SEGA/Gremlin

ELIMINATOR™

Owner's Manual

Manual Part No. 420-0603

ELIMINATOR™

OPERATING INSTRUCTIONS

AND

SERVICE MANUAL

MANUFACTURED BY

SEGA/GREMLIN
TLX 910-335-1621

ELIMINATOR OWNER'S MANUAL
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INTRODUCTION

ELIMINATOR is an electronic game that makes extensive use of digital integrated circuitry and television monitor concepts. This manual is designed for the maintenance technician who possesses a general knowledge of solid state circuitry, microprocessor and digital integrated circuitry and TV monitor concepts. Any individual not knowledgeable in these areas should not attempt repair of the electronic portion of the game. For detailed G-80 troubleshooting and theory, refer to the X-Y Color Monitor Manual, Service School Manual and Service Video Tapes.

Gremlin's G-80 system makes troubleshooting easy. Each board has a separate function and most problems can immediately be isolated to a single board. The individual boards contain less circuitry than if they were combined on one or two boards. This results in faster and easier servicing. The G-80 system gives Gremlin a lot more flexibility in designing new games. Increased ROM capability means that new Gremlin games will be more exciting and even more profitable. If you have any questions not answered in this manual, call SEGA/Gremlin Customer Service, 800-854-1098.

GAME CONCEPT

ELIMINATOR is a one or two player game in which players try to destroy the Eliminator. The Eliminator stays within the eliminator base a fixed amount of time. The Eliminator cannot be hit until it is well clear of the eliminator base, because there is a protective shield around it. The eliminator base floats in a random motion around the screen. It is difficult for players to predict the eliminator base's floating motion. The eliminator is capable of shooting fireballs at a player's ship. The pursuit speed of the eliminator, the firing frequency and speed of its fireballs is controlled in a manner which makes the game more and more difficult as the rounds progress. Once the eliminator leaves the base, it is destroyed by one of two methods:

1. Colliding with the base.
2. Colliding with a player's ship, thus destroying the ship and the eliminator.

Once the eliminator ship is destroyed, another one reappears in the center of the base, and another countdown begins for the emergence of the new eliminator ship. Fighter ships roam the screen in a one player game. In a two player game, fighter ships are not used, until one player loses all his ships. Then the game switches to the one player mode with fighters. Fighter ships are destroyed by running into the eliminator base, or being hit by the eliminator fireball. Only contact with the eliminator base or the eliminator fireball destroys fighter.

Game Action

Players try to line their ship up to shoot directly into the eliminator base tunnel. Once this shot is made, it breaks up the eliminator base,

destroys the eliminator and the round is over. This shot is worth bonus points. Making the tunnel shot also increases all point values. Players must avoid contact with the surface of the eliminator base, because this will cause the player's ship to explode. Electrons flow around the eliminator ship for a specific amount of time, and then the eliminator comes out onto the playing area.

In a two player game, no fighters are present. When one of the players is eliminated from the game, several fighters are instantly added to the battle and the remaining player continues the game in the single player mode. The main objective in the game is to explode the eliminator base, which ends the game and point accumulation takes place. As the rounds progress, it is more difficult to reach this objective, because of the increase in rotational and translational speed of the base, and the increased speed and firepower of the eliminator ship. Game action is completed when both players have lost all their ships.

Scoring

	Round	1	2	3	4	5
Player Ship and Fighters	Hit	50	100	150	200	250
	Destroy	100	150	200	250	300
Eliminator Ship	Hit	100	150	200	250	300
	Destroy	150	200	250	300	350
Tunnel Shot	Ship Inside Base	500	1000	1500	2000	2500
	Ship Outside Base	750	1500	2250	3000	3750

GAME SET-UP AND INSPECTION

1. Inspection

a) Before plugging in your new game, inspect it closely to spot any possible shipping damage. Check to ensure the graphics are in place, the monitor is not damaged and that the overall cabinet is in good condition.

b) Open the coin mechanism door and inspect the inside of the game electronics compartment. Be sure no components or connectors have come loose. Proper connector fittings must be checked before game power is applied. Check all related connectors for good contact. Although disconnected connectors are easily spotted, poor contacts are difficult to locate. The connectors should therefore be pushed in firmly and then loosened to spot poor connections.

c) Check to ensure the fuses are intact. There are five fuses (not counting the monitor fuses which are detailed in the monitor manual for this game). One fuse is located on the AC junction box. The other four are on the power supply PC board.

2. Voltage Selection

Before plugging in your game, make sure that the game voltage is correct for your location. Locate the two leads from the AC junction box to the power transformer. For 110 VAC, they should be connected to terminals 1 and 3 on the power transformer. For 100 VAC, connect 1 and 2, and for 220 VAC applications, they should be connected to 1 and 4. You will also notice on the AC junction box that there is a safety interlock switch. When the front panel is in place the switch is depressed and the game receives power. Removing the front panel, the switch returns to its original position and the power is cut off from the game. For servicing, this switch can be pulled out

and power will be restored.

3. Game Specifications

Power	100 VAC, 60HZ (nominal), 150 watts maximum
	110 VAC, 60HZ (nominal), 150 watts maximum
	220 VAC, 60HZ (nominal), 150 watts maximum
Dimensions	25½ inches wide X 30¼ inches depth (64.8 cm wide X 76.8 cm depth)
	72½ inches height (184.2 cm height)

4. Important Notes

a) The following note is included in compliance with FCC rules:

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. As temporarily permitted by regulations, it has not been tested for compliance with the limits for Class A computing devices pursuant to Subpart J of Part 15 FCC Rules, which are designed to provide reasonable protection against interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

b) Miscellaneous

NEVER remove circuit board connections while power is on.

NEVER replace any components with anything other than exact replacement parts.

DO NOT replace fuses with anything other than proper value. A blown fuse indicates an overload condition within the game. Replacing the fuse with a higher value can cause damage to internal components, if an overload occurs.

CORRESPONDENCE regarding this game should be addressed to:

SEGA/Gremlin
8401 Aero Drive
San Diego, California 92123
Attn: Customer Service

5. Control Panel Removal

With the door to the game electronics compartment open, reach under the control panel and flip the fasteners on both sides of the control panel. The control panel will now swing outwards. Disconnect the control panel harness, slide the spring-loaded pins on both sides and remove the control panel.

6. Front Plexiglass, Interior Graphics and Graphics Frame Removal

The front plexiglass, which secures the interior graphics, is held in place by the control panel. Release the fasteners on the control panel and swing it down. Directly under the front plexiglass, you will notice a small frame support piece. Grab it by the hand slot in the middle and pull it from the game. The front plexiglass can now be removed easily by lifting it on the bottom slightly and pulling it outward. The interior graphics can now be removed. You will also see the graphics frame, which is located directly behind the interior graphics. It must be removed when taking out the monitor. To remove the graphics frame, simply grip two sides and carefully lift out.

7. Card Cage Removal

If it is necessary to remove the card cage for servicing, first disconnect all the connectors. Then remove the three mounting screws, located on the front bracket. The card cage can now be slipped from under the rear bracket and removed from the game.

8. Logo Panel Removal

Underneath the logo panel are four mounting screws. Remove these and the logo panel can be lifted from its slot. With the logo panel removed, easy access is gained to the speaker and fluorescent lamp assemblies for servicing.

9. Monitor Removal

To remove the monitor for servicing or replacement, first open the rear panel on the cabinet and disconnect the power cable and video cable to the monitor. Then, remove the front plexiglass, interior graphics and graphics frame as explained earlier. Remove the four bolts in each corner of the monitor board. Now grasp the board by the hand holds provided at top and bottom and pull the monitor from the cabinet.

SELF-TEST

The G-80 system contains a built-in self-test system, activated by depressing the red self-test switch located on the CPU Board. If the cover to the G-80 card cage is in place, the switch can be activated by putting a pen or pencil through the hole provided on the cover.

Basic diagnostics test sequence:

1. CPU RAM
2. Maskable interrupts
3. First 1K of game ROMs
4. Video RAM and Hardware multiplier
5. Player start buttons
6. Display screen (visual)
7. All game ROMs
8. System inputs
9. Game controls
10. Sounds/Voice

Individualized diagnostics descriptions and procedures:

1. CPU RAM - tests all RAM on CPU card before proceeding, system needs to use this RAM for stack and variables during other tests so if any locations are bad processor will halt (halt light will come on).

2. Maskable interrupts - video interrupt is enabled through output port bit and all maskable interrupts are enabled inside processor, CPU then executes several HALT instructions to insure that at least one edge triggered interrupt has occured. If no interrupts occur during this test the halt light will remain on constantly. This is the same result as a bad CPU RAM. This ambiguity can be eliminated by checking the vertical interrupt another way.

The system reset/power-up logic will also halt if the video interrupt is not functioning, to try this press the RESET switch.

3. First 1K of game ROMs - the first 1K of the first game ROM will be checked for validity. If this portion of the first ROM is bad the system will not be able to proceed because vital information defining parameters of the game are stored in this first 1K. If an error occurs during this validity check, the CPU will hand up and repeatedly flash the halt light.

4. Video RAM and Hardware multiplier - the video RAM is tested first and in the event that it tests good then the hardware multiplier is checked. If the video RAM is good, the message "ALL VIDEO RAM GOOD, MULTIPLIER GOOD" appears. If a bad video RAM chip is found, then the message "BAD VIDEO RAM, CHIP U##" appears on the screen along with that chip's location. Due to the fact that sometimes a bad video chip causes the display to be erratic, the system also flashes out the bad chip's location on the halt light, over and over again separating the U#s with a one second on pulse.

The hardware multiplier is used in the game to multiply two 8 bit numbers together to form one 16 bit product. This test performs a select group of multiplications, over 2,000 multiplications in actuality, designed to thoroughly exercise the process of multiplication between the software and the hardware multiplier. The messages "GOOD" or "BAD" are the only indication of functionality with respect to this test.

5. Player start buttons - one of the two "game start" push buttons on the front of the cabinet is very special. The "one player start" button was designated by the system as a way to terminate the test that is currently being run. The reason that these two buttons were tested relatively early in the sequence, was so that the remaining tests could use the "one player start" button for a termination signal. To be sure that these two buttons

are functioning properly, see that when untouched the status indicated is "O" (for open switch contact) and that when pushed or depressed momentarily the indicated status is "C" (for closed switch contact) during the time the button is down. This notation for switches being in the open or closed state, "O" or "C", will be used throughout the diagnostic sequence whenever the status of a switch is being displayed on the screen.

6. Screen - this test is supplied by the game logic, external to the CPU ROM, to provide a visual indication of how well the display screen is functioning. It tests beam deflection and colors to check that all electron guns are functioning. In the display, you should see some sort of test showing the colors white, red, green and blue.

7. All game ROMs - the intent of this test was to insure the integrity of all of the data in all of the game ROMs. At the time the ROMs for a game were originally generated there was an algorithm performed on each 1K block of data. Each of these calculations, a form of CRC (cyclic redundancy check, similar to a checksum), produced one 16-bit word. These words are stored, along with a Gremlin part number, in the first ROM. When this test is run, all of these 16-bit CRC words are regenerated and are compared to the known values stored in the table in the first ROM. If one of these newly calculated values does not match its corresponding stored value, then the system kicks out an error which amounts to the message "BAD ROM" followed by one or more bad part numbers of that ROM that was found in mis-match. If all ROMs are good the screen displays: "ALL ROMS GOOD". Then the system quickly proceeds on to the next test.

8. System inputs - these inputs are referred to as 'system inputs', simply because they control system functions, such as credit accumulation, coinage options, game configuration, etc. The diagnostic user may check to see

that the coin switches, service switch, and option dip switches are functioning properly. The open and closed switch notation applies here as described earlier.

9. Game controls - the names of the controls that the game player would use to control the action on the screen is what this test was designed to check. Make sure that when hands are off of the controls all of the switches are open. When a particular control is twisted, pushed, turned or in whatever way activated, watch to see that the status of that control, and only that particular control, changes to reflect the action on the control panel. The screen should display from open to closed.

10. Sounds - just sit back, listen and watch this one. All of the sounds made by the game will be produced and their respective names will appear in the center of the screen. The termination button acts sluggish during this test due to the fact that some of the sounds must be created by subroutines external to the CPU ROM. After completion of this test, the system will return to the advertising mode.

ELIMINATOR OPTION SWITCH SETTINGS

OPTION		SWITCH #1							
		1	2	3	4	5	6	7	8
5 Ship Game		X	X	X	X	O	O	X	X
4 Ship Game		X	X	X	X	O	C	X	X
3 Ship Game		X	X	X	X	C	O	X	X
Game Difficulty:	Hardest	X	X	O	O	X	X	X	X
	Hard	X	X	O	C	X	X	X	X
	Medium	X	X	C	O	X	X	X	X
No Free Ships		O	O	X	X	X	X	X	X
One Free Ship At:	10,000	O	C	X	X	X	X	X	X
	20,000	C	O	X	X	X	X	X	X
	30,000	C	C	X	X	X	X	X	X

Coin/Credit Options - Switch #2

Coin/Credit	8	7	6	5	4	3	2	1
4 coin/1 credit	C	C	C	C	C	C	C	C
3 coin/1 credit	O	C	C	C	O	C	C	C
2 coin/1 credit	C	O	C	C	C	O	C	C
1 coin/1 credit	O	O	C	C	O	O	C	C
1 coin/2 credit	C	C	O	C	C	C	O	C
1 coin/3 credit	O	C	O	C	O	C	O	C
1 coin/4 credit	C	O	O	C	C	O	O	C
1 coin/5 credit	O	O	O	C	O	O	O	C
1 coin/6 credit	C	C	C	O	C	C	C	O
2 coin/1 credit 4 coin/2 credit 5 coin/3 credit	O	C	C	O	O	C	C	O
2 coin/1 credit 4 coin/3 credit	C	O	C	O	C	O	C	O
1 coin/1 credit 2 coin/2 credit 3 coin/3 credit 4 coin/4 credit 5 coin/6 credit	O	O	C	O	O	O	C	O
1 coin/1 credit 2 coin/2 credit 3 coin/3 credit 4 coin/5 credit	C	C	O	O	C	C	O	O
1 coin/1 credit 2 coin/3 credit	O	C	O	O	O	C	O	O
1 coin/2 credit 2 coin/4 credit 3 coin/6 credit 4 coin/8 credit 5 coin/11 credit	C	O	O	O	C	O	O	O
1 coin/2 credit 2 coin/4 credit 3 coin/6 credit 4 coin/9 credit	O	O	O	O	O	O	O	O

X= Don't Care O=Open C=Closed

TOP ASSEMBLY

DRAWING NUMBER 700-0062

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
1	130-0001	1	Game Speaker, 6 x 9
2	130-0002	1	Speaker Cover, 6 x 9
3	140-0021	1	Junction Box Cover
4	140-0055	1	Universal Cabinet Upright
5	220-0160	2	Coin Mechanism
6	220-0167	2	Coin Mechanism Door Lock (& Back)
7	220-0178	2	Draw Catch
8	420-0636	1	Extra Value Tag
9	250-0038	1	Molding Strip
10	250-0048	1	Clip Switch
11	250-0458	1	G-80 Cage Saddle
12	250-0481	1	Strike Plate
13	250-0492	1	Logo Panel Molding
14	250-0497	2	Component Board Clamp
15	280-0345	11	Screw Mounted Tie Wrap
16	253-0232	1	Panel Logo
17	253-0222	2	Coin Receptacle
18	253-0228	1	Clear Panel Monitor
19	800-0297	1	Cabinet Fan Assembly
20	280-0005	30	Cable Tie
21	280-0324	2	Nylon Cable Clamp
22	280-0327	8	Base Tie Wrap
23	280-0360	2	Lock Washer Lock
24	280-0359	2	Electric Crimp Sleeve

TOP ASSEMBLY-Continued

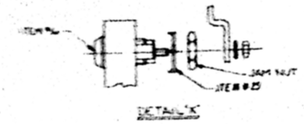
DRAWING NUMBER 700-0062

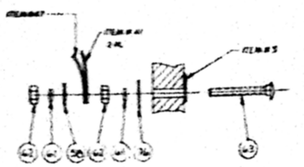
ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
25	390-0019	1	Fluorescent Lamp
26	420-0028	1	Serial Number Decal
27	420-0030	1	Caution 115V Decal
28	420-0041	1	Small Serial Number Decal
29	420-0642	1	Interior Graphic
30	420-0603	1	Game Manual
31	420-0568	1	FCC Decal
32	420-0624	1	Light Baffle
33	800-0145-01	1	AC Junction Box Assembly
34	800-0147	1	Fluorescent Lamp Assembly
35	800-0178	1	Power Harness Assembly
36	800-0190	1	Transformer EMI Assembly
37	800-0191	1	G-80 Power Supply Assembly
38	800-0192	1	Speaker Harness Assembly
39	800-0232	1	Interface Ground Harness Assembly
40	200-0025	1	19" Electrohome X-Y Color Monitor
41	800-0255	1	AC X-Y Monitor Interface Harness Assembly
42	800-0277	1	Volume Control Block Assembly
43	800-0279	1	Connector Bracket Assembly
44	800-0280	1	Coin Counter Assembly
45	800-0284	1	Coin Mechanism Ground Harness Assembly
46	800-0285	1	Game Electronics Ground Harness Assembly
47	800-0286	1	G-80 Power Supply Ground Harness Assembly

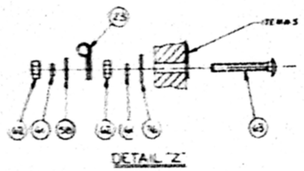
ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
48	800-0290	1	Control Panel Ground Strap Assembly
49	800-3167	1	Control Panel Assembly
50	800-3172	1	Game Electronics Assembly
51	420-0641	1	Game Instructions Decal
52	281-0014-28	4	Large Black Oval Phillips Machine Screw, #8-32 x 1.750
53	283-0024-00	4	Machine Hex Nut, #8-32
54	284-0004-00	10	Steel Flat Washer, Std. O.D., #8
55	284-0034-00	12	Steel Split Lock Washer, #8
56	284-0006-00	25	Steel Flat Washer, Std. O.D., #10
57	800-0276	1	Coin Mechanism Harness Assembly
58	282-0005-20	11	Large Machine Head Carriage Bolt, #10-24 x 1.250
59	284-0036-00	45	Steel Split Lock Washer, #10
60	283-0025-00	17	Machine Hex Nut, #10-24
61	282-0005-24	3	Large Machine Head Carriage Bolt, #10-24 x 1.50
62	281-0044-12	8	Pin Head Phillips Screw, S/M Type, A/AB, #8-15 x .750, Large
63	281-0052-08	4	Flat Head Phillips Screw, 82°, S/M Type, A/AB, #6-18 x .500, Large
64	282-0017-24	8	Machine Head Hex Bolt, #¼-20 x 1.000

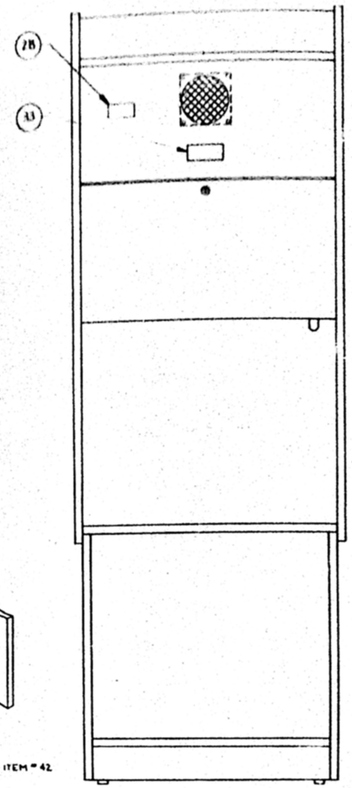
ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
65	286-0044-12	4	Pin Head Phillips Screw, S/M Type, A/AB, Black, #8-15 x .750, Large
66	282-0017-16	2	Large Machine Head Hex Bolt, #¼-20 x 1.000
67	284-0027-00	14	Large O.D. Steel Flat Washer(Fender)#¼
68	283-0007-00	4	Self-Locking Machine Hex Nut, #¼-20
69	284-0037-00	10	Steel Split Lock Washer, #¼
70	281-0042-32	6	Pin Head Phillips Screw, S/M Type, A/AB, #6-18 x 2.000 Large
71	284-0002-00	4	Steel Std. O.D. Flat Washer, #6
72	281-0045-12	27	Pin Head Phillips Screw, S/M Type, A/AB, #10-12 x .750 Large
73	284-0006-00	12	Flat Washer, #10 x 3/4
74	281-0074-12	11	Flat Head Phillips Screw, Large, #8-15 x .75, 82°
75	283-0015-001	1	Machine Wing, #10-24

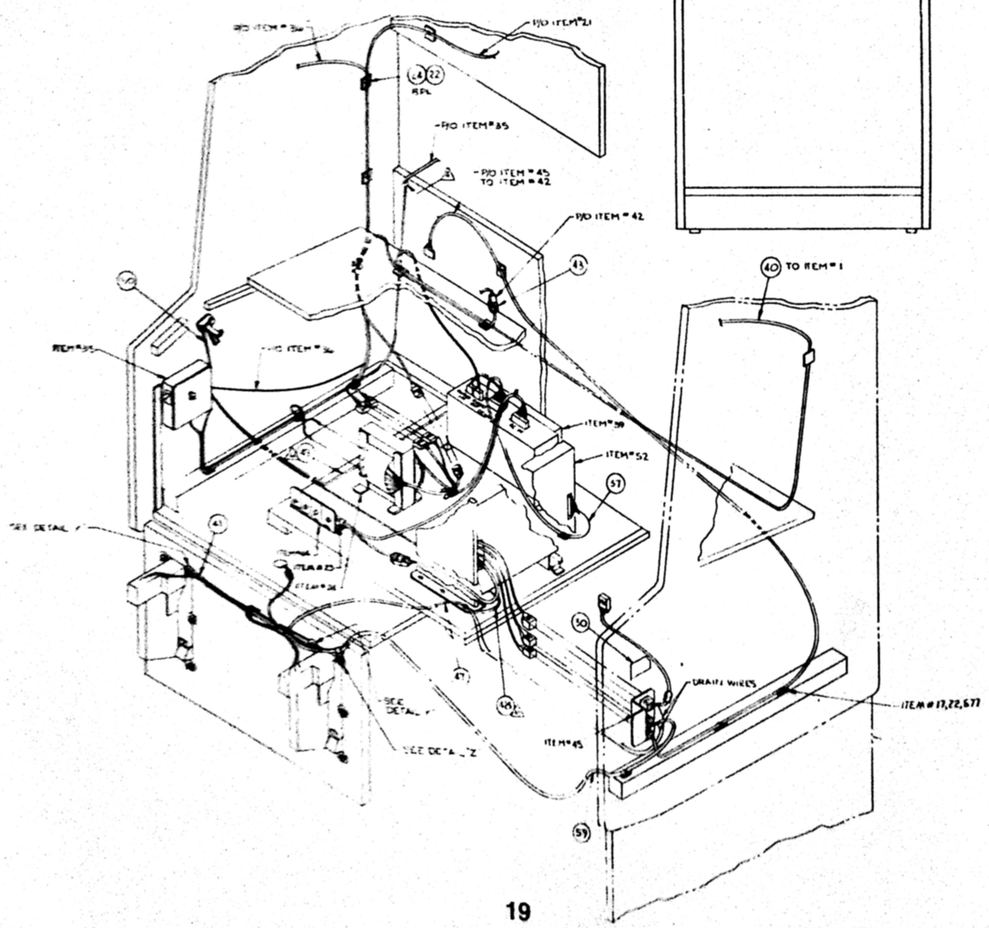
Top Assembly
700-0062



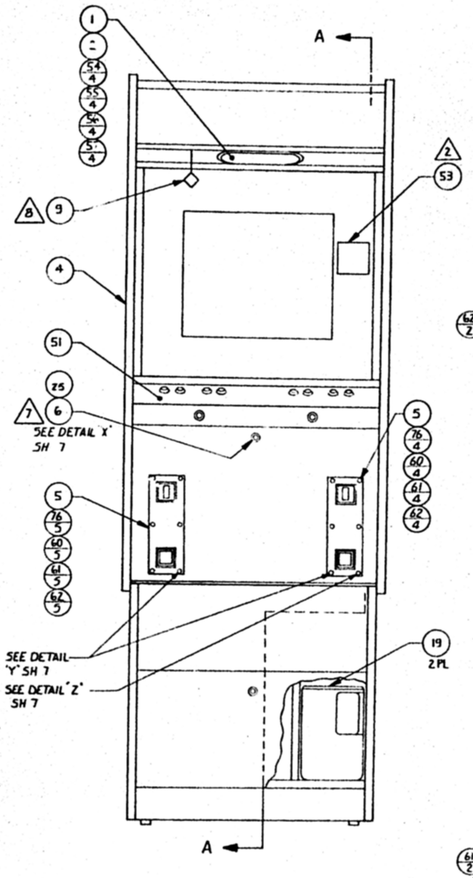


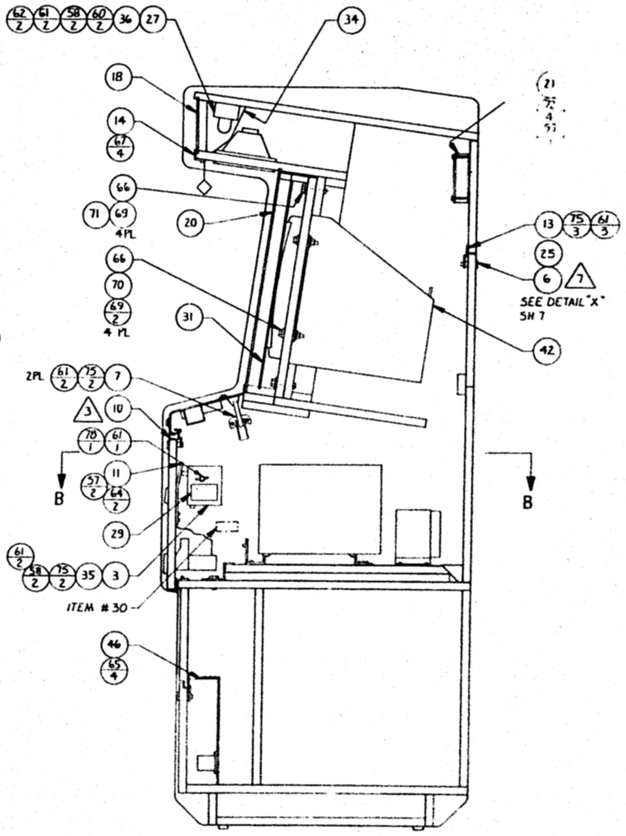




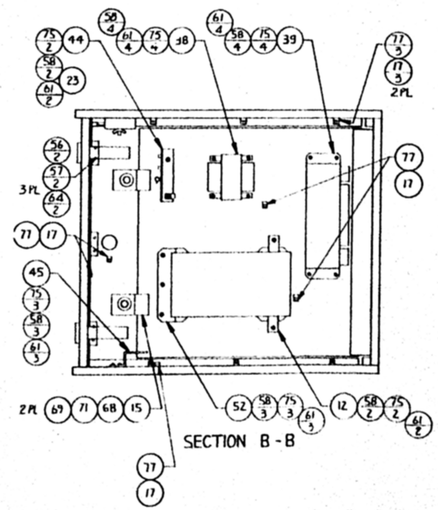


Top Assembly
700-0062





SECTION A - A



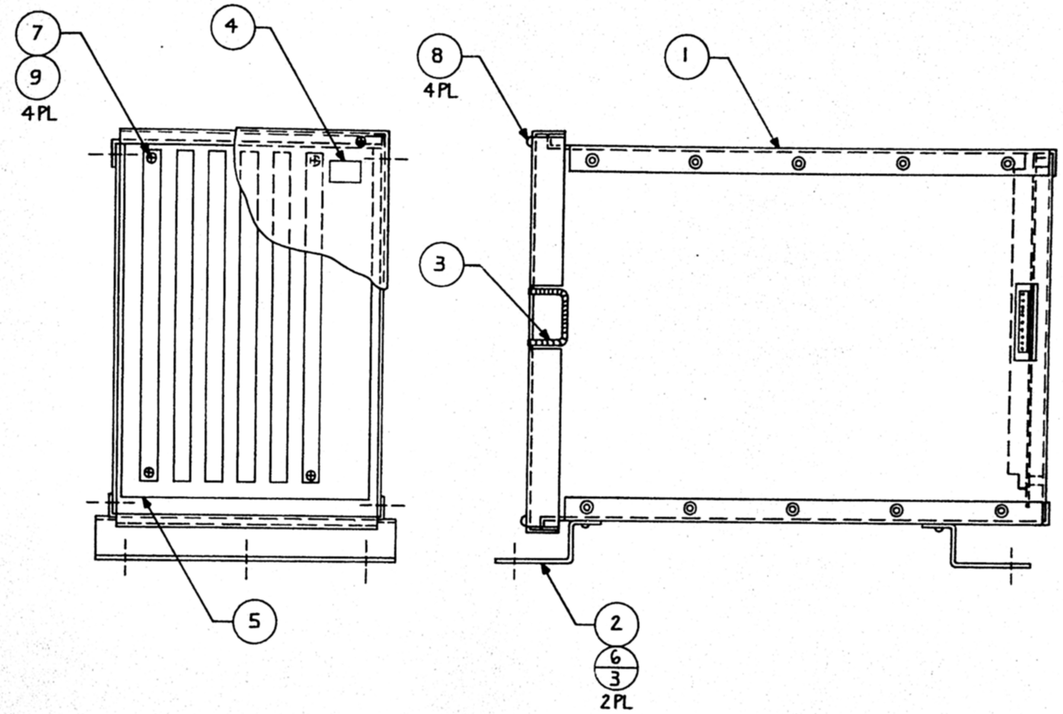
SECTION B - B

G-80 CAGE UNIVERSAL ASSEMBLY

DRAWING NUMBER 800-0296

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
1	250-0456	1	G-80 Cage Assembly
2	250-0499	2	G-80 Cage Bracket
3	280-0343	1	Split Grommet
4	420-0560	1	Test Button Decal
5	800-0105	1	6-Slot Master Board
6		6	Sheet Metal Screw, Type AB, #10 x ¼
7		4	Pin Head Phillips Machine Screw, #4-40x3/4
8		4	Pin Head Phillips Machine Screw, #4-40x3/8
9		4	Flat Washer, #4

G-80 Cage Universal Assembly
800-0296

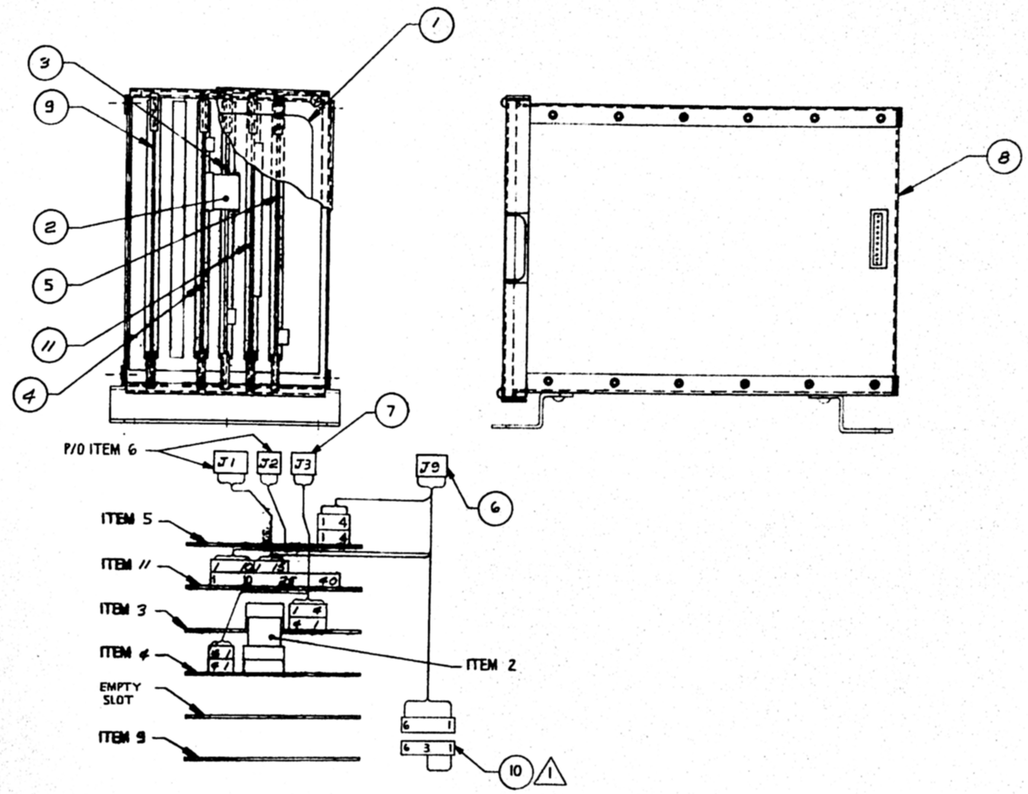


GAME ELECTRONICS ASSEMBLY

DRAWING NUMBER 800-3172

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
1	420-0643	1	Game Electronics Decal
2	600-0089	1	X-Y Interface Cable
3	800-0161	1	X-Y Timing Board Assembly
4	800-0163	1	X-Y Control Board Assembly
5	800-3174	1	Sound Board Assembly
6	800-0281	1	Master Interface Harness Assembly
7	800-0282	1	X-Y Video Interface Harness Assembly
8	800-0296	1	G-80 Universal Card Cage Assembly
9	800-3156	1	G-80 2716 EPROM Board Assembly
10	800-0302	1	Jumper Plug Assembly
11	800-3157	1	CPU Board Assembly

Game Electronics Assembly
800-3172



ASSEMBLY CPU BOARD

DRAWING NUMBER 800-0107

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF. DES.
1	150-0088	3	CAP E 10 uf 25V	C43, C46, C62
2	151-0005	1	CAP CER 680 pf 50V	C50
3	151-0012	1	CAP CER .1 uf 50V	C47
4	151-0020	1	CAP CER 33 pf 50V	C49
5	151-0060	21	CAP CER .1 uf 16V AX	C37-C42, C44, C48 C51-C61, C63, C64
6	151-0061	36	CAP CER 220 pf 16V AX	C1-C36
7	170-0194	1	PC BOARD	
8	211-0008	4	CONN PIN TEST PT	TP1-TP4
9	212-0098	4	CONN M 10 PIN RTA	
10	230-0013	1	XTAL 8.000 MHZ	Y1
11	314-0001	1	IC NE555	U12
12	314-0015	1	IC 7404	U30
13	314-0018	4	IC 74LS00	U6, U8, U14, U19
14	314-0019	1	IC 74LS04	U18
15	314-0055	3	IC 74LS244	U34, U36, U38
16	314-0058	1	IC 74LS08	U13
17	314-0062	5	IC 74LS74	U10, U11, U17, U20, U39
18	314-0066	1	IC 74LS27	U16
19	314-0067	1	IC 74LS30	U37
20	314-0068	2	IC 74LS32	U32, U33
21	314-0078	1	IC 74LS02	U23
22	314-0083	1	IC 74LS240	U4
23	314-0085	2	IC 74LS14	U7, U31
24	314-0087	1	IC 74LS139	U24

ASSEMBLY CPU BOARD-Continued

DRAWING NUMBER 800-0107

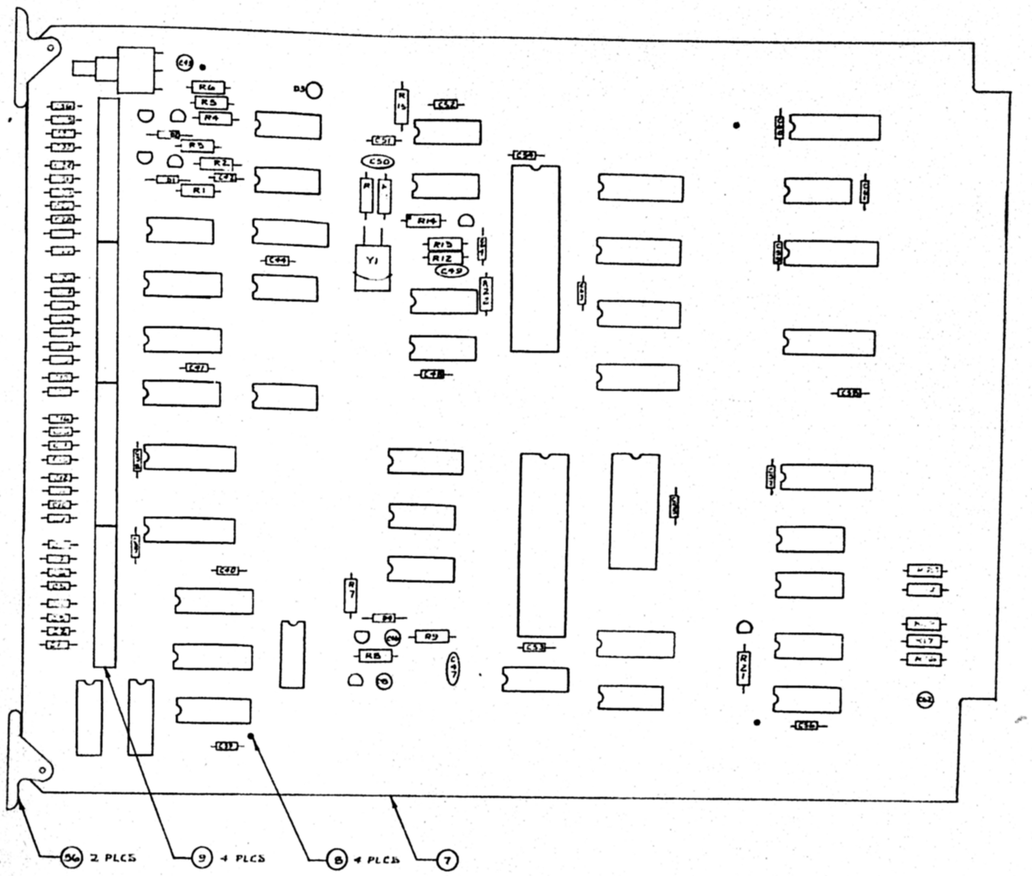
ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
25	314-0093	1	IC 74LS374	U3
26	314-0099	1	IC 74LS245	U35
27	314-0105	4	IC 74LS253	U1, U2, U5, U9
28	315-0041	1	IC Z80A	U22
29	315-0046	4	IC 2114	U26-U29
30	315-0050	1	IC 2516 (2716)	U25
31	316-0764	1	IC PROM 32X8	U15
32				
33	390-0003	1	LED RED	D3
34	471-0101	1	RES 100 OHM 1/2W 5%	R5
35	471-0102	2	RES 1K OHM 1/2W 5%	R1, R3
36	471-0103	1	RES 10K OHM 1/2W 5%	R6
37	471-0104	3	RES 100K OHM 1/2W 5%	R7, R8, R22
38	471-0122	1	RES 1.2K OHM 1/2W 5%	R12
39	471-0220	1	RES 22 OHM 1/2W 5%	R14
40	471-0221	3	RES 220 OHM 1/2W 5%	R2, R4, R13
41	471-0331	8	RES 330 OHM 1/2W 5%	R10, R11, R15-R20
42	477-0002	3	RES PACK 15X2.2K	RP1-RP3
43	481-0001	2	DIODE 1N4002	D1, D2
44	481-0006	1	DIODE 1N914/1N4148	D4
45	482-0006	1	XSTR 2N4403	Q7
46	482-0010	2	XSTR PE8050	Q1, Q2
47	482-0014	5	XSTR 2N4401	Q3-Q6, Q8
48	510-0052	1	SWITCH PIANO DIP	SW1
49	510-0053	1	SW PUSHBUTTON SIDE PCM	SW3

DRAWING NUMBER 800-0107

ASSEMBLY CPU BOARD-Continued

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
50	213-0001	1	SKT 24 PIN DUAL INLN	XU25
51	213-0002	4	SKT 18 PIN DUAL INLN	XU26-XU29
52	213-0004	1	SKT 16 PIN DUAL INLN	XU15
53	213-0005	2	SKT 40 PIN DUAL INLN	XU21, XU22
54	510-0049	1	SWITCH 8 POS DIP	SW2
55	471-0472	1	RES 4.7K OHM 1/2W 5%	R21
56	280-0330	2	CARD EJECTOR	
57	471-0473	1	RES 47K OHM 1/2W 5%	R9
58	151-0031	1	CAP CER .22 uf 16V	C45

CPU Board Assembly
800-0107



SOUND BOARD ASSEMBLY

DRAWING NUMBER 800-3174

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
1	150-0087	2	Electrolytic Capacitor, 4.7uf, 25V RDL	C1,C38
2	150-0088	4	Electrolytic Capacitor, 10uf, 25V RDL	C4,C8,C37, C73
3	150-0090	1	Electrolytic Capacitor, 33uf, 25V RDL	C56
4	150-0099	1	Electrolytic Capacitor, 1uf, 50V	C35
5	150-0100	2	Electrolytic Capacitor, 2.2uf, 50V	C21,C36
6	151-0001	4	Ceramic Capacitor, .05uf, 50V	C48,C50-C52
7	151-0002	1	Ceramic Capacitor, 100pf, 50V	C63
8	151-0008	1	Ceramic Capacitor,.001uf, 50V	C60
9	151-0012	35	Ceramic Capacitor, .1uf, 50V	C2,C3,C5,C6, C12,C22-C29, C31,C32,C39- C41,C44,C45, C53-C55,C49, C57,C59,C62, C64,C70-C72, C74-C77
10	152-0001	6	Film Capacitor, .1uf, 100V	C13,C14,C33, C34,C58,C69

SOUND BOARD ASSEMBLY-Continued

DRAWING NUMBER 800-3174

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
11	152-0007	1	Film Capacitor, .001uf, 250V	C7
12	152-0010	3	Film Capacitor, .022uf, 100V	C30,C46,C66
13	152-0035	1	Film Capacitor, .033uf, 100V	C43
14	152-0037	9	Film Capacitor, .068uf, 100V	C10,C11, C15-C20,C61
15	152-0038	2	Film Capacitor, .047uf, 100V	C47,C67
16	152-0039	3	Film Capacitor, .01uf, 100V	C9,C65,C68
17	170-0234	1	PC Board	
18	212-0101	1	4-Pin M RTA Connector	
19	213-0012	1	28-Pin Dual Inline Socket	XU30
20	280-0330	2	Card Ejector	
2 21	313-0005	1	IC LM566CN	U25
3 22	313-0037	4	IC TL081	U1,U3,U12, U29
3 23	313-0038	3	IC TL082	U2,U16,U20
2 24	313-0046	8	IC CA3080E	U6-U11,U14, U15
4 25	314-0001	2	IC NE555	U5,U13

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
26	314-0018	1	IC 74LS00	U26
27	314-0040	1	IC 74LS125	U33
28	314-0042	1	IC 7406	U24
2 29	314-0043	2	IC 7407	U27,U28
30	314-0058	1	IC 74LS08	U39
31	314-0059	1	IC 74LS10	U37
32	314-0062	1	IC 74LS74	U36
33	314-0067	1	IC 74LS30	U40
1 34	314-0085	2	IC 74LS14	U38,U41
1 35	314-0093	2	IC 74LS374	U34,U35
3 36	315-0007	4	IC CD4011A	U17-U19,U22
1 37	315-0035	1	IC MM5837	U4
2 38	315-0043	2	IC CD4069A	U31,U32
1 39	315-0052	2	IC CD4024A	U21,U23
40	471-0102	16	Resistor, 1K ohm, ½W 5%	R19,R31,R35, R40,R43,R51-R53,R55-R57, R63,R69,R72, R80,R131
41	471-0103	22	Resistor, 10K ohm, ½W 5%	R5,R8,R10, R17,R18,R20, R22,R44,R60, R76-R78,R94,

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
				R95,R99,R100, R105,R126, R134,R135, R137,R138
42	471-0104	14	Resistor, 100K ohm, ½W 5%	R1,R15,R16, R21,R67,R68, R111,R114, R118-R120, R123,R125, R144
43	471-0105	8	Resistor, 1M ohm, ½W 5%	R2,R12,R91, R93,R113, R115-R117
44	471-0153	2	Resistor, 15K ohm, ½W 5%	R90,R104
45	471-0154	2	Resistor, 150K ohm, ½W 5%	R64,R75
46	471-0155	2	Resistor, 1.5M ohm, ½W 5%	R36,R81
47	471-0202	3	Resistor, 2K ohm ½W 5%	R47,R54,R59
48	471-0205	1	Resistor, 2M ohm, ½W 5%	R79
49	471-0222	11	Resistor, 2.2K ohm, ½W 5%	R4,R11,R84-R89,R109, R110,R147
50	471-0223	11	Resistor, 22K ohm, ½W 5%	R3,R30,R34, R39,R46,R50, R92,R96,R127,

SOUND BOARD ASSEMBLY-Continued

DRAWING NUMBER 800-3174

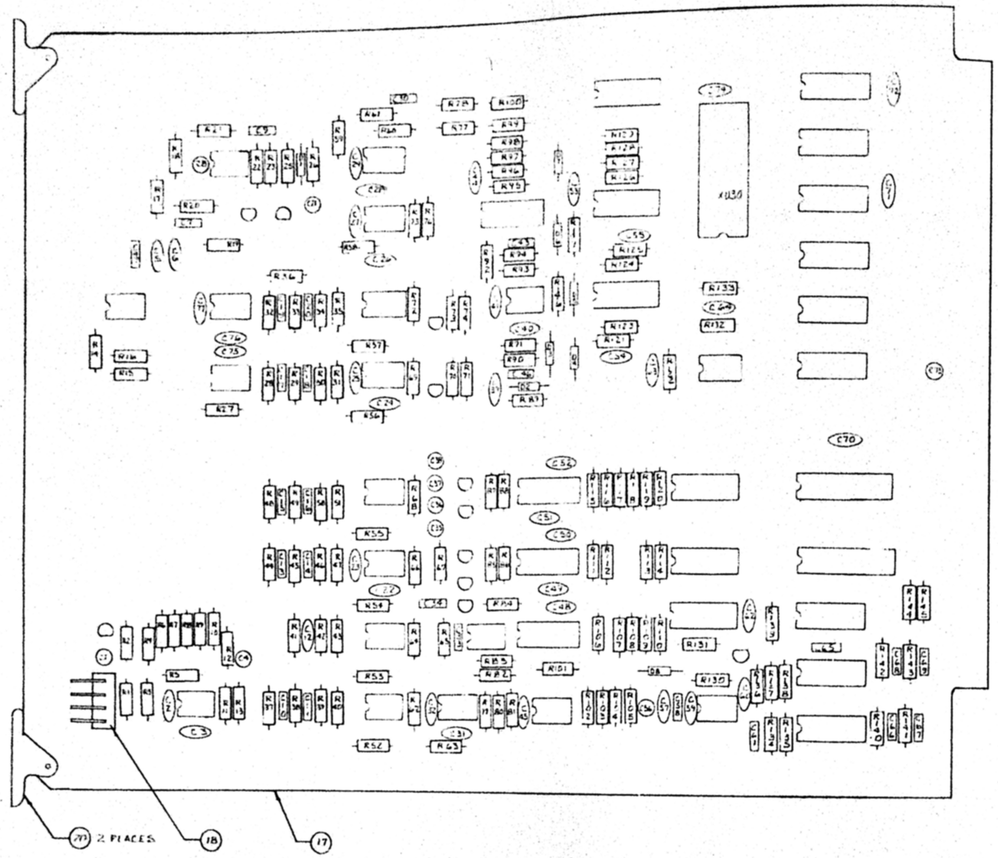
ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
				R130,R146
51	471-0224	7	Resistor, 220K ohm, ½W 5%	R6,R7,R25,
				R62,R122,
				R132,R141
52	471-0225	5	Resistor, 2.2M ohm, ½W 5%	R41,R42,R11
				R121,R124
53	471-0274	2	Resistor, 270K ohm, ½W 5%	R71,R140
54	471-0333	6	Resistor, 33K ohm, ½W 5%	R9,R28,R38,
				R49,R58,R66
55	471-0334	3	Resistor, 330K ohm, ½W 5%	R13,R139,R14
56	471-0393	2	Resistor, 39K ohm, ½W 5%	R97,R128
57	471-0394	2	Resistor, 390K ohm, ½W 5%	R65,R74
58	471-0471	2	Resistor, 470 ohm, ½W 5%	R82,R83
59	471-0472	3	Resistor, 4.7K ohm, ½W 5%	R23,R107,R10
60	471-0473	3	Resistor, 47K ohm, ½W 5%	R32,R45,R61
61	471-0474	4	Resistor, 470K ohm, ½W 5%	R14,R26,R27,
				R70
62	471-0681	1	Resistor, 680 ohm, ½W 5%	R133
63	471-0682	3	Resistor, 6.8K ohm, ½W 5%	R37,R48,R102
64	471-0683	2	Resistor, 68K ohm, ½W 5%	R29,R145
65	471-0684	4	Resistor, 680K ohm, ½W 5%	R73,R106,
				R136,R143

SOUND BOARD ASSEMBLY-Continued

DRAWING NUMBER 800-3174

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
66	471-0823	3	Resistor, 82K ohm, ½W 5%	R33,R98,R129
67	471-0911	1	Resistor, 910 ohm, ½W 5%	R101
68	471-0912	1	Resistor, 9.1K ohm, ½W 5%	R103
1 69	481-0001	1	Diode IN4002	D8
8 70	481-0006	7	Diode IN914/IN4148	D1-D7
10 71	482-0006	10	Transistor 2N4403	Q2-Q11
1 72	482-0023	1	Transistor 2N4093	Q1

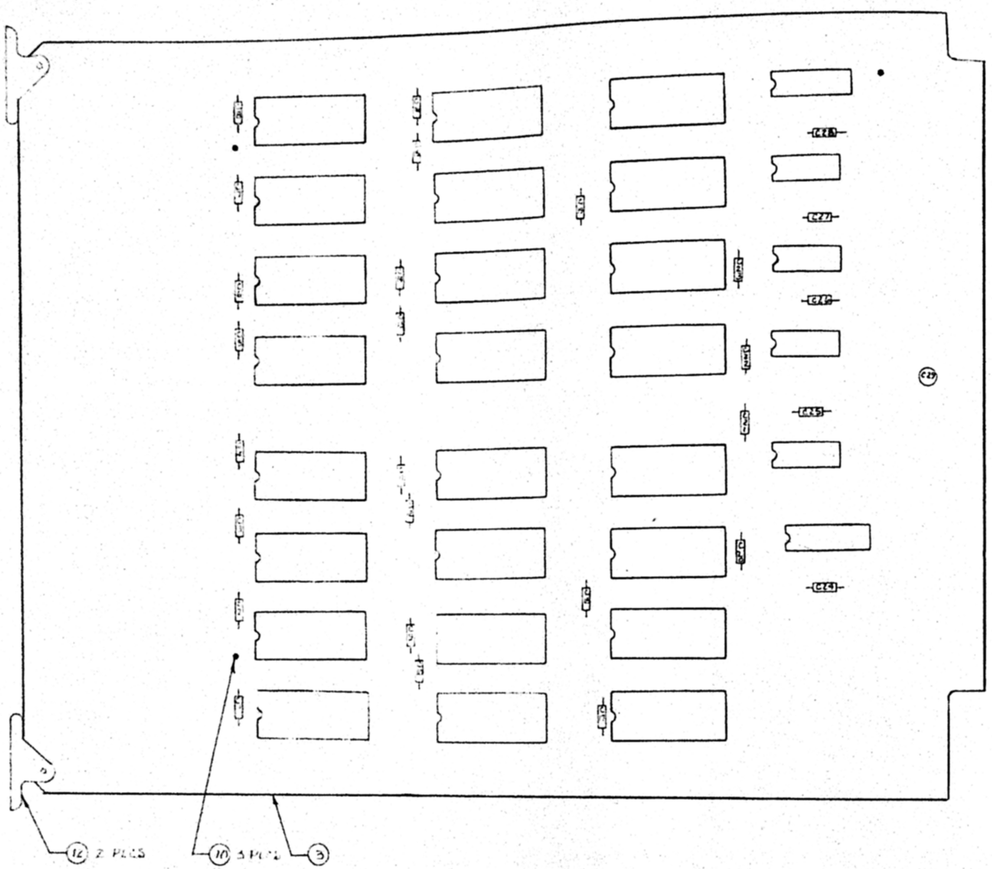
Sound Board Assembly
800-3174



G-80 2716 EPROM BOARD ASSEMBLY — DRAWING NUMBER 800-0151

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
1	151-0058	13	Ceramic Capacitor, .01uf, 16V AX	C2,C4,C6, C8,C9,C11, C14,C16,C18 C21,C23,C25, C27
2	151-0060	15	Ceramic Capacitor, .1uf, 16V AX	C1,C3,C5,C7, C10,C12,C13, C15,C17,C19, C20,C22,C24, C26,C28
3	170-0211	1	PC Board	
4	213-0001	23	24-Pin Dual Inline Socket	XU!-XU23
5	314-0055	1	IC 74LS244	U25
6	314-0058	3	IC 74LS08	U26-U28
7	314-0059	1	IC 74LS10	U29
8	314-0104	1	IC 74LS138	U30
9	314-0120	1	IC 74LS154	U24
10	211-0008	3	Test Point Connector Pin	TP1-TP3
11	150-0088	1	Electrolytic Capacitor, 10uf, 25V	C29
12	280-0330	2	Card Ejector	

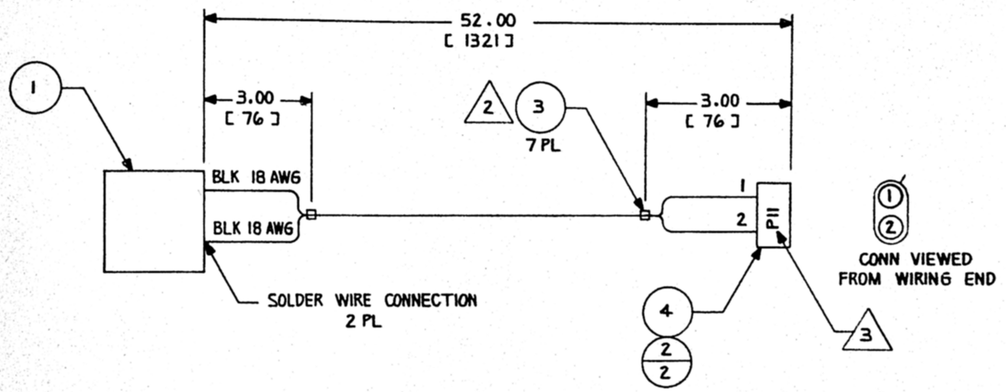
G-80 2716 Eprom Board Assembly
800-0151



CABINET FAN ASSEMBLY

DRAWING NUMBER 800-0297

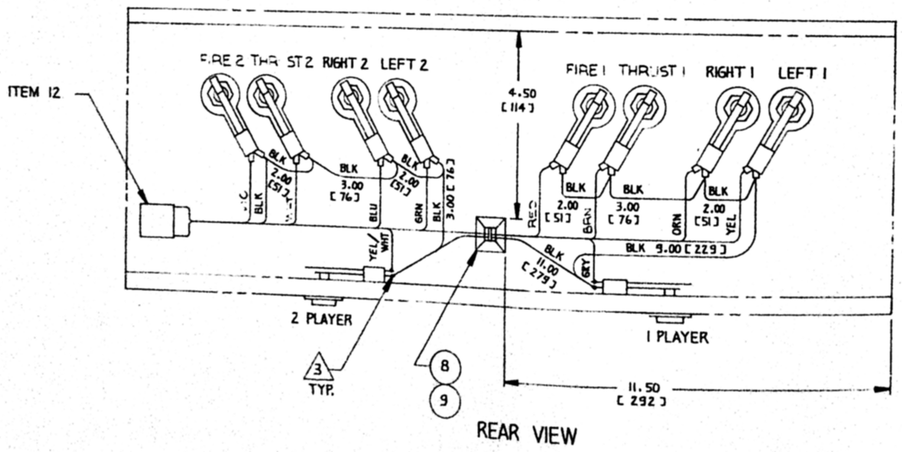
ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
1	260-0001	1	Axial Cooling Fan, 110V
2	211-0078	2	Connector Terminal Pin, 20-14 AWG
3	280-0005	7	Cable Tie
4	211-0044	1	2-Pin Cap Amp Connector



CONTROL PANEL ASSEMBLY

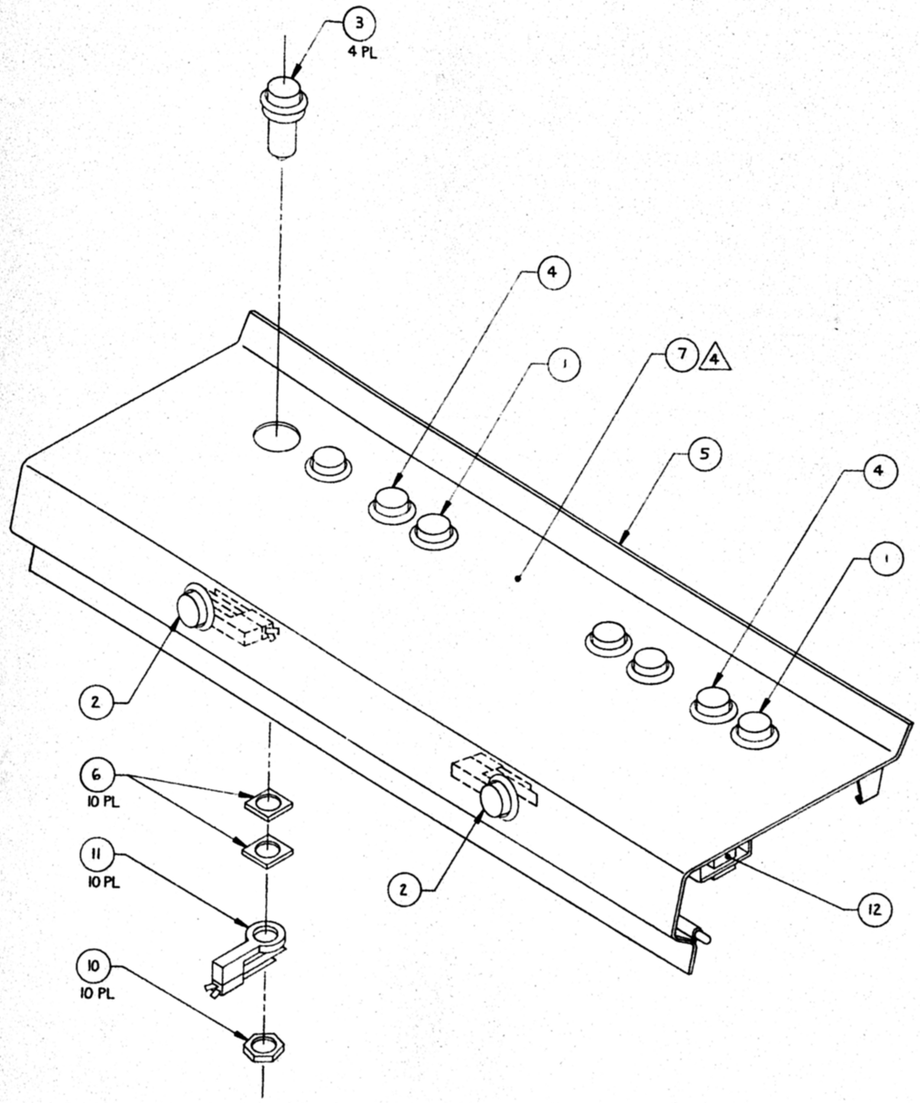
DRAWING NUMBER 800-3167

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
1	240-0006	2	Red Button Plunger
2	240-0008	2	White Button Plunger
3	240-0009	4	Yellow Button Plunger
4	240-0109	2	Orange Button Plunger
5	250-0491	1	Metal Subpanel
6	253-0031	20	WICO Switch Spacer
7	253-0233	1	Control Panel Graphic
8	280-0005	1	Cable Tie
9	280-0327	1	Base Tie Wrap
10	280-0329	10	Pal Hex Nut, ½-13
11	510-0023	10	WICO Switch Assembly
12	800-3168	1	Control Panel Harness Assembly



REAR VIEW

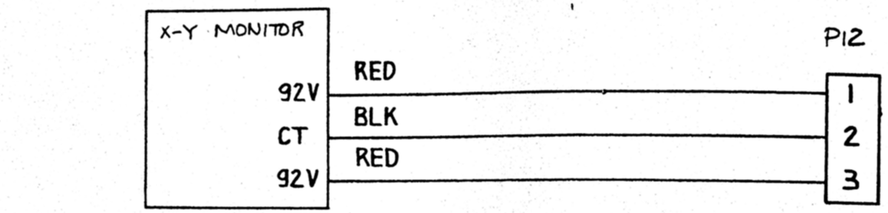
Control Panel Assembly 800-3167

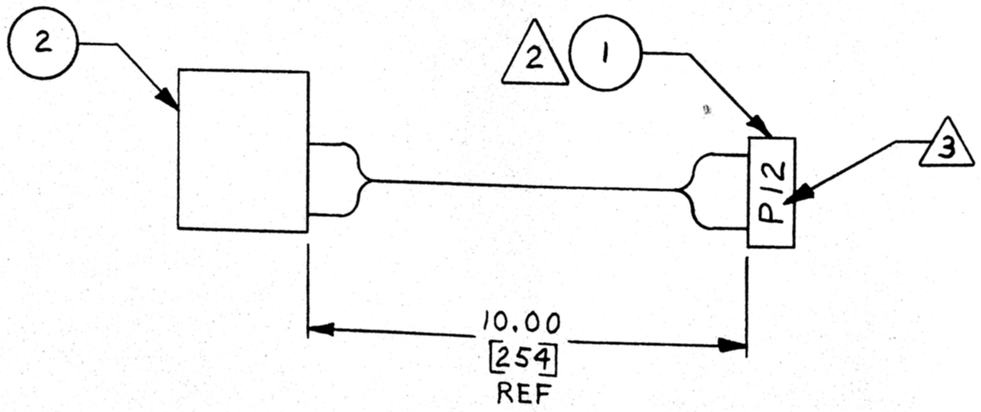


DRAWING NUMBER 800-0249

X-Y MONITOR ASSEMBLY

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
1	211-0059	1	3-Pin Amp Connector Plug
2	200-0025	1	19" Electrohome X-Y Color Monitor

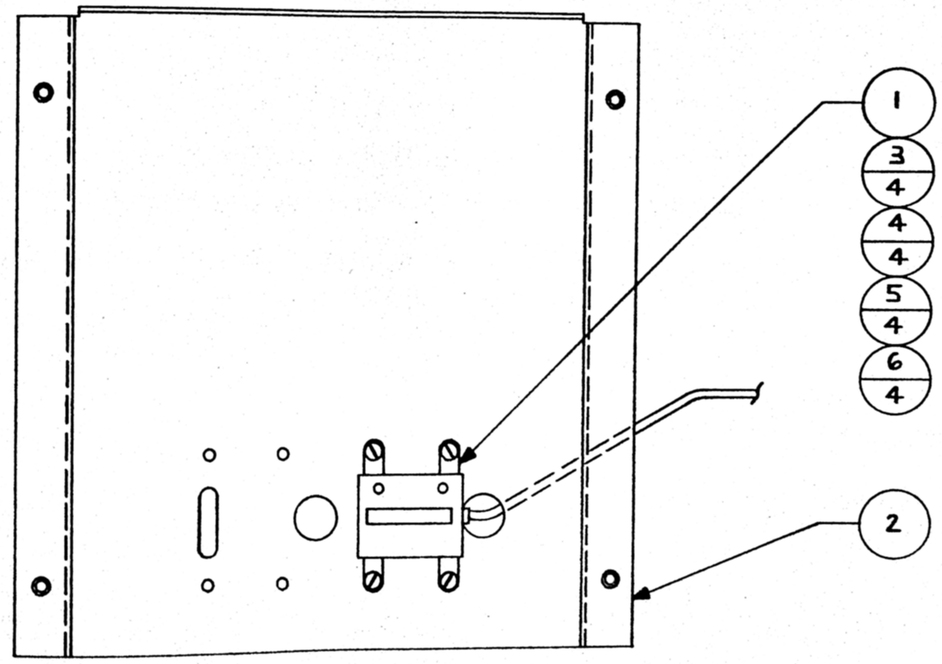




COIN COUNTER ASSEMBLY

DRAWING NUMBER 800-0280

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
1	220-0008	1	Digital Counter, 6 volts
2	250-0496	1	Coin Counter Bracket
3		4	Slot Pin Head Screw, #6 x ½" machine
4		4	Flat Washer, #6
5		4	Lock Split Washer, #6
6		4	Hex Nut, #6 - 32

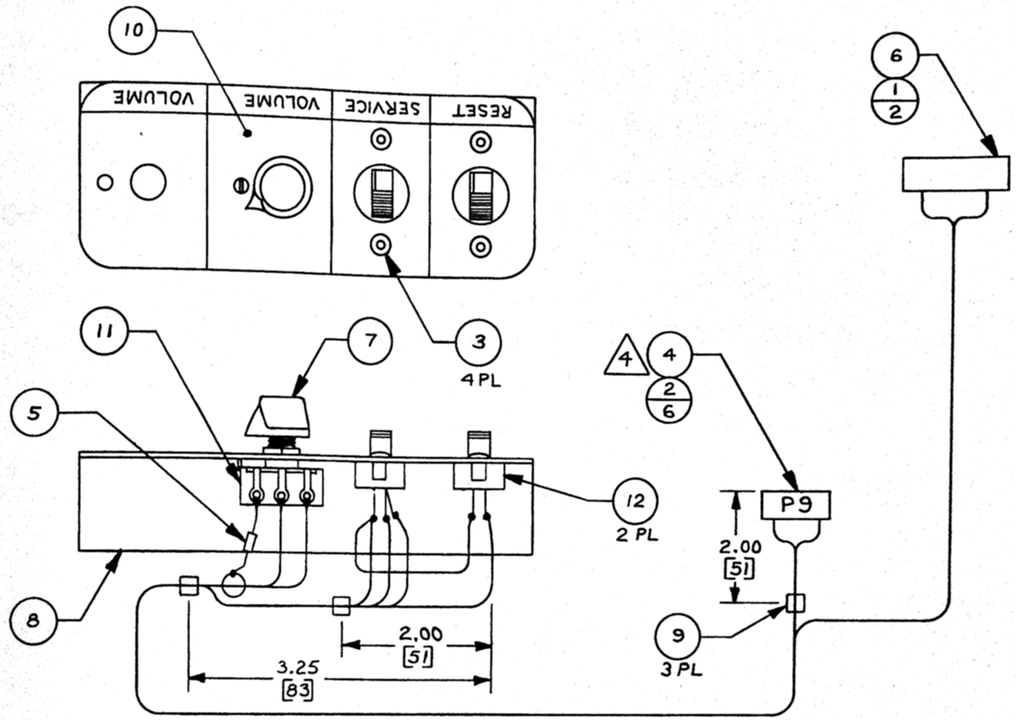


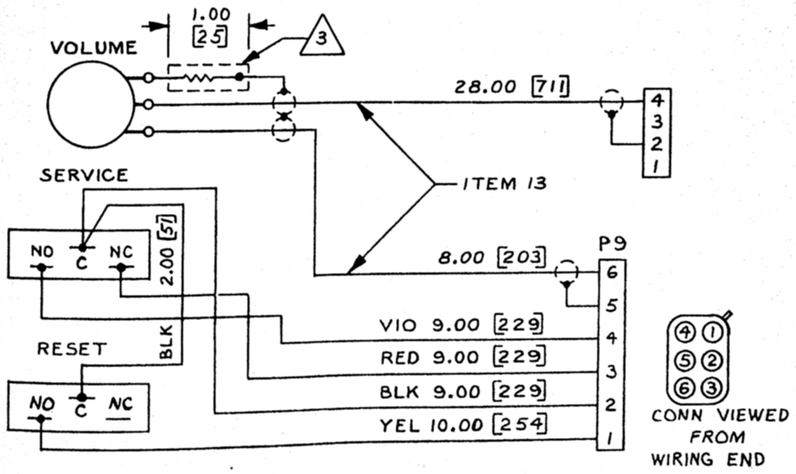
VOLUME CONTROL BLOCK ASSEMBLY

DRAWING NUMBER 800-0277

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
1	211-0005	2	Connector Crimp Lock
2	211-0041	6	Connector Pin Amp
3		4	Pop Rivet, 1/8" x 1/4 Lg
4	211-0046	1	Connector Cap Amp, 6 Pin
5	470-0331	1	Resistor, 330 ohm ¼ watt 5%
6	212-0005	1	Connector, Female, Black 4 Pin
7	240-0001	1	Volume Control Knob
8	250-0462	1	Volume Control Bracket
9	280-0005	3	Cable Tie
10	420-0623	1	Operator Panel Decal
11	475-0007	1	Pot, 10K, CAR Panel Mount
12	510-0051	2	Pushbutton Slide Switch
13	600-0013	3.1 feet	1 Condition Shielded Cable
14		0.1 feet	Heat Shrink Tubing, 1/8" Diameter

Volume Control Block Assembly
800-0277

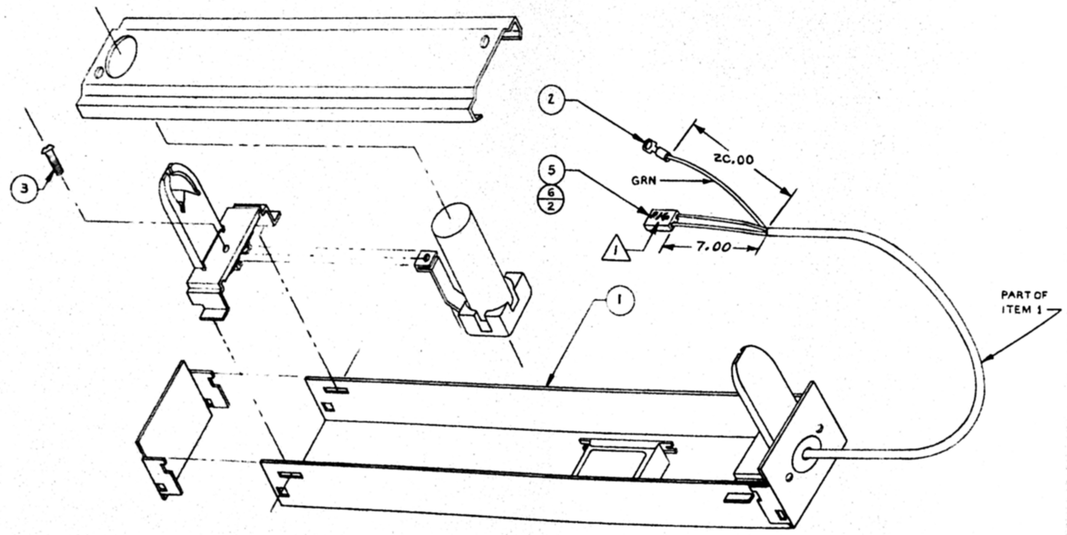




FLUORESCENT LAMP 2 ASSEMBLY

DRAWING NUMBER 800-0147

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
1	390-0083	1	Fluorescent Lamp Fixture, 18"
2	211-0027	1	Connector Ring Lug, #10
3		1	Round or Pin Head Machine Screw, 6-32 x ½"
4	211-0044	1	Connector Cap Amp, 2 Pin
5	211-0041	2	Connector Pin Amp

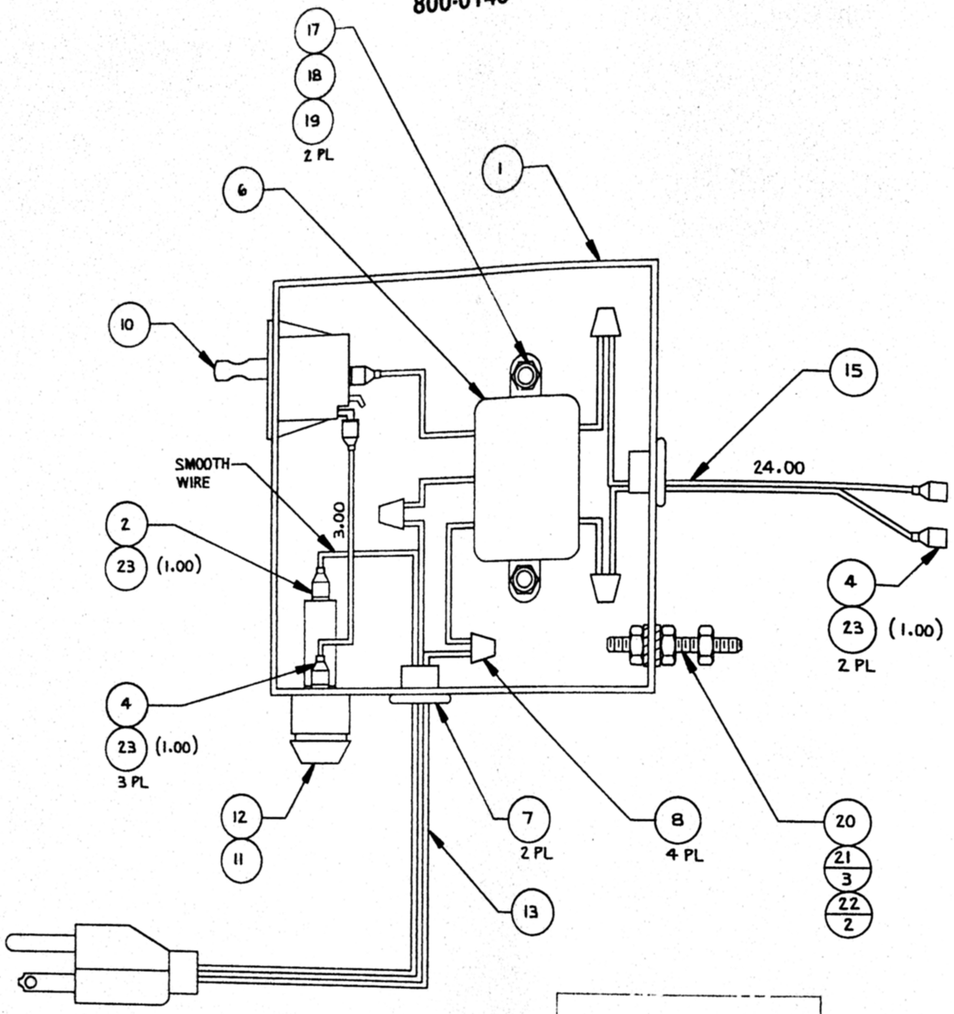


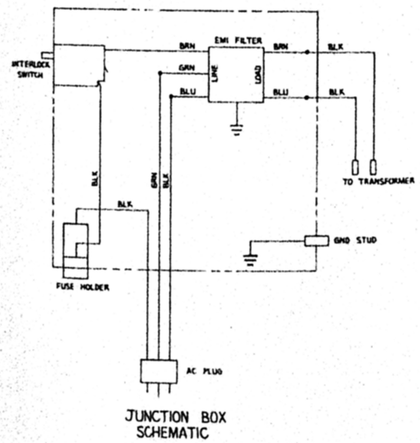
A. C. JUNCTION BOX ASSEMBLY

DRAWING NUMBER 800-0145

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
1	140-0020	1	Junction Box Metal
2	211-0017	1	Connector Quick ¼ Female
3	211-0038	5	Connector Quick 3/16 Female
4	270-0001	1	EMI Filter
5	280-0007	2	Bushing S/Rel ½
6	280-0010	4	Wire Nut
7	510-0013	1	SPDT Switch, Cherry
5 8	514-0001	1	2 Amp Fuse, 250 volt Slow Burn
9	514-0005	1	Fuse Holder
10	600-0001	1	3 Condition Line Cord
11	600-0079	2 feet	Zip Cord Line
12		2	Screw, 6-32 x 5/8
13		2	Hex Head Nut 6-32
14		2	Lock Washer, #6 Int. Star
15		1	Stud, 8-32 x 1
16		3	Hex Head Nut 8-32
17		2	Lock Washer, #8, Int. Star
18		6.0	Shrink Tubing, ¼ Diameter

A.C. Junction Box Assembly
800-0145





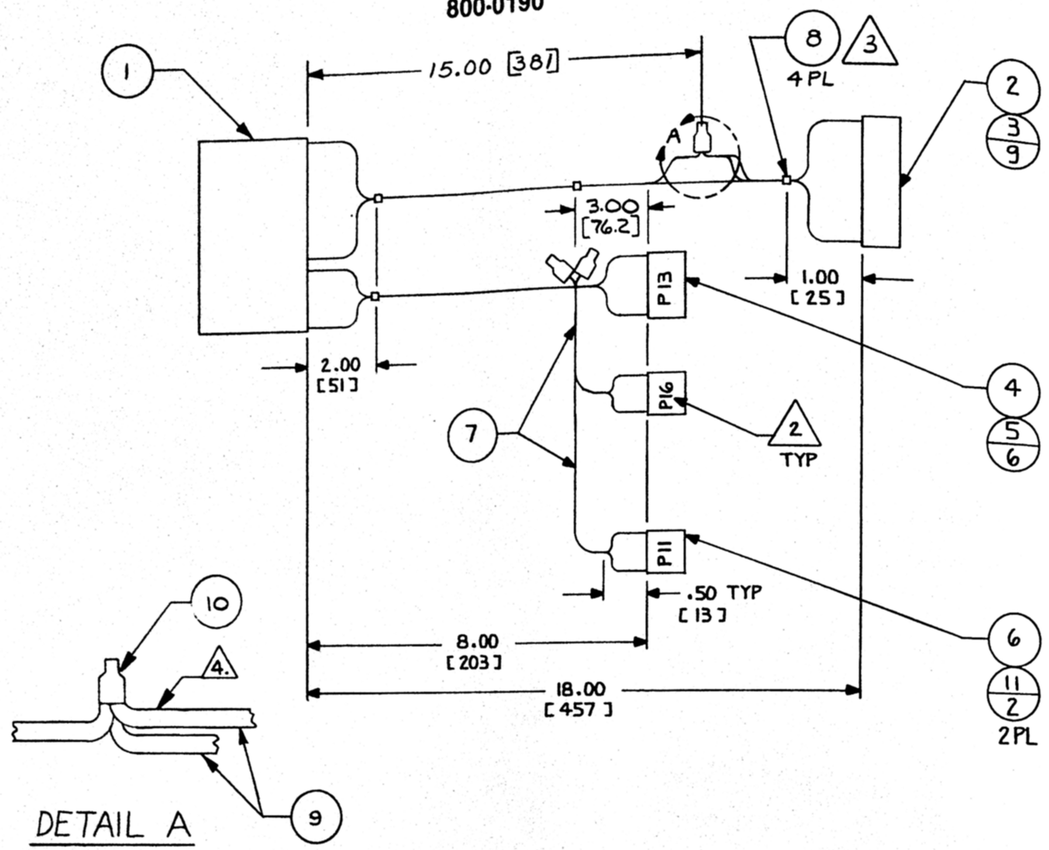
JUNCTION BOX SCHEMATIC

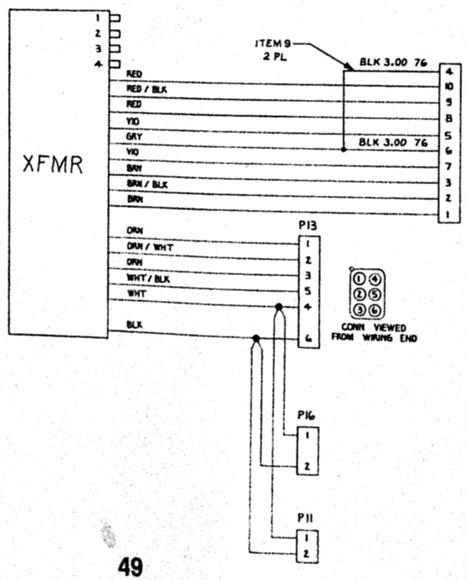
TRANSFORMER EMI ASSEMBLY

DRAWING NUMBER 800-0190

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION
1	560-0055	1	G-80 Power Supply Transformer
2	212-0016	1	Connector, Female, 10 Pin
3	211-0005	9	Connector Crimp
4	211-0045	1	Connector Plug Amp, 6 Pin
5	211-0042	6	Connector Socket
6	211-0043	2	Connector Plug Amp, 2 Pin
7	600-0079	1 foot	Zip Cord
8	280-0005	4	Cable Tie
9		0.5 feet	Electric Strand Wire, Black, AWG 18
10	280-0359	3	Electric Crimp Sleeve
11	211-0077	4	Connector Terminal Socket, 20-14 AWG

Transformer EMI Assembly
800-0190





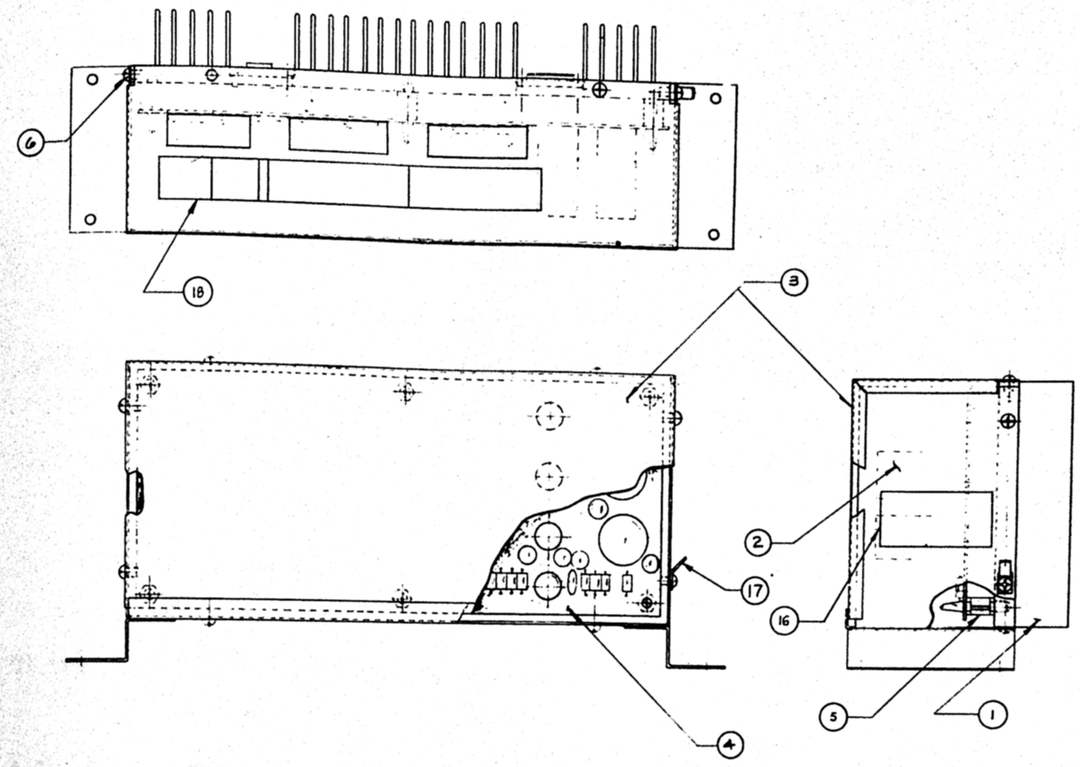
G-80 POWER SUPPLY CHASSIS ASSEMBLY

DRAWING NUMBER 800-0191

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
1	530-0016	1	Heat Sink, G-80 Pwr Sup.	
2	250-0460	1	Chassis Support	
3	250-0461	1	Cover	
4	800-0170	1	PCB Assembly	
5	253-0206	6	PCB Support, Threaded	
4 6		8	Thread Forming Screw, #6, Type B, 3/8 long	
2 7	482-0104	1	Power Transistor	TIP 141
2 8	313-0023	1	Negative 5 Volt Regulator	320T5
2 9	313-0014	1	Positive 12 Volt Regulator	340T12
2 10	313-0015	1	Negative 12 Volt Regulator	320T12
2 11	482-0100	1	Power Transistor (Audio Amp)	TIP 125
2 12	482-0019	1	Power Transistor (Audio Amp)	TIP 120
13	420-0557	1	Fuse Decal	
14	280-0117	1	Tab Rivet, Male $\frac{1}{4}$"	
15	420-0575	1	Decal--Power Supply B	
16		6	Pin Head Machine Screw, #4--40 x $\frac{1}{2}$	
17		6	Nylon Transistor Insulator	
18		6	Mica Transistor Insulator	
19		6	Flat Washer, #4	
20		6	Lock Split Washer, #4	

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
21		6	Hex Nut, #4, 40	
22	800-0243	1	Transistor Harness Assembly, P1	
23	800-0244	1	Transistor Harness Assembly, P2	
24	800-0245	1	Transistor Harness Assembly, P3	
25	800-0246	1	Transistor Harness Assembly, P4	
26	800-0247	1	Transistor Harness Assembly, P5	
27	800-0248	1	Transistor Harness Assembly, P6	

G-80 Power Supply Chassis Assembly 800-0191



G-80 POWER SUPPLY PC ASSEMBLY

DRAWING NUMBER 800-0170

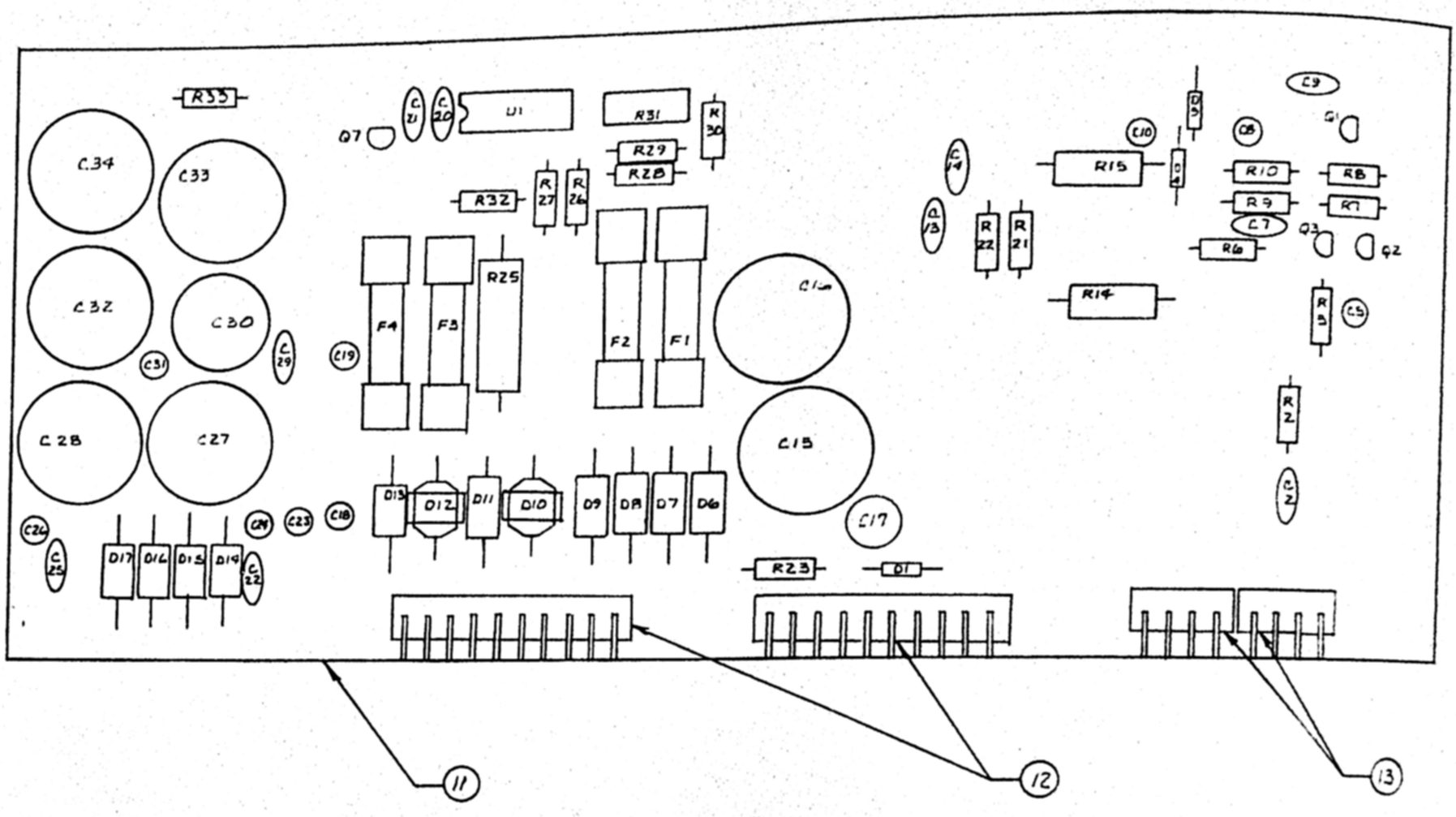
ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
5 1	150-0088	9	Electrolytic Capacitor, 10uf, 25V	C5,C8,C10, C18,C19,C23, C24,C26,C31,
2	150-0092	1	Electrolytic Capacitor, 100uf, 25V	C17
3	150-0095	1	Electrolytic Capacitor, 3300uf, 25V	C30
4	150-0096	3	Electrolytic Capacitor, 6800uf, 16V	C32-C34
5	150-0097	4	Electrolytic Capacitor, 4700uf, 25V	C15,C16,C27, C28
6	151-0002	1	Ceramic Capacitor, 100pf, 50V	C9
7	151-0007	1	Ceramic Capacitor,.005uf,100V	C20
8	151-0011	4	Ceramic Capacitor,.01uf,50V	C21,C22,C25 C29
9	151-0012	3	Ceramic Capacitor,.1uf,50V	C2,C13,C14
10	151-0021	1	Ceramic Capacitor,20pf,50V	C7
11	170-0222	1	PC Board	
12	212-0020	2	10-Pin Male Connector RTA	
13	212-0081	2	4-Pin Male Connector RTA	
14	313-0001	1	IC LM723 Dip	U1
15	471-0011	1	Resistor, 10 ohm, ½W 5%	R2
16	471-0101	1	Resistor, 100 ohm, ½W 5%	R32

G-80 POWER SUPPLY PC ASSEMBLY-Continued

DRAWING NUMBER 800-0170

ITEM NO.	PART NO.	QTY REQD.	DESCRIPTION	REF DES.
17	471-0102	3	Resistor, 1K ohm, ½W 5%	R10,R27,R29
18	471-0103	2	Resistor, 10K ohm, ½W 5%	R6,R30
19	471-0104	1	Resistor, 100K ohm, ½W 5%	R23
20	471-0222	2	Resistor, 2.2K ohm, ½W 5%	R21,R22
21	471-0223	2	Resistor, 22K ohm, ½W 5%	R5,R9
22	471-0332	1	Resistor, 3.3K ohm, ½W 5%	R28
23	471-0182	1	Resistor, 1.8K ohm, ½W 5%	R26
24	471-0681	1	Resistor, 680 ohm, ½W 5%	R7
25	473-05R0	1	Resistor, .05 ohm, 5W 3%	R25
26	473-00R2	2	Resistor, .2 ohm, 3W 5%	R14,R15
27	475-0004	1	Pot 1K Car PCMTV	R31
5 28	481-0002	2	Diode MR751	D10,D12
10 29	481-0004	10	Diode MR501	D6-D9,D11, D13-D17
5 30	481-0006	3	Diode IN914/IN4148	D1,D4,D5
2 31	482-0006	2	Transistor 2N4403	Q1,Q7
2 32	482-0014	2	Transistor 2N4401	Q2,Q3
10 33	514-0002	2	Fuse 3A Norm	F1,F2
34	514-0003	8	Clip Fuse Mounting	
5 35	514-0006	1	Fuse 1.5A Norm	F4
5 36	514-0008	1	Fuse 10A Slow Blow	F3
37	800-0191	1	Schematic Reference	
38	471-0220	1	Resistor, 22 ohm, ½W 5%	R8
39	471-0221	1	Resistor 220 ohm, ½W 5%	R33

G-80 Power Supply PC Assembly
800-0170



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	SEE SH'T. #1 CTC	8-3 81	

#800-0290
#800-0285
#800-0286
#800-0284
BLK
BLK

EMI FILTER
BRN
BLU
BRN
GRN
BLU
ASSY A.C. J-BOX 800-0145-01

XFMR EMI 800-0190
BLK COM
BLK/WHT 100 V
WHT 115 V
ORN 45 V
WHT/ORN CT
ORN 45 V

ASSY FLUORESCENT LAMP 800-0147
GRN
P16
BLK
BLK
P13

ASSY FAN CABINET #2 800-0297
BLK
BLK
P11

RED WHT/RED RED VIO GRY VIO BLK BRN WHT/BRN BRN
A.C. IN
G-80 POWER SUPPLY 800-0191
D.C. OUT
AUDIO OUT IN
#800-0176
ORN -12
RED +12
WHT AC
BLK GND
BLK GND
BLK GND
VIO -5
BRN +5
BRN +5
BRN +5
BLU
ORN

ASSY GAME ELECTRONICS 800-3172
2716 PROM 800-3156
X-Y CONTROL 800-0163
X-Y TIMING 800-0161
800-3157 CPU
SOUND 800-3174
BLU
GRN
WHT/YEL
BLK
WHT/RED
WHT/GRN
WHT/BLK
VIO
GRY
ORN
BRN
WHT
YEL
BLK
GRY
VIO
WHT
RED
BLU
YEL
ORN
ORN
BRN
BRN
P/O 800-0281
#800-0282 REF
#800-0281 REF

P1
P/O 800-0279
#800-0283
BLU
GRN
WHT/YEL
BLK
WHT/RED
WHT/GRN
WHT/BLK
VIO
GRY
ORN
BRN
WHT
YEL
BLK
P10
BLU RIGHT 2
VIO FIRE 2
WHT THRUST 2
GRN LEFT 2
RED FIRE 1
YEL/WHT 2 PLYR
BRN THRUST 1
ORN RIGHT 1
GRY 1 PLYR
YEL LEFT 1
BLK GND
ASSY CONTROL PANEL
800-3167

P2
#800-0276
YEL
BLU
RED
WHT
BLK
800-0232
NC NO C
COIN MECH B
COIN MECH A
ORN
ORN
ASSY COIN COUNTER 800 - 0280
2PL
SEE SH 5 FOR NOTES

ALTERNATE CONFIGURATION FOR TWO COIN COUNTERS
P2
#800-0301
YEL
BLU
RED
WHT
BLK
800-0232
4PL
SH5
COIN MECH B
COIN MECH A
BRN
BRN
ORN
ORN
COIN COUNTER B
COIN COUNTER A
ASSY COIN COUNTER 800 - 0300

ASSY MONITOR X-Y 800-0249
45 V
CT
45 V
G N
B G R D Y X
1 2 3 4 5 6
P12
#800-0255
RED
BLK
RED

SPEAKER
#800-0192

VOLUME
SERVICE
RESET
ASSY VOLUME CONTROL BLOCK 800-0277
VIO
RED
BLK
YEL
P9
WHT
P3

P/O 800-0279
#800-0278
RED
WHT
BLK

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±
MATERIAL
FINISH
NEXT ASSY
USED ON
APPLICATION
DO NOT SCALE DRAWING

CONTRACT NO

APPROVALS	DATE
DRAWN CATTELL	6/16/81
CHECKED G GRILE	7/10/81

GREMLIN / SEGA
SAN DIEGO, CALIFORNIA 92123

Top Assembly

SIZE	CODE IDENT NO	DRAWING NO	REV
D		700-0062	A

SCALE NONE SHEET 2 OF 2

700-0062 A

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
—		SEE SHEET 1 FOR REVISIONS C TC	10-28-80	A. AROTI

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

NEXT ASSY	USED ON
APPLICATION	

CONTRACT NO.

APPROVALS	DATE
DRAWN	9/17/80
CHECKED JEFF TEASE	9-26-80
P.R.M	10-27-80

Gremlin Industries, Inc.
San Diego, California 92123

CPU Board

SIZE	CODE IDENT NO.	DRAWING NO.	REV
D		800-0107	D

SCALE: NONE — SHEET 6 OF 7

800-0107 D

REVISIONS					
ZONE	LTR	DESCRIPTION		DATE	APPROVED
	A	RELEASED	CTC	10-28-80	A. ARON
	B	ECN # 528	CTC	11-12-80	JEFF ROSE
	C	ECN # 669	CTC	2-10-81	[illegible]
	D	ECN # 677A	CTC	2-25-81	[illegible]

P1
N.O. (5) — COIN A
N.C. (6)
N.O. (7) — COIN B
N.C. (8)
N.O. (9) — SERVICE
N.C. (10)
REF.

C32 220 PF, C31 220 PF
C30 220 PF, C29 220 PF
C28 220 PF, C27 220 PF
C26 220 PF

Q8 2N4401, R21 4.7K

RST, $\overline{RST}$ (SHT 6)

C25 220 PF, C24 220 PF

+5 — RP3 15 × 2200Ω

LS00 U6, LS00 U6, LS00 U8

U9 LS253

D7 (SHT 6), D6 (SHT 6)

U11 LS74

$\overline{OUT\ 37I}$ (SHT 6), $\overline{RESET}$ (SHT 6)

U7 LS14 — XINT (SHT 6)

U16 LS27

U39 LS74 — INTCL (SHT 6)

R1 1K, R3 1K

Q3 2N4401, Q1 PE8050

Q4 2N4401, Q2 PE8050

R2 220Ω, R4 220Ω

D1 IN4002, D2 IN4002

C33 220 PF, C34 220 PF, C35 220 PF, C36 220 PF

P1 (4), (3), (2), (1)

$\overline{CI}$, A1, AØ (SHT 6)

P1 (15) (16) (17) (18) (19) (20) (21) (22)

C23 220 PF, C22 220 PF, C21 220 PF, C20 220 PF, C19 220 PF, C18 220 PF, C17 220 PF

U5 LS253 — D5 (SHT 6), D4 (SHT 6)

RP 15 × 2200Ω

SW1 — U2 LS253 — D3 (SHT 6), D2 (SHT 6)

RP1 15 × 2200Ω

SW2 — U1 LS253 — D1 (SHT 6), DØ (SHT 6)

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS	DATE
DRAWN C.T. CATTELL	10-23-80
CHECKED JEFF ROSE	10-28-80
ARM	10-29-80

NEXT ASSY | USED ON
APPLICATION

Gremlin Industries, Inc.
San Diego, California 92123

CPU Board

SIZE	CODE IDENT NO.	DRAWING NO.	REV
D		800-0107	D

SCALE NONE — SHEET 7 OF 7

800-0107 D

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	C	SEE SHT 3 FOR CHANGES	4-19-81	[illegible]

U1 2716 — 10-17
U2 2716 — 20-27
U3 2716 — 30-37
U4 2716 — 40-47
U5 2716 — 50-57
U6 2716 — 60-67
U7 2716 — 70-77
U8 2716 — 100-107
U9 2716 — 110-117
U10 2716 — 120-127
U11 2716 — 130-137
U12 2716 — 140-147
U13 2716 — 150-157
U14 2716 — 160-167
U15 2716 — 170-177
U16 2716 — 200-207
U17 2716 — 210-217
U18 2716 — 220-227
U19 2716 — 230-237
U20 2716 — 240-247
U21 2716 — 250-257
U22 2716 — 260-267
U23 2716 — 270-277

TYP U1-U23: 24 +5V; 21; 13 A10; 18; 12

U30 74LS 138: G1 G2 A15 A14 A13 A12 A11; 15 200-207; 14 210-217; 13 220-227; 12 230-237; 11 240-247; 10 250-257; 9 260-267; 7 270-277

U24 74LS 154: A15 G1 G2; MEMR; 1 0-7; 2 10-17; 3 20-27; 4 30-37; 5 40-47; 6 50-57; 7 60-67; 8 70-77; 9 100-107; 10 110-117; 11 120-127; 13 130-137; 14 140-147; 15 150-157; 16 160-167; 17 170-177

U25 74LS 244: BUFFER; P N M L 13 12 11 19; D0 D1 D2 D3 D4 D5 D6 D7

A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 MEMR

74LS08 U27 U28 U26

74LS10 U29

(A13) (A12) (A11) (A15) (A14) (A10) (MEMR) Ø-7 BUFFER

C29 10uf

C1,C3,C5,C7, C10,C12,C13, C15,C17,C19 C20,C22,C24, C26,C28. 0.1 uf

C2,C4,C6,C8, C9,C11,C14,C16, C18,C21,C23, C25,C27. .01uf

+5

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
			PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

NEXT ASSY | USED ON
APPLICATION

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CONTRACT NO.

APPROVALS	DATE
DRAWN Tathum	12/14/81
CHECKED	12/24/81

Gremlin Industries, Inc.
San Diego, California 92123

G-80 2716 Eprom Board

SIZE	CODE IDENT NO.	DRAWING NO.	REV
D		800-0151	-

SCALE NONE — SHEET 4 OF 4

800-0151

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	B	FOR REVISIONS SEE SHT 1 .W.B	6-22-81	C. Williams

SUM VCA SHT B

BUFFER SHT B

WBN SHT B

SKITTER SHT B

ENEMY SHT B

PSG SHT B

SHT B

THRUST MSB
THRUST LSB
THRUST HI
THRUST LOW

SKITTER
ENEMY SHIP
HEXAGONS LSB
HEXAGONS MSB

N.C.
FIREBALL
EXPLOSION 1
EXPLOSION 2
EXPLOSION 3
BOUNCE
TORPEDO 1
TORPEDO 2

A7 A6 A5 A4 A3 A2 A1 A0 OUT IN SPEECH READY RESET Φ

D0 D1 D2 D3 D4 D5 D6 D7

50HZ
200HZA
200HZB
100 HZ

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	ITEM NO.
			PARTS LIST	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS XX ± XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS	DATE
DRAWN Wayne Mac	6-17-81
CHECKED G GEKE	6-22-81
MECH	
ELEC	
MFG	
PROJECT	

NEXT ASSY | USED ON
APPLICATION

Gremlin/SEGA
San Diego, California 92123

Sound Board

SIZE	CODE IDENT NO.	DRAWING NO.	REV
D		800-3174	B

SCALE NONE | SHEET 7 OF 8

800-3174 B

60

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	B	FOR REVISIONS SEE SHT 1 WJB	6-22-81	

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	ITEM NO.

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

NEXT ASSY | USED ON

APPLICATION

CONTRACT NO.

APPROVALS	DATE
DRAWN Wilpitz	6-19-81
CHECKED G. GRIECE	6-22-81
MECH	
ELEC	
MFG	
PROJECT	

Gremlin/SEGA
San Diego, California 92121

Sound Board

SIZE	CODE IDENT NO.	DRAWING NO.	REV
D		800-3174	B

SCALE NONE SHEET 8 OF 8

800-3174 B

61

ZONE	LTR	REVISIONS DESCRIPTION		DATE	APPROVED
	A	RELEASED	CTC	11-16-80	
	B	PER ECN 579	CTC	12-23-80	
	C	PER ECN 597	SD	1-27-81	
	D	PER ECN 741	SD	4-3-81	
	E	PER ECN 791	CTC	4-28-81	
	F	PER ECN 804	CTC	4-24-81	

(VAC) 230 4, 115 3, 100 2, COM 1

RED 5, RED BLK 6, RED 7 — Ⓒ

VIO 11, GRY 12, VIO 13 — Ⓐ

ORN 14 — Ⓓ — 92V TO COLOR XY MONITOR

WHT/ORN 15, ORN 16

WHT 17 — Ⓔ — 115 VAC TO COLOR RASTER MONITOR

WHT/BLK 18 — 100 VAC

BLK 19 — COM

BRN 8 — Ⓑ, BRN/BLK 9, BRN 10

REF XFMR #560-0055

P4 10, 9, 8 — D6 MR501, D7, D8, D9 — C16 4700 UF — C15 4700 UF

P3 3 AC — F2 3A — C14 .1 UF — F1 3A

P4 7, 6, 5, 4 — D11 MR751, D10 MR751, D12 MR751, D13 MR501 — F3 10A

R23 100K — D1 IN914

TIP 141 — R25 .05Ω — R32 100Ω — R26 1.8K

C32 6800 UF/16V, C33 6800 UF/16V, C34 6800 UF/16V

C21 .01 UF — 2N4403 Q7 — R30 10K

R29 1K, R31 1K — LM 723 U1 (10, 6, 5, 2, 3, 11, 12, 7, 13, 4) — R28 3.3K — C20 .005 UF — R27 1K

F4 1.5A

C30 3300 UF 16V — C29 .01 UF — C31 10 UF — 320 T-5 IN/OUT/COM — C19 10 UF

R33 220Ω

C17 100 uF 25V

P3 10 +5V 4A, 9, 8, 7 -5V 1A

D17, D16, MR501, D15, D14 — 3, 2, 1

C27 4700 UF — C22 .01UF — C24 10UF — 340 T-12 IN/OUT/COM — C18 10UF

P3 2 +12V 1A, 6 GND, 5, 4

C28 4700 UF — C25 .01UF — C26 10UF — 320 T-12 IN/OUT/COM — C23 10UF

P3 1 -12V 1A

P1 4 AUDIO IN #1 — P1 2, 3 — P2 2, 3 — P2 4 AUDIO OUT #1

C5 10 UF — R8 22Ω — 2N4403 Q1 — TIP 120

R7 680 — C9 100 PF — 2N4401 Q2 — 2N4401 Q3 — C7 20PF — D5 IN914 — R15 0.2Ω

R5 22K — R6 10K — R9 22K — R10 1K — C8 10UF — D4 IN914 — R14 0.2Ω — R2 10Ω — C2 0.1 UF

C13 .1 UF — TIP 125

C10 10UF — R22 2.2K — R21 2.2K

FOR FUTURE USE

P1 1 AUDIO IN #2 — C1 10 UF — R3 680 — R13 22Ω — 2N4403 Q4 — C6 100 PF — TIP 120

2N4401 Q5 — 2N4401 Q6 — C3 20 PF — D3 IN914 — R20 0.2Ω — P2 1 AUDIO OUT #2

R1 22K — R11 10K — R12 22K — R4 1K — C4 10UF — D2 IN914 — R16 0.2Ω — R17 10Ω — C11 0.1UF

C12 10UF — TIP 125 — R18 2.2K — R19 2.2K

NOTE: ALL RESISTANCE VALUES ARE IN OHMS, 1/2 W ±5%.

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION

PARTS LIST

NEXT ASSY | USED ON — APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS	DATE
DRAWN CATTELL	12/11/80
CHECKED	12-16-80
	12-17-80

Gremlin Industries, Inc. San Diego, California 92123

G-80 Power Supply

SIZE	CODE IDENT NO.	DRAWING NO.	REV
D		800-0191	F

SCALE NONE — SHEET 3 OF 3

800-0191 F

62

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