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## WARNING

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

## GENERAL INSTRUCTIONS FOR SPACE ENCOUNTERS

### 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 top of the cabinet. Plug into A.C. only, 115 volts, 60 cycles.

### LINE VOLTAGE SAFETY SWITCH

A line voltage safety switch has been provided for your protection. It is located on the right rear side of the cabinet. When the door is removed, it opens the circuit to the line voltage. To restore power when servicing, pull switch fully out.

### TO CENTER PICTURE

1. Place adjustment switch (5) "ON" and (6) "OFF". These switches are located on Game Logic (P.C. A084-90700-F645). Switch adjustment card is located in rear of cabinet area.
2. Adjust monitor so that cross-hatch is inside of viewing area.

### TO SERVICE CONTROL PANEL

1. Open coin box door.
2. Release two (2) clamps, located on each side of cabinet.
3. Disconnect control cable jack if removing unit from cabinet.

### TO ADJUST CONTROL PANEL VERTICAL AND HORIZONTAL ENCODERS

1. Place adjustment switch (5) "OFF" and (6) "ON".
2. Press trigger button, located on steering control to set encoder test mode.
3. Loosen set screws on vertical encoder gear (at rear of assembly).
4. Rotate encoder shaft until defense ship stops in lower part of the viewing area.  
NOTE: Steering control must be in it's furthest out position.
5. Tighten set screws.
6. Loosen set screws on horizontal encoder gear.
7. Hold hand grips in a horizontal position and rotate encoder shaft until defense ship is in center of screen.
8. Tighten set screws.

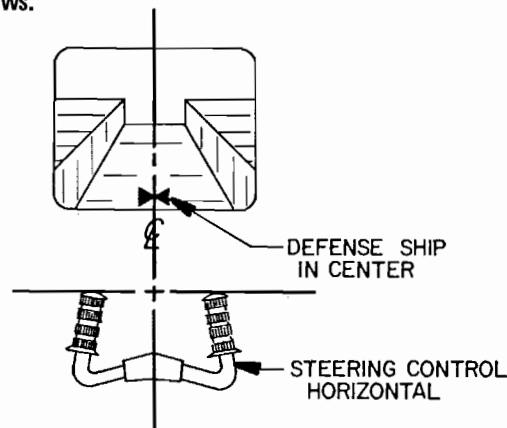


FIGURE 1

**NO. 645 – SPACE ENCOUNTERS – PHOTOGRAPH**  
**ORDER BY PART NUMBER ONLY**

ITEM	PART NO	DESCRIPTION
1	A645-00020-0000	PLASTIC BEZEL ASSY.
2	0645-00919-0000	COLORLED SCREEN OVERLAY
3	0645-00910-0000	FRONT GLASS – 23-9/16" x 20" x 3/16"
	0537-00903-0017	GLASS CHANNEL – 18-3/4" LG. (2 REQ'D.)
	0537-00903-0034	GLASS CHANNEL – 23" LG.
	0629-00902-0700	GLASS LIFT CHANNEL 23-1/4" LG.
	0645-00108-00XF	GLASS LOCK BRKT. (2 REQ'D.)
4	0645-00916-0000	COCKPIT LIGHTS INSERT
	0645-00506-0000	COCKPIT LIGHTS PANEL
	0645-00111-0000	SUPPORT BRKT. (2 REQ'D.)
	0017-00031-0030	WEDGE BASE LIGHT SOCKET (8 REQ'D.)
	0017-00003-0182	7V., .43 AMP WEDGE LAMP (8 REQ'D.)
	A645-00032-0000	COCKPIT LIGHTS CABLE ASSY.
5	0645-00900-00XF	SCENERY CARD – BOTTOM
	0645-00901-00XF	SCENERY CARD – RIGHT (NOT SEEN)
	0645-00901-01XF	SCENERY CARD – LEFT (NOT SEEN)
	0645-00902-00XF	SCENERY CARD – BACK (NOT SEEN)
6	0645-00100-00XF	CONTROL SHELF PLATE
7	0017-00102-0019	1/4-20 x 1-1/2 CARRIAGE BOLT (4 REQ'D.)
	0017-00103-0018	1/4-20 HEX NUT (4 REQ'D')
	0017-00104-0005	1/4 SPLIT LOCK WASHER (4 REQ'D.)
8	0017-00101-0639	#8-32 x 1-1/4 CARRIAGE BOLT (4 REQ'D:)
	0017-00103-0061	#8-32 HEX NUT (4 REQ'D.)
	0017-00104-0022	#8 FLAT WASHER (4 REQ'D.)
9	0017-00101-0062	#6 x 3/4 PHIL. PAN HD. SCREW (3 REQ'D')
10	0017-00009-0393	SPEAKER GRILL & HARDWARE
	0017-00003-0187	SPEAKER
11	0017-00101-0642	#8-32 x 1-1/2 CARRIAGE BOLT (4 REQ'D.)
12	A090-00020-2001	DOUBLE ENTRY COIN DOOR ASSY.
	A090-00057-0000	COIN METER ASSY.
13	0090-00002-02GR	COIN DOOR FRAME
	0017-00101-0121	#6-32 x 5/16 PHIL. TRUS HD. M.S. (3 REQ'D.) (MOUNTS COIN DOOR TO FRAME)
14	0645-00911-0000	ALUMINUM STEP
15	0017-00102-0048	LEG LEVELERS (4 REQ'D.)
	0017-00103-0026	LEG LEVELER NUTS (4 REQ'D.)
		<b>NOT SHOWN LIST</b>
	0017-00009-0033	BASSICK CLAMP (2 REQ'D.)
	0603-00131-0000	STRIKE (2 REQ'D.)
	0645-00107-00XF	SPRING BRKT. (MOUNTS STEERING, CONTROL SPRING TO CABINET SIDE).

**NO. 0645 – SPACE ENCOUNTERS – BACK PICTURE**

***ORDER BY PART NUMBER ONLY***

<b>ITEM</b>	<b>PART NO</b>	<b>DESCRIPTION</b>
1	A082-90400-H000	POWER SUPPLY P.C.B. ASSY.
2	A082-90000-L645	MOTHER P.C.B. ASSY.
3	A084-90700-G645	GAME LOGIC P.C.B. ASSY.
4	A084-91324-F645	SOUND P.C.B. ASSY.
	0624-00902-0100	P.C. SUPPORT BRKT. 12" (5 REQ'D.)
	0624-00902-0300	P.C. SUPPORT BRKT. 2-1/2" (7 REQ'D.)
	0017-00101-0025	#8 x 1/2 HEX HD. WOOD SCREW (29 REQ'D.)
	0017-00104-0037	#8 FLAT WASHER (29 REQ'D.)
5	A905-00022-0000	TRANSFORMER BOARD ASSY.
6	0017-00003-0199	22" CATHODE RAY TUBE
7	0017-00003-0198	22" CHASSIS
	0017-00003-0322	22" C.R.T. YOKE
	A739-00010-0000	DAG SPRING ASSY.
	3000-17175-0000	GROUND STRAP
	0592-00104-0100	CHASSIS MTG. BRKT. R.H.
	0592-00104-0200	CHASSIS MTG. BRKT. L.H.
	0645-00502-0000	CHASSIS PANEL
8	0017-00101-0637	#8-32 x 1 CARRIAGE BOLT (4 TUBE, 4 CHASSIS)
	0017-00104-0022	#8 FLAT WASHER (4 TUBE, 4 CHASSIS)
	0017-00103-0061	#8-32 HEX NUT SEMS (4 TUBE, 4 CHASSIS)
9	0017-00032-0005	ON-OFF SWITCH
	0567-00106-0100	SWITCH MTG. PLATE
	0017-00101-0025	#8 x 1/2 SLOT HEX HD. WOOD SCREW (4 REQ'D.)
10	A645-00022-00XF	INTERLOCK SWITCH BRKT. ASSY.
	0017-00003-0225	INTERLOCK SWITCH
11	A622-00018-0000	COIN DOOR CABLE ASSY.
12	A645-00033-0000	CONTROL SHELF CABLE ASSY.
13	A645-00034-0000	MASTER CABLE ASSY.
		<u>ADDITIONAL PARTS LIST</u>
	A097-00001-0000	LOCK ASSY. - BACK DOOR (2 REQ'D.)
	0017-00009-0490	VENT SCREEN (4 REQ'D.)
	0017-00009-0477	MOLDED CASH BOX
	A623-00013-0000	COIN BOX COVER ASSY.
	A624-00001-0000	COIN BOX GUIDE BRKT. ASSY.
	0624-00101-0000	COIN BOX GUIDE BRKT.

# NOTES

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This space is provided for personal notes

**NO. 645 – SPACE ENCOUNTERS – EXPLOSION LIGHT ASSY.**

***ORDER BY PART NUMBER ONLY***

<b>ITEM</b>	<b>PART N<sup>o</sup></b>	<b>DESCRIPTION</b>
1	0645-00115-0000	EXPLOSION LIGHT MTG. BRKT.
2	0017-00003-0135	LAMP SOCKET
3	0017-00101-0026	#8-32 x 5/8 SLOT HEX HD. SCREW (2 REQ'D.)
4	0017-00103-0061	#8-32 HEX NUT SEMS (2 REQ'D.)
5	0760-00945-00XF	LAMP GE 200 W RED
6	0017-00042-0231	STANDOFF 3/4 (4 REQ'D.)
7	A084-91359-B645	EXPLOSION P.C. BOARD
8	0017-00042-0232	STANDOFF 1-3/8 (4 REQ'D.)
9	0069-156XX-XXIX	FLASH TUBE - FT19-30K
10	0069-157XX-XXIX	REFLECTOR
11	0017-00042-0233	TENSION CLIP
12	0017-00101-0555	#6-32 x 5/16 SLOT HEX HD. SCREW
13	0017-00104-0019	#6 FLAT WASHER
14	0645-00116-0000	STROBE LIGHT HOUSING BRKT.
15	0645-00114-0000	STROBE LIGHT GUARD
16	0017-00101-0598	#8-32 x 5/16 SLOT HEX HD. SCREW (3 REQ'D.)
17	0645-00918-0000	GROMMET (2 REQ'D.)
	A645-00030-0000	STROBE LIGHT CABLE ASSY. (NOT SHOWN)

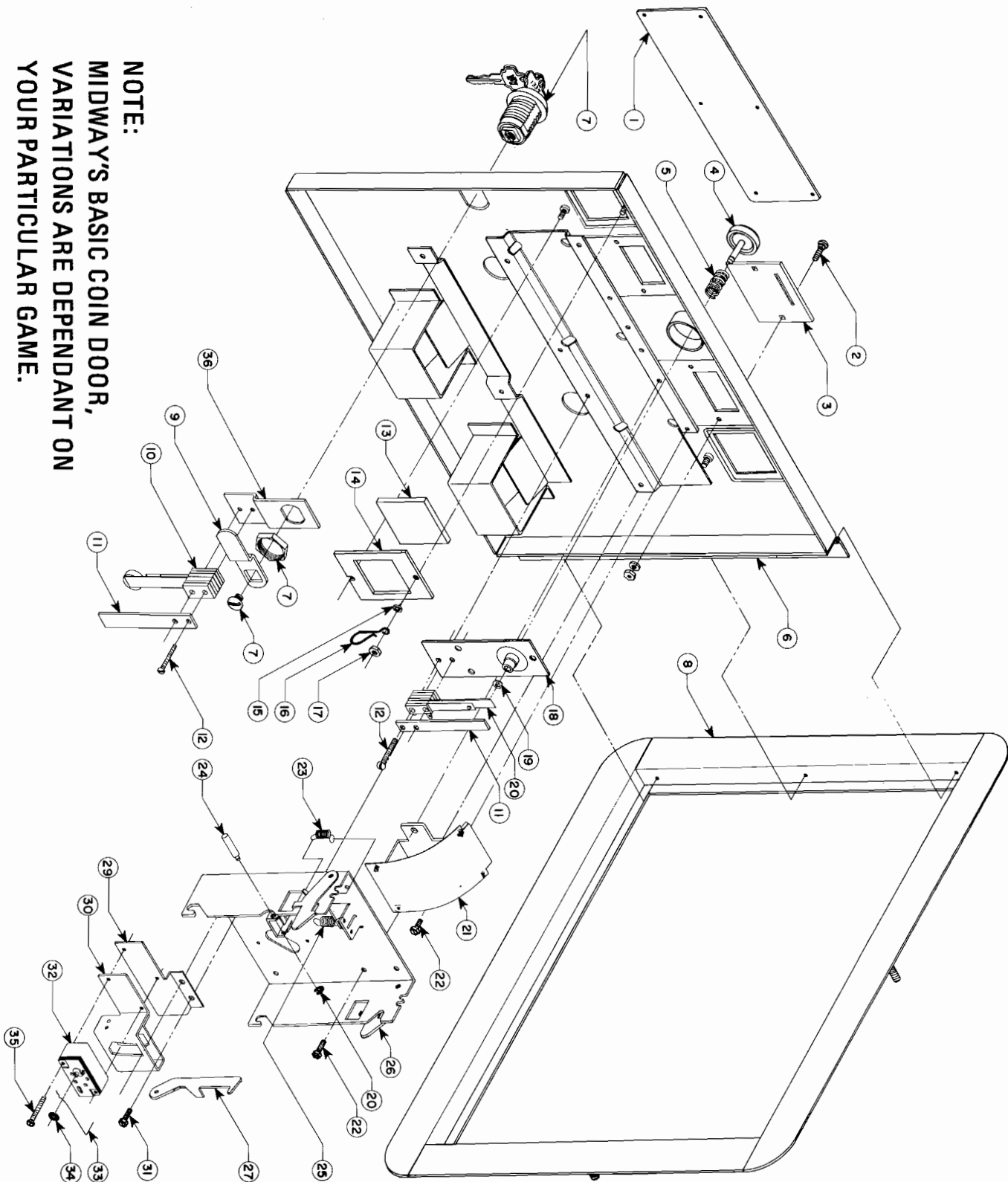
**NO. 645 – SPACE ENCOUNTERS – TRANSFORMER BOARD ASSY.**

***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 1.5 AMP FUSE 4 AMP
5	0017-00101-0018 0017-00003-0064 0017-00003-0114	#6 x 3/4 SLT. HEX HD. SCREW (5 REQ'D.) 16 FT. LINE CORD – NOT SHOWN NOISE FILTER - NOT SHOWN

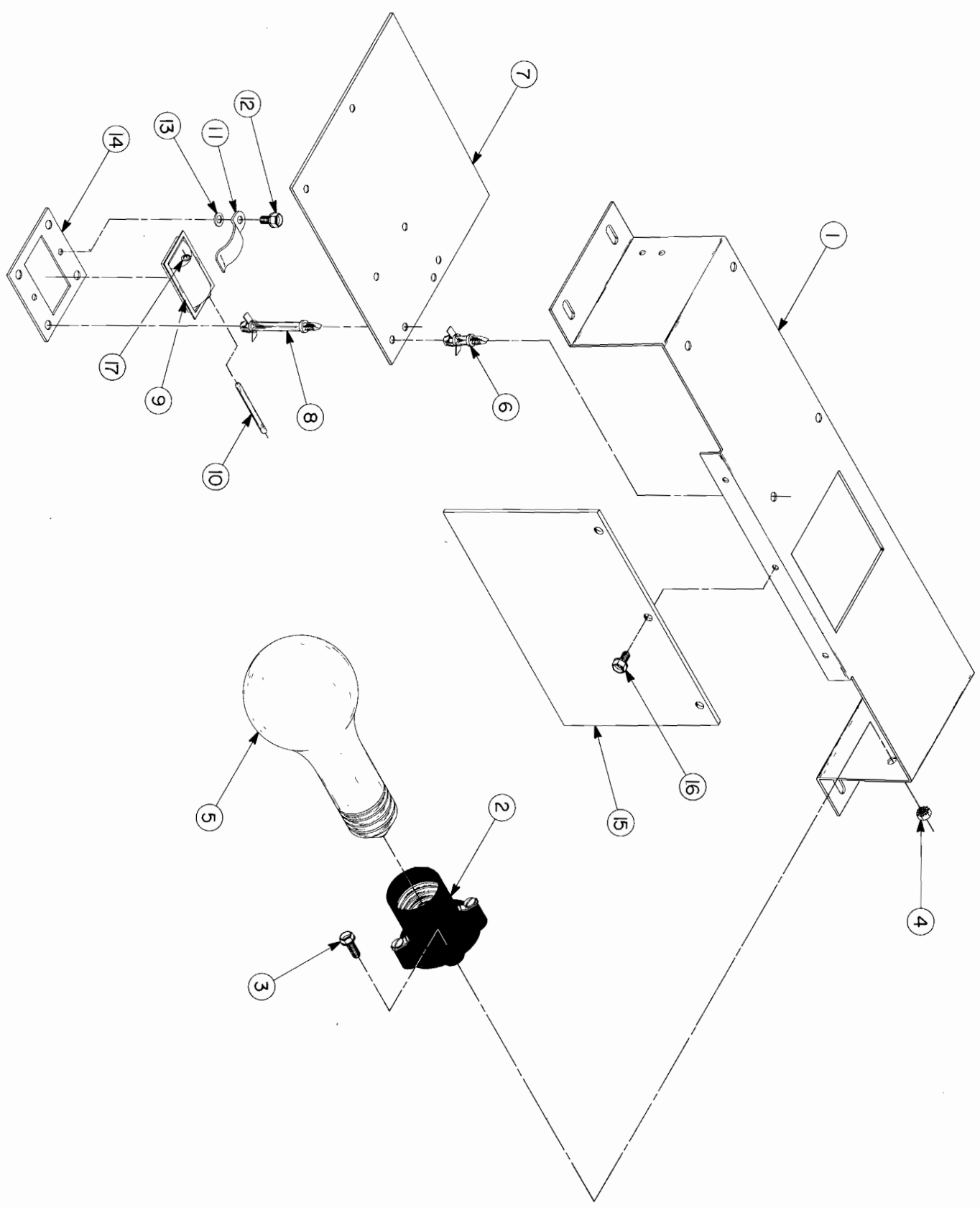




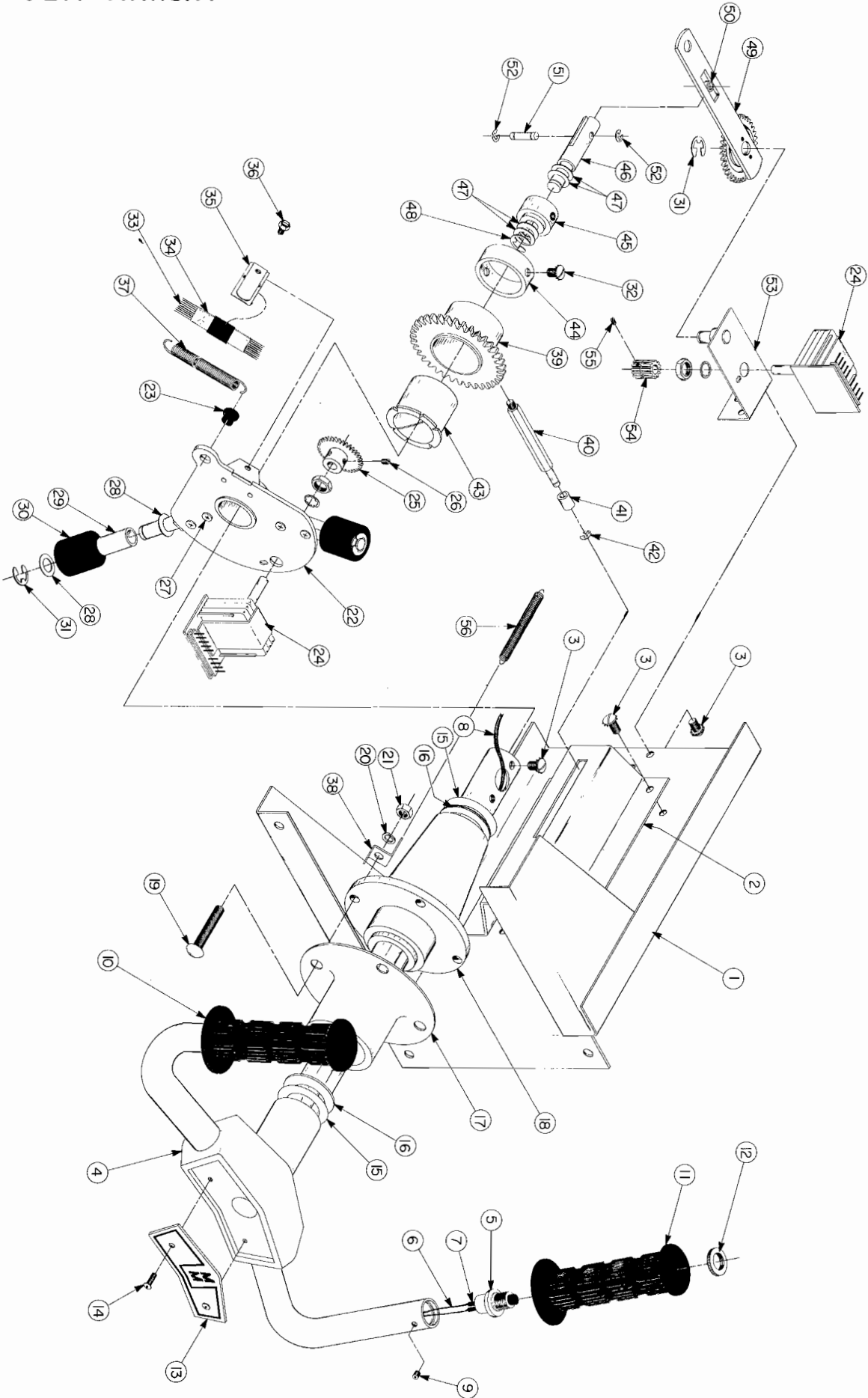


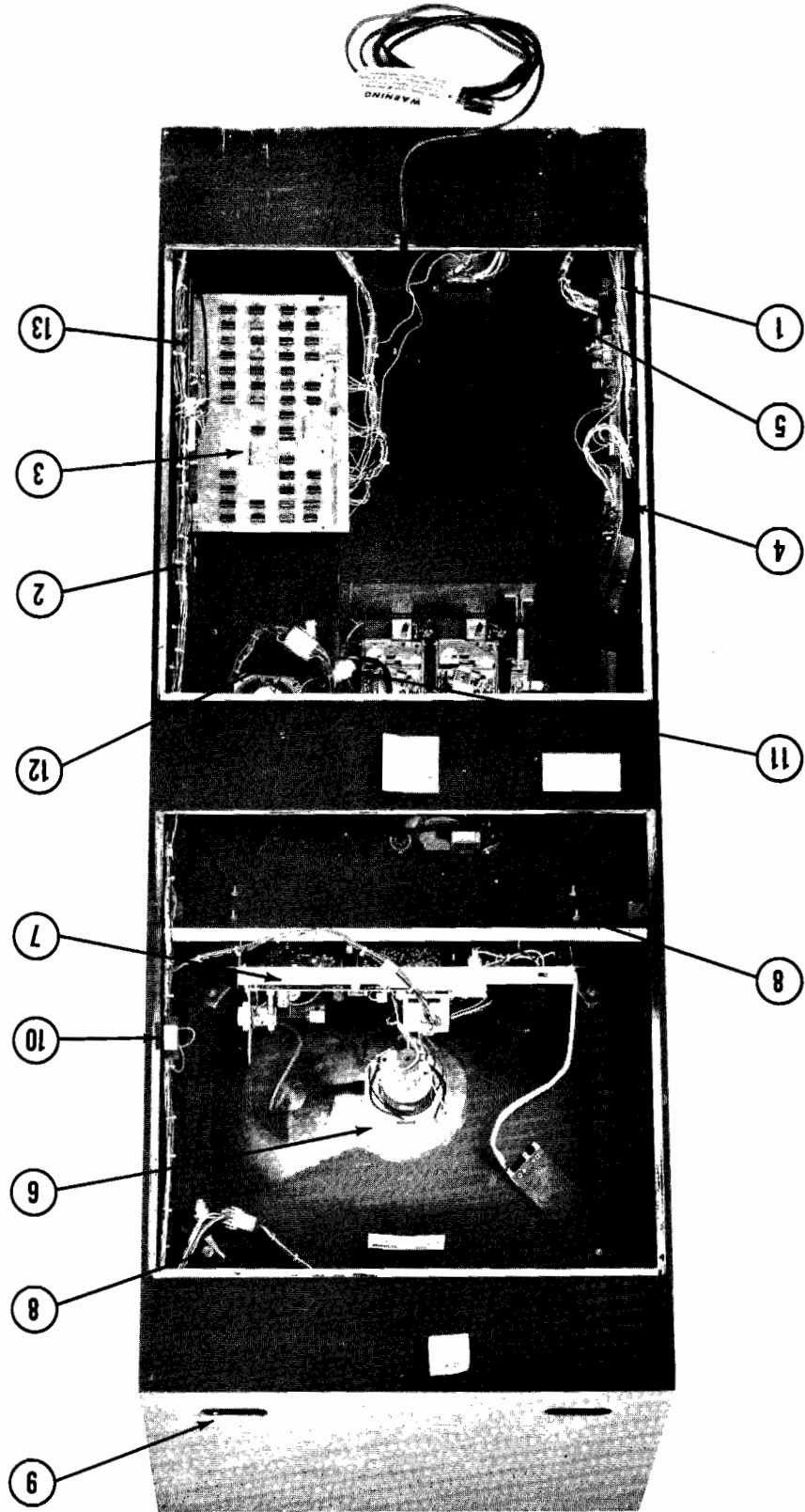
**NOTE:**  
MIDWAY'S BASIC COIN DOOR,  
VARIATIONS ARE DEPENDANT ON  
YOUR PARTICULAR GAME.

**NO. 645 - SPACE ENCOUNTERS - EXPLOSION LIGHT ASSY.**



**NO. 645 -- SPACE ENCOUNTERS -- CONTROL SHELF ASSY.**





NO. 645 - SPACE ENCOUNTERS - BACK PICTURE

During this test mode, you can play the game without the defense ship being hit to check:

- a. Coin switch
- b. Trigger switch
- c. Score and bonus
- d. All sounds (except defense ship hit)
- e. Defense ship travel
- f. Reset switches (5) and (6)

### VOLTAGE CONTROL POTS

Located on Power Supply Board (P.C. A084-91324-F645) and are preset at the factory. These pots should not be tampered with unless the distributor service department is contacted.

### VOLUME CONTROL

Located on sound board (P.C. A084-91324-0645) controls the volume of all sounds and may be varied as desired by rotating pot control.

### STROBE LITE ASSEMBLY

Located on top shelf of game. Before servicing this unit, turn off game and wait three (3) minutes to avoid shock.

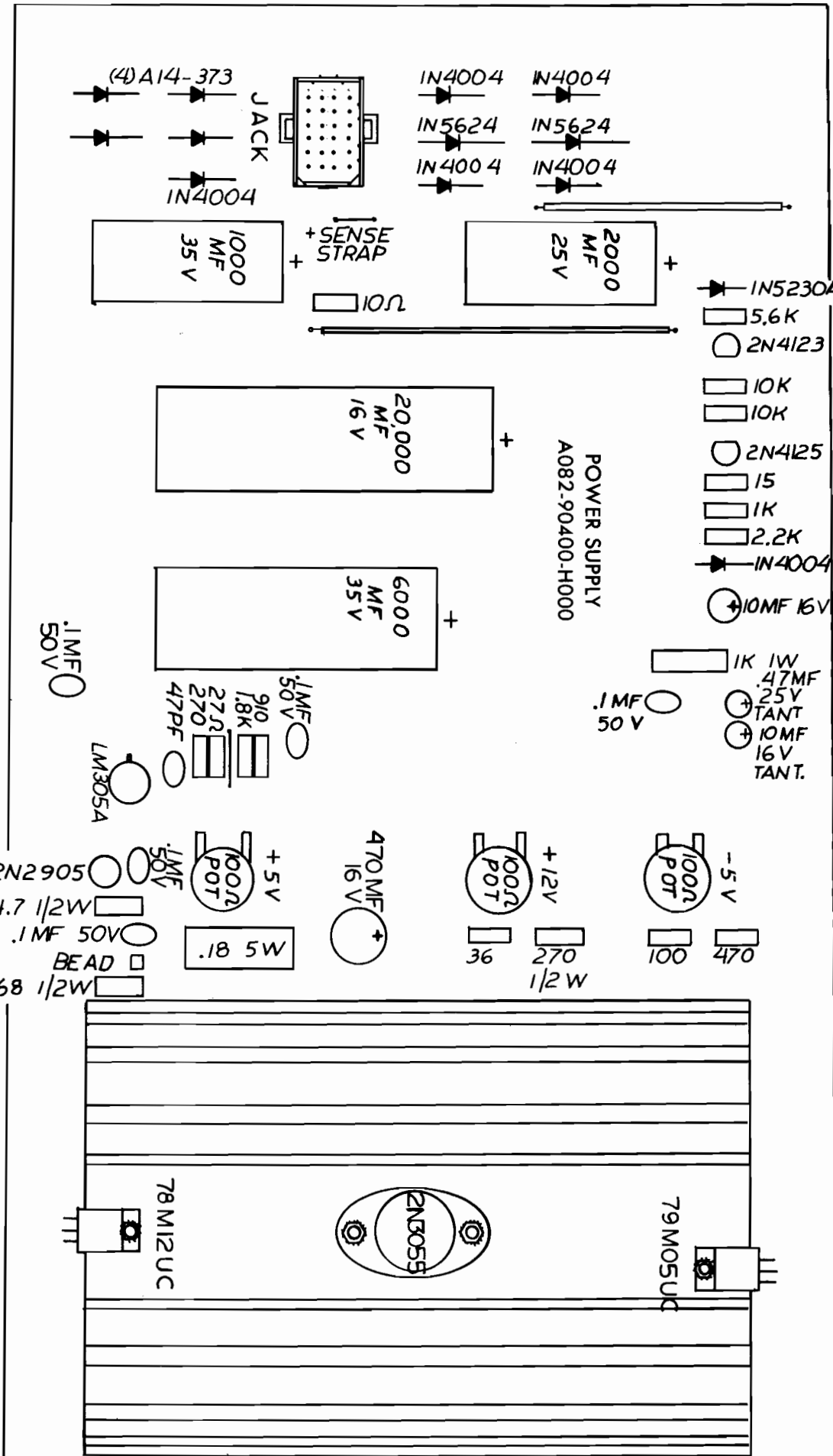
### CLEANING OF PICTURE TUBE, GLASS & PLEXI

1. Remove control panel.
2. Remove screws at bottom of plastic viewing bezel. Remove bezel.
3. Remove two (2) brackets holding the clear front glass and lift out.
4. Remove two (2) brackets from bottom of interior shelf to lower screened plexi-glass for cleaning.

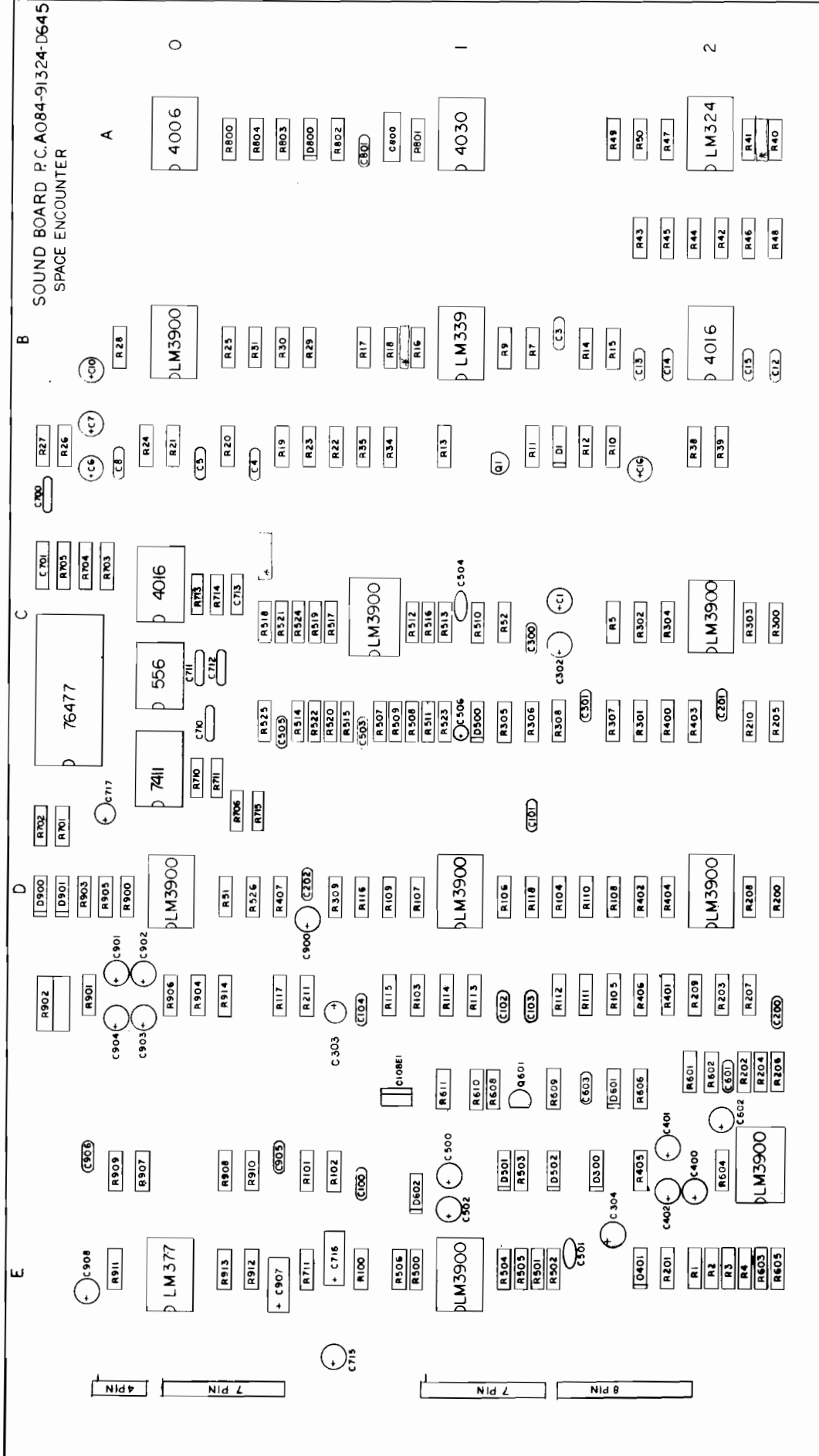
ELECTRICAL BULLETIN: FOR ALL APPARATUS COVERED BY THE CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD C22.2 NO. 1, WHICH EMPLOYS A SUPPLY CORD TERMINATED WITH A POLARIZED 2-PRONG ATTACHMENT PLUG.

**CAUTION:** TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

**ATTENTION:** POUR PREVENIR LES CHOCs ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRIE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.



SOUND BOARD P.C.A084-91324-D645  
SPACE ENCOUNTER

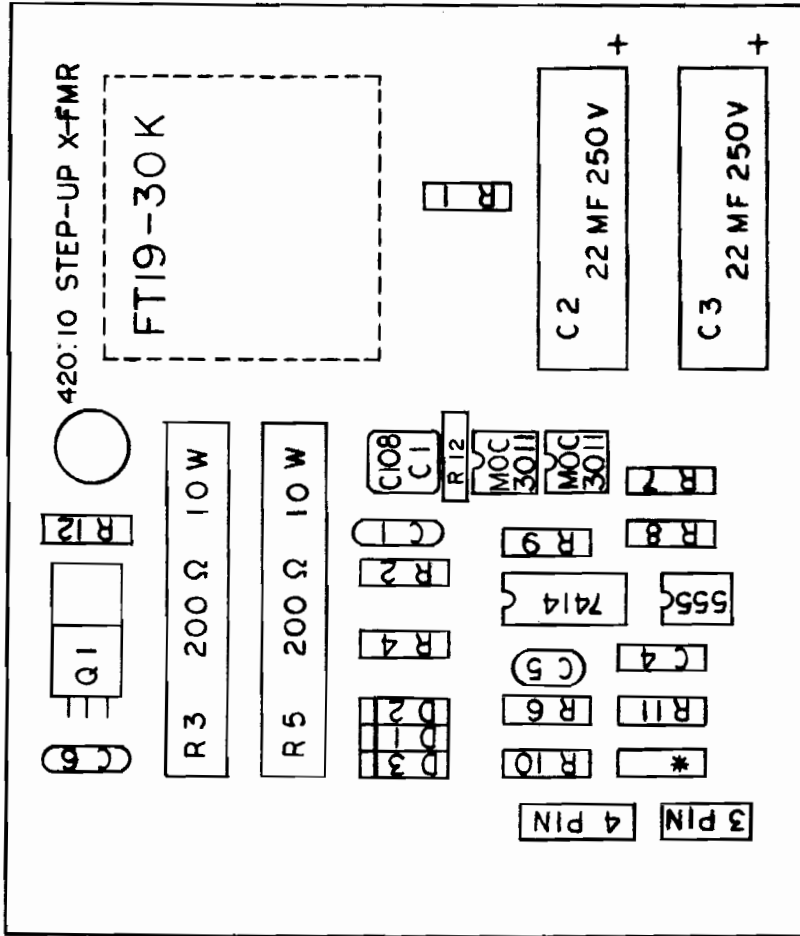


RRC LAYOUT PART NO. M051-00645 - A006



**NOTE**

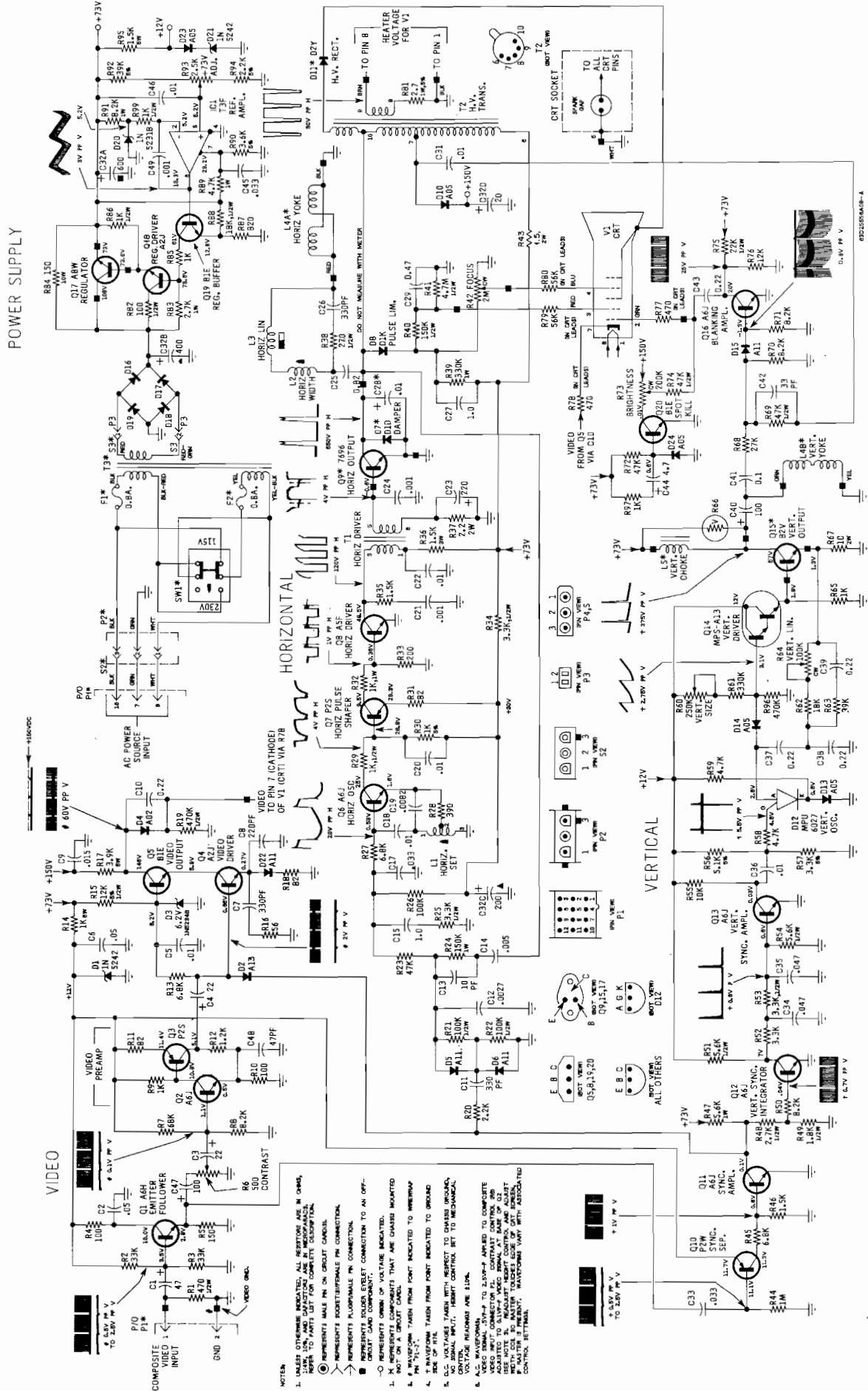
- D 1 2 3 IN 4004
- \* .1 MF AX. CER.
- C 1 0.1 MF 200V MYLAR
- C 4 .01 MF AX. CER.
- C 5 .1 MF 100V MYLAR
- C 6 0.01 MF 250V MYLAR
- R 1 1 M
- R 2 10 K
- R 4 180 K
- R 6 820 Ω
- R 7 220 Ω
- R 8 1.6 M
- R 9 1 K
- R 10 330 Ω
- R 11 220 Ω
- R 12 180 Ω
- Q 1 SC141 D



REVISIONS	

USED ONSPACE ENCOUNTER		<b>MIDWAY MFG. CO.</b>	
NO. REQ'D 1 PER		FRANKLIN PK. ILL.	
ASSEMBLY DRAWING		PART NO.	
STROBE AND LIGHT P.C.		A084-91359-B645	
DO NOT SCALE DWG.	HEAT TREAT	MAT'L.	FINISH
DIM. TOLERANCES UNLESS SPECIFIED	SCALE	DRN. <i>Q.V.</i>	DATE 7/3/80
CONCENTRICITY T.I.R. .003		CKD.	
FRACTIONAL ± 1/64			
DECIMAL ± .005			
HOLE DIA. ± .002-.000			

POWER SUPPLY



M5000-155, M7000-155 - Diagram Schematic

**REPLACEMENT PARTS LIST**

REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
R-63	6S121301	1000 10% 1/2W			
R-64	17S10130C91	10 10% 1/2W (special)	E-1	50V25008A22 65S139451	SPEAKER: 4" PM; inclc D22 LAMP: No. 1436
R-66	6S129064	4700 10% 1W			
R-67	6S122848	18K 10% 1/2W			
R-68	6S124797	150 10% 1/2W			
R-69	17S647132	1200 10% 5W WW (Use 17S136197)			
R-71	6S119926	2700 10% 1/2W			
R-72	6S124551	15K 10% 1/2W		9D66133A28	CAP, SS Rect (HV Transformer - PRI/SEC lead)
R-73	6S129875	2200 10% 1/2W			
R-75	6S121301	1000 10% 1/2W		42B25158A01 31D70080B04	CLAMP, Metal : Defl Yoke Mtg CONNECTOR, PC panel: 9 contact; on chassis
R-76	6S124506	3300 10% 1/2W			
R-77	6S129221	100 10% 1/2W	S-2	*15S10390A06	CONNECTOR, PC panel: 12 contact; less key and contacts (power-audio panel)
R-78	6S127005	5600 10% 1/2W	P-1	*15S10183A69	CONNECTOR, Plug: 12 contact; less contacts (power)
R-79	17S135589	150 10% 10W WW			
R-81	6C66263A08	VARISTOR (Use 6S66263A16)			
R-86	6S127099	220 10% 1/2W			
R-88	6S121301	1000 10% 1/2W			
R-89	---	Part of CRT Socket		*39S10184A63	CONTACT, Plug: for power connector 15S10183A69
R-90	6S131412	56 10% 1/2W			
R-91	6S10053C39	1800 5% 1/2W		39S10184A22	CONTACT: for S2 connector
R-92	6S10053C57	10K 5% 1/2W		15S10630A01	COVER, nylon: slide switch; SW1
R-95	6S125568	22K 10% 1/2W		*7S10609A03	GROMMET, Plastic: PC panel mtg
R-96	6S125568	22K 10% 1/2W		26C66745A05	HEAT SINK: Q3
R-97	6S121847	4700 10% 1/2W		*26C25198A01	HEAT SINK: Q20
R-98	6S127099	220 10% 1/2W		9C66238A02	HOLDER, Fuse: F1 & F2
R-99	6S128226	120 10% 1/2W		14A562353	INSULATOR, Mica: Transistor socket; Q9, Q13, Q16 & Q20 (Use 14A543810)
<b>SWITCHES</b>					
SW-1	40S10624A01	SWITCH, Slide: DPDT (115V-230V)		28S10733A01 2S7051	KEY, Plug: for S2 connector
<b>TRANSFORMERS</b>					
T-1	25D67440A03	HORIZ DRIVER		5S10281A03	NUT, hex: 3/8-32; control mtg
T-2	24D69791A21	H. V. TRANSFORMER: complete		47C66082A03	RIVET, drive pin: nylon; HV transf mtg
T-3	25D65840A22	VERT OUTPUT (Use 25D65840B23)		3S136050	ROD, Adjustment: width coil; L4
T-4	*25D68164A31	POWER			SCREW, tpg: 6-20 x 1/2 clu pan hd; Q9, Q13, Q16 & Q20
<b>MISCELLANEOUS ELECTRICAL PARTS</b>					
V-1	20WP4 23JEP4	CRT (XM501-10 19VP111) CRT (XM701-10 23VP111)		9S10143A41 9D67555V27 *9D25201A01	SOCKET, lamp: E1 SOCKET, CRT: inclc leads & resistors SOCKET, HV Rectifier (4): complete; inclc 2nd anode lead & cup
				9C63825A01 9C63825A02 41D65987A01 66P65173A47	SOCKET, transistor: Q9, Q13, Q16 SOCKET, transistor: Q20 SPRING, special: CRT aquadag grnd TOOL, contact removal (S2 connector)
* DENOTES NEW ITEM APPEARING ON ANY LIST FOR FIRST TIME.					

**MOTOROLA PARTS DEPT.  
MOTOROLA INC.  
1155 HARVESTER RD.  
WEST CHICAGO, IL 60185  
PHONE (312) 231-4400**

## SPACE ENCOUNTERS

### GAME LOGIC BOARD [PC - A084 - 90700 - A905]

CHIP NUMBER	FUNCTION
7400	Quad two input Nand
7402	Quad two input Nor
7404	Hex inverter
74LS08	Quad two input And
7417	Hex Buffer
7438	Quad two input Nand Buffer
7442	BCD-Decimal Decoder
7474	Dual "D" Type Flip - Flop
7483	4 Bit Binary Adder
74S89	64 Bit Ram
74109	Dual "JK" Flip Flop
74LS138	3 to 8 line Decoder Multiplexer
74LS153	Dual 4 to 1 line Multiplexer
74157	Quad 2 to 1 line Multiplexer
74161	4 Bit Binary Counter
74174	Hex "D" Type Flip Flop
74175	Quad "D" Type Flip Flop
74191	Binary up - down Counter
74S201	256 Bit Ram
27LS00	256 Bit Ram
74LS298	Quad 2 input Multiplexer

#### ADDITIONAL DEVICES

ADDITIONAL DEVICES	FUNCTION
2N4401	Transistor
TIP-110	Transistor
1N4004	Diode
1N4148	Diode

### STROBE AND LIGHT UNIT [PC A084 - 91359]

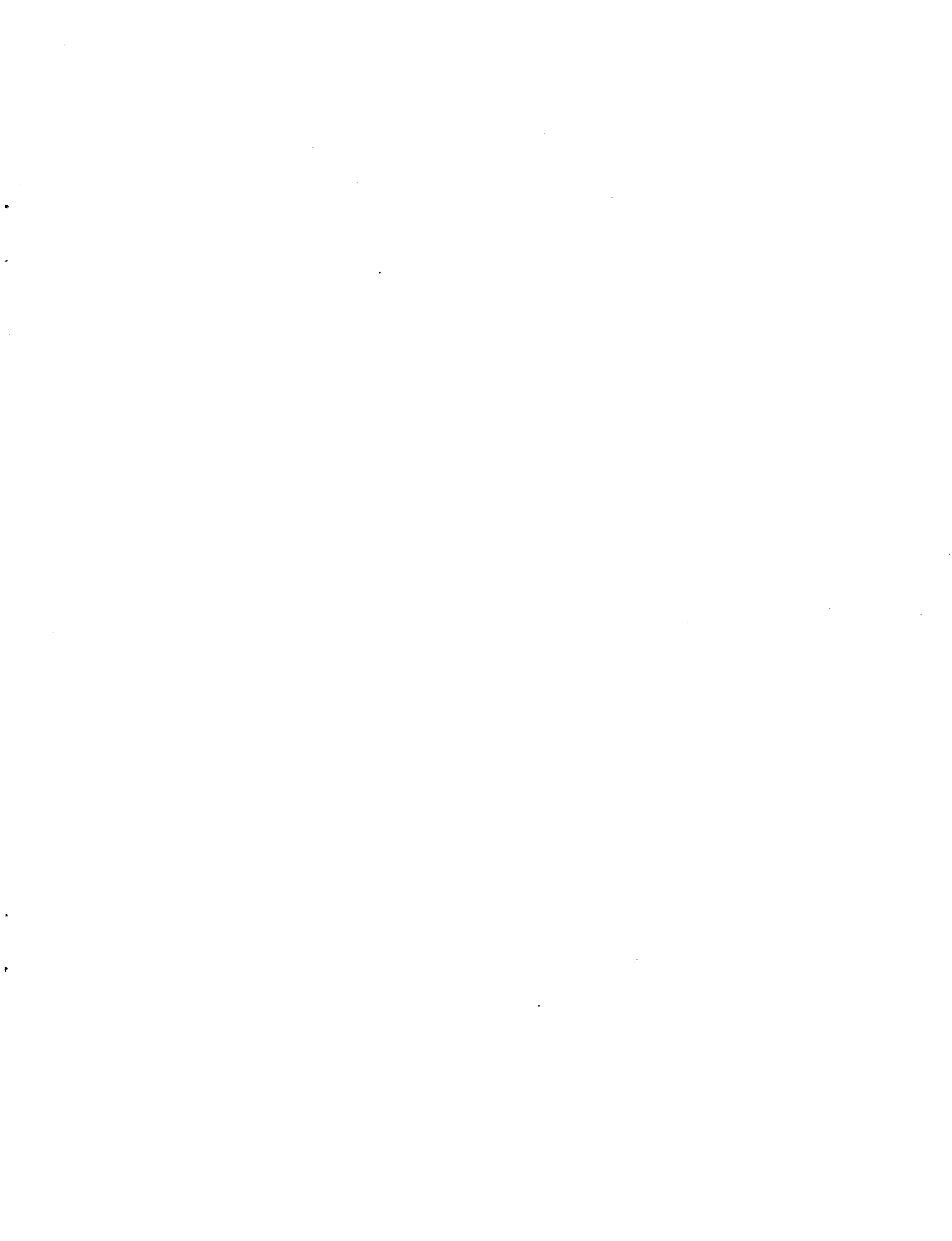
DEVICES	FUNCTION
MDC3011	Opto - Isolator
SC141D	Triac
7414	Hex Schmitt Trigger
555	Timer
FT19 - 30K	Strobe Light Assembly
C108C1	SCR
1N4004	Diode

### SOUND GENERATOR [PC A084 - 91324 - F - 645]

CHIP NUMBER	FUNCTION
4006	18 Bit Shift Register
4016	Quad Electronic Switch
4030	Quad Exclusive OR
LM324	Quad OP. Amp.
LM339	Quad Voltage Comparator
LM377	Dual Audio Amp.
556	Dual Timer
76477	Sound Generator
7411	3 Input And
2N4871	Unijunction Transistor

#### ADDITIONAL DEVICES

ADDITIONAL DEVICES	FUNCTION
C108B1	SCR
MPSA20	Transistor
TIP-32	Transistor



This space is provided for personal notes

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# NOTES

REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
1Y25017A01	K1364LM	MONITOR PANEL: complete:	L.1	24D68822A08	HORIZ SET
1Y25017A02	K1365LM	POWER, Audio: Panel: complete:	L.2	24D69163A18	COMPENSATING: 2000 uh
			L.3	24D68801A67	HORIZ LINEARITY
			L.4	24V2500A74	HORIZ WIDTH: incl: C42 & R68
			L.5	24D68523A15	DEFLECTION YOKE
<b>ELECTRICAL PARTS</b>					
C-1	23C65282A41	50 mF 50V Lytic	Q-1	48S137171	1st VIDEO: A6H
C-2	23C65282A41	50 mF 50V Lytic	Q-2	48S137127	2nd VIDEO: P2S
C-3	21S180D10	220 pF 20% 100V X5F (Use 21R132503)	Q-3	48S134919	VIDEO OUTPUT: A1M
C-4	23C65282A41	50 mF 50V Lytic	Q-4	48S137317	VIDEO DRIVER: A8H
C-5	21S180B98	180 pF 10% 500V X5F	Q-5	48S137115	SYNC SEPARATOR: A5U
C-6	23S10255A78	470 mF 10% 160V Lytic	Q-6	48S137172	HORIZ OSCILLATOR: A6J
C-7	21S180C01	680 pF 10% 500V X5F	Q-6	48S137172	HORIZ OSCILLATOR: A6J
C-8	21S180B85	560 pF 10% 500V X5F	Q-7	48S137127	HORIZ PULSE SHAPER: P2S
C-10	8S10191A87	22 mF 10% 250V Polyester	Q-8	48S137093	HORIZ DRIVER: A5F
C-11	8S10191A54	0.068 mF 10% 160V Polyester	Q-9	48S137203	HORIZ OUTPUT: A6Z
C-12	21S180D10	220 pF 20% 100V X5F (Use 21R132503)	Q-10	48S137173	VERT OSCILLATOR (1): P2W
C-13	21S131625	330 pF 10% X5F	Q-11	48S137171	VERT OSCILLATOR (2): A6H
C-15	21S180C41	0.027 mF 10% 500V Z5F (Use 21R121699)	Q-12	48S137115	VERT DRIVER: A5U
C-16	23S10229A07	1.0 mF +40-20% 15V Lytic	Q-13	48S134900	VERT OUTPUT: A1C
C-17	8S10191B90	0.03 mF 10% 160V Polyester	Q-14	48S134952	REGULATOR DRIVER: A2J
C-18	8S10299A73	0.1 mF 10% 100V Poly carb	Q-15	48S137315	REFERENCE AMP: A8G
C-19	8S10299A74	0.082 mF 10% 160V Poly carb	Q-16	48S137368	REGULATOR: A8W
C-20	8S10191B98	0.1 mF 10% 250V Polyester	Q-17	48S137172	AUDIO DRIVER: A6J
C-21	21S180B81	0.01 mF 10% 500V X5F	Q-18	48S137168	AUDIO OUTPUT: P2V
C-22	8S10191B98	0.1 mF 10% 250V Polyester	Q-19	48S137169	5V REGULATOR, Driver: A6G
C-23	21S180C02	10 pF 10% N150	Q-20	48S137344	5V REGULATOR: A8U
C-24	23D65282A40	150 mF 10V Lytic	Q-21	48S137476	SPOT KILLER: B1E
C-25	8S10212853	0.01 mF 10% 630V Mtlz Poly			
C-26	8S10212A11	1.0 mF 10% 630V Mtlz Poly			
C-27	8S10571A06	0.1 mF 5% 1200V Poly Prop Foil			
C-28	8S10571A23	0.56 mF 10% 250V Mtlz Prop Foil			
C-30	8S10191A32	0.07 mF 10% 250V Polyester			
C-31	21S180B87	220 pF 10% 500V X5F			
C-32	21S180D34	0.005 mF 20% 1K V Z5F (Use 21S180D31)			
C-33	8S10212A36	0.47 mF 10% 100V Mtlz Poly			
C-34	8S10191B98	0.01 mF 10% 250V Polyester			
C-35	8S10191B98	0.1 mF 10% 250V Polyester			
C-36	23S10255A69	4.7 mF 100V Lytic			
C-37	8S10212A20	2.2 mF 10% 100V Mtlz Poly			
C-38	8S10212A20	2.2 mF 10% 100V Mtlz Poly			
C-39	8S10191B57	1.0 mF 10% 250V Polyester			
C-40	8S10212A10	1.0 mF 10% 100V Mtlz Poly (Use 8S10191A46)			
C-41	8S10064A06	0.1 mF 10% 600V Mylar			
C-42	21S180A71	470 pF 10% 500V X5F			
C-43	23C65807A47	200 mF/125V: 600 mF/50V:			
C-44	21S180E06	40 mF/200V Lytic			
C-47	23C65807A52	5000 mF 20V Lytic			
C-49	23S10255A31	470 mF 40V Lytic			
C-50	23D65282A41	50 mF 50V Lytic			
C-51	23S10255B43	40 mF 100V Lytic			
<b>DIODES &amp; RECTIFIERS</b>					
D-1	48S134928	DIODE, Silicon: D1D; Dampner	D-19	48S129296	Part of CRT socket assembly
D-2	48S134978	DIODE, Silicon: D1K; Pulse Limiter	D-20	48S129296	Part of CRT socket assembly
D-3	48D67120A11	DIODE, Low Power	D-21	48S129296	Part of CRT socket assembly
D-4	48S137114	RECTIFIER, H. V.: Silicon: D2Y	D-22	6S10053C67	Part of CRT socket assembly
D-5	48S191A05	RECTIFIER, Silicon: 91A05 (Use 48S191A07)	D-23	6S127538	470 10% 1/2W
D-6	48S137469	DIODE, Silicon: zener; D7G	D-24	6S127538	27K 5% 1/2W
D-7	48S134917	DIODE, Dual: D1C; Detector	D-25	6S127538	3.3 meg 10% 1/2W
D-8	48S67120A11	DIODE, Low Power	D-26	6S127541	56K 10% 1/2W
D-9	48S191A10	RECTIFIER, Silicon: 91A10	D-27	6S127541	27K 10% 1/2W
D-10	48S191A10	RECTIFIER, Silicon: 91A10	D-28	6S129875	180K 10% 1/2W
D-11	48S101A10	RECTIFIER, Silicon: 91A10	D-29	6S129875	180K 10% 1/2W
D-12	48S101A10	RECTIFIER, Silicon: 91A10	D-30	6S129892	47K 10% 1/2W
D-13	48D67120A11	DIODE, Low Power	D-31	6S125534	100K 10% 1/2W
D-14	48S191A05	RECTIFIER, Silicon: 91A05	D-32	6S125534	3300 10% 1/2W
D-15	48S191A05	RECTIFIER, Silicon: 91A05	D-33	6S125506	6800 5% 1/2W
D-16	48S191A05	RECTIFIER, Silicon: 91A05	D-34	6S125506	3300 10% 1/2W
D-17	48S191A05	RECTIFIER, Silicon: 91A05	D-35	6S125506	3300 10% 1/2W
D-18	48S191A05	RECTIFIER, Silicon: 91A05	D-36	6S125545	56K 10% 1/2W
D-19	48D67120A11	DIODE, Low Power	D-37	6S125545	56K 10% 1/2W
D-20	48S10641D43	DIODE, Silicon: D4.3	D-38	6S10053C33	1000 5% 1/2W
D-21	48D67120A11	DIODE, Low Power	D-39	6S127516	82 10% 1/2W
D-22	48S191A05	RECTIFIER, Silicon: 91A05	D-40	6S127547	1000 10% 1W
D-23	48S191A05	RECTIFIER, Silicon: 91A05	D-41	6S127099	220 10% 1/2W
D-24	48S191A05	RECTIFIER, Silicon: 91A05	D-42	6S127513	1500 10% 1/2W
D-25	48S191A05	RECTIFIER, Silicon: 91A05	D-43	17S10130B07	1500 10% 3W fxd mt film
D-26	48S191A05	RECTIFIER, Silicon: 91A05	D-44	17S744356	2.2 10% 2W WW
D-27	48S191A05	RECTIFIER, Silicon: 91A05	D-45	6S120141	150K 10% 1W
D-28	48D67120A11	DIODE, Low Power	D-46	6S127634	33K 10% 1W
D-29	48S10641D43	DIODE, Silicon: D4.3	D-47	6S128229	680K 10% 1/2W
D-30	48D67120A11	DIODE, Low Power	D-48	6S10053C21	4.7 meg 10% 1/2W
D-31	48D67120A11	DIODE, Low Power	D-49	6S124797	150 10% 1/2W
D-32	48S191A07	RECTIFIER, Silicon: 91A07	D-50	6S10053C45	3300 5% 1/2W
D-33	48S191A07	RECTIFIER, Silicon: 91A07	D-51	6S124506	3300 10% 1/2W
D-34	48S191A07	RECTIFIER, Silicon: 91A07	D-52	6S129874	68 10% 1/2W
D-35	48S191A07	RECTIFIER, Silicon: 91A07	D-53	6S131972	39 10% 1/2W
D-36	48S191A07	RECTIFIER, Silicon: 91A07	D-54	6S10053C65	22K 5% 1/2W
D-37	48S191A07	RECTIFIER, Silicon: 91A07	D-55	6S125535	39K 10% 1/2W
D-38	48S191A07	RECTIFIER, Silicon: 91A07	D-56	6S125535	39K 10% 1/2W
D-39	48S191A07	RECTIFIER, Silicon: 91A07	D-57	6S124506	3300 10% 1/2W
D-40	48S191A07	RECTIFIER, Silicon: 91A07	D-58	6S129793	82K 5% 1/2W
D-41	48S191A07	RECTIFIER, Silicon: 91A07	D-59	6S124506	3300 10% 1/2W
D-42	48S191A07	RECTIFIER, Silicon: 91A07	D-60	6S129875	2200 10% 1/2W
D-43	48S191A07	RECTIFIER, Silicon: 91A07	D-61	6S10053F29	820 10% 1W
D-44	48S191A07	RECTIFIER, Silicon: 91A07	D-62	6S127515	3900 10% 1/2W
<b>FUSES</b>					
F-1	65S139424	FUSE: 1A-250V			
F-2	65S139424	FUSE: 1A-250V			
<b>INTEGRATED CIRCUITS</b>					
IC-1	51S10732A01	INTEGRATED CIRCUIT: T3F			
<b>COLS &amp; CHOKES</b>					
L.1	24D68822A08	HORIZ SET			
L.2	24D68801A67	COMPENSATING: 2000 uh			
L.3	24D69163A18	HORIZ LINEARITY			
L.4	24V2500A74	HORIZ WIDTH: incl: C42 & R68			
L.5	24D68523A15	DEFLECTION YOKE			
<b>TRANSISTORS</b>					
Q-1	48S137171	1st VIDEO: A6H			
Q-2	48S137127	2nd VIDEO: P2S			
Q-3	48S134919	VIDEO OUTPUT: A1M			
Q-4	48S137317	VIDEO DRIVER: A8H			
Q-5	48S137115	SYNC SEPARATOR: A5U			
Q-6	48S137172	HORIZ OSCILLATOR: A6J			
Q-7	48S137127	HORIZ PULSE SHAPER: P2S			
Q-8	48S137093	HORIZ DRIVER: A5F			
Q-9	48S137203	HORIZ OUTPUT: A6Z			
Q-10	48S137173	VERT OSCILLATOR (1): P2W			
Q-11	48S137171	VERT OSCILLATOR (2): A6H			
Q-12	48S137115	VERT DRIVER: A5U			
Q-13	48S134900	VERT OUTPUT: A1C			
Q-14	48S134952	REGULATOR DRIVER: A2J			
Q-15	48S137315	REFERENCE AMP: A8G			
Q-16	48S137368	REGULATOR: A8W			
Q-17	48S137172	AUDIO DRIVER: A6J			
Q-18	48S137168	AUDIO OUTPUT: P2V			
Q-19	48S137169	5V REGULATOR, Driver: A6G			
Q-20	48S137344	5V REGULATOR: A8U			
Q-21	48S137476	SPOT KILLER: B1E			
<b>CONTROLS</b>					
R-1	6S127633	470 10% 1/2W			
R-2	6S125568	22K 10% 1/2W			
R-3	6S127541	56K 10% 1/2W			
R-4	6S127633	470 10% 1/2W			
R-6	6S128955	1500 10% 1W			
R-7	6S121847	4700 10% 1/2W			
R-8	6S122445	1800 10% 1/2W			
R-9	6S119926	2700 10% 1/2W			
R-11	6S128226	120 10% 1/2W			
R-12	6S128226	120 10% 1/2W			
R-13	6S127633	470 10% 1/2W			
R-14	6S124797	150 10% 1/2W			
R-15	6S127516	82 10% 1/2W			
R-18	6S127516	82 10% 1/2W			
R-19	6S129296	Part of CRT socket assembly			
R-20	6S129296	Part of CRT socket assembly			
R-21	6S129296	Part of CRT socket assembly			
R-22	6S10053C67	27K 5% 1/2W			
R-23	6S127538	3.3 meg 10% 1/2W			
R-24	6S127538	27K 5% 1/2W			
R-25	6S121300	56K 10% 1/2W			
R-26	6S127541	27K 10% 1/2W			
R-27	6S129875	180K 10% 1/2W			
R-28	6S129875	180K 10% 1/2W			
R-29	6S125531	180K 10% 1/2W			
R-30	6S125892	47K 10% 1/2W			
R-31	6S125534	100K 10% 1/2W			
R-32	6S125506	3300 10% 1/2W			
R-33	6S10053C53	6800 5% 1/2W			
R-35	6S127541	56K 10% 1/2W			
R-36	6S125545	56K 10% 1/2W			
R-37	6S121301	1000 10% 1/2W			
R-38	6S10053C33	1000 5% 1/2W			
R-39	6S127516	82 10% 1/2W			
R-40	6S127547	1000 10% 1W			
R-41	6S127099	220 10% 1/2W			
R-42	6S127513	1500 10% 1/2W			
R-43	17S10130B07	1500 10% 3W fxd mt film			
R-44	17S744356	2.2 10% 2W WW			
R-45	6				

# NOTES

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This space is provided for personal notes







**SWITCH ADJUSTMENTS**

<b>BONUS AT</b>		
	SW. 1	SW. 2
2000, 4000, 8000 PTS.	ON	ON
3000, 6000, 12000 PTS.	OFF	ON
4000, 8000, 16000 PTS.	ON	OFF
5000, 10000, 20000 PTS.	OFF	OFF

<b>METHOD OF PLAY</b>		
	SW. 3	SW. 4
1 COIN – 1 PLAY	ON	ON
2 COINS – 1 PLAY	OFF	ON
1 COIN – 3 PLAYS	ON	OFF
2 COINS – 3 PLAYS	OFF	OFF

	SW. 5	SW. 6
BONUS	ON	ON
NO BONUS	OFF	OFF
CROSS HATCH	ON	OFF
RAM-ROM TEST	OFF	ON
ENCODER ALIGNMENT		

<b>TIME OF PLAY</b>		
	SW. 7	SW. 8
45 SECONDS	ON	ON
60 SECONDS	OFF	ON
75 SECONDS	ON	OFF
90 SECONDS	OFF	OFF

M051-00645-A012

NO. 645 - SPACE ENCOUNTERS - CONTROL SHELF ASSY.

*ORDER BY PART NUMBER ONLY*

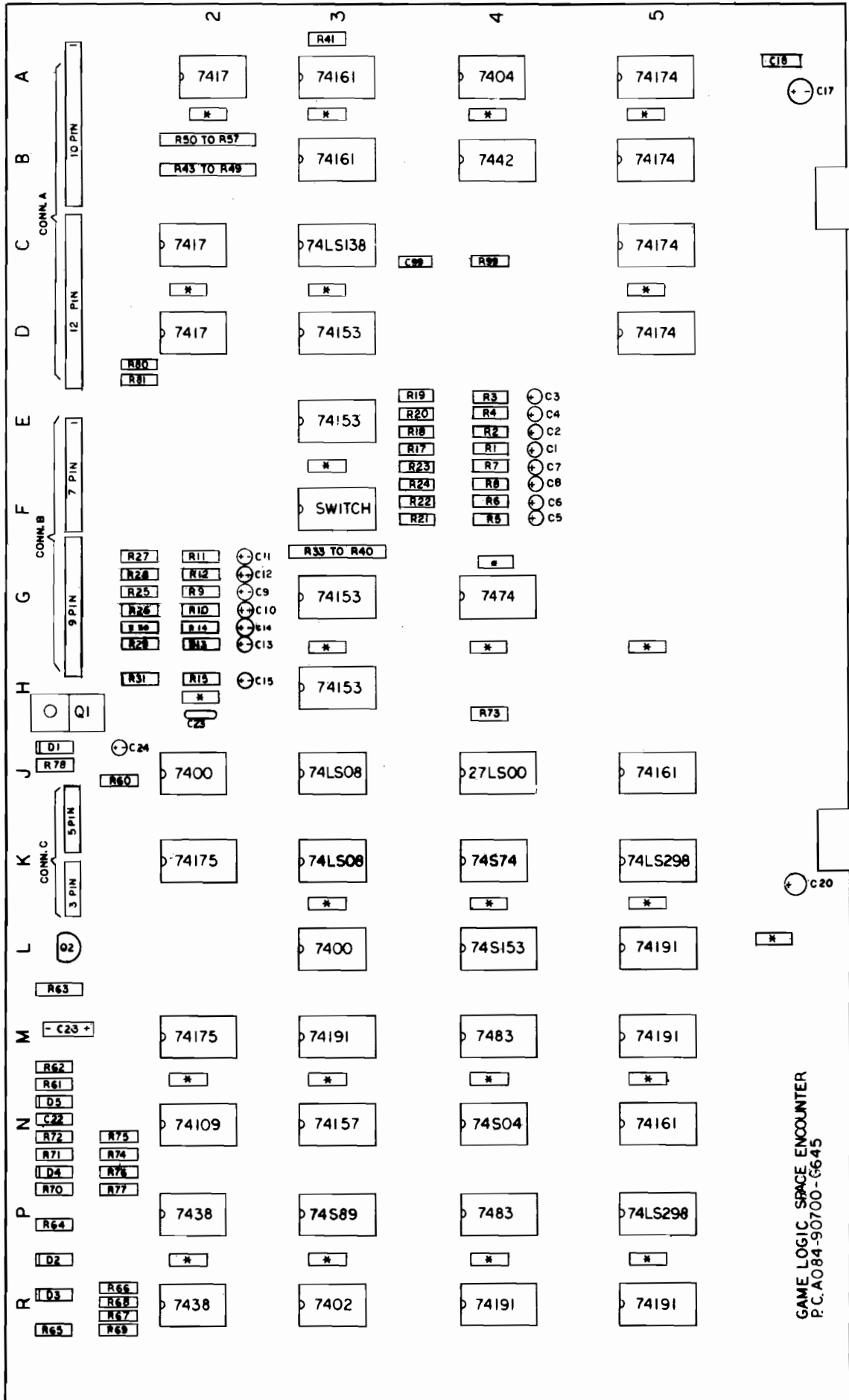
ITEM	PART NO	DESCRIPTION
1	A645-00006-00XF	BASE & BRACE ASSY.
2	0645-00106-00XF	STOP BRKT.
3	0017-00101-0652	#10-32 3/8 SLOT PAN HD. S.M.S. (9 REQ'D.)
4	A645-00011-0000	BASE - TUBE & HANDLE ASSY.
5	0017-00032-0004	SWITCH
6	0017-00033-0334	CABLE - 2 LEAD
7	M033-00100-0001	SHRINK TUBING (2 REQ'D.)
8	0010-00225-0200	CABLE GUARD
9	0017-00101-0307	#8-32 x 1/8 SETSCREW (2 REQ'D.)
10	0017-00009-0443	GRIP
11	0645-00917-0000	GRIP
12	0017-00021-0009	15/32-32 ROUND NUT
13	0645-00912-0000	CONTROL INSERT
14	0017-00101-0116	#10-32 x 1/4 TAMPER PROOF SCREW (2 REQ'D.)
15	0017-00041-0617	RING - NEOPRENE (2 REQ'D.)
16	0645-00913-0000	WASHER - FRICTION (2 REQ'D.)
17	0645-00905-0000	SHROUD
18	A645-00012-0000	PEDESTAL ASSY.
19	0017-00102-0019	1/4-20 x 1-1/2 CARRIAGE BOLT (4 REQ'D.)
20	0017-00104-0005	1/4 SPLIT LOCK WASHER (4 REQ'D.)
21	0017-00103-0018	1/4-20 HEX NUT (4 REQ'D.)
22	A645-00008-00XF	STOP PLATE & HUB ASSY.
23	0017-00042-0016	SNAP BUSHING
24	A082-91101-B000	ENCODER (2 REQ'D.)
25	A645-00024-0000	GEAR & BUSHING ASSY.
26	0017-00101-0309	#8-32 x 1/4 SET SCREW (2 REQ'D.)
27	0017-00101-0658	#10-32 x 5/8 PHIL. PAN HD. SCREW (4 REQ'D.)
28	0017-00104-0032	FLAT WASHER (4 REQ'D.)
29	0645-00906-0000	BEARING (2 REQ'D.)
30	0645-00907-0000	RUBBER ROLLER (2 REQ'D.)
31	0017-00100-0031	E-RING (3 REQ'D.)
32	0017-00101-0652	#10-32 x 3/8 SLOT. PAN HD. SCREW (2 REQ'D.)
33	0017-00033-0329	CABLE ASSY.
34	0645-00915-0000	INSULATOR STRIP
35	A645-00039-0000	CLAMP BRKT. & SPRING PLT. ASSY.
36	0017-00101-0598	#8-32 x 5/16 SLOT HEX HD. SCREW
37	0010-00597-0000	SPRING
38	0645-00117-00XF	"Z" - BRKT.
39	A645-00007-0000	GEAR & BUSHING ASSY.

NO. 645 – SPACE ENCOUNTERS – FRONT DOOR ASSY.

*ORDER BY PART NUMBER ONLY*

ITEM	PART NO	DESCRIPTION
1	0090-00902-0000 0090-00902-0100	DRESS PLATE DRESS PLATE (W/O PRESS BUTTON TO START GAME)
2	0017-00101-0552	#6-32 x 1/4 CARRIAGE BOLT (2)
3	0090-00117-03XF	COIN ENTRY PLATE (25¢)
4	0090-00906-0000	PLASTIC START BUTTON
5	0010-00007-0000	COMPRESSION SPRING
6	0090-00013-0200	DOOR ASSY. DOUBLE ENTRY
7	0017-00005-0050	DOOR LOCK & KEY WITH SCREW & NUT
8	0090-00002-02BR	DOUBLE DOOR FRAME
9	0017-00005-0041	421 N.S. CAM
10	0090-00901-0000	DOOR SWITCH
11	0090-00126-01XF	SWITCH BACKUP PLATE
12	0017-00101-0528	#5-40 x 3/4" LNG. M.S.
13	0090-00903-0040	25¢ WINDOW
14	0090-00143-0000	COIN PLEX RETAINER
15	0017-00104-0002	SPLIT LOCK WASHER
16	0017-00007-0019	KEY HOOK
17	0017-00103-0005	#6-32 HEX NUT
18	0090-00010-0000	SW. PLATE & OILLITE ASSY.
19	0017-00100-0018	"E" RING
20	0090-00131-0000	SWITCH
21	0090-00104-0000	TOP & BTM. COIN CHUT W/BRKT. ASSY.
22	0017-00101-0598	#8-32 x 5/16 SCREW
23	0010-00181-0100	SPRING
24	0090-00129-00XF	PIVOT POST
25	0010-00134-0000	SPRING
26	0090-00008-0000	ACCEPTOR FRAME ASSY.
27	0093-00155-00XF	REJECTOR LEVER
28	0017-00100-0012	"E" RING
29	0093-00151-00XF	COIN GUIDE MTG. BRACKET
30	0090-00005-0000	COIN GUIDE ASSY.
31	0017-00101-0555	#6-32 x 5/16 SCREW
32	0017-00005-0039	COIN SWITCH
33	0010-00557-2500	TRIP WIRE
34	0017-00007-0132	PUSH-ON RING (BIK)
35	0017-00101-0507	#4-36 x 3/4 SCREW
36	0090-00128-00XF A090-00061-0000  A090-00064-0000	SWITCH BRKT. - DOOR TILT ANTI-STRING DEVICE ASSY. - OPTIONAL (REPLACES ITEM 30) ANTI-PENNY DEVICE ASSY.

RRC LAYOUT PART NO. M05I-00645-A003



\* INDICATES 0.1MF 50V AXIAL LEAD CERAMIC CAP.

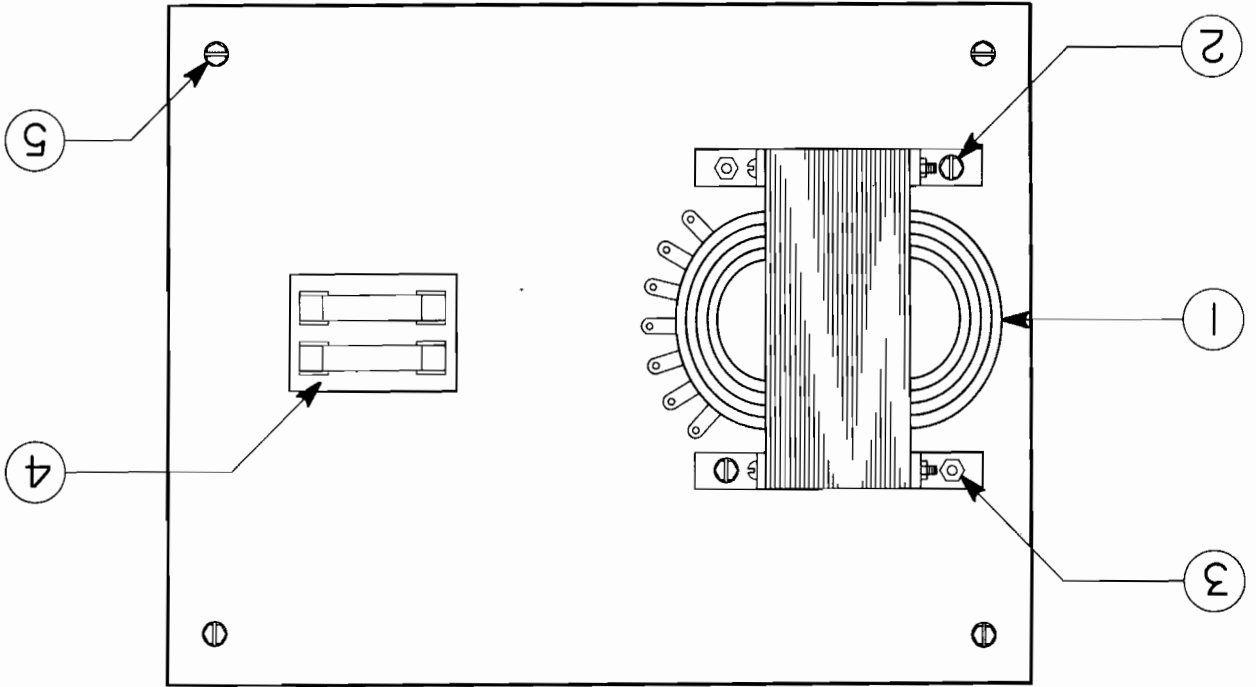
GAME LOGIC SPACE ENCOUNTER  
P.C.A084-90700-6645

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# NOTES

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



**NO. 645 - SPACE ENCOUNTERS - TRANSFORMER BOARD ASSY.**

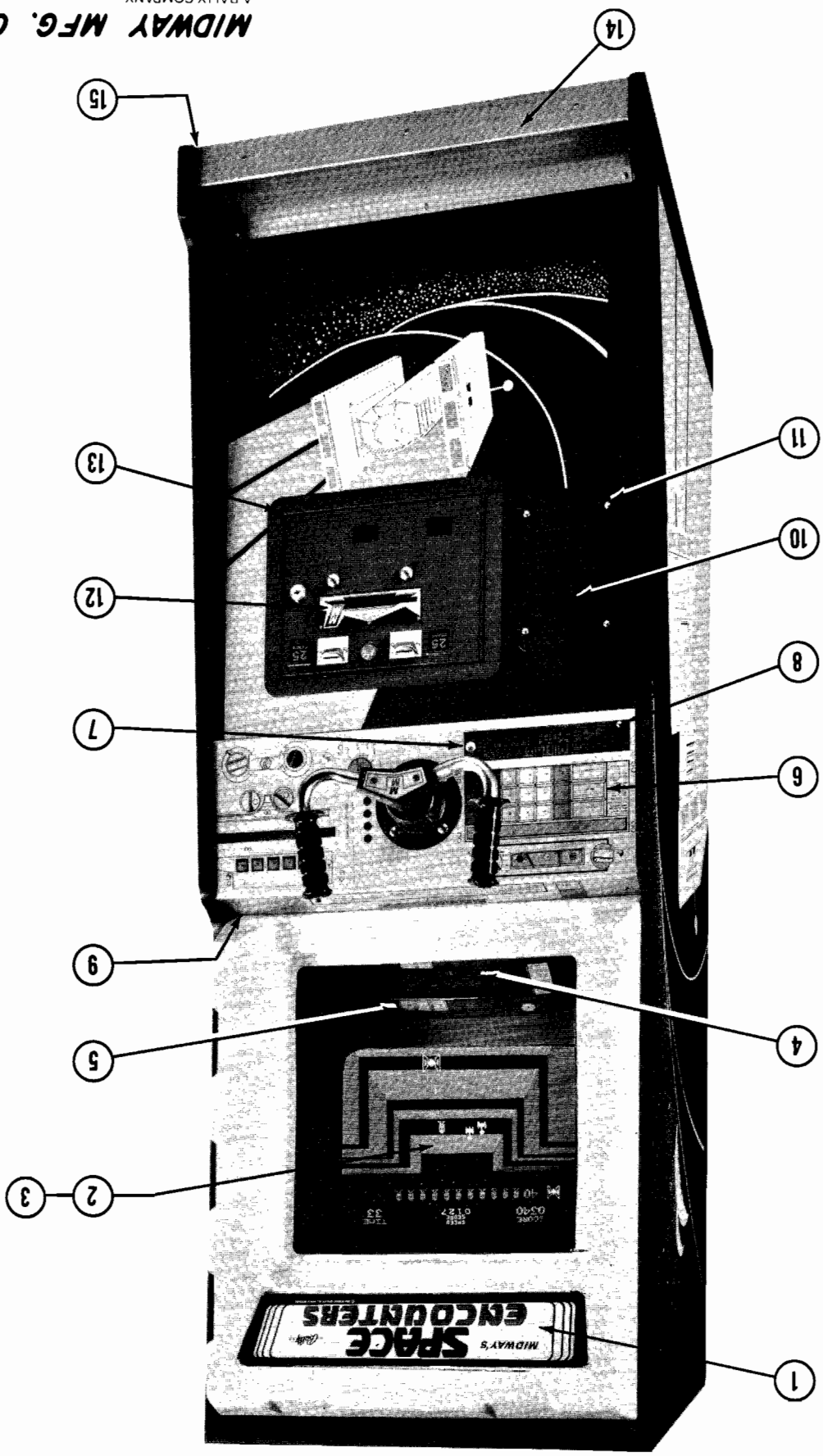


NO. 645 - SPACE ENCOUNTERS - CONTROL SHELF ASSY.

ORDER BY PART NUMBER ONLY

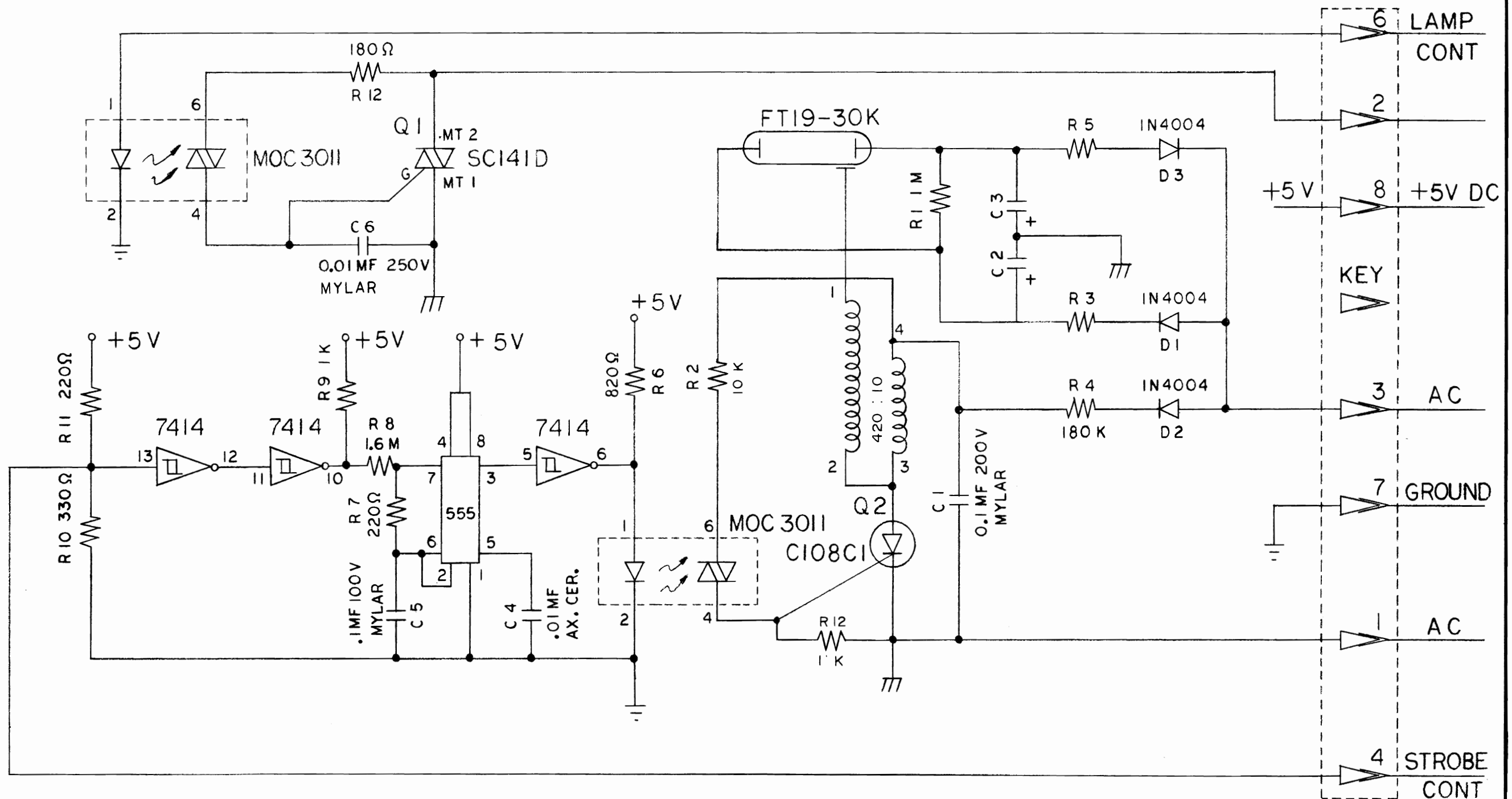
ITEM	PART NO	DESCRIPTION
40	0645-00702-00XF	ANTI-ROTATION ROD
41	0645-00908-0000	NYLON ROLLER
42	0017-00100-0015	E-RING
43	0017-00042-0222	NYLINER 1-1/4
44	0645-00708-00XF	COLLAR
45	A645-00025-0000	PLUG & BEARING ASSY.
46	0645-00710-00XF	ANTI-TWIST SHAFT
47	0030-00125-0000	NYLON WASHER (4 REQ'D.)
48	0017-00100-0037	E-RING
49	A645-00010-0000	ARM & GEAR ASSY.
50	0645-00701-00XF	ROLLER
51	0645-00700-00XF	PIN
52	0017-00100-0018	E-RING (2 REQ'D.)
53	A645-00009-0000	BRKT. & PIN ASSY.
54	0583-00723-00B0	PINION - 16 TOOTH
55	0017-00101-0308	#8-32 x 3/16 SETSCREW (2 REQ'D.)
56	0010-00265-0000	SPRING
	0017-00009-0484	TAMPER PROOF ALLEN KEY (NOT SHOWN)
		THE FOLLOWING PARTS USED TO ATTACH
		ITEM 22 TO SHAFT
		PIN
		E-RING (2 REQ'D.)
		1/4-20 x 3/4 SOCKET HD. CAP SCREW

NO. 645 - SPACE ENCOUNTERS - PHOTOGRAPH



MIDWAY MFG. CO.  
A BALLY COMPANY



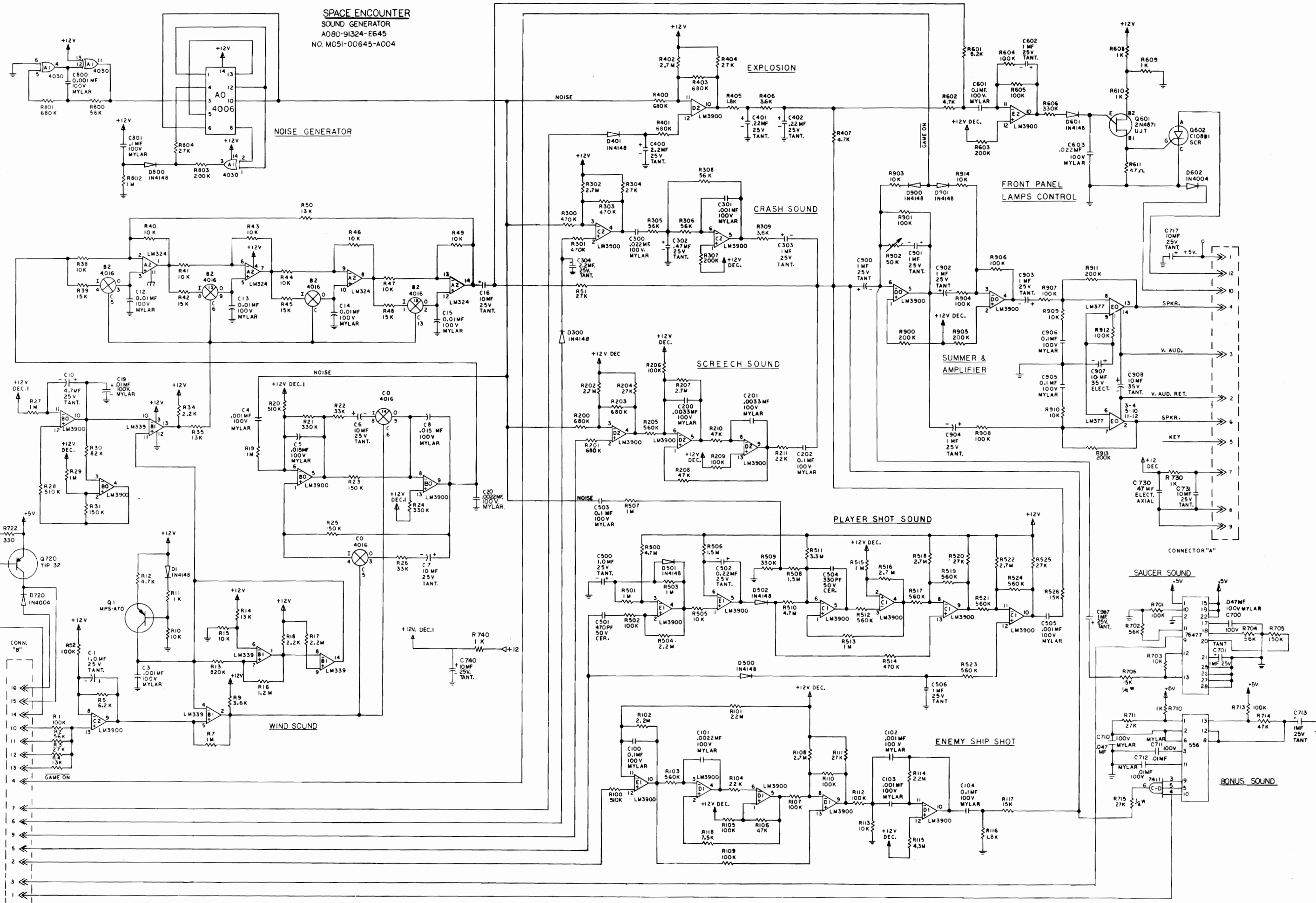


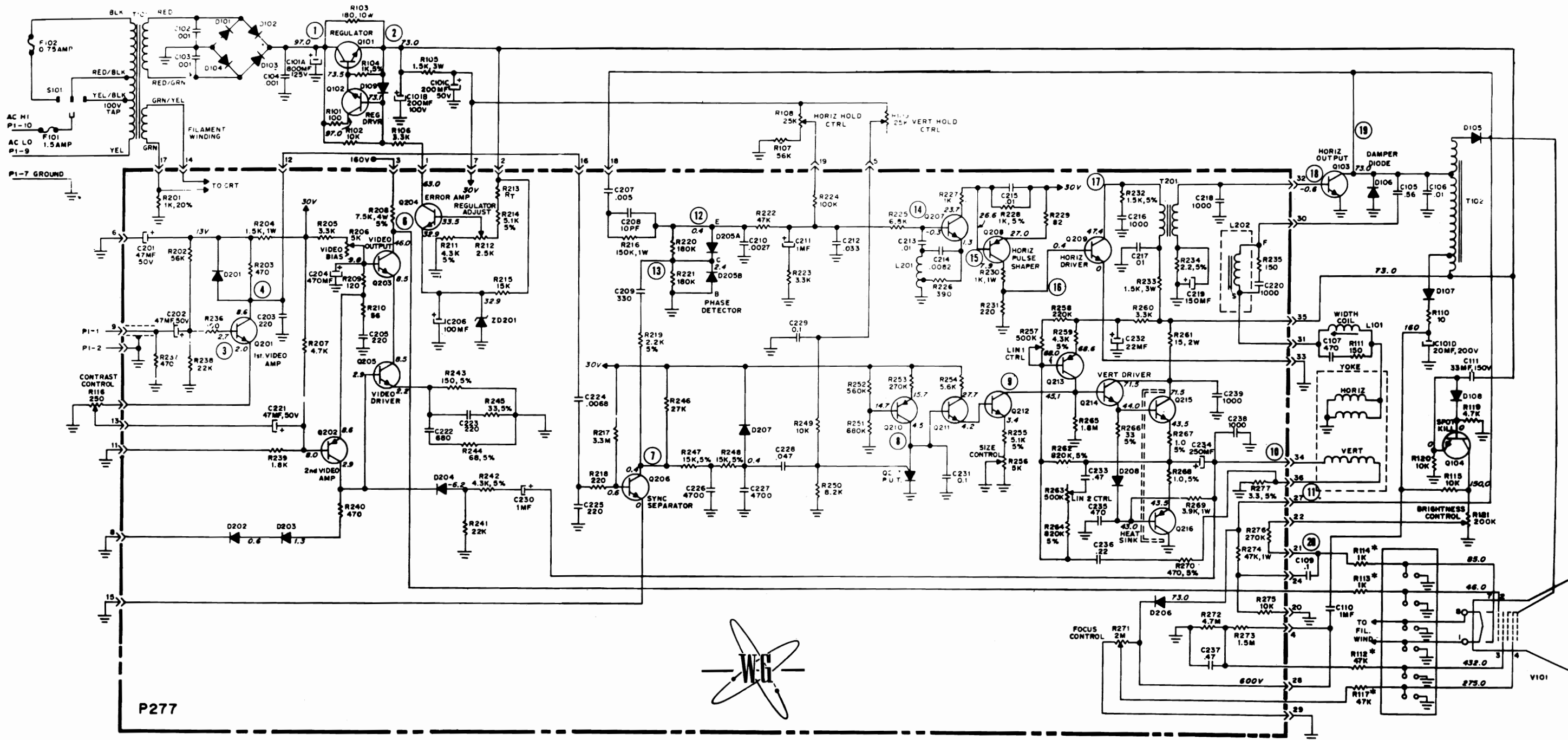
C 2,3 22 MF 250V ELEC  
 R 3,5 200Ω 10 W

DRAWING NO M051-00645-B001

DO NOT SCALE DWG.		HEAT TREAT	SCALE	USED ONSPACE ENCOUNTER	<b>MIDWAY MFG. CO.</b> FRANKLIN PK. ILL.
DIM. TOLERANCES UNLESS SPECIFIED		MAT'L.	NO. REQ'D		
CONCENTRICITY T.I.R. .003	DRN. <i>CL</i>				PART NO. A084-91359-B645
FRACTIONAL..... ± 1/64	CKD.				
DECIMAL..... ± .005	DATE 7/2/80	FINISH			
HOLE DIA..... ± .002-.000					
STROBE AND LIGHT P.C. SCHEMATIC DRAWING					

**SPACE ENCOUNTER**  
SOUND GENERATOR  
A080-91324-E645  
NO. M051-00645-A004





P277



- NOTES:
1. VOLTAGE MAY VARY WITH CONTROL SETTING.
  2. LINE VOLTAGE MAINTAINED AT 120VAC, 50/60 Hz.
  3. ALL D.C. VOLTAGES  $\pm 10\%$  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.

# WELLS - GARDNER ELECTRONICS CORPORATION

2701 N. KILDARE AVE. • CHICAGO, ILL. 60639 • ALBANY 2-8220  
TELEX 25-3286

- NOTES:
- \* INDICATES RESISTORS LOCATED IN PICTURE TUBE LEAD ASSEMBLY.
  - RESISTANCE VALUES IN OHMS, 1/2 WATT, 10% UNLESS OTHERWISE NOTED. K-1,000 M-1,000,000
  - CAPACITANCE VALUES OF 1 OR LESS ARE IN MICROFARADS. ABOVE 1 IN PICOFARADS UNLESS OTHERWISE NOTED.

MODEL No.  
V1001-5734









# REPLACEMENT PARTS LIST

## CHASSIS PARTS

### CAPACITORS

C101A, B, C, D	45X0558-001	800 $\mu$ F/125V, 200 $\mu$ F/100V 200 $\mu$ F/50V, 20 $\mu$ F/200V	Electrolytic
C102, 103			
C105	80X0001-000	.001 $\mu$ F, GMV Z5U Cer. Disc.	
C106	342X5642-049	.56 $\mu$ F, 400V, 10% Polypropylene	
C107	46X0536-001	.01 $\mu$ F, 1200V, 5% Polypropylene	
C109	80X00099-006	470 pF, Z5F, 10%	
C110	342X1044-040	0.1 $\mu$ F, 400V, 20% Mylar	
C111	46X0540-002	1.0 $\mu$ F, 630V, 10% Polyester Film	
	45X0515-032	33 $\mu$ F, 150V, Electrolytic	

### CONTROLS

R108, 109	40X0585-091	25k Ohm, Horiz. & Vert. Hold	
R116	40X0585-090	250 Ohm, Contrast	
R121	40X0585-092	200k Ohm, Brightness	

### COILS & TRANSFORMERS

L101	9A2787-001	Coil, Width	
T101	53X0475-001	Transformer, Power	
T102	53X0474-001	Transformer, Flyback	

### RESISTORS

R101	340X3101-941	100 Ohm, 10%, 1/2W	
R102, 115,	340X3103-941	10k Ohm, 10%, 1/2W	
R120	340X0181-341	180 Ohm, 10%, 10W, WW	
R103	340X3102-931	1k Ohm, 5%, 1/2W	
R104	340X6152-341	1.5k Ohm, 10%, 3W, WW	
R105	340X3332-941	3.3k Ohm, 10%, 1/2W	
R106	340X3563-941	56k Ohm, 10%, 1/2W	
R107	340X3100-941	10 Ohm, 10%, 1/2W	
R110	340X3151-941	150 Ohm, 10%, 1/2W	
R111	340X3472-941	4.7k Ohm, 10%, 1/2W	

### SEMICONDUCTORS

D101, 102	66X0023-009	Rectifier, Silicon 500V 1N444B	
D105	66X0067-001	Rectifier Varo H1802	
D106	66X0068-001	Diode, Damper MR1-1600	
D107	66X0053-001	Diode, 350V Ampere BA148	
D108, 109	66X0046-001	Diode, Silicon FDH444	
Q101	86X0117-001	Transistor (NPN) 2N5632 Regulator	
Q102	86X0071-001	Transistor (NPN) Reg. Driver	
Q103	86X0118-001	Transistor (NPN) BU207 Hor. Output	
Q104	86X0065-001	Transistor (NPN) D40N5 Spot Kill	

### MISCELLANEOUS

F101	16X0171-001	Fuse Holder	
F102	16X0175-001	Fuse, 1.5 Amp, Slo-Bio 3AG	
F103	16X0176-001	Fuse, 1.5 Amp, Slo-Bio 3AG	
F104	13X1201-001	HV Lead & Receipt. Assy.	
F105	28X0789-001	Spring, Dag, Grounding	
F106	9A2786-001	Deflection Yoke & Clamp	
F107	19VARP4	CRT (19V1001)	
F108	22VATP4	CRT (22V1001)	
F109	38A5473-000	2 PDT Small Relay (W/Wires)	
F110	38A5474-000	6 PDT Large Relay (W/Wires)	

Product Safety Device

# REPLACEMENT PARTS LIST P277 CIRCUIT BOARD ASSY.

## CAPACITORS

C201, 202, 221	45X0524-027	47 $\mu$ F, 50V, Electrolytic
C203, 205, 223, 225	80X0099-057	220 pF, 10%, Z5F, Cer. Disc.
C204	45X0524-053	470 $\mu$ F, 16V, Electrolytic
C206	45X0524-051	100 $\mu$ F, 50V, Electrolytic
C207	80X0099-192	.005 $\mu$ F, 20%, 1KV, Cer. Disc.
C208	80X0099-036	10 pF, 10%, 500V, Cer. Disc.
C209	80X0099-013	330 pF, 10%, 500V, Cer. Disc.
C210	349X4722-109	.0027 $\mu$ F, 10%, Mylar
C211	45X0524-023	1.0 $\mu$ F, 15V, Electrolytic
C212	349X3332-109	.033 $\mu$ F, Mylar
C213	46X0537-002	.01 $\mu$ F, Poly
C214	46X0537-003	.0082 $\mu$ F, Poly
C215	349X1032-109	.01 $\mu$ F, 10%, 100V Mylar
C216, 218, 220, 238, 239	80X0099-076	1000 pF, 10%, 500V, Cer. Disc.
C217	349X1032-209	.01 $\mu$ F, 10%, 200V, Mylar
C219	45X0524-052	150 $\mu$ F, 10V, Electrolytic
C222	80X0099-137	680 pF, 10%, 500V, Cer. Disc.
C224	349X6822-109	.0068 $\mu$ F, 10%, 100V, Mylar
C226, 227	80X0099-056	4700 $\mu$ F, 10%, 500V, Cer. Disc.
C228	349X4732-109	.047 $\mu$ F, 10%, 100V, Mylar
C229	349X1044-109	0.1 $\mu$ F, 20%, 100V, Mylar
C230	45X0515-014	1.0 $\mu$ F, 50V, Electrolytic
C231	349X1042-109	0.1 $\mu$ F, 10%, 100V, Mylar
C232	45X0524-026	22 $\mu$ F, 100V, Electrolytic
C233	349X4742-109	.47 $\mu$ F, 10%, 100V, Mylar
C234	45X0524-025	250 $\mu$ F, 100V, Electrolytic
C235	80X0099-006	470 pF, 10%, Z5F, Cer. Disc.
C236	349X2242-109	.22 $\mu$ F, 10%, 100V, Mylar
C237	46X0540-001	.47 $\mu$ F, 10%, 630V, Polyester Film

## CONTROLS

R206, 256	40X0592-008	5k Ohm, Video Output, Size
R212	40X0585-093	2.5k Ohm, Reg. Adj.
R257, 263	40X0592-004	500k Ohm, Lin 1 & 2
R271	40X0585-094	2M Ohm, Focus

## COILS & TRANSFORMERS

★L201	9A2788-001	Horiz. Osc.
★L202	9A2789-001	Horiz. Lin.
★T201	52X0126-001	Horiz. Driver

## RESISTORS

R201	340X3102-954	1k Ohm, 20%, 1/2W
R202	340X3563-944	56k Ohm, 10%, 1/2W
R203, 237, 240	340X3471-944	470 Ohm, 10%, 1/2W
★R204	340X4152-843	1.5k Ohm, 10%, 1.0W
R205, 223, 260	340X3332-944	3.3k Ohm, 10%, 1/2W
R207	340X3472-944	4.7k Ohm, 10%, 1/2W
★R208	340X7752-733	7.5k Ohm, 5%, 4.0W
R209	340X3121-944	120 Ohm, 10%, 1/2W
R210	340X3560-944	56 Ohm, 10%, 1/2W
R211, 242, 259	340X3432-934	4300 Ohm, 5%, 1/2W
R213	43X0467-001	Thermistor
R214, 255	340X3512-934	5.1k Ohm, 5%, 1/2W
R215	340X3153-944	15k Ohm, 10%, 1/2W
★R216	340X4154-843	150k Ohm, 10%, 1.0W
R217	340X3335-944	3.3M Ohm, 10%, 1/2W
R218, 231	340X3221-944	220 Ohm, 10%, 1/2W
R219	340X3222-934	2.2k Ohm, 5%, 1/2W

## RESISTORS (Cont'd.)

R220, 221	340X3184-944	180k Ohm, 10%, 1/2W
R222	340X3473-944	47k Ohm, 10%, 1/2W
R224	340X3104-944	100k Ohm, 10%, 1/2W
R225	340X3682-944	6.8k Ohm, 10%, 1/2W
R226	340X3391-944	390 Ohm, 10%, 1/2W
R227	340X3102-944	1k Ohm, 10%, 1/2W
R228	340X3102-934	1k Ohm, 5%, 1/2W
R229	340X3820-944	82 Ohm, 10%, 1/2W
★R230	340X4102-843	1k Ohm, 10%, 1.0W
R232	340X3152-934	1.5k Ohm, 5%, 1/2W
★R233	340X6152-743	1.5k Ohm, 10%, 3.0W
R234	340X5022-333	2.2 Ohm, 5%, 2.0W
R235	340X3151-944	150 Ohm, 10%, 1/2W
R236	340X3101-944	100 Ohm, 10%, 1/2W
R238, 241	340X3223-944	22k Ohm, 10%, 1/2W
R239	340X3182-944	1.8k Ohm, 10%, 1/2W
R243	340X3151-934	150 Ohm, 5%, 1/2W
R244	340X3680-934	68 Ohm, 5%, 1/2W
R245, 266	340X3330-934	33 Ohm, 5%, 1/2W
R246	340X3273-944	27k Ohm, 10%, 1/2W
R247, 248	340X3153-934	15k Ohm, 5%, 1/2W
R249, 275	340X3103-944	10k Ohm, 10%, 1/2W
R250	340X3822-944	8.2k Ohm, 10%, 1/2W
R251	340X3684-944	680k Ohm, 10%, 1/2W
R252	340X3564-944	560k Ohm, 10%, 1/2W
R253, 276	340X3274-944	270k Ohm, 10%, 1/2W
R254	340X3562-944	5.6k Ohm, 10%, 1/2W
R258	340X3224-944	220k Ohm, 10%, 1/2W
★R261	340X5150-843	15 Ohm, 10%, 2.0W
R262, 264	340X3824-934	820k Ohm, 5%, 1/2W
R265	340X3185-944	1.8M Ohm, 10%, 1/2W
R267, 268	340X3010-934	1 Ohm, 5%, 1/2W
R269	340X4392-843	3.9k Ohm, 10%, 1/2W
R270	340X3471-934	470 Ohm, 5%, 1/2W
R272	340X3475-944	4.7M Ohm, 10%, 1/2W
R273	340X3155-944	1.5M Ohm, 10%, 1/2W
★R274	340X4473-843	47k Ohm, 10%, 1.0W
R277	340X3033-934	3.3 Ohm, 5%, 1/2W

## SEMICONDUCTORS

D201, 202, 203, 204, 207, 208	66X0046-001	Diode, Silicon FDH444
D205A, 205B	66X0066-001	Diode, Dual, MSD6102
D206	66X0054-002	Diode, RCA D2102SF
Q201, 205, 206	86X0113-001	Transistor (NPN) 2N3904
Q202, 208	86X0114-001	Transistor (PNP) 2N3906
Q203	86X0071-001	Transistor (NPN)
Q204, 212	86X0071-001	Transistor (NPN) MPSA06
Q207, 211	86X0058-002	Transistor (NPN) MPSA20
Q209	86X0116-001	Transistor Horiz, Driver (NPN) 2N6557
Q210	86X0066-001	Transistor (PNP) MPSA70
Q213	86X0072-001	Transistor (PNP) MPSA56
Q214	86X0073-001	Transistor (NPN) MPSU07
Q215	86X0074-001	Transistor (NPN) 2N5192
Q216	86X0075-001	Transistor (PNP) 2N5195
Q217	86X0070-001	Transistor (P.U.T.) MPU131
ZD201	66X0040-004	Diode, Zener 31V

## MISCELLANEOUS

38A5395-000	Pix Socket & Connector Assy.
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★ Product Safety Device