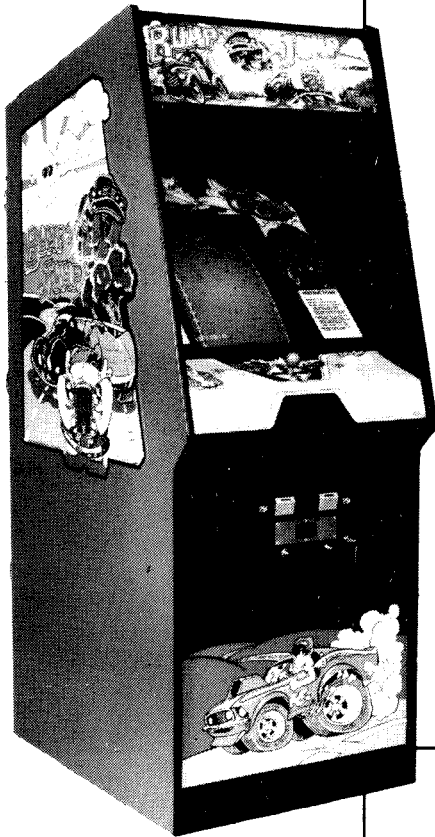
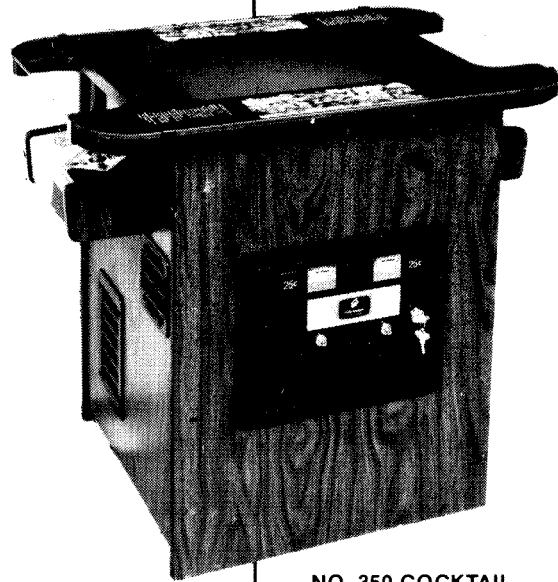


Parts and Operating Manual



NO. 349 UPRIGHT



NO. 350 COCKTAIL

Bally

MIDWAY MFG. CO.

10750 W. Grand Avenue
Franklin Park, Illinois 60131
U.S.A.



Phone: (312) 451-1360

Cable Address: MIDCO

Telex No.: 72-1596

WARNING

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

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a CLASS A computing device pursuant to SUBPART J of PART 15 of FCC RULES, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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 CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

Bally* | **MIDWAY*
T.M.

Invites You To Use

**OUR TOLL FREE NUMBERS FOR
SERVICE INFORMATION CONCERNING THIS GAME, OR ANY
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Printed in U.S.A.

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Bump & Jump

IMPORTANT NOTE

DO NOT plug in your new game yet. Before you do anything to your game, we recommend that you read SECTIONS I and II of this manual completely. It will not take more than a few minutes and it may be very helpful.

I. Introduction

Your NEW GAME is for one or two players. There are two models: the "UPRIGHT" and "COCKTAIL TABLE". When the two player mode is selected on the Upright model, the players take turns at the controls to guide their player through the game course. If you have purchased the Cocktail Table model of this game, the rules of play are the same. The only **difference** is that in the two player mode of the Cocktail Table game, the picture flips to face you when it's your turn.

When playing this game, you are the controlling force. It is up to you to direct your player successfully through the game course. Your job is to give guidance and provide offensive and defensive strategy to enable your player to overcome all obstacles.

Your opponents will use every trick in the book, and may even invent a few new ones, to overcome your various strategies and eliminate your player(s). You really have to keep a close eye on them at all times.

As your skill level increases, you will notice that your opponents' offensive abilities greatly increase. Any advantages you once had at the beginning of the game will gradually be reduced until they are completely gone.

Bonus players may or may not be awarded depending on the options the game owner has selected. The point values of all items are listed in Figure 1-1.

Major Features

Your game is equipped with a detailed self-diagnostic package.

It also has been provided with a new improved Power Chassis designed to help reduce electrical interference with other equipment.

Game Objective

The object of the game is to **HAVE FUN** and survive as long as possible while constantly improving your skills and advancing to the highest rack that you can. As you do this, each following rack of the game will have more and greater obstacles for you to overcome, and will in general be harder to complete.

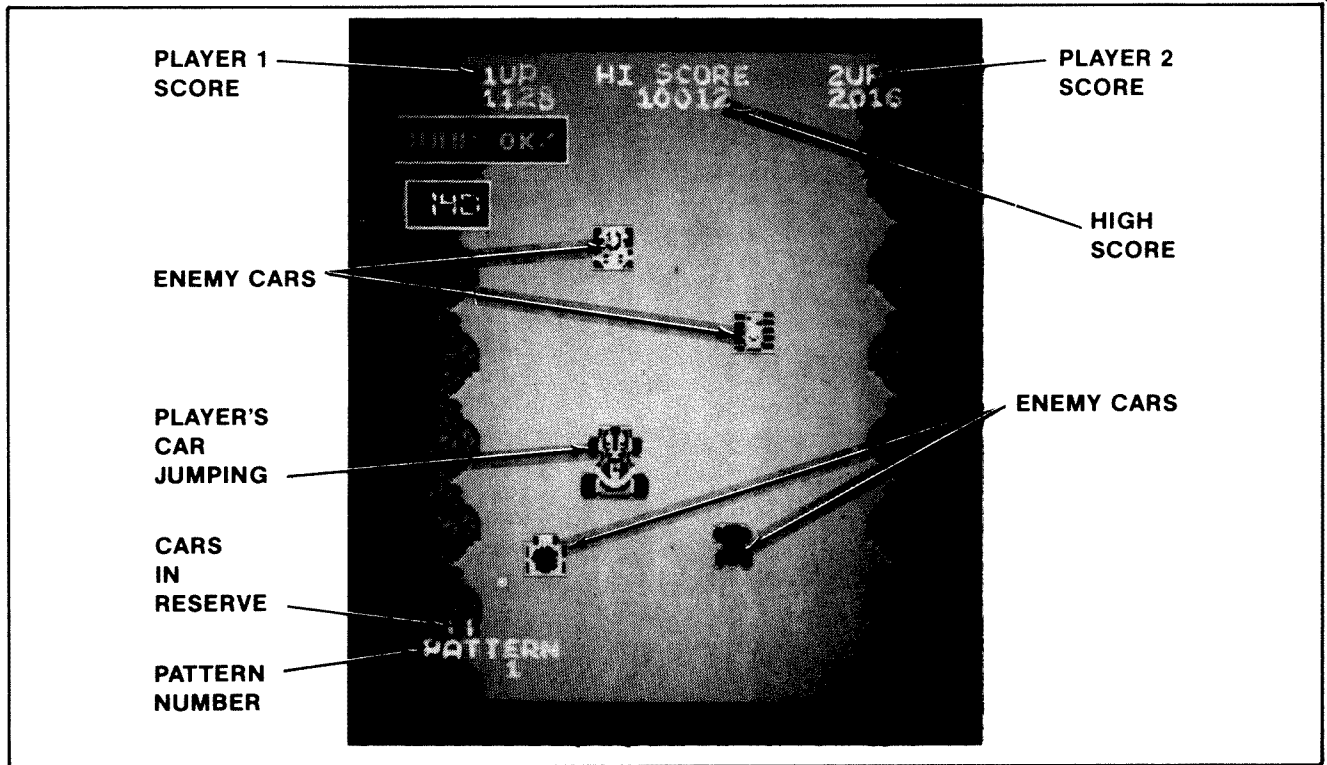
COMPETITORS VEHICLE POINT VALUES	
1. FIRST GROUP OF COMPETITORS VEHICLES	200 POINTS EACH
2. SECOND GROUP OF COMPETITORS VEHICLES	300 POINTS EACH
3. THIRD GROUP OF COMPETITORS VEHICLES	500 POINTS EACH
SPECIAL BONUS AWARDED	
50,000 POINTS	FOR EACH RACK FINISHED WITHOUT CAUSING ANY COMPETITORS TO CRASH
1,000 POINTS	FOR LANDING ON AN ISLAND WHILE MAKING A WATER JUMP

Figure 1-1

II. Game Operation

BUMP & JUMP is a one or a two player game with a color T.V. monitor. The game gives a display which has all the parts shown below.

The game has five possible modes of operation: ATTRACT, READY-TO-PLAY, PLAY, HIGH SCORE/INITIAL, and SELF-TEST.



Identification of "On-Screen" Graphics During Game Play

SELF-TEST MODE

The Self-Test mode is a special mode for checking the game switches and computer functions. It is the easiest and best way to check for proper operation of the entire game.

NOTE: Putting the game into Self-Test will cause it to **erase** any CREDITS it has on it from its memory.

You may begin a Self-Test at any time after the power to the game is on by sliding the TOP Self-Test switch to the "ON" position and then turning the game "OFF" and back "ON" again. (The "SELF-TEST" Switch(es) are **ONLY READ** by the game's computer for instructions **WHEN THE GAME IS POWERED UP.**) Now that the game is in the Self-Test mode, it will react as follows:

1. First, you will hear a tone for about 1/2 second.
2. Immediately following this, a rightside up test display is shown on the monitor screen. Pushing the CREDIT BUTTON after each display is completed will cause the game to step through each of its Self-Tests. The game will remain in this Self-

Test mode until you set the TOP Self-Test switch back to the "OFF" position and turn the game "OFF" and back "ON" again. These test displays are shown on the following page.

3. If a bad ROM or RAM chip is found by the game's internal check system during the Self-Test, the game indicates this to you by showing the P.C. Board location code of the bad chip(s) in place of the letters "OK".
4. To check your game function switches and buttons (coin counter switches, JUMP Button, 1 PLAYER and 2 PLAYER buttons, etc.): activate each one while the game is in the "SW TEST" section of the complete Self-Test mode. You should see a different square filled with light for each activation. If you do not see it, the switch/button is either not working, miswired, or disconnected. Check it out thoroughly.

NOTE: Activating either the CREDIT BUTTON or COIN COUNTER SWITCH will cause the game to advance to the next test mode category.

**SELF-TEST DISPLAY
AND BOARD LOCATION COORDINATES**

RAM TEST OK or (a number and a letter i.e. 1L, 3H, etc.)

ROM TEST OK or (a number and a letter i.e. 4D, 5B, etc.)

SOUND	PSG1	PSG2	END
	CHECK 01/02/03	04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21	

SW TEST — (ACTIVATE ALL OF GAME'S INPUT SWITCHES — IF GOOD THEY WILL LIGHT A SQUARE)

TILT TEST — (ACTIVATE TILT SWITCH — IF GOOD IT WILL LIGHT THE SQUARE)

DIP TEST **NO 1** **NO 2** (INDICATES WHICH OPTION SWITCHES ARE TURNED "ON"
 00001011 00000000 AND WHICH ARE TURNED "OFF" — 1 = "ON" & 0 = "OFF".)

↙ THIS NUMBER **ALWAYS APPEARS** AS 1.

MAPING OK or (a number and a letter i.e. 6J, 7F, etc.)

MIX TEST (if error, one or more characters will be out of sync)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

FOREGROUND CHARACTER DISPLAY — (screen is filled with different parts of foreground objects) —
If error has occurred, pictures will be distorted.

BACK TEST OK or (incorrect address bit)

SCROLL	P1 1T 1
	P1 1N 1
	P1 2T 1
	P1 2N 1
	P1 1T 2
	P1 1N 2
	P1 2T 2
	P1 2N 2
	P2 1T 1
	P2 1N 1
	P2 2T 1
	P2 2N 1
	P2 1T 2
	P2 1N 2
	P2 2T 2
P2 2N 2	

CROSS HATCH PATTERN DISPLAYED (there is a dot in the center of each square)

5. VIDEO P.C. BOARD TEST **ONLY**:

To check "VIDEO", slide the TOP and the BOTTOM Self-Test switches to the "ON" position and then turn the game "OFF" and back "ON" again. (The "SELF-TEST" Switch(es) are **ONLY READ** by the game's computer for instructions **WHEN THE GAME IS POWERED UP.**) Now that the game is in the Self-Test mode, it will react as follows:

It will give the same screen display it did when the video was checked as part of the complete Self-Test procedure.

Pushing the CREDIT BUTTON after each display is completed will cause the game to step through each of its VIDEO P.C. BOARD Self-Tests. The game will remain in this Self-Test mode until you

set the TOP and the BOTTOM Self-Test switches back to the "OFF" position and then turn the game "OFF" and back "ON" again. These test displays are shown below.

- 6. If you wish to produce **ONLY** a CROSS HATCH test pattern on the monitor screen for further use, just leave the game at that portion of either the complete Self-Test or the partial Self-Test mode until you are through making whatever adjustments you needed it for.
- 7. When finished with the Self-Test mode, make sure **BOTH** Self-Test slide switches are in the "OFF" position.
- 8. Normal game functions will then return to the monitor screen.

RAM TEST OK or (a number and a letter i.e. 1L, 3H, etc.) [DOES NOT REPEAT]

MAPING OK or (incorrect address bit)

MIX TEST (if error, one or more characters will be out of sync)

1
2
3
4
5
6
7
8

FOREGROUND CHARACTER DISPLAY — (screen is filled with different parts of foreground objects) —
If error has occurred, pictures will be distorted.)

BACK TEST OK or (incorrect address bit)

SCROLL

P1 1T 1
P1 1N 1
P1 2T 1
P1 2N 1
P1 1T 2
P1 1N 2
P1 2T 2
P1 2N 2

P2 1T 1
P2 1N 1
P2 2T 1
P2 2N 1
P2 1T 2
P2 1N 2
P2 2T 2
P2 2N 2

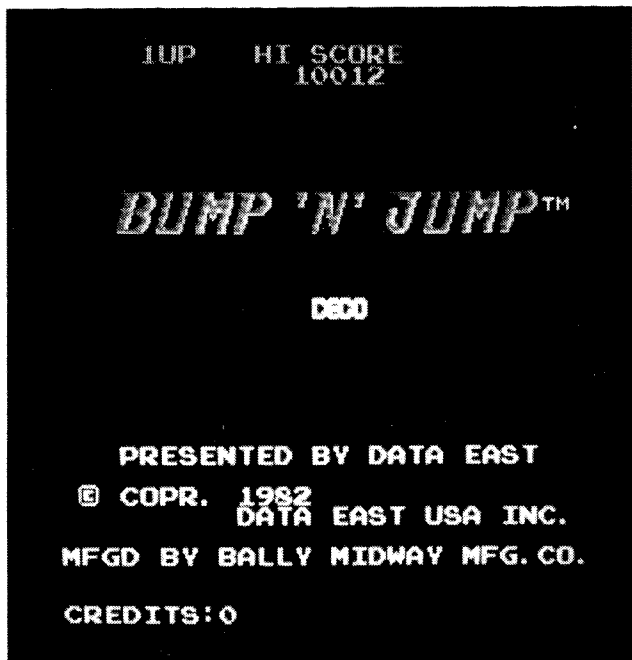
CROSS HATCH PATTERN DISPLAYED (there is a dot in the center of each square)

ATTRACT MODE

1. The Attract mode starts:

- Just after power has been turned on to the game. (Self-Test switch(es) in the "OFF" position.)
- After a Self-Test has been completed. (Performing a Self-Test sets the credits in the game's memory to zero "0".)

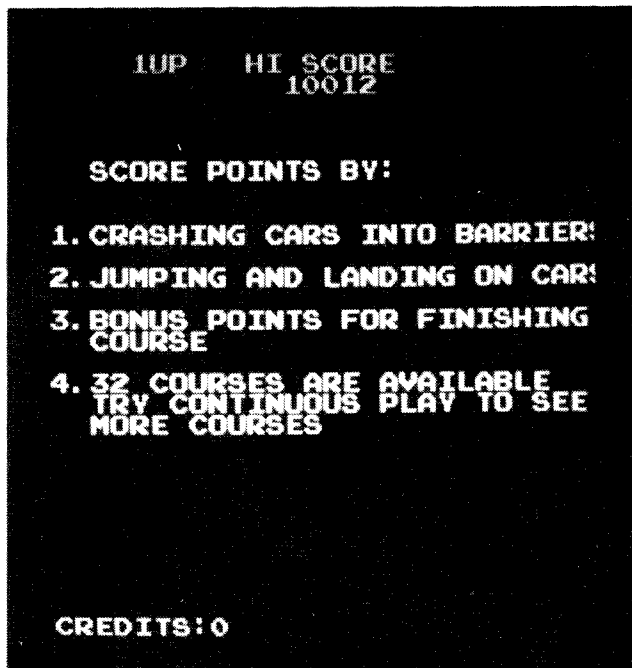
- After a play has been finished, the score was not high enough to put the game into the High Score/Initial mode, and there are no more credits left in the game's memory.
- After the High Score/Initial mode when there are no more credits left in its memory.
- In the Attract mode, the game will give the following displays **centered** on the monitor screen:



Attract Mode Display #1



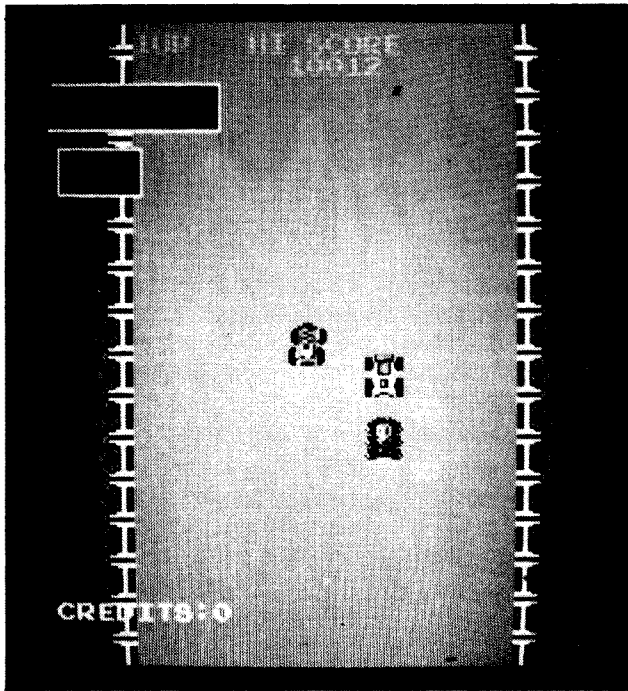
Attract Mode Display #3



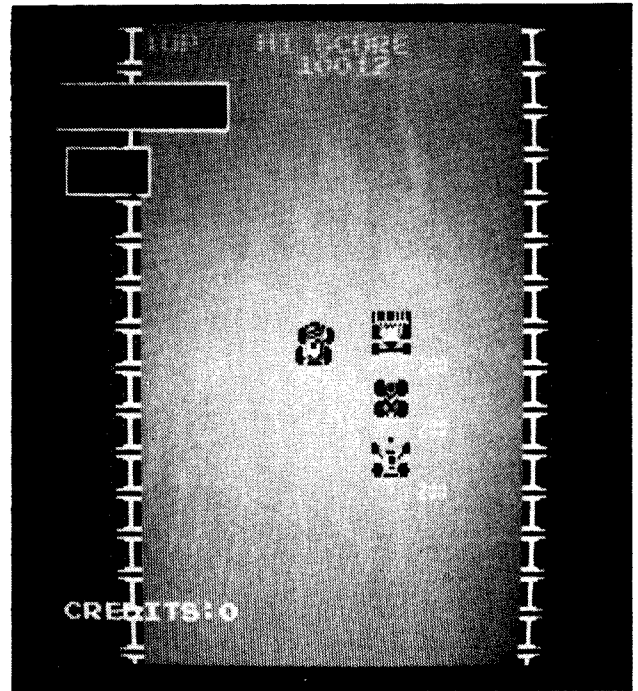
Attract Mode Display #2



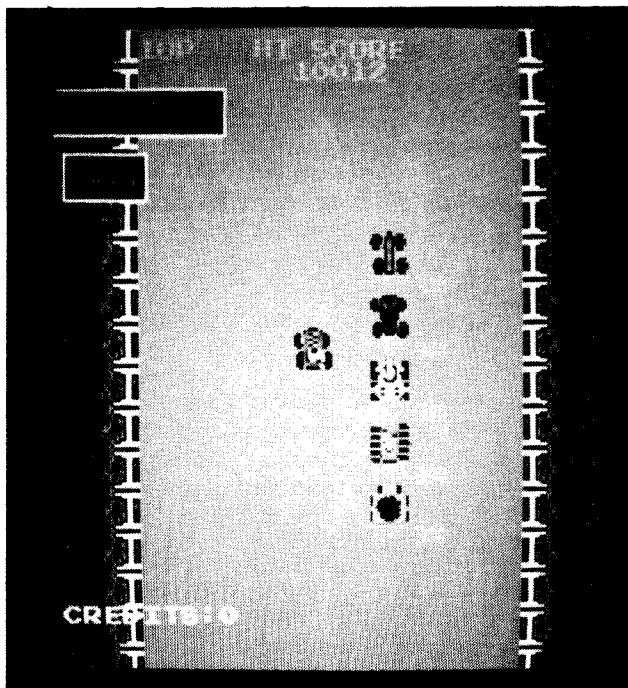
Attract Mode Display #4



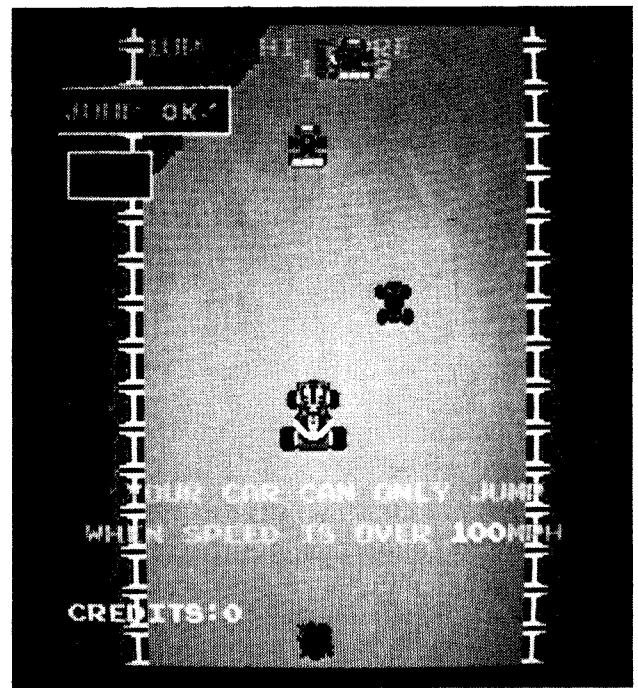
Attract Mode Display #5



Attract Mode Display #7



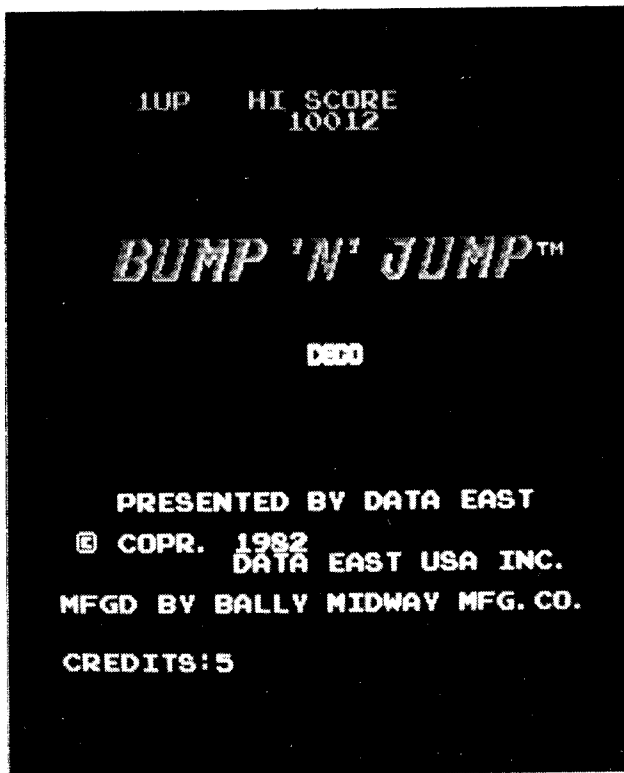
Attract Mode Display #6



Attract Mode Display #8

□ No matter where the game is in the Attract mode sequence, it will immediately show the credits you just paid for at the lower left hand corner of the monitor screen. This is the **ONLY** change in the Attract mode sequence to indicate that you are

now in the Ready-To-Play mode sequence. These credits will remain at the bottom of these displays in this sequence until the "1 PLAYER" or the "2 PLAYER" start button is pushed.



Ready-To-Play Mode Display

READY-TO-PLAY MODE

1. The Ready-To-Play mode starts when enough coins have been accepted for a 1 or a 2 player game.
2. The Ready-To-Play mode ends when either the "1 PLAYER" or the "2 PLAYER" push button is pressed.
3. In the Ready-To-Play mode, the game will give the above modified displays **centered** on the monitor screen.
4. If no START button is pressed, the displays will remain modified indefinitely as shown above.

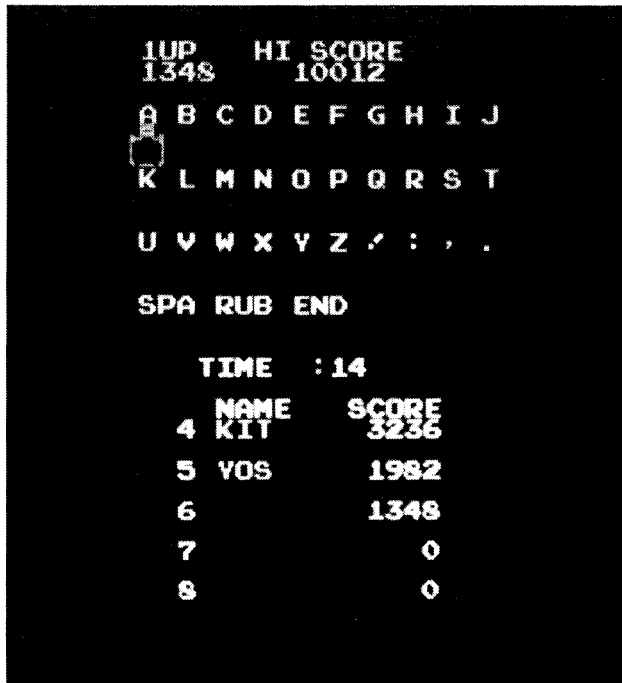
PLAY MODE

1. The Play mode begins when either the "1 PLAYER" or the "2 PLAYER" start button is pressed. "PLAYER 1 GAME START" is displayed **centered** on the screen.
2. The Play mode ends when all of your CARS have been eliminated. When this happens, you will go to the High Score/Initial mode if your score was high enough — or — "PLAYER 1 GAME OVER" is written across the center of the monitor screen.

3. When playing this game, you are the CAR's controlling force. It is up to you to direct it through the driving course to reach the gas pump at its end. Your job is to give it guidance while going through the course, keep it from being smashed into the sides of the road by its competitors, and to smash as many of those competitors into the same obstacles and edges of the course that they were trying to smash it into.
4. These competitors are very sneaky and, if given half a chance, will try to corner your CAR in such a way as to force it off the road or keep it from gaining enough speed to jump over the water and other obstacles.
5. The CAR's competitors have no real defense mechanisms of any kind. But they **CANNOT** be **PERMANENTLY** eliminated either. As soon as your CAR puts one competitor out of commission, another appears on the road at the top or bottom edge of the screen.
6. As your skill level increases, the number and types of competitors coming at your CAR at any one time and the speed with which they move, is gradually increased; plus, their pursuit patterns become more and more devious while their overall accuracy is highly improved.
7. Bonus CARs are awarded to you periodically throughout the game as you reach or pass certain preselected point values.
8. When you complete the first course (called a Rack), your CAR pulls up to the pump to take on fuel, you are given a congratulatory message by the game, are told what your bonus is, the number of the next Rack is displayed in the lower left corner of the screen, your CAR appears at the bottom center of the road, and then the next course begins.
9. When the competitors happen to eliminate one of your CARS, assuming you have at least one remaining in reserve, the next CAR appears at the bottom center of the road and play begins again.
10. When the competitors eliminate your **LAST** CAR, **SEVERAL DIFFERENT THINGS CAN HAPPEN**.
If your score was one of the TOP 20, the game will go directly to the High Score/Initial mode presentation. When you are finished entering your initials, the words "PLAYER 1 GAME OVER" are displayed **centered** on the monitor screen.
If your score is not high enough to cause the game to go into the High Score/Initial mode, the words "PLAYER 1 GAME OVER" are displayed **centered** on the monitor screen and it will then either go to the Attract mode (if there are no more credits left in its memory) or into the Ready-To-Play mode (if there are still credits left in its memory).

HIGH SCORE/INITIAL MODE

In the High Score/Initial mode the game gives a display which looks like the following:



High Score Initial Mode Display

When in the High Score/Initial mode, all the letters of the alphabet are displayed in a field above the rankings list.

By moving the controller stick left, right, up, or down, you can position the Cursor at your initials one at a time. When you have it positioned properly for one of your initials, push the Jump Button and the Cursor will take that initial down and put it in front of your score. Continue the procedure for your remaining initials.

If you do not wish to put your initials opposite your score, just press the Jump Button three times. Three "A"'s will be positioned opposite your score.

After the High Score/Initial mode, the game will display "PLAYER ____ GAME OVER" and then go to either the Attract mode (if there are no more credits left in its memory) or into the Ready-To-Play mode (if there are still credits left in its memory).

Most of the above holds true in the "2 PLAYER" mode also. But there are a few minor differences.

TWO PLAYER OPERATION

The Upright and Cocktail Table models both have two player operation.

In the Two Player mode, the rules of play are the same as in the single player mode. There are some additional rules, however.

1. In the Upright models, the players must take turns at the controls.
2. In the Cocktail Table model, each player has his own set of individual controls. The picture will flip to face you when it is your turn. (When it is not your turn, your set of controls will have **NO** effect on the game.)
3. Your turn lasts until one of your CARS is eliminated. At this point, the game will do one of several things depending on whether or not the eliminated CAR was your last or if you still have others remaining in reserve.

CAR ELIMINATED — OTHERS REMAINING IN RESERVE

- The GAME stops.
- Next, the Rack changes to the Rack number the other player is in, it displays "PLAYER ____ GET READY" while the other player's Rack and CAR appear on the screen.
- Play then begins for the other player.

CAR ELIMINATED — NO OTHERS REMAINING IN RESERVE (SEVERAL DIFFERENT THINGS CAN HAPPEN)

- FIRST PLAYER ELIMINATED:** If your score was one of the TOP 20, the game will go directly to the High Score/Initial mode presentation. When you are finished entering your initials, the words "PLAYER ____ GAME OVER" are displayed **centered** on the monitor screen.

If your score is not high enough to cause the game to go into the High Score/Initial mode, the words "PLAYER ____ GAME OVER" are displayed **centered** on the monitor screen.

Next, the Rack changes to the Rack number the other player is in, it displays "PLAYER ____ GET READY" while the other player's Rack and CAR appear on the screen. Play then begins for the other player.

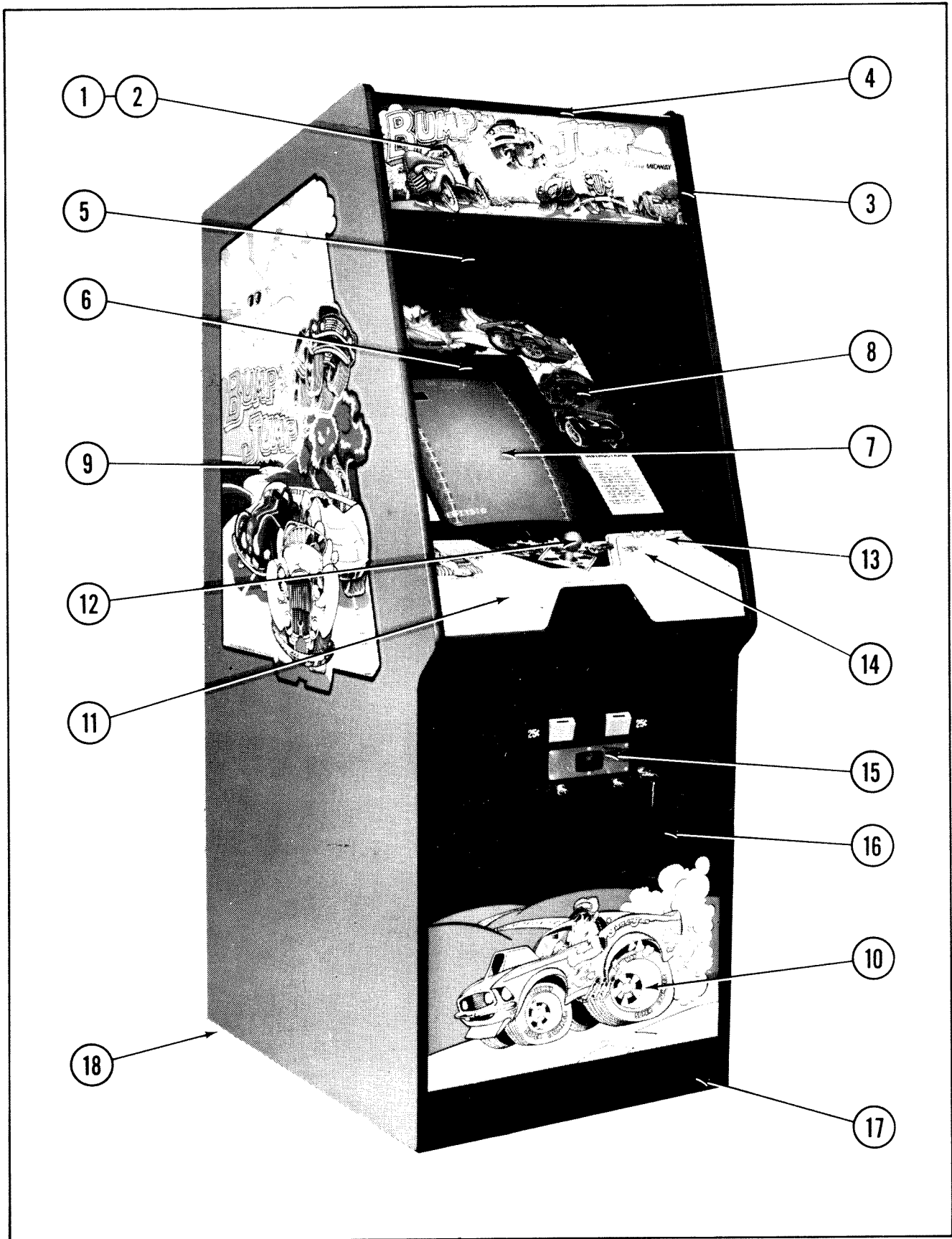
- LAST PLAYER ELIMINATED:** If your score was one of the TOP 20, the game will go directly to the High Score/Initial mode presentation. When you are finished entering your initials, the words "PLAYER ____ GAME OVER" are displayed **centered** on the monitor screen.

If your score is not high enough to cause the game to go into the High Score/Initial mode, the words "PLAYER ____ GAME OVER" are displayed **centered** on the monitor screen.

Next, it will either go to the Attract mode (if there are no more credits left in its memory) or into the Ready-To-Play mode (if there are still credits left in its memory).

III. Illustrated Parts Breakdown.

NO. 349 — BUMP & JUMP — UPRIGHT — FRONT

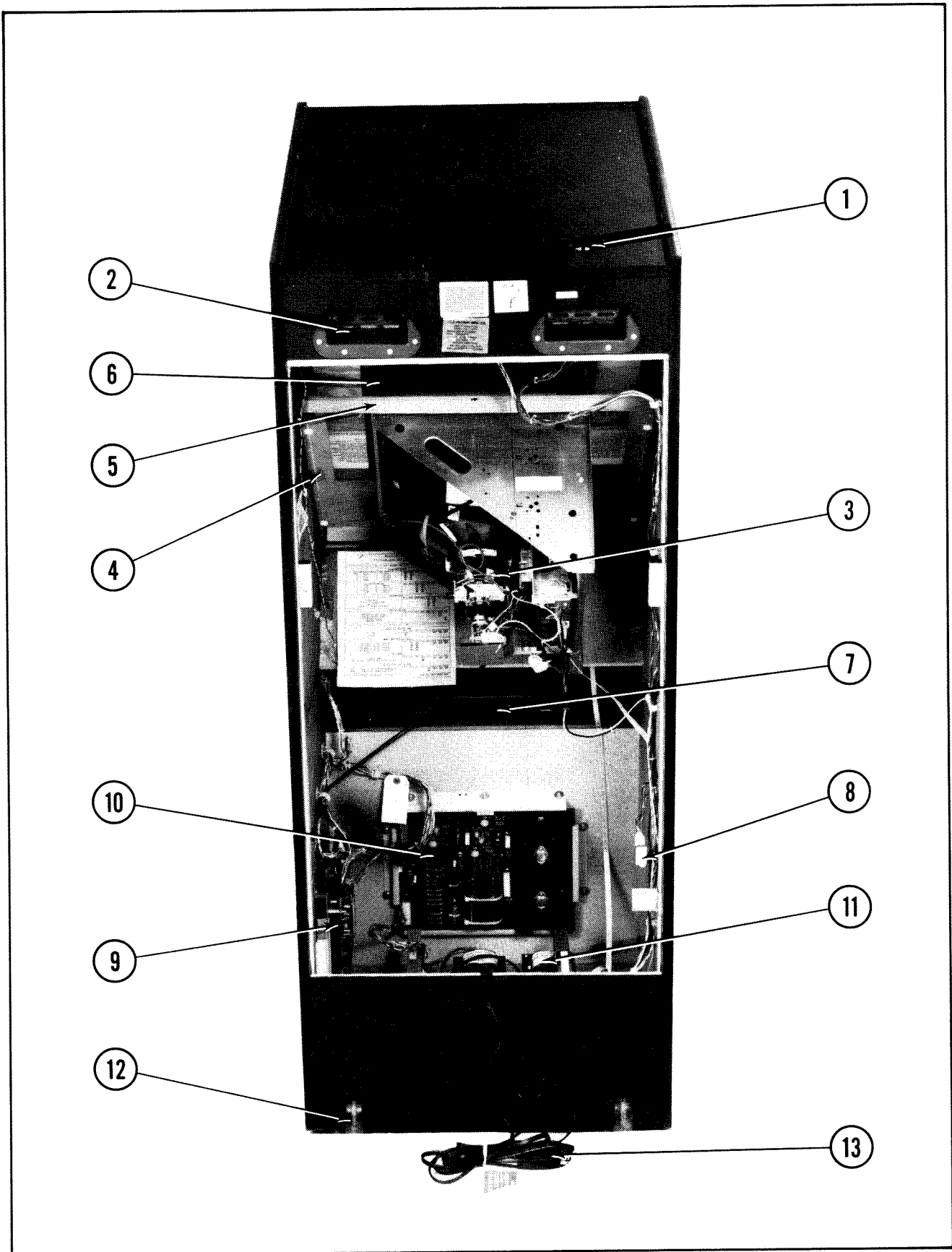


NO. 349 — BUMP & JUMP — UPRIGHT — FRONT — PARTS LIST

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	0349-00901-00XF	HEADER DISPLAY PLEXI
2	A595-00011-0000	HEADER FLUOR. LIGHT ASSY.
3	0537-00903-0058	GLASS CHANNEL — 6-15/16" LG. (2 REQ'D.)
4	0574-00903-0100	HEADER BRKT. RETAINER (2 REQ'D.)
	0017-00101-0138	#8 x 5/8 TORX TAMPER RESISTANT SCREW (10 REQ'D.)
	0017-00009-0522	LONG ARM KEY T-20 (FOR ABOVE SCREW)
5	0017-00009-0393	BLACK SPEAKER GRILLE W/SLOTS
	0017-00003-0259	6" x 9" SPEAKER — 8 OHM, 9W.
	0017-00101-0127	#8-32 x 1-1/2 CARRIAGE BOLT (4 REQ'D.)
	0017-00103-0061	#8-32 HEX NUT W/SEMS (4 REQ'D.)
6	0350-00902-0000	19" T.V. BEZEL
7	0333-00902-0000	DIFFUSER
	0508-00901-0000	PLEXI-GLASS MTG. CLIPS (4 REQ'D.)
	0017-00101-0017	#6 x 1/2 BLK. SLT. HEX HD. SCREW (4 REQ'D.)
8	0349-00900-00XF	MAIN VIEWING GLASS — 23" x 23-15/16" x 3/16"
9	0349-00902-0200	DECAL — LEFT SIDE
	0349-00902-0100	DECAL — RIGHT SIDE (NOT SEEN)
10	0349-00903-0000	DECAL — FRONT
11	A349-00016-0000	CONTROL SHELF PLATE WELD ASSY. W/STRIKES
	0349-00904-0000	DECORATIVE CONTROL SHELF OVERLAY
	0531-00105-0100	CONTROL SHELF MTG. BRKT. — RIGHT
	0531-00105-0200	CONTROL SHELF MTG. BRKT. — LEFT
	0555-00901-0000	PLASTIC LOCATING PIN (4 REQ'D.)
	0017-00009-0534	BASSICK CLAMP (3 REQ'D.)
	0017-00101-0141	#8 x 11/16 UNSLOT. HEX HD. SCREW (10 REQ'D.)
	0316-00903-0000	CONTROL SHELF STRAP
12	A349-00015-0000	CONTROL ASSEMBLY — 8 POSITION
	A316-00005-0000	CONTROL SHELF CABLE ASSY.
13	0151-00804-0001	PUSH BUTTON ASSY. — WHITE (2 REQ'D.)
14	0151-00804-0002	PUSH BUTTON ASSY. — YELLOW (2 REQ'D.)
	0017-00032-0093	PUSH BUTTON SWITCH W/HOLDER (4 REQ'D.)
	0017-00103-0054	5/8-11 PAL NUT (4 REQ'D.)
15	A090-00300-11BK	U.S.A. 25¢ DOUBLE COIN DOOR ASSY.
	A982-00015-0000	COIN DOOR CABLE ASSY.
16	0090-00002-04BK	BLACK LARGE COIN DOOR FRAME
	0017-00101-0121	#6-32 x 5/16 PHIL. TRS. HD. SCR. (3 REQ'D.) (MOUNTS COIN DOOR TO FRAME)
17	0935-00906-0100	KICK PLATE — 23" LG.
18	0017-00102-0048	3/8-16 x 2" LEG LEVELERS (4 REQ'D.)
	0017-00103-0026	3/8-16 LEG LEVELER HEX NUTS (4 REQ'D.)

NO. 349 — BUMP & JUMP — UPRIGHT — REAR ACCESS

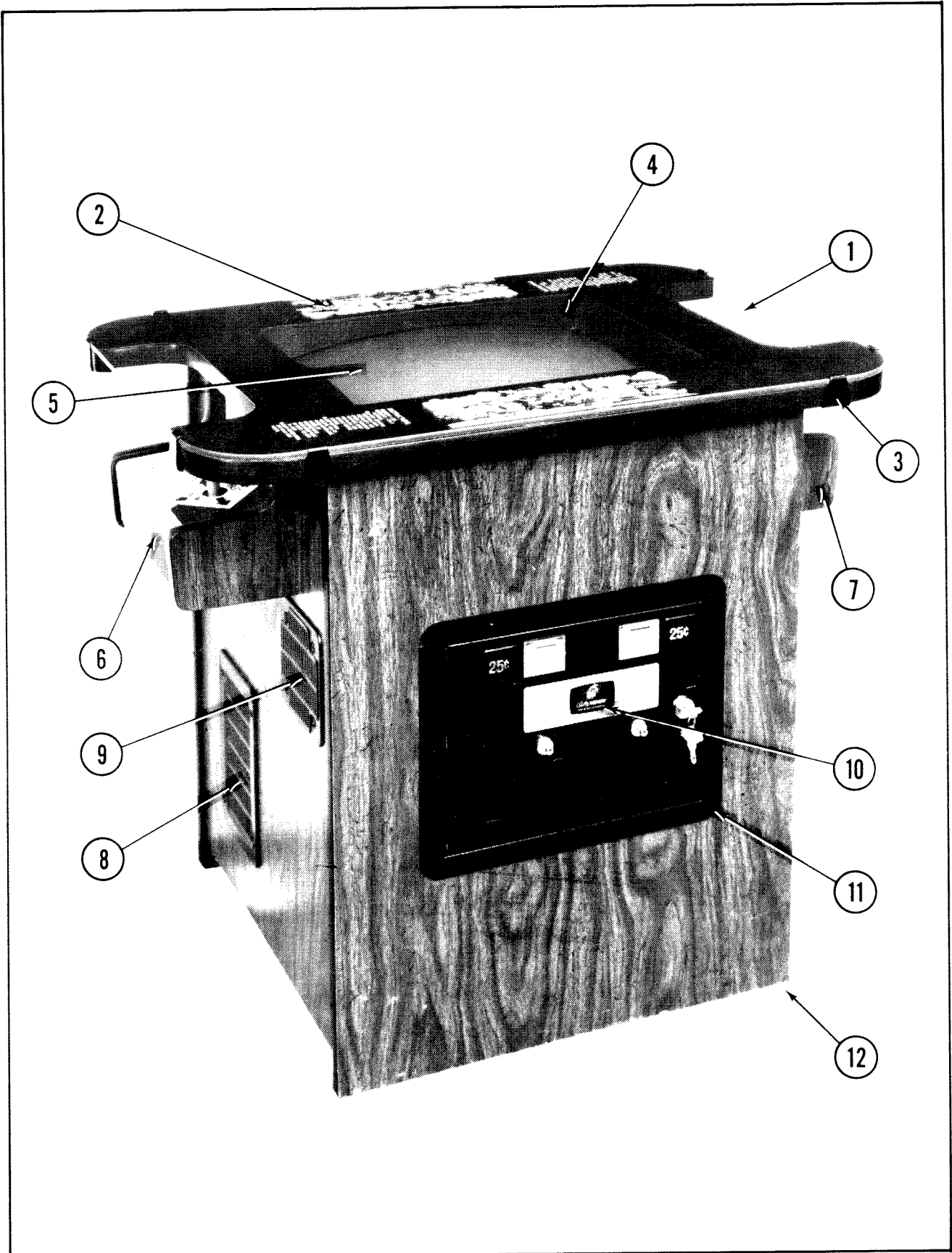


NO. 349 — BUMP & JUMP — UPRIGHT — REAR ACCESS — PARTS LIST

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	A945-00038-0000	ON-OFF SWITCH & PLATE ASSY.
2	0894-00916-0000	PLASTIC PULL & VENT (2 REQ'D.)
	0017-00101-0141	#8 x 11/16 UNSLOT. HEX HD. M.S. (8 REQ'D.)
3	0017-00003-0439	WELLS-GARDNER — 19" COLOR DUAL SYNC. HORIZ. MTG. MONITOR
4	0595-00104-0000	MONITOR RAIL (2 REQ'D.)
	0555-00901-0000	PLASTIC LOCATING PIN (4 REQ'D.)
	0017-00101-0141	#8 x 11/16 UNSLOT. HEX HD. M.S. (8 REQ'D.)
5	0349-00100-0000	MONITOR MTG. ANGLE BRKT. (2 REQ'D.)
	0017-00101-0144	#10-24 x 5/8 SLT. HEX W/WASHER SCREW (4 REQ'D.)
	0017-00101-0082	#10 x 3/4 UNSLOT. HEX HD. BOLT (4 REQ'D.)
	0017-00104-0011	#10 EXT. WASHER (4 REQ'D.)
6	0350-00902-0000	19" T.V. BEZEL
	0508-00106-0000	BEZEL MTG. BRKT.
7	A950-00004-0000	COIN BOX ASSY.
	A151-00101-0000	COIN BOX CRADLE ASSY.
	0950-00105-0000	COIN BOX COVER
	0950-00104-0000	COIN BOX HANDLE
	0950-00101-0000	COIN DEFLECTOR (2 REQ'D.)
	0950-00900-0000	LARGE PLASTIC CASH BOX
	0950-00103-0000	COIN BOX DIVIDER — OPTIONAL
	0017-00101-0142	1/4-20 x 1-3/8 BLACK RND. HD. BOLT (4 REQ'D.)
	0017-00104-0014	7/8" DISH WASHER (4 REQ'D.)
	0017-00103-0018	1/4-20 HEX NUT (4 REQ'D.)
8	A088-00016-0000	INTERLOCK SWITCH & SPRING BRKT. ASSY.
9	A349-00004-0000	CARD RACK W/BOARDS ASSY.
	A084-91462-A349	CPU/SOUND BOARD P.C. ASSY.
	A084-91463-A349	VIDEO BOARD P.C. ASSY.
	0017-00101-0339	#6-32 x 3/8 PHIL. RND. HD. SCREW (8 REQ'D.)
	0017-00104-0027	#6 WASHER (8 REQ'D.)
	0316-00700-00XF	CARD RACK SPACER (4 REQ'D.)
10	A082-90427-A000	POWER SUPPLY P.C. BOARD ASSY.
	0624-00902-0100	P.C. SUPPORT BRKT. — 12" LG. (2 REQ'D.)
	0624-00902-0200	P.C. SUPPORT BRKT. — 10" LG. (2 REQ'D.)
	0624-00902-0500	P.C. SUPPORT BRKT. — 6-1/2" LG. (3 REQ'D.)
	0317-00102-0000	P.C. MTG. BRACE BRKT. (4 REQ'D.)
	0017-00101-0141	#8 x 11/16 UNSLOT. HEX HD. M.S. (18 REQ'D.)
	0017-00104-0037	#8 FLAT WASHER (18 REQ'D.)
11	A945-00036-0002	POWER CHASSIS ASSY. — 70VA., 115V.
12	A961-00007-0000	CASTER ASSY. (2 REQ'D.)
	0961-00109-0000	WHEEL BRKT. (2 REQ'D.)
	0017-00042-0255	PLASTIC WHEEL (2 REQ'D.)
	0894-00702-00XF	SHAFT (2 REQ'D.)
	0017-00100-0037	3/8" E-RING (2 REQ'D.)
13	A945-00019-0000	LINE CORD ASSY.
	ADDITIONAL PARTS LIST	
	A151-00098-0000	BACK DOOR LOCK ASSY.
	0017-00009-0490	5-5/8" SQR. VENT GRILLE (4 REQ'D.)
	A349-00008-0000	MASTER CABLE W/BRKT. ASSY.
	A316-00009-0000	HIGH VOLTAGE CABLE ASSY.
	A316-00010-0000	LOW VOLTAGE CABLE ASSY.
	0350-00101-0000	GAME CARD HOLD DOWN BRKT.

NO. 350 — BUMP & JUMP — COCKTAIL — FRONT

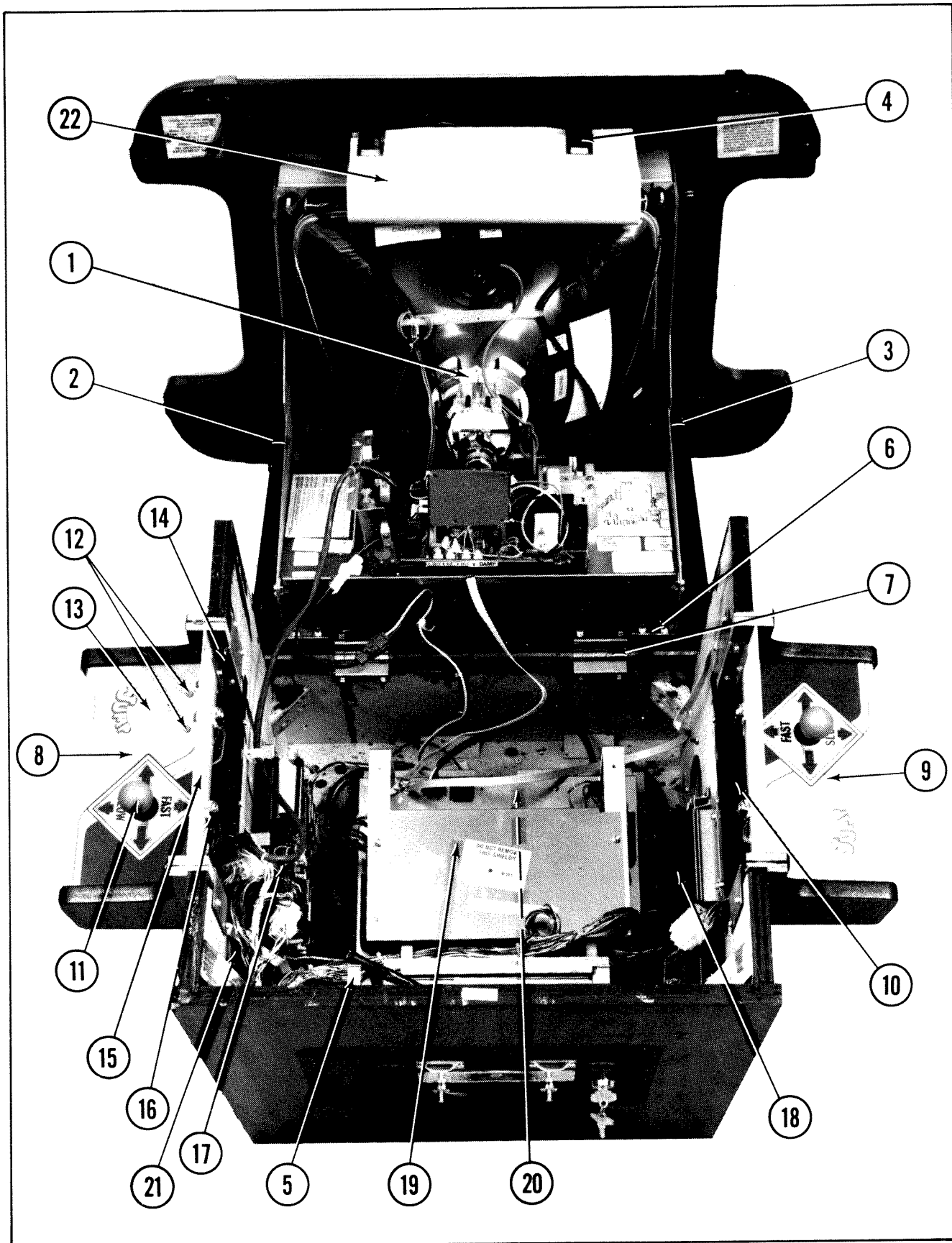


NO. 350 — BUMP & JUMP — COCKTAIL — FRONT — PARTS LIST

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	0017-00009-0499	COVER GLASS — 32" x 22" x 1/4"
2	0350-00900-0000	DECORATIVE ARTWORK UNDERLAY
3	0775-00104-00XF	GLASS CLIPS (8 REQ'D.)
	0017-00101-0117	#8 x 5/8 BLK. PHIL. TRS. HD. SCR. (8 REQ'D.)
4	0350-00902-0000	T.V. BEZEL
	0508-00106-0000	BEZEL MTG. BRKT.
5	0333-00902-0000	DIFFUSER
	0508-00901-0000	PLEXI-GLASS CLIPS (4 REQ'D.)
	0017-00101-0017	#6 x 1/2 SLT. HEX HD. SCR. (4 REQ'D.)
6	A350-00004-0100	CONTROL SHELF ASSY. — PLAYER #1
7	A350-00004-0200	CONTROL SHELF ASSY. — PLAYER #2
8	0017-00009-0393	BLACK SPEAKER GRILL W/SLOTS (2 REQ'D.)
9	0017-00009-0482	SPEAKER GRILL
	0017-00003-0431	4" SQR. SPEAKER — 4 OHM, 10W.
	0017-00101-0136	#8-32 x 1-1/4 CARRIAGE BOLT (8 REQ'D.)
	0017-00101-0127	#8-32 x 1-1/2 CARRIAGE BOLT (4 REQ'D.)
	0017-00103-0061	#8-32 HEX NUT W/SEMS (12 REQ'D.)
10	A090-00300-11BK	U.S.A. 25¢ DOUBLE COIN DOOR ASSY.
	A982-00015-0000	COIN DOOR CABLE ASSY.
11	0090-00002-04BK	LARGE COIN DOOR FRAME
	0017-00101-0121	#6-32 x 5/16 PHIL. TRS. HD. SCR. (3 REQ'D.) (MOUNTS COIN DOOR TO FRAME)
	A927-00019-0000	COIN BOX ASSEMBLY
	A962-00004-0000	COIN BOX COVER ASSY.
	A962-00005-0000	COIN BOX SIDE CHANNEL ASSY. — SHORT
	0962-00101-0000	COIN BOX SIDE CHANNEL — SHORT
	0017-00101-0628	#8-32 x 3/4 CARRIAGE BOLT (4 REQ'D.)
	0017-00104-0022	#8 FLAT WASHER (4 REQ'D.)
	0017-00103-0061	#8-32 HEX NUT W/SEMS (4 REQ'D.)
12	0017-00102-0048	3/8-16 x 2" LEG LEVELERS (4 REQ'D.)
	0017-00103-0026	3/8-16 LEG LEVELER HEX NUTS (4 REQ'D.)

NO. 350 — BUMP & JUMP — COCKTAIL — INTERIOR ACCESS



NO. 350 — BUMP & JUMP — COCKTAIL — INTERIOR ACCESS — PARTS LIST

ORDER BY PART NUMBER **ONLY**

ITEM	PART NO.	DESCRIPTION
1	0017-00003-0439	WELLS-GARDNER — 19" COLOR DUAL SYNC. HORIZ. MTG. MONITOR
2	A515-00019-0000	MONITOR SUPPORT ASSY. — LEFT
3	A515-00019-0100	MONITOR SUPPORT ASSY. — RIGHT
4	0017-00101-0109	#8 x 5/16 UNSLOT. HEX HD. BOLT (6 REQ'D.)
5	0610-00132-00ZN	STRIKE (2 REQ'D.)
5	0017-00009-0534	BASSICK CLAMP (2 REQ'D.)
6	0017-00101-0141	#8 x 11/16 UNSLOT. HEX HD. M.S. (8 REQ'D.)
6	0927-00101-00XF	SUPPORT ANGLE (2 REQ'D.)
7	0017-00101-0598	#8-32 x 5/16 SLT. HEX HD. SCREW (4 REQ'D.)
7	0017-00009-0514	2-1/2" HINGE (2 REQ'D.)
	0017-00101-0639	#8-32 x 1-1/4 CARRIAGE BOLT (4 REQ'D.)
	0017-00101-0628	#8-32 x 3/4 CARRIAGE BOLT (4 REQ'D.)
	0017-00103-0061	#8-32 HEX NUT W/SEMS (8 REQ'D.)
8	0350-00901-0100	DECORATIVE OVERLAY — PLAYER #1
9	0350-00901-0200	DECORATIVE OVERLAY — PLAYER #2
	A302-00015-0000	CONTROL PANEL WELDMENT ASSY. (2 REQ'D.)
10	0510-00101-00XF	BOTTOM PAN (2 REQ'D.)
	0017-00101-0341	#6 x 1/4 PHIL. TRS. HD. SCR. (6 REQ'D.)
11	A349-00015-0000	CONTROL ASSEMBLY — 8 POSITION
	A317-00010-0100	CONTROL SHELF CABLE ASSY. — PLAYER #1
	A317-00010-0200	CONTROL SHELF CABLE ASSY. — PLAYER #2
12	0017-00032-0106	PUSH BUTTON (2 REQ'D.)
13	0151-00804-0002	PUSH BUTTON ASSY. — YELLOW (2 REQ'D.)
	0017-00032-0093	PUSH BUTTON SWITCH W/HOLDER (2 REQ'D.)
	0017-00103-0054	5/8-11 PAL NUT (2 REQ'D.)
14	0903-00104-0000	CONTROL PANEL LOCATING BRKT. (4 REQ'D.)
	0017-00101-0025	#8 x 1/2 SLT. HEX HD. M.S. (16 REQ'D.)
15	0727-00901-0000	LIGHT SHIELD (2 REQ'D.)
16	0017-00031-0044	WEDGE BASE LAMP SOCKET (4 REQ'D.)
	0017-00003-0219	#194 WEDGE LAMP — 14V., .27A. (4 REQ'D.)
	0017-00101-0555	#6-32 x 5/16 SLT. HEX HD. M.S. (4 REQ'D.)
17	A349-00004-0000	CARD RACK W/BOARDS ASSY.
	A084-91462-A349	CPU/SOUND BOARD P.C. ASSY.
	A084-91463-A349	VIDEO BOARD P.C. ASSY.
	0017-00101-0339	#6-32 x 3/8 PHIL. RND. HD. SCREW (8 REQ'D.)
	0017-00104-0027	#6 WASHER (8 REQ'D.)
	0316-00700-00XF	CARD RACK SPACER (4 REQ'D.)
18	A082-90427-A000	POWER SUPPLY P.C. BOARD ASSY.
	0624-00902-0100	P.C. SUPPORT BRKT. — 12" LG.
	0624-00902-0200	P.C. SUPPORT BRKT. — 10" LG. (2 REQ'D.)
	0624-00902-0400	P.C. SUPPORT BRKT. — 4" LG.
	0624-00902-0500	P.C. SUPPORT BRKT. — 6-1/2" LG. (2 REQ'D.)
	0317-00102-0000	P.C. MTG. BRACE BRKT. (4 REQ'D.)
	0017-00101-0141	#8 x 11/16 UNSLOT. HEX HD. M.S. (15 REQ'D.)
	0017-00104-0037	#8 FLAT WASHER (15 REQ'D.)
19	A945-00036-0000	POWER CHASSIS ASSY. — 70VA., 115V.

NO. 350 — BUMP & JUMP — COCKTAIL — INTERIOR ACCESS — PARTS LIST (Continued)

ORDER BY PART NUMBER ONLY

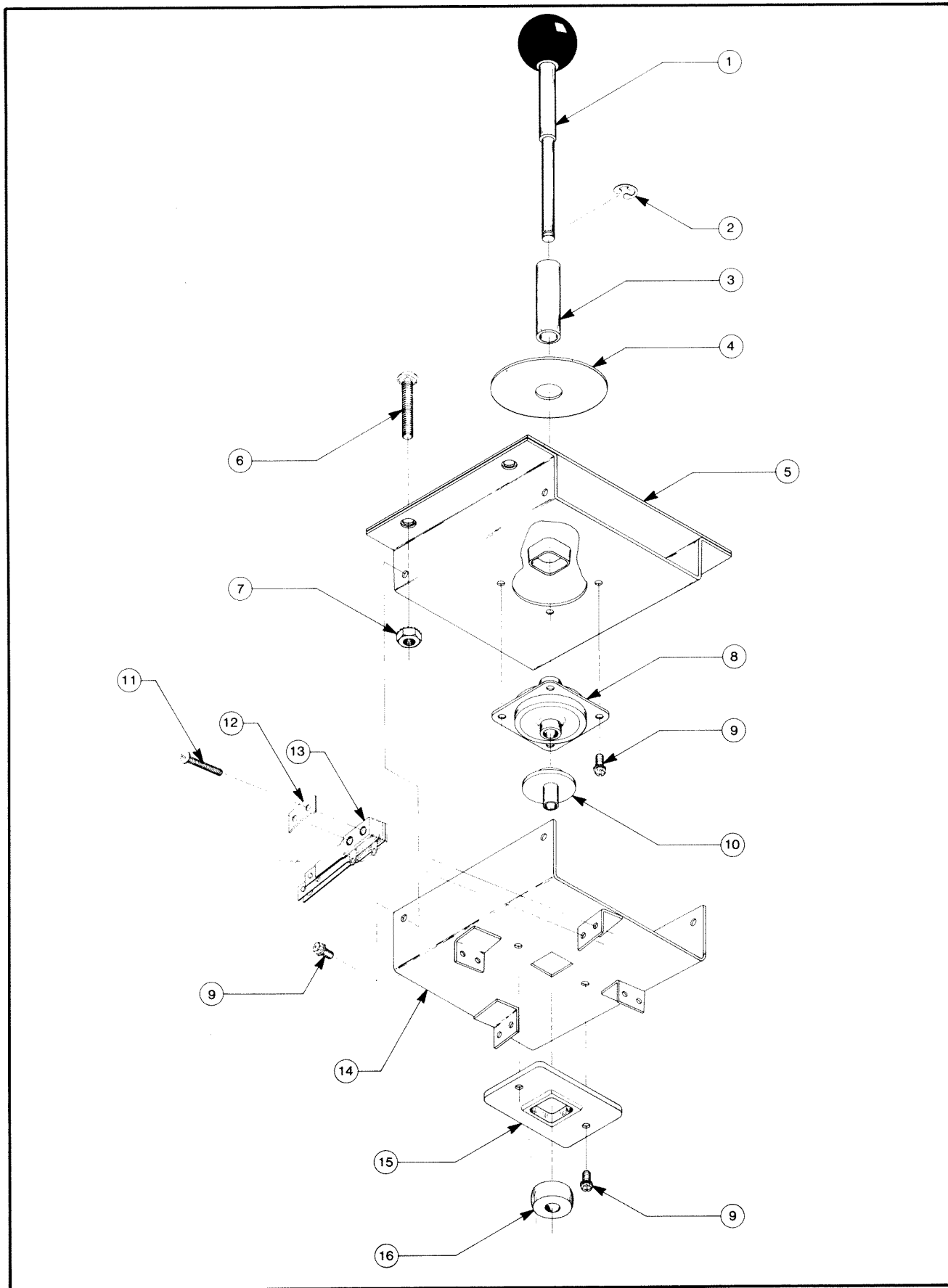
ITEM	PART NO.	DESCRIPTION
20	A775-00013-0000	FAN ASSY. (NOT SEEN)
	0151-00081-0000	4" FAN
	0775-00110-00XF	FAN PLATE
	0749-00106-00XF	VENT SCREEN
	0017-00101-0347	#6-32 x 1/2" R.H.M.S. (4 REQ'D.)
	0017-00104-0009	#6 EXT. WASHER (4 REQ'D.)
	0017-00103-0005	#6-32 HEX NUT (4 REQ'D.)
	0017-00101-0026	#8 x 5/8 SLT. HEX HD. SCREW (4 REQ'D.)
21	0017-00003-0431	4" SQR. SPEAKER — 4 OHM, 10W.
22	0942-00902-0000	MONITOR SHIELD
ADDITIONAL PARTS LIST		
	A088-00014-0000	INTERLOCK SWITCH & BRKT. ASSY.
	A088-00013-0000	ON-OFF SWITCH & BRKT. ASSY.
	A945-00038-0000	ON-OFF SWITCH & PLATE ASSY. (POWER CHASSIS)
	A350-00007-0000	MASTER CABLE ASSY. W/BRKT.
	A316-00010-0000	LOW VOLTAGE CABLE ASSY.
	A317-00006-0000	HIGH VOLTAGE CABLE ASSY.
	A927-00005-0000	HIGH BASE LEG KIT ASSY. — OPTIONAL

BUMP & JUMP — CONTROL ASSEMBLY — PARTS LIST

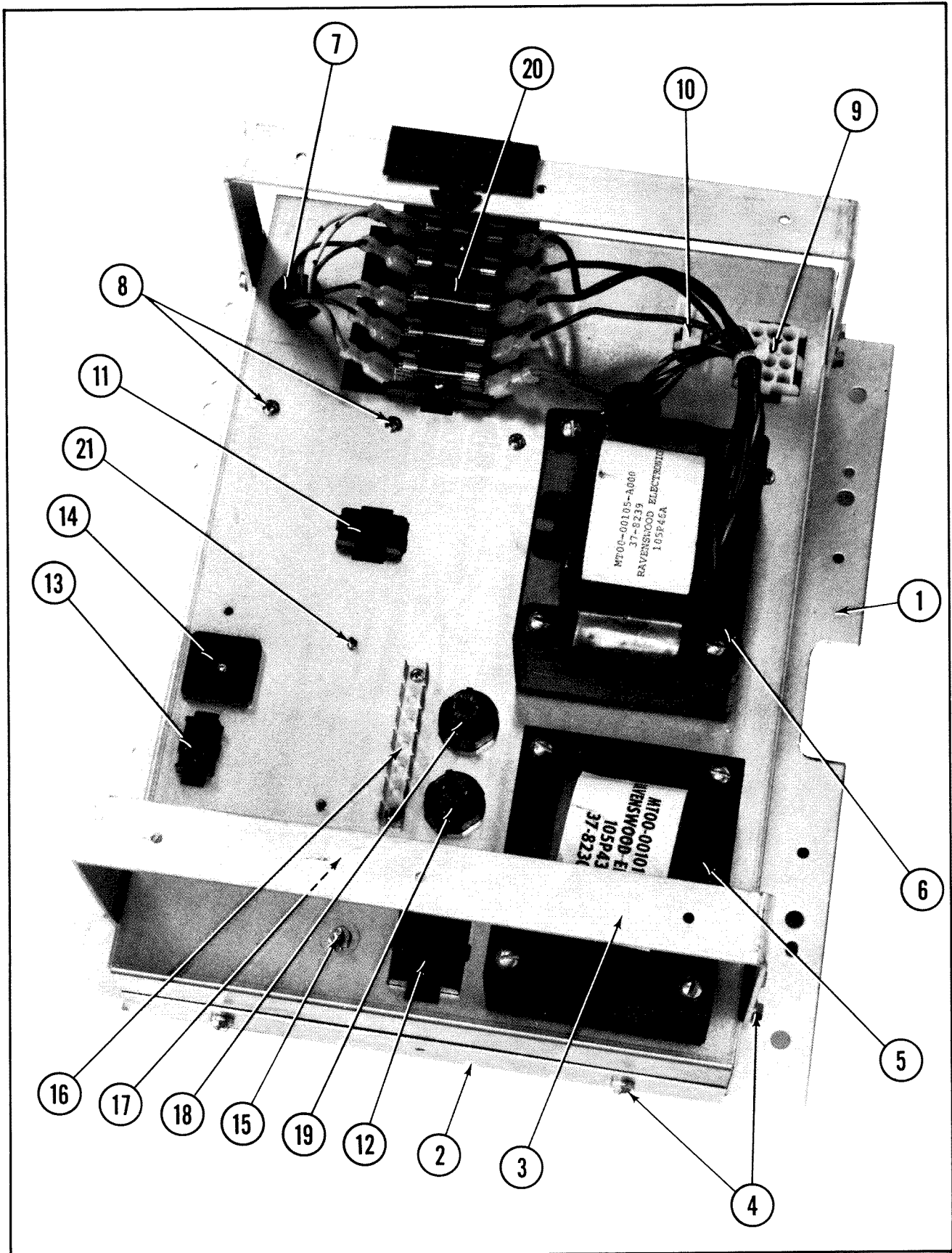
ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	A932-00022-0000	BALL & SHAFT ASSEMBLY
2	0017-00100-0025	1/4" E-RING
3	0921-00702-0000	STOP SPACER
4	0530-00907-0000	SLIDE PLATE
5	A349-00014-0000	TOP PLATE TO PIVOT PLATE ASSY.
6	0017-00101-0637	#8-32 x 1" CARRIAGE BOLT (4 REQ'D.)
7	0017-00103-0061	#8-32 HEX NUT W/SEMS (4 REQ'D.)
8	0932-00902-0000	GROMMET
9	0017-00101-0598	#8-32 x 5/16 SLT. HEX HD. M.S. (10 REQ'D.)
10	0962-00904-0000	SLEEVE
11	0017-00101-0527	#5-40 x 5/8 SLT. RND. HD. SCR. (8 REQ'D.)
12	0020-00202-0000	SWITCH PLATE (4 REQ'D.)
13	A932-00009-0000	SWITCH ASSEMBLY (4 REQ'D.)
14	A921-00009-0000	STOP PLATE & SWITCH BRKT. ASSY.
15	0927-00908-0000	WEAR PLATE
16	0921-00700-0000	ACTUATOR

BUMP & JUMP — CONTROL ASSEMBLY



BUMP & JUMP — POWER CHASSIS ASSY. — 70VA, 115V. — ALL VERSIONS

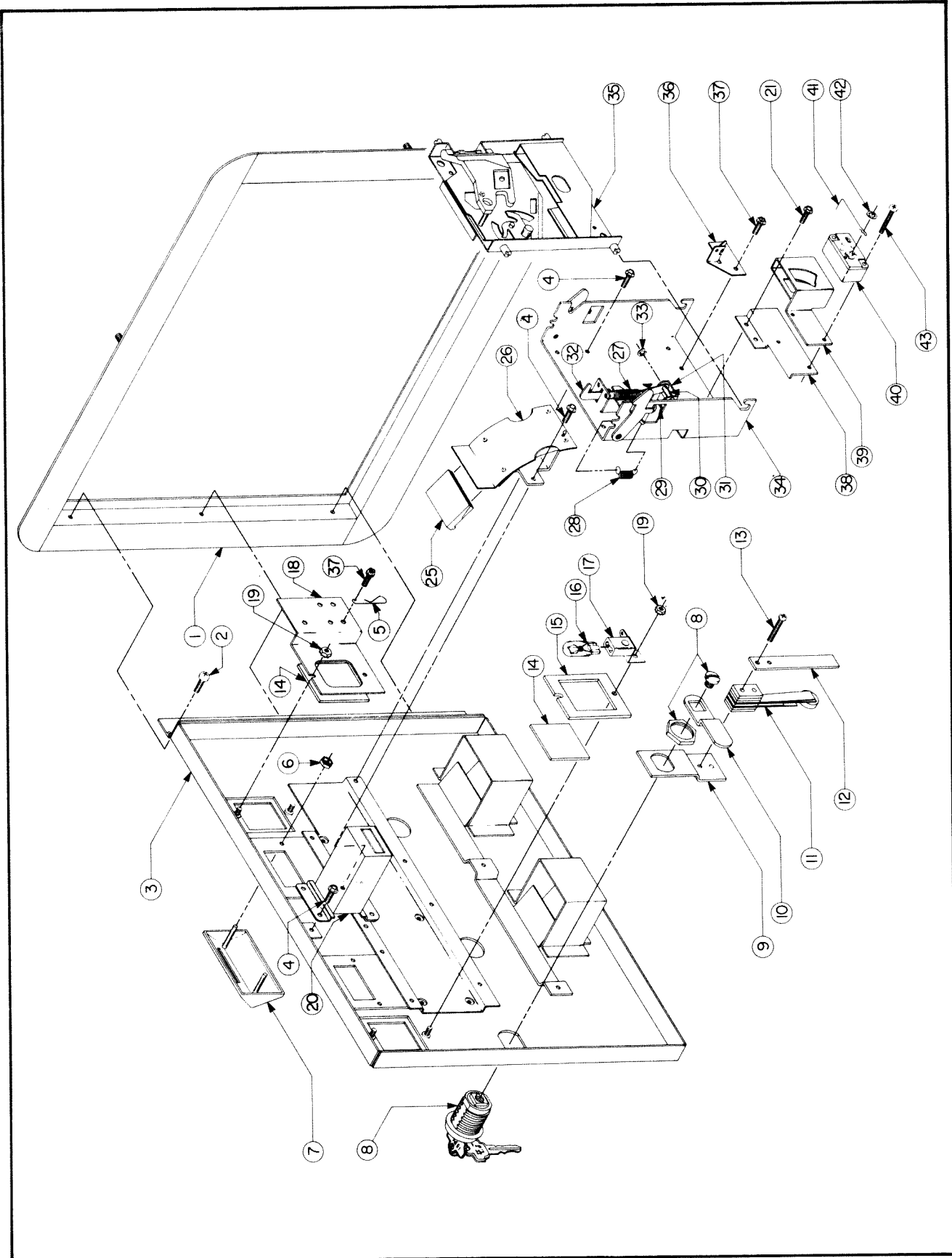


BUMP & JUMP — POWER CHASSIS ASSY. — 70VA, 115V. — ALL VERSIONS — PARTS LIST

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	0945-00108-00XF	CHASSIS
2	A945-00029-0000	MTG. PLATE & BARRIER ASSY.
3	0945-00107-01XF	STRAP (2 REQ'D.)
4	0017-00101-0123	#8 x 1/4 UNSLOT. HEX HD. SCR. (12 REQ'D.)
5	MT00-00101-A000	ISOLATION TRANSFORMER W/O SHIELD ASSY. — 115V., 50/60 HZ.
	0017-00103-0061	#8-32 HEX NUT W/SEMS (4 REQ'D.)
6	MT00-00105-A000	POWER TRANSFORMER W/O SHIELD — 70VA, 115V. (UPRIGHT ONLY)
6	MT00-00105-B000	POWER TRANSFORMER W/SHIELD — 70VA, 115V. (COCKTAIL ONLY)
	0017-00103-0061	#8-32 HEX NUT W/SEMS (4 REQ'D.)
7	0945-00902-0000	SNAP BUSHING (3 REQ'D.)
8	0017-00101-0067	#6 x 3/8 PHIL. PAN HD. SCR. (11 REQ'D.)
	0945-00103-00XF	PARTITION — LOCATED UNDER CHASSIS (NOT SEEN)
9	A945-00030-0400	CONNECTOR & CABLE ASSY.
10	0017-00021-0297	2 POSITION CONNECTOR
11	A945-00030-0300	CONNECTOR & CABLE ASSY.
12	A945-00030-0500	CONNECTOR & CABLE ASSY.
13	A945-00030-0200	CONNECTOR & CABLE ASSY.
14	A945-00021-0000	CONVENIENCE OUTLET ASSY.
15	0017-00101-0573	#6-32 x 1/2 PHIL. RND. HD. SCR. (2 REQ'D.)
	0017-00103-0084	#6-32 HEX NUT W/SEMS (2 REQ'D.)
	A945-00025-0000	FILTER ASSY. — 125V. — UNDER CHASSIS (NOT SEEN)
16	0017-00021-0510	TERMINAL STRIP
	0017-00101-0140	#4-40 x 5/16 PHIL. PAN HD. SCR. (2 REQ'D.)
17	0017-00101-0660	#10-32 x 3/4 SLT. PAN HD. SCREW (NOT SEEN)
	0017-00104-0107	#10 FLAT WASHER
	0017-00103-0081	#10-32 HEX NUT W/SEMS
18	0017-00003-0263	SLO-BLO FUSE — 4A., 250V.
19	0017-00003-0005	FUSE — 2A., 250V.
	0017-00003-0444	FUSE HOLDER — QUICK CONN. (2 REQ'D.) — FOR ABOVE FUSES
20	0945-00904-0000	5 POSITION FUSE HOLDER
	0945-00908-0000	FUSE BLOCK INSULATOR
	0017-00003-0217	SLO-BLO FUSE — 2.5A., 250V. (2 REQ'D.)
	0017-00003-0007	SLO-BLO FUSE — 3A., 250V. (2 REQ'D.)
	0017-00003-0263	SLO-BLO FUSE — 4A., 250V.
	0945-00903-0000	FUSE HOLDER BARRIER
	0017-00101-0067	#6 x 3/8 PHIL. PAN HD. SCREW (2 REQ'D.)
21	0017-00101-0780	#6 x 1/2 PHIL. PAN HD. SCREW (2 REQ'D.)
	0017-00021-0629	5 POSITION TERMINAL STRIP (UNDER CHASSIS)
	A945-00019-0000	LINE CORD ASSY. — 115V. (NOT SHOWN)
	A945-00033-0000	MAGNETIC SHIELD & LABEL ASSY. (NOT SHOWN)

FRONT DOOR ASSEMBLY — U.S.A. 25¢

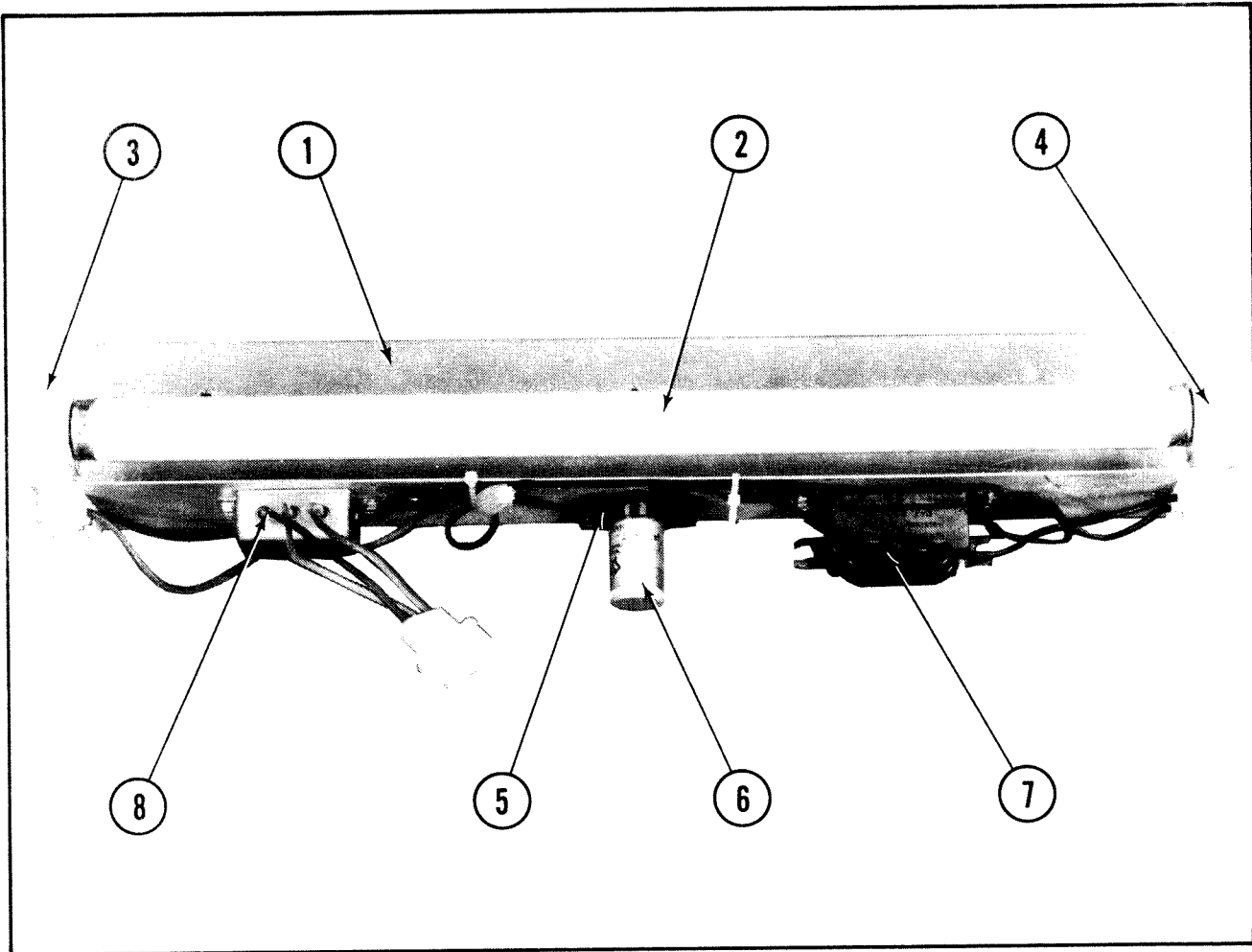


FRONT DOOR ASSEMBLY — U.S.A. 25¢ — PARTS LIST

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	0090-00002-04BK	DOUBLE ENTRY COIN DOOR FRAME
2	0017-00101-0121	#6-32 x 5/16 PHIL. TRS. HD. SCR. (3 REQ'D.)
3	A090-00073-02BK	DOUBLE ENTRY COIN DOOR W/DRESS PLATE
4	0017-00101-0123	#8 x 1/4 UNSLOT. HEX HD. SCREW (12 REQ'D.)
5	0017-00007-0019	KEY HOOK
6	0017-00103-0059	PUSH NUT (4 REQ'D.)
7	0090-00912-0000	COIN ENTRY PLATE — 25¢ (2 REQ'D.)
8	A097-00005-0000	DOOR LOCK & KEY W/SCREW & NUT (OR)
8	A097-00006-0000	DOOR LOCK & KEY W/SCREW & NUT
9	0090-00128-00XF	DOOR TILT SWITCH BRKT.
10	0017-00005-0225	DOOR CAM
11	A090-00095-0000	DOOR TILT SWITCH
12	0090-00126-03XF	SWITCH BACK-UP PLATE
13	0017-00101-0525	#5-40 x 9/16" PHIL. HD. M.S. (2 REQ'D.)
	A090-00096-0000	DOOR TILT SWITCH & BRKT. ASSY. (ITEMS 9 & 11 THRU 13)
14	0090-00903-9500	25¢ WINDOW (2 REQ'D.)
15	0090-00143-00XF	COIN PLEX RETAINER
16	0017-00003-0219	12 VOLT LAMP — G.E. #194 (2 REQ'D.)
17	0017-00031-0048	WEDGE SOCKET W/BRKT. (2 REQ'D.)
18	A090-00100-0000	BRKT. ASSY.
19	0017-00103-0084	#6-32 HEX NUT W/SEMS (4 REQ'D.)
20	A090-00089-0000	COIN METER W/DIODE
21	0017-00101-0124	#6 x 1/4 UNSLOT. HEX HD. SCR. (4 REQ'D.)
25	0090-00911-0000	INSULATOR (2 REQ'D.)
26	A090-00112-0000	COIN CHUTE & TOP ASSY. (2 REQ'D.)
27	0010-00134-0000	SPRING
28	0010-00181-0000	SPRING
29	0017-00007-0083	1/8 x 1-5/8 ROLL PIN
30	0090-00129-00XF	PIVOT POST
31	0090-00167-00XF	PIVOT LEVER
32	0090-00182-00XF	REJECT LEVER
33	0017-00100-0018	E-RING
	A090-00088-0000	REJECT LEVER ASSY. (2 REQ'D.) (ITEMS 30 THRU 33)
34	A090-00105-0000	COIN ACCEPTOR FRAME ASSY. (2 REQ'D.)
35	0017-00005-0003	COIN ACCEPTOR W/STRING CUTTER (2 REQ'D.) (OR)
35	0017-00005-0211	COIN ACCEPTOR W/ANTI STRING DEVICE (2 REQ'D.) (OR)
35	0017-00005-0214	COIN ACCEPTOR W/STRING CUTTER (2 REQ'D.)
36	A090-00064-0000	ANTI-PENNY DEVICE
37	0017-00101-0099	#6 x 1/4 SLT. HEX HD. M.S. (2 REQ'D.)
38	0090-00162-00XF	COIN SWITCH MTG. BRKT.
39	0017-00005-0203	COIN SWITCH CHUTE
40	0017-00005-0195	COIN SWITCH
41	0010-00599-0000	COIN SWITCH WIRE
42	0017-00007-0015	PUSH-ON RING
	A090-00059-0400	COIN SWITCH & WIRE ASSY. (ITEMS 40 THRU 42)
43	0017-00101-0147	#4-40 x 3/4 PHIL. PAN. HD. M.S. (2 REQ'D.)
	A090-00077-0000	COIN GUIDE & SWITCH ASSY. (ITEMS 38 THRU 43)

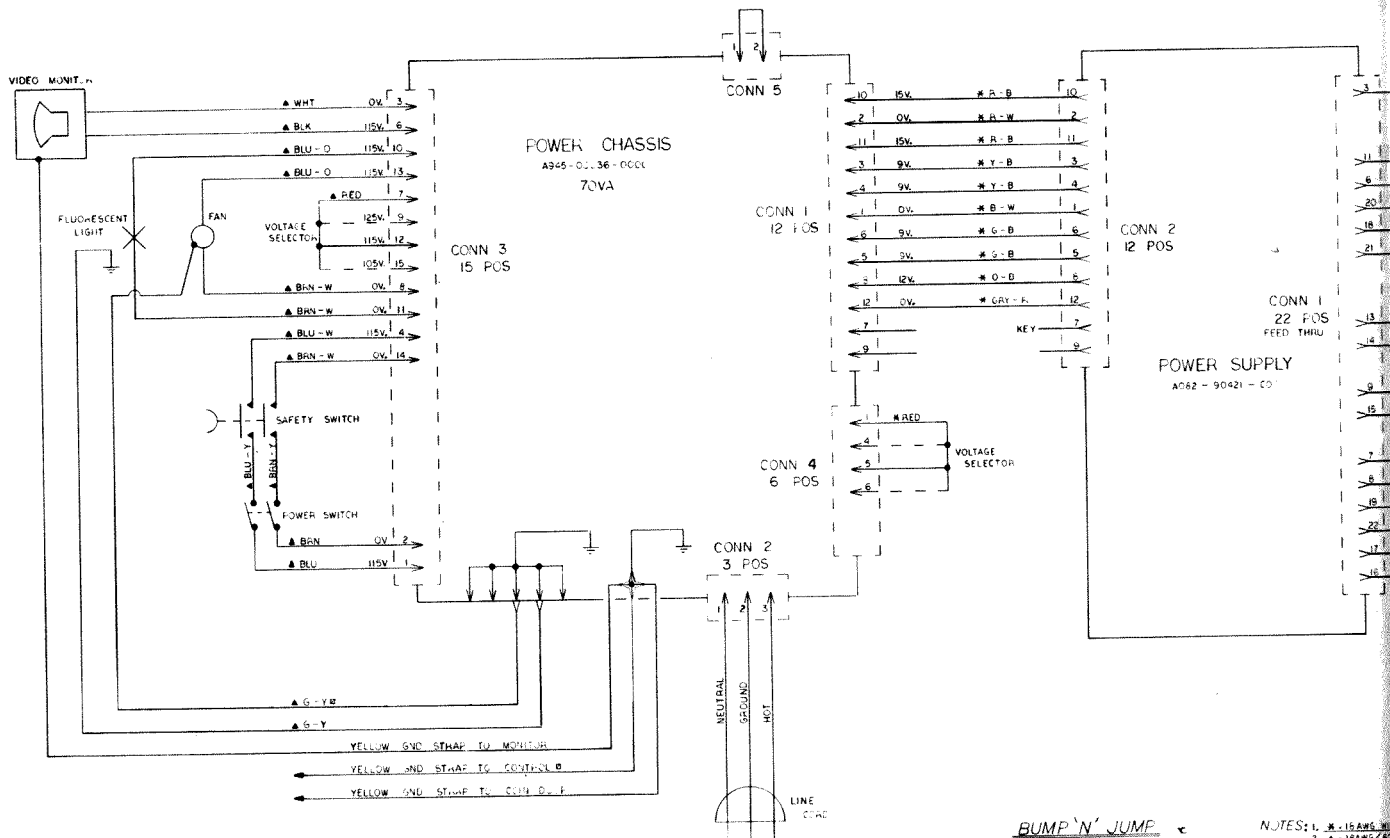
NO. 349 — BUMP & JUMP — UPRIGHT — HEADER FLUORESCENT LIGHT ASSY.



NO. 349 — BUMP & JUMP — UPRIGHT — HEADER FLUORESCENT LIGHT ASSY. — PARTS LIST

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	0595-00105-0000	FLUORESCENT BRKT.
2	0017-00003-0043	18" COOL WHITE FLUORESCENT LAMP
3	0017-00003-0445	LAMP LOCKS (2 REQ'D.)
4	0017-00031-0036	FLUORESCENT SOCKET (2 REQ'D.)
5	0017-00003-0412	FLUORESCENT STARTER HOLDER W/LEADS
	0017-00101-0573	#6-32 x 1/2 PHIL. RND. HD. M.S. (4 REQ'D.)
	0017-00104-0009	#6 EXT. WASHER (4 REQ'D.)
6	0017-00003-0019	FLUORESCENT STARTER
7	0017-00003-0026	BALLAST
	0017-00101-0598	#8-32 x 5/16 SLT. HEX HD. SCR. (4 REQ'D.)
8	A961-00042-0000	LINE FILTER ASSY.

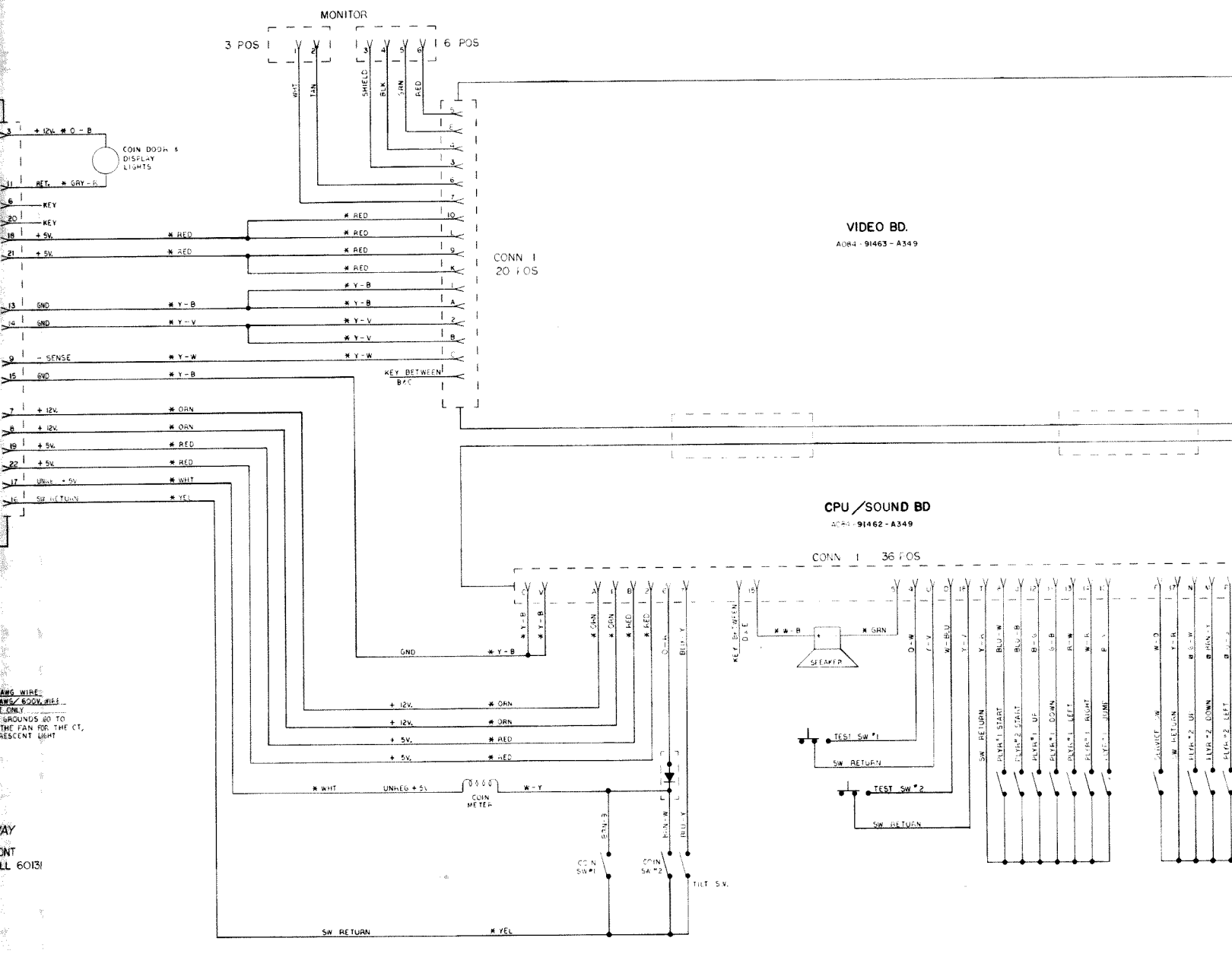


BUMP 'N' JUMP
MOSI-00349-A003

NOTES: 1. WIRE SIZE
2. WIRE COLOR
3. WIRE GAUGE
4. G-Y GROUND
5. BRN-Y GROUND
6. BRN-Y GROUND
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21. BRN-Y GROUND
22. BRN-Y GROUND

REVISION	DATE	NAME
1	1/15/53	EC

Bally/MIDWAY
10601 W BELMONT
FRANKLIN PARK, ILL 60016



MONITOR
3 POS 6 POS

VIDEO BD.
AOR4-91463-A349

CONN 1
20 POS

CPU/SOUND BD
AOR4-91462-A349

CONN 1 36 POS

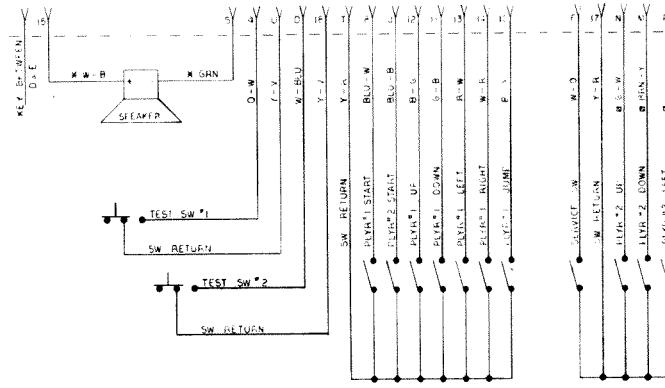
ANG WIRE
W/ 600V RES.
ONLY
GROUNDS GO TO
THE FAN FOR THE CT.
RESCENT LIGHT

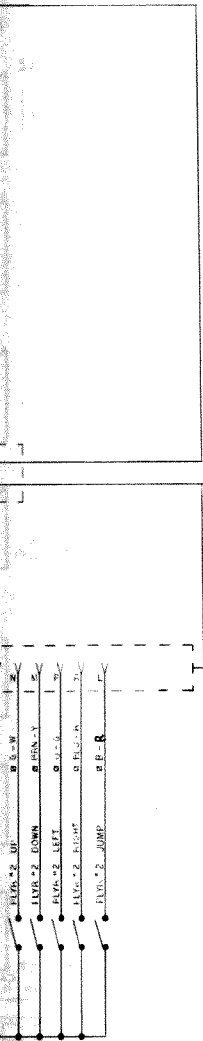
AY
ONT
LL 60131

COIN METER
UNNEG +5V

COIN SW #1
COIN SW #2
TILT 5V.

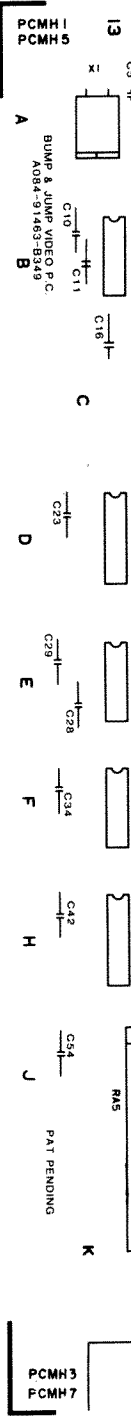
SW RETURN

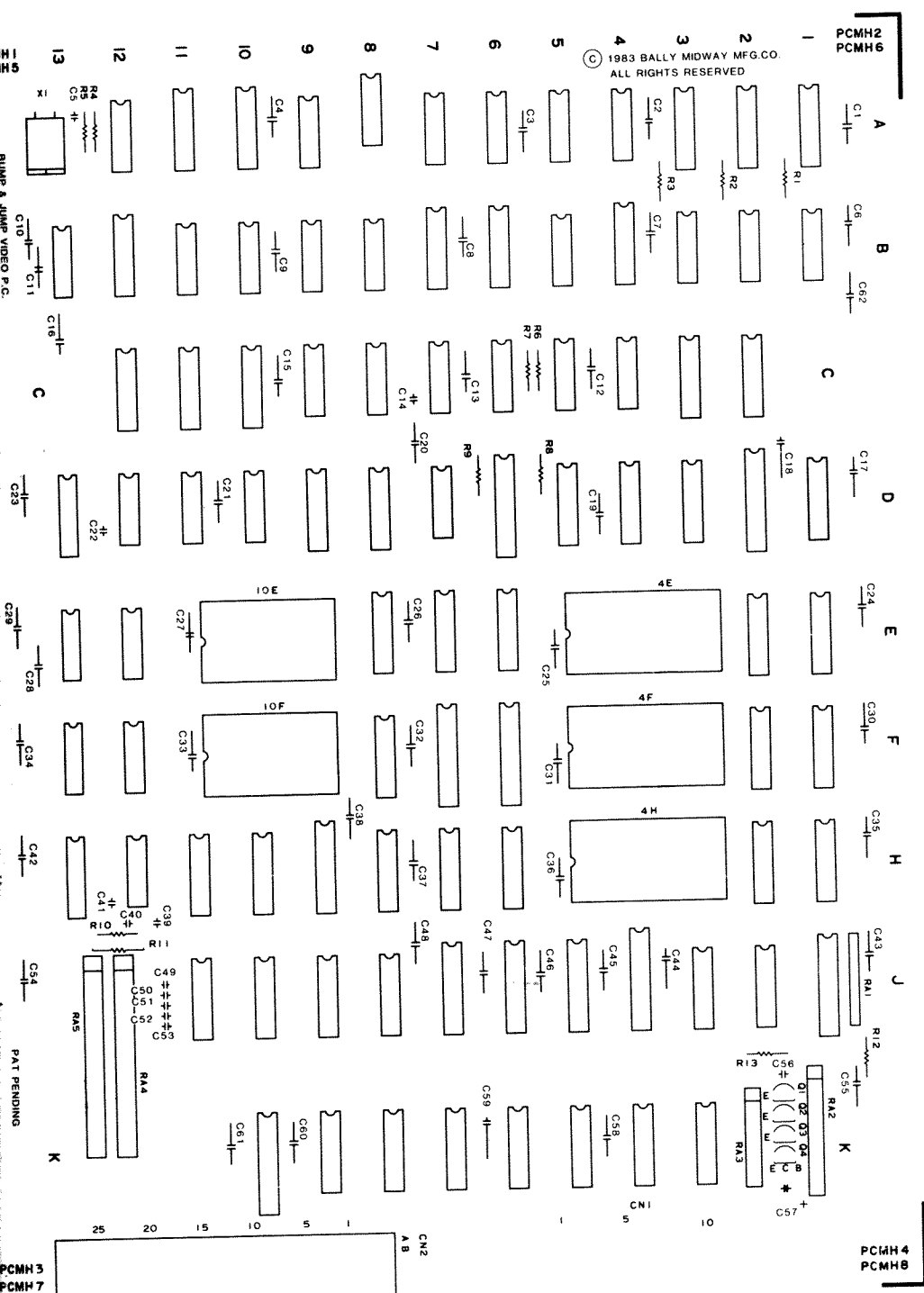




DESCRIPTION LIST

<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>	<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>
C1 - C4	0.1 μ f CER.	IC 8D	74LS194
C5	0.01 μ f "	" 9D	74LS157
C6 - C10	0.1 μ f "	" 10D	74LS04
C11	100 pf "	" 11D, 12D	74LS86
C12, C13, C15 - C21,	0.1 μ f "	" 13D	74LS367
C23-C28	"	" 1E, 2E	74LS194
C29	100 pf "	" 4E	EPROM 2764 ADOO
C30-C38	0.1 μ f "	" 6E, 7E	74LS283
C39, C40	330 pf "	" 8E	74LS194
C41	680 pf "	" 10E	EPROM 2732 AD03
C42-C48	0.1 μ f "	" 12E	74LS32
C49-C53	.0033 μ f "	" 13E	74LS08
C54-C56	0.1 μ f "	" 1F, 2F	74LS194
C57	100 μ f "	" 4F	EPROM 2764 ADO1
C58-C61	0.1 μ f CER.	" 6F, 7F	74LS374
		" 8F	74LS194
R1 - R3	1K ohm 1/4 W. 5%	" 10F	EPROM 2732 ADO4
R4, R5	470 " " "	" 12F	74LS00
R6 - R9	4.7K " " "	" 13F	74LS86
R10-R11	470 " " "	" 1H, 2H	74LS194
R12	22 " " "	" 4H	EPROM 2764 ADO2
R13	1K " " "	" 6H-8H	74LS367
		" 9H	STATIC RAM
RA1	1K ohm 9 -PIN SIP	" 10H	74LS174
RA2	CUSTOM 12 -PIN SIP	" 11H	8216
RA3	" 9 -PIN SIP	" 12H	74LS00
RA4, RA5	" 19 -PIN SIP	" 13H	74LS175
		" 1J	74LS273
Q1 - Q4	2N3391	" 2J, 3J	7489
		" 4J	74LS245
IC 1A - 3A	93425	" 5J-7J	STATIC RAM
" 4A	74LS00	" 8J-10J	74LS157
" 5A	74LS08	" 11J	74LS174
" 6A	74LS00	" 3K, 4K	74LS157
" 7A	74LS04	" 5K-9K	74LS153
" 8A 9A	74LS32	" 10K	PAL
" 10A	74LS175		
" 11A	BP - ROM	ICS 1A-3A, 11A	16-PIN IC SOCKET
" 12A	7404	" 2D	20-PIN " "
" 1B	74LS74	" 4E	28-PIN " "
" 2B, 3B	74LS86	" 10E	24-PIN " "
" 4B	74112	" 4F	28-PIN " "
" 5B	74LS30	" 10F	24-PIN " "
" 6B, 7B	74LS163	" 4H	28-PIN " "
" 8B	74LS00	" 9H, 5J-7J	18-PIN " "
" 9B	74LS04	" 10K	20-PIN " "
" 10B, 11B	74LS74		
" 12B	74LS138	J2	RIBBON CONN. SCKT. 50 PIN
" 13B	74LS04	X-TAL 1	X-TAL 12 MHZ
" 2C, 3C	74LS163		
" 4C	74LS86	PCMH 1 - PCMH 4	THREADED SPACER (FINISHED)
" 5C	74LS20	PCMH 5 - PCMH 8	P.C. MTG. SCRW. 6-32 X 6 (4)
" 6C, 7C	74LS86		
" 8C	74LS04		
" 9C	74LS00		
" 10C - 12C	74LS163		
" 1D	74LS157		
" 2D	PAL		
" 3D	74LS175	A080-91463-B349	VIDEO BD.
" 4D	74LS174		
" 5D	74LS367		
" 6D	74LS374		
" 7D	74LS86		





DESCRIPTION

Q'ty

DESIC

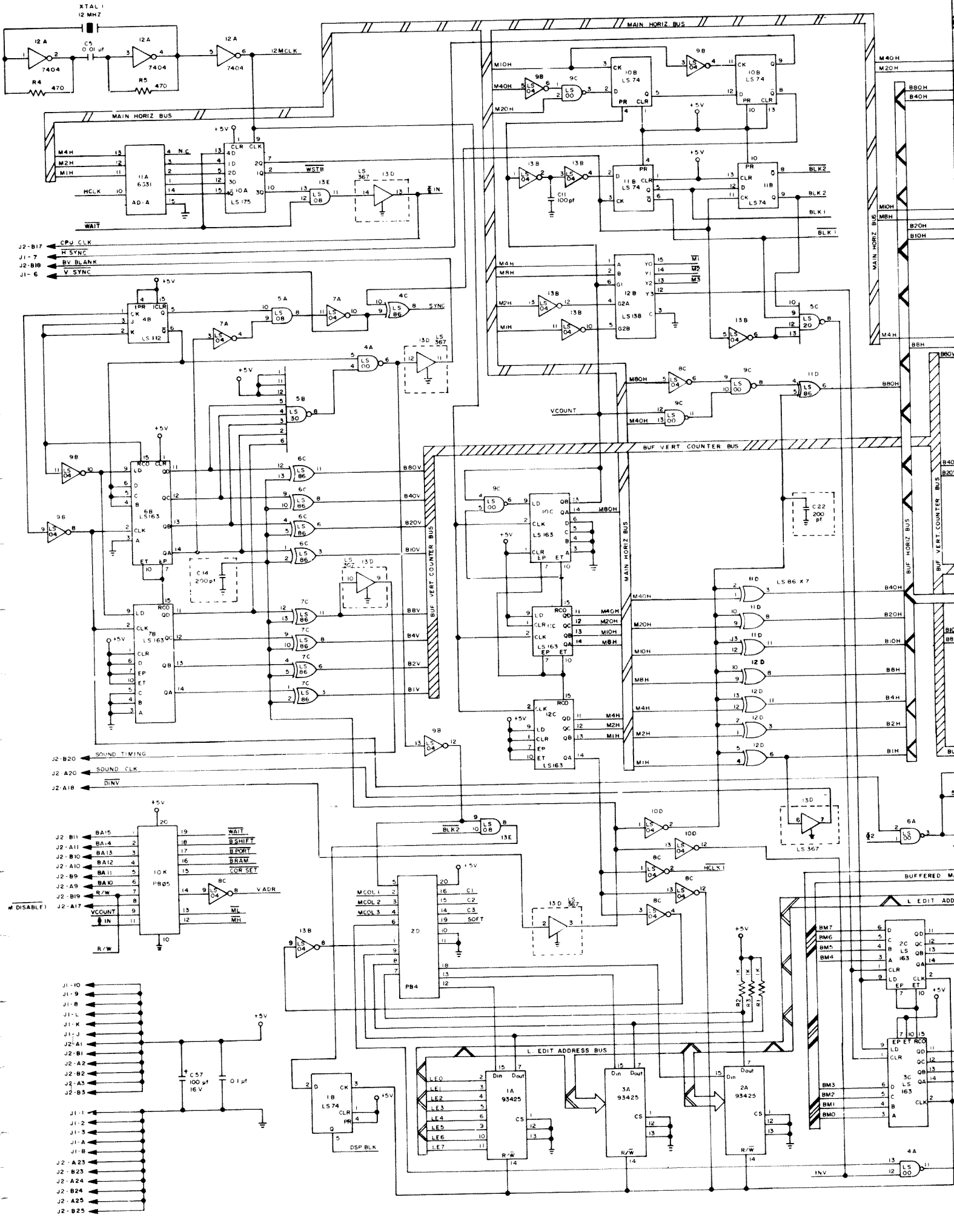
100 pf CER.	2	C11, C2
330 pf "	2	C39, C4
680 pf "	1	C41
.0033µf "	5	C49-C
0.01µf "	1	C5
0.1µf "	47	C1-C4
		C13, C1
		C30-C
		C54-C
		C57
100 µf	1	
22 ohm 1/4 W 5%	1	R12
470 " " "	4	R4, R5
1K " " "	4	R1-R3
4.7K " " "	4	R6-R8
1K ohm 9-PIN SIP	1	RA 1
CUSTOM 9-PIN SIP	1	RA3
" 12-PIN SIP	1	RA2
" 19-PIN SIP	2	RA4,
2N3391A	4	Q1-Q
74LS00	6	IC 4A
74LS04	5	" 7A
74LS08	2	" 5A
74LS20	1	" 5C
74LS30	1	" 5B
74LS32	3	" 8A
74LS74	3	" 1B
74LS86	9	" 2B
74LS112	1	" 7D
74LS138	1	" 4B
74LS153	5	" 12B
74LS157	7	" 5H
74LS163	7	" 1D
74LS174	3	" 3K
74LS175	3	" 6E
74LS194	9	" 4D
74LS245	1	" 10A
74LS273	1	" 8D
74LS283	2	" 2F
74LS367	5	" 4
74LS374	3	" 6F
7404	1	" 12
7489	2	" 2
8216	1	" 11
93425	3	" 1
BP-ROM	1	" 11
EPROM 2764 AD00	1	" 4
" " AD01	1	" 4
" " AD02	1	" 4
" 2732 AD03	1	" 10
" 2732 AD04	1	" 10
PAL	2	" 2
STATIC RAM	4	" 9

CROSS REFERENCE LIST

<u>SIGNATION NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>Q'ty</u>	<u>DESIGNATION NO.</u>	<u>PART NO.</u>
C29	0300-00800-0500	16-PIN IC SOCKET	4	ICS 1A-3A, 11A	0508-00804-0700
C40	0300-00800-1402	18-PIN " "	4	" 9H, 5J-7J	0300-00804-0900
	0349-00800-0002	20-PIN " "	2	" 2D, 10K	0508-00804-2300
C53	0349-00800-0001	24-PIN " "	2	" 10E, 10F	0550-00804-0500
	0508-00800-0800	28-PIN " "	2	" 4E, 4F, 4H	0508-00804-0400
	0508-00800-0900				
C4, C6-C10, C12, C15-C21, C23-C28, C38, C42-C48, C56, C58-C61		RIBBON CONN. SCKT. 50 PIN	1	J2	0300-00804-1104
	0333-00800-0003	X-TAL 12 MHZ	1	X-TAL 1	0333-00804-0001
	0062-063B3-1XXX	THREADED SPACER (FINISHED)	4	PCMH1-PCMH4	0986-00701-00XF
C5, R10, R11	0062-156B3-1XXX	P.C. MTG. SCRW. 6-32 X 6(4)	4	PCMH5-PCMH8	0017-00101-0339
C3, R13	0062-179B3-1XXX				
C19	0062-211B3-1XXX				
	0508-00804-0200	VIDEO BOARD	1	A080-91463-B349	A080-91463-B349
	0066-025CX-XAWX				
	0066-026CX-XAWX				
RA5	0066-027CX-XAWX				
	0300-00802-0003				
	0300-00803-0027				
A, 6A, 8B, 9C, F, 12H	0300-00803-0029				
A, 9B, 13B, 8C, 10D, A, 13E	0300-00803-0030				
	0300-00803-0052				
	0333-00803-0011				
A, 9A, 12E	0300-00803-0031				
A, 10B, 11B	0300-00803-0032				
A, 3B, 4C, 6C, 7C, 10, 11D, 12D, 13F	0300-00803-0054				
	0333-00803-0007				
	0300-00803-0033				
X-9K	0333-00803-0006				
A, 9D, 8J-10J, K, 4K	0300-00803-0050				
A, 7B, 2C, 3C, 10, 10H, 11J	0333-00803-0001				
A, 3D, 13H	0300-00803-0047				
A, 1E, 2E, 8E, 1F, F, 8F, 1H, 2H	0300-00803-0035				
	0333-00803-0003				
	0300-00803-0038				
A, 7E	0300-00803-0045				
A, 3D, 6H-8H	0300-00803-0039				
A, 6F, 7F	0333-00803-0004				
	0333-00803-0012				
A, 3J	0550-00803-3300				
	0349-00803-0005				
A, 3A	0349-00803-0006				
	0349-00803-0007				
	0349-00803-0010				
	0349-00803-0011				
	0349-00803-0012				
	0349-00803-0008				
	0349-00803-0009				
A, 10K	0349-00803-0013				
A, 5J-7J	0508-00803-0300				

REVISIONS		

PROJECT ENG. J. SZERSZEN		HEAT TREAT		SCALE FULL	USED ON BUMP & JUMP	<i>Bally</i> / MIDWAY MFG. CO. FRANKLIN PK ILL
DESIGNER		MATERIAL		NO REQ'D I PER		
DIM TOLERANCES		DWG. <i>RLW</i>	FINISH		ASSEMBLY DRAWING BUMP & JUMP VIDEO BD. A084-91463-B349	
DATE 02/15/83				PART NO M051-00349-8008		



J2-B17 ← CPU CLK
 J1-7 ← H SYNC
 J2-B18 ← BV BLANK
 J1-6 ← V SYNC

J2-B20 ← SOUND TIMING
 J2-A20 ← SOUND CLK
 J2-A18 ← DIVV

W DISABLE

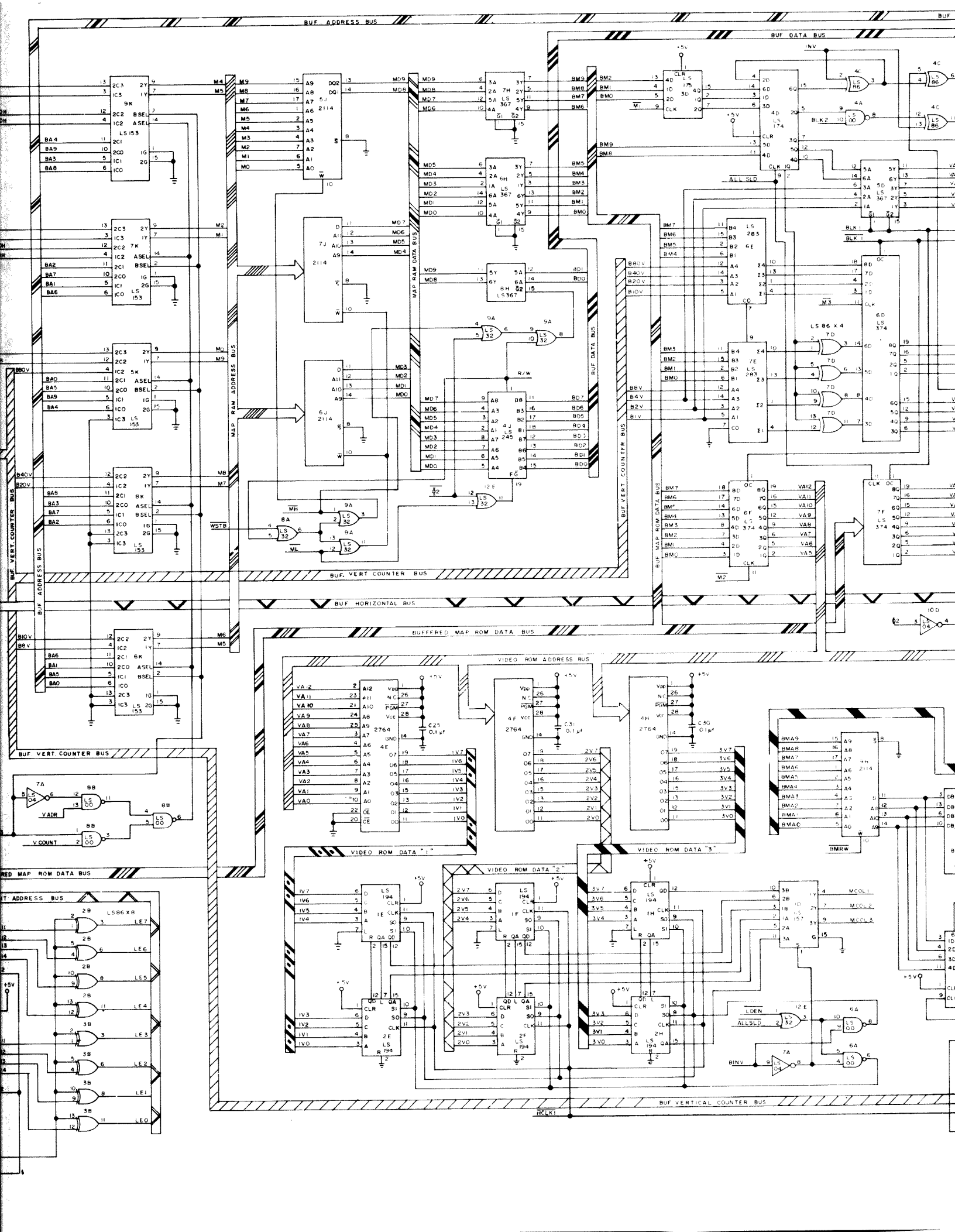
J1-10
 J1-9
 J1-8
 J1-L
 J1-K
 J1-J
 J2-A1
 J2-B1
 J2-A2
 J2-B2
 J2-A3
 J2-B3

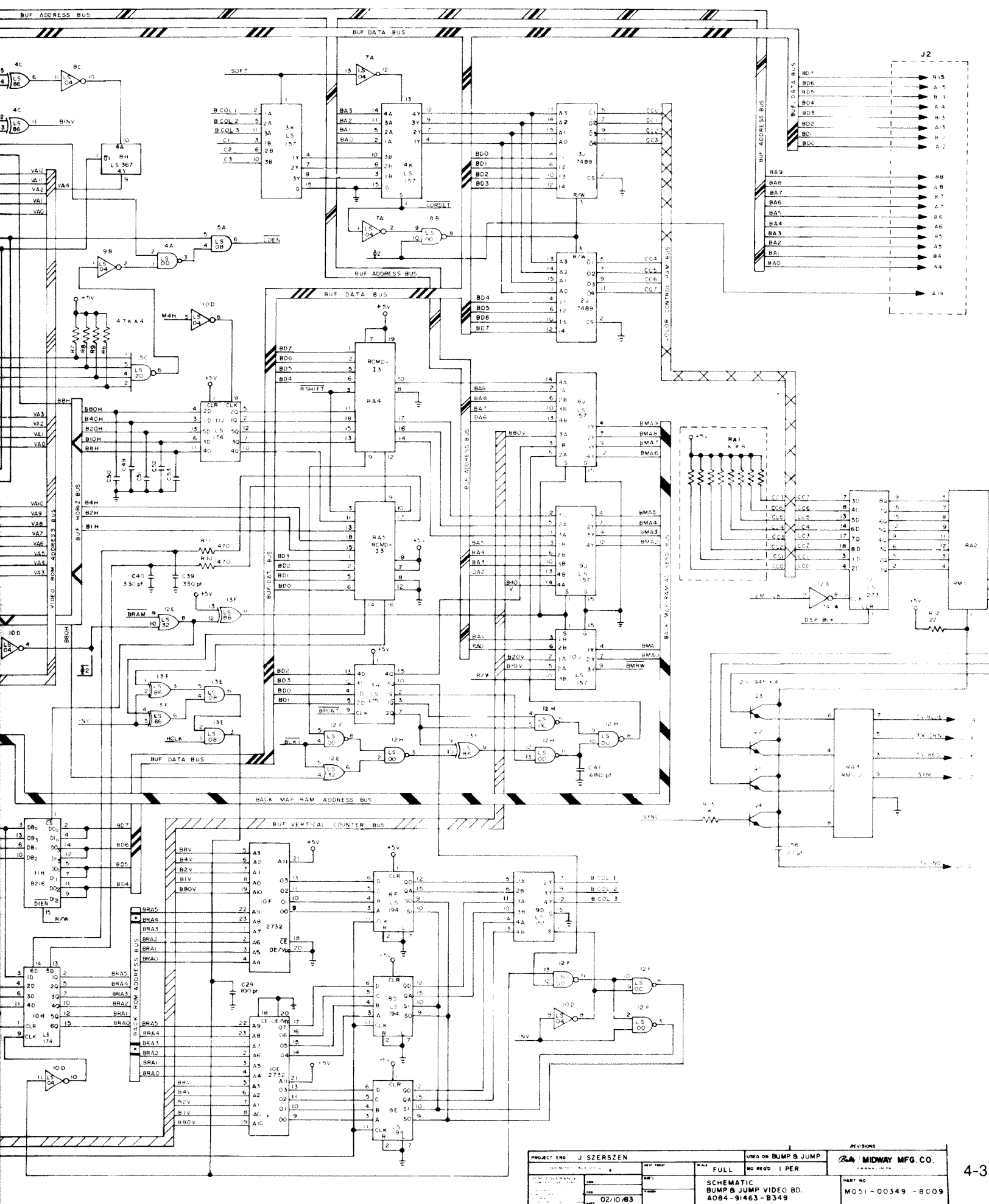
J1-11
 J1-2
 J1-3
 J1-A
 J1-B

J2-A23
 J2-B23
 J2-A24
 J2-B24
 J2-A25
 J2-B25

BM7
 BM6
 BM5
 BM4

BM3
 BM2
 BM1
 BM0

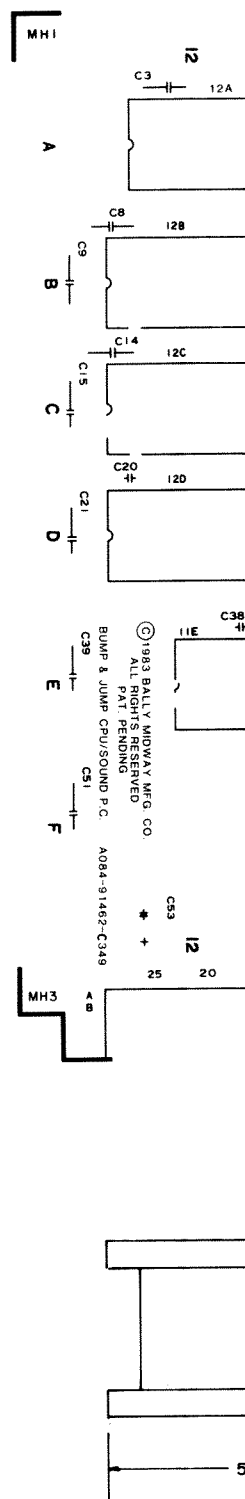


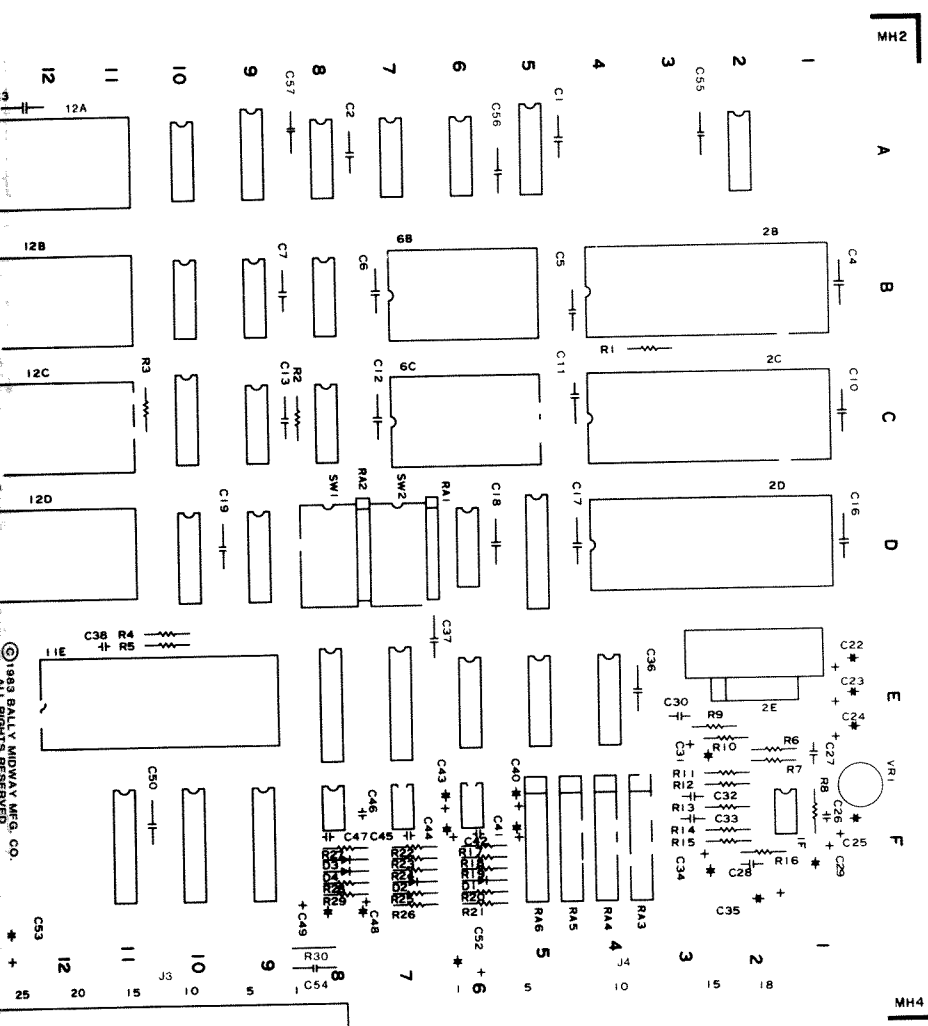


PROJECT ENG	J SZERSZEN	DESIGNER	DATE	REV	REVISED BY	DATE	REVISIONS
USED ON	BUMP & JUMP	FULL	NO REED	I PER			
SCHEMATIC BUMP & JUMP VIDEO BD. A084-91463-B349							PART NO M051-00349-B009
MIDWAY MFG. CO.							

DESCRIPTION LIST

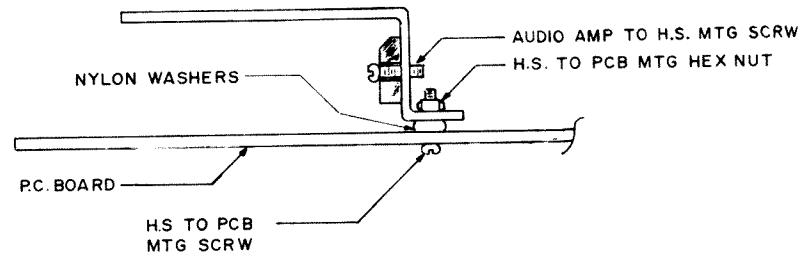
<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>	<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>
C1 - C21	0.1 µf CER.	IC 2A	74 LS 74
C22, C23, C24	47 µf RD	" 5A	74 LS 42
C25	10 µf RD	" 6A	74 LS 02
C26	220 pf CER.	" 7A	74 LS 32
C27, C28	0.1 µf MYLAR	" 8A	74 LS 04
C29	100 µf 16V	" 9A	74 LS 112
C30	0.1 µf MYLAR	" 10A	74 LS 74
C31	1 µf	" 12A	2K X 8 RAM
C32, C33	.068 µf MYLAR		
C34	47 µf RD	" 2B	6502 CPU
C35	100 µf 16V	" 6B	2K X 8 RAM
C36 - C39	0.1 µf CER.	" 8B	74 LS 00
C40, C41	22 µf RD	" 9B	74 LS 08
C42	0.01 µf CER.	" 10B	74 LS 32
C43, C44	22 µf RD	" 12B	2764 EPROM AD 08
C45, C46	0.01 µf CER.		
C47	0.1 µf CER.	" 2C	8910 SND GEN
C48	47 µf RD	" 6C	2732 EPROM AD 05
C49	10 µf RD	" 8C	74 LS 74
C50, C51	0.1 µf CER.	" 9C	74 LS 04
C52	100 µf 25V	" 10C	74 LS 138
C53	100 µf 16V	" 12C	2764 EPROM AD 07
C54	0.01 µf CER.		
C55, C56, C57	0.1 µf CER.	" 2D	8910 SND GEN
		" 5D	74 LS 374
		" 6D	74 LS 74
		" 9D, 10D	74 LS 138
		" 12D	2764 EPROM AD 06
R1	1 K ohm 1/4W 5%		
R2	10K " " "	" 2E	C 1181 H3 SND AMP
R3, R4, R5	1 K " " "	" 4E, 5E, 6E	74367
R6, R7	100 K " " "	" 7E, 8E	74 LS 244
R8	10 K " " "	" 11E	DECO 222 (CUSTOM CPU)
R9, R10, R11	1 K " " "		
R12	10 K " " "	" 1F	4558 OP AMP
R13	47 K " " "	" 6F, 7F, 8F	NE 555N TIMER IC
R14	22 K " " "	" 9F, 10F	74 LS 244
R15, R16	47 K " " "	" 11F	74 LS 245
R17	33 " " "		
R18	1 K " " "		
R19	33 " " "		
R20	5.1 K " " "		
R21	1 K " " "	HSIC 2E	HEAT SINK (AUDIO AMP)
R22	33 " " "		
R23	1 K " " "	ICS 2B	40 PIN IC SOCKET
R24	33 " " "	" 12B	28 PIN "
R25	5.1 K " " "	" 2C	40 PIN "
R26	1 K " " "	" 12A, 6B, 6C	24 PIN "
R27	47 K " " "	" 12C	28 PIN "
R28, R29	10 K " " "	" 2D	40 PIN "
R30	30 K " " "	" 12D	28 PIN "
		" 11E	40 PIN "
RA1, RA2	1 K SIP 9PIN	J3	50 PIN RIBBON CONN. SCKT
RA3 - RA6	CUSTOM IO PIN SIP		50 PIN CABLE ASSY
VRI	POT 10K SIP	MHIC 2E	AUDIO AMP TO H.S. MTG. SCRW 5-40 X 4 SCRW (2)
DI - D4	DIODE 1N914 B	MHHSIC 2E	H.S. TO PCB MTG SCRW 4-40 X 6 SCRW (2)
		"	H.S. TO PCB MTG NUT 4-40 HEX NUT (2)
		"	H.S. INSULATING #6 FLT NYLON WASHER (2)
		PCMHI - PCMH4	PC MTG SCRW 6-32 X 6 (4)
		SW1, SW2	8 POS DIP SW
		A080 - 91462 - C349	CPU/SOUND PCB





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DESCRIPTION	QTY	DESIGNATION
220 pf CER.	1	C26
.068 μ f MYLAR	2	C32, C33
0.01 μ f CER.	4	C42, C45, C46
0.1 μ f CER.	31	C1-C21, C36-C40, C51, C55
0.1 μ f MYLAR	3	C27, C28, C30
1 μ f	1	C31
10 μ f RD	2	C25, C49
22 μ f RD	4	C40, C41, C43
47 μ f RD	5	C22, C23, C24
100 μ f 16V	3	C29, C35, C53
100 μ f 25V	1	C52
33 ohm 1/4W 5%	4	R17, R19, R22
1 K " " "	11	R1, R3, R4, R5, R11, R18, R21, R20, R25
5.1 K " " "	2	R2, R8, R12, R14
10 K " " "	5	R14
22 K " " "	1	R30
30 K " " "	1	R13, R15, R16
47 K " " "	4	R6, R7
100 K " " "	2	
1 K SIP 9PIN	2	RA1, RA2
CUSTOM 10PIN SIP	4	RA3-RA6
POT 10K SIP	1	VRI
DIODE IN914B	4	DI-D4
DECO 222 (CUSTOM CPU)	1	IC 11E
6502 CPU	1	" 2B
74 LS00	1	" 8B
74 LS02	1	" 6A
74 LS04	2	" 8A, 9C
74 LS08	1	" 9B
74 LS32	2	" 7A, 10B
74 LS42	1	" 5A
74 LS74	4	" 2A, 6D, 8
74 LS112	1	" 9A
74 LS138	3	" 9D, 10C, 1
74 LS244	4	" 7E, 8E, 9
74 LS245	1	" 11F
74 LS374	1	" 5D
74367	3	" 4E, 5E, 6C
2732 EPROM AD05	1	" 6C
2764 EPROM AD06	3	" 12D
2764 EPROM AD07	1	" 12C
2764 EPROM AD08	1	" 12B
2K X 8 RAM	2	" 6B, 12A
8910 SND GEN	2	" 2C, 2D
C1181 H3 SND AMP	1	" 2E
4558 OP AMP	1	" 1F
NE 555N TIMER	3	" 6F, 7F, 7
HEAT SINK (AUDIO AMP)	1	HSIC 2E

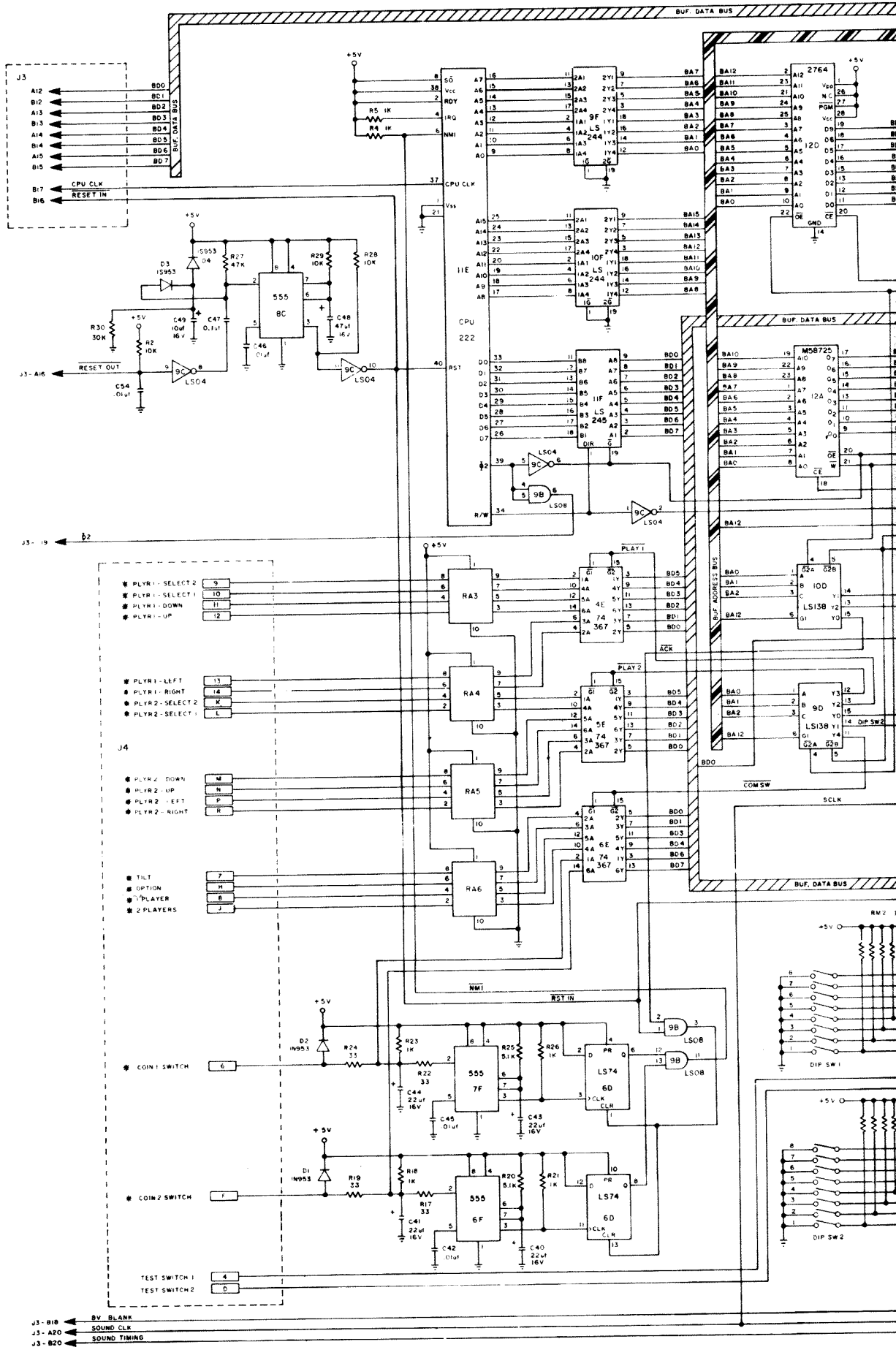


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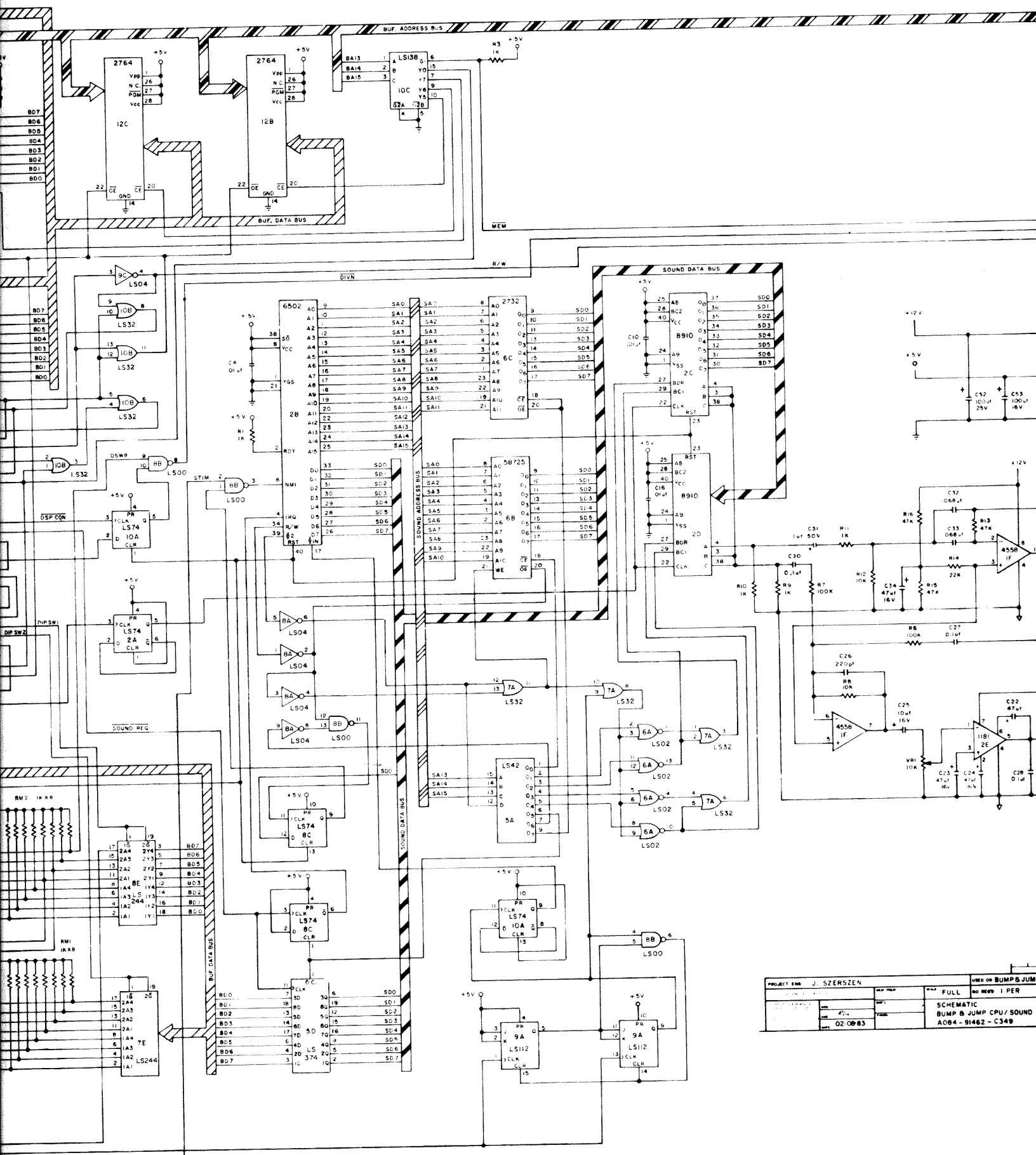
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3	24 PIN IC SOCKET	ICS 12A, 6B, 6C	0508 - 00804 - 0500
3	28 PIN "	" 12B, 12C, 12D	0508 - 00804 - 0400
4	40 PIN "	" 2B, 2C, 2D, 11E	0508 - 00804 - 1800
1	50 PIN RIBBON CONN. SCKT	J3	0300 - 00804 - 1104
1	50 PIN CABLE		0333 - 00804 - 0002
2	AUDIO AMP TO H.S. MTG SCRW 5-40 X 4 SCRW	MHIC 2E	0017 - 00101 - 0751
2	H.S. TO PCB MTG SCRW 4-40 X 6 SCRW	MHHSIC2E	0017 - 00101 - 0731
2	H.S. TO PCB MTG NUT 4-40 HEX NUT	"	0017 - 00103 - 0002
2	H.S. INSULATING #6 FLT NYLON WASHER	"	0017 - 00104 - 0088
4	P.C. MTG SCRW 6-32 X 6	PCMHI - PCMH4	0017 - 00101 - 0339
2	8 POS DIP SW	SW1, SW2	0300 - 00804 - 0700
1	CPU/SOUND PCB		A080 - 91462 - C349
	0300 - 00801 - 0001		
	0666 - 023CX - XAWX		
	0333 - 00803 - 0030		
	0300 - 00803 - 0027		
	0300 - 00803 - 0028		
	0300 - 00803 - 0029		
	0300 - 00803 - 0030		
	0300 - 00803 - 0031		
	0932 - 00819 - 1200		
	0300 - 00803 - 0032		
	0333 - 00803 - 0007		
	0300 - 00803 - 0033		
	0300 - 00803 - 0037		
	0333 - 00803 - 0035		
	0333 - 00803 - 0004		
	0333 - 00803 - 0032		
	0349 - 00803 - 0001		
	0349 - 00803 - 0004		
	0349 - 00803 - 0003		
	0349 - 00803 - 0002		
	0508 - 00803 - 2500		
	0066 - 953AX - XXSX		
	0333 - 00803 - 0036		
	0333 - 00803 - 0029		
	0333 - 00803 - 0008		
	0068 - 071XX - AXCX		

REVISIONS	

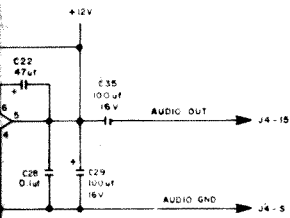
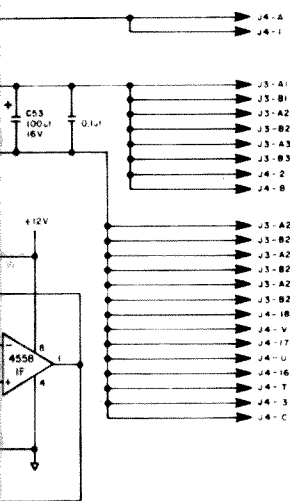
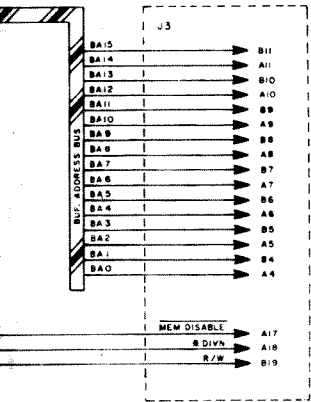
PROJECT ENG: J. SZERSZEN		USED ON BUMP & JUMP		Bally / MIDWAY MFG. CO. FRANKLIN PARK, ILL.	
DON'T FORGET TO CHECK		HEAT TREAT	SCALE: FULL	NO. REQ'D: 1 PER	
DIM. TOLERANCE UNLESS OTHERWISE SPECIFIED		DRM: TBC	MAT'L	ASSEMBLY DWG	
DATE: 02/16/83		CHKD.	FINISH	BUMP & JUMP CPU/SOUND	
				A084 - 91462 - C349	
				PART NO. M051 - 00349 - C006	



J3 - B19 ← BV BLANK
 J3 - A20 ← SOUND CLK
 J3 - B20 ← SOUND TIMING



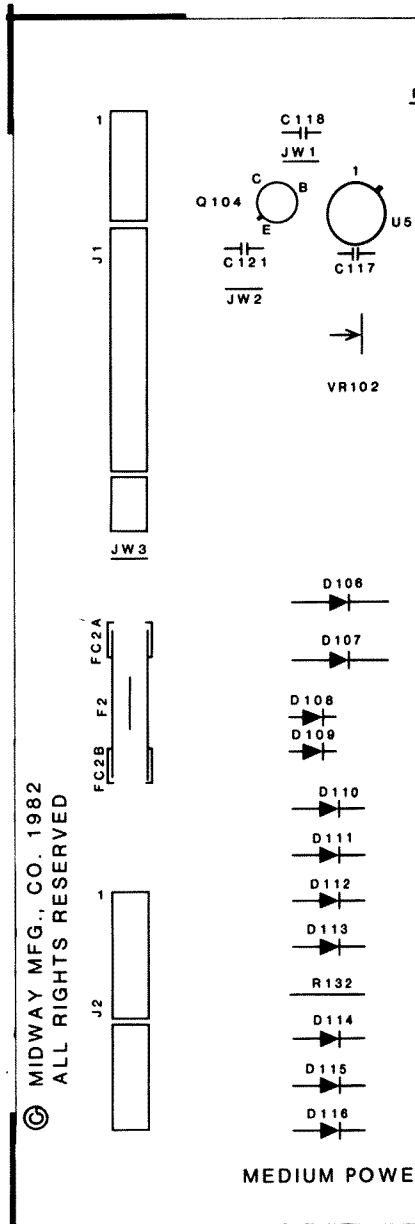
PROJECT ENG	J. SZERSZEN	DATE	02/08/83
DESIGNER		REV	
CHECKED		DATE	
APPROVED		DATE	
SCHEMATIC		NO REVISIONS PER	
BUMP & JUMP CPU/SOUND		A084-91462-C349	



REVISIONS	
MPFS JUMP PER	MIDWAY MFG. CO. EVANSTON, ILL.
SOUND 49	PART NO MOSI - 00349 - C007

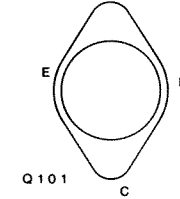
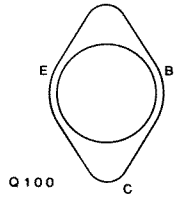
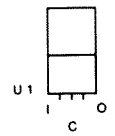
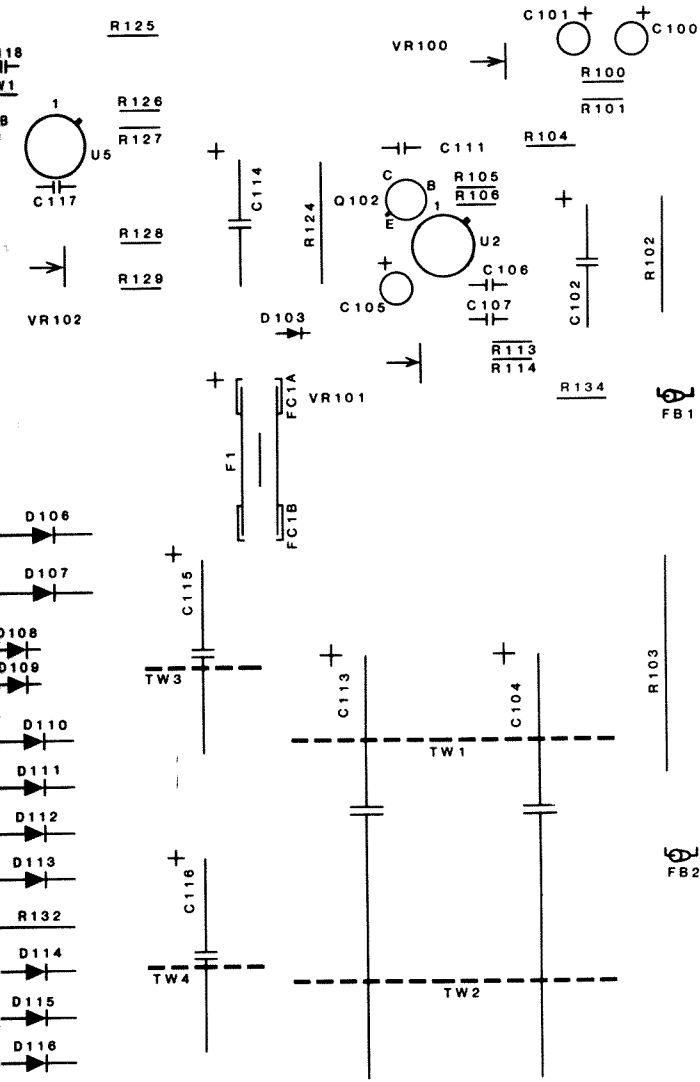
DESIGNATION LIST

DESIGNATION	DESCRIPTION	DESIGNATION	DESCRIPTION
C100	10 μ f RD TANT	D103	IN 4001
C101	0.47 μ f RD TANT 35 V	D106,107	MR 750
C102	470 μ f AX. ELEC.	D108,109	IN 4001
C104	25,000 μ f AX. ELEC.	D110-D116	A15 F 50V 5A
C105	4.7 μ f RD TANT 35 V		
C106,107	0.1 μ f	Q102,Q104	2N2905
C111	0.1 μ f		
C113	40,000 μ f AX. ELEC.	U2,U5	LM305
C114	470 μ f " " "		
C115	2200 μ f " " 25 V	FBI, FB2	FERRITE BEAD
C116	4700 μ f " " "	FBMH1, FBMH2	FERRITE BEAD
C117	47 pf		MTG HDRW.
C118	0.1 μ f		2-20G SOLID WIRE
C121	0.1 μ f		
R100	100 ohm 1/4 W 5% CRBN	HSA1	HEAT SINK ASSY.
R101	470 " " " "	MHSA	HEAT SINK ASSY MTG HDRW
R102	0.18 " 5 W " "		2-4-40 X 10 SLT RND
R103	0.16 " 15 W " "		4-WASHER, 4, I20-.250-018
R104	68 " 1/2 W " CRBN		2-4-40 HEX NUT
R105	24 " 1/4 W " "		THERMAL COMPOUND
R106	270 " " " "	F1	FUSE, 1/4A, SLO-BLO
R113	1.2 K " " " "	F2	FUSE, 1AMP
R114	560 " " " "	F1,F2	FUSE CLIP W/STOP
R124	25 " 5W 10%	J1	2 POS. KK-156
R125	68 " 1/2 W 5% CRBN	J1,J2	5 " " "
R126	10 " 1/4 W 5% "	J1	13 " " "
R127	1 K " " " "	J2	6 " " "
R128	6.2 K " " " "		
R129	1 K " " " "	JW1,JW2,JW3	JUMPER WIRE
R132	150 " 2W 10%	TW1-TW4	TIE WRAP
R134	68 " 1/2 W 5%		
VR100,101,102	100 ohm POT	LB1	TAG, FUSE 1/4A. SLO-BLO
		LB2	TAG, FUSE 1AMP
		LB3	TAG, PWR SPLY I. D.



A082-90427-A000

HSA 1



DESCRIPTION

- 47 pf
- 0.1 μf
- 0.47 μf RD TANT 35 V
- 4.7 μf " " "
- 10 μf " " "
- 470 μf AX.ELEC.
- 2200 μf " " 25 V
- 4700 μf " " "
- 25,000 μf " " "
- 40,000 μf " " "
- 0.16 ohm 15W 5%
- 0.18 " 5W 5%
- 10 " 1/4 W 5% CRBN
- 24 " " " "
- 25 " 5W 10%
- 68 " 1/2 W 5%
- 100 " 1/4 W 5% CRBN
- 150 " 2W 10%
- 270 " 1/4 W 5%
- 470 " " "
- 560 " " "
- 1 K " " "
- 1.2 K " " "
- 6.2 K " " "
- 100 ohm POT
- A 15F 50V 5A DIODE
- IN 4001
- MR 750

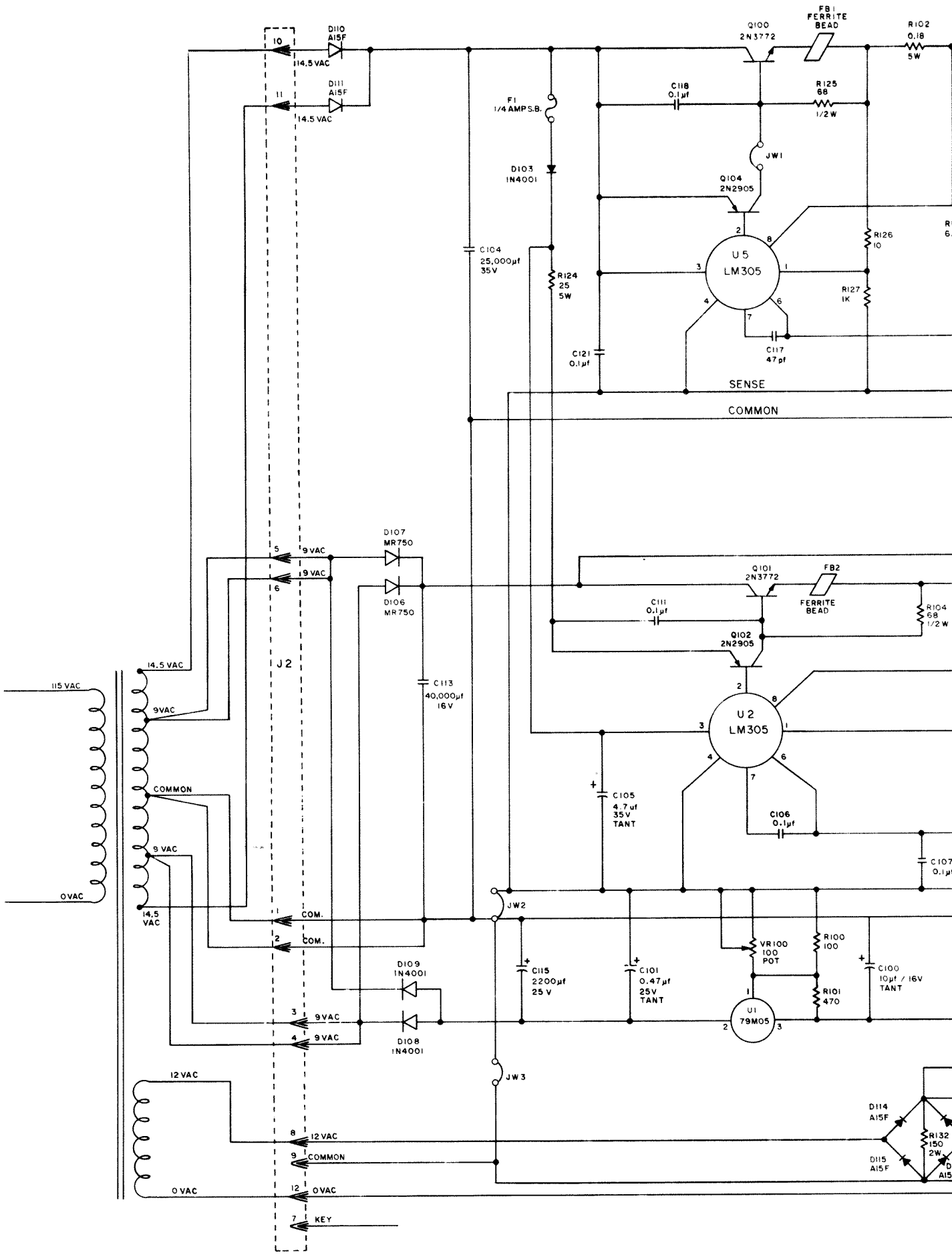
DIUM POWER SUPPLY 70VA

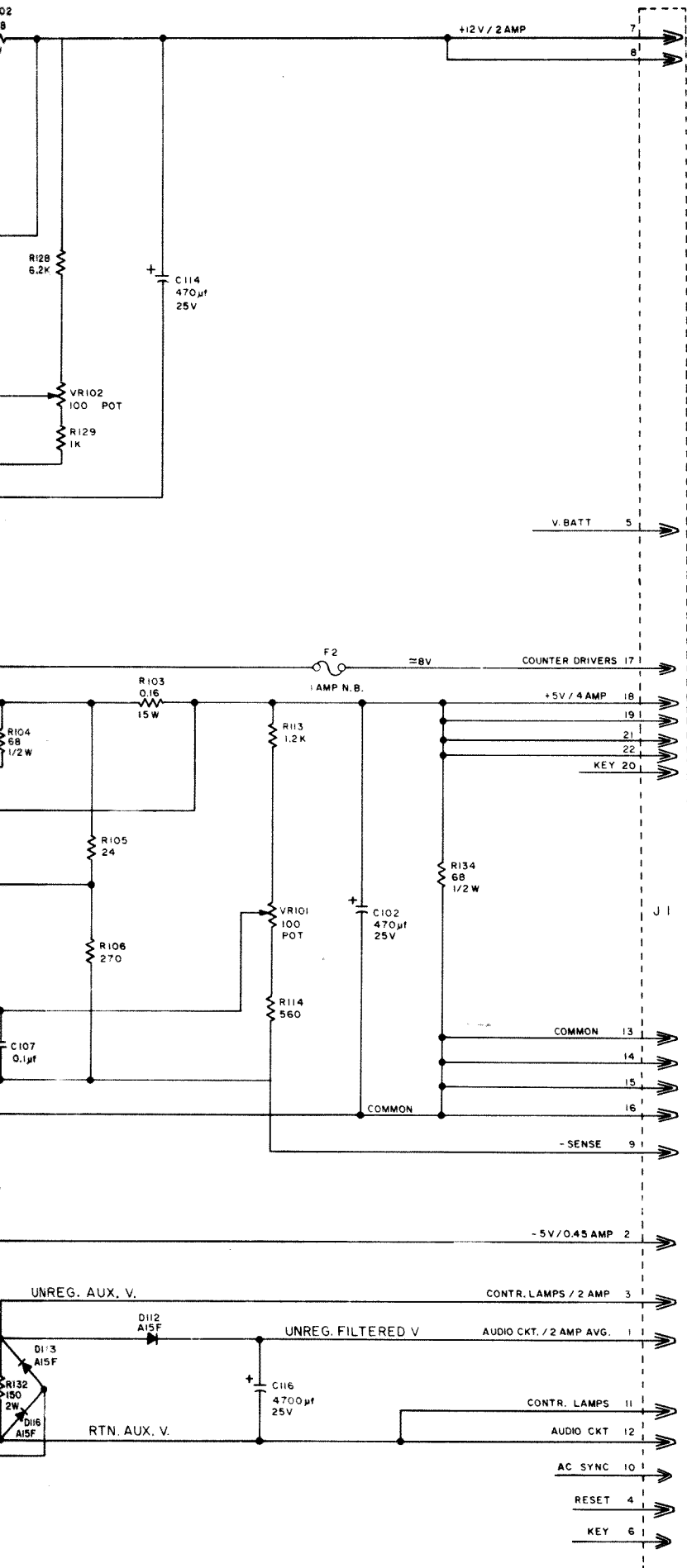
CROSS REFERENCE LIST

DESIG. NOS.	PART NOS.	DESCRIPTION	QTY	DESIG. NOS.	PART NOS.
C117	0945-00811-0100				
C106, 107, 111, 118, 121	0945-00811-0200	2N2905	2	Q102, 104	0945-00808-0300
C101	0945-00816-1100				
C105	0945-00811-0400	LM 305	2	U2, U5	0945-00813-0100
C100	0945-00816-1000				
C102, 114	0945-00816-0600	FERRITE BEAD	2	FB1, FB2	0017-00009-0225
C115	0945-00816-1300	FERRITE MTG. HDRW.		FBMH1, FBMH2	
C116	0945-00811-0700				
C104	0945-00816-1700	20 G SOLID WIRE	2	FBMH1, FBMH2	0017-00033-0139
C113	0945-00816-1800				
		HEAT SINK ASSY	1	HSA1	A945-00008-0100
R103	0945-00815-0100				
R102	0945-00815-0200	4-40 X 10 SLT RND	2	HSA1	0017-00101-0727
R126	0062-051B3-1XXX	WSH, 4, 120-.250-018	4	HSA1	0017-00104-0071
R105	0062-065B3-1XXX	4-40 HEX NUT	2	HSA1	0017-00103-0002
R124	0945-00815-1000				
R104, 125, 134	0062-09803-1XXX	FUSE, 1/4 A SLO-BLO	1	F1	0017-00003-0446
R100	0062-110B3-1XXX	FUSE, 1 AMP	1	F2	0017-00003-0001
R132	0945-00812-0200	FUSE CLIP W/STOP	4	F1, F2	0017-00071-0033
R106	0062-138B3-1XXX				
R101	0062-156B3-1XXX	2 POS. KK-156 CONN.	1	J1	3000-16387-0200
R114	0062-162B3-1XXX	5 " " " "	2	J1, J2	3000-16387-0500
R127, 129	0062-179B3-1XXX	6 " " " "	1	J2	3000-16387-0600
R113	0062-183B3-1XXX	13 " " " "	1	J1	3000-16387-1300
R128	0062-217B3-1XXX				
		22 AWG 2 1/2 IN.	3	JW1, JW2, JW3	0151-00087-0000
VR 100, 101, 102	0945-00814-0000	TIE WRAP 7 5/8 IN.	2	TW3, TW4	0945-00814-0300
		TIE WRAP 10 3/4 IN.	2	TW1, TW2	0945-00814-0400
D110 - D116	0945-00804-0200	TAG, FUSE 1/4 A SLO-BLO	1	LB1	M051-00945-A020
		TAG, FUSE 1 AMP	1	LB2	M051-00945-A021
D103, 108, 109	0945-00804-0300	TAG, PWR SPLY I.D.	1	LB3	M051-00945-A022
D106, 107	0945-00804-0800	70 VA PWR SPLY PC	1	_____	A080-90421-C000
		HEAT SINK ASSY	1	_____	0017-00033-0139

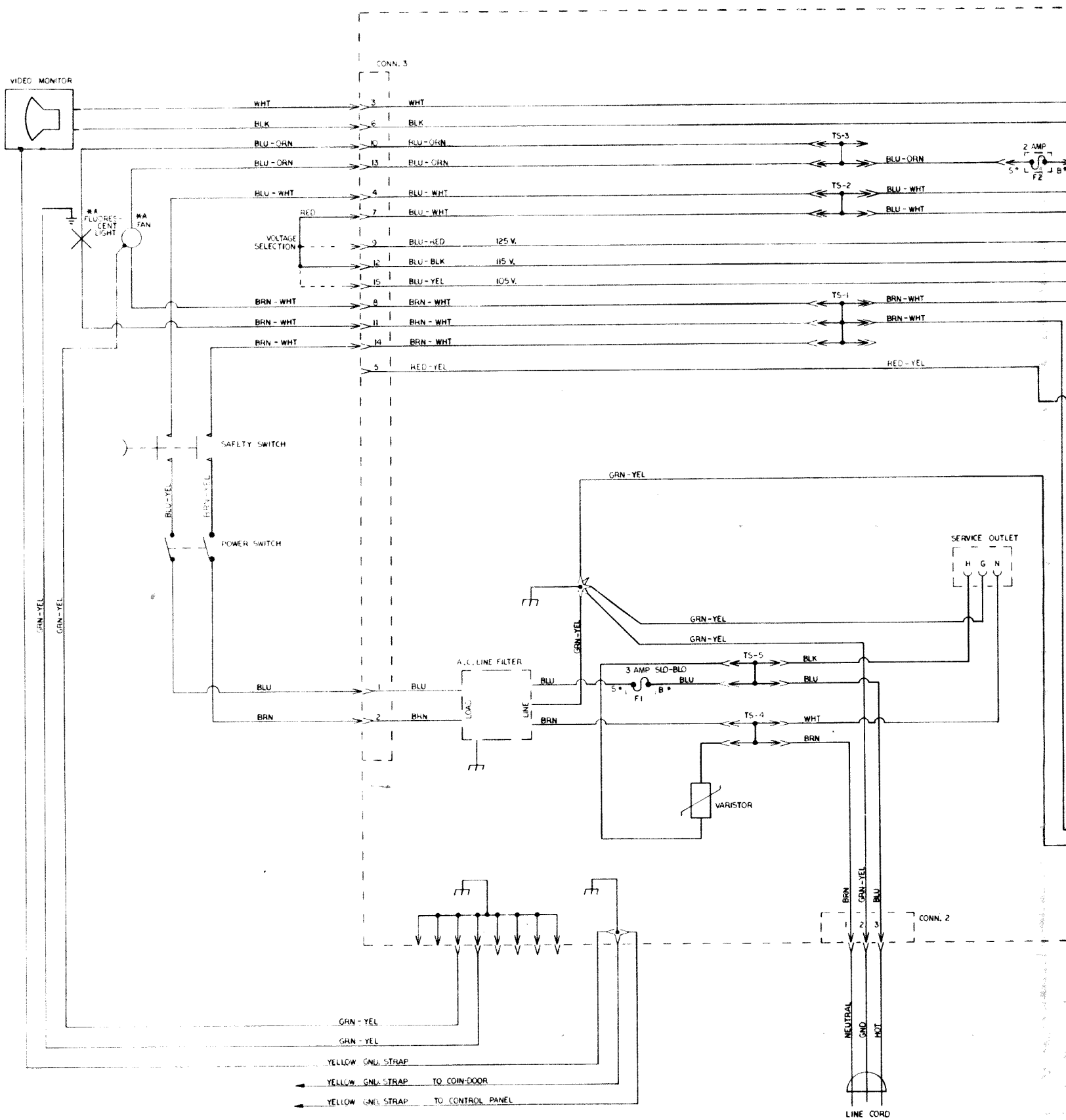
REVISIONS			

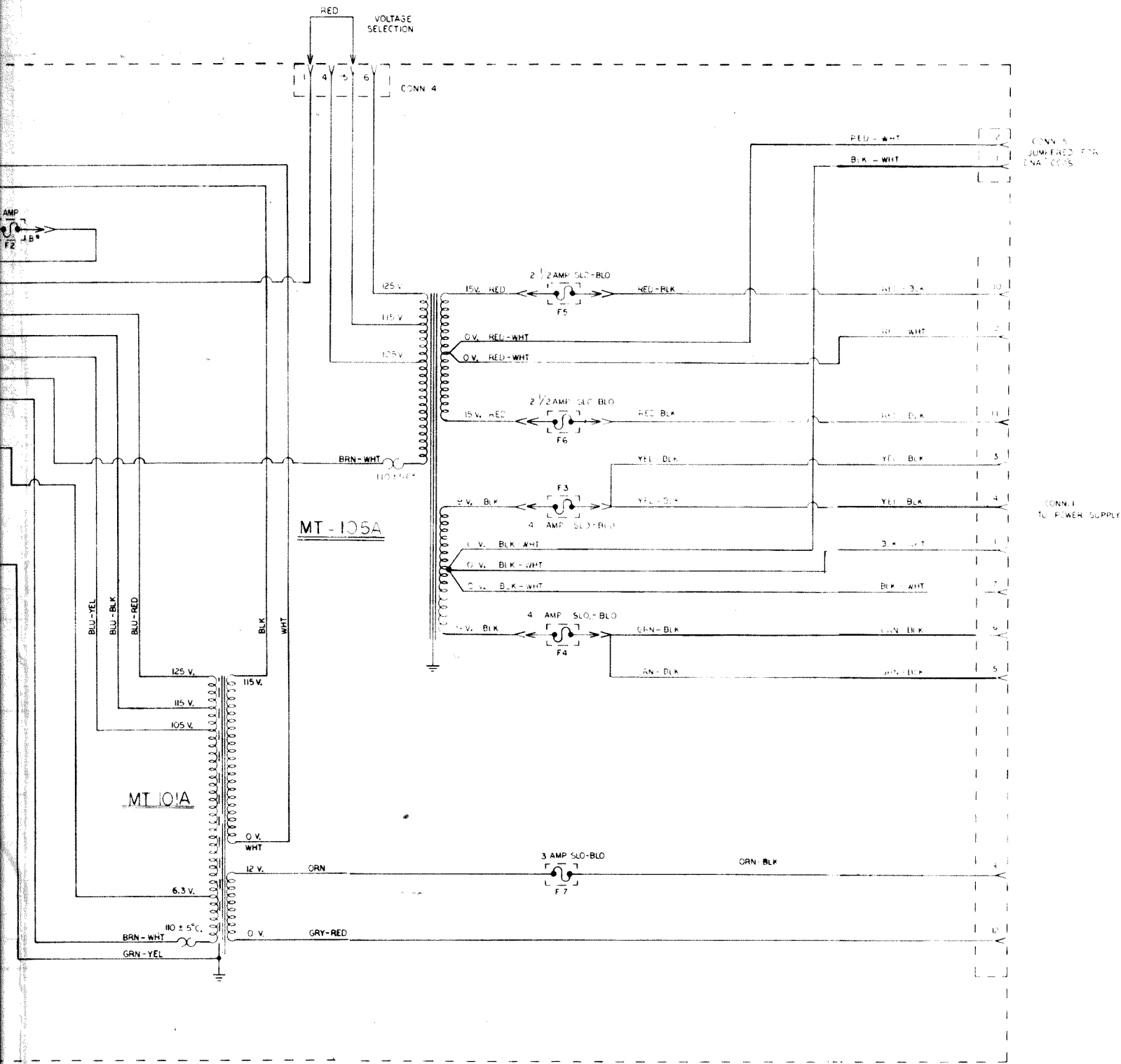
PROJECT ENG J. JARON		USED ON BLUEPRINT		Baby / MIDWAY MFG. CO.	
DOWNSCALE BY:		HEAT TREAT	SCALE FULL	NO. REQ'D 1 PER	
DIM. TOLERANCES UNLESS SPECIFIED		MAT'L	ASSY DRWG. MED PS. 70 VA (A082-90421-C000) A082-90427-A000		PART NO
DRS: TJB	CKD:	FINISH:			M051 - 00945 - A031
DATE: 12/2/82					





REVISIONS		MIDWAY MFG. CO.	
USED ON	NO REGD	DATE	REV
MEDIUM PWR. SUPPLY 70 VA		DESIGNER	DATE
A082-90421-C000		CHKD	DATE
PART NO. M051-00945-A032		APP'D	DATE
PROJECT ENG		DATE	DATE

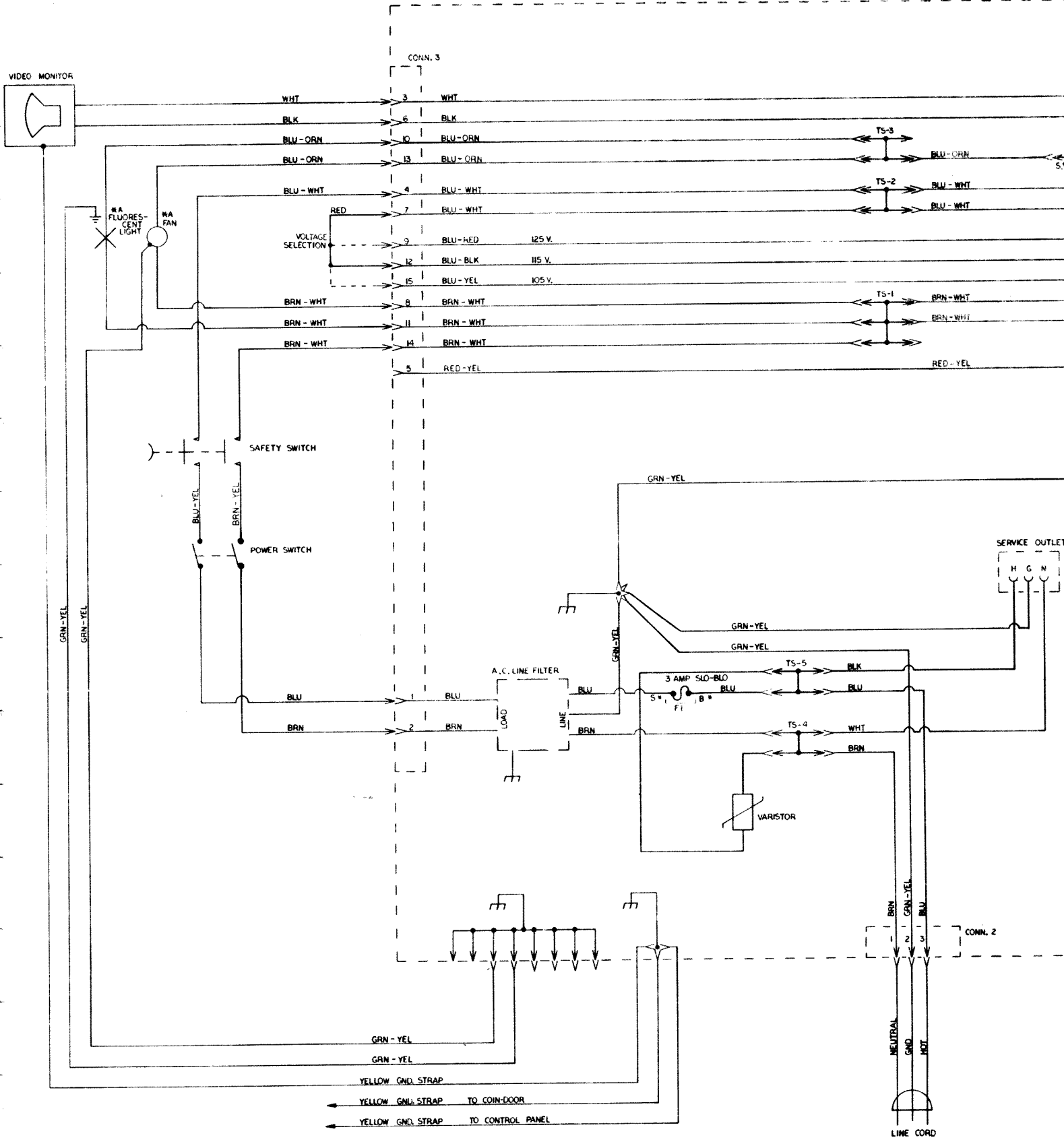


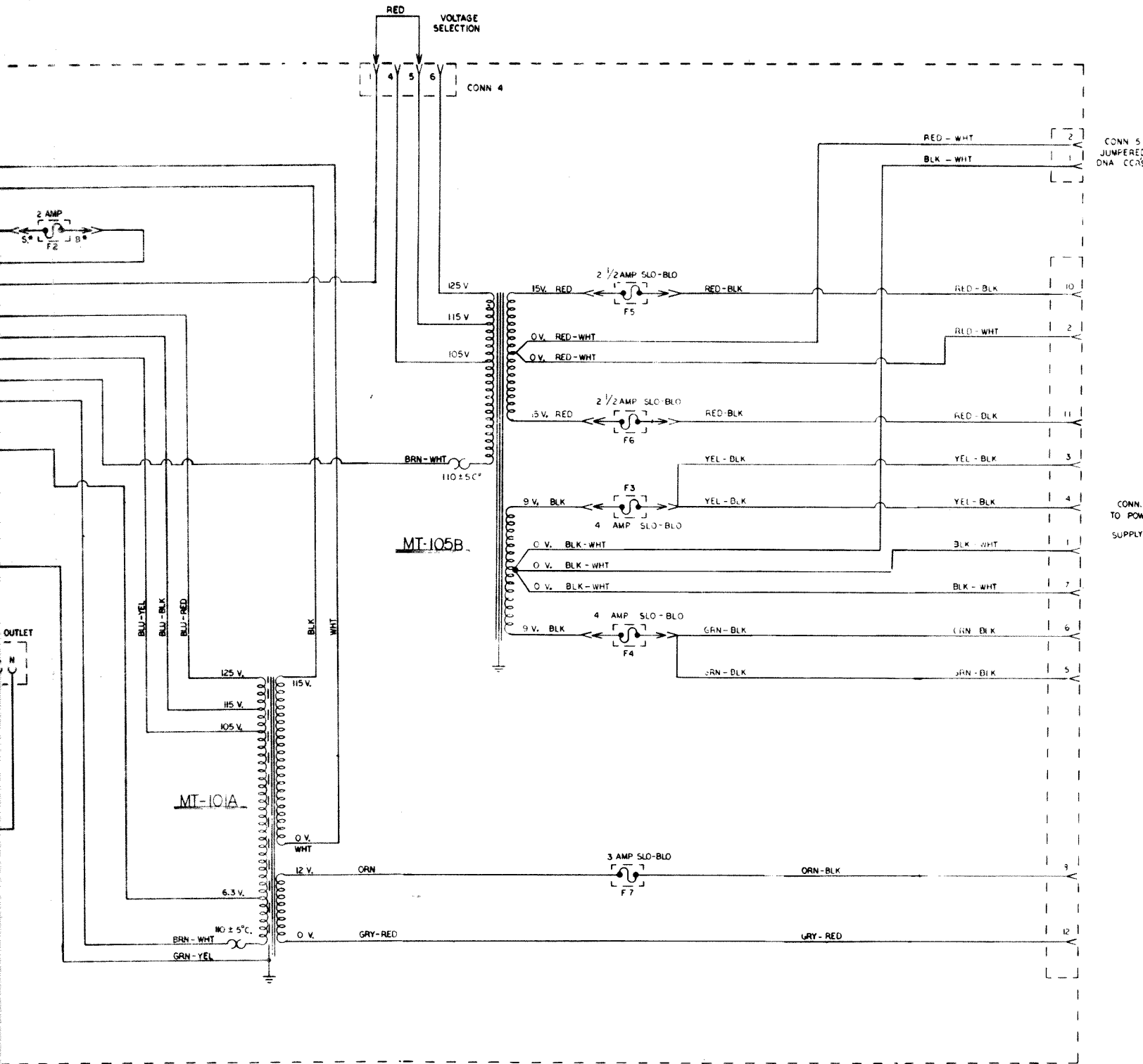


- NOTES:
1. A* = WHEN USED
 2. B* = BOTTOM TERMINAL
 3. S* = SIDE TERMINAL
 4. TS1-5 = TERMINAL BARRIER STRIP POSITIONS
 5. ⚡ = CHASSIS EARTH GND.
 6. (---) = ALTERNATE COLOR

POWER CHASSIS
 70VA, 115V, 60 Hz.
 • M051-00945-A051

MIDWAY MFG CO.
 10601 W. BELMONT AVE.
 FRANKLIN PARK, ILL. 60131





- NOTES:
1. A* = WHEN USED
 2. B* = BOTTOM TERMINAL
 3. S* = SIDE TERMINAL
 4. TS 1-5 = TERMINAL BARRIER STRIP POSITIONS
 5. * = CHASSIS EARTH GND.
 6. (---) = ALTERNATE COLOR

POWER CHASSIS CT MODEL
70VA 115V. 60Hz.
* MO51-00945-A046

MIDWAY MFG CO.
10601 W. BELMONT AVE.
FRANKLIN PARK, ILL. 60131