



COSMIC
GUERRILLA

Operation, Maintenance
and Service Manual

UNIVERSAL

CONTENTS

I.	Features of this machine	1
II.	How to handle and maintain this machine.	2
III.	How to play	3
IV.	Nomenclature of each part	4
	A. Nomenclature of cabinet parts	4
	B. Drawing of circuit board mounting position	5
	C. Positions of dip switches and volume controller knobs	6
	a) Setting the option (dip switches)	6
	b) Volume controller knob	7
	c) Fuses in the power unit	7
V.	TV monitor	8
	A. Adjustment of TV picture screen	8
VI.	Parts catalog	9
	A-1 Component parts related to cabinet (outside)	9
	A-2 Component parts related to cabinet (inside)	10
	a) Operating panel assembly	10
	b) Door assembly and parts list	11
	c) Lever assembly and parts list	13
	B. Component parts related to switches in the cabinet	14
	C. Circuit board IC location and parts list	15
	a) Main circuit board IC location	15
	b) Main circuit board parts list	16
	c) Sound circuit board IC location, resistance setting and resistance location	18
	d) Sound circuit board parts list	19
VII.	Wiring diagram	20
	a) Wiring diagram (connector)	20
	b) Schematic diagram (23'')	21
	c) Schematic diagram (20'')	22
	Postface	23

REFERENCE DRAWING

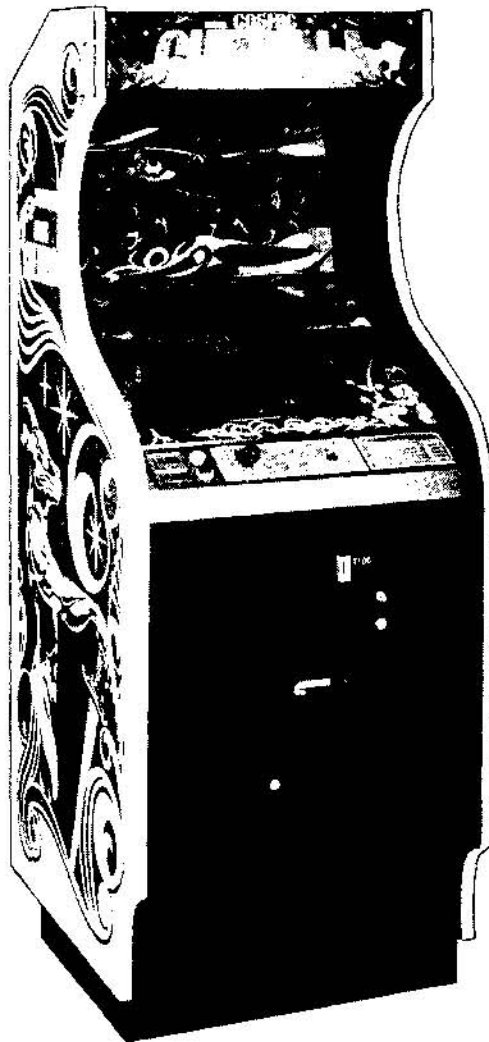
Fig. 1-1	Nomenclature of Cabinet Parts	4
Fig. 2-1	Circuit Board Mounting Positions	5
Fig. 2-2	Side View of Circuit Board Mounting Positions	5
Fig. 3-1	Positions of Dip Switches	6
Fig. 3-2	Position of Volume Controller Knob	7
Fig. 3-3	Fuses in the Power Unit	7
Fig. 4-1	The Inside Drawing of Front Door	8
Fig. 5-1	Component Parts Related to Cabinet (Outside)	9
Fig. 5-2	Component Parts Related to Cabinet (Inside)	10
Fig. 5-3	Operating Panel Assembly	10
Fig. 5-4	Inside View of Door Assembly	11
Fig. 5-5	Lever Assembly	13
Fig. 6-1	Component Parts Related to Switches in the Cabinet	14
Fig. 7-1	Main Circuit Board	15
Fig. 7-2	Sound Circuit Board	18
Fig. 8-1	Wiring Diagram	20
Fig. 8-2	Schematic Diagram (23")	21
Fig. 8-3	Schematic Diagram (20")	22

— WHEN ORDERING PARTS —

Since each component part is indicated by block, definitely specify both the corresponding Fig. No. and part No. within the Fig. when placing an order for it.

I. FEATURES OF THIS MACHINE

1. The game packs in excellent features capturing the hearts of players.
2. The lever control system is simple to handle.
3. At the flick of a dip switch, you can select among extended play, the number of laser guns and time of appearance of an additional laser gun, etc.
4. High score for the day is always displayed on the screen.
5. Finely designed cabinet and fascinating acoustic effects.



UNIVERSAL

II. HOW TO HANDLE AND MAINTAIN THIS MACHINE

1. Since the UNIVERSAL's COSMIC GUERRILLA employs a color TV receiving set, be careful not to shake it during transit and when carrying it about.
2. Install it at a location which is not exposed to direct sunlight. In order to prevent the inside temperature rising, avoid as much as possible a location near a heater, etc.
3. Since the grounding terminal is visible, be sure to connect it to a grounding conductor.
4. Insert the power cord into the outlet and turn on the switch.
5. Even if the solid-state module seems to be out of order, do not check the circuit by means of a circuit tester, etc., since the internal voltage of the tester, etc. may sometimes break down the IC.
6. Make sure the machine is well ventilated. If the temperature of the IC and transistor is lower than 60°C, they function normally and may be considered reliable. If it exceeds 60°C, their performance cannot be guaranteed.
7. Make sure that the connector, etc. is not disconnected.
8. Whenever connecting the power cord of the solid-state module to, or disconnecting it from, the outlet, be sure to turn the power off.
9. Although the products of UNIVERSAL are manufactured with the utmost care, they may develop malfunctions when used for long periods. So, be sure to check this machine daily.

III. HOW TO PLAY

1. Drop in a coin when playing by yourself. Drop in two coins when playing with a friend.
2. When pressing either one- or two-player button after inserting a coin or two, the game starts. Play it by handling a lever for moving the laser guns from side to side and a FIRE button.
3. UFO
UFO appears flying behind the guerillas as they race towards the front of the screen. Here's your chance to shoot the UFO down and add up points. But if you get too absorbed in it, you expose your laser guns to danger. When you hit the UFO, your score – either of 50, 100, 150 or 200 up to 300 points – is displayed at random.
4. Guerillas
The guerilla rushes towards your block from both sides to take it away while bombing. When the block disappears, he tries to take away the central laser gun to his position. They are your targets. Wipe one off and your score piles up. Depending on the type of guerilla you get 20, 40, 50, 60 and 100. When you destroy all the guerillas on the screen, a new bunch of guerillas appears closer to your laser guns, making the game more and more difficult.
5. Station
There are two stations for protecting your laser guns from the guerillas' direct assault. The point is to wipe off as many guerillas as possible. Your stations will be gradually destroyed by missiles launched by the guerillas. Be careful! As each new group of guerillas reappears, your destroyed stations come back on the screen.
6. Laser guns
You can dodge the guerillas by moving your laser guns sideways with the lever controller knob. Press the FIRE button to launch the laser missiles. Hit a guerilla and it vanishes with a horrifying shriek. The key to mastering the game is skillful operation of the laser gun and well-timed missile launchings. When each laser gun is destroyed, a reserve gun at the left bottom of the screen appears and the game continues. (Play by turns when playing with a friend).
7. Reserve guns
The remaining number of laser guns is displayed at all times. The game continues until all the laser guns are destroyed. If your score reaches a certain level, you are awarded another stock of laser gun as a bonus.

– The number of laser guns and the setting of bonus points, etc. can be selected with dip switches.
8. Block
It protects the central laser gun. If the guerilla is shot before he takes away the block, it returns to its location.
9. Mutant mole
It appears every time you score 500 points, attacking your laser guns.

IV. NOMENCLATURE OF EACH PART

A. NOMENCLATURE OF CABINET PARTS

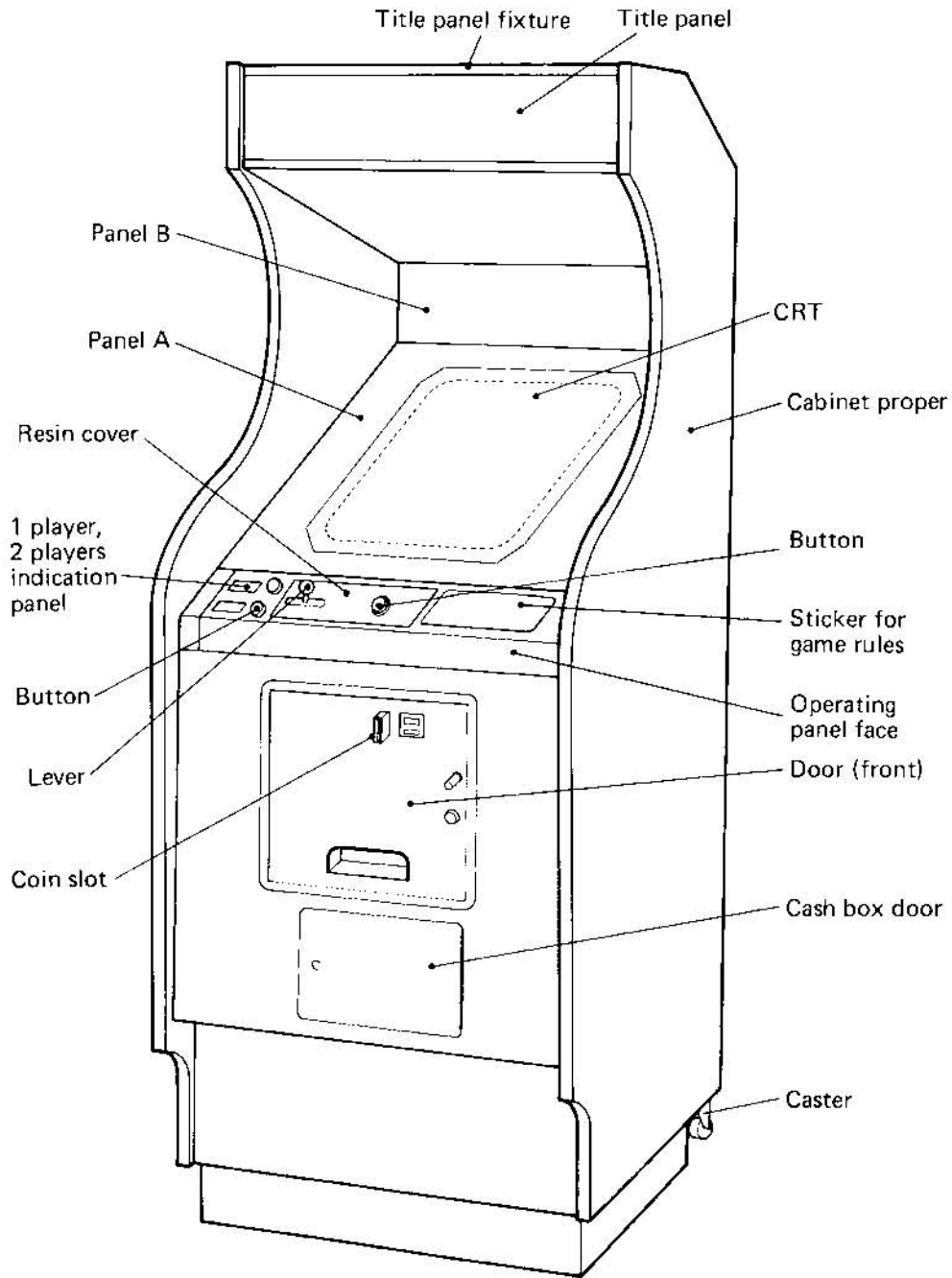


Fig. 1-1 Nomenclature of Cabinet Parts

B. DRAWING OF CIRCUIT BOARD MOUNTING POSITION

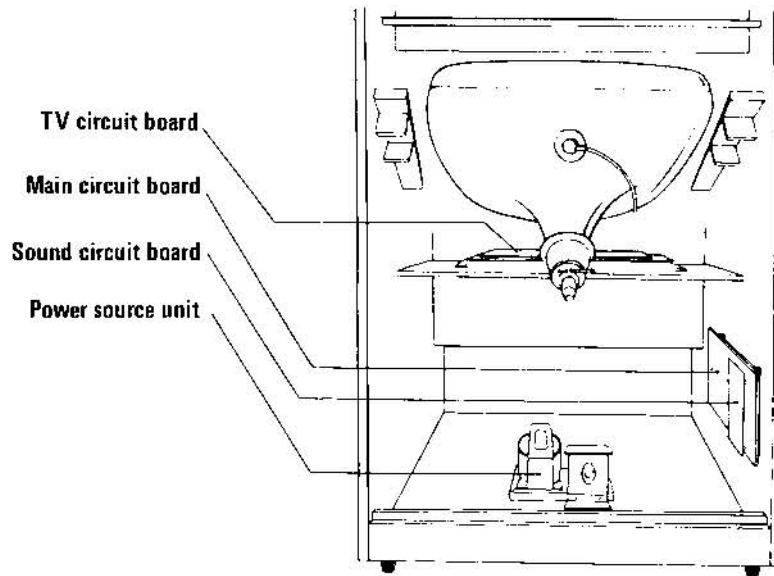


Fig. 2-1 Circuit Board Mounting Positions

Main circuit board and its container

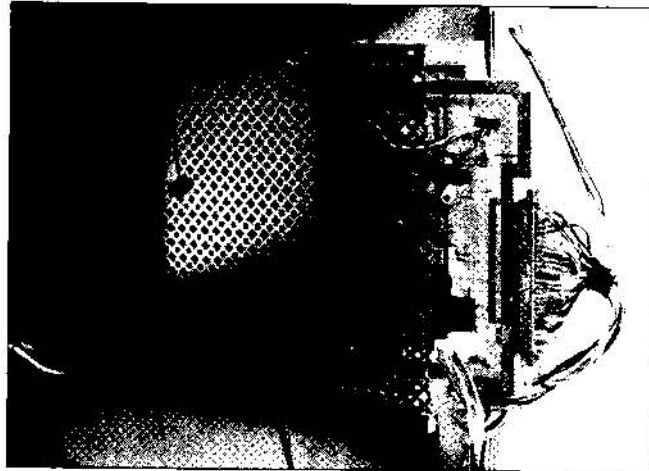


Fig. 2-2 Side View of Circuit Board Mounting Positions

C. POSITIONS OF DIP SWITCHES AND VOLUME CONTROLLER KNOBS

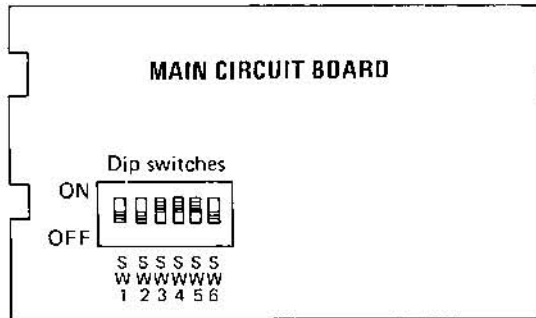


Fig. 3-1 Positions of Dip Switches

a) Setting the option (dip switches)

COSMIC GUERRILLA is designed to have various operations and options set by the ON-OFF combinations of the dip switches. When starting a game, choose any desired game option and set the dip switches accordingly.

1. Setting the number of laser guns according to score:
(Dip switches SW1, 2)

Score	SW1	SW2
2000	OFF	OFF
1500	ON	OFF
1000	OFF	ON
0	ON	ON

(Set at 2,000 points when shipped)

2. Setting the game charge:

Credit	SW3
1 coin 1 play	ON
1 coin 2 plays	OFF

3. Setting the number of laser guns:

Number of laser guns	SW4
3	ON
5	OFF

(Set at 3 laser guns when shipped)

4. Change-over setting of the mode of game (SW5):

The game may be enjoyed either as an upright or table type.

(When used as a table type for 2-player action, the table turns over.)

For upright use ON

For table use OFF

(Be sure to place SW6 in the OFF position at all times, since it is not related to the game.)

b) Volume controller knob

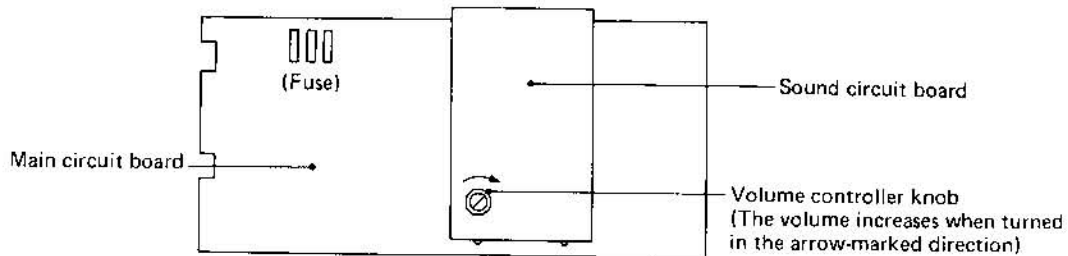


Fig. 3-2 Position of Volume Controller Knob

c) Fuses in the power unit

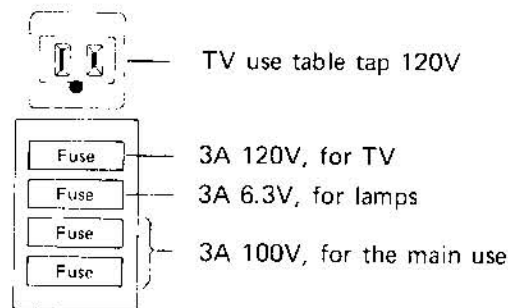


Fig. 3-3 Fuses in the Power Unit

VI. PARTS CATALOG

A-1 COMPONENT PARTS RELATED TO CABINET (OUTSIDE)

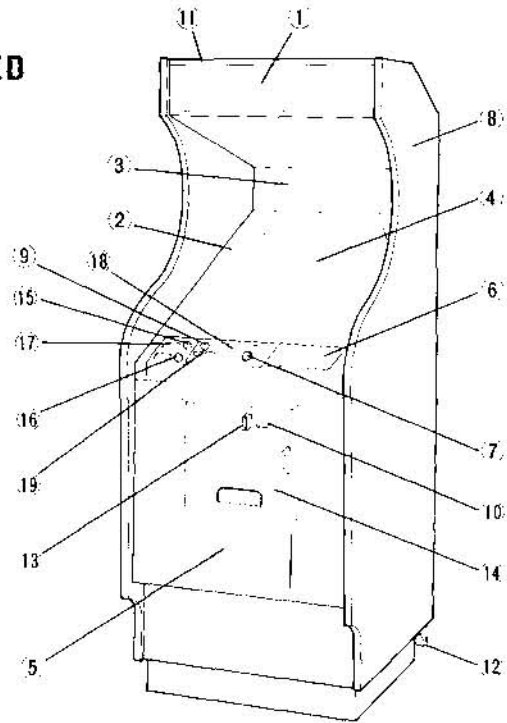


Fig. 5-1 Component Parts Related to Cabinet (Outside)

OUTSIDE CABINET PARTS LIST

Ref. No.	Name
1	Title panel
2	Illustrated glass A
3	Illustrated glass B
4	CRT
5	Cash box door
6	Sticker for game rules
7	Push button (Fire)
8	Cabinet proper
9	Knob 32-Dim.
10	Coin indication panel
11	Title panel fixture
12	Caster
13	Coin slot
14	Main door
15	Push button (1 player)
16	Push button (2 players)
17	1 or 2 players indication panel
18	Lever indication panel
19	Control lever (general name)

A-2 COMPONENT PARTS RELATED TO CABINET (INSIDE)

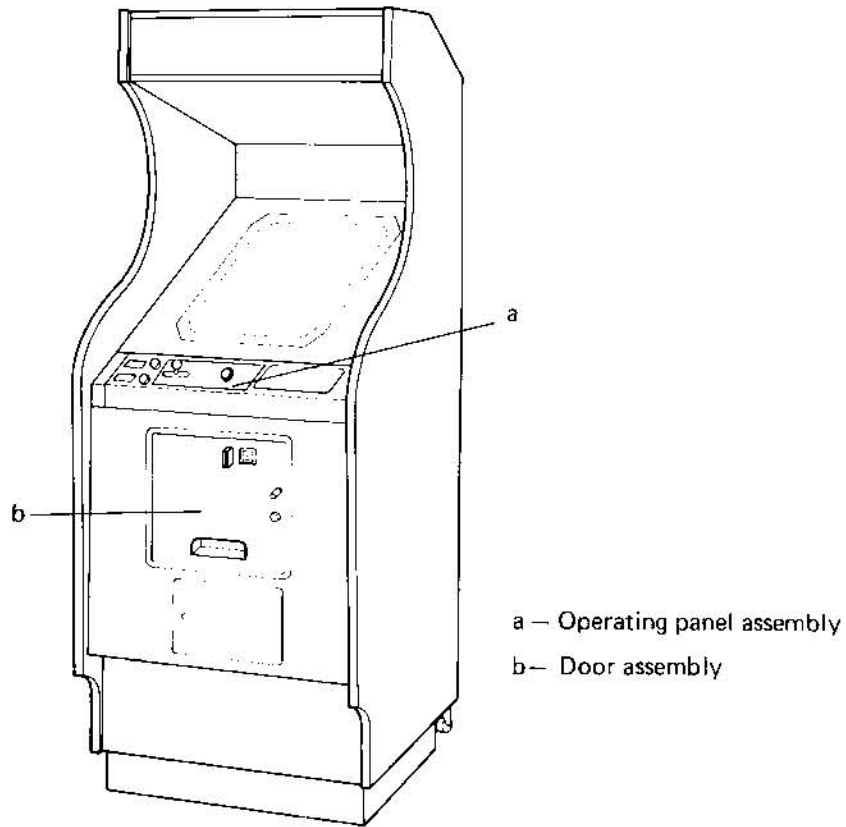


Fig. 5-2 Component Parts Related to Cabinet (Inside)

a) Operating panel assembly

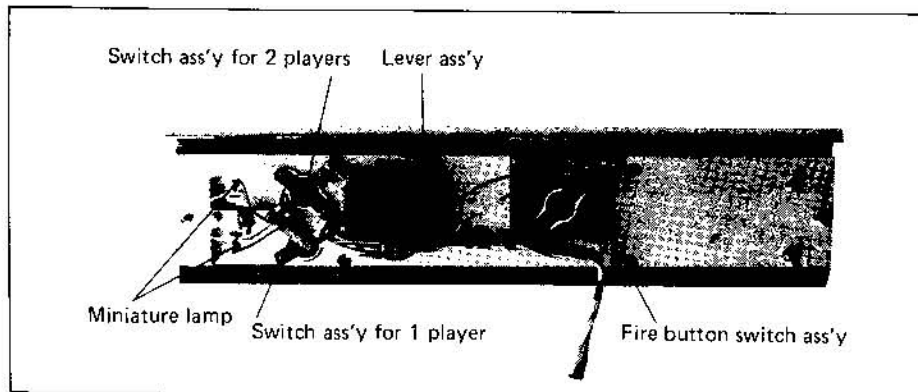


Fig. 5-3 Operating Panel Assembly

b) Door assembly

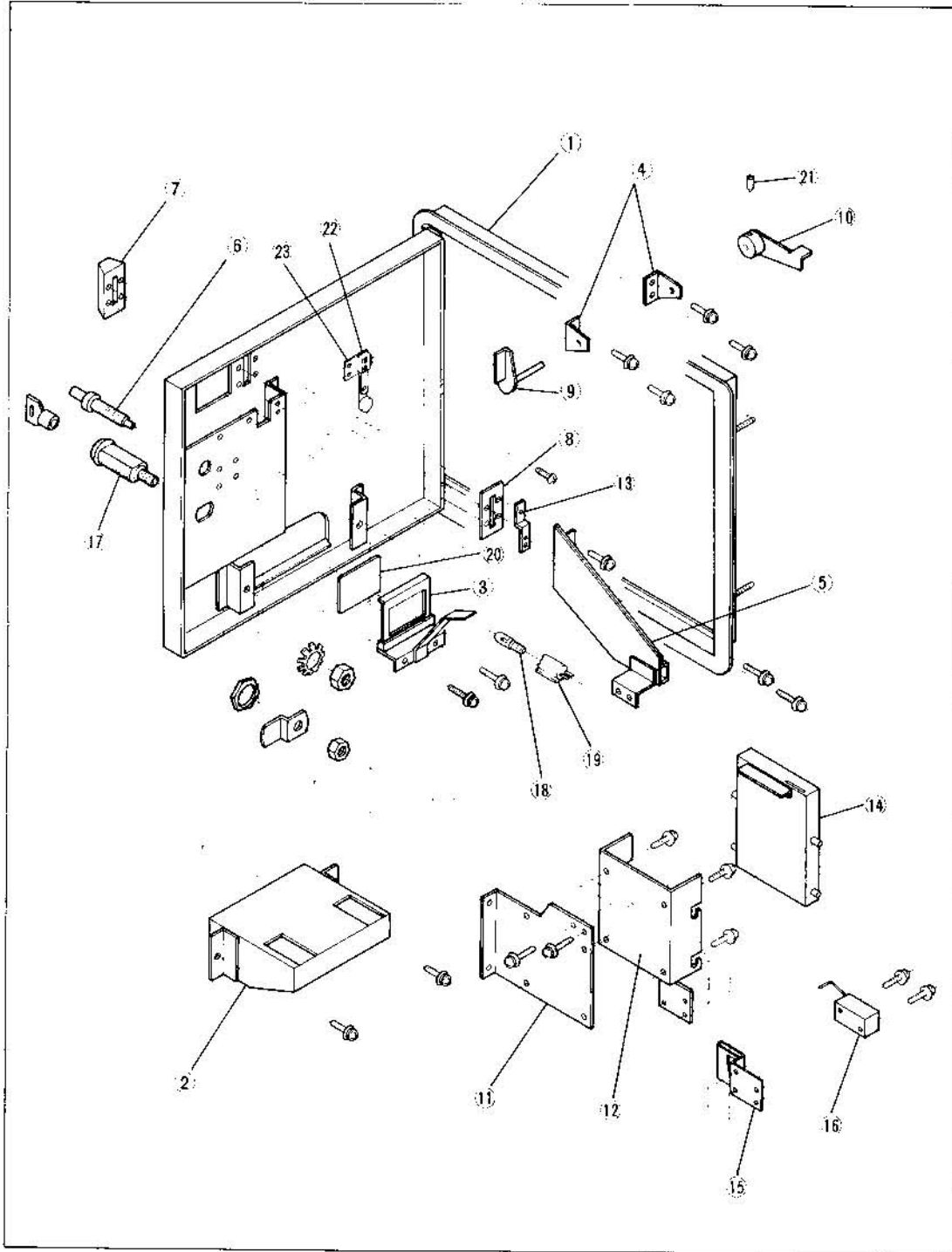


Fig. 5-4 Inside View of Rejector Assembly

REJECTOR ASSEMBLY PARTS LIST

Ref. No.	Name
1	Main door
2	Returning soucer
3	Lamp & plastic plate bracket
4	Bearing
5	Coin slot shute
6	Returning button
7	Coin slot
8	Slot plate
9	Transmission shaft
10	Rotary bracket
11	Rejector bracket
12	Rejector case
13	Coin slot shute holder
14	Rejector
15	Sensor slot
16	Micro switch
17	Key sets
18	Miniature lamp
19	Miniature lamp socket
20	Coin indication panel
21	Hexagon socket head screw
22	Slam switch
23	Slam switch holder

c) Lever assembly and parts list

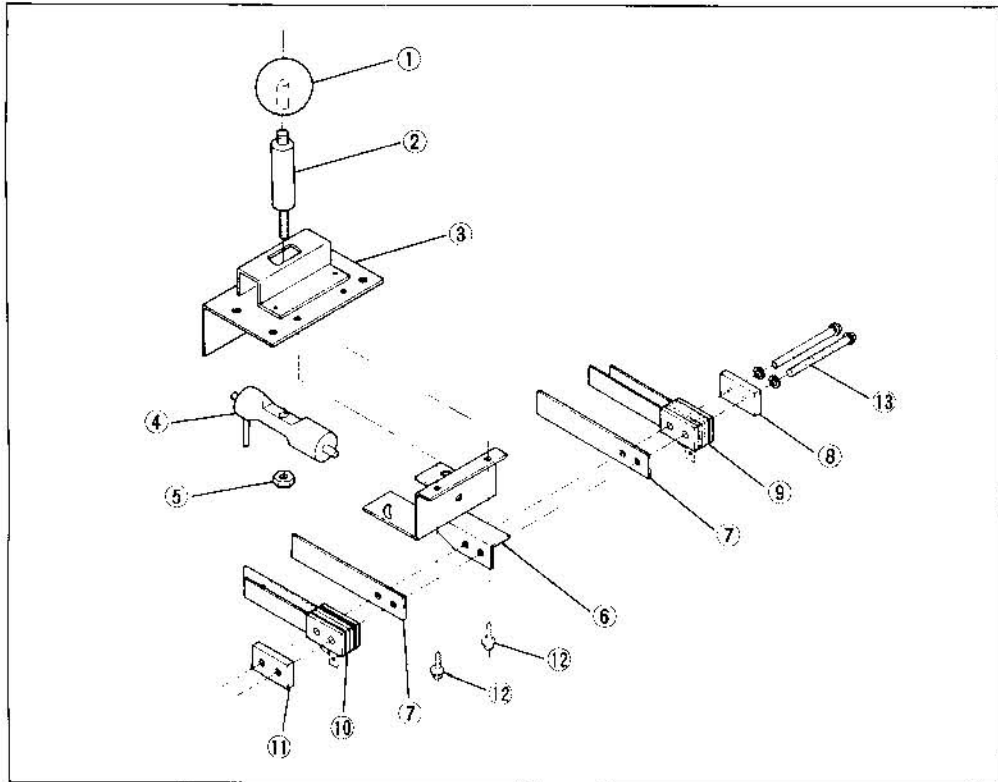


Fig. 5-5 Lever Assembly

LEVEL ASSEMBLY PARTS LIST

Ref. No.	Name
1	Knob 32-Dim.
2	Lever shaft
3	Lever guide & stopper
4	Transmission bar
5	Nut with stopper
6	Switch bracket
7	Spring
8	Spring holder
9	Blades switch
10	Blades switch
11	Spring holder with nut
12	Bolt
13	Bolt

B. COMPONENT PARTS RELATED TO SWITCHES IN THE CABINET

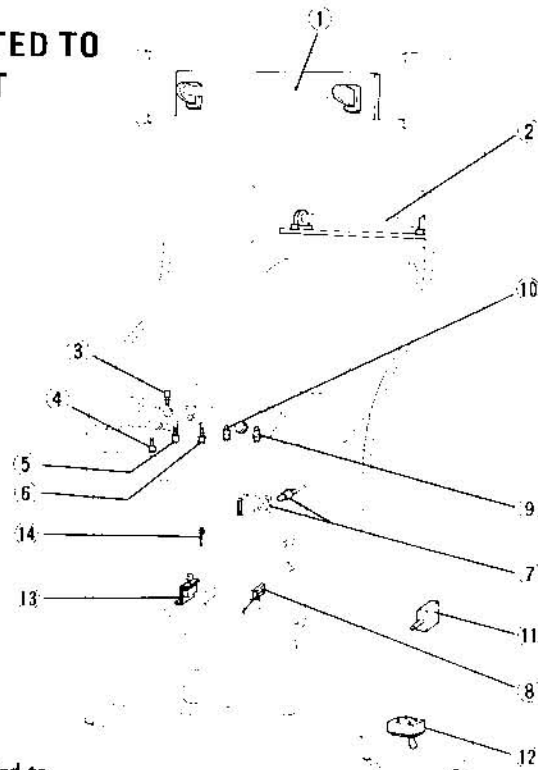


Fig. 5-6 Component Parts Related to Switches in the Cabinet

INSIDE CABINET PARTS LIST

Ref. No.	Name
1	Fluorscent lamp assembly
2	Fluorscent lamp assembly
3	Blades switch
4	Blades switch
5	Blades switch
6	Blades switch
7	Miniature lamp assembly
8	Micro switch
9	Miniature lamp assembly
10	Miniature lamp assembly
11	Door switch
12	Toggle switch
13	Micro switch
14	Slam switch

C. CIRCUIT BOARD IC LOCATION AND PARTS LIST

a) Main circuit board IC location

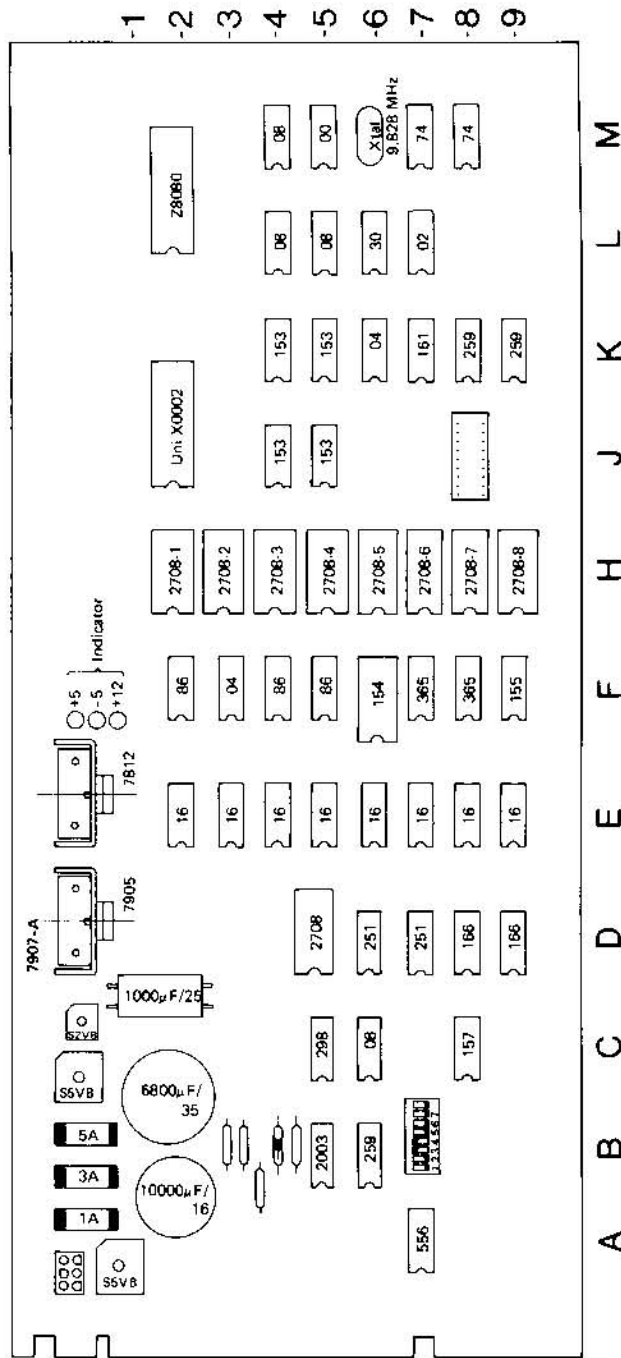


Fig. 7-1 Main Circuit Board

Note: The IC for color TV differs a little.

b) Main circuit board parts list
[1] Integrated circuit

Item No.	Q'ty	Description
SN7400N	1	Transistor Logic
02N	1	"
04N	3	"
08N	4	"
30N	1	"
74N	2	"
86N	3	"
125N	1	"
153N	4	"
154N	1	"
155N	1	"
157N	1	"
161N	1	"
166N	2	"
251N	2	"
259N	3	"
298N	1	"
365N	2	"
NE 556N	1	Dual timer
TMS4116	8	Nch mos 16k bits RAM
TMM333	2	Nch mos 32k bits ROM
Z8080	1	Nch mos CPU
UN0002	1	Nch mos CRTIC
μA78H05	1	+5V voltage regulator
μA7812	1	+12V "
μA7905	1	-5V "

[2] Other semiconductor devices

Item No.	Q'ty	Description
ULN2003	2	Darlington transistor array
S5VB	2	5 Ampere rectifier bridge
S2VB	1	2 Ampere "
TLR301	3	LED (RED)
1S1588	2	Switching diode
RD7AN	1	Zener diode (7.1–7.8V Avalanche)

[3] Capacitors

Rating	Q'ty	Description
10,000 μ F/16WV	1	Chemical capacitor
6,800 μ F/35WV	1	"
1,000 μ F/25WV	1	"
22 μ F/35WV	1	"
10 μ F/16WV	1	"
4.7 μ F/25WV	1	"
0.1 μ F/12WV	70	Ceramic capacitor
0.01 μ F/12WV	1	"
100pF/12WV	1	"

[4] Resistors

Rating	Q'ty	Description
MS1028	2	1k Ω Resistor array
200 k Ω 1/4 W	1	Carbon solid resistor
100 k Ω "	1	"
4.7 k Ω "	1	"
3 k Ω "	1	"
2 k Ω "	1	"
1.6 k Ω "	1	"
1.2 k Ω "	1	"
1 k Ω "	5	"
510 Ω "	8	"
330 Ω "	7	"
100 Ω "	1	"
10 Ω "	2	"

[5] Misc

Name	Q'ty	Description
DIP SW	1	8 element switch array
X'tal	1	9.828 MHz
Fuse	1	1A
"	1	3 A
"	1	5 A

d) Sound circuit board parts list

[1] Integrated Circuit

Item No.	Q'ty	Description
LM324	1	Quadruple Operational Amplifiers
NE556	2	Dual Timer
ULN2003	1	Darlington Transistor Array
CD4006	1	18-stage Static Shift Register
CD4070	1	Quad 2-Input EXCLUSIVE-OR Gate
CD4093	3	Quad 2-Input NAND Schmitt Trigger
μ PC1181	2	Power Amplifiers

[2] Other Semiconductor Devices

Item No.	Q'ty	Description
1S1588	4	Switching Diode
2SC945	1	N-P-N Transistor

[3] Capacitors

Rating	Q'ty	Description
2.2 μ F 50WV	3	Chemical Capacitor
10 μ F 16WV	1	"
47 μ F 25WV	2	"
220 μ F 25WV	2	"
470 μ F 25WV	2	"
1000 pF 12V	2	Ceramic Capacitor
0.01 μ F 12V	1	"
0.1 μ F 12V	3	"
0.1 μ F 50V	1	"
0.0033 μ F 50V	1	Polyester Film Capacitor
0.0068 μ F 50V	1	"
0.01 μ F 50V	1	"
0.068 μ F 50V	2	"
0.47 μ F 12WV	4	Tantalum Capacitor

[4] Resistors

Rating	Q'ty	Description
1.5 Ω	2	Carbon Solid Resistor
4.7 Ω	1	"
100 Ω	4	"
1 k Ω	4	"
2.2 k Ω	1	"
4.7 k Ω	1	"
10 k Ω	10	"
22 k Ω	1	"
51 k Ω	4	"
100 k Ω	11	"
150 k Ω	2	"
200 k Ω	1	"
220 k Ω	2	"
510 k Ω	1	"
680 k Ω	1	"
1 M Ω	1	"

[5] Misc

Name	Q'ty	Description
24P Wire Wrap Socket	1	

VII. WIRING DIAGRAM

a) Wiring diagram (connector)

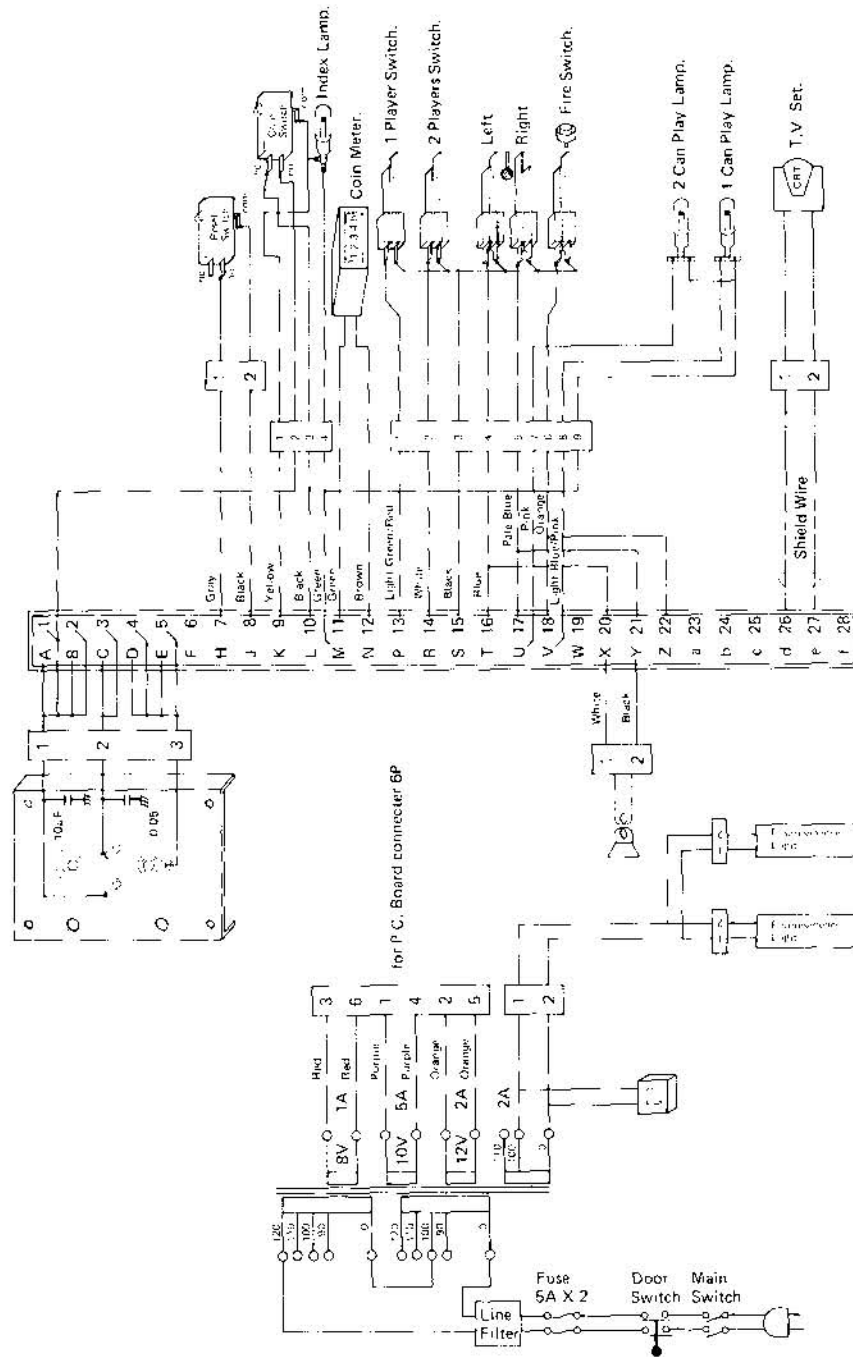
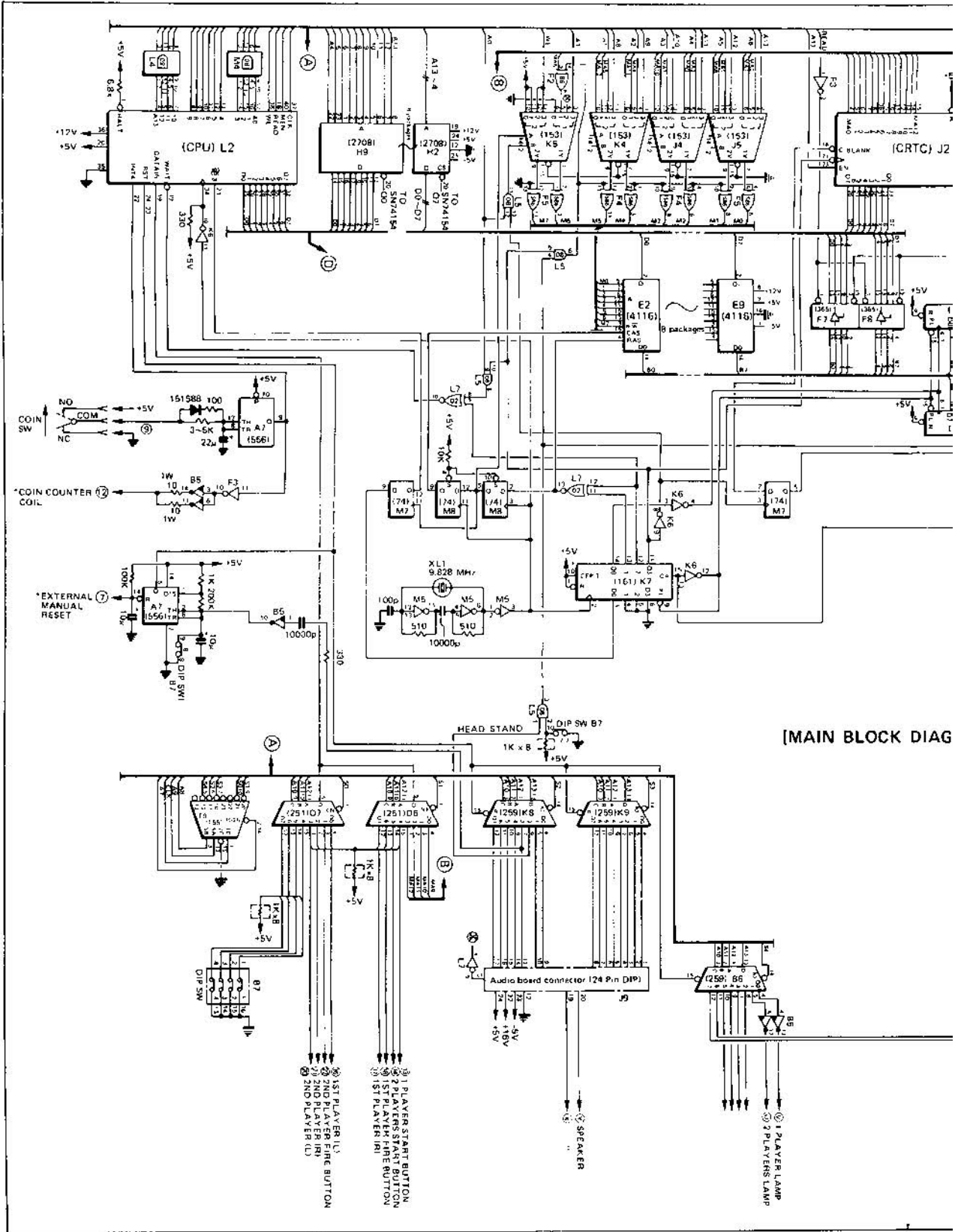
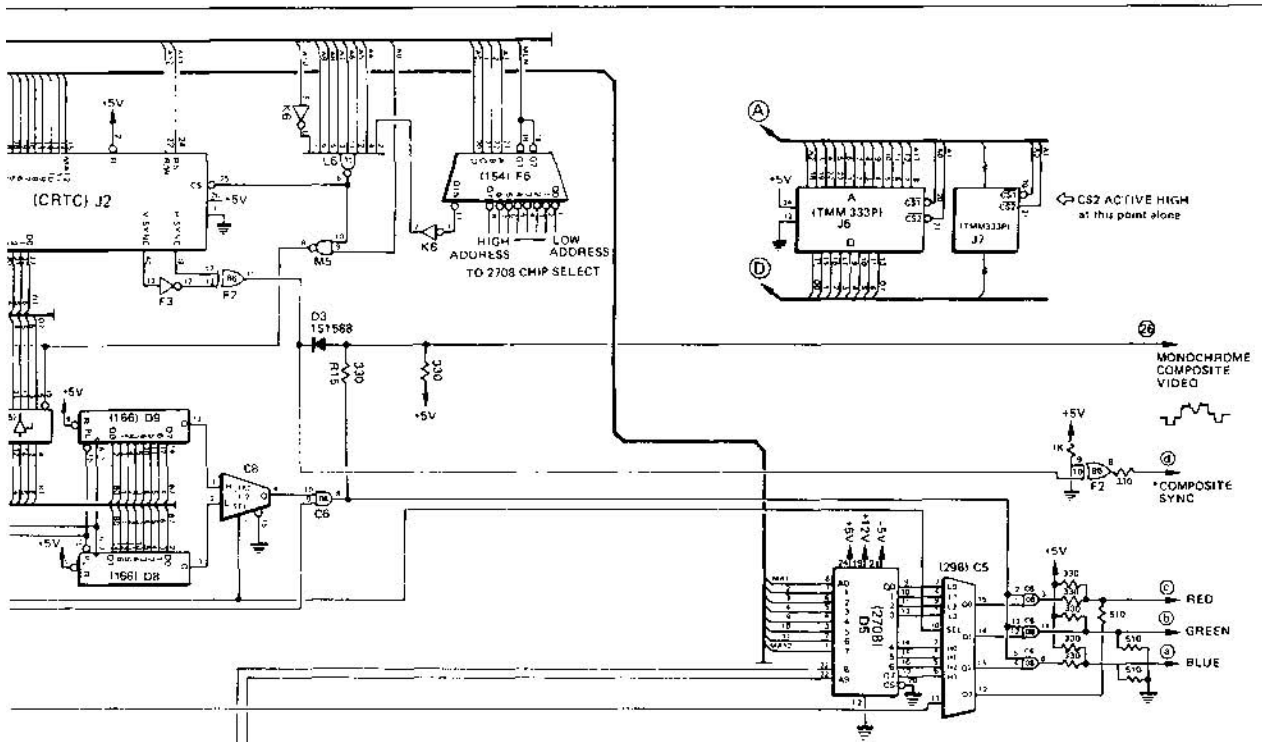


Fig. 8-1 Wiring Diagram



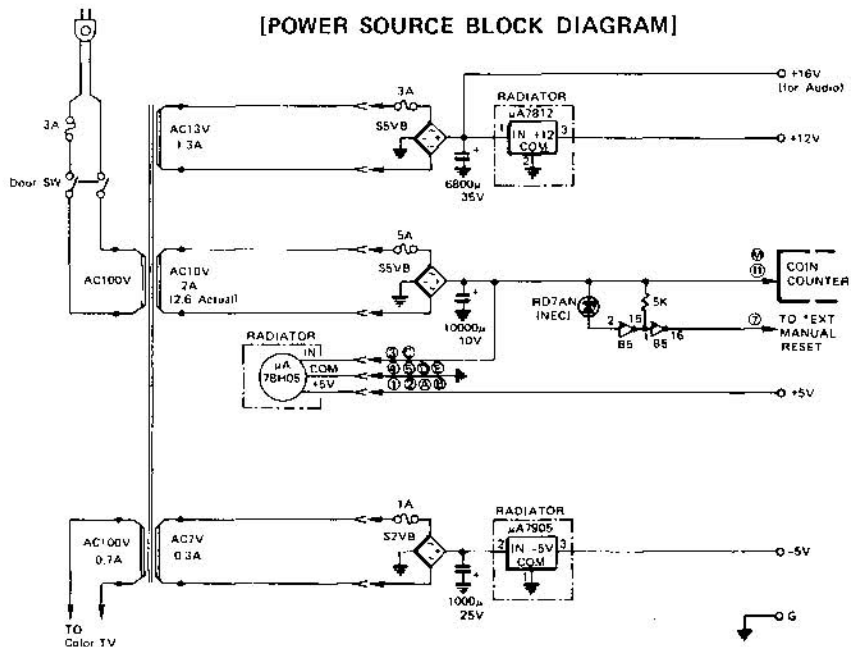
[MAIN BLOCK DIAG

- 1st PLAYER (L)
- 2nd PLAYER (R)
- 1st PLAYER FIRE BUTTON
- 2nd PLAYER FIRE BUTTON
- 1st PLAYER START BUTTON
- 2nd PLAYER START BUTTON
- 1st PLAYER LAMP
- 2nd PLAYER LAMP



CK DIAGRAM]

[POWER SOURCE BLOCK DIAGRAM]



ODSMIC GUERRILLA

7907A

UNIVERSAL

