



FUN GAMES INC.

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INFORMATION SHEET

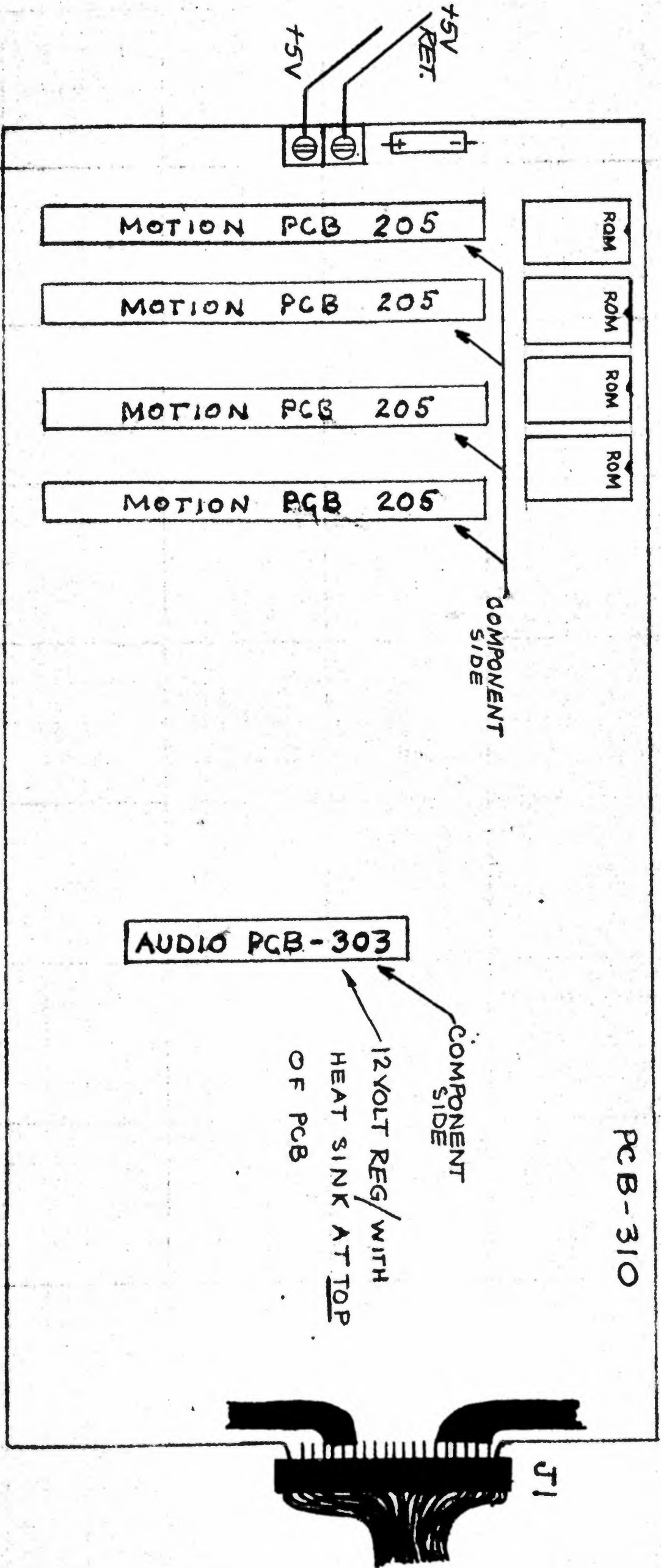
REFERENCE: 4-PLAYER BI-PLANE COLOR VIDEO GAME

SUBJECT: INSTRUCTION NOTES FOR THE INSERTION AND PLACEMENT OF THE MOTION (NO. 205) PCB'S (4 ea.), THE AUDIO/COIN COUNTER (NO. 303) PCB, AND FOR THE PROPER CONNECTOR ALIGNMENT WITH THE AUDIO/COIN PCB, THE MAIN LOGIC PCB (NO. 310), AND THE VIDEO PCB (NO. 309).

NOTE I. FOR PROPER CONNECTOR ALIGNMENT WITH THE PCB'S MATCH THE COLOR DOT ON THE CONNECTOR BODY WITH THE COLOR DOT ON THE PCB.

NOTE II. THE MAIN LOGIC PCB IS SECURED HORIZONTALLY IN THE CARD CAGE ASSEMBLY. THE MOTION (NO. 205) PCB'S AND THE AUDIO/COIN (NO. 303) PCB ARE POSITIONED VERTICALLY IN EDGE CONNECTORS ON THE MAIN LOGIC (NO. 310) PCB. (SEE LAYOUT SHEET)

NOTE III. WHEN VIEWED FROM THE REAR OF THE CABINET ALL COMPONENTS ON THE MOTION PCB'S AND THE AUDIO/COIN PCB MUST FACE TO THE RIGHT SIDE OF THE CABINET. WITH REFERENCE TO THE AUDIO/COIN PCB, THE 12v REGULATOR WITH HEAT SINK WILL BE POSITIONED AT THE TOP WHEN THIS PCB IS PROPERLY INSERTED.



REAR OF CABINET



INSTALLATION:

1. Open back of game and unpack P.C. Boards.
2. Insert four motion boards (#305) in four sockets located at the left side of main logic board (#310). Make sure components on motion boards are all facing towards center of main board.
3. Insert audio/coin board (#303) in remaining socket on the main logic board. The unkeyed end of the audio board should be installed in the main logic board. The keyed end should be connected to the harness by the dangling connector. The audio/coin board components should face in the same direction as motion board components.
4. When all boards are seated firmly and main logic board connector is attached, flip down apparatus to secure and space P.C. Boards.

OPERATOR ADJUSTABLE CONTROLS.

Game Time Pot: Audio/coin board - Location A-6
 Volume Pot 1: " " " - Location C-11
 Volume Pot 2: " " " - Location C-11
 Antenna Sense Pot: " " " - Location A-11

Turning the antenna sense pot clockwise increases circuits sensitivity to static discharge.

Note: Following controls are factory adjusted.

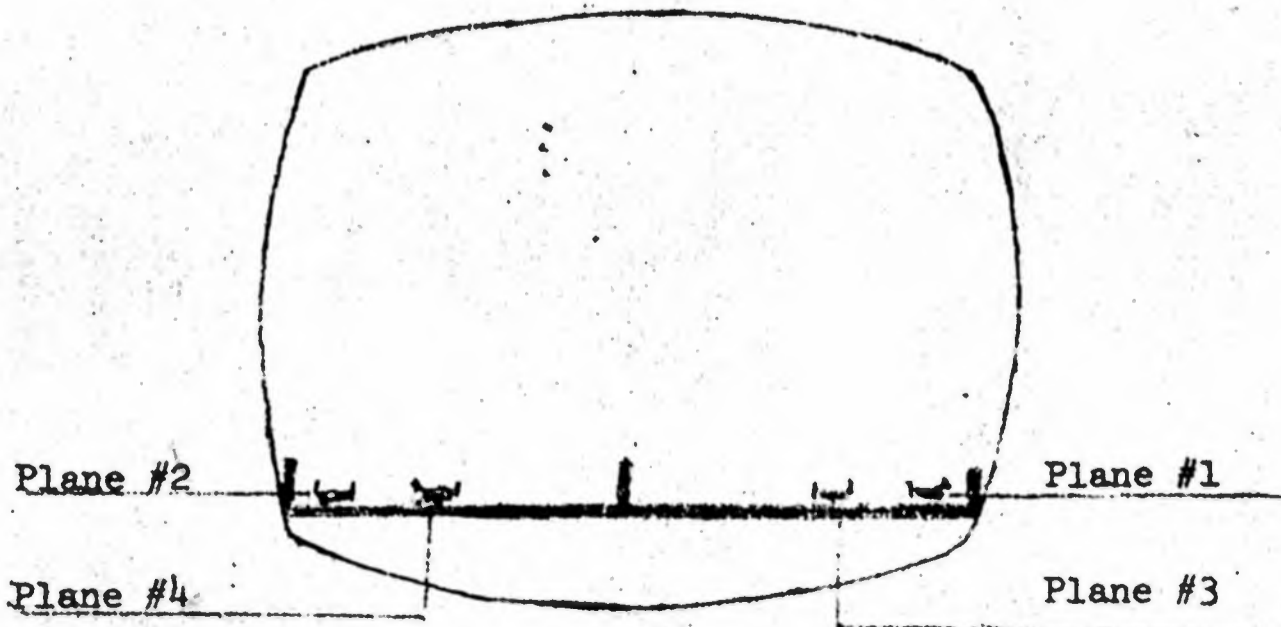
Audio Board			Location	
Pitch 1	- Controls	pitch of plane	#1	E-4
Pitch 2	- "	pitch of plane	#2	F-4
Pitch 3	- "	pitch of plane	#3	E-7
Pitch 4	- "	pitch of plane	#4	F-7
Tone 1	- Controls	tone of plane	#1	E-5
Tone 2	- "	tone of plane	#2	F-5
Tone 3	- "	tone of plane	#3	E-8
Tone 4	- "	tone of plane	#4	F-8

Main Logic Board:

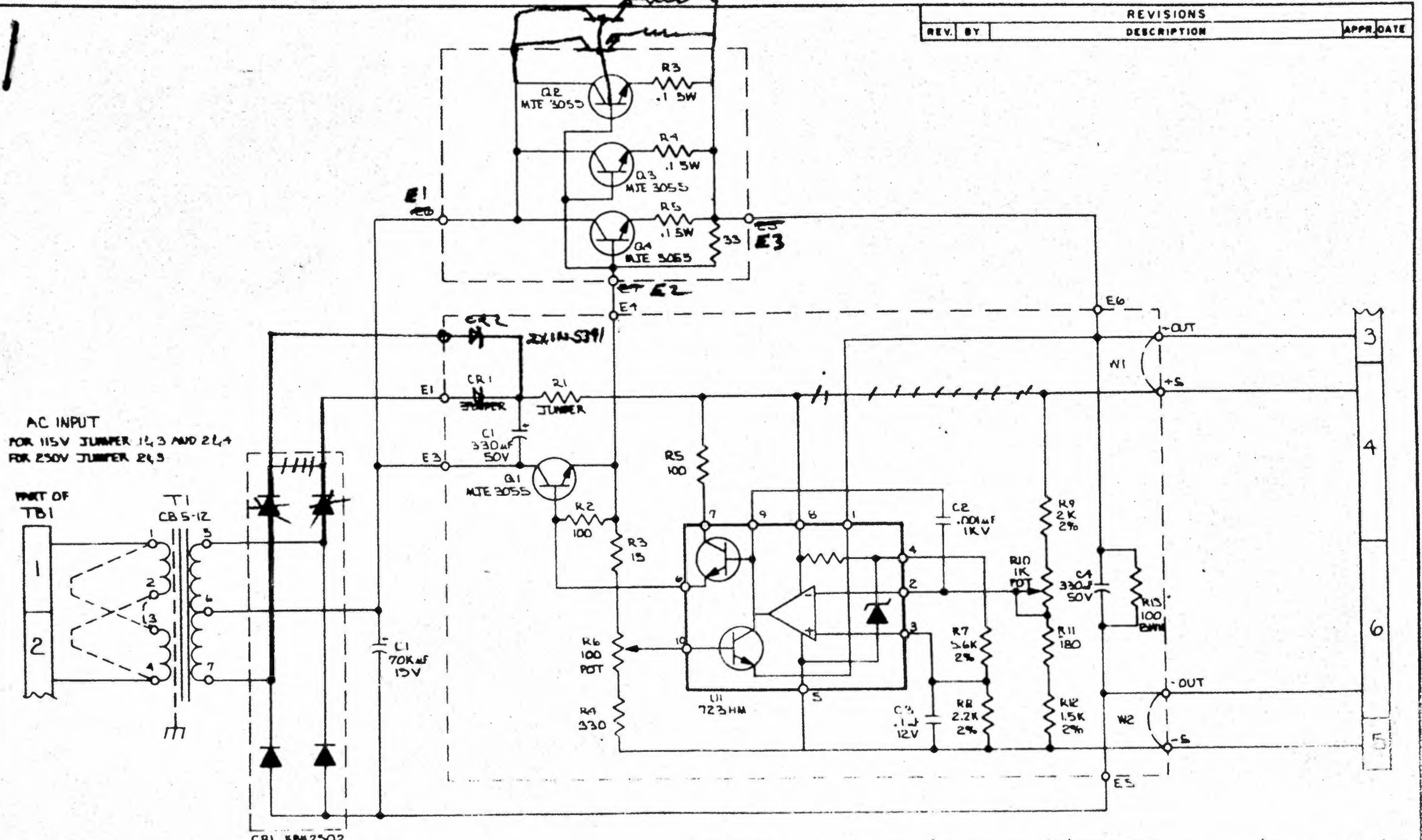
							Location
Range control #1	- Controls	shell range for plane #1.	#1.	G-1	(left)		
Range control #2	- "	" " " " "	#2.	G-1	(right)		
Range control #3	- "	" " " " "	#3	G-8	(left)		
Range control #4	- "	" " " " "	#4	G-8	(right)		

INTERNATIONAL REVISIONS:

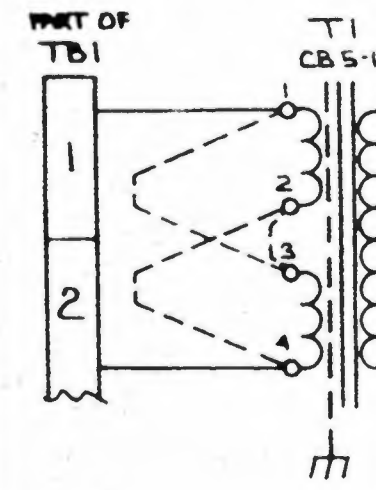
1. A jumper installed at location A-2 (next to 1K resistor) would cause unit to require two coins per player.
2. To prepare unit for 50 cycle use remove 4.7 ohm resistor in location I-5 (main logic board #310).



REV. BY		REVISIONS	APPR. DATE
		DESCRIPTION	



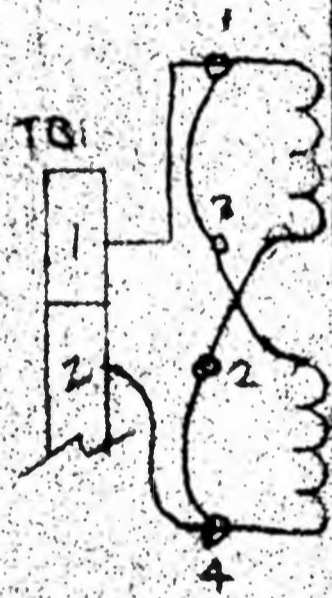
AC INPUT
 FOR 115V JUMPER 2,3 AND 2,4
 FOR 250V JUMPER 2,5



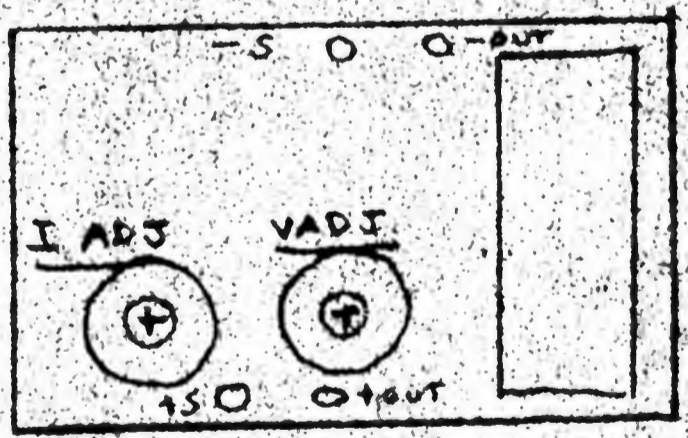
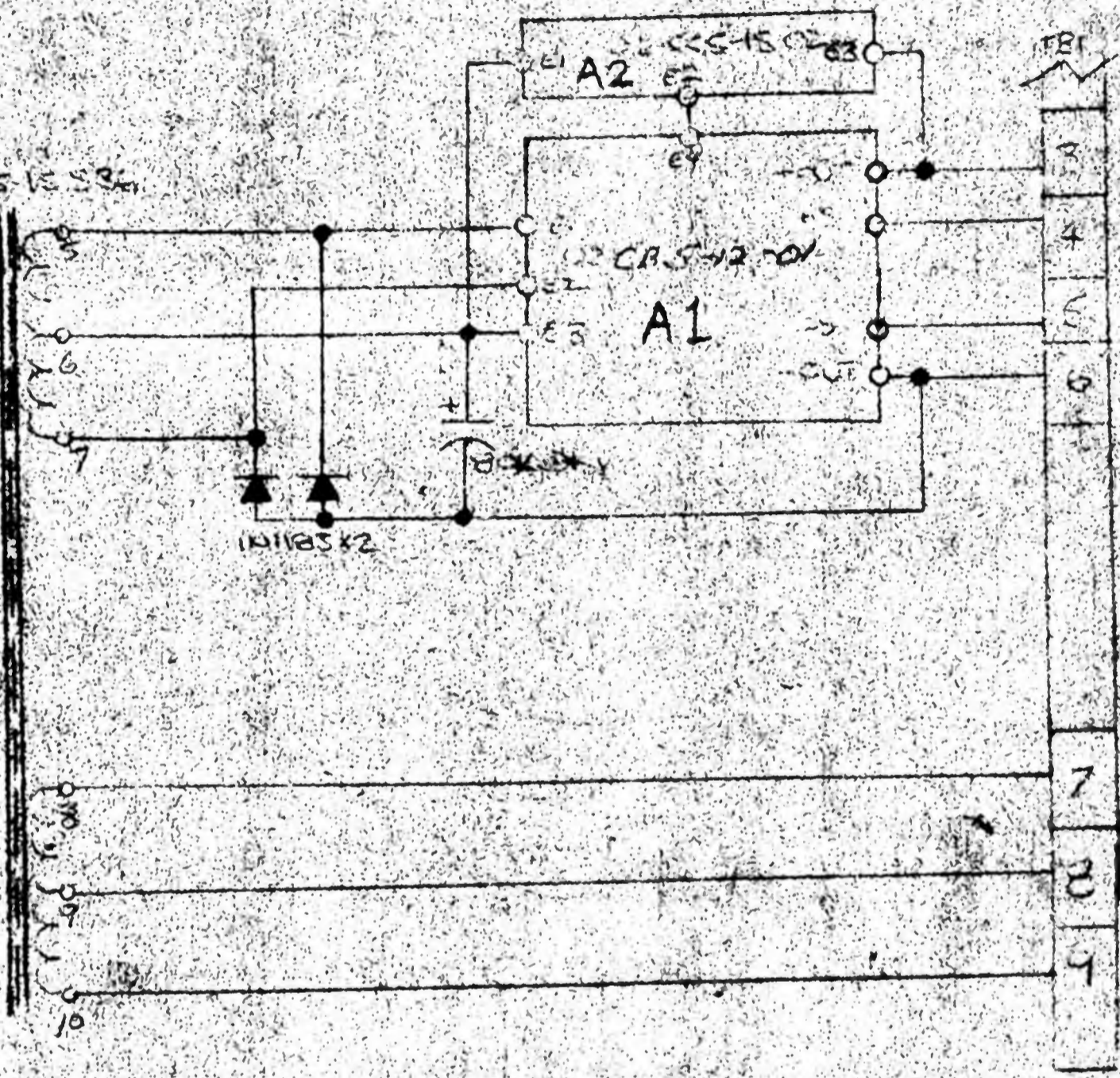
3. R10 IS VOLTAGE ADJ
 2. R6 IS CURRENT LIMIT ADJ
 1. RESISTORS ARE IN OHMS, 1/2W ±5%
 NOTES: UNLESS OTHERWISE SPECIFIED

QTY REQ'D	DESCRIPTION	PART NO	MATERIAL	MANUFACTURER	TEC NO
LIST OF MATERIAL					
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	SIGNATURES		DATES	
	TOLERANCES	DWN	I MEHL	9 30 75	
	FRAC DEC ANOLES	CHK			
	1/32 XX 2 02 1 1/2	DSGN	I MEHL	9 30 75	
	XXX 2 010	ENGR			
		APPR	<i>[Signature]</i>	10 21 75	
	MATERIAL	PROPRIETARY NOTICE		TITLE	
		ALL PATENT OR OTHER PROPRIETARY RIGHTS PERTAINING TO THE DESIGN HEREIN SHOWN SHALL REMAIN THE PROPERTY OF CUSTOM POWER INC. NO COPY OR REPRODUCTION SHALL BE MADE OR USED FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF CUSTOM POWER INC.		CUSTOM POWER INC. Orange, California	
	FINISH			SCHEMATIC CB 5THRU12B-12/5 SERIES 5V @ 12A	
NEXT ASSY	USED ON	CODE IDENT	SIZE	DWG NO	
APPLICATION	QTYREQD	C	C	04-CB5/28-12/5	
		SCALE:	WEIGHT:	SHEET	1 OF 1

T1 - 10-005-15-536



CONNECTED FOR 115V AC INPUT

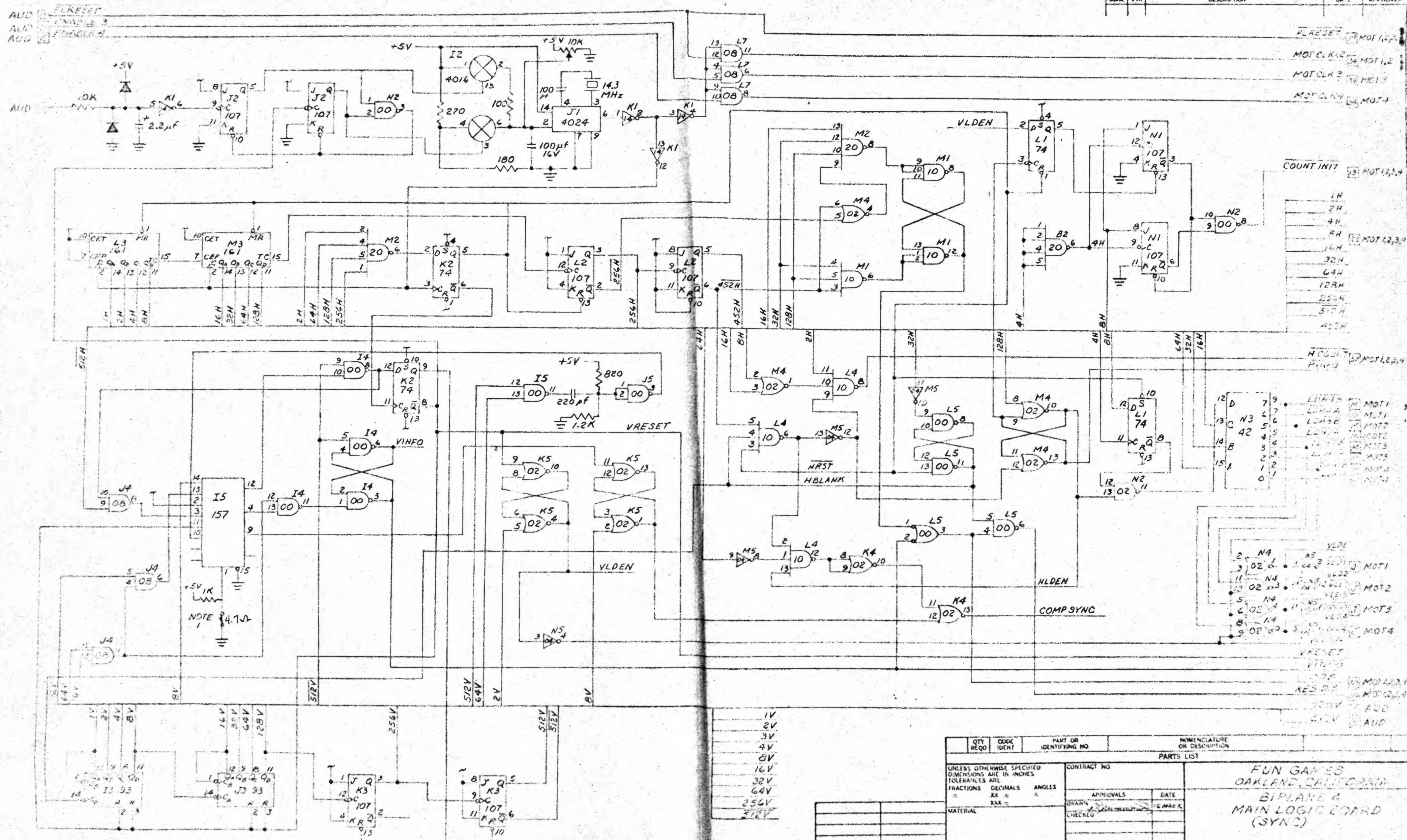


A1

SCHEMATIC - POWER SUPPLY

CODE IDENT	536	SER	A
DRAWING NUMBER	04-005-15-536	REV	B
DATE	1/10/66		

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE



COUNT INIT

1H	MOT1,2,3,4
2H	
4H	
8H	MOT1,2,3,4
16H	
32H	
64H	
128H	
256H	
512H	
1024H	

HRST

D	7	9	L1	MOT1
N3	6	6	L2	MOT1
C	5	5	L3	MOT2
42	4	4	L4	MOT2
B	3	3	L5	MOT3
8	2	2	L6	MOT3
15	1	1	L7	MOT4
A	0	0	L8	MOT4

VLDEN

2	N4	10	MOT1
3	O2	10	MOT1
11	N4	10	MOT2
12	O2	10	MOT2
5	N4	10	MOT3
6	O2	10	MOT3
8	N4	10	MOT4
9	O2	10	MOT4

- 1V
- 2V
- 3V
- 4V
- 8V
- 16V
- 32V
- 64V
- 256V
- 512V

NOTE 1: ADD JUMPER TO GND FOR 50 HZ OPERATION

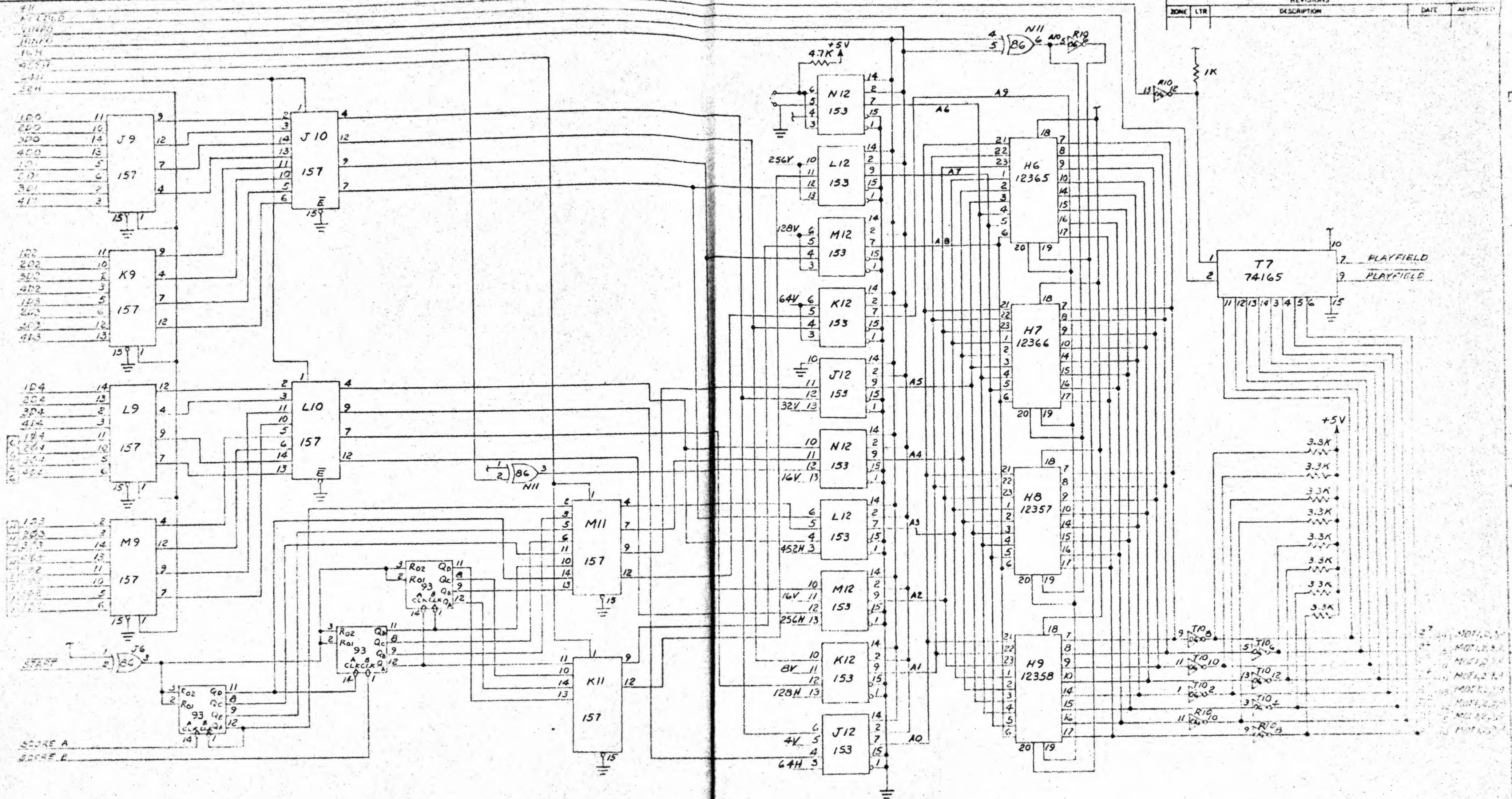
QTY REQD	CODE IDENT	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES		CONTRACT NO.	
MATERIAL		APPROVALS DATE	
FINISH		DRAWN CHECKED	
NEXT ASSY USED ON		SCALE	
APPLICATION		DO NOT SCALE DRAWING	

FUN GAMES
OAKLAND, CALIFORNIA

BIPLANE 4
MAIN LOGIC BOARD
(SYNC)

SIZE	CODE IDENT NO	DRAWING NO
D		310

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE



- MOT 1
- MOT 2
- MOT 3
- MOT 4

- MOT 1
- MOT 2
- MOT 3
- MOT 4

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES ± .XX ± .XXX ± °		CONTRACT NO.	FUN GAMES OAKLAND, CALIFORNIA
MATERIAL		APPROVALS	DATE
FINISH		CHECKED	5-7-76
SIZE	CODE IDENT NO.	DRAWING NO.	310
SCALE	DO NOT SCALE DRAWING		

REVISEMENTS		DATE	APPROVED
ZONE	LTR	DESCRIPTION	

J1 (6) FIRE SWITCH 1

ATTRACT
VINFO
PLAYFIELD
SHELL 1

J1 (6) FIRE SWITCH 2

SHELL 2
FIRE SWITCH 3
SHELL 3

J1 (6) FIRE SWITCH 4

SHELL 4

PLANE 2
PLANE 3
PLANE 4

PLANE 1

VREST B

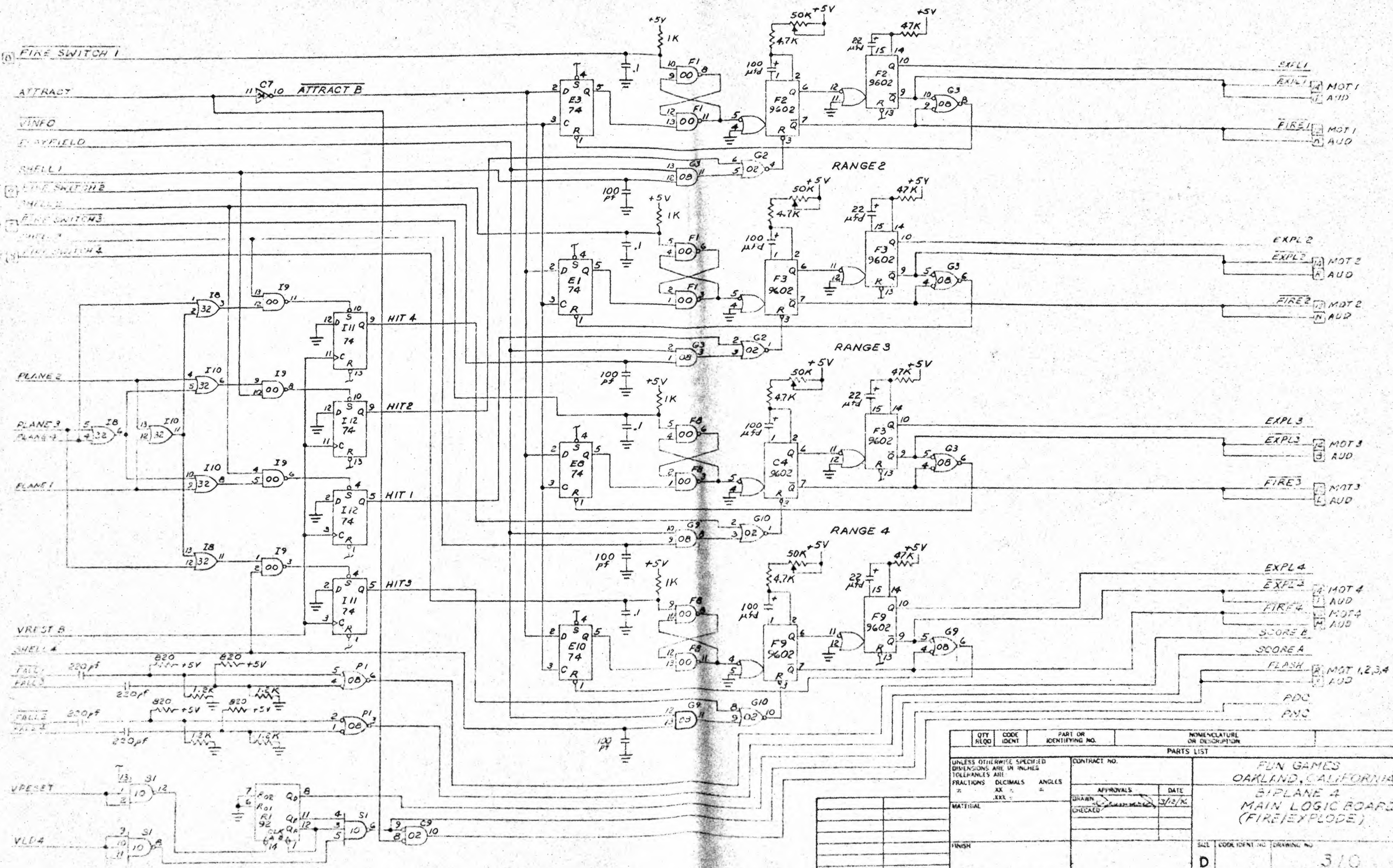
SHELL 4

FALL 1
FALL 2

FALL 2
FALL 3

VRESET

VLD 4

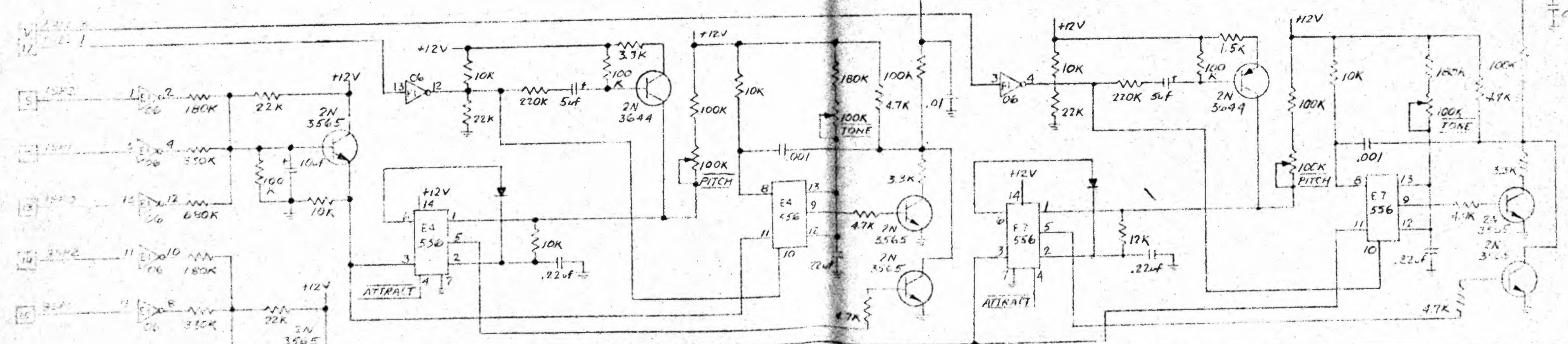
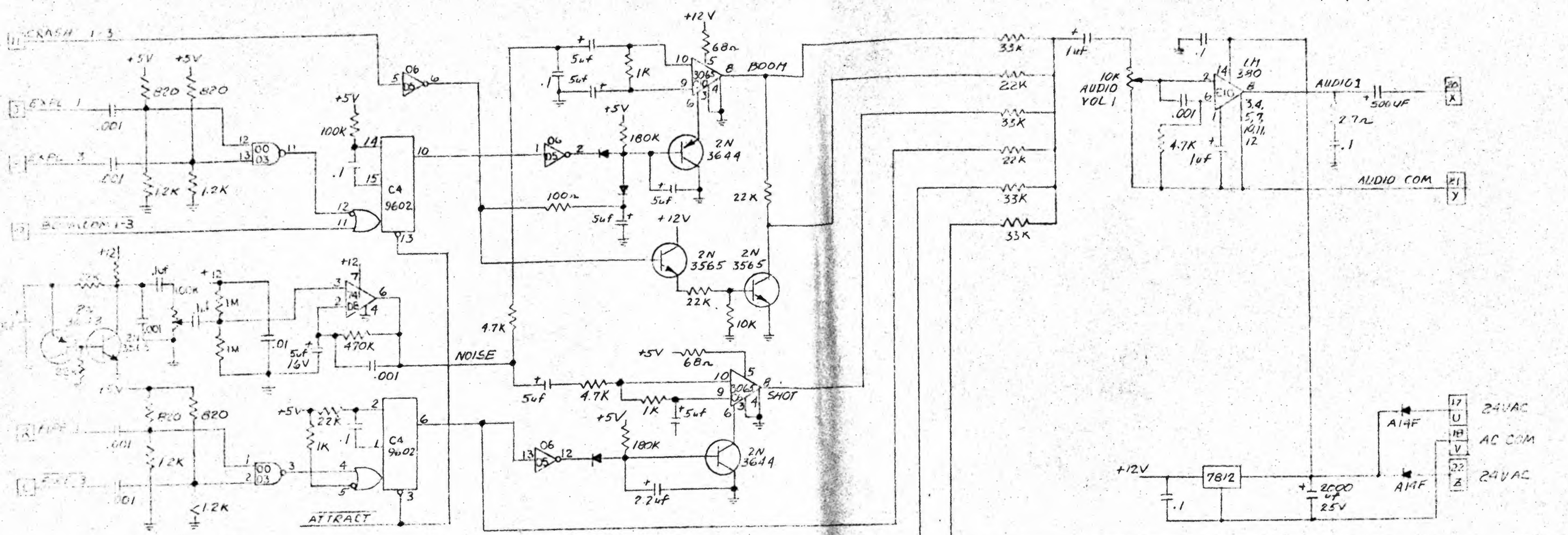


QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
			EXPL 1
			EXPL 1
			MOT 1
			AUD
			FIRE 1
			MOT 1
			AUD
			EXPL 2
			EXPL 2
			MOT 2
			AUD
			FIRE 2
			MOT 2
			AUD
			EXPL 3
			EXPL 3
			MOT 3
			AUD
			FIRE 3
			MOT 3
			AUD
			EXPL 4
			EXPL 4
			MOT 4
			AUD
			FIRE 4
			MOT 4
			AUD
			SCORE B
			SCORE A
			FLASH
			MOT 1,2,3,4
			AUD
			ADC
			PNC

PARTS LIST		CONTRACT NO.	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES .XX .XXX		APPROVALS	
DRAWN		DATE	
CHECKED			
MATERIAL			
FINISH			
NEXT ASSY		USED ON	
APPLICATION		DO NOT SCALE DRAWING	

FUN GAMES		OAKLAND, CALIFORNIA	
BIPLANE 4		MAIN LOGIC BOARD	
(FIRE/EXPLODE)		SCALE	
D		3/10	

REVISIONS			
ZONE	DESCRIPTION	DATE	APPROVED

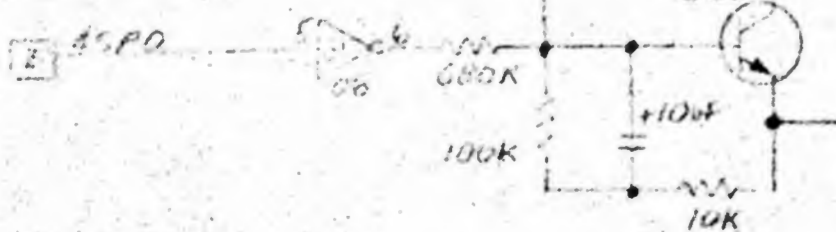
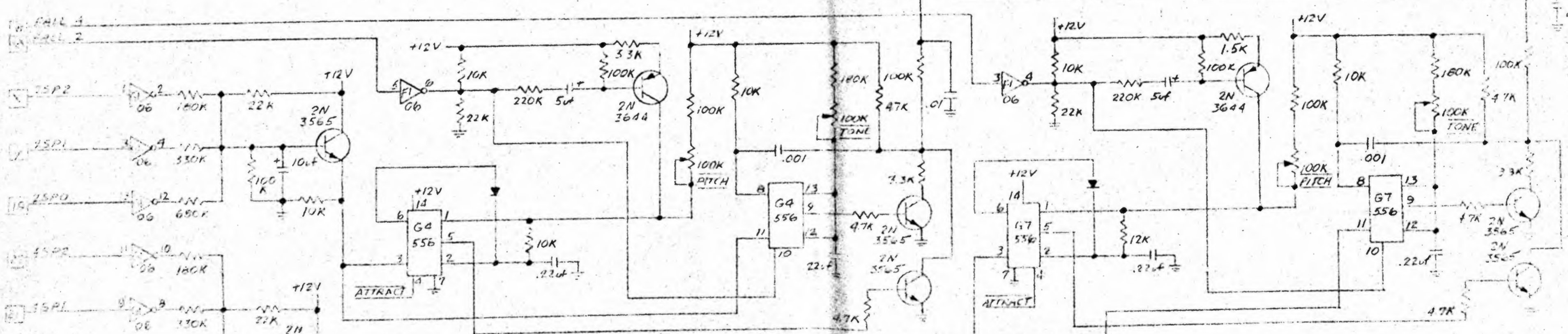
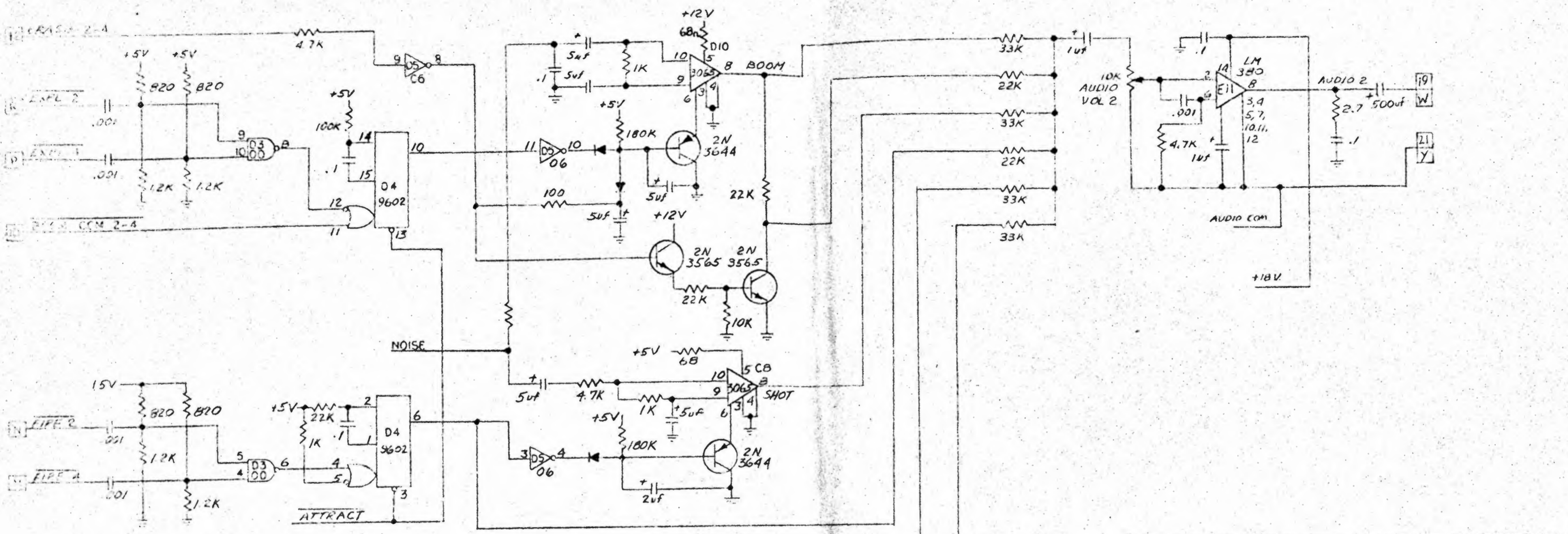


QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES		CONTRACT NO	
MATERIAL		APPROVALS DATE	
FINISH		DRAWN 5/14/76	
NEXT ASSY USED ON APPLICATION		CHECKED	
DO NOT SCALE DRAWING		DATE 5/14/76	
		SIZE CODE IDENT NO DRAWING NO	
		D 303	
		SCALE ~	

FUN GAMES
OAKLAND, CALIFORNIA
BIPLANE
AUDIO BOARD

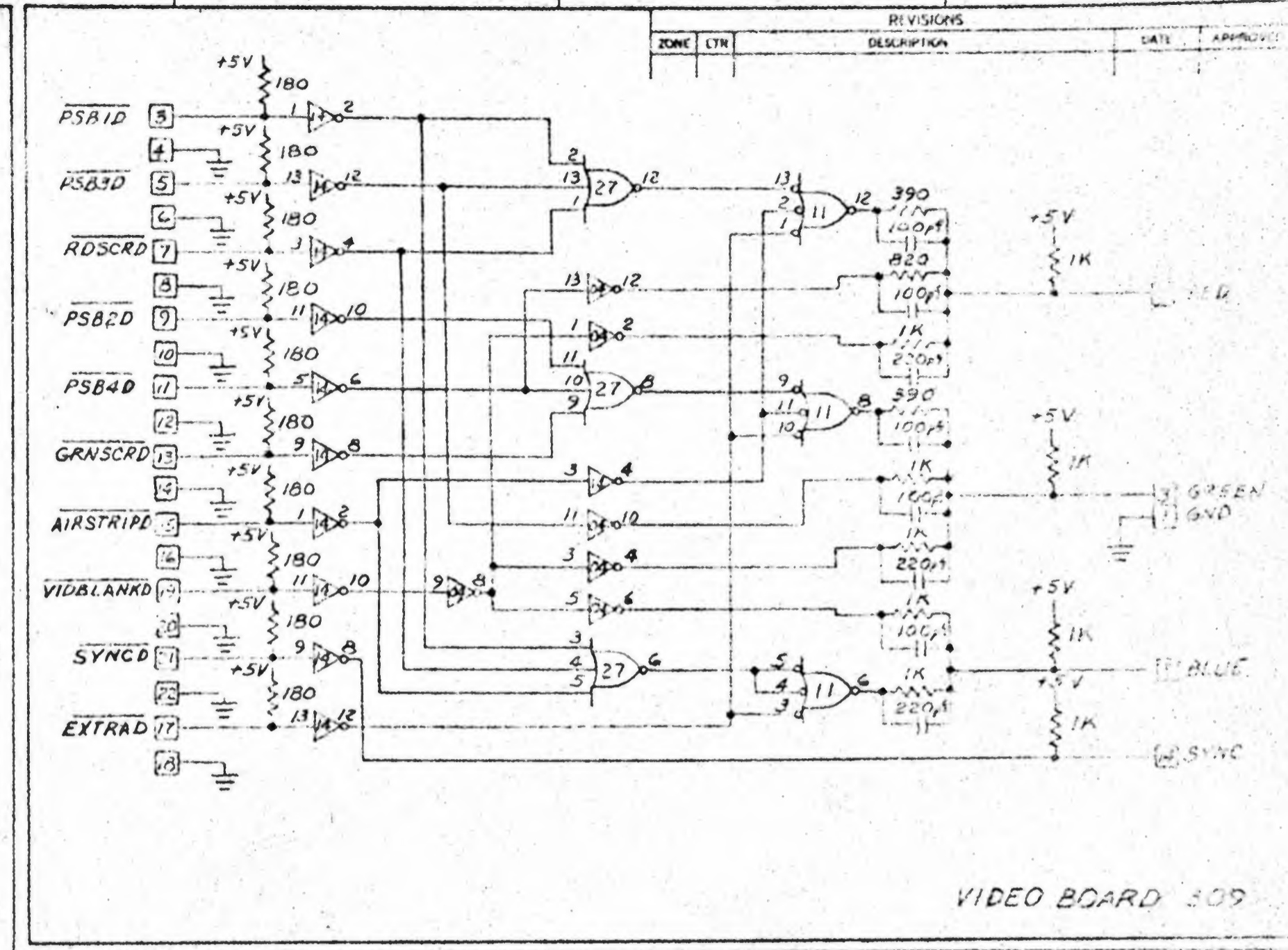
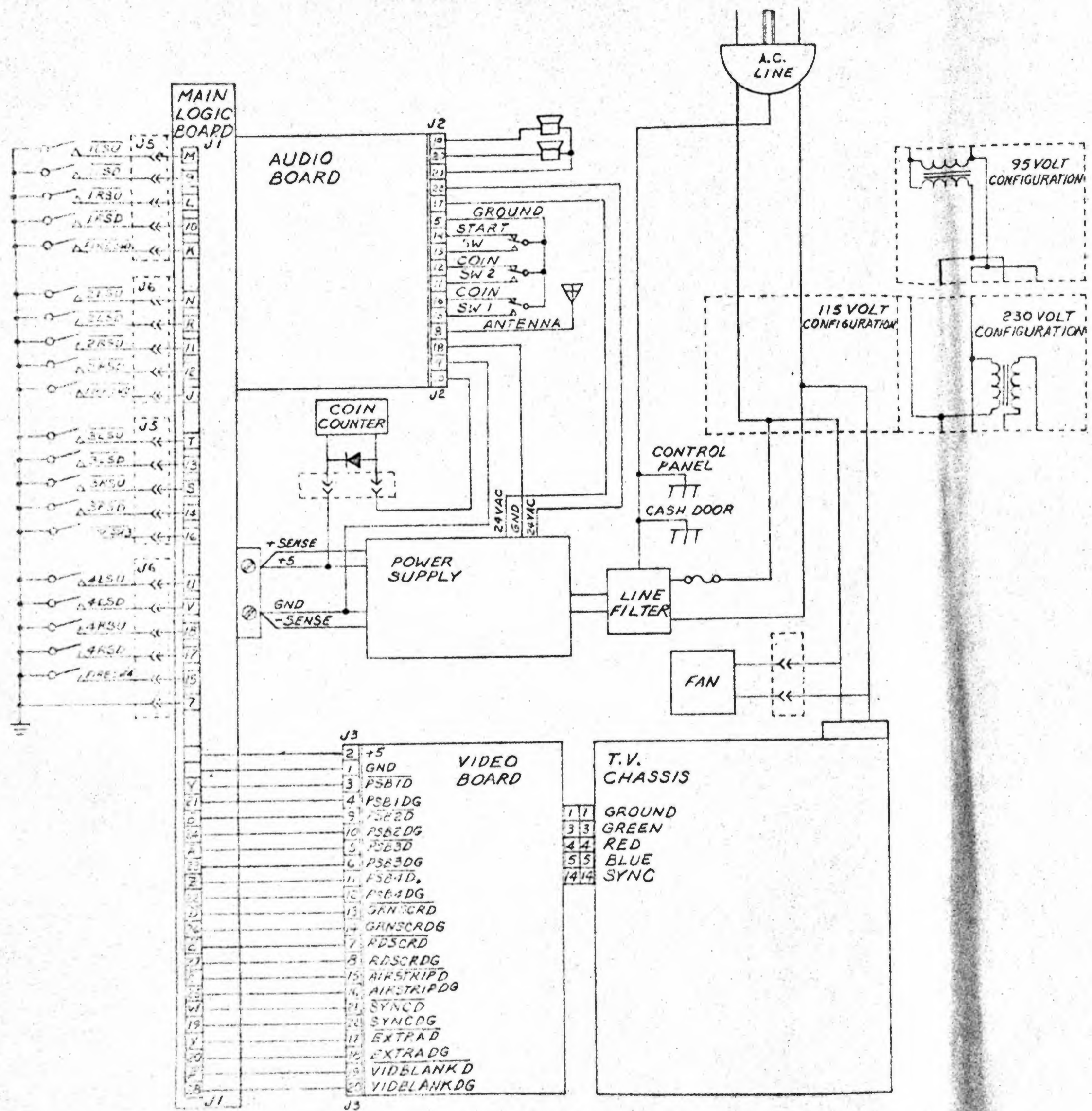
303

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE



2. ALL RESISTORS ARE IN OHMS
 1/4 W, 5%, CC
 1. ALL DIODES ARE IN 914
 NOTE: UNLESS OTHERWISE NOTED

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOL HANCES ARE FRACTIONS		CONTRACT NO.	
DECIMALS		APPROVALS	
ANGLES		DATE	
XXX		DRAWN	
MATERIAL		CHECKED	
FINISH		DATE	
NEXT ASSY		USED ON	
APPLICATION		DO NOT SCALE DRAWING	
D		303	



QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES		CONTRACT NO.	FUN GAMES OAKLAND, CALIFORNIA B. PLANE'S INTERCONNECTIONS AND VIDEO BOARD
MATERIAL		APPROVALS DATE DRAWN CHECKED	
FINISH		SIZE	DATE SENT NO. DRAWING NO.
NEXT ASSY	USED ON	SCALE	309
APPLICATION			DO NOT SCALE DRAWING