

GAME NO. 645
AUGUST 1980

MIDWAY'S SPACE ENCOUNTERS PARTS AND OPERATING MANUAL



MIDWAY MFG. CO.

A BALLY COMPANY

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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 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.

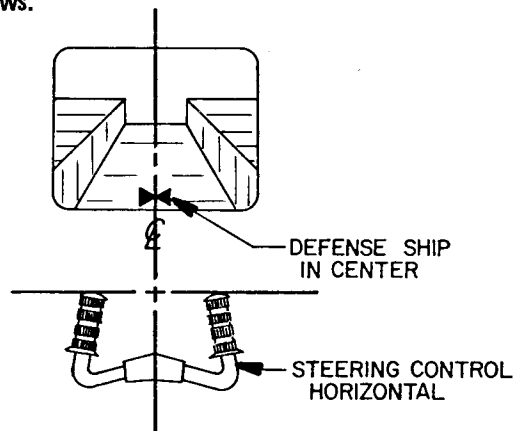


FIGURE 1

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.

SWITCH ADJUSTMENTS

BONUS AT		
	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

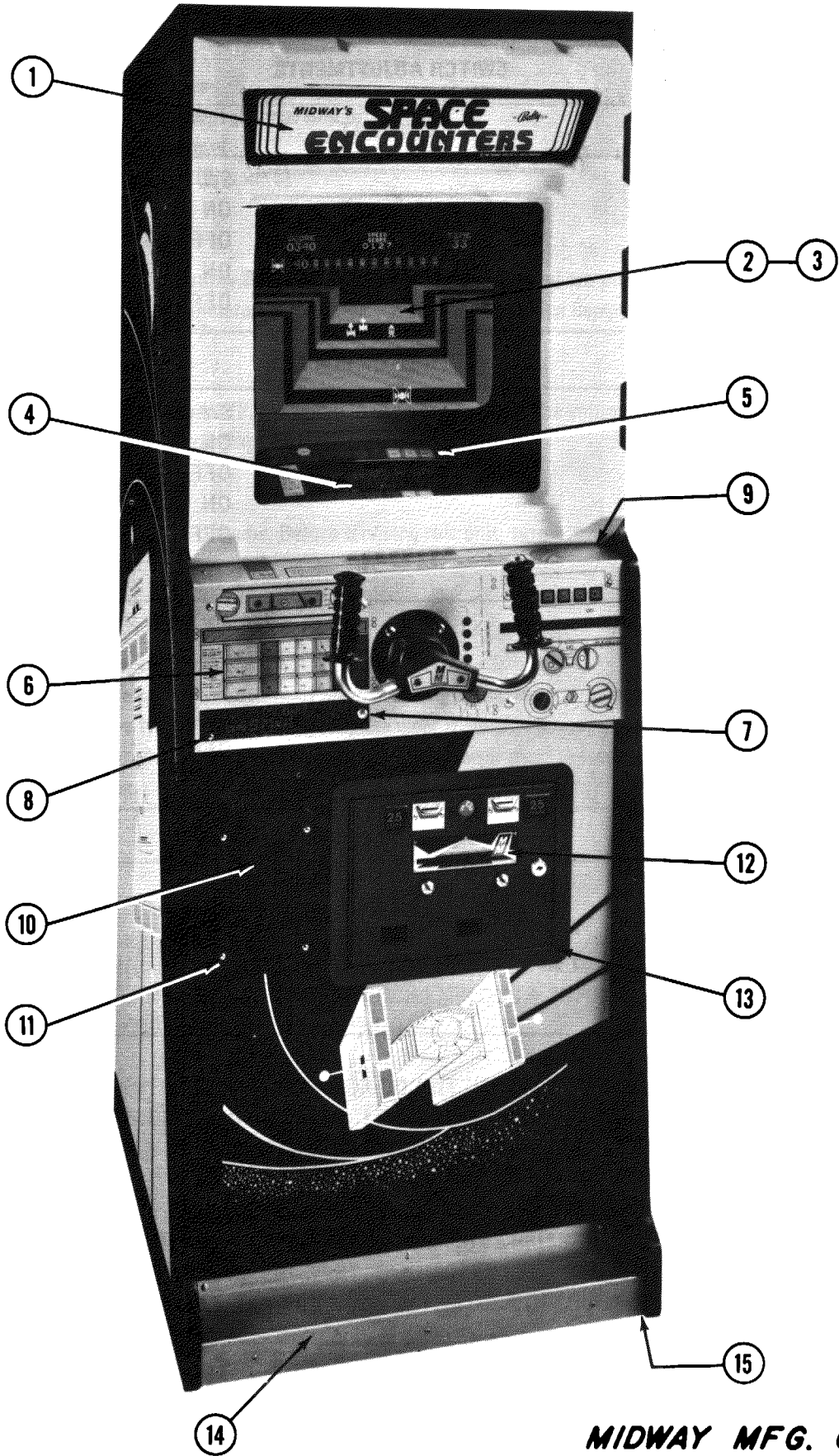
METHOD OF PLAY		
	SW. 3	SW. 4
1 COIN – 1 PLAY	ON	ON
2 COINS – 1 PLAY	OFF	ON
1 COIN – 3 PLAYS	ON	OFF
2 COINS – 3 PLAYS	OFF	OFF

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

TIME OF PLAY		
	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 - PHOTOGRAPH

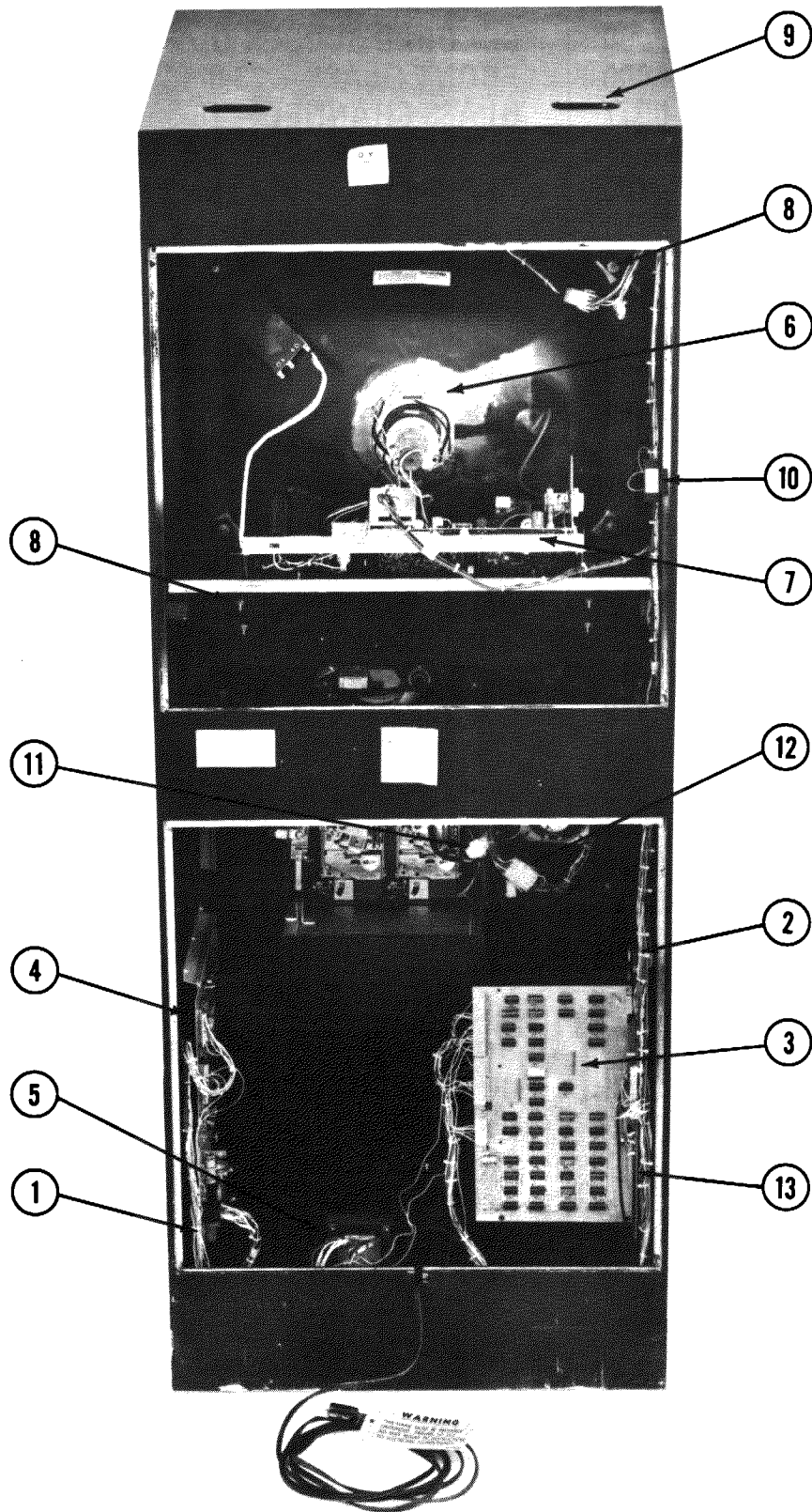


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A BALLY COMPANY

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

ITEM	PART N^o	DESCRIPTION
1	A645-00020-0000	PLASTIC BEZEL ASSY.
2	0645-00919-0000	COLORED 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.)
		NOT SHOWN LIST
	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. 645 - SPACE ENCOUNTERS - BACK PICTURE

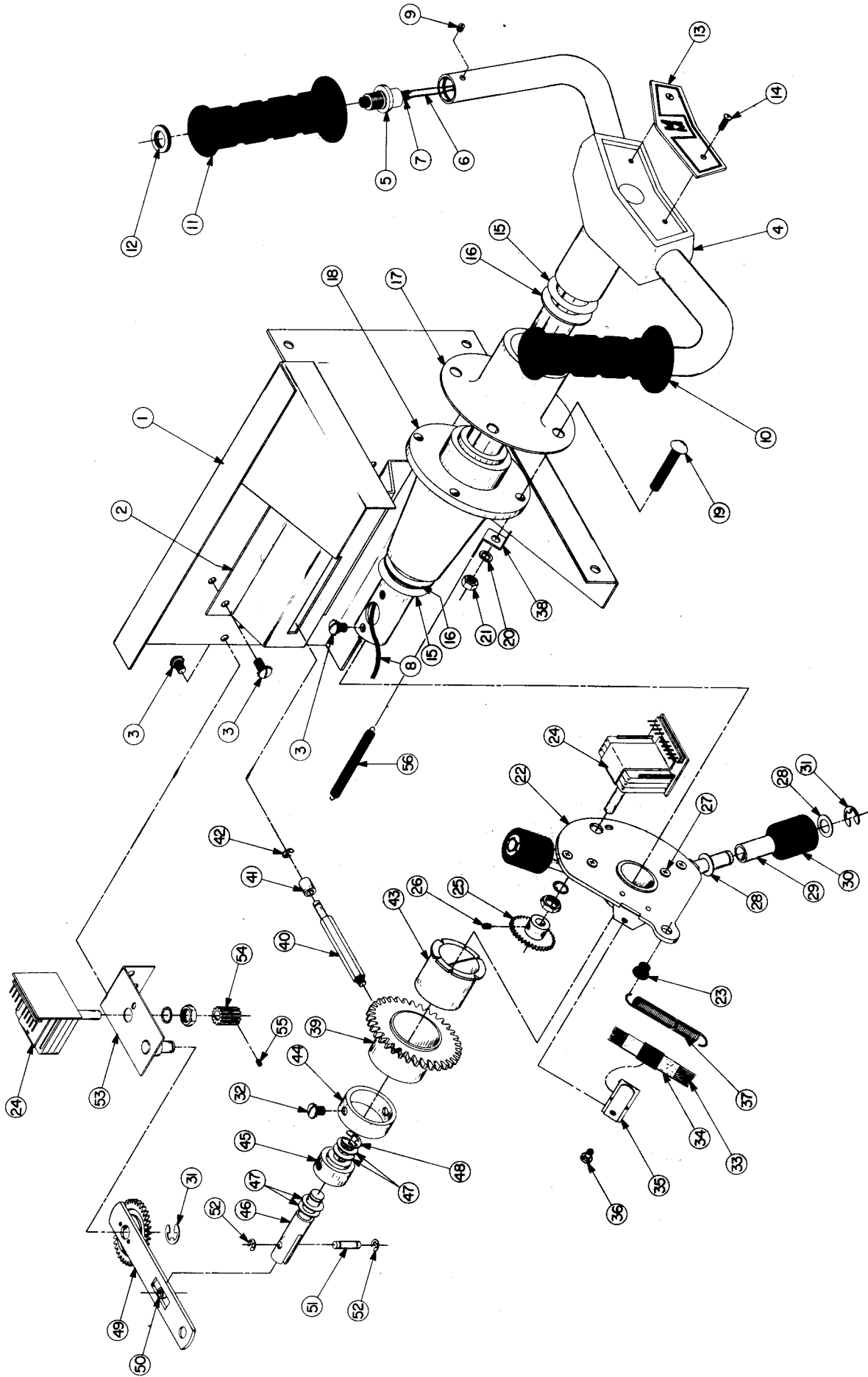


NO. 0645 – SPACE ENCOUNTERS – BACK PICTURE

ORDER BY PART NUMBER ONLY

ITEM	PART NO	DESCRIPTION
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.

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



NO. 645 – SPACE ENCOUNTERS – CONTROL SHELF ASSY.

ORDER BY PART NUMBER ONLY

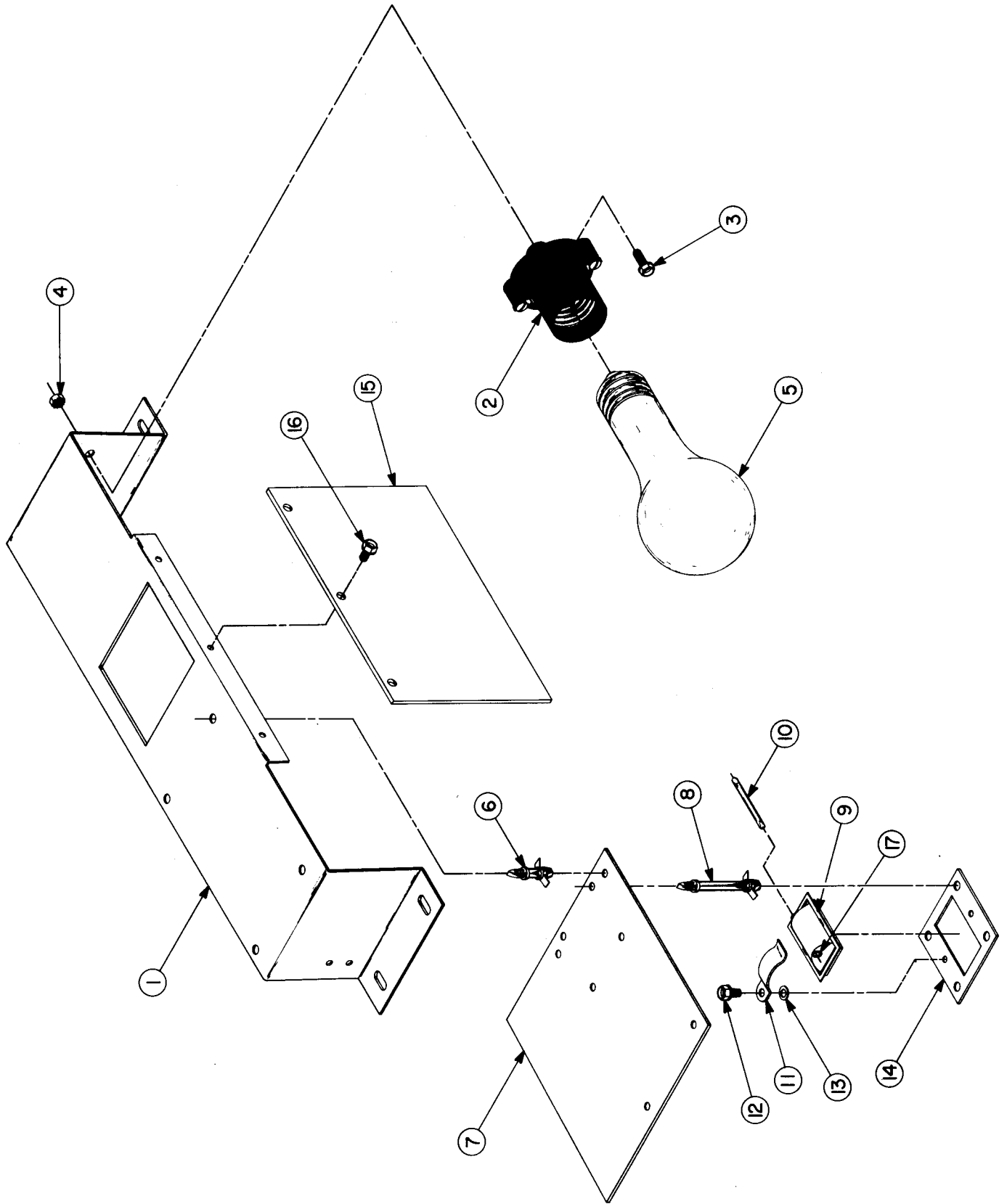
ITEM	PART N^o	DESCRIPTION
1	A645-00006-00XF	BASE & BRACE ASSY.
2	0645-00106-00XF	STOP BRKT.
3	0017-00101-0652	#10-32 3/8 SLOT PAN HD. S.M.S. (9 REQ'D.)
4	A645-00011-0000	BASE - TUBE & HANDLE ASSY.
5	0017-00032-0004	SWITCH
6	0017-00033-0334	CABLE - 2 LEAD
7	M033-00100-0001	SHRINK TUBING (2 REQ'D.)
8	0010-00225-0200	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 – 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
	0645-00712-00XF	PIN
	0017-00100-0037	E-RING (2 REQ'D.)
	0017-00102-0042	1/4-20 x 3/4 SOCKET HD. CAP SCREW

NO. 645 - SPACE ENCOUNTERS - EXPLOSION LIGHT ASSY.

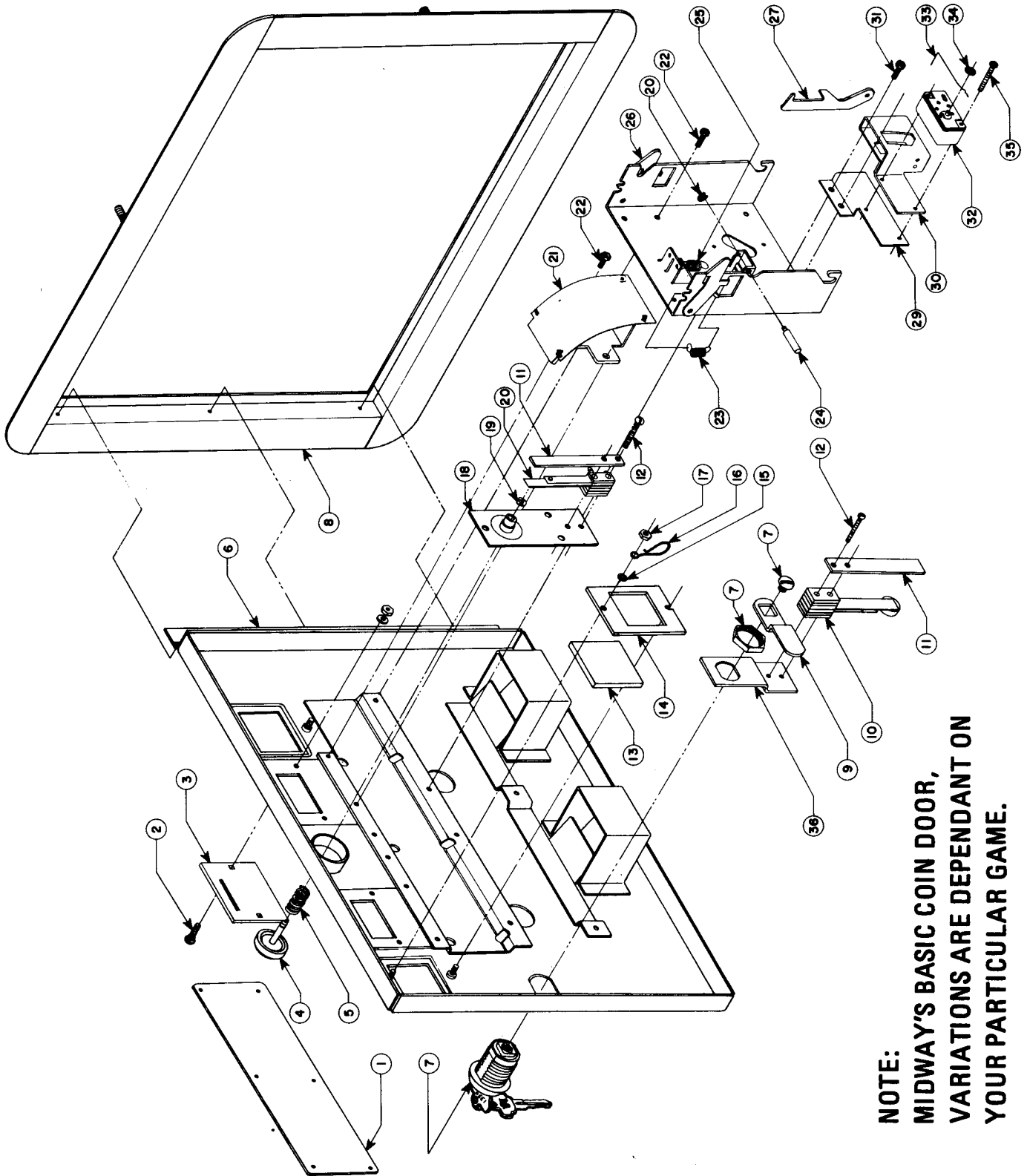


NO. 645 – SPACE ENCOUNTERS – EXPLOSION LIGHT ASSY.

ORDER BY PART NUMBER ONLY

ITEM	PART NO	DESCRIPTION
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 - FRONT DOOR ASSY.



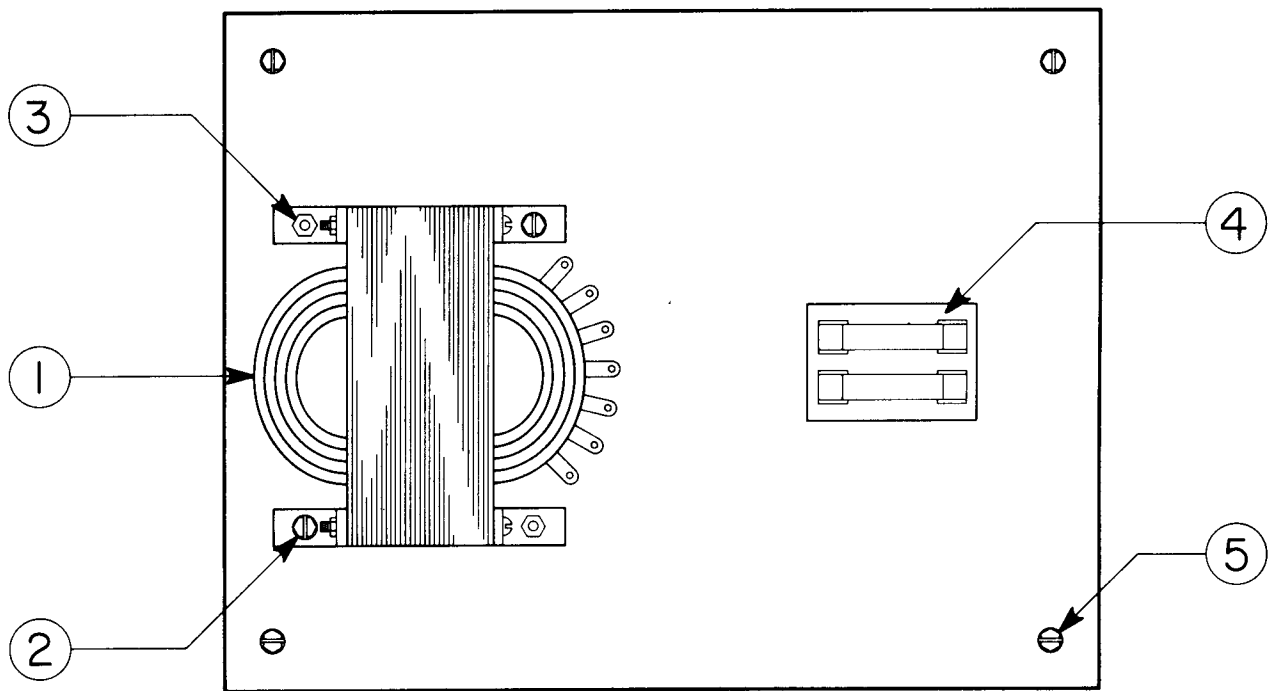
**NOTE:
MIDWAY'S BASIC COIN DOOR,
VARIATIONS ARE DEPENDANT ON
YOUR PARTICULAR GAME.**

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.

NO. 645 – SPACE ENCOUNTERS – TRANSFORMER BOARD ASSY.



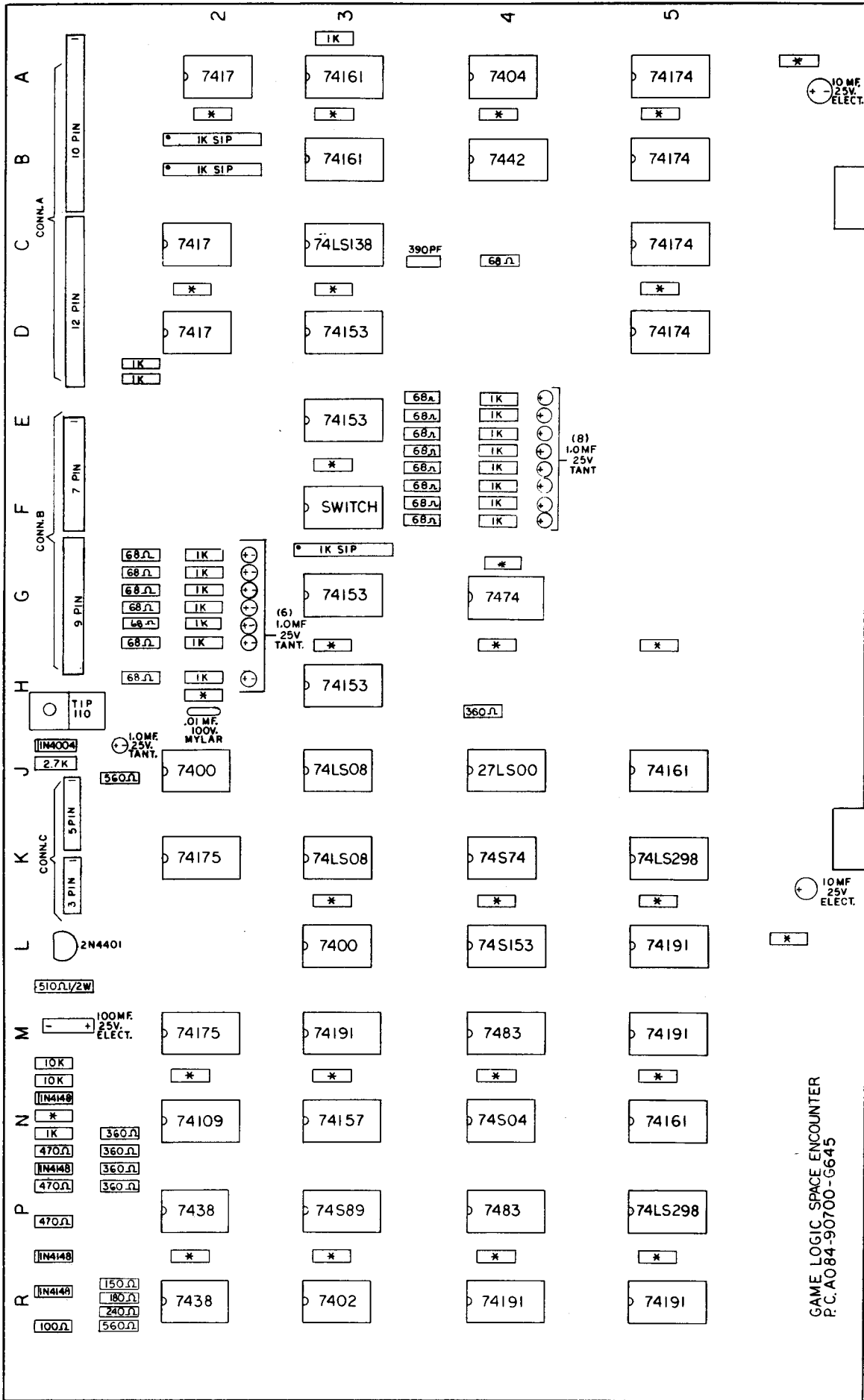
MIDWAY MFG. CO.
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NO. 645 – SPACE ENCOUNTERS – TRANSFORMER BOARD ASSY.

ORDER BY PART NUMBER ONLY

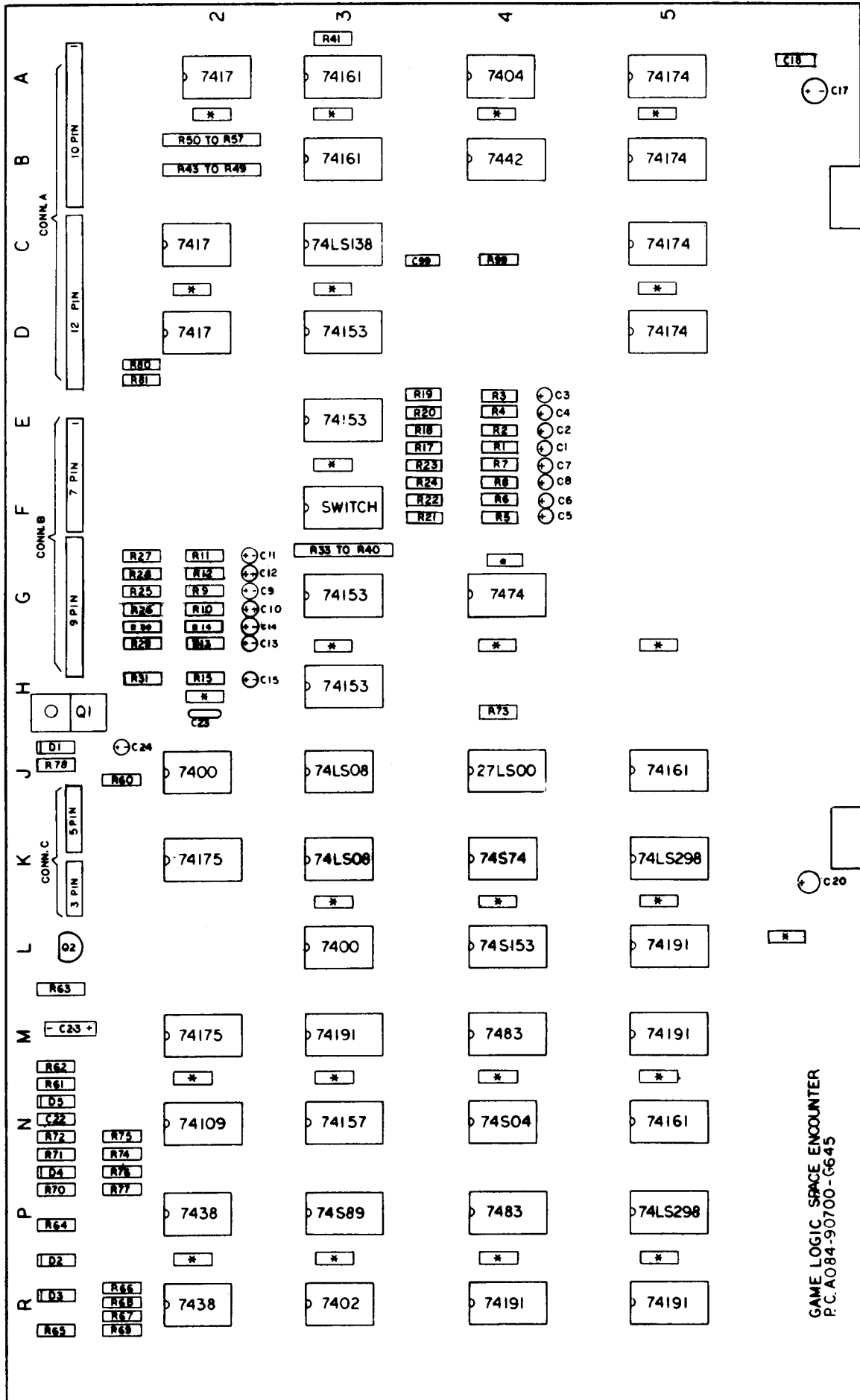
ITEM	PART NO	DESCRIPTION
1	MT00-00058-0000 MT00-00059-0000	TRANSFORMER – 60 CYCLE – DOMESTIC (OR) TRANSFORMER – 50 CYCLE – FOREIGN
2	0017-00101-0017	#6 x 1/2 SLT. HEX HD. WD. SCR. (2 REQ'D.)
3	0017-00101-0637 0017-00103-0008	#8-32 x 1" CARRIAGE BOLT (2 REQ'D.) WITH #8-32 HEX NUT (2 REQ'D.)
4	0720-00001-0200 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

COMPONENT LAYOUT PART NO. M051-00645-A002



GAME LOGIC SPACE ENCOUNTER
P.C. A084-90700-G645

RRC LAYOUT PART NO. M051-00645-A003

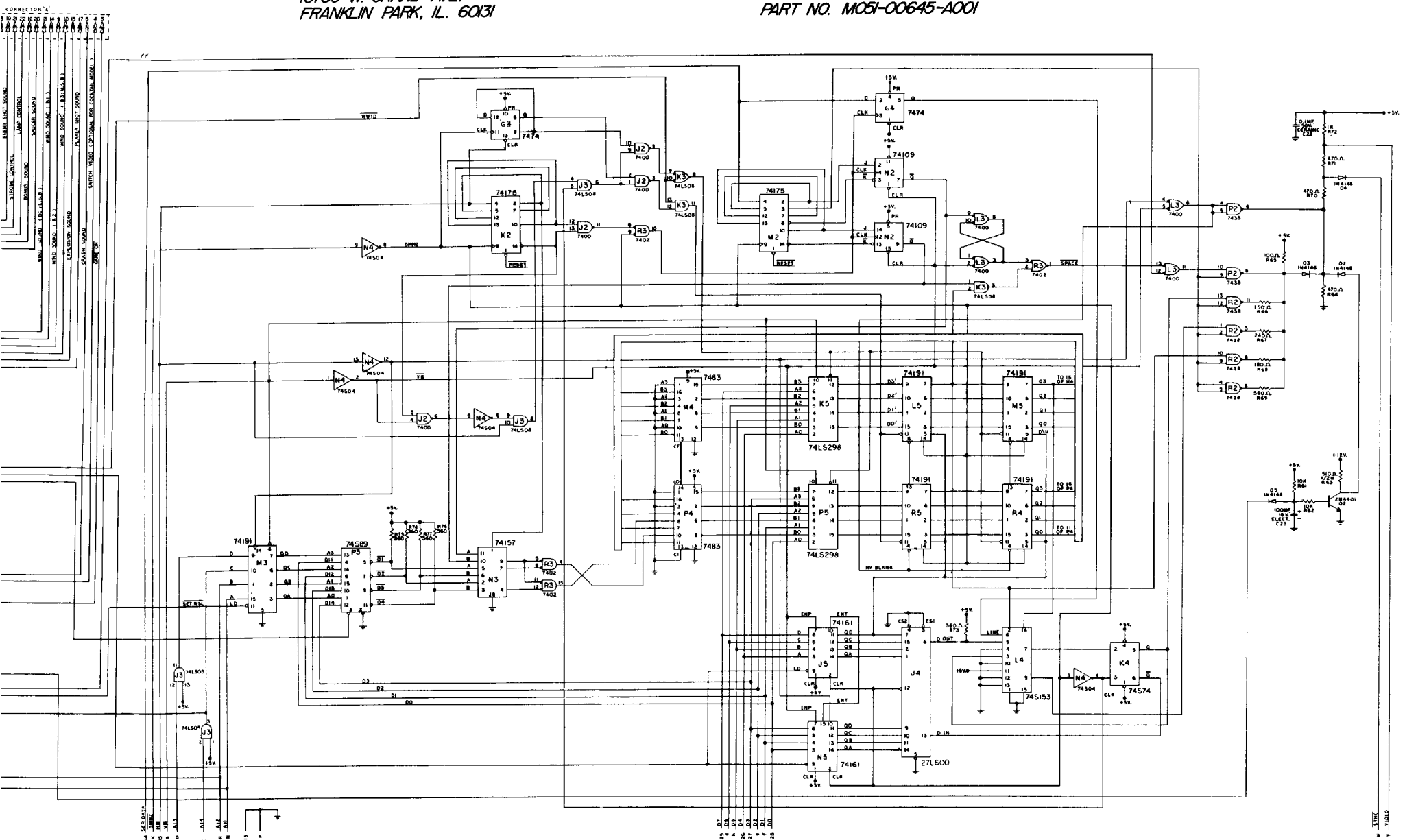


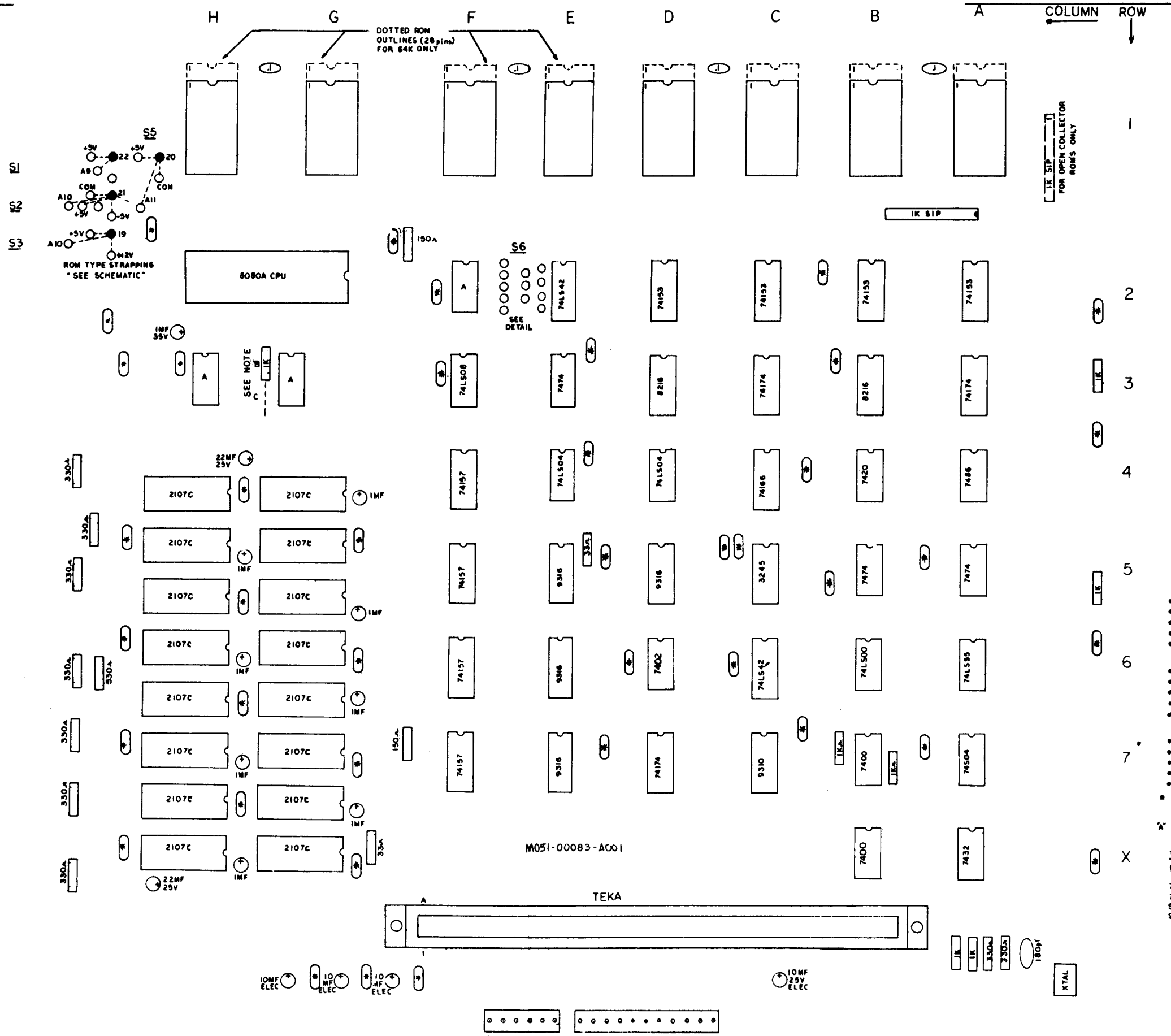
* INDICATES 0.1MF. 50V. AXIAL LEAD CERAMIC CAP.

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

"SPACE ENCOUNTERS"
 MIDWAY MFG. CO.
 10750 W. GRAND AVE.
 FRANKLIN PARK, IL. 60131

GAME LOGIC SCHEMATIC
 P.C. A084-90700-G645
 PART NO. M051-00645-A001





ROM SIZE STRAPPING DETAILS S6

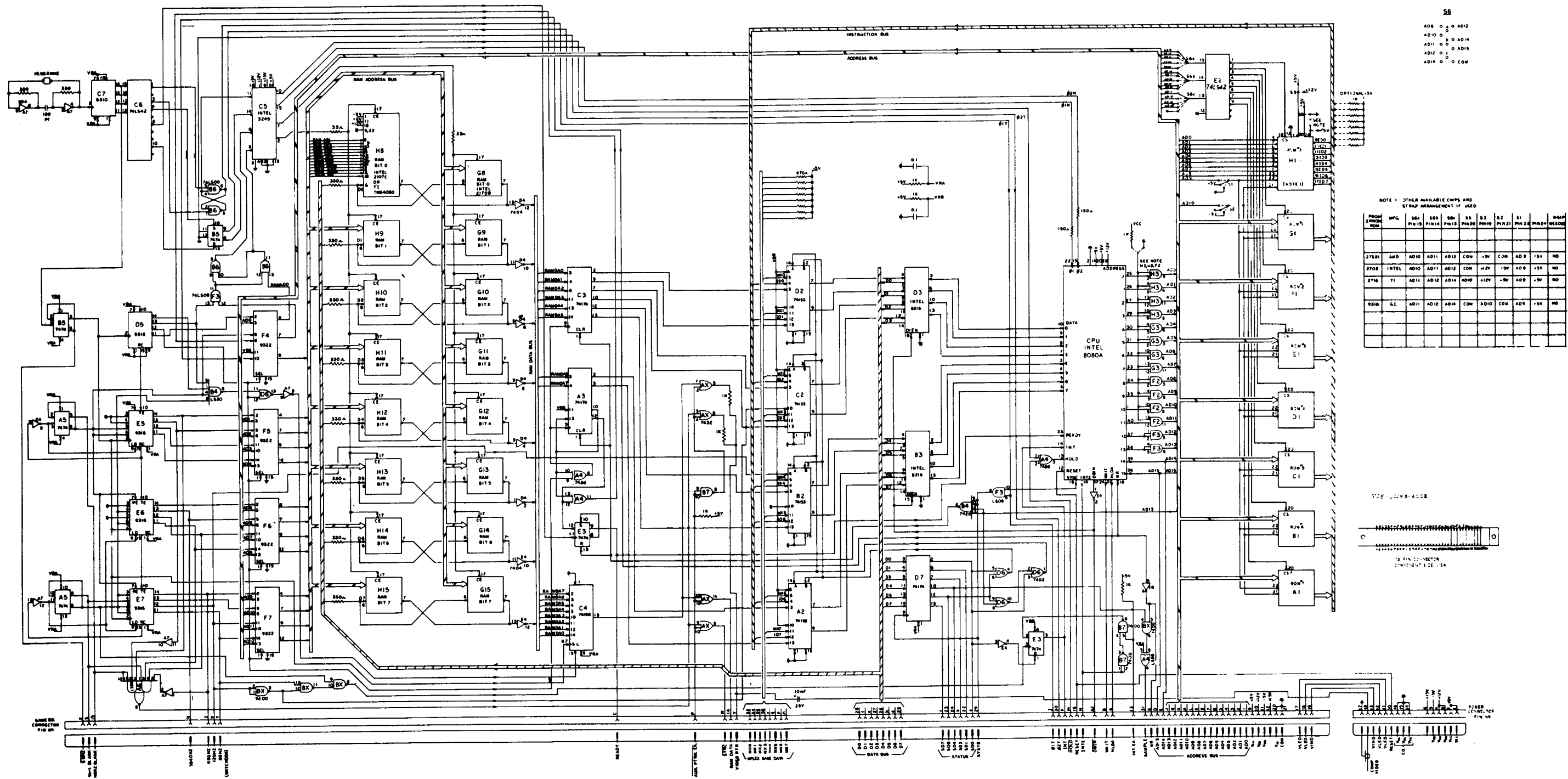
ALL CAPACITORS MARKED ARE 0.1MF 25V MIN. CER. AXIAL LEAD.

* 74LS08 (3pc) CAN BE SUBSTITUTED WITH 74LS05, 74LS125, 74LS26, 74LS26 WHEN STRAPPED TO +5V WITH RESISTOR R.

OR CAN BE SUBSTITUTED WITH 74LS32, 74LS86, 74LS86, 74LS2, 74LS125, 74LS25, 74LS25 WHEN STRAPPED TO COMMON WITH STRAP 'C'.

ALL POLARIZED CAPS ARE TANTALUM UNLESS NOTED OTHERWISE.

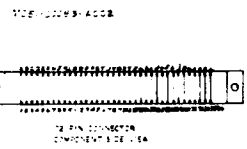
MOTHER BOARD COMPONENTS LAYOUT
A084-90000-L000



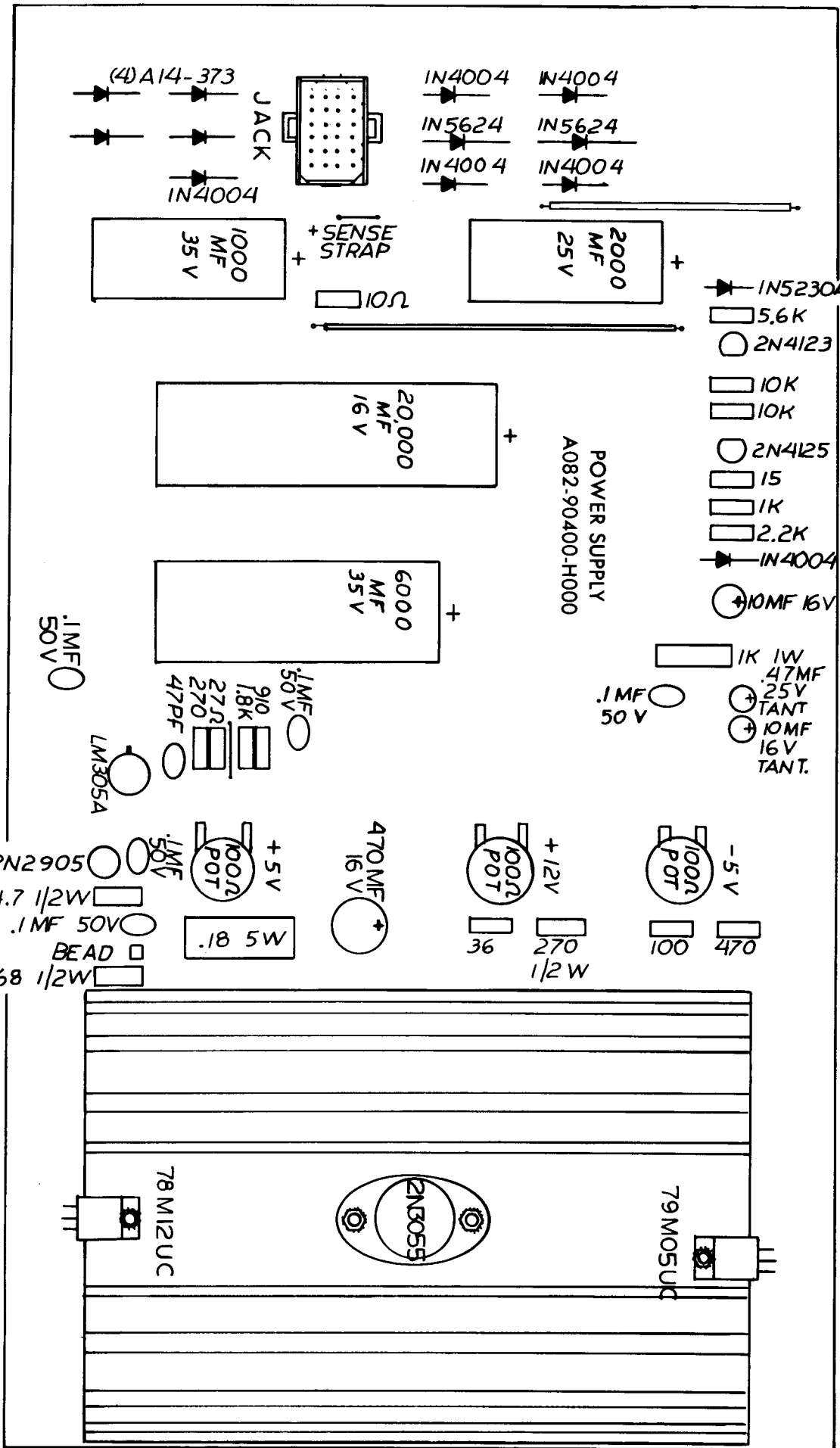
56
 AD6 0 0 AD12
 AD10 0 0 AD14
 AD11 0 0 AD15
 AD12 0 0
 AD14 0 0 COM

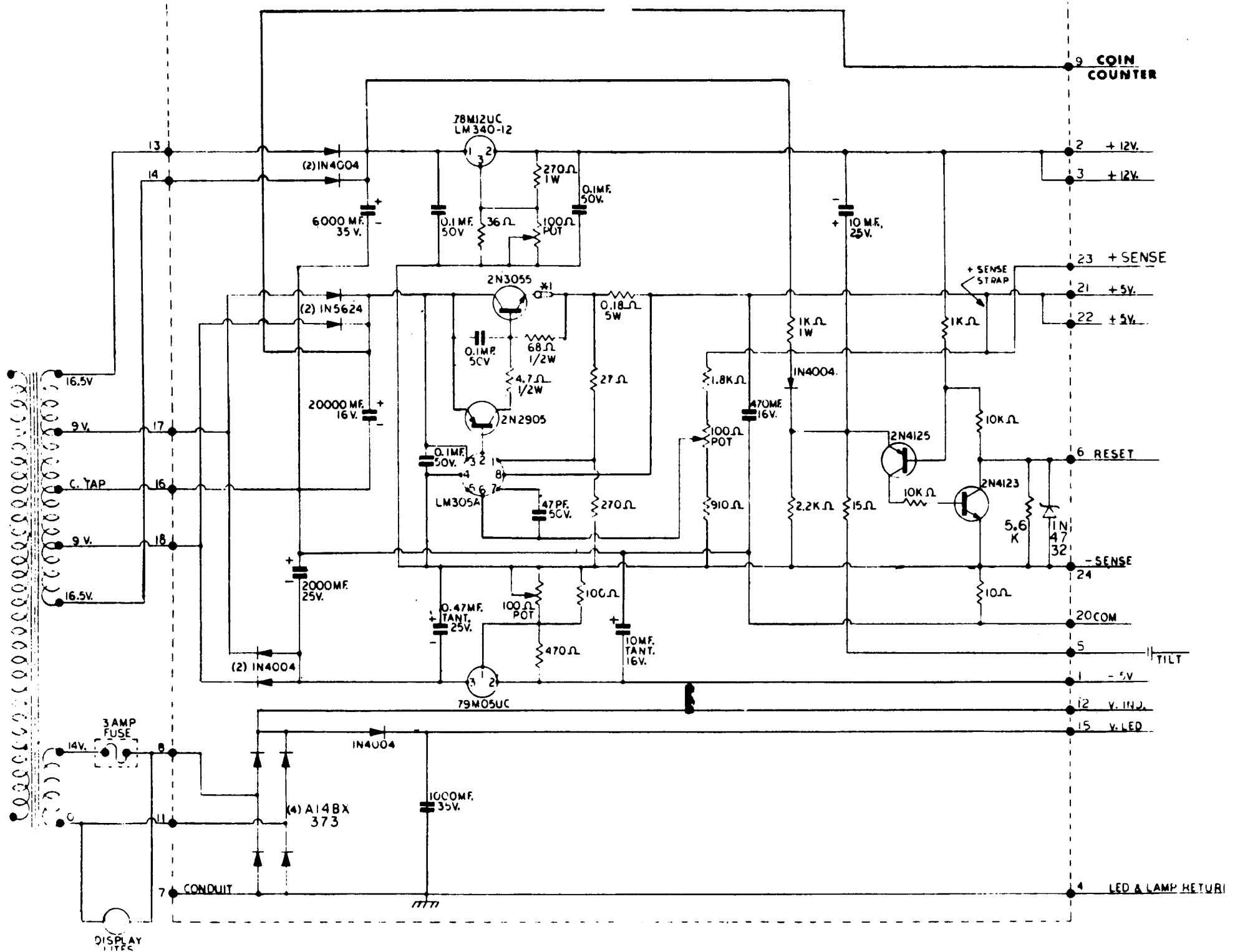
NOTE 1 OTHER AVAILABLE CHIPS AND STRAP ARRANGEMENT IF USED

FROM (FROM ROW)	WFL	SA	SA13	SA14	SA15	SA16	SA17	SA18	SA19	SA20	SA21	SA22	SA23	SA24	SA25	SA26	SA27	SA28	SA29	SA30
2781	AND	AD10	AD11	AD12	COM	+5V	COM	AD9	+5V	NO										
2708	INTEL	AD10	AD11	AD12	COM	+2V	+5V	AD9	+5V	NO										
2766	TI	AD11	AD12	AD14	AD16	+2V	+5V	AD9	+5V	NO										
9818	GL	AD11	AD12	AD14	COM	AD10	COM	AD9	+5V	NO										



MOTHER BOARD SCHEMATIC
 A084-90000-L000





DISPLAY
117EC

TILT

COIN
COUNTER

+12V.
+12V.

+ SENSE
STRAP

+5V.
+5V.

RESET

- SENSE

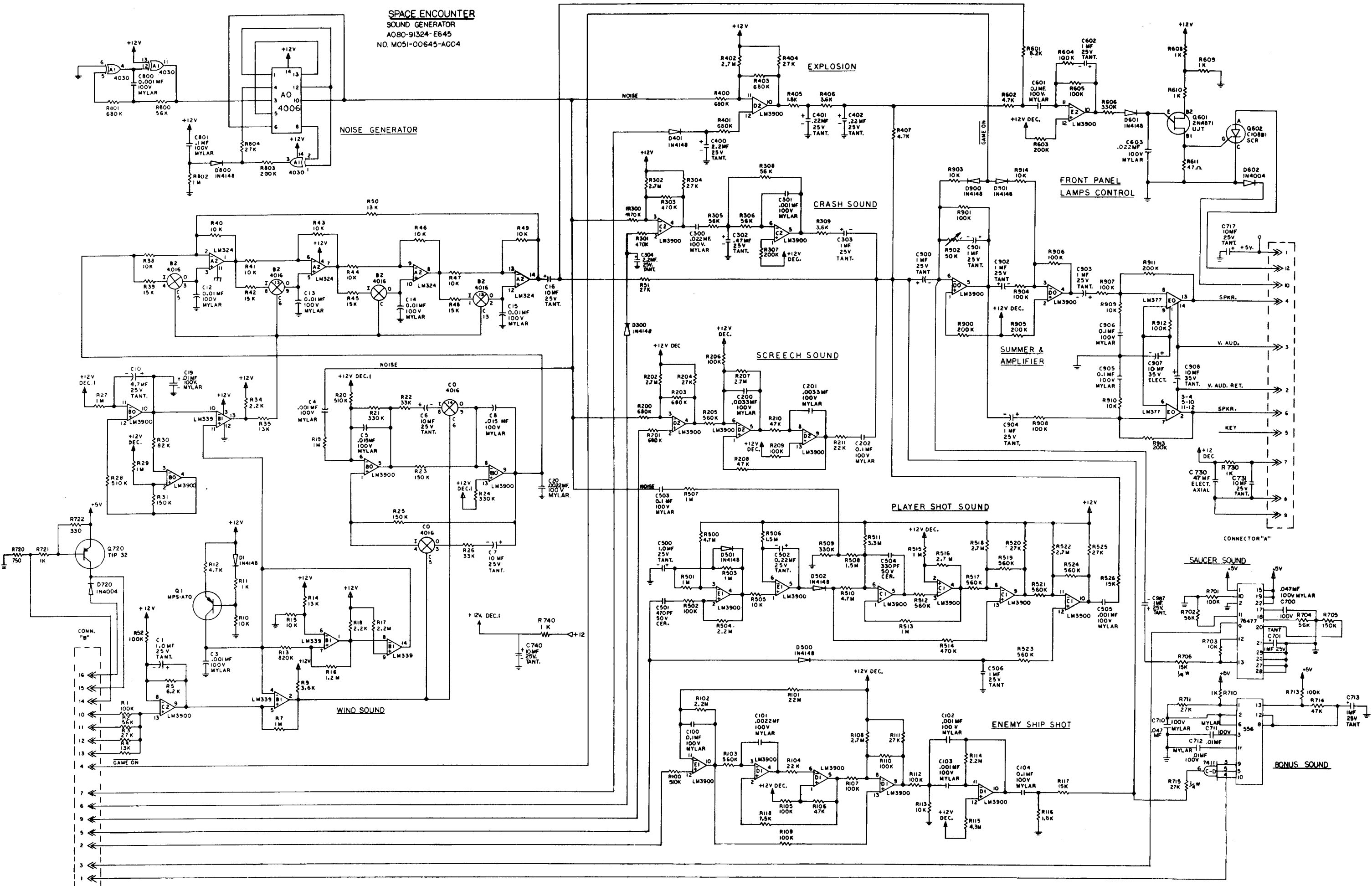
COM

-5V

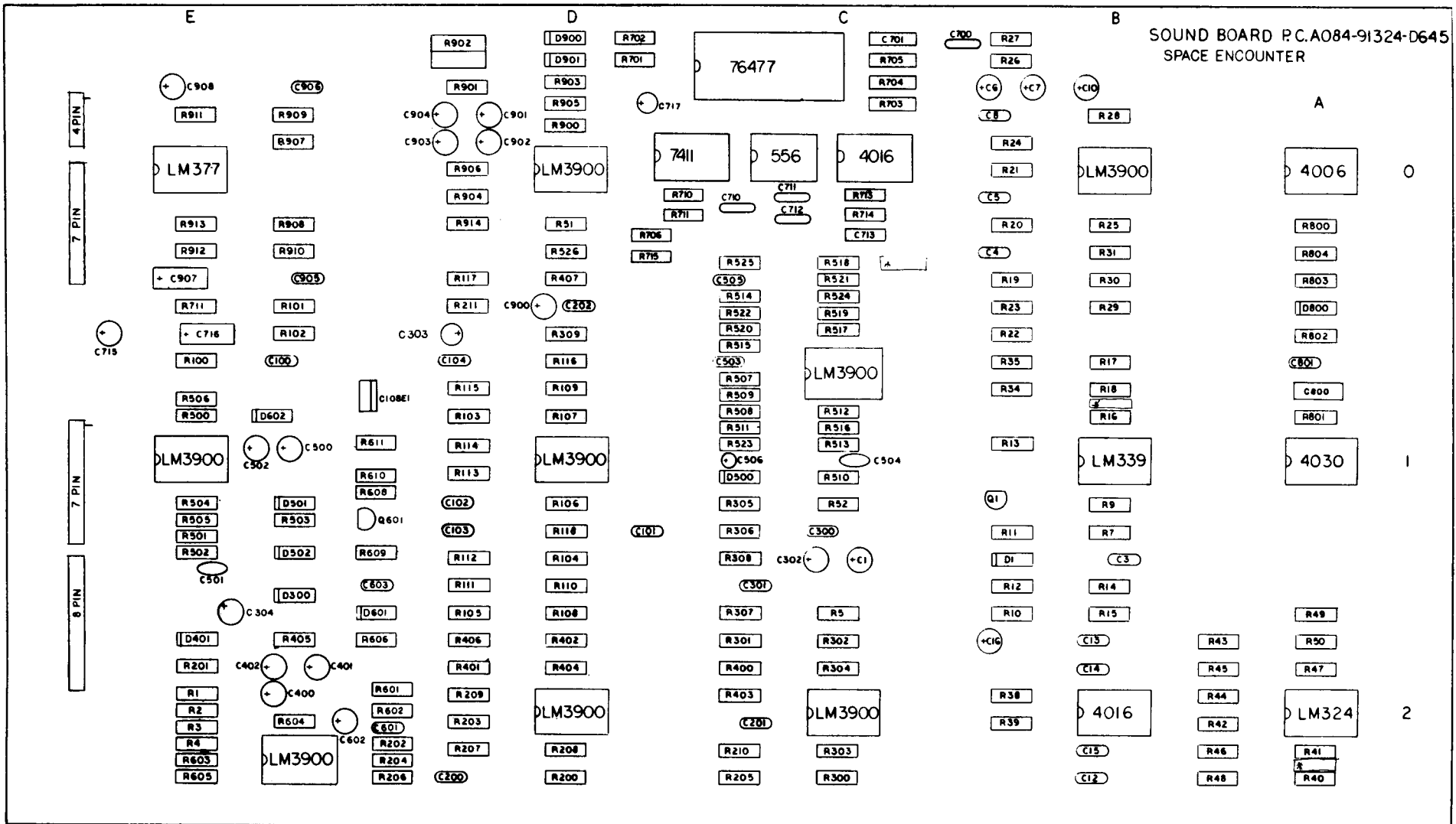
V. INJ.
V. LED

LED & LAMP RETURN

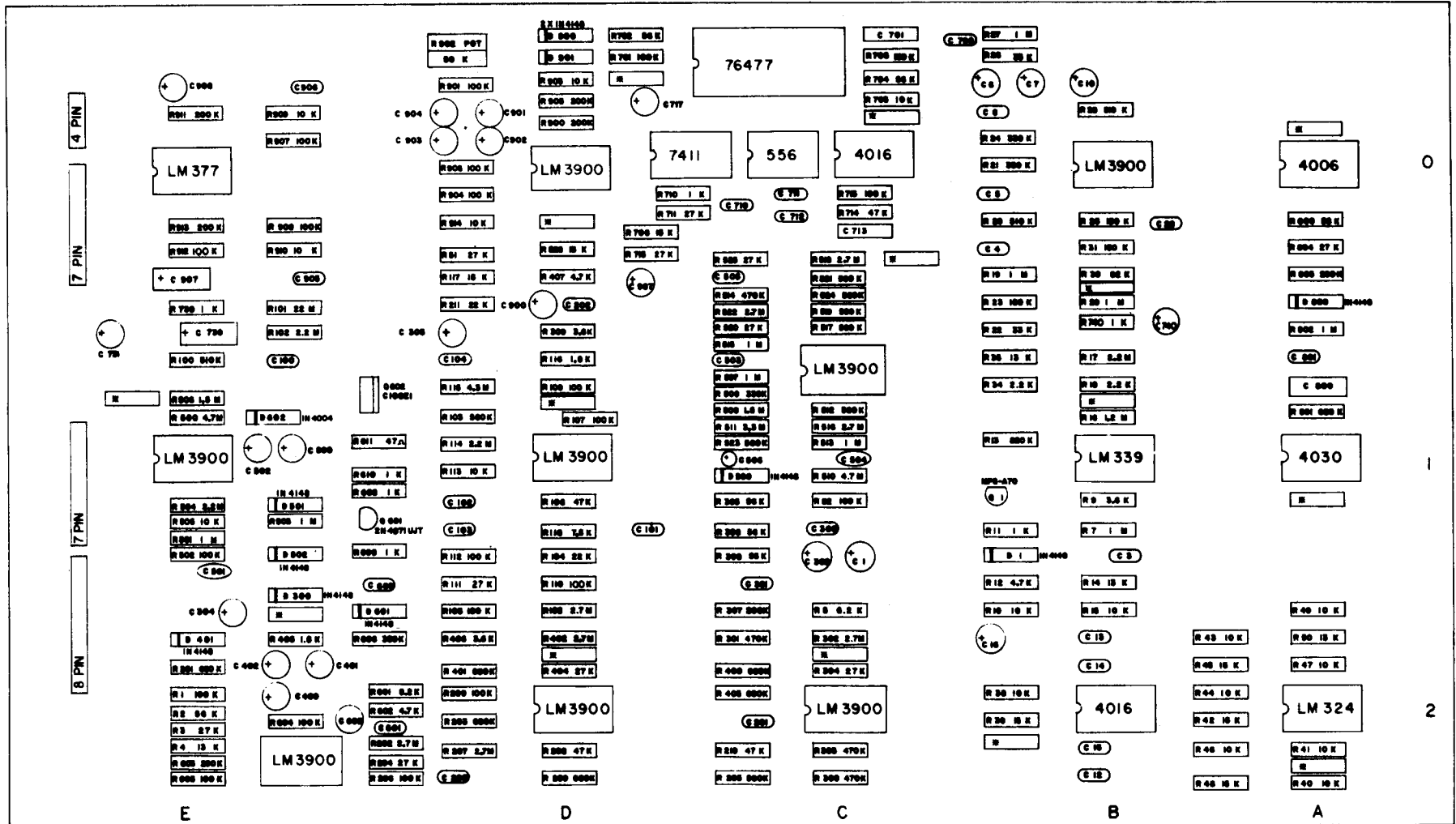
SPACE ENCOUNTER
SOUND GENERATOR
 AO80-91324-E645
 NO. M051-00645-A004



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



RRC LAYOUT PART NO. M051-00645-A006



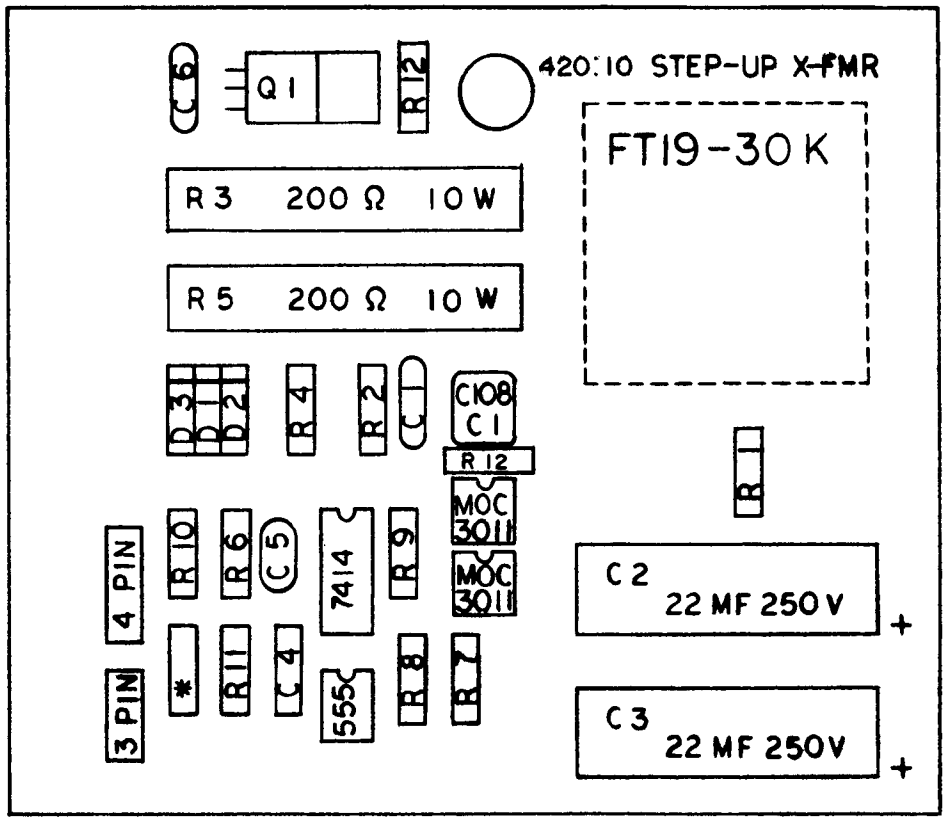
NOTE

* MARKED ON CAPS ARE .1MF 50V AX. CER.

C1, .1 MF 25 V TANT	C15, .01 MF 100 V NYLAR	C100, .1 MF 100 V NYLAR	C308, .47 MF 25 V TANT	C504, .330 PF 50 V CER.	C700, .047 MF 100 V NYLAR	C900, .001 MF 100 V NYLAR	C906, .1 MF 100 V NYLAR	C907, .1 MF 100 V NYLAR	C908, .10 MF 25 V ELEC.	C909, .10 MF 25 V TANT
C2, .01 MF 100 V NYLAR	C16, .01 MF 100 V NYLAR	C101, .0002 MF 100 V NYLAR	C309, .1 MF 25 V TANT	C505, .001 MF 100 V NYLAR	C701, .01 MF 100 V NYLAR	C901, .1 MF 100 V NYLAR	C902, .1 MF 25 V TANT	C903, .1 MF 25 V TANT	C904, .1 MF 25 V TANT	C905, .1 MF 25 V TANT
C3, .001 MF 100 V NYLAR	C17, .01 MF 100 V NYLAR	C102, .001 MF 100 V NYLAR	C304, 2.2 MF 25 V TANT	C506, .1 MF 25 V TANT	C702, .01 MF 100 V NYLAR	C906, .1 MF 25 V TANT	C907, .1 MF 25 V TANT	C908, .1 MF 25 V TANT	C909, .1 MF 25 V TANT	C910, .1 MF 25 V TANT
C4, .001 MF 100 V NYLAR	C18, .01 MF 100 V NYLAR	C103, .001 MF 100 V NYLAR	C305, 2.2 MF 25 V TANT	C507, .1 MF 25 V TANT	C703, .1 MF 25 V TANT	C901, .1 MF 100 V NYLAR	C902, .1 MF 25 V TANT	C903, .1 MF 25 V TANT	C904, .1 MF 25 V TANT	C905, .1 MF 25 V TANT
C5, .016 MF 100 V NYLAR	C19, .01 MF 25 V TANT	C104, .1 MF 100 V NYLAR	C306, 2.2 MF 25 V TANT	C508, .1 MF 25 V TANT	C704, .01 MF 100 V NYLAR	C906, .1 MF 25 V TANT	C907, .1 MF 25 V TANT	C908, .1 MF 25 V TANT	C909, .1 MF 25 V TANT	C910, .1 MF 25 V TANT
C6, .10 MF 25 V TANT	C20, .01 MF 25 V TANT	C105, .001 MF 100 V NYLAR	C307, 2.2 MF 25 V TANT	C509, .1 MF 25 V TANT	C705, .01 MF 100 V NYLAR	C906, .1 MF 25 V TANT	C907, .1 MF 25 V TANT	C908, .1 MF 25 V TANT	C909, .1 MF 25 V TANT	C910, .1 MF 25 V TANT
C7, .10 MF 25 V TANT	C21, .01 MF 25 V TANT	C106, .001 MF 100 V NYLAR	C308, 2.2 MF 25 V TANT	C510, .1 MF 25 V TANT	C706, .01 MF 100 V NYLAR	C906, .1 MF 25 V TANT	C907, .1 MF 25 V TANT	C908, .1 MF 25 V TANT	C909, .1 MF 25 V TANT	C910, .1 MF 25 V TANT
C8, .05 MF 25 V NYLAR	C22, .01 MF 25 V TANT	C107, .001 MF 100 V NYLAR	C309, 2.2 MF 25 V TANT	C511, .1 MF 25 V TANT	C707, .01 MF 100 V NYLAR	C906, .1 MF 25 V TANT	C907, .1 MF 25 V TANT	C908, .1 MF 25 V TANT	C909, .1 MF 25 V TANT	C910, .1 MF 25 V TANT
C9, .05 MF 25 V NYLAR	C23, .01 MF 25 V TANT	C108, .001 MF 100 V NYLAR	C310, 2.2 MF 25 V TANT	C512, .1 MF 25 V TANT	C708, .01 MF 100 V NYLAR	C906, .1 MF 25 V TANT	C907, .1 MF 25 V TANT	C908, .1 MF 25 V TANT	C909, .1 MF 25 V TANT	C910, .1 MF 25 V TANT
C10, 4.7 MF 25 V TANT	C24, .01 MF 25 V TANT	C109, .001 MF 100 V NYLAR	C311, 2.2 MF 25 V TANT	C513, .1 MF 25 V TANT	C709, .01 MF 100 V NYLAR	C906, .1 MF 25 V TANT	C907, .1 MF 25 V TANT	C908, .1 MF 25 V TANT	C909, .1 MF 25 V TANT	C910, .1 MF 25 V TANT
C11, .01 MF 100 V NYLAR	C25, .01 MF 25 V TANT	C110, .001 MF 100 V NYLAR	C312, 2.2 MF 25 V TANT	C514, .1 MF 25 V TANT	C710, .01 MF 100 V NYLAR	C906, .1 MF 25 V TANT	C907, .1 MF 25 V TANT	C908, .1 MF 25 V TANT	C909, .1 MF 25 V TANT	C910, .1 MF 25 V TANT
C12, .01 MF 100 V NYLAR	C26, .01 MF 25 V TANT	C111, .001 MF 100 V NYLAR	C313, 2.2 MF 25 V TANT	C515, .1 MF 25 V TANT	C711, .01 MF 100 V NYLAR	C906, .1 MF 25 V TANT	C907, .1 MF 25 V TANT	C908, .1 MF 25 V TANT	C909, .1 MF 25 V TANT	C910, .1 MF 25 V TANT

DRAWING NO. - M051-00645-8005

NO. REV. SCALE DOC.	REV. THEORY	2/1	NO. 200'S
DATE: 8.4.80	BY: [Signature]	SOUND BOARD COMPONENT LAYOUT	
MIDWAY MFG. CO.			PAROLE, PA. U.S.A.
84084-91324-F645			

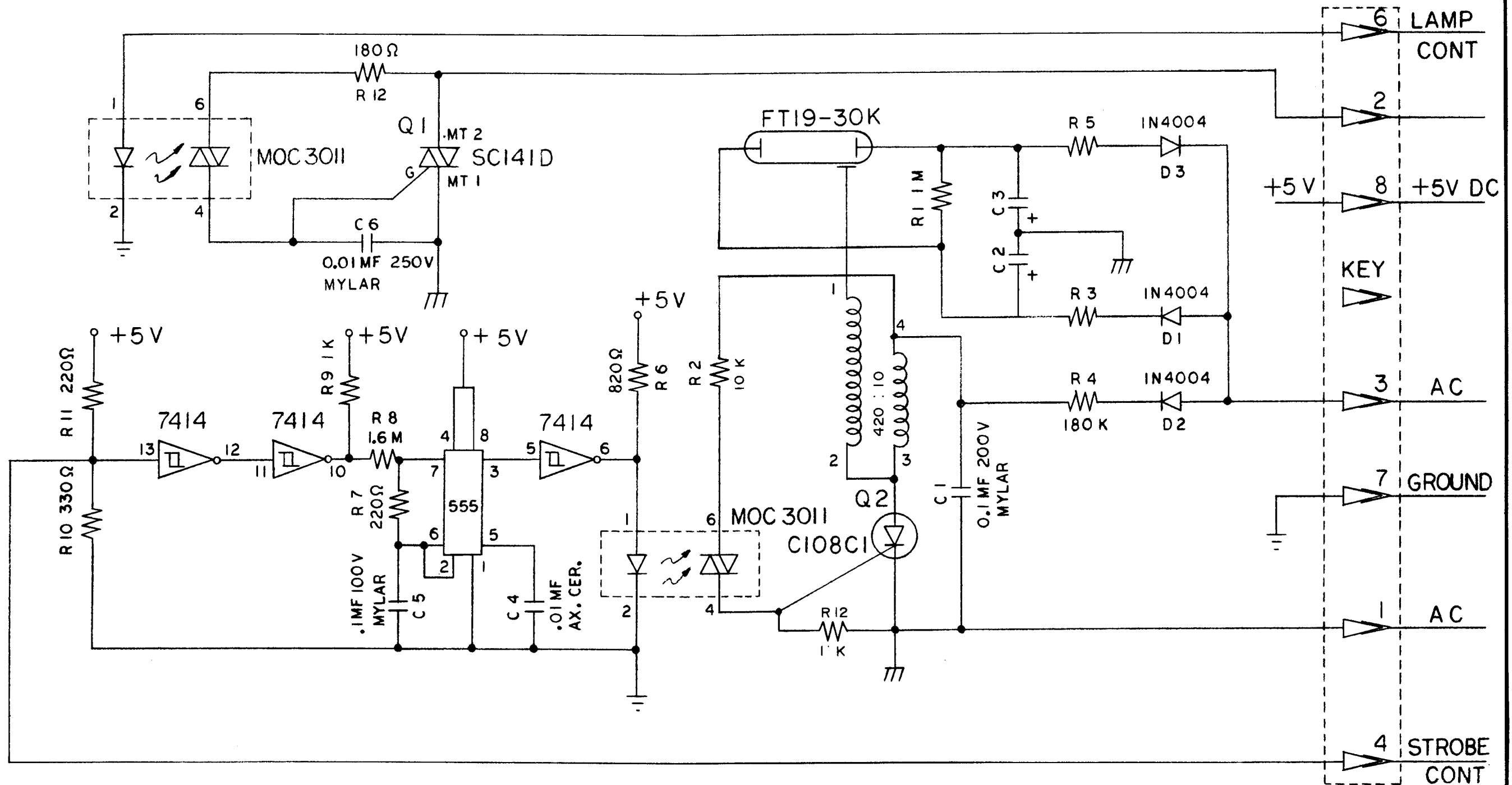


NOTE

- 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		

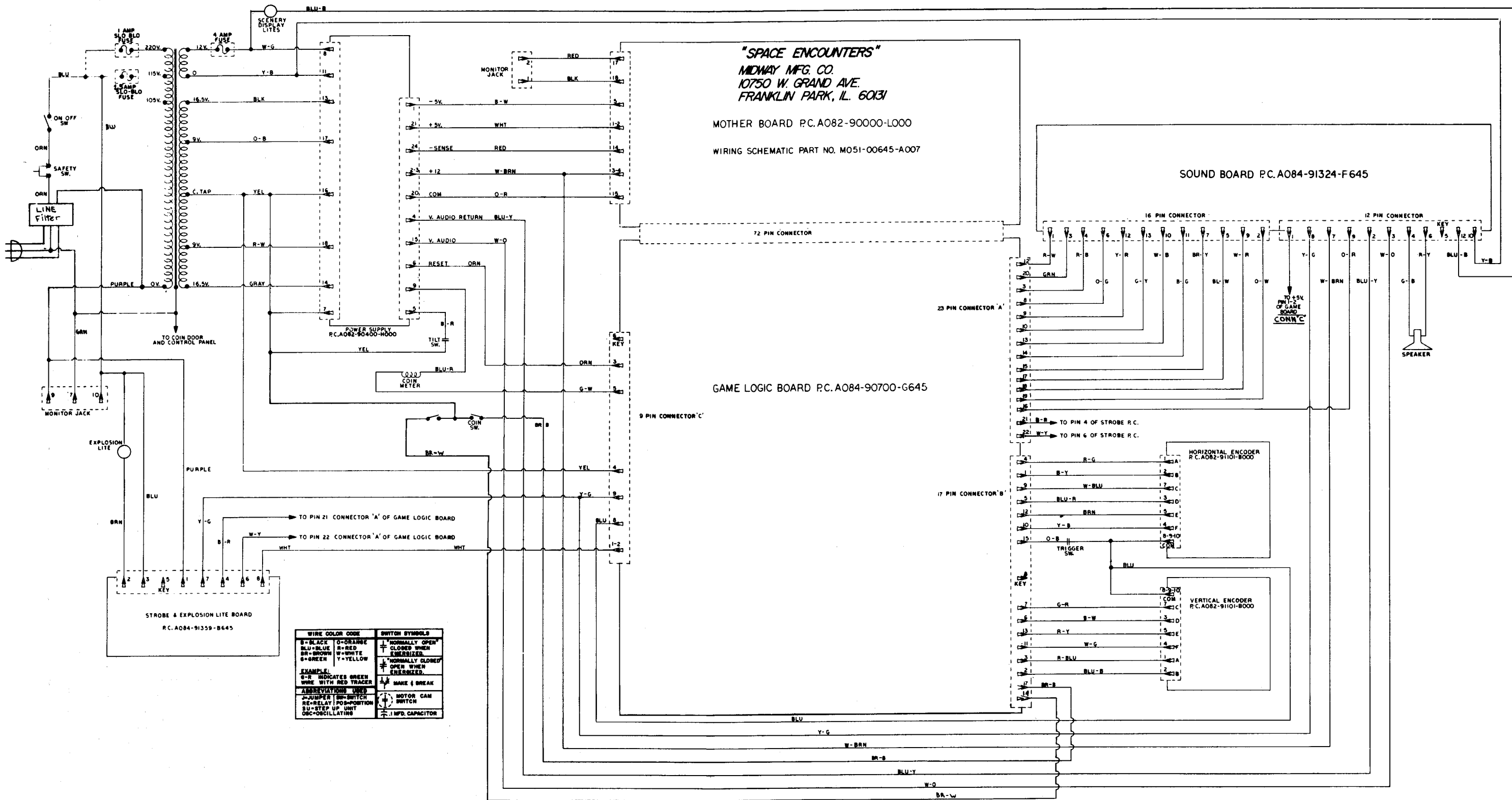
DO NOT SCALE DWG.		HEAT TREAT	SCALE	USED ON SPACE ENCOUNTER	MIDWAY MFG. CO. FRANKLIN PK. ILL.	
				NO. REQ'D 1 PER		
DIM. TOLERANCES UNLESS SPECIFIED CONCENTRICITY T.I.R. .003 FRACTIONAL..... ± 1/64 DECIMAL..... ± .008 HOLE DIA..... +.002-.000		DRN. <i>C.V.</i> CKD. DATE 7/3/80	MAT'L. FINISH	ASSEMBLY DRAWING STROBE AND LIGHT P.C.		PART NO. A084-91359-B645



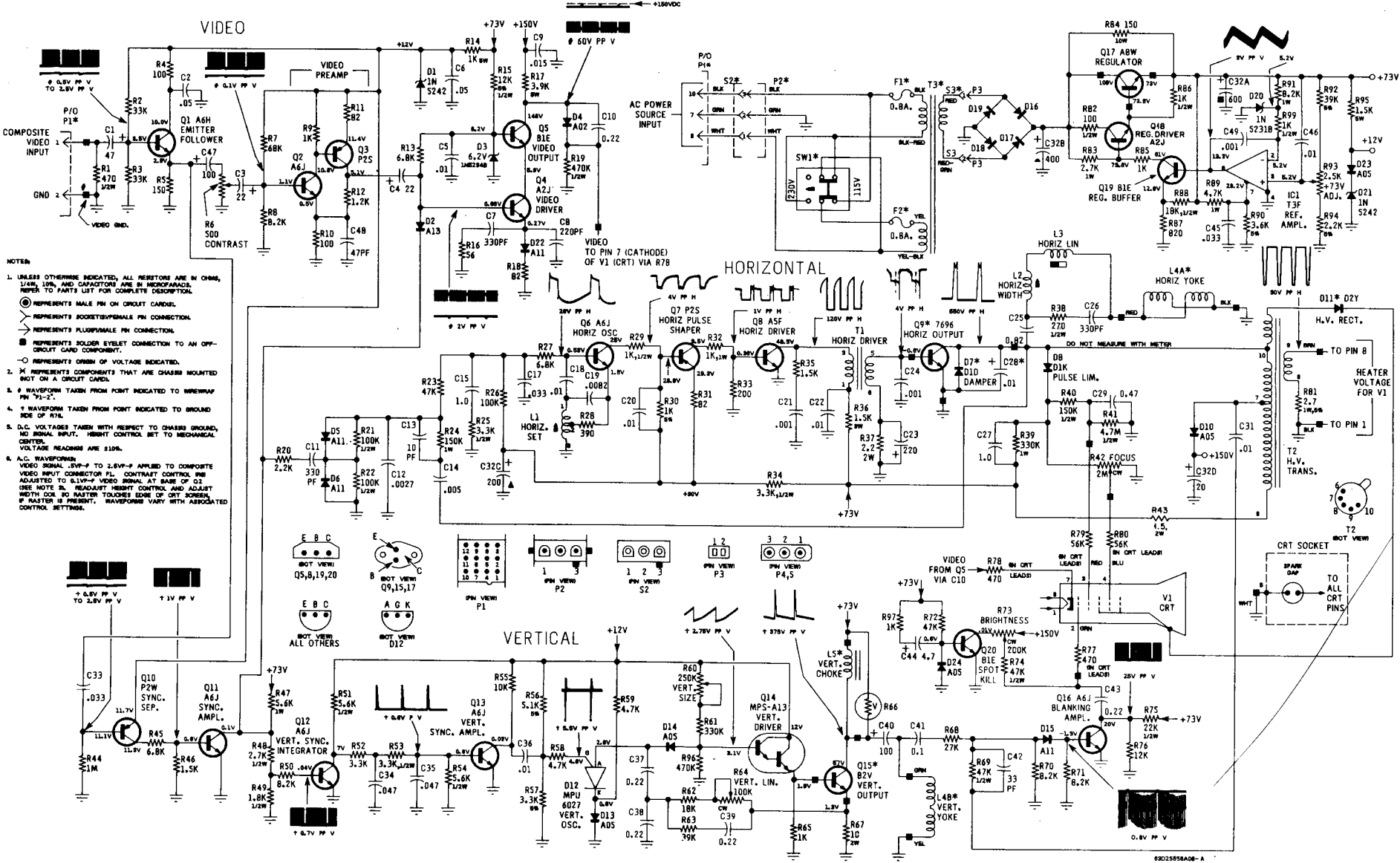
C 2,3 22 MF 250V ELEC
 R 3,5 200Ω 10W

DRAWING NO M051-00645-B001

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



POWER SUPPLY



- NOTES
- UNLESS OTHERWISE INDICATED, ALL RESISTORS ARE IN OHMS, 1/4W, 10%, AND CAPACITORS ARE IN MICROFARADS. REFER TO PARTS LIST FOR COMPLETE DESCRIPTION.
 - ⊙ REPRESENTS MALE PIN ON CIRCUIT BOARD.
 - ⊕ REPRESENTS SOCKET/TERMINALS PIN CONNECTION.
 - ⊔ REPRESENTS PLUGGABLE PIN CONNECTION.
 - ⊓ REPRESENTS SOLDER EYELET CONNECTION TO AN OFF-CIRCUIT BOARD COMPONENT.
 - ⊖ REPRESENTS GROUND OF VOLTAGE INDICATED.
 - ✕ REPRESENTS COMPONENTS THAT ARE CHANGES MOUNTED NOT ON A CIRCUIT BOARD.
 - ⊕ WAVEFORM TAKEN FROM POINT INDICATED BY WIREWRAPE PIN "1"-2".
 - ⊕ WAVEFORM TAKEN FROM POINT INDICATED TO GROUND SIDE OF R76.
 - D.C. VOLTAGES TAKEN WITH RESPECT TO CHASSIS GROUND, NO SIGNAL INPUT. HORIZONTAL CONTROL SET TO MECHANICAL CENTER. VOLTAGE READINGS ARE ±10%.
 - A.C. WAVEFORMS: VIDEO SIGNAL 1.5V-P TO 2.6V-P APPLIED TO COMPOSITE VIDEO INPUT CONNECTOR P1. CONTRAST CONTROL IS ADJUSTED TO 8.5V-P VIDEO SIGNAL AT BASE OF Q1. SEE NOTE 8. READOUT HORIZONTAL CONTROL AND ADJUST WIDTH CONTROL SO MASTER TOUCHES EDGE OF CRT SCREEN. IF MASTER IS PRESENT, WAVEFORMS VARY WITH ASSOCIATED CONTROL SETTINGS.

REPLACEMENT PARTS LIST

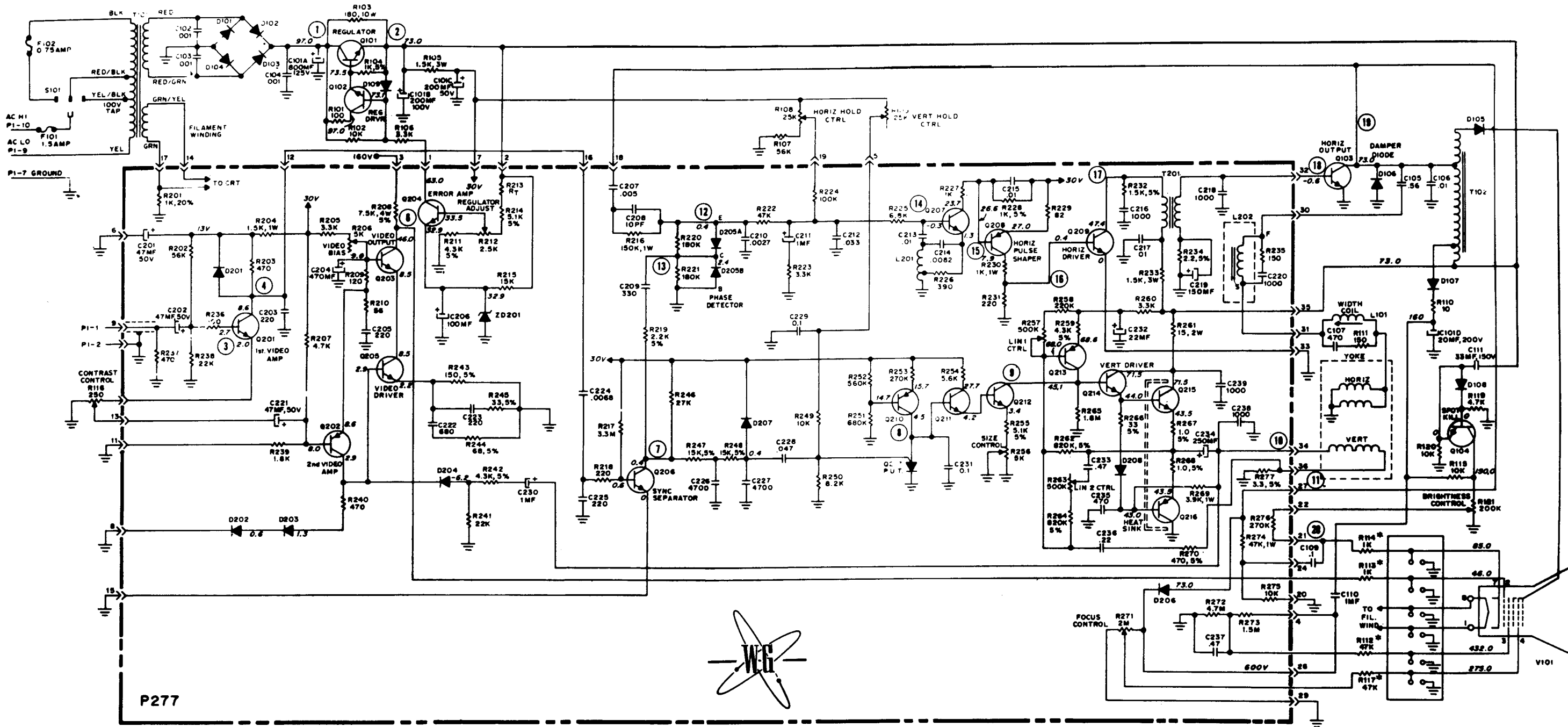
VP12

REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
ELECTRICAL PARTS			COILS & CHOKES		
	1Y25017A01	MONITOR PANEL: complete; KT364LM	L-1	24D68822A08	HORIZ SET
	1Y25017A02	POWER, Audio Panel: complete; KT365LM	L-2	24D68801A67	COMPENSATING: 2000 uh
CAPACITORS			L-3	24D69163A18	HORIZ LINEARITY
C-1	23C65282A41	50 mf 50V Lytic	L-4	24V25000A74	HORIZ WIDTH: incl's C42 & R68
C-2	23C65282A41	50 mf 50V Lytic	L-5	24D68523A15	DEFLECTION YOKE
C-3	21S180D10	220 pf 20% 100V X5F (Use 21R132503)	TRANSISTORS		
C-4	23C65282A41	50 mf 50V Lytic	Q-1	48S137171	1st VIDEO: A6H
C-5	21S180B98	180 pf 10% 500V X5F	Q-2	48S137127	2nd VIDEO: P2S
C-6	23S10255A78	470 mf 16V Lytic	Q-3	48S134919	VIDEO OUTPUT: A1M
C-7	21S180C01	680 pf 10% 500V X5F	Q-4	48S137317	VIDEO DRIVER: A8H
C-8	21S180B85	560 pf 10% 500V X5F	Q-5	48S137115	SYNC SEPERATOR: A5U
C-10	8S10191B67	.22 mf 10% 250V Polyester	Q-6	48S137172	HORIZ OSCILLATOR: A6J
C-11	8S10191A54	.0068 mf 10% 160V Polyester	Q-7	48S137127	HORIZ PULSE SHAPER: P2S
C-12	21S180D10	220 pf 20% 100V X5F (Use 21R132503)	Q-8	48S137093	HORIZ DRIVER: A5F
C-13	21S131625	330 pf 10% X5F	Q-9	48S137203	HORIZ OUTPUT: A6Z
C-15	21S180C41	.0027 mf 10% 500V Z5F (Use 21K121699)	Q-10	48S137173	VERT OSCILLATOR (1): P2W
C-16	23S10229A07	1.0 mf +40-20% 15V Lytic (Use 23C43280A17)	Q-11	48S137171	VERT OSCILLATOR (2): A6H
C-17	8S10191B90	.033 mf 10% 160V Polyester	Q-12	48S137115	VERT DRIVER: A5U
C-18	8S10299A73	.01 mf 10% 100V Poly carb	Q-13	48S134900	VERT OUTPUT: A1C
C-19	8S10299A74	.0082 mf 10% 160V Poly carb	Q-14	48S134952	REGULATOR DRIVER: A2J
C-20	8S10191B98	.01 mf 10% 250V Polyester	Q-15	48S137315	REFERENCE AMP: A8G
C-21	21S180B51	.001 mf 10% 500V X5F	Q-16	48S137368	REGULATOR: A8W
C-22	8S10191B98	.01 mf 10% 160V Polyester	Q-17	48S137172	AUDIO DRIVER: A6J
C-23	21S180C02	10 pf 10% N150	Q-18	48S137168	AUDIO OUTPUT: P2V
C-24	23D65282A40	150 mf 10V Lytic	Q-19	48S137169	5V REGULATOR, Driver: A6G
C-25	21S180B51	.001 mf 10% 500V X5F	Q-20	48S137344	5V REGULATOR: A8U
C-26	8S10212B53	.47 mf 10% 630V Mtiz Poly	Q-21	48S137476	SPOT KILLER: B1E
C-27	8S10212A11	1.0 mf 10% 630V Mtiz Poly	CONTROLS		
C-28	8S10571A06	.01 mf 5% 1200V Poly Prop Foil	R-5	18D68222A34	CONTRAST: 250 Ohm
C-29	8S10571A23	.56 mf 10% 250V Mtiz Prop Foil	R-10	18D66401A44	VIDEO BIAS: 4K
C-30	8S10191A32	.047 mf 10% 250V Polyester	R-17	18D67858A12	FOCUS: 2 meg
C-31	21S180B87	220 pf 10% 500V X5F	R-21	18D68222A35	BRIGHTNESS: 200K
C32	21S180D34	.005 mf 20% 1KV Z5F (Use 21S180D31)	R-34	18D68222A37	HORIZ HOLD: 25K
C-33	8S10212A69	.47 mf 10% 100V Mtiz Poly	R-59	18D66401A44	VERT LINEARITY: 4K
C-34	8S10191A32	.047 10% 250V Polyester	R-65	17D65820A38	VERT SIZE: 15 Ohm
C-35	8S10191B98	.01 mf 10% 250V Polyester	R-74	17D65820A37	REGULATOR ADJUST: 2K
C-36	23S10255A69	4.7 mf 100V Lytic	R-82	18D68222A36	VERT HOLD: 3K
C-37	8S10212A20	2.2 mf 10% 100V Mtiz Poly	R-85	18D68222A34	VOLUME: 250 Ohm
C-38	8S10212A20	2.2 mf 10% 100V Mtiz Poly	RESISTORS		
C-39	8S10191B67	.22 mf 10% 250V Polyester	R-1	6S127633	470 10% 1/2W
C-40	8S10212A10	1.0 mf 10% 100V Mtiz Poly (Use 8S10191A46)	R-2	6S125568	22K 10% 1/2W
C-41	8S10064A06	.01 mf 10% 600V Mylar	R-3	6S127541	56K 10% 1/2W
C-42	21S180A71	470 pf 10% 500V X5F	R-4	6S127633	470 10% 1/2W
C43	23C65807A47	400 mf/125V; 600 mf/50V; 20 mf/200V Lytic	R-6	6S128955	1500 10% 1W
C-44	21S180E60	.01 mf +80-20% 50V Z5V	R-7	6S121847	4700 10% 1/2W
C-47	*23C65807A52	5000 mf 20V Lytic	R-8	6S122445	1800 10% 1/2W
C-49	23S10255A31	470 mf 40V Lytic	R-9	6S119926	2700 10% 1/2W
C-50	23D65282A41	50 mf 50V Lytic	R-11	6S128226	120 10% 1/2W
C-51	23S10255B43	40 mf 100V Lytic	R-12	6S127633	470 10% 1/2W
DIODES & RECTIFIERS			R-13	17S10731A02	7500 5% 5W WW
D-1	48S134921	DIODE, Silicon: D1D; Damper	R-14	6S124797	150 10% 1/2W
D-2	48S134978	DIODE, Silicon: D1K; Pulse Limiter	R-15	6S127516	82 10% 1/2W
D-3	48D67120A11	DIODE, Low Power	R-18	-----	Part of CRT socket assembly
D-4	48S137114	RECTIFIER, H. V.: Silicon: D2Y	R-19	-----	Part of CRT socket assembly
D-5	48S191A05	RECTIFIER, Silicon: 91A05 (Use 48S191A07)	R-20	-----	Part of CRT socket assembly
D-6	48S137469	DIODE, Silicon: zener; D7G	R-22	6S129296	270K 10% 1/2W
D-7	48S134917	DIODE, Dual: D1C; Detector	R-23	6S10053C67	27K 5% 1/2W
D-8	48S67120A11	DIODE, Low Power	R-24	6S127538	3.3 meg 10% 1/2W
D-9	*48S191A10	RECTIFIER, Silicon: 91A10	R-25	6S121300	27K 10% 1/2W
D-10	48S191A10	RECTIFIER, Silicon: 91A10	R-26	6S127541	56K 10% 1/2W
D-11	48S101A10	RECTIFIER, Silicon: 91A10	R-27	48S129875	2200 10% 1/2W
D-12	48S191A10	RECTIFIER, Silicon: 91A10	R-28	6S125531	180K 10% 1/2W
D-13	48D67120A11	DIODE, Low Power	R-29	6S125531	180K 10% 1/2W
D-14	48S191A05	RECTIFIER, Silicon: 91A05 (Use 48S191A07)	R-30	6S125892	47K 10% 1/2W
D-15	48S191A05	RECTIFIER, Silicon: 91A05 (Use 48S191A07)	R-31	6S125534	100K 10% 1/2W
D-16	48S191A05	RECTIFIER, Silicon: 91A05 (Use 48S191A07)	R-32	6S124506	3300 10% 1/2W
D-17	48S191A05	RECTIFIER, Silicon: 91A05 (Use 48S191A07)	R-33	6S10053C53	6800 5% 1/2W
D-18	48S191A05	RECTIFIER, Silicon: 91A05 (Use 48S191A07)	R-35	6S127541	56K 10% 1/2W
D-19	48D67120A11	DIODE, Low Power	R-36	6S125545	390 10% 1/2W
D-20	*48S10641D43	DIODE, Silicon: D4.3	R-37	6S121301	1000 10% 1/2W
D-21	48D67120A11	DIODE, Low Power	R-38	6S10053C33	1000 5% 1/2W
D-22	48S191A05	RECTIFIER, Silicon: 91A05 (Use 48S191A07)	R-39	6S127516	82 10% 1/2W
D23	48S191A05	RECTIFIER Silicon: 91A05 (Use 48S191A07)	R-40	6S127547	1000 10% 1W
FUSES			R-41	6S127099	220 10% 1/2W
F-1	65S139424	FUSE: 1A-250V	R-42	6S127513	1500 10% 1/2W
F-2	65S139424	FUSE: 1A-250V	R-43	17S10130B07	1500 10% 3W fxd mtl film
INTEGRATED CIRCUITS			R-44	17S744356	2.2 10% 2W WW
IC-1	*51S10732A01	INTEGRATED CIRCUIT: T3F	R-45	6S120141	150K 10% 1W
			R-46	6S127634	33K 10% 1W
			R-47	6S128229	680K 10% 1/2W
			R-48	6S10053D21	4.7 meg 10% 1/2W
			R-49	6S124797	150 10% 1/2W
			R-50	6S10053C45	3300 5% 1/2W
			R-52	6S124506	3300 10% 1/2W
			R-53	6S129874	68 10% 1/2W
			R-54	6S131972	39 10% 1/2W
			R-55	6S10053C65	22K 5% 1/2W
			R-56	6S125535	39K 10% 1/2W
			R-57	6S124506	3300 10% 1/2W
			R-58	6S129793	82K 5% 1/2W
			R-60	6S129875	2200 10% 1/2W
			R-61	6S10053F29	820 10% 1W
			R-62	6S127515	3900 10% 1/2W

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		42B25158A01 31D70080B04	CLAMP, Metal : Defl Yoke Mtg CONNECTOR, PC panel: 9 contact; on chassis
R-75	6S121301	1000 10% 1/2W			
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			
R-90	6S131412	56 10% 1/2W		*39S10184A63	CONTACT, Plug: for power connector 15S10183A69
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)
SWITCHES				28S10733A01	KEY, Plug: for S2 connector
SW-1	40S10624A01	SWITCH, Slide: DPDT (115V-230V)		2S7051	NUT, hex: 3/8-32; control mtg
TRANSFORMERS				5S10281A03	RIVET, drive pin: nylon; HV transf mtg
T-1	25D67440A03	HORIZ DRIVER		47C66082A03	ROD, Adjustment: width coil: L4
T-2	24D69791A21	H. V. TRANSFORMER: complete		3S136050	SCREW, tpg: 6-20 x 1/2 clu pan hd; Q9, Q13, Q16 & Q20
T-3	25D65840A22	VERT OUTPUT (Use 25D65840B23)		9S10143A41	SOCKET, lamp: E1
T-4	*25D68164A31	POWER		9D67555V27	SOCKET, CRT: inclc leads & resistors
MISCELLANEOUS ELECTRICAL PARTS				*9D25201A01	SOCKET, HV Rectifier (4): complete; inclc 2nd anode lead & cup.
V-1	20WP4	CRT (XM501-10 19VP111)		9C63825A01	SOCKET, transistor: Q9, Q13, Q16
	23JEP4	CRT (XM701-10 23VP111)		9C63825A02	SOCKET, transistor: Q20
				41D65987A01	SPRING, special: CRT aquadag grnd
				66P65173A47	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



- NOTES:
- VOLTAGE MAY VARY WITH CONTROL SETTING.
 - LINE VOLTAGE MAINTAINED AT 120VAC, 50/60 Hz.
 - 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.
 - 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 μ F/125V, 200 μ F/100V 200 μ F/50V, 20 μ F/200V Electrolytic
C102, 103 104	80X0001-000	.001 μ F, GMV Z5U Cer. Disc.
★C105	342X5642-049	.56 μ F, 400V, 10% Polypropylene
★C106	46X0536-001	.01 μ F, 1200V, 5% Polypropylene
C107	80X0099-006	470 pF, Z5F, 10%
C109	342X1044-040	0.1 μ F, 400V, 20% Mylar
★C110	46X0540-002	1.0 μ F, 630V, 10% Polyester Film
C111	45X0515-032	33 μ 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, 120	340X3103-941	10k Ohm, 10%, 1/2W
★R103	340X0181-341	180 Ohm, 10%, 10W, WW
R104	340X3102-931	1k Ohm, 5%, 1/2W
★R105	340X6152-341	1.5k Ohm, 10%, 3W, WW
R106	340X3332-941	3.3k Ohm, 10%, 1/2W
R107	340X3563-941	56k Ohm, 10%, 1/2W
R110	340X3100-941	10 Ohm, 10%, 1/2W
R111	340X3151-941	150 Ohm, 10%, 1/2W
R119	340X3472-941	4.7k Ohm, 10%, 1/2W

SEMICONDUCTORS

D101, 102 103, 104	66X0023-009	Rectifier, Silicon 500V 1N444B
★D105	66X0067-001	Rectifier Varo H1802
★D106	66X0068-001	Diode, Damper MR1-1600
D107	66X0053-001	Diode, 350V Amperex BA148
D108, 109	66X0046-001	Diode, Silicon FDH444
★Q101	86X0117-001	Transistor (NPN) 2N5632 Regulator
Q102	86X0071-001	Transistor (NPN) Reg. Driver MPSA06
★Q103	86X0118-001	Transistor (NPN) BU207 Hor. Output
Q104	86X0065-001	Transistor (NPN) D40N5 Spot Kill

MISCELLANEOUS

★F101	16X0171-001	Fuse Holder
★F102	16X0176-001	Fuse, 1.5 Amp. Slo-Blo 3AG
★	16X0175-001	Fuse, 0.75 Amp, Slo-Blo 3AG
★	13X1201-001	HV Lead & Recept. Assy.
★	28X0789-001	Spring, Dag, Grounding
★	9A2786-001	Deflection Yoke & Clamp
★V101	19VARP4	CRT (19V1001)
or	or	
★V101	22VATP4	CRT (22V1001)
	38A5473-000	2 PDT Small Relay (W/Wires)
	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 μ F, 50V, Electrolytic
C203, 205, 223, 225	80X0099-057	220 pF, 10%, Z5F, Cer. Disc.
C204	45X0524-053	470 μ F, 16V, Electrolytic
C206	45X0524-051	100 μ F, 50V, Electrolytic
C207	80X0099-192	.005 μ 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 μ F, 10%, Mylar
C211	45X0524-023	1.0 μ F, 15V, Electrolytic
C212	349X3332-109	.033 μ F, Mylar
C213	46X0537-002	.01 μ F, Poly
C214	46X0537-003	.0082 μ F, Poly
C215	349X1032-109	.01 μ F, 10%, 100V Mylar
C216, 218, 220, 238, 239	80X0099-076	1000 pF, 10%, 500V, Cer. Disc.
C217	349X1032-209	.01 μ F, 10%, 200V, Mylar
C219	45X0524-052	150 μ F, 10V, Electrolytic
C222	80X0099-137	680 pF, 10%, 500V, Cer. Disc.
C224	349X6822-109	.0068 μ F, 10%, 100V, Mylar
C226, 227	80X0099-056	4700 μ F, 10%, 500V, Cer. Disc.
C228	349X4732-109	.047 μ F, 10%, 100V, Mylar
C229	349X1044-109	0.1 μ F, 20%, 100V, Mylar
C230	45X0515-014	1.0 μ F, 50V, Electrolytic
C231	349X1042-109	0.1 μ F, 10%, 100V, Mylar
C232	45X0524-026	22 μ F, 100V, Electrolytic
C233	349X4742-109	.47 μ F, 10%, 100V, Mylar
C234	45X0524-025	250 μ F, 100V, Electrolytic
C235	80X0099-006	470 pF, 10%, Z5F, Cer. Disc.
C236	349X2242-109	.22 μ F, 10%, 100V, Mylar
C237	46X0540-001	.47 μ 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

★ Product Safety Device

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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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