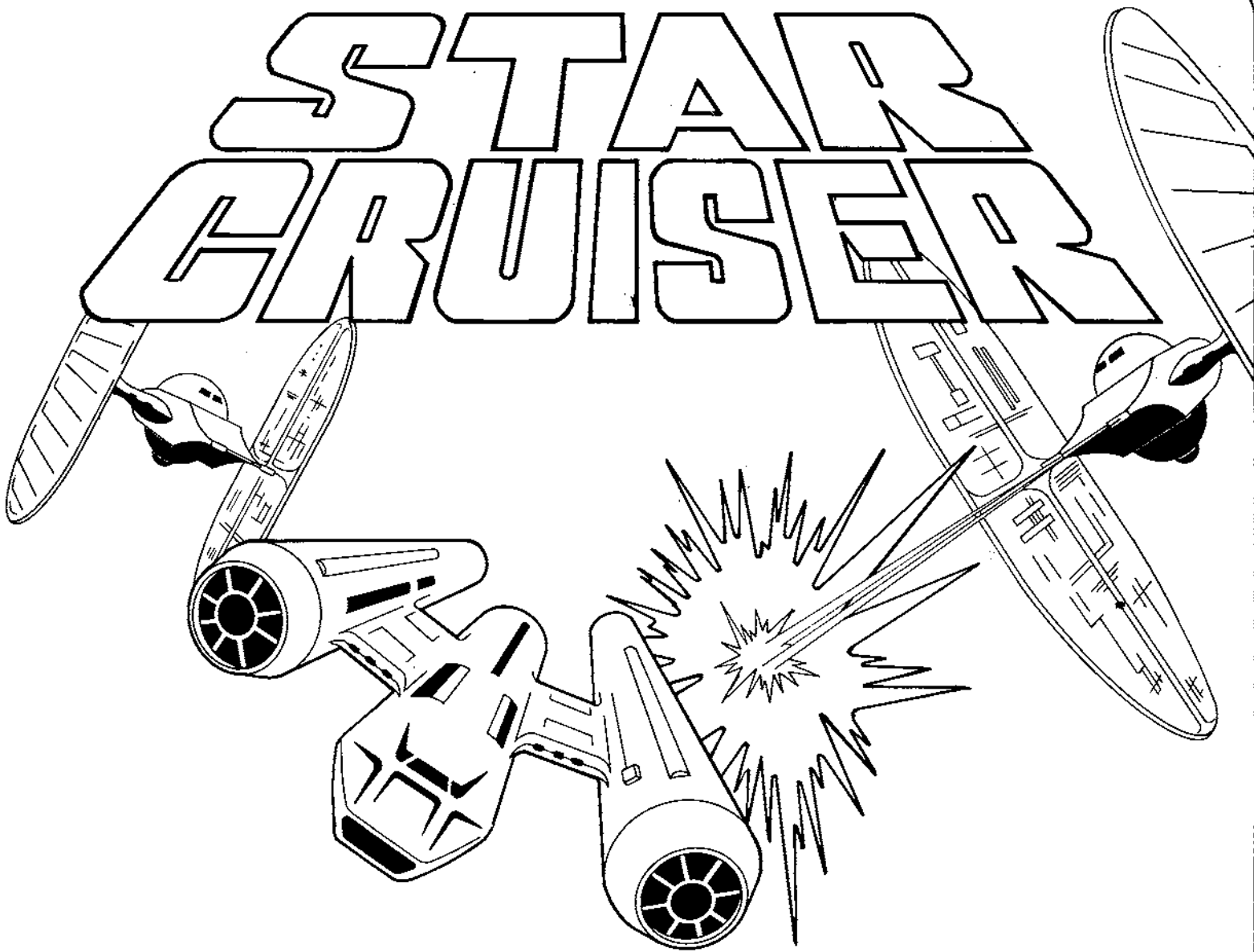


STAR CRUISER



OPERATOR'S MANUAL

SALES AND
SERVICE
(800) 538-1733

framtek
Our Experience Shows
292 COMMERCIAL ST.
SUNNYVALE, CA 94686

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1. INTRODUCTION

Star Cruiser is another Ramtek Amusement Device which is engineered to provide the highest degree of reliability using the most advanced techniques available. All solid-state circuitry ensures years of dependable service.

Star Cruiser is a two-player driving/shooting game where players use heavy cast aluminum steering wheels and aluminum pedals to control starships. The object of the game is to avoid being hit by your opponent's torpedoes and phasers while you try to hit his star cruiser.

Exciting firing and explosion sounds accompany the sound of the vehicles to provide a dynamic audio presentation.

2. GAME OPERATION

While the Star Cruiser game is not coined, it displays an attract mode which consists of two star cruisers moving across the screen.

An actual game begins when players insert one or two coins (operator adjustable to work on one or two coins per play).

The star cruisers are now positioned at the upper left and lower right corners of the screen. Turning the steering wheel to the left rotates the star cruiser to the left, and to the right rotates the star cruiser to the right.

Actuating the foot pedal causes the ship to move forward accompanied by a "whooshing" sound. The ships can exit the screen only to reappear on the opposite side. The players can fire at their opponent by depressing a switch on the right-hand side of the steering wheel. As long as the switch is depressed, the phaser continues in motion, wrapping around the screen and re-entering on the other side. Releasing the switch causes the phaser to explode. A switch on the left side of the steering wheels actuates the steerable torpedo. The torpedo is steered by turning the steering wheel. When a torpedo is in motion, the steering wheel does not actuate the star cruiser. Only one torpedo or phaser may be in motion for each player at one time. A hit on an opponent's ship scores one point. The score for each player is displayed on the upper portion of the screen. The score does not appear when a torpedo or phaser is in motion. The game is over when one player reaches a score of seven (7) or the set time is exceeded (operator adjustable for 60, 90, 120 or 150 seconds). A light indicates the game is over. The score is displayed then the game goes back into the attract mode.

3. INSTALLATION

Any shipping container that appears damaged should be unpacked with the Carrier Agent present. Carefully inspect the unit for

external damage, then remove the back cover and inspect for internal damage. If any damage is found, notify the Carrier and Ramtek Corporation immediately. Retain containers for Carrier inspection.

Plug in the unit and operate to ensure proper operation.

4. OPERATOR SELECTABLE OPTIONS

The characteristics of the game which can be altered by the operator are:

1. The maximum length of time allowed to play each game.
2. The number of coins per game.

A component top view of the microprocessor board used on Star Cruiser is shown in Figure 3 and the option settings are clearly indicated.

5. WIRING DIAGRAM DESCRIPTION

The wiring diagram in Figure 6 basically describes the major components of Star Cruiser. The functional description of each block is as follows:

COIN DOOR

Coin drop provides a logic signal to the logic board to initiate the game when a coin drop is sensed through the switch closer. A tilt switch is provided to reset the game if the unit is abused.

POWER SUPPLY ASSEMBLY

The power supply assembly generates all the regulated DC voltages required for the logic/sound board.

CONTROL PANEL ASSEMBLY

The control panel assembly provides a logic signal indicating the steering wheel position. It also provides a signal to the logic board when phasers or torpedoes are fired. See Figure 2 for more detail.

FOOT PEDAL ASSEMBLY

Provides a signal to cause the star cruiser to move forward.

LOGIC/SOUND BOARD

The logic/sound board contains the necessary logic circuitry to enable Star Cruiser operation. Its heart is an 8080 microprocessor. The logic/sound board receives input signals from the steering wheel/foot pedal controls and the coin door. It provides output signals to the T. V. monitor to generate the video display.

MONITOR

The monitor provides the video display of the signal from the logic board. See Figure 7 for schematic.

SPEAKER

Provides the sound.

PANEL LAMPS

Provides general glass illumination and indication when game is over.

INTERLOCK SWITCH

Disconnects AC power when the back door is removed.

COIN COUNTER

Counts the coins put in the game.

6. TROUBLE SHOOTING TECHNIQUES

The following diagrams are provided to assist in trouble shooting the unit:

Figure 1	Rear View of Cabinet
Figure 2	Steering Wheel Control Panel
Figure 3	Logic/Sound Board
Figure 4	Power Supply Front View
Figure 5	Power Supply Rear View
Figure 6	Wiring Diagram
Figure 7	T. V. Monitor Schematic

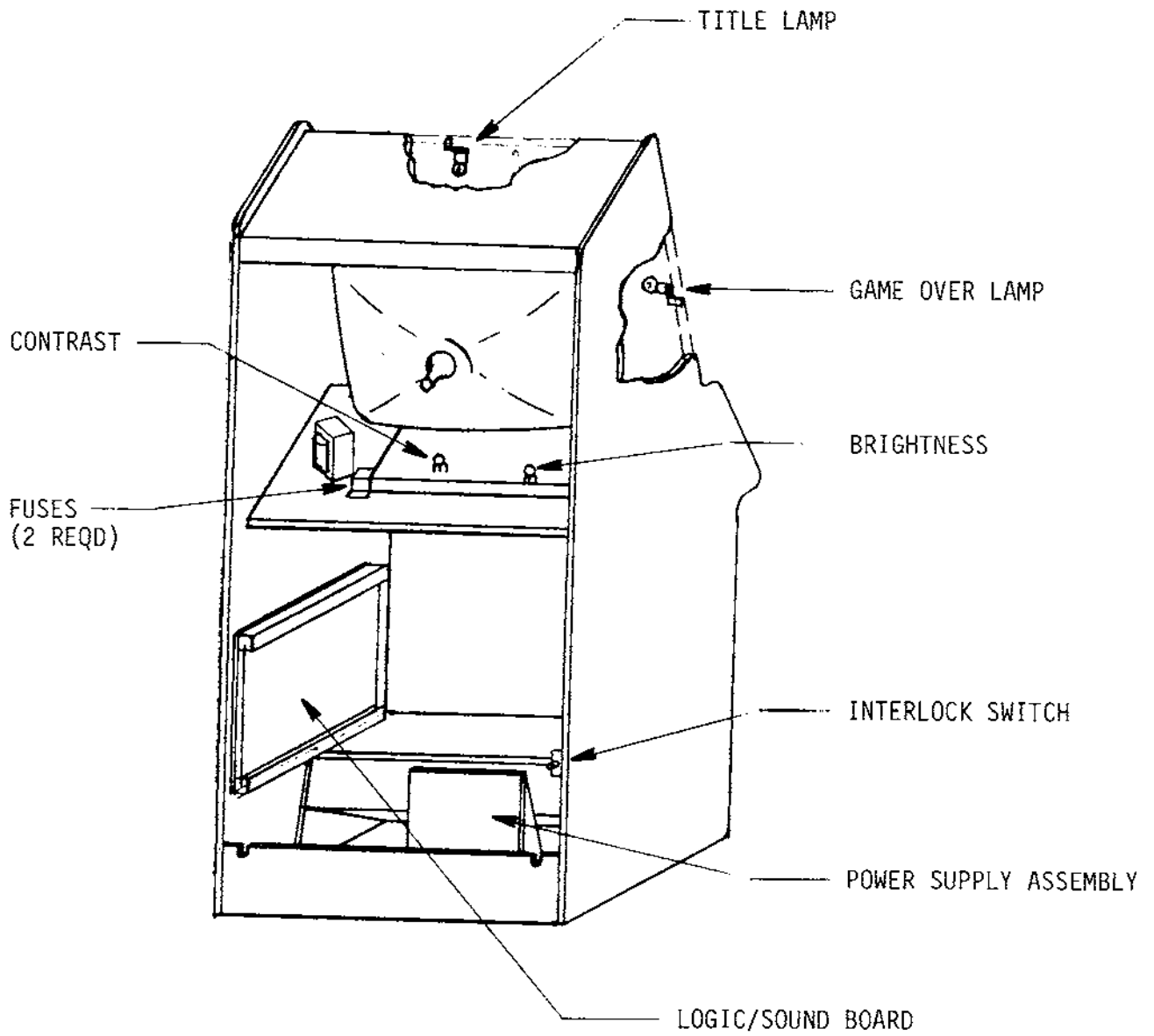
Make sure the power cord is plugged in the wall socket, and the interlock switch is ON. The interlock switch is ON when it is fully depressed -- this requires the back cover to maintain closure; or when the switch is pulled fully out -- maintains self in this position.

Check all three(3) fuses in the game -- the system power fuse located on the rear of power supply assembly and two(2) fuses mounted on the T. V. monitor. See Figures 1 and 5.

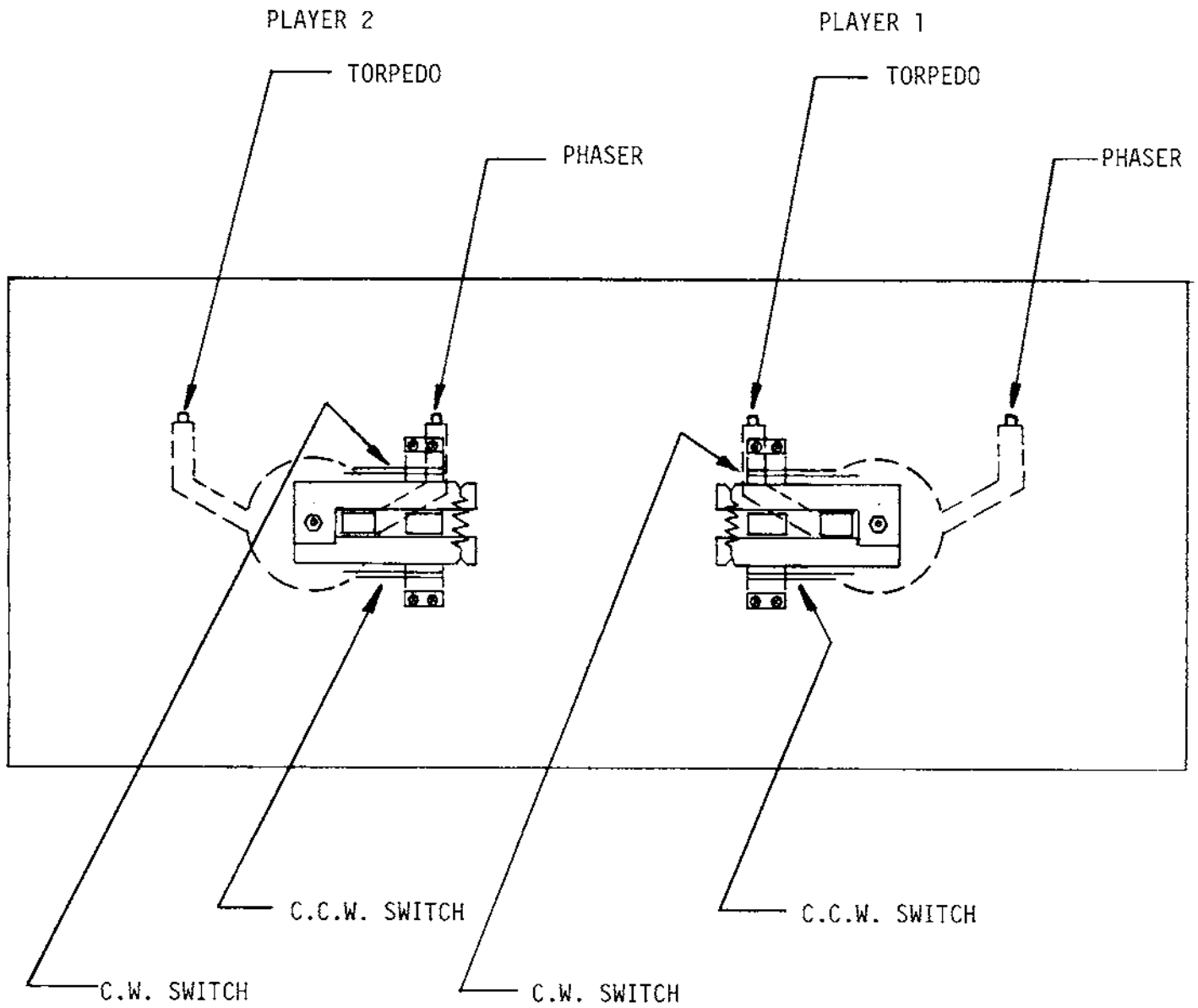
Check the brightness and contrast control on the monitor, and turn them in the direction to give maximum brightness and contrast. Turn brightness and contrast up. Check to see that screen lights up indicating the monitor is working properly.

If there is no sound associated with the game, check the volume control located on the logic/sound board. See Figure 3. Check the +24V DC on the power supply. See Figure 4.

Whenever the game malfunctions, the +5V, -5V and +12V DC supplies should be checked. Use any standard voltmeter. These DC voltages can be measured as shown in Figure 4. Be careful not to short these supplies when making measurement.



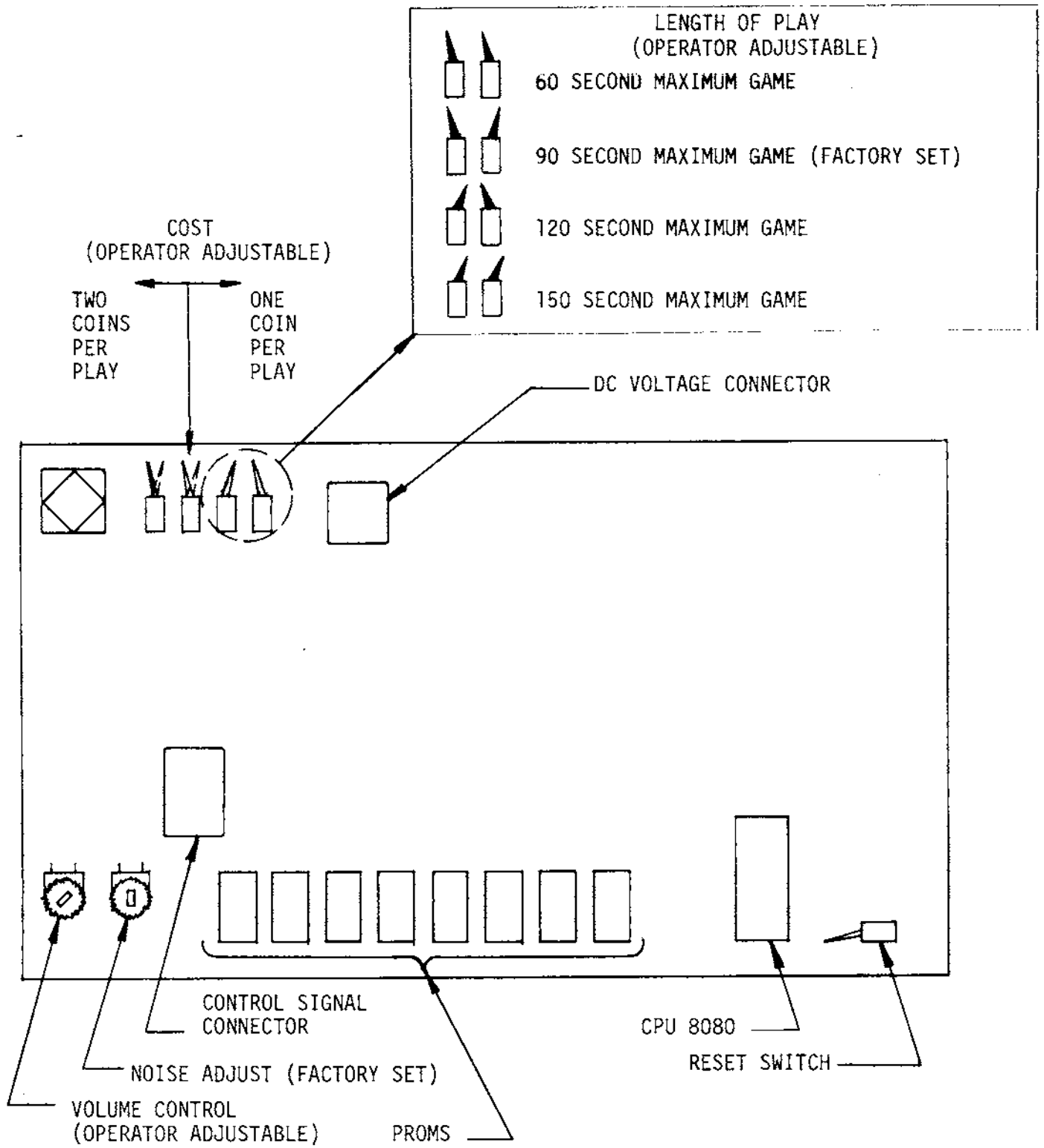
REAR VIEW OF CABINET
 FIGURE 1



CONTROL PANEL ASSEMBLY

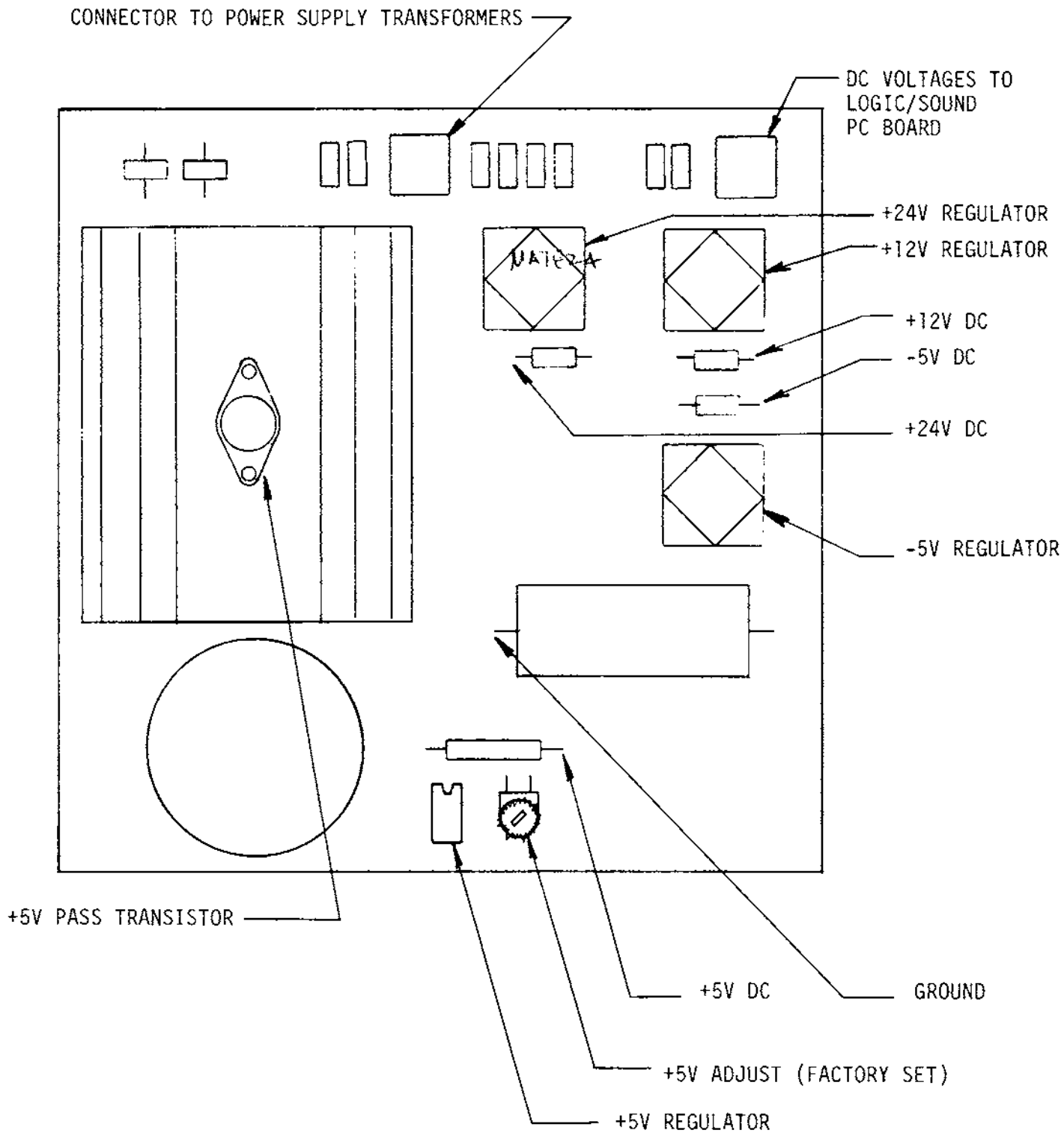
REAR VIEW

FIGURE 2

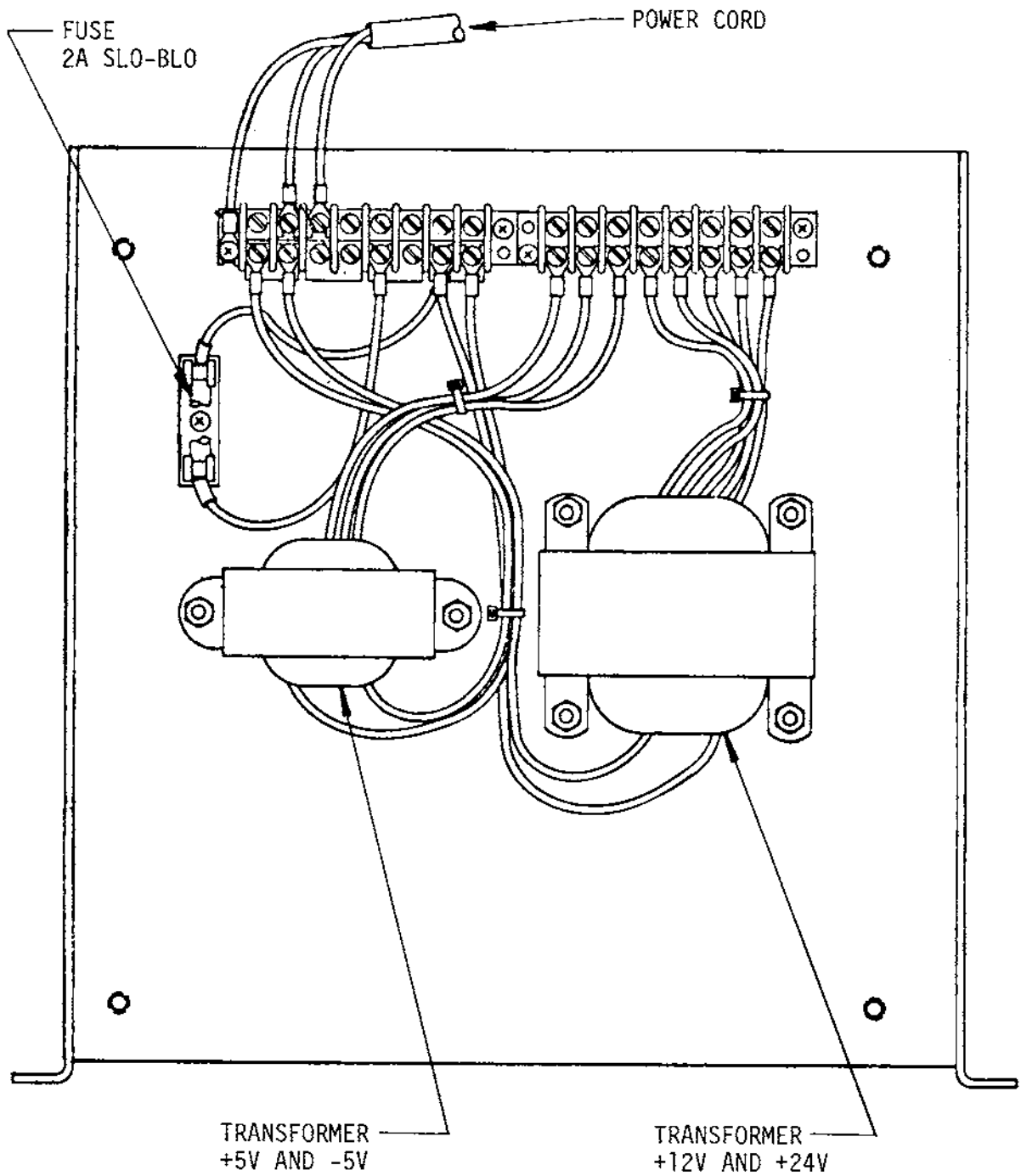


LOGIC/SOUND BOARD

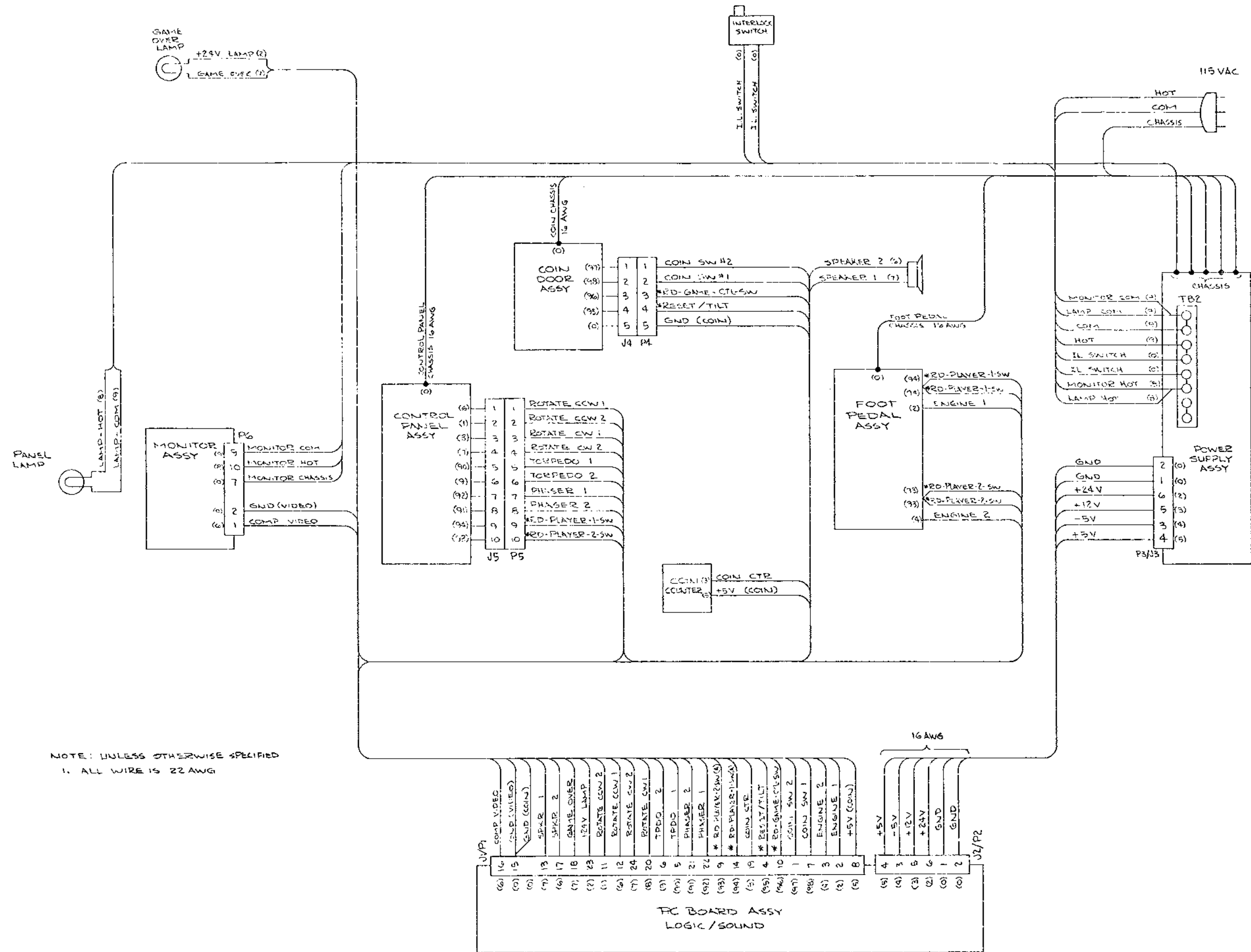
FIGURE 3



P.C.B. ASSY, POWER SUPPLY
 FRONT VIEW
 FIGURE 4



POWER SUPPLY ASSEMBLY
REAR VIEW
FIGURE 5

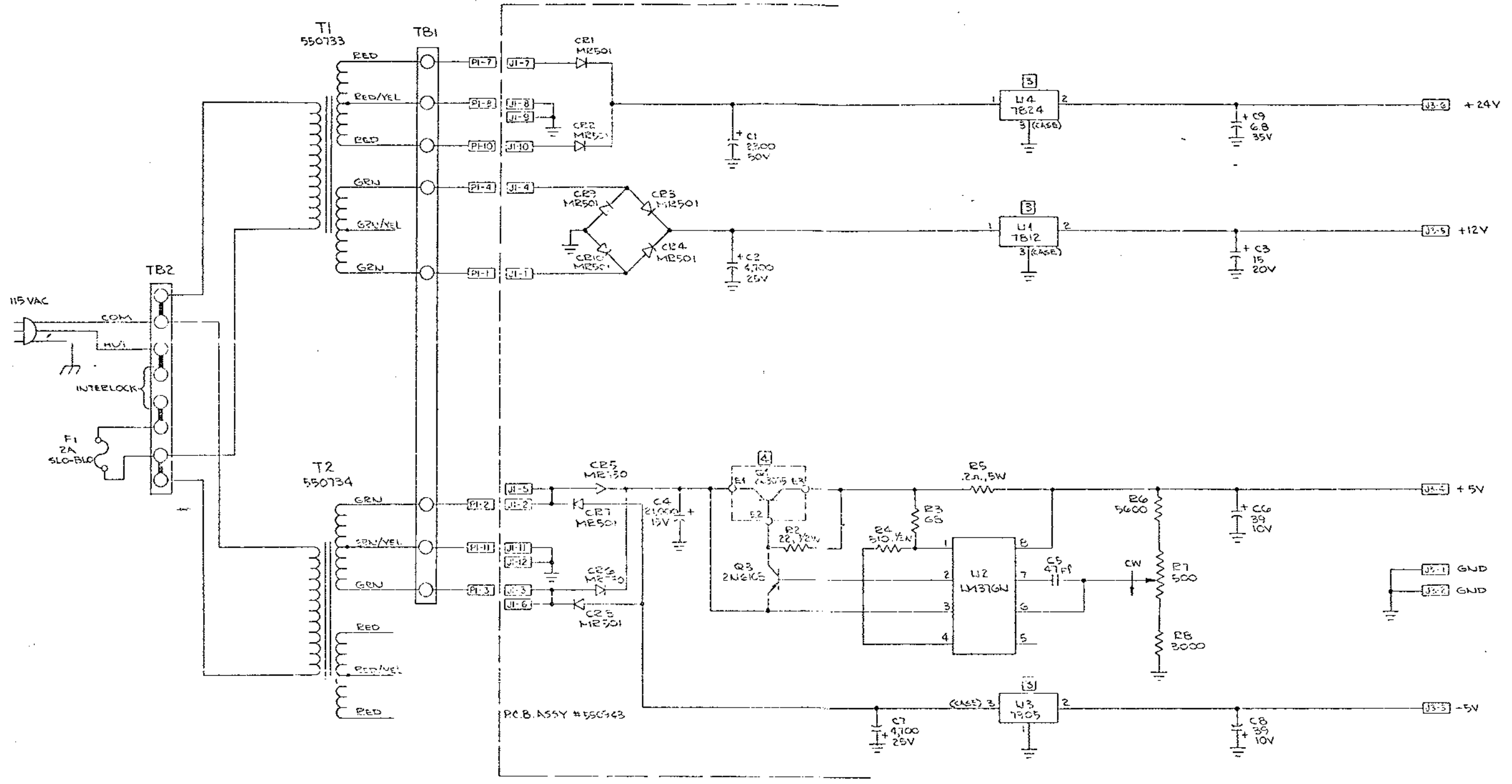


NOTE: UNLESS OTHERWISE SPECIFIED
1. ALL WIRE IS 22 AWG

WIRING DIAGRAM
FIGURE 6

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REVISED		DATE
1	RELEASED PER ECO-0100111	11-1



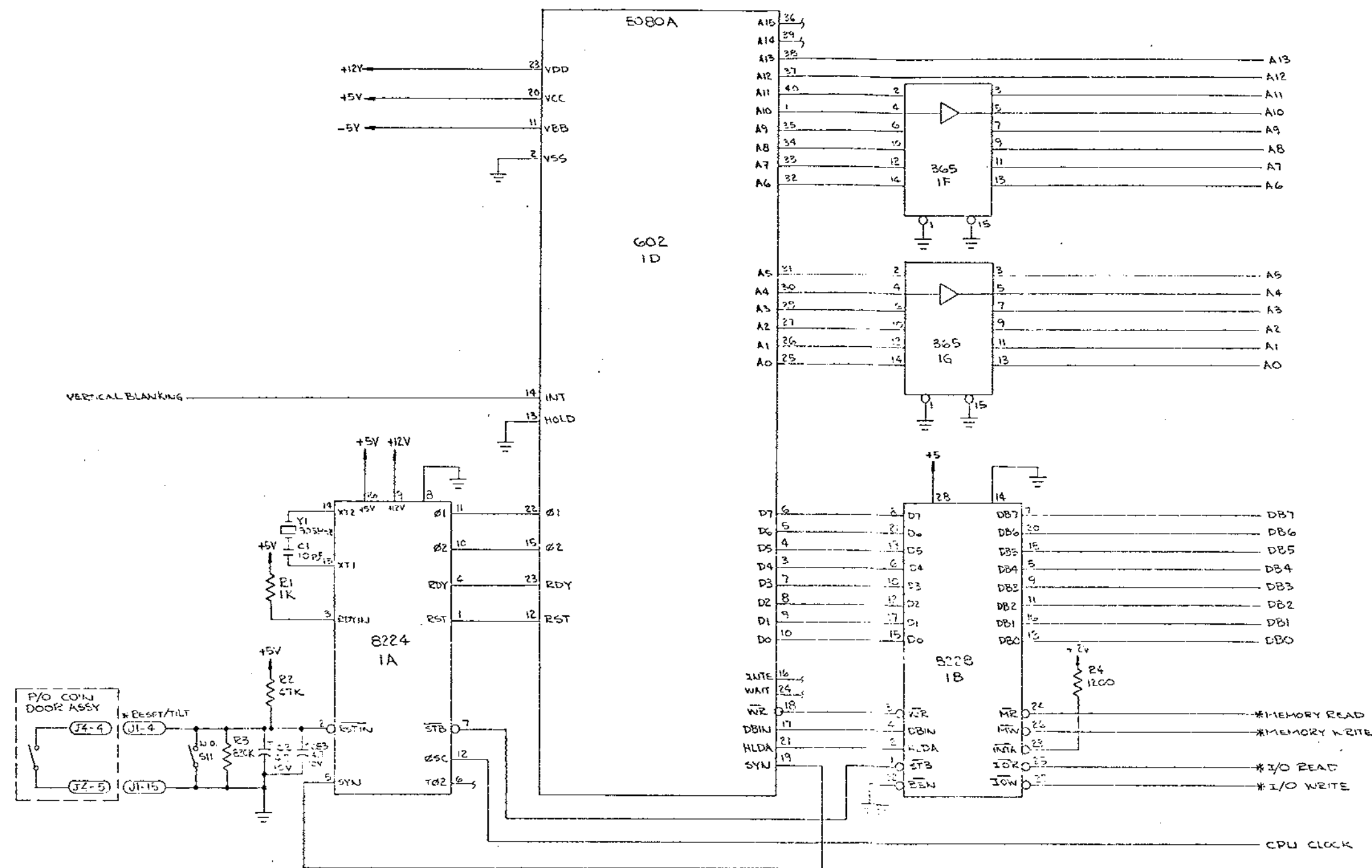
- NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS 1/4 OHMS, 1/4W, 5%
 2. ALL CAPACITORS IN MICROFARADS
 3. MOUNTS ON TO3 HEATSINK 0701102
 4. HEATSINK ASSY, POWER SUPPLY 550963

CITY	PART NO.	ITEM DESCRIPTION	ITEM NO.
LIST OF MATERIALS			

DO NOT SCALE DRAWING		SIGNATURE		DATE
DESIGNED	BY	CHECKED	DATE	
DRAWN	BY	APPROVED	DATE	
RAMTEK				
LOCKHEED MISSILES & SPACE COMPANY				
RAMTEK CORPORATION				
REV	DATE	BY	DATE	REV
1	11-1			A

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REVISIONS			
LTN	DESCRIPTION	DATE	BY
A	1.5G DRAWING		
B	2.FV PER FOOT 0080	1/16	7-11-77
B	PROD REL. FOOT 0102	1/16	7-11-77



- NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS IN OHMS, 1/4W, 5%
 2. ALL CAPACITORS IN MICROFARADS
 3. * DENOTES LOGIC SIGNAL

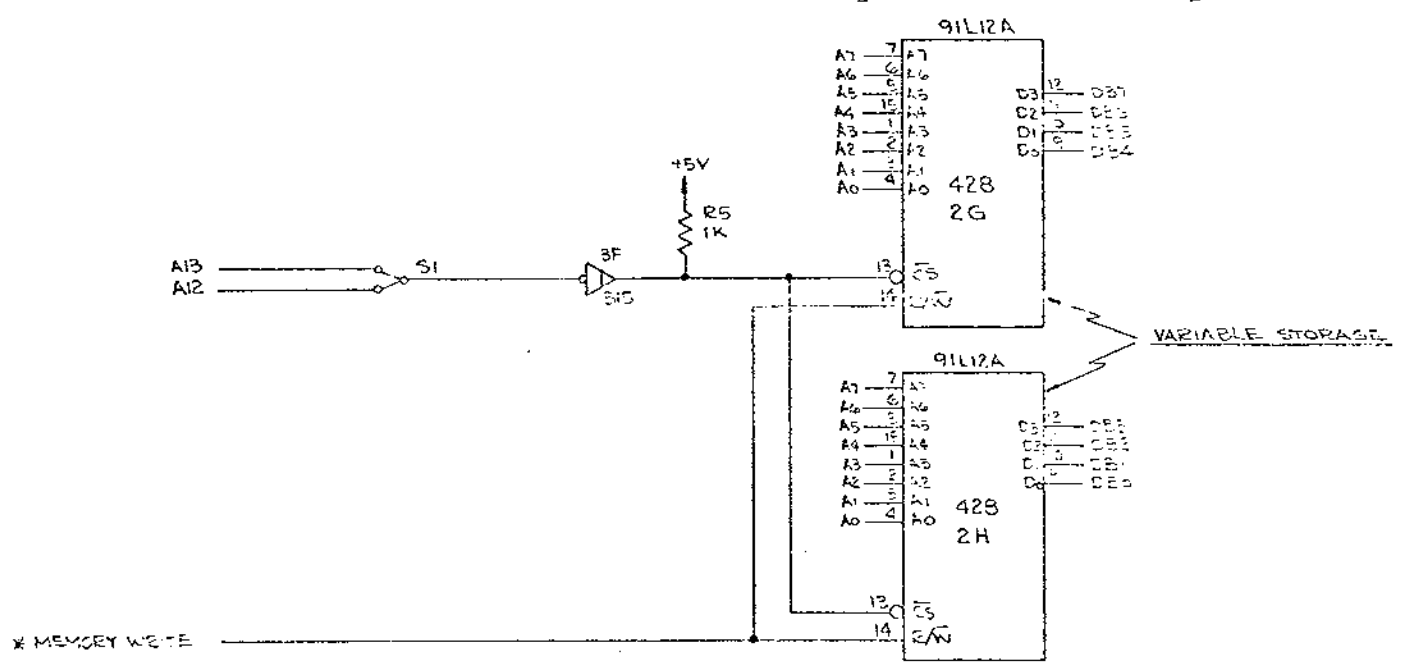
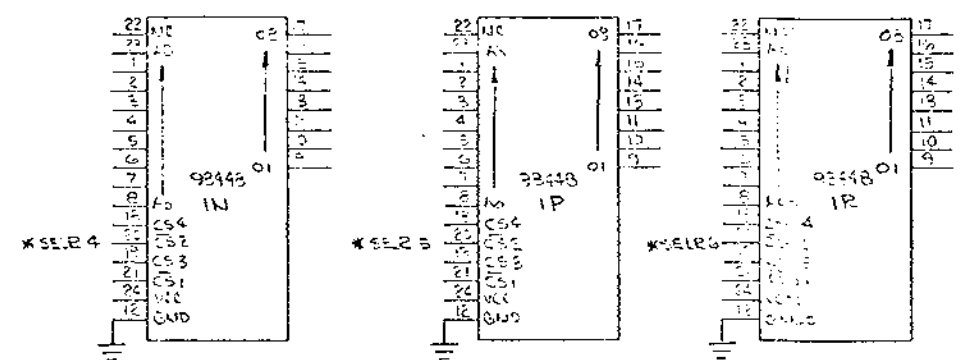
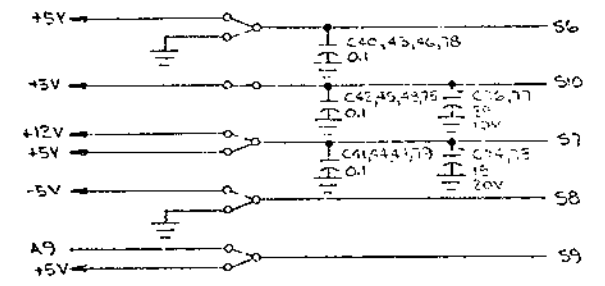
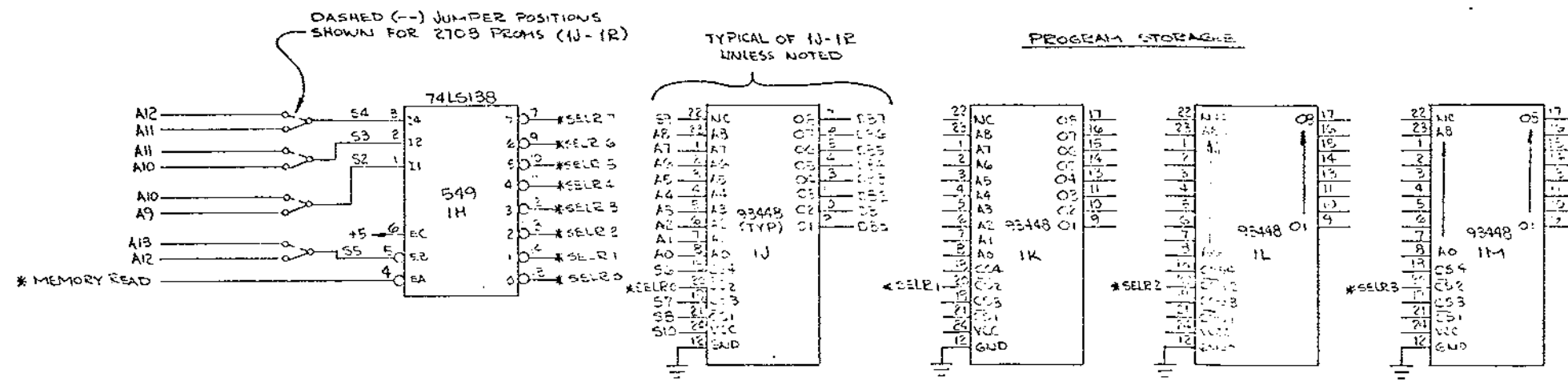
MICRO-PROCESSOR

QTY	PART NO.	ITEM DESCRIPTION	ITER NO.
LIST OF MATERIALS			

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XX	XXX	DATE			
DATE		CHK	DATE	RAMTEK	
FINISH		END	DATE	RAMTEK	
NEXT ACTN		APPD		RAMTEK	

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REVISIONS			
LTN	DESCRIPTION	APVD	DATE
-	SEE SHEET 1	-	-

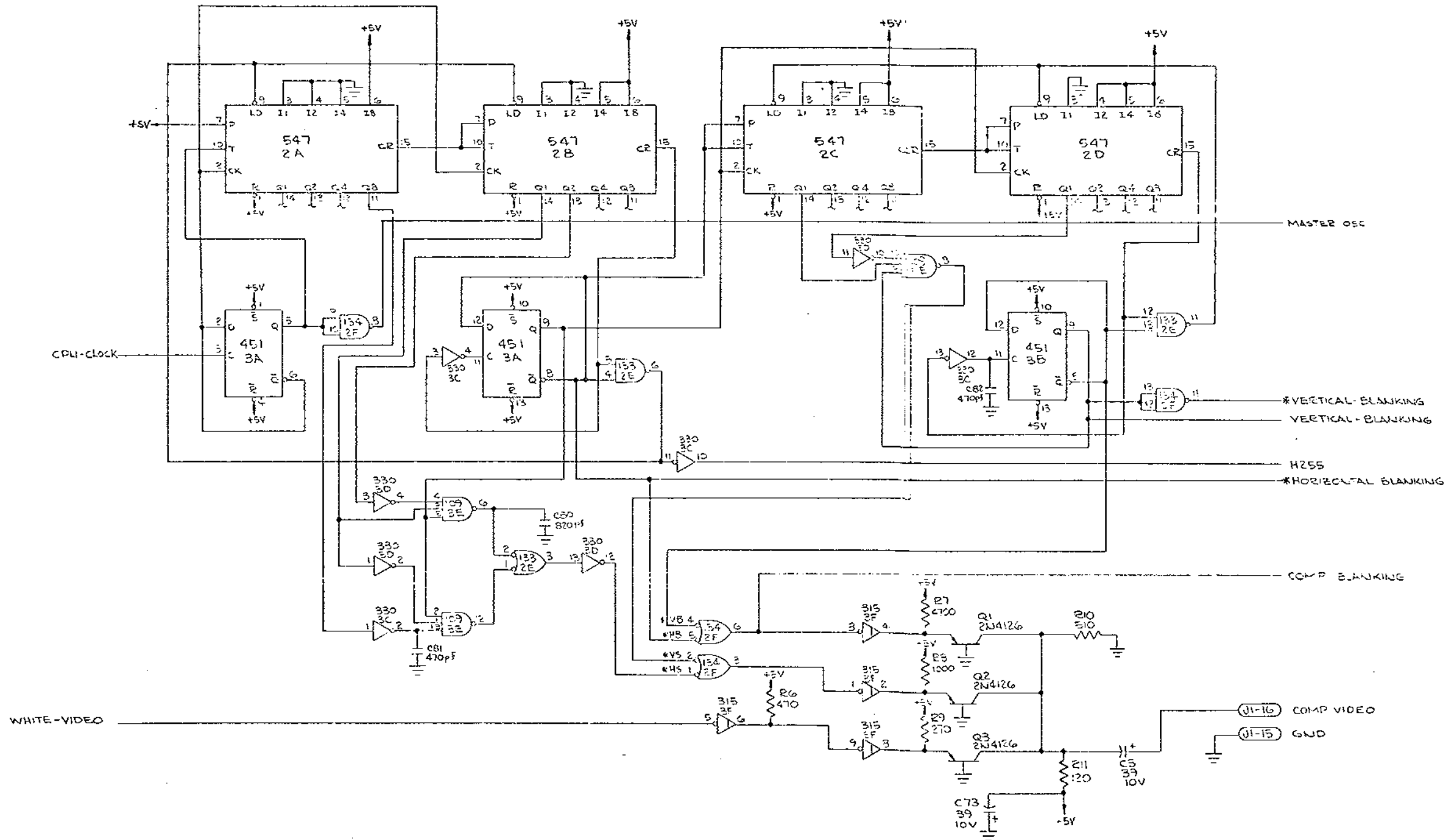


MICRO-PROCESSOR STORAGE

QTY	PART NO	ITEM DESCRIPTION	ITEM NO
LIST OF MATERIALS			
RAMTEK			
PART NO. 1000/0000			
REV. 1			
DATE: 10/10/84			
DRAWN BY: J. S. K.			
CHECKED BY: J. S. K.			
APPROVED BY: J. S. K.			
DATE: 10/10/84			
REV. 8			

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REV.	DATE	BY	CHKD.
1	11/17/74		



SYNC-GENERATOR

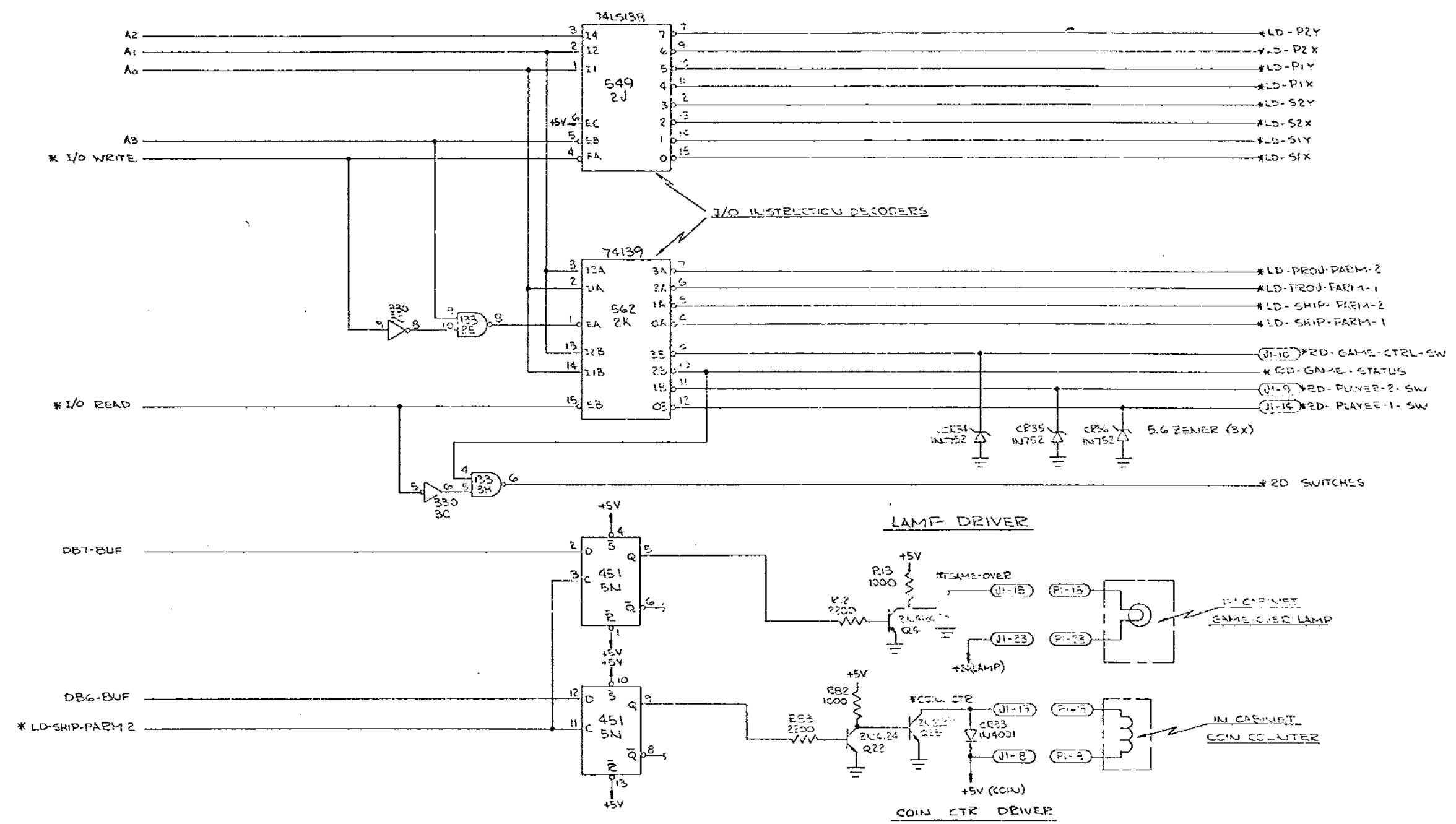
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UNLESS OTHERWISE SPECIFIED		SIGNATURES	
RESISTORS: 1% (R)		DATE	
CAPACITORS: 5% (C)		DRAWN	
MATERIALS		CHKD.	
FINISH		ENG.	
NEXT AREA		APPR.	

RAMTEK

501003 REV. #1/2

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REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	SEE SHT 1		



I/O DECODE LOGIC

QTY REQD	PART NO	ITEM DESCRIPTION	ITEM NO
LIST OF MATERIALS			
TOLERANCES		DO NOT SCALE DRAWING	
MATERIALS		SIGNATURES	
FINISH		DATE	
NEXT AVAIL		REV	
		RAMTEK	
		RAMTEK CORPORATION	
		5000 1/4	
		REV B	

REVISIONS			
LTN	DESCRIPTION	DATE	BY
-	SEE SH1 1	-	-

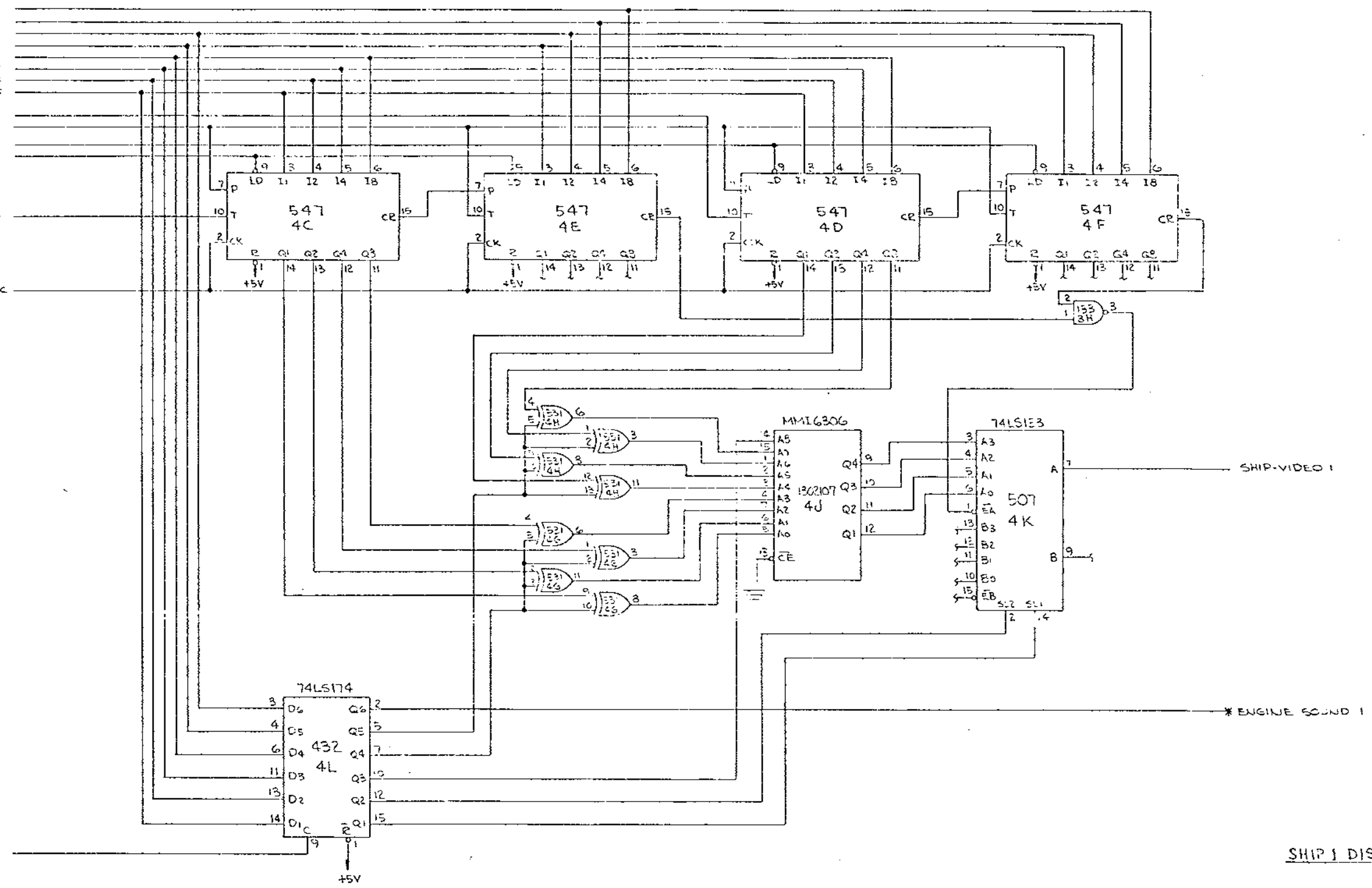
DB7-BUF
DB6-BUF
DB5-BUF
DB4-BUF
DB3-BUF
DB2-BUF
DB1-BUF
DB0-BUF

HR55
* VERTICAL BLANKING
* LD-S1Y
* LD-S1X

* HORIZONTAL BLANKING

MASTER OSC

* LD-SHIP-PRGM 1



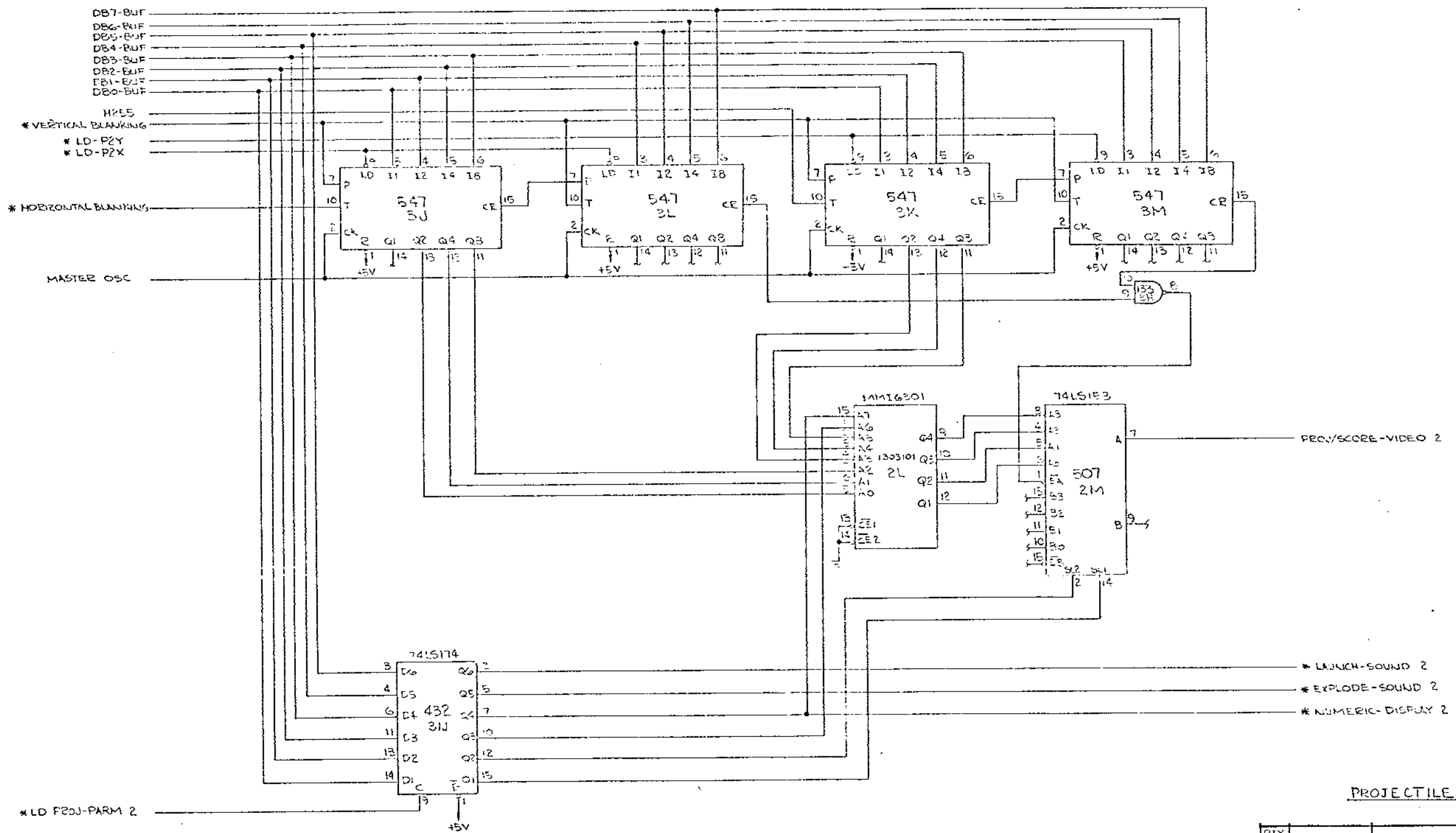
SHIP 1 DISPLAY & MOTION

QTY	PART NO	ITEM DESCRIPTION	UNIT
LIST OF MATERIALS			

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SIZE	FINISH	SIGNATURES	DATE	DATE	REV
DATE	FINISH	OWN			
DATE	FINISH	CHK			
DATE	FINISH	ENG			
DATE	FINISH	APP			

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REVISIONS			
LTN	DESCRIPTION	DATE	BY
—	SEE SHEET 1	—	—



PROJECTILE & SCORE 2

QTY	PART NO.	ITEM DESCRIPTION	REV.
LIST OF MATERIALS			
RAMTEK			
SUB-MATERIALS			
* LAUNCH-SOUND 2			
* EXPLODE-SOUND 2			
* NUMERIC-DISPLAY 2			
REV. NO. 100002			

TOLERANCES		DO NOT SCALE DRAWING	
FRONT VIEW	±0.10	DATE	
RIGHT VIEW	±0.10	DESIGNED BY	
LEFT VIEW	±0.10	CHECKED BY	
TOP VIEW	±0.10	DATE	
BOTTOM VIEW	±0.10	REV. NO.	
ISOMETRIC VIEW	±0.10	REV. NO.	

A

