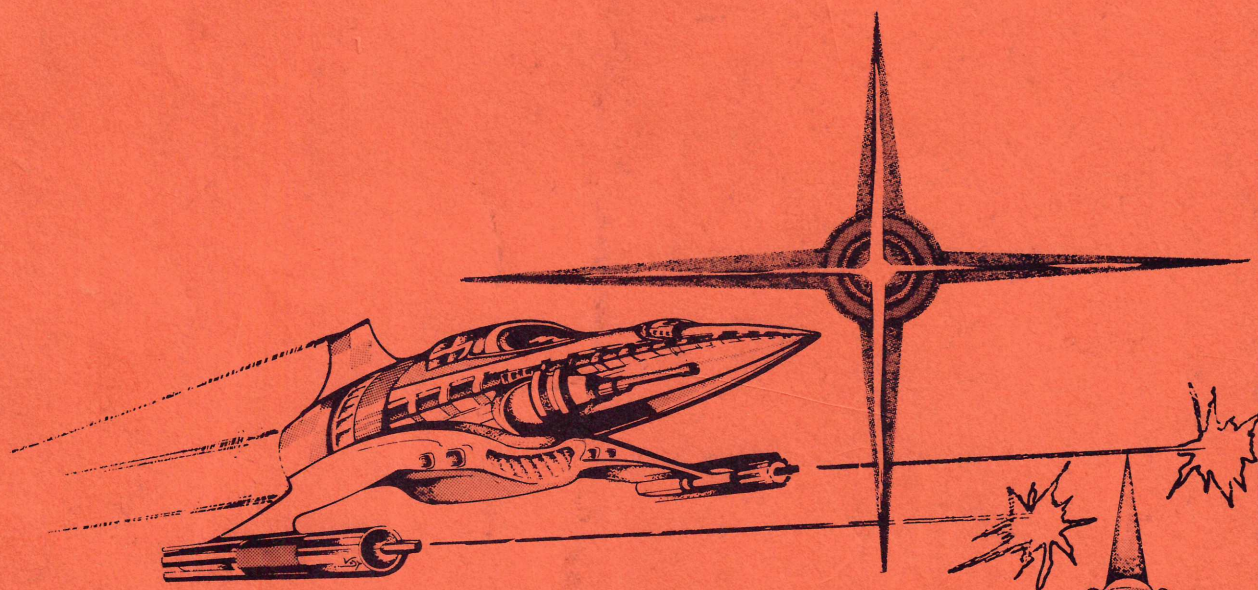




TARG

REFERENCE MANUAL

centuri, INC.
HIALEAH . FLORIDA . U . S . A

"TARG (TM) "

OPERATION AND MAINTENANCE
MANUAL

CENTURI, INC.

245 WEST 74TH PLACE

HIALEAH, FLORIDA 33014

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INTRODUCTION

TARG(TM) is a one or two player full color video cocktail game. Two controls for each player(the joystick and the fire button), allow the player to steer his Wummel around the geometric grid, to both avoid collisions with enemy ships and to fire at these ships for points. The video display and audio system work together to make TARG (TM) an excitingly colorful game with a variety of sounds.



INSPECTION

Every game is carefully packaged in well-padded cardboard containers to prevent damage during shipment. If a component is noticeably damaged, notify the CENTURI Customer Service Department for information concerning the disposition for the damaged component. DO NOT apply power to the game.

To ensure the equipment incurred no damage in shipment, inspect the container prior to acceptance from the carrier. If no immediate cabinet damage is evident, perform the following visual inspection:

1. Open the top of the game with the appropriate packaged key.
2. Examine each major and electrical component thoroughly for scrapes, dents, broken or missing parts and loose or missing screws.
3. Check for loose cable connectors.
4. Visually verify that all the integrated circuit devices (IC's) plugged into sockets are properly seated and that no IC pins are bent or misaligned.

If you find any damage during this inspection, file a claim with the freight carrier, and send a complete report of the damage to CENTURI, INC.

INSTALLATION

Planning the location of the game should involve both physical and electrical consideration. Physical considerations concern the placement of the equipment with respect to clearances, AC cable and environmental conditions such as ventilation, temperature, weight support and accessibility (although your game has the durability to endure nearly every type of physical hazard). Electrical considerations include availability of the correct voltage and frequency.

In planning this installation, consideration must also be given to working space required for personnel involved with operation or maintenance of this system.

NOTE: The cabinet must be within five feet of an AC outlet. Be certain that a ground jack or terminal is available at the outlet.

CAUTION: DO NOT remove the AC ground prong from the plug.

AC Line Voltage Selection: AC line voltage selection is available in your TARG (TM) game by setting the appropriate jumpers on the power chassis. See the schematics on power supply adjustments for further information.

PRELIMINARY CHECKOUT PROCEDURE

After properly installing TARG (TM), we suggest checking it's operation in the following procedure:

1. Plug the AC jack into the AC outlet.
2. Allow one to two minutes for CRT to warm up.
3. Observe the TV monitor display to assure the correct attract mode is present on the screen, as explained in the following section.
4. If the TARG (TM) display is incorrect, contact the Customer Service Department, outside Florida, our tollfree number is: #1-800-327-6749, or in Florida: #1-305-887-5528.
5. Insert a quarter into the coin slot. The constant interchange between the Attract Mode game play and messages should then display messages only, as described in the following section.
6. Continue to play the game and verify that all screen images are displayed, once again, described in the Normal Operation procedure.

If repairs are necessary, contact the CENTURI Customer Service Department.

NORMAL OPERATION

A. ATTRACT MODE

When TARG (TM) is first turned on, the screen shows nine rows of nine yellow squares, lined up on a blue field. Ten evil Targs (red arrows) travel down the blue columns and randomly scatter. A green Wummel starts its journey in the lower right hand corner, randomly shooting its white missiles while traveling the parameter of the game board. The top of the screen shows CREDITS 00.

Randomly, a yellow square opens up and releases the Spectar (light blue enemy ship) which travels among the space traffic, avoiding Targs. When it or a Targ hits the Wummel, an explosion occurs and a cloud of green smoke temporarily marks the scene of the collision. The following message then appears:

CREDITS 00

00000 HI SCR 10000 00000

TOP HIGH SCORE FOR EXTRA PLAY

1 PLAYER 1 COIN

2 PLAYERS 2 COINS

DEPOSIT COIN

TARG (TM)

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(If 10 pence/50 pence coin option is selected, this message differs). The attract mode game play automatically alternates with the message until one or more coins are deposited. TARG (TM) features an automatic coin accumulator, allowing the player to buy any number of games in advance, up to 99.

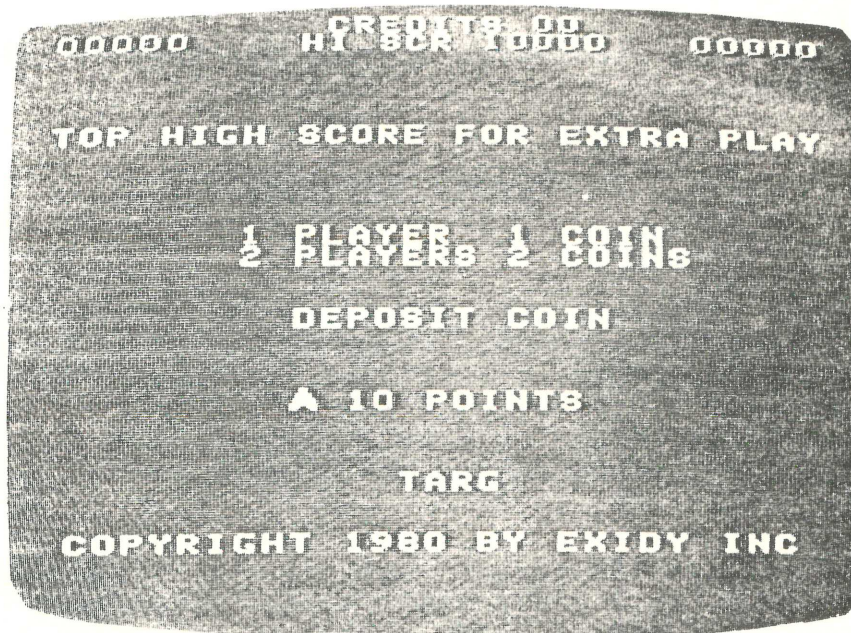


FIGURE 3: MESSAGE IN ATTRACT MODE DISPLAY

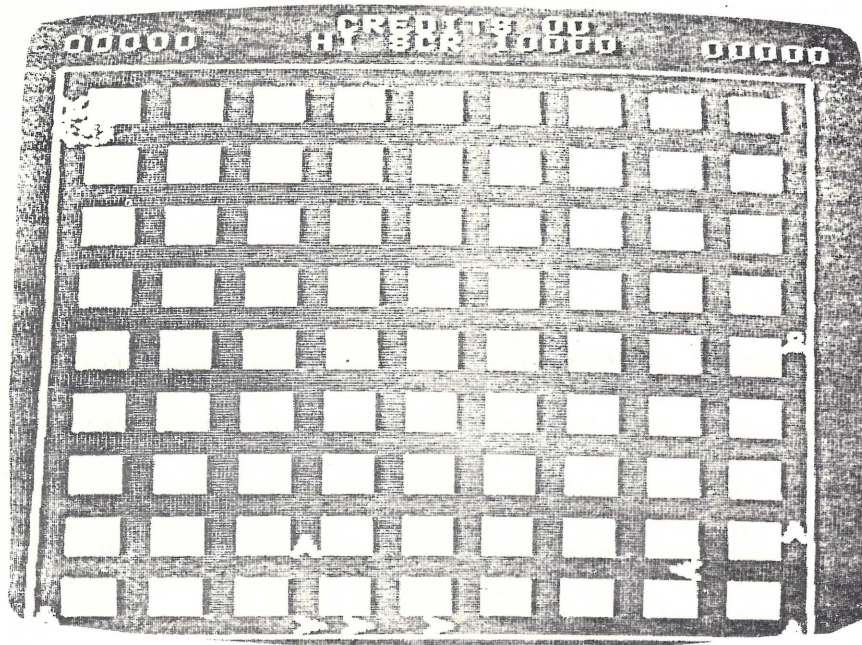


FIGURE 4: GAME PLAY SCREEN DISPLAY IN ATTRACT MODE

B. INTRODUCTION MODE:

When a Player deposits one or more coins, this message appears:

CREDITS XX
 00000 HI SCR YYYYY 00000
 TOP HIGH SCORE FOR EXTRA PLAY
 1 PLAYER 1 COIN
 2 PLAYERS 2 COINS
 DEPOSIT COIN
 OR PRESS START (flashing)
 TARG (TM)
 COPYRIGHT 1980 BY EXIDY, INC.

XX displays the number of games paid for and YYYYY is the highest score of the day. When the top score is beat, the player receives an extended game (one extra turn) or a credit for complete game depending on the operator's selection (see Selectable Options).

To begin game play, the player presses either the upper button for one or the lower button for two players.

C. GENERAL GAME PLAY DESCRIPTION:

After one of the two play buttons are pressed, this message appears briefly:

GET READY

PLAYER 1

The Wummel (the player's green ship) starts at the bottom right of the screen. The joystick on the right of the control panel directs the Wummel. Shifting the joystick in the direction of travel also increases speed. To decrease speed, leave the joystick stationary or tap the stick slightly opposite the travel direction. To fire at the enemy, press the fire button left of the joystick. Notice that a second shot cannot be made until the previous one explodes or disappears from view.

When the game begins, red Targs descend from the top of the screen and then scatter in random directions midway down the screen. The player both avoids being hit by Targs and shoots at them for points. At random, a yellow square opens up and releases a blue Spectar. The Spectar is also an enemy ship attempting to destroy the Wummel. A siren wails until the Spectar is shot.

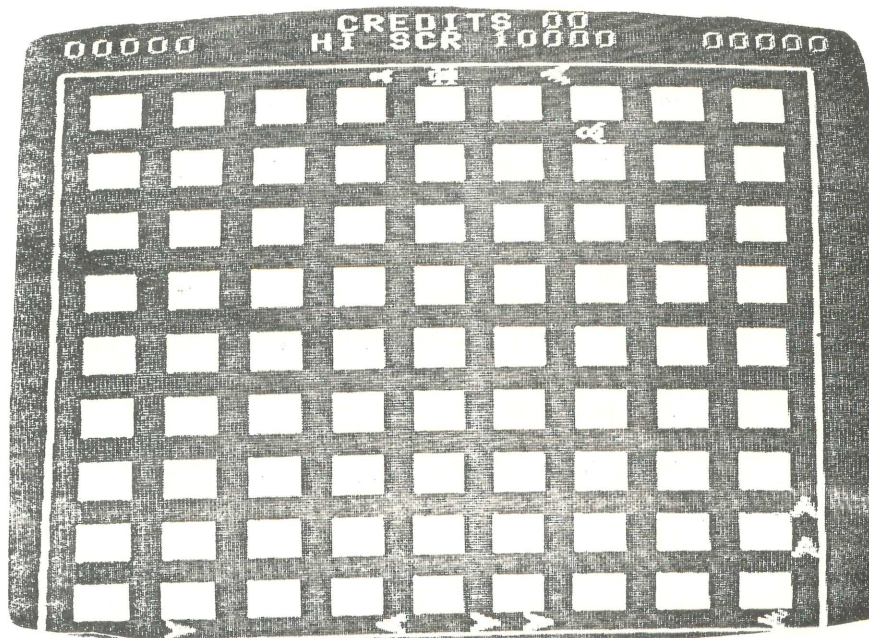


FIGURE 5: SCREEN DISPLAY OF TARGS, SPECTAR, AND WUMMEL.

D. GAME PLAY FOR ONE PLAYER:

After the player has pushed the upper start button, signifying one player, the game begins. The top of the game screen displays this message:

CREDITS XX

00000

00000

XX here, stands for number of games paid. Only the left hand score is used for one player. Between the two scores are a number of green Wummel images, iperator-selectable (see selectable options). This signifies how many turns the player has left, decreasing by one after each turn.

The following message appears for a few seconds between each turn:

GET READY

PLAYER 1

For each turn, the player returns to the same number of Targs as were left after his last turn at play.

E. GAME PLAY FOR TWO PLAYERS:

After two or more credits are accumulated, and the lower start button pressed, the game begins. At the top of the game screen, this message is displayed:

CREDITS XX

00000

00000

XX here, stands for number of games remaining to be played. The score on the left, 00000, is the first player's score, and that on the right is the second player's. Between the two scores are a number of operator-selectable green Wummels, indicating the number of turns left in the game (see selectable options). The Wummel's position switches from just left of center, to just right to indicate which player is up.

Each of the turns alternates between players, guided by the brief message:

GET READY

PLAYER 1

and

GET READY

PLAYER 2

Player 1 is the player on the side of the game with the coin mechanism; Player 2 is on the opposite side.

For each turn, the player returns to the same number of Targs as were left after his last turn at play. When a bonus turn is awarded, it is played directly after the turn for which it was given, unless it is awarded for topping the HIGH SCORE, in which case it is awarded after all other normal one or two player games.

F. SCORING:

A destroyed Spectar's point value varies randomly (100, 200, 300, 500 points). After Spectar is destroyed, its value appears at the scene of the collision, freezing game action temporarily and is automatically added into the player's score. Each Targ shot is worth 10 points. If all Targs are shot, 1000 points bonus is awarded, and appears on the screen as shown below in Figure 6:



FIGURE 6: SCREEN DISPLAY OF BONUS

The value of the Targ increases by ten each time a bonus is awarded.

NOTE: After plugging in TARG (TM), the Top This Score feature automatically sets at 10,000. The first player to top this score, may receive credit or extended play. Any succeeding player must top that player's score to receive awards.

SELECTABLE OPTIONS

TARG (TM) has several switch selectable options which are controlled by an 8-position DIP switch located on the main logic board at position 16A. This switch is located on the lower left corner of the logic board, and is accessible through the top of the game. Figure 7 shows all selectable functions controlled by the 8-position DIP Switch.

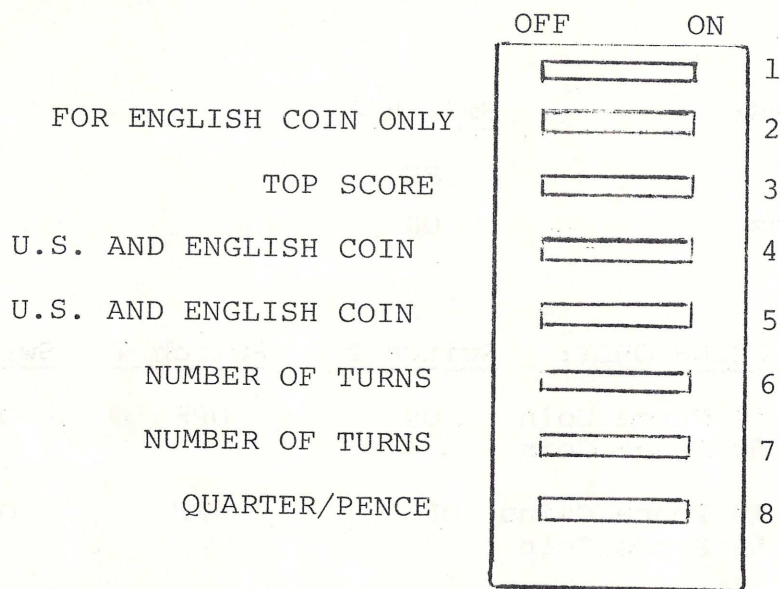


FIGURE 7: FUNCTIONS OF THE 8-POSITION DIP SWITCH.

Following are the switch settings for the selection of options:

<u>A. COINAGE:</u>	<u>Switch 4</u>	<u>Switch 5</u>
2 Player - 1 Coin	OFF	OFF
1 Player - 1 Coin	OFF	ON
2 Player - 2 Coins		
1 Player - 2 Coins	ON	OFF
2 Players - 4 Coins		

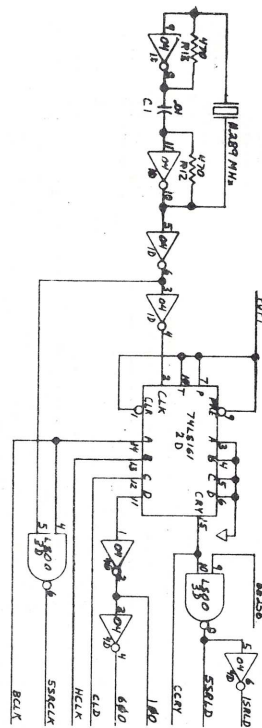
<u>B. TYPE OF COINS:</u>	<u>Switch 8</u>
Quarters	OFF
English Coins	ON

<u>C. FOR ENGLISH COINS ONLY:</u>	<u>Switch 2</u>	<u>Switch 4</u>	<u>Switch 5</u>
1 Game, one 10 Pence Coin	ON	OFF	OFF
6 Games one 50 Pence Coin			
1 Game, two 10 Pence Coins	OFF	OFF	OFF
3 Games one 50 Pence Coin			

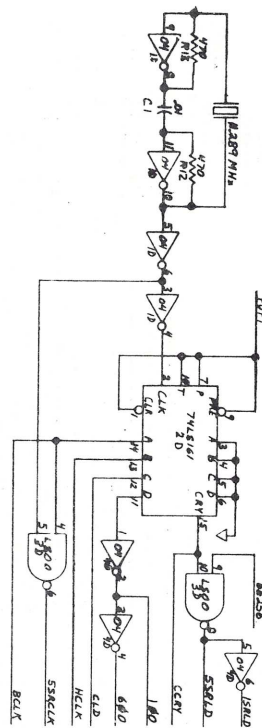
<u>D. NUMBER OF TURNS (Turns):</u>	<u>Switch 6</u>	<u>Switch 7</u>
2 Wummels (turns)	OFF	OFF
3 Wummels	ON	OFF
4 Wummels	OFF	ON
5 Wummels	ON	ON

<u>E. TOP THIS SCORE:</u>	<u>Switch 3</u>
Credit awarded for topping score	ON
Extended play for topping score	OFF

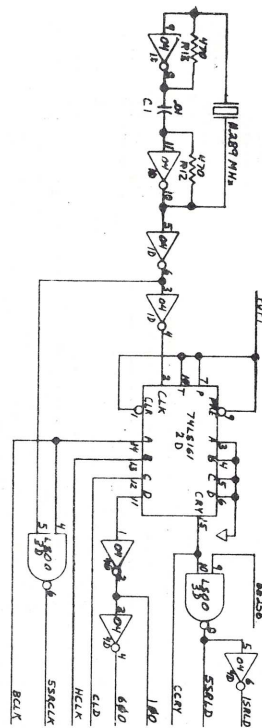
MASTER OSCILLATOR



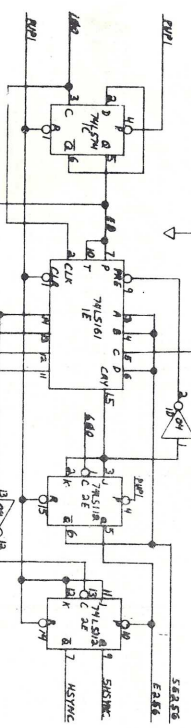
CLOCK DIVIDE



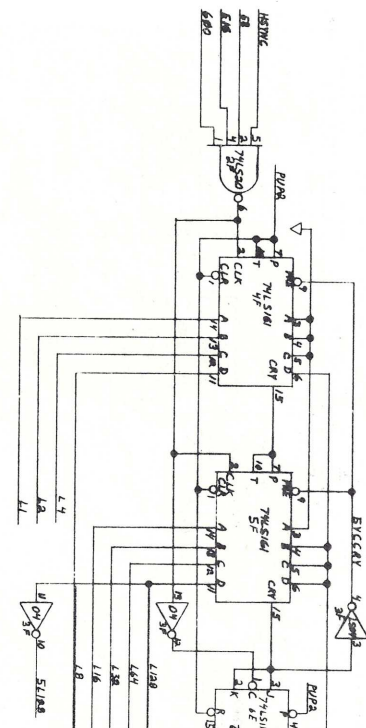
HARDWARE GENERATED LINE POSITONING PROMS



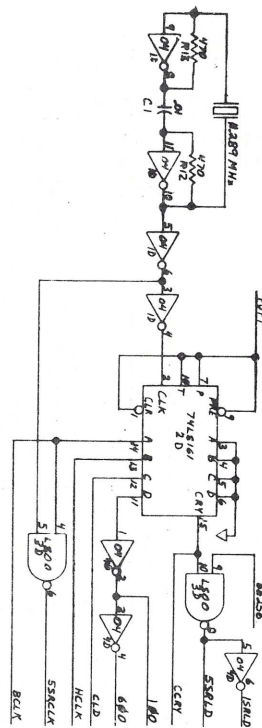
ELEMENT (HORIZONTAL) COUNTERS



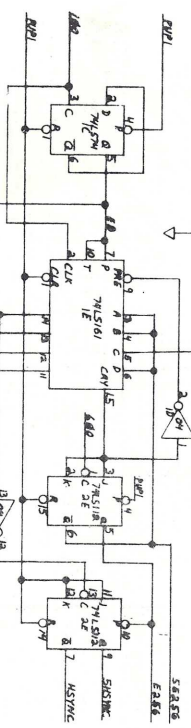
LINE (VERTICAL) COUNTERS



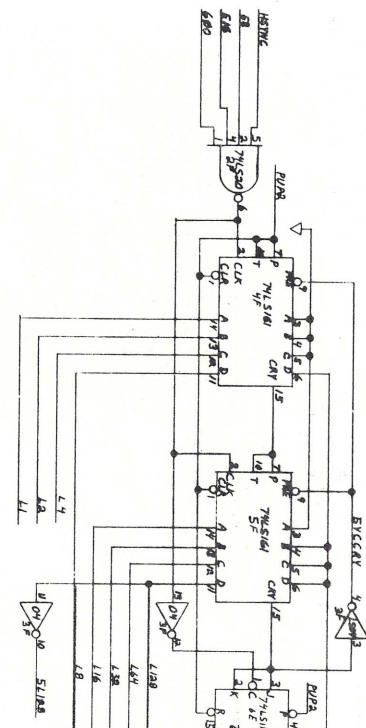
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BLANKING & VIDEO CLOCKING

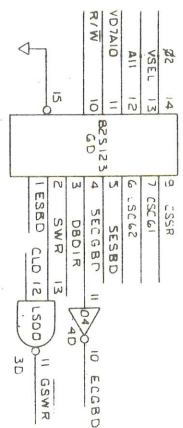


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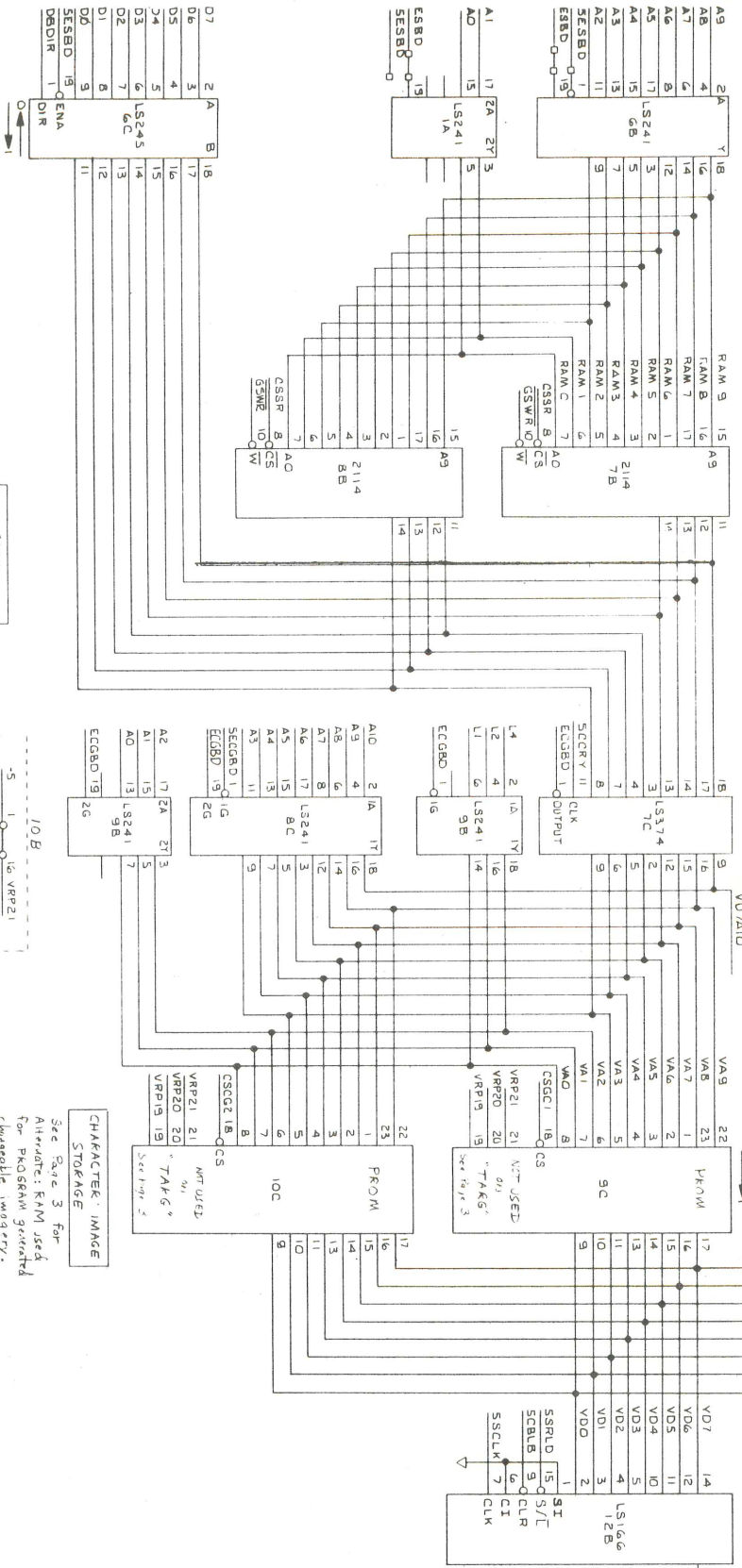


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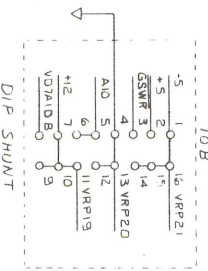
SCREEN CHIP SELECT and BIOS
INJECTION VECTORS FROM



SCREEN RAM
(from core storage)



FROM
POWER & SIGNAL
SELECTION



CHARACTER IMAGE
STORAGE

CHARACTER
GENERATOR
VIDEO OUTPUT
SHIFT REGISTER

C-44AC-EN 05114 A704
IMAGE STORAGE RAMS

For use with HOSAM
generation storage master.

JEC or TAs

VA9	15	11	VD7
VA8	16	12	VD6
VA7	17	13	VD5
VA6	1	14	VD4
VA5	2		
VA4	3	2114	
VA3	4	14C	
VA2	5		
VA1	6		
VA0	7		
CSG1	8		
GSWR	11		

VA9	15	11	VD7
VA8	16	12	VD6
VA7	17	13	VD5
VA6	1	14	VD4
VA5	2		
VA4	3	2114	
VA3	4	14C	
VA2	5		
VA1	6		
VA0	7		
CSG2	8		
GSWR	11		

VA9	15	11	VD3
VA8	16	12	VD2
VA7	17	13	VD1
VA6	1	14	VDO
VA5	2		
VA4	3	2114	
VA3	4	11C	
VA2	5		
VA1	6		
VA0	7		
CSG1	8		
GSWR	11		

VA9	15	11	VD3
VA8	16	12	VD2
VA7	17	13	VD1
VA6	1	14	VDO
VA5	2		
VA4	3	2114	
VA3	4	12C	
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GSWR	11		

6502 GAME LOGIC PCB

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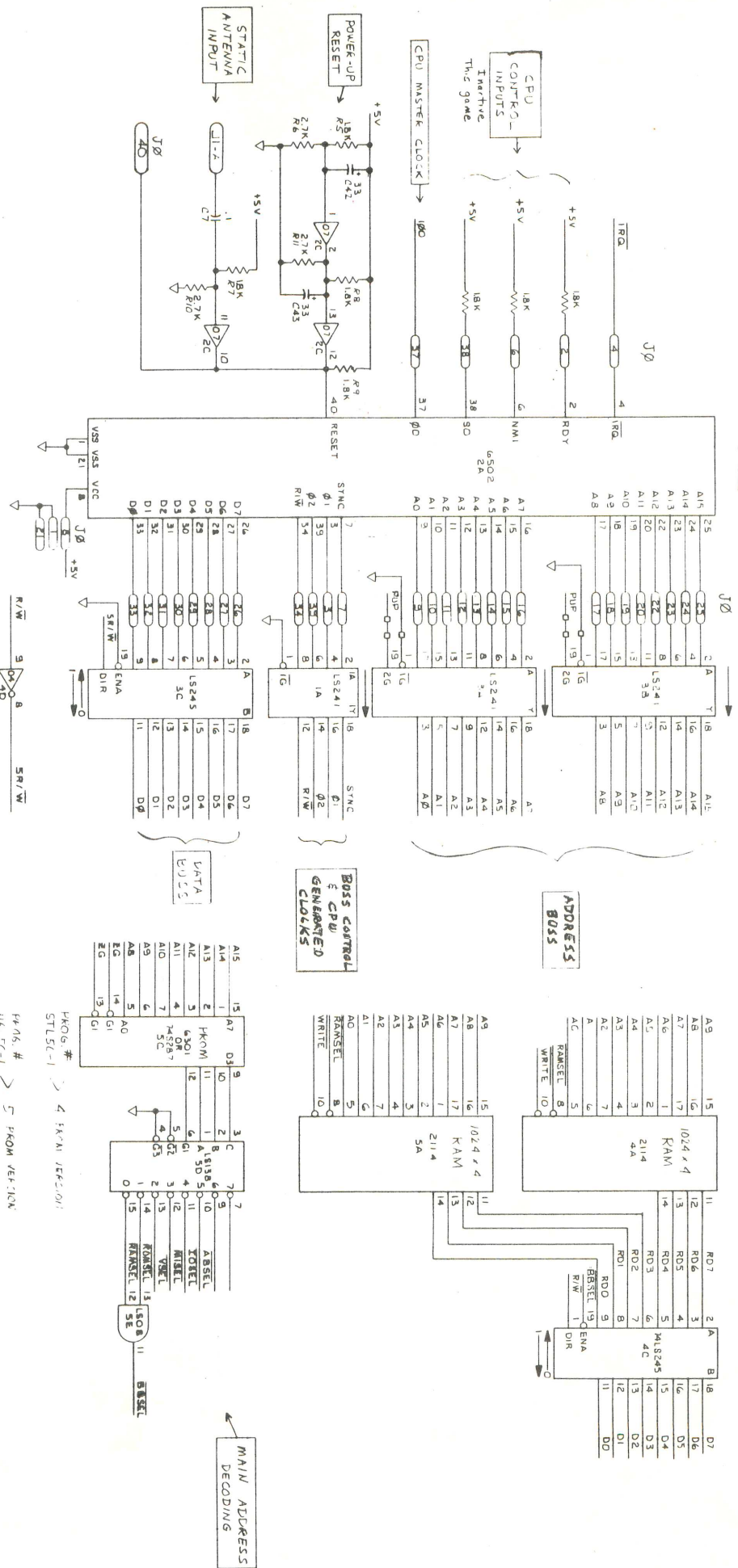
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IMAGE STORAGE RAM

3 OF 8

BOSS DRIVERS

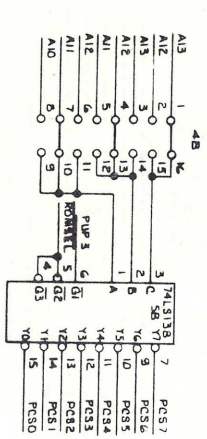
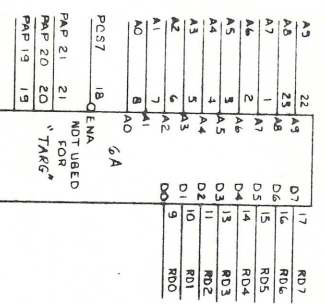
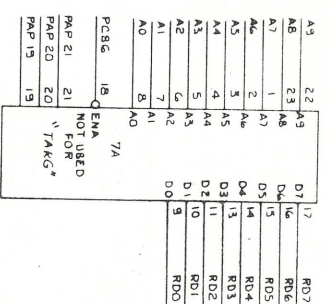
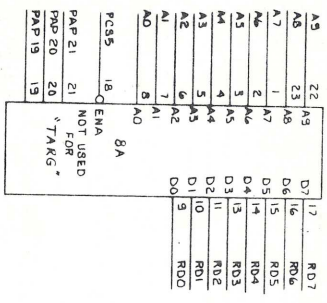
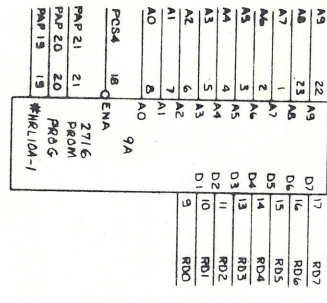
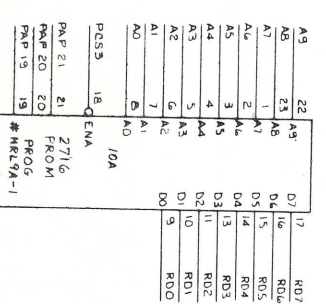
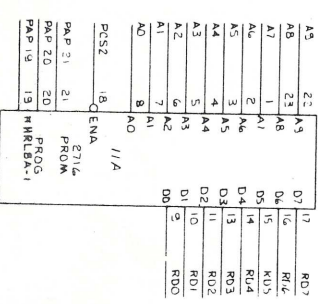
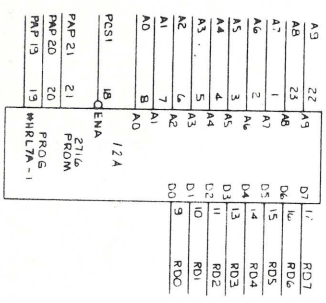
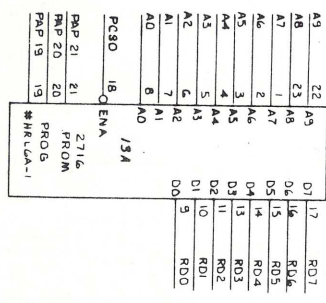
CPU



NOTE: Connector J0 used for test & analysis purposes only. Contains all CPU connections.

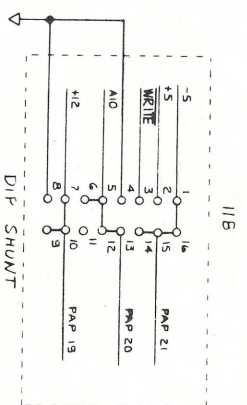
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40P 8	77-5374-8

PROGRAM MEMORY



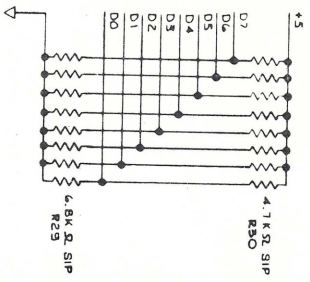
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FROM ADDRESS SELECTION



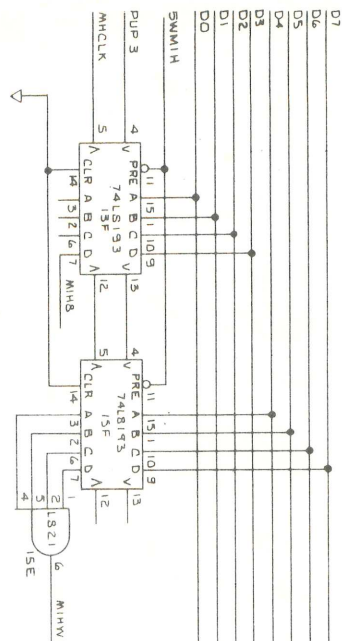
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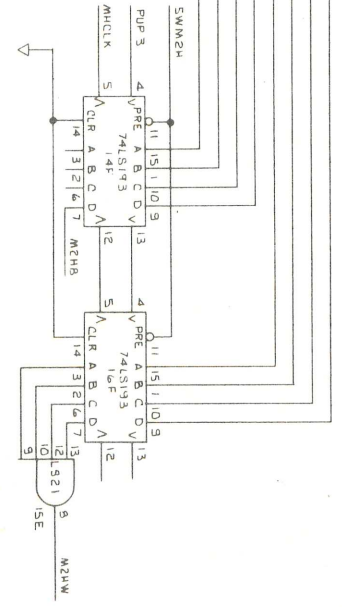


DATA BUS TERMINATION
Ringing Suppression

MOVING OBJECT 1
HORIZ. COUNTERS



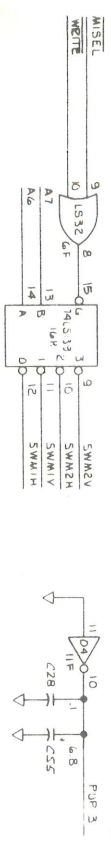
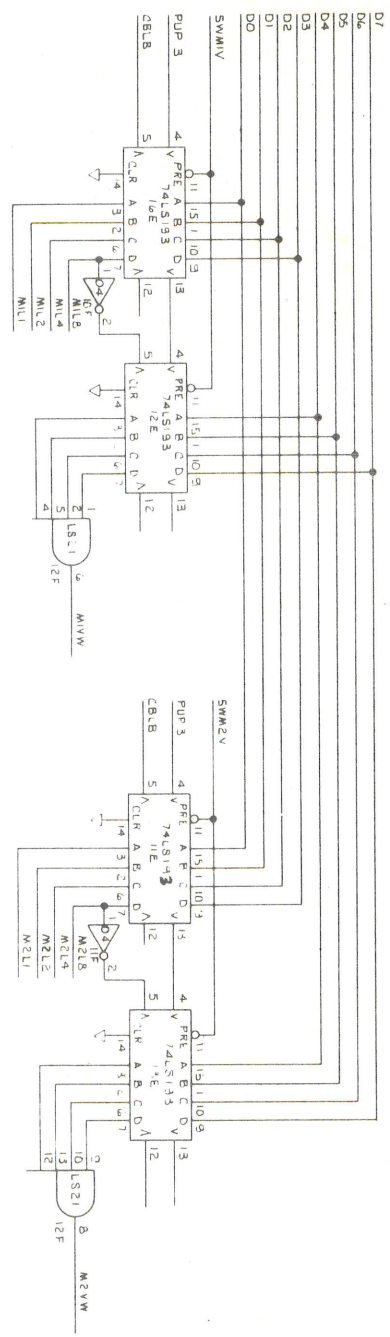
MOVING OBJECT 2
HORIZ. COUNTERS



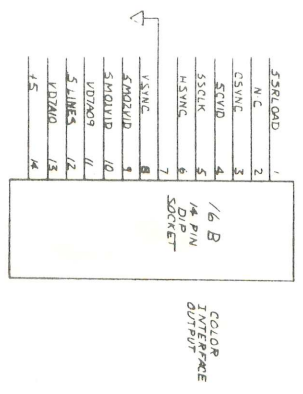
MOVING OBJECT 1
VERTICAL COUNTERS

MOVING OBJECT 2
VERTICAL COUNTERS

NOTE: FOR "TARG"
MOVING OBJECT 1 = PLAYER IMAGE (NUMBERS)
MOVING OBJECT 2 = MISSILE



WRITE MOVING OBJECT' DECODING



6502 GAME LOGIC PCB

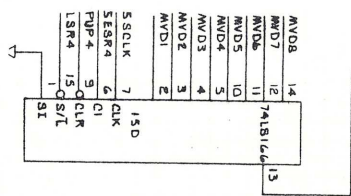
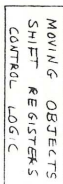
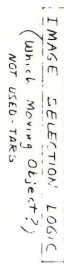
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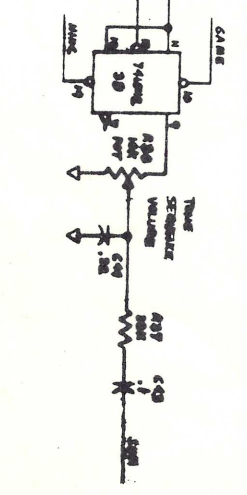
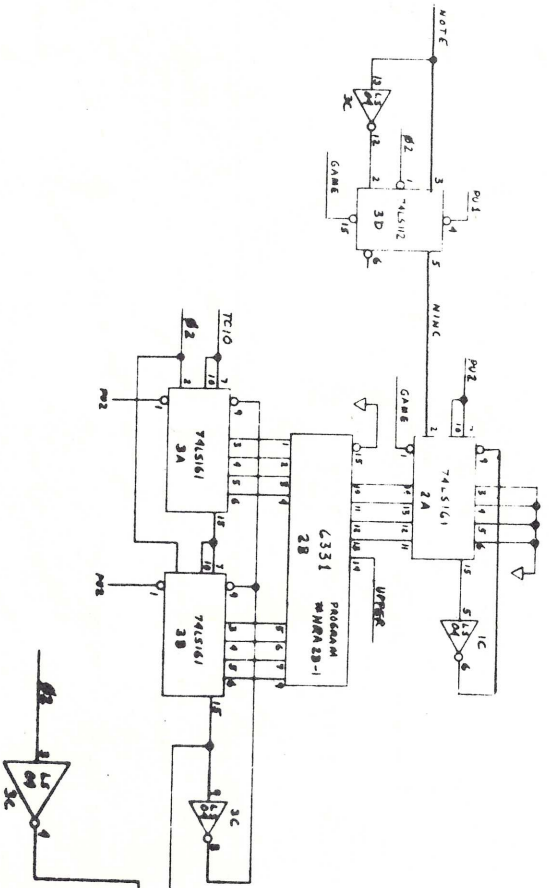
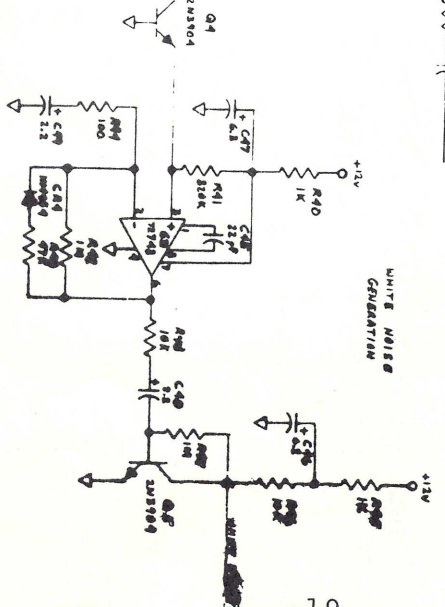
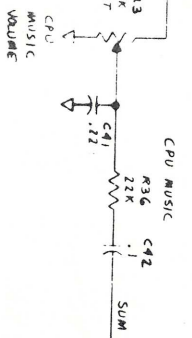
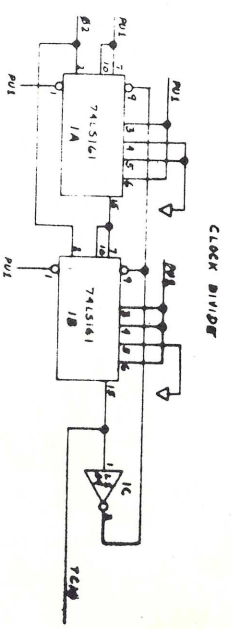
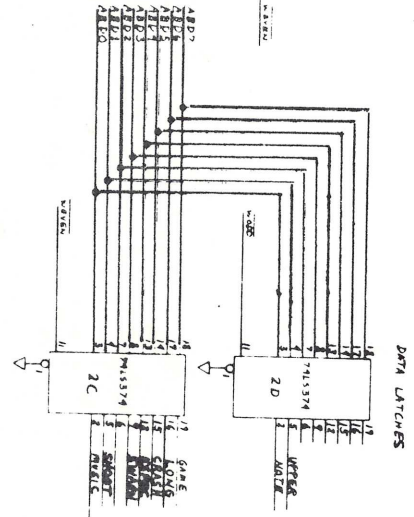
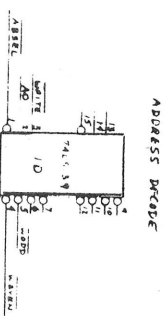
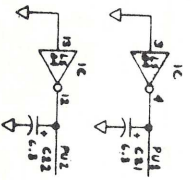
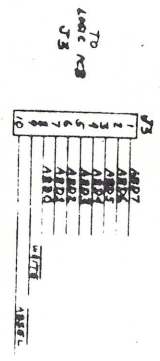
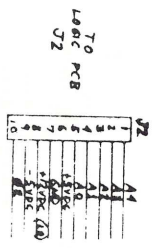
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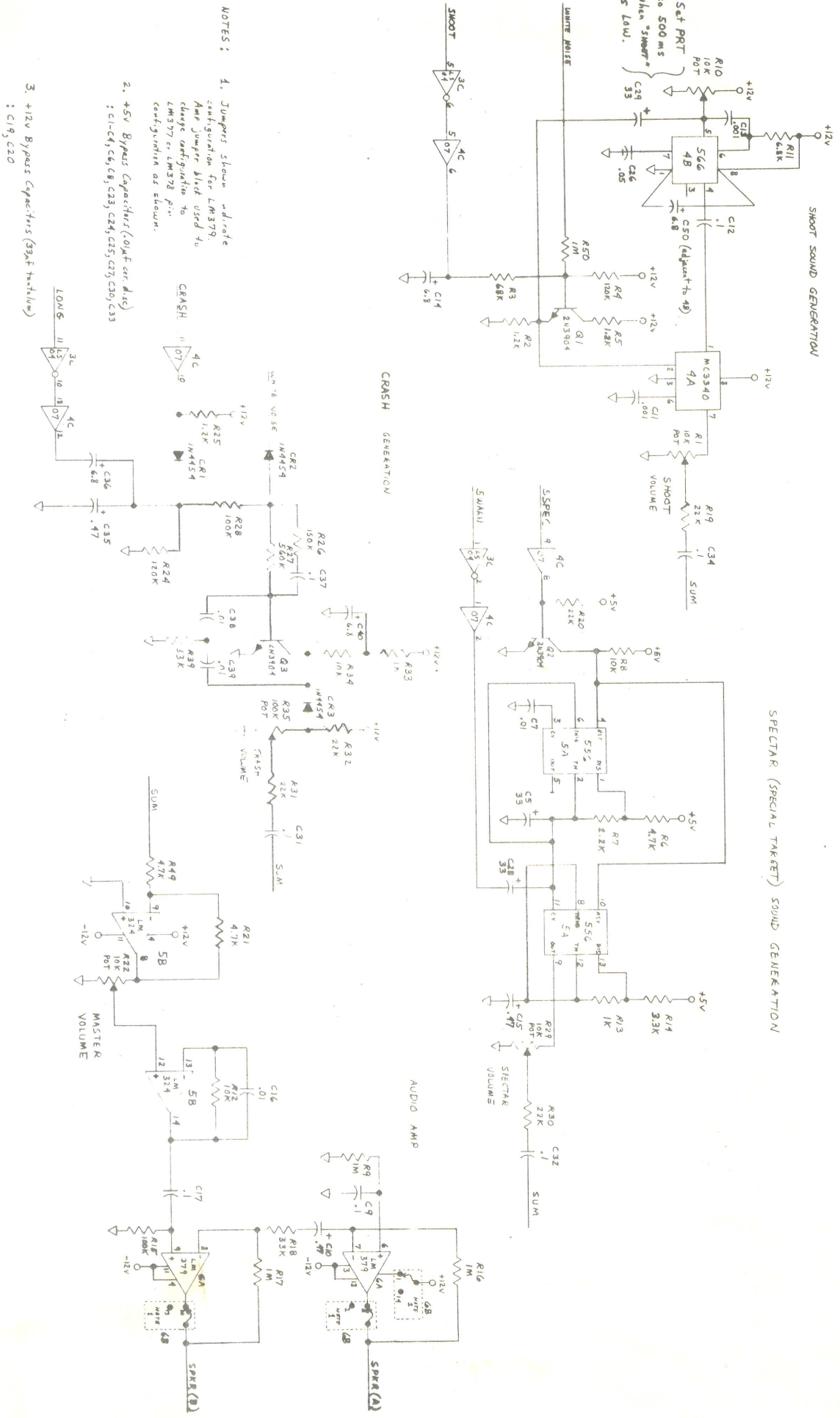
6 OF 8



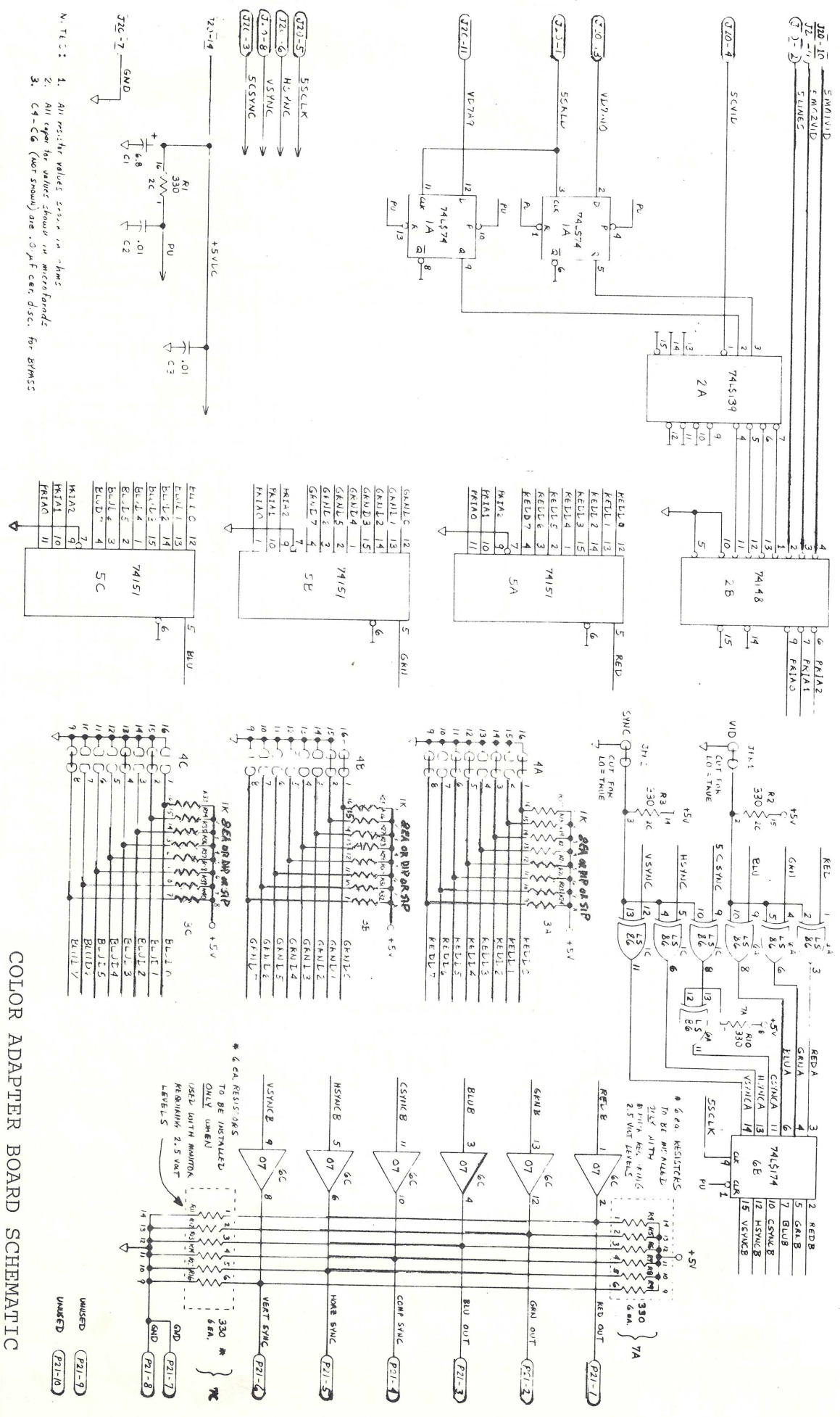
[illegible]



TARG AUDIO BOARD
1 OF 2



COLOR ADAPTER BOARD SCHEMATIC

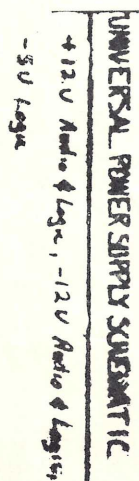


1. All resistor values shown in ohms.
2. All capacitor values shown in microfarads.
3. C4-C6 (not shown) are .01 uF cer. disc. for bypass.

REV. LETTER	ITEM NO.	ECN NO.	DESCRIPTION	DISPOSITION OF EXISTING PARTS	RE-SCRAP WORK	ENGR'G APP'D
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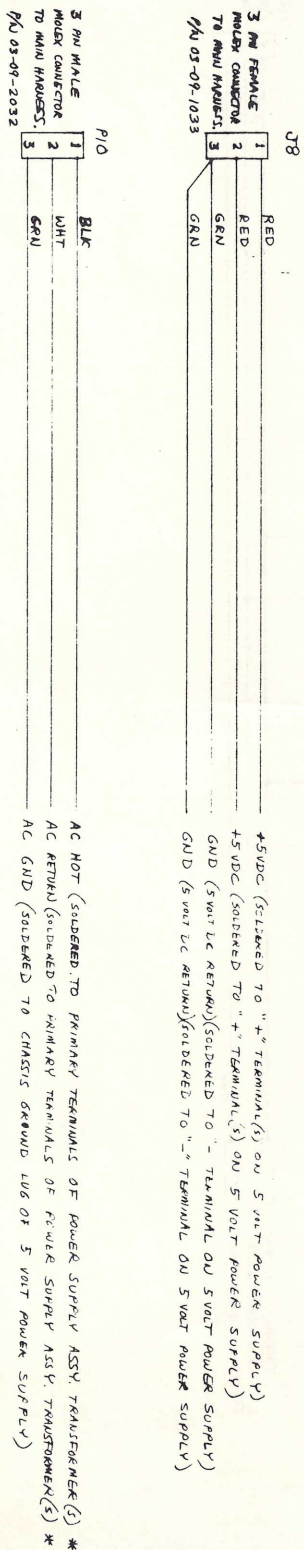
- 22 -



6502 COLOR MAIN HAIRNESS SCHEMATIC



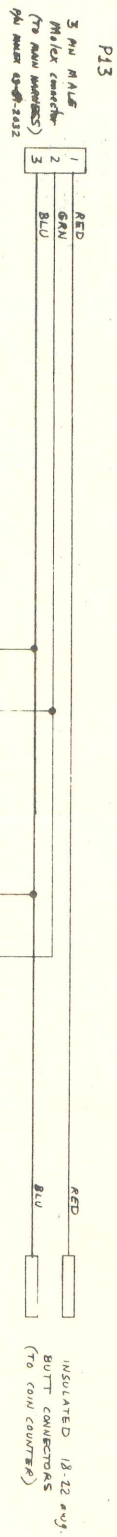
UNIVERSAL POWER SUPPLY ASSEMBLY HARNESS SCHEMATIC



* Which transformer leads or terminals used varies with manufacturer and input AC voltage requirements

- NOTES:
1. All wires 18 awg insulated unless otherwise specified
 2. ABSOLUTELY NO SUBSTITUTIONS on specified wire colors

TARG
COIL HARNESS SCHEMATIC
(UNIVERSAL COIL
HARNESS)

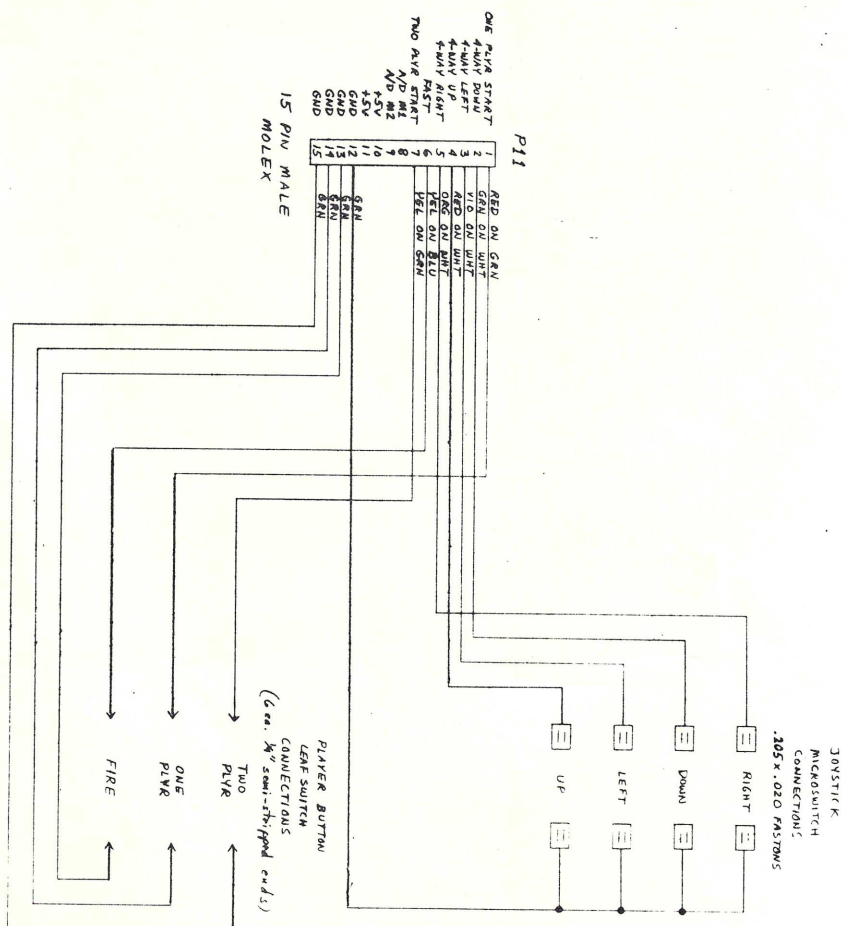


- NOTES:
1. All wires 22 awg. insulated unless otherwise specified.
 2. ABSOLUTELY NO SUBSTITUTIONS ON SPECIFIED WIRE COLORS

.205 x .032 FASTONS
NON-INSULATED
(TO MECH 1 MICROSWITCH)

.205 x .032 FASTONS
NON-INSULATED
(TO MECH 2 MICROSWITCH)

TARG
CONTROL PANEL HARNESS
SCHEMATIC



- NOTES:
1. All wires 22 awg. insulated unless otherwise specified.
 2. ABSOLUTELY NO SUBSTITUTIONS
ON SPECIFIED WIRE COLORS



