

JUDO FIRST

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Instruction Manual

JUNO FIRST (GAME GV-122) INSTRUCTION MANUAL

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**WELLS GARDNER MONITOR,
SERVICE AND OPERATION MANUAL (Attached)**

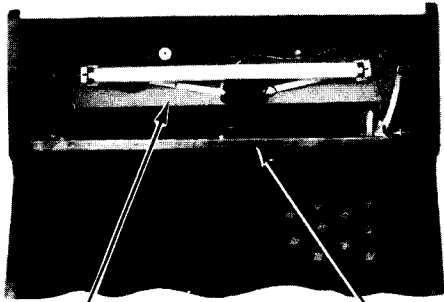
WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart 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."

NOTICE

WARRANTY INFORMATION IS LOCATED ON THE INSIDE BACK COVER.

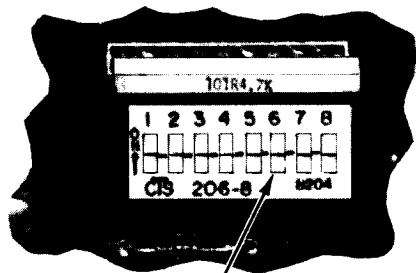
FOR SERVICE, CALL TOLL FREE: 1-800-323-9121; (ILLINOIS) 1-800-942-1620

I. INSTALLATION

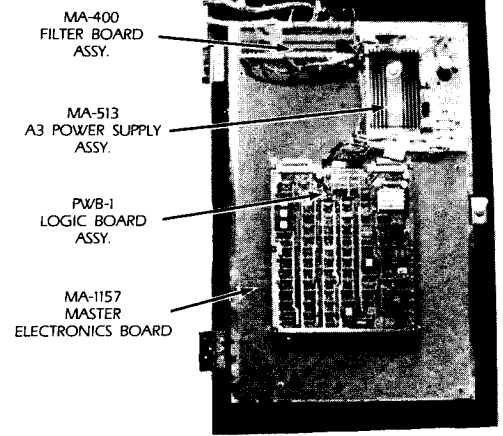


MA-376 ILLUMINATION ASSY.

MA-459 SPEAKER ASSY.



GAME ADJUSTMENT SWITCHES (PART OF PWB-1 LOGIC BOARD)

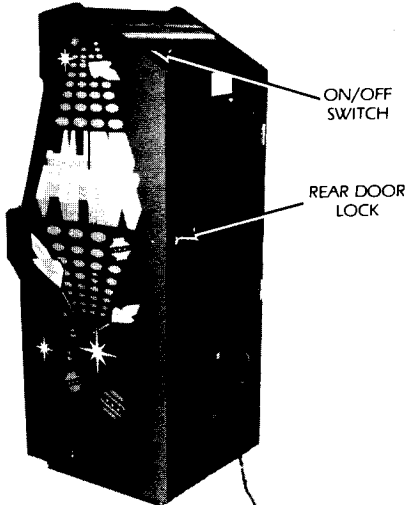


MA-400 FILTER BOARD ASSY.

MA-513 A3 POWER SUPPLY ASSY.

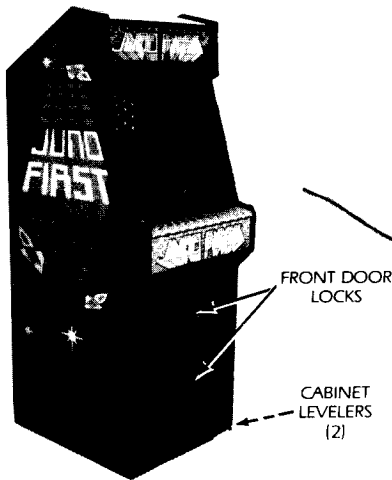
PWB-1 LOGIC BOARD ASSY.

MA-1157 MASTER ELECTRONICS BOARD



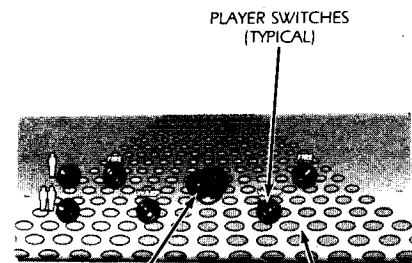
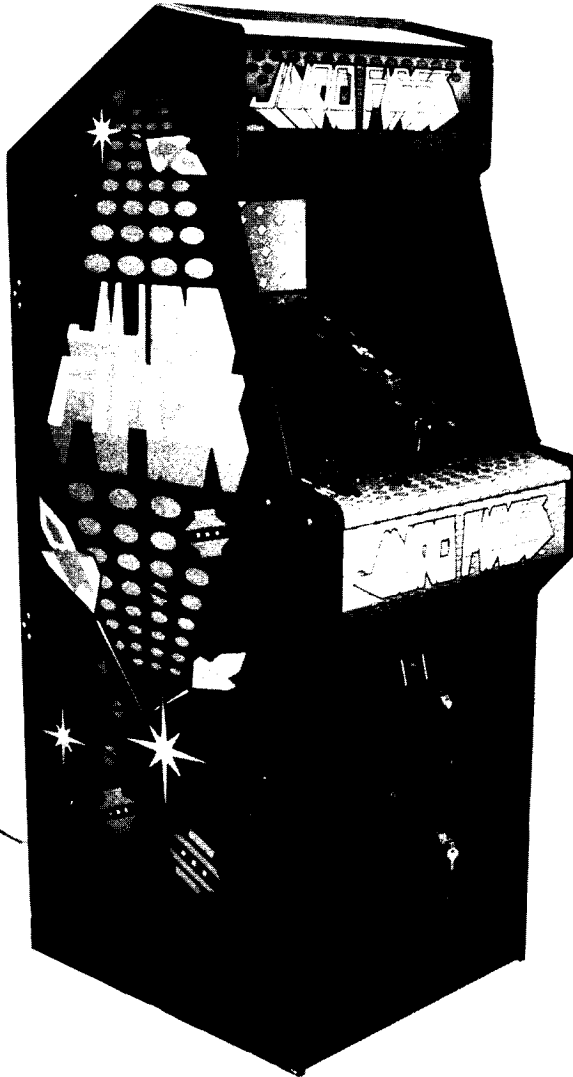
ON/OFF SWITCH

REAR DOOR LOCK



FRONT DOOR LOCKS

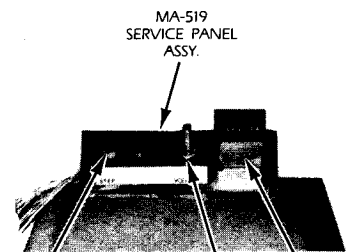
CABINET LEVELERS (2)



PLAYER SWITCHES (TYPICAL)

C-23189 JOYSTICK ASSY.

MA-1137 CONTROL PANEL ASSY.

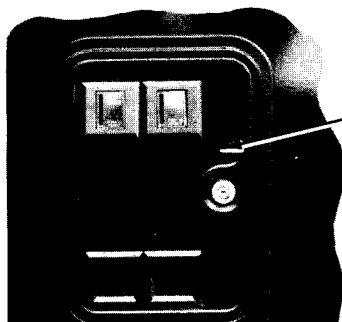


MA-519 SERVICE PANEL ASSY.

STEP/TEST SWITCH

VOLUME CONTROL

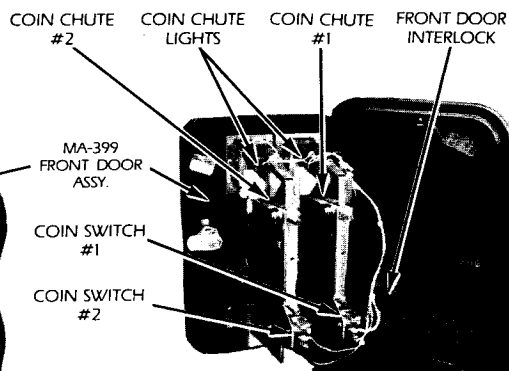
COIN METER



MA-399 FRONT DOOR ASSY.

COIN SWITCH #1

COIN SWITCH #2



COIN CHUTE #2

COIN CHUTE LIGHTS

COIN CHUTE #1

FRONT DOOR INTERLOCK

MA-375 BOTTOM PANEL ASSY.

A12J2

SERVICE OUTLET

F1 PRIMARY POWER FUSE

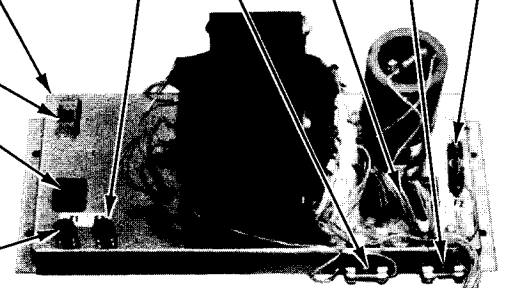
F3 MONITOR FUSE

F4 9V AC FUSE

BRIDGE RECTIFIERS

F5 15V AC FUSE

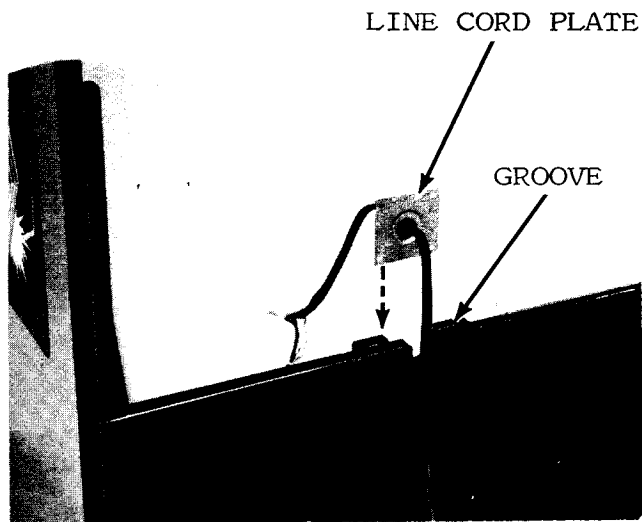
F2 6.3V AC FUSE



I. INSTALLATION

A. SET—UP

1. Carefully inspect the exterior of the game for any damage which might have occurred during shipment.
2. Unlock and open the rear cabinet door.
3. Check that all plug in connectors are seated firmly. The connectors are keyed so they will only go in one way.
4. Remove the binding strap from the line cord, and install the line cord plate in the groove provided (see photo).
5. Cabinet levelers (2) are stored within the cash box for shipping purposes. Install and adjust as necessary.



B. CHECK-OUT

1. Check that all cables are free of moving parts.
2. Check for any loose wires.
3. Check for loose solder or foreign matter on switches and power supply assemblies.
4. Be certain all fuses are seated firmly.
5. Be sure transformer wiring corresponds to the supply voltage.
6. Refer to section VI to make all the necessary game adjustments.
7. Reassemble the game.
8. Plug the line cord into a properly grounded 3-wire receptacle ONLY!!

C. CONTROL PANEL REMOVAL

1. Unplug the game.
2. Unlock and open the coin chute door.
3. Reach in through the coin chute door and remove the wing nut and flat washer from each of the two carriage bolts which secure the control panel to the game. Unlatch the control panel latch at the top center of the panel. Note where the latch strike plate is located. Remove the carriage bolts.
4. Pull the control panel back, grasp it at the front edge as far back as it will go (approximately 1/4").
5. Raise the front of the control panel approximately one inch above its supports and lift the entire assembly high enough to disconnect plug A9J2/A9P2.
6. Remove the entire control panel assembly from the game.
7. The joystick's and leaf-switches are now accessible for removal or cleaning.
8. For reassembly, reverse the above procedure.

D. MONITOR REMOVAL

1. Unplug the game.
2. Perform the control panel assembly removal procedure (Section C).
3. Unlock and open the rear cabinet door.
4. NOTE: The color monitor contains HIGH VOLTAGES delivering LETHAL quantities of energy. Do not attempt to service the monitor until you have shorted the anode plug on the picture tube to ground.
5. Disconnect the video plug A17J1, the monitor power supply plug A12J3/A12P3 and the ground wire from the monitor chassis.
6. From the rear of the game, remove the one nut and one washer from each of the four carriage bolts used to secure the monitor to the platform.
7. Remove the monitor from the rear of the game, being careful to clear all cables from the CRT neck.
8. For reassembly, reverse the above procedure.

I. INSTALLATION, II. INITIALIZATION, III. GAME OPERATION

I. INSTALLATION

E. SPEAKER ASSEMBLY AND MARQUEE REMOVAL

1. Unplug the game.
2. Unlock and open the back door.
3. Unplug the A15-J1/P1 connector.
4. Unlatch the two latches on the rear of the Speaker Assembly Panel located inside the back door above the monitor.
5. On the front of the game, pull down on the lower molding under the marquee. The Speaker Assembly will lower to allow removal of the marquee.
6. Remove the marquee by lifting it upward out of its track. The Speaker Assembly and Illumination Assembly are now accessible for servicing.
7. Tilt the front of the Speaker Assembly downward while lifting the center upward.

Pull the assembly straight out to remove. Be careful not to pinch the Speaker Assembly cable.

8. For reassembly, reverse the above procedure. When replacing the marquee:
 - a. Tilt the front of the Speaker Assembly downward.
 - b. Place the bottom of the marquee in the lower molding track on the front of the assembly.
 - c. Apply slight pressure with your thumbs to the lower left and right corners of the marquee.
 - d. Slowly raise the Speaker Assembly until the top of the marquee is in place in the upper track in the top molding.
 - e. Be certain to reconnect the A15-J1/P1 connector and relatch the rear assembly latches.

II. INITIALIZATION

TURN GAME ON

Immediately, the coin chute lamps and the speaker marquee lamp will turn on.

- B. The playing field cycles through the following:

1. High Game to Date screen
2. Point values
3. Game play cycle

AFTER A TEN SECOND DELAY

- A. The attract mode appears on the screen.

III. GAME OPERATION

A. GAME START

1. Insert coins into coin chute.
 - a. Coin chute tune is played.
 - b. Total credits are displayed on screen.
2. Press one or two player button to start game.
 - a. Total Credits are decreased by one.
 - b. Game initializes.

C. SECOND PLAYER

1. Additional player is indicated by zeroes in the second player's display.

B. FIRST PLAYER

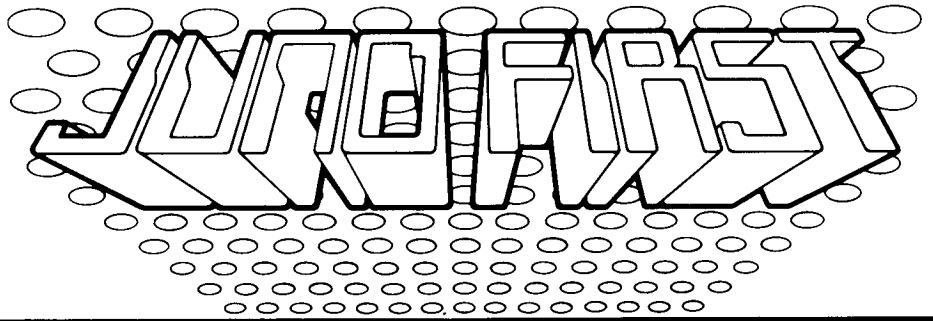
1. The first player's score displays a zero.
2. The other player's display will be blank.

D. SHIPS/EXTRA SHIPS

1. Each player will begin with three Ships (dependent on Option/Parameter settings).
2. Extra Ships are earned by achieving certain score levels (dependent on Option/Parameter settings).

IV. GAME PLAY AND SCORING

HOW TO PLAY



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CONTROL PANEL

The joystick controls the players ships direction of flight. The ship can be moved in one of eight directions. The FIRE button shoots lasers in the forward direction. The WARP button will cause the ship to warp momentarily in order to avoid enemy fire. The one and two player select buttons are also located on the panel.

SCREEN DISPLAYS

The top of the screen displays the first players score, number of ships remaining, the current wave of game play and the second players score (2 players). The second line across the top of the screen displays the time (initially 99 seconds) and the remaining number of warps available.

GAME PLAY

The game starts with the players ship flying towards the horizon where enemy aliens are seen. The player must avoid their bombs while shooting lasers with the FIRE button. There are two types of enemy bombs throughout the game. The aliens can fire either straight bombs or smart bombs. Smart bombs can be destroyed by the players lasers. If not destroyed, the smart bomb will follow the players ship around the screen. It is advantageous to destroy the aliens as quickly as possible because their longevity allows them to

become faster and more dangerous to the players ship. If the timer is allowed to decrement to zero the player loses his ship.

BONUS PERIOD

During each wave, a space capsule containing an enemy astronaut momentarily appears. For bonus points, the player must hit the capsule with laser fire, which dislodges the enemy astronaut, causing him to float freely in space. The player can then capture the enemy astronaut with the ship. At this point the screen will change colors and the enemy aliens stop shooting at the players ship. The player can now shoot as many of the aliens as possible for bonus points until the screen changes back to the original color. See ROUND PROGRESSIONS. The player must shoot the space capsule quickly since it appears only for a brief period of time.

BONUS

At the end of each wave, another bonus is awarded. The bonus for completing the wave is multiplied by a bonus multiplier to determine the total bonus. The bonus multiplier is determined by the amount of time remaining on the timer when the wave is completed. See BONUS PROGRESSIONS.

IV. GAME PLAY AND SCORING

ROUND PROGRESSIONS (BONUS PERIOD)

WAVE	CAPTURE ENEMY ASTRONAUT	FIRST ALIEN SHIP DESTROYED	*EACH SUCCESSIVE ALIEN SHIP DESTROYED
1	800	400	Increments by 200 Points Per Alien Ship
2	800	600	
3	Formation Attack		
4	1600	1000	
5	1600	1200	Increments by 200 Points Per Alien Ship
6	Formation Attack		
7	3200	1600	
8	3200	1800	
9	800	2000	Increments by 200 Points Per Alien Ship
10	800	2200	
11	Formation Attack		
12	1600	2600	
13	1600	2800	Increments by 200 Points Per Alien Ship
14	Formation Attack		
15	3200	3200	
16	3200	3200	

*The bonus value for Each Successive Alien Ship Destroyed has a base value equal to 200 points above the first alien destroyed.

The maximum successive bonus per alien ship is 3200 points.

BONUS PROGRESSIONS

TIME REMAINING— END OF WAVE (SECONDS)	BONUS MULTIPLIER	END OF WAVE BONUS	WAVE
1-5	0	100	1
6-10	1	100	2
11-15	2	200	3
16-20	3	200	4
21-25	4	300	5
26-30	5	300	6
31-35	6	400	7
36-40	7	400	8
41-45	8	400	9
46-50	9	400	10
51-55	10	400	11
56-60	11	400	12
61-65	12	400	13
66-70	13	400	14
71-75	14	400	15
76-80	15	400	16
81-85	16	400	17
86-89	17	400	18

The bonus awarded at the end of each wave is equal to the End of Wave Bonus multiplied by the Bonus Multiplier which is determined by the amount of time remaining on the timer when the wave is completed.

V. SOUND, VI. GAME ADJUSTMENTS / OPTIONS

V. SOUND

The Sound Board installed in this game has been programmed for Sound only.

VI. GAME ADJUSTMENTS/OPTIONS

A. LOGIC BOARD SWITCH ADJUSTMENTS

DIP SWITCH 1 (DSW1)
Coin Chute 1

SW	4	3	2	1	COIN	CREDIT
OFF	OFF	OFF	OFF	1	1	
		OFF	ON	1	2	
		ON	OFF	1	3	
		ON	ON	1	4	
OFF	ON	OFF	OFF	1	5	
		OFF	ON	1	6	
		ON	OFF	1	7	
ON	OFF	ON	ON	2	1	
		OFF	OFF	2	3	
		OFF	ON	2	5	
ON	ON	ON	OFF	3	1	
		ON	ON	3	2	
		OFF	OFF	3	4	
ON	ON	OFF	ON	4	1	
		ON	OFF	4	3	
		ON	ON	FREE PLAY		

Coin Chute 2

SW	8	7	6	5	COIN	CREDIT
OFF	OFF	OFF	OFF	1	1	
		OFF	ON	1	2	
		ON	OFF	1	3	
		ON	ON	1	4	
OFF	ON	OFF	OFF	1	5	
		OFF	ON	1	6	
		ON	OFF	1	7	
		ON	ON	2	1	
ON	OFF	OFF	OFF	2	3	
		OFF	ON	2	5	
		ON	OFF	3	1	
		ON	ON	3	2	
ON	ON	OFF	OFF	3	4	
		OFF	ON	4	1	
		ON	OFF	4	3	
		ON	ON	INVALID		

DIP SWITCH 2 (DSW2)

SW	2	1	NUMBER OF SHIPS	
*	OFF	OFF	3	
	OFF	ON	4	
	ON	OFF	5	
	ON	ON	256	
SW	3	TABLE/UPRIGHT		
	OFF	Table		
	ON	Upright		
SW	4	NOT USED		
SW	7	6	5	DIFFICULTY LEVEL
*	OFF	OFF	OFF	1 (easy)
	OFF	OFF	ON	2
	OFF	ON	OFF	3
	OFF	ON	ON	4
	ON	OFF	OFF	5
	ON	OFF	ON	6
	ON	ON	OFF	7
	ON	ON	ON	8 (difficult)
SW	8	SOUND-ATTRACT MODE		
*	OFF	No Sound		
	ON	Sound		

*INDICATES RECOMMENDED SETTINGS

B. SOUND ADJUSTMENTS

The audio output is controlled by the potentiometer mounted on the Service Panel Assembly (located inside the coin mechanism door) as well as the limiting potentiometer (VR200) located on the PWB1 Logic Board.

Turning the potentiometers counter-clockwise will decrease the volume. Turning it clockwise will increase the volume.

C. MONITOR ADJUSTMENTS

Normally, few if any adjustments are required for proper monitor operation. However, after any major repairs to the monitor chassis refer to the attached monitor manual.

VII. GENERAL INFORMATION

A. PRINTED CIRCUIT BOARDS ARE DESIGNATED AS FOLLOWS:

PWB1 Logic Board Assy.
A3 Power Supply Assy.
A8 Filter Board Assy.

B. WIRE COLORS ARE SHOWN AS NUMBERS:

0 Black	5 Green
1 Brown	6 Blue
2 Red	7 Purple
3 Orange	8 Slate
4 Yellow	9 White

For example, 688 is a BLUE- SLATE-SLATE striped wire.

C. FUSES

BOTTOM PANEL

F1	Primary Power	4 Amp SLO-BLO
F2	6.3 VAC	3 Amp SLO-BLO
F3	Monitor	2 Amp SLO-BLO
F4	9 VAC	10 Amp SLO-BLO
F5	15 VAC	1 Amp SLO-BLO

POWER SUPPLY ASSY. (A3)

F11	+5VDC Source	6¼ Amp SLO-BLO	
F21	PWB1 Logic Board Assy.	+12VDC	2.5 Amp SLO-BLO
F31	PWB1 Logic Board Assy.	-5VDC	¼ Amp SLO-BLO
F32	PWB1 Logic Board Assy.	-5VDC	¼ Amp SLO-BLO
F41	Coin Meter	+20VDC	1 Amp SLO-BLO

VII. GENERAL INFORMATION

POWER SUPPLY SPECIFICATIONS

LOCATION	VOLTAGE*	PROTECTION
Logic Board Assy.	+5VDC	Voltage adjustable. 6 Amps over-voltage protection and fused for over-current protection.
Logic Board Assy.	+12VDC	1.5 Amps fused for over-current protection. The reference for this circuit is a 1N4742A +12VDC Zener controlling the base of an emitter follower pass transistor.
Logic Board Assy.	-5VDC	20 milliamps fused for over-current protection. The minus 5 volt supply is the 7905 IC regulator.
Coin Meter	+20VDC	Full wave rectified unfiltered voltage, fused for over-current protection.
Coin Chute Lights	+4.5VDC	Full wave rectified unfiltered voltage, fused for over-current protection.
Monitor and Marquee	100VAC or 115VAC, 60HZ	Isolated, fused AC voltage.

VIII. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS

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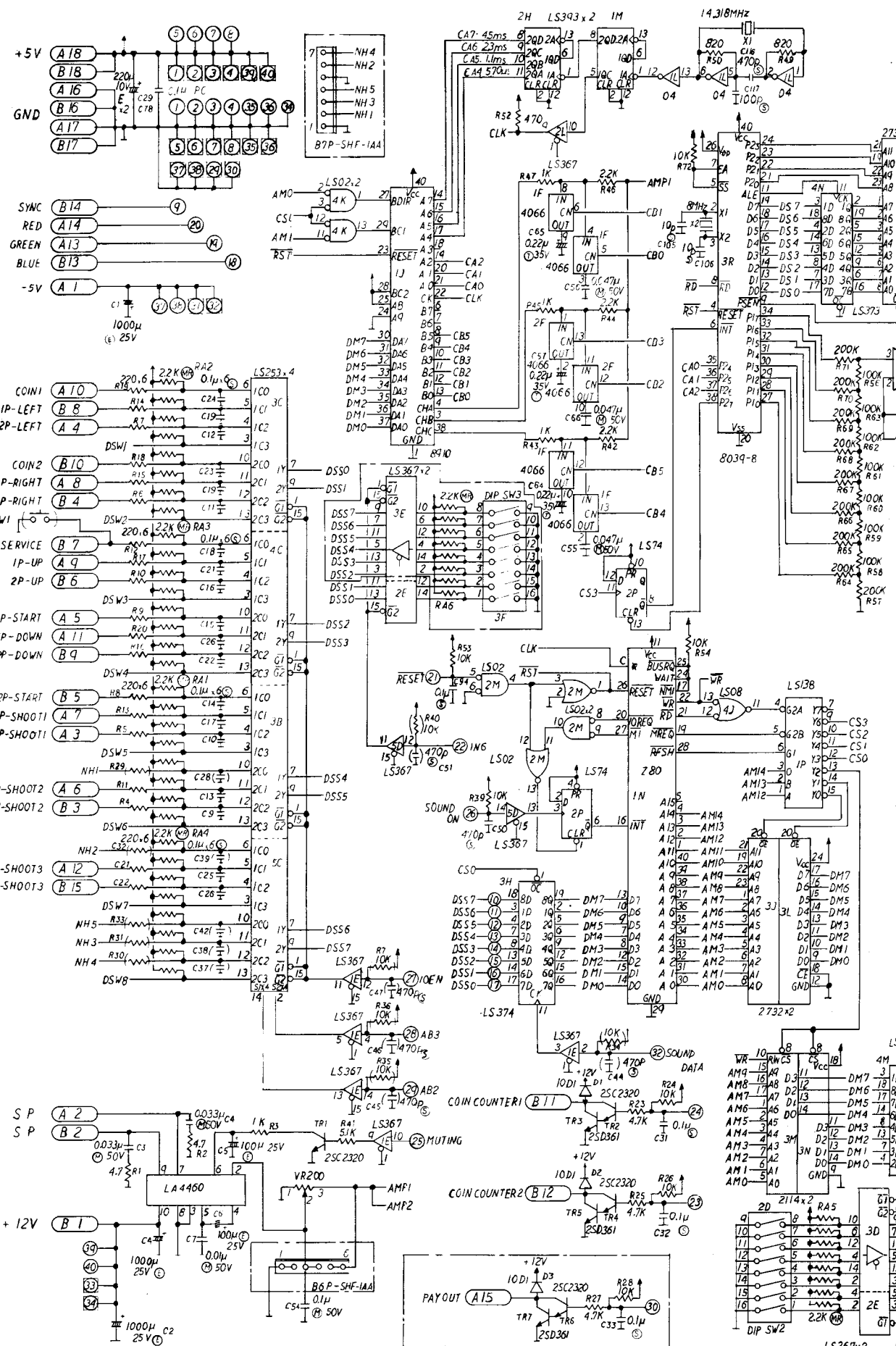
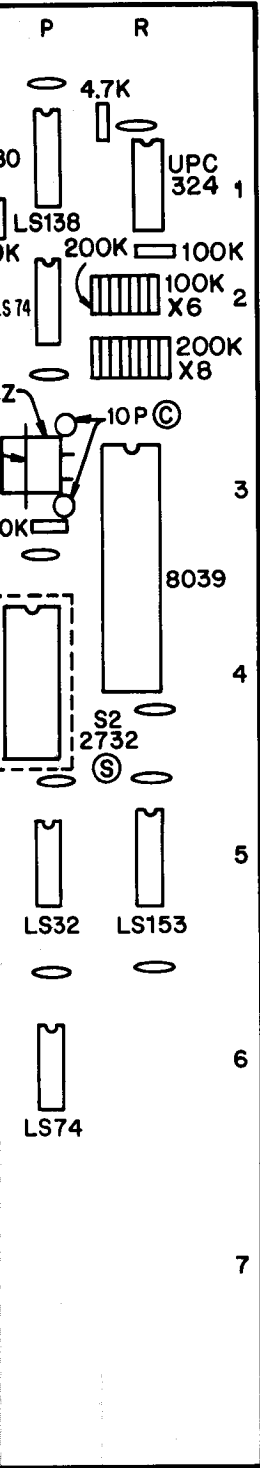
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VIII. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS

The following parts list contains unique parts used on the PWB-1 Logic Board Assy. All other components on the PWB-1 Logic Board Assy. are standard parts.

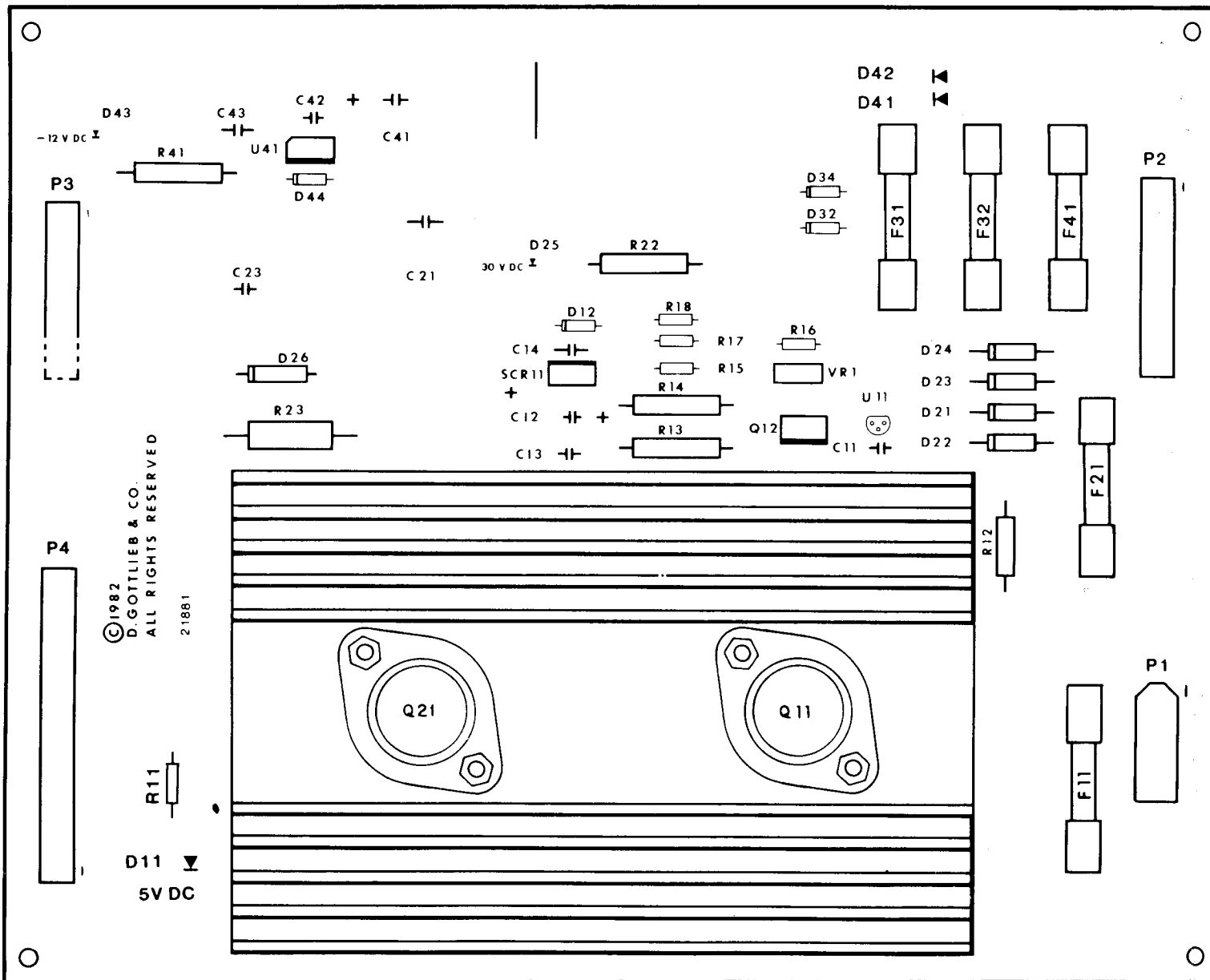
DESIGNATION	PART NO.
74LS293	XO-717
74LS375	XO-718
74LS257	XO-719
7489	XO-88
74153	XO-721
Konami 1 CPU	XO-741
M14081	XO-725
M14082	XO-740
M14083	XO-726
K-8207	XO-727
74LS14	XO-728
74LS21	XO-729
Z80 CPU	XO-730
M5L8039-8 CPU	XO-731
AY-3-8910	XO-733
LA4460	XO-732
MSM4066	XO-734
74LS85	XO-735
74LS393	XO-736
2SA697	XO-722
2SC2320	XO-723
1S1588	XO-724

VIII. WIRING AND SCHEMATIC



VIII. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS

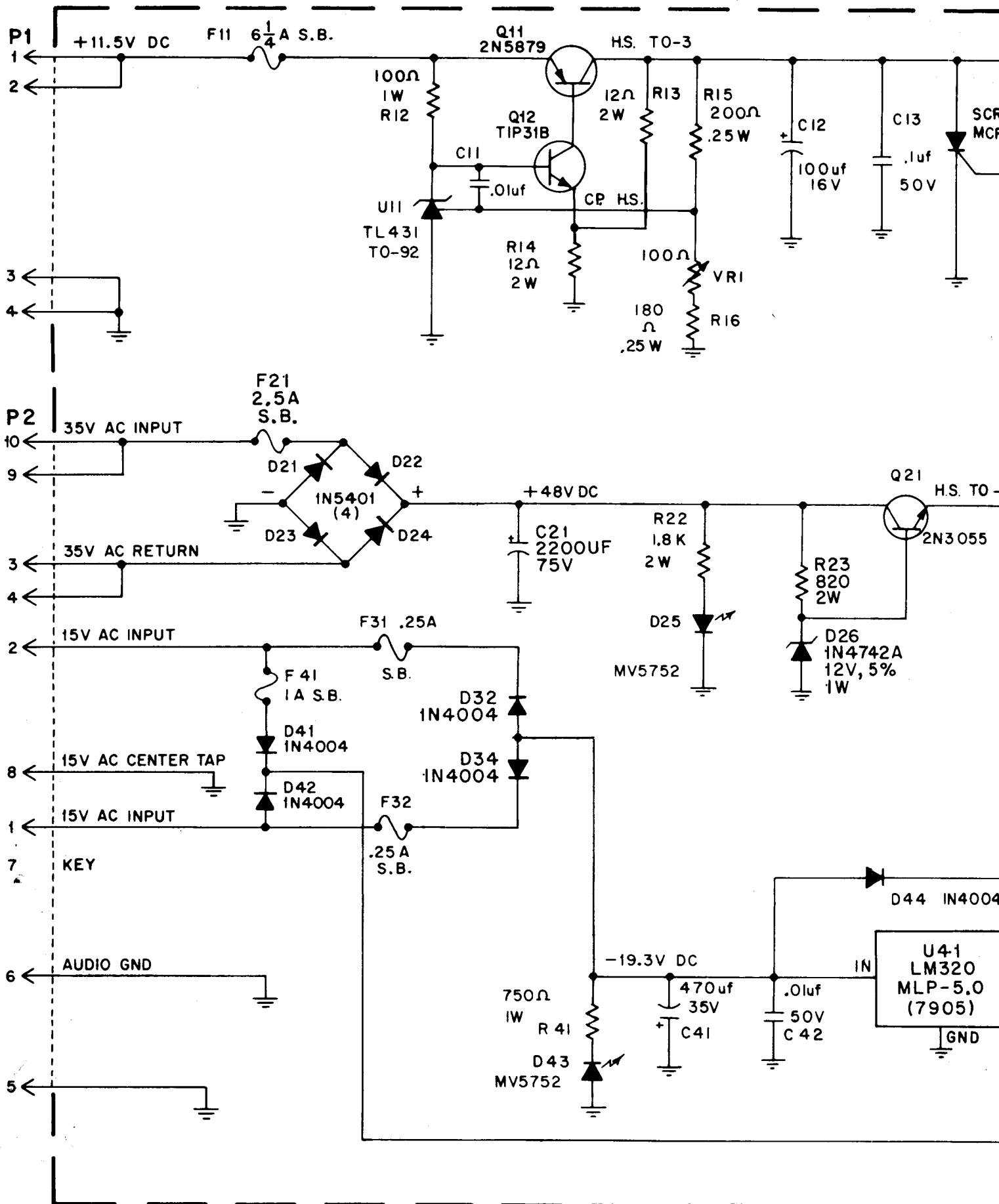
POWER SUPPLY ASSY. (A3), COMPONENT LOCATION



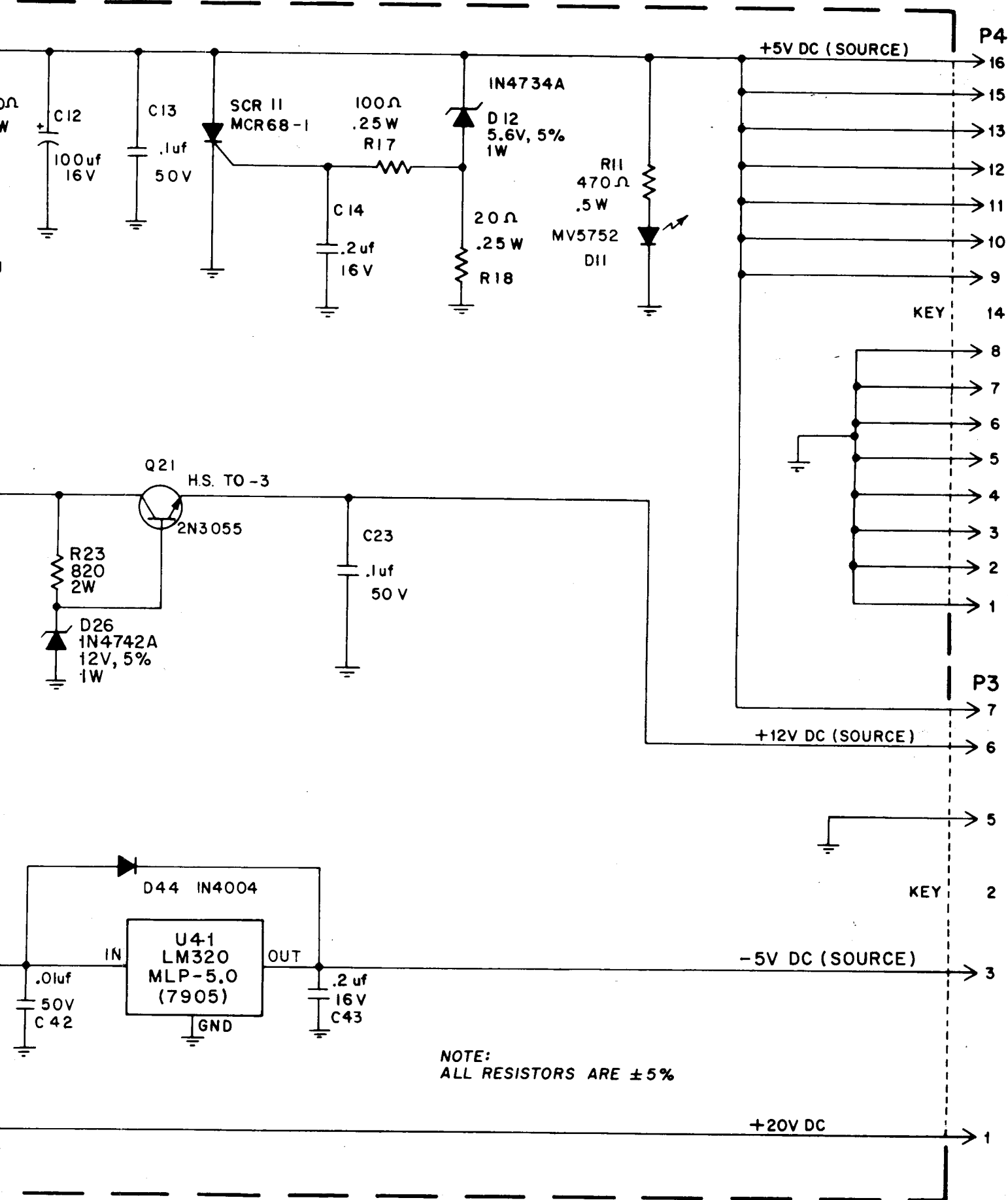
POWER SUPPLY ASSY. (A3), PARTS LIST

REFERENCE	DESCRIPTION	PART NO.	REFERENCE	DESCRIPTION	PART NO.
	Power Supply Assy.	MA-513	P2	Connector, 10 PIN	XO-531
C11, C42	Capacitor, 01 mfd., 50V	XO-229	P3	Connector, 7 PIN	XO-526
C12	Capacitor, 100UF, 16V	XO-235	P4	Connector, 16 PIN	XO-372
C13, C23	Capacitor, 0.1UF, 100V	XO-234	Q11	Transistor, PNP, 2N5879	XO-323
C14, C43	Capacitor, 0.2UF, 16V	XO-205	Q12	Transistor, NPN, TIP31B	XO-641
C21	Capacitor, 2200UF, 75V	XO-132	Q21	Transistor, NPN, 2N3055	XO-301
C41	Capacitor, 470UF, 35V	XO-284	R11	Resistor, 470 OHM, 5% 1/2W	XO-55
D11, D25	Diode, Light Emitting MV-5752	XO-270	R12	Resistor, 100 OHM, 5% 1W	XO-137
D43	Diode, Zener, 5.6V, 5%, 1W, 1N4734A	XO-255	R13, R14	Resistor, 12 OHM, 5% 2W	XO-138
D12	Diode, Zener, 12V, 5%, 1W 1N4742A	XO-257	R15	Resistor, 200 OHM, 5% 1/4W	XO-143
D21-D24	Diode, 1N5401	XO-263	R16	Resistor, 180 OHM, 5% 1/4W	XO-24
D26	Diode, Zener, 5.6V, 5%, 1W, 1N4734A	XO-255	R17	Resistor, 100 OHM, 5% 1/4W	XO-28
D32, D34	Diode, 1N4004	XO-254	R18	Resistor, 20 OHM, 5% 1/4W	XO-29
D41, D42, D44	Diode, 1N4004	XO-254	R22	Resistor, 1.8KOHM, 5% 2W	XO-135
F11	Fuse, 6 1/4 AMP SLO-BLO	EL-8	R23	Resistor, 820 OHM, 5%, 2W	XO-706
F21	Fuse, 2 1/2 AMP SLO-BLO	EL-21	R41	Resistor, 750 OHM, 5% 1W	XO-136
F31, F32	Fuse, 1/4 AMP SLO-BLO	EL-5	SCR11	Silicon Controlled Rectifier	XO-131
F41	Fuse, 1 AMP SLO-BLO	EL-6	U11	Diode, Programmable Zener TL431	XO-272
P1	Connector, 4 PIN	PS-87	U41	Voltage Regulator +5V, LM 320	XO-572
			VR1	Potentiometer, 100 OHM	XO-134

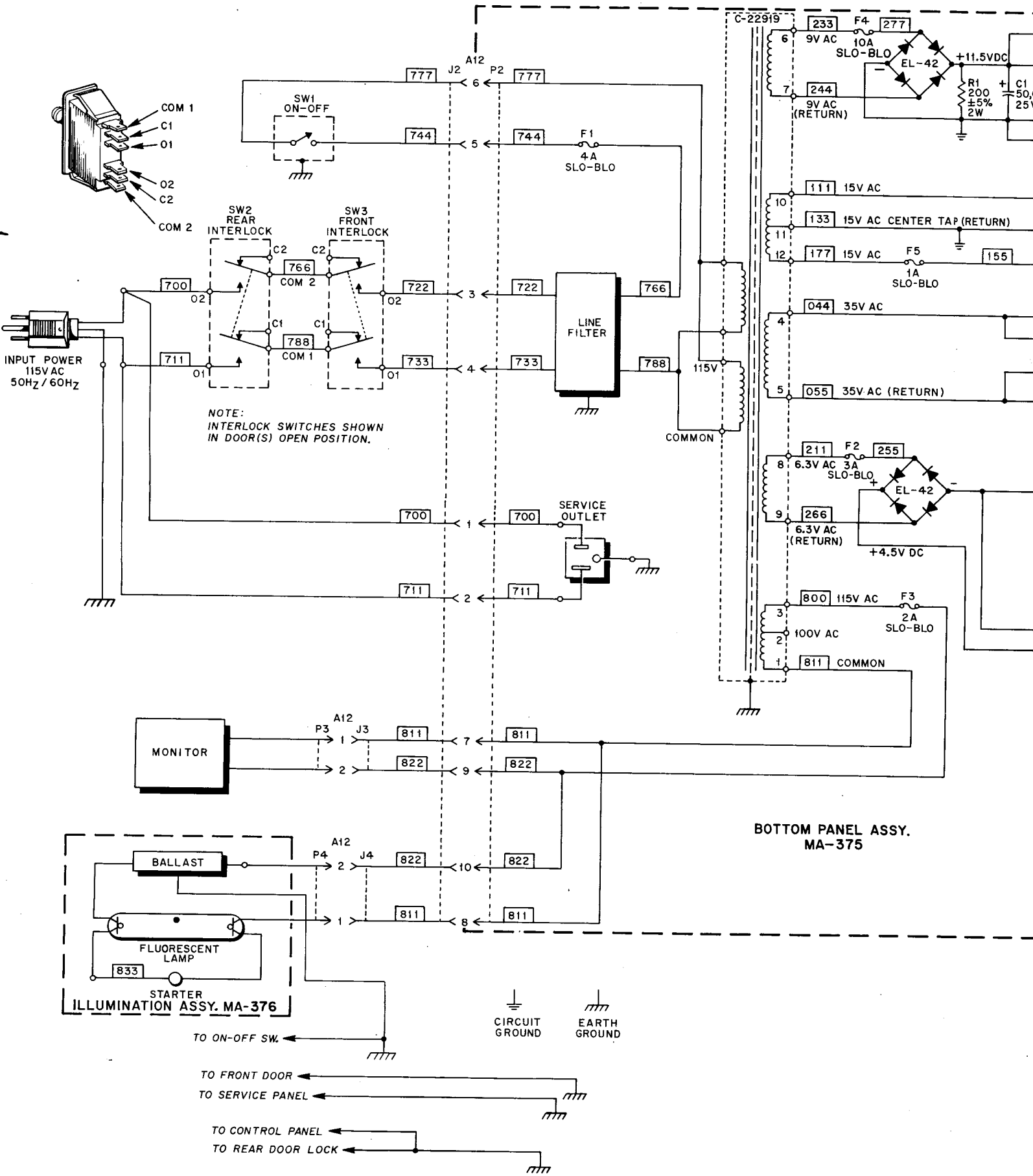
VIII. WIRING AND SCHEMATIC DIAGRAM



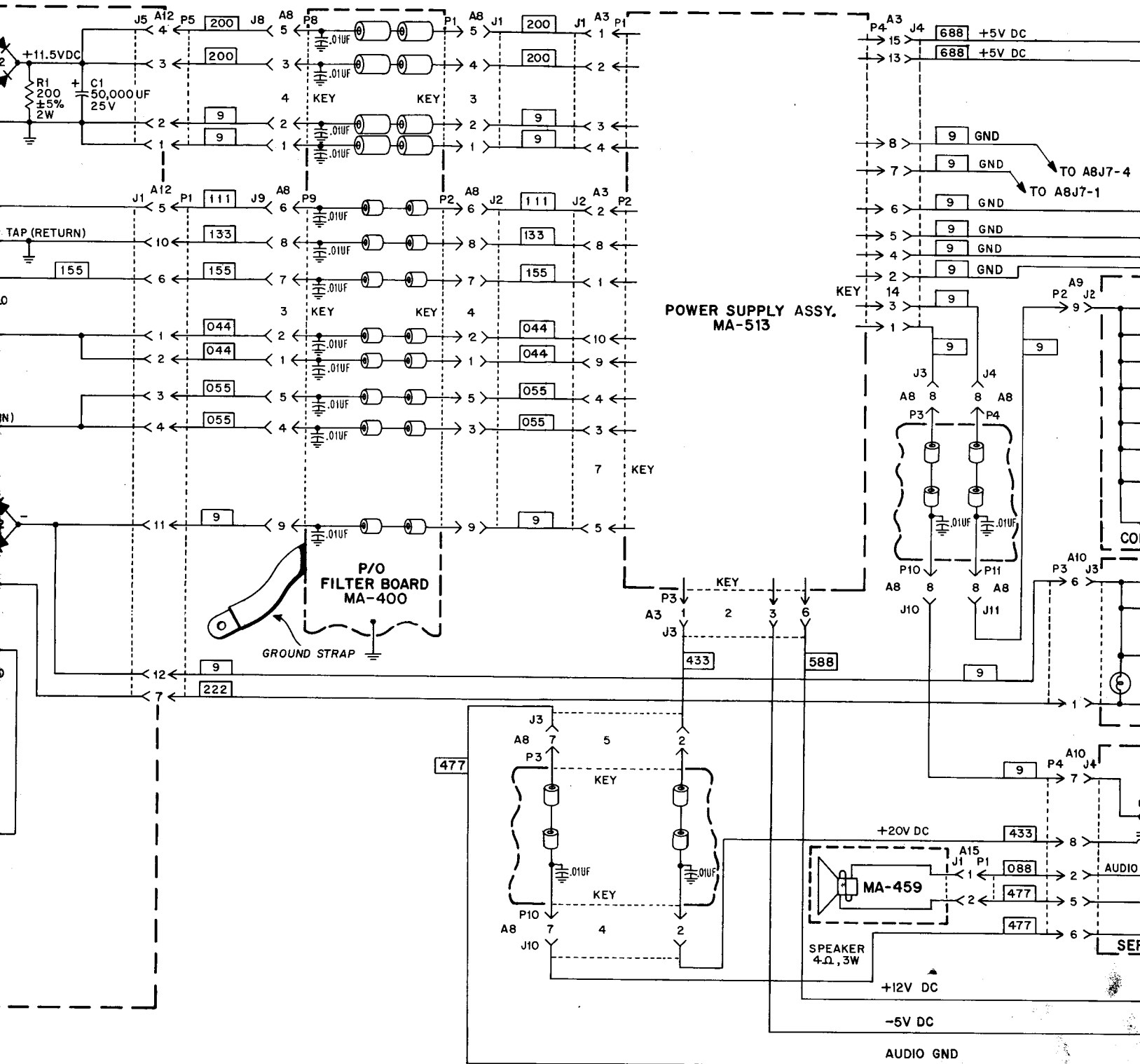
SCHEMATIC DIAGRAMS, PARTS LISTS



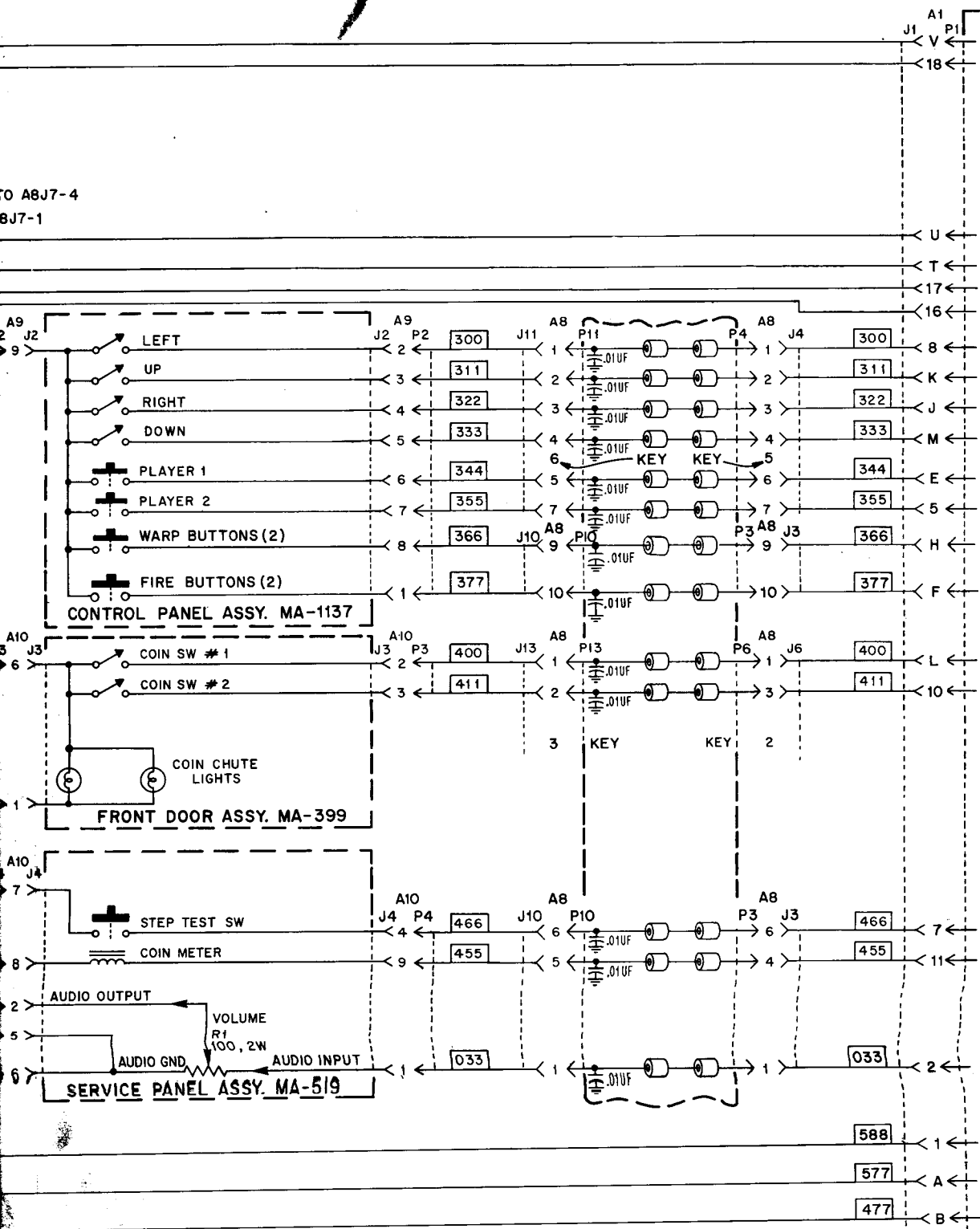
POWER SUPPLY ASSY. (A3), SCHEMATIC DIAGRAM



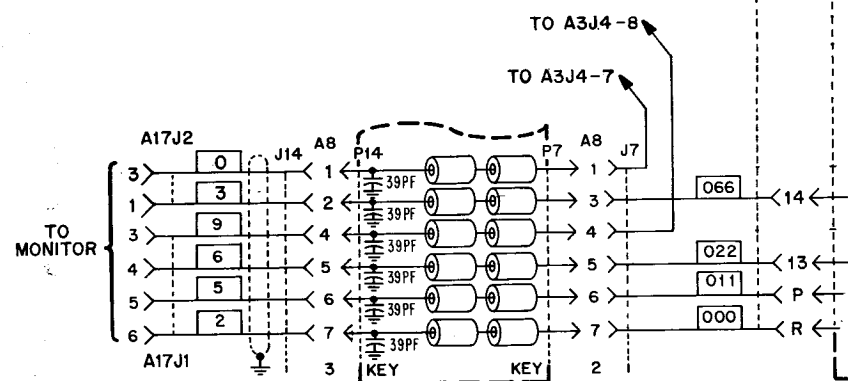
VIII. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS



TO A8J7-4
8J7-1



LOGIC BOARD ASSY.
PWB-1



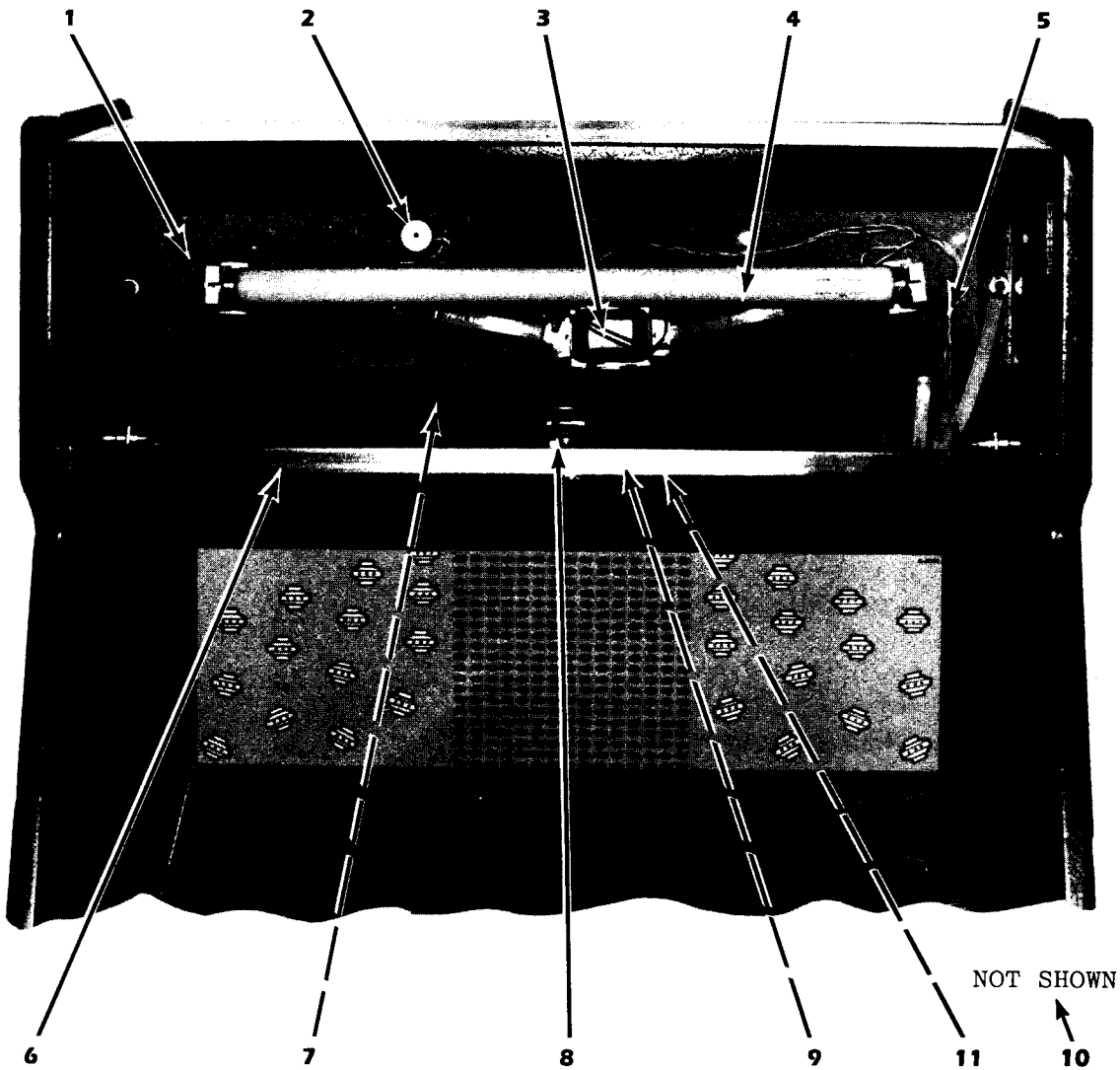
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CABINET PARTS	29

IX. PARTS INFORMATION

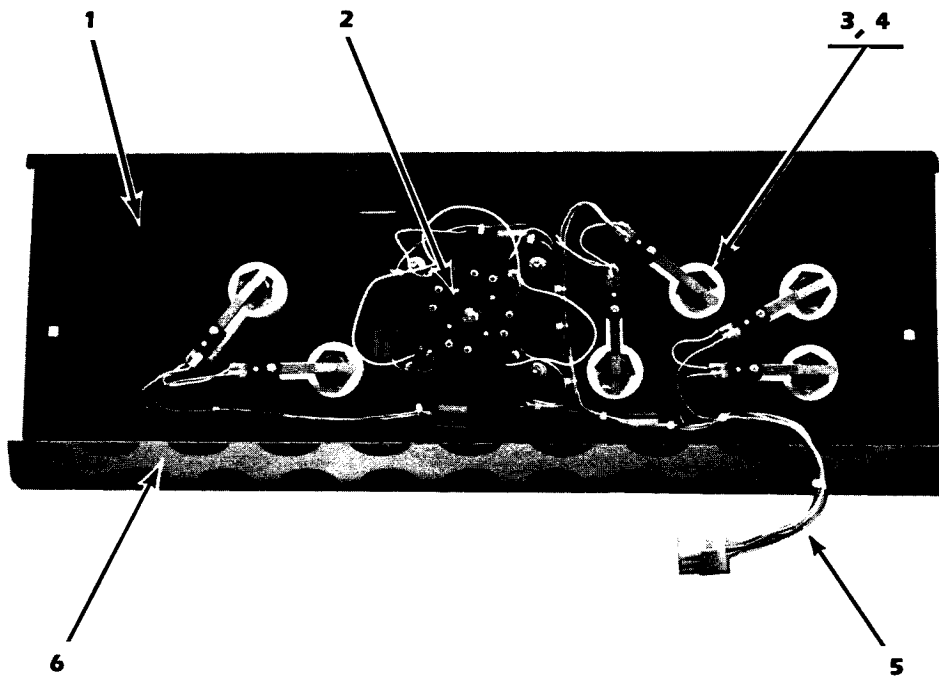
SPEAKER/MARQUEE ASSY. AND ILLUMINATION ASSY.



ITEM	DESCRIPTION	PART NO.
1.	Illumination Assy.	MA-376
2.	Starter	EL-69
3.	Ballast (60 HZ)	EL-70
4.	Lamp, Fluorescent	LA-4
5.	Cable Assy.	MA-364
6.	Speaker Assy.	MA-459
7.	Cable Assy.	MA-318
8.	Speaker	EL-93
9.	Speaker Grill	B-20931
10.	Marquee, Lexan (Screen)	A-23195
11.	Speaker Guard	B-20931

IX. PARTS INFORMATION

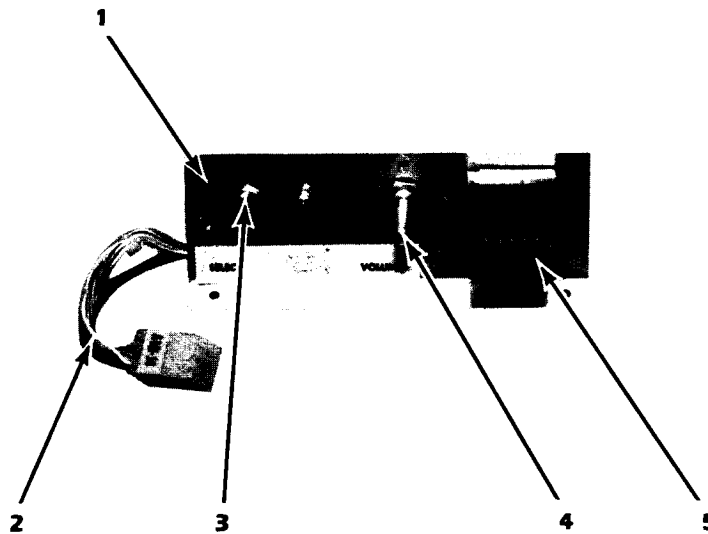
CONTROL PANEL ASSY.



ITEM	DESCRIPTION	PART NO.
1.	Control Panel Assy.	MA-1137
2.	Joystick	C-23189
3.	Short Button (6)	A-21970
4.	Button Holder and Switch (6)	A-21971
5.	Cable Assy.	MA-514
6.	Lexan Overlay	A-23196

IX. PARTS INFORMATION

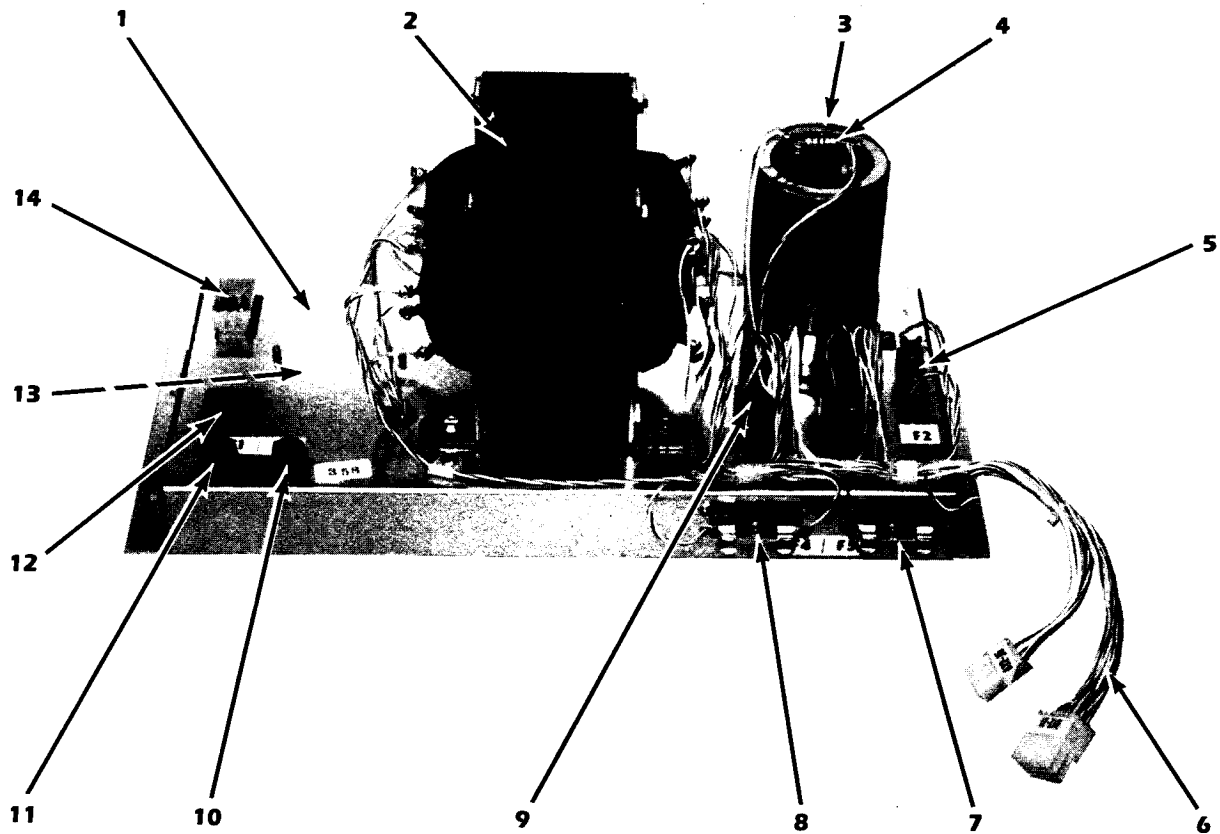
SERVICE PANEL ASSY.



ITEM	DESCRIPTION	PART NO.
1.	Service Panel Assy.	MA-519
2.	Cable Assy.	MA-518
3.	Switch (Push Button)	EL-57
4.	Volume Control	XO-199
5.	Coin Meter	EL-84

IX. PARTS INFORMATION

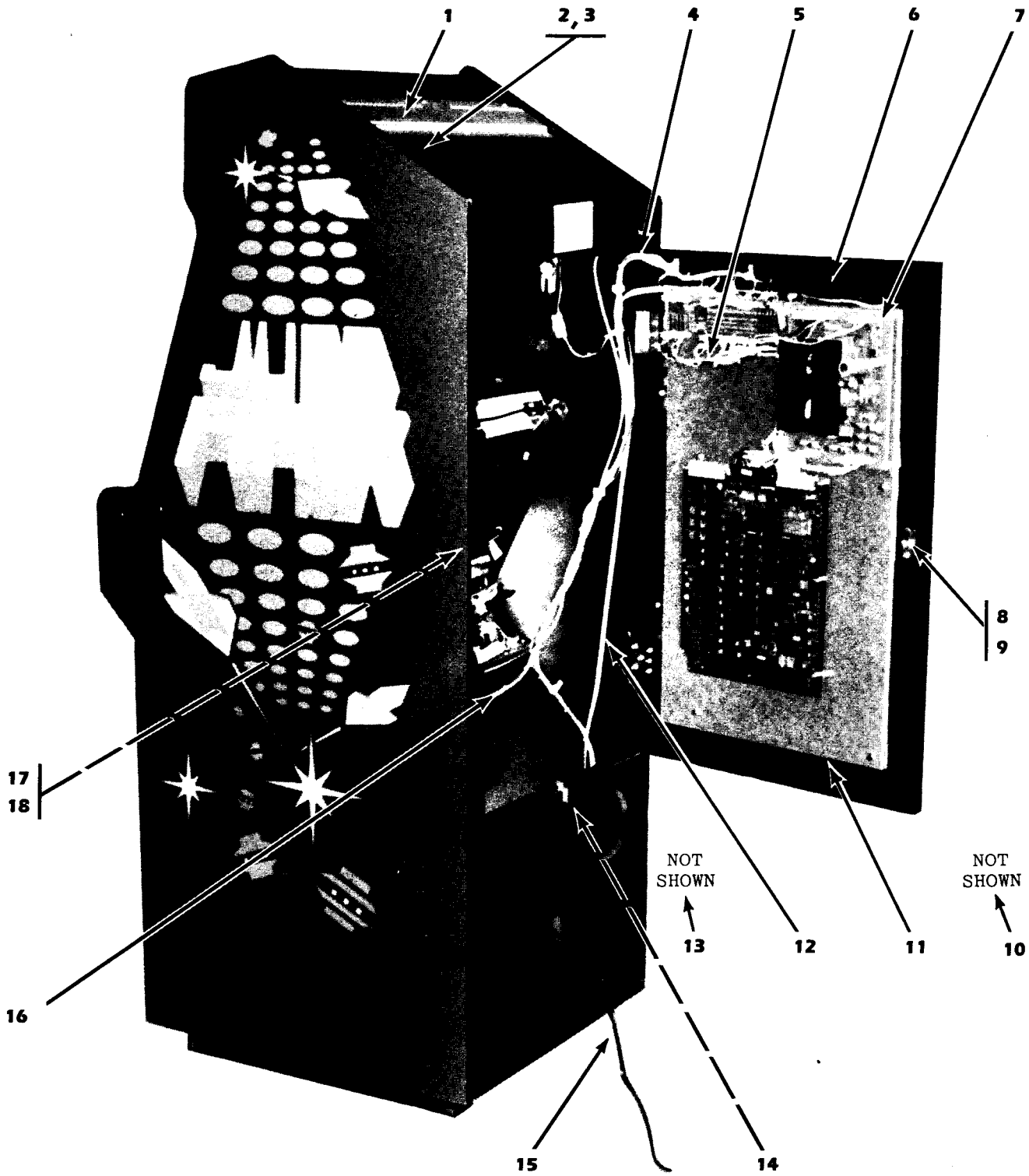
BOTTOM PANEL ASSY.



ITEM	DESCRIPTION	PART NO.
1.	Bottom Panel Assy.	MA-375
2.	Transformer	C-22919
3.	Capacitor, 50,000UF, 25V	XO-141
4.	Resistor, 200 OHM, 5%, 2W	XO-142
5.	Fuse Holder	EL-0
	Fuse, 3 Amp, SLO-BLO	EL-9
6.	Cable Assy. (Secondary)	MA-517
7.	Fuse Holder	EL-0
	Fuse, 1 Amp, SLO-BLO	EL-6
8.	Fuse Holder	EL-0
	Fuse, 10 Amp	EL-23
9.	Bridge Rectifier (2)	EL-42
10.	Fuse Holder	EL-78
	Fuse, 2 Amp, SLO-BLO	EL-7
11.	Fuse Holder	EL-78
	Fuse, 4 Amp, SLO-BLO	EL-33
12.	Service Outlet	A-18133
13.	Line Filter	EL-50
14.	Cable Assy. (Primary)	MA-363

IX. PARTS INFORMATION

CABINET PARTS

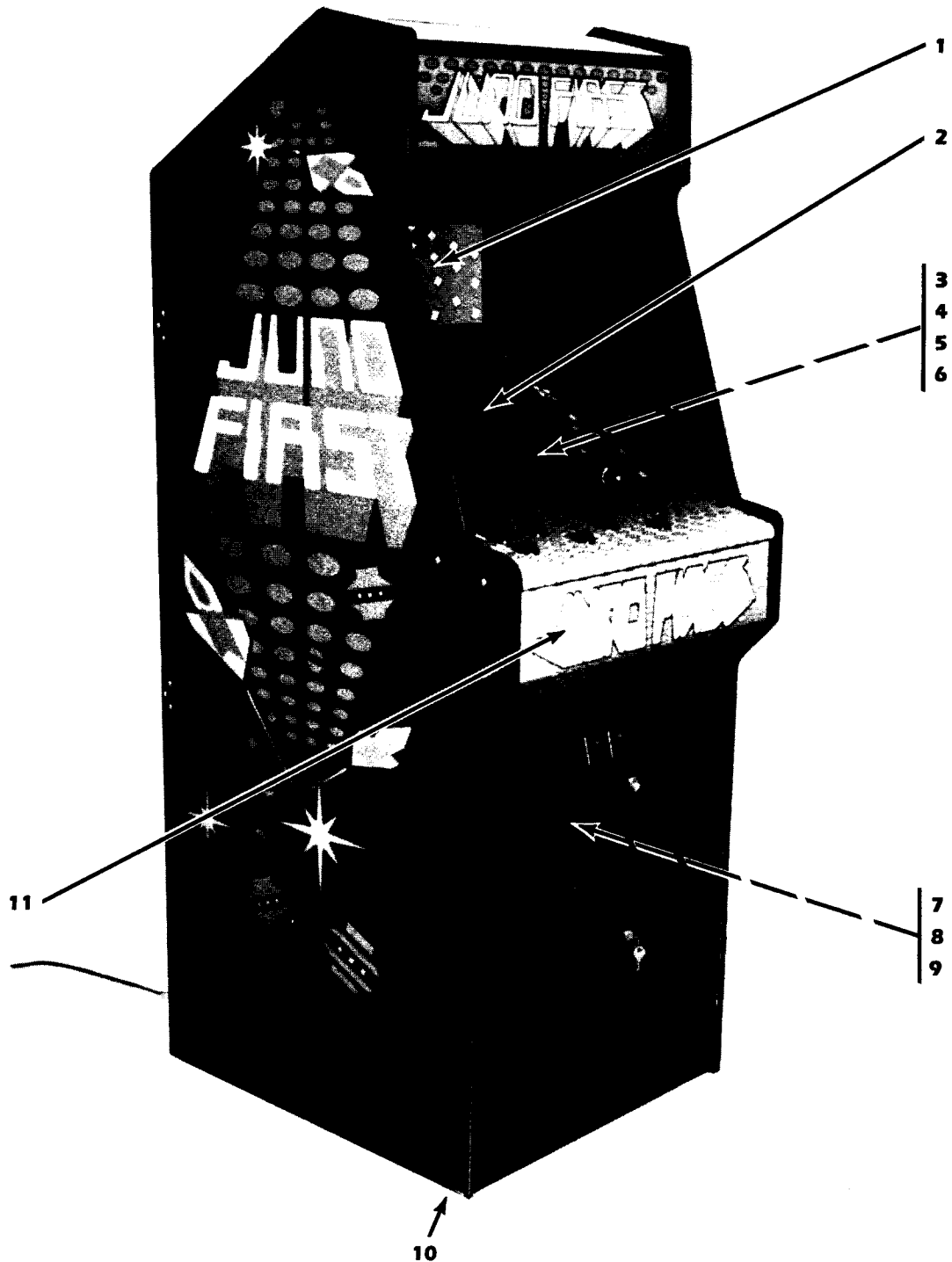


ITEM	DESCRIPTION	PART NO.
1.	Vent Channel (2)	D-21754
2.	On-Off Switch	EL-56
3.	Switch Plate	A-22396
4.	Cable Assy. Master Electronics	MA-515
5.	Interconnect Cable	MA-516
6.	Back Door	D-23073-3
7.	Master Electronic Board	MA-1157
8.	Rear Door Lock	MH-0
9.	Anchor Plate, Lock	MH-1

ITEM	DESCRIPTION	PART NO.
10.	Shield, Top	D-22632
11.	Shield, Bottom	C-22633
12.	Monitor Cable	A-23244-1
13.	Clip Bracket, Shield	B-22631
14.	Cover Plate, Line Cord	A-21955
15.	Line Cord	B-15357
16.	Cable Assy. High Voltage	MA-360
17.	Interlock Switch	EL-66
18.	Cover, Interlock Switch	A-21888

IX. PARTS INFORMATION

CABINET PARTS



ITEM	DESCRIPTION	PART NO.	ITEM	DESCRIPTION	PART NO.
1.	Rear Side CRT Decal	A-23198	7.	Cable Assy. Front Door	MA-396
2.	Top Glass	A-22464	8.	Interlock Switch	EL-66
3.	CRT Frame	A-23199	9.	Cover, Interlock Switch	A-21888
4.	Monitor Filter Glass	C-22849-1	10.	3" Leg Adjuster (2)	MH-21
5.	Monitor Mask	D-22463	11.	Lexan Overlay (Screen)	A-23197
6.	Monitor	C-23260			

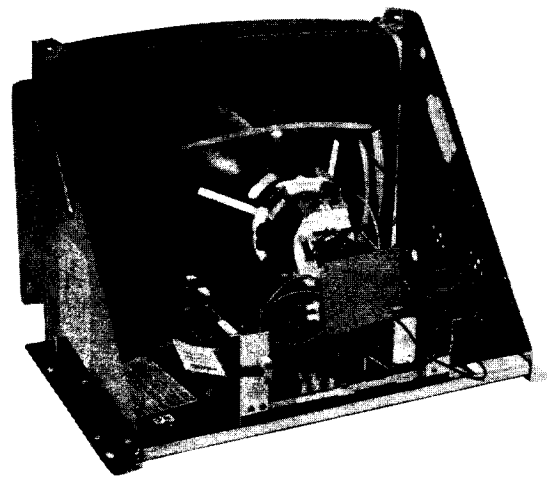
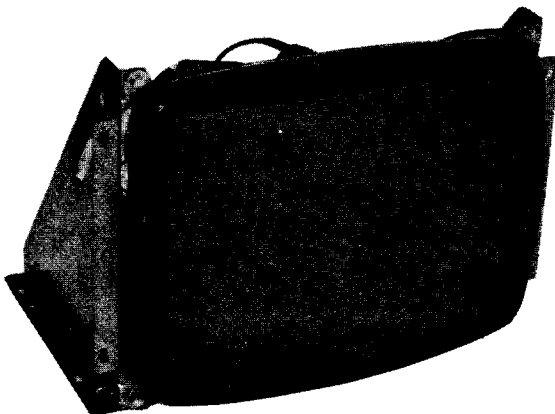


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19" IN LINE COLOR MONITORS

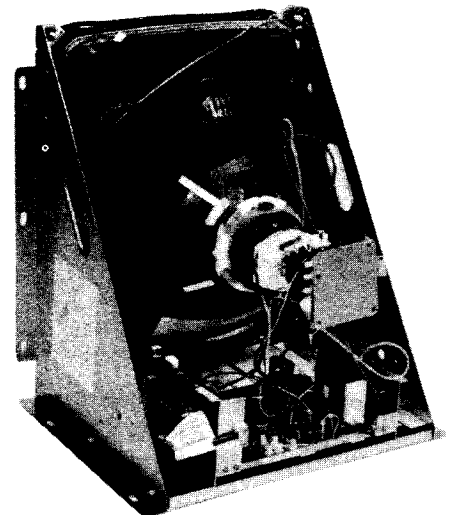
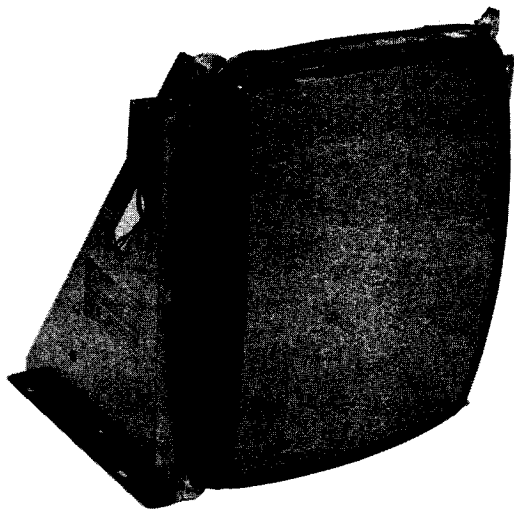
MODELS

19K4901
19K4906



MODELS

19K4951
19K4956
19K4951RYC



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