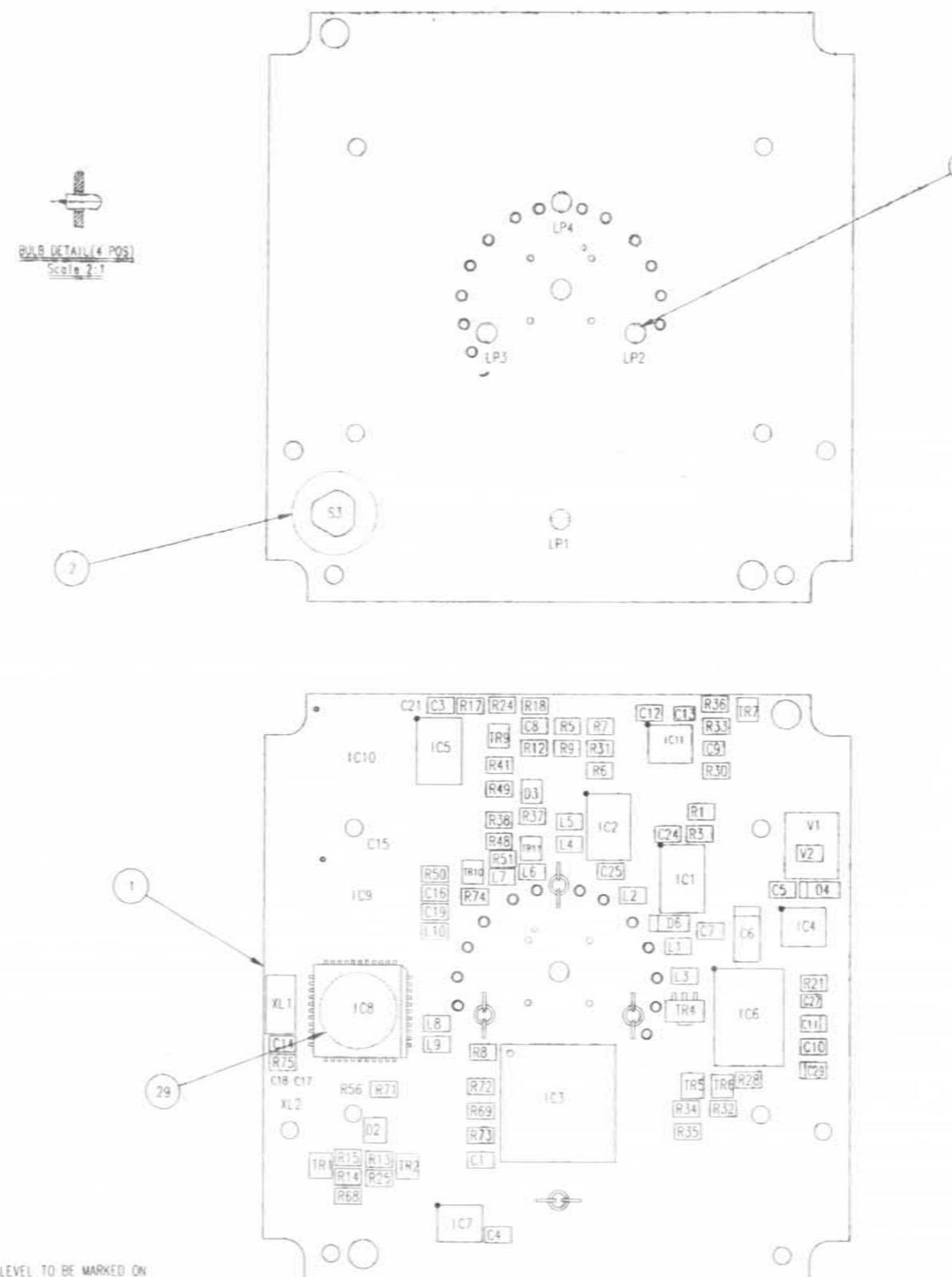


COLOUR IDENT LABEL ITEM 57
BOARD CURRENT ISSUE LEVEL TO BE MARKED ON





48	15127	1	CERAMIC RESONATOR CERALOCK CST 11.0MT(3 LEGS)	XL1
47	15085	0	CERAMIC RESONATOR 11MHz CERALOCK CSA 11.0MT	(XL2)
46	930133P	0	CAPACITOR 33pF 5x 50V AVX-0805-5A-330-JN3-TR	(C17,C18)
45	94077225G	1	LCD DRIVER 7225	(IC3)
44	940074HC4051	1	ANALOG SWITCH CD74HC4051M 8 CHANNEL	(IC5)
43	940374373	0	LATCH 8 BIT PC74HC373T	(IC9)
42	940427C256	0	EPROM 32Kx8 27C256 PLCC32 200NS 12.5V PROGRAMMED	(IC10)
41	9400L272D	2	DUAL OP-AMP L272D STM	(IC1,2)
40	9400CA3130	1	SINGLE OP-AMP CA3130 RCA	(IC11)
39	940093061	1	EEPROM M9306M1 STM(SGS)	(IC7)
38	9400LM2931AM	1	REGULATOR LM2931AM 5V SO8	(IC4)
37	940087C51FB	1	MICROCONTROLLER 87C51FB 12MHz PLCC CMOS	(IC8)
36	9401RLA80	1	AUTOHELM ASIC RLA80	(IC6)
35	9501BC868	1	TRANSISTOR SOT89 BC868 MULLARD	(TR4)
34	9500BC807	3	TRANSISTOR SOT23 BC807 MULLARD	(TR1,7,9)
33	9500BC817	5	TRANSISTOR SOT23 BC817 MULLARD	(TR2,5,6,10,11)
32	93102U2	1	CAPACITOR 2.2uF	(C16)
31	93091U	2	CAPACITOR TANT 1uF 16V 2930-105-X9-016-A-2	(C11,28)
30	93070U1	12	CAPACITOR 0.1uF 20x 50V AVX-1206-5C-104-MN3-TR X7R	(C1,3,4,5,7,8,10,12,14,(15),19,(21),24,25)
29	03067	1	CAPACITOR TANT 100uF 6V3 +/-20%	(C8)
28	930247OP	1	CAPACITOR 470pF 20x 50V 0805	(C13)
27	9300100OP	2	CAPACITOR 1000pF 0805 2x	(C9,27)
26	9200BAW56	1	DIODE BAW56	(D3)
25	9200BAS16	1	DIODE BAS16 SOT23	(D2)
24	9204DIF10	2	DIODE RECTIFIER DIF10 1A 100V	(D4,6)
23	9108VC180400	1	VARISTOR VC180400	(V2)
22	9600L1	10	SOLID CHIP INDUCTOR	(L1-10)
21	910647R	1	RESISTOR WCR 1206 47R 5x 0.125W	(R15)
20	910639R	1	RESISTOR WCR 1206 390R 5x 0.125W	(R73)
19	91063K3	1	RESISTOR WCR 1206 3K3 5x 0.125W	(R29)
18	9103180K	1	RESISTOR WCR 1206 180K 1x 0.125W	(R8)
17	9103270R	2	RESISTOR WCR 1206 270R 1x 0.125W	(R6,7)
16	91068R2	4	RESISTOR WCR 1206 8R2 5x 0.125W	(R21,41,50,(56),71)
15	910639K	2	RESISTOR WCR 1206 39K 5x 0.125W	(R17,18)
14	91062K2	2	RESISTOR WCR 1206 2K2 5x 0.125W	(R28,36)
13	91064K7	2	RESISTOR WCR 1206 4K7 5x 0.125W	(R14,31)
12	910610K	5	RESISTOR WCR 1206 10K 5x 0.125W	(R1,3,13,32,33)
11	91061R0	1	RESISTOR WCR 1206 1R0 5x 0.125W	(R74)
10	91031K5	7	RESISTOR WCR 1206 1K5 1x 0.125W	(R38,48,49,51,68,69,72)
9	91031K2	4	RESISTOR WCR 1206 1K2 1x 0.125W	(R5,9,12,24)
8	910382R	1	RESISTOR WCR 1206 82R 1x 0.125W	(R18)
7	91035K6	1	RESISTOR WCR 1206 5K6 1x 0.125W	(R30)
6	910310R	1	RESISTOR WCR 1206 10R 1x 0.125W	(R34)
5	910313R	1	RESISTOR WCR 1206 13R 1x 0.125W	(R35)
4	15167	4	MINIATURE LAMP (OM683 INT)	(LP1,2,3,4)
3	3010-036	1	CLICKER SEAL	
2	06025	1	CONTACT CLICKER BAB01T	(S3)
1	3015-076	1	PCB RUDDER ANGLE INDICATOR/COMPASS/TRIM METER	
	ITEM NO.	DRG PART NO.	DESCRIPTION	PARTS LIST



NOTES :-

- BOARD CURRENT ISSUE LEVEL TO BE MARKED ON COLOUR IDENT LABEL ITEM 57.

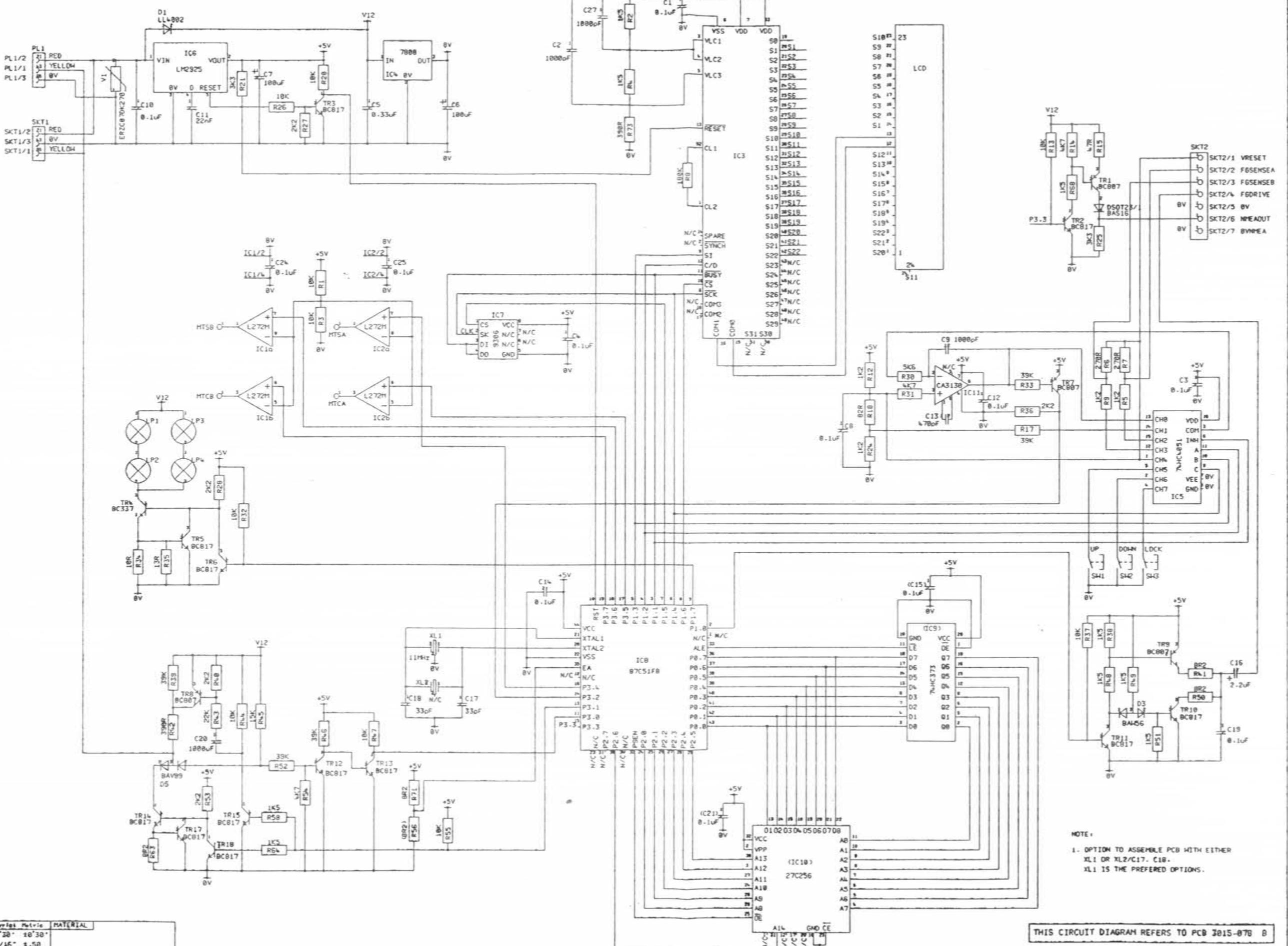
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TOLERANCES UNLESS OTHERWISE STATED
X ±0.50 MACHINING
XX ±0.10 SURFACE
XXX ±0.05 SHARP INTERNAL CORNERS
ANGLES ±1° TO HAVE RADIUS 0.4 MAX
DIMENSIONS IN MM SCALE X:X FINISH
DRAWN TO BS308 DO NOT SCALE - IF IN DOUBT ASK
MATERIAL AS PARTS LIST
FINISH FROZEN DATE/ISSUE/REV
DRAWING NO. APP'D S/N 1001

E ITEM 56 (IC6) WAS 9400RLA80.
OP 97-383-055 MNC 95-07-97
D CHANGE ITEM 29 FROM 58 TO 16
OP 92-141-005 MNC 95-07-96
C ITEM 37 WAS 94068C17 (IC1) (ITEM 43, 47-10-95)
AND (C10) (ITEM 42) DELETED QUANTITY OF EACH WAS 1. C15 AND G01 (ITEM 30) DELETED.
QUANTITY WAS 14. R56 (ITEM 16) DELETED.
R71 RE-INSTATED AS ITEM 16. (PREVIOUSLY WAS ITEM 14). OP 95-249-073 MNC
B REGRANN. OP 93-255-085 S.M.C. 95-12-38
A FIRST ISSUE
155 DESCRIPTION OF CHANGE
TITLE ST50 WIND TRIM PCB S*ASSY (MAS)
DRAWING NO. 4234-001 PAGE 39
S/N 1001

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MODIFICATION/AMENDMENT		
ISS	DATE	CHANGES
A	08-06-93	NEW ISSUE
B	07-11-93	Modification for EPC. Delete R79. CP-33 03-09-93 CP-33 03-09-93

NOTE:
1. OPTION TO ASSEMBLE PCB WITH EITHER
XL1 OR XL2/C17. C18.
XL1 IS THE PREFERRED OPTIONS.

THIS CIRCUIT DIAGRAM REFERS TO PCB J015-070 B

TELERANCES	Permitted Metric	MATERIAL
ANGLES	$\pm 10^\circ$	$\pm 30^\circ$
NO DECIMAL	$\pm 1/16^\circ$	$\pm .50$
DECIMAL .0	$\pm .015^\circ$	$\pm .25$
DECIMAL .00	$\pm .010^\circ$	$\pm .10$
DECIMAL .000	$\pm .005^\circ$	$\pm .05$
CONCENTRICITY		
T.I.R MAXIMUM	$.005^\circ$.10

FINISH

DO NOT SCALE	REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE STATED	DRAWN BY	DATE
PROJ	TITLE - ST50 TRIM CIRCUIT DIAGRAM	CNC	08-06-93