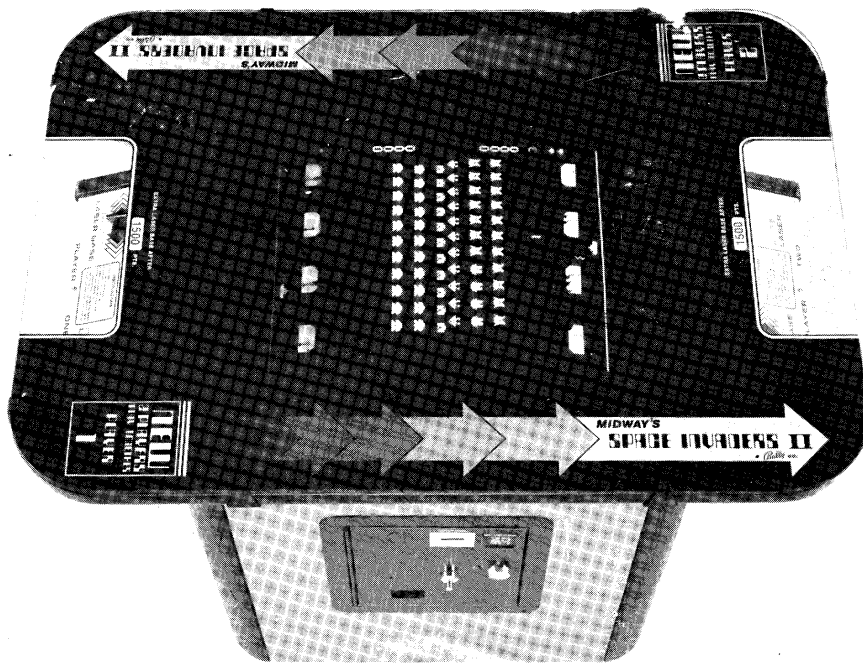


GAME NO. 851  
MARCH, 1980

# **MIDWAY'S SPACE INVADERS II 'COCKTAIL' PARTS AND OPERATING MANUAL**



**MIDWAY MFG. CO.**

A BALLY COMPANY

10750 WEST GRAND AVENUE  
FRANKLIN PARK, ILLINOIS 60131  
U.S.A.

PHONE: (312) 451-1360 CABLE ADDRESS: MIDCO TELEX NO.: 72-1396

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**WARNING**

**THIS GAME MUST BE GROUNDED. FAILURE TO DO  
SO MAY RESULT IN DESTRUCTION TO ELECTRONIC  
COMPONENTS.**

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## GENERAL INSTRUCTIONS FOR SPACE INVADER II COCKTAIL TABLE

### INSTALLATION

1. Remove shipping cleats located on bottom of cabinet.
2. Install four (4) provided leg levelers to bottom of cabinet and level cabinet.
3. The power is controlled by a switch located on the bottom of the cabinet. Plug into A.C. only, 115 volts, 60 cycles. In low line areas (105 volts or less), a boost in the output voltage of the transformer may be obtained by removing the wire from the 115 volt tap of the transformer and rewiring it to the 105 volt position.

### VOLTAGE CONTROL POTS

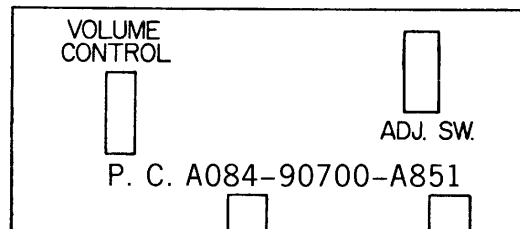
Located on Power Supply Board (P.C. A082-90400-H000) and are preset at the factory. These pots should not be tampered with unless the Distributor Service Department is contacted.

### MASTER VOLUME CONTROL

Located on Game Logic Board (P.C. A084-90700-A851) controls the volume of all sounds and may be varied as desired by rotating pot.

### ADJUSTMENT SWITCHES

Located on Game Logic Board (P.C. A084-90700-A851) and may be adjusted as indicated on separate instruction sheet in cabinet.



### LINE VOLTAGE SAFETY SWITCH

A line voltage safety switch has been provided for your protection. It is located in the cabinet on the left side of the coin door. When the coin door is opened the circuit to the line voltage is interrupted. To restore power (when servicing), pull switch fully out.

### TO SERVICE GAME LOGIC BOARD

The game logic board assembly is easily serviced by removing rear access door panel.

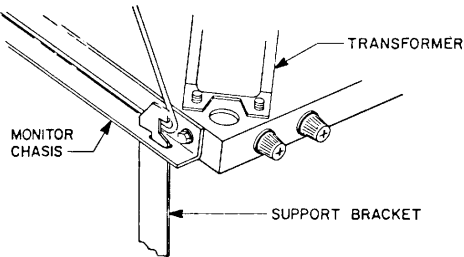
### HIGH SCORE AND NAME DISPLAY PROGRAM

1. Place switch #2 located on Game Logic Board (P.C. A084-90700-A851) in "OFF" position.
2. Close coin switch to display one credit on screen.
3. Depress One Player Select Button. "Preset Mode" will be displayed on screen.
4. Depress One Player Select Button again to increase score until previous Hi Score is beaten.
5. Depress Fire Button to start game. When all lasar bases have been destroyed, the alphabet will be displayed on the screen. A new name may now be programmed on the screen as indicated by instructions on Control Panel.
6. Place switch #2 located on Game Logic Board (P.C. A084-90700-A851) in "ON" position to reestablish game mode.

NOTE: To reset Hi-Score (to 5,000) and Name Display, depress "ON-OFF" switch.

## TO SERVICE MONITOR

1. Open coin box door.
2. Release two clamps located above coin door opening. **CAUTION: NEVER RELEASE CLAMPS UNLESS THE LINE VOLTAGE IS INTERRUPTED VIA SAFETY SWITCH.**
3. Rotate top panel on its hinges to an upright position.
4. Place Monitor Support Bracket (located on left cabinet wall) in provided hole in monitor chassis.
5. To restore power to monitor, pull safety switch fully out.



M051-00851-A015

## SERVICE BULLETIN

**GAME: SPACE INVADER II**  
**SUBJECT: RAMS, PROMS AND ROMS**

\*\*\*\*\*

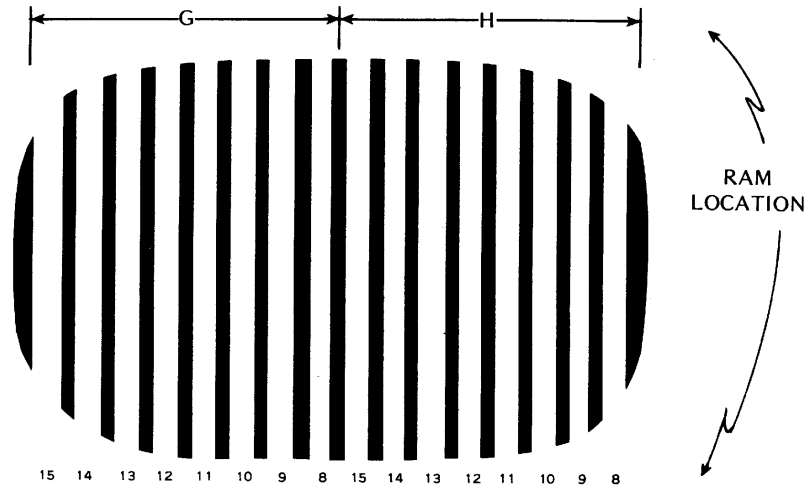
The Space Invader II game microprocessor system has been programmed to detect a defective Ram, Prom and/or Rom. To utilize the test, proceed as follows:

- 1) Set switch #8 to on position. (A084-90700-A851) Game Board.
- 2) Activate coin door tilt switch.
- 3) The Ram test sequence will scan and vertical lines will appear.
- 4) When all Rams are good, the scan will be continuous and then stop.
- 5) When a Ram is defective, dark vertical columns will appear (refer to Figure #1 for method of locating a bad Ram).
- 6) When Ram test is completed and all Rams are good, the T.V. screen will blank out to indicate a bad Prom or Rom by displaying letters locating it.
- 7) When Proms and Roms are good, the Ram scan will be continuous and then stop.
- 8) Return switch #8 to off position (A084-90700-A851)
- 9) The Ram scan will stop and game will return to normal when the tilt switch is activated.

**NOTE:** Rams must be good before Prom and Rom test can be made.

SUBJECT:

Figure One – Method of Locating a Bad RAM



- 1) When one or more columns are missing or altered, this would indicate a RAM problem.
- 2) Use Figure One TV display to determine location of faulty RAMs.

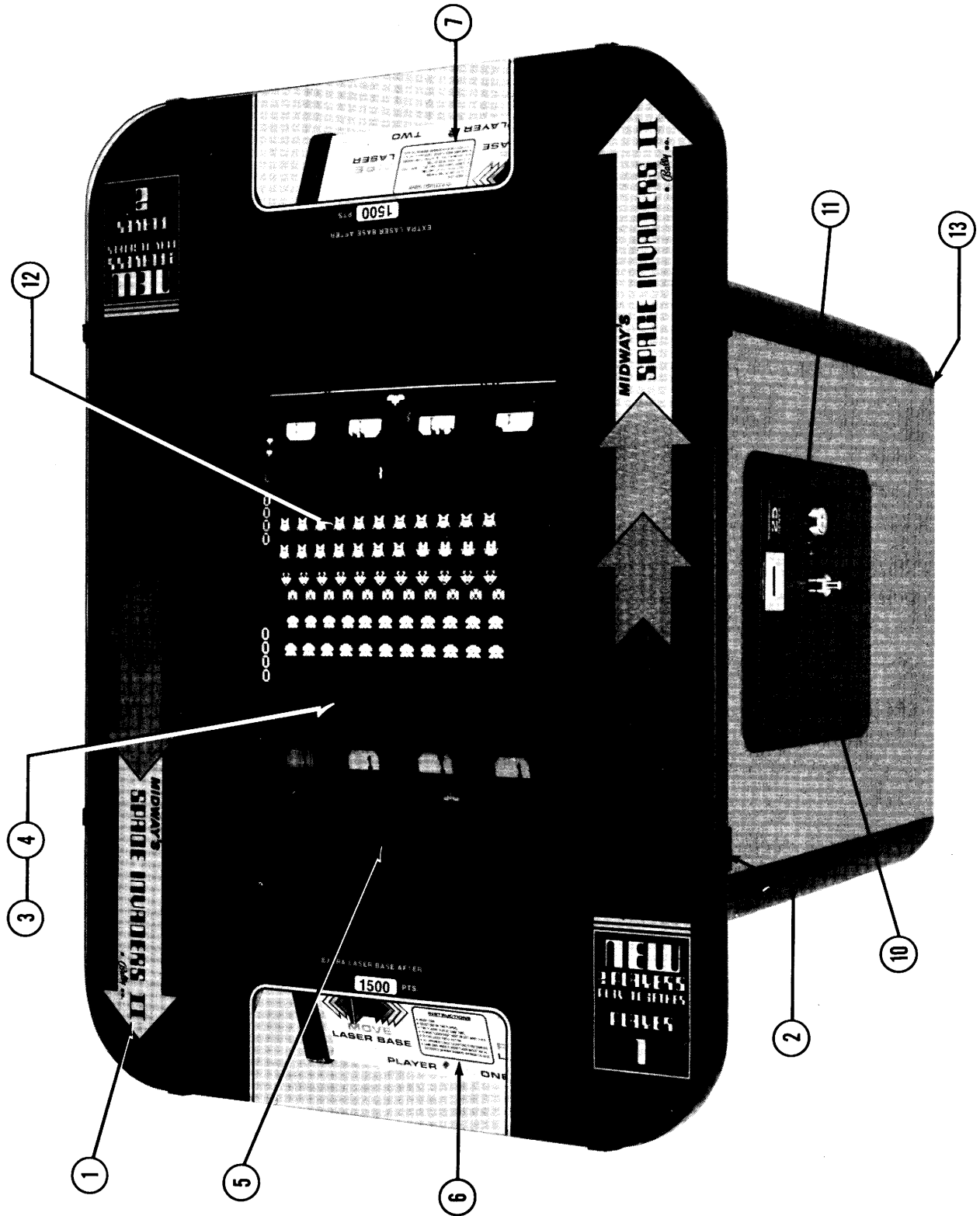
**SWITCH ADJUSTMENTS**

BONUS LASER BASE		
BONUS LASER BASE AT 1500 SCORE	SW. 1	OFF
BONUS LASER BASE AT 2000 SCORE		ON
GAME OPTION		
COCKTAIL MODEL	SW. 2	ON
UP-RIGHT		OFF
COIN OPTION		
1 COIN = 1 PLAYER	SW. 3	SW. 4
2 COINS = 2 PLAYERS	ON	ON
1 COIN = 1 PLAYER	ON	ON
1 COIN = 2 PLAYERS	ON	OFF
2 COINS = 1 PLAYER	ON	OFF
2 COINS = 1 PLAYER	OFF	ON
4 COINS = 2 PLAYERS	OFF	ON
2 COINS = 1 PLAYER	OFF	OFF
2 COINS = 2 PLAYERS	OFF	OFF
RAM/ROM TEST		
GAME MODE	SW. 8	OFF
TEST MODE		ON

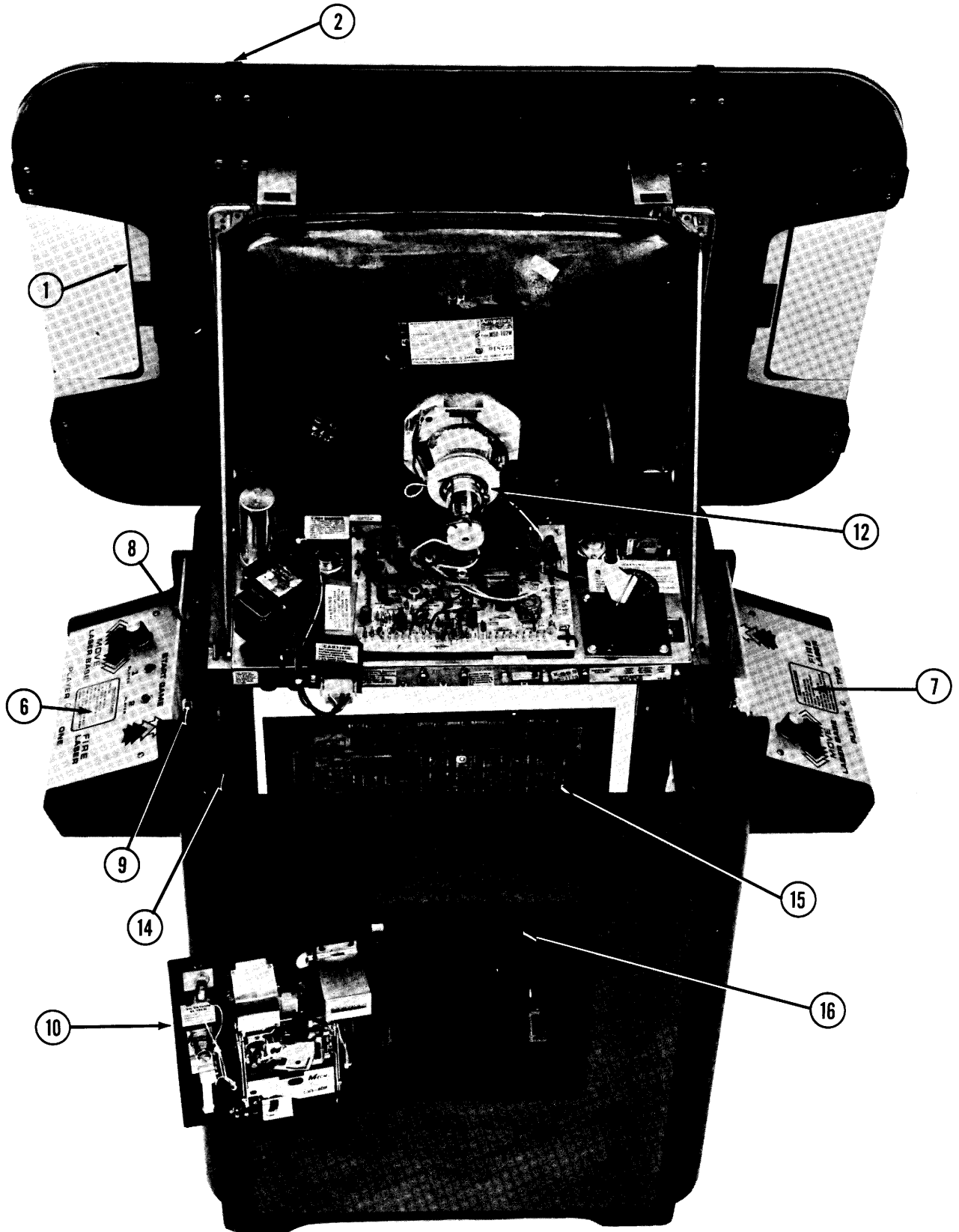
NOTE: SWS. 5, 6, & 7 NOT USED.

M051-00851-A009

**NO. 851 — SPACE INVADER II — COCKTAIL TABLE — PICTURE**



**NO. 851 — SPACE INVADER II — COCKTAIL TABLE — PICTURE**

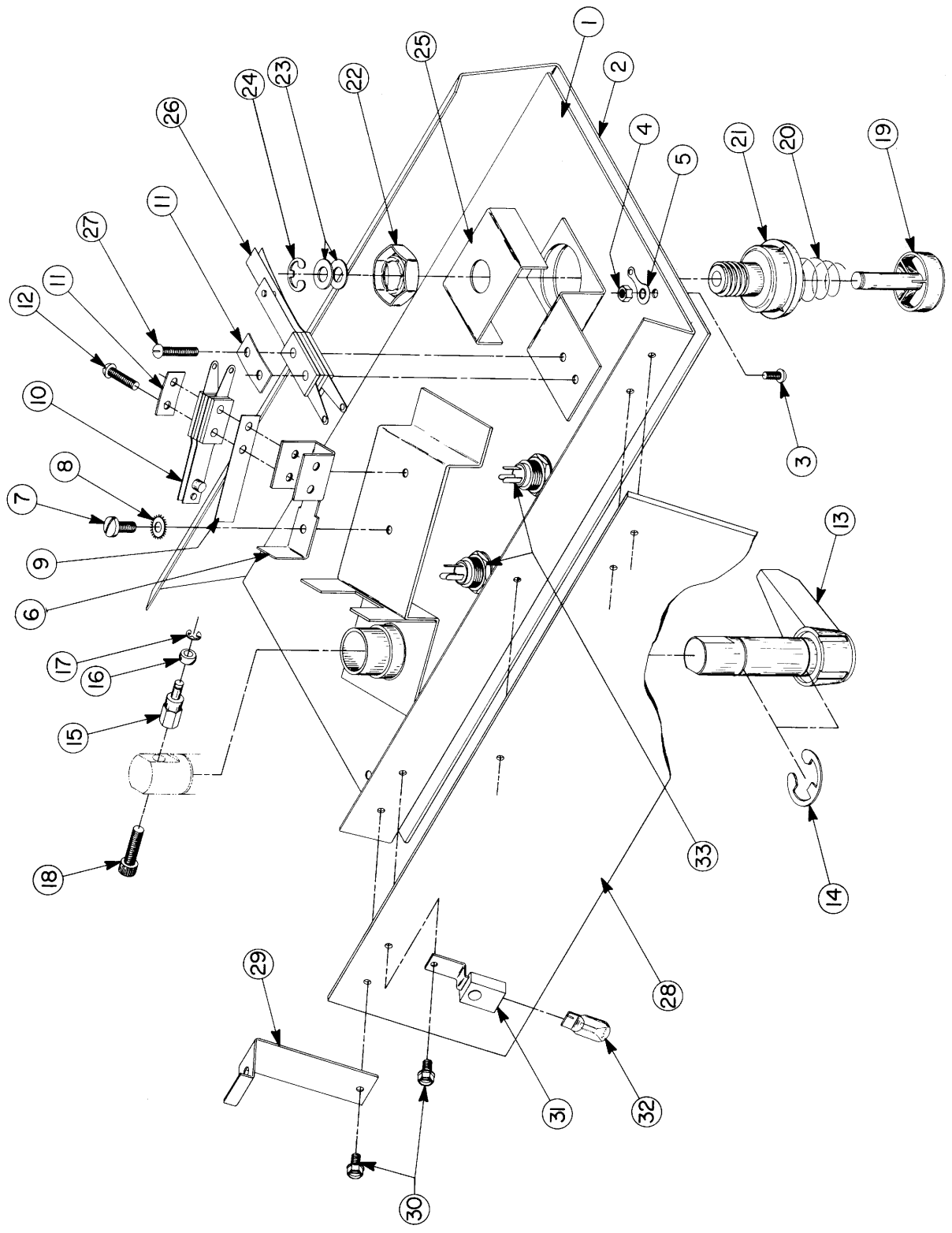


NO. 851 — SPACE INVADER II — COCKTAIL TABLE — PICTURES

ORDER BY PART NUMBER ONLY

ITEM	PART NO	DESCRIPTION
1	0851-00902-00XF	GLASS TOP — 32" x 22" x 1/4"
2	0775-00104-00XF	GLASS CLIPS (8 REQ'D.)
	0017-00101-0742	#8 x 1/2 PHIL. TRUSS HD. S.M.S. (16 REQ'D.)
3	0851-00905-0000	PLEXI SCREEN OVERLAY — GREY — 17-3/8" x 14" x 1/8"
4	0851-00903-0000	BLUE — GREEN SCREEN OVERLAY
5	0749-00901-0000	T.V. BEZEL
6	0851-00900-00XF	MAIN ESCUTCHEON
7	0851-00901-00XF	ESCUTCHEON — R.H. PLAYER 2
	A775-00003-0000	SHELF PLATE ASSY. (2 REQ'D.)
8	0775-00901-0000	LIGHT SHIELD (2 REQ'D.)
	0775-00112-00XF	BRKT. DECAL (2 REQ'D.)
	0775-00100-00XF	SHELF BRKT. (4 REQ'D.)
	0017-00101-0017	#6 x 1/2 HEX HD. WD. W/BLK. S.M.S. (4 REQ'D.)
9	0017-00003-0219	LAMP 14V. (4 REQ'D.)
	0017-00031-0044	LIGHT SOCKET (4 REQ'D.)
	0017-00101-0014	#6 x 1/2 HEX HD. WD. W/S.M.S. (8 REQ'D.)
10	A090-00058-0000	FRONT DOOR ASSY. W/COIN METER
11	0090-00002-01BK	FRONT DOOR FRAME
12	A851-00002-0000	MONITOR AND CHASSIS ASSY.
	0017-00003-0213	19" B & W MONITOR
	0017-00101-0082	#10 x 3/4 HEX HD. S.M.S. (8 REQ'D.)
13	0017-00102-0048	LEG LEVELERS (4 REQ'D.)
	0017-00103-0026	LEG LEVELER NUTS (4 REQ'D.)
14	0749-00105-00XF	PROP (ORANGE SUPPORT BRKT.)
15	A084-90000-L851	MOTHER BOARD ASSY.
16	A084-90700-A851	GAME BOARD ASSY.
		<u>NOT SHOWN LIST</u>
		<u>SPEAKER ASSEMBLY</u>
	0017-00003-0161	SPEAKER 4IN, 8 OHM (2 REQ'D.)
	0549-00128-00XF	SPEAKER GRILL (2 REQ'D.)
	0017-00041-0576	SPEAKER GASKET (2 REQ'D.)
	0547-00035-00XF	SPEAKER BEZEL (2 REQ'D.)
	0017-00101-0639	#8 - 32 x 1-1/4 CARRIAGE BOLTS (8 REQ'D.)
	0017-00103-0061	#8 - 32 HEX NUT SEMS. (8 REQ'D.)
	0017-00009-0393	VENT GRILL W/4, 1-1/2 SCRS. (2 REQ'D.)
		<u>FAN ASSEMBLY</u>
	0017-00003-0222	FAN
	0775-00110-00XF	FAN PLATE
	0870-00100-00XF	VENT SCREEN
	0017-00101-0347	#6 - 32 x 1/2 PHIL. R.H.M.S. SEMS. (4 REQ'D.)
	0017-00104-0009	#6 EXT. WASHER (4 REQ'D.)
	0017-00103-0005	#6 - 32 HEX NUT (4 REQ'D.)
	0017-00101-0026	#8 x 5/8 SLOT HEX HD. S.M.S. (4 REQ'D.)
	0017-00009-0439	HINGE (TOP ASSY.) (2 REQ'D.)
	0017-00101-0082	#10 x 3/4 HEX HD. S.M.S. (12 REQ'D.)

**NO. 851 - SPACE INVADER II - COCKTAIL - CONTROL SHELF ASSY.**



**NO. 851 – SPACE INVADER II – COCKTAIL – CONTROL SHELF ASSY.**

***ORDER BY PART NUMBER ONLY***

<b>ITEM</b>	<b>PART NO</b>	<b>DESCRIPTION</b>
1	A775-00003-0000	SHELF PLATE ASSY.
2	0851-00900-00XF	ESCUTCHEON – MAIN
2	0851-00901-00XF	ESCUTCHEON – R.H. PLAYER 2
3	0017-00101-0077	#6 - 32 x 5/16 PHIL PAN HD M.S. (2 REQ'D.)
4	0017-00103-0005	#6 - 32 HEX NUT (2 REQ'D.)
5	0017-00021-0002	#6 SOLDER LUG
6	0775-00101-00XF	SWITCH MTG. BRKT.
7	0017-00101-0517	#5 - 40 x 1/4 SOLT PAN HD M.S. (2 REQ'D.)
8	0017-00104-0009	#6 EXT LOCK WASHER (2 REQ'D.)
9	0020-00240-0010	TENSION LEAF .010 (2 REQ'D.)
10	A775-00005-0000	SWITCH ASSY. (2 REQ'D.)
11	0020-00202-0000	SWITCH PLATE (3 REQ'D.)
12	0017-00101-0525	#5 - 40 x 9/16 SLOT RD HD M.S. (4 REQ'D.)
13	A869-00006-0000	KNOB & SHAFT ASSY.
14	0017-00100-0050	1/2 E-RING (2 REQ'D.)
15	0775-00701-00XF	POST
16	0775-00902-0000	ROLLER
17	0017-00100-0015	5/32 E-RING
18	0017-00101-0720	#10 - 32 x 3/4 SOCKET HD CAP SCREW
19	0017-00009-0384	BUTTON
20	0010-00593-0000	SPRING
21	0017-00009-0376	HOUSING
22	0017-00103-0054	PAL NUT 5/8 - 11
23	0017-00104-0028	FLAT WASHER (2 REQ'D.)
24	0017-00100-0025	1/4 E-RING
	A739-00012-0000	PUSH BUTTON ASSY. (ITEMS 19-24)
25	0775-00105-00XF	SPACER
26	0586-00036-0000	PUSH BUTTON SWITCH ASSY.
27	0017-00101-0522	5 - 40 x 7/16 SLOT RD HD M.S. (2 REQ'D.)
28	0775-00901-0000	LIGHT SHIELD
29	0775-00100-00XF	SHELF MTG. BRKT. (2 REQ'D.)
30	0017-00101-0014	#6 x 1/2 SLOT HEX HD M.S. (5 REQ'D.)
31	0017-00031-0044	LAMP SOCKET (2 REQ'D.)
32	0017-00003-0219	LAMP #194 15V .27A WEDGE (2 REQ'D.)
33	0017-00032-0051	BUTTON SWITCH (MAIN CONTROL ONLY) (2 REQ'D.)

**NO. 851 – SPACE INVADER II – COCKTAIL TABLE – ADDITIONAL PARTS LIST**

***ORDER BY PART NUMBER ONLY***

ITEM	PART №	DESCRIPTION
	A097-00001-0000	LOCK ASSY.
	A749-00003-0000	CASH BOX ASSY.
	A627-00052-0000	CASH BOX COVER ASSY.
	A625-00024-0000	CASH BOX GUIDE BRKT. ASSY.
	0625-00117-0000	CASH BOX GUIDE
	0017-00101-0628	#8 - 32 x 3/4 CARRIAGE BOLTS (4 REQ'D.)
	0017-00103-0008	#8 - 32 HEX NUT (4 REQ'D.)
	0017-00009-0033	BASSICK CLAMP (2 REQ'D.)
	0017-00101-0025	#8 x 1/2 HEX HD. S.M.S. (4 REQ'D.)
	0610-00132-0000	STRIKE (2 REQ'D.)
	0017-00101-0028	#8 x 3/4 HEX HD. S.M.S. (4 REQ'D.)
	A749-00005-0000	INTERLOCK SWITCH ASSY.
	0017-00101-0026	#8 x 5/8 HEX HD. S.M.S. (3 REQ'D.)
	A627-00066-0000	ON-OFF SWITCH ASSY.
	0017-00101-0017	#6 x 1/2 HEX HD. S.M.S. (6 REQ'D.)
	A084-90700-A851	GAME BOARD P.C. ASSY.
	A084-90000-L851	MOTHER BOARD P.C. ASSY.
	A082-90400-H000	POWER SUPPLY ASSY.
	A749-00004-0000	TRANSFORMER BOARD ASSY.
	A084-90901-C851	SOUND BOARD P.C. BOARD ASSY.
	0624-00902-0100	P.C. SUPPORT BRKT. – 12" (4 REQ'D.)
	0624-00902-0500	P.C. SUPPORT BRKT. – 6-1/2" (2 REQ'D.)
	0624-00902-0400	P.C. SUPPORT BRKT. – 4" (6 REQ'D.)
	0624-00902-0300	P.C. SUPPORT BRKT. – 2-1/2"
	0597-00012-0100	P.C. SUPPORT BRKT. – R.H.
	0597-00012-0200	P.C. SUPPORT BRKT. – L.H.
	0017-00101-0028	#8 x 3/4 HEX HD. S.M.S. (22 REQ'D.)
	0017-00104-0037	#8 WASHER (22 REQ'D.)
	0017-00009-0419	PIN EXTRACTOR TOOL (PIN POPPER)

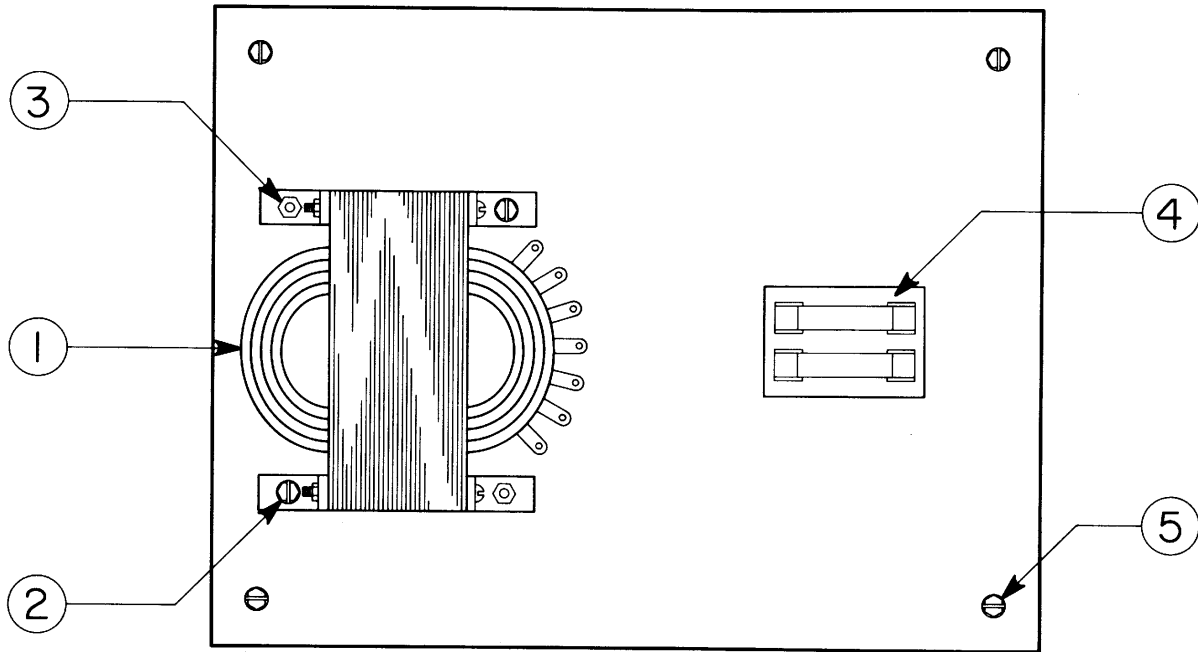


**NO. 851 – SPACE INVADER II – FRONT DOOR ASSY.**

***ORDER BY PART NUMBER ONLY***

<b>ITEM</b>	<b>PART NO</b>	<b>DESCRIPTION</b>
1	0017-00101-0552	#6 - 32 x 1/4 CARRIAGE BOLT (2 REQ'D.)
2	0090-00117-03XF	COIN ENTRY PLATE (25¢)
3	A090-00058-0000	DOOR ASSY. SINGLE ENTRY
4	0017-00005-0050	DOOR LOCK & KEY WITH SCREW & NUT
5	0090-00002-01BK	SINGLE DOOR FRAME
6	0017-00005-0041	421 N.S. CAM
7	0090-00901-0000	DOOR SWITCH
8	0090-00126-01XF	SWITCH BACKUP PLATE
9	0017-00101-0528	#5 - 40 x 3/4 LONG M.S. (2 REQ'D.)
10	0090-00903-0040	25¢ WINDOW
11	0090-00143-0000	COIN PLEX RETAINER
12	0017-00104-0002	SPLIT LOCK WASHER (2 REQ'D.)
13	0017-00007-0019	KEY HOOK
14	0017-00103-0005	#6 - 32 HEX NUT (2 REQ'D.)
15	0090-00104-0000	TOP & BOTTOM COIN CHUTE W/BRKT. ASSY.
16	0017-00101-0598	#8 - 32 x 5/16 SCREW (4 REQ'D.)
17	0010-00181-0100	SPRING
18	0090-00129-00XF	PIVOT POST
19	0010-00134-0000	SPRING
20	0090-00008-0000	ACCEPTOR FRAME ASSY.
21	0093-00155-00XF	REJECTOR LEVER
22	0017-00100-0012	E-RING
23	0093-00151-00XF	COIN GUIDE MTG. BRKT.
24	0090-00005-0000	COIN GUIDE ASSY.
25	0017-00101-0555	#6 - 32 x 5/16 SCREW (2 REQ'D.)
26	0017-00005-0039	COIN SWITCH
27	0010-00557-2500	TRIP WIRE
28	0017-00007-0132	PUSH-ON RING (BLK)
29	0017-00101-0507	#4 - 36 x 3/4 SCREW (2 REQ'D.)
30	0090-00128-00XF	SWITCH BRKT. - DOOR TILT
	A090-00061-0000	ANTI-STRING DEVICE ASSY. – OPTIONAL (REPLACES ITEM 24)
	A090-00064-0000	ANTI-PENNY DEVICE ASSY. – OPTIONAL

**NO. 851 – SPACE INVADER II – TRANSFORMER BOARD ASSY.**



**MIDWAY MFG. CO.**  
A BALLY COMPANY

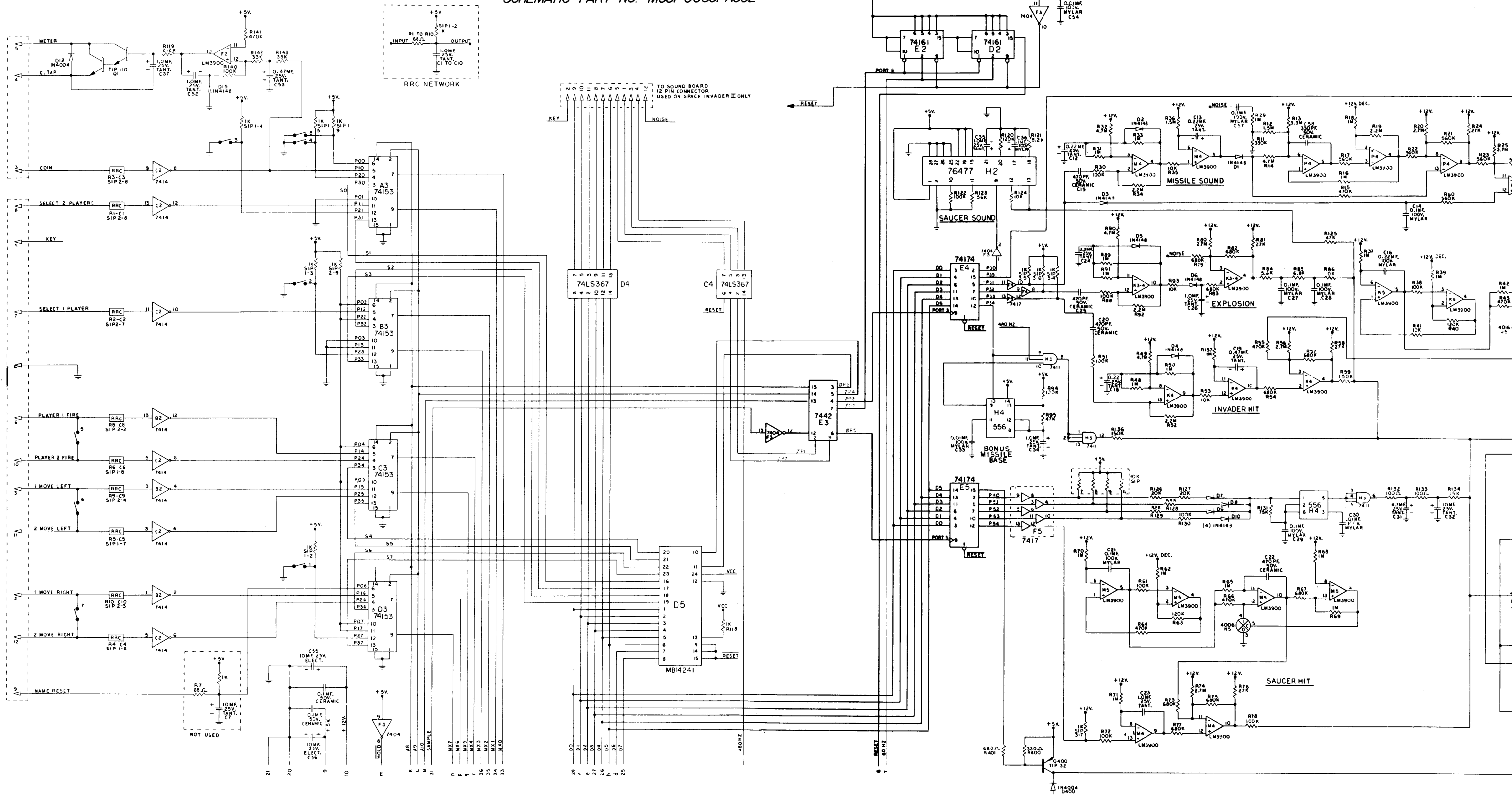
**NO. 851 – SPACE INVADER II – TRANSFORMER BOARD ASSY.**

***ORDER BY PART NUMBER ONLY***

ITEM	PART NO	DESCRIPTION
1	MT00-00058-0000 MT00-00059-0000	TRANSFORMER – 60 CYCLE – DOMESTIC (OR) TRANSFORMER – 50 CYCLE – FOREIGN
2	0017-00101-0017	#6 x 1/2 SLT. HEX HD. WD. SCR. (2 REQ'D.)
3	0017-00101-0637 0017-00103-0008	#8 - 32 x 1" CARRIAGE BOLT (2 REQ'D.) WITH #8 - 32 HEX NUT (2 REQ'D.)
4	0720-00001-0200 0017-00003-0103 0017-00003-0006	2 POSITION FUSE BLOCK FUSE 1 AMP FUSE 3 AMP
5	0017-00101-0018 0017-00003-0064	#6 x 3/4 SLT. HEX HD. SCREW (5 REQ'D.) 16 FT. LINE CORD – NOT SHOWN

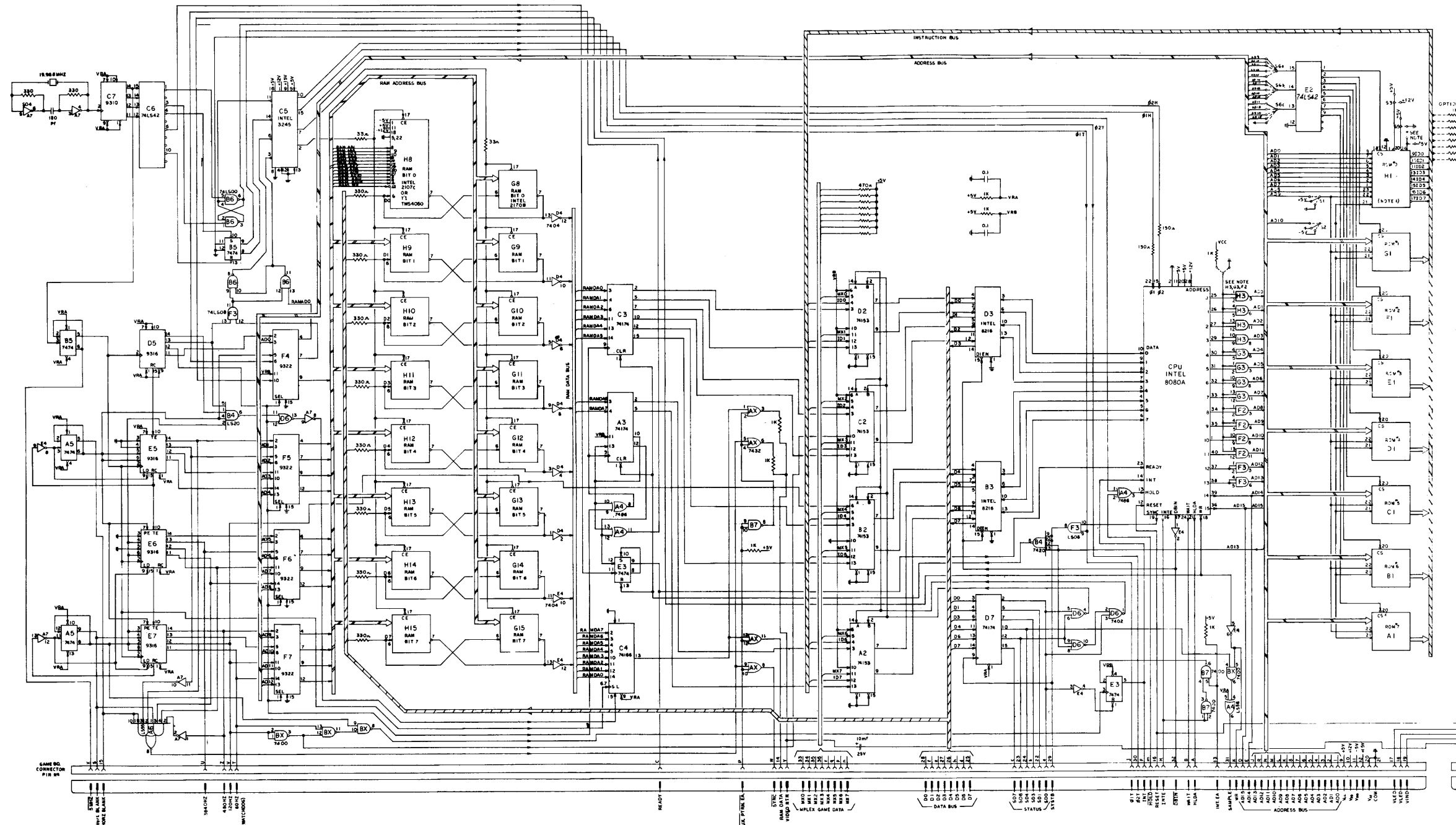


GAME LOGIC P.C. A082-90700-A000  
 USED ON: SPACE INVADER II COCKTAIL  
 DELUXE SPACE INVADER UPRIGHT  
 DELUXE SPACE INVADER COCKTAIL  
 SCHEMATIC PART NO. M051-00851-A002





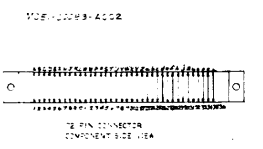




56  
 AD0 0 0 AD12  
 AD10 0 0 AD14  
 AD11 0 0 AD15  
 AD12 0 0  
 AD14 0 0 COM

NOTE 1: OTHER AVAILABLE CHIPS AND  
 STRAP ARRANGEMENT IF USED

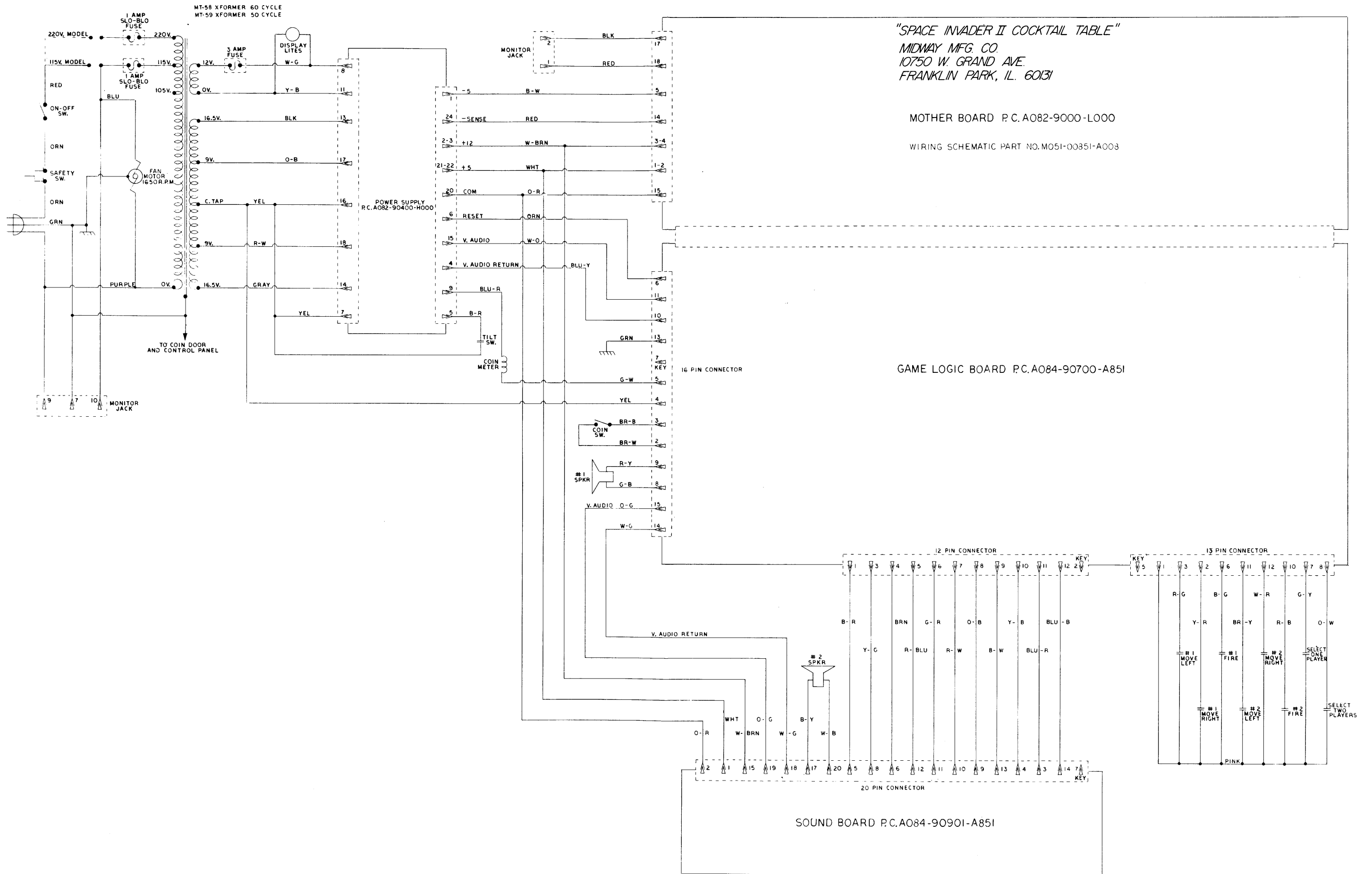
PROG	WFL	SA	SA9	SA6	SA5	SA3	SA2	SA1	SA0	NEEDS
ROM	PIN 15	PIN 14	PIN 13	PIN 20	PIN 19	PIN 21	PIN 22	PIN 24		
2781	AMD	AD10	AD11	AD12	COM	+5V	COM	AD9	+5V	NO
2708	INTEL	AD10	AD11	AD12	COM	+5V	AD9	+5V		NO
2716	TI	AD11	AD12	AD14	AD10	+12V	+9V	AD9	+5V	NO
9318	GI	AD11	AD12	AD14	COM	AD10	COM	AD9	+5V	NO



MOTHER BOARD SCHEMATIC  
 A084-90000-L851



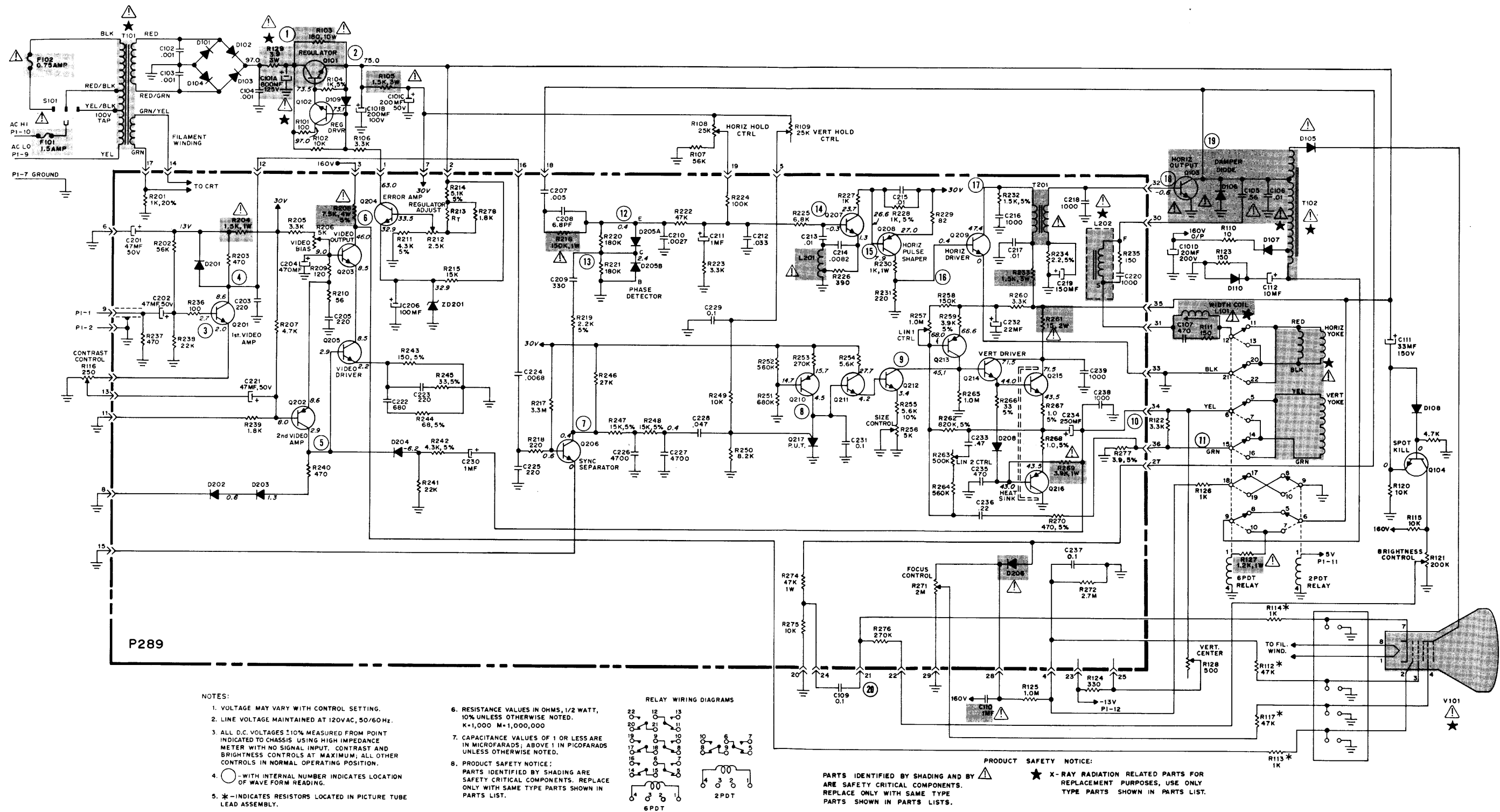






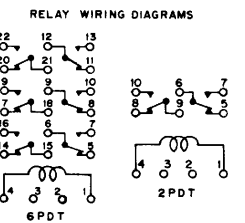


# SCHEMATIC DIAGRAM



- NOTES:**
1. VOLTAGE MAY VARY WITH CONTROL SETTING.
  2. LINE VOLTAGE MAINTAINED AT 120VAC, 50/60Hz.
  3. ALL D.C. VOLTAGES ±10% MEASURED FROM POINT INDICATED TO CHASSIS USING HIGH IMPEDANCE METER WITH NO SIGNAL INPUT. CONTRAST AND BRIGHTNESS CONTROLS AT MAXIMUM, ALL OTHER CONTROLS IN NORMAL OPERATING POSITION.
  4. ○ - WITH INTERNAL NUMBER INDICATES LOCATION OF WAVE FORM READING.
  5. \* - INDICATES RESISTORS LOCATED IN PICTURE TUBE LEAD ASSEMBLY.

6. RESISTANCE VALUES IN OHMS, 1/2 WATT, 10% UNLESS OTHERWISE NOTED. K=1,000 M=1,000,000
7. CAPACITANCE VALUES OF 1 OR LESS ARE IN MICROFARADS; ABOVE 1 IN PICOFARADS UNLESS OTHERWISE NOTED.
8. PRODUCT SAFETY NOTICE: PARTS IDENTIFIED BY SHADING ARE SAFETY CRITICAL COMPONENTS. REPLACE ONLY WITH SAME TYPE PARTS SHOWN IN PARTS LIST.



**PRODUCT SAFETY NOTICE:**  
PARTS IDENTIFIED BY SHADING AND BY ⚠ ARE SAFETY CRITICAL COMPONENTS. REPLACE ONLY WITH SAME TYPE PARTS SHOWN IN PARTS LISTS.

★ X-RAY RADIATION RELATED PARTS FOR REPLACEMENT PURPOSES, USE ONLY TYPE PARTS SHOWN IN PARTS LIST.

SUPPLEMENTARY PARTS LIST FOR V1002 TO USE WITH V1001 MANUAL

THESE SYMBOLS AND PARTS TO BE USED WITH V1002 SCHEMATIC

CHANGES AND ADDITIONS

<u>CIRCUIT SYMBOL</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
P289	38A5470-000	P.C. Board Assy.
C208	80X0099-069	Cap. 6.8PF Plus/Minus 0.5-N.P.O.
C112	45X0515-025	Electrolytic 10MF-100V
D110	66X0023-009	Rectifier-Silicon 500V-IN444B
R123	340X3151-941	Resistor-150 OHM 10% .5W
R124	340X3331-941	Resistor-330 OHM 10% .5W
R125	340X3105-941	Resistor-1MEG 10% .5W
R126	340X3102-941	Resistor 1K OHM 10% .5W
△ R127	340X4122-841	Resistor 1.2K 10% 1.Watt
R128	40X0585-095	Vert. Centering Control 500 OHM
△★ R129	43X0401-049	Resistor 3.9 OHM 3.W 10%
	38A5473-000	Relay Assy. 2PDT (with wires)
	38A5474-000	Relay Assy. 6PDT (with wires)
	02A0678-001	Relay 2PDT (no wires)
	02A0679-001	Relay 6PDT (no wires)

★ X-RAY RELATED PARTS

△ SAFETY RELATED PARTS

★

**SERVICE TECHNICIAN WARNING X-RAY RADIATION PRECAUTION:**  
 THIS PRODUCT CONTAINS CRITICAL ELECTRICAL AND MECHANICAL PARTS ESSENTIAL FOR X-RAY RADIATION PROTECTION.  
 FOR REPLACEMENT PURPOSES, USE ONLY TYPE PARTS SHOWN IN THE PARTS LIST.

△

**PRODUCT SAFETY NOTICE:**  
 THE PARTS IDENTIFIED BY SHADING AND BY (△) ON THE SCHEMATIC DIAGRAM ARE SAFETY CRITICAL COMPONENTS.  
 FOR REPLACEMENT PURPOSES, USE ONLY SAME TYPE PARTS SHOWN IN THE PARTS LIST.