

CONTENTS

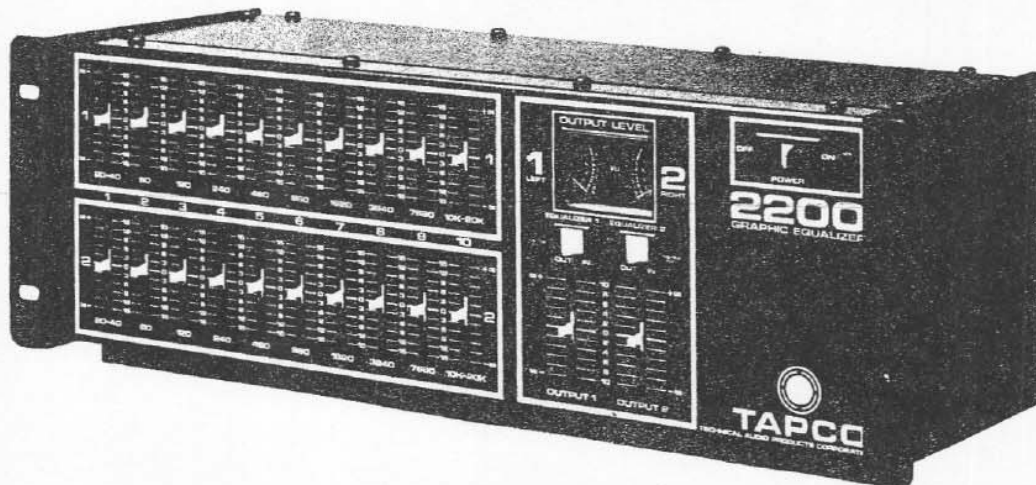
Introduction	2
Disassembly & Common Mode Rejection Adjustment Procedure	3
Schematic Diagram	4
P.C.B Parts Layout	5
Circuit Description	6
Specifications - Factory Service	7
Parts List	8

TAPCO
TECHNICAL AUDIO PRODUCTS CORPORATION

MODEL 2200 SERVICE MANUAL

INTRODUCTION

The TAPCO model 2200 is a two channel, ten band graphic equalizer intended primarily for use in music & sound reinforcement systems, recording studios, broadcast studios and similar professional applications. It offers the user selective equalization of ten independent octave-wide frequency ranges. Level adjustments have been provided to compensate for apparent loudness differences when the unit is switched in and out of the system. Both balanced and unbalanced outputs & inputs have been provided for each channel. All the circuitry, including the controls, is mounted on one master circuit board.



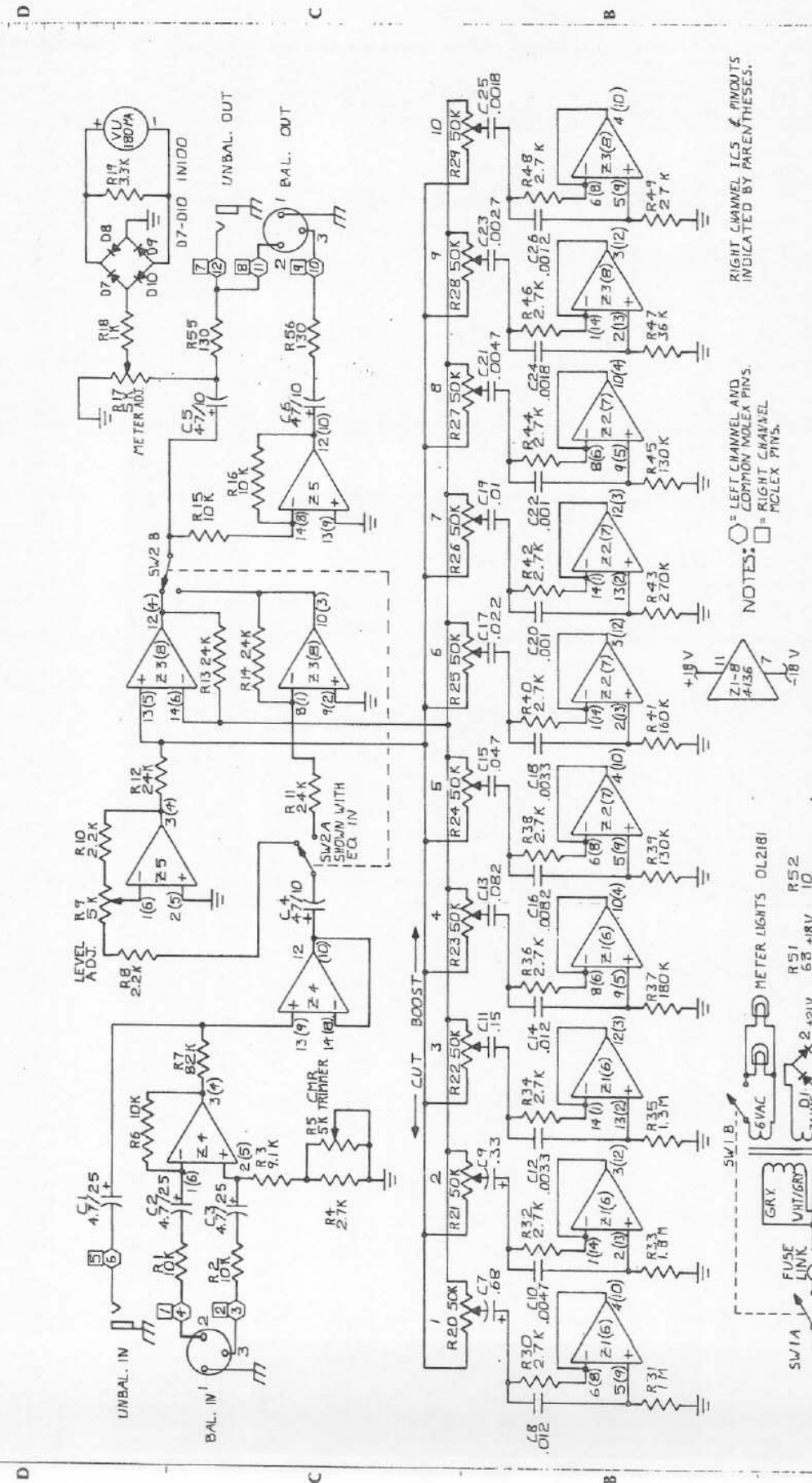
DISASSEMBLY


1. Remove 8 black sheet metal screws & lockwashers from the top of the equalizer. Slide the top cover to the rear to remove it. Do not loosen the screws on the sides of the equalizer.
2. Note that three multi-pin connectors make all of the external connections to the printed circuit board (except for the ground wire in some units, which must be unsoldered). Carefully note the position and direction of each connector. This is important...a shock hazard may result if the connectors are replaced incorrectly. Remove the multi-pin connectors.
3. Remove the 10 small screws from the front of the equalizer. The circuit board may now be removed. The front surface of each linear control is coated with lubricating grease. Do not attempt to wipe it off, but try to keep the surfaces free from dirt.
4. Assembly is the reverse of these steps. Take special care to replace the multi-pin connectors the right way.

C.M.R. ADJUSTMENT

1. Temporarily short together pins 2 and 3 of the 3-pin input connector of the channel under test.
2. Apply a test signal of approximately 10 volts RMS, 1000 Hz, to pin 1 (ground) and pin 2 or 3 (hot) of the aforementioned connector.
3. Connect a sensitive audio voltmeter or oscilloscope to the output of the channel under test. Either the balanced or unbalanced output may be monitored.
4. Set all equalization and level controls to midposition, and apply power to the unit.
5. Adjust the appropriate CMR trim pot (R5R for right channel, R5L for left channel) for minimum output signal. Adjustment can be made by placing a very small screwdriver through the access holes in the circuit board.
6. Remove the short from the input connector.
7. Repeat this procedure for the other channel.

ZONE/LTR	DESCRIPTION	BY	DATE	APPROVED





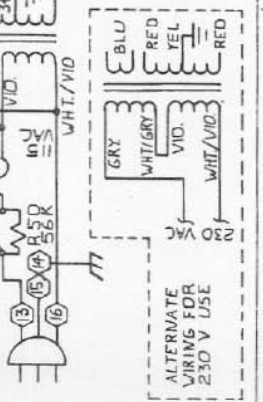
SCHEMATIC DIAGRAM
2200

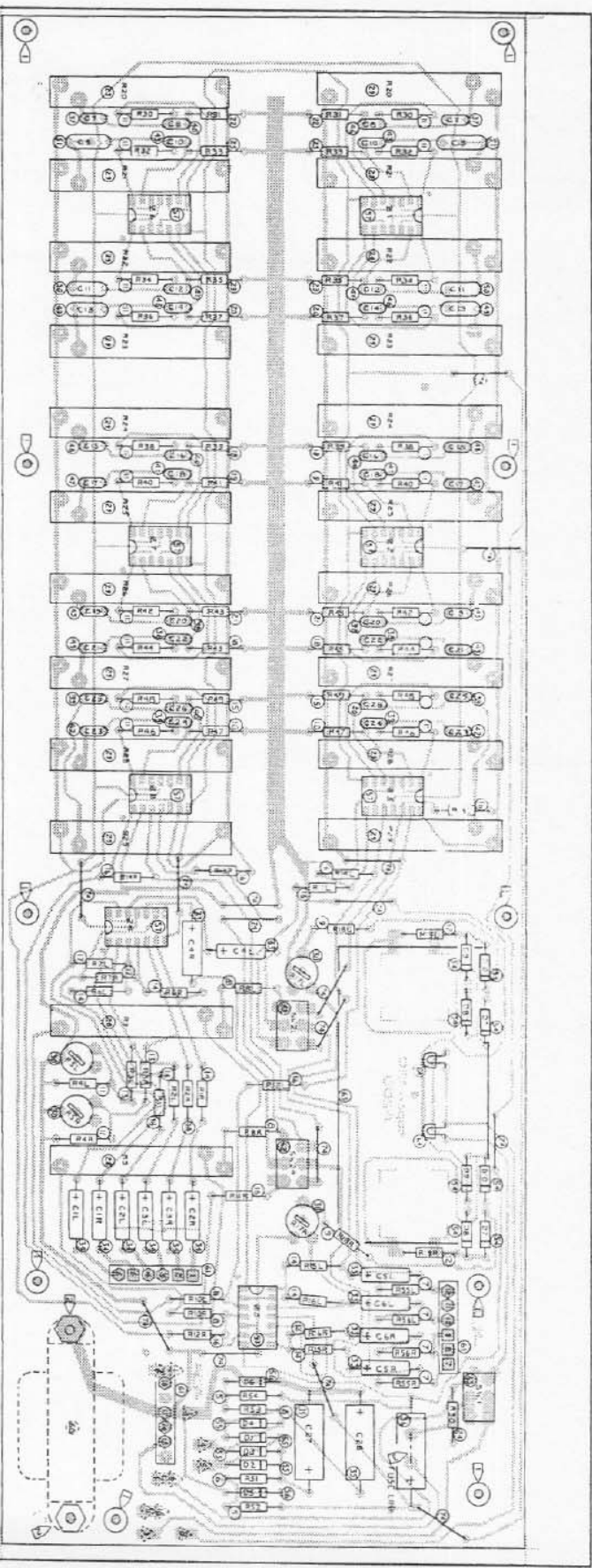
DRAWN	7/28	DATE	11/15
DESIGNED BY	MMF	DATE	1/18/76
APPROVED BY		DATE	
RELEASE STATUS			
TOLERANCES UNLESS SPECIFIED	1.0% C	1.0% F	0.5% G
ANGLE	90°		
REMOVE BURRS (H/R SHARP EDGES)			
MACH SURFACES			
MATL			
FINISH			
HT TREAT			

DON'T SCALE DWG
 UNIT WT.
 SHEET / OF /

RIGHT CHANNEL ICS & PINOUTS INDICATED BY PARENTHESES.

NOTES:
 ○ = LEFT CHANNEL AND COMMON/MOLEX PINS.
 □ = RIGHT CHANNEL MOLEX PINS.





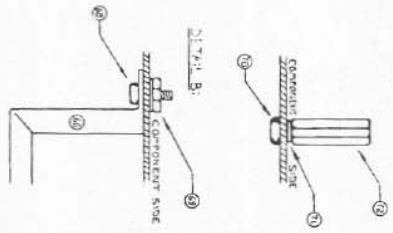
TRANSFORMER CONNECTIONS

- ① WHT/GW } PRIMARY HVY
- ② WHT/VIO } PRIMARY HVY
- ③ TEL } 34VAC
- ④ RED } 34VAC
- ⑤ RED } 34VAC
- ⑥ 8S VIO } PRIMARY HVY
- ⑦ 8S VIO } PRIMARY HVY
- ⑧ 8S VIO } PRIMARY HVY
- ⑨ 8S VIO } PRIMARY HVY
- ⑩ 8S VIO } PRIMARY HVY
- ⑪ 8S VIO } PRIMARY HVY
- ⑫ 8S VIO } PRIMARY HVY
- ⑬ 8S VIO } PRIMARY HVY
- ⑭ 8S VIO } PRIMARY HVY
- ⑮ 8S VIO } PRIMARY HVY
- ⑯ 8S VIO } PRIMARY HVY
- ⑰ 8S VIO } PRIMARY HVY
- ⑱ 8S VIO } PRIMARY HVY
- ⑲ WHT/VIO } PRIMARY LDR 230V US
- ⑳ WHT/VIO } PRIMARY LDR 230V US
- ㉑ WHT/VIO } PRIMARY LDR 230V US
- ㉒ WHT/VIO } PRIMARY LDR 230V US

NOTES

- ① SEE DETAIL A
- ② SEE DET. A - B
- ③ SINGLE STRAP OR #34 WIRE ADDED DURING REWORK.

DETAIL A:



DATE: 01/18/00 DRAWN BY: DB CHECKED BY: JLB RELEASE STATUS: <input type="checkbox"/> PENDING <input type="checkbox"/> RELEASED		TAPCOOL ASSEMBLY PCB MOTHERBOARD 2200	
TITLE: MOTHERBOARD 2200 FILE: M2200.PCB SHEET: 1 OF 1		DRAWN NO: 24040 REV: A	
SCALE: D UNIT: INCHES		SHEET: 1 OF 1	

CIRCUIT DESCRIPTION

Referring to the schematic drawing, the first section of Z4 is the balanced input amplifier. Trim pot R5 is adjusted for best common mode rejection. Unbalanced sources are applied directly to the following section of Z4. Since the + input has an impedance of several megohms, the unbalanced input source sees an impedance of 82K ohms (R7) to ground, and when used, will swamp out any residual noise coming from the balanced input section.

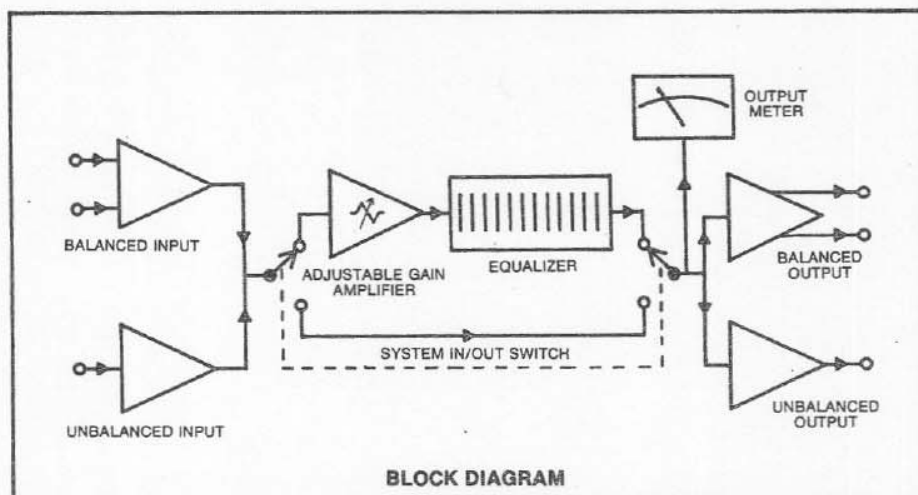
With the equalizer switched "IN", the signal travels through the adjustable gain amp (one section of Z5) and then to the equalizer-controlled amp Z3.

Each equalizer section uses an op amp to simulate an inductance by a standard gyrator circuit. This inductance, then, is placed in series with a resonating capacitor and connected to the wiper of equalization pots R20-R29. When a pot wiper is moved towards "CUT" the resonant circuit shunts the signal at the + input of Z3 to ground, thus reducing the signal at the resonant frequency. Similarly, when the wiper is moved in the "BOOST" direction, it shunts the negative feedback at the - terminal of Z3 to ground, thereby increasing the gain of Z3 at that frequency.

With the equalizer switched "OUT", the signal is routed through another section of Z3. This is a simple inverting amp whose purpose is to maintain proper signal phasing between the "IN" and "OUT" positions. Note that the level adjustment is not active when the equalizer is switched "OUT".

The output is taken from the appropriate section of Z3, and is metered by a standard VU circuit. Inverting amp Z5 completes the balanced output circuit. Meter sensitivity is adjustable by R17, accessible through the front panel. When R17 is turned fully clockwise, the meters will indicate approximately zero VU = 0 dbm (.776Vrms).

The power supply is straightforward, using a bridge rectifier & zener diodes to produce +18 volts DC to all op amps. A switch in the lamp section reduces turn-off thump caused by the collapsing magnetic field in the power transformer. The power transformer may be re-wired for 230 volt operation as shown. An extra pad on the circuit board has been provided to make the series connection between the center wires.



SPECIFICATIONS

Input Impedance: Balanced, 20K ohms. Unbalanced, 82K ohms.

Input Overload Point: Balanced, over +20 dbm. Unbalanced, over 10 volts RMS.

Output Capability: Balanced: at least +15 dbm into 600 ohms.

Unbalanced: at least 10 volts RMS into 6000 ohms or higher
(+22 db Ref: .776 volts RMS)

Output Impedance: Balanced, 260 ohms. Unbalanced, 130 ohms.

Range of Equalization Controls: typically 24db, one control used individually;
typically 30db when used in conjunction with neighboring controls.

Circuit Q: 3

Output Level Adjustment Range: \pm 10db nominal.

Common Mode Rejection: over 65db at 1000Hz (typically 70db); increases at lower frequencies.

Meter Range: Adjustable. Factory set to indicate zero VU = +4 DBM

Frequency response (all controls set flat): \pm 1db, 10Hz to 40,000Hz.

THD: Less than .1%, typically .02%

IMD: Less than .1%, typically .02%

S/N Ratio: (ref: 1 volt RMS, all controls set for unity gain & flat response)
20-20,000Hz bandwidth: -80db (typically -85db)
240-20,000Hz bandwidth: -86db (typically -90db)

Power Consumption: 12 watts nominal

Dimensions: 19" wide, 6½" high, 7½" deep.

Weight: approximately 8 pounds

FACTORY SERVICE

TAPCO has a staff of qualified service personnel who can assist with any field problems which may arise, and are able to answer questions concerning all aspects of the use and performance of our products. Our telephone number is: area code (206) 775-4411. Collect calls for repair service will be accepted. If you need written information, repair parts, or factory repair service, our address is:

TAPCO
405 Howell Way
Edmonds, Washington 98020

PARTS LIST

item no.	tapco part no.		
28	005409	LINEAR CONTROL (level)	5K
29	005411	LINEAR CONTROL (e.q.)	50K
30	005412	TRIM POT	5K
33	001211	CAPACITOR, ELECTROLYTIC	47/10V
34	001405	" "	4.7/25V
35	001415	" "	330/25V
36	001612	" "	100/50
37	002016	CAPACITOR, TANTALUM	.68/35V
38	003001	CAPACITOR, MYLAR	.001/50V
40	003002	" "	.0012/50V
39	003010	" "	.0018/50V
42	003014	" "	.0027/50V
41	003019	" "	.0033/50V
43	003025	" "	.0047/50V
44	003034	" "	.0082/50V
45	003037	" "	.01/50V
46	003040	" "	.012/50V
47	003049	" "	.022/50V
48	003061	" "	.047/50V
49	003070	" "	.082/50V
50	003079	" "	.15/50V
51	003091	" "	.33/50V
57	007004	INTEGRATED CIRCUIT, QUAD	XR4136
54	008008	DIODE, SIGNAL	1N100
55	008021	DIODE, POWER	1N4001
56	008046	DIODE, ZENER	1N4746A
	300001	½" PHONE JACK	
	300008	3-PIN CONNECTOR, FEMALE (D3F)	
	300010	3-PIN CONNECTOR, MALE (D3M)	
61	300011	CONNECTOR, MALE (Molex 09-64-1061)	
	300012	CONNECTOR, FEMALE (Molex 09-50-3061)	
	300013	INSERTS FOR ABOVE (Molex 2578)	
62	301002	SWITCH, WHITE (in-out)	
63	301004	SWITCH, RED (power)	
64	301043	LAMP (2181)	
60	302044	POWER TRANSFORMER (830511)	
	303001	LINECORD, 18/3 SVT BLK	
	303007	FOOT	
72	303011	SPACER, .750", PCB MOUNTING, THREADED, HEX	
	450014	CHASSIS	
	450015	TOP PANEL	
	450016	END PANEL	
65	455001	VU METER, DUAL	
70	500070	MACHINE SCREW, BLACK, PH, 4-40x3/8	
	500200	SCREW, THD. FRMG, PH, BLACK, No. 8x1/2 (top panel)	
	500201	MACHINE SCREW, BLACK, PH, 8-32x1/2 (end panel)	
	500280	LOCKWASHER, BLACK, No. 8	
	500590	NUT, 3/8-32	
	500680	LOCKWASHER, 3/8	
	500681	FLAT WASHER, 3/8	
68	500102	MACHINE SCREW, BLACK 6-32x1/2	
69	500190	NUT, KEP, 6-32	
71	500080	LOCKWASHER, No. 4	

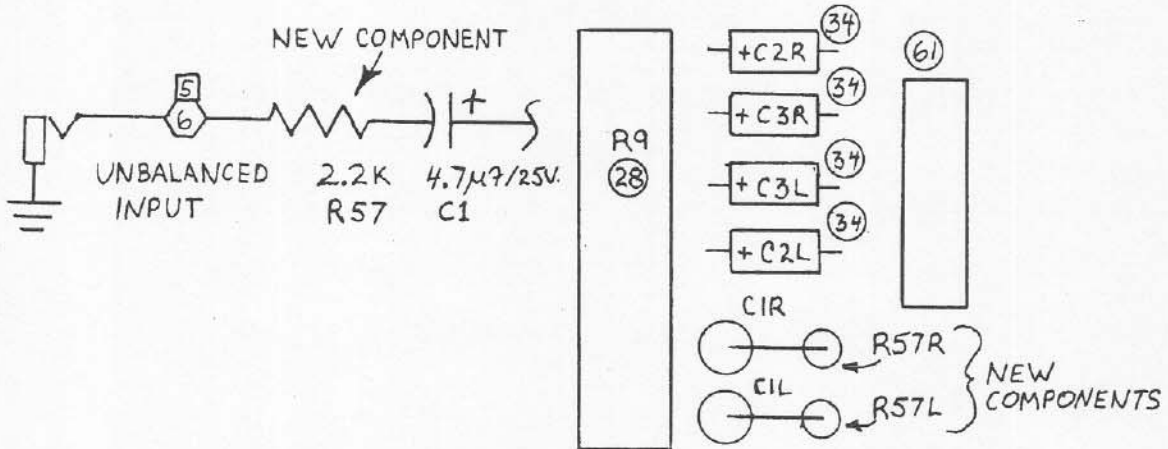
SERVICE MEMO

RE: TAPCO E.C.O. #6,7,8
2200 Unbalanced input modification

March 25, 1976

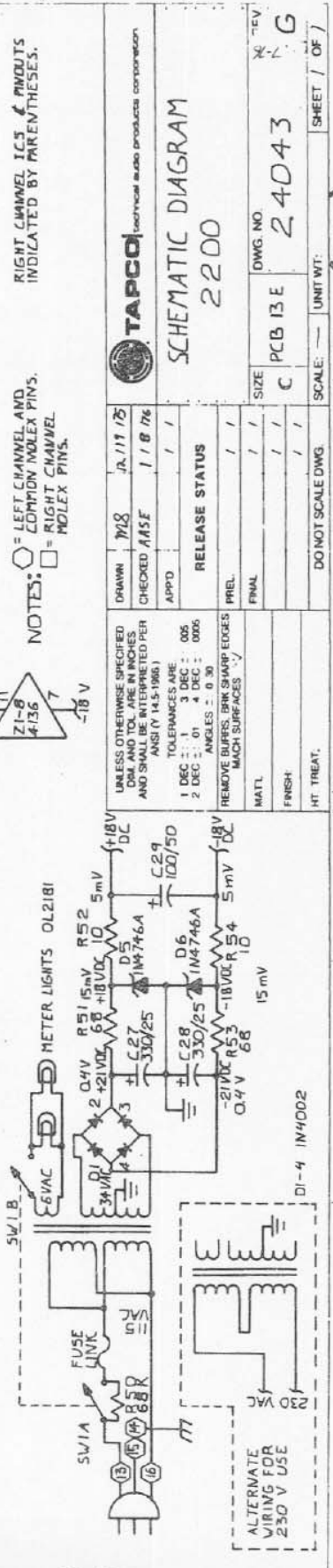
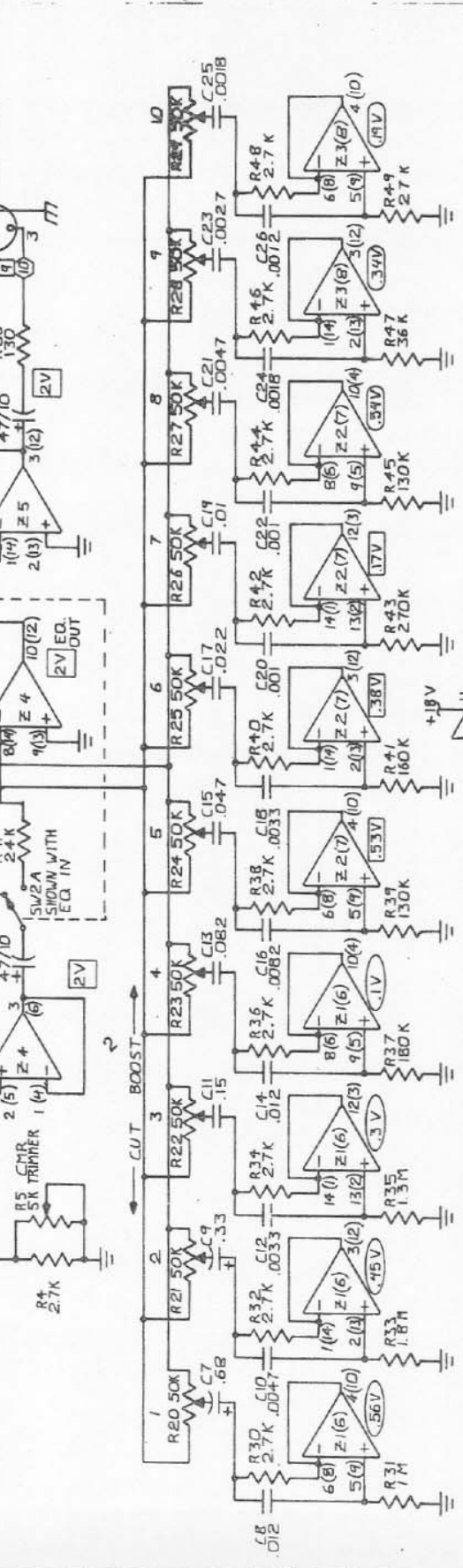
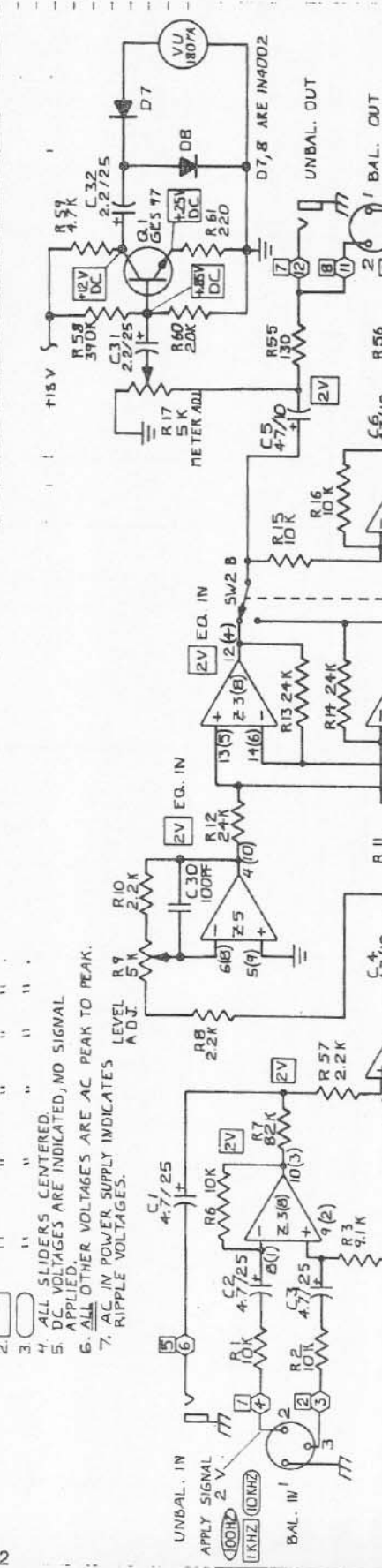
NOTE: This modification is to be performed on all 2200's that come in for warranty repair.

Beginning with approximately #0260150 (serial number) and up, this circuit modification was incorporated to prevent possible damage and subsequent failure of Z4 (unbalanced input).



ADD TWO (2) 2.2 KΩ RESISTORS

Part Number	Quantity	Description
005076	6	Resistor, ½ W, CF, 5%, 2.2K



NOTES:
 ○ = LEFT CHANNEL AND COMMON MOLEX PINS.
 □ = RIGHT CHANNEL MOLEX PINS.
 RIGHT CHANNEL IC'S & PINOUTS INDICATED BY PARENTHESES.

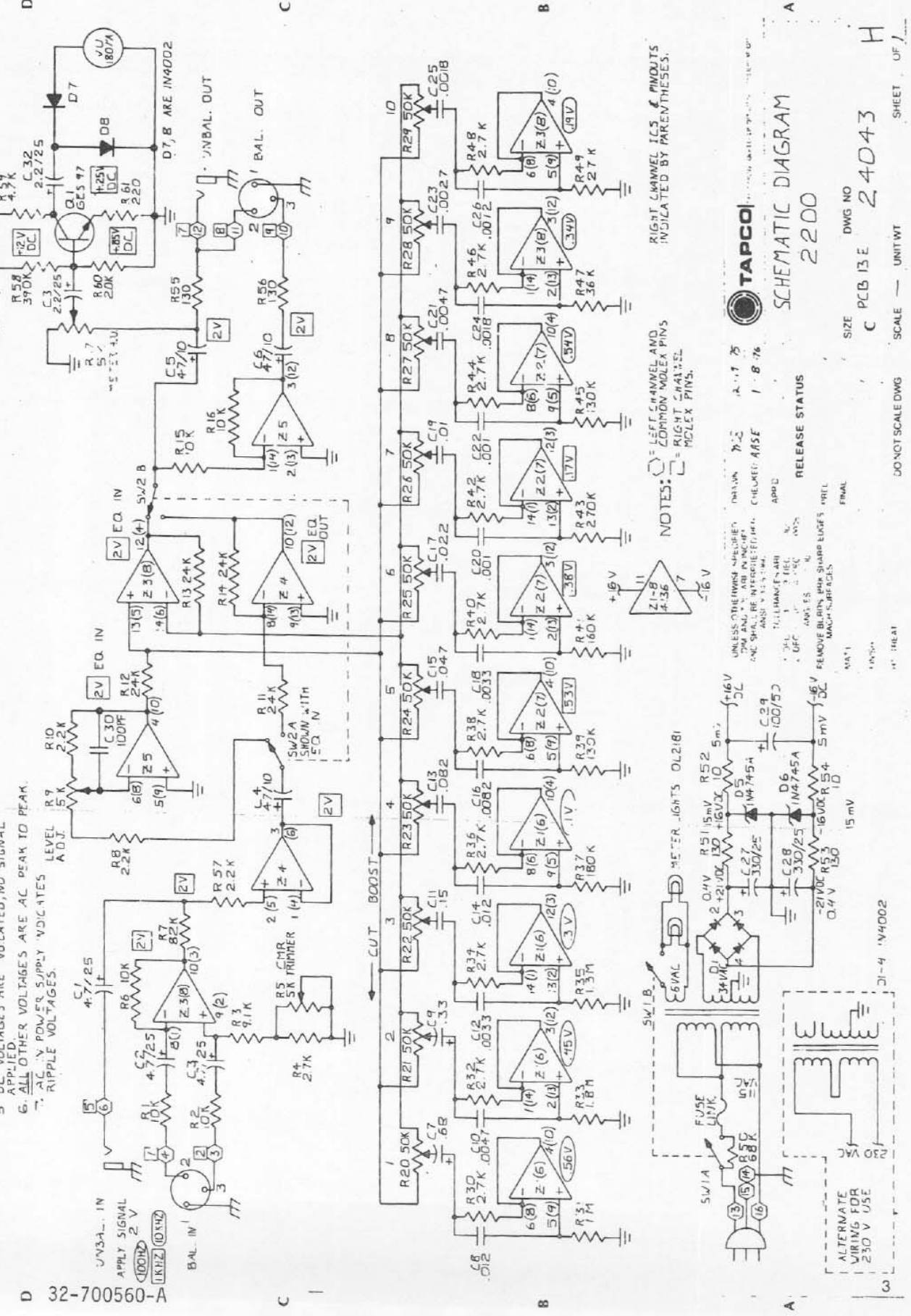
UNLESS OTHERWISE SPECIFIED DIM. AND TOL. ARE IN INCHES AND SHALL BE INTERPRETED PER ANSI (Y 14.5-1986)		DRAWN	M/S	J.A. 11/78
TOLERANCES ARE 1 DEC: .1 2 DEC: .01 3 DEC: .005		CHECKED	ARSE	1/8/76
REMOVE BURRS, BURN SHARP EDGES, ANGLES = 0.30 INCH SURFACES		APP'D	/	/
RELEASE STATUS		PREL.	/	/
MATERIAL		FINISH	/	/
HT. TREAT.		DO NOT SCALE DWG.	/	/
PCB 13 E		SIZE	C	DWG. NO. 24043
SCALE: 1/16"		UNIT WT.		SHEET 1 OF 1

TAPCOI
 SCHEMATIC DIAGRAM
 2200

NOTE: D5 & 6 CHANGED TO IN4745A (16V);
 R51 & 53 CHANGED TO 130Ω AFTER SER 1 096001.

REVISIONS: 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

VOLTAGE TESTS: 1. ○ = SIGNAL & VOLTAGE RESULTS AS SHOWN. 2. □ = SLIDERS CENTERED. 3. △ = DC VOLTAGES ARE INDICATED, NO SIGNAL APPLIED. 4. ▽ = ALL OTHER VOLTAGES ARE AC PEAK TO PEAK. 5. ~ = AC VOLTAGE SUPPLY INDICATES RIPPLE VOLTAGES. 6. ○ = LEFT CHANNEL AND COMMON MOLEX PINS. 7. □ = RIGHT CHANNEL MOLEX PINS. 8. △ = MOLEX PINS.

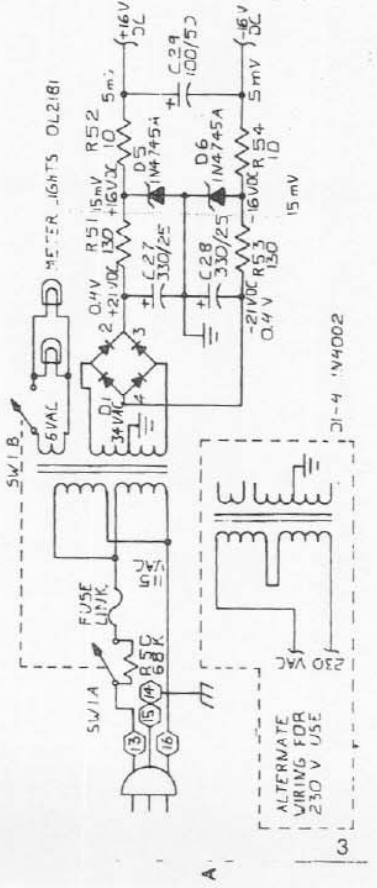


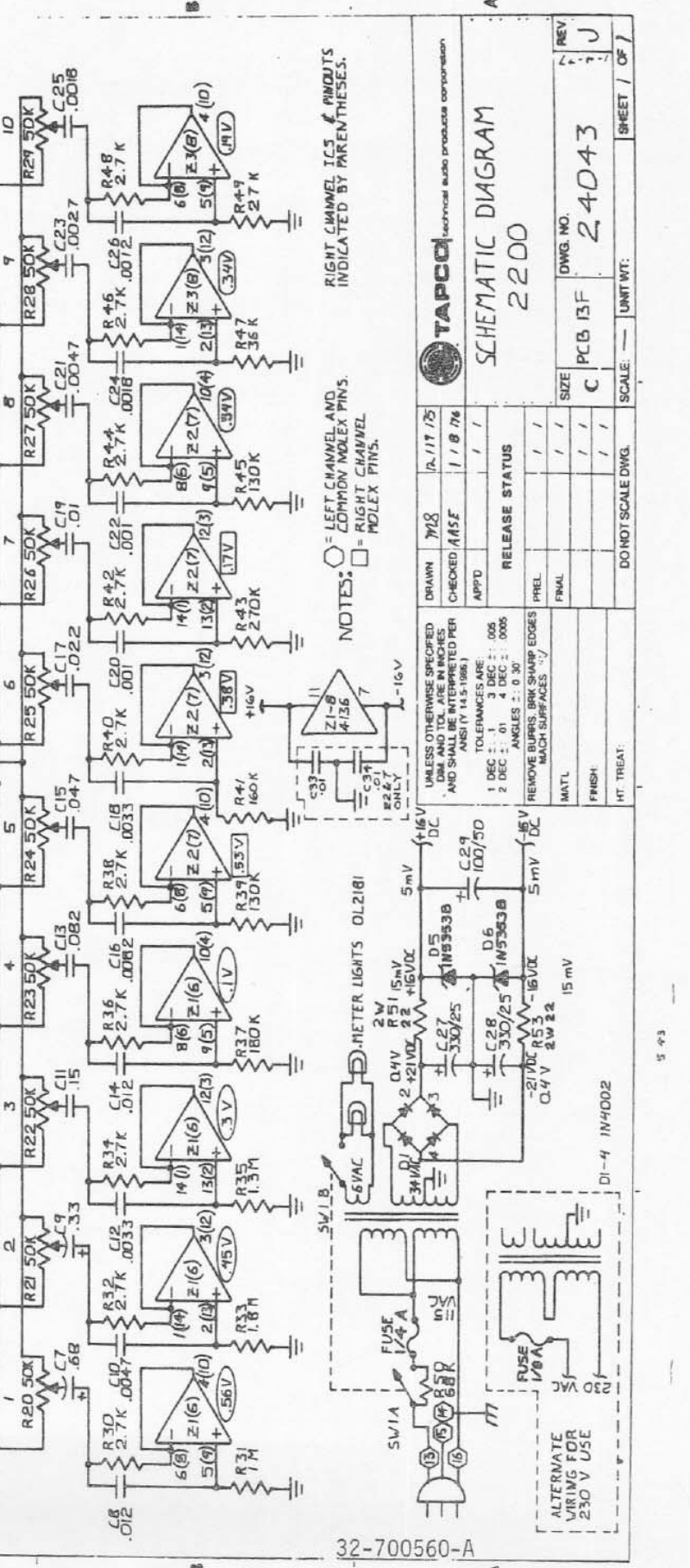
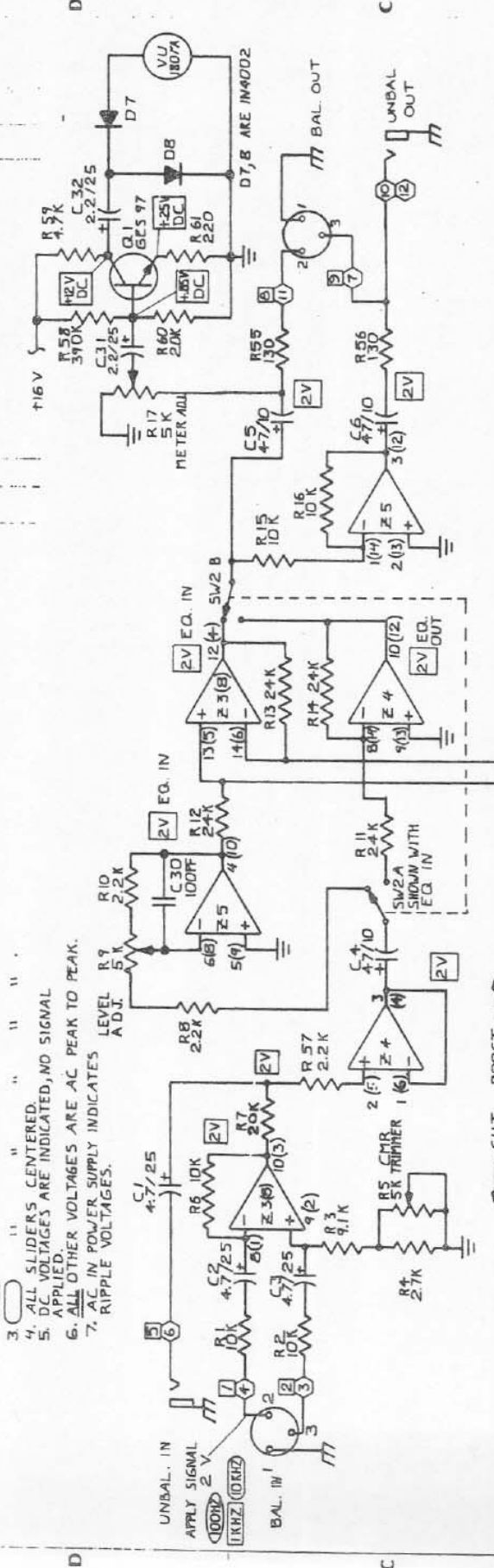
SCHMATIC DIAGRAM
2200

RELEASE STATUS
DRAWN: 7-52
CHECKED: ARSE
SCALE: UNIT WT
DWG NO: 24043
SHEET OF 1

NOTES:
1. ○ = LEFT CHANNEL AND COMMON MOLEX PINS.
2. □ = RIGHT CHANNEL MOLEX PINS.
3. △ = MOLEX PINS.

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.
DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.





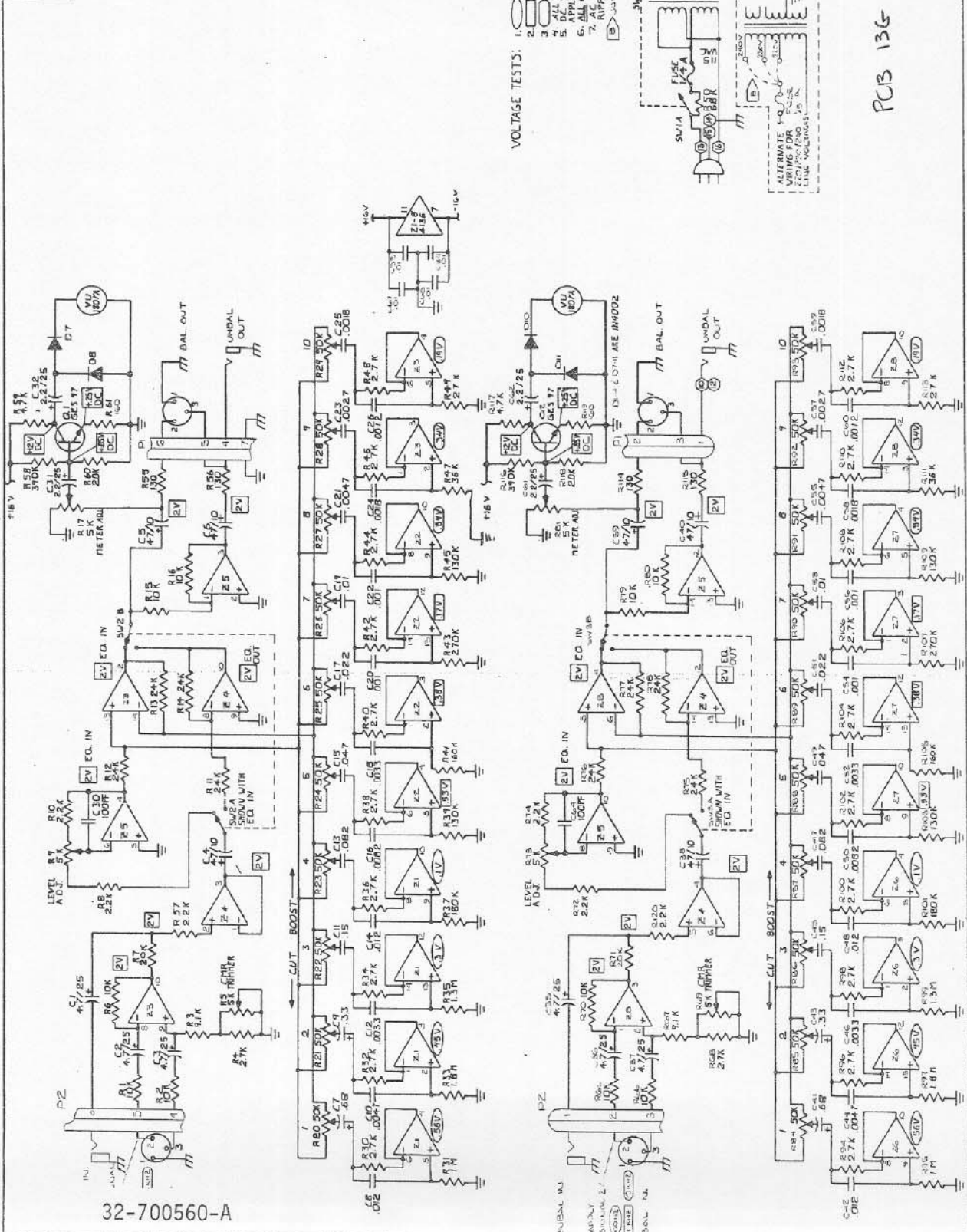
NOTES:
 ○ = LEFT CHANNEL AND COMMON MOLEX PINS.
 □ = RIGHT CHANNEL MOLEX PINS.

RIGHT CHANNEL ICS PINOUTS INDICATED BY PARENTHESES.

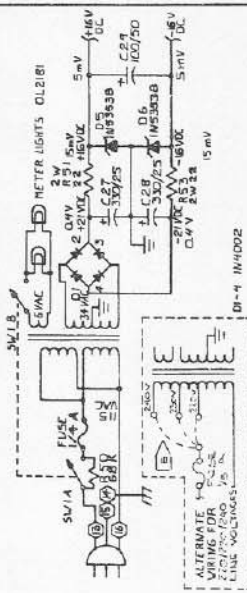
32-700560-A

		DRAWN: 7/18 CHECKED: A/SF APP'D: / / /	DATE: 12/17/75 1/18/76 1/1
SCHEMATIC DIAGRAM 2200			
UNLESS OTHERWISE SPECIFIED DIM AND TOL ARE IN INCHES AND SHALL BE INTERPRETED PER ANSI (Y 14.5-1986)		RELEASE STATUS PREL: / / / FINAL: / / / MACH SURFACES: / / /	
TOLERANCES ARE: 1 DEC: ± .1 2 DEC: ± .01 3 DEC: ± .005 ANGLES: 0-90°		DO NOT SCALE DWG. SCALE: / / / UNIT WT: / / /	
REMOVE BURRS, BRK SHARP EDGES MATCH SURFACES: / / /	MATL: / / / FINISH: / / / HT. TREAT: / / /	SIZE: C PCB B3F DWG. NO.: 24043	REV: J SHEET: / OF /

REV	DESCRIPTION	DATE	APPROVED
1	REVISIONS WITHOUT CHECK	11/5/78	
2	RELEASED TO PROOD	3/2/79	
3	UNDEP. E.O. 4.87	11/29/79	



- VOLTAGE TESTS:
1. SIGNAL & VOLTAGE RESULTS AS SHOWN.
 2. " " " " " " " "
 3. " " " " " " " "
 4. ALL SLIDERS ARE CENTERED, NO SIGNAL.
 5. D.C. VOLTAGES ARE INDICATED.
 6. ALL OTHER VOLTAGES ARE AC PEAK TO PEAK.
 7. AC IN POWER SUPPLY INDICATES RIPPLE VOLTAGES.



PROD REL

TAPCO

SCHEMATIC DIAGRAM 2200

REV. 1

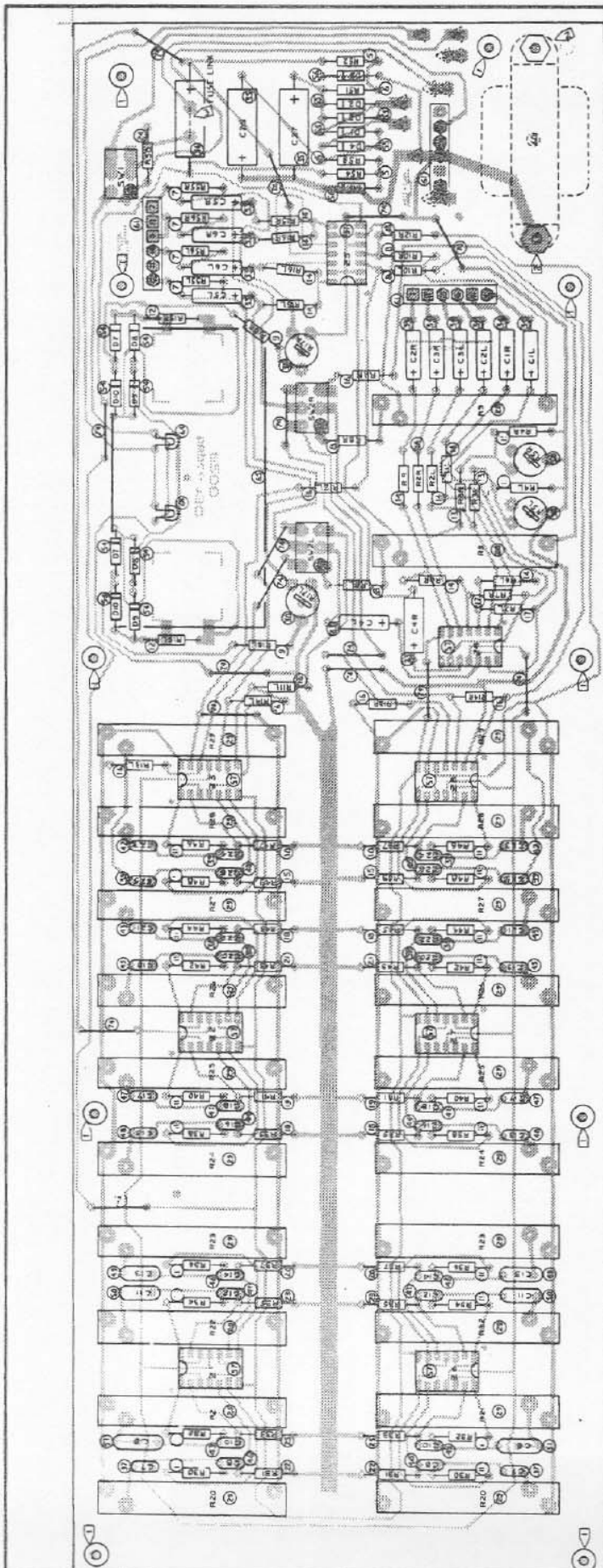
DATE 11/29/79

BY D 24043 M

NO. 100 SCALE DRAWING SHEET 1 OF 1

PCB 136

32-700560-A



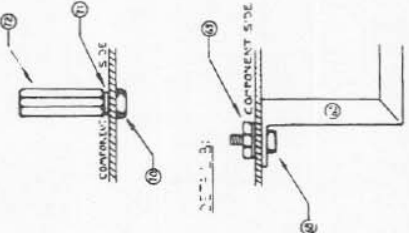
TRANSFORMER CONNECTIONS

- 1. GRN
 - 2. WHT
 - 3. YEL
 - 4. RED
 - 5. REC
 - 6. LIO
 - 7. GRN
 - 8. BLU
 - 9. BLU
 - 10. WHT
 - 11. WHT
 - 12. GRN
- PRIMARY 110V
- 30V AC
- PRIMARY 110V
- 5VDC
- PRIMARY 220V USE

NOTES

- 1. SEE DET-A
- 2. SEE DET-B
- 3. SINGLE STRIPS OF #34 & #40 ADDED DURING REV. GWH.

DETAILS



TAPCO
THE APPLIED ELECTRONIC CORPORATION

**ASSEMBLY PCB
 MOTHERBOARD 2200**

REVISION: **A**

DATE: **11/10/70**

DESIGNER: **D**

CHECKED BY: **ABF**

APPROVED BY: **ABF**

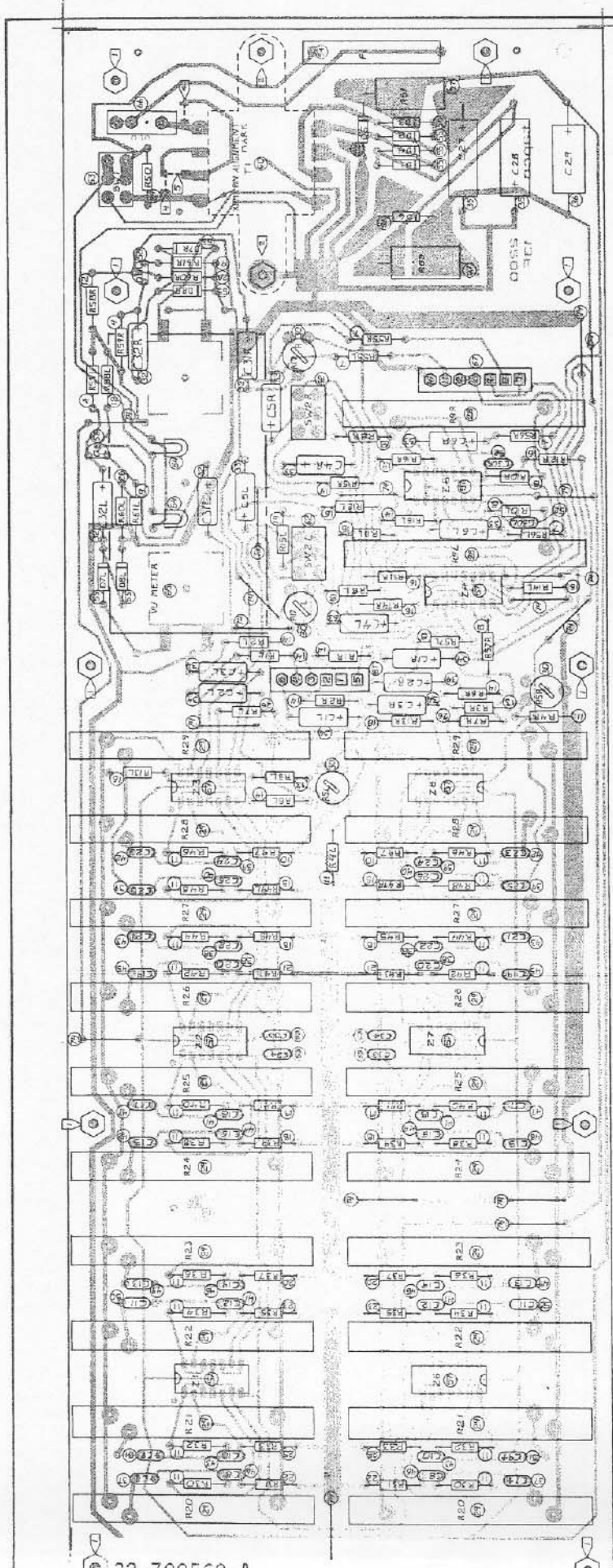
RELEASE STATUS: **FOR PRODUCTION**

UNIT NO: **24040**

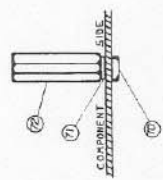
SCALE: **D**

DO NOT SCALE DIMS

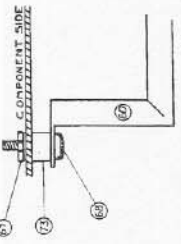
SHEET 1 OF 1



DETAIL A:



DETAIL B:



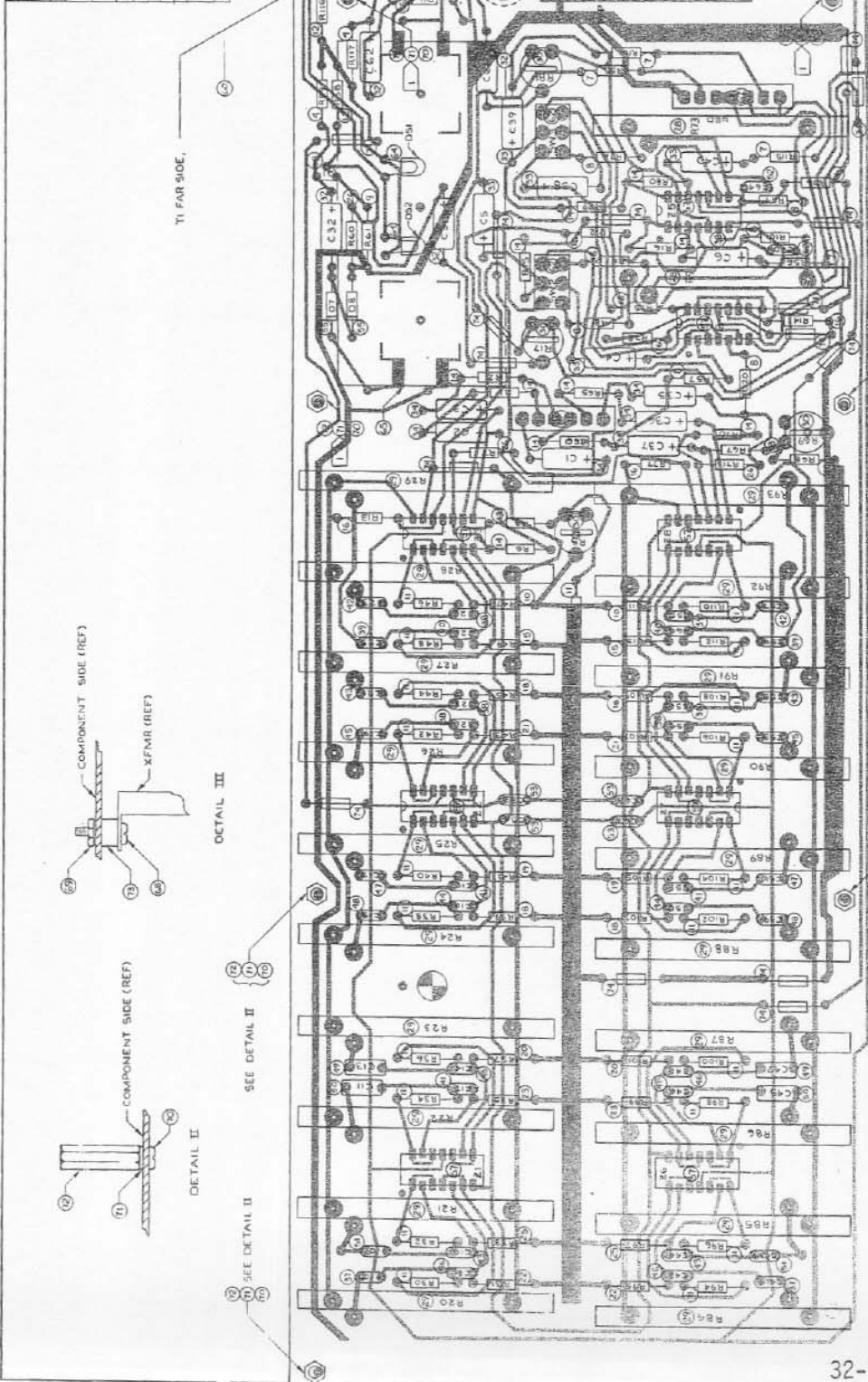
NOTES:

- 1 > SEE DETAIL "A".
- 2 > SEE DETAIL "B".

- 1 > 10 VOLT CONNECTION, #22 SOLID WIRE ADDED DURING REWORK.
- 2 > 230 VOLT CONNECTION, #27 SOLID WIRE ADDED DURING REWORK.

UNLESS OTHERWISE SPECIFIED AND SHALL BE INTERPRETED FOR ASSEMBLY (ASSEMBLY):		DATE: 5/1/78	TIME: 5/1/78	TAPCOI	ASSEMBLY PCB MOTHERBOARD 2200
1. DRG. 1.0	1.0	6/18/78	6/18/78		
2. DRG. 2.0	2.0				
3. DRG. 3.0	3.0				
4. DRG. 4.0	4.0				
5. DRG. 5.0	5.0				
6. DRG. 6.0	6.0				
7. DRG. 7.0	7.0				
8. DRG. 8.0	8.0				
9. DRG. 9.0	9.0				
10. DRG. 10.0	10.0				
11. DRG. 11.0	11.0				
12. DRG. 12.0	12.0				
13. DRG. 13.0	13.0				
14. DRG. 14.0	14.0				
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25. DRG. 25.0	25.0				
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27. DRG. 27.0	27.0				
28. DRG. 28.0	28.0				
29. DRG. 29.0	29.0				
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62. DRG. 62.0	62.0				
63. DRG. 63.0	63.0				
64. DRG. 64.0	64.0				
65. DRG. 65.0	65.0				
66. DRG. 66.0	66.0				
67. DRG. 67.0	67.0				
68. DRG. 68.0	68.0				
69. DRG. 69.0	69.0				
70. DRG. 70.0	70.0				
71. DRG. 71.0	71.0				
72. DRG. 72.0	72.0				
73. DRG. 73.0	73.0				
74. DRG. 74.0	74.0				
75. DRG. 75.0	75.0				
76. DRG. 76.0	76.0				
77. DRG. 77.0	77.0				
78. DRG. 78.0	78.0				
79. DRG. 79.0	79.0				
80. DRG. 80.0	80.0				
81. DRG. 81.0	81.0				
82. DRG. 82.0	82.0				
83. DRG. 83.0	83.0				
84. DRG. 84.0	84.0				
85. DRG. 85.0	85.0				
86. DRG. 86.0	86.0				
87. DRG. 87.0	87.0				
88. DRG. 88.0	88.0				
89. DRG. 89.0	89.0				
90. DRG. 90.0	90.0				
91. DRG. 91.0	91.0				
92. DRG. 92.0	92.0				
93. DRG. 93.0	93.0				
94. DRG. 94.0	94.0				
95. DRG. 95.0	95.0				
96. DRG. 96.0	96.0				
97. DRG. 97.0	97.0				
98. DRG. 98.0	98.0				
99. DRG. 99.0	99.0				
100. DRG. 100.0	100.0				

REV	DESCRIPTION	DATE	APPROVED
F	REDRAWN WITH CHANGE PER ECO 507	4-22-7	10/1/7
H	SEE SHEET I	5-18-7	5-25-7
J	INCORPORATED ECO 227	6-27-7	D.L. 1-6-4
K	ADDED SHEET 3	1-19-7	1-19-7
L	INCORPORATED ECO 232	2-2-7	2-2-7
M	ADDED SHEET 3	2-2-7	2-2-7
N	INCORPORATED ECO 381	5-21-7	5-21-7
O	RELEASED TO PRODUCTION	7-1-8	7-1-8
P	INCORP ECO 415	1-10-9	1-10-9
Q	INCORP ECO 495	1-23-9	1-23-9
R	SEE ECN 495	4-1-9	4-1-9
S	INCORP ECO 532	4-16-9	4-16-9



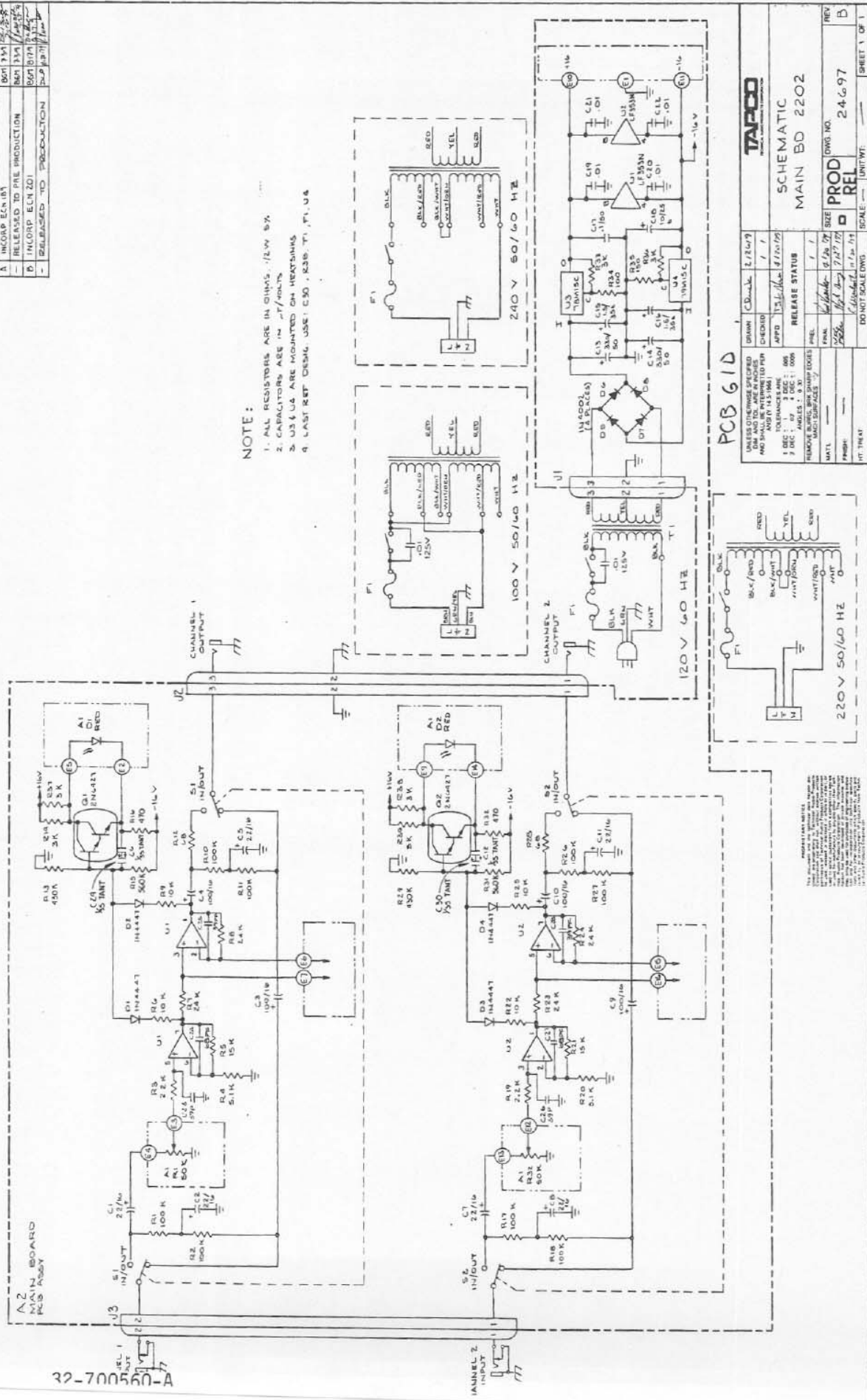
PROD REL		TAPCO	
PCB ASSY MAIN 2200		REV	
2/1		D 24040	
DO NOT SCALE DRAWING		SHEET 2 OF 3	

PCB 136

SHEET 2: BOARDS ONLY
SEE SHEET 1 FOR NOTES

REVISIONS		BY	DATE	APPROVED
10	DESIGN	...	...	...
9	RELEASED TO PRODUCTION	...	...	...
8	INCORP ECU 201	...	...	...
7	RELEASED TO PRODUCTION	...	...	...
6	INCORP ECU 201	...	...	...
5	RELEASED TO PRODUCTION	...	...	...
4	INCORP ECU 101	...	...	...
3	RELEASED TO PRODUCTION	...	...	...
2	INCORP ECU 101	...	...	...
1	RELEASED TO PRODUCTION	...	...	...

NOTE:
 1. ALL RESISTORS ARE IN OHMS, 1/2W, 5%.
 2. CAPACITORS ARE IN μ F/50V.
 3. U3, U4 ARE MOUNTED ON HEATSINKS.
 4. LAST REF DESIG. USE: C30, R36, T1, F1, U4.



DIMENSIONS		CD	DATE
1	2.75/0.9	1	1

CHECKED: [Signature]
 APPROVED: [Signature]
 TOLERANCES ARE:
 3 DEC: 0.1%
 2 DEC: 1%
 1 DEC: 5%
 UNLESS OTHERWISE SPECIFIED

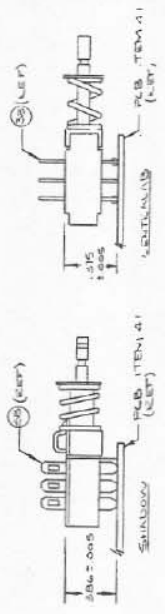
RELEASE STATUS: []
 FINAL: []
 PREL: []
 REMOVED TO PRODUCTION: []
 MATL: []
 FINISH: []

TAPCO
 SCHEMATIC
 MAIN BD 2202
 PROD DWS NO. 24697
 REL []
 SCALE: [] UNIT: []
 SHEET 1 OF 1

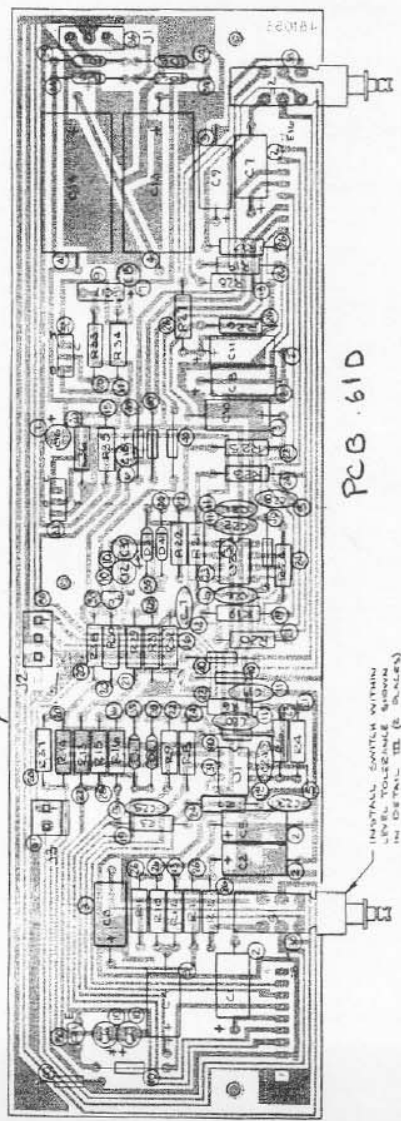
APPROVED FOR RELEASE
 THIS DOCUMENT IS UNCLASSIFIED
 DATE 08-14-2011 BY 60322 UCBAW/SJS
 REASON: EXECUTIVE ORDER 13526, DECLASSIFICATION AUTHORITY 5010.104

32-7000-50-A

REV	DESCRIPTION	BY	DATE	APPROVED
1	RELEASED FOR PRODUCTION	SAK	1/15/73	
2	REWORK ECN 101	SAK	1/15/73	
3	REWORK ECN 101	SAK	1/15/73	
4	REWORK ECN 101	SAK	1/15/73	
5	REWORK ECN 101	SAK	1/15/73	
6	REWORK ECN 101	SAK	1/15/73	
7	REWORK ECN 101	SAK	1/15/73	



NOTE:
 1. FOR SCHEMATIC SEE 24077-REV 2
 2. SEE ECN 101, 102, 103, 104, 105, 106, 107



QTY	DESCRIPTION	REV	DATE	APPROVED
1	482903			
2	201023			
3	201023			
4	201023			
5	201023			
6	201023			
7	201023			
8	201023			
9	201023			
10	201023			
11	201023			
12	201023			
13	201023			
14	201023			
15	201023			
16	201023			
17	201023			
18	201023			
19	201023			
20	201023			
21	201023			
22	201023			
23	201023			
24	201023			
25	201023			
26	201023			
27	201023			
28	201023			
29	201023			
30	201023			
31	201023			
32	201023			
33	201023			
34	201023			
35	201023			
36	201023			
37	201023			
38	201023			
39	201023			
40	201023			
41	201023			

UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES
 AND DECIMALS THEREOF
 TOLERANCES ARE:
 1 DEC - .010
 2 DEC - .005
 3 DEC - .002

REMOVE BURRS AND SHARP EDGES
 FINISH ALL SURFACES

MITI SEE PARTS LIST
 DATE: 1/15/73
 BY: SAK

REVISIONS

DATE: 1/15/73

BY: SAK

DESCRIPTION

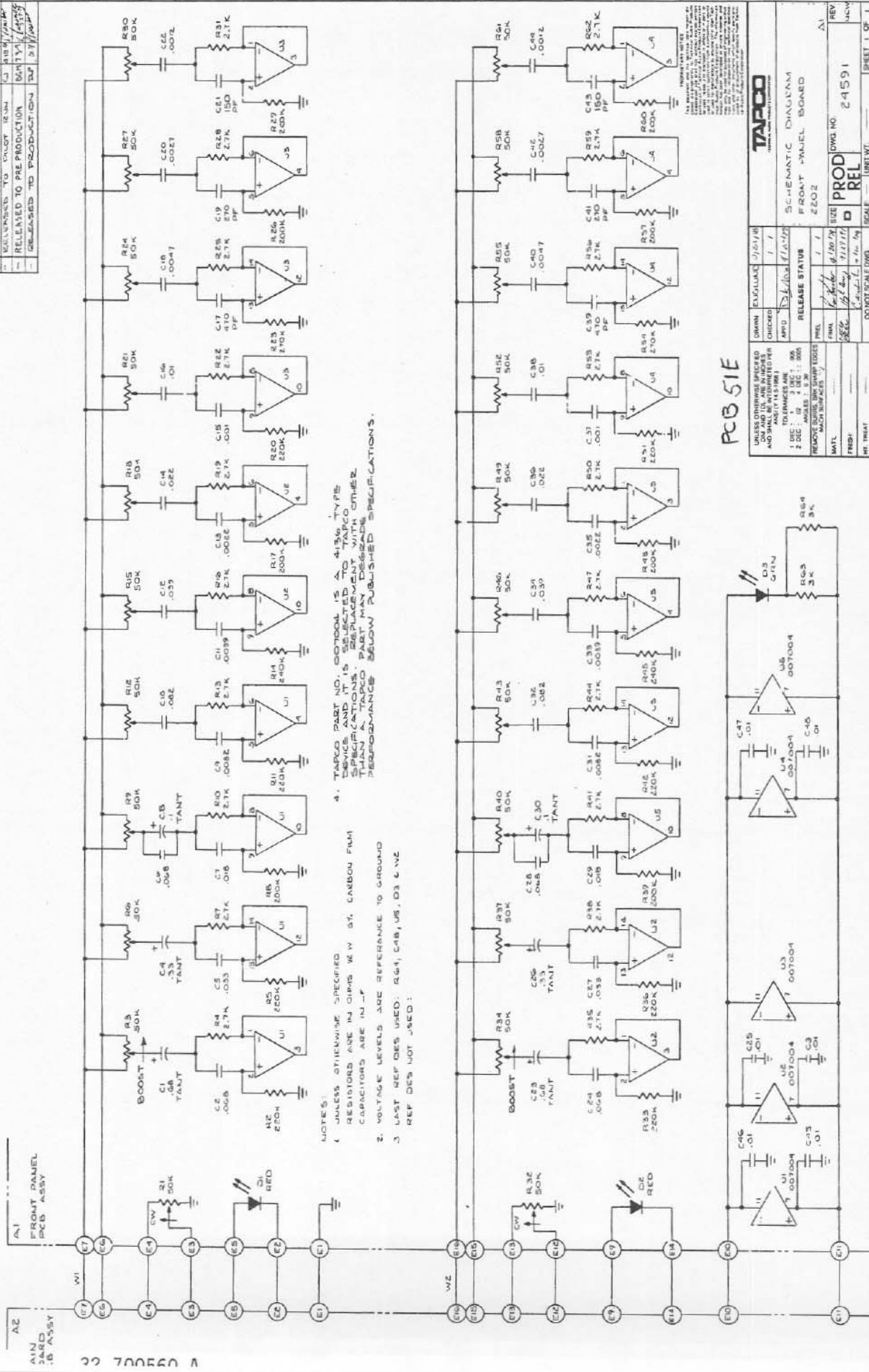
PCB ASSY MAIN
 2202

PROJ DWG NO 24695
 REL

SCALE 2/1 UNIT WT

SHEET 1 OF 1

REVISIONS			
REV	DESCRIPTION	BY	DATE
1	RELEASED TO PRE PRODUCTION	DAW	1/10/77
2	RELEASED TO PRODUCTION	DAW	3/1/77



DRAWN	ENCLARED	7/5/78
APPROVED	1/1	1/1
APPROVED	1/1	1/1

UNLESS OTHERWISE SPECIFIED AND SHALL BE WITHIN THE TOLERANCES AND RELEASED DURING THE SHIP EPOCH MATL. MUST BE USED.

1 SEC : 1000000
2 SEC : 10000000
RELATIVE HUMIDITY : 50%
TEMPERATURE : 25°C

SCHEMATIC DIAGRAM
FRONT PANEL BOARD
2202

PROJ. NO. 24591
REV. 1

DATE: 1/10/77
BY: DAW

PCB 51E

NOTE: 1. UNLESS OTHERWISE SPECIFIED RESISTORS ARE IN OHMS W W 5%, CARBON FILM CAPACITORS ARE IN PF

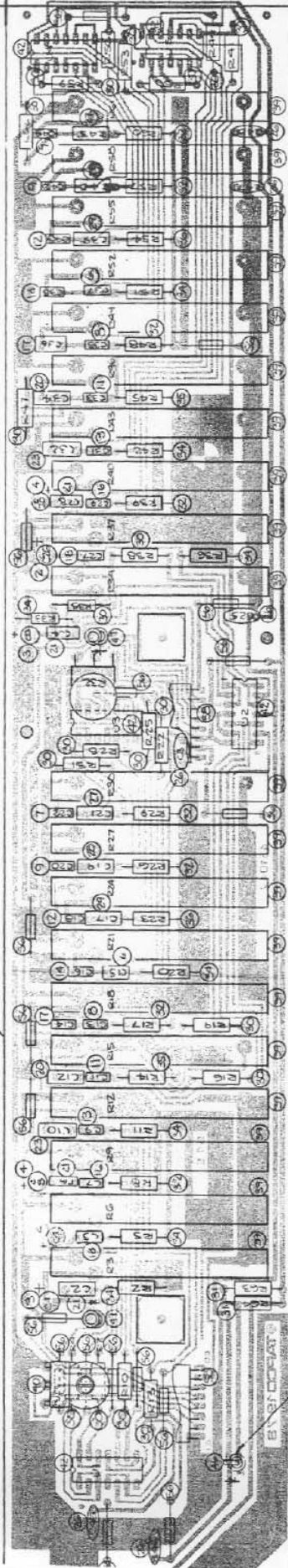
2. VOLTAGE LEVELS ARE REFERENCE TO GROUND

3. LAST REF DES USED: R64, C48, U8, D3 & W2 REF DES NOT USED:

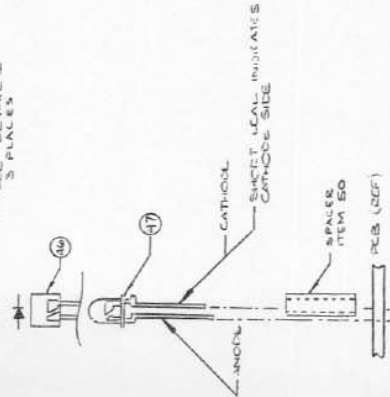
4. TARCO PART NO. 02000A IS A 4134 TYPE DEVICE AND IT IS SELECTED TO TARCO SPECIFICATIONS. REPLACEMENT WITH OTHER THAN A TARCO PART MAY DEGRADE PERFORMANCE. SEE BELOW PUBLISHED SPECIFICATIONS.

REVISIONS	
LTN	DESCRIPTION
1	REVISED TO S-27
2	REVISION TO S-27
3	REVISION TO S-27

SEE DETAIL I
SPACERS



PCB 51 E



DETAIL I

UNLESS OTHERWISE SPECIFIED DIM AND TOL ARE IN INCHES AND DIM TOL ARE IN MILLIMETERS	
DRAWN BY: [Signature]	NO. 35 45
CHECKED BY: [Signature]	1 1 1
APPROVED BY: [Signature]	18 JAN 1962
RELEASE STATUS	1 1 1
REVISIONS	1 1 1
DATE	18 JAN 1962
BY	[Signature]
REASON FOR CHANGE	1 1 1
MATERIALS PARTS VECT	1 1 1
MTX ASSEMBLY	1 1 1
PROB	1 1 1
HT TREAT	1 1 1
DO NOT SCALE DIMS.	SCALE 2:1 UNIT WT.
SHEET 2 OF 2	

TAPOO TELECOMMUNICATIONS	
PCB ASSY FRONT PANEL	
2702	
PROJ NO.	241094
REL	B
SHEET 2 OF 2	

ASSEMBLY 800076 PCB ASSY MAIN 2202

ITEM NO.	PART NUMBER	D E S C R I P T I O N		TOTAL QTY REQUIRED
001	800076	PCB ASSY, MAIN 2202	DWG 24695	0
002	001308	CAP ELECT AL AX	22/16	6
003	001350	CAP ELECT AL AX	100/16	4
004	001616	CAP ELECT AL AX	330/50	2
005	004022	CAP CERAMIC 10%	39PF/50	4
006	002005	CAP TANT 20%	10/25	1
007	002022	CAP TANT 20%	1.5/35	2
009	003073	CAP MYLAR 10%	.1/50	1
010	002019	CAP TANT 20%	1/35	4
011	004087	CAP CERAMIC 20%		4
012	004030	CAP CERAMIC 10%	68PF/50	2
013	005040	RES CF .5W 5%	68	2
014	005044	RES CF .5W 5%	100	1
015	005048	RES CF .5W 5%	150	1
016	005060	RES CF .5W 5%	470	2
019	005076	RES CF .5W 5%	2.2K	2
020	005079	RES CF .5W 5%	3.0K	6
021	005085	RES CF .5W 5%	5.1K	2
022	005092	RES CF .5W 5%	10K	4
023	005096	RES CF .5W 5%	15K	2
024	005101	RES CF .5W 5%	24K	4
026	005116	RES CF .5W 5%	100K	8
027	005131	RES CF .5W 5%	430K	2
028	005134	RES CF .5W 5%	560K	2
030	006021	XISTOR NPN DARLINGTON	2N6427	2
031	007010	IC DUAL OP-AMP (8 PIN DIP) LF 353N		2
032	007101	IC +15V REG TO-220 TI UA78M15KC		1
033	007151	IC -15V REG TO-220 TI UA79M15KC		1
034	008022	DIODE PWR 1A/100V DR 200V	IN4002	4
035	008049	DIODE SIGNAL (ITT PREFERRED)	IN4447	4
036	300097	HDR .045 SQ PST STR 3 PIN W/LOCK AMP		2
037	300098	HDR .045 SQ PST STR 2 PIN W/LOCK AMP		1
038	301023	SW PUSH ON-OFF VERT PCB DPDT CRIMP .093		2
040	452503	JUMPER ZERO OHM	.6	9
041	451055	PCB, MAIN 2202	DWG 61	1

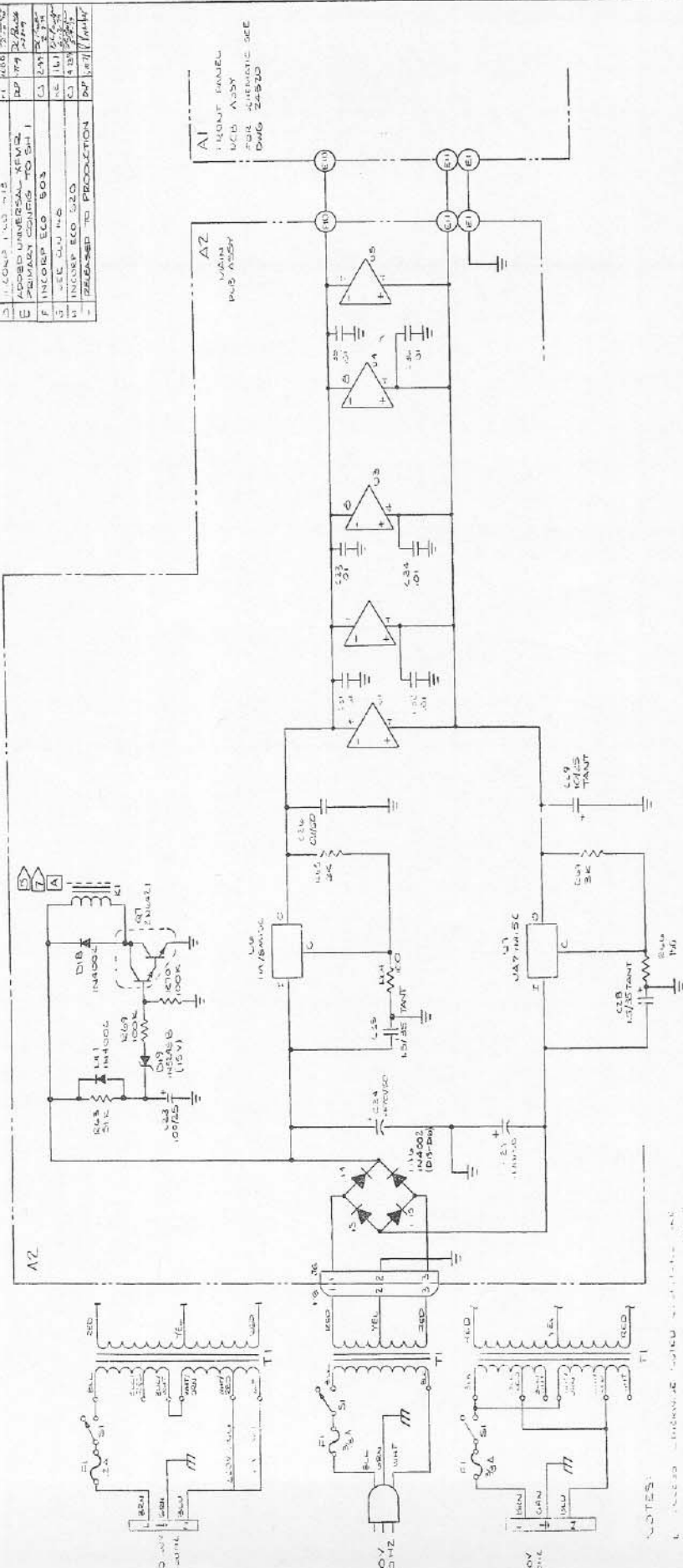
ASSEMBLY 800075 PCB ASSY FRONT PANEL 2202

ITEM NO.	PART NUMBER	DESCRIPTION	TOTAL QTY REQUIRED	
001	800075	PCB ASSY, FRONT PANEL 2202	DWG 24694	0
002	002010	CAP TANT 10%	.33/35	2
003	002015	CAP TANT 10%	.68/35	2
004	002004	CAP TANT 10%	.10/35	2
006	003001	CAP MYLAR 10%	.001/50	2
007	003002	CAP MYLAR 10%	.0012/50	2
008	003013	CAP MYLAR 10%	.0022/50	2
009	003014	CAP MYLAR 10%	.0027/50	2
011	003022	CAP MYLAR 10%	.0039/50	2
012	003025	CAP MYLAR 10%	.0047/50	2
013	003034	CAP MYLAR 10%	.0062/50	2
014	003037	CAP MYLAR 10%	.01/50	2
016	003044	CAP MYLAR 10%	.018/100	2
017	003049	CAP MYLAR 10%	.022/50	2
018	003055	CAP MYLAR 10%	.033/50	2
020	003058	CAP MYLAR 10%	.039/50	2
021	003068	CAP MYLAR 10%	.068/50	4
023	003070	CAP MYLAR 10%	.082/50	2
026	004087	CAP CERAMIC 20%		6
027	004080	CAP CERAMIC 10%	150PF/100	2
028	004044	CAP CERAMIC 10%	270PF/100	2
029	004050	CAP CERAMIC 10%	470PF/50	2
030	005078	RES CF .5w 5%	2.7K	20
031	005079	RES CF .5w 5%	3.0K	2
032	005123	RES CF .5w 5%	200K	8
034	005124	RES CF .5w 5%	220K	8
035	005125	RES CF .5w 5%	240K	2
036	005126	RES CF .5w 5%	270K	2
039	005411	POT PCB S LIN 20%	50K	20
040	005424	POT 16MM HORIZ PCB AUDIO 20%	50K	2
042	007004	IC QUAD OP AMP TESTED	4136	5
046	008052	DIODE, LED RECTANGULAR GREEN	HLMP-0500	1
047	008060	DIODE, LED ROUND RED		2
050	303029	SPACER, LED 6001/6201	DWG 24254	3
053	451042	PCB, FRONT PANEL 2202	DWG 51	1
056	452503	JUMPER ZERO OHM	.6	18
058	454105	JUMPER RIB CAB 8-COND 5.0		2

ASSEMBLY 900079 FINAL ASSY 2202 120V 60HZ

ITEM NO.	PART NUMBER	DESCRIPTION	TOTAL QTY REQUIRED
001	900079	FINAL ASSY 2202 120V 60HZ DWG 24705	0
002	300001	CONN JACK PHONE .25 OD	11 2
003	300002	CONN JACK PHONE SWITCHING	12A 2
005	301025	SW RKR 250V 10(4)A, SPST, BLACK	1
007	004701	CAP U.L. APPROVED .01/125VAC	1
009	303003	STRAIN RELIEF HEYMAN SR-5P-4 OR EQUIV	1
012	303030	RUBBER FEET .81 SQ 3M SJ5023 OR EQUIV	4
013	303033	TERMINAL STRIP 3 LUG SMITH 864	1
015	303039	SPACER 1.25 LG .25 HEX 6-32	3
016	303040	SPACER, PCB NYLON .75 LONG	0
017	303041	SPACER, PUSH BUTTON, SWITCH SHAFT	2
019	303103	FUSEHOLDER, PANEL MT SCHURTER FEU	1
020	303106	CARRIER, FUSE USA, BAG GREY 031.1666	1
021	303113	FUSE 3/8A BUSS AGC 3/8 OR EQUIV	1
023	400023	KNOB PUSH SW BLK CENTRALAB BL305/EQUIV	2
024	400014	LED BEZEL DWG 24205	1
025	400040	KNOB, SML, 6MM 36 TOOTH BLACK DWG 24627	2
026	450094	CHASSIS 2202 SCREENED DWG 24619	1
028	452503	JUMPER ZERO OHM .0	2
029	500102	SCREW MACH STL PHPNHD BLK 6-32X3/8	1
030	500107	SCREW SM STL AB PHP BLK OXIDE WAX 6X1/2	2
031	500117	SCREW MACH STL PHP SEMS CAD PL 6-32X1/4	3
033	500181	WASHER LKG STL INT STAR CAD PLATE NO. 6	1
036	500190	NUT KEP STL CAD PLATE 6-32	1
038	500194	NUT, J-CLIP SHEET METAL NO.6	0

REV.	DESCRIPTION	BY	DATE	APPROVED
A	ORIGINAL SCHEMATIC	RS	05/15/79	
B	PB TO PRINT RUN	CE	12/21/79	
C	PRINTED SCHEMATIC	CE	1/29/80	
D	UPDATED SCHEMATIC	CE	1/29/80	
E	RELEASED TO PRE PRODUCTION	KE	10/27/80	
F	1. LOADS 1, 3, 4, 5	JP	1/19/81	
G	APPROB UNIVERSAL REVIZ	DP	1/19/81	
H	PRIMARY CONN TO SH 1	CE	1/21/81	
I	INCOMP ELO 503	CE	2/25/81	
J	SEC CLJ 145	CE	3/16/81	
K	INCOMP ELO 520	CE	4/15/81	
L	RELEASED TO PRODUCTION	DP	5/17/81	



PCB 386

UNLESS OTHERWISE SPECIFIED		DIMENSION	UNLESS OTHERWISE SPECIFIED
1. DIMENSION TO CENTER UNLESS NOTED OTHERWISE	2. DIMENSION TO SURFACE UNLESS NOTED OTHERWISE	3. DIMENSION TO CENTER UNLESS NOTED OTHERWISE	4. DIMENSION TO SURFACE UNLESS NOTED OTHERWISE
5. DIMENSION TO CENTER UNLESS NOTED OTHERWISE	6. DIMENSION TO SURFACE UNLESS NOTED OTHERWISE	7. DIMENSION TO CENTER UNLESS NOTED OTHERWISE	8. DIMENSION TO SURFACE UNLESS NOTED OTHERWISE

CHECKED	DATE	BY	APPROVED
	10/27/80	KE	

RELEASE STATUS	REVISIONS	DATE	BY	APPROVED
	1	10/27/80	KE	
	2	12/21/79	CE	
	3	1/29/80	CE	
	4	1/29/80	CE	
	5	10/27/80	KE	
	6	1/19/81	JP	
	7	1/19/81	DP	
	8	1/21/81	CE	
	9	2/25/81	CE	
	10	3/16/81	CE	
	11	4/15/81	CE	
	12	5/17/81	DP	

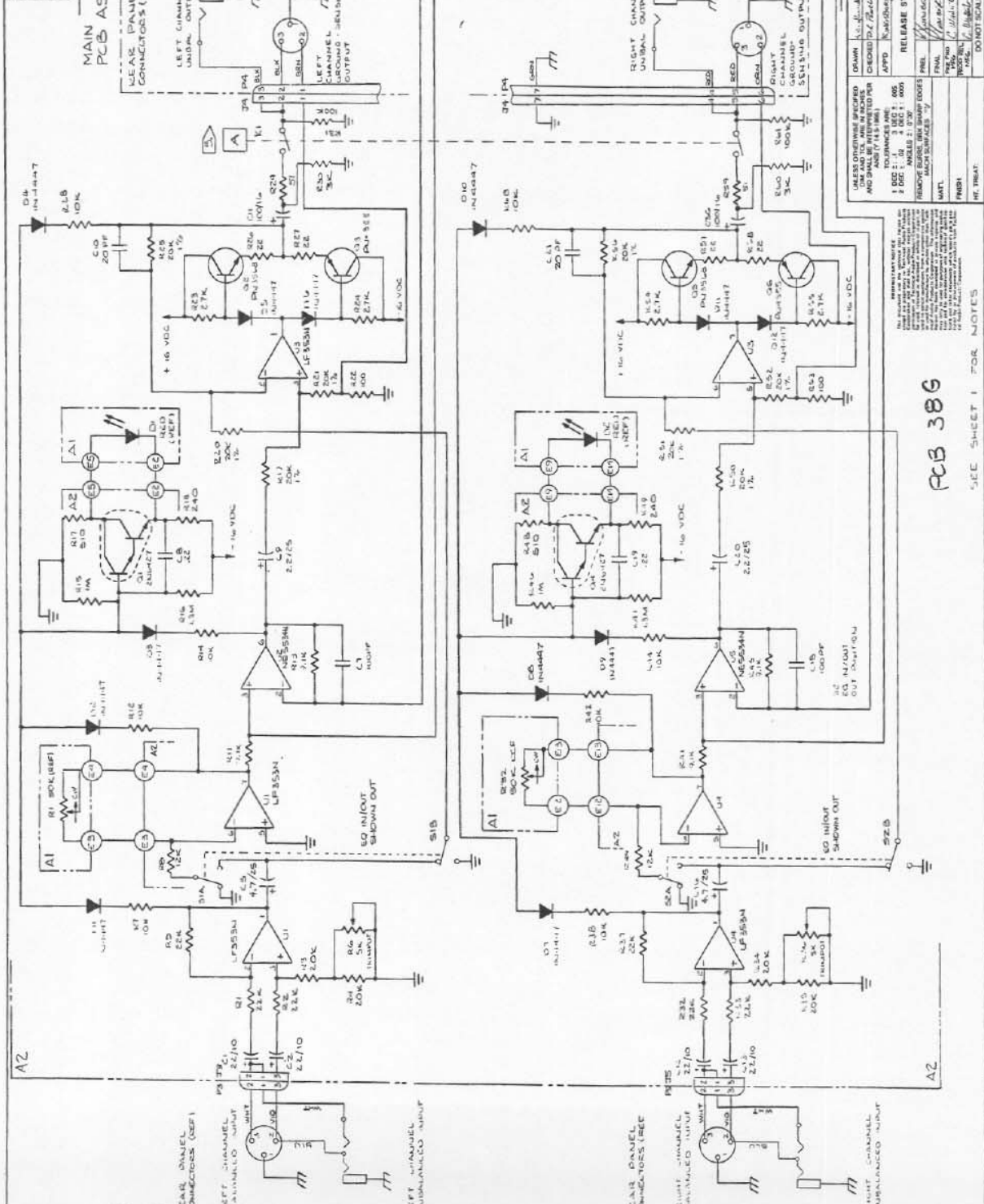
DO NOT SCALE DRAWING

SCALE: 1:1

PCB 386
Schematic Diagram
Main Board
C-201
PROJ DWG NO
REL 041135
REV -4
SHEET 1 OF 2

- NOTES:
1. UNLESS OTHERWISE SPECIFIED...
 2. DIMENSION TO SURFACE UNLESS NOTED OTHERWISE...
 3. DIMENSION TO CENTER UNLESS NOTED OTHERWISE...
 4. DIMENSION TO SURFACE UNLESS NOTED OTHERWISE...
 5. DIMENSION TO CENTER UNLESS NOTED OTHERWISE...
 6. DIMENSION TO SURFACE UNLESS NOTED OTHERWISE...
 7. DIMENSION TO CENTER UNLESS NOTED OTHERWISE...
 8. DIMENSION TO SURFACE UNLESS NOTED OTHERWISE...

REV	DESCRIPTION	BY	DATE	APPROVED
1	SEE SHEET 1 FOR DIMENSIONS	...	...	...
2	SEE TO PILOT RUN	...	...	...
3	RELEASED TO PRODUCTION	...	...	...



32-700560-A

TAPOD

SCHEMATIC DIAGRAM
MAIN BOARD
C-201

PROJ NO 24435
REV H

SCALE UNIT UNIT

DO NOT SCALE DIMS

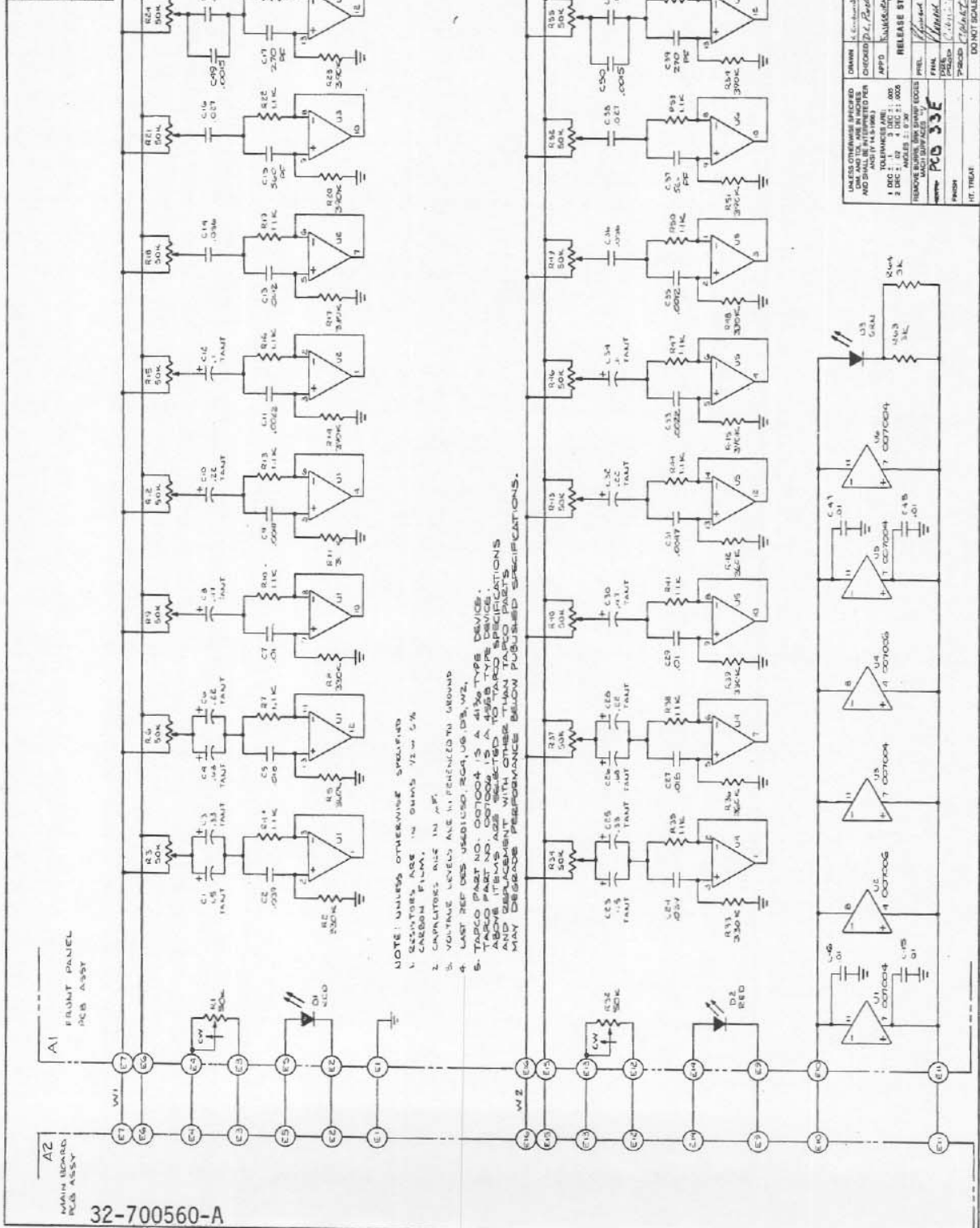
DATE: 1/17/76
DRAWN: [Name]
CHECKED: [Name]
APPD: [Name]
RELEASE STATUS: [Name]

REMOVE DIMENSIONS FROM DRAWING FOR MAT.
REMOVE DIMENSIONS FROM DRAWING FOR MAT.
REMOVE DIMENSIONS FROM DRAWING FOR MAT.

PCB 386

SEE SHEET 1 FOR NOTES

REVISIONS	
DATE	DESCRIPTION
25-02-84	REVISED SCHEMATIC
25-01-84	REL TO PILOT QUN
25-01-84	UPDATED SCHEMATIC
25-01-84	REL TO PRODUCTION
25-01-84	REL TO PRODUCTION
25-01-84	REL TO PRODUCTION



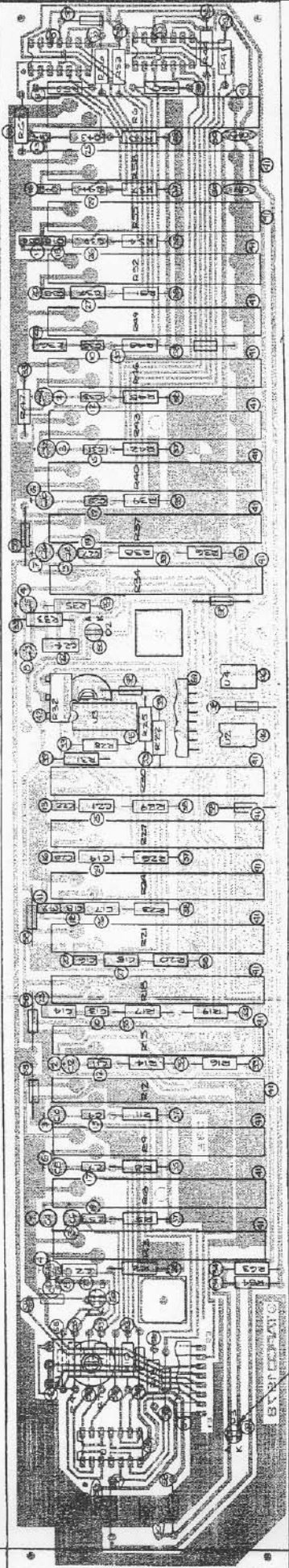
NOTE: UNLESS OTHERWISE SPECIFIED
 1. RESISTORS ARE IN OHMS UNLESS OTHERWISE SPECIFIED
 2. CAPACITORS ARE IN P.F.
 3. VOLTAGE LEVELS ARE IN PENELOPEN TO GROUND
 4. LAST REF DES USED: 0201004 IS A 4130 TYPE DEVICE.
 5. TAPCO PART NO. 0201004 IS A 4130 TYPE DEVICE.
 ABOVE PART NOS. ARE SUBJECT TO TAPCO SPECIFICATIONS
 UNLESS OTHERWISE SPECIFIED. TAPCO SPECIFICATIONS
 MAY DEGRADE PERFORMANCE BELOW PUBLISHED SPECIFICATIONS.

UNLESS OTHERWISE SPECIFIED
 ALL DIMENSIONS ARE IN INCHES
 1 DEC: 0.1 INCHES
 2 DEC: 0.05 INCHES
 3 DEC: 0.025 INCHES
 4 DEC: 0.0125 INCHES
 5 DEC: 0.00625 INCHES
 6 DEC: 0.003125 INCHES
 7 DEC: 0.0015625 INCHES
 8 DEC: 0.00078125 INCHES
 9 DEC: 0.000390625 INCHES
 10 DEC: 0.0001953125 INCHES
 11 DEC: 0.00009765625 INCHES
 12 DEC: 0.000048828125 INCHES
 13 DEC: 0.0000244140625 INCHES
 14 DEC: 0.00001220703125 INCHES
 15 DEC: 0.000006103515625 INCHES
 16 DEC: 0.0000030517578125 INCHES
 17 DEC: 0.00000152587890625 INCHES
 18 DEC: 0.000000762939453125 INCHES
 19 DEC: 0.0000003814697265625 INCHES
 20 DEC: 0.00000019073486328125 INCHES

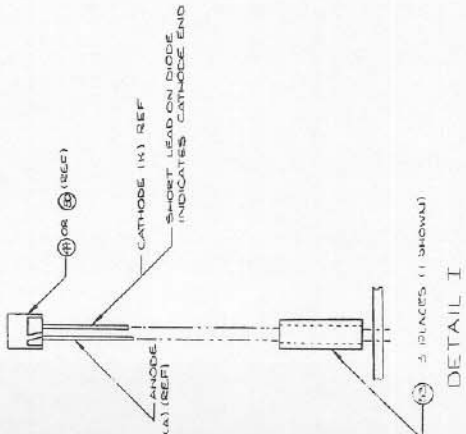
DATE	DESCRIPTION	BY	DATE	APPROVED
25-02-84	REVISED SCHEMATIC	RS	25-02-84	RS
25-01-84	REL TO PILOT QUN	RS	25-01-84	RS
25-01-84	UPDATED SCHEMATIC	RS	25-01-84	RS
25-01-84	REL TO PRODUCTION	RS	25-01-84	RS
25-01-84	REL TO PRODUCTION	RS	25-01-84	RS
25-01-84	REL TO PRODUCTION	RS	25-01-84	RS

DATE	DESCRIPTION	BY	DATE	APPROVED
25-02-84	REVISED SCHEMATIC	RS	25-02-84	RS
25-01-84	REL TO PILOT QUN	RS	25-01-84	RS
25-01-84	UPDATED SCHEMATIC	RS	25-01-84	RS
25-01-84	REL TO PRODUCTION	RS	25-01-84	RS
25-01-84	REL TO PRODUCTION	RS	25-01-84	RS
25-01-84	REL TO PRODUCTION	RS	25-01-84	RS

REVISIONS			
REV	DESCRIPTION	BY	DATE
A	INFORMED ECU 125	SE	11/16/66
B	RELEASED TO PRODUCTION	SE	12/1/66
C	SEE INT 1 FOR REVISIONS	CS	4/24/67
D	RELEASED TO PRODUCTION	DA	10/27/67



SEE DETAIL I
(3 PLACES
D1, 2, & 3)



PC 33E

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND DECIMALS ARE IN THOUSANDS TOLERANCES ARE: 1 DEC. ± .02 2 DEC. ± .01 3 DEC. ± .005 MACH. SURFACES .005		DRAWN: L.S. CHECKED: D.L. ZILAN APP'D: [Signature]	DATE: 7/10/66 REVISED: 10/25/66 REVISED: 11/17/66 REVISED: 12/1/66 REVISED: 4/24/67
REMOVE BUBBLES AND SHARP EDGES MATERIAL: 6061-T6 ALUMINUM FINISH: MIL-C-13100		RELEASE STATUS: 1-1	SCALE: 1:1
TAPCOB PCB ASSY FRONT PANEL C-201		PROD DWG NO: Z4504	REV: 12
UNIT MT		SCALE: 1:1	SHEET 2 OF 2

ASSEMBLY 800070 PCB ASSY, MAIN C-201

ITEM NO.	PART NUMBER	DESCRIPTION	TOTAL QTY REQUIRED
001	800070	PCB ASSY, MAIN 2201	DWG 24505 0
002	001208	CAP ELECT AL AX	22/10 5
004	001403	CAP ELECT AL AX	2.2/25 2
005	001405	CAP ELECT AL AX	4.7/25 2
006	001412	CAP ELECT,AL AX	100/25 2
007	001606	CAP ELECT AL AX	10/50 1
008	001620	CAP ELECT AL AX	470/50 2
009	002005	CAP TANT 20%	10/25 1
010	002022	CAP TANT 20%	1.5/35 2
012	003073	CAP MYLAR 10%	.1/50 1
013	003085	CAP MYLAR 10%	.22/50 2
017	004013	CAP CERAMIC 10%	20PF/50 2
018	004037	CAP CERAMIC 10%	100PF/50 2
019	004087	CAP CERAMIC 20%	0
022	005028	RES CF .5W 5%	22 4
023	005037	RES CF .5W 5%	51 2
024	005044	RES CF .5W 5%	100 3
025	005048	RES CF .5W 5%	150 1
026	005056	RES CF .5W 5%	360 2
027	005059	RES CF .5W 5%	430 2
029	005078	RES CF .5W 5%	2.7K 4
030	005079	RES CF .5W 5%	3.0K 4
031	005099	RES CF .5W 5%	20K 4
032	005091	RES CF .5W 5%	9.1K 4
033	005092	RES CF .5W 5%	10K 8
035	005094	RES CF .5W 5%	12K 2
036	005100	RES CF .5W 5%	22K 0
037	005140	RES CF .5W 5%	1.0M 2
038	005143	RES CF .5W 5%	1.3M 2
039	005116	RES CF .5W 5%	100K 2
040	005147	RES CF .5W 5%	6.8M 1
041	005412	POT PCB HUR TRIM U-260	5K 2
042	005601	RES MF .25W 1%	20K 8
044	006016	XISTOR SMALL SIGNAL PNP (FCHD)	PN4355 2
045	006017	XISTOR SMALL SIGNAL NPN (FCHD)	PN3568 2
046	006021	XISTOR NPN DARLINGTON	2N6427 3

049	007009	IC SINGLE OP-AMP (8 PIN DIP) NE 5534N	2
050	007010	IC DUAL OP-AMP (8 PIN DIP) LF 353N	3
051	007101	IC +15V REG TO-220 TI UA78M15KC	1
052	007151	IC -15V REG TO-220 TI UA79M15KC	1
055	008022	DIODE PWR 1A/100V OR 200V IN4002	6
056	008049	DIODE SIGNAL (ITT PREFERRED) 1N4447	12
058	300072	HDR .045 SQ PST STR 3 PIN AMP 640383-3	3
059	300076	HDR .045 SQ. PST STR 7 PIN AMP 640383-7	1
062	301023	SW PUSH ON-OFF VERT PCB DPDT CRIMP .093	2
063	301028	RELAY, .5A 24VDC DPST	1
065	304013	HEATSINK TO-220 THERMALLOY 6030P8	2
067	500592	NUT, HEX, KEP 4-40	2
068	451035	PCB, MAIN 2201 DWG 38	1
069	500070	SCREW MACH PH PHHD BLK 4-40X3/8	2
070	452503	JUMPER ZERO OHM .6	34
071	500905	THERMAL JOINT COMPOUND THERMACOTE NO 250	0

ASSEMBLY 800096 PCB ASSY MAIN C-201

ITEM NO.	PART NUMBER	DESCRIPTION	TOTAL QTY REQUIRED	
001	800096	PCB ASSY MAIN C-201	DWG 24505	0
002	001208	CAP ELECT AL AX	22/10	4
003	001350	CAP ELECT AL AX	100/16	2
004	001403	CAP ELECT AL AX	2.2/25	2
005	001405	CAP ELECT AL AX	4.7/25	2
006	001412	CAP ELECT AL AX	100/25	1
008	001620	CAP ELECT AL AX	470/50	2
009	002005	CAP TANT 20%	10/25	1
010	002022	CAP TANT 20%	1.5/35	2
012	003073	CAP MYLAR 10%	.1/50	1
013	003085	CAP MYLAR 10%	.22/50	2
017	004013	CAP CERAMIC 10%	20PF/50	2
018	004037	CAP CERAMIC 10%	100PF/50	2
019	004087	CAP CERAMIC 20%		6
022	005028	RES CF .5W 5%	22	4
023	005037	RES CF .5W 5%	51	2
024	005044	RES CF .5W 5%	100	3
025	005048	RES CF .5W 5%	150	1
026	005053	RES CF .5W 5%	240	2
027	005061	RES CF .5W 5%	510	2
029	005078	RES CF .5W 5%	2.7K	4
030	005079	RES CF .5W 5%	3.0K	4
031	005099	RES CF .5W 5%	20K	4
032	005091	RES CF .5W 5%	9.1K	4
033	005092	RES CF .5W 5%	10K	8
035	005094	RES CF .5W 5%	12K	2
036	005100	RES CF .5W 5%	22K	6
037	005140	RES CF .5W 5%	1.0M	2
038	005143	RES CF .5W 5%	1.3M	2
039	005116	RES CF .5W 5%	100K	4
040	005109	RES CF .5W 5%	51K	1
041	005412	POT PCB HOR TRIM U-260	5K	2
042	005601	RES MF .25W 1%	20K	8
044	006016	XISTOR SMALL SIGNAL PNP (FCHD)	PN4355	2
045	006017	XISTOR SMALL SIGNAL NPN (FCHD)	PN3568	2

046	006021	XISTOR NPN DARLINGTON	2N6427	3
049	007009	IC SINGLE OP-AMP (8 PIN DIP) NE 5534N		2
050	007010	IC DUAL OP-AMP (8 PIN DIP) LF 353N		3
051	007101	IC +15V REG TO-220 TI UA78M15KC		1
052	007151	IC -15V REG TO-220 TI UA79M15KC		1
054	008058	DIODE ZENER 15V 5%	1N5245B	1
055	008022	DIODE PWR 1A/100V OR 200V	1N4002	6
056	008049	DIODE SIGNAL (ITT PREFERRED)	1N4447	12
058	300072	HDR .045 SQ PST STR 3 PIN AMP 640383-3		3
058	300097	HDR .045 SQ PST STR 3 PIN W/LOCK AMP		3
059	300076	HDR .045 SQ. PST STR 7 PIN AMP 640383-7		1
062	301023	SW PUSH ON-OFF VERT PCB DPDT CRIMP .093		2
063	301028	RELAY, .5A 24VDC DPST		1
065	304013	HEATSINK TO-220 THERMALLOY 6030PB		2
067	500592	NUT, HEX, KEP 4-40		2
068	451067	PCB MAIN C-201	DWG 38	1
069	500070	SCREW MACH PH PNHD BLK 4-40X3/8		2
070	452503	JUMPER ZERO OHM	.6	33
071	500905	THERMAL JOINT COMPOUND THERMACOTE NU 250		6

ASSEMBLY 800097 PCB ASSY FRONT PANEL C201

ITEM NO.	PART NUMBER	D E S C R I P T I O N	TOTAL QTY REQUIRED
001	800097	PCB ASSY FRONT PANEL C-201	DWG 24504 0
002	002004	CAP TANT 10%	.10/35 2
003	002008	CAP TANT 10%	.22/35 4
004	002010	CAP TANT 10%	.33/35 2
006	002013	CAP TANT 10%	.47/35 2
007	002015	CAP TANT 10%	.68/35 2
008	002021	CAP TANT 10%	1.5/35 2
010	003002	CAP MYLAR 10%	.0012/50 2
011	003007	CAP MYLAR 10%	.0015/50 2
012	003013	CAP MYLAR 10%	.0022/50 2
013	003019	CAP MYLAR 10%	.0033/50 2
015	003025	CAP MYLAR 10%	.0047/50 2
016	003030	CAP MYLAR 10%	.0068/50 2
017	003037	CAP MYLAR 10%	.01/50 2
018	003040	CAP MYLAR 10%	.012/50 2
019	003044	CAP MYLAR 10%	.018/100 2
020	003052	CAP MYLAR 10%	.027/50 2
022	003058	CAP MYLAR 10%	.039/50 2
023	003065	CAP MYLAR 10%	.056/50 2
025	004030	CAP CERAMIC 10%	68PF/50 2
026	004044	CAP CERAMIC 10%	270PF/100 2
027	004055	CAP CERAMIC 10%	560PF/50 2
029	004080	CAP CERAMIC 10%	150PF/100 2
030	004087	CAP CERAMIC 20%	4
033	005069	RES CF .5W 5%	1.1K 20
034	005079	RES CF .5W 5%	3.0K 2
035	005128	RES CF .5W 5%	330K 6
037	005129	RES CF .5W 5%	360K 6
038	005130	RES CF .5W 5%	390K 8
041	005445	POT 1.750 SLIDE 50K SPECIAL TAPER 20%	20
042	005443	POT 16MM HORZ PCB 50K K CNTR DET	2
045	007004	IC QUAD OP AMP TESTED	4136 4
046	007006	IC DUAL OP-AMP (3 PIN DIP) TESTED	4558 2
049	008052	DIODE, LED RECTANGULAR GREEN HLMP-0500	1
050	008053	DIODE, LED RECTANGULAR RED HLMP-0300	2

053	303029	SPACER, LED 6001/6201	DWG 24254	5
055	451068	PCB FRONT PANEL C-201	DWG 33	1
058	452503	JUMPER ZERO OHM	.6	18
059	454105	JUMPER RIB CAB 8-COND 5.0		2