

2 P.C. BOARDS TYPE



**POPPEYE**

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# OPERATION MANUAL

**MODEL NO: TPP 2-UP**

**MODEL NO: TPP 2-UP-US**

**Nintendo™**

**—WARNING—**

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

**—WARNING—**

Use of non-Nintendo parts or modifications of your Nintendo game circuitry may adversely affect the safety of your game, and may cause injury to your players.

# Contents

<b>1. Location Setup</b>	
A. Game Inspection .....	1
B. Game Installation .....	2
(1) Voltage Selection .....	3
(2) Power On/Off Switch .....	4
(3) Adjustment of Video Monitor .....	5
<b>2. Option Switch Settings .....</b>	<b>6</b>
A. Game Price Settings .....	7
B. Game Option Settings .....	7
<b>3. Self-Test .....</b>	<b>9</b>
<b>4. Maintenance and Repair .....</b>	<b>11</b>
A. Fuse Replacement .....	11
B. Cleaning .....	11
C. Operation Panel .....	11
D. Video Monitor removal .....	13
E. Game PCB removal .....	15
<b>5. Radio Frequency Interference .....</b>	<b>15</b>
<b>6. Wiring and Connection .....</b>	<b>16</b>
<b>7. Name of each part and Parts List .....</b>	<b>17</b>

# 1. Location Setup

## A. Game Inspection

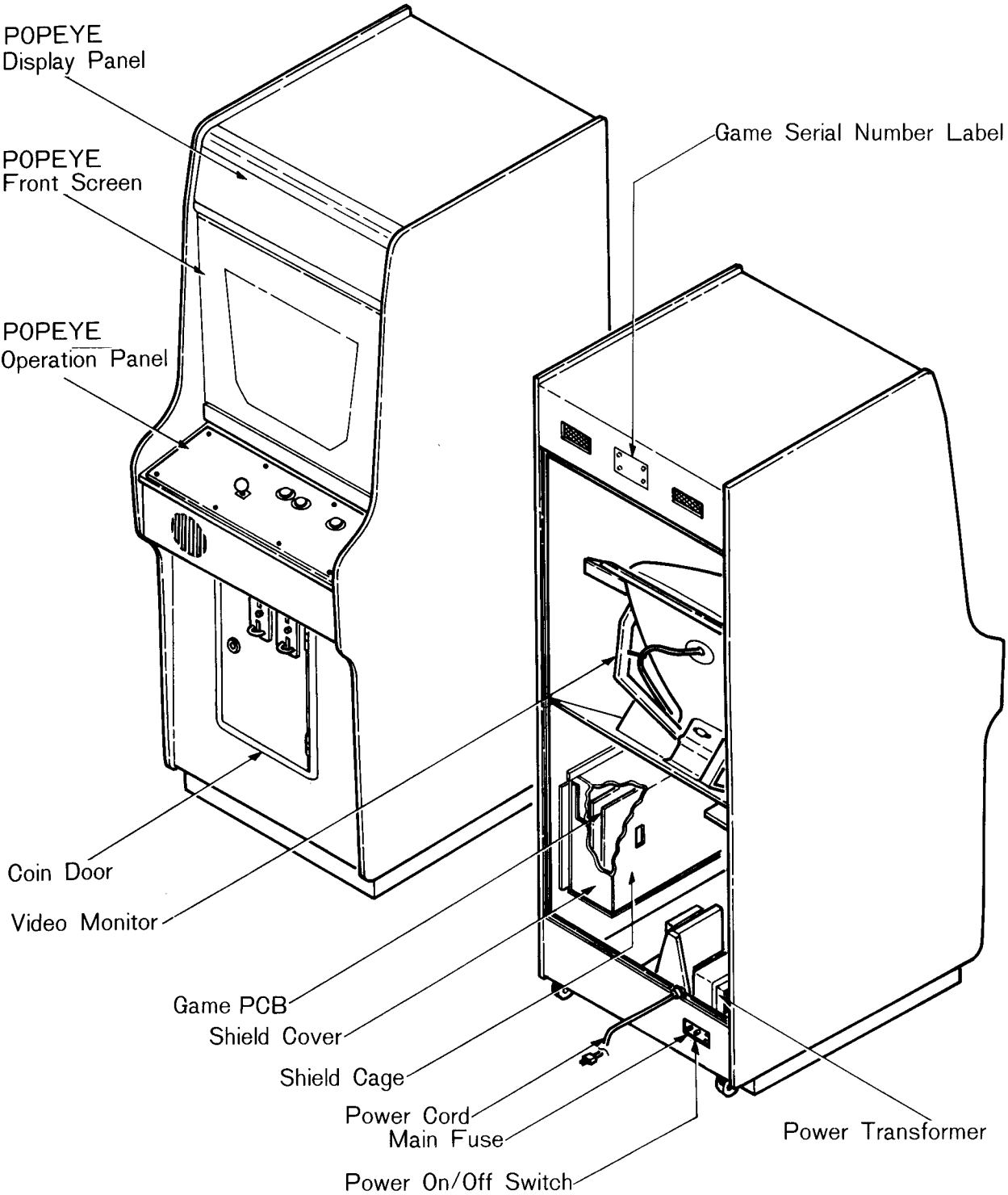


Fig. 1 Game Overview

**WARNING**

Check before plugging the game in !

The game "POPEYE" is shipped ready for operation, but a last visual check should be made to insure the final touch of quality control. Please check the following to help us insure that your new game was delivered to you in good condition.

- (1) Check the exterior of the game for shipping damage, dents, chips, or broken parts.
- (2) Remove the screws on the Rear Panel.
- (3) Unlock and open the Rear Panel, as well as the Coin Door; inspect the interior of the game as follows:
  - (a) Check that Plug-in connectors are firmly connected.
  - (b) Check that Plug-in integrated circuits on the Game PCB are firmly connected in their sockets.
  - (c) Check that all major subassemblies such as the Power Supply, Operation Panel, and Video Monitor are properly mounted.
  - (d) Remove the tie-wrap that holds the coiled Power Cord on the inside cabinet wall. Check the cord for any cuts or dents in the insulation.

## B. Game Installation

**Fig. 2**      Installation Requirements

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Power	:	101 watts
Temperature	:	0 to 38 deg.C (32 to 100 deg.F)
Humidity	:	Not over 95% relative
Space required	:	60(W) × 85(D)cm (23 1/2 × 33 1/2 in.)
Height	:	170cm (67in.)

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### (1) Voltage Selection

Before plugging in your game, make sure the Terminal Block of the Power Supply is correct for your location's line voltage.

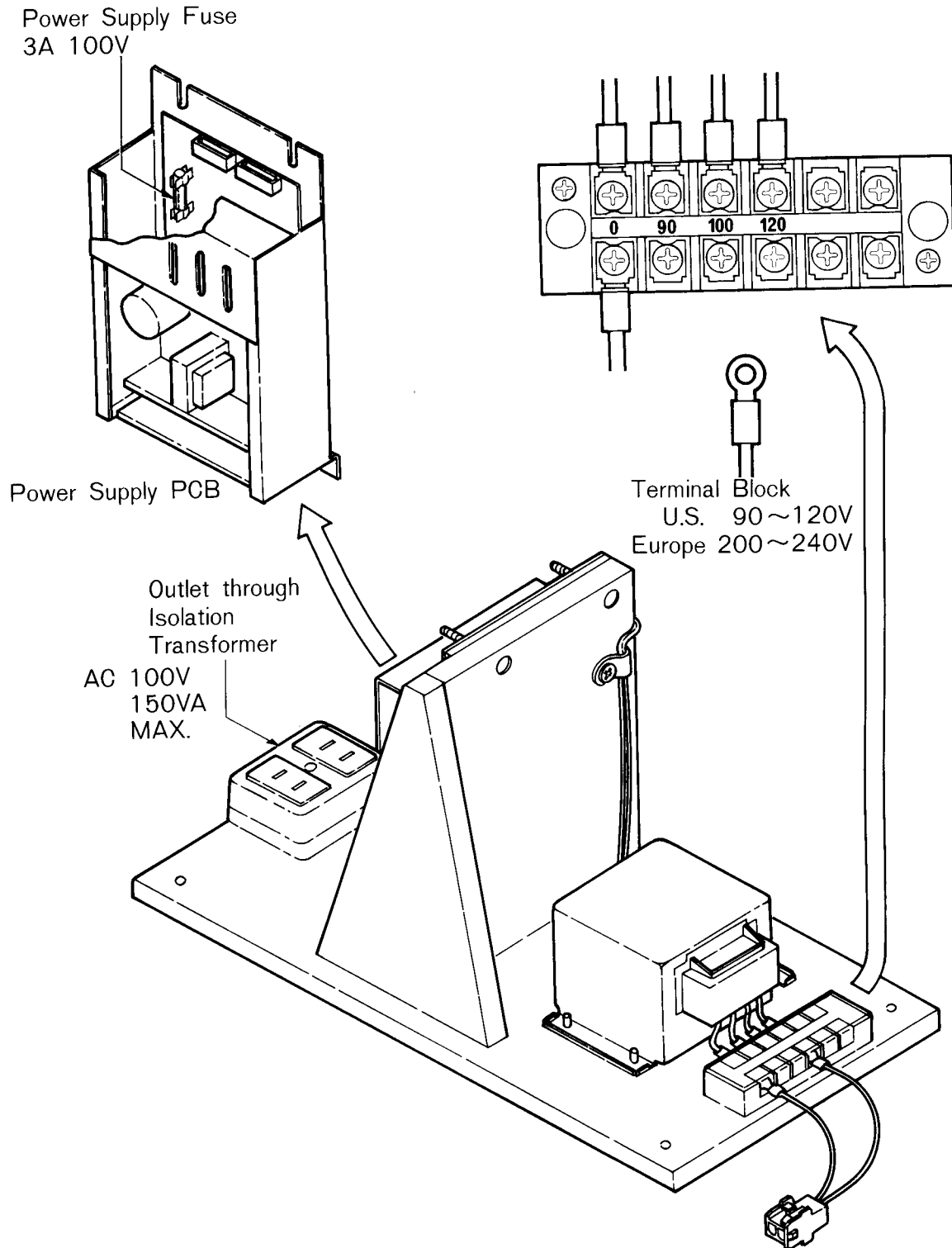


Fig. 3 Power Supply and Voltage Selection

**(2) Power On/Off Switch**

A Power On/Off Switch is located in the rear of the game at the bottom right side of the cabinet. See Fig. 1.

**—WARNING—**

This game **MUST** be grounded. Failure to do so may result in destruction to electronic components.

**—WARNING—**

If the results of the preceding steps are satisfactory, you are ready to plug the game in, and set the Power On/Off Switch to the “On” position.

### (3) Adjustment of Video Monitor

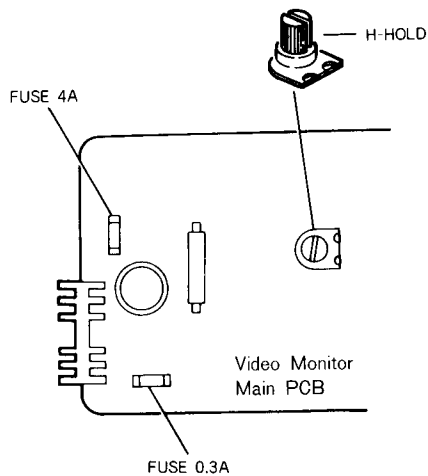
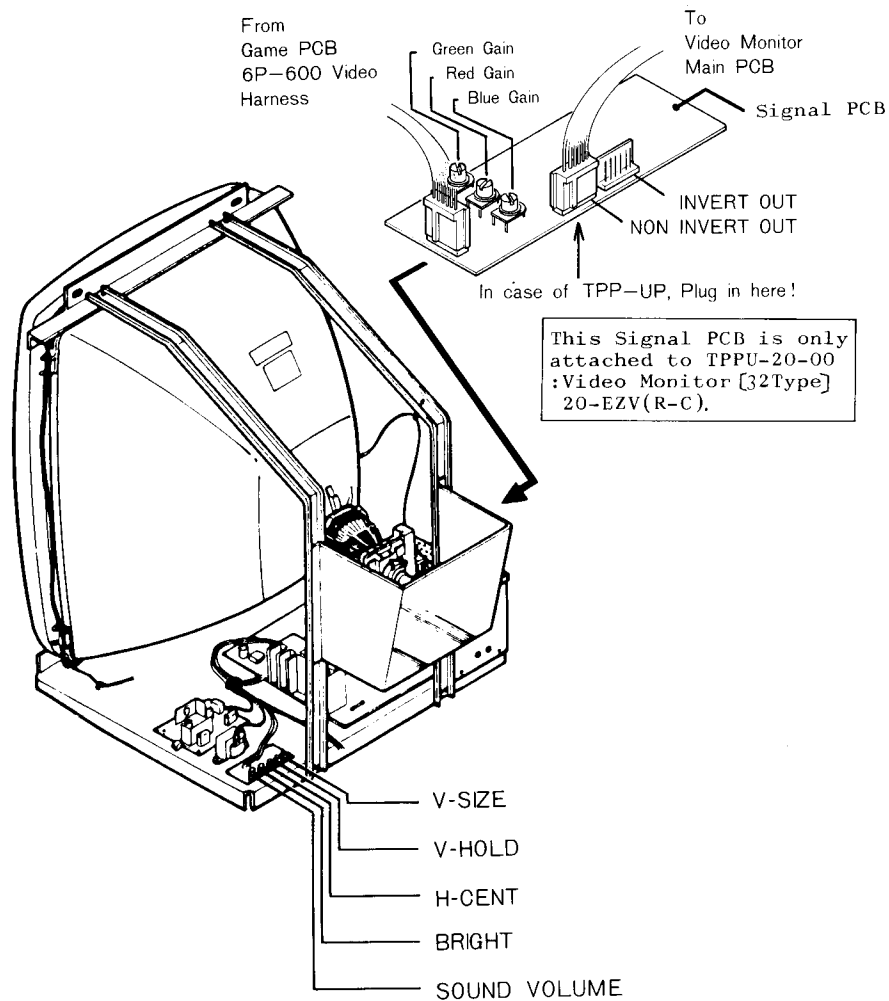


Fig. 4 Video Monitor

#### WARNING

Do not touch the inside of the Video Monitor in which many parts are supplied with high voltage.



## 2. Option Switch Settings

A pair of Option Toggle Switches are mounted on the Game PCB.

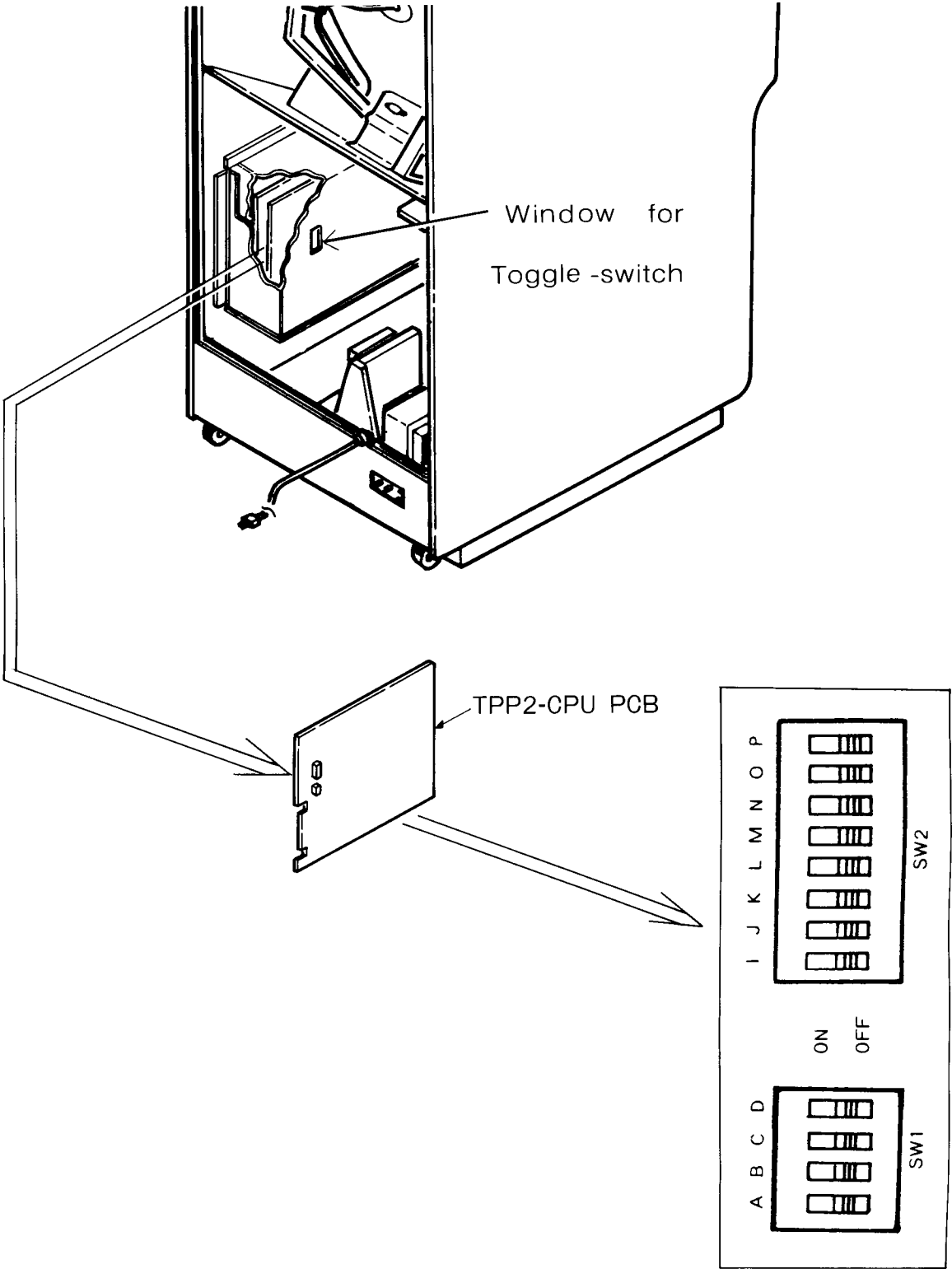


Fig. 5 Option Toggle Switches

## A. Game Price Settings

You can set the game price multipliers with Toggles A thru D (SW1) on the Game PCB.

**Fig. 6 Game Price Settings**

credit/coin	Toggle Settings			
	A	B	C	D
1/3	OFF	OFF	ON	ON
1/2	ON	OFF	OFF	OFF
1/1	OFF	OFF	OFF	OFF
2/1	OFF	ON	OFF	OFF
3/1	ON	OFF	ON	OFF
4/1	OFF	ON	ON	OFF
5/1	OFF	ON	OFF	ON
6/1	ON	ON	ON	OFF
Freeplay	ON	ON	ON	ON

## B. Game Option Settings

### (1) Number of POPEYE per Game

Set the number of POPEYE per game with Toggles I & J (SW2) on the Game PCB.

**Fig. 7 Number of POPEYE per Game**

Number of POPEYE per Game	Toggle Settings	
	I	J
1	OFF	OFF
2	ON	OFF
3	OFF	ON
4	ON	ON

\$: factory settings

### (2) Game Difficulty

Set the game difficulty with Toggles K & L (SW2) on the Game PCB.

**Fig. 8 Game Difficulty**

Game Difficulty	Toggle Settings	
	K	L
Easy (0)	OFF	OFF
(1)	ON	OFF
(2)	OFF	ON
Hard (3)	ON	ON

### (3) Bonus POPEYE

Set the Points for bonus POPEYE with Toggles M & N (SW2) on the Game PCB.

**Fig. 9 Bonus POPEYE**

Bonus POPEYE at	Toggle Settings	
	M	N
40,000pts. (0)	OFF	OFF
60,000pts. (1)	ON	OFF
80,000pts. (2)	OFF	ON
No Bonus (3)	ON	ON

### (4) Attract Music

It is a new feature to play the theme music "POPEYE" on the game Attract Mode. You can select "With music" or "Silent" with Toggle O (SW2) on the Game PCB.

**Fig. 10 Attract Music**

Attract Music	Toggle Setting
	O
Silent (0)	OFF
With music (1)	ON

\$ : factory setting

### (5) Upright/Table Version Select

**Fig. 11 Upright/Table**

Version	Toggle Setting
	P
Table (0)	OFF
Upright (1)	ON

\$ : factory setting

### WARNING

All the Option Switch Settings MUST be done with Power Off.

### 3. Self-Test

#### A. Self-Test Menu

(1) Entry

With pressing Service Switch, set the Power On/Off Switch to the "On" position.

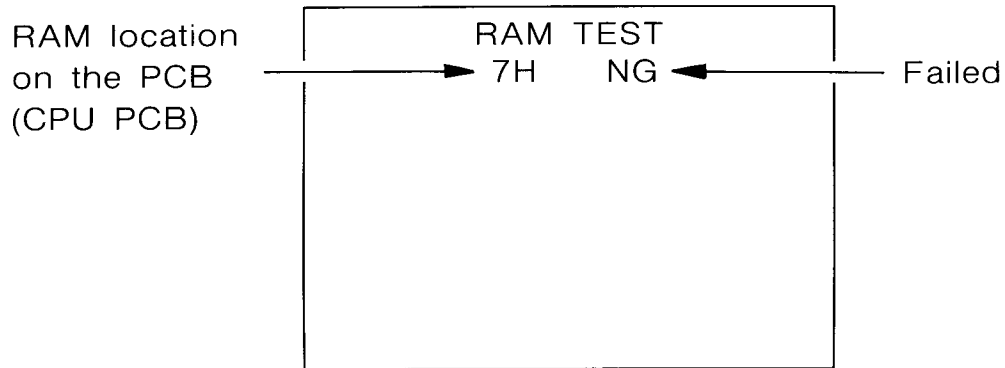
(2) Audio Test

You will hear a beep sound.

(3) RAM Test

The result of RAM Test will be displayed on the Video Monitor as follows.

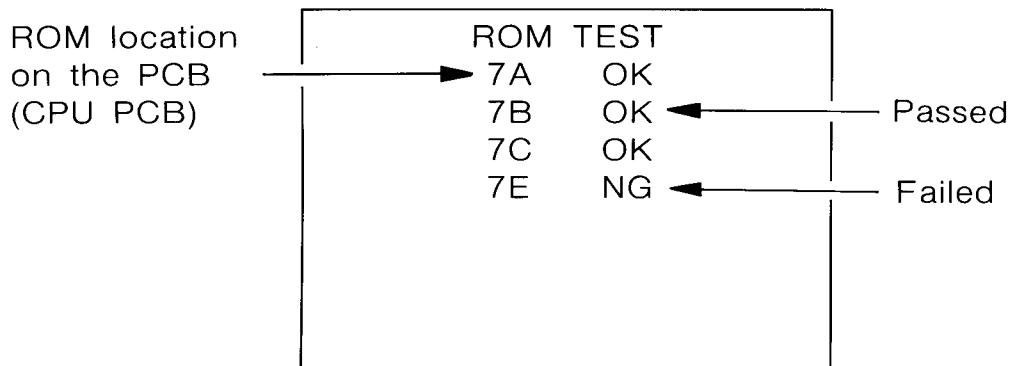
Example



(4) ROM Test

The result of ROM Test will be displayed on the Video Monitor as follows.

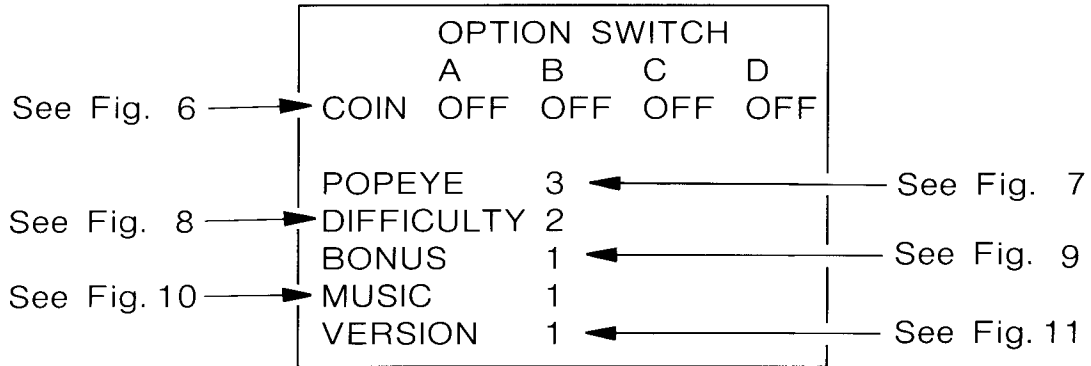
Example



**(5) Option Switch Test**

The Toggle Settings will be displayed on the Video Monitor as follows.

Example



(6) Press any switch on the Operation Panel in order to step to next test !!

**(7) Switch Test**

You will hear a beep sound for each press of the switches; 4 way Controller, Punch Switch, 1-Player Switch, 2-Player Switch, Service Switch, and Coin Switch.

(8) The end of Self-Test.

## 4. Maintenance and Repair

### A. Fuse Replacement

This game contains 4 fuses. Replace fuses only with the same type as listed below.

Fig. 12 Specification of Fuses

(1) Main fuse	U.S. : 4A 100V ( 90~120V) Europe : 2A 250V (200~240V) See Fig. 1
(2) Power Supply fuse	3A 100V See Fig. 3
(3) Video Monitor fuse	4A 100V 0.3A 100V See Fig. 4

### B. Cleaning

The exterior of the game, all metal parts and all plastic parts can be cleaned with a nonabrasive cleanser. You have to be careful when cleaning the glass or plastic parts. A dry cloth may cause scratches and results in a foggy appearance.

### C. Operation Panel

#### (1) Operation Panel removal

Before repairing or replacing any switch or 4 way Controller on the Operation Panel, unplug the game. Then open the Coin Door. Reach through the Coin Door opening and unlock the Clamps, located at each end on the underside of the Operation Panel. See Fig. 16.

#### (2) Micro-switch Replacement

Whenever you replace any micro-switch on the Operation Panel, a switch gap adjustment is needed as shown in Fig. 13, and See Fig. 22.

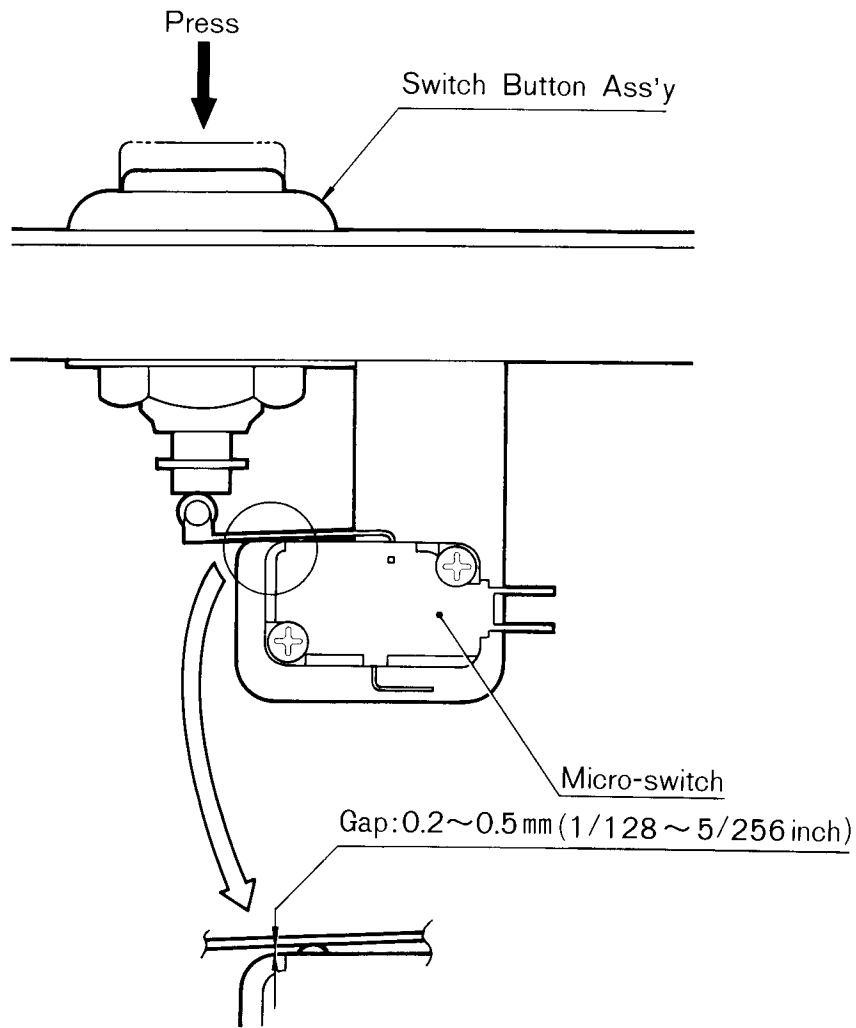


Fig. 13 Switch gap adjustment

(3) Lubrication for 4 way Controller

To maintain the 4 way Controller in good condition, lubricate the pillow balls and 4 way Guide Plate approx. every 3 months. See Fig. 14.

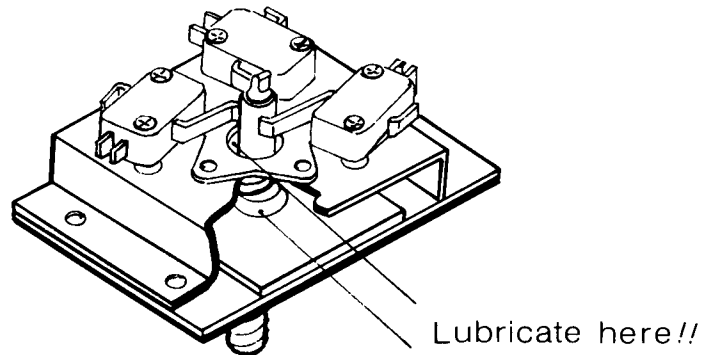


Fig. 14 Lubrication points

## D. Video Monitor removal

### (1) Front Screen removal

Unlock and open the rear panel, pull the Front Screen Clamp. Lift the Front Screen upward while pushing and then pull toward you. See Fig. 15 & Fig. 16.

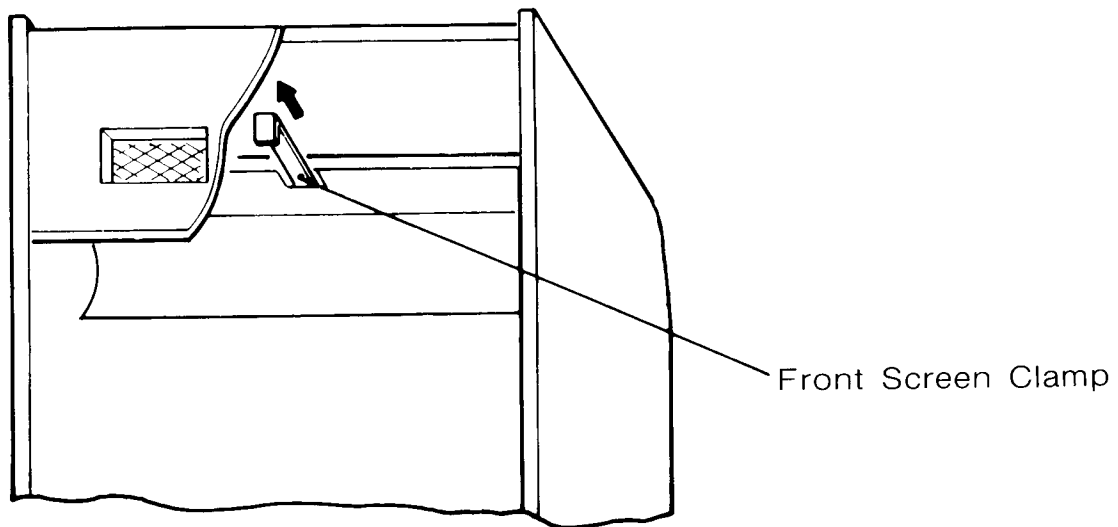


Fig. 15 Front Screen Clamp

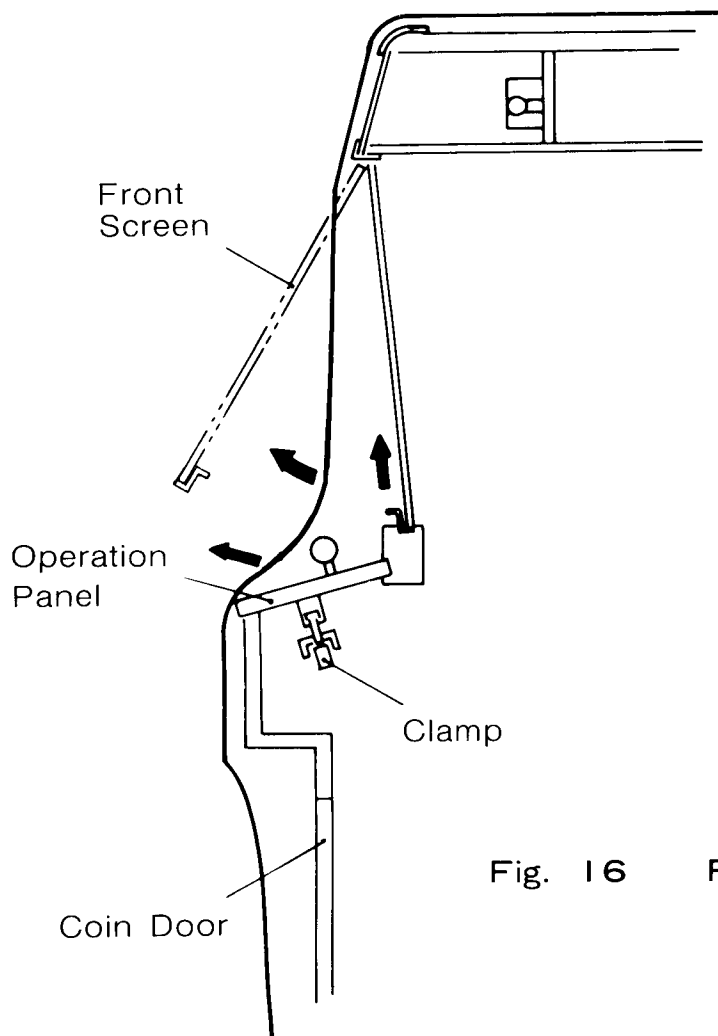


Fig. 16 Front Screen and Operation Panel removal



## (2) Video Monitor removal

If you need to remove the Video Monitor, follow the instructions listed below. But the following procedure should only be performed by an experienced service technician.

### WARNING

It is recommended the game be left unplugged for at least one hour before removing the Video Monitor. This will probably discharge the CRT, but extreme caution is still necessary.

- (a) Check the game is unplugged !!
- (b) Open the rear panel and remove the Front Screen.
- (c) Unplug all the harness and cables from the Video Monitor.
- (d) Standing at the front opening of the game, remove the four mounting bolts and flat washers. See Fig. 17.
- (e) From the rear opening, carefully lift the Video Monitor and pull toward you.

### WARNING

Use extreme caution and do not touch electrical parts of the yoke area with your hands or with any metal object in your hands.

Remove the four mounting bolts  
and flat washers

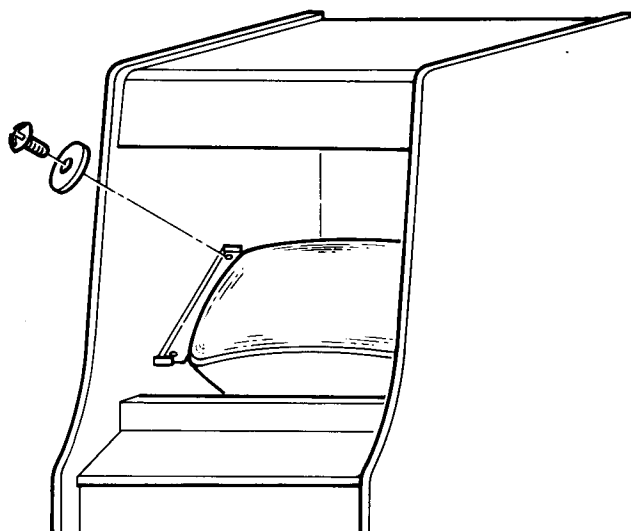


Fig. 17 Video Monitor removal

## E. Game PCB removal

- (a) Check the game is unplugged !!
- (b) Open the rear panel.
- (c) Remove the 44-pin edge connector from the upper side of the 031-FCC PCB on the Shield Cover.
- (d) Locate the 6 Phillips-head Screws on the Shield Cover. Remove and save these Screws.
- (e) Remove the Game PCB from the Shield Cage by carefully sliding it straight out of the wooden PCB retainer.

### WARNING

A reversed connector will damage your PCB !  
If the connectors don't slip on easily, don't force them !

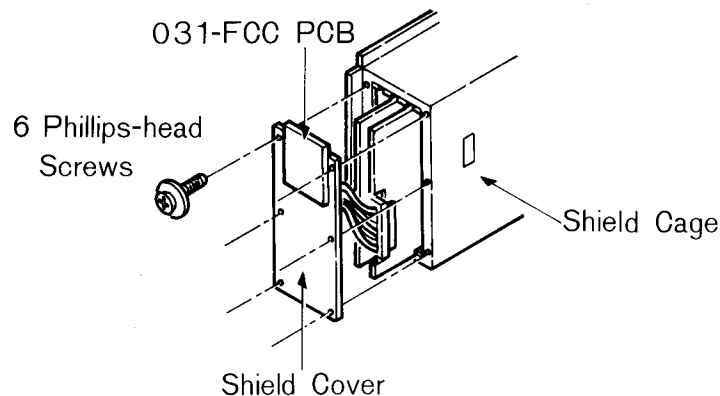


Fig. 18 Game PCB removal

## 5. Radio Frequency Interference (RFI)

In order to keep protecting against the RFI radiated from this equipment, please read the following attentions.

- (a) Do not use non-Nintendo parts !
- (b) Do not modify your game circuitry !
- (c) Do not modify the wiring harness and connections !
- (d) Connect this game only to a grounded 3-wire outlet.
- (e) After servicing the Game PCB, shut the Shield Cover completely by the Screws. See Fig. 18.

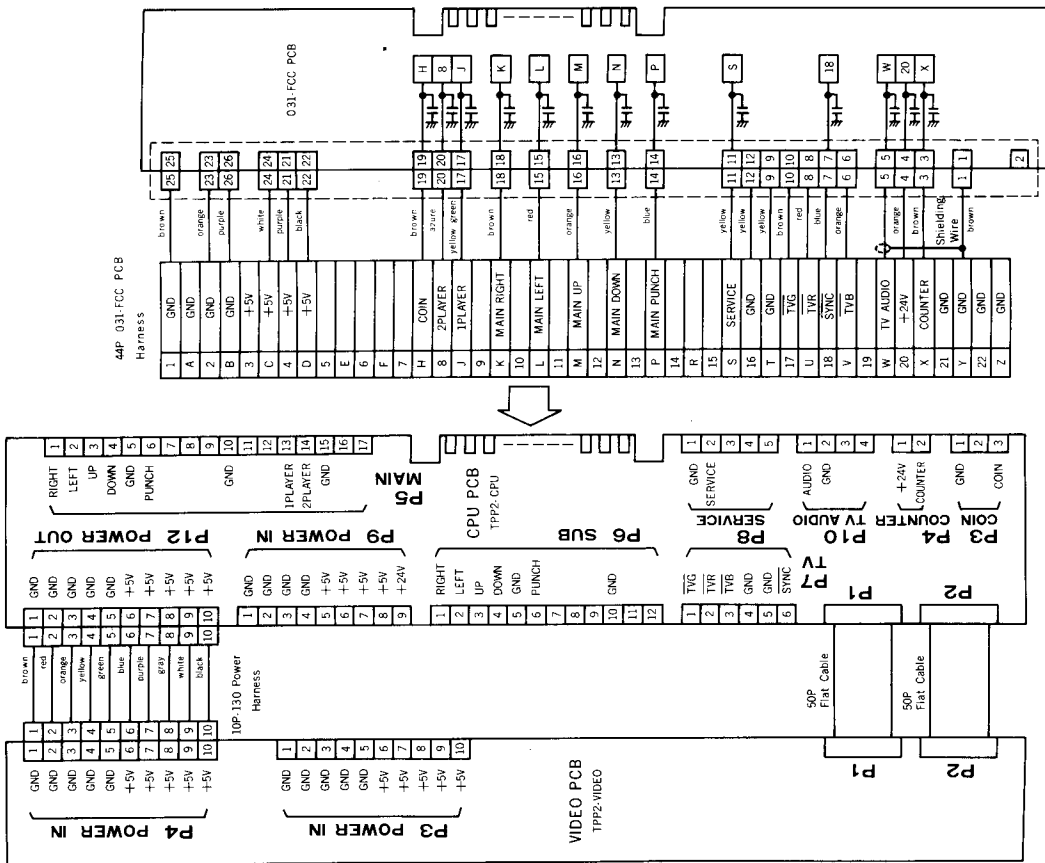
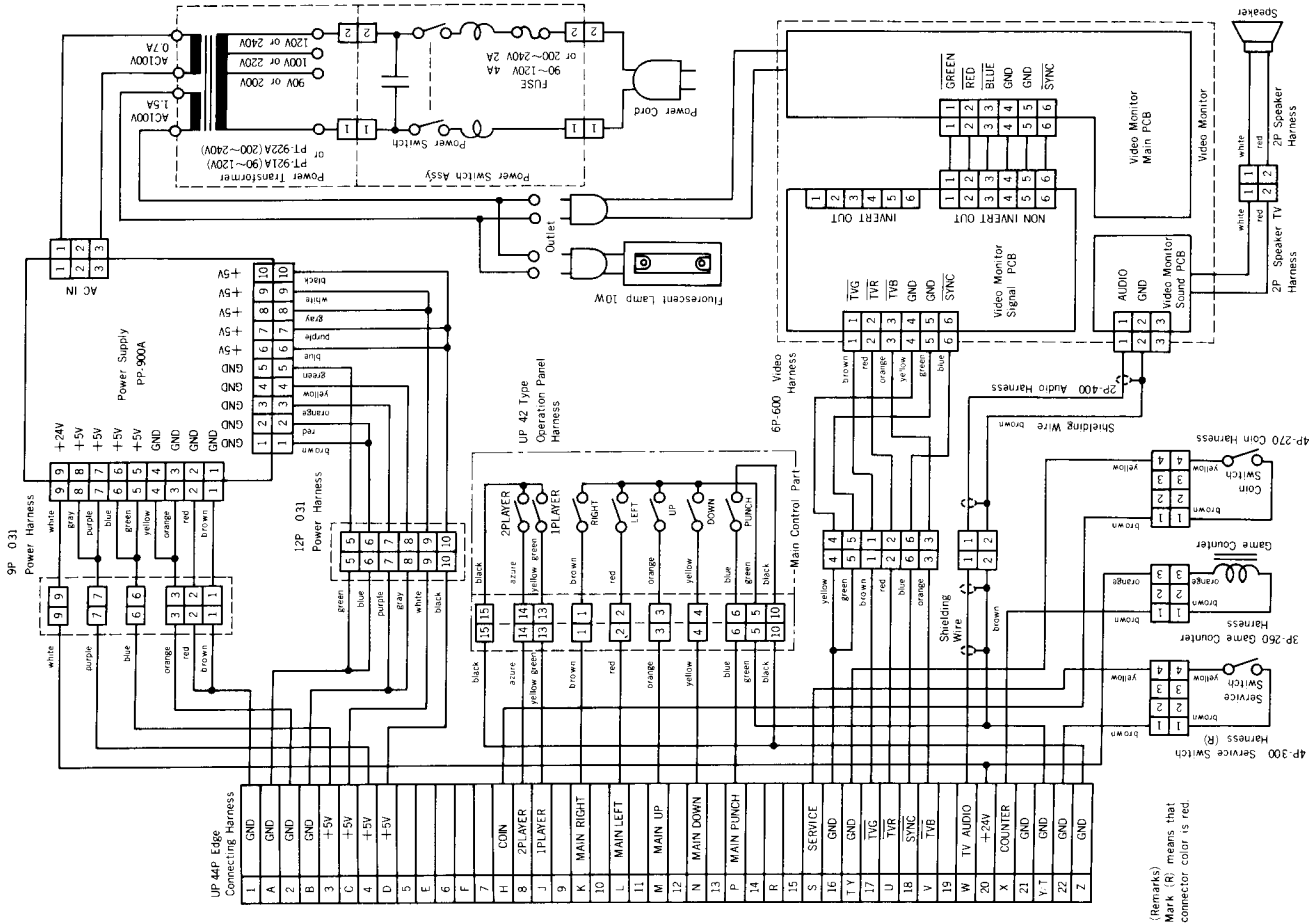


Fig. 19 Wiring and Connection

7. Name of each part and Parts List

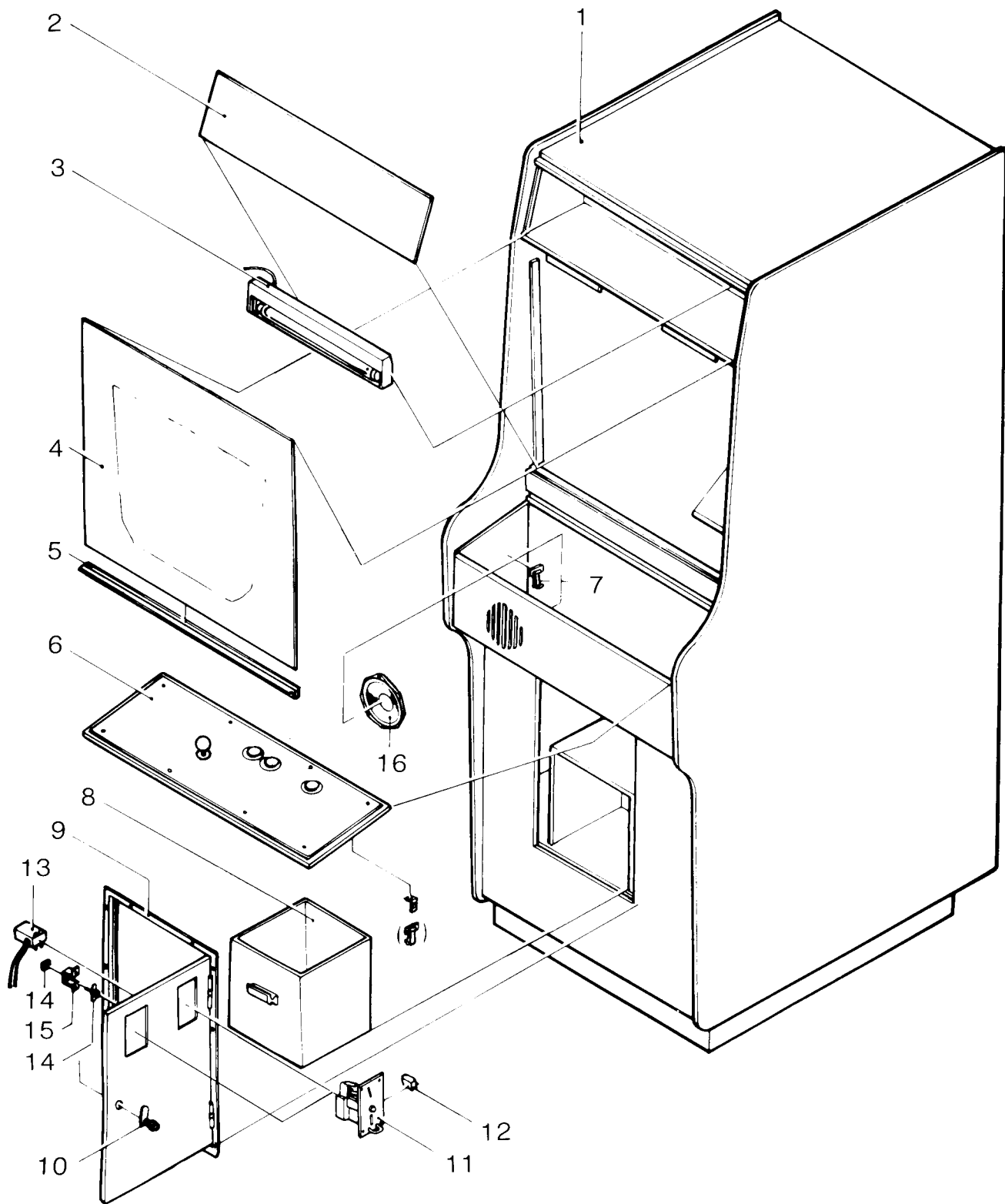


Fig. 20 Front View of Game Cabinet

ITEM	PART No.	DESCRIPTION
1	TPPU-01-01-01	Body (Wooden Game Cabinet)
2	TPPU-01-24	POPEYE Display Panel
3	TKGU-01-29	Fluorescent Lamp Ass'y
4	TPPU-01-23	POPEYE Front Screen
5	TKGU-01-53	Front Screen Frame (Lower Retainer)
6	TPPU-01-22	Plastic POPEYE Operation Panel
7	TKGU-01-31	Operation Panel Clamp A (2 Required)
8	TKGU-01-01-03	Cash Box
9	TKGU-01-28	Coin Door Ass'y
10	TKGU-01-04	Coin Door Lock
11	TPPU-01-02	Coin Selector : Order By Currency
	TPPU-01-02	Coin Selector 730A (For 25 cent)
12	TPPU-01-02-01	Coin Switch : Order By Coin Selector
	TPPU-01-02-01	Coin Switch D2MC-01F1 (For 730A)
13	TKGU-01-11	Game Counter
14	TKGU-01-33	Service Switch
15	TKGU-01-64	Service Switch Bracket
16	TKGU-01-43	Speaker

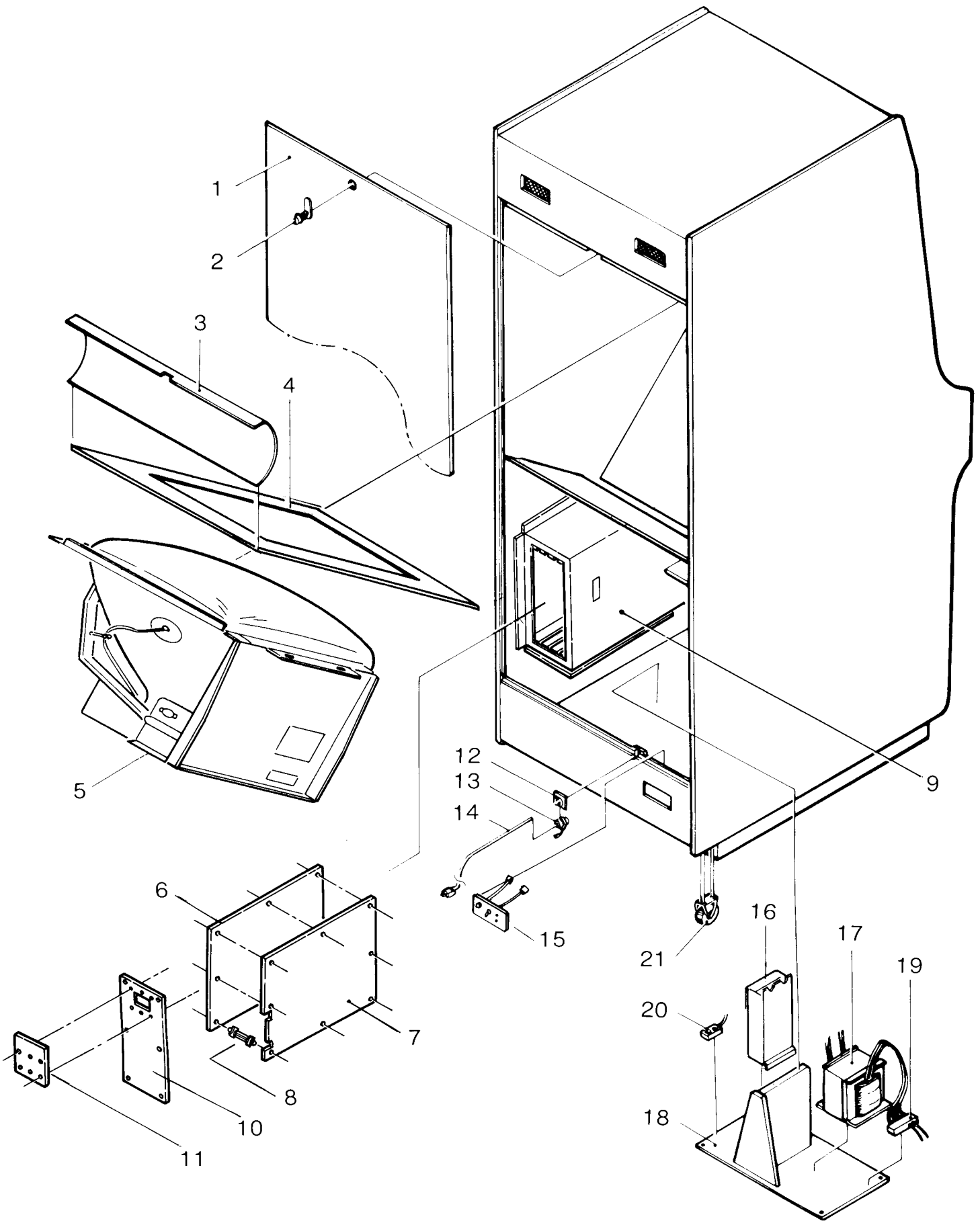


Fig. 21 Rear View of Game Cabinet

ITEM	PART No.	DESCRIPTION
1	TKGU-01-01-05	Rear Panel
2	TKGU-01-03	Rear Panel Lock
3	TPPU-01-68	Blind Cardboard (Small)
4	TPPU-01-67	Black Cardboard Bezel
5	TPPU-20-00	Video Monitor [32 Type] 20-EZV (R-C)
	or TKGU-20-00	Video Monitor [31 Type] 20-EZV (R-B)
6	TPP2-06-00	TPP2-VIDEO Complete PCB Assembly
7	TPP2-07-00	TPP2-CPU Complete PCB Assembly
8	TPP2-01-20	Dual Locking-head PCB Spacer 10N(8 Req'd)
9	TPPU-01-01-10	Shield Cage
10	TPPU-01-01-11	Shield Cover
11	TPPU-01-01-12	031-FCC PCB
12	TKGU-01-65	Strain Relief Bushing Plate
13	TKGU-01-10	Strain Relief Bushing
14	TKGU-01-08	Power Cord: Order By Voltage & Plug Type
15	TPPU-10-00	Power On/Off Switch Ass'y (For 90~120V)
15	TPPU-11-00	Power On/Off Switch Ass'y (For 200~240V)
16	TPP-08-00	PP-900A Complete Power Supply Assembly
17	TPPU-09-01-01	PT-921A Power Transformer (For 90~120V)
17	TPPU-19-01-01	PT-922A Power Transformer (For 200~240V)
18	TKGU-01-01-02	Transformer Base
19	TKGU-09-01-03	Terminal Block 6-Position Type
19	TKGU-19-01-03	Terminal Block 4-Position Type
20	TKGU-09-01-02	Outlet Through Isolation Transformer
21	TKGU-01-30	Caster (2 Required)

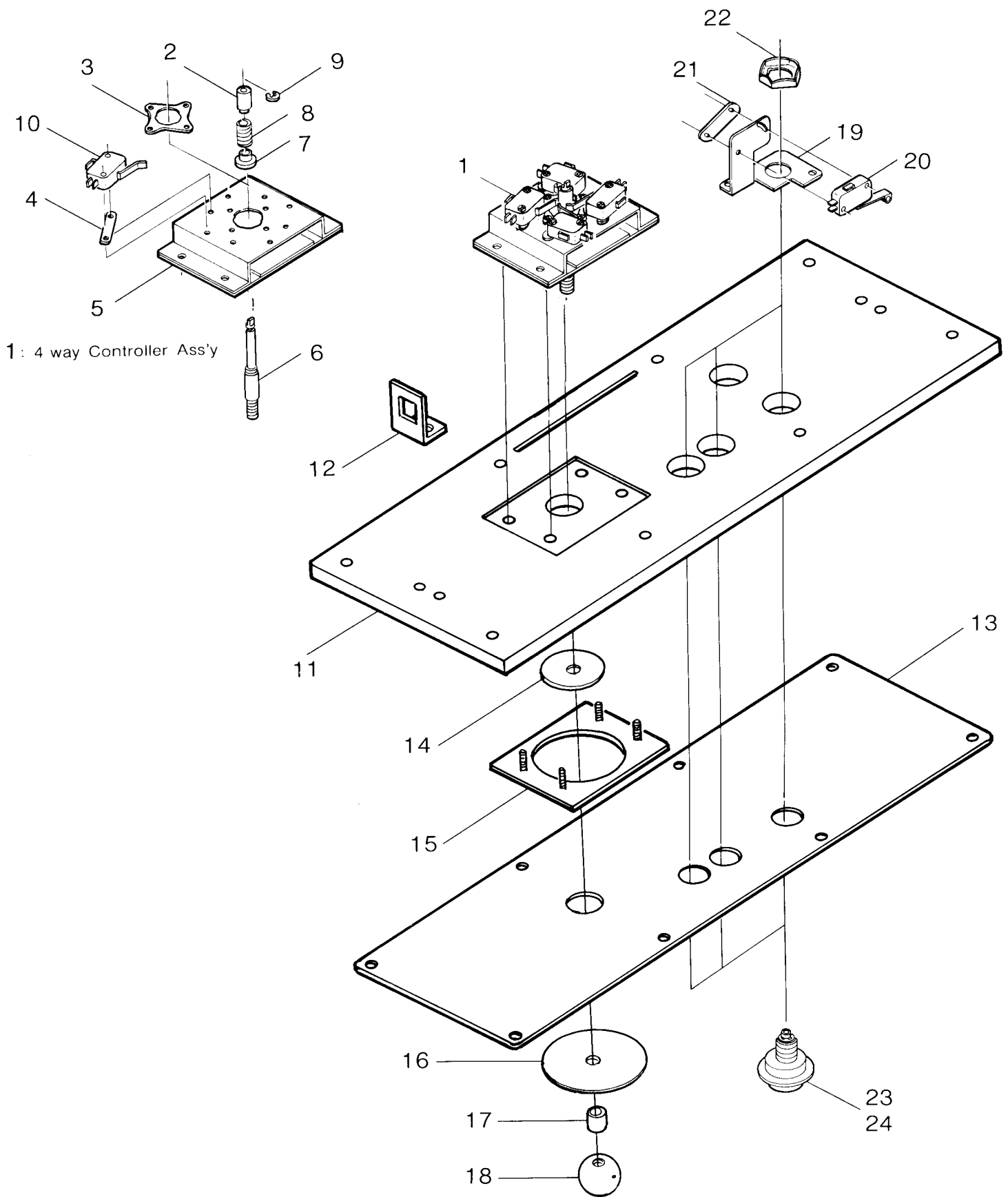


Fig. 22 Operation Panel Assembly



**PARTS LIST: TPP2-UP Operation Panel Assembly**

ITEM	PART No.	DESCRIPTION
1	TKGU-23-50	Complete 4 way Controller Ass'y
2	TKGU-23-21	Switch Collar
3	TKGU-23-51	4 way Guide Plate
4	TKGU-23-17	Switch Spacer (4 Required)
5	TKGU-23-16	Bearing Bracket
6	TKGU-23-19	Shaft
7	TKGU-23-20	Spring Stopper
8	TKGU-23-22	Lever Spring
9	TKGU-23-23	E Ring 4
10	TKGU-23-13	Control Switch (4 Required)
11	TKGU-01-01-04	Wooden Operation Base
12	TKGU-01-55	Operation Panel Clamp B
13	TPPU-01-22	Plastic POPEYE Operation Panel
14	TKGU-23-14	Blind Plate
15	TKGU-01-39	Controller Ass'y Mounting Plate
16	TKGU-01-70	Controller Knob Plate
17	TKGU-23-29	Controller Knob Collar
18	TKGU-01-41	Controller Knob
19	TKGU-23-12	Switch Button Bracket (3 Required)
20	TKGU-23-10	Button Micro-switch VL105L2 (3 Required)
21	TKGU-23-26	Nut Plate (3 Required)
22	TKGU-23-34	Pal Nut (3 Required)
23	TKGU-23-31	Blue Button Ass'y (For 1P, 2P)
24	TKGU-23-32	Orange Button Ass'y (For Punch)

**PARTS LIST: TPP2-UP Wiring Harness**

PART No.	DESCRIPTION	See Fig. 19
TPPU-93-01	UP 44P Edge Connecting Harness	
TPPU-93-31	44P 031-FCC PCB Harness	
TPPU-93-02	2P-400 Audio Harness (400mm)	
TPPU-93-07	6P-600 Video Harness (600mm)	
TPPU-93-03	3P-260 Game Counter Harness (260mm)	
TPPU-93-04	4P-300 Service Switch Harness (300mm)	
TPPU-93-05	4P-270 Coin Harness (270mm)	
TPPU-93-06	4P-270 Double Coin Harness (270mm)	
TKGU-13-06	2P Speaker TV Harness [2P-370] (370mm)	
TKGU-13-17	2P Speaker Harness [2P-860] (860mm)	
TPPU-93-08	9P 031 Power Harness (9P-9P Connector)	
TPPU-93-09	12P 031 Power Harness (10P-12P Connector)	
TPPU-93-10	UP 42 Type Operation Panel Harness	
DJR-13-12	50P Flat Cable [50P-40] (2 Required)	
TPPU-93-11	10P-130 Power Harness (130mm)	
or DJR-89-11	10P Power Harness [10P-180] (180mm)	

No.	DESCRIPTION (Reference Designations and Locations)
TPP2-07-00	TPP2-CPU Complete PCB Assembly
TPP2-07-01	Z80A Microprocessor (5J)
TPP2-07-02	AY-3-8910 Audio I/O MOS LSI with Heat Sink (7L)
TPP2-07-03	2764 8K byte EPROM 300 nsec. : TPP2-C-7Ab (7A)
TPP2-07-04	2764 8K byte EPROM 300 nsec. : TPP2-C-7Bb (7B)
TPP2-07-05	2764 8K byte EPROM 300 nsec. : TPP2-C-7Cb (7C)
TPP2-07-06	2764 8K byte EPROM 300 nsec. : TPP2-C-7Eb (7E)
TPP2-07-07	MB7051 32 × 8 bit Bipolar ROM : TPP2-C-3A (3A)
TPP2-07-08	MB7051 32 × 8 bit Bipolar ROM : TPP2-C-4A (4A)
TPP2-07-09	MB7052 256 × 4 bit Bipolar ROM : TPP2-C-5A (5A)
TPP2-07-10	MB7052 256 × 4 bit Bipolar ROM : TPP2-C-5B (5B)
TPP2-07-11	Selected Decoder : TPP2-C-7J (7J)
TPP2-07-12	PLA : TPP2-C-3E (3E)
TPP2-07-13	PLA : TPP2-C-4E (4E)
TPP2-07-14	PLA : TPP2-C-6E (6E)
TPP2-07-15	PLA : TPP2-C-6F (6F)
TPP2-07-16	PLA : TPP2-C-6H (6H)
TPP2-07-17	TMM2016 2K byte RAM 200 nsec. (7H)
TPP2-07-18	28 Pin ALU Custom Chip (7K)
TPP2-07-19	75471 Dual 2-input NAND Driver (1P)
TPP2-07-20	7437 Quad 2-input NAND Buffer (5H)
TPP2-07-21	74123 Dual Retriggerable Monostable (3M)
TPP2-67-01	74LS00 Quad 2-input NAND (1B, 1D, 4L, 8D)
TPP2-07-22	74LS02 Quad 2-input NOR (2K, 3L, 5E, 6C, 8E)
TPP2-67-02	74LS04 Hex Inverter (1A, 4H, 4K)
TPP2-67-03	74LS08 Quad 2-input AND (3J)
TPP2-07-23	74LS14 Hex Schmitt-Trigger Inverter (3N)
TPP2-67-04	74LS20 Dual 4-input NAND (5D)
TPP2-67-05	74LS74 Dual D Type Flip-Flop (1C, 1L, 2D, 3K, 6D)
TPP2-07-24	74LS109 Dual J-K Flip-Flop (5F)
TPP2-07-25	74LS138 Single 3 to 8 Line Decoder (1E)
TPP2-67-06	74LS139 Dual 2 to 4 Line Decoder (8C, 8F)
TPP2-07-26	74LS151 8 to 1 Line Data Selector (5N)
TPP2-67-07	74LS161 Synchronous 4 bit Counter (1F, 2F, 2E, 2L)
TPP2-07-27	74LS240 Octal Inverted Buffer (2P, 3P, 4M)
TPP2-07-28	74LS245 Octal Bus Transceiver (6N)
TPP2-67-08	74LS367 Hex Bus Driver (2H, 3H)
TPP2-07-29	2SC1815 Silicon NPN Transistor (Q1, 2, 4, 6, 8)
TPP2-07-30	2SA1015 Silicon PNP Transistor (Q3, 5, 7, 9)
TPP2-67-09	1S1595 Diode (D1, 2, 6)
TPP2-07-31	1S2076 Diode (D3, 4, 5, 13)
TPP2-07-32	1S5277B Diode (D7)
TPP2-07-33	DAN401 Quad Cathode-common Diode Array (DA1~6)

No.	DESCRIPTION (Reference Designations and Locations)		
TPP2-67-10	330 pf	50V Ceramic-Disc Capacitor	(C5, 6)
TPP2-07-34	680 pf	50V Ceramic-Disc Cap.	(C40)
TPP2-67-11	1000 pf	50V Ceramic-Disc Cap.	(C1)
TPP2-07-35	.01 uf	50V Ceramic-Disc Cap.	(C14, 19)
TPP2-67-12	.01 uf	50V Ceramic-Disc Cap.	(C50 ~ 113)
TPP2-07-36	.047 uf	25V $\pm 20\%$ Ceramic-Disc Cap.	(C4)
TPP2-07-37	.068 uf	25V Ceramic-Disc Cap.	(C17, 20,21)
TPP2-07-38	3.3 uf	16V Al Electrolytic Radial Cap.	(C7, 18)
TPP2-07-39	33 uf	16V Al Electrolytic Axial Cap.	(C3, 15)
TPP2-07-40	47 uf	16V Al Electrolytic Axial Cap.	(C13)
TPP2-67-13	220 uf	16V Al Electrolytic Axial Cap.	(C12)
TPP2-07-41	10 uf	10V Tantalum Radial Cap.	(C16)
TPP2-07-42	0	Ohm Shunt Lead	(R84, 85)
All discrete R are Carbon Resistors			
TPP2-07-43	51 Ohm	1/4W $\pm 5\%$ Resistor	(R35, 39,43, 47, 67)
TPP2-07-44	100 Ohm	1/4W $\pm 5\%$ Resistor	(R36, 40, 44, 51, 63)
TPP2-07-45	110 Ohm	1/4W $\pm 5\%$ Resistor	(R3)
TPP2-07-46	220 Ohm	1/4W $\pm 5\%$ Resistor	(R18, 21, 23, 26, 29,31)
TPP2-67-14	330 Ohm	1/4W $\pm 5\%$ Resistor	(R34, 38, 42, 46, 66, 82)
TPP2-07-47	360 Ohm	1/4W $\pm 5\%$ Resistor	(R37, 41, 45)
TPP2-07-48	470 Ohm	1/4W $\pm 5\%$ Resistor	(R10, 13, 15, 17, 20, 22, 25, 28, 30, 49,50)
TPP2-07-49	680 Ohm	1/4W $\pm 5\%$ Resistor	(R9, 12, 14,48)
TPP2-07-50	820 Ohm	1/4W $\pm 5\%$ Resistor	(R1, 2)
TPP2-67-15	1K Ohm	1/4W $\pm 5\%$ Resistor	(R16, 19, 24, 27,73, 74, R90~98)
TPP2-07-51	1.2K Ohm	1/4W $\pm 5\%$ Resistor	(R8, 11)
TPP2-07-52	2K Ohm	1/4W $\pm 5\%$ Resistor	(R32,52,53,55,56,58,59)
TPP2-07-53	3.3K Ohm	1/4W $\pm 5\%$ Resistor	(R81)
TPP2-07-54	5.1K Ohm	1/4W $\pm 5\%$ Resistor	(R4, 5, 6, 7, 65, 75)
TPP2-07-55	7.5K Ohm	1/4W $\pm 5\%$ Resistor	(R33)
TPP2-07-56	10K Ohm	1/4W $\pm 5\%$ Resistor	(R80)
TPP2-07-57	20K Ohm	1/4W $\pm 5\%$ Resistor	(R54)
TPP2-07-58	30K Ohm	1/4W $\pm 5\%$ Resistor	(R57, 60)
TPP2-07-59	33K Ohm	1/4W $\pm 5\%$ Resistor	(R71,72)
TPP2-07-60	120K Ohm	1/4W $\pm 5\%$ Resistor	(R61)
TPP2-07-61	510K Ohm	1/4W $\pm 5\%$ Resistor	(R62, 64)
TPP2-07-62	Hex	5.1K Ohm Series Resistor Array	(RM11)
TPP2-07-63	Octal	1K Ohm Series Resistor Array	(RM7 ~ 10)
TPP2-07-64	Quad	68 Ohm Parallel Resistor Array	(RM1 ~ 6)
TPP2-07-65	8.00 MHz	Crystal	(X1)
TPP2-07-66	4-Station,	Single-Throw, DIP Bit Switch	(SW1)
TPP2-07-67	8-Station,	Single-Throw, DIP Bit Switch	(SW2)
TPP2-67-16	16 Pin	DIP IC Socket	(3A, 4A, 5A, 5B)
TPP2-67-17	28 Pin	DIP IC Socket	(7A, 7B, 7C, 7E)
TPP2-07-68	40 Pin	DIP IC Socket	(5J, 7L)
TPP2-67-18	10 Pin	Connector Receptacle	(P12)
TPP2-67-19	50 Pin	Flat Cable Header	(P1, 2)

No.	DESCRIPTION (Reference Designations and Locations)	
TPP2-06-00	TPP2-VIDEO Complete PCB Assembly	
TPP2-06-01	2764 8K byte EPROM 450 nsec.	: TPP2-V-1Eb (1E)
TPP2-06-02	2764 8K byte EPROM 450 nsec.	: TPP2-V-1Fb (1F)
TPP2-06-03	2764 8K byte EPROM 450 nsec.	: TPP2-V-1Jb (1J)
TPP2-06-04	2764 8K byte EPROM 450 nsec.	: TPP2-V-1Kb (1K)
TPP2-06-05	2716 2K byte EPROM 450 nsec.	
or TPP2-06-06	2732 4K byte EPROM 450 nsec.	: TPP2-V-5Nb (5N)
TPP2-06-07	MB7052 256×4 bit Bipolar ROM	: TPP2-V-7J (7J)
TPP2-06-08	PLA	: TPP2-V-5U (5U)
TPP2-06-09	PLA	: TPP2-V-7H (7H)
TPP2-06-10	TMM2016 2K byte RAM 120 nsec.	(8P, 8S)
TPP2-06-11	2114 1K×4 bit RAM 300 nsec.	(5P, 5R, 5S)
TPP2-06-12	Special Ordered 256×4 bit RAM 300 nsec.	(1S, 2S, 1T, 2T, 2U)
TPP2-06-13	Selected 5501 256×4 bit CMOS RAM 350 nsec.	(1R, 2R, 1U)
TPP2-06-14	MB7063 64×9 bit Bipolar RAM	(1M, 3M, 1P, 3P)
TPP2-06-15	TC40H004 CMOS Hex Inverter	(8L)
TPP2-06-16	74S04 Schottky Hex Inverter	(7D)
TPP2-67-01	74LS00 Quad 2-input NAND	(3A, 4D, 4S, 5B, 6L, 7L)
TPP2-67-02	74LS04 Hex Inverter	(5A, 5L, 6A, 6T)
TPP2-67-03	74LS08 Quad 2-input AND	(2C, 2D)
TPP2-06-17	74LS10 Triple 3-input NAND	(3D)
TPP2-06-18	74LS11 Triple 3-input AND	(4A, 7C)
TPP2-67-04	74LS20 Dual 4-input NAND	(7B)
TPP2-06-19	74LS32 Quad 2-input OR	(1D)
TPP2-67-05	74LS74 Dual D Type Flip-Flop	(4B, 5C, 6B, 8B, 8E, 8M)
TPP2-06-20	74LS86 Quad 2-input EXOR	(2A, 5D, 6F, 6H, 6J, 7K, 8C)
TPP2-67-06	74LS139 Dual 2 to 4 Line Decoder	(4R)
TPP2-06-21	74LS157 Quad 2 to 1 Line Data Selector	(4M, 4N, 4P, 5J, 6K, 6P, 6R, 6S, 6U, 7P, 7R, 7S, 8T)
TPP2-67-07	74LS161 Synchronous 4 bit Counter	(5E, 6E, 7E, 7F, 8F, 8H, 7M, 7N)
TPP2-06-22	74LS174 Hex D Type Flip-Flop	(1L, 2L, 3C, 3L, 5T, 8U)
TPP2-06-23	74LS175 Quad D Type Flip-Flop	(3U, 4C)
TPP2-06-24	74LS194 4 bit Shift Register	(4E, 4F, 4H, 4J, 4K, 4L, 5F, 5K, 6M, 6N)
TPP2-06-25	74LS257 Quad Data Selector	(7T, 7U)
TPP2-06-26	74LS273 Octal D Type Flip-Flop	(8N)
TPP2-06-27	74LS283 4 bit Full Adder	(3R, 3S, 3T)
TPP2-67-08	74LS367 Hex Bus Driver	(4T, 4U, 6D)
TPP2-06-28	74LS368 Hex Bus Driver	(6C)
TPP2-06-29	74LS377 Octal D Type Flip-Flop	(3E, 3F, 3J, 3K)
TPP2-67-09	1S1595 Diode	(D1)

No.	DESCRIPTION (Reference Designations and Locations)		
TPP2-06-30	33 pf	50V Ceramic-Disc Capacitor	(C8)
TPP2-06-31	180 pf	50V Ceramic-Disc Cap.	(C1)
TPP2-67-10	330 pf	50V Ceramic-Disc Cap. (C2, C3, C4, C6, C7, C10)	
TPP2-67-11	1000 pf	50V Ceramic-Disc Cap.	(C5)
TPP2-67-12	.01 uf	50V Ceramic-Disc Cap.	(C50~139)
TPP2-67-13	220 uf	16V Al Electrolytic Axial Cap.	(C9)
All discrete R are Carbon Resistors			
TPP2-67-14	330	Ohm 1/4W $\pm 5\%$ Resistor	(R1, 2)
TPP2-67-15	1K	Ohm 1/4W $\pm 5\%$ Resistor	(R90~101)
TPP2-06-32	1K	Ohm $\times 9$ Parallel Resistor Array	(RM1, 2)
TPP2-06-33	20.160 MHz	Crystal	(X1)
TPP2-67-16	16 Pin	DIP IC Socket	(7J)
TPP2-06-34	24 Pin	DIP IC Socket	(5N)
TPP2-06-35	22 Pin	DIP IC Socket	(1R, 2R, 1U)
TPP2-67-17	28 Pin	DIP IC Socket (1E, 1F, 1J, 1K, 1M, 1P, 3M, 3P)	
TPP2-67-18	10 Pin	Connector Receptacle	(P4)
TPP2-67-19	50 Pin	Flat Cable Header	(P1, 2)

**PARTS LIST : PP-900A Power Supply Assembly**

Continued

No.	DESCRIPTION (Reference Designations)		
TPP-08-00	PP-900A Complete Power Supply Assembly		
TPP-08-01	3D-0086 Complete Power Supply PCB Assembly		
TPP-08-02	3D-1001	Custom Hybrid IC	(IC1)
TPP-08-03	2SA817	Silicon PNP Switching Transistor	(TR2)
TPP-08-04	2SA1015	Silicon PNP Transistor	(TR3)
TPP-08-05	2SC2535	Silicon NPN Transistor	(TR1)
TPP-08-06	SF0R1B41 or 03P05M	SCR	(SCR1)
TPP-08-07	S4VB40 or 4G4B41	Diode Bridge	(BR1)
TPP-08-08	1B4B41	Diode Bridge	(BR2)
TPP-08-09	CTB-33S or S10	Schottky Barrier Diode	(D6)
TPP-08-10	1S1835	Fast-Recovery Diode	(D1, 2, 3, 4)
TPP-08-11	1S953 or 1S1588	Diode	(D5, 8)
TPP-08-12	1S954	Diode	(D7)
TPP-08-13	05Z	5.6V Zener Diode	(ZD2)
TPP-08-14	470 pf	2KV Ceramic-Disc Capacitor	(C1, 2, 17)
TPP-08-15	10 uf	16V Al Electrolytic Radial Cap.	(C6, 9, 12)
TPP-08-16	100 uf	35V Al Electrolytic Radial Cap.	(C8)
TPP-08-17	220 uf	25V Al Electrolytic Radial Cap.	(C16)
TPP-08-18	330 uf	200V Al Electrolytic Switching Radial Cap.	(C4)
TPP-08-19	470 uf	25V Al Electrolytic Radial Cap.	(C5)
TPP-08-20	2200 uf	10V Al Electrolytic Radial Cap.	(C10, 11, 15)
TPP-08-21	1000 pf	50V Film Cap.	(C7)
TPP-08-22	.047 uf	630V Film Cap.	(C3, 13, 14)

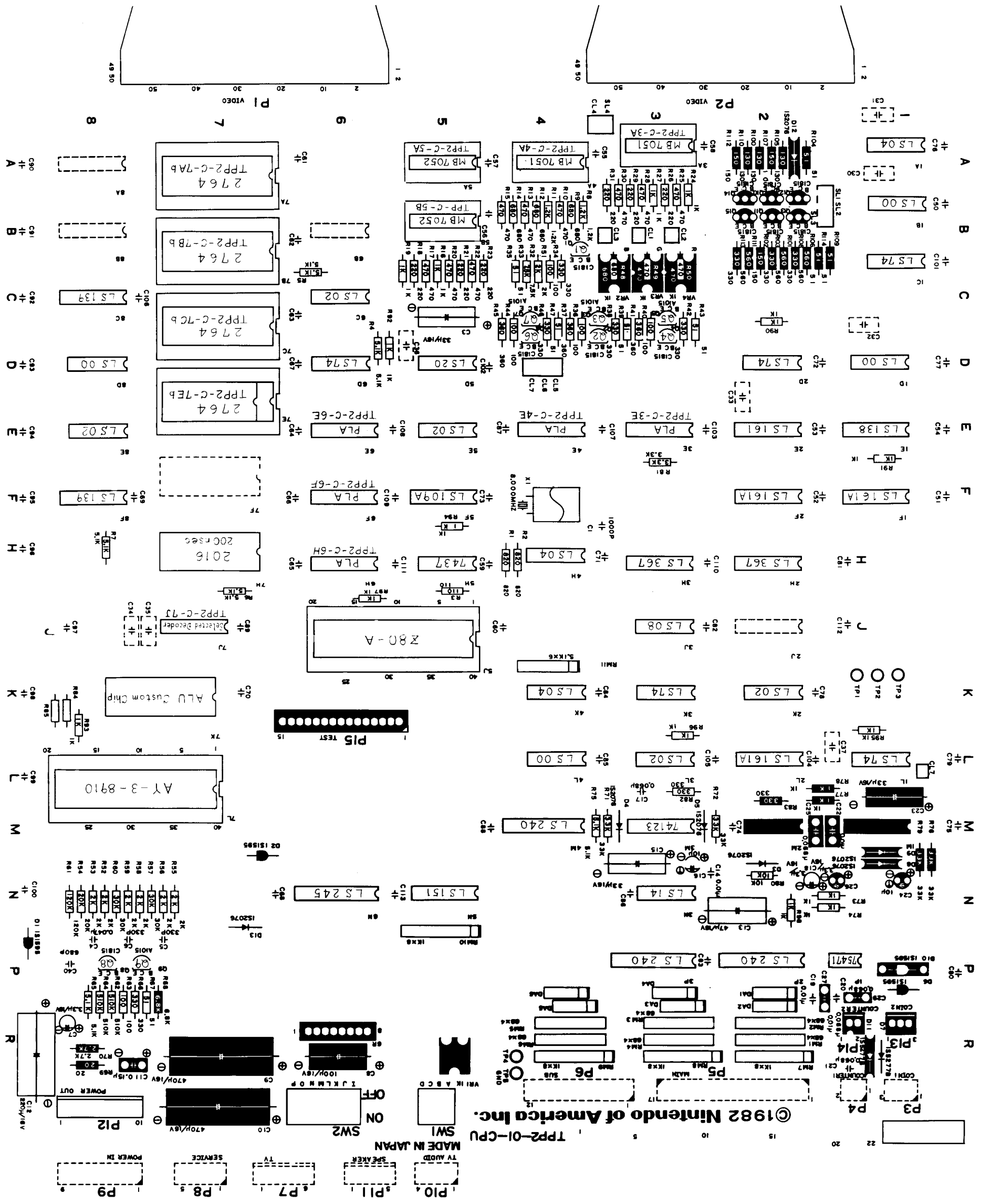
No.	DESCRIPTION (Reference Designations)	
TPP-08-23	22	Ohm 1/4W Carbon Resistor (R2)
TPP-08-24	51	Ohm 1/4W Carbon Resistor (R4, 10, 12)
TPP-08-25	470	Ohm 1/4W Carbon Resistor (R5)
TPP-08-26	1K	Ohm 1/4W Carbon Resistor (R14, 15)
TPP-08-27	20K	Ohm 1/4W Carbon Resistor (R13)
TPP-08-28	12	Ohm 1/2W Carbon Resistor (R3, 9)
TPP-08-29	100	Ohm 1/2W Carbon Resistor (R16)
TPP-08-30	1K	Ohm 1/2W Carbon Resistor (R6)
TPP-08-31	2	Ohm 5W Cement Resistor (R1)
TPP-08-32	20	Ohm 5W Cement Resistor (R11)
TPP-08-33	1	Ohm 1W $\pm 5\%$ Metal Oxide Film Resistor (R7)
TPP-08-34	1K	Ohm 3W $\pm 5\%$ Metal Oxide Film Resistor (R8)
TPP-08-35	.01	Ohm Shunt Resistor (SH1)
TPP-08-36	2K	Ohm 1/4W Vertical Cermet Trimpot (VR1)
TPP-08-37	50K	Ohm 1/4W Vertical Cermet Trimpot (VR2)
TPP-08-38	EI-30 Type	SD-0086T Switching Transformer (T1)
TPP-08-39	28 Type	3D-1000 Transformer (T2)
TPP-08-40	EE-16 Type	3D-1000 Oscillator Transformer (T3)
TPP-08-41	SC02-100	SC Coil (L1)
TPP-08-42	EI-30 Type	SD-0086L 25 mH 0.5A Choke Coil (L2)
TPP-08-43	SFT12-50	100 uH 5A SF Coil (L3)
TPP-08-44	9 Pin	DC Output Connector Receptacle (9P)
TPP-08-45	10 Pin	DC Output Connector Receptacle (10P)
TPP-08-46	3A SB FGMB NR	Type Fuse
TPP-08-47	F-6	Fuse Holder
TPP-08-48	3D-0086	Type Heat Sink
TPP-08-49	Heat Sink	Clip (2 per assembly)
TPP-08-50	Thermally	Conductive Rubber (2 per assembly)
TPP-08-51	Nylon	PCB Retainer (2 per assembly)
TPP-08-52	3D-0086	Type Metal Frame
TPP-08-53	3D-0086	Type Metal Cover
TPP-08-54	3 Pin	AC Input Connector Receptacle on Metal Frame

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**A** TPP2-CPU ASSEMBLY

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TPP2-01-CPU

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SW1  
SW2

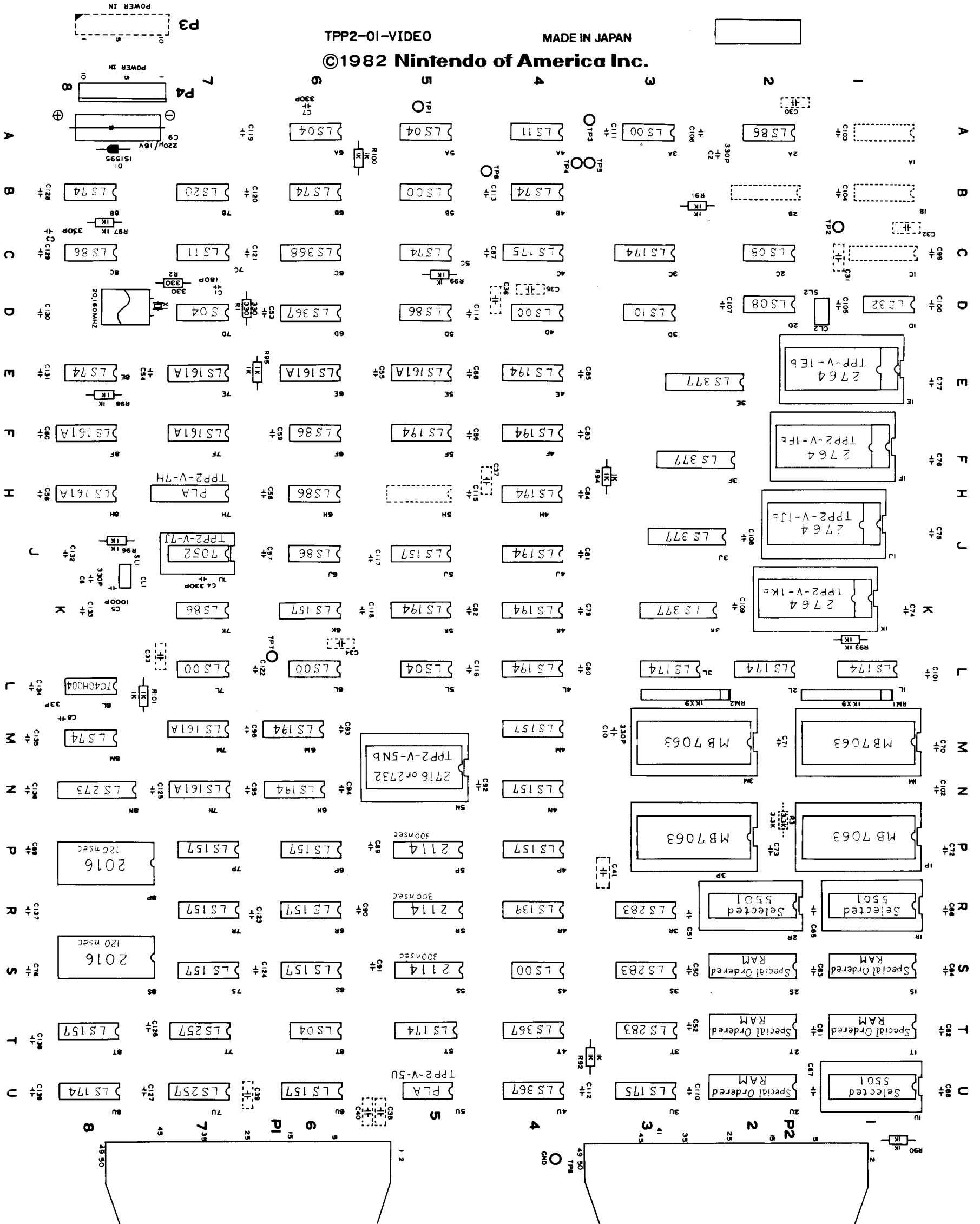
P10 TV AUDIO  
P11 SPEAKER  
P7 TV  
P8 SERVICE  
P9 POWER IN  
P12 POWER OUT



TPP2-01-VIDEO

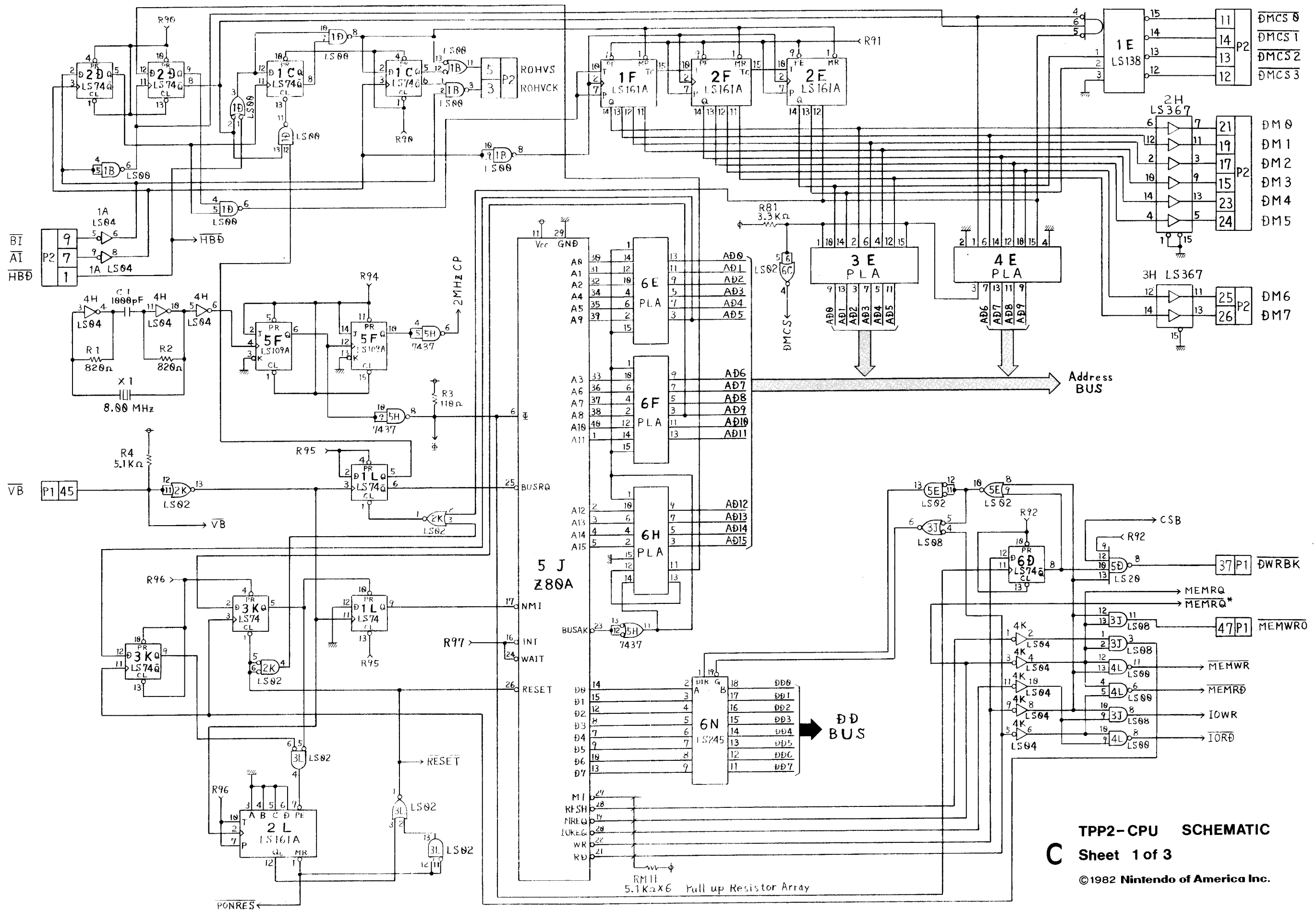
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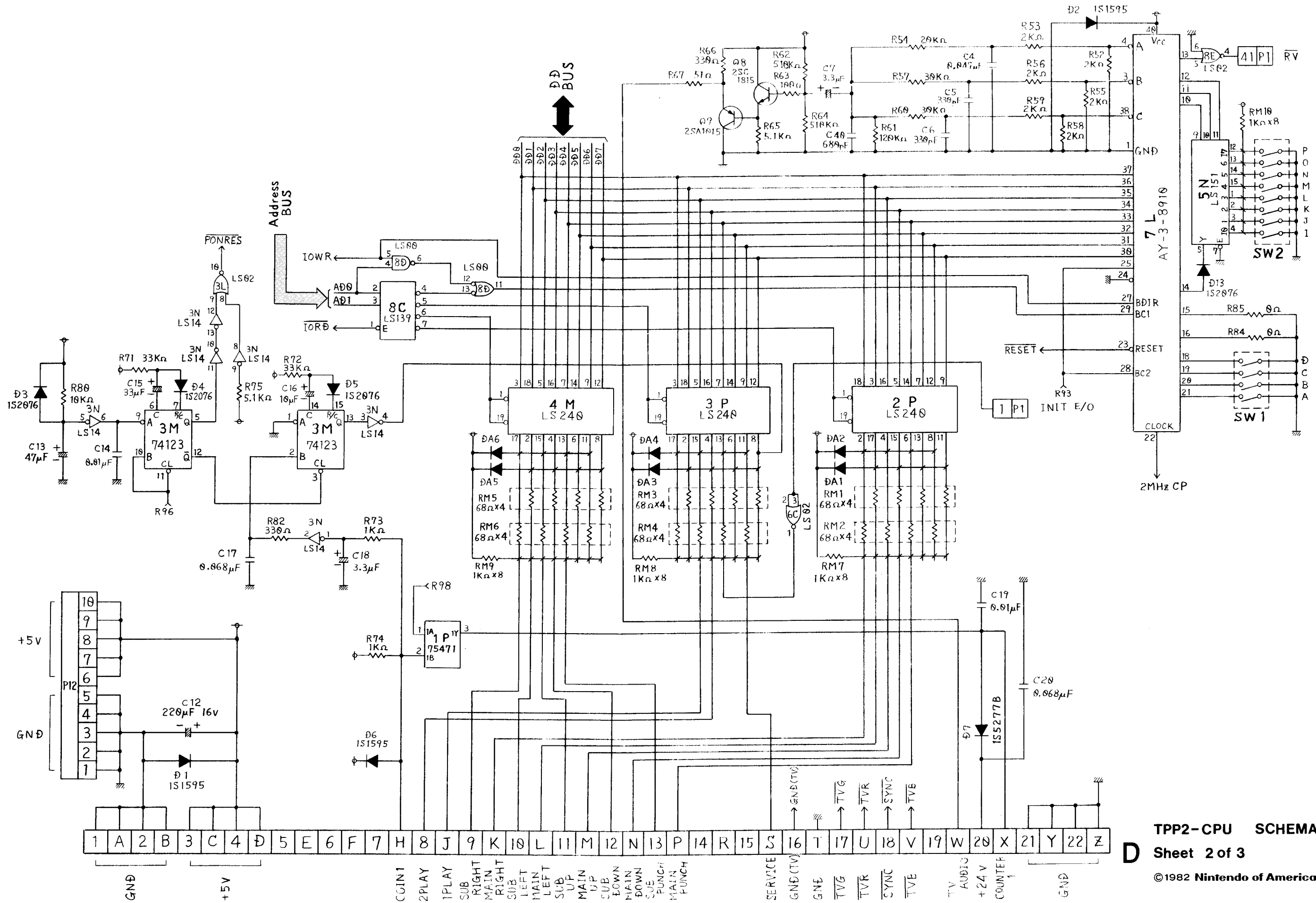


**B** TPP2-VIDEO ASSEMBLY

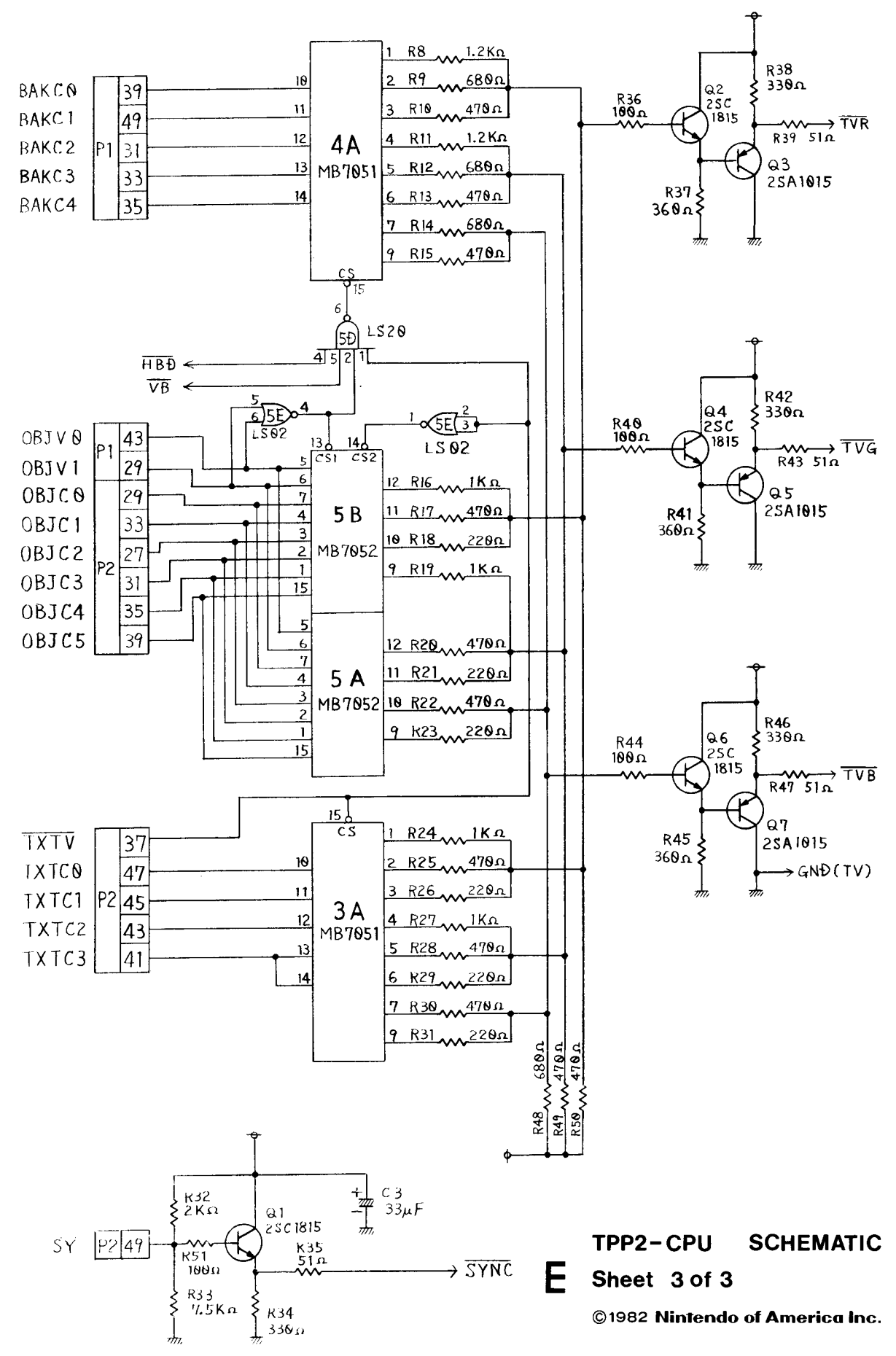
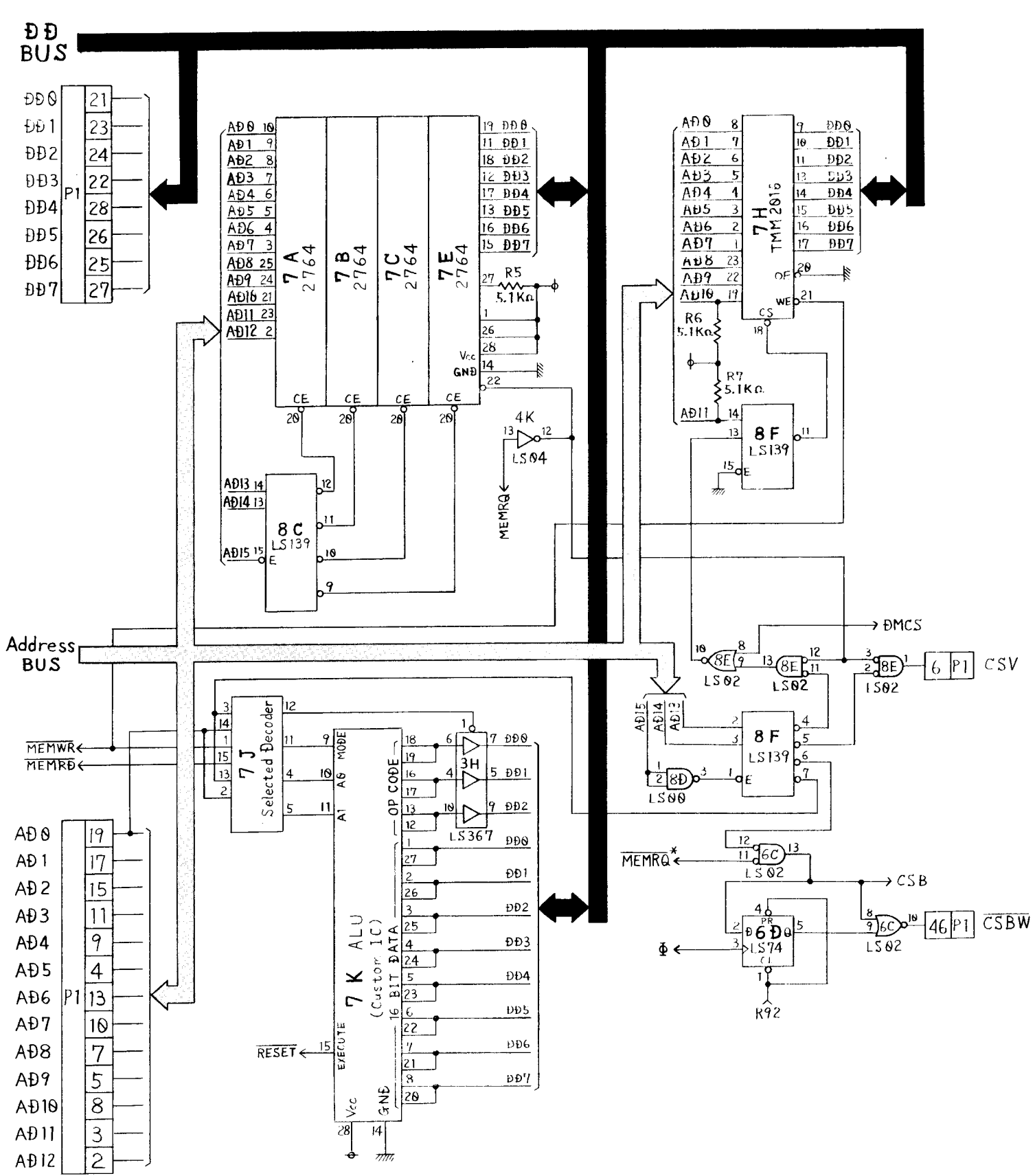
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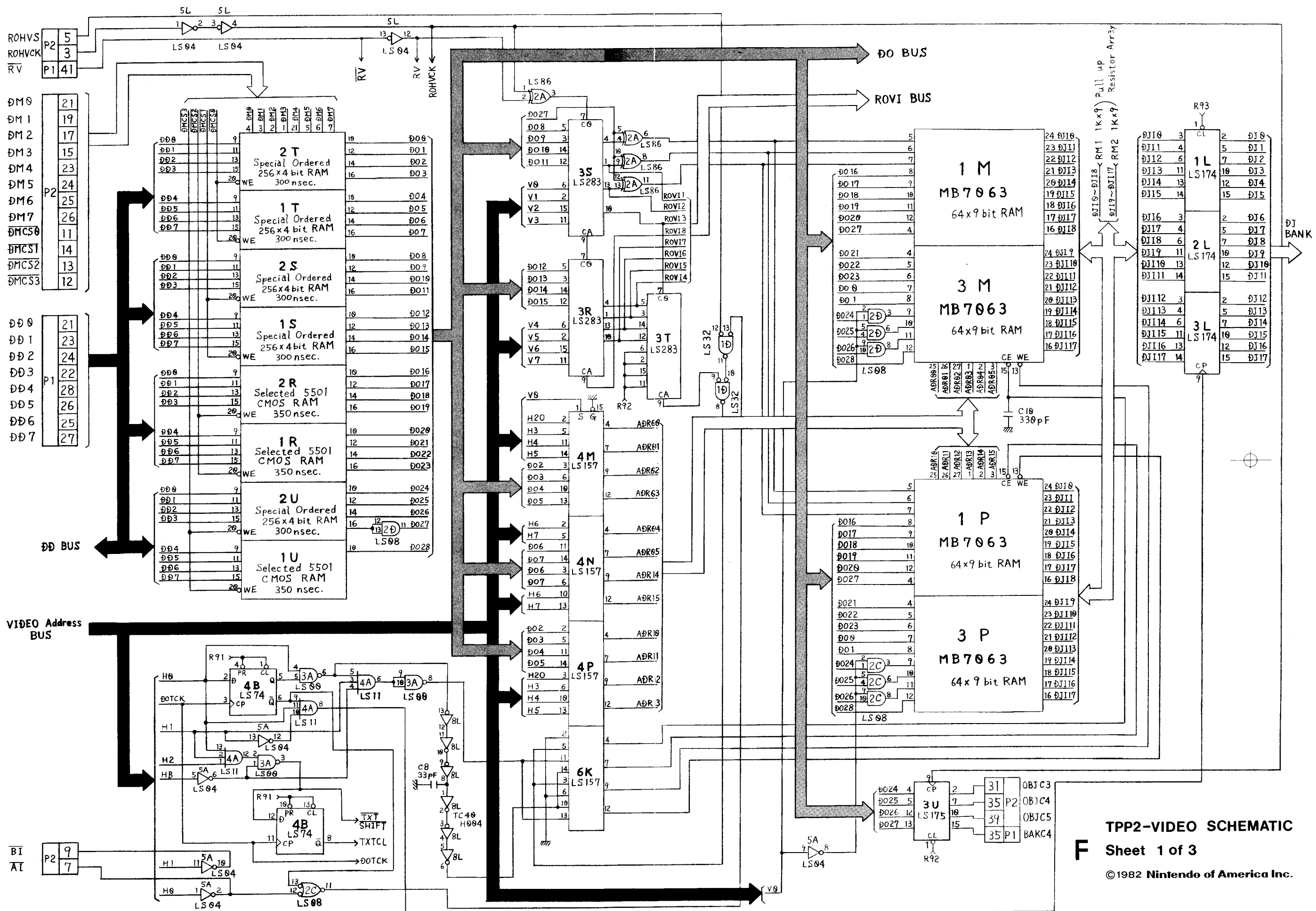
**TPP2-CPU SCHEMATIC**  
**C Sheet 1 of 3**  
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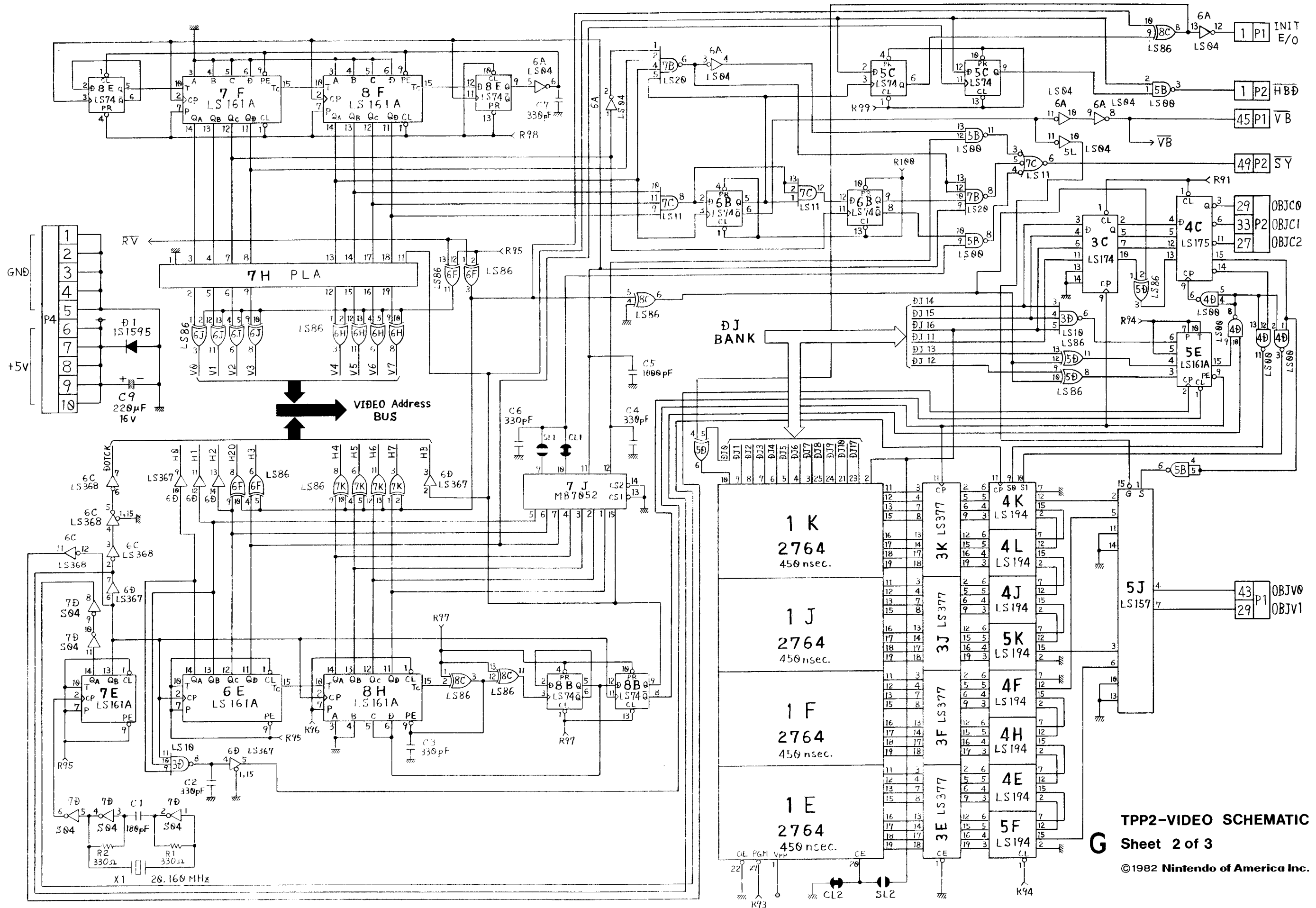
**D** TPP2-CPU SCHEMATIC  
 Sheet 2 of 3  
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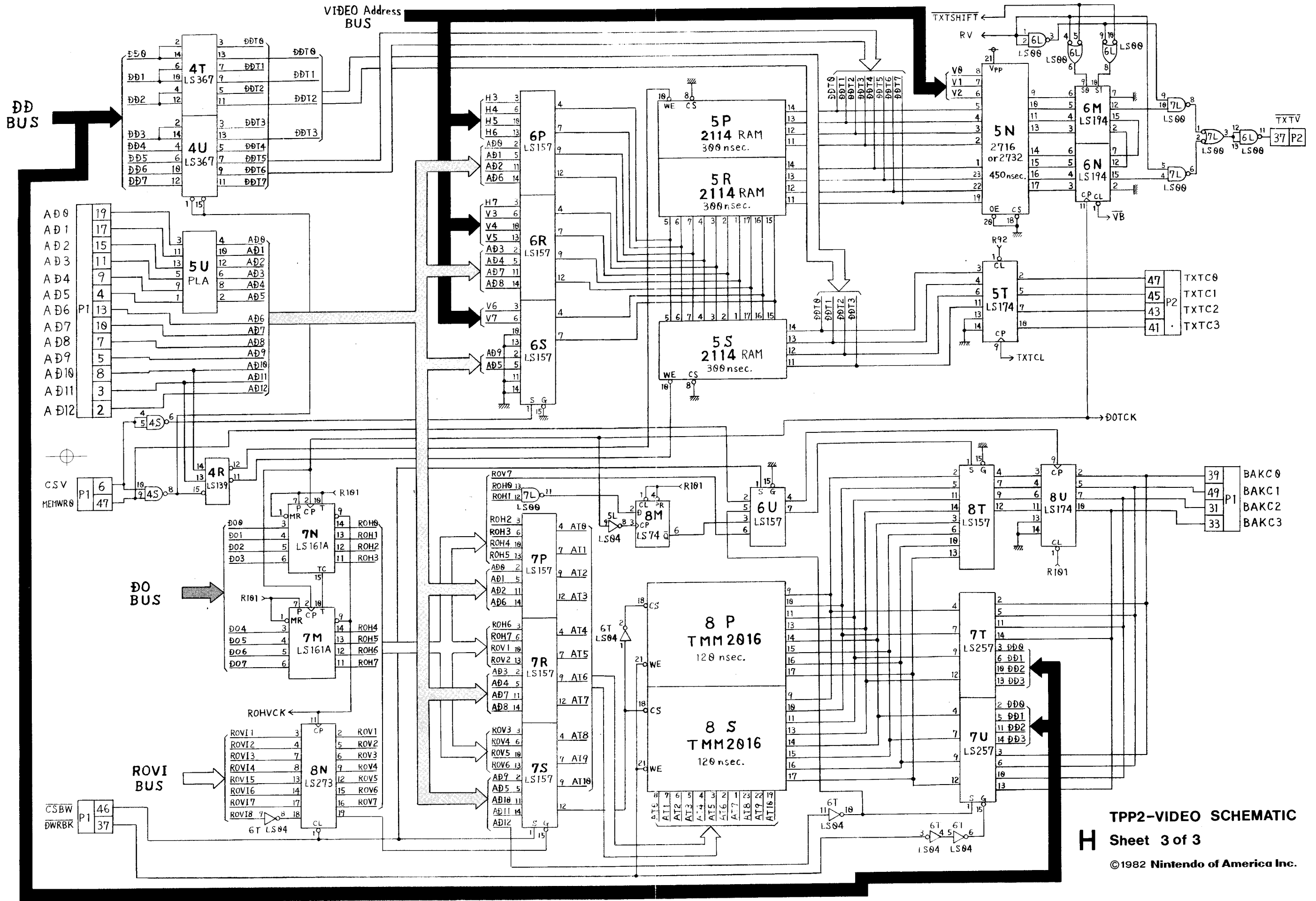
**TPP2-CPU SCHEMATIC**  
**E** Sheet 3 of 3  
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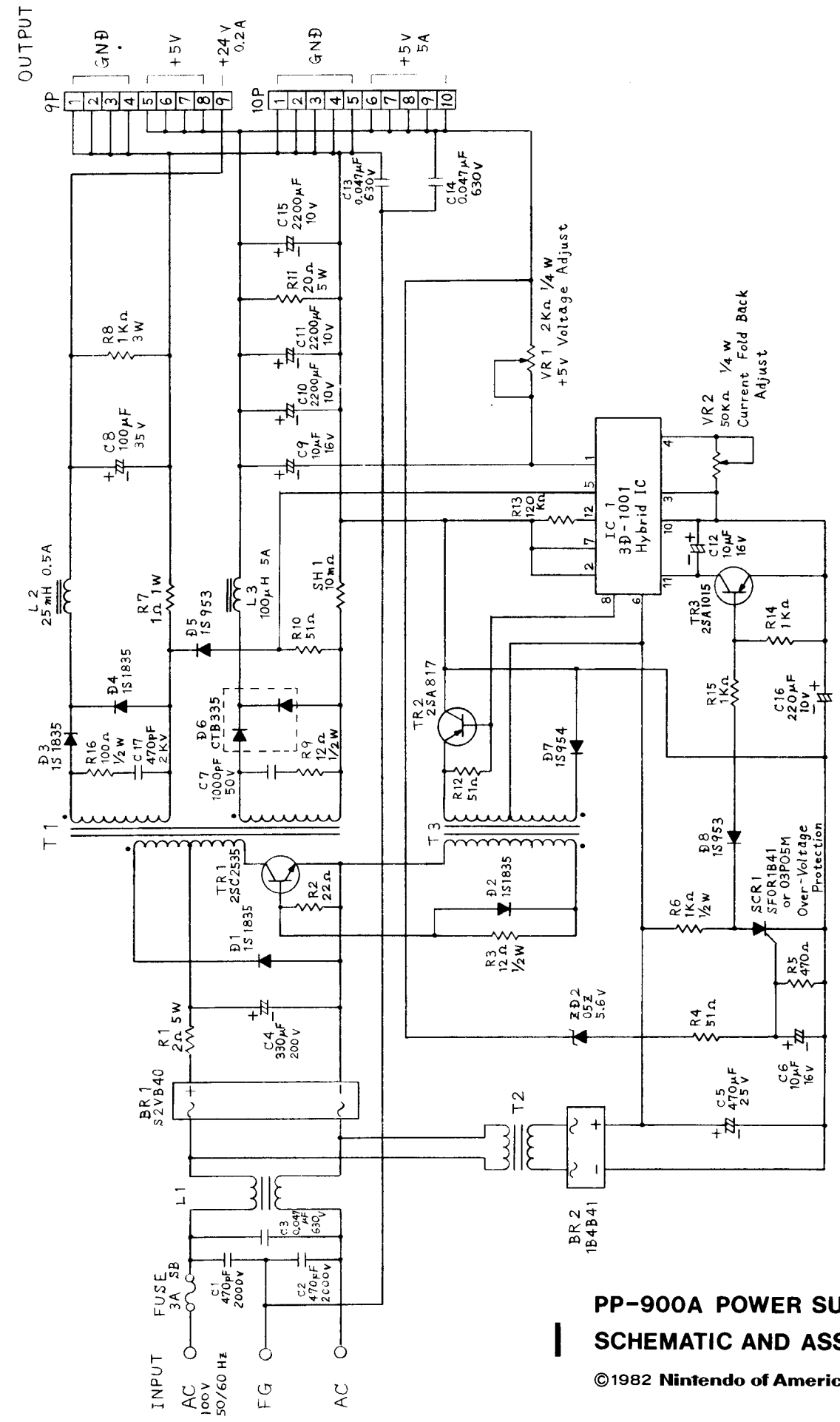
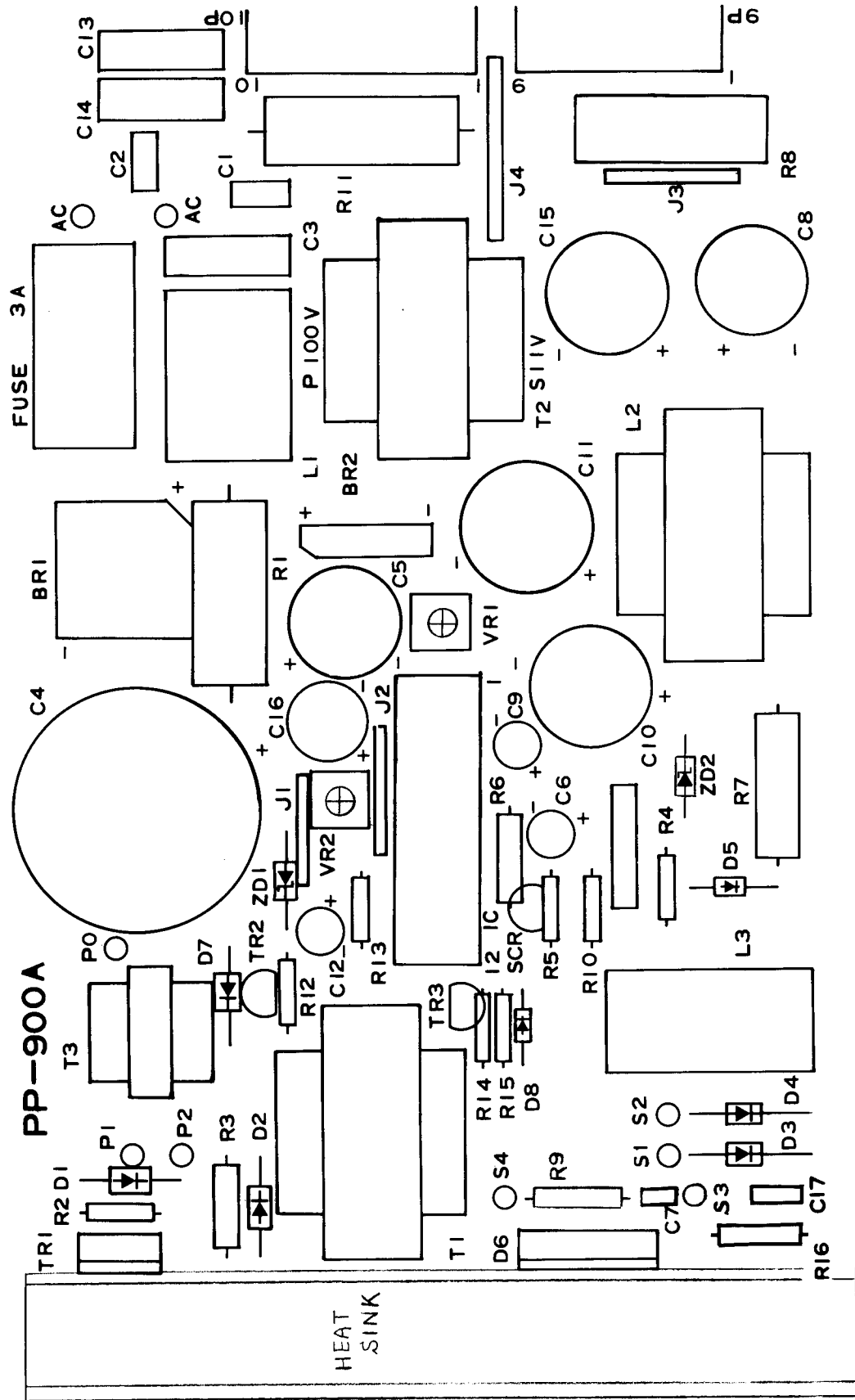
**TPP2-VIDEO SCHEMATIC**  
**F** Sheet 1 of 3  
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**TPP2-VIDEO SCHEMATIC**  
**Sheet 2 of 3**  
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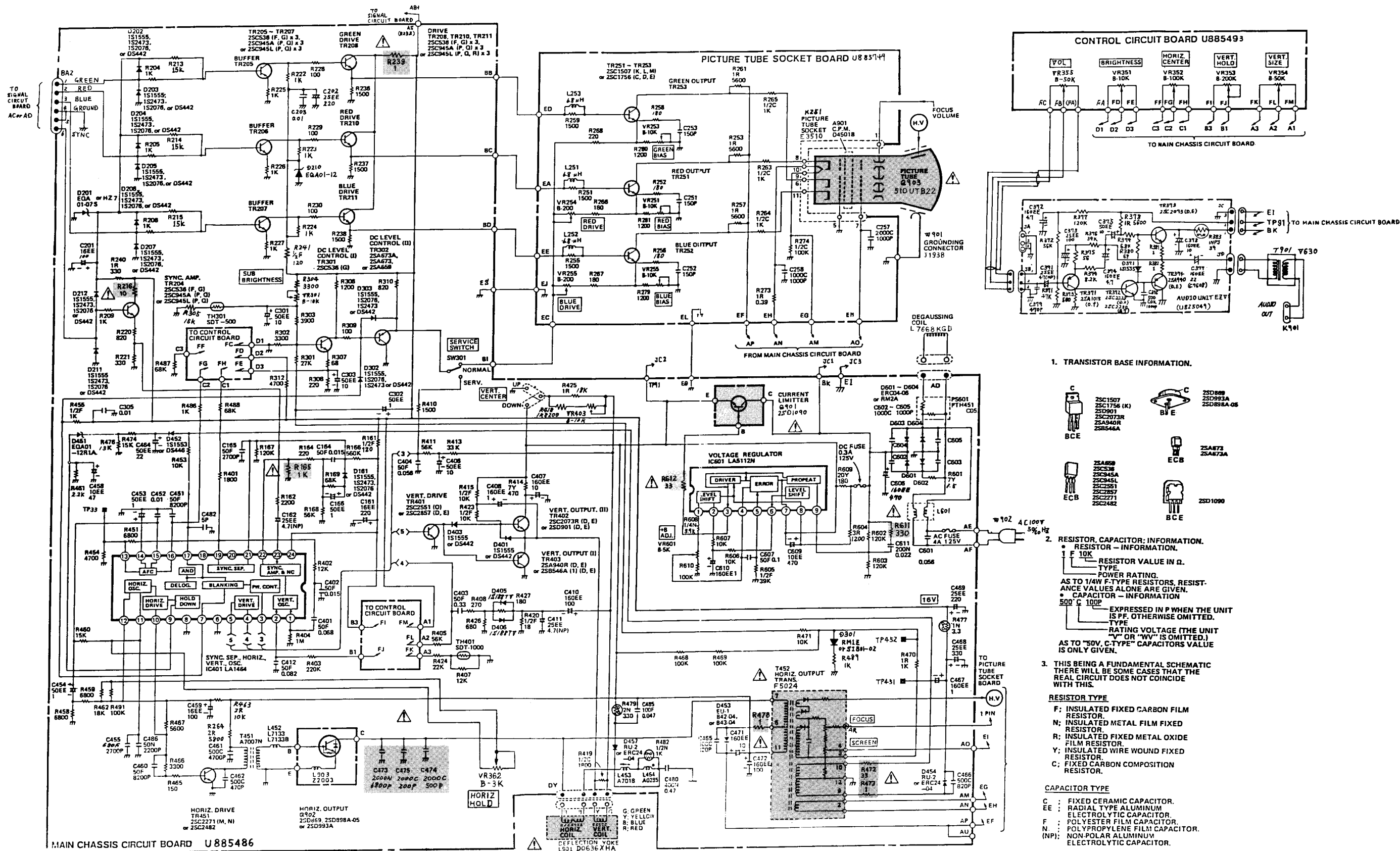


**TPP2-VIDEO SCHEMATIC**  
**H Sheet 3 of 3**  
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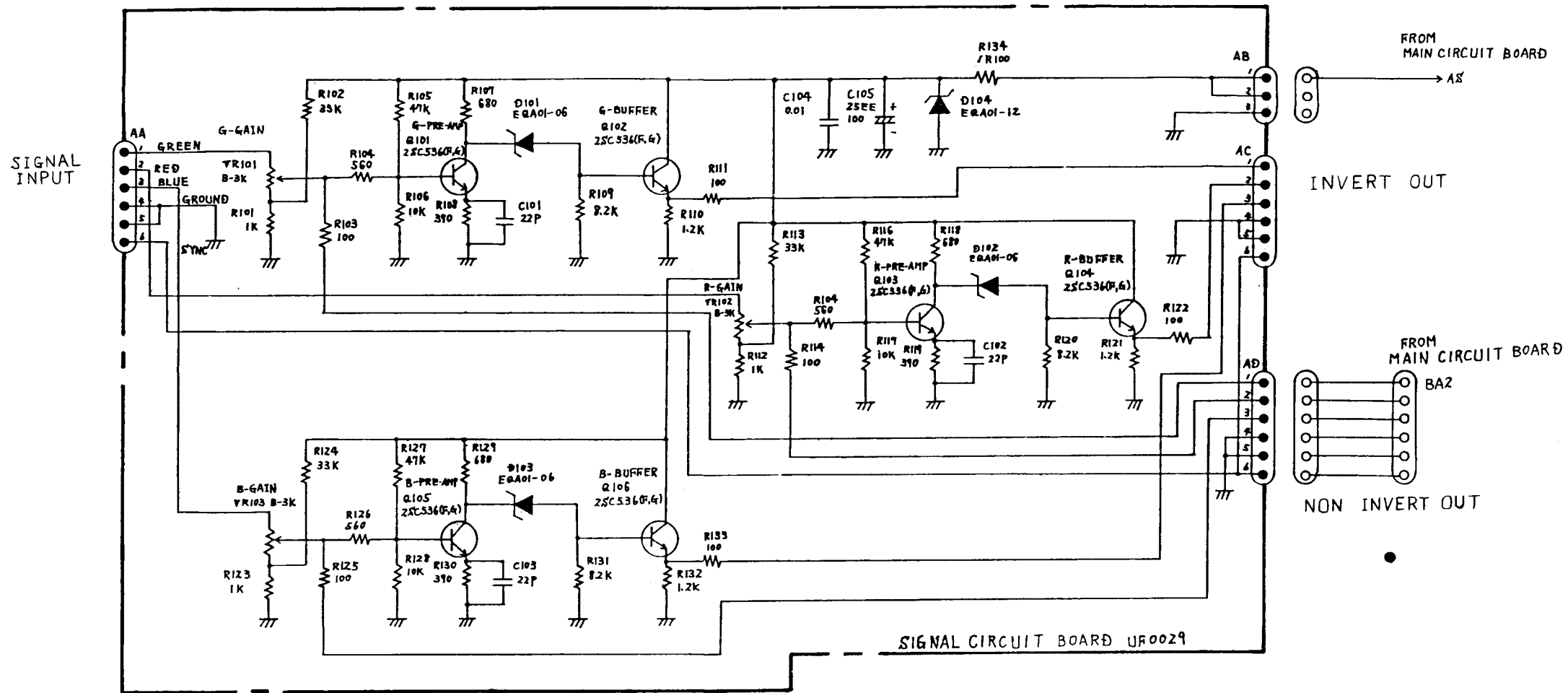
**PP-900A POWER SUPPLY**  
**SCHEMATIC AND ASSEMBLY**  
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1. TRANSISTOR BASE INFORMATION.
- |  |             |  |            |
|--|-------------|--|------------|
|  | ZSC1507     |  | ZSD888     |
|  | ZSC1756 (K) |  | ZSD993A    |
|  | or RM2A     |  | ZSD993A-08 |
|  | ZSC2073R    |  |            |
|  | ZSA940R     |  | ZSA873     |
|  | ZSB46A      |  | ZSA873A    |
|  |             |  |            |
|  | ZSA688      |  |            |
|  | ZSC338      |  |            |
|  | ZSC345A     |  |            |
|  | ZSC345L     |  |            |
|  | ZSC357      |  |            |
|  | ZSC2771     |  | ZSD1090    |
|  | ZSC2482     |  |            |
2. RESISTOR, CAPACITOR, INFORMATION.
- RESISTOR - INFORMATION.
  - 1 F 10K
  - RESISTOR VALUE IN Ω.
  - TYPE
  - POWER RATING.
  - AS TO 1/4W F-TYPE RESISTORS, RESISTANCE VALUES ALONE ARE GIVEN.
  - CAPACITOR - INFORMATION
  - 500 C 100P
  - EXPRESSED IN P WHEN THE UNIT IS PF. OTHERWISE OMITTED.
  - TYPE
  - RATING VOLTAGE (THE UNIT "V" OR "WV" IS OMITTED.)
  - AS TO "50V, C-TYPE" CAPACITORS VALUE IS ONLY GIVEN.
3. THIS BEING A FUNDAMENTAL SCHEMATIC THERE WILL BE SOME CASES THAT THE REAL CIRCUIT DOES NOT COINCIDE WITH THIS.
- RESISTOR TYPE
- F: INSULATED FIXED CARBON FILM RESISTOR.
  - N: INSULATED METAL FILM FIXED RESISTOR.
  - R: INSULATED FIXED METAL OXIDE FILM RESISTOR.
  - Y: INSULATED WIRE WOUND FIXED RESISTOR.
  - C: FIXED CARBON COMPOSITION RESISTOR.
- CAPACITOR TYPE
- C: FIXED CERAMIC CAPACITOR.
  - EE: RADIAL TYPE ALUMINUM ELECTROLYTIC CAPACITOR.
  - F: POLYESTER FILM CAPACITOR.
  - N: POLYPROPYLENE FILM CAPACITOR.
  - (NP): NON-POLAR ALUMINUM ELECTROLYTIC CAPACITOR.

20-EZV(R-C) SCHEMATIC



----- WARNINGS -----

1. Service work should only be performed by a qualified service technician.
2. An isolation transformer must be used between the AC supply and the AC plug of the monitor before servicing or testing is performed since the chassis and the heat-sink are directly connected to one side of the AC line which could present a shock hazard.  
Supply voltage of the video monitor : AC 90V - 110V  
50/60 Hz
3. X-RAY RADIATION WARNING AND PRODUCT SAFETY NOTICE !  
This video monitor contains circuits and components included specifically for safety purpose.  
For continued protection, no changes should be made to original design, and components identified by shading and by (  $\Delta$  ) on schematic diagram should be replaced with exact factory replacement parts.  
DO NOT degrade the safety of the set through improper servicing.

20-EZV(R-C) SCHEMATIC

K Sheet 2 of 2

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