

MANUAL NO. OH05-00300-0000
GAME NO. OH05



Operating & Parts Manual

DECEMBER, 1987

Bally
MIDWAY

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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 installed and used in accordance with the instruction 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.

**USE ONLY GENUINE BALLY MIDWAY
APPROVED REPLACEMENT PARTS.**

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BLOCK DIAGRAM—ELECTRONIC PINBALL GAME

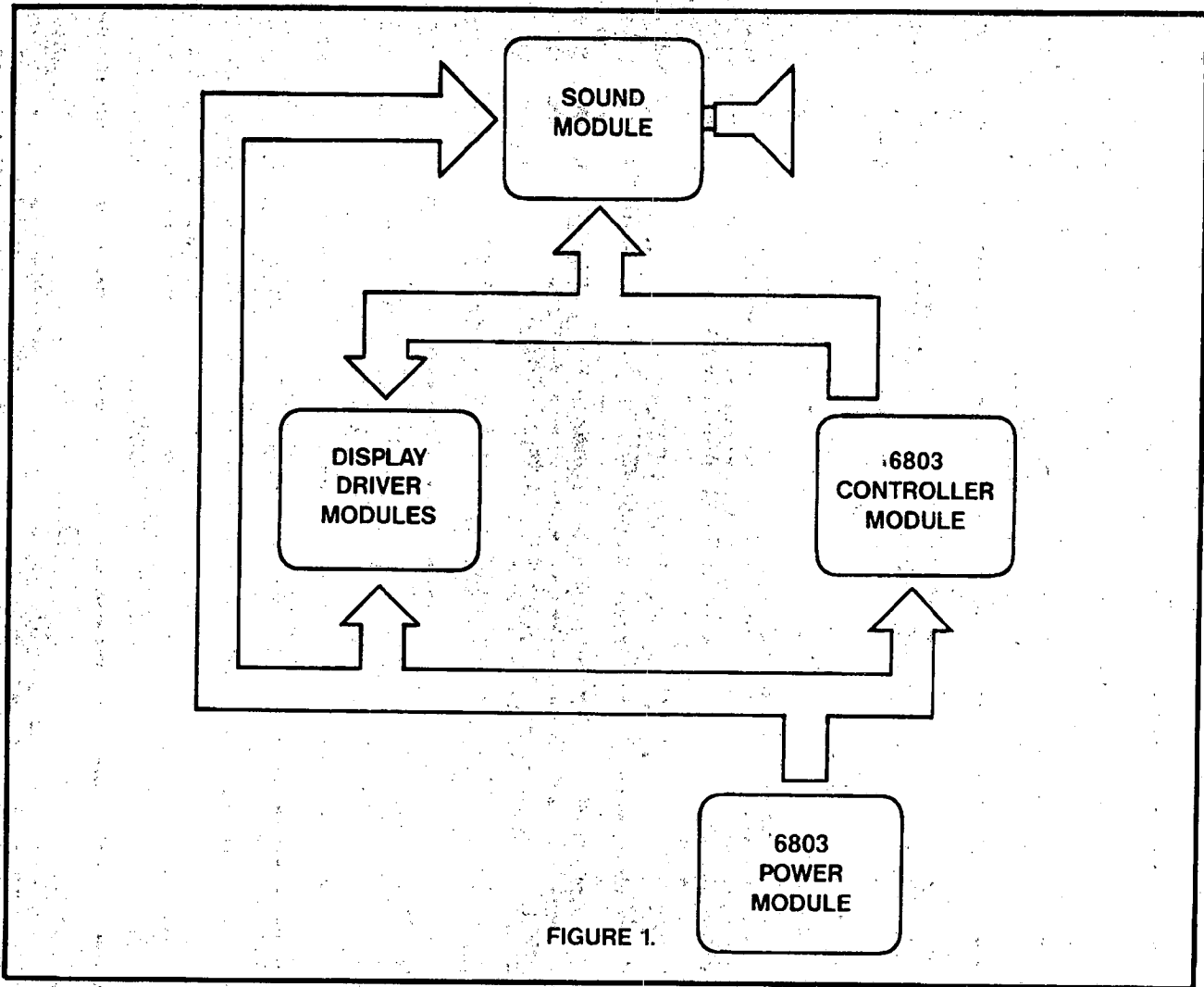


FIGURE 1.

BACKBOX SAFETY WARNING

* W A R N I N G *

TO AVOID INJURY TO OWNER/SERVICE PERSONNEL
AND TO PREVENT DAMAGE TO THE MACHINE, THE
BACK BOX **MUST** BE SECURED WITH THE BOLTS
PROVIDED BEFORE THE MACHINE IS TRANSPORTED
OR ACTIVATED.

M051-00365-A063

IMPORTANT NOTICE

BOTH PLAYFIELD BALLS MUST BE INSERTED
IN THE OUTHOLE.

THIS GAME WILL NOT START IF THERE IS A
BALL IN THE SHOOTER LANE IN THE GAME
OVER MODE.

SAFETY

The following safety hints apply to all game Operators and Service Technicians. Specific warnings and cautions will be found throughout this manual. BALLY-MIDWAY recommends that you read this page and the operating information before preparing the game for play.

WARNINGS

AC POWER CONNECTION

Before connecting the game to the AC power source, verify that the "location voltage" jumper wires are installed correctly for the line voltage in the area. For additional information, see page 1-2 and Table A on page 10-6.

PROPERLY GROUND THE GAME

Service Technicians and players may receive an electrical shock if this game is not properly grounded! To avoid shocks, **DO NOT** plug in the game until it has been inspected and properly grounded. This game should only be plugged into a grounded 3-wire outlet. After servicing any portion of the game, check to ensure that the grounded wires are secure in the game before locking up the game or returning the game to the play mode.

DISCONNECT POWER DURING REPAIRS

To avoid electrical shock, disconnect the game from the AC power source before disconnecting, repairing or removing components from the game. Before removing the 6803 Power Module or Display Module(s) from the game, or servicing the Module(s) in the game, turn power off and **wait** a minimum of 30 seconds for any 'stored' voltages to drain (bleed) off to a safe operating level.

USE THE PROPER FUSE

To avoid damaging components in the game, **use** the replacement fuses which are specified in the parts list(s) for this game. All replacement fuses **must** match the original fuses (replaced) in fuse type, voltage rating and current rating.

CAUTION

PROPERLY ATTACH ALL CONNECTORS

Ensure that the connectors on each printed circuit board (PCB) are properly connected. If they do not slide on easily, **DO NOT** force them. A reversed connector **can** damage the game and void the game's Warranty. All connectors are 'keyed' to fit the specific pins on each board. If in doubt, **always** refer to the wiring diagram. To prevent damaging components on the printed circuit boards, **NEVER** disconnect a connector from a printed circuit board with power on.

**SECTION 1
GAME INSTALLATION
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INSTALLATION PROCEDURE

When the game is removed from the shipping carton, the following procedure is recommended for installing the game.

1—Carefully, remove the game from the shipping carton and set the game on a flat surface or on a Dolly.

NOTICE: When installing this game with a Dolly or flat surface device, the Dolly Assist Stilt Assembly should be used. The procedure for use of assembly can be found on page 1-4, TRANSPORTING THE GAME BY DOLLY.

2—Remove the legs from their shipping carton and remove the four (4) Leg Adjusters (Levellers) from the Spare Parts Bag in the Coin Box. Next, assemble the Leg Adjusters to the legs and install the legs onto the cabinet.

3—Referring to BACK BOX POSITION, FIGURE A, on page 1-3, raise the Back Box to the upright (play) position. Secure the Back Box to the cabinet with the two (2) long bolts and flat washers that are located in the Spare Parts Bag in the Coin Box.

4—Adjust the Leg Adjusters to level the cabinet so that the playfield is on a pitch angle of approximately 7°.

On all games, there are certain items that should be checked after shipment, and they are:

1—Check that all cable connectors are completely seated on all printed circuit board assemblies.

2—Check that all cables are clear of moving parts.

3—Check for wires that may have come loose during shipment.

4—Check switches for loose solder or other foreign material that may have come loose in shipment and could cause shorting of switches or lamp sockets.

5—Check coils for proper soldering. Cold solder connections may not show up in factory inspection, but vibration in shipment may cause loss of contact.

6—Check that fuses are firmly seated and making good contact.

7—Check and adjust the plumb bob tilt on the left side of the Cabinet.

8—Check wiring of the plug on the transformer to correspond to location voltage. For reference, see Table A on the BACKBOX WIRING SCHEMATIC on page 10-6.

For 115 VAC, install jumper wires 2-8, 3-6 and 7-10.

For 120 VAC, install jumper wires 2-8, 4-6 and 7-11.

For 220 VAC, install jumper wires 4-8 and 7-9.

For 240 VAC, install jumper wires 4-8 and 7-11.

9—Place the two (2) game balls into the Playfield outhole.

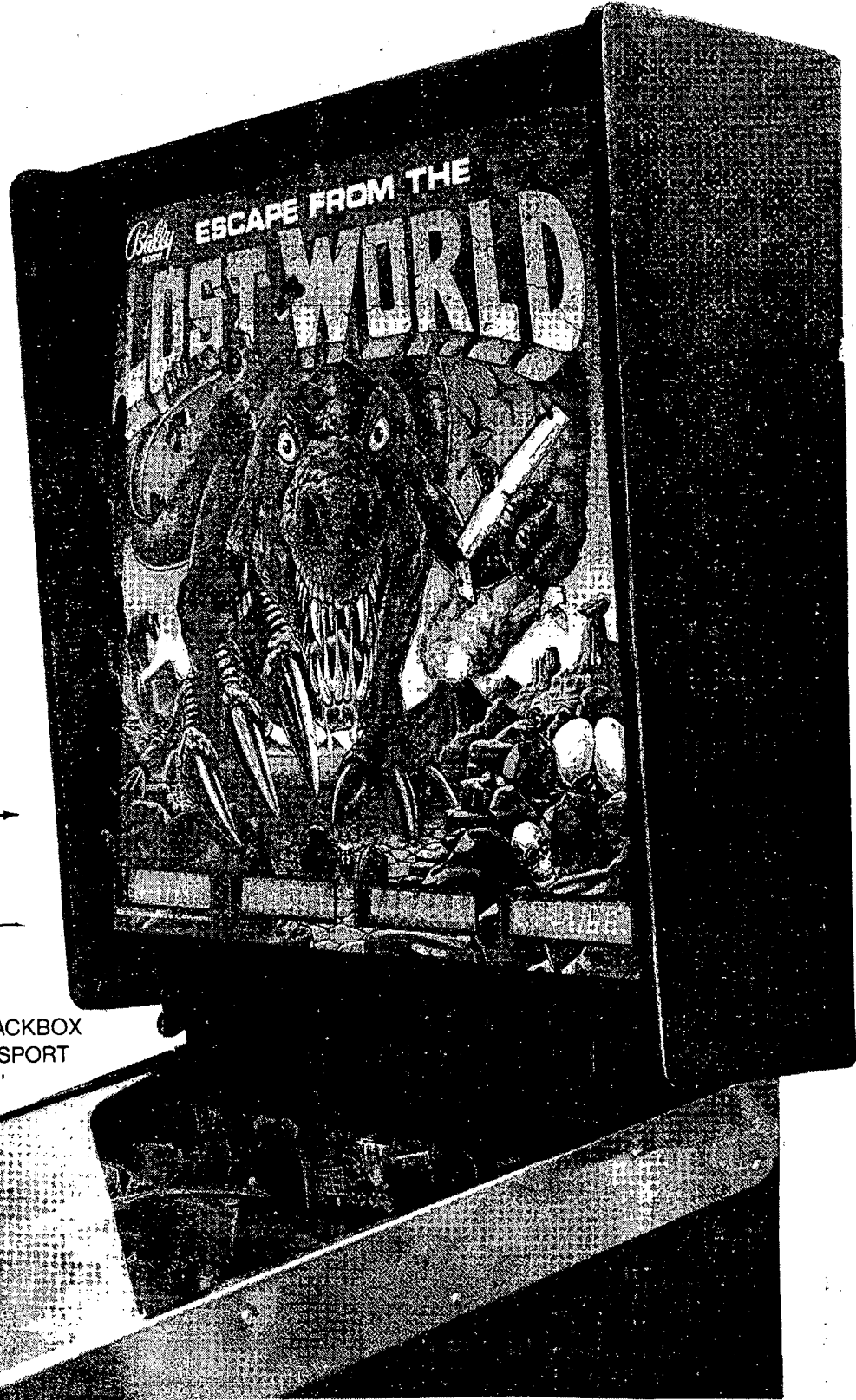
10—Plug in the line cord.

FIGURE A. BACKBOX POSITIONING

BACKBOX IN
"PLAY POSITION"

RAISE BACKBOX
FROM "TRANSPORT
POSITION"

LOWER BACKBOX
TO "TRANSPORT
POSITION"



TRANSPORTING THE GAME BY DOLLY

The following procedure is recommended by Bally-Midway when transporting this game. The purpose of this procedure is to ensure that, by using the Dolly-Assist Assembly, the game can be properly transported on a dolly. This game is shipped with the Dolly-Assist Stilt Assembly #A365-07250-0003 attached to the inside of the cabinet assembly.

PROCEDURE

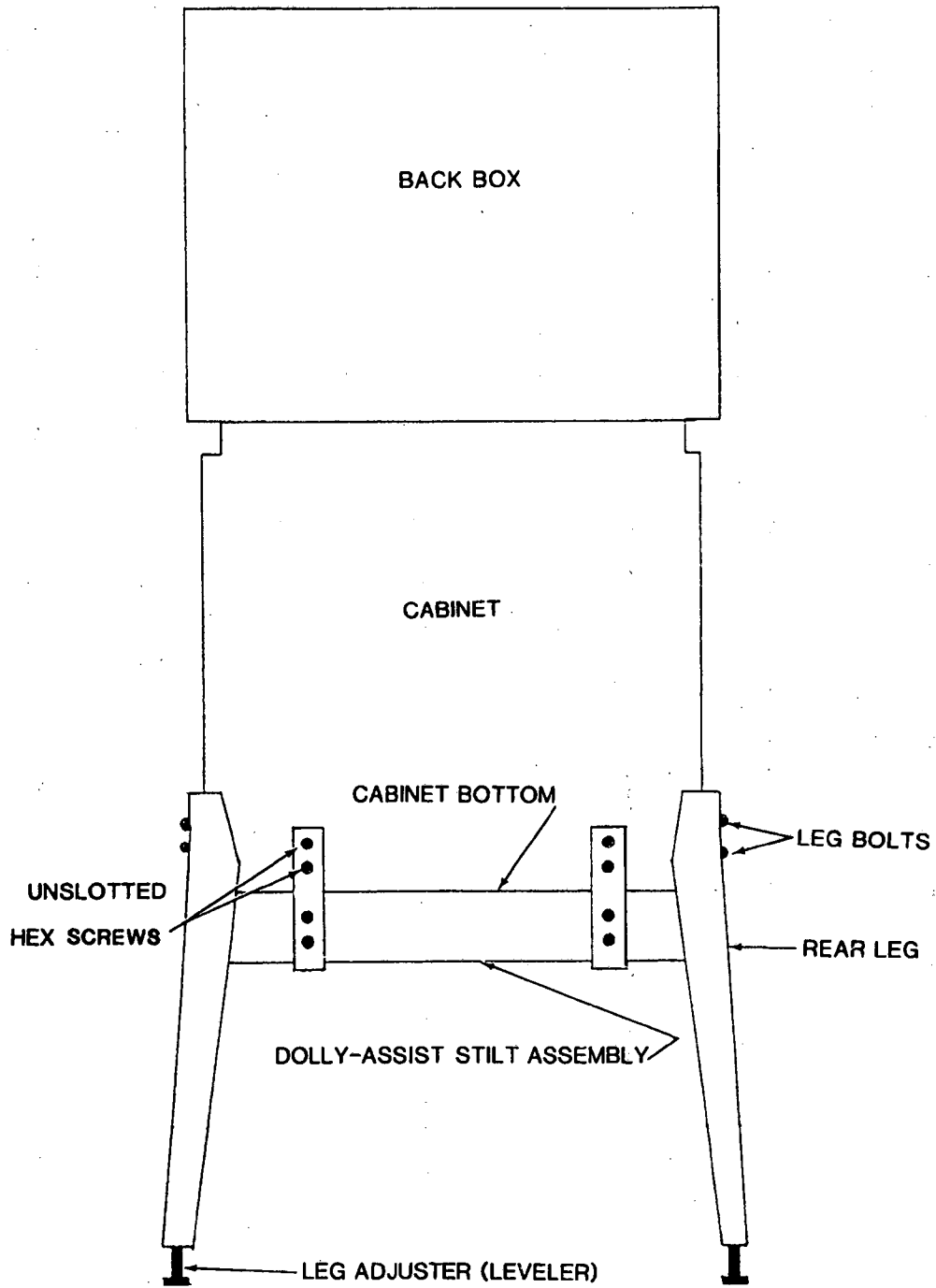
STEP 1—Unscrew the Dolly-Assist Stilt Assembly from inside the cabinet.

STEP 2—Remove the four (4) unslotted hex screws #0017-00101-1338 from the Spare Parts Bag Assembly.

STEP 3—Referring to FIGURE B, page 1-5, place the Dolly-Assist Stilt Assembly between the rear legs of the cabinet with the brackets pointing up toward the Back Box. Ensure that the Assembly is flush to the bottom of the cabinet before installing the four (4) unslotted hex screws.

NOTICE: Transporting this game with the legs removed and the Dolly-Assist Stilt Assembly installed will cause the Stilt Assembly brackets to bend as the game shifts forward.

FIGURE B. DOLLY-ASSIST STILT ASSEMBLY



SECTION 2 GENERAL GAME OPERATION

Move the ON/OFF switch (at the bottom right front corner of the cabinet) to the ON position. The game will play a power-up sound sequence and reset the drop targets. If any switch is closed when the game powers-up, the name of the closed switch is displayed for a brief period of time. After a short delay, GAME OVER on the display will indicate that the game is ready for play.

The game should accept coins and post (display) the appropriate amount of credits. Pressing the Credit Button on the cabinet will cause the Outhole Kicker Assembly to 'kick' the ball to the Shooter Lane. If both balls are in the Outhole when the Credit Button is pressed, the 1st ball will be 'kicked' to the Multi-Ball Lane and the 2nd ball will be 'kicked' to the Shooter Lane. While the balls are being 'kicked' into the proper lanes, the game sound sequence is played to announce play-readiness.

Each time the Credit Button is pressed, one (1) player is 'posted' and the remaining credits are reduced by one. Game play is initiated when the player shoots the ball. The game awards all points earned by the player(s).

When the ball enters the Outhole, the bonus score is added to the total score. The player-up and/or ball in play is advanced one (1) position. The Outhole Kicker Assembly 'kicks' the ball to the Shooter Lane and play is resumed. This continues until each player has played the allowable number of balls per game. After each player has played the allowable number of balls per game, a random Match number appears in the display. If the Match number is the same as the last two (2) digits in a player's score, a free credit game is awarded.

Any extra balls won during the game are played immediately after the player's regular ball enters the Outhole. The player-up and/or ball in play are not advanced before the game serves the extra ball for play.

Slamming the game results in a Game Over Mode. This causes all feature lights to go out (the game goes "dead") and a time delay occurs. This occurs any time either one of the slam switches make contact. This is to discourage unnecessary abuse to the game. After the delay, GAME OVER is displayed and is followed by the power-up sound sequence.

Any number of slam switches could be installed by the Operator, to meet his or her individual requirements. The switch should be adjusted to have approximately 1/16" (4.24mm) gap between the contacts. The weighted blade should be adjusted to attain the desired sensitivity. Decreasing the gap between the contacts will make the switch more sensitive; opening the gap between the contacts will make the switch less sensitive.

If, at the end of the game, either the "High Score To Date" is beaten or if the score is over 10,000,000, free games will be awarded according to the HISCORE AWARD register setting.

Tilting the game results in the loss of the ball in play. Bonus points are not awarded, the flippers and thumper bumpers go dead, and none of the Playfield switches score. The purpose of the tilt penalty is to discourage the player from 'jostling' (shaking) the game in an attempt to prolong game play. Game action returns to normal after the Outhole Kicker Assembly 'kicks' the ball to the Shooter Lane.

**SECTION 3
TAILORING & TESTING THE GAME**

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INTRODUCTION

The system in this game provides a large amount of easily accessible information to the Operator and it also communicates with the player through the use of alpha- numerics and sound effects.

The system is designed to be "user friendly" to the Operator. It can be used without a manual. This will come to light the moment you press the Self-Test button and the displays come to life with their messages of assistance. You can now change difficulty levels, awards, threshold level settings and monitor specific special awards, replay percent and income just by reading what is displayed and by using three (3) cabinet push buttons. The categories of registers are described with useful titles such as GAME SET-UP or GAME CHECK-UP.

If you've ever changed the replay threshold levels on a machine and you forgot to change the replay card because you were distracted by a customer, listen to this: "It will never happen again!" When using this system, if you want to change the first replay threshold level to 2,000,000 in the LEVEL 1 SCORE register, the corresponding message; FIRST REPLAY AT 2,000,000 will be displayed at Game Over.

All of the information that follows in this section should provide you with an understanding of how to access and change the various game registers in order to tailor or test this game. But, before reading this information, Bally-Midway recommends that you first read through all of TABLE A—REGISTERS & OPTIONS found on pages 5-2 and 5-3.

GAME REGISTERS ACCESS & MODIFICATION INSTRUCTIONS

1. Enter the Test Mode by pressing the Test button inside the front door. The category GAME STATUS will appear on the display.
2. To select a different category, use the top yellow SELECT INITIALS button¹ on the front cabinet to advance to that category. If the category is passed by, press the bottom yellow SELECT INITIALS button¹ to back-up to the previous category.
3. When the selected category appears on the display, press the Credit button to open the category and enter its directory. The first register in a directory of registers will appear on the display.
4. To select a different register, use either SELECT INITIALS button to step to that register. Using the top SELECT INITIALS button allows you to step to the end of the register directory, and out to the same category. The bottom SELECT INITIALS button allows you to back-up in the same manner.

With the exception of the GAME CHECK-UP category and the HELP READ ME HELP category, all other categories in the Test Mode contain registers with optional values². Included are registers with values that can only be reset to zero (0).

5. When the selected register appears on the display and you want to change its value²:
 - A. Press the Credit button to open the register. A flashing value appears on the display to the left of the register name and its existing value².
 - B. Use the SELECT INITIALS buttons¹, as shown in Step 2 above, to step to the desired new flashing register value.
 - C. Lock-in the selected new register value by pressing the Credit button. The flashing value shifts to the left and becomes the new fixed register value².

¹Some games were produced with yellow SELECT INITIALS buttons and some games were produced with white SELECT INITIALS buttons.

²Each register in the COIN SET-UP category contains three (3) optional values instead of one (1) optional value as in the other registers. Each of the three values can be changed sequentially (from left to right) by following Steps 5A, 5B, and 5C above. However, due to lack of space on the display, each new flashing value will replace each existing value on the display before the new value is locked-in. For additional information, see pages 5-2, 5-3 and 5-4.

6. To make further changes to registers in the selected category, repeat Step #4 & Step #5 on page 3-2. To close the directory and remain in the same category, repeat Step #4 on page 3-2 only. To exit the Test Mode, press the Test button.

DIAGNOSTIC TEST REGISTER ACCESS INSTRUCTIONS

The GAME CHECK-UP category in the Test Mode contains a directory of Diagnostic Test registers (except for the PROGRAM VERSION register which displays EPROM program version information). Each test is performed as follows:

- A. Enter the directory and select the register to be displayed by using the Credit button and the SELECT INITIALS buttons as shown in Steps 1 through 4 on page 3-2.
- B. When the selected register appears in the display, press the Credit button to open the register and begin the test. From this point on, until you exit from the directory, the SELECT INITIALS buttons are used only in stepping through certain register test sequences.
- C. When the test is completed in any test register, press the Credit button to advance to the next register. Press the Credit button again to open that register. Repeating this procedure will advance you to the end of the directory. The last register in the directory is the SWITCH TEST.
- D. When finished with the SWITCH TEST, exit from the register and the directory by holding in the Credit button for one full second.
- E. To exit the Test Mode, press the Test button.

1. Located in the GAME CHECK-UP category of the Test Mode are the following registers:

- A. ALL LAMPS
- B. SINGLE LAMPS
- C. DISPLAY TEST
- D. SOLENOID TEST
- E. PROGRAM VERSION
- F. SWITCH TEST

These are all Diagnostic Test registers with the exception of item E, the PROGRAM VERSION register, which displays only EPROM program version information. The application of each Diagnostic Test register is explained in detail in SECTION 9—TROUBLESHOOTING ON LOCATION. An abbreviated description of each of these registers is given in the GAME CHECK-UP category of TABLE A—REGISTERS & OPTIONS on page 5-3.

2. Diagnostic Test in registers are performed as follows:

- A. Enter the GAME CHECK-UP category's directory and select the register to be displayed by using the Credit button and either of the SELECT INITIALS buttons as shown in Steps 1 through 4 on page 3-2.
- B. When the selected register appears in the display, press the Credit button to open the register and begin the test(s). From this point on, until you exit from the directory, the SELECT INITIALS buttons are used only in stepping through certain register test sequences.
- C. When the test is completed in any test register, (except the SWITCH TEST register) press the Credit button again to exit from that register and to enter the next register. Repeating this procedure will advance you to the end of the directory. The last register in the directory is the SWITCH TEST.

NOTE: Exit from the Test Mode AT ANY TIME by pressing the Test button.

- D. When finished with the SWITCH TEST, exit from the register and the directory by holding in the Credit button for one full second or exit from the Test Mode by pressing the Test button.

NOTE: While performing the series of tests within the SINGLE LAMPS register or the SOLENOID TEST register, holding the top SELECT INITIALS button will continuously cycle (advance) the display from one driver to the next. Holding in the bottom SELECT INITIALS button will continuously cycle the display backwards from one driver to the previous driver.

3. SECTION 9—TROUBLESHOOTING ON LOCATION contains specific Diagnostic Test procedure information for the following test registers.

- A. For ALL LAMPS, see page 9-3.
- B. For SINGLE LAMPS, see page 9-3.
- C. For DISPLAY TEST, see pages 9-4 and 9-5.
- D. For SOLENOID TEST, see pages 9-5 through 9-8.
- E. For SWITCH TEST, see pages 9-8 and 9-9.

SELF-PERCENTAGING

1. The term Self-Percentaging refers to the game's ability to automatically adjust the score level of the First Replay Threshold to attain a desired replay percentage, also known as the TARGET PERCENT. For additional information, see Step #9 on page 3-5.
2. Self-Percentaging also applies to extra balls, when used instead of replays.
3. Initially a minimum of 200 games must be played before the Self-Percentaging Process goes into effect. It then monitors the current replay percentage of the First Replay Threshold only and makes any adjustment, if necessary, every 50 games.
4. The Self-Percentaging Process will automatically adjust the score level of the First Replay Threshold only. It makes NO adjustments to other Award features in the game.
5. Located within the SCORING STATUS category of your games Test Mode are the following registers:

- | | |
|----------------------------|--------------------|
| A. LEVEL 1 SCORE | F. LEVEL 1 PERCENT |
| B. LEVEL 2 SCORE | G. LEVEL 2 PERCENT |
| C. LEVEL 3 SCORE | H. LEVEL 3 PERCENT |
| D. HIGHEST SCORE | I. TARGET PERCENT |
| E. TIMES HIGH SCORE BEATEN | |

Each of these registers are explained in detail further in this section.

6. To set or check the current score level of the First Replay Threshold:

- A. Step through the Test Mode categories until you reach SCORING STATUS.
- B. Press the Credit button to select this category and enter its directory.
- C. The first register displayed in the directory will be LEVEL 1 SCORE.

LEVEL 1 SCORE—This register displays the current score level of the First Replay Threshold.

- D. Use either one of the SELECT INITIALS buttons to select any value from 0 to 9,900,000. The LEVEL 1 SCORE value can only be changed in steps of 100,000 points.
- E. Press the Credit button to set the desired score level.
- F. Use either one of the SELECT INITIALS buttons to exit the directory or press the Test button to exit the Test Mode.

7. To set or check the current score level of the Second Replay Threshold, repeat Step #6 above, but in Step 6.C, use the top SELECT INITIALS button to select the register titled LEVEL 2 SCORE.

8. To set or check the current score level of the Third Replay Threshold, repeat Step #6 on page 3-4, but in Step 6.C, use the top SELECT INITIALS button to select the register titled LEVEL 3 SCORE.
9. To adjust the desired Replay Percentage for the First Replay Threshold:

- A. Step through the games Test Mode until you reach the category titled SCORING STATUS.
- B. Press the Credit button to select this category, and enter its directory.
- C. Use either one of the SELECT INITIALS buttons to select the TARGET PERCENT register in the directory.

TARGET PERCENT—This register displays the desired percentage of replays to be awarded for reaching the First Replay Threshold Level.

- D. For example, if you want the First Replay Threshold Level to award a replay in 15% of the games played, use either SELECT INITIALS button to select 15% and then press the Credit button to set the percentage. The register will then display 15% as your goal or TARGET PERCENT.
- E. Use either one of the SELECT INITIALS buttons to exit the directory or press the Test button to exit the Test Mode.

IMPORTANT NOTES:

When the value of this register is set at 0%, the Self-Percentaging feature, as defined in Step #1 on page 3-4, is disabled.

This register automatically defaults to a Factory Setting of 10%, when the FACTORY SETTING register, in the GAME SET-UP category, is disabled.

10. The Total Replay Percentage will be 10% or 15% higher with the addition of Match, Special and High Score To Date credits.

11. To manually check the current replay percentage of the First Replay Threshold Level, only:

- A. Step through your game's Test Mode with either SELECT INITIALS button until you reach the category titled SCORING STATUS.
- B. Press the Credit button to select this category, and enter its directory.
- C. Use either one of the SELECT INITIALS buttons to select the register in the directory titled LEVEL 1 PERCENT.

LEVEL 1 PERCENT—The value displayed in this register is the percentage of replays awarded for reaching the First Replay Threshold Level. Progress of the Self-Percentaging Process may be monitored by comparing the current value displayed in this register with the TARGET PERCENT.

- D. Use either one of the SELECT INITIALS buttons to exit the directory or press the Test button to exit the Test Mode.

12. The size of adjustment, made by the Self-Percentaging Process to the score level of the First Replay Threshold, is determined by the current difference between the TARGET PERCENT (entered by the Operator) and the actual percentage of replays awarded for reaching the First Replay Threshold.

- A. A difference of 10% or more will result in a 10% adjustment.
- B. A difference equal to or greater than 5%, but less than 10%, will result in a 5% adjustment.
- C. A difference of less than 5% will result in a 1% adjustment.

13. To check the current score level of the First Replay Threshold, see Step 6 on page 3-4.
14. When the CLEAR ACCOUNT register is enabled, the Self-Percentaging Process is re-initiated.
15. The Second Replay Threshold Level and the Third Threshold Level are not affected in any way by the Self-Percentaging Process.
16. To check the current replay percent of the Second Replay Threshold Level, only, repeat Step 11 on page 3-5, and use either one of the SELECT INITIALS buttons to select the register titled LEVEL 2 PERCENT.
17. To check the current replay percent of the Third Replay Threshold Level, only, repeat Step 11 on page 3-5, and use either one of the SELECT INITIALS buttons to select the register titled LEVEL 3 PERCENT.
18. To adjust the High Score To Date Level at which a replay (or replays) is awarded:
 - A. Step through the game's Test Mode until you reach the category titled SCORING STATUS.
 - B. Press the Credit button to select this category and enter its directory.
 - C. Use either one of the SELECT INITIALS buttons to select the HIGHEST SCORE register in the directory.

HIGHEST SCORE—This register displays the High Score To Date for which the replay level is set.
 - D. Use either one of the SELECT INITIALS buttons to select any value from 0 to 990,000. The HIGHEST SCORE register value can only be changed in steps of 100,000 points.
 - E. Press the Credit button to set the desired score level.
 - F. Use either one of the SELECT INITIALS buttons to exit the directory or press the Test button to exit the Test Mode.
19. To check the number of times the High Score To Date Level was exceeded:
 - A. Step through the game's Test Mode until you reach the category titled SCORING STATUS.
 - B. Press the Credit button to select this category and enter its directory.
 - C. Use either one of the SELECT INITIALS buttons to select the TIMES HS BEATEN register in the directory.

TIMES HS BEATEN—This register displays the number of times the High Score To Date Level was exceeded. This information aids the Operator in deciding at what point level the High Score To Date will be adjusted to in the HIGHEST SCORE register. For additional information, see Step 18 above.
 - D. Use either one of the SELECT INITIALS buttons to select any value from 0 to 9,900,000. The HIGHEST SCORE register value can be changed only in steps of 100,000 points.
 - E. Press the Credit button to set the desired score level.
 - F. Use either one of the SELECT INITIALS buttons to exit the directory or press the Test switch to exit the Test Mode.

SECTION 4 FEATURE OPERATIONS & SCORING

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INTRODUCTION

In ESCAPE FROM THE LOST WORLD, the player is a daring treasure hunter who enters the LOST WORLD to carry away as much of its wealth as possible. The player builds Treasure Values by collecting GOLDEN IDOLS, by entering the dreaded DINOSAUR CAVE, by hitting the SKELETON while crossing over the MOUNTAIN, and by entering the VOLCANO. The player collects the accumulated Treasure Values by entering through the ESCAPE GATEWAY to a secret ESCAPE PATH that awards an instantaneous Multi-Ball to the player.

The maximum number of Treasure Value points, that can be accumulated and collected by one player during the game, is 2,500,000. In a game involving more than one player, the Treasure Value points are accumulated and collected independently by each player.

GAME FEATURES

- 1--Shooter Lane Skill Shots
- 2--MOUNTAIN Ramp Shot
- 3--Build Treasure Values
- 4--Collect Treasure Values
- 5--ESCAPE GATE Timer
- 6--DINOSAUR CAVE Entrances
- 7--Right Cave Entrance
- 8--BRIDGE OF GOLD Shot
- 9--VOLCANO TUNNEL
- 10--Ball Return Lanes, Outlanes & Ball Saver
- 11--Multi-Ball Play
- 12--Special, Extra Ball & Hold Bonus
- 13--LAVA PIT Bonus

1. SHOOTER LANE SKILL SHOTS

Any one of the following three (3) skill shots can be made by the player from the ball shooter.

- A. With a gentle shot, the ball can roll through the gate at the end of the shooter lane and then roll back down through the Flipper Return ramp and operate the rollover switch. For scoring information, see Table A, below. Operating the rollover switch also lights, in sequence, one of three (3) MULTI-BALL RELEASE MEMORY lamps located at the bottom of the Playfield. When all three (3) lamps are lit, Multi-Ball play begins. For information, see the MULTI-BALL PLAY feature on page 4-9.
- B. With a firm shot, the ball can roll through the shooter lane gate and the top right gate. When the ball passes through the top gate, the player can use the top right flipper to make the VOLCANO TUNNEL shot. For scoring information, see Table A below, and VOLCANO TUNNEL feature on page 4-8.
- C. With a hard shot, the ball can roll through the shooter lane and two (2) top right gates, over the plastic MOUNTAIN, and make the SKELETON switch. For scoring information, see Table A below, and MOUNTAIN RAMP SHOT feature on page 4-3.

TABLE A—SHOOTER LANE SKILL SHOT AWARDS

SHOOTER LANE SKILL SHOT	LOCATION OF SWITCH MADE	GAME POINTS AWARDED	TREASURE VALUE POINTS ADVANCED
GENTLE	ROLLOVER SWITCH ON FLIPPER RETURN RAMP	25,000 POINTS	50,000 POINTS
FIRM	STAR ROLLOVER SWITCH AT VOLCANO	50,000 POINTS	100,000 POINTS
HARD	SKELETON SWITCH AT LEFT END OF BACKBOARD	50,000 POINTS	100,000 POINTS

2. MOUNTAIN RAMP SHOT

The MOUNTAIN RAMP SHOT is completed by hitting the ball off of the right top flipper, or from the ball shooter, through the MOUNTAIN RAMP located at the top of the Top Platform. The ESCAPE gate in the COLLECT TREASURE ESCAPE GATEWAY, must be closed to complete the shot. For more information, see the COLLECT TREASURE VALUE feature on pages 4-4 and 4-5.

As the ball travels through the MOUNTAIN ramp and operates the SKELETON Backboard switch 50,000 points are awarded, and builds up the Treasure Value by 100,000 points. For more information, see the COLLECT TREASURE VALUE feature on pages 4-4 and 4-5.

Making the SKELETON Backboard switch, while the EXTRA BALL lamp (located at the left end of the Backboard) is flashing, awards the Extra Ball. For more information, see the SPECIAL, EXTRA BALL & HOLD BONUS feature on pages 4-9 and 4-10.

3. BUILD TREASURE VALUE

At the beginning of the game, the player is provided with 100,000 Treasure Value points. All Treasure Value points are accumulated in a game memory location. The player advances, or builds, the Treasure Value by operating various switches at locations shown, below, in Table B. Each time the Treasure Value is advanced, its total is briefly displayed.

The maximum number of Treasure Value points earned in a game is 2,500,000. The player can collect, at any time, the accumulated total number of Treasure Value points by entering the COLLECT TREASURE ESCAPE GATEWAY while the ESCAPE gate is open. The Treasure Values are advanced and game points awarded as shown in Table B, below. For additional information, see the COLLECT TREASURE VALUE feature on pages 4-4 and 4-5.

TABLE B—TREASURE VALUE ADVANCES & GAME POINTS AWARDED

REQUIRED GAME PLAY ACTION	TREASURE VALUE POINTS ADVANCED	GAME POINTS AWARDED
Complete 3 left GOLDEN IDOL bullseye targets.	30,000 POINTS	30,000 POINTS
Complete 5 right GOLDEN IDOL bullseye targets.	50,000 POINTS	50,000 POINTS
Make rollover switch on plastic Ball Return ramp.	50,000 POINTS	NONE
Enter into Right Cave Entrance Elevator.	50,000 POINTS	25,000 POINTS
Enter DINOSAUR CAVE through Center Elevator.	50,000 POINTS	25,000 POINTS
Enter DINOSAUR CAVE through lower entrance.	50,000 POINTS	25,000 POINTS
Enter DINOSAUR CAVE through saucer hole.	50,000 POINTS	50,000 POINTS
Operate star rollover button switch at VOLCANO TUNNEL exit.	100,000 POINTS	50,000 POINTS
Operate MOUNTAIN switch.	100,000 POINTS	50,000 POINTS

At the beginning of each new ball, not provided through Multi-Ball play, all GOLDEN IDOL bullseye target lamps are lit. Operating each GOLDEN IDOL bullseye target awards 10,000 points when lit, and awards 1,000 points when unlit. Completing all three (3) lit GOLDEN IDOL bullseye targets, on the left side of the Playfield, advances the Treasure Value and awards additional game points as shown in Table B, above. All three (3) left GOLDEN IDOL bullseye targets will reset and their respective lamps will re-light, after that group's bullseye targets are completed (or knocked down). The same is true for the five (5) right GOLDEN IDOL bullseye targets. ALL GOLDEN IDOL bullseye targets, and their respective lamps, are re-called from ball to ball throughout the entire game.

4. COLLECT TREASURE VALUE

To collect the Treasure Value, the ball must enter the COLLECT TREASURE ESCAPE GATEWAY while the ESCAPE gate is open. When the ball enters the gateway, the following occurs.

- A. The player is awarded 50,000 points.
- B. The player collects the Treasure Value.
- C. The ball travels down the ESCAPE PATH and makes two (2) rollover switches to achieve Multi-Ball play. For additional information, see the MULTI-BALL PLAY feature on page 4-9.

The COLLECT TREASURE ESCAPE GATEWAY is blocked when the ESCAPE gate is closed. When the gate is open, the gate blocks the MOUNTAIN ramp at a point just to the left of the COLLECT TREASURE ESCAPE GATEWAY. When the ball is hit off the top right flipper and travels up the MOUNTAIN ramp, it will drain in the COLLECT TREASURE ESCAPE GATEWAY when the ESCAPE gate is open.

The player can open the ESCAPE gate by knocking down all three (3) DINO EGG drop targets. One ESCAPE lamp, located on the Backboard, lights briefly and, as the ESCAPE gate swings open, a count-down timer begins. The ESCAPE gate will remain open for a period of 30 Time Units. For additional information, see the ESCAPE GATE TIMER feature on page 4-5.

The ESCAPE gate can also be opened by operating the MOUNTAIN Backboard switch six (6) times, which is adjustable. One ESCAPE lamp lights briefly and, as the ESCAPE gate swings open, a deep menacing voice says

"YOU CAN ESCAPE!" For additional information, see Table H, GAME OPTIONS DIRECTORY SETTINGS on page 4-12, and see the MOUNTAIN RAMP SHOT feature on page 4-3.

The ESCAPE gate remains open until points are scored by hitting a target or by operating a switch. However, the following targets and switches have no effect on the ESCAPE gate.

- 1—The unlit 25K rollover switches in the left and right Ball Return Lanes.
- 2—The rollover switch in the Flipper Return ramp.
- 3—Any unlit GOLDEN IDOL bullseye target.
- 4—The VOLCANO rollover button.

5. ESCAPE GATE TIMER

Knocking down each of the three (3) DINO EGG drop targets will score 3,000 points each and light, respectively, each Time Unit lamp. Ten (10) Time Units are accumulated with each drop target knocked down. When all three (3) DINO EGG drop targets are completed (knocked down), the following occurs.

- A. Briefly lights the Backboard ESCAPE lamps on the left side of the COLLECT TREASURE ESCAPE GATEWAY.
- B. Opens the ESCAPE gate in front of the COLLECT TREASURE ESCAPE GATEWAY. For additional information, see the COLLECT TREASURE VALUE feature on pages 4-4 and 4-5.
- C. Activates the ESCAPE GATE TIMER, which holds the ESCAPE gate open for a period of thirty (30) Time Units.

Each Time Unit is a brief fixed unit of time. As the ESCAPE gate swings open, a deep menacing voice says "YOU CAN ESCAPE!"

The activated ESCAPE GATE TIMER counts through its thirty (30) Time Units as shown in Table C, below.

TABLE C—ESCAPE GATE TIMER COUNTDOWN

DROP TARGET LOCATION	DROP TARGET LAMP NAME	DROP TARGET LAMP STATUS				
		AS TIMER IS ACTIVATED*	COUNTDOWN BEGINS	10 TIME UNITS ELAPSED	20 TIME UNITS ELAPSED	30 TIME UNITS ELAPSED°
BOTTOM	30 TIME UNITS	ON	FLASHING	OFF	OFF	OFF
MIDDLE	20 TIME UNITS	ON	ON	FLASHING	OFF	OFF
TOP	10 TIME UNITS	ON	ON	ON	FLASHING	OFF

* = ESCAPE GATE OPENS.

° = ESCAPE GATE CLOSES.

6. DINOSAUR CAVE ENTRANCES

The DINOSAUR CAVE, or CENTER CAVE, can be entered through three (3) different entrances, with Treasure Value points advanced or game points awarded as shown in Table D, below.

TABLE D—DINOSAUR CAVE ENTRANCES & AWARDS

DINOSAUR CAVE ENTRANCE	ENTRANCE LOCATION	"25,000" SWITCH AWARDS	BALL LANDS IN HIDDEN CENTER BALL KICKER		
			BALL KICKER ACTION	TREASURE VALUE POINTS ADVANCED†	GAME POINTS AWARDED
LOWER CENTER ENTRANCE	LEFT OF THUMPER BUMPER		BALL EXITS THRU CENTER ELEVATOR	50,000 POINTS	25,000 POINTS
CENTER ELEVATOR "HIDDEN" ENTRANCE	CENTER OF TOP PLATFORM		BALL EXITS THRU CENTER ELEVATOR	50,000 POINTS	25,000 POINTS
SAUCER HOLE ENTRANCE	CENTER OF TOP PLATFORM	25,000 POINTS WITH MULTI-BALL PLAY QUALIFIED OR AWARDED††	BALL EXITS THRU CENTER ELEVATOR	50,000 POINTS	25,000 POINTS

†SEE BUILD TREASURE FEATURE ON PAGES 4-3 AND 4-4.

††SEE MULTI-BALL PLAY FEATURE ON PAGE 4-9.

The lower CENTER CAVE ENTRANCE shot is made by hitting the ball off of the lower right flipper. The CENTER ELEVATOR "HIDDEN" ENTRANCE shot and the SAUCE HOLE ENTRANCE shot are made by hitting the ball off of either the lower right flipper or the lower left flipper, so that the ball travels up the MYSTERY PATH ramp.

When the DINOSAUR CAVE is entered, by any one of the entrances, the following events take place.

- A. The ball lands on the hidden center ball kicker.
- B. The cave's DINOSAUR FACE lamp flashes on and the DINOSAUR roars.
- C. The ball is kicked up thru the center elevator to the Top Platform.
- D. The ball rolls through a portion of the MOUNTAIN ramp to the upper left flipper, on the Top Platform. This provides an opportunity to make the BRIDGE OF GOLD shot off of the upper left flipper. For additional information, see the BRIDGE OF GOLD SHOT feature on pages 4-7 and 4-8.

When the ball is shot and falls into the SAUCER HOLE ENTRANCE, it operates the "25,000" rollover switch and rolls to the HIDDEN CENTER BALL KICKER. In addition to awarding 25,000 game points, the Treasure Value is advanced by 50,000 points. Other events that happen when the "25,000" rollover switch is operated are as follows.

1. Lights in sequence, one of three (3) MULTI-BALL RELEASE MEMORY lamps located at the bottom of the Playfield, above the SHOOT AGAIN lamp, or
2. When all three (3) of the MULTI-BALL RELEASE MEMORY lamps are lit, Multi-Ball play begins. For additional information, see the MULTI-BALL PLAY feature on page 4-9.

Accumulated LAVA PIT BONUS points can be collected as a HOLD BONUS when the ball enters through any one of the three (3) DINOSAUR CAVE ENTRANCES a certain number of times. The number of times is dependent upon the games difficulty level setting. For additional information, see the SPECIAL, EXTRA BALL & HOLD BONUS feature on page 4-9 and 4-10.

Whenever the game ball enters through any one of the three (3) DINOSAUR CAVE ENTRANCES while the ESCAPE gate is open, a voice can be heard saying "THE GATE'S OPEN". For additional information, see the COLLECT TREASURE VALUE feature on page 4-6 and the ESCAPE GATE TIMER feature on page 4-5.

7. RIGHT CAVE ENTRANCE

The RIGHT CAVE ENTRANCE is located on the upper right side of the Playfield. The entrance shot is made by hitting the ball off of the lower left flipper. When the ball enters the RIGHT CAVE, the following events take place.

- A. The ball falls in the saucer opening, landing on the right ball kicker, 25,000 game points are awarded and the Treasure Value advances by 50,000 points. For additional information, see the BUILD TREASURE VALUE feature on pages 4-3 and 4-4.
- B. The ball is kicked up through the right elevator to the Top Platform.
- C. The ball will either fall off of the Top Platform or it will roll down through the flipper return ramp, fall off the ramp, then roll to the lower right flipper. When the ball operates the rollover switch on the ramp, 25,000 points are awarded and the Treasure Value is advanced 50,000 points. For additional information, see the BUILD TREASURE VALUE feature on pages 4-3 and 4-4.

Other events that happen when the rollover switch is operated are as follows:

1. Lights in sequence, one of three (3) MULTI-BALL RELEASE MEMORY lamps located at the bottom of the Playfield, above the SHOOT AGAIN lamp, or
2. When all three (3) of the MULTI-BALL RELEASE MEMORY lamps are lit, Multi-Ball play begins. For additional information, see the MULTI-BALL PLAY feature on page 4-9.

8. BRIDGE OF GOLD SHOT

The BRIDGE OF GOLD is the gold colored metal ramp attached to the Top Platform. When the ball is hit off the upper left flipper, it can roll over the BRIDGE to set up the upper right flipper for a shot. With a hard shot, the ball will roll past the upper right flipper, over the VOLCANO star rollover button and then, back past the upper right flipper. For scoring information, see the VOLCANO TUNNEL feature on page 4-8.

The ball is delivered to the upper left flipper for the BRIDGE OF GOLD shot in one of the following three ways.

- A. When the ball travels up the MYSTERY PATH ramp but does not clear the ramp, it will roll back down the lower portion of the MOUNTAIN ramp to the upper left flipper.
- B. When the ball enters the DINOSAUR CAVE (through one of its three entrances) it is kicked up through the center elevator to the Top Platform. The ball can roll down the lower portion of the MOUNTAIN ramp to the upper left flipper. For additional information, see the DINOSAUR CAVE ENTRANCES feature on pages 4-5 and 4-6.
- C. When the ball is hit off of the upper right flipper, completes the MOUNTAIN ramp shot and then returns to the upper left flipper. The ESCAPE gate, in the COLLECT TREASURE ESCAPE GATEWAY, must be closed to complete this shot. Each time this shot is completed the SKELETON Backboard switch is made. For additional information, see the COLLECT TREASURE VALUE feature on pages 4-4 and 4-5.

Step C, above, indicates one type of skill shot that can be made off of the upper right flipper. There are also two (2) other skill shots that can be made, and they are as follows.

- A. When the ball is hit off of the upper right flipper, the VOLCANO TUNNEL shot is completed if the ball rolls into the BUILD TREASURE entrance of the VOLCANO TUNNEL in the Backboard. When this occurs, the ball exits at the right end of the Backboard, makes the VOLCANO star rollover button switch and returns to the upper right flipper. For additional information, see the VOLCANO TUNNEL feature on page 4-9.
- B. When the ball is hit off of the upper right flipper, it can enter the COLLECT TREASURE ESCAPE GATEWAY, only when the ESCAPE gate is open, to the ESCAPE PATH which awards instantaneous Multi-Ball play. For additional information, see COLLECT TREASURE VALUE feature on pages 4-4 and 4-5 and the MULTI-BALL PLAY feature on page 4-9.

To open the ESCAPE gate, see the ESCAPE GATE TIMER feature on page 4-5.

Completed skill shots off of the upper right flipper will earn the player the following scores and awards as described in Table E, below.

TABLE E--UPPER RIGHT FLIPPER SKILL SHOTS & AWARDS

SKILL SHOT ACTION	TREASURE VALUE POINTS AWARDED†	GAME POINTS AWARDED	MULTI-BALL PLAY AWARDED††
OPERATE SKELETON BACKBOARD SWITCH	100,000 POINTS	50,000 POINTS	
OPERATE STAR ROLLOVER BUTTON SWITCH AT VOLCANO TUNNEL EXIT	100,000 POINTS	50,000 POINTS	
OPERATE EITHER ROLLOVER SWITCH IN ESCAPE PATH		50,000 POINTS	INSTANTANEOUS TWO BALL PLAY

†SEE BUILD TREASURE FEATURE ON PAGES 4-3 AND 4-4.

††SEE MULTI-BALL PLAY FEATURE ON PAGE 4-9.

9. VOLCANO TUNNEL

The VOLCANO TUNNEL is a plastic ramp located behind the Backboard. When the ball is hit off of the upper right flipper, the VOLCANO TUNNEL shot is completed when the ball rolls into the BUILD TREASURE entrance of the VOLCANO TUNNEL on the Backboard. The ball will exit at the right end of the Backboard, operate the VOLCANO star rollover button switch and return to the upper right flipper.

When the ball is hit hard off of the upper left flipper, the ball crosses the BRIDGE OF GOLD ramp, rolls past the upper right flipper, operates the VOLCANO star rollover button switch and returns to the upper right flipper. For additional information, see the BRIDGE OF GOLD feature on pages 4-7 and 4-8.

The following awards are earned when the VOLCANO star rollover button switch is made.

- A. 50,000 points are earned.
- B. The TREASURE VALUE is advanced 100,000 points. For additional information, see the BUILD TREASURE VALUE feature on pages 4-3 and 4-4.

An Extra Ball is qualified when the VOLCANO star rollover button switch is operated a certain number of times. The number of times is dependent upon the game's difficulty level setting. For additional information, see the SPECIAL, EXTRA BALL & HOLD BONUS feature on page 4-17 and Table H, GAME OPTIONS DIRECTORY SETTINGS on page 4-12.

10. BALL RETURN LANES, OUTLANES & BALL SAVER

At the beginning of each new ball, not provided through Multi-Ball Play, the 25K lamps in the left and right Ball Return Lanes are lit. When the 25K lamps are lit and the ball operates either Return Lane switch, 25,000 points is awarded and that Return Lane's 25K lamp goes out. When either 25K lamp is unlit and the ball operates that Return Lane's rollover switches, 1,000 points is awarded. The left 25K lamp in the left Ball Return Lane will re-light when the left slingshot is operated and the right 25K lamp in the right Ball Return Lane will re-light when the right slingshot is operated.

As the ball enters the right Ball Return Lane, it may roll into the right Outlane instead of operating the right 25K rollover switch. When the ball rolls into the right Outlane, the 50K rollover switch is operated and 50,000 points is awarded.

When the ball enters the left Ball Return Lane and operates the left 25K rollover switch, the ball will take one of the following three (3) paths.

- A. Roll through the gate below the left slingshot to the left flipper.
- B. Roll through the left Outlane to the outhole with no points awarded.
- C. Roll into the BALL SAVER lane, left of the bottom arch. When this occurs, 100,000 points and Multi-Ball play is awarded. For additional information, see the MULTI-BALL PLAY feature on page 4-9.

11. MULTI-BALL PLAY

Two-ball Multi-Ball play can be achieved in four (4) ways, as shown in Table F, below. Two of the four ways will earn "automatic" Multi-Ball play. The remaining two ways will earn "instantaneous" Multi-Ball play, which is awarded immediately.

TABLE F—EARNING MULTI-BALL PLAY

REQUIRED GAME PLAY ACTION	# OF TIMES REQUIRED TO AWARD MULTI-BALL PLAY		GAME POINTS AWARDED PER PLAY ACTION
	AUTOMATIC	INSTANTANEOUS	
BALL MAKES ROLLOVER SWITCH ON FLIPPER RETURN RAMP†	3 TIMES		25,000 POINTS
BALL FALLS THROUGH DINOSAUR CAVE OPENING & MAKES 25K ROLLOVER SWITCH ††	3 TIMES		25,000 POINTS
BALL TRAVELS DOWN ESCAPE PATH & MAKES TWO ROLLOVER SWITCHES †††		1 TIME	50,000 POINTS
BALL FALLS INTO BALL SAVER LANE & RESTS ON PLUNGER OF TOP MOUNTED BALL KICKER ††††		1 TIME	100,000 POINTS

- † SEE SHOOTER LANE SKILL SHOTS FEATURE ON PAGE 4-3.
- †† SEE DINOSAUR CAVE ENTRANCES FEATURE ON PAGES 4-5 AND 4-6.
- ††† SEE COLLECT TREASURE VALUE FEATURE ON PAGES 4-4 AND 4-5.
- †††† SEE BALL RETURN LANES, OUTLANES & BALL SAVER FEATURE ON PAGES 4-8 AND 4-9.

Automatic Multi-Ball play must be qualified before it is earned. Three (3) green MULTI-BALL RELEASE MEMORY lamps, numbered "1," "2" and "3" are located above the SHOOT AGAIN lamp at the bottom of the Playfield. Lighting Lamp 1 and then Lamp 2, qualifies Multi-Ball Play. Lighting Lamp 3 awards Multi-Ball play. All three MULTI-BALL RELEASE MEMORY lamps remain flashing during Multi-Ball play. The lamps will turn off as MULTI-BALL RELEASE MEMORY is automatically reset at the end of Multi-Ball play. If the game ball drains to the outhole while Lamp 1 and Lamp 2 are lit, the MULTI-BALL RELEASE MEMORY lamp status will carry over to the next game ball.

The BALL SAVER (RELEASE MULTI-BALL) Lane contains one ball during game play, resting against the plunger on the top mounted ball kicker at all times, except during Multi-Ball play. When the second ball enters the lane, the Emitter & Detector P.C. Board Assembly will sense the two balls in the lane. As a result, the top mounted ball kicker's solenoid will energize, causing the plunger to kick both balls out of the lane and into the field of play, for Multi-Ball play.

12. SPECIAL, EXTRA BALL & HOLD BONUS

Completing the RIGHT CAVE ENTRANCE shot, while the SPECIAL WHEN FLASHING lamp is flashing, awards the Special. The Special is qualified by completing the shot three (3) times when the game is set at a medium

difficulty level. This setting is adjustable. For additional information, see the RIGHT CAVE ENTRANCE feature on page 4-7 and Table H, GAME OPTIONS DIRECTORY SETTINGS on page 4-12. Only one (1) Special is awarded per game.

When the VOLCANO star rollover button switch lamp is flashing and the switch is operated, a certain number of times, the red EXTRA BALL lamp will begin flashing. This lamp is located on the left side of the Backboard. Also, when the VOLCANO star rollover button switch lamp is flashing and the SKELETON switch is operated, an Extra Ball is awarded and the SHOOT AGAIN lamp, located in front of the Outhole, turns on. The lamp remains lit until the game ball enters the Outhole. The Extra Ball is qualified when the VOLCANO star rollover button switch is operated two (2) times with the game set at a medium difficulty level. This setting is adjustable. For additional information, see the MOUNTAIN RAMP SHOT feature on page 4-3, the VOLCANO TUNNEL feature on page 4-8 and Table H, GAME OPTIONS DIRECTORY SETTINGS on page 4-12. Only one (1) Extra Ball can be earned per game ball. No Extra Ball can be earned while the SHOOT AGAIN lamp is lit or during extra ball play.

Entering the DINOSAUR CAVE through one (1) of its three (3) entrances (see DINOSAUR CAVE ENTRANCES feature on pages 4-5 and 4-6), while the HOLD BONUS WHEN FLASHING lamp is flashing, awards the HOLD BONUS points. As a result of this, the green BONUS HELD W/LIT lamp turns on and remains lit until the HOLD BONUS is collected. The HOLD BONUS, along with the LAVA PIT BONUS, is collected when the ball enters the outhole. These HOLD BONUS points are then carried over to the next game ball and will be added to the next HOLD BONUS awarded and then collected when the ball enters the Outhole. The HOLD BONUS Value increases with each new game ball through this process of accumulation.

When the game is set at a medium difficulty level, the HOLD BONUS is qualified by entering the DINOSAUR CAVE. The following is a listing of the number of times the ball must enter the DINOSAUR CAVE, per ball in play, to qualify for the HOLD BONUS feature.

1	Enter the CAVE two (2) times when the 1st ball is in play.
2	Enter the CAVE three (3) times when the 2nd ball is in play.
3	Enter the CAVE four (4) times when the 3rd ball is in play.
4	Enter the CAVE five (5) times when the 4th ball is in play.
5	Enter the CAVE six (6) times when the 5th ball is in play.

The game difficulty level is adjustable. For additional information, see the DINOSAUR CAVE ENTRANCES feature on pages 4-5 and 4-6 and Table H, GAME OPTIONS DIRECTORY SETTINGS, on page 4-12.

13. LAVA PIT BONUS

The LAVA PIT is located near the center of the Playfield. To the left of the LAVA PIT are eight (8) LAVA PIT BONUS lamps. The top four (4) white lamps represent a bonus of "2K", "4K", "8K" and "16K". The next three (3) orange lamps represent a bonus of "32K", "64K" and "128K". The bottom red lamp represents "256K". The lamps, when lit, indicate the total number of bonus points awarded as they accumulate during game ball play. All bonus points are awarded when the ball enters the outhole.

The LAVA PIT BONUS value increases when certain targets, ball kickers and rollover switches are operated. The maximum number of bonus points earned during single game ball play is 510,000 points.

When each GOLDEN IDOL bullseye target is lit and operated, 2,000 points is awarded. When the last target is operated, to complete either the left three (3) or the right five (5) GOLDEN IDOL bullseye targets, 4,000 points is awarded.

The DINO EGG drop targets award 2,000 points each when operated (knocked down). When the last target is operated (all three [3] knocked down), 6,000 points is awarded.

Each time the ball enters the RIGHT CAVE ENTRANCE and activates the right ball kicker, 2,000 bonus points are awarded. Each time the ball enters the DINOSAUR CAVE or CENTER CAVE, and activated the hidden center

ball kicker during agme ball play, 7,000 bonus points are awarded regardless of which one of the three (3) DINOSAUR CAVE ENTRANCES the ball enters. For additional information, see the RIGHT CAVE ENTRANCE feature on page 4-7 and the DINOSAUR CAVE ENTRANCES feature on pages 4-5 and 4-6.

LAVA PIT bonus points are awarded for operating rollover switches at the locations shown in the following Table G, below.

TABLE G—LAVA PIT BONUS AWARDS FOR ROLLOVER SWITCHES

ROLLOVER SWITCH LOCATION	BONUS POINTS AWARDED
FLIPPER RETURN RAMP	5,000 POINTS
LEFT BALL RETURN LANE †	3,000 POINTS
RIGHT BALL RETURN LANE †	3,000 POINTS
SHOOTER LANE ††	1,000 POINTS
VOLCANO TUNNEL EXIT †††	5,000 POINTS
ON BACKBOARD BELOW SKELETON	5,000 POINTS

† BONUS POINTS ARE AWARDED ONLY IF THE BALL RETURN LANE'S 25K LAMP IS LIT WHEN THE ROLLOVER SWITCH IS OPERATED.

†† DURING SINGLE BALL PLAY, THESE BONUS POINTS ARE AWARDED WHEN THE GAME BALL ENTERS THE OUT-HOLE ONLY IF NO OTHER BONUS POINTS HAVE NOT BEEN EARNED.

††† STAR ROLLOVER BUTTON SWITCH.

14. MISCELLANEOUS FEATURES

The two (2) thumper bumpers are always lit. Each hit on either thumper bumper awards 1,000 points.

When the ball hits the top left slingshot, 1,000 points are awarded. When the ball hits either the left or the right lower slingshots, 130 points are awarded.

Referring to the GAME SET-UP CATEGORY in REGISTERS & OPTIONS, on page 5-2, the GAME OPTIONS DIRECTORY can be set for a particular game difficulty level. The GAME OPTIONS DIRECTORY SETTINGS affect certain game features as shown in Table H on page 4-12.

TABLE H—GAME OPTIONS DIRECTORY SETTINGS

DIFFICULTY LEVEL SETTINGS	XX EASY	X EASY	EASY	MEDIUM	HARD	X HARD	XX HARD
# OF TIMES SKELETON SWITCH IS OPERATED TO OPEN ESCAPE GATE †	3	3	4	4	5	5	6
# OF TIMES RIGHT BALL KICKER IS ACTIVATED TO QUALIFY SPECIAL ††	2	2	3	3	4	4	5
# OF TIMES VOLCANO STAR ROLLOVER BUTTON SWITCH IS OPERATED TO QUALIFY EXTRA BALL †††	2	2	2	2	3	3	3
# OF TIMES HIDDEN CENTER BALL KICKER IS OPERATED TO QUALIFY HOLD BONUS ††††	2	2	2	2	2	2	2

† SEE MOUNTAIN RAMP SHOT FEATURE ON PAGE 4-3 AND COLLECT TREASURE VALUE FEATURE ON PAGES 4-5 AND 4-6.

†† SEE RIGHT CAVE ENTRANCE FEATURE ON PAGE 4-7 AND SPECIAL, EXTRA BALL & HOLD BONUS FEATURE ON PAGES 4-9 AND 4-10.

††† SEE VOLCANO TUNNEL FEATURE ON PAGE 4-8 AND SPECIAL, EXTRA BALL & HOLD BONUS FEATURE ON PAGES 4-9 AND 4-10.

†††† SEE DINOSAUR CAVE ENTRANCES FEATURE ON PAGES 4-5 AND 4-6 AND SPECIAL, EXTRA BALL & HOLD BONUS FEATURE ON PAGES 4-9 AND 4-10.

SECTION 5
REGISTERS & OPTIONS INFORMATION

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TABLE A—REGISTERS & OPTIONS

CATEGORY	REGISTER DIRECTORY			
	PLAYER #1 & #2 DISPLAYS	PLAYER #3 & #4 DISPLAYS*	SEE NOTES	REGISTER DESCRIPTION
GAME STATUS	TOTAL COINS	XXXXXXX	1	Total Coins From All 3 Coin Chutes
	GAMES PLAYED	XXXXXXX	1	# Of Games Played
	REPLAYS AWARDED	XXXXXXX	1	# Of Replays Awarded From All Scores
	REPLAYS PERCENT	XX	1	Percentage Of All Replays—Maximum Of 99 Percent
	AV GAME TIME =	XX XX	1	Average Game Time In Minutes & Seconds
	BALLS PLAYED	XXXXXXX	1	# Of Balls Played
	X-BALLS AWARDED	XXXXXXX	1	# Of Extra Balls Awarded
	X-BALL PERCENT	XX	1	Percentage Of Extra Balls—Maximum Of 99 Percent
	AV BALL TIME =	XX XX	1	Average Ball Time In Minutes & Seconds
CLEAR ACCOUNT	NO**	2	Clear All Account Date	
REPLAY STATUS	LEVEL 1 SPECIAL	XXXXXXX	1	# Of 1 st Threshold Level Specials Awarded
	LEVEL 2 SPECIAL	XXXXXXX	1	# Of 2 nd Threshold Level Specials Awarded
	LEVEL 3 SPECIAL	XXXXXXX	1	# Of 3 rd Threshold Level Specials Awarded
	HISCORE SPECIAL	XXXXXXX	1	# Of High Score Specials Awarded
	PLAYFIELD SPECIAL	XXXXXXX	1	# Of Playfield Specials Awarded
	MATCH SPECIAL	XXXXXXX	1	# Of Match Feature Specials Awarded
SCORING STATUS	LEVEL 1 SCORE =	XXXXXXX	3	Set First Threshold Award Level & Display
	LEVEL 2 SCORE =	XXXXXXX	3	Set Second Threshold Award Level & Display
	LEVEL 3 SCORE =	XXXXXXX	3	Set Third Threshold Award Level & Display
	HIGHEST SCORE =	XXXXXXX	3	Set the High Score To Date Replay Level
	TIMES HS BEATEN	XXXXXXX	1	# Of Times Point Total Exceeded High Score To Date Earned
	LEVEL 1 PERCENT	XX	1	Actual Percentage Of First Threshold Level Replays Awarded
	LEVEL 2 PERCENT	XX	1	Actual Percentage Of Second Threshold Level Replays Awarded
	LEVEL 3 PERCENT	XX	1	Actual Percentage Of Third Threshold Level Replays Awarded
	TARGET PERCENT	XX	4	Enter desired percentage of replays awarded for reaching the First Threshold Level
COIN STATUS	LEFT COINS =	XXXXXXX	1	# Of Coins Thru Left Coin Chute
	MIDDLE COINS =	XXXXXXX	1	# Of Coins Thru Middle Coin Chute
	RIGHT COINS =	XXXXXXX	1	# Of Coins Thru Right Coin Chute
	TOTAL COINS =	XXXXXXX	1	Total # Of Coins Thru All 3 Coin Chutes
	BONUS CREDITS	XXXXXXX	1	# Of Bonus Credits Awarded
COIN SET-UP	LEFT XX COIN	YY CRDT, ZZ BONS	10	Left Coin Chute Set-Up
	MIDDLE XX COIN	YY CRDT, ZZ BONS	10	Middle Coin Chute Set-Up
	RIGHT XX COIN	YY CRDT, ZZ BONS	10	Right Coin Chute Set-Up
GAME SET-UP	FACTORY SETTING	NO**	2	Reset to factory selected options.
	CREDIT LIMIT=	10**	5	Set Credit Limit from 1-4.
	BALLS ALLOWED	03**	5	Set # of Balls Allowed from 1-5.
	LEVELS AWARD	REPLAY**	6	Set type of award for exceeding Threshold Levels.
	SPECIAL AWARD =	REPLAY**	6	Set type of award for lighting Special lights.
	HISCORE AWARD	3 REPLAY**	7	Set type of award for exceeding High Score To Date.
	BCKGRND SOUND	ON**	8	Provide background music during game play.
	MATCH PERCENT	10**	5	Set allowed Match Percent from 00-10. 00 = Option is disabled. 10 = Maximum percent.
	DISPLAY CREDITS	YES**	2	Display credits when game is over.
	NO LIMIT REPLAY	YES**	2	Allows more than 1 Special per game, per player.
	FREE PLAY	NO**	2	Set NO = Coins, or set YES = Free Play mode.
	TILT WARNING	01**	5	Set # of Tilt Warnings.
	ATTRACT SOUNDS	ON**	8	Set Attract Sound in Game Over mode.
	SLINGSHOTS	ON**	8	Activate slingshots.
GAME OPTIONS	MEDIUM**	9	Set game difficulty level.	
MAXIMUM PLAYERS	04**	5	Set # of players allowed from 1-4.	
MISC. INFO.	TOTAL TIME =	XXXXXXX	1	Time in minutes the game is powered up from the time the game is ready for play.
	TIMES MULTIB	XXXXXXX	1	# Of times Multi-Ball Play was achieved.

*Player #3 & #4 indicate a variable range of values. The XXXXXXX represents the number value and XX represents the % value. Player #4 shows the values that can be selected to replace the value shown in Player #3.

**Denotes Factory Setting.

TABLE A—REGISTERS & OPTIONS CONT'D.

CATEGORY	REGISTER DIRECTORY			
	PLAYER #1 & #2 DISPLAYS	PLAYER #3 & #4 DISPLAYS*	SEE NOTES	REGISTER DESCRIPTION
GAME CHECK-UP	ALL LAMPS			Flashes all lamps on the Playfield.
	SINGLE LAMPS			Lamps flash sequentially until either SELECT INITIALS button, located on the front of the cabinet, is pressed. Press the top SELECT INITIALS button to advance to the next lamp in the test. Press the bottom SELECT INITIALS button to 'back-up' to the previous test.
	DISPLAY TEST			Continuously cycles through all segments of any selected digit in either Display Driver Module. Press the top SELECT INITIALS button to advance to the next digit to the right. Press the bottom SELECT INITIALS button to 'back-up' to the previous digit to the left.
	SOLENOID TEST			Press the top SELECT INITIALS button to advance to the next Solenoid in the test. Press the bottom SELECT INITIALS button to test the same Solenoid under test.
	PROGRAM VERSION			Displays EPROM's #U2 and #U3 program version.
	SWITCH TEST			Displays stuck switch by name.
HELP— READ ME HELP		ALL OK		ALL OK is displayed when no game problems are detected. If a problem is detected in the game, assistance information will be displayed.

NOTES:

- 1—Can be reset to 00, only.
- 2—Can be changed to YES (enabled) or NO (disabled), only.
- 3—Can be changed in 100,000 point steps.
- 4—Has a value from 00 thru 20. Self Percentage feature is off (disabled) if this setting is 00.
- 5—Can be changed in unit steps.
- 6—Can be changed to REPLAY, XBALL, POINTS or NOTHING.
- 7—Can be changed to 3 REPLAYS, 2 REPLAYS, 1 REPLAY or NOTHING.
- 8—Can be changed to ON (enable) or OFF (disable).
- 9—Can be changed to XX-EASY, X-EASY, EASY, MEDIUM, HARD, X-HARD or XX-HARD.
- 10—XX coins buys YY credits, and bonus credits will be awarded by buying ZZ credits.

COIN SET-UP PROCEDURE

EXAMPLE 1

- A.—Enter COIN SET-UP category to set the right coin chute for 3 credits for 2 coins played (with no credits on the first coin).
- B.—Enter the directory.

PLAYER 1 DISPLAY	PLAYER 2 DISPLAY	PLAYER 3 DISPLAY	PLAYER 4 DISPLAY
RIGHT	XX COIN	YY CREDIT	XX BONS

- C.—Set the directory to RIGHT, 02 COIN, 03 CREDIT and 00 BONS.

PLAYER 1 DISPLAY	PLAYER 2 DISPLAY	PLAYER 3 DISPLAY	PLAYER 4 DISPLAY
RIGHT	02 COIN	03 CREDIT	00 BONS

EXAMPLE 2

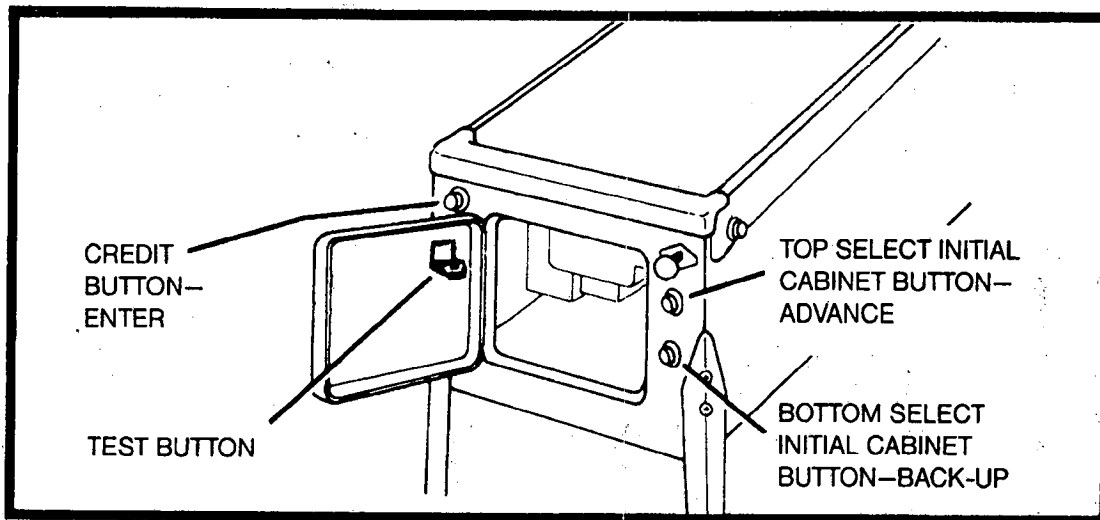
A.—Enter COIN SET-UP category to set the right coin chute for 3 credits for 2 coins played (with one credit on the first coin and 2 credits on the second coin).

B.—Enter the directory.

PLAYER 1 DISPLAY	PLAYER 2 DISPLAY	PLAYER 3 DISPLAY	PLAYER 4 DISPLAY
RIGHT	XX COIN	YY CREDIT	XX BONS

C.—Set the directory to RIGHT, 01 COIN, 01 CREDIT and 02 BONS.

PLAYER 1 DISPLAY	PLAYER 2 DISPLAY	PLAYER 3 DISPLAY	PLAYER 4 DISPLAY
RIGHT	01 COIN	01 CREDIT	02 BONS



**FIGURE A—REGISTERS & OPTIONS
SELECT BUTTONS**

**BALLY-MIDWAY PINBALL REGISTERS & OPTIONS
ACCESS & MODIFICATION INSTRUCTIONS**

1. Enter the Test Mode by pressing the Test Button on the inside of the front door.
2. Change the category by pressing the top or bottom SELECT INITIALS cabinet button.
3. Select the category and open its directory by pressing the Credit buttons.
4. Change directory by pressing the top or bottom SELECT INITIALS cabinet buttons.
5. Select & open the register in the directory by pressing the Credit button.
6. Change register values by pressing the top or bottom SELECT INITIALS cabinet button.
7. Lock-in selected register values by pressing the Credit button.
8. Repeat steps 4 through 7 for more register changes or changes in the same category. To exit the Test Mode, press the Test button.

TABLE B—RECOMMENDED 3 & 5 BALL OPTION SETTINGS

GAME MODE	CATEGORY	REGISTER DIRECTORY					
		PLAYER 1 DISPLAY	PLAYER 2 DISPLAY	3 BALL PLAYER 3 DISPLAY	3 BALL PLAYER 4 DISPLAY	5 BALL PLAYER 3 DISPLAY	5 BALL PLAYER 4 DISPLAY
REPLAYS	GAME SET UP	SPECIAL AWARD HISCORE AWARD MATCH PERCENT GAME OPTIONS		REPLAY* 3 REPLAY* 10* MEDIUM*		REPLAY 3 REPLAY 10 HARD	
	SCORING STATUS	LEVEL 1 SCORE LEVEL 2 SCORE HIGHEST SCORE		1,200,000 3,000,000 6,000,000		2,000,000 5,000,000 8,000,000	
	COIN SET UP		RIGHT 01* COIN LEFT 01* COIN MIDDLE 01* COIN	01* CRDT 01* CRDT 01* CRDT	00* BONS 00* BONS 00* BONS	01 CRDT 01 CRDT 01 CRDT	00 BONS 00 BONS 00 BONS
EXTRA BALL	GAME SET UP	SPECIAL AWARD HISCORE AWARD MATCH PERCENT GAME OPTIONS		XBALL NOTHING 00 MEDIUM*		XBALL NOTHING 00 HARD	
	SCORING STATUS	LEVEL 1 SCORE LEVEL 2 SCORE HIGHEST SCORE		1,200,000 3,000,000 6,000,000		2,000,000 5,000,000 8,000,000	
	COIN SET UP		RIGHT 01* COIN LEFT 01* COIN MIDDLE 01* COIN	01* CRDT 01* CRDT 01* CRDT	00* BONS 00* BONS 00* BONS	01 CRDT 01 CRDT 01 CRDT	00 BONS 00 BONS 00 BONS
NOVELTY	GAME SET UP	SPECIAL AWARD HISCORE AWARD MATCH PERCENT GAME OPTIONS		POINTS NOTHING 00 MEDIUM*		POINTS NOTHING 00 HARD	
	SCORING STATUS	LEVEL 1 SCORE LEVEL 2 SCORE HIGHEST SCORE		1,200,000 3,000,000 6,000,000		2,000,000 5,000,000 8,000,000	
	COIN SET UP		RIGHT 01* COIN LEFT 01* COIN MIDDLE 01* COIN	01* CRDT 01* CRDT 01* CRDT	00* BONS 00* BONS 00* BONS	01 CRDT 01 CRDT 01 CRDT	00 BONS 00 BONS 00 BONS

* = Denotes Factory Setting.

NOTE: Player #4 values can be selected to replace the settings shown in Player #3 display. However, the #4 Player values do not apply for any of the Coin Set Up Procedure or values. See the Coin Set-Up Procedure example on pages 5-3 and 5-4.

**SECTION 6
SERVICING THE GAME**

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DETACHING THE PINBALL GAME BACKBOX

When the Backbox is in an upright position and the 3/8" hold-down bolts are removed, the Backbox can be removed from the Cabinet by lifting the right corner of the Backbox approximately 3/4" and pulling it slightly towards you. Now, both hinges are disengaged and the Backbox can be removed.

SWITCH ASSEMBLY ADJUSTMENTS

All switch assemblies consist of switch blades, contacts separators, plastic tubing and screws to hold them to the mounting surface. Before attempting to adjust a switch assembly, ensure that the screws are tight. If not, tighten the front screw (closest to the switch blade) first and then the back screw (closest to the soldering end of the blade). This will prevent the assembly from being secured in such a manner that the switch blades tend to fan-out.

In general, all switch blades are adjusted for a 1/6" gap between the switch contacts in the open position and adjusted for .010" over-travel or wipe in the closed position. All switch contacts should be free of dust and dirt. Contacts, with the exception of the Flipper Button Switch Assemblies, are plated to resist corrosion. Filing or burnishing the switch contacts breaks the finish and encourages corrosion. Clean the switch contacts by gently closing them on a clean business card or piece of paper and wiping until the contacts are clean.

To clean Flipper Button Switch Assembly contacts: Remove the tarnish from the switch contacts with a contact file followed by a burnishing tool. Severely pitted contacts must be replaced and adjusted only when they are found to be a source of game malfunction.

SECTION 7
ROUTINE MAINTENANCE ON LOCATION

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LIST OF ILLUSTRATIONS

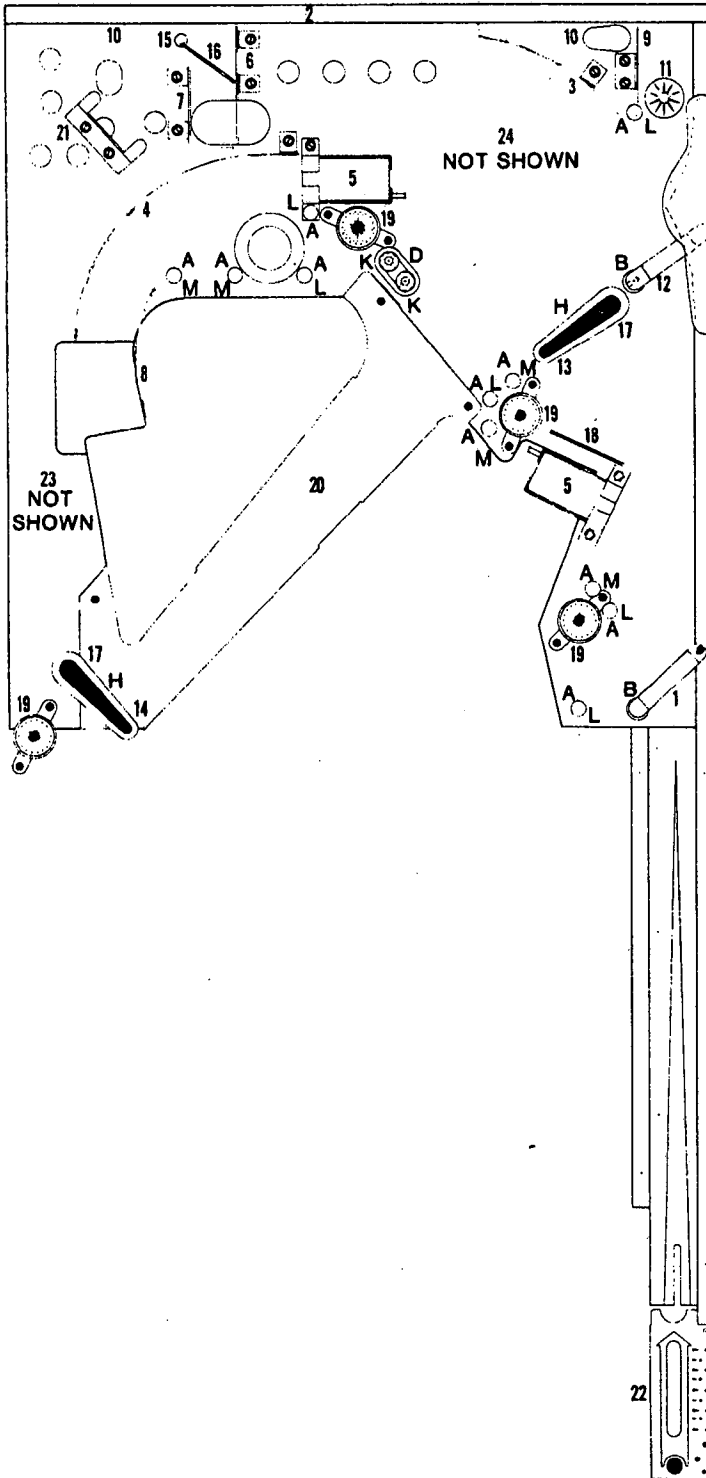
FIGURE	DESCRIPTION	PAGE
A	PLATFORM ASSEMBLY—TOP VIEW W/PARTS INCLUDING RAMPS, RINGS & POSTS CALL-OUTS	7-3
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SWITCH ASSEMBLY MAINTENANCE

After successful completion of the Self-Diagnostic Test Procedure, set the game up for play. Exercise each rollover, thumper bumper, slingshot, target and rebound switches with a game ball until each Switch Assembly on the Playfield has been checked for proper operation.

If actuating a Switch Assembly results in intermittent or no response, clean the switch contacts by gently closing them on a clean business card or piece of paper with a wiping motion until the contacts are wiped clean. If necessary, re-gap the switch contacts to 1/16". DO NOT burnish or file gold plated switch contacts.

FIGURE A—PLATFORM ASSEMBLY—TOP VIEW WITH PARTS INCLUDING RAMPS, RUBBER RINGS & POSTS CALLOUTS



TOP PLATFORM PARTS

ITEM	DESCRIPTION	PART NUMBER
1	GATE BRACKET & WIRE FORM ASSEMBLY	AA40-00034-0000
2	BACKBOARD ASSEMBLY	AH05-00009-0000
3	MOUNTAIN BALL GUIDE	AH05-00018-0000
4	BALL GUIDE ASSEMBLY: SECOND LEVEL	AH05-00019-0000
5	ELEVATOR ASSEMBLY	AH05-00022-0000
6	BALL GUIDE ASSEMBLY: RIGHT	AH05-00025-0000
7	BALL GUIDE ASSEMBLY: LEFT	AH05-00026-0000
8	INSIDE GUIDE ASSEMBLY	AH06-00027-0000
9	BALL RETAINER ASSEMBLY	AH05-00028-0000
10	BRACKET & HINGE WELD ASSEMBLY	AH05-00055-00XF
11	SWITCH ASSEMBLY	A020-00095-0201
12	GATE BRACKET & WIRE FORM ASSEMBLY	A360-00212-0000
13	FLIPPER ASSEMBLY: SINGLE SWITCH RIGHT	A365-00386-0100
14	FLIPPER ASSEMBLY: SINGLE SWITCH LEFT	A365-00386-0200
15	FREE BALL GATE ASSEMBLY: LONG	A365-05900-0001
16	WIRE FORM: BALL GATE	0H05-00152-0000
17	FLIPPER W/SHAFT ASSEMBLY: YELLOW	0365-00984-0300
18	WIRE FORM: BALL GUIDE	0365-00151-2375
19	LIGHT DOME: YELLOW	0017-00042-0743
20	BRIDGE	0H05-00119-00XF
21	MOUNTAIN MOUNTING BRACKET	0H05-00120-00XF
22	SHOOTER GAUGE—ROLLOVER	0H05-00100-00XF
23	RAMP ASSEMBLY: TO 2ND LEVEL	AH05-00062-0000
24	MOUNTAIN ASSEMBLY: ESCAPE	AH05-00063-0000

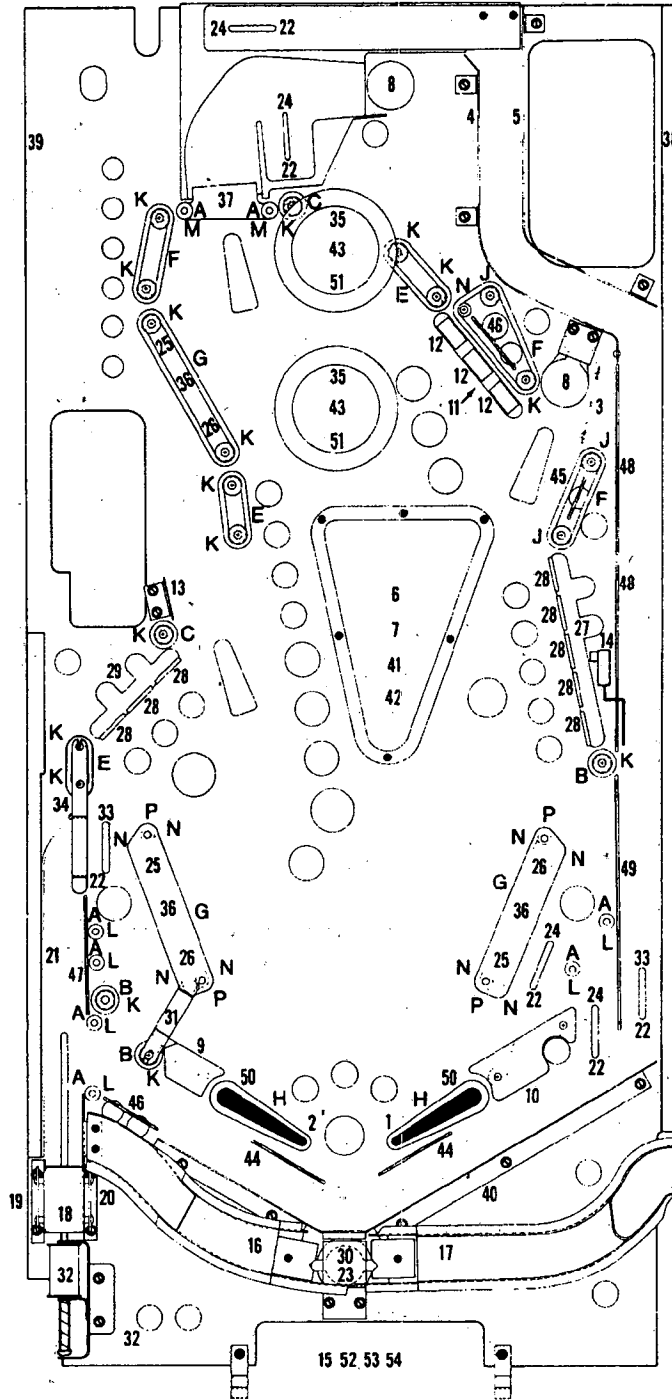
RUBBER RINGS

A	BUMPER: POST, WHITE RUBBER	0017-00041-0633
D	BUMPER: WHITE RUBBER	0017-00041-0642
H	FLIPPER: RED RUBBER, 3"	0017-00041-0682

POSTS

K	POST: GREEN, 1.205"	0017-00042-0633
L	POST: BUMPER #10 X 7 W.S.	0360-00732-00XF
M	POST: BUMPER #10-32 X 7	0365-00700-00XF

FIGURE B—PLAYFIELD—TOP VIEW WITH PARTS INCLUDING RAMPS, RUBBER RINGS & CALLOUTS



TOP PLAYFIELD PARTS

ITEM	DESCRIPTION	PART NUMBER	ITEM	DESCRIPTION	PART NUMBER
1	FLIPPER ASSEMBLY: DOUBLE SWITCH RIGHT	AC70-00023-0100	43	COLLAR: THUMPER BUMPER, RED	0017-00042-0566
2	FLIPPER ASSEMBLY: DOUBLE SWITCH LEFT	AC70-00023-0200	44	WIRE FORM: BALL GUIDE 2 $\frac{3}{8}$ "	0360-00175-5300
3	SCOOP ASSEMBLY: SHORT	AH05-00029-0000	45	WIRE FORM: BALL GUIDE 1 $\frac{1}{4}$ "	0365-00151-1250
4	DRAIN GUIDE ASSEMBLY: LEFT	AH05-00030-0000	46	WIRE FORM: BALL GUIDE 1 $\frac{3}{4}$ "	0365-00151-1750
5	DRAIN GUIDE ASSEMBLY: RIGHT	AH05-00031-0000	47	WIRE FORM: BALL GUIDE 3 $\frac{3}{8}$ "	0365-00151-3375
6	LAVA PIT ASSEMBLY	AH05-00033-0000	48	WIRE FORM: BALL GUIDE 5 $\frac{3}{8}$ "	0365-00151-5375
7	LAVA PIT P.C. BOARD & LAMP ASSEMBLY	AH05-00040-0000	49	WIRE FORM: BALL GUIDE 7 $\frac{1}{4}$ "	0365-00151-7250
8	ELEVATOR KICKER ASSEMBLY	AH05-00037-0000	50	FLIPPER W/SHAFT ASSEMBLY: YELLOW	0365-00984-0300
9	FEED GUIDE ASSEMBLY: LEFT	AH05-00042-0000	51	CAP: THUMPER BUMPER, RED	0017-00042-0518
10	FEED GUIDE ASSEMBLY: RIGHT	AH05-00043-0000	52	BOTTOM ARCH: PLASTIC	0H05-00923-0000
11	DROP TARGET ASSEMBLY: 3 IN-LINE	AH05-00049-0000	53	LIGHT DOME: GREEN	0017-00042-0744
12	TARGET: WHITE W/DECAL	AH05-00048-0000	54	LIGHT DOME: CLEAR	0017-00042-0745
13	GUIDE ASSEMBLY: SMALL	AH05-00050-0000			
14	SWITCH W/BRACKET ASSEMBLY: BOTTOM ARCH	AH05-00056-0000			
15	ARCH ASSEMBLY: BOTTOM	AH05-00058-0000			
16	RAMP & COVER ASSEMBLY: LEFT FRONT	AH05-00059-0000			
17	RAMP & COVER ASSEMBLY: RIGHT FRONT	AH05-00060-0000			
18	EMITTER/DETECTOR SENSOR	AH05-00069-0000			
19	DETECTOR P.C.B. ASSEMBLY	B084-91911-B000			
20	EMITTER P.C.B. ASSEMBLY	B084-91912-A000			
21	EJECT GUIDE ASSEMBLY	AH05-00070-0000			
22	SWITCH ASSEMBLY: ROLLOVER	A020-00095-0301			
23	SWITCH ASSEMBLY	A020-00095-0501			
24	BRACKET W/WIRE FORM ASSEMBLY	A360-00216-0000			
25	SWITCH ASSEMBLY: SLINGSHOT	A360-00230-0000			
26	SWITCH ASSEMBLY: SLINGSHOT	A360-00239-0000			
27	SWITCH TARGET: YELLOW	A365-R0305-F113			
28	TARGET W/SWITCH: YELLOW	A365-R0300-0003			
29	SWITCH: TARGET, YELLOW	A365-R0307-F113			
30	EJECT HOLE ASSEMBLY: 2-WAY	A365-00087-0000			
31	GAME BRACKET & WIRE FORM ASSEMBLY	A365-00377-0000			
32	KICKER ASSEMBLY	A365-00381-0000			
33	BRACKET W/WIRE FORM ROLLOVER LEFT	A365-00382-0000			
34	GATE BRACKET & WIRE FORM ASSEMBLY	A365-06100-0001			
35	THUMPER BUMPER ASSEMBLY	A967-00053-0100			
36	KICKER ASSEMBLY: SLINGSHOT	A967-00059-0000			
37	GUIDE: RAMP TRAY	0H05-00136-0000			
38	GUIDE: PLAYFIELD RIGHT	0H05-00149-00XF			
39	GUIDE: PLAYFIELD LEFT	0H05-00149-02XF			
40	GUIDE: BOTTOM DRAIN	0H05-00151-0000			
41	LAVA PIT COVER	0H05-00909-00XF			
42	RUBBER GASKET	0H05-00910-0000			

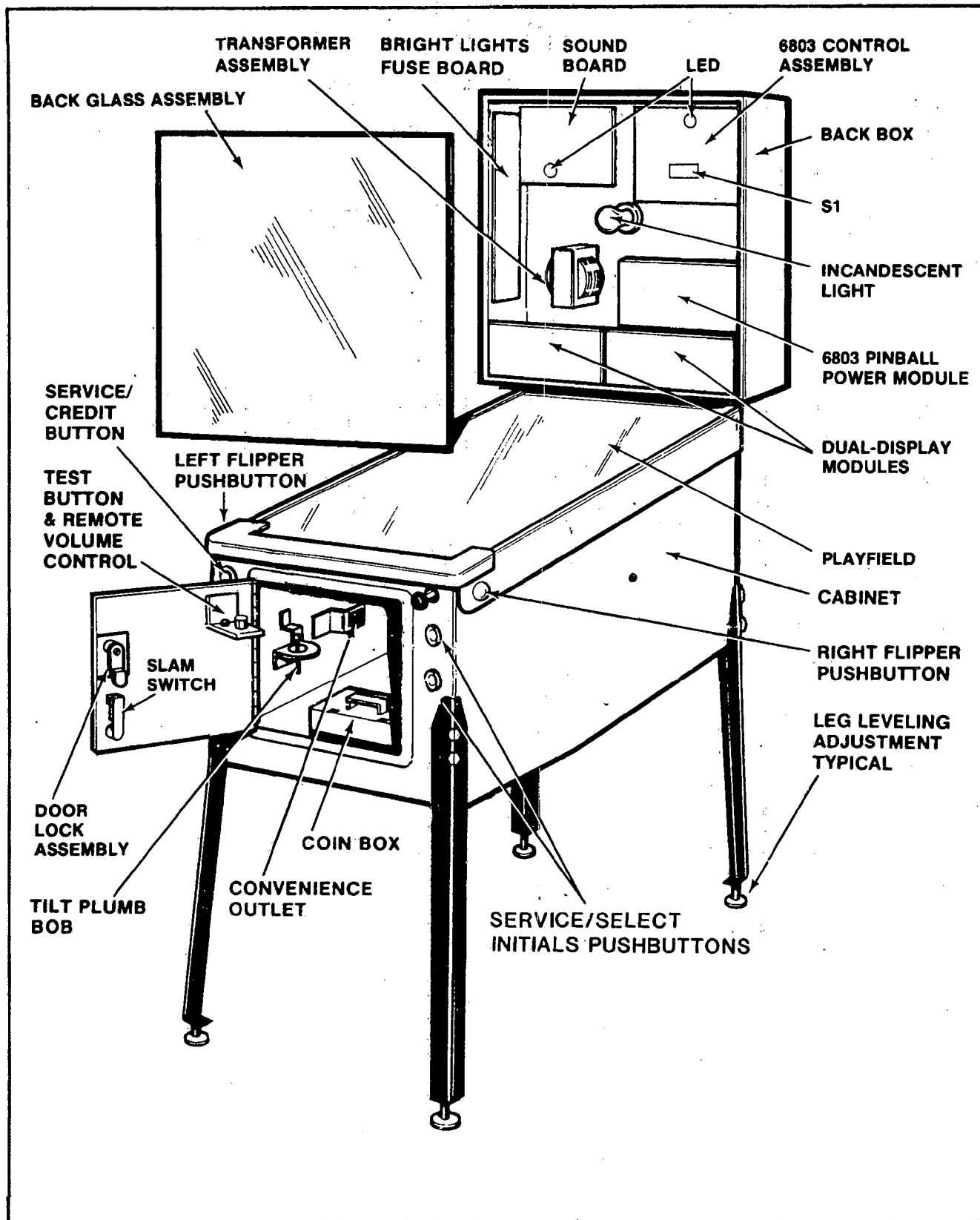
RUBBER RINGS

A	BUMPER: POST, WHITE RUBBER	0017-00041-0633
B	BUMPER: POST, WHITE RUBBER	0017-00041-0637
C	BUMPER: WHITE RUBBER .23	0017-00041-0641
E	BUMPER: WHITE RUBBER 1.0	0017-00041-0643
F	BUMPER: WHITE RUBBER 1.5	0017-00041-0644
G	BUMPER: WHITE RUBBER 2.5	0017-00041-0646
H	BUMPER: WHITE RUBBER 3.0	0017-00041-0682

POSTS

J	POST: GREEN, 1.020	0017-00042-0712
K	POST: GREEN, 1.205"	0017-00042-0714
L	POST: BUMPER #10 X 7 W.S.	0360-00732-00XF
M	POST: BUMPER #10-32 X 7	0365-00700-00XF
N	POST: $\frac{3}{8}$ " X $1\frac{1}{16}$ "	0365-00980-0000
P	STUD: #6-32 X $1\frac{1}{16}$ "	0967-00707-01XF

FIGURE C—ESCAPE FROM THE LOST WORLD PINBALL GAME



SECTION 8 SERVICE HINTS

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CLEANING THE PLAYFIELD

The Bally-Midway Playfield has an improved "tuff-coat" finish with excellent wearing properties. Life expectancy of the Playfield as well as play appeal, can be extended by periodic cleaning.

DO

Bally recommends that you clean the Playfield with Wildcat #125 (Wildcat Chemical Company, 1349 East Seminary Drive, Fort Worth, Texas 76115, 817-924-8321). Wildcat #125 is a combination cleaner and polish. Bally-Midway has tried and tested this product and found it to be very effective. If Wildcat #125 is not available, Bally suggests that you ask your Distributor to order it.

Inspect and hand polish the ball in a clean cloth. A chipped ball must be replaced. If not, it will ruin the finish on the Playfield in a short period of time.

DON'T

Do not use water in large quantities, highly caustic cleaners, abrasive cleaners and cleaning pads on the Playfield, or allow a wax or polish build-up. Waxes yellow with age and spoil play appeal.

SERVICING THE PLAYFIELD—SEMI-UPRIGHT & UPRIGHT POSITIONS

To provide access for servicing the Playfield, in the SEMI-UPRIGHT or UPRIGHT position, the following procedure is recommended. For additional information, see FIGURE A on page 8-3.

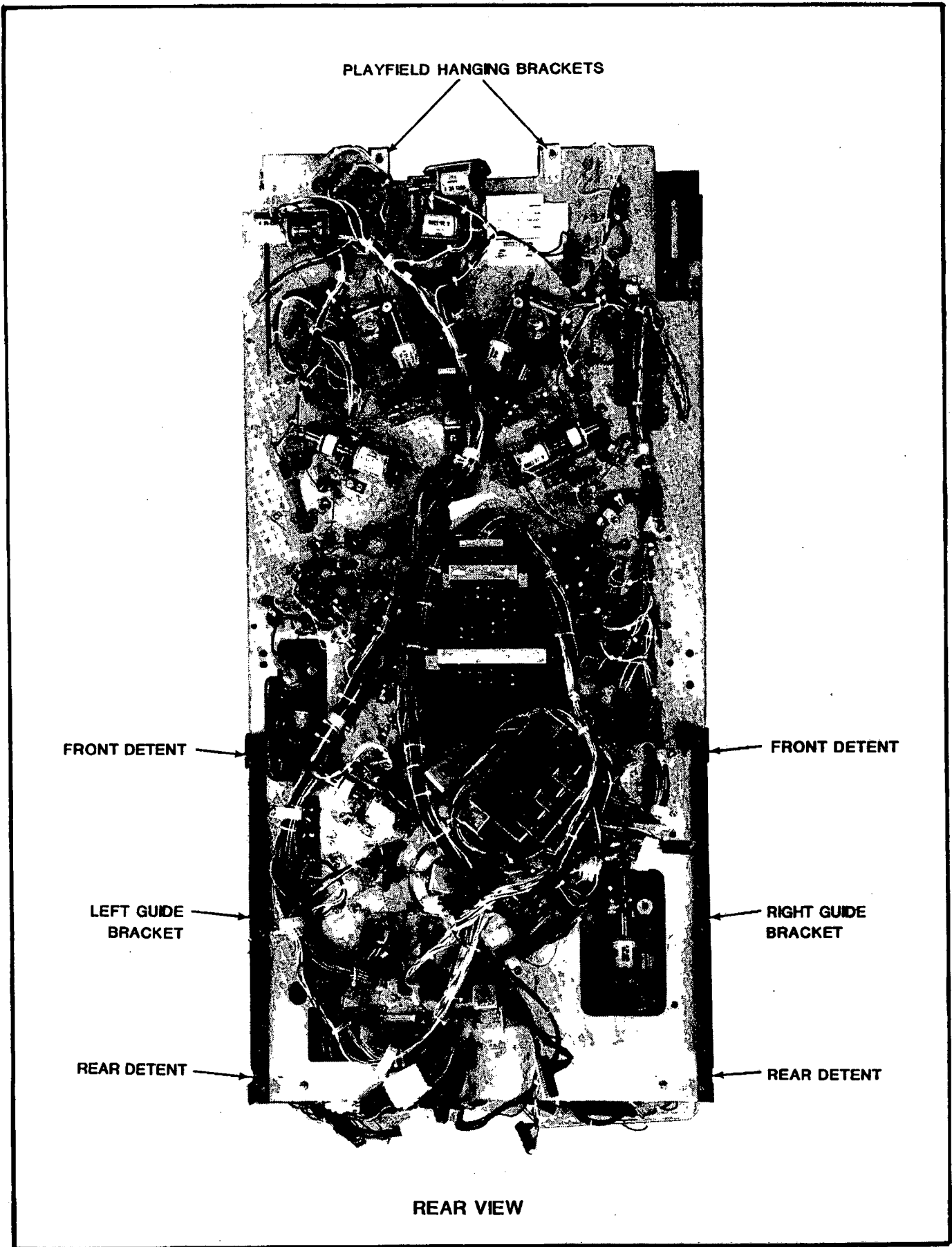
1. Lift up the Playfield by the bottom arch extension (above the outhole) until the Playfield rests on the stop blocks in the cabinet.
2. Continue lifting and pulling the Playfield up, vertically, to ensure that the guide brackets on the Playfield are clear of the hinge-pins on the sides of the cabinet. When the guide brackets are clear the hinge-pins, pull the Playfield towards you. As you pull on the Playfield, the guide brackets will slide on the hinge-pins.
3. Continue to pull the Playfield out until the rear detents on the guide brackets engage on the hinge-pins. This will position the Playfield in the SEMI-UPRIGHT service position.
4. To position the Playfield in the full UPRIGHT position, continue lifting and rotating the Playfield until it rests against the Backbox.

SERVICING THE PLAYFIELD—RETURN TO PLAY POSITION

The following procedure is recommended to return the Playfield to the play position.

1. Lower Playfield to the SEMI-UPRIGHT service position, resting on the hair-pin bracket.
2. Hold the Back-Board with one hand and hold the Playfield with the other hand.
3. Lift the rear of the Playfield approximately 1" to disengage the rear guide bracket detents from the hinge-pins. Next, slide the Playfield toward the rear of the cabinet. In this position, the Playfield is resting on the non-dented areas of the guide brackets.
4. Continue sliding the Playfield toward the rear of the cabinet until the "playing" position detents on the guide brackets engage on the hinge-pins.
5. Lower the Playfield front end into the playing position. Ensure that the Playfield hanging brackets fully engage into the slots in the cabinet Front Rail Assembly.

FIGURE A. PLAYFIELD IN SEMI-UPRIGHT POSITION & UPRIGHT POSITION



SERVICING THE TOP PLATFORM ASSEMBLY

The following procedure is recommended to service the TOP PLATFORM ASSEMBLY on the Playfield. For additional information, see FIGURE B on page 8-5, to locate items (1) thru (5).

1. Position the Playfield in the SEMI-UPRIGHT service position, resting on the hair-pin bracket on the bottom of the Playfield.
2. To raise the TOP PLATFORM on its hinges, remove the plastic nut (1) and rotate the butyrate to gain access to the Playfield hold-down screw (2).
3. Remove the Playfield hold-down screws (2) & (3).
4. Remove the rail hold-down screws (4) & (5).
5. Hold the rail where the screw (5) was removed from and lift up the TOP PLATFORM ASSEMBLY. The TOP PLATFORM will hinge open to provide access for servicing the PLATFORM.

SERVICING THE TOP PLATFORM ASSEMBLY—RETURN TO PLAY POSITION

The following procedure is recommended to return the TOP PLATFORM ASSEMBLY to the play position.

1. Hold the rail where screw (5) was removed from and lower the TOP PLATFORM to the play (rest) position.
2. Install the rail hold-down screws (4) & (5).
3. Install the Playfield hold-down screws (2) & (3).
4. Rotate the butyrate back to its original position and re-install the plastic nut (1).

CONTROL BOARD ERROR DETECTION SUB-ROUTINE

Bally-Midway has installed a new sub-routine to detect CMOS RAM error or battery failure on the 6803 Control Board Assembly.

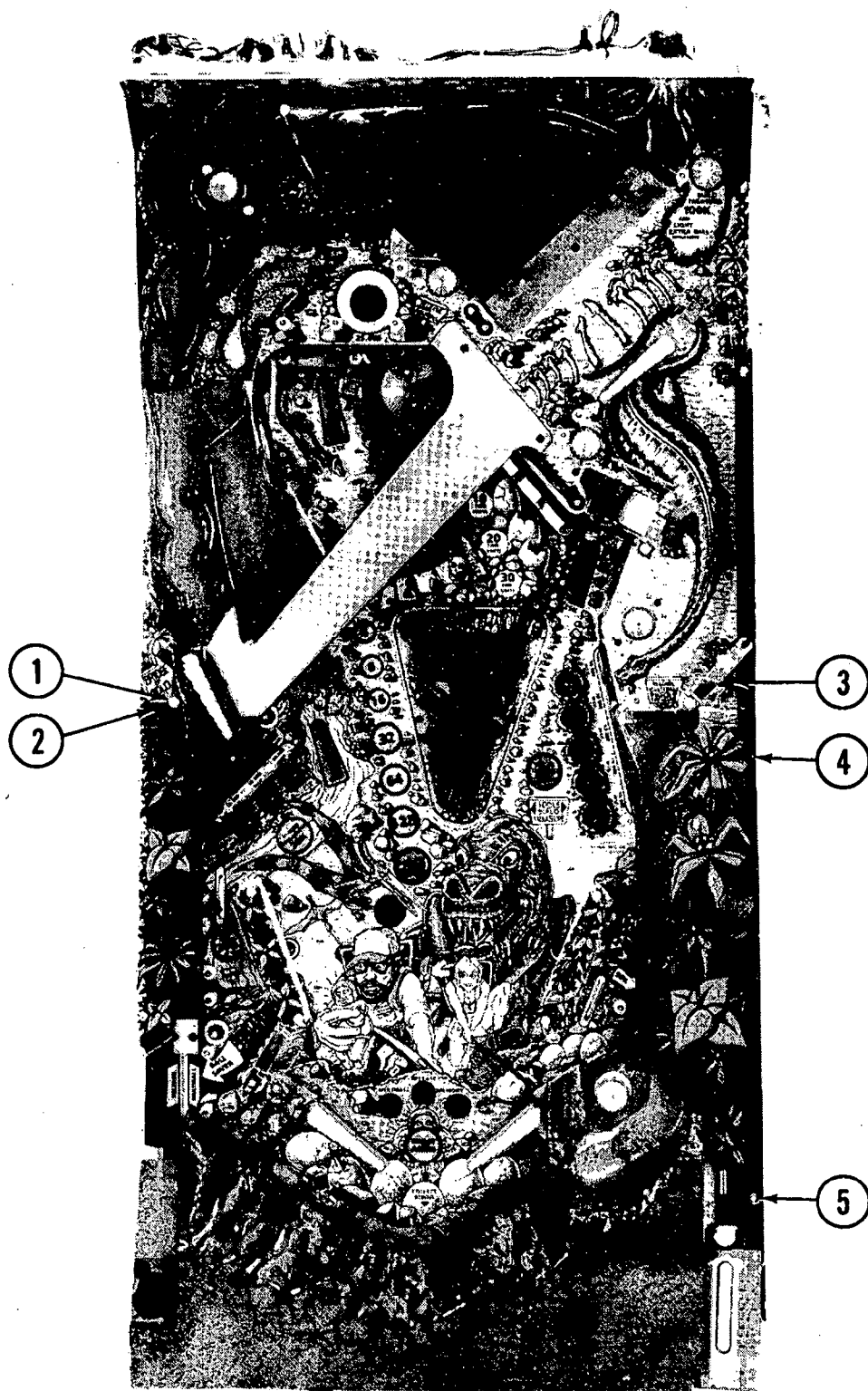
When an error occurs, a "1" will be added in the "units" digit of the High Score To Date total, each time an error occurs. This condition will also be displayed if the program has been changed to that of another game program. This is accomplished by comparing the EPROM version number in the EPROM with the previously stored EPROM version number in CMOS RAM.

When an error occurs or new EPROMs are installed on the Control Board Assembly, the following events will occur the next time the game is powered up.

1. ACCOUNT CLEARED will be displayed. This indicates that all "accounting data" registers have been reset to zero (0).
2. INSTALL FACTORY will be displayed. This indicates that all "game features" have been reset to the Factory Recommended Settings.
3. The High Score To Date "units" digit is incremented by "1." If the High Score To Date score was 6,000,000 before the game was powered up, it will now display 6,000,001 when the game is powered up.
4. When the game is powered up, the EPROM version I.D. number is written into CMOS RAM.

NOTE: The RAM error can only be cleared by holding the left and right coin switches closed while the game is powering up. This is a "quick" procedure to clear all "accounting data" and reset the game to Factory Recommended Settings.

FIGURE B. SECURING THE TOP PLATFORM TO THE PLAYFIELD



FRONT VIEW

FIXED "TWO PLAYERS PER GAME" MODE FOR ONE AVAILABLE DISPLAY DRIVER MODULE

The system in this game is designed for reasonably normal operation when one Display Driver Module is damaged and unusable. To use only one Display Driver Module, the game must be adjusted to operate in a "Two Players Per Game" mode.

"Reasonably normal operation" is defined as a means of providing a maximum of two (2) players per game information to be able to play the game. During the Game Play Mode, only the following information is displayed, entirely, on the left Display Driver Module.

CURRENT GAME BALL IN PLAY
PLAYER #1 GAME SCORE
PLAYER #2 GAME SCORE

During the Attract Mode, only the High Score To Date for players 1 & 2, is displayed, entirely, on the left Display Driver Module.

The following procedure must be performed to adjust the game for the "Two Players Per Game" mode.

1. Power the game up.

NOTE 1: When the left Display Driver Module is not working properly, exchange it with the right Display Driver Module before proceeding.

NOTE 2: Before exchanging or replacing Display Driver Modules, see the **WARNING** for Troubleshooting On Location on page 9-4.

2. Turn power OFF and remove the damaged Display Driver Module.

NOTE: Before exchanging or replacing Display Driver Modules, see the **WARNING** for Troubleshooting On Location on page 9-4.

3. Turn power ON. Simultaneously, hold in the bottom SELECT INITIALS button on the front cabinet while pressing the Credit and Test buttons with the left index finger and thumb, respectively. This action will cause the game to enter the Test Mode and, at the same time, adjust the game to a limit of "Two Players Per Game."

4. Press the Test button again to return the game to the Game Play Mode.

The above procedure prevents the system from entering the "Three Players Per Game" mode or the "Four Players Per Game" mode, regardless of how many credits the player attempts to add to the game.

To discontinue the fixed "Two Players Per Game" mode, perform the following procedure.

1. Turn the game OFF and re-install the repaired Display Driver Module or install a new Module.

NOTE: Before exchanging or replacing Display Driver Modules, see the **WARNING** for Troubleshooting On Location on page 9-4.

2. Turn the game ON and enter the Test Mode by pressing the Test button on the Coin Door Assembly.
3. Select the GAME SET-UP category with the top SELECT INITIALS button.
4. Press the Credit button to open this category's directory.
5. Select the MAXIMUM PLAYERS register in the directory with the top SELECT INITIALS button.
6. Press the Credit button to open the register.
7. Select the 4 PLAYERS register with the top SELECT INITIALS button.
8. Press the Credit button to lock-in the 4 PLAYERS register value.
9. Press the Test button to exit the Test Mode.

NOTE: Anytime the FACTORY RESET condition occurs, the game will revert back to the "Four Players Per Game" mode.

**SECTION 9
TROUBLESHOOTING ON LOCATION**

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GAME WON'T POWER-UP

Game does not complete the power-up sequence (i.e., Displays functioning and Playfield lights are flashing) when power is turned on and the general illumination lamps are lit.

ACTION TO TAKE:

- A. Check Fuses on the Power Module Assembly.
- B. Turn power OFF and open the Backbox. Locate the LED (Light Emitting Diode) on the 6803 Control Board Assembly. For additional information, see the 6803 CONTROL BOARD POWER-UP TEST SEQUENCE below.
- C. If the +5VDC and the +14VDC are present on the Control Board Assembly, the game performs a self-diagnostic test. **When no problems are encountered, the game powers-up immediately without flashing the LED on the Control Board Assembly.** When a problem is detected, the LED will flash the approximate number of times for each diagnostic test passed. (i.e., If the LED only flashes three [3] times, U4 is probably defective, using the Table of power-up sequences below.

CONTROL BOARD POWER-UP TEST SEQUENCE

1st Flash—Determines if the internal RAM of the Microprocessor U1 is good.

2nd Flash—Determines if the program ROM U2 is good.

3rd Flash—Determines if the program ROM U3 is good.

4th Flash—Determines if the CMOS RAM U4 is good.

5th Flash—Tests the U8 PIA-0.

6th Flash—Tests the U7 PIA-1.

7th Flash—Determines if the internal display interrupt generator U1 is good.

8th Flash—Verifies U8 & U12 operation of the Phase B switched illumination voltage.

NOTE: Fuse F5 on the Power Module Assembly protects the Phase B signal to the Control Board Assembly for U8 & U12.

9th Flash—Verifies U1, U11 & U12 operation of the Phase A switched illumination voltage.

NOTE: Fuse F4 on the Power Module Assembly protects the Phase A signal to the Control Board Assembly for U1, U11 & U12.

- D. If the LED does not come on or does not flash, or flashes, but less than 9 times, turn power OFF. Check the fuses and if the fuses are good, replace the 6803 Control Board Assembly.

CAUTION: The replacement 6803 Control Board Assembly **must** have the same part number or incorrect operation of the game will be the result! For additional information, see the Parts List for the Control Board Assembly on pages 10-13 thru 10-15 and the EPROM Listing on page 10-36.

- E. Turn power ON. If the game is operating correctly, it is now ready for play. If the game does not operate correctly, contact the Bally-Midway Field Service Department.

LAMPS ARE ALWAYS ON OR ALWAYS OFF DURING GAME PLAY

ACTION TO TAKE:

- A. With the power ON, select the LAMP TEST from the GAME CHECK-UP category with the top SELECT INITIALS button.

NOTE: When pressed, the top SELECT INITIALS button advances to the next test and the bottom SELECT INITIALS button "backs-up" to the previous test.

- B. Press the Credit button to start the test.

There are two (2) Lamp Test Sequences. The first test is the ALL LAMPS test and the second test sequence is the SINGLE LAMP test. For additional information, refer to the FEATURE LAMP ASSIGNMENT ILLUSTRATION on page 9-12 for the lamp sequence.

ALL LAMPS TEST SEQUENCE

When the test is started, all feature lamps will flash on and off. The lamps will continue to flash on and off until the test is exited or another test is selected.

SINGLE LAMP TEST SEQUENCE

When the test is started, the first lamp in the Test Sequence will flash on and off. After a few seconds, the first lamp will turn off and the next lamp in the Test Sequence will flash on and off. This Test Sequence will continue for all of the feature lamps until the test is exited or another test is selected.

- C. If the lamps are flashing correctly, the game is ready for play.

NOTE: The Single Lamp Test Sequence can be stopped by pressing either the top or bottom SELECT INITIALS button. When pressed, the top button advances to the next lamp in the test and the bottom button "backs-up" to the previous lamp in the test.

- D. Carefully raise the Playfield or open the Backbox to gain access to the lamp(s).

NOTE: Before raising the Playfield, refer to the SERVICE HINTS on page 8-2, for SERVICING THE PLAYFIELD IN THE SEMI-UPRIGHT & UPRIGHT POSITIONS and, refer to SERVICING THE TOP PLATFORM ASSEMBLY on page 8-4.

- E. Before replacing lamps that do not flash on and off, check the wiring to the lamp socket(s). If the wiring appears to be correct, replace the lamps that do not flash on and off.

- F. If all of the lamps are now flashing on and off, the game is ready for play. If the lamps are not flashing on and off, replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the **CAUTION** on page 9-2.

- G. Turn power ON and repeat Steps A and B. If all the lamps are flashing on and off, the game is ready for play. If the lamps do not flash on and off, contact the Bally-Midway Field Service Department.

IMPROPER DISPLAY DIGITS

I. Display digits improper on one (1) or several, but less than all Display Driver Modules.

One (1) or several segments are always off, the digits are "mottled" (spotted), or several segments or digits are always on.

ACTION TO TAKE:

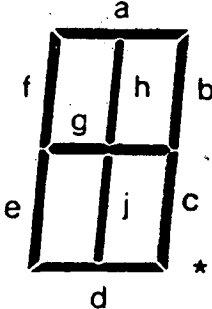
A. With the power ON, select the DISPLAY TEST from the GAME CHECK-UP category with the top SELECT INITIALS button.

NOTE: When pressed, the top SELECT INITIALS button advances to the next test and the bottom SELECT INITIALS button "backs-up" to the previous test.

B. Press the Credit button to start the test.

If the Displays are operating correctly, the segments in the left digit in the left Display Driver Module, will turn on as indicated in the following Display Driver Module Segment Test Pattern.

DISPLAY DRIVER MODULE SEGMENT TEST PATTERN

<u>DISPLAY CHARACTER SEGMENT DESIGNATION</u>	<u>DISPLAY CHARACTER SEGMENT</u>	<u>SEGMENT CYCLING PATTERN</u>
	f a b c d e g h & j	1 2 3 4 5 6 7 8

NOTE: * = The comma segment is not tested during the DISPLAY TEST. Verification of operation can be seen during the game play or when the game is in the Attract Mode.

C. If the segments are correct in the digit, press the top SELECT INITIALS button to advance to the next digit in the Display Driver Module. If the segments are correct, continue to press the top SELECT INITIALS button to test the segments in each digit on the Display Driver Modules.

D. If the segments are correct, the game is ready for play. If the segments are incorrect in any Display Driver Module, replace the Module.

WARNING: High Voltage is supplied to the Display Driver Modules from the Power Supply Module. After turning power OFF, wait a minimum of 30 seconds for the High Voltage to drain (bleed) off before replacing or servicing the Display Driver Modules.

E. Turn power ON and repeat Steps A and B. If the segments are operating correctly, the game is ready for play. If the segments are not operating correctly, contact the Bally-Midway Field Service Department.

II. All Display Driver Modules have improper display patterns.

Digits are always on or off, or the segments are always on or off, in all Modules.

ACTION TO TAKE:

- A. With power On, select the DISPLAY TEST from the GAME CHECK-UP category with the top SELECT INITIALS button. If the Displays are operating correctly, perform the Segment Test Pattern described in category I, Step A and B, on page 9-4.
- B. Press the Credit button to start the test.
- C. If the Displays are operating correctly, the game is ready for play. If the Displays are not operating correctly, replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, refer to the **CAUTION** on page 9-2.

- D. Turn power On and repeat category II, Steps A and B. If the Displays are operating correctly, the game is ready for play. If the Displays are not operating correctly, contact the Bally-Midway Field Service Department.

III. One or several Displays always off.

ACTION TO TAKE:

- A. With power ON, select the DISPLAY TEST from the GAME CHECK-UP category with the top SELECT INITIALS button.
- B. Press the Credit button to start the test.
- C. If the first digit is operating correctly, continue to press the SELECT INITIALS button to test each Display Driver Module.
- D. If the Test Pattern is correct, the game is ready for play. If the Test Pattern is incorrect, turn power OFF and replace the defective Display Driver Module.

NOTE: Before replacing the Display Driver Module, refer to the **WARNING** on page 9-4.

- E. Turn power ON and repeat Steps A and B. If the Display Driver Module(s) are operating correctly, the game is ready for play. If the Displays are not operating correctly, contact the Bally-Midway Field Service Department.

COIL(S) OR SOLENOID(S) NOT OPERATING CORRECTLY

- I. One (1) or more Coils or Solenoids do not energize (pulse on) during game play. For additional information, refer to the COIL & SOLENOID ASSIGNMENT NUMBER ILLUSTRATION on page 9-10.

ACTION TO TAKE:

- A. With power ON, select the SOLENOID TEST from the GAME CHECK-UP category with the top SELECT INITIALS button.

NOTE: When pressed, the top SELECT INITIALS button advances to the next test and the bottom SELECT INITIALS button "backs-up" to the previous test.

- B. Press the Credit button to start the test.

When the test is started, the SINGLE SOLENOID test will be displayed, the first Coil or Solenoid in the Test Sequence will momentarily pulse on, then off. Also, the name of each Coil or Solenoid, I.D. number, output number, connector number and pin number, are displayed as each one is tested. This information remains displayed until the test is exited.

NOTE: Press the top SELECT INITIALS button to advance to the next Coil or Solenoid in the test, and press the bottom SELECT INITIALS button to pulse the same Coil or Solenoid in the test.

C. Continue the SOLENOID TEST until all Coils or Solenoids have been tested.

NOTE 1: If the majority of the Coils or Solenoids do not operate correctly, check the Playfield fuse to see if it's blown. The fuse is located on the bottom of the Playfield, near the Flipper Assemblies. See the **NOTE** in Step D before proceeding.

NOTE 2: The General Illumination lamp circuitry and the Flipper Solenoid circuitry are tested during the SOLENOID TEST. For additional information, see GENERAL ILLUMINATION LAMPS on this page and see FLIPPER SOLENOIDS on page 9-7.

D. Carefully raise the Playfield to gain access to the Coils or Solenoids, and inspect the wiring.

NOTE: Before raising the Playfield, see the SERVICE HINTS on pages 8-2 and 8-4.

E. If a lead wire is broken off, repair it and repeat Step C.

F. If the Coil or Solenoid is operating correctly, the game is ready for play. If the wiring is correct and the Coil or Solenoid does not operate, turn the game OFF and replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the **CAUTION** on page 9-2.

NO GENERAL ILLUMINATION LAMPS

The General Illumination Lamp Test is performed during the SOLENOID TEST. The lamps are controlled by the Auxiliary Coil Driver P.C. Board Assembly. The board is located on the bottom of the Playfield. For additional information, refer to the GENERAL ILLUMINATION LAMP ASSIGNMENT NUMBER ILLUSTRATION on page 9-13.

ACTION TO TAKE:

A. Repeat category I, Steps A, B and C. The General Illumination lamps will turn off, and then turn back on, during the SOLENOID TEST when output port number 14 is tested.

B. If the lamps turn off, and then back on, the General Illumination Circuitry is operating correctly. If the lamps do not turn off or are always off, raise the Playfield to gain access to the Auxiliary Coil Driver P.C. Board Assembly.

NOTE: Before raising the Playfield, see the SERVICE HINTS on pages 8-2 and 8-4.

C. Press the bottom SELECT INITIALS button and observe if the relay is energizing on the P.C. board. If the relay is working, check to see if the lamps are blown, and replace those that are blown.

D. Repeat Step C. If the lamps turn off, then on, the circuitry is operating correctly. If the lamps do not turn off or are always off, replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the **CAUTION** on page 9-2.

E. Repeat Steps A, B and C. If the lamps turn off, and then on, the circuitry is operating correctly. If the lamps do not turn off or do not turn on, contact the Bally-Midway Field Service Department.

NO FLIPPER SOLENOIDS

The Flipper Solenoid Test is performed during the SOLENOID TEST. The Solenoids are controlled by the K1 relay on the 6803 Control Board Assembly. For additional information, refer to the COIL & SOLENOID ASSIGNMENT NUMBER ILLUSTRATION on page 9-10.

ACTION TO TAKE:

- A. Repeat category I, steps A, B and C. The Flipper Solenoids will not energize when the K1 relay energizes on the Control Board Assembly, when output port 15 (Flipper Test) is tested.
- B. Press the bottom SELECT INITIALS button to energize the K1 relay. Press the cabinet Flipper buttons while the K1 relay is energized. If the Flipper Solenoids operate correctly, the game is ready for play. If the Solenoids do not operate correctly, raise the Playfield and inspect the wiring to the Solenoids.

NOTE: Before raising the Playfield, see the SERVICE HINTS on pages 8-2 and 8-4.

- C. If the wiring is correct, replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the CAUTION on page 9-2.

- D. Repeat Steps A, B and C. If the Coils or Solenoids are operating correctly, the game is ready for play. If they do not operate correctly, contact the Bally-Midway Field Service Department.

II. Coils or Solenoids always on.

Some Coils and Solenoids are designed to be energized (on) momentarily rather than continuously. Those that are designed to be energized momentarily, are subject to being damaged when energized continuously.

Limit the troubleshooting on time to **one minute with power ON** and **five minutes with power off**. Repeat this process as required and replace any Coils or Solenoids that are damaged.

When troubleshooting Coil and Solenoid circuits, **be advised** that a constantly energized momentary duty Coil or Solenoid, will "blow" the Playfield fuse in a few seconds. To avoid replacing the fuse repeatedly, isolate the faulty Coil or Solenoid circuit as soon as power is turned on.

ACTION TO TAKE:

- A. With power ON, select the SOLENOID TEST from the GAME CHECK-UP category with the top SELECT INITIALS button.

NOTE: When pressed, the top SELECT INITIALS button advances to the next test and the bottom SELECT INITIALS button "backs-up" to the previous test.

- B. Press the Credit button to start the test.

When the test is started, the SINGLE SOLENOID test will be displayed, the first Coil or Solenoid in the Test Sequence will momentarily pulse on, then off. Also, the name of each Coil and Solenoid, I.D. number, output port number, connector number and pin number, is displayed as each one is tested. This information remains displayed until the test is exited.

NOTE: Press the top SELECT INITIALS button to advance to the next Coil or Solenoid in the test, and press the bottom SELECT INITIALS button to pulse the same Coil or Solenoid in the test.

- C. Continue the SOLENOID TEST until all Coils or Solenoids have been tested.
- D. If the Coils or Solenoids are operating correctly, the game is ready for play. If they are not operating correctly, raise the Playfield to gain access to the Coils or Solenoids.
- E. Carefully raise the Playfield to gain access to the Coils or Solenoids, and inspect the wiring.

NOTE: Before raising the Playfield, see the SERVICE HINTS on pages 8-2 and 8-4.

- F. If a lead wire is broken off, repair it and repeat Step C.
- G. If the Coil or Solenoid is operating correctly, the game is ready for play. If the wiring is correct and the Coil or Solenoid does not operate correctly, turn the game OFF and replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the **CAUTION** on page 9-2.

- H. Repeat Steps A, B and C. If the Coils or Solenoids are operating correctly, the game is ready for play. If they are not operating correctly, turn the game OFF and contact the Bally-Midway Field Service Department.

NO SOUND

ACTION TO TAKE:

- A. With power ON, select the SWITCH TEST from the GAME CHECK-UP category with the top SELECT INITIALS button.
- B. Press the Credit button to start the test.
- C. Turn the Volume Control POT (Potentiometer) on the front door to the maximum counter-clockwise (left) position.
- D. Operate any switch on the Playfield. When the switch is operated, a sound will be heard. If no sound is heard, check to ensure that the speaker lead wire is connected to speaker terminal J2-2 and the speaker return wire is connected to terminal J2-1.
- E. Repeat Step D. If sound is heard, the game is ready for play. If no sound is heard, check the fuses on the Power Module Assembly.
- F. Turn power OFF and open the Backbox. Locate the LED (Light Emitting Diode) on the Sound Module Assembly. For additional information, see the SOUND BOARD SELF-TEST SEQUENCE below.

SOUND BOARD SELF-TEST SEQUENCE

- 1st Flash—Determines if the ROM U11 is good.
- 2nd Flash—Determines if the ROM U12 is good.
- 3rd Flash—Determines if the ROM U13 is good.
- 4th Flash—Determines if the ROM U14 is good.
- 5th Flash—Determines if the RAM's U9 & U10 are good.
- 6th Flash—Test the PIA U7.

- G. Turn power ON. The LED must flash 6 times to indicate that the Sound Module is good. The correct sequence of flashes are: "flash, pause, flash, then flash four (4) more times." The LED goes out after the 6th flash.
- H. If the LED does not come on when the game is powered up, or flashes less than 6 times, turn power OFF and replace the Sound Module Assembly.

CAUTION: The replacement Sound Module Assembly **must** have the same part number or incorrect operation will be the result! See the Parts List for the Sound Module Assembly on pages 10-20 thru 10-22 and the EPROM Listing on page 10-36.

- J. Turn power ON and repeat Steps A, B, C and D. If sound is heard, the game is ready for play. If no sound is heard, contact the Bally-Midway Field Service Department.

SWITCHES DO NOT SCORE

ACTION TO TAKE:

- A. Turn power ON and select the SWITCH TEST from the GAME CHECK-UP category with the top SELECT INITIALS button. For additional information, refer to the SWITCH ASSIGNMENT NUMBER ILLUSTRATION on page 9-10.
- B. Press the Credit button to start the test.
- C. If no switches are stuck or held closed, ALL SWITCHES OPEN is displayed. If any switch is stuck or held closed, the name of the switch will be displayed.
- D. Carefully raise the Playfield to gain access to the switches.

NOTE: Before raising the Playfield, see the SERVICE HINTS on pages 8-2 and 8-4.

- E. Visually inspect the Switch Assembly. If the contacts are closed, adjust them to a 1/16" gap between the switch contacts. If ALL SWITCHES OPEN is displayed after the adjustment is made, the game is ready for play. If the name of the switch is displayed after inspection and adjustment, turn power OFF.
- F. Replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the **CAUTION** on page 9-2.

- G. Repeat Steps A, B and C. If ALL SWITCHES OPEN is displayed, the game is ready to play. If the name of the switch is displayed, contact the Bally-Midway Field Service Department.

COIL, SOLENOID & SWITCH ASSIGNMENT NUMBERS

○ H05 SWITCH ASSEMBLY IDENTIFICATION TABLE

SELF TEST #	SEQUENCE
1	PLUNGER
2	50K MOUNTAIN
3	MULTIBALL-2
4	MULTIBALL-1
5	INITIAL BUTTON BOTTOM*
6	CREDIT*
7	INITIAL BUTTON TOP*
8	OUTHOLE
9	COINS RIGHT**
10	COINS LEFT**
11	COINS MIDDLE**
12	SLINGSHOT TOP
13	STAR ROLLOVER
14	SLAM**
15	TILT*
16	ESCAPE LOW
17	TREASURE 50K-5
18	TREASURE 50K-4
19	TREASURE 50K-3
20	TREASURE 50K-2
21	TREASURE 50K-1
22	TREASURE 30K-3
23	TREASURE 30K-2
24	TREASURE 30K-1
25	THUMPER BOTTOM
26	THUMPER TOP
27	SLINGSHOT RIGHT
28	SLINGSHOT LEFT
29	DROP TARGET-3
30	DROP TARGET-2
31	DROP TARGET-1
32	RETURN RIGHT
33	RETURN LEFT
34	ARCH RETURN
35	ESCAPE HIGH
36	SAUCER HOLE
37	RIGHT OUTLANE
38	ELEVATOR RIGHT
39	ELEVATOR TOP

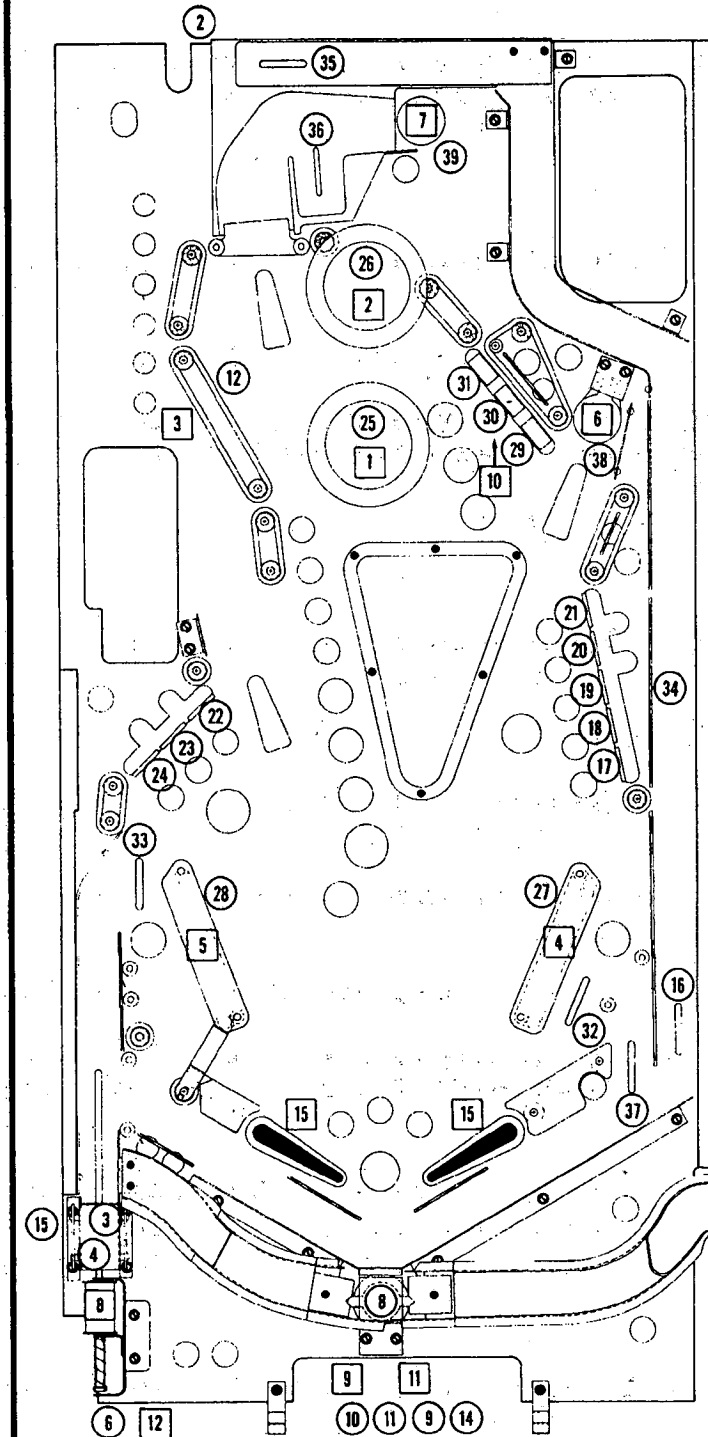
* = CABINET SWITCH
 ** = DOOR SWITCH

NOTE: 1) THE SEQUENCE NUMBERS SHOWN HERE ARE USED AS AN AID IN LOCATING FAULTY SOLENOID OR SWITCH ON FIGURE

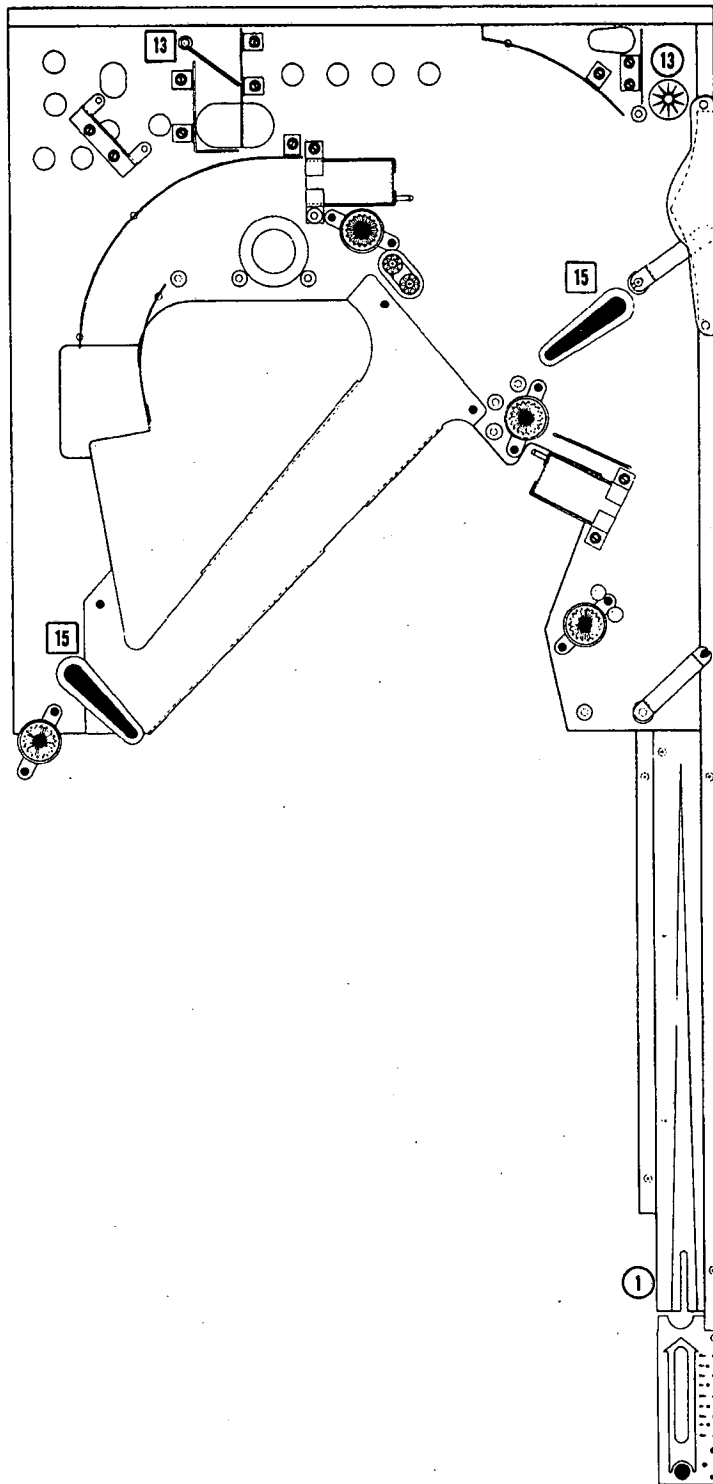
□ H05 SOLENOID IDENTIFICATION TABLE

SELF TEST #	SEQUENCE
1	BOTTOM THUMPER BUMPER
2	TOP THUMPER BUMPER
3	TOP SLINGSHOT
4	RIGHT SLINGSHOT
5	LEFT SLINGSHOT
6	RIGHT ELEVATOR
7	TOP ELEVATOR
8	MULTI-BALL RELEASE
9	LEFT OUTHOLE
10	DROP TARGET
11	RIGHT OUTHOLE
12	KNOCKER
13	ESCAPE GATE
14	GENERAL ILLUMINATION LIGHTS*
15	FLIPPERS

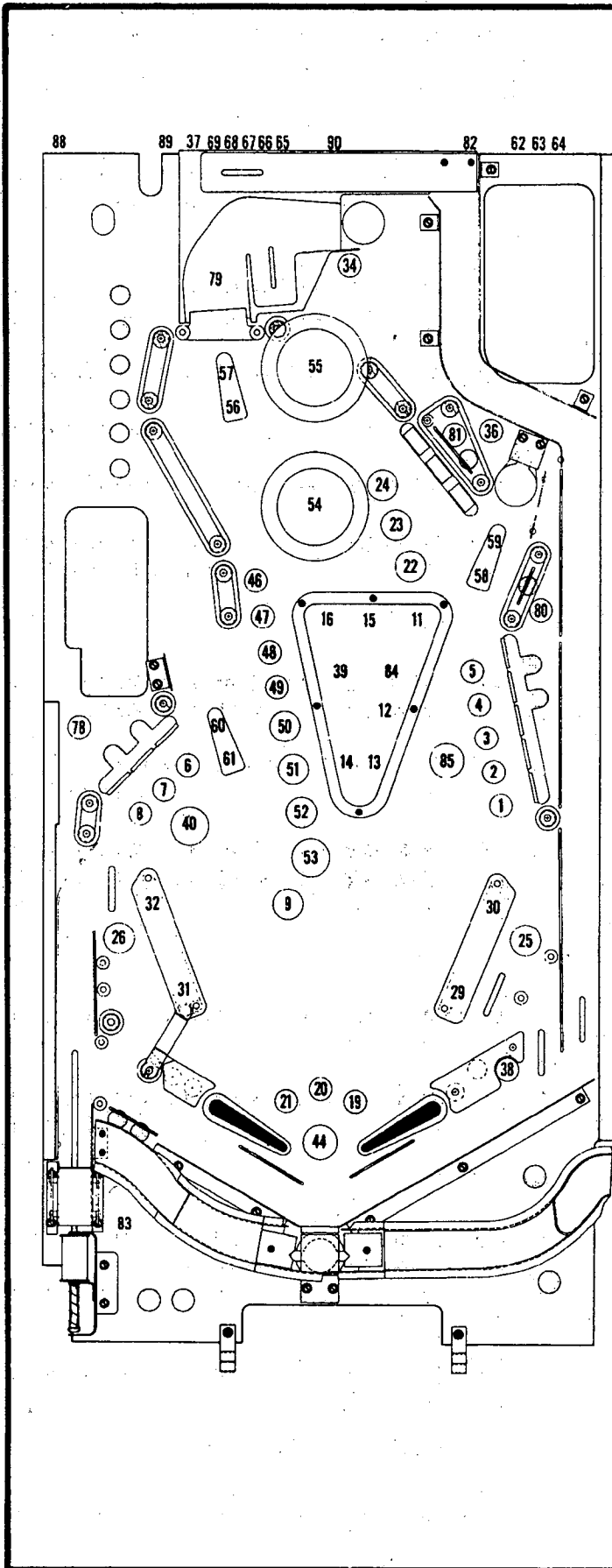
* = THE GENERAL ILLUMINATION CIRCUITRY IS CONTAINED ON THE SOLENOID BUSS CIRCUIT.



COIL, SOLENOID & SWITCH ASSIGNMENT NUMBERS, Cont'd.



FEATURE LAMP ASSIGNMENT NUMBERS

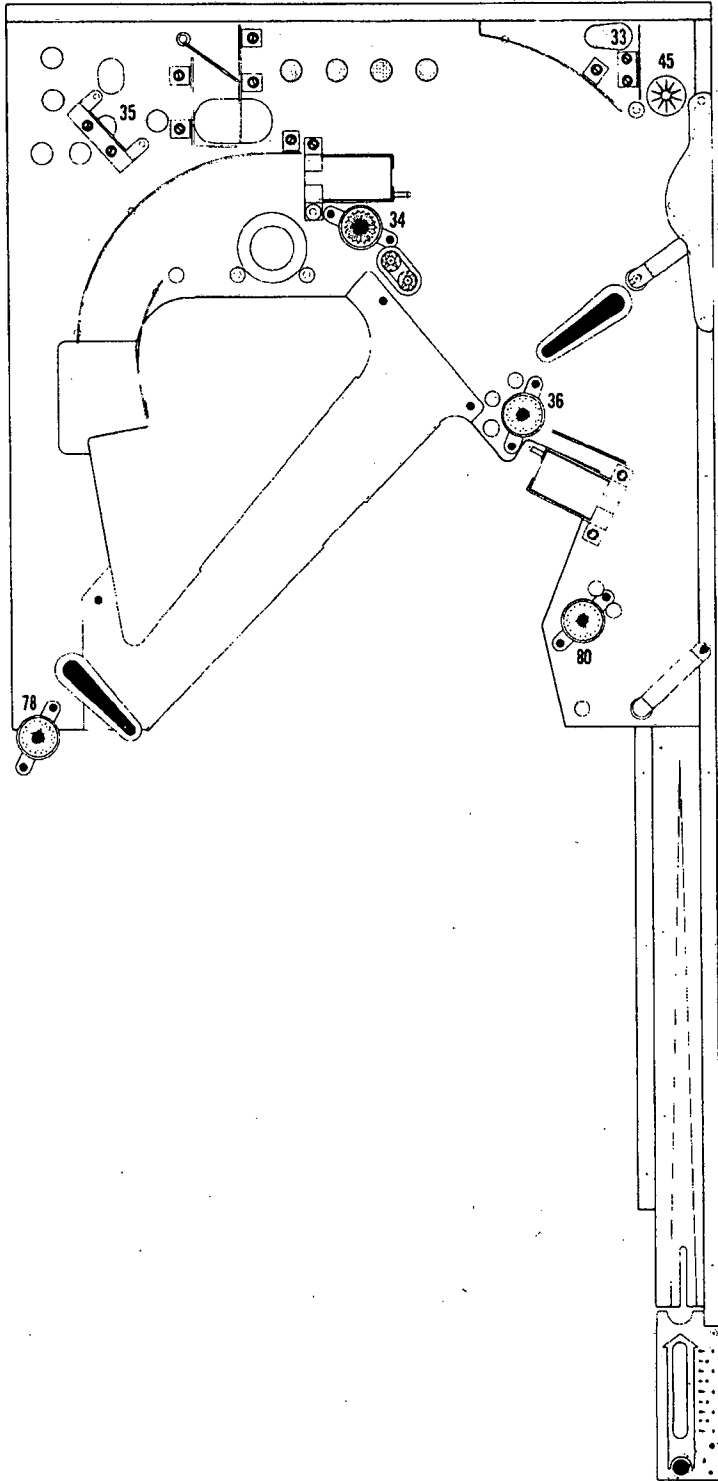


FEATURE LAMPS IDENTIFICATION TABLE

SEQUENCE	DESCRIPTION
1	TREASURE 50K-5
2	TREASURE 50K-4
3	TREASURE 50K-3
4	TREASURE 50K-2
5	TREASURE 50K-1
6	TREASURE 30K-3
7	TREASURE 30K-2
8	TREASURE 30K-1
9	BONUS HELD
10	NOT USED
11	LAVA-6
12	LAVA-5
13	LAVA-4
14	LAVA-3
15	LAVA-2
16	LAVA-1
17	NOT USED
18	NOT USED
19	RELEASE MULTIBALL MEMORY-3
20	RELEASE MULTIBALL MEMORY-2
21	RELEASE MULTIBALL MEMORY-1
22	30 TIME UNITS
23	20 TIME UNITS
24	10 TIME UNITS
25	25K RIGHT
26	25K LEFT
27	NOT USED
28	NOT USED
29	SLINGSHOT RIGHT-B
30	SLINGSHOT RIGHT-A
31	SLINGSHOT LEFT-B
32	SLINGSHOT LEFT-A
33	BRIGHT VOLCANO
34	BRIGHT ELEVATOR TOP
35	BRIGHT MOUNTAIN
36	BRIGHT ELEVATOR RIGHT
37	BRIGHT ESCAPE CAVE
38	BRIGHT RIGHT OUTLANE
39	BRIGHT LAVA LEFT
40	BRIGHT 30K
41	BRIGHT RIGHT
42	BRIGHT VOLCANO
43	NOT USED
44	SHOOT AGAIN
45	100K ROLLOVER
46	BONUS 2K
47	BONUS 4K
48	BONUS 8K
49	BONUS 16K
50	BONUS 32K

FEATURE LAMP ASSIGNMENT NUMBERS, Cont'd.

SEQUENCE	DESCRIPTION
51	BONUS 64K
52	BONUS 128K
53	BONUS 256K
54	THUMPER BOTTOM
55	THUMPER TOP
56	HOLD BONUS-B
57	HOLD BONUS-A
58	SPECIAL-B
59	SPECIAL-A
60	MYSTERY-B
61	MYSTERY-A
62	VOLCANO 3
63	VOLCANO 2
64	VOLCANO 1
65	ESCAPE DOOR 5
66	ESCAPE DOOR 4
67	ESCAPE DOOR 3
68	ESCAPE DOOR 2
69	ESCAPE DOOR 1
70	NOT USED
71	NOT USED
72	NOT USED
73	NOT USED
74	NOT USED
75	NOT USED
76	NOT USED
77	NOT USED
78	BRIGHT BRIDGE LEFT
79	BRIGHT HOLE LOW
80	BRIGHT ARCH RETURN
81	BRIGHT DROP TARGET
82	BRIGHT BACK RIGHT
83	BRIGHT MULTIBALL
84	BRIGHT LAVA RIGHT
85	BRIGHT 50K
86	BRIGHT LEFT
87	BRIGHT CENTER
88	EXTRA BALL OFFERED
89	ESCAPE LEFT
90	ESCAPE RIGHT



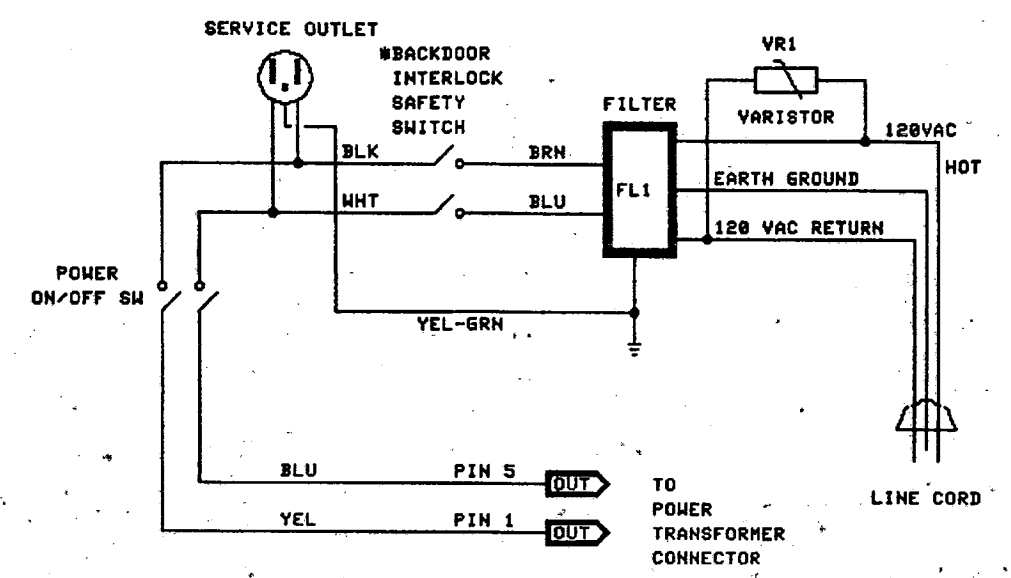
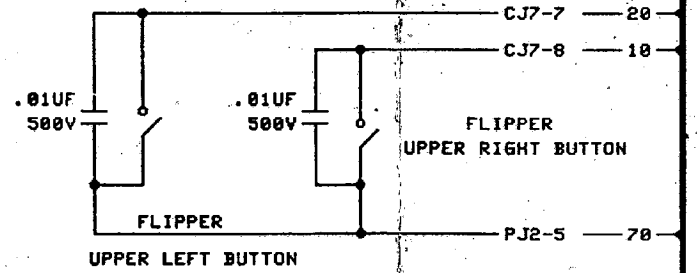
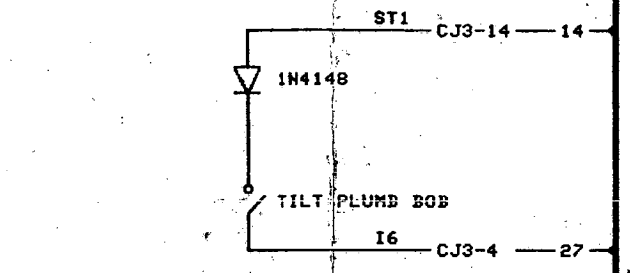
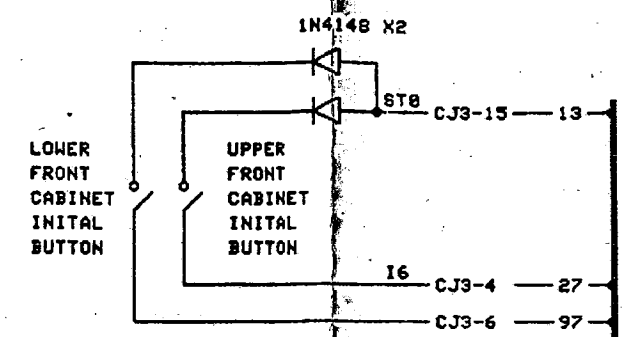
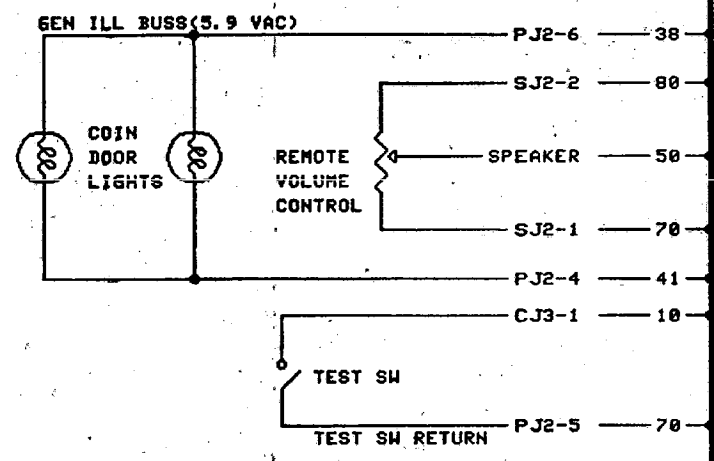
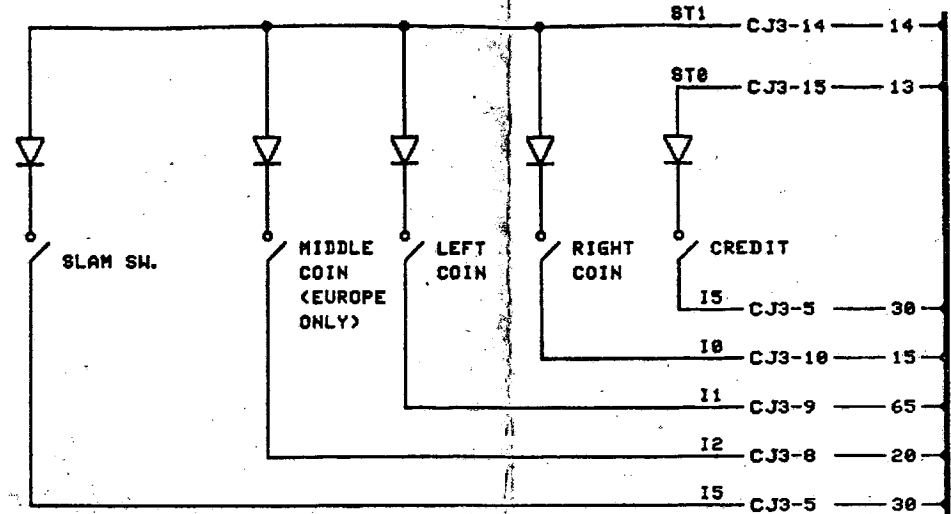
NOTE: THERE ARE 29 GENERAL ILLUMINATION LAMP LOCATIONS IDENTIFIED WITH A "SHADED CIRCLE", ON ILLUSTRATION

SECTION 10

COMPONENT LAYOUTS, SCHEMATICS & WIRING DIAGRAMS

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WIRING DIAGRAM - BACKBOX	10-6
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TWO POSITION DETECTOR P.C. BOARD - COMPONENT LAYOUT & SCHEMATIC	10-36
EPROM LIST	10-37



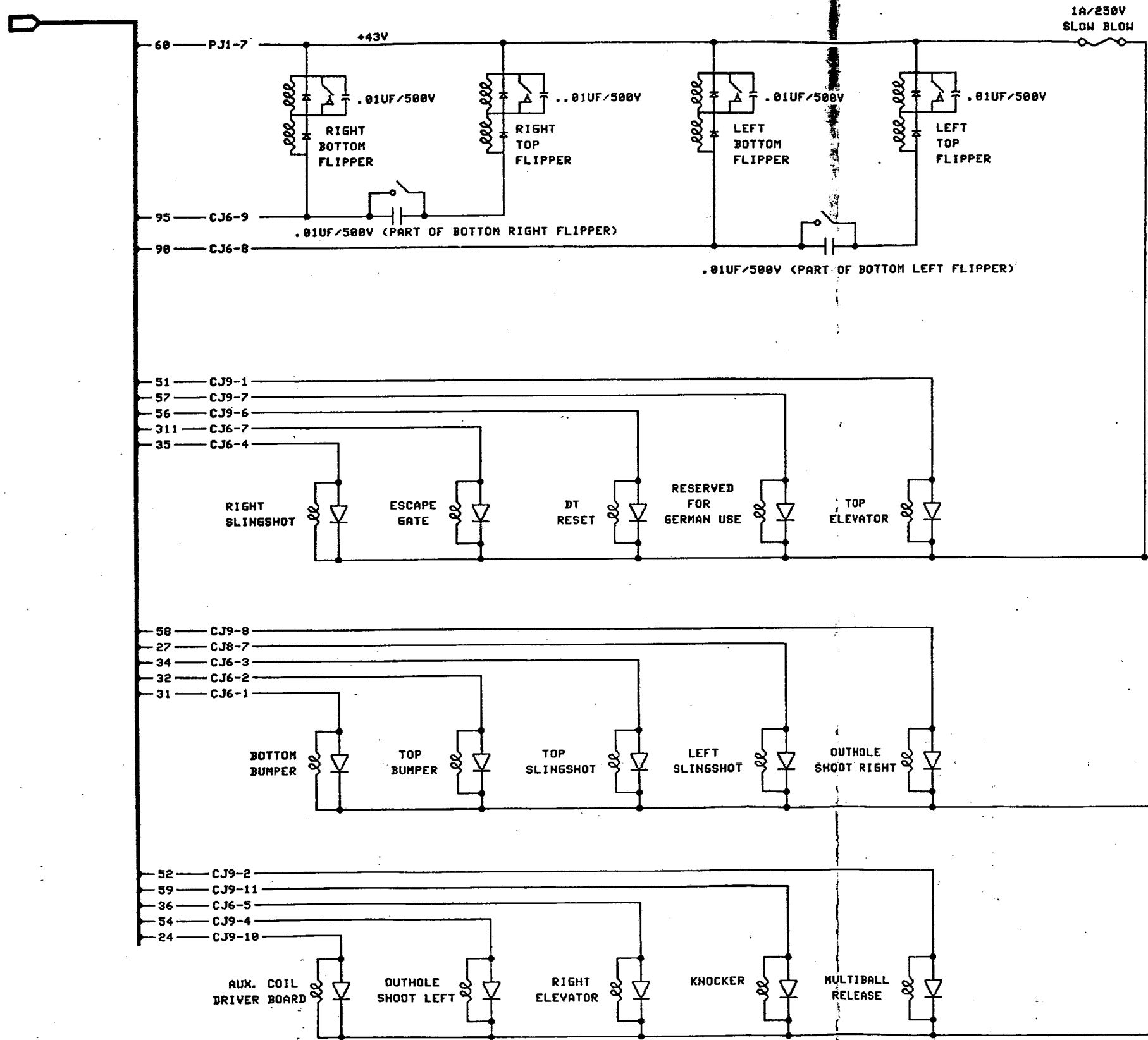
CABINET TO BACK BOX

* OPTIONAL- NOT USED IN ALL GAMES

COLOR CODE

1=RED	7=ORANGE
2=BLUE	8=BLACK
3=YELLOW	9=GRAY
4=GREEN	0=NO TRACE
5=WHITE	11=VIOLET
6=BROWN	

NOTES:	BALLY MIDWAY MFG. CO.
M KONOPA	ESCAPE FROM THE LOST WORLD
12/2/87	CABINET DIAGRAM
	M051-00H05-A003
	SHEET 1 OF 1 REV



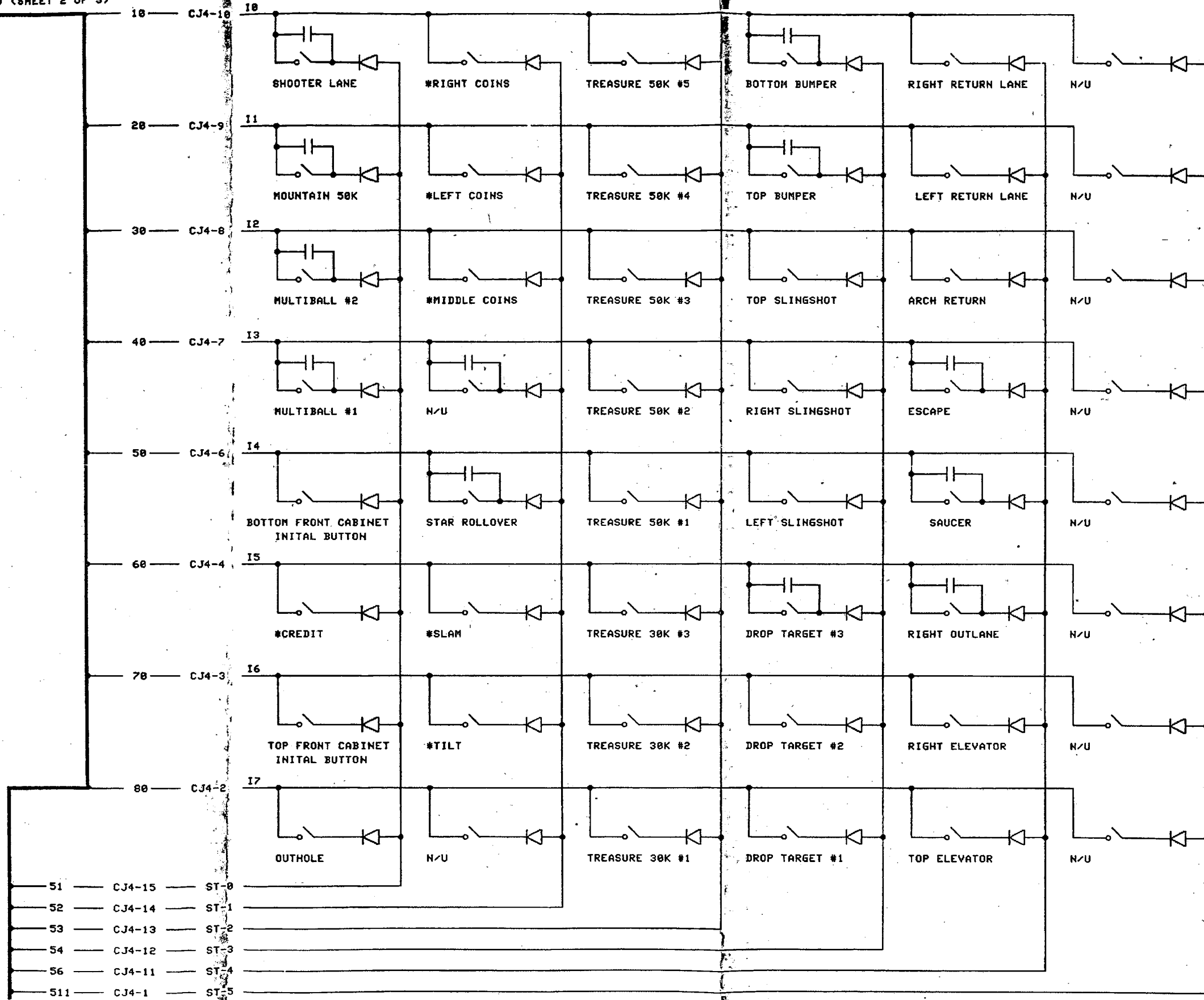
COLOR CODE

1	RED
2	BLUE
3	YELLOW
4	GREEN
5	WHITE
6	BROWN
7	ORANGE
8	BLACK
9	GRAY
0	NO COLOR
11	VIOLET

SOLENOIDS

NOTES:	BALLY MIDWAY MFG. CO.
M KONOPA	ESCAPE FROM THE LOST WORLD
12/2/87	PLAYFIELD DIAGRAM
	MOS1-00H05-A005
	SHEET 1 OF 3 REV

1E JAN 88 13143 7USER/MK/LOSTWORLD/PLAYFIELD 1.0KAM



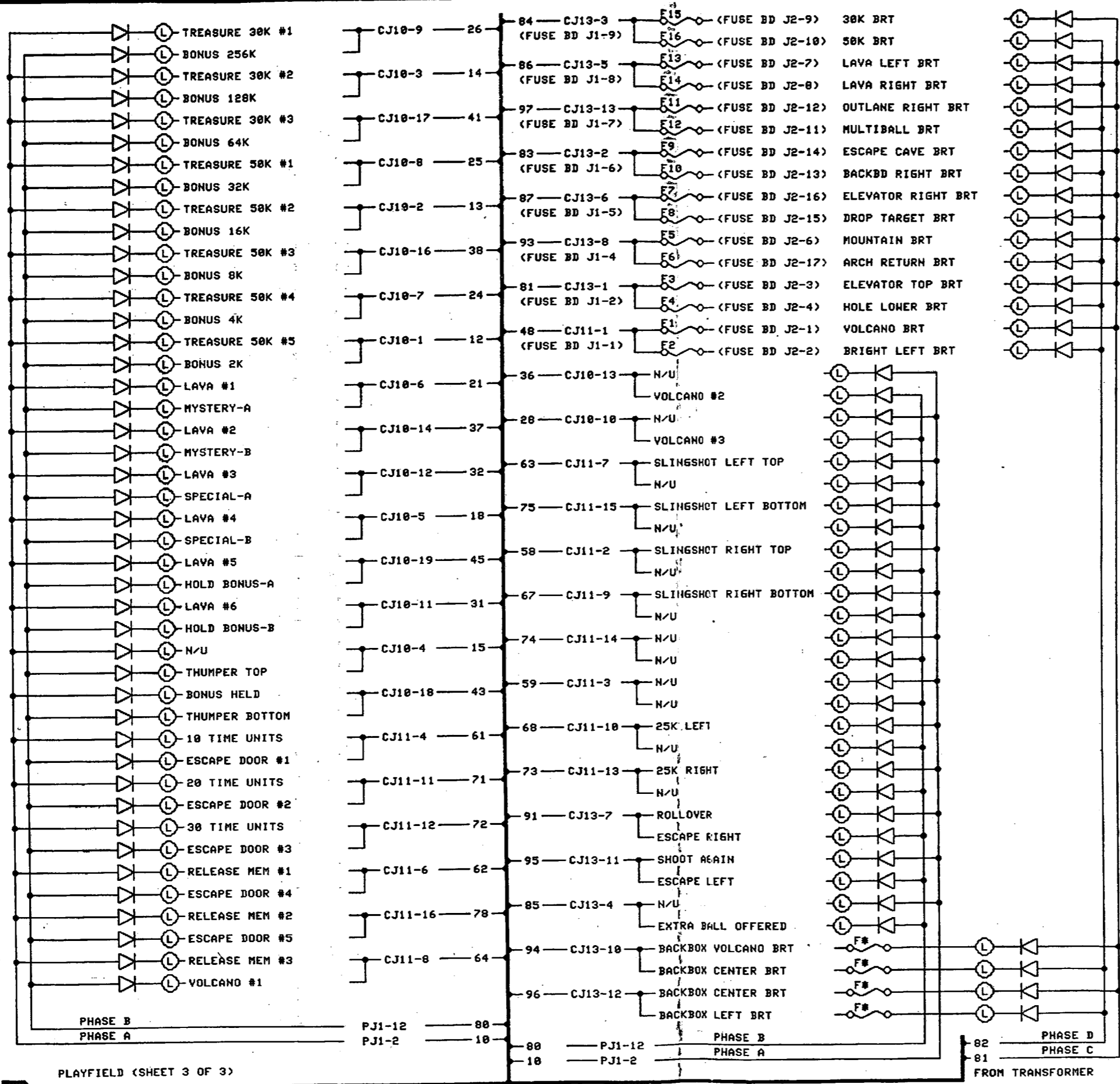
COLOR CODE	
1-RED	6-BROWN
2-BLUE	7-ORANGE
3-YELLOW	8-BLACK
4-GREEN	9-GRAY
5-WHITE	0-NO TRACE
	11-VIOLET

NOTE 1. ALL SWITCH DIODES ARE 1N4148
 NOTE 2. * INDICATES NOT USED ON PLAYFIELD. DRAWING ONLY TO SHOW RESPECTIVE CABINET SWITCH POSITION IN SWITCH MATRIX.
 NOTE 3. ALL CAPACITORS ARE .05MF, 25V

PLAYFIELD SWITCHES

NOTES:	BALLY MIDWAY MFG. CO.
M KONOPA	ESCAPE FROM THE LOST WORLD
12/2/87	PLAYFIELD DIAGRAM
	N051-00H05-A005
	SHEET 2 OF 3 REV

12 JAN 88 13:48 / USER:MK/LOSTWORLD/PLAYFIELD 2. DRAM



COLOR CODE

1 ◆ RED	6 ◆ BROWN
2 ◆ BLUE	7 ◆ ORANGE
3 ◆ YELLOW	8 ◆ BLACK
4 ◆ GREEN	9 ◆ GRAY
5 ◆ WHITE	10 ◆ NO COLOR
	11 ◆ VIOLET

NOTE: DIODES ARE 1N4004
 ALL FUSES IN FUSEBOARD ARE 3/4A MDQ, 250V AND LOCATED IN THE BACKBOX
 FUSES MARKED F# ARE LOCATED NEAR BRITE LAMPS

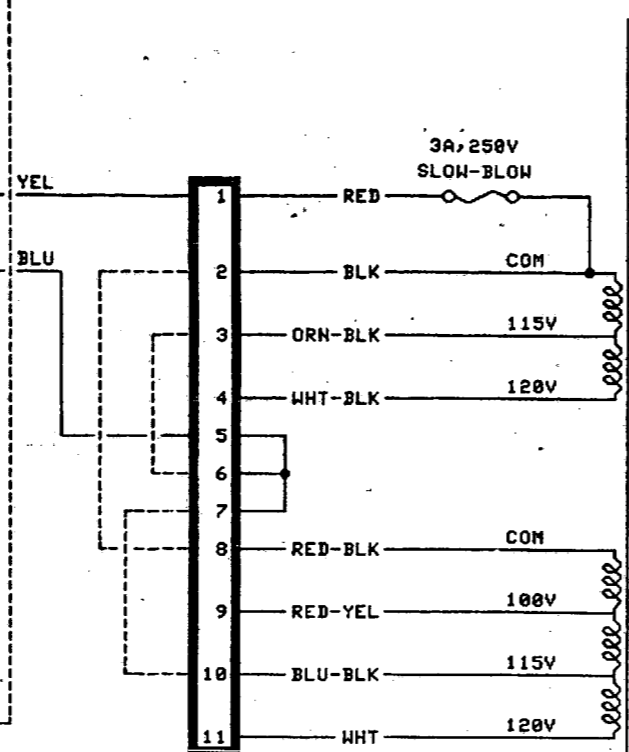
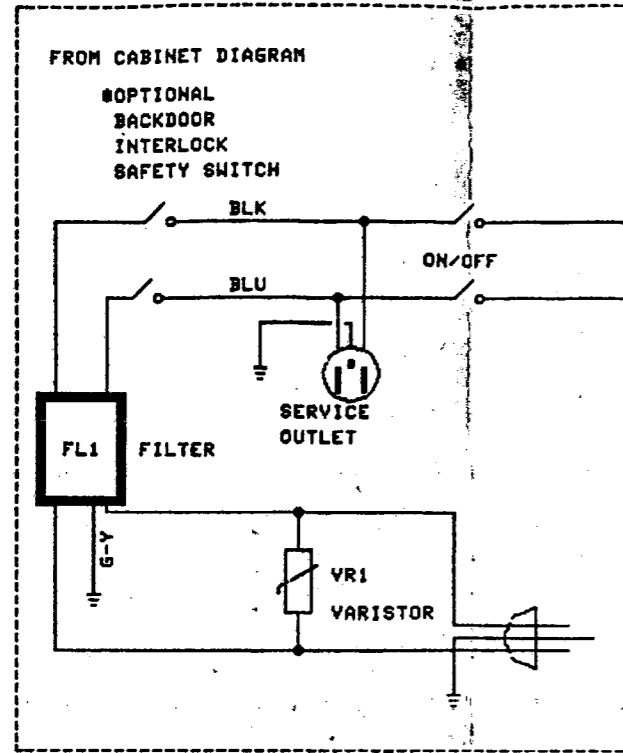
FEATURE LIGHTS AND BRIGHT LIGHTS

NOTES:	BALLY MIDWAY MFG. CO.
M KONOPA	ESCAPE FROM THE LOST WORLD
12/2/87	PLAYFIELD DIAGRAM
	M051-00H05-A005
	SHEET 3 OF 3 REV

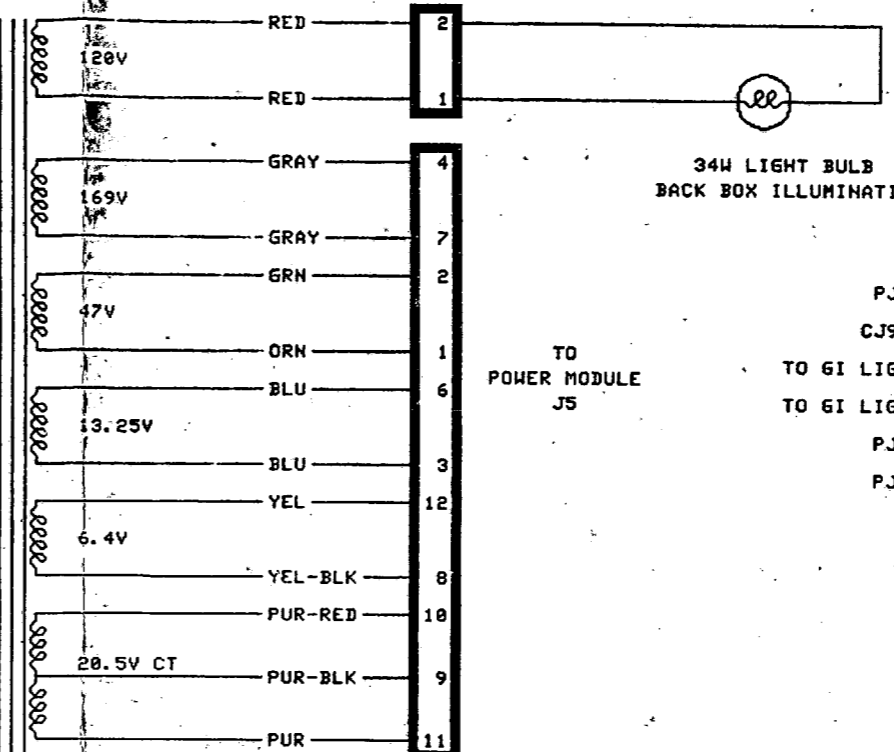
FROM PLAYFIELD (SHEET 2 OF 3)

PLAYFIELD (SHEET 3 OF 3)

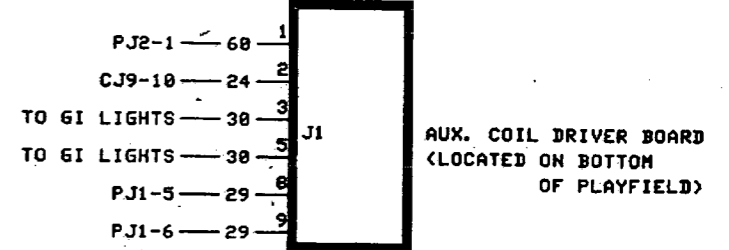
E JAN 88 13151 USER/MK/LOSTWORLD/PLAYFIELD 3.0RAN



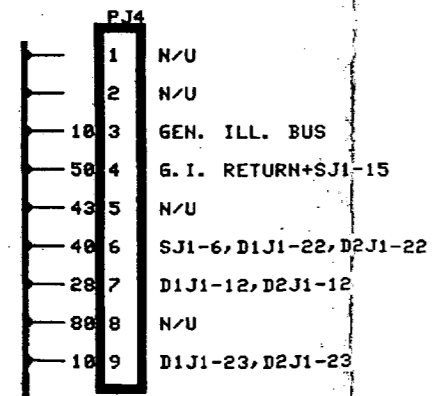
SHOWN JUMPERED FOR 115V
NOTE: SEE TABLE "A" FOR JUMPER OPTIONS.



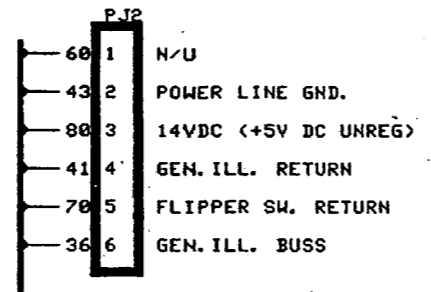
34W LIGHT BULB
BACK BOX ILLUMINATION



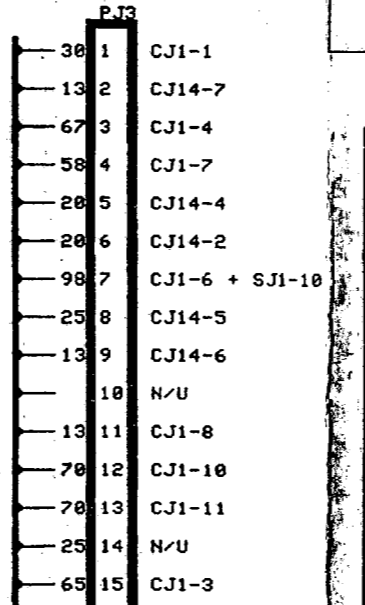
NOTE: PJ1-PJ4 ARE PART OF POWER MODULE:



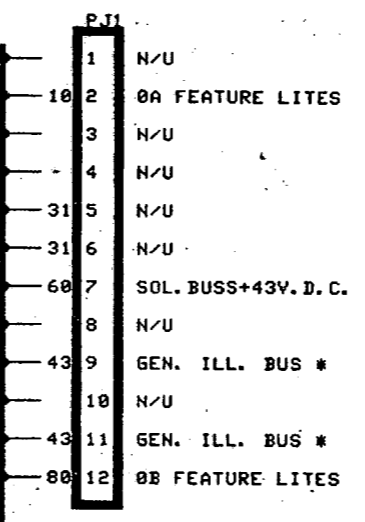
WITHIN BACKBOX
(SHEET 3 OF 3)



TO CABINET



TO CONTROLLER (IN BACKBOX)
(SHEET 2 OF 3)



TO PLAYFIELD

* = 32 GI LAMPS

PHASE C
FOR PLAYFIELD AND
BACKBOX BRIGHT LIGHTS

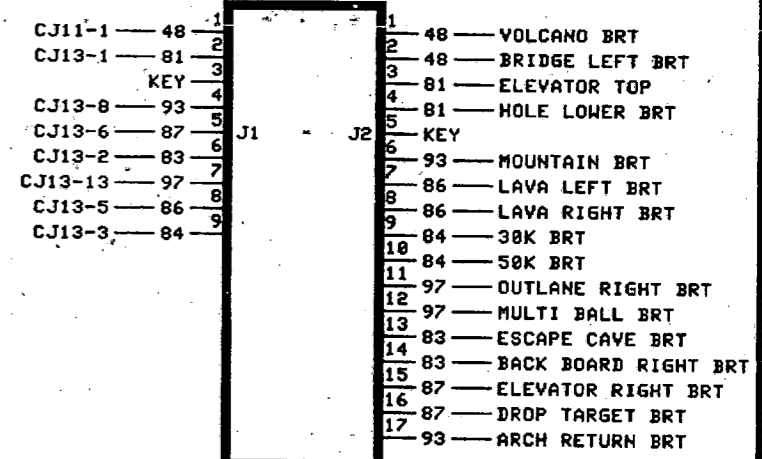
PHASE D
TO POWER MODULE (PJ6-1)
INSERT PIN INTO CONNECTOR

TABLE "A"

115VAC, 2-8, 3-6, 7-10
120VAC, 2-8, 4-6, 7-11
220VAC, 4-8, 7-9
240VAC, 4-8, 7-11

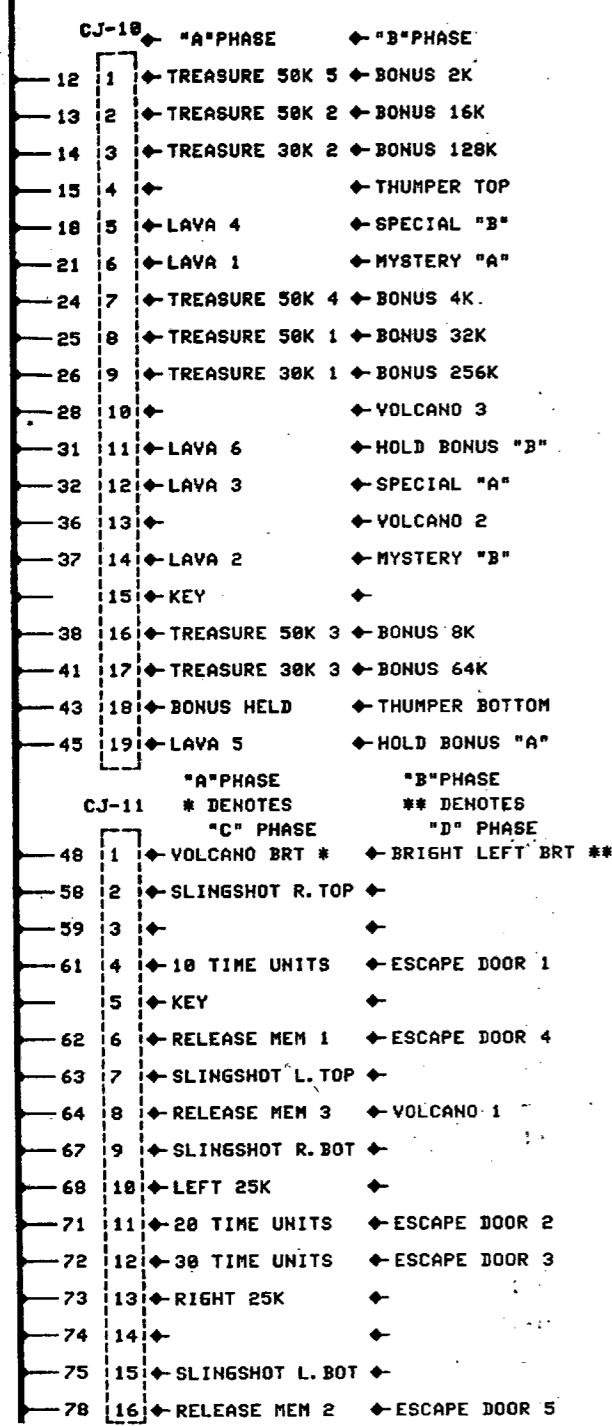
COLOR CODE

1-RED	6-BROWN
2-BLUE	7-ORANGE
3-YELLOW	8-BLACK
4-GREEN	9-GRAY
5-WHITE	0-NO TRACE
	11-VIOLET



POWER DISTRIBUTION

NOTES:	BALLY MIDWAY MFG. CO.
M KONOPA	ESCAPE FROM THE LOST WORLD BACKBOX
12/2/87	M051-00H05-A006
	SHEET 1 OF 3 REV

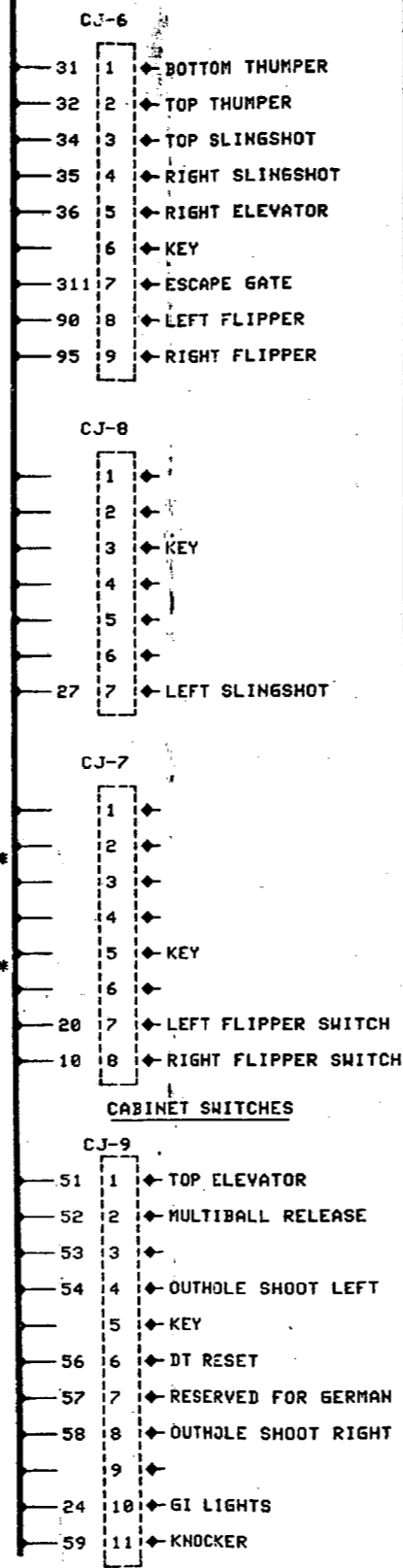
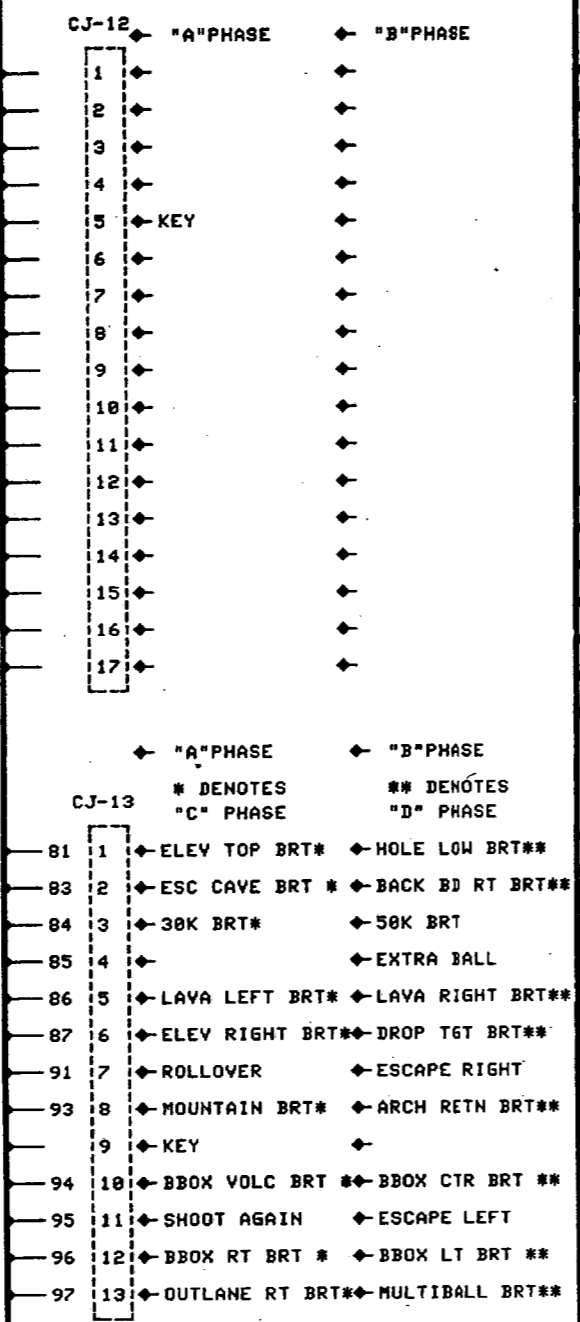


PLAYFIELD & BACKBOX LAMP OUTPUTS

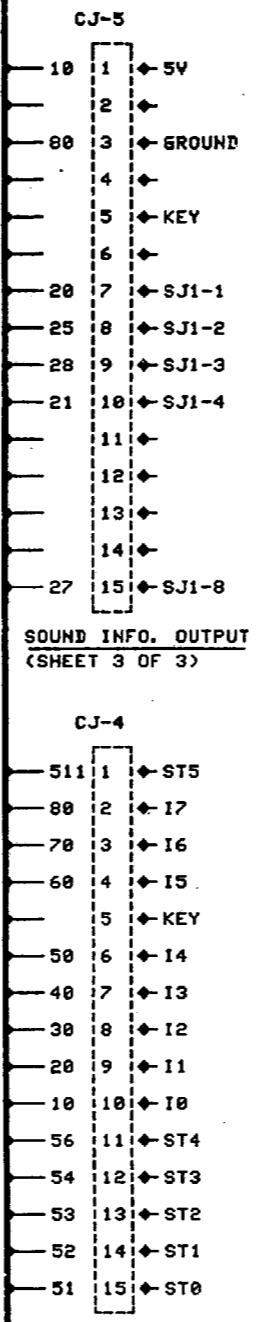
COLOR CODE

1-RED	6-BROWN
2-BLUE	7-ORANGE
3-YELLOW	8-BLACK
4-GREEN	9-GRAY
5-WHITE	0-NO TRACE
	11-VIOLET

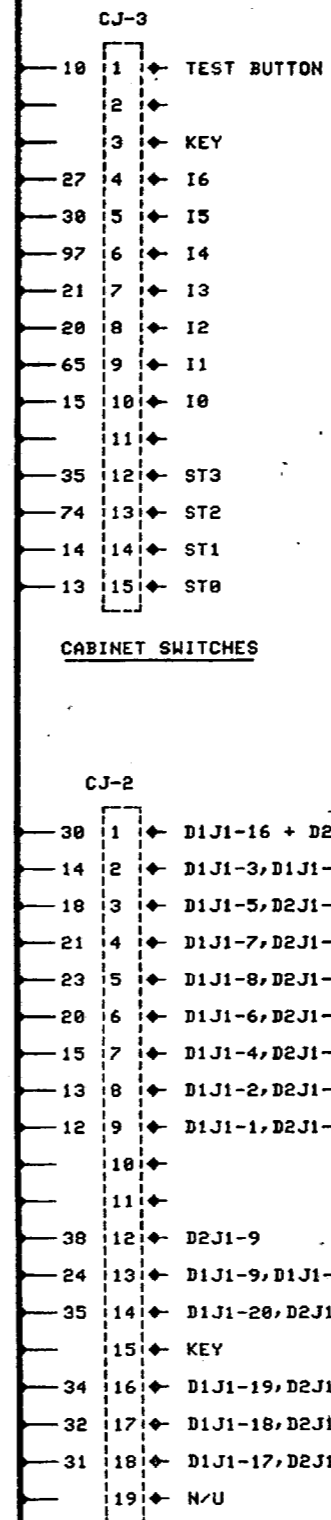
NOTES
CJ-12 NOT USED
BRIGHT LIGHTS TYPE 912 BULBS (C&D PHASE)
OTHER LIGHTS TYPE 555 BULBS (A&B PHASE)
CJ1 THROUGH CJ14 LOCATED ON CONTROLLER BOARD



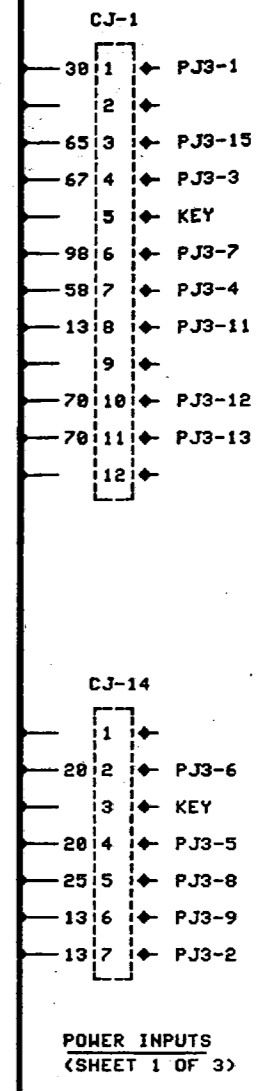
SOLENOID OUTPUTS TO PLAYFIELD



PLAYFIELD SWITCHES
(TO PLAYFIELD)
(SHEET 2 OF 3)



DIGITAL DISPLAY OUTPUTS
(SHEET 3 OF 3)



POWER INPUTS
(SHEET 1 OF 3)

BACKBOX CABLE DISTRIBUTION

NOTES:		BALLY MIDWAY MFG. CO.	
M: KONDPA		ESCAPE FROM THE LOST WORLD BACKBOX	
12/2/87		M051-00H05-A006	
		SHEET 2 OF 3 REV	

12 JAN 88 10:13 70SER7MK/LUSTHORLD/BACKBOX E-DRAW

DIGITAL DISPLAY MODULES-D1 & D2

PLYR 1&2

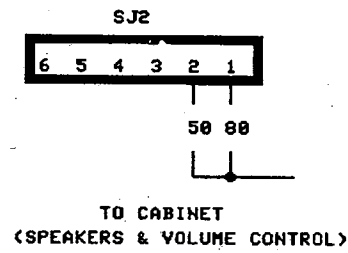
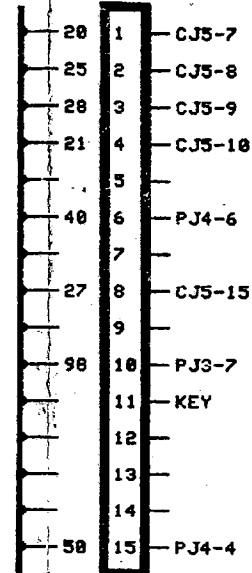
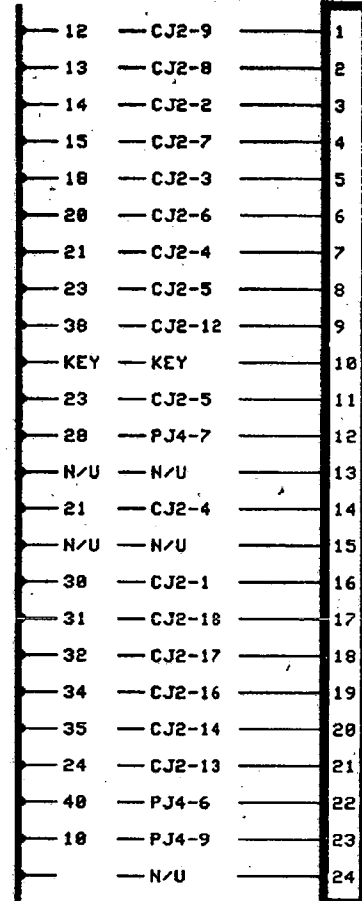
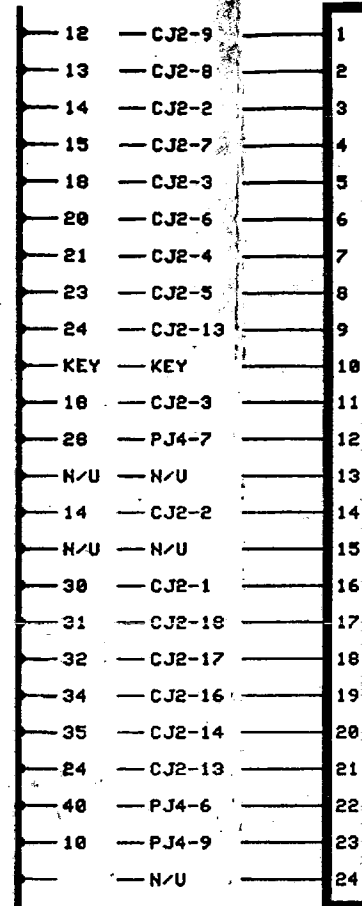
PLYR 3&4

SOUND MODULE

D1J1

D2J1

SJ1



BACKBOX (SHEET 3 OF 3)

TO BACKBOX (PAGE 2 OF 3)

DISPLAY MODULES & SOUND MODULE

COLOR CODE	
1 - RED	6 - BROWN
2 - BLUE	7 - ORANGE
3 - YELLOW	8 - BLACK
4 - GREEN	9 - GRAY
5 - WHITE	0 - NO TRACE
	11 - VIOLET

NOTES:	BALLY MIDWAY MFG. CO.
M KONOPA	ESCAPE FROM THE
12/2/87	LOST WORLD
	BACKBOX
	M051-00N05-A006
	SHEET 3 OF 3 REV

6803 PINBALL POWER MODULE
 A084-91785-0000
 M051-00C53-0001

DESIGNATION LIST

DESIGNATION

DESCRIPTION

C1	11,000uf 20V ELEC.
P/O C1	TY-WRAP
P/O C1	SOLDER LUG
P/O C1	WIRE 20AWG
C2	160uf 350V ELEC.
P/O C2	TY-WRAP
C3	2uf 25V ELEC.
C4, C5	.1uf 25V CER.
C6, C7	.01uf 500V CER.
R1	600 OHM 10W
R2	100K 1W 5%
R3	2.2 OHM 1/4W 5%
R4	100 OHM 1/2W 5%
R5	22K 1/2W 5%
R6	100K 1/4W 5%
R7	390 OHM 1/4W 5%
R8	1.2K 1/4W 5%
R9	82K 1/2W 5%
R10	8.2K 1/4W 5%
VR1	0 - 25K 1/4W POT.
D1 - D4	MR751
D5 - D9	IN4004
D10	IN5275A ZENER
BR1	KBPC-35-02-W
P/O BR1	BRIDGE SPACER
O1	2N3584
P/O Q1	SHIELD
P/O Q1	HEX SPACER
P/O Q1	6-32 X 5 SCREW
P/O Q1	6-32 X 12 SCREW
P/O Q1	LOCKWASHER EXT.
P/O Q1	LOCKWASHER INT.
P/O Q1	FLAT WASHER
P/O Q1	6-32 HEX NUT
P/O Q1	LABEL - CAUTION HIGH VOLT.
P/O Q1	HEATSINK 2
P/O Q1	INSULATOR TO-66
Q2, Q3	2N3440
P/O Q2, Q3	INSULATOR TO-5
P/O Q3	HEATSINK 3
U1	78H05C REG.
P/O U1	6-32 X 12 SCREW
P/O U1	6-32 HEX NUT
P/O U1	LOCKWASHER EXT.
P/O U1	FLAT WASHER
P/O U1	HEATSINK 1
P/O U1	INSULATOR TO-3
VA1	VARISTOR

DESIGNATION

DESCRIPTION

JW1 - JW16	ZERO OHM RES. JUMPER
TP1 - TP10	TEST POINTS
F1*	5 AMP 3AG FUSE
F2	3/4 AMP 3AG FUSE
F3	6 AMP 3AG FUSE
F4, F5	8 AMP 3AG FUSE
F6, F7	15 AMP 3AG FUSE
F8	3/16 AMP 8AG FUSE
FC1A - FC3B, FC8A	FUSE CLIPS
FC8B	
FC4A - FC7B	FUSE CLIPS
J1	12 PIN M-N-L CONN. FEMALE
J2	6 PIN M-N-L CONN. MALE
J3	15 PIN M-N-L CONN. MALE
J4	9 PIN M-N-L CONN. MALE
J5	12 PIN M-N-L CONN. MALE
J6	2 PIN M-N-L CONN. MALE
6803 POWER MODULE	P.C. BOARD

4-23-86 REV. 1.0 FIXED R2, R6

* TWO FLIPPER GAMES ONLY - SEE SCHEMATIC

6803 PINBALL POWER MODULE
A084-91785-D000
M051-00C53-D001

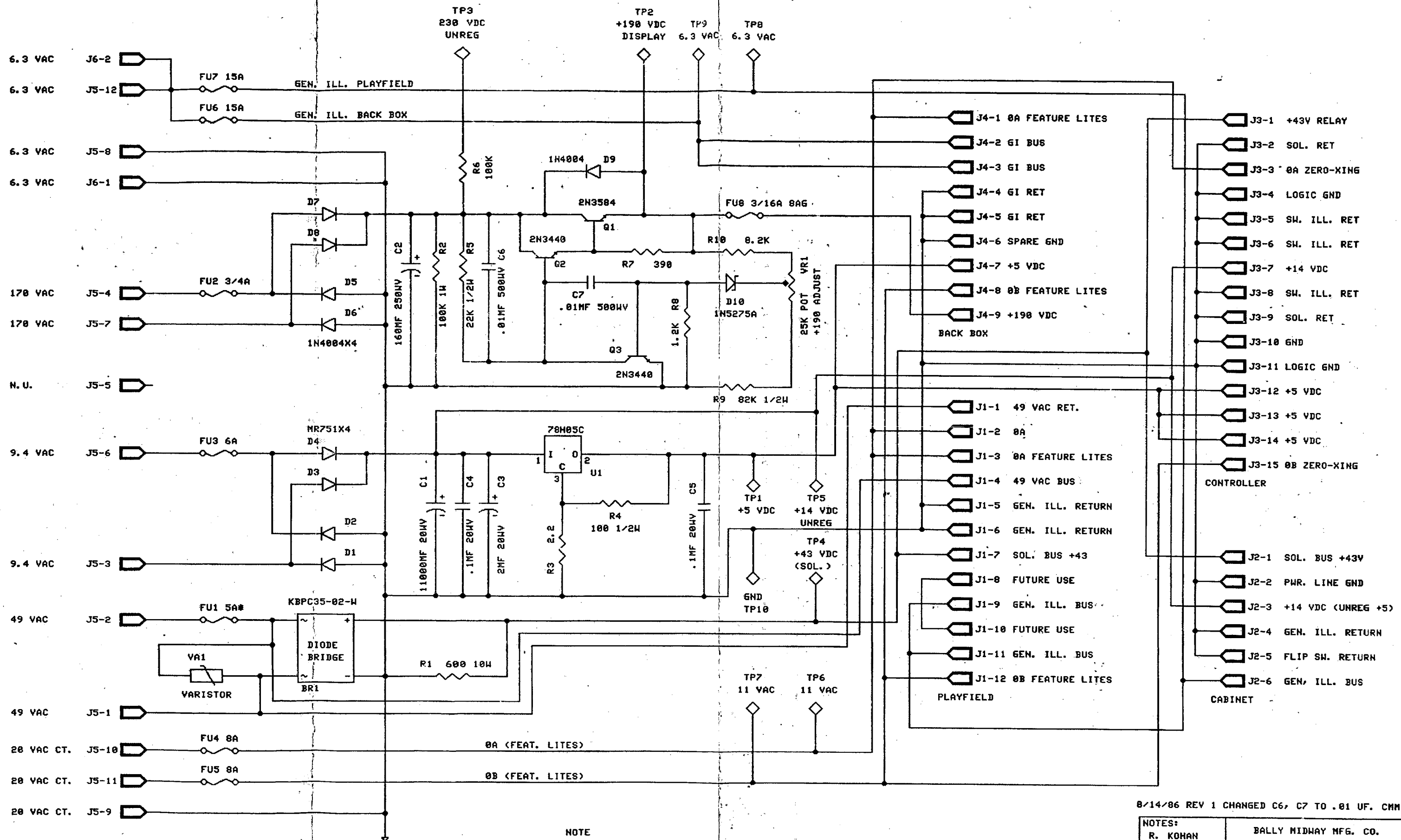
CROSS REFERENCE LIST

<u>DESCRIPTION</u>	<u>QTY.</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
.01UF 500V CER.	2	C6,C7	0360-00800-0013
.1UF 25V CER.	2	C4,C5	0360-00800-0026
2UF 25V ELEC.	1	C3	0360-00800-0019
160UF 350V ELEC.	1	C2	0360-00800-0020
11,000UF 20V ELEC.	1	C1	0360-00800-0024
2.2 OHM 1/4W 5%	1	R3	100E-00005-0003
100 OHM 1/2W 5%	1	R4	100E-00006-0021
390 OHM 1/4W 5%	1	R7	100E-00005-0049
600 OHM 10W 10%	1	R1	100E-00002-0049
1.2K 1/4W 5%	1	R8	100E-00005-0063
8.2K 1/4W 5%	1	R10	100E-00005-0086
22K 1/2W 5%	1	R5	100E-00006-0065
82K 1/2W 5%	1	R9	100E-00006-0072
100K 1/4W 5%	1	R6	100E-00005-0115
100K 1W 5%	1	R2	100E-00007-0037
0-25K 1/4W POT	1	VR1	0360-00804-0004
MR 751	4	D1-D4	103E-00003-0016
1N4004	5	D5-D9	103E-00003-0005
1N5275	1	D10	103E-00001-0027
KBPC-35-02-W	1	BR1	103E-00005-0005
2N3440	2	Q2,Q3	104E-00003-0002
2N3584	1	Q1	104E-00005-0002
78H05C REG	1	U1	0360-00803-0021
VARIATOR METAL OXIDE 60V	1	VA1	115E-00001-0002
TY-WRAP	4	P/O C1,C2	0017-00042-0048
ZERO OHM RES. JUMPER	16	JW1-JW16	117E-00001-0001
TEST POINTS	10	TP1-TP10	0017-00007-0131
SOLDER LUG	2	P/O C1	0017-00021-0257
JUMPER WIRE 20AWG	2	P/O C1	0017-00033-0448
INSULATOR T0-3	1	P/O U1	0017-00042-0119
INSULATOR T0-5	2	P/O Q2,Q3	0017-00042-0151
INSULATOR T0-66	1	P/O Q1	0017-00042-0158
HEX SPACER	2	P/O Q1	0017-00042-0248
SHIELD	1	P/O Q1	0365-00952-0000
HEATSINK 1	1	P/O U1	112E-00001-0003
HEATSINK 2	1	P/O Q1	112E-00001-0002
HEATSINK 3	1	P/O Q3	112E-00001-0004
BRIDGE SPACER	1	P/O BR1	118E-00001-0001
6-32 X 12 SCREW	4	P/O Q1,U1	0017-00101-0132
6-32 X 5 SCREW	2	P/O Q1	0017-00101-0555
6-32 HEX NUT	4	P/O Q1,U1	0017-00103-0005
LOCKWASHER INT.	4	P/O Q1,	0017-00104-0008
LOCKWASHER EXT.	4	P/O Q1,U1	0017-00104-0009
FLAT WASHER	4	P/O Q1,U1	0017-00104-0106
FUSE CLIP	8	FC1A-FC3B, FC8A,FC8B	0017-00071-0033
FUSE CLIP	8	FC4A-FC7A	0017-00071-0034
3/16 AMP 8AG FUSE	1	F8	0017-00003-0206
3/4 AMP 3AG FUSE	1	F2	0017-00003-0010
5 AMP 3AG FUSE	1	F1*	0017-00003-0175
6 AMP 3AG FUSE	1	F3	0017-00003-0008

CROSS REFERENCE LIST

<u>DESCRIPTION</u>	<u>QTY.</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
8 AMP 3AG FUSE	2	F4,F5	0017-00003-0387
15 AMP 3AG FUSE	2	F6,F7	0017-00003-0011
12 PIN M-N-L CONN. FEMALE	1	J1	0017-00021-0532
6 PIN M-N-L CONN. MALE	1	J2	0017-00021-0424
15 PIN M-N-L CONN. MALE	1	J3	0017-00021-0434
9 PIN M-N-L CONN. MALE	1	J4	0017-00021-0425
12 PIN M-N-L CONN. MALE	1	J5	0017-00021-0426
2 PIN M-N-L CONN. MALE	1	J6	0017-00021-0488
6803 POWER MODULE P.C.B.	1		A080-91785-D000

* TWO FLIPPER GAMES ONLY - SEE SCHEMATIC



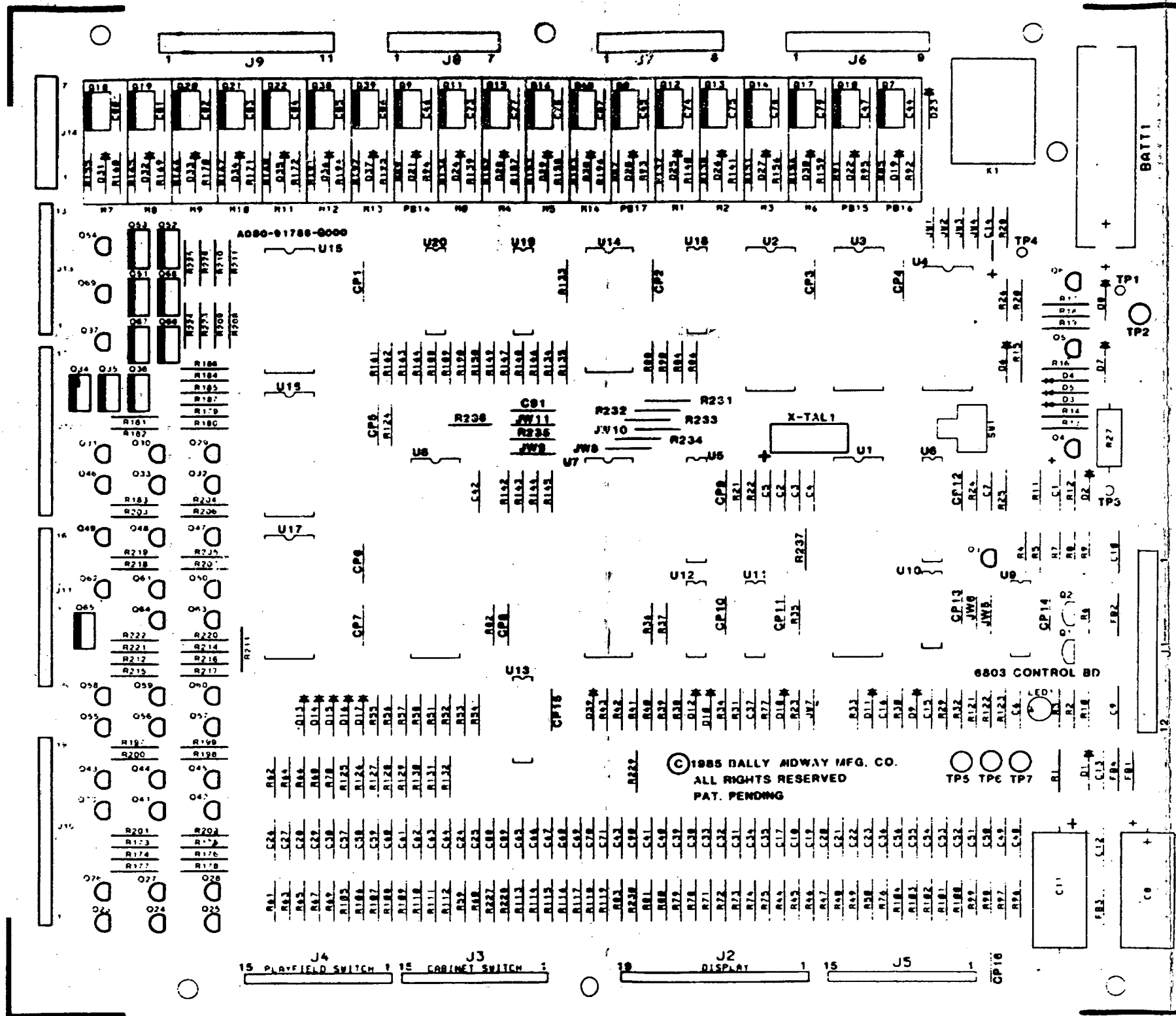
NOTE

* WHEN 3FLIPPERS ARE USED FU1 SHOULD BE 6AMP
 WHEN 4FLIPPERS ARE USED FU1 SHOULD BE 7AMP

8/14/86 REV 1 CHANGED C6, C7 TO .01 UF. CMM

NOTES:	BALLY MIDWAY MFG. CO.
R. KOHAN	
1PER	6803 PINBALL PWR MODULE
03/11/86	SCHEMATIC DRAWING
	A084-91785-D000
	M051-00C53-D002
	SHEET 1 OF 1
	REV

86 09132 USER/DRAW/POWER 1. DRAM



THIS DWG IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG. CO.

DIM. TOLERANCES UNLESS OTHERWISE SPEC. CONCENTRICITY T.I.R. .002 FRACTIONAL ± .1/64 DECIMAL ± .005 HOLE DIA. +.002-.000 ANGLE ± 1/2° DO NOT SCALE DWG.	FIRST USED ON	DATE		SCALE	MIDWAY MFG. CO. FRANKLIN PK., ILL. 60131 A BALLY CO.	REVISIONS PART NO. M0-5-1-0-0-C-5-3-G-0-0-3
	DRN	CL	04/08/86			
	MECH CHK	MAT L				
	ELEC CHK	FINISH				

6803 CONTROL BOARD
A084-91786-G000
M051-00C53-G003

CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
27pf 50V CER.	2	C2, C3	0360-00800-0052
47pf 50V CER.	1	C7	0360-00800-0027
390pf 50V CER.	25	C24-C30, C57-C71 C88-C90	0360-00800-0001
470pf 1KV CER.	27	C17-C23, C31-C36, C38-C41, C48-C56, C91	0307-00800-0008
.002uf 1KV CER.	19	C44-C47, C73-C87	0360-00800-0012
.003uf 1KV CER.	1	C43	0360-00800-0025
.01uf 50V CER.	24	C6, C9, C10, C12, C13 C15, C16, C42, CP1-CP16	0365-00800-0014
.05uf 16V CER.	1	C37	0360-00800-0006
.1uf 50V CER.	1	C4	0360-00800-0058
4.7uf 25V TANT	2	C5, C14	0360-00800-0008
6.8uf 25V TANT	1	C1	0360-00800-0048
470uf 16V ELEC	1	C8	0360-00800-0022
470uf 25V ELEC	1	C11	0360-00800-0024
82 OHM 1/4W 5%	1	R9	100E-00005-0031
100 OHM 1/4W 5%	1	R8	100E-00005-0033
110 OHM 1/4W 5%	1	R83	100E-00005-0034
120 OHM 1/4W 5%	21	R24, R85, R87, R89, R91, R121, R136-R138, R151-R155, R165-R168, R191-R193	100E-00005-0035
270 OHM 1/4W 5%	1	R28	100E-00005-0044
330 OHM 1/4W 5%	23	R92-R95, R139-R141, R156-R160, R169-R172, R194-R196, R231-R234	100E-00005-0047
470 OHM 1/4W 5%	9	R96-R104	100E-00005-0051
560 OHM 1/4W 5%	1	R1	100E-00005-0054
680 OHM 1/4W 5%	1	R25	100E-00005-0056
750 OHM 1/4W 5%	1	R19	100E-00005-0057
910 OHM 1/4W 5%	1	R18	100E-00005-0059
1K 1/4W 5%	3	R3, R29, R32	100E-00005-0061
1.2K 1/4W 5%	60	R44-R50, R59-R61, R63, R65, R67, R69, R71-R76, R78-R82, R105-R119, R122 R133-R135, R146-R150, R161-R164, R188-R190, R227, R228, R230, R236	100E-00005-0063
1.5K 1/4W 5%	1	R20	100E-00005-0065
2K 1/4W 5%	46	R123, R173-R187 R197-R226	100E-00005-0068
2.7K 1/4W 5%	2	R2, R6	100E-00005-0071
3K 1/4W 5%	1	R17	100E-00005-0073
3.3K 1/4W 5%	18	R21-R23, R35, R51-R58, R124, R142-R145, R235	100E-00005-0074
3.9K 1/4W 5%	4	R84, R86, R88, R90	100E-00005-0077
4.7K 1/4W 5%	8	R36-R43	100E-00005-0079
5.6 1/4W 5%	1	R16	100E-00005-0082

CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
7.5 1/4W 5%	1	R5	100E-00005-0085
9.1 1/4W 5%	1	R4	100E-00005-0087
10K 1/4W 5%	4	R12, R13, R30, R33	100E-00005-0088
15K 1/4W 5%	2	R31, R34	100E-00005-0092
39K 1/4W 5%	1	R7	100E-00005-0102
47K 1/4W 5%	2	R10, R11	100E-00005-0104
56K 1/4W 5%	14	R62, R64, R66, R68 R70, R125-R132, R229	100E-00005-0106
62K 1/4W 5%	1	R15	100E-00005-0107
82K 1/4W 5%	1	R14	100E-00005-0112
100K 1/4W 5%	2	R26, R237	100E-00005-0115
270K 1/4W 5%	1	R77	100E-00005-0126
82 OHM 1W 10%	1	R27	100E-00007-0014
1N958B ZENER	1	D1	103E-00001-0002
1N4004	20	D19-D38	103E-00003-0005
1N4148	13	D3, D6, D9-D18, D39	103E-00002-0005
1N4606	5	D2, D4, D5, D7, D8	103E-00002-0006
2N3904	3	Q2, Q4, Q6	104E-00001-0006
2N4403	2	Q3, Q5	104E-00002-0006
2N5060	35	Q23-Q33, Q37, Q41-Q50, Q54-Q64, Q69, Q70	104E-00015-0001
2N5305	1	Q1	104E-00007-0003
MCR106-1	10	Q34-Q36, Q51-Q53 Q65-Q68	0360-00802-0009
SE9302	19	Q7-Q22, Q38-Q40	0360-00802-0008
4011	1	U11	0360-00803-0010
4502	1	U13	0360-00803-0005
4514B	3	U15-U17	0360-00803-0013
4584	1	U12	0066-090RX-XXDX
6116 RAM	1	U4	0365-00803-0013
6803 MPU	1	U1	0360-00803-0048
6821 PIA	2	U7, U8	0360-00803-0017
74LS04	1	U10	0A15-00803-0010
74LS10	1	U9	0A89-00803-0007
75LS154	1	U14	0360-00803-0024
74HCT245	1	U5	0365-00803-0014
74LS373	1	U6	0A89-00803-0006
CA3081	3	U18-U20	0360-00803-0007
3.580 MHz CRYSTAL	1	XTAL-1	109E-00001-0003
LED GREEN	1	LED 1	0017-00007-0131
TEST POINTS	7	TP1-TP7	0017-00007-0131
SWITCH P.B.	1	SW1	0017-00032-0038
BATTERY 3.6V	1	BATT-1	0017-00003-0172
ZERO OHM RES. JUMPER	5	JW2, JW4, JW6, JW8, JW10	117E-00001-0001
RELAY 48VDC	1	K1	114E-00001-0011
40 PIN I.C. SOCKET	3	XU1, XU7, XU8	110E-00001-0011
28 PIN I.C. SOCKET	2	XU2, XU3	110E-00001-0010
24 PIN I.C. SOCKET	1	XU4	110E-00001-0007
FERRITE BEAD	4	FB1-FR4	0316-00804-0002

DESIGNATION LIST

6803 CONTROL BOARD
A084-91786-G000
M051-00C53-G003

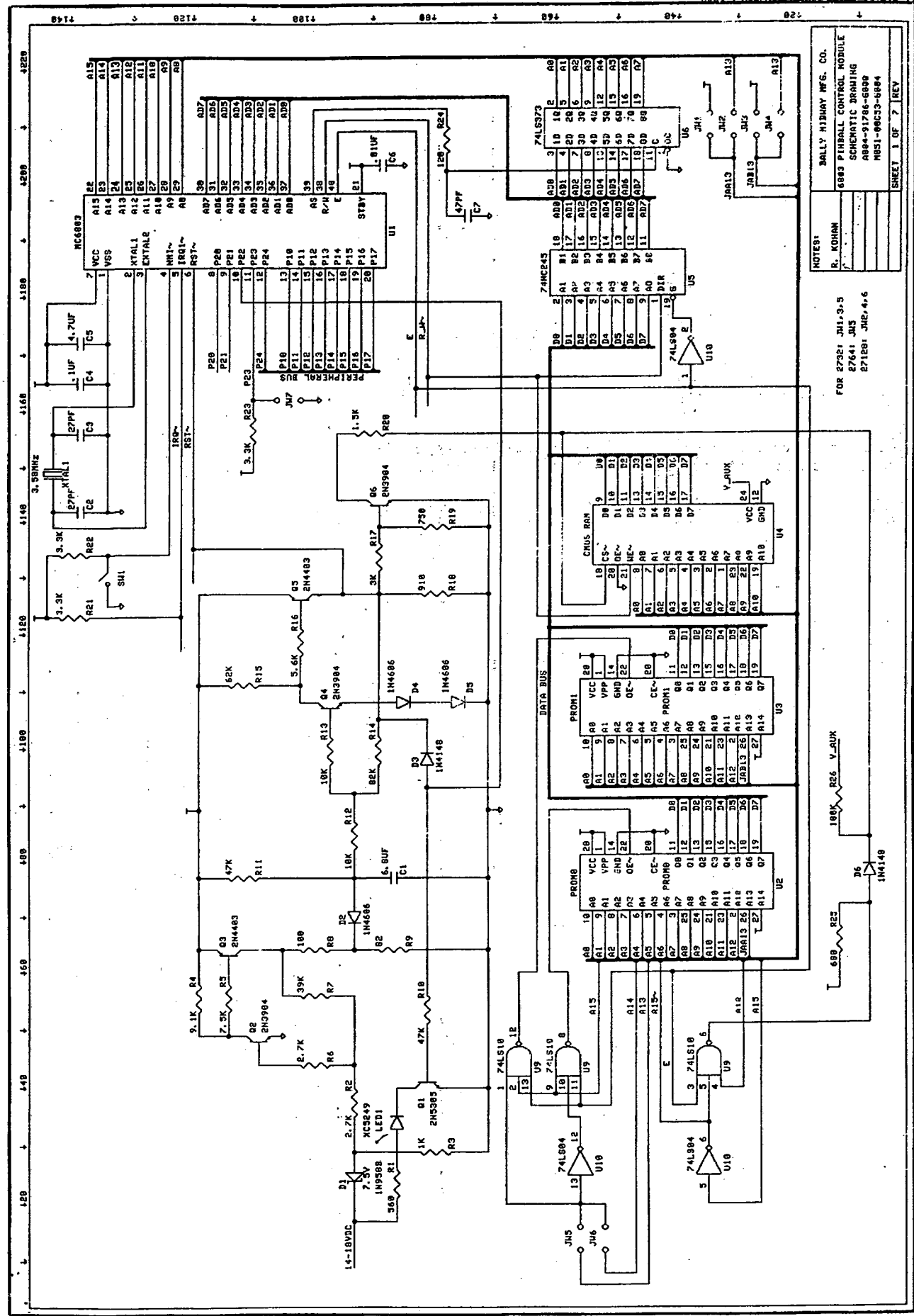
<u>DESIGNATION</u>	<u>DESCRIPTION</u>	<u>DESIGNATION</u>	<u>DESCRIPTION</u>	<u>DESIGNATION</u>	<u>DESCRIPTION</u>	<u>DESIGNATION</u>	<u>DESCRIPTION</u>
C1	6.8UF 25V TANT.	R28	270 OHM 1/4W 5%	R165 - R168	120 OHM 1/4W 5%	U15 - U17	4514B
C2,C3	27PF 50V CER.	R29	1K 1/4W 5%	R169 - R172	330 OHM 1/4W 5%	U18 - U20	CA3081
C4	.1UF 50V CER.	R30	10K 1/4W 5%	R173 - R187	2K 1/4W 5%	XTAL-1	3.580 MHZ CRYSTAL
C5	4.7UF 25V TANT.	R31	15K 1/4W 5%	R188 - R190	1.2K 1/4W 5%	LED 1	LED GREEN
C6	.01UF 50V CER.	R32	1K 1/4W 5%	R191 - R193	120 OHM 1/4W 5%	TP1 - TP7	TEST POINTS
C7	47PF 50V CER.	R33	10K 1/4W 5%	R194 - R196	330 OHM 1/4W 5%	SW1	SWITCH P.B.
C8	470UF 16V ELEC.	R34	15K 1/4W 5%	R197 - R226	2K 1/4W 5%	BATT-1	BATTERY 3.6V
C9,C10	.01UF 50V CER.	R35	3.3K 1/4W 5%	R227,R228	1.2K 1/4W 5%	JW2	ZERO OHM RES. JUMPER
C11	470UF 25V ELEC.	R36 - R43	4.7K 1/4W 5%	R229	56K 1/4W 5%	JW4	ZERO OHM RES. JUMPER
C12,C13	.01UF 50V CER.	R44 - R50	1.2K 1/4W 5%	R230	1.2K 1/4W 5%	JW6	ZERO OHM RES. JUMPER
C14	4.7UF 25V TANT.	R51 - R58	3.3K 1/4W 5%	R231 - R234	330 OHM 1/4W 5%	JW8	ZERO OHM RES. JUMPER
C15,C16	.01UF 50V CER.	R59 - R61	1.2K 1/4W 5%	R235	3.3K 1/4W 5%	JW10	ZERO OHM RES. JUMPER
C17 - C23	470PF 1KV CER.	R62	56K 1/4W 5%	R236	1.2K 1/4W 5%	K1	RELAY 48V DC
C24 - C30	390PF 50V CER.	R63	1.2K 1/4W 5%	R237	100K OHM 1/4W 5%	XU1,XU7,XU8	40 PIN IC SOCKET
C31 - C36	470PF 1KV CER.	R64	56K 1/4W 5%	D1	1N958B	XU2, XU3	28 PIN IC SOCKET
C37	.05UF 16V CER.	R65	1.2K 1/4W 5%	D2	1N4606	XU4	24 PIN IC SOCKET
C38 - C41	470PF 1KV CER.	R66	56K 1/4W 5%	D3	1N4148	FB1 - FB4	FERRITE BEAD
C42	.01UF 50V CER.	R67	1.2K 1/4W 5%	D4,D5	1N4606	J1	11 - .045 SO. PINS
C43	.003UF 1KV CER.	R68	56K 1/4W 5%	D6	1N4148	J2	18 - .025 SO. PINS
C44 - C47	.002UF 1KV CER.	R69	1.2K 1/4W 5%	D7,D8	1N4606	J3	14 - .025 SO. PINS
C48 - C56	470PF 1KV CER.	R70	56K 1/4W 5%	D9 - D18	1N4148	J4	14 - .025 SO. PINS
C57 - C71	390PF 50V CER.	R71 - R76	1.2K 1/4W 5%	D19 - D38	1N4004	J5	14 - .025 SO. PINS
C73 - C87	.002 1KV CER.	R77	270K 1/4W 5%	D39	1N4148	J6	8 - .045 SO. PINS
C88 - C90	390PF 50V CER.	R78 - R82	1.2K 1/4W 5%	Q1	2N5305	J7	7 - .045 SO. PINS
C91	470PF 1KV CER.	R83	110 OHM 1/4W 5%	Q2	2N3904	J8	6 - .045 SO. PINS
CP1 - CP16	.01 50V CER.	R84	3.9K 1/4W 5%	Q3	2N4403	J9	10 - .045 SO. PINS
R1	560 OHM 1/4W 5%	R85	120 OHM 1/4W 5%	Q4	2N3904	J10	18 - .025 SO. PINS
R2	2.7K 1/4W 5%	R86	3.9K 1/4W 5%	Q5	2N4403	J11	17 - .025 SO. PINS
R3	1K 1/4W 5%	R87	120 OHM 1/4W 5%	Q6	2N3904	J12	16 - .025 SO. PINS
R4	9.1K 1/4W 5%	R88	3.9K 1/4W 5%	Q7 - Q22	SE9302	J13	12 - .025 SO. PINS
R5	7.5K 1/4W 5%	R89	120 OHM 1/4W 5%	Q23 - Q33	2N5060	J14	5 - .045 SO. PINS
R6	2.7K 1/4W 5%	R90	3.9K 1/4W 5%	Q34 - Q36	MCR 106-1	P/O BATT-1	TY-WRAP
R7	39K 1/4W 5%	R91	120 OHM 1/4W 5%	Q37	2N5060	6803 CONTROL BD.	P.C. BOARD
R8	100 OHM 1/4W 5%	R92 - R95	330 OHM 1/4W 5%	Q38 - Q40	SE9302		
R9	82 OHM 1/4W 5%	R96 - R104	470 OHM 1/4W 5%	Q41 - Q50	2N5060		
R10,R11	47K 1/4W 5%	R105 - R119	1.2K 1/4W 5%	Q51 - Q53	MCR 106-1		
R12,R13	10K 1/4W 5%	R121	120 OHM 1/4W 5%	Q54 - Q64	2N5060		
R14	82K 1/4W 5%	R122	1.2K 1/4W 5%	Q65 - Q68	MCR 106-1		
R15	62K 1/4W 5%	R123	2K 1/4W 5%	Q69,Q70	2N5060		
R16	5.6K 1/4W 5%	R124	3.3K 1/4W 5%	U1	6803		
R17	3K 1/4W 5%	R125 - R132	56K 1/4W 5%	U4	6116 RAM		
R18	910 OHM 1/4W 5%	R133 - R135	1.2K 1/4W 5%	U5	74HCT245		
R19	750 OHM 1/4W 5%	R136 - R138	120 OHM 1/4W 5%	U6	74LS373		
R20	1.5K 1/4W 5%	R139 - R141	330 OHM 1/4W 5%	U7,U8	6821		
R21 - R23	3.3K 1/4W 5%	R142 - R145	3.3K 1/4W 5%	U9	74LS10		
R24	120 OHM 1/4W 5%	R146 - R150	1.2K 1/4W 5%	U10	74LS04		
R25	680 OHM 1/4W 5%	R151 - R155	120 OHM 1/4W 5%	U11	4011		
R26	100K 1/4W 5%	R156 - R160	330 OHM 1/4W 5%	U12	4584		
R27	82 OHM 1W 10%	R161 - R164	1.2K OHM 1/4W 5%	U13	4502		
				U14	74LS154		

6803 CONTROL BOARD
A084-91786-G000
M051-000C53-G003

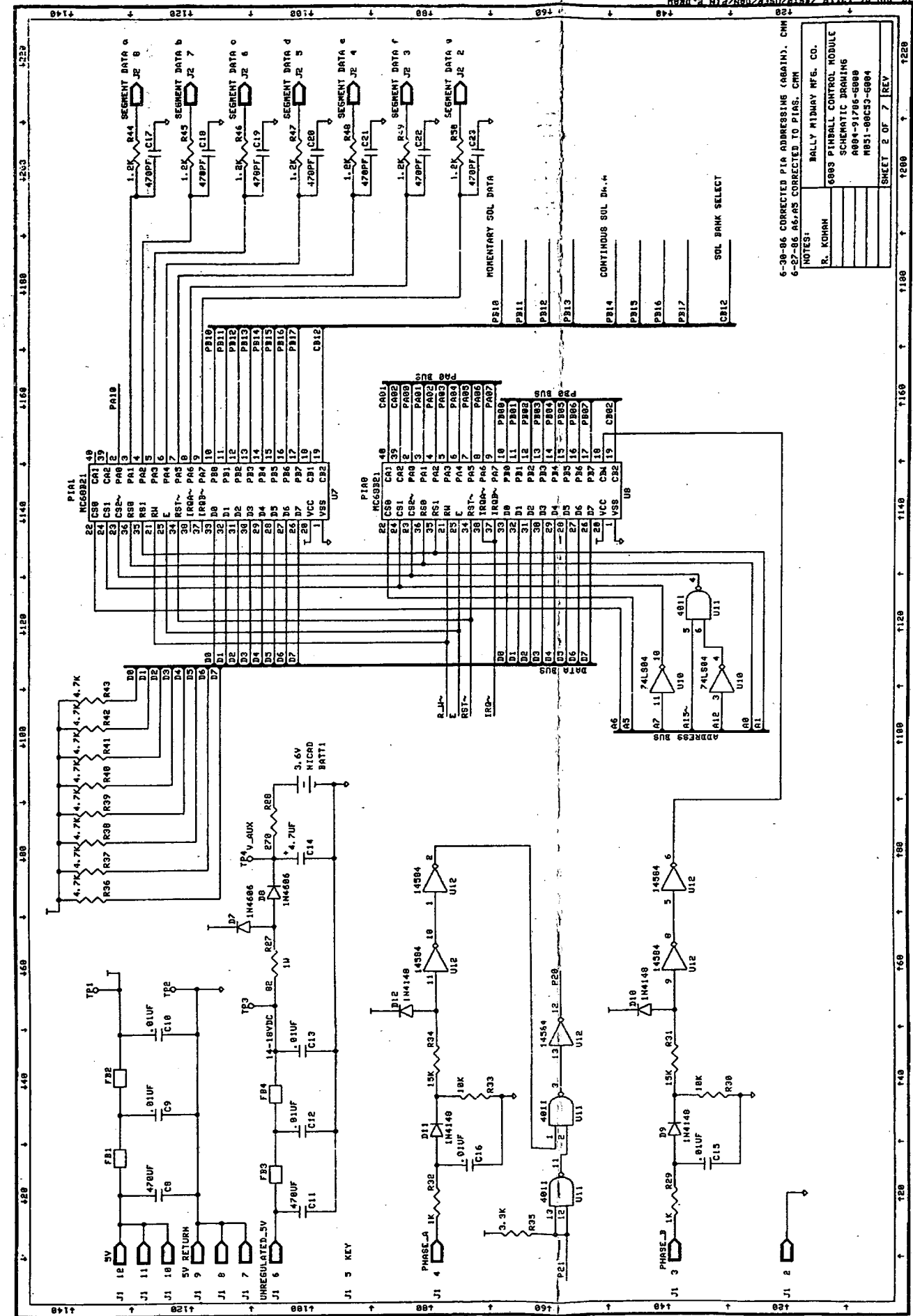
CROSS REFERENCE LIST

<u>DESCRIPTION</u>	<u>QTY.</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
.025 SQ. PINS	123	J2, J3, J4, J5, J10, J11, J12, J13	0304-00804-0009
.045 SQ. PINS	47	J1, J6, J7, J8, J9, J14	0304-00804-0010
TY-WRAP	1	P/O BATT-1	0017-00042-0622
P.C. BOARD	1	6803 CONTROL BOARD	A080-91786-G000

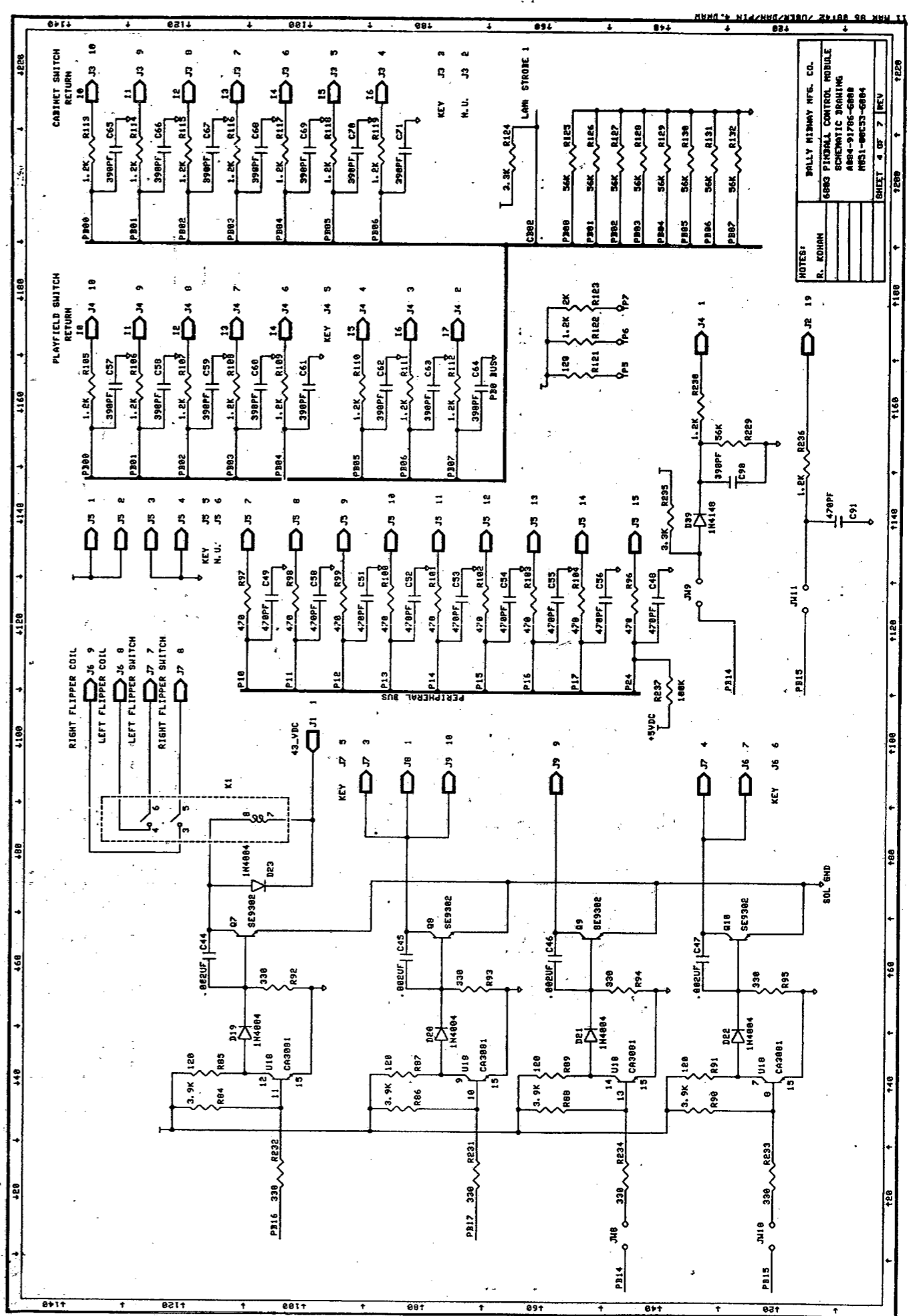
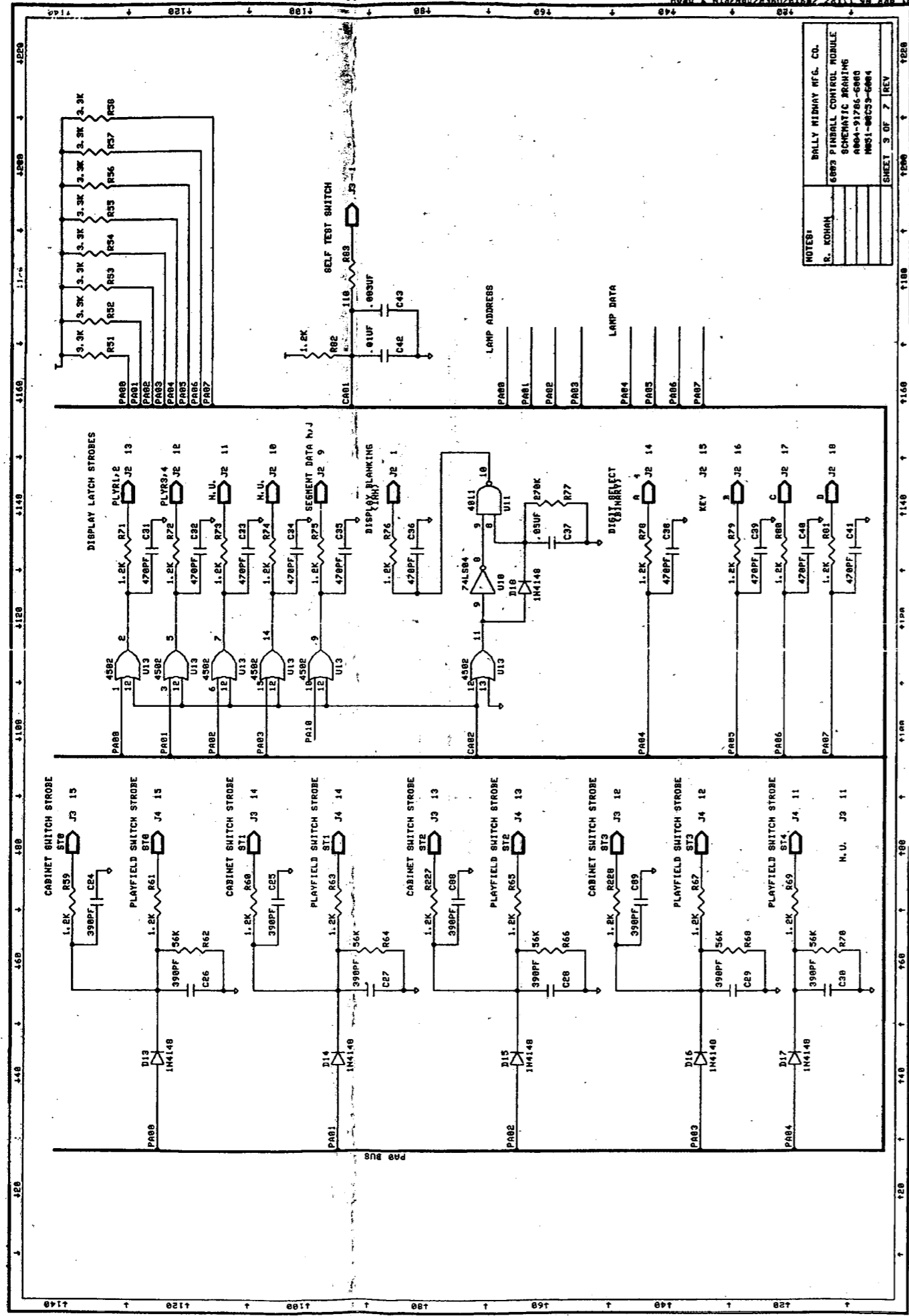
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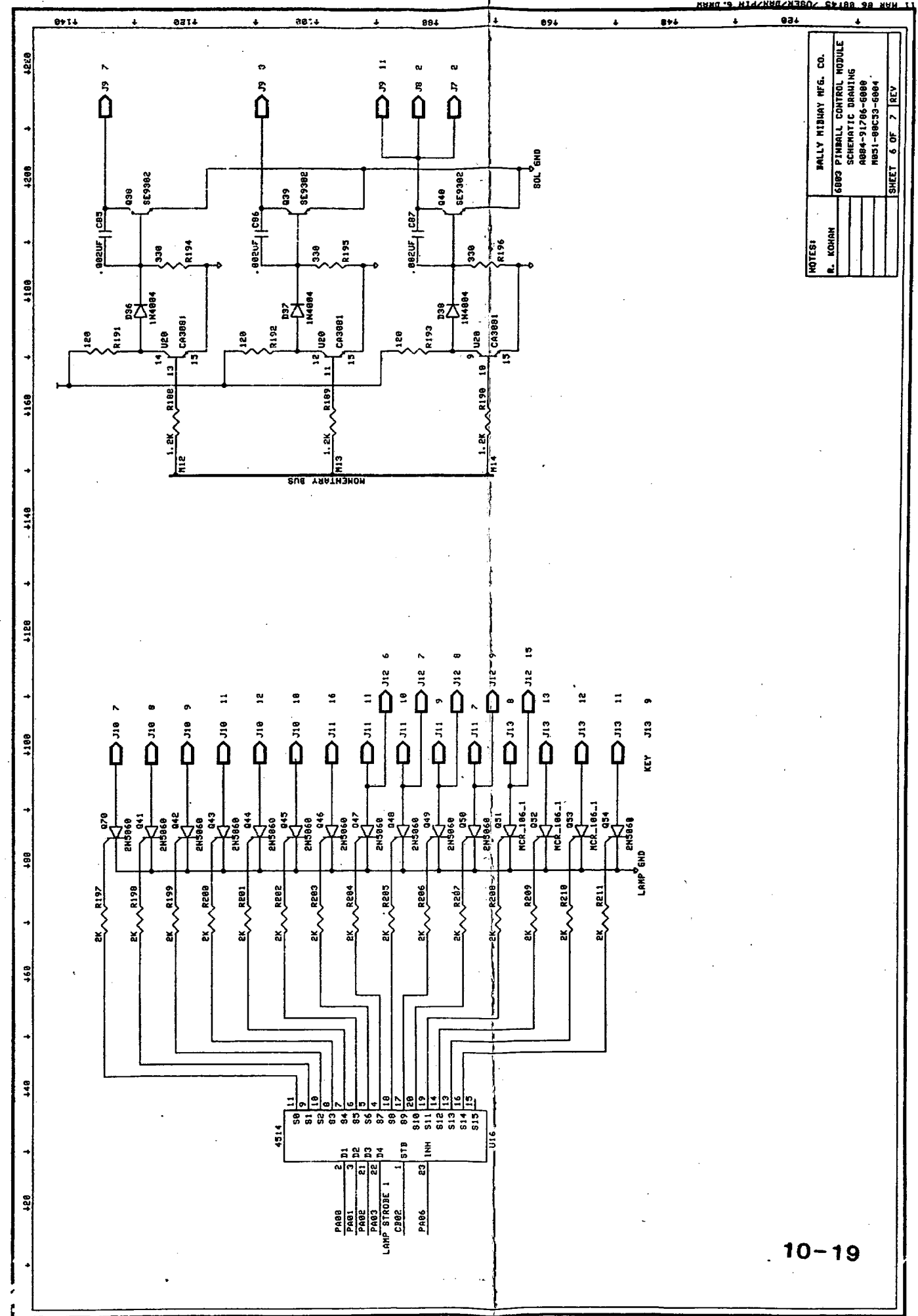
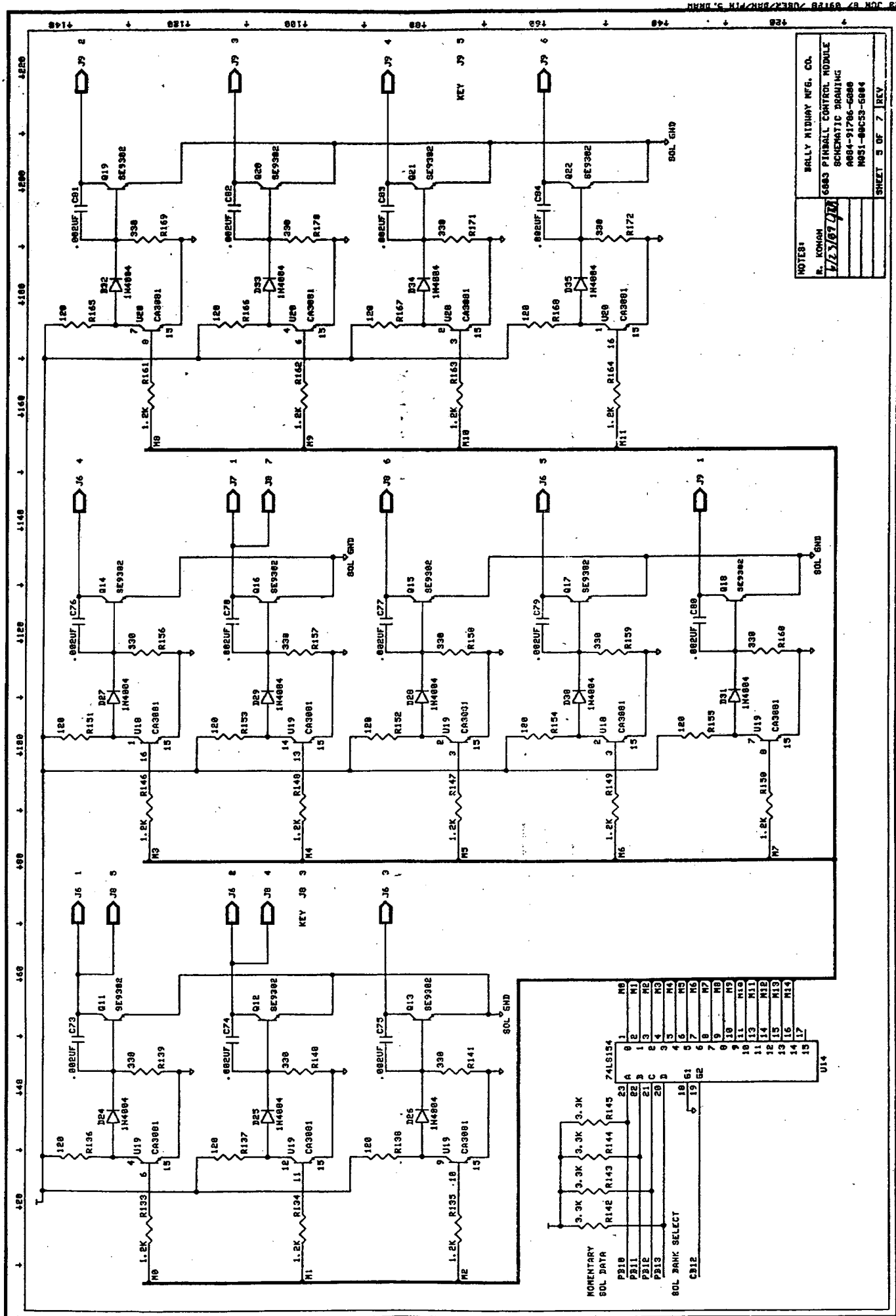


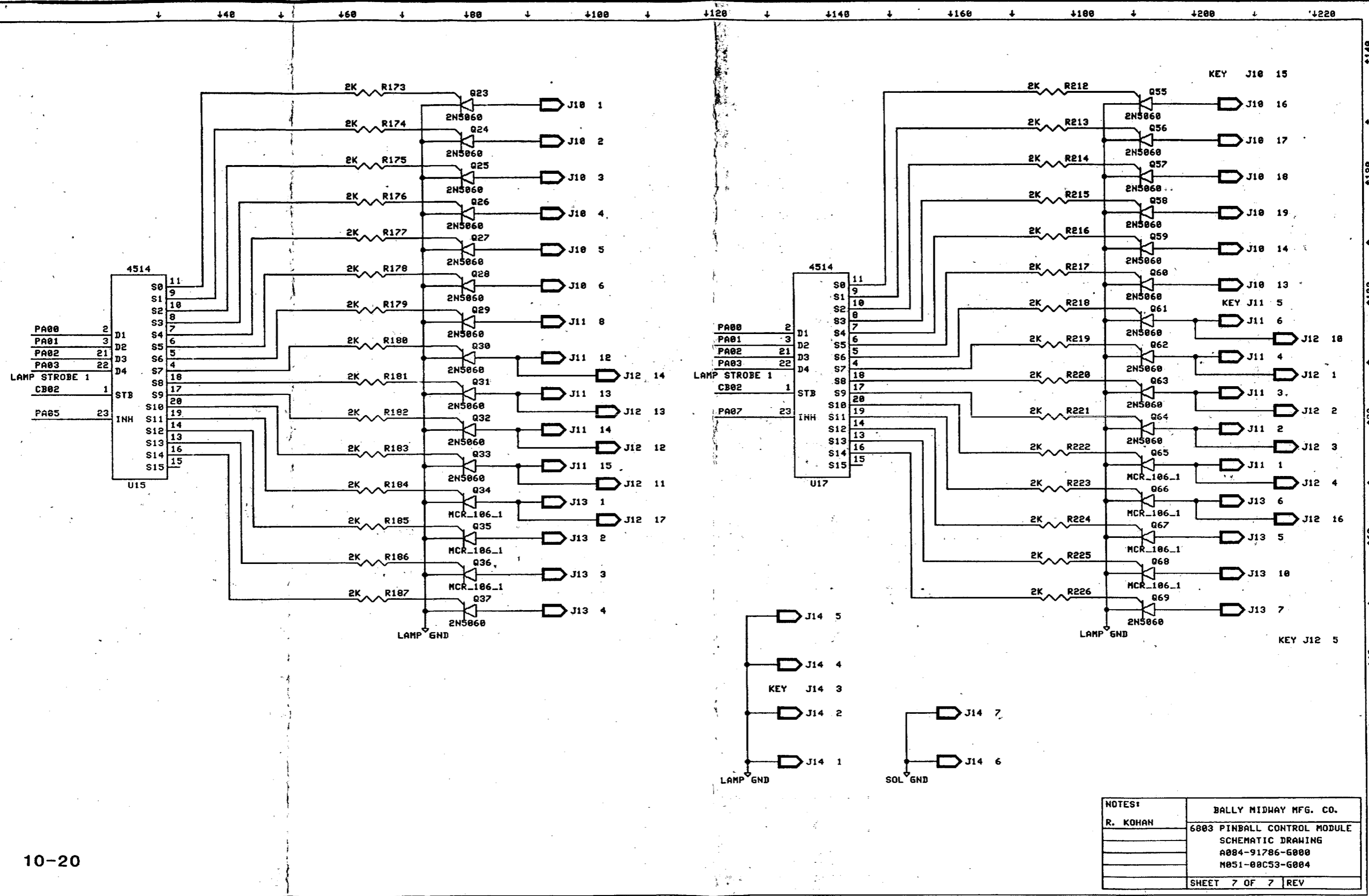
NOTES:
 1. KODIAN
 2. BALLY MIDWAY MFG. CO.
 3. 6883 PINBALL CONTROL MODULE
 4. SCHEMATIC DRAWING
 5. A884-91786-6889
 6. M851-98C33-6884
 7. SHEET 1 OF 7 REV



NOTES:
 1. KODIAN
 2. BALLY MIDWAY MFG. CO.
 3. 6883 PINBALL CONTROL MODULE
 4. SCHEMATIC DRAWING
 5. A884-91786-6889
 6. M851-98C33-6884
 7. SHEET 2 OF 7 REV







NOTES:	BALLY MIDWAY MFG. CO.
R. KOHAN	6803 PINBALL CONTROL MODULE
	SCHEMATIC DRAWING
	A084-91786-6000
	M051-00C53-0004
	SHEET 7 OF 7 REV

11 MAR 85 08:46 705ER/DAN/PLN 7. DRAN

CONTROL BOARD LAMP DRIVERS

DRIVER	CONNECTOR	PIN	PHASE	WIRE	DESCRIPTION
Q36	J13	3	C	84	30K BRT.
Q36	J13	3	D	84	50K BRT.
Q51	J13	8	D	93	ARCH RETURN BRT.
Q35	J13	2	D	83	BACK BOARD RIGHT BRT.
A68	J13	10	D	94	BACK BOX CENTER BRT.
Q53	J13	12	D	96	BACK BOX LEFT BRT.
Q53	J13	12	C	96	BACK BOX RIGHT BRT.
Q68	J13	10	C	94	BACK BOX VOLCANO BRT.
Q23	J10	1	B	12	BONUS 2K
Q70	J10	7	B	24	BONUS 4K
Q55	J10	16	B	38	BONUS 8K
Q24	J10	2	B	13	BONUS 16K
Q41	J10	8	B	25	BONUS 32K
Q56	J10	17	B	41	BONUS 64K
Q25	J10	3	B	14	BONUS 128K
Q42	J10	9	B	26	BONUS 256K
Q57	J10	18	A	43	BONUS HELD
Q65	J11	1	D	48	BRIDGE LEFT BRT.
Q66	J13	6	D	87	DROP TARGET BRT.
Q66	J13	6	C	87	ELEVATOR RIGHT BRT.
Q34	J13	1	C	81	ELEVATOR TOP BRT.
Q35	J13	2	C	83	ESCAPE CAVE BRT.
Q62	J11	4	B	61	ESCAPE DOOR #1
Q47	J11	11	B	71	ESCAPE DOOR #2
Q30	J11	12	B	72	ESCAPE DOOR #3
Q61	J11	6	B	62	ESCAPE DOOR #4
Q46	J11	16	B	78	ESCAPE DOOR #5
Q54	J13	11	B	95	ESCAPE LEFT
Q69	J13	7	B	91	ESCAPE RIGHT
Q37	J13	4	B	85	EXTRA BALL OFFERED
Q62	J11	4	A	61	GATE OPEN 10 TIME UNITS
Q47	J11	11	A	71	GATE OPEN 20 TIME UNITS
Q30	J11	12	A	72	GATE OPEN 30 TIME UNITS
Q58	J10	19	B	45	HOLD BONUS "A"
Q43	J10	11	B	31	HOLD BONUS "B"
Q34	J13	1	D	81	HOLE LOWER BRT.
Q28	J10	6	A	21	LAVA #1

CONTROL BOARD LAMP DRIVERS

DRIVER	CONNECTOR	PIN	PHASE	WIRE	DESCRIPTION
Q59	J10	14	A	37	LAVA #2
Q44	J10	12	A	32	LAVA #3
Q27	J10	5	A	18	LAVA #4
Q58	J10	19	A	45	LAVA #5
Q43	J10	11	A	31	LAVA #6
Q67	J13	5	C	86	LAVA LEFT BRT.
Q67	J13	5	D	86	LAVA RIGHT BRT.
Q48	J11	10	A	68	LEFT 25K
Q51	J13	8	C	93	MOUNTAIN BRT.
Q52	J13	13	D	97	MULTI-BALL BRT.
Q28	J10	6	B	21	MYSTERY "A"
Q59	J10	14	B	37	MYSTERY "B"
Q52	J13	13	C	97	OUTLANE RIGHT BRT.
Q61	J11	6	A	62	RELEASE MULTI-BALL MEMORY 1
Q46	J11	16	A	78	RELEASE MULTI-BALL MEMORY 2
Q29	J11	8	A	64	RELEASE MULTI-BALL MEMORY 3
Q31	J11	13	A	73	RIGHT 25K
Q69	J13	7	A	91	ROLLOVER
Q54	J13	11	A	95	SHOOT AGAIN
Q33	J11	15	A	75	SLING SHOT LEFT BOTTOM
Q50	J11	7	A	63	SLING SHOT LEFT TOP
Q49	J11	9	A	67	SLING SHOT RIGHT BOTTOM
Q64	J11	2	A	58	SLING SHOT RIGHT TOP
Q44	J10	12	B	32	SPECIAL "A"
Q27	J10	5	B	18	SPECIAL "B"
Q57	J10	18	B	43	THUMPER BUMPER BOTTOM
Q26	J10	4	B	15	THUMPER BUMPER TOP
Q42	J10	9	A	26	TREASURE 30K #1
Q25	J10	3	A	14	TREASURE 30K #2
Q56	J10	17	A	41	TREASURE 30K #3
Q41	J10	8	A	25	TREASURE 50K #1
Q24	J10	2	A	13	TREASURE 50K #2
Q55	J10	16	A	38	TREASURE 50K #3
Q70	J10	7	A	24	TREASURE 50K #4
Q23	J10	1	A	12	TREASURE 50K #5
Q65	J11	1	C	48	VOLCANO BRT.
Q29	J11	8	B	64	VOLCANO #1
Q60	J10	13	B	36	VOLCANO #2
Q45	J10	10	B	28	VOLCANO #3

CONTROL BOARD SOLENOID DRIVERS

TRANSISTOR	CONNECTOR	PIN	WIRE	DESCRIPTION
Q22	J9	6	56	DROP TARGET RESET
Q17	J6	5	36	ELEVATOR RIGHT
Q18	J9	1	51	ELEVATOR TOP
Q10	J6	7	311	ESCAPE DOOR
Q7	J6	8	90	FLIPPER LEFT
Q7	J6	9	95	FLIPPER RIGHT
Q40	J9	11	59	KNOCKER
Q19	J9	2	52	MULTI-BALL RELEASE
Q21	J9	4	54	OUTHOLE LEFT
Q39	J9	8	58	OUTHOLE RIGHT
Q38	J9	7	57	RESERVED FOR GERMAN-USE
Q16	J8	7	27	SLINGSHOT LEFT
Q14	J6	4	35	SLINGSHOT RIGHT
Q13	J6	3	34	SLINGSHOT TOP
Q8	J9	10	24	AUX. COIL DRIVER BOARD
Q12	J6	2	32	THUMPER BUMPER TOP
Q11	J6	1	31	THUMPER BUMPER BOTTOM

WIRE COLOR CODE	
1-RED	6-BROWN
2-BLUE	7-ORANGE
3-YELLOW	8-BLACK
4-GREEN	9-GREY
5-WHITE	0-NO TRACE
J-JUMPER	11-VIOLET
1-FIRST NUMBER-BODY COLOR	
2-SECOND NUMBER-TRACER COLOR	
EXAMPLE: 50-WHITE	
51-WHITE/RED	

DRAWING #M051-00H05-A016

NOTES:	BALLY MIDWAY MFG. CO.
M KONOPA	
1/8/88	ESCAPE FROM THE LOST WORLD
	CONTROL BOARD LAMP DRIVERS
	AND SOLENOID DRIVERS
	SHEET OF REV

11 JAN 88 09:42 USER:MK7/LOSTWORLD 1: DRAH

Bally
MIDWAY

10601 W. Belmont Avenue
Franklin Park, Illinois 60131
U.S.A.

Phone: (312) 451-9200 Fax No.: 312-451-4150
Cable Address: MIDCO Telex No.: 72-1596

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DESIGNATION LIST

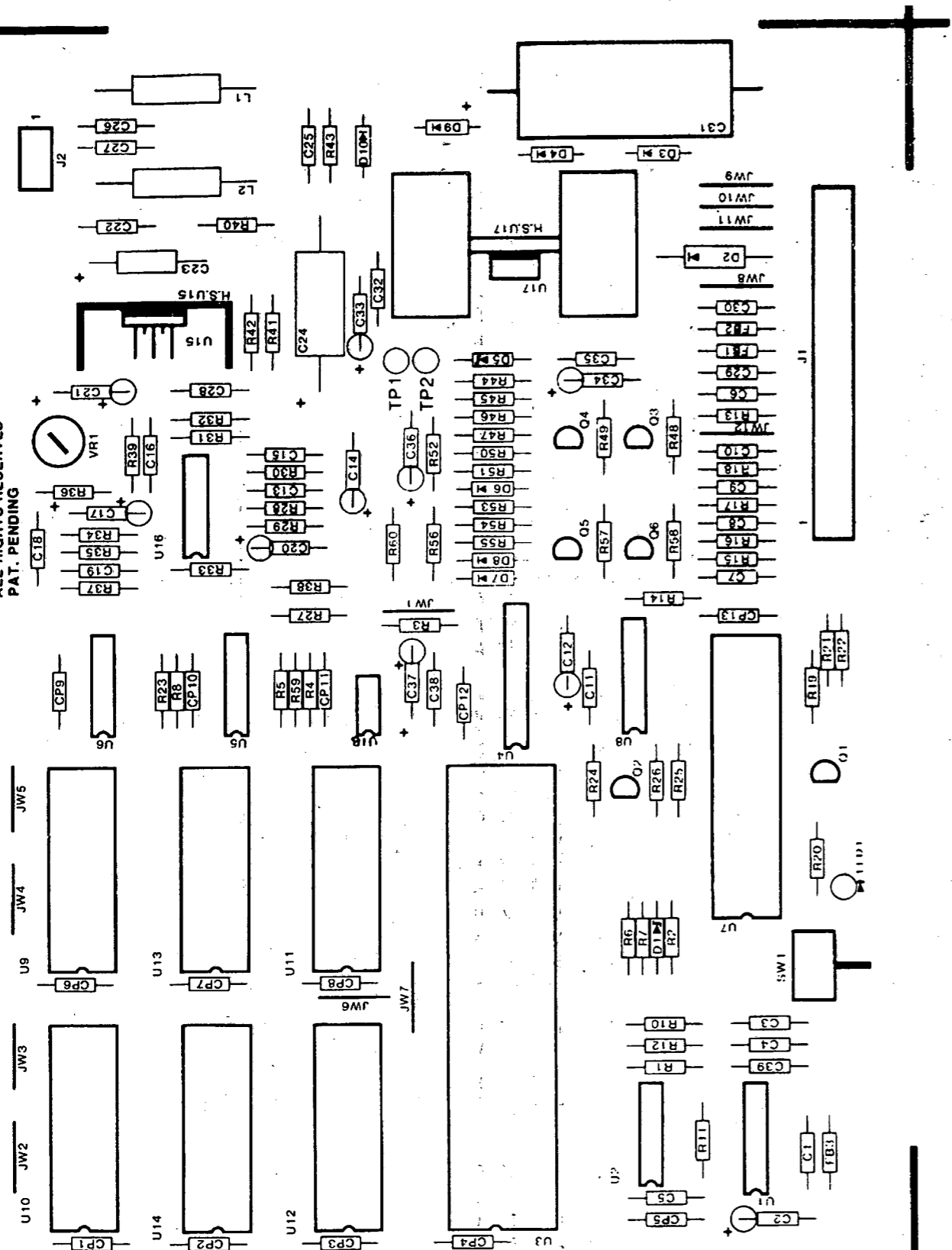
DESIGNATION	DESCRIPTION
CP1,CP2	.1 UF AX CER
CP3-CP13	.01 UF AX CER
C1	.1 UF AX CER
C2	10 UF RD TANT
C3-C5	NOT INSERTED
C6	470 PF AX CER
C7-C10	100 PF AX CER
C11	.01 UF AX CER
C12	47 UF AX ELEC
C13	470 PF AX CER
C14	1 UF AX TANT
C15	.01 UF AX CER
C16	68 PF AX CER
C17	.1 UF AX TANT
C18	.001 UF AX CER
C19	82 PF AX CER
C20	10 UF AX TANT
C21	1 UF AX TANT
C22	.05 UF RD CER
C23	470 UF AX ELEC
C24	1000 UF AX ELEC
C25	.1 UF AX CER
C26,C27	.22 UF AX CER
C28-C30	.1 UF AX CER
C31	4700 UF AX ELEC
C32	.01 UF AX CER
C33,C34	4.7 UF RD TANT
C35	.01 UF AX CER
C36	NOT INSERTED
C37	10 UF AX TANT
C38	.01 UF AX CER
C39	.1 UF AX CER
D1	NOT INSERTED
D2	VR330
D3,D4	1N4004
D5-D8	NOT INSERTED
D9,D10	1N4004
FB1-FB3	FERRITE BEAD
HS U15	HEATSINK T0-220
HS U17	HEATSINK T0-220
ICS U3	64 PIN I.C. SOCKET
ICS U4	20 PIN I.C. SOCKET
ICS U7	40 PIN I.C. SOCKET
ICS U8	16 PIN I.C. SOCKET
ICS U9-U14	28 PIN I.C. SOCKET

DESIGNATION LIST

DESIGNATION	DESCRIPTION
INS U15, INS U17	SIL PAD THERMAL WASHER
J1,J2	AUTO INSERT PIN TIN .045 SQ.
JW1-JW12	JUMPER WIRE
L1,L2	10 UH INDUCTOR
LED 1	GREEN LED
MH U15	SCREW, 6-32
MH U15	NUT, 6-32
MH U15	WASHER, #6 STAR
MH U17	SCREW, 4-40
MH U17	NUT, 4-40
MH U17	WASHER, #4 STAR
Q1,Q2	2N5305
Q3-Q6	NOT INSERTED
R1-R8	4.7K OHM 1/4W CRBN
R9	NOT USED
R10-R12	NOT INSERTED
R13	10K OHM 1/4W CRBN
R14	100K OHM 1/4W CRBN
R15-R18	10K OHM 1/4W CRBN
R19	47K OHM 1/4W CRBN
R20	100 OHM 1/4W CRBN
R21-R23	4.7K OHM 1/4W CRBN
R24	2.7K OHM 1/4W CRBN
R25	180 OHM 1/4W CRBN
R26	68 OHM 1/4W CRBN
R27	62K OHM 1/4W CRBN
R28	120K OHM 1/4W CRBN
R29	75K OHM 1/4W CRBN
R30	33K OHM 1/4W CRBN
R31	18K OHM 1/4W CRBN
R32	33K OHM 1/4W CRBN
R33	47K OHM 1/4W CRBN
R34	150K OHM 1/4W CRBN
R35	82K OHM 1/4W CRBN
R36	150K OHM 1/4W CRBN
R37	200K OHM 1/4W CRBN
R38	1K OHM 1/4W CRBN
R39	33K OHM 1/4W CRBN
R40	430 OHM 1/4W CRBN
R41	220 OHM 1/4W CRBN
R42	2.2 OHM 1/4W CRBN

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PAT. PENDING

A080-91864-C000



7/25/86	REL FOR PRODUCTION	CM-1
REVISIONS		

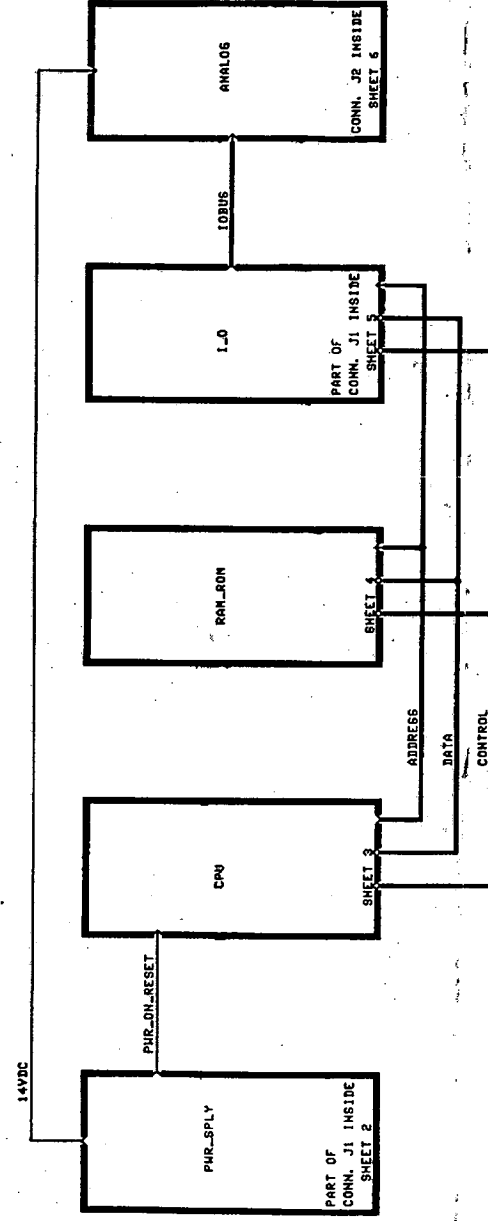
SCALE	USED ON Pinball	Bally / MIDWAY MFG. CO. FRANKLIN PK. ILL.
	NO. REQ'D	
ASSEMBLY DRAWING		PART NO.
SOUNDS DELUXE P.C.B.D.		M051-00114-C153
A084-91864-C000		

SOUNDS DELUXE
A084-91864-C000
M051-00114-C154

CROSS REFERENCE

<u>DESCRIPTION</u>	<u>QTY.</u>	<u>DESIGNATION</u>	<u>PART NUMBER</u>
2N5305	2	Q1,Q2	0360-00802-0012
74F32	1	U6	0304-00803-0059
74LS05	1	U5	0E47-00803-0002
74LS74	1	U2	0304-00803-0058
AD7533 DAC	1	U8	0304-00803-0055
16 MHZ COSC	1	U1	0304-00804-0008
LM3900	1	U16	0360-00803-0002
MC6821	1	U7	0304-00803-0054
MC68000 G8 CPU	1	U3	
MC7805 REG	1	U17	0360-00803-0050
PAL16L8A-2 SDOORO	1	U4	0E47-00803-0001
RAM 2K X 8	2	U9,U10	0E47-00803-0003
TDA2002	1	U15	0360-00803-0009
TL7705AC	1	U18	0066-447RX-XXCX
ROM/EPROM	4	U11-U14	SEE ROM/EPROM SHEET
FERRITE BEAD	3	FB1-FB3	0316-00804-0002
10 UH INDUCTOR	2	L1,L2	0360-00804-0031
16 PIN I.C. SOCKET	1	ICS U8	110E-00001-0003
20 PIN I.C. SOCKET	1	ICS U4	110E-00001-0005
28 PIN I.C. SOCKET	6	ICS U9-ICS U14	110E-00001-0010
40 PIN I.C. SOCKET	1	ICS U7	110E-00001-0011
64 PIN I.C. SOCKET	1	ICS U3	110E-00001-0016
HEATSINK TO-220	1	HS U15	112E-00001-0011
HEATSINK TO-220	1	HS U17	0E47-00804-0001
SIL PAD THERMAL WASHER	2	INS U15, INS U17	0017-00042-0319
SCREW, 6-32	1	MH U15	0017-00101-0339
NUT, 6-32	1	MH U15	0017-00103-0005
WASHER, #6 STAR	1	MH U15	0017-00104-0009
SCREW, 4-40	1	MH U17	0017-00101-0731
NUT, 4-40	1	MH U17	0017-00103-0002
WASHER, #4 STAR	1	MH U17	0017-00104-0071
AUTO INSERT PIN TIN .045 SQ.	16	J1,J2	0304-00804-0010
JUMPER WIRE	12	JW1-JW12	117E-00001-0003
GREEN LED	1	LED 1	119E-00001-0001
TEST POINT	2	TP1,TP2	0017-00007-0131
PC MTG. SWITCH	1	SW1	0986-00804-3100
PC BOARD	1	--	A080-91864-C000

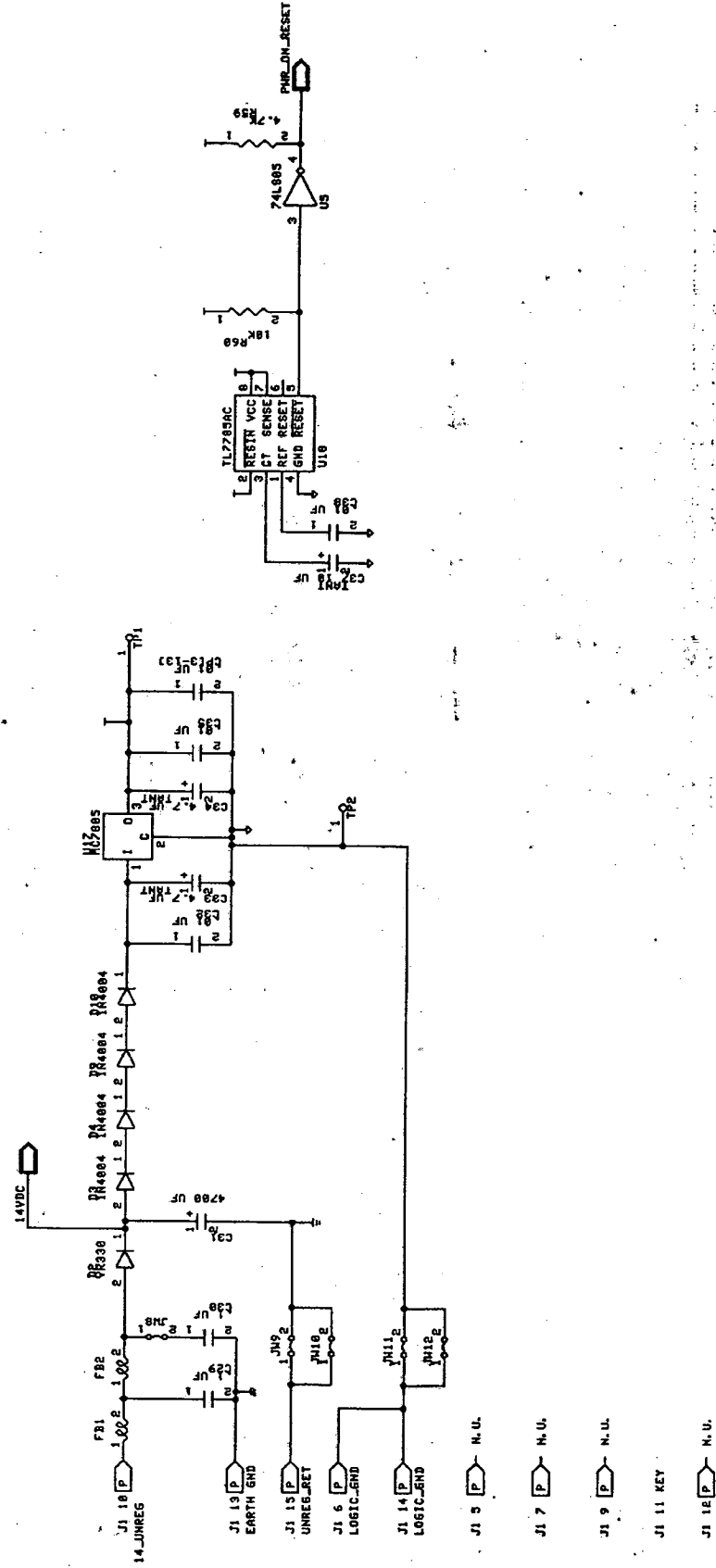
8/01/86 Rev. 1 - Changed Filter Values, C13,C15,C16,C18,C19,P39 CMM
8/05/86 Rev. 2 - Removed D1 CMM.
8/11/86 Rev. 3 - Added CP11-CP13 CMM.
8/15/86 Rev. 4 - Added ICS U13, ICS U14. Fixed Desig. list U5, U6.
Corrected qty. of Ferrite Bead.



8/11/86 REV 3 - Changed Page 2, CWR
 8/4/86 REV 2 - Changed Page 3, CWR
 8/1/86 REV 1 - Changed Page 5

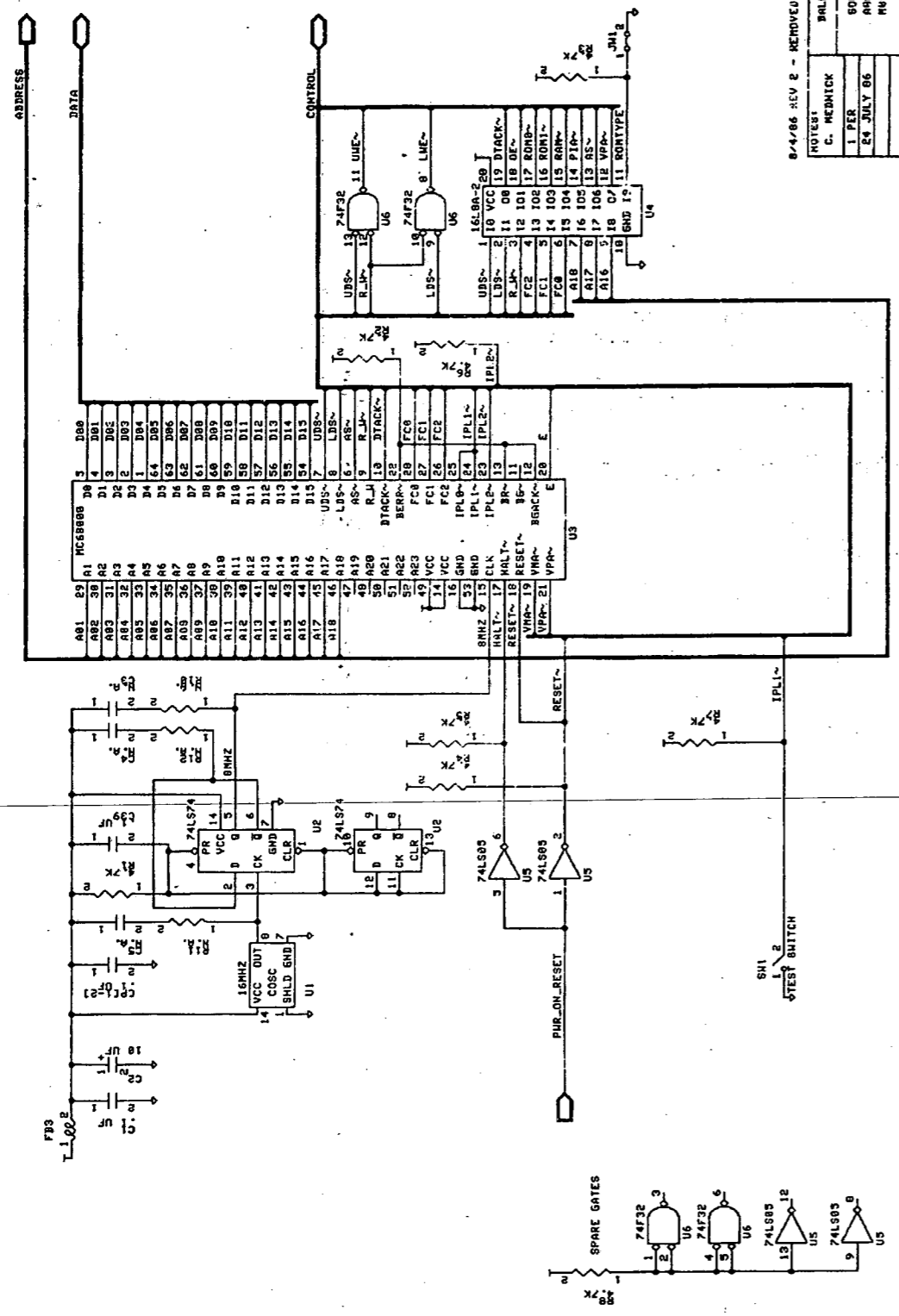
NOTES:	BALLY MIDWAY MFG. CO.
1. PER	SOUNDS DELUXE
24 JULY 86	8894-9184-C888
	M831-88114-C135
	SHEET 1 OF 6 REV

LAST USED: C39, CP13, N18, F83, J2, JN12, LE, R69, SUI, TPE, LED1, VR1
 NOT INSERTED: C3, CS, C36, D1, D5, D9, D3, D6, R19, R18, R44, R59
 NOT USED: R9



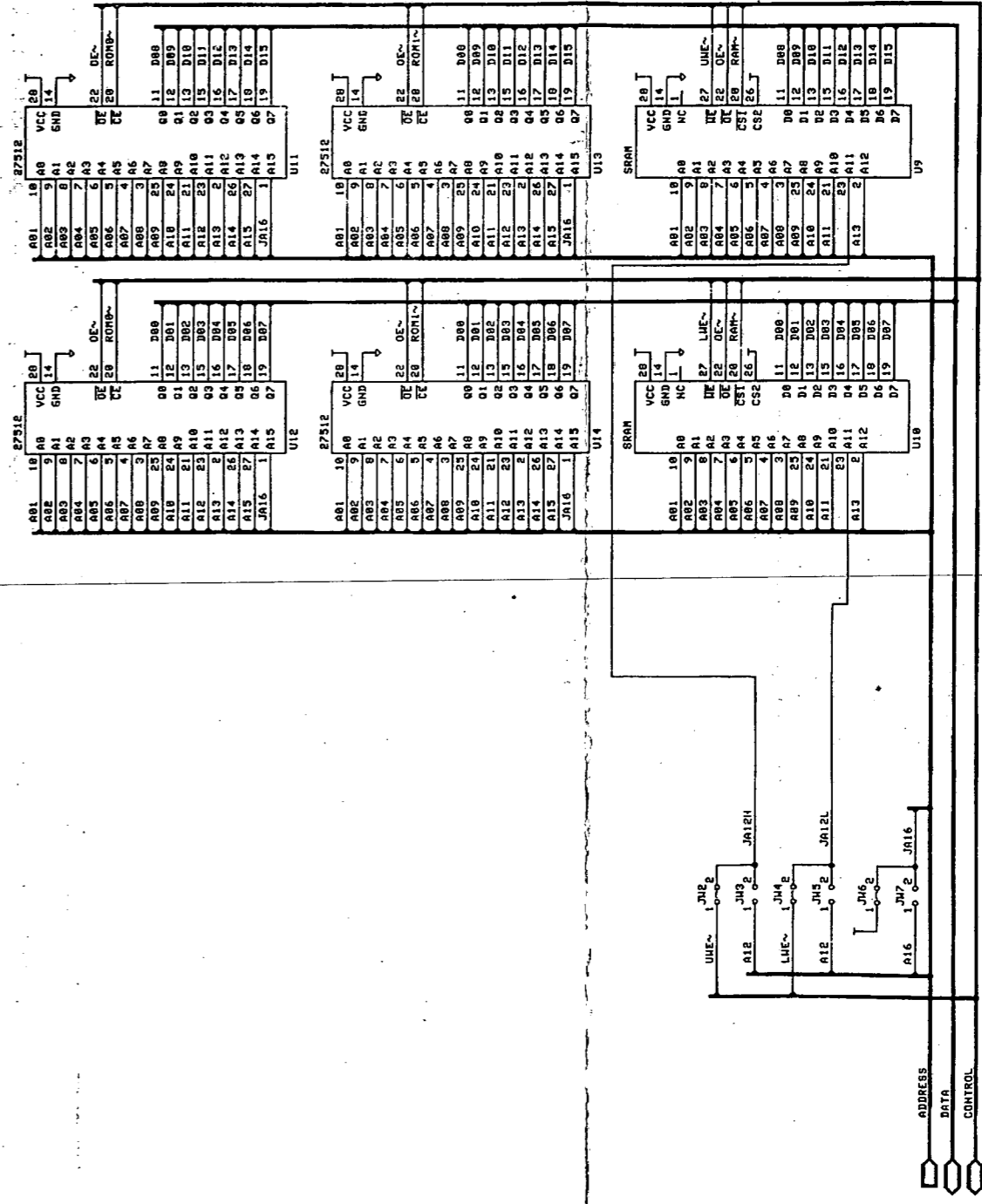
8/11/86 REV 3 - Added CP11-CP13, CWR

NOTES:	BALLY MIDWAY MFG. CO.
1. PER	SOUNDS DELUXE
24 JULY 86	8894-9184-C888
	M831-88114-C135
	SHEET 2 OF 6 REV

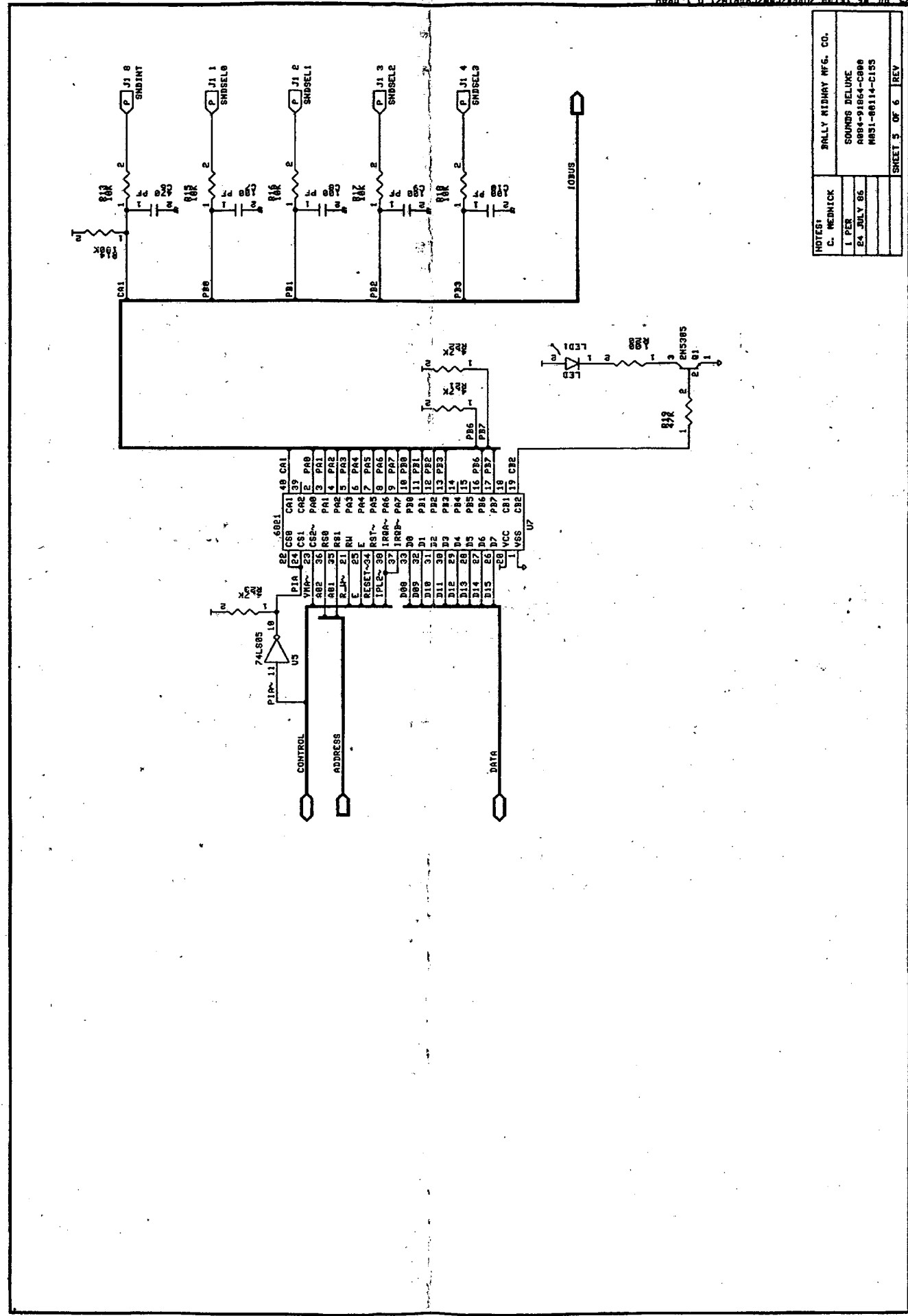


8/4/86 REV 2 - REMOVED D1, CMT

NOTES:
 C. WEDNICK
 1 PER
 24 JULY 86
 BALLY MIDWAY MFG. CO.
 SOUNDS DELUXE
 A884-91864-C888
 M851-88114-C155
 SHEET 3 OF 6 REV



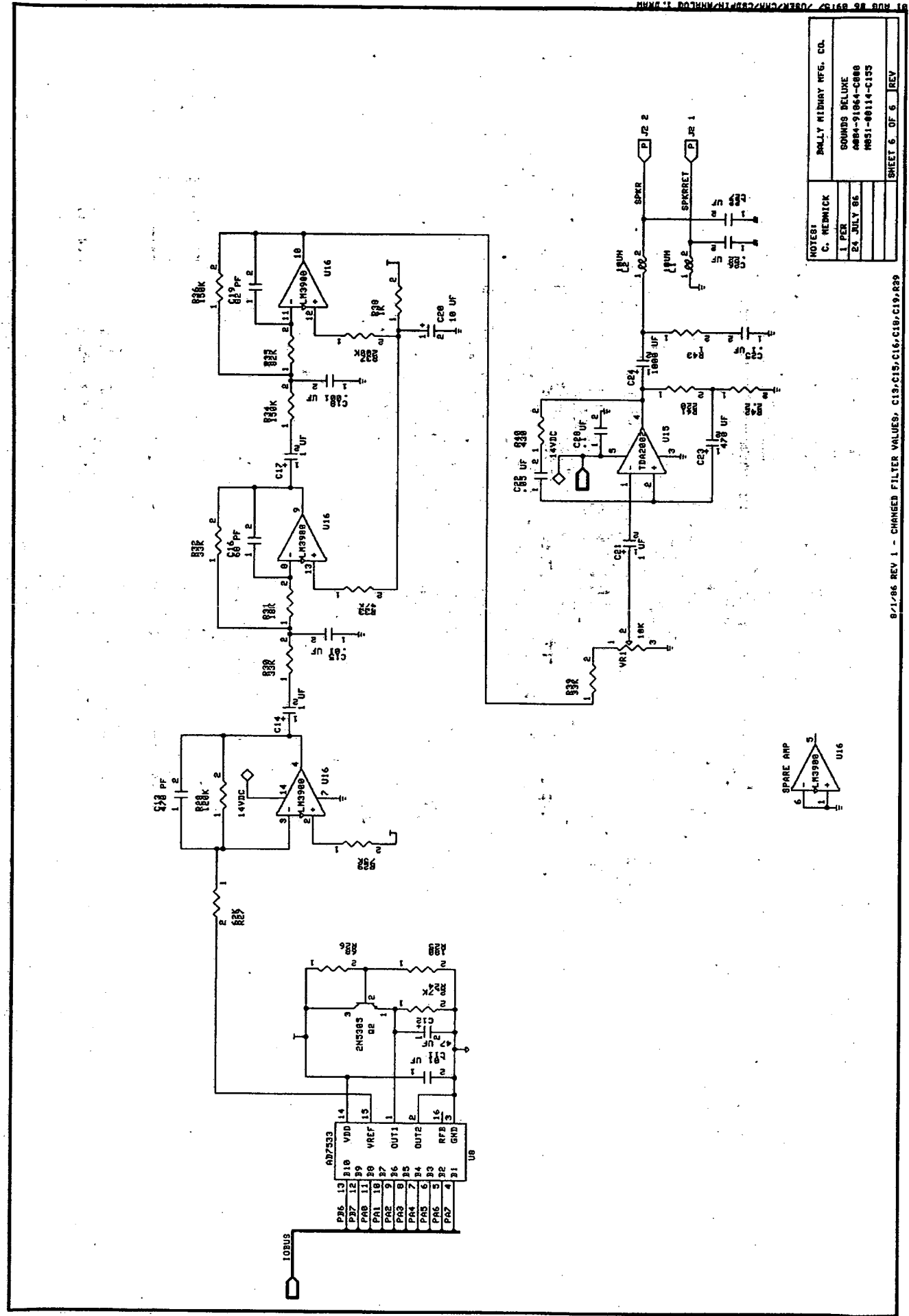
NOTES:
 C. WEDNICK
 1 PER
 24 JULY 86
 BALLY MIDWAY MFG. CO.
 SOUNDS DELUXE
 A884-91864-C888
 M851-88114-C155
 SHEET 4 OF 6 REV



NOTES:
 C. WEINICK
 1 PER
 24 JULY 85

BRILLY MIDWAY MFG. CO.
 SOUNDS DELUXE
 8884-91864-C888
 M851-88114-C155

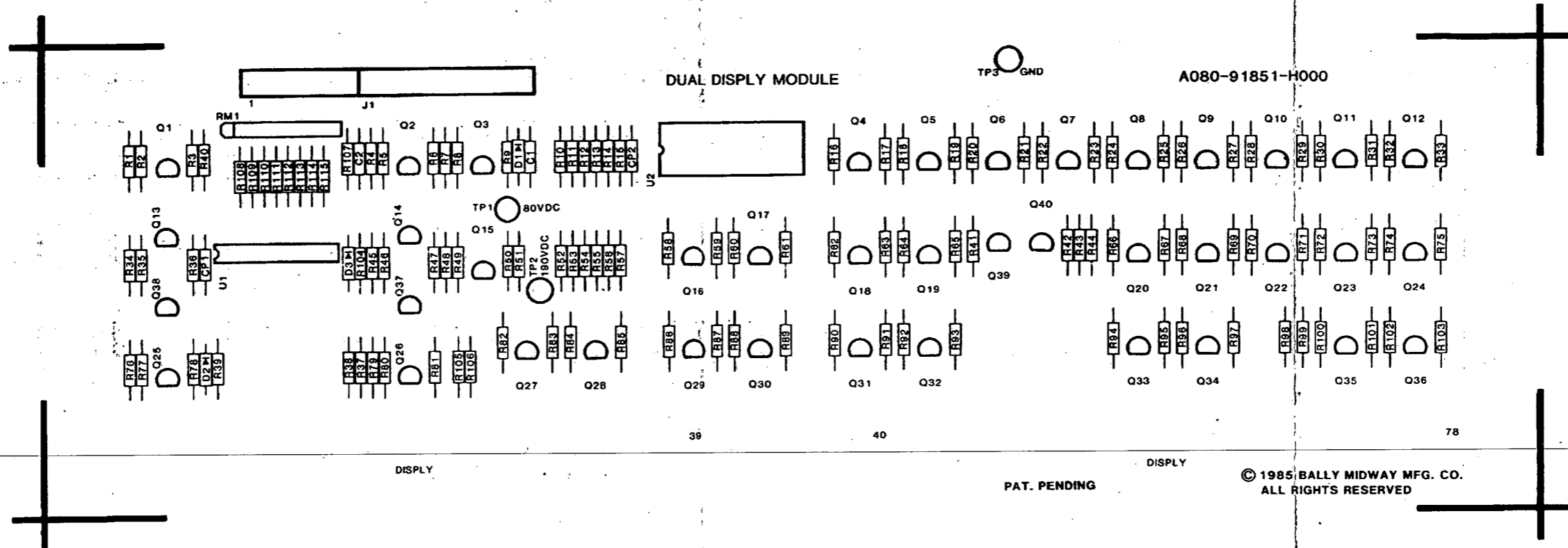
SHEET 5 OF 6 REV



NOTES:
 C. WEINICK
 1 PER
 24 JULY 85

BRILLY MIDWAY MFG. CO.
 SOUNDS DELUXE
 8884-91864-C888
 M851-88114-C155

SHEET 6 OF 6 REV



THIS DWG. IS CONFIDENTIAL & PROPERTY OF BALLY/MIDWAY MFG. CO.

DIM. TOLERANCES UNLESS OTHERWISE SPEC. CONCENTRICITY T.I.R. .002 FRACTIONAL ± .1/64 DECIMAL ± .005 HOLE DIA. +.002-.000 ANGLE ± 1/2° DO NOT SCALE DWG.	FIRST USED ON PIN BALL			Bally/MIDWAY MFG. CO. FRANKLIN PARK, IL 60131 ASSEMBLY DRAWING DUAL DISPLAY MODULE A084-91851-H000	REL. FOR PRODUCTION 5/15/87		
	DRN <i>QBB</i>	DATE 5/15/87	SCALE FULL		REVISIONS		
	MEC. CHK	MATL.	FINISH		PART NO.		
	ELEC. CHK <i>QBB</i>				M0-5-1-0-0-3-6-5-H0-3-3		

DUAL DISPLAY MODULE
A084-91851-H000
M051-00365-H042 (Page 1 of 5) REV.1

DESIGNATION LIST

<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>
R1	1.5K 1/4W 5% CARBON
R2	820 OHM 1/4W 5% CARBON
R3	300K 1/4W 5% CARBON
R4	1.5K 1/4W 5% CARBON
R5	510 OHM 1/4W 5% CARBON
R6	300K 1/4W 5% CARBON
R7	1.5K 1/4W 5% CARBON
R8	820 OHM 1/4W 5% CARBON
R9	300K 1/4W 5% CARBON
R10 - R15	20K 1/4W 5% CARBON
R16	9.1K 1/4W 5% CARBON
R17	100K 1/4W 1% METAL FILM
R18	2.2K 1/4W 5% CARBON
R19	300K 1/4W 5% CARBON
R20	9.1K 1/4W 5% CARBON
R21	100K 1/4W 1% METAL FILM
R22	2.2K 1/4W 5% CARBON
R23	300K 1/4W 5% CARBON
R24	9.1K 1/4W 5% CARBON
R25	100K 1/4W 1% METAL FILM
R26	2.2K 1/4W 5% CARBON
R27	300K 1/4W 5% CARBON
R28	9.1K 1/4W 5% CARBON
R29	100K 1/4W 1% METAL FILM
R30	9.1K 1/4W 5% CARBON
R31	100K 1/4W 1% METAL FILM
R32	9.1K 1/4W 5% CARBON
R33	100K 1/4W 1% METAL FILM
R34	1.5K 1/4W 5% CARBON
R35	820 OHM 1/4W 5% CARBON
R36	300K 1/4W 5% CARBON
R37	300K 1/4W 5% CARBON
R38	1.5K 1/4W 5% CARBON
R39	1K 1/4W 5% CARBON
R40	100K 1/4W 5% CARBON
R41	100K 1/4W 5% CARBON
R42	1K 1/4W 5% CARBON
R43	1.5K 1/4W 5% CARBON
R44	300K 1/4W 5% CARBON
R45	1.5K 1/4W 5% CARBON
R46	820 OHM 1/4W 5% CARBON
R47	300K 1/4W 5% CARBON
R48	1.5K 1/4W 5% CARBON
R49	820 OHM 1/4W 5% CARBON
R50	300K 1/4W 5% CARBON
R51	100K 1/4W 1% METAL FILM
R52 - R57	2.2M 1/4W 5% CARBON
R58	9.1K 1/4W 5% CARBON

DUAL DISPLAY MODULE
A084-91851-H000
M051-00365-H042 (Page 2 of 5) REV. 1

DESIGNATION LIST

<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>
R59	100K 1/4W 1% METAL FILM
R60	100K 1/4W 1% METAL FILM
R61	9.1K 1/4W 5% CARBON
R62	9.1K 1/4W 5% CARBON
R63	100K 1/4W 1% METAL FILM
R64	9.1K 1/4W 5% CARBON
R65	100K 1/4W 1% METAL FILM
R66	9.1K 1/4W 5% CARBON
R67	100K 1/4W 1% METAL FILM
R68	9.1K 1/4W 5% CARBON
R69	100K 1/4W 1% METAL FILM
R70	300K 1/4W 5% CARBON
R71	2.2K 1/4W 5% CARBON
R72	300K 1/4W 5% CARBON
R73	2.2K 1/4W 5% CARBON
R74	300K 1/4W 5% CARBON
R75	2.2K 1/4W 5% CARBON
R76	1.5K 1/4W 5% CARBON
R77	820 OHM 1/4W 5% CARBON
R78	300K 1/4W 5% CARBON
R79	1.5K 1/4W 5% CARBON
R80	820 OHM 1/4W 5% CARBON
R81	300K 1/4W 5% CARBON
R82	300K 1/4W 5% CARBON
R83	2.2K 1/4W 5% CARBON
R84	100K 1/4W 1% METAL FILM
R85	9.1K 1/4W 5% CARBON
R86	300K 1/4W 5% CARBON
R87	2.2K 1/4W 5% CARBON
R88	2.2K 1/4W 5% CARBON
R89	300K 1/4W 5% CARBON
R90	300K 1/4W 5% CARBON
R91	2.2K 1/4W 5% CARBON
R92	300K 1/4W 5% CARBON
R93	2.2K 1/4W 5% CARBON
R94	300K 1/4W 5% CARBON
R95	2.2K 1/4W 5% CARBON
R96	300K 1/4W 5% CARBON
R97	2.2K 1/4W 5% CARBON
R98	10M 1/4W 5% CARBON
R99	1M 1/4W 5% CARBON
R100	300K 1/4W 5% CARBON
R101	2.2K 1/4W 5% CARBON
R102	100K 1/4W 1% METAL FILM
R103	9.1K 1/4W 5% CARBON
R104	150K 1/4W 5% CARBON
R105	10M 1/4W 5% CARBON
R106	1M 1/4W 5% CARBON
R107	10K 1/4W 5% CARBON
R108-R115	20K 1/4W 5% CARBON
RM1	100K 10 PIN SIP

DUAL DISPLAY MODULE
A084-91851-H000
M051-00365-H042 (Page 3 of 5) REV. 1

DESIGNATION LIST

<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>
C1	.01UF 500V CER.
C2	100PF 50V AX. CER.
CP1, CP2	.01UF 50V CER.
D1	1M110ZS10 110V ZENER DIODE
D2, D3	1N4148 DIODE
Q1 - Q4	MPS-A-42 NPN XSTR
Q5	2N5401 PNP XSTR
Q6	MPS-A-42
Q7	2N5401
Q8	MPS-A-42
Q9	2N5401
Q10 - Q21	MPS-A-42
Q22 - Q24	2N5401
Q25	MPS-A-42
Q26	MPS-A-42
Q27	2N5401
Q28	MPS-A-42
Q29 - Q35	2N5401
Q36 - Q40	MPS-A-42
U1	74HC373 CMOS OCTAL LATCH
U2	14514 1-16 DECODER
DISPLAY 1	14 DIGIT, 9 SEGMENT GAS DISCHARGE DISPLAY
J1	.025 SQ. PINS
TP1, TP2, TP3	TEST LOOPS
	FOAM TAPE
	BUMPER
	DISPLAY MTG. CLIPS
	SCREWS
	DISPLAY MTG. PROCEDURE
	DUAL DISPLAY MODULE P.C.B.
	M051-00365- A041
	A080-91851-H000

DUAL DISPLAY MODULE
A084-91851-H000
M051-00365-H042 (Page 4 of 5) REV. 1

CROSS REFERENCE LIST

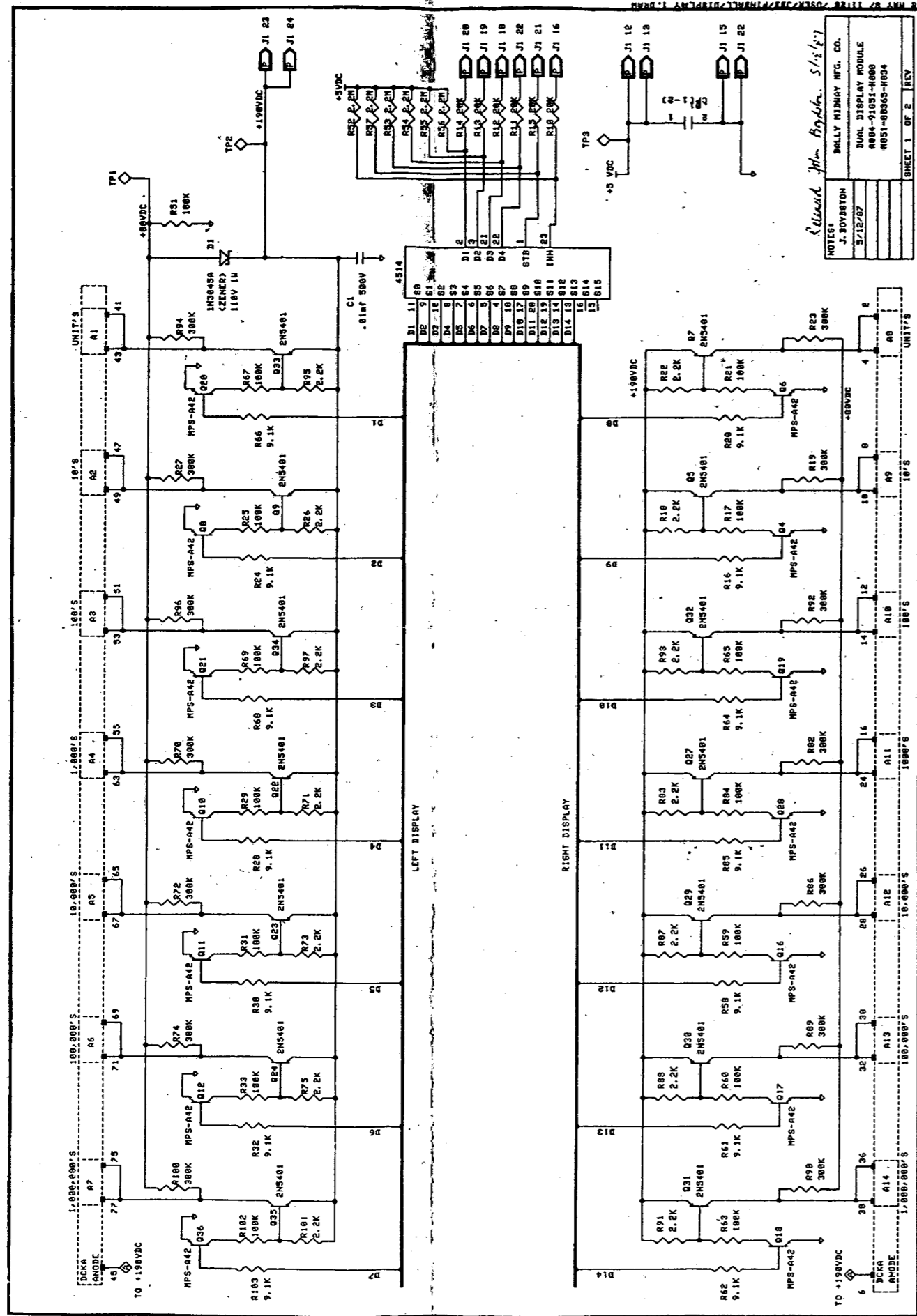
DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
510 OHM 1/4W 5% CARBON	1	R5	100E-00005-0053
820 OHM 1/4W 5% CARBON	7	R2,R8,R35,R46 R49,R77,R80	100E-00005-0058
1K 1/4W 5% CARBON	2	R39,R42	100E-00005-0061
1.5K 1/4W 5% CARBON	10	R1,R4,R7,R34,R38 R43,R45,R48 R76,R79	100E-00005-0065
2.2K 1/4W 5% CARBON	14	R18,R22,R26,R71 R73,R75,R83,R87 R88,R91,R93,R95 R97,R101	100E-00005-0069
9.1K 1/4W 5% CARBON	14	R16,R20,R24,R28 R30,R32,R58,R61 R62,R64,R66,R68 R85,R103	100E-00005-0087
10K 1/4W 5% CARBON	1	R107	100E-00005-0088
20K 1/4W 5% CARBON	14	R10-R15,R108-R115	100E-00005-0095
100K 1/4W 5% CARBON	2	R40,R41	100E-00005-0115
100K 1/4W 1% METAL FILM	15	R17,R21,R25,R29 R31,R33,R51,R59 R60,R63,R65,R67 R69,R84,R102	100E-00001-0046
150K 1/4W 5% CARBON	1	R104	100E-00005-0120
300K 1/4W 5% CARBON	24	R3,R6,R9,R19,R23 R27,R36,R37,R44, R47,R50,R70,R72, R74,R78,R81,R82, R86,R89,R90,R92, R94,R96,R100 R99,R106	100E-00005-0127
1.0M OHM 1/4W 5% CARBON	2	R52 - R57	100E-00005-0140
2.2M OHM 1/4W 5% CARBON	6		100E-00005-0147
100K 10 PIN SIP	1	RM1	102E-00004-0045
10.0M OHM 1/4W 5% CARBON	2	R98,R105	100E-00005-0162
100PF AX. CER.	1	C2	0639-00800-0003
.01UF	2	CP1,CP2	0360-00800-0005
.01UF 500V	1	C1	0360-00800-0013
1N4148	2	D2,D3	103E-00002-0005
1M110ZS10 110V ZENER DIODE	1	D1	103E-00001-0028
2N5401 PNP XSTR	14	Q5,Q7,Q9,Q22,Q23 Q24,Q27,Q29,Q30 Q31,Q32,Q33,Q34 Q35	0360-00802-0006
MPS-A-42 NPN XSTR	26	Q1-Q4,Q6,Q8,Q10- Q21,Q25,Q26,Q28 Q36-Q40	0360-00802-0007
14514 1-16 DECODER	1	U2	0360-00803-0013
74HC373 OCTAL LATCH	1	U1	0365-00803-0015
.025SQ. PINS	23	J1	0304-00804-0009
14 DIGIT, 9 SEGMENT GAS DISCHARGE DISPLAY	1	DISPLAY 1	119E-00002-0006
TEST LOOPS	3	TP1 - TP3	0017-00007-0131

DUAL DISPLAY MODULE
A084-91851-H000
M051-00365-H042 (Page 5 of 5) REV. 1

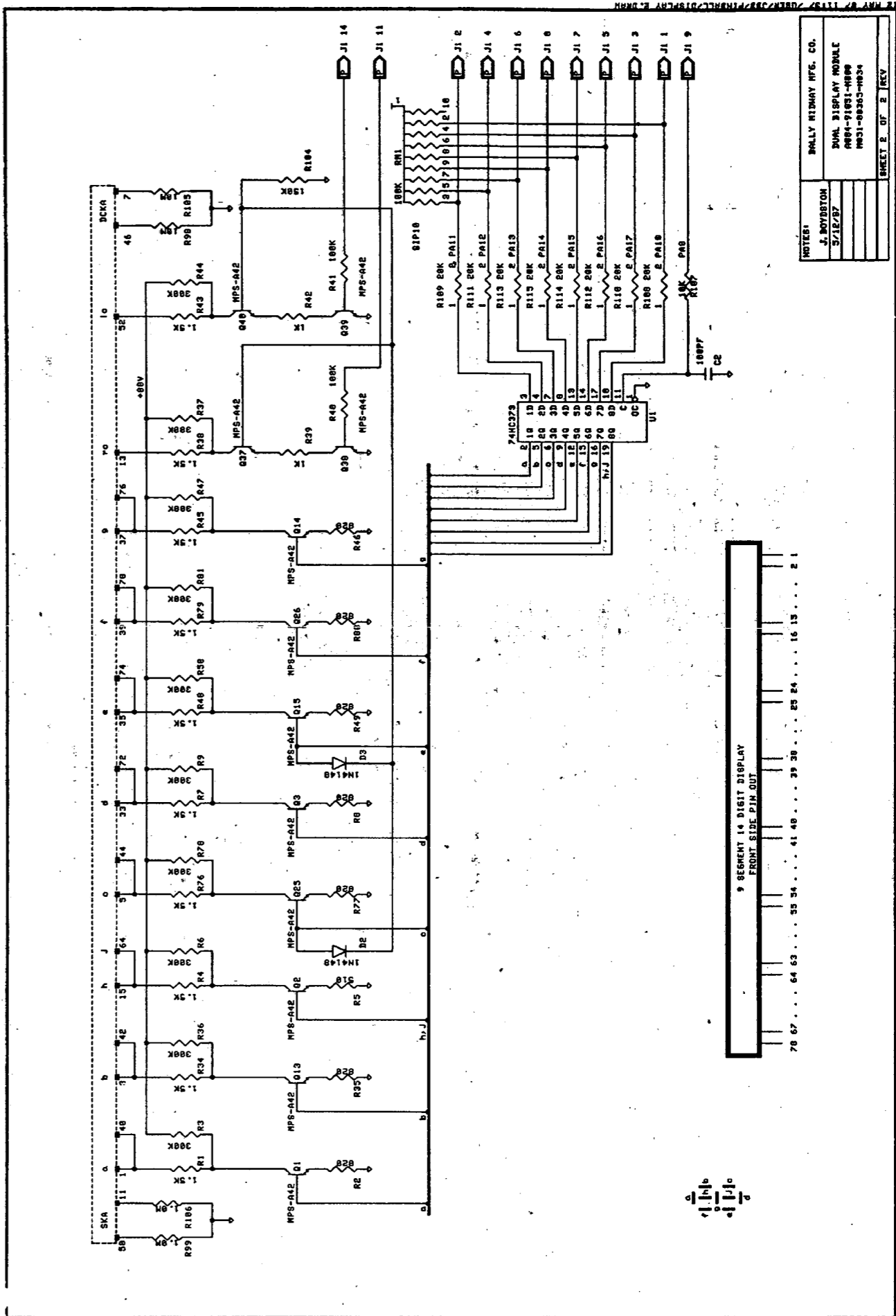
CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
FOAM TAPE	2		0017-00081-0289
BUMPER	1		0017-00041-0598
DISPLAY MTG. CLIP	2		0365-00174-00XF
SCREW	2		0017-00101-0175
DISPLAY MTG. PROCEDURE	1		M051-00365-A041
DUAL DISPLAY MODULE PCB	1		A080-91851-H000

5/20/87 REV. 1 - CORRECTION TO DISPLAY MTG. PROCEDURE PART NO. *JBB*



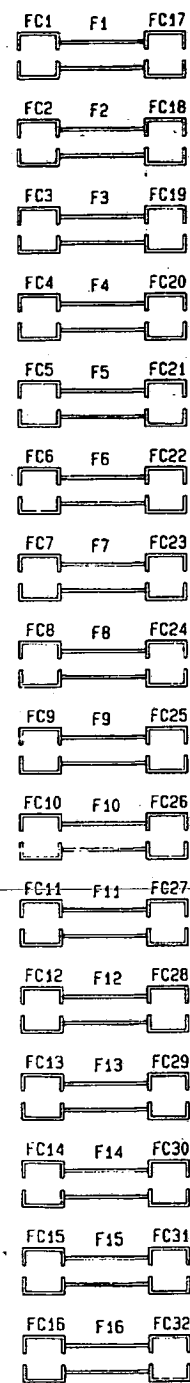
NOTES:
 J. BOYBOSTON
 3/12/67
 BALLY MIDWAY MFG. CO.
 DUAL DISPLAY MODULE
 A884-91831-H888
 M851-88365-H834
 SHEET 1 OF 2 REV



NOTES:
 J. BOYBOSTON
 3/12/67
 BALLY MIDWAY MFG. CO.
 DUAL DISPLAY MODULE
 A884-91831-H888
 M851-88365-H834
 SHEET 2 OF 2 REV

BALLY MIDWAY MFG. CO.
A080-91901-A000

J1



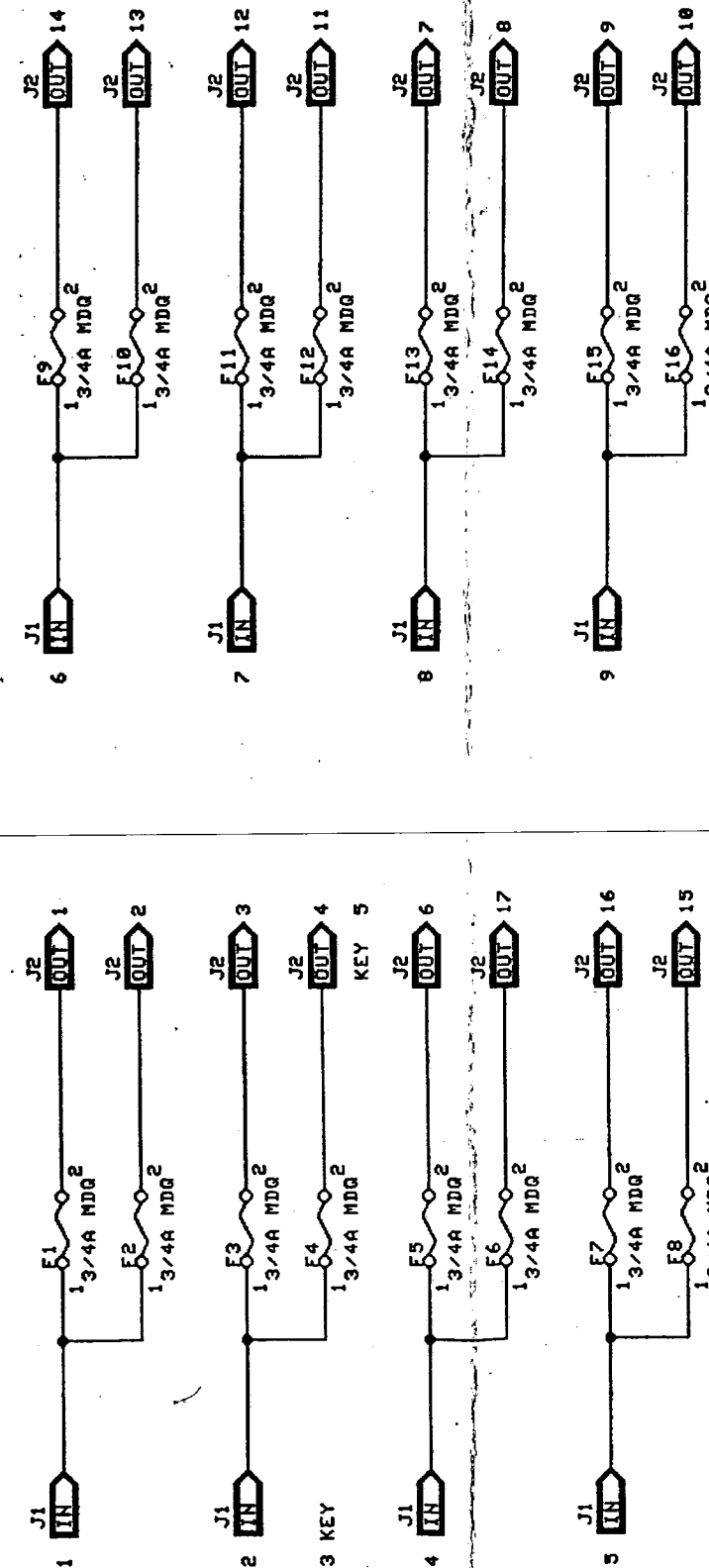
J2

CROSS REFERENCE/DESIGNATION LIST
FOR BRIGHT LIGHTS FUSE BOARD
M051-00114-A211 / REV. 1

QTY.	DESCRIPTION	PART NO.	DESIGNATION
32	PCB FUSE CLIPS	0017-00071-0034	F1-F16 (2 USED PER DESIGNATION)
1	17 POS. CONNECTOR KK100	0017-00021-1888	J2
1	9 POS. CONNECTOR KK100	0017-00021-1887	J1
1	RAW PC BOARD	A060-91901-A000	

REF:

LAYOUT/ASSEMBLY DRAWING M051-00114-A210
SCHEMATIC DRAWING M051-00114-A212
REV. 1 - CHANGED TO KK100 HEADERS 9/17/87 JBB

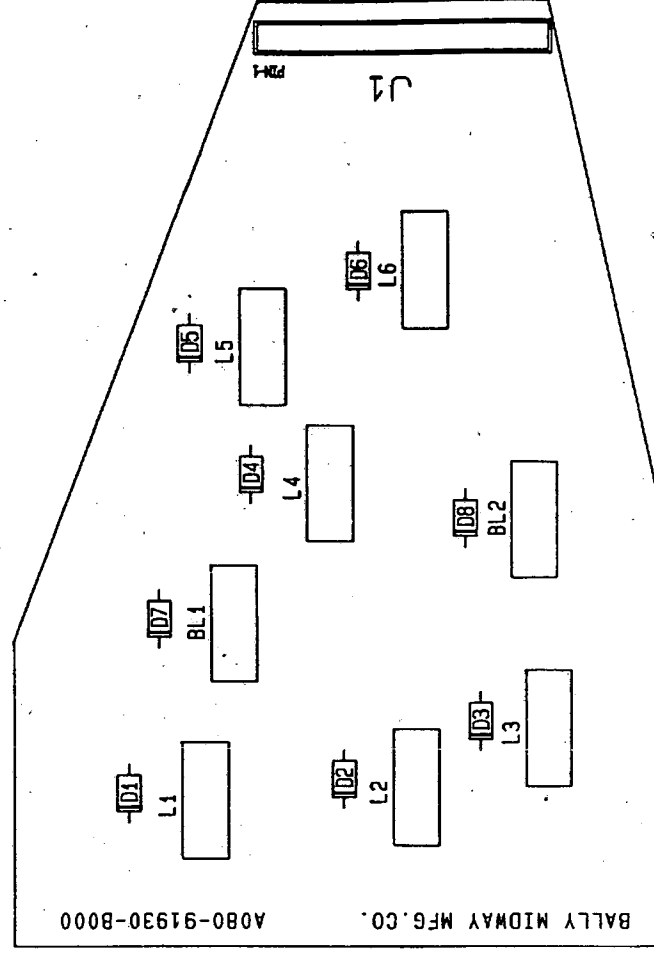


NOTES:
J. BOYDSTON
10-87-87

BALLY MIDWAY MFG. CO.
BRIGHT LIGHTS FUSE PCB
M051-00114-A212

SHEET 1 OF 1 REV

07 OCT 87 09147 / USER/DAN/F02_BD 1.DRAW



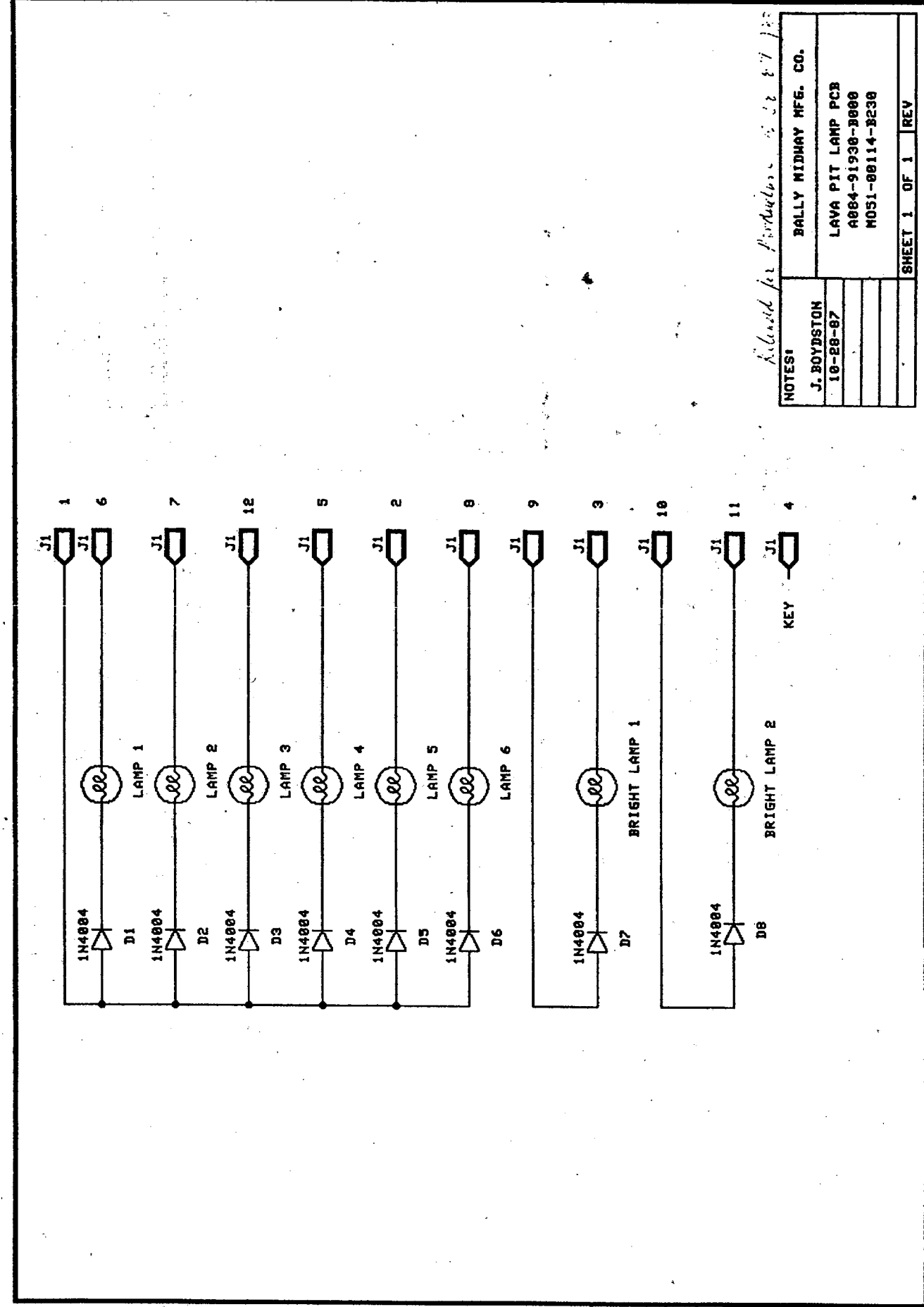
LAVA PIT LAMP PCB
A084-91930-8000
M051-00114-B229

CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
1N4004 Diode	8	D1-D8	103E-00003-0005
Socket: Lamp	8	L1-L6	0017-00031-0068
Connector: Header KK156 R/A	1	BL1-BL2	0017-00021-1889
Lava Pit Lamp PCB	1	J1	A080-91930-8000

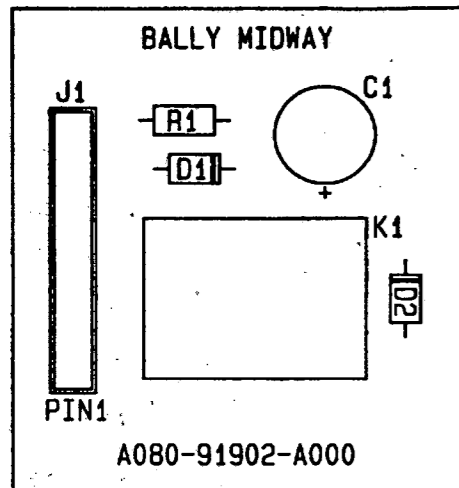
10/16/87 - Released for Production JBB
10/28/87 - B Rev. J1, mounting hole changes JBB

PROJECT ENG: J. BOYDSTON		USED ON 0H05		BALLY/MIDWAY MFG. CO.	
DO NOT SCALE DWG.	HEAT TREAT	SCALE	FULL	FRANKLIN PARK ILL.	
DRN. D.B.S.	MATL.	ASSEMBLY DRAWING		PART NO.	
CKO.	FINISH	LAVA PIT PCB		M051-00114-B228	
DATE 10/21/87		A084-91930-8000			
REVISIONS					



Released for Production 10/21/87 JBB

NOTES:	
J. BOYDSTON	BALLY MIDWAY MFG. CO.
10-28-87	LAVA PIT LAMP PCB
	A084-91930-8000
	M051-00114-B238
	SHEET 1 OF 1 REV



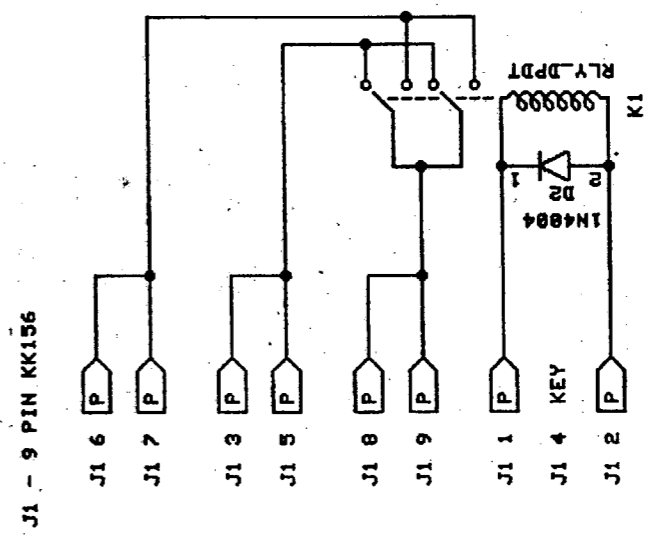
AUX COIL DRIVE
A084-91902-A000
M051-00114-A214

CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NO.
1N4004 DIODE	1	D2	103E-00003-0005
.045 SQ. PIN	8	J1	0304-00804-0010
RELAY	1	K1	114E-00001-0011
NOT INSERTED	3	C1,01,R1	
AUX COIL DRIVER PCB	1		A080-91902-A000

6/4/87 - Released for Production. CMM

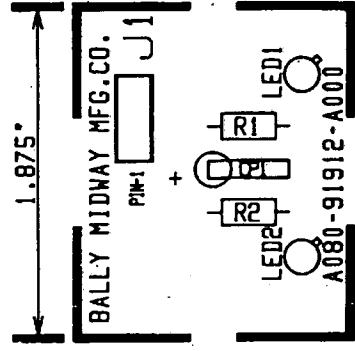
NOTES:	BALLY MIDWAY MFG. CO.
C. MEDNICK	AUX COIL DRIVER
6/4/87	A084-91902-A000
	M051-00114-A215
	SHEET 1 OF 1
	REV



NOT INSERTED: C1,D1,R1

BALLY MIDWAY MFG. CO.

PROJECT ENG.	D.B.S.	ASSEMBLY DRAWING	
C. MEDNICK	05/28/87	AUX. COIL DRIVER BD.	M051-00114-A213



2-POS EMITTER
 A084-91912-A000
 M051-00114-A223

CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
10MF CAP AX. TANT	1	CP1	0986-00800-3400
68 OHM 1/2W 5%	2	R1-R2	100E-00006-0020
MLED 930 IR EMIT DIODE	2	LED 1- LED 2	119E-00003-0004
HEADER KK100 4 PIN OMIT #2	1	J1	0017-00021-1878
2 POS. EMITTER PCB	1		A080-91912-A000

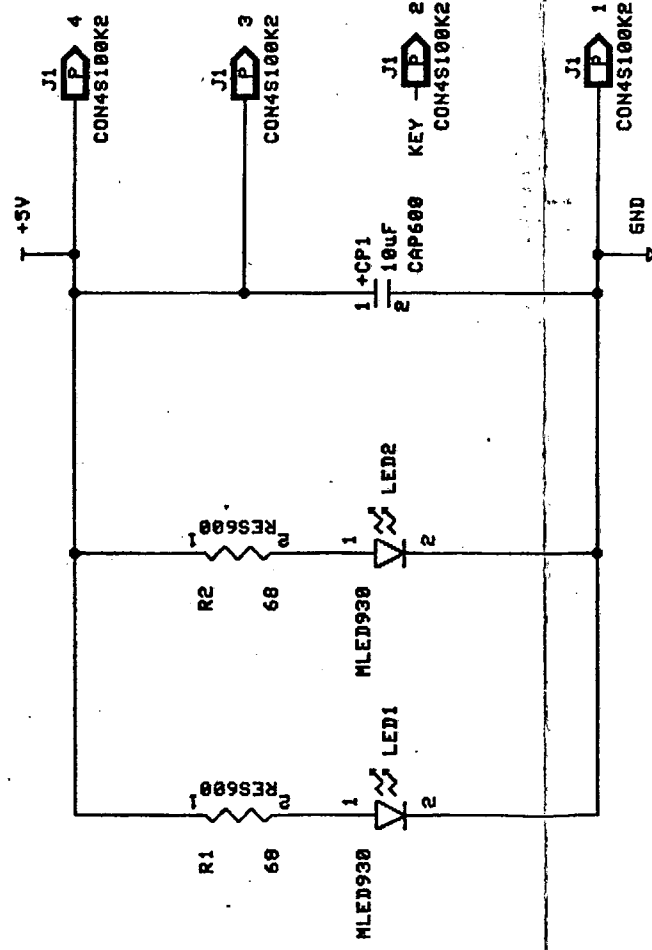
10/27/87 - RELEASED FOR PRODUCTION JBB

THIS DWG. IS CONFIDENTIAL & PROPERTY OF BALLY/MIDWAY MFG. CO.

DIM. TOLERANCES UNLESS OTHERWISE SPEC.		PINBALL	
FRACTIONAL	± 1/64	DATE	SCALE
DECIMAL	± .005	10 27 87	
HOLE DIA.	+ .002 - .000	MAT'L	
ANGLE	± 1/2°	FINISH	
DO NOT SCALE DWG.			

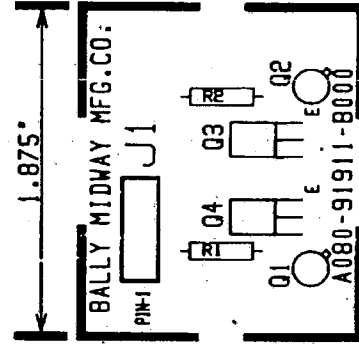
Bally/MIDWAY MFG. CO.
 FRANKLIN PARK, IL 60131

ASSEMBLY DRAWING A084-91912-A000 2-POS EMITTER PC	REVISIONS
PART NO. M051-00114-A222	



Submitted for Production - 10-27-87 JBB

NOTES:	BALLY MIDWAY MFG. CO.
10-27-87	
J. BOYDSTON	2 POSITION EMITTER PCB
	A084-91912-A000
	M051-00114-A224
	SHEET 1 OF 1 REV



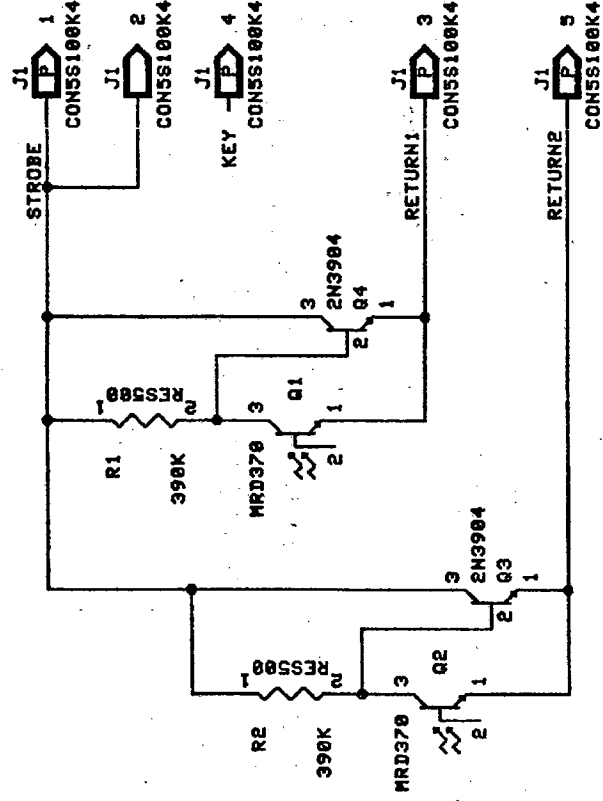
2-POS. DETECTOR
A084-91911-B000
M051-00114-B220

CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION	PART NOS.
390K OHM 1/4W 5%	2	R1-R2	100E-00005-0130
2N3904 NPN XSTR	2	Q3-Q4	104E-00001-0006
MRD370 PHOTO XSTR	2	Q1-Q2	119E-00003-0001
HEADER KK100 5 PIN OMIT #4	1	J1	0017-00021-1890
2-POS. DETECTOR .PCB	1		A080-91911-8000

10/27/87 - RELEASED FOR PRODUCTION JBB

DIM. TOLERANCES UNLESS OTHERWISE SPEC. CONCENTRICITY T.I.R. .002 FRACTIONAL ± 1/64 DECIMAL ± .005 HOLE DIA. +.002 - .000 ANGLE ± 1/2° DO NOT SCALE DWG.		FIRST USED ON DRN DATE SCALE PINBALL		THIS DWG. IS CONFIDENTIAL & PROPERTY OF BALLY/MIDWAY MFG. CO. <i>Bally/MIDWAY MFG. CO.</i> FRANKLIN PARK, IL 60131	
		MECH. CHK MAT. L.		REVISIONS	
		ELEC. CHK FINISH		PART NO. M051-00114-B219	
		ASSEMBLY DRAWING A084-91911-B000 2-POS DETECTOR PC			



NOTES:	BALLY MIDWAY MFG. CO.
18-26-87	
J. BOYBOSTON	2 POSITION DETECTOR PCB
	A084-91911-B000
	M051-00114-B221
	SHEET 1 OF 1 REV

BALLY/MIDWAY'S ESCAPE FROM THE LOST WORLD - GAME #H05

ROM/EPROM PART NUMBERS

UNPROGRAMMED CONTROL BOARD A084-91786-G000
 PROGRAMMED CONTROL BOARD A084-91786-AH05

POS.	MIDWAY PART NUMBER
U2	H05A-12601-0000
U3	H05A-12602-0000

JUMPERS	IN	OUT
JW1		X
JW2	X	
JW3		X
JW4	X	
JW5		X
JW6	X	
JW7		X
JW8	X	
JW9		X
JW10	X	
JW11		X

UNPROGRAMMED SOUNDS DELUXE A084-91864-C000
 PROGRAMMED SOUNDS DELUXE A084-91864-AH05

POS.	MIDWAY PART NUMBER
U11	H05A-12603-0000
U12	H05A-12604-0000
U13	H05A-12605-0000
U14	H05A-12606-0000

JUMPERS	IN	OUT
JW1	X	
JW2	X	
JW3		X
JW4	X	
JW5		X
JW6		X
JW7	X	
JW8	X	
JW9	X	
JW10	X	
JW11	X	
JW12	X	

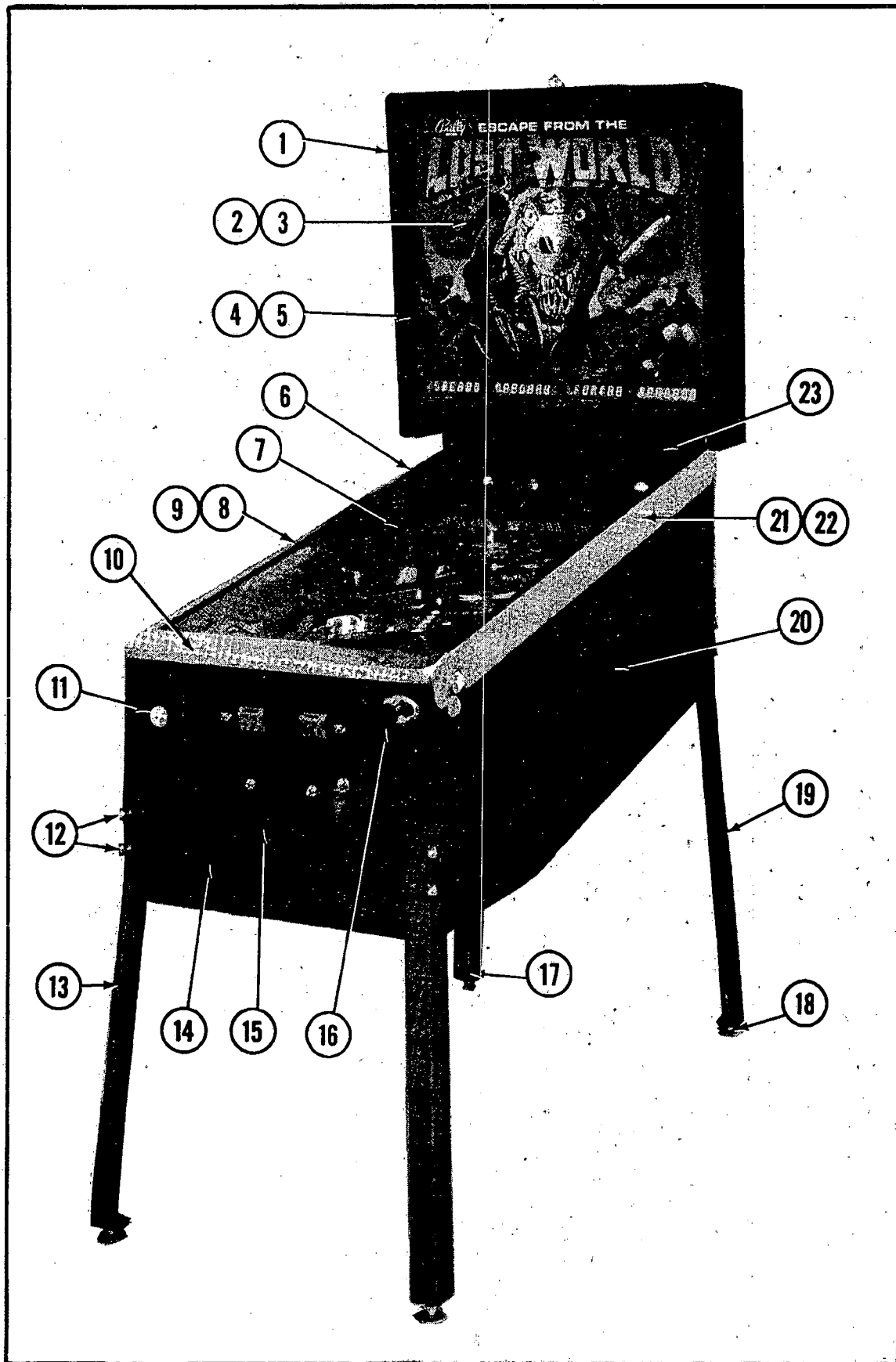
M051-00H05-A008	REVISIONS	
12-16-87	BY: <i>[Signature]</i>	RELEASE FOR PRODUCTION

SECTION 11 ILLUSTRATED PARTS BREAKDOWN

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ESCAPE FROM THE LOST WORLD EXTERNAL GAME PARTS



**ESCAPE FROM THE LOST WORLD
EXTERNAL GAME PARTS—PARTS LIST**

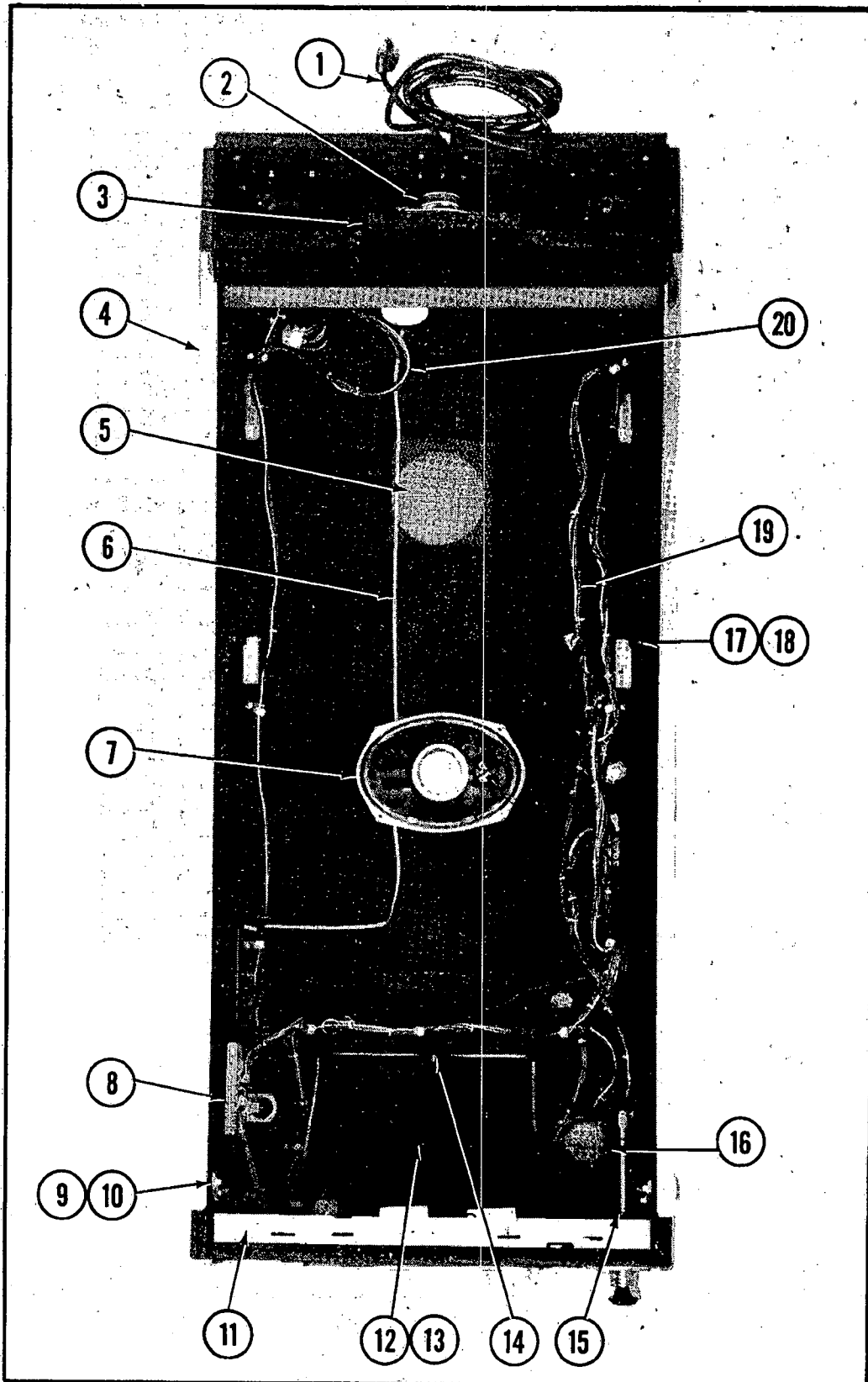
ITEM	PART NUMBER	DESCRIPTION	QTY
1	AH05-00008-0000	BACK CABINET ASSEMBLY	1
2	AH05-00010-0000	BACK GLASS ASSEMBLY	1
3	0H05-00904-0000	TRANSLITE	1
4	0365-00976-0100	CHANNEL: EDGE TRANSLITE L = 23'1/8" (SIDE)	3
5	0365-00975-0100	CHANNEL: GLASS TRANSLITE L = 26'5/8" (TOP)	1
6	0017-00042-0768	CHANNEL: GLASS L = 48"	2
7	0H05-00935-0000	GLASS: PLAYFIELD—SCREENED, TEMPERED	1
8	0365-04300-0002	SIDE MOULDING: LEFT, PRE-PLATED	1
9	0365-04300-0004	SIDE MOULDING: LEFT, STAINLESS STEEL	1
10	A365-00079-0000	FRONT MOULDING ASSEMBLY	1
11**	0017-00042-0300	PUSH BUTTON: ROUND, WHITE	3
12*	0017-00102-0063	UNSLOTTED HEX HEAD BOLT	8
13	0360-00937-00XF	LEG: FRONT	2
14	0090-00002-04BK	DOOR FRAME: BLACK, DOUBLE SLOT	1
15	A982-00014-0013	COIN DOOR W/CABLE ASSEMBLY	1
16	A360-00280-0000	BALL SHOOTER ROD & SPRING ASSEMBLY	1
17*	0017-00103-0026	NUT: HEX 3/8" —16	4
18*	0017-00102-0082	LEG ADJUSTER (LEVELLER)	4
19	0365-00220-00XF	LEG: REAR	2
20	AH05-00500-0000	CABINET ASSEMBLY	1
21	0365-04300-0001	SIDE MOULDING: RIGHT, PRE-PLATED	1
22	0365-04300-0003	SIDE MOULDING: LEFT, STAINLESS STEEL	1
23	0365-00188-00XF	SPEAKER BEZEL	1

*THESE PARTS ARE LOCATED IN THE SPARE PARTS KIT ASSEMBLY.

**SOME GAMES WERE PRODUCED WITH OTHER COLORS; WHITE IS THE STANDARD COLOR.

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

ESCAPE FROM THE LOST WORLD INTERNAL GAME PARTS

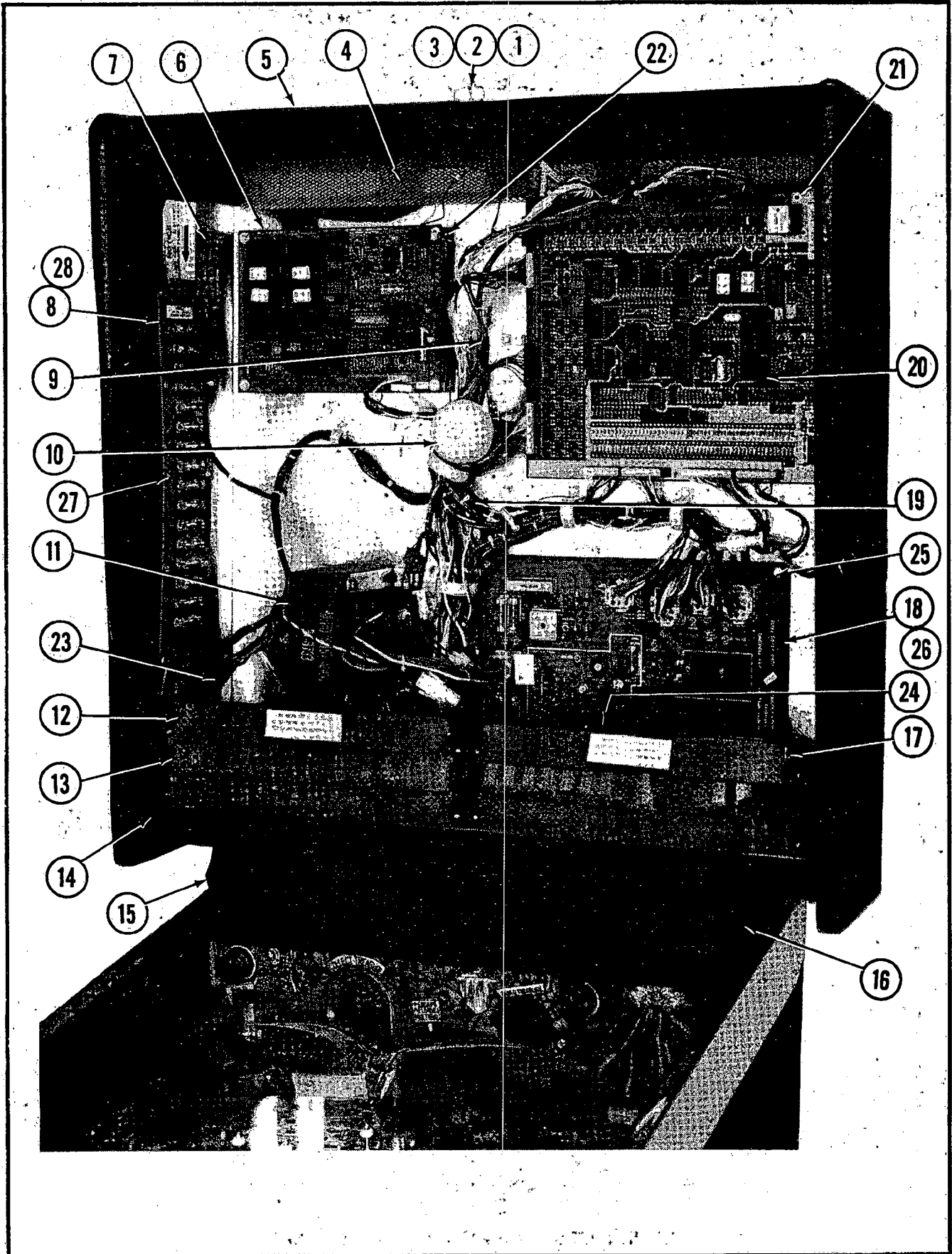


**ESCAPE FROM THE LOST WORLD
INTERNAL GAME PARTS—PARTS LIST**

ITEM	PART NUMBER	DESCRIPTION	QTY
1	A365-00043-0001	LINE CORD ASSEMBLY	1
	0017-00003-0114	FILTER: LINE, 5 AMP	1
	0017-00003-0618	CONVENIENCE OUTLET	1
	0017-00003-0500	LINE CORD: 3 CONDUCTOR, 18AWG	1
	115E-00001-0001	VARISTOR: METAL-OXIDE 130VAC	1
2	0017-00003-0570	SPEAKER: 4-OHM, 15 WATT, 5 1/4" DIAMETER	1
3	AH06-00052-0000	SPEAKER PANEL ASSEMBLY	1
4	AH05-00500-0000	CABINET ASSEMBLY	1
	A365-07250-0001	MOUNTING BRACKET ASSEMBLY: BACKBOX, RIGHT	1
	A365-07250-0002	MOUNTING BRACKET ASSEMBLY: BACKBOX, LEFT	1
	0360-00953-00XF	TEENUT: DOUBLE	4
	A365-07250-0003	DOLLY ASSIST-STILT ASSEMBLY	1
	0H05-00500-0000	CABINET	1
5	0017-00009-0490	GRILLE: VENT, 5 1/2" SQUARE	1
6	0017-00009-0589	GROUND STRAP: L = 23"	1
7	0017-00003-0513	SPEAKER: 8-OHM, 10 WATT, 6" X 9"	1
8	A365-00370-0000	TILT BOARD ASSEMBLY	1
	0360-00168-0000	BRACKET: TILT CONTACT	1
	0360-00170-0000	TILT HANGER	1
	0360-00502-0001	TILT BOARD	1
	0360-00922-00XF	WIRE FORM: PLUMB BOB	1
	103E-00002-0005	DIODE: 1N4148, 100V, 500MA, GLASS	1
9	A365-00060-0100	SWITCH ASSEMBLY: PUSH BUTTON	3
10	A365-00316-0100	SWITCH ASSEMBLY W/CAP: PUSH BUTTON	2
	0171-097P6-AXPC	CAPACITOR: .01MF, 500V, 20%	2
11	A365-00334-0000	FRONT RAIL ASSEMBLY	1
12	0950-00903-0000	CASH BOX: PLASTIC (NOT SHOWN)	1
13	0950-00113-00XF	HANDLE: CASH BOX (NOT SHOWN)	1
	0950-00114-0000	COVER: CASH BOX (NOT SHOWN)	1
14	0365-00214-00XF	BRACKET: SECURITY, CASH BOX	1
15	0967-00115-00XF	PLATE: BALL SHOOTER, INSIDE (NOT SHOWN)	1
16	A945-00062-0000	ON/OFF SWITCH & PLATE ASSEMBLY	1
	0017-00032-0105	SWITCH: 2PST, 6 AMP	1
17	0017-00101-0829	BOLT: CARRIAGE, 5/16" X 1 1/8" X 22	4
18	0017-00104-0160	WASHER: .325" X .600" X .029"	4
19	AH05-00006-0000	CABINET CABLE W/ASSEMBLIES	1
	AH05-00007-0000	CABINET CABLE W/O ASSEMBLIES	1
20	AH06-00007-0000	HIGH VOLTAGE CABLE ASSEMBLY	1
21	0365-00709-00XF	STUD: HEX, PLAYFIELD HINGE	2
22	0H06-00127-00XF	GRILLE: BLACK	1
23	0H06-00140-01XF	PIVOT ARM, RIGHT	1
24	0H06-00140-02XF	PIVOT ARM, LEFT	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

ESCAPE FROM THE LOST WORLD BACK CABINET ASSEMBLY
PART NO. AH05-00008-0000



**BACK CABINET ASSEMBLY PARTS LIST
PART NO. AH05-00008-0000**

ITEM	PART NUMBER	DESCRIPTION	QTY
1	0017-00005-0042	CAM: BACK DOOR LOCK	1
2	0017-00005-0050	KEYS: 750 SERIES DOOR LOCK W/2 INDIVIDUAL	1
3	0017-00005-0209	PLATE: LOCK	1
4	0365-00104-00XF	GRILLE: VENT	1
5	0H05-00511-0000	BACK BOX	1
	0017-00101-0025	SCREW: #8 X 1/2" SLOTTED HEX HEAD SCREW	35
6	A084-91864-AH05	PROGRAMMED SOUNDS DELUXE BOARD ASSEMBLY	1
7	0365-00963-0002	FOIL: BACK BOX FLUORESCENT	1
8	A084-91901-AH05	BRITE LIGHTS BOARD W/FUSES	1
	0017-00003-0638	FUSE: MDQ 3/4 AMP, 250 VAC, SLOW BLOW	16
9	AH06-00030-0000	DISPLAY CONTROLLER CABLE ASSEMBLY	1
10	A365-06700-0001	LAMP SOCKET W/MOUNTING BRACKET ASSEMBLY	1
	A365-00309-0000	SOCKET W/CONNECTOR & PINS ASSEMBLY	1
	0017-00003-0615	LAMP: 34 WATT MISER	1
11	MT00-00157-A000	TRANSFORMER: POWER (SEE COUNTRY KIT LISTING)	1
12	0365-00967-0000	SHIELD: DISPLAY P.C. BOARD	4
13	A365-00317-0000	DUAL DISPLAY BOARD W/CLIPS ASSEMBLY	2
14	0365-00993-0000	RETAINER: GLASS	1
15	A635-00383-00XF	BRACKET: W/PIVOT ASSEMBLY	1
16	A365-00384-00XF	BRACKET: W/PIVOT POST ASSEMBLY	1
17	0365-00219-0000	BRACKET: DISPLAY BOARD MOUNTING	1
18	AH05-00013-0000	POWER MODULE & SPACER ASSEMBLY	1
	A084-91785-AH05	6803 POWER MODULE W/FUSES	1
	0017-00003-0492	FUSE: GLH 3AG, 7 AMP, 125 VAC, FAST-BLOW	1
	0365-00952-0000	SHIELD: POWER SUPPLY	1
19	AH06-00007-0000	HIGH VOLTAGE CABLE ASSEMBLY	1
20	A084-91786-AH05	6803 CONTROL BOARD ASSEMBLY: PROGRAMMED	1
21	0365-00153-0000	BRACKET: P.C. BOARD SUPPORT	4
22	0365-00142-0000	BRACKET: P.C. BOARD MOUNTING	4
23	0017-00003-0007	FUSE: MDA, 3 AMP, 250 VAC, SLO-BLO	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

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BACK BOX SAFETY WARNING

★★★★★★★★★★
★ WARNING ★
★★★★★★★★★★

**TO AVOID INJURY TO OWNER/SERVICE PERSONNEL
AND TO PREVENT DAMAGE TO THE MACHINE, THE
BACK BOX MUST BE SECURED WITH THE BOLTS
PROVIDED BEFORE THE MACHINE IS TRANSPORTED
OR ACTIVATED.**

MO51-00365-A063

**PLAYFIELD ASSEMBLY--PARTS LIST
PART NO. AH05-00004-0000**

ITEM	DESCRIPTION	PART NUMBER
1	FLIPPER ASSEMBLY: DOUBLE SWITCH RIGHT	AC70-00023-0100
2	FLIPPER ASSEMBLY: DOUBLE SWITCH LEFT	AC70-00023-0200
3	SCOOP ASSEMBLY: SHORT	AH05-00029-0000
4	DRAIN GUIDE ASSEMBLY: LEFT	AH05-00030-0000
5	DRAIN GUIDE ASSEMBLY: RIGHT	AH05-00031-0000
6	LAVA PIT ASSEMBLY	AH05-00033-0000
7	LAVA PIT P.C. BOARD & LAMP ASSEMBLY	AH05-00040-0000
	BRACKET: LAVA PIT WALL	0H05-00102-0000
	BRACKET: LAVA PIT FRONT	0H05-00103-00XF
	BRACKET: LAVA PIT REAR	0H05-00139-00XF
	BUTYRATE: LAVA PIT	0H05-00911-00XF
	LAMP: WEDGE BASE, 6.3V	0017-00003-0501
	LAMP: WEDGE BASE, 12.8V	0017-00003-0525
	SUPPORT: SINGLE LOCK	0017-00042-0213
	#6 X 1/4" UNSLOTTED HEX SCREW	0017-00101-0124
8	ELEVATOR KICKER ASSEMBLY	AH05-00037-0000
9	FEED GUIDE ASSEMBLY: LEFT	AH05-00042-0000
10	FEED GUIDE ASSEMBLY: RIGHT	AH05-00043-0000
11	DROP TARGET ASSEMBLY: 3 IN-LINE	AH05-00049-0000
12	TARGET: WHITE W/DECAL	AH05-00048-0000
13	GUIDE ASSEMBLY: SMALL	AH05-00050-0000
14	SWITCH W/BRACKET ASSEMBLY: BOTTOM ARCH	AH05-00056-0000
	SWITCH W/BRACKET/BOLT	AH05-00038-0000
	BRACKET: BOTTOM ARCH SWITCH	0H05-00137-00XF
	#8-32 X 3/4" SCREW	0017-00101-0187
	SWITCH: MICRO; BOTTOM	0017-00032-0165
	#4-40 X 5/16" PHILLIPS PAN HEAD SCREW	0017-00101-0155
15	ARCH ASSEMBLY: BOTTOM	AH05-00058-0000
16	RAMP & COVER ASSEMBLY: LEFT FRONT	AH05-00059-0000
17	RAMP & COVER ASSEMBLY: RIGHT FRONT	AH05-00060-0000
18	EMITTER/DETECTOR SENSOR	AH05-00069-0000
19	DETECTOR P.C.B. ASSEMBLY	B084-91911-B000
20	EMITTER P.C.B. ASSEMBLY	B084-91912-A000
21	EJECT GUIDE ASSEMBLY	AH05-00070-0000
22	SWITCH ASSEMBLY: ROLLOVER	A020-00095-0301
23	SWITCH ASSEMBLY	A020-00095-0501
24	BRACKET W/WIRE FORM ASSEMBLY	A360-00216-0000
	BRACKET: WIRE FORM	0360-00134-0000
	WIRE FORM: ROLLOVER	0360-00930-0000
25	SWITCH ASSEMBLY: SLINGSHOT	A360-00230-0000
26	SWITCH ASSEMBLY: SLINGSHOT	A360-00239-0000
27	SWITCH: TARGET, YELLOW	A365-R0305-F113
28	TARGET W/SWITCH: YELLOW	A365-R0300-0003
29	SWITCH: TARGET, YELLOW	A365-R0307-F113

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

PLAYFIELD ASSEMBLY—PARTS LIST, CONT'D
PART NO. AH05-00004-0000

ITEM	DESCRIPTION	PART NUMBER
30	EJECT HOLE ASSEMBLY: 2-WAY	A365-00087-0000
31	GAME BRACKET & WIRE FORM ASSY.	A365-00377-0000
	BRACKET: GATE	0365-00229-0000
	WIRE FORM: GATE	0391-00917-0000
32	KICKER ASSEMBLY	A365-00381-0000
33	BRACKET W/WIRE FORM ROLLOVER LEFT	A365-00382-0000
	BRACKET: ROLLOVER WIRE	0360-00135-0000
	WIRE FORM	0365-00997-0000
34	GATE BRACKET & WIRE FORM ASSY.	A365-06100-0001
	WIRE FORM: GATE BRACKET	0010-00609-0000
	BRACKET: GATE	0365-02100-0001
35	THUMPER BUMPER ASSEMBLY	A967-00053-0100
36	KICKER ASSEMBLY: SLINGSHOT	A967-00059-0000
37	GUIDE: RAMP TRAY	0H05-00136-0000
38	GUIDE: PLAYFIELD RIGHT	0H05-00149-00XF
39	GUIDE: PLAYFIELD LEFT	0H05-00149-02XF
40	GUIDE: BOTTOM DRAIN	0H05-00151-0000
41	LAVA PIT COVER	0H05-00909-00XF
42	RUBBER GASKET	0H05-00910-0000
43	COLLAR: THUMPER BUMPER, RED	0017-00042-0566
44	WIRE FORM: BALL GUIDE 2 $\frac{3}{8}$ "	0360-00175-5300
45	WIRE FORM: BALL GUIDE 1 $\frac{1}{2}$ "	0365-00151-1250
46	WIRE FORM: BALL GUIDE 1 $\frac{3}{4}$ "	0365-00151-1750
47	WIRE FORM: BALL GUIDE 3 $\frac{3}{8}$ "	0365-00151-3375
48	WIRE FORM: BALL GUIDE 5 $\frac{3}{8}$ "	0365-00151-5375
49	WIRE FORM: BALL GUIDE 7 $\frac{1}{4}$ "	0365-00151-7250
50	FLIPPER W/SHAFT ASSEMBLY: YEL.	0365-00984-0300
51	CAP: THUMPER BUMPER, RED	0017-00042-0518
52	BOTTOM ARCH: PLASTIC	0H05-00923-0000
53	LIGHT DOME: GREEN	0017-00042-0744
54	LIGHT DOME: CLEAR	0017-00042-0745

RUBBER RINGS

A	BUMPER: POST, WHITE RUBBER	0017-00041-0633
B	BUMPER: POST, WHITE RUBBER	0017-00041-0637
C	BUMPER: WHITE RUBBER .23	0017-00041-0641
E	BUMPER: WHITE RUBBER 1.0	0017-00041-0643
F	BUMPER: WHITE RUBBER 1.5	0017-00041-0644
G	BUMPER: WHITE RUBBER 2.5	0017-00041-0646
H	FLIPPER: RED RUBBER, 3.0	0017-00041-0682

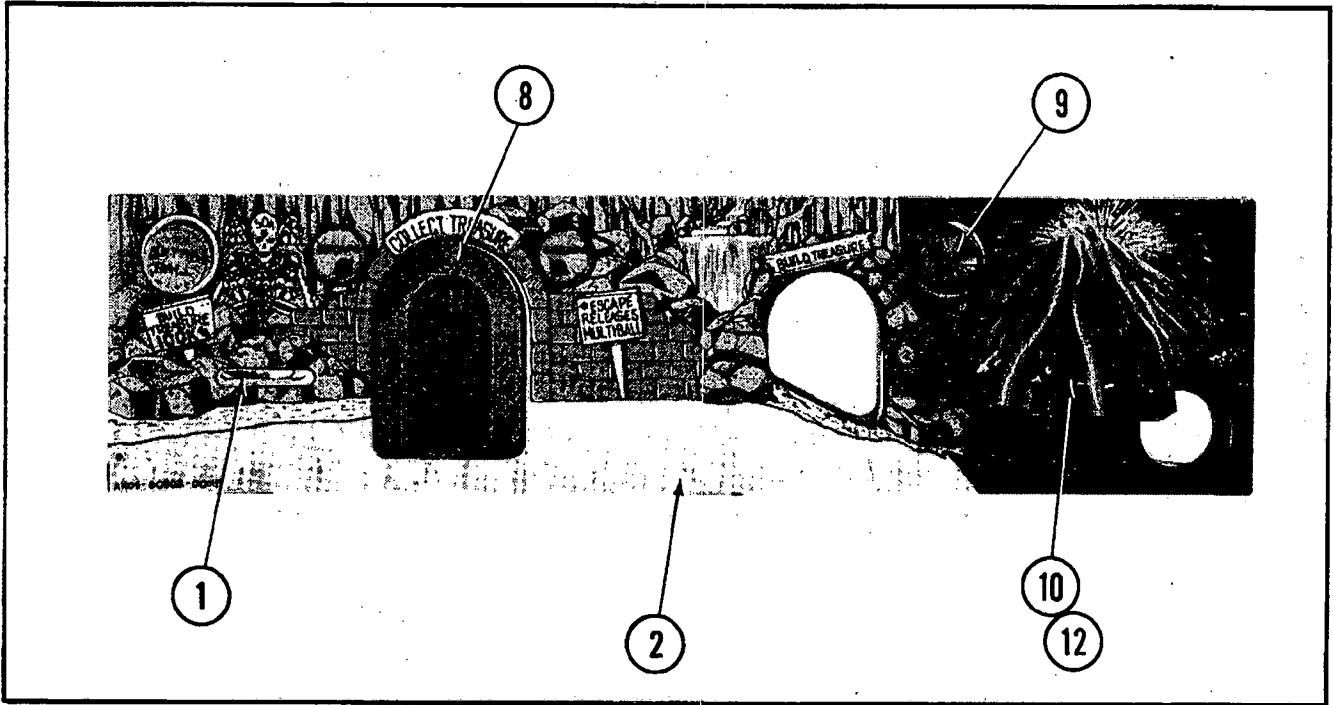
POSTS

J	POST: GREEN, 1.020	0017-00042-0712
K	POST: GREEN, 1.205"	0017-00042-0714
L	POST: BUMPER #10 X 7 W.S.	0360-00732-00XF
M	POST: BUMPER #10-32 X 7	0365-00700-00XF
N	POST: $\frac{3}{8}$ " X $1\frac{3}{16}$ "	0365-00980-0000
P	STUD: #6-32 X $1\frac{1}{16}$ "	0967-00707-01XF

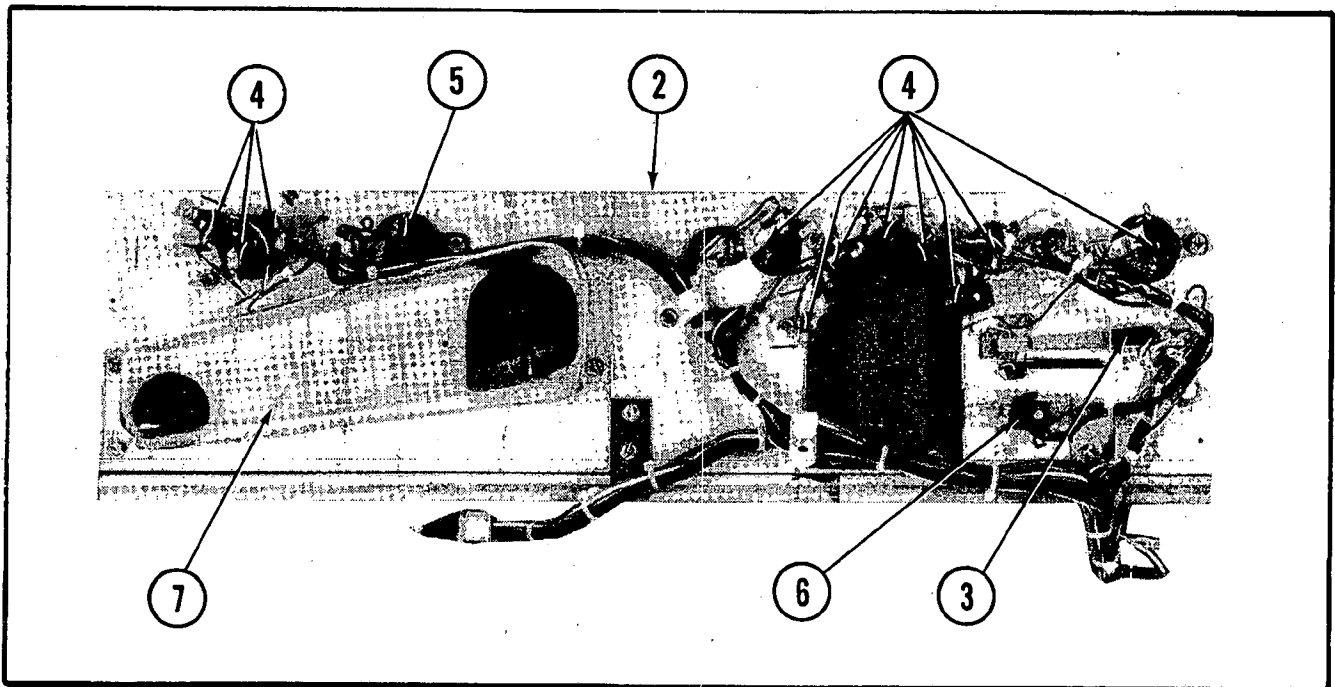
WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

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BACKBOARD ASSEMBLY (FRONT VIEW)
PART NO. AH05-00009-0000



BACKBOARD ASSEMBLY (REAR VIEW)
PART NO. AH05-00009-0000



**BACKBOARD ASSEMBLY PARTS LIST
PART NO. AH05-00009-0000**

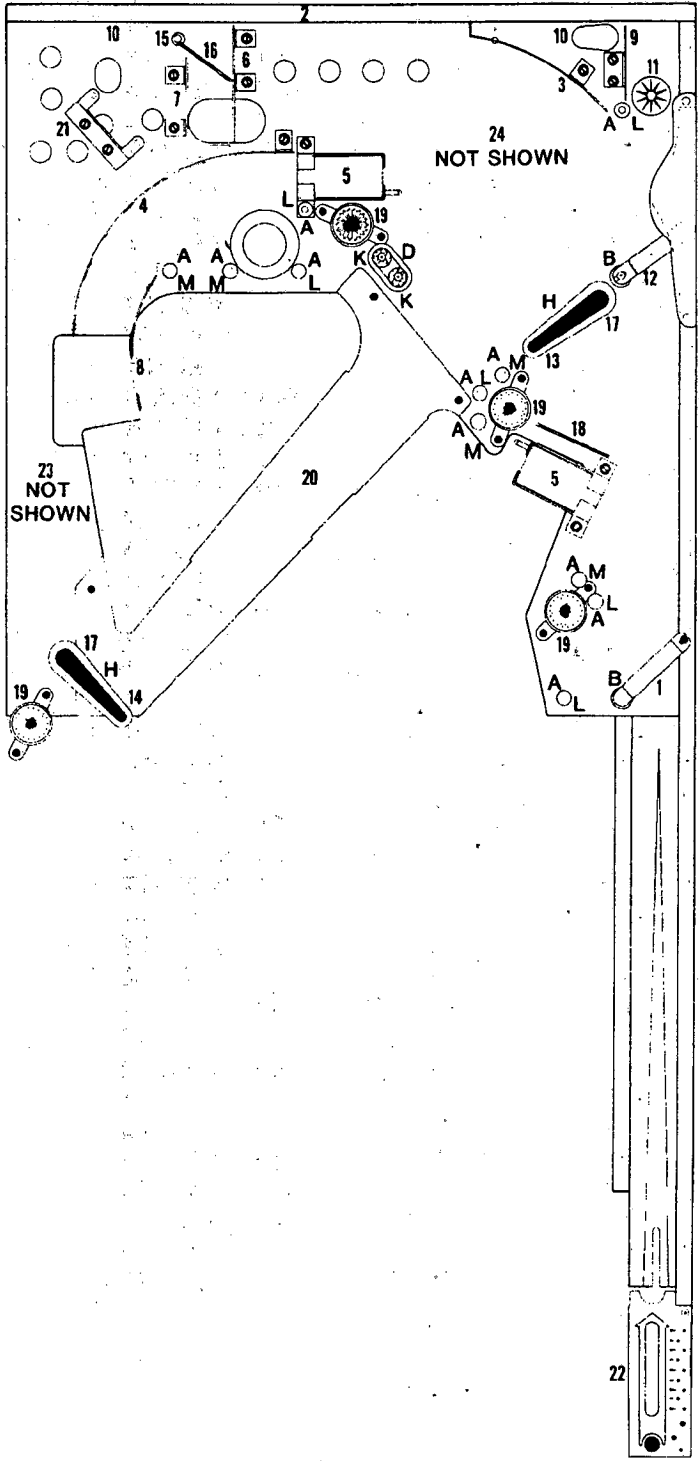
ITEM	DESCRIPTION	PART NUMBER	QTY
1	GATE W/WIRE FORM ASSEMBLY ROLLOVER LEFT	AH05-00054-0000	1
	WIRE FORM: ROLLOVER	0H05-00929-0000	1
	BRACKET: ROLLOVER WIRE	0360-00135-0000	1
2	BACKBOARD W/INSERT SCREENED	AH05-00502-00XF	1
3	SWITCH ASSEMBLY: ROLLOVER	A020-00095-0301	1
	DIODE: 1N4148, 100V, 500MA	103E-00002-0005	1
4	LAMP W/SOCKET ASSEMBLY	A365-00008-0000	11
	LAMP: WEDGE BASE, 6.3V	0017-00003-0501	11
5	LAMP W/SOCKET ASSEMBLY	A365-00008-0100	1
	LAMP: WEDGE BASE, 12.8V	0017-00003-0525	1
6	LAMP W/SOCKET/DIODE ASSY.	A365-00009-0100	1
	LAMP: WEDGE BASE, 12.8V	0017-00003-0525	1
7	TUNNEL: VOLCANO	0H05-00914-0000	1
8	ESCAPE DOOR	0H05-00916-0000	1
9	LIGHT DOME: PLASTIC, RED	0017-00042-0741	1
10	VOLCANO	0H05-00913-0000	1
11	MYLAR: BACKBOARD	0H05-00932-0000	1
12	POST: $\frac{3}{8}$ " X $1\frac{3}{16}$ "	0365-00980-0000	1

ASSEMBLY MOUNTING HARDWARE

#6 X $\frac{3}{8}$ " SLOTTED HEX SCREW	0017-00101-0010	14
#8 X $\frac{1}{2}$ " SLOTTED HEX SCREW	0017-00101-0025	17
#6 X $1\frac{1}{2}$ " PHILLIPS ROUND HEAD SCREW	0017-00101-0385	1
#5 X $\frac{7}{8}$ " PHILLIPS ROUND HEAD SCREW	0017-00101-0394	2

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

PLATFORM ASSEMBLY
PART NO. AH05-00023-0000

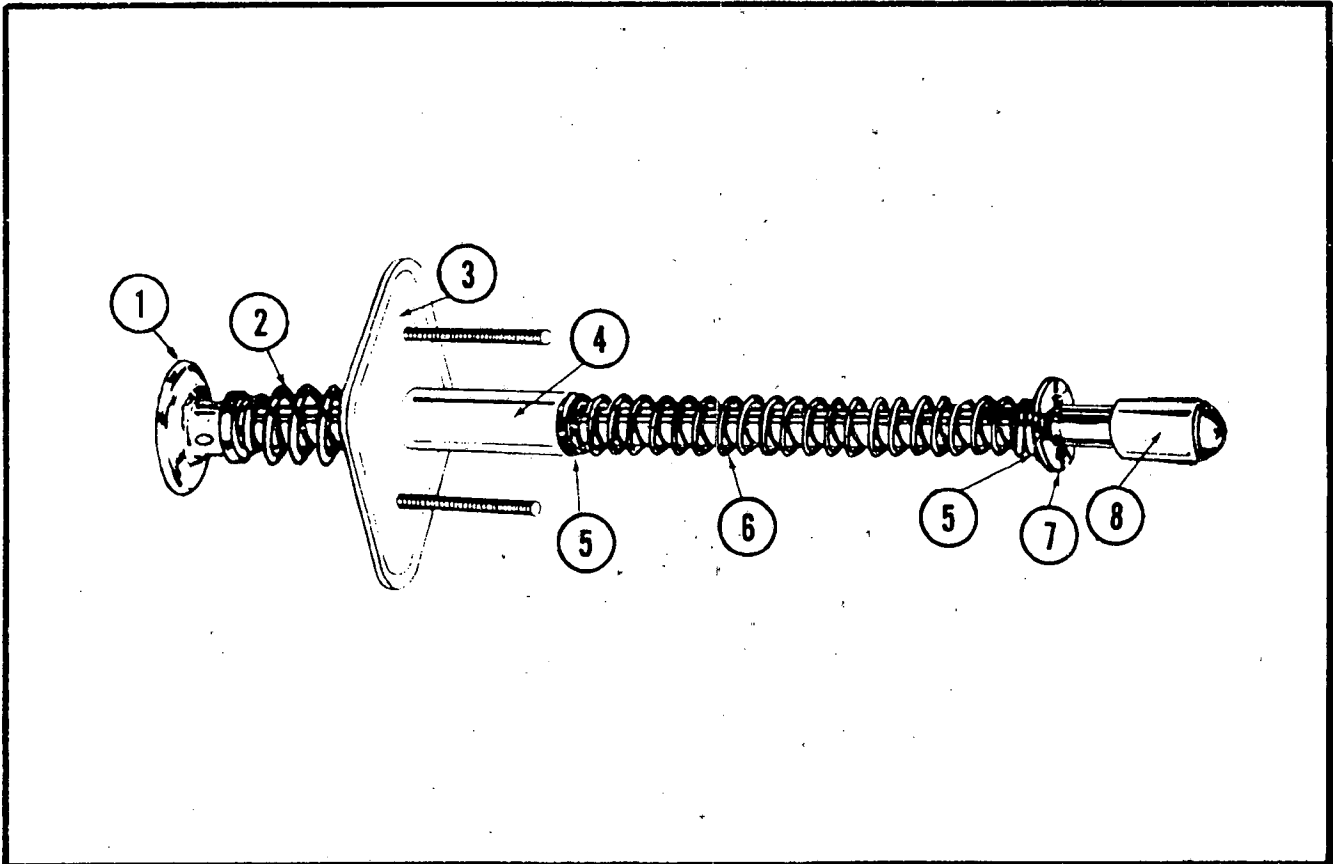


**PLATFORM ASSEMBLY—PARTS LIST
PART NO. AH05-00023-0000**

ITEM	DESCRIPTION	PART NUMBER
1	GATE BRACKET & WIRE FORM ASSEMBLY	AA40-00034-0000
	WIRE FORM: ROLLOVER	0A40-00909-0000
	BRACKET: GATE	0360-00116-0000
2	BACKBOARD ASSEMBLY	AH05-00009-0000
3	MOUNTAIN BALL GUIDE	AH05-00018-0000
4	BALL GUIDE ASSEMBLY: SECOND LEVEL	AH05-00019-0000
5	ELEVATOR ASSEMBLY	AH05-00022-0000
6	BALL GUIDE ASSEMBLY: RIGHT	AH05-00025-0000
7	BALL GUIDE ASSEMBLY: LEFT	AH05-00026-0000
8	INSIDE GUIDE ASSEMBLY	AH05-00027-0000
9	BALL RETAINER ASSEMBLY	AH05-00028-0000
10	BRACKET & HINGE WELD ASSEMBLY	AH05-00055-00XF
11	SWITCH ASSEMBLY	A020-00095-0201
12	GATE BRACKET & WIRE FORM ASSEMBLY	A360-00212-0000
	BRACKET: GATE	0360-00131-0000
	WIRE FORM: GATE BRACKET	0360-00924-0000
13	FLIPPER ASSEMBLY: SINGLE SWITCH RIGHT	A365-00386-0100
14	FLIPPER ASSEMBLY: SINGLE SWITCH LEFT	A365-00386-0200
15	FREE BALL GATE ASSEMBLY: LONG	A365-05900-0001
16	WIRE FORM: BALL GATE	0H05-00152-0000
17	FLIPPER W/SHAFT ASSEMBLY: YELLOW	0365-00984-0300
18	WIRE FORM: BALL GUIDE	0365-00151-2375
19	LIGHT DOME: YELLOW	0017-00042-0743
20	BRIDGE	0H05-00119-00XF
21	MOUNTAIN MOUNTING BRACKET	0H05-00120-00XF
22	SHOOTER GAUGE--ROLLOVER	0H05-00100-00XF
23	RAMP ASSEMBLY: TO 2ND LEVEL	AH05-00062-0000
24	MOUNTAIN ASSEMBLY: ESCAPE	AH05-00063-0000
RUBBER RINGS		
A	BUMPER: POST, WHITE RUBBER	0017-00041-0633
D	BUMPER: WHITE RUBBER .25"	0017-00041-0642
H	FLIPPER: RED RUBBER, 3"	0017-00041-0682
POSTS		
K	POST: GREEN, 1.205"	0017-00042-0714
L	POST: BUMPER #10 X 7 W.S.	0360-00732-00XF
M	POST: BUMPER #10-32 X 7	0365-00700-00XF

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

**BALL SHOOTER ROD & SPRING ASSEMBLY
PART NO. A360-00280-0000**



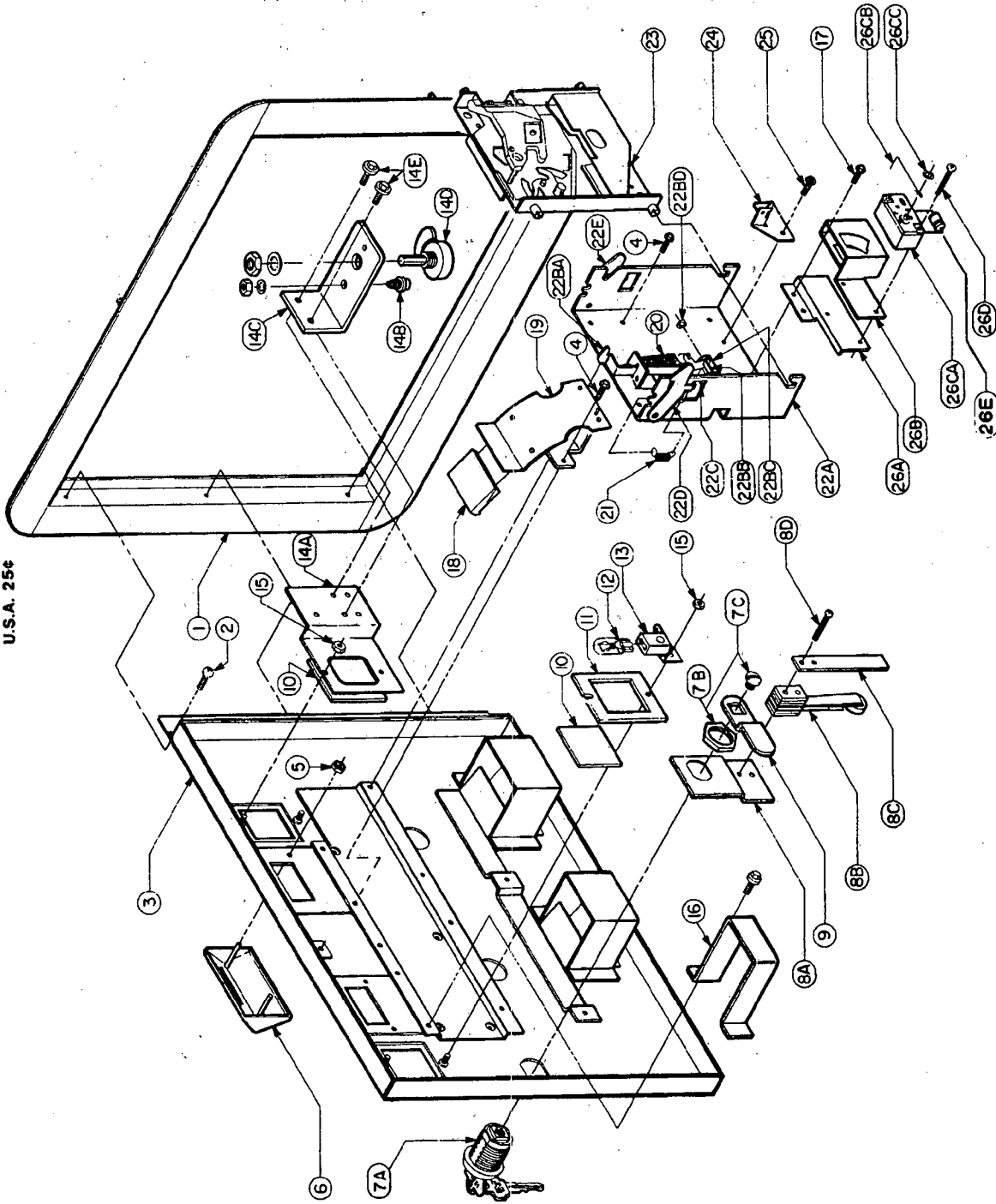
ITEM	PART NO.	DESCRIPTION	QTY
1	0017-00009-0610	BALL SHOOTER ROD ASSEMBLY: MOLDED	1
2	0010-00271-0000	SPRING: COMPRESSION	1
3	A360-00040-00XF	SHOOTER GUIDE COVER WELD ASSEMBLY	1
4	0017-00042-0347	GUIDE: BALL SHOOTER	1
5	0017-00104-0076	WASHER: FLAT .395" I.D., .500" O.D. & .032" TH.	3
6	0010-00274-0024	SPRING: COMPRESSION	1
7	0017-00100-0037	E-RING: .375" DIA.	1
8	0017-00041-0631	SHOOTER-TIP: ROUND, RUBBER	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

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COIN DOOR ASSEMBLY—U.S.A. 25¢
PART NO. A982-00014-0013

PINBALL GAME COIN DOOR ASSEMBLY
U.S.A. 25¢



**COIN DOOR WITH CABLE ASSEMBLY PARTS LIST—U.S.A. 25¢
PART NO. A982-00014-0013**

ITEM	PART NO.	DESCRIPTION	QTY
1*	0090-00002-048K	DOUBLE ENTRY COIN DOOR FRAME	1
2*	0017-00101-0121	#6—32 X 5/16" PHILLIPS TRUSS HEAD SCREW	3
3	A090-00072-06BK	COIN DOOR: 2-HOLE PAINTED	1
4	0017-00101-0123	#8 X 1/4" UNSLOTTED HEX HEAD SCREW	9
5	0017-00103-0059	PUSH NUT	4
6	0090-00912-0000	COIN ENTRY PLATE—25¢	2
7A	0017-00005-0200:	LOCK: INDIVIDUAL KEYED W/2 KEYS	1
7B	0017-00103-0079	3/4 HEX NUT	1
7C	0017-00101-0125	#10—32 X 1/4" SLOTTED PAN HEAD SCREW	1
8	A090-00096-0000	ANTI-SLAM SWITCH & BRACKET ASSEMBLY	1
8A	0090-00185-00XF	DOOR TILT SWITCH BRACKET	1
8B	A090-00095-0000	DOOR ANTI-SLAM SWITCH	1
8C	0090-00126-01XF	SWITCH BACK-UP PLATE	1
8D	0017-00101-0155	#4—40 X 9/16" PHILLIPS PAN HEAD	2
9	0017-00005-0238	DOOR CAM	1
10	0090-00903-9500	25¢ WINDOW	2
11	0090-00438-0000	COIN PLEX RETAINER	1
12	0017-00003-0501	LAMP: 6.3 VOLT, WEDGE BASE #555	2
13	0017-00031-0048	WEDGE BASE SOCKET W/BRACKET	2
14	A090-00647-0000	BRACKET & SWITCH ASSEMBLY	1
14A	0090-00179-0000	CABLE & SWITCH MOUNTING BRACKET	1
14B	0017-00032-0120	PUSH-BUTTON SWITCH	1
14C	0360-00171-00XF	BRACKET: VOLUME CONTROL MOUNTING	1
14D	105E-00003-0001	POTENTIOMETER: 0-100 OHMS, WIREWOUND	1
14E	0017-00101-0123	#8 X 7/8" UNSLOTTED HEX HEAD SCREW	2
15	0017-00103-0084	#6—32 HEX NUT W/SEMS	4
16	0090-00434-00XF	SWITCH GUARD	1
17	0017-00101-0124	#6 X 1/4" UNSLOTTED HEX HEAD SCREW	4
18	0090-00911-0000	INSULATOR	2
19	A090-00087-0000	COIN CHUTE & TOP ASSEMBLY	2
	A090-00081-00XF	COIN CHUTE & BRACKET ASSEMBLY	1
	0090-00172-00XF	COIN CHUTE TOP	1
	0017-00101-0140	#4—40 X 5/16" PHILLIPS PAN HEAD SCREW	3
	0017-00007-0162	COTTER PIN	4
20	0010-00134-0000	SPRING:	2
21	0010-00181-0000	SPRING:	4
22	A090-00115-0000	COIN ACCEPTOR FRAME SUB-ASSEMBLY	2
22A	A090-00118-0000	COIN ACCEPTOR & BUSHING ASSEMBLY	1
22B	A090-00116-0000	REJECT LEVER ASSEMBLY	2
22BA	0090-00182-00XF	REJECT LEVER	1
22BB	0090-00129-00XF	POST: PIVOT REJECTOR	1
22BC	0090-00167-00XF	PIVOT LEVER	1
22BD	0017-00100-0012	E-RING: .125" DIA.	1
22C	0017-00007-0083	ROLL PIN: 1/8" X 1 5/8"	1
22D	0093-00145-01XF	LATCH: LEFT	1
22E	0093-00145-00XF	LATCH: RIGHT	1
	0090-00910-00XF	REJECT BUTTON	1
	0090-00183-0000	BUTTON STOP	1
	0017-00101-0140	#4—40 X 5/16" PHILLIPS PAN HEAD SCREW	1

*THESE ITEMS ARE NOT PART OF THE DOOR ASSEMBLY & MUST BE ORDERED SEPARATELY.

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

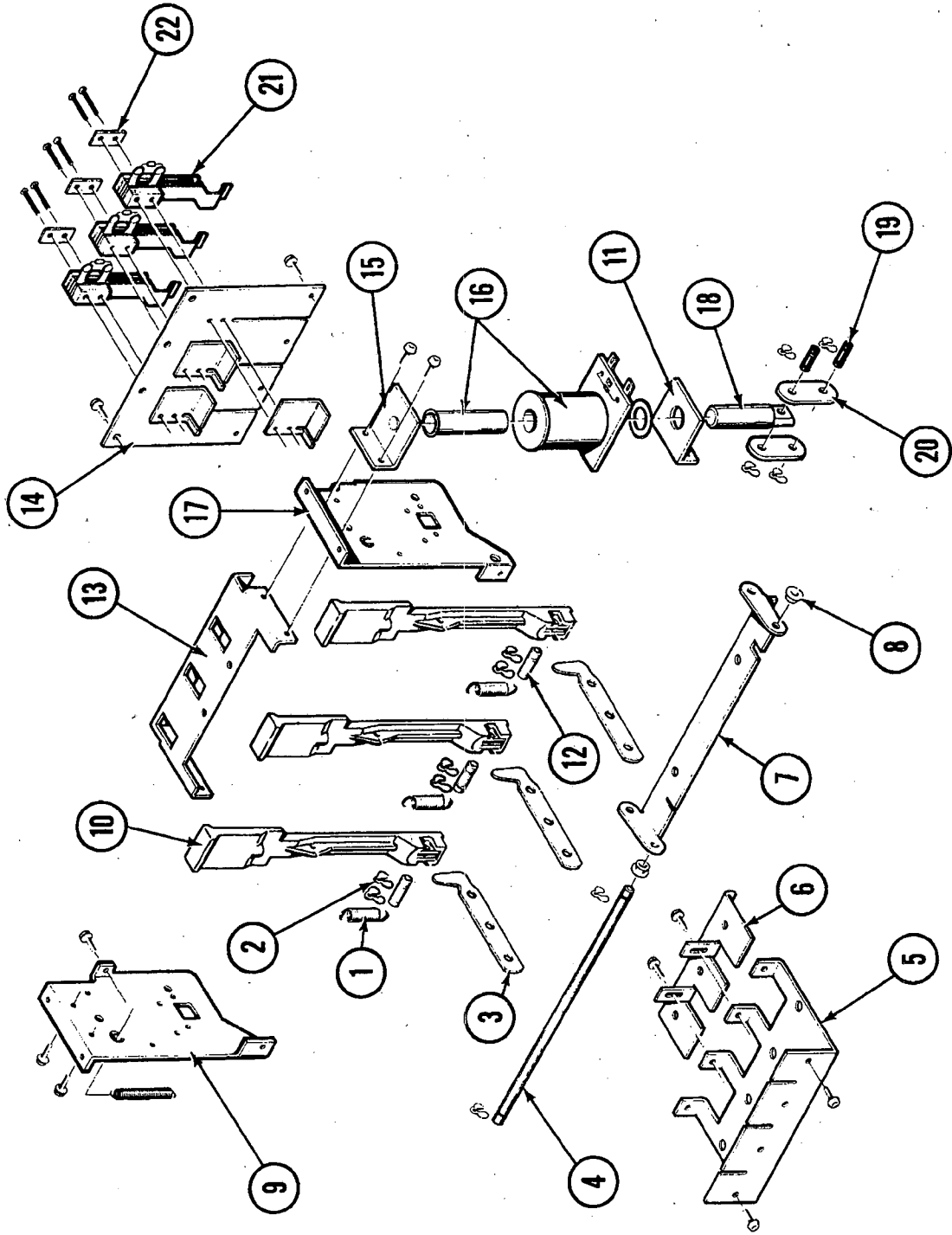
**COIN DOOR WITH CABLE ASSEMBLY PARTS LIST—U.S.A. 25¢, CONT'D
PART NO. A982-00014-0013**

ITEM	PART NO.	DESCRIPTION	QTY
23	0151-00086-0000	COIN ACCEPTOR W/STRING CUTTER	2
24	A090-00064-0100	ANTI-PENNY DEVICE	2
25	0017-00101-0099	#6 X 1/4" SLOTTED HEX HEAD MACHINE SCREW	4
26	A090-00654-0000	COIN GUIDE, SWITCH & DIODE ASSEMBLY	1
26A	0090-00162-00XF	BRACKET: COIN SWITCH MOUNTING	1
26B	0017-00005-0203	COIN SWITCH CHUTE	1
26C	A090-00059-0400	COIN SWITCH & WIRE ASSEMBLY	1
26CA	0017-00005-0195	COIN SWITCH	1
26CB	0010-00599-0000	COIN SWITCH WIRE	1
26CC	0017-00007-0015	PUSH-ON RING	1
26D	0017-00101-0147	#4-40 X 3/4" PHILLIPS PAN HEAD SCREW	4
26E	103E-00002-0005	DIODE: 1N4148, 500 MA, 100V	2
	0090-00184-0000	COIN SWITCH COVER (NOT SHOWN)	2
	A982-00015-0007	DOOR CABLE ASSEMBLY: STANDARD (NOT SHOWN)	1
	0017-00007-0019	KEY HOOK: DOOR	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

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DROP TARGET ASSEMBLY
PART NO. AH05-00049-0000



**DROP TARGET ASSEMBLY: 3 SIDE-BY-SIDE PARTS LIST
PART NO. AH05-00049-0000**

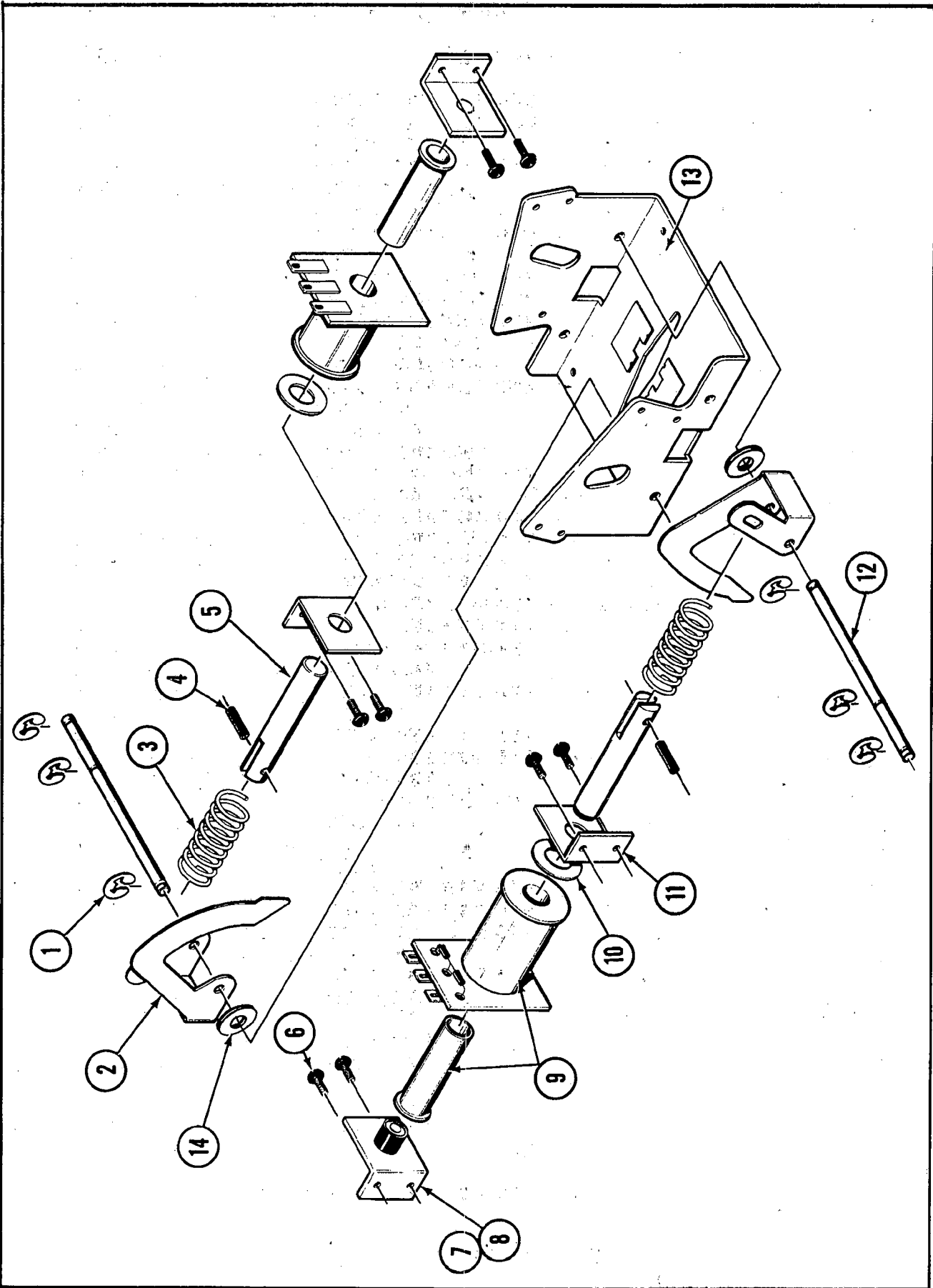
ITEM	PART NO.	DESCRIPTION	QTY
1	0010-00275-0314	SPRING: EXTENSION	3
2	0017-00100-0117	RING: KLIP .250"	12
3	0360-00117-00XF	LINK: DROP TARGET	3
4	0391-00700-00XF	SHAFT: DROP TARGET	1
5	0967-00143-03XF	PLATE: BOTTOM-STATIONARY, L = 4 $\frac{1}{16}$ "	1
6	0967-00142-03XF	PLATE: BOTTOM-ADJUSTABLE, L = 2 $\frac{5}{16}$ "	1
7	0391-00103-00XF	RESET BAR: DROP TARGET	1
8	0017-00042-0429	NYLINER: SNAP-IN COIL	4
9	0371-00125-00XF	PLATE: END, DROP TARGET	1
10	AH05-00048-0000	TARGET W/HOT STAMP ASSEMBLY: WHITE	3
11	0360-00122-00XF	BRACKET: COIL	1
12	0360-00720-00XF	PIN: TARGET PIVOT	3
13	0967-00144-13XF	PLATE: LATCH, L = 4"	1
14	0371-00123-12XF	PLATE: SIDE, L = 4 $\frac{1}{8}$ "	1
15	A360-00014-0000	CORE-PLUG & BRACKET ASSEMBLY	1
16	A360-00209-0000	COIL & TUBING ASSEMBLY: 2 LUG	1
	A967-00077-0000	COIL: 2-LUG	1
	103E-00002-0015	DIODE: 1N4004GP, 400V, 1 AMP	1
	0017-00041-0673	TUBING: L = 2" X $\frac{3}{4}$ "	1
17	0371-00124-00XF	PLATE: END, DROP TARGET	1
18	0360-00717-00XF	PLUNGER	1
19	0360-00721-00XF	PIN: LINK	2
20	0360-00118-0000	LINK: DROP TARGET	2
21	A967-00066-0000	SWITCH ASSEMBLY W/DIODE	3
	A360-00062-0000	SWITCH ASSEMBLY	3
22	0020-00202-0000	PLATE: SWITCH	6
23	0360-00723-01XF	ROD: SPRING, L = 4.5" (NOT SHOWN)	2

ADDITIONAL ASSEMBLY MOUNTING HARDWARE LISTING

ITEM	PART NO.	DESCRIPTION	QTY
	0017-00100-0118	RING: RETAINING-.125"	4
	0017-00101-0172	#5-40 X $\frac{3}{8}$ " PHILLIPS PAN HEAD SCREW	6
	0017-00101-0184	#8-32 X $\frac{3}{8}$ " HEX HEAD SCREWS	14
	0017-00101-0207	#8-32 X $\frac{3}{8}$ " PHILLIPS PAN HEAD SCREW	2
	0017-00101-0810	#5-40 X $\frac{5}{8}$ " PHILLIPS PAN HEAD SCREW	6
	0017-00104-0003	WASHER: SPLIT, #8-.168" I.D., .293" O.D., .040 TH	2
	0017-00104-0062	WASHER: FLAT, #8-.171 I.D., .375" O.D., .032 TH	2
	0017-00104-0063	WASHER: SPRING, .645" I.D., 1" O.D., .012 TH	1
	0017-00104-0120	WASHER: FLAT, .132" I.D., .375" O.D., .047" TH	2

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

EJECT HOLE ASSEMBLY: TWO WAY
PART NO. A365-00087-0000

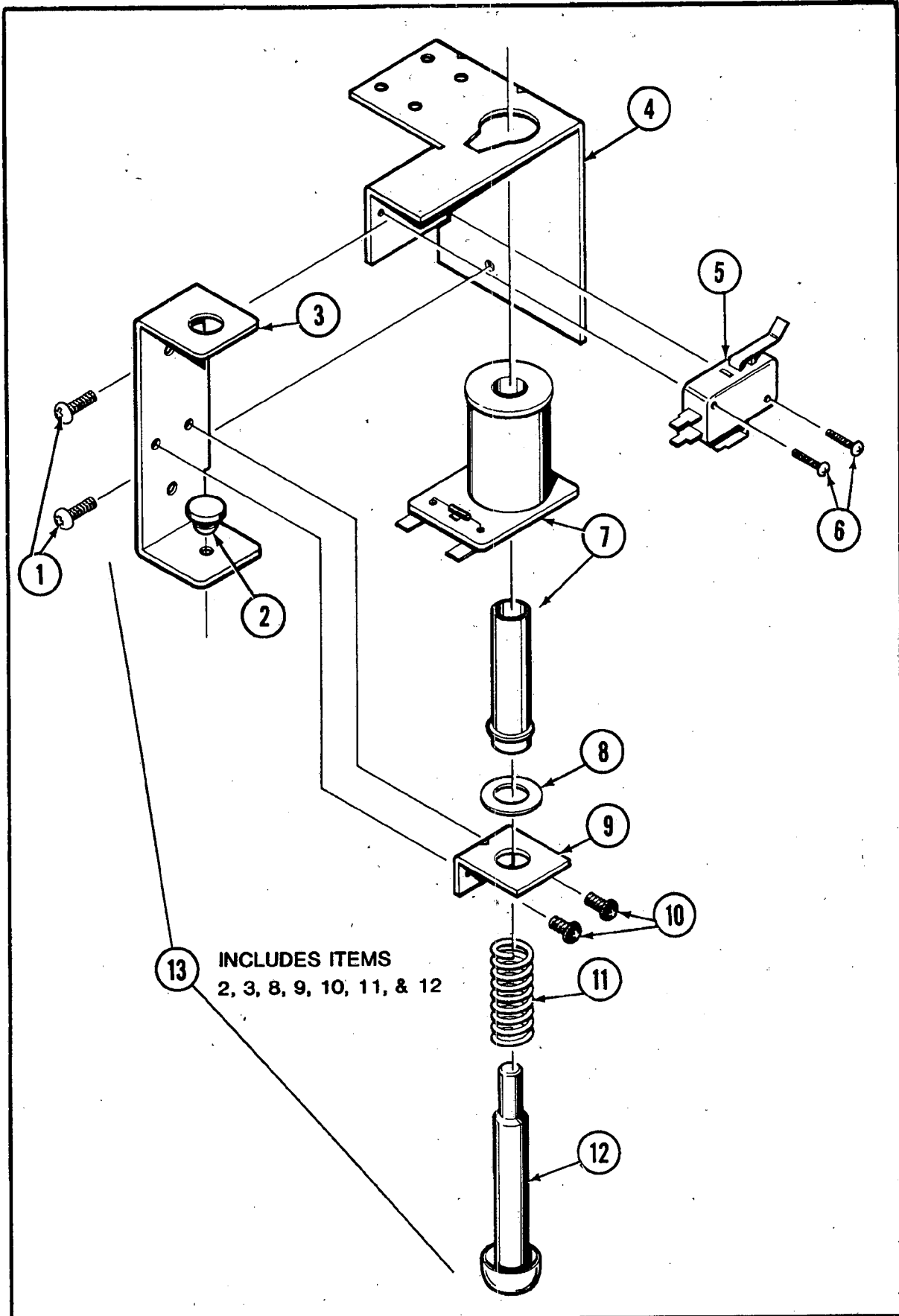


**EJECT HOLE ASSEMBLY: TWO WAY—PARTS LIST
PART NO. A365-00087-0000**

ITEM	PART NO.	DESCRIPTION	QTY.
1	0017-00100-0110	E-RING: RE-INFORCED .188"	6
2	0365-00147-00XF	KICKER ARM: BALL	2
3	0010-00274-0212	SPRING: COMPRESSION	2
4	0017-00007-0086	ROLL PIN: #8 X 1/2"	2
5	0365-00706-00XF	PLUNGER	2
6	0017-00101-0162	SCREW: #8-32 X 3/8" PHILLIPS TAPTITE	8
7	A369-00019-0000	CORE PLUG & BRACKET ASSEMBLY	2
8	0967-00103-00XF	BRACKET: CORE PLUG	2
9	A967-00046-0000	COIL & TUBING ASSEMBLY 2-LUG	2
	A365-00067-0006	COIL: 2-LUG	2
	103E-00002-0015	DIODE: 1N4004GP, 400VAC, 1 AMP	2
	0017-00041-0605	TUBING: COIL, L = 1.686" X 5/8"	2
10	0017-00104-0073	WASHER: FLAT—.515" I.D., .875" O.D., .013" TH.	2
11	0360-00318-00XF	BRACKET: COIL	2
12	0365-00707-00XF	SHAFT: TWO WAY EJECT	2
13	A365-00090-00XF	BRACKET & BALL PLATE ASSEMBLY	1
14	0017-00104-0022	WASHER: .193 X .437 X .046	2

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

ELEVATOR KICKER ASSEMBLY
PART NO. AH05-00037-0000

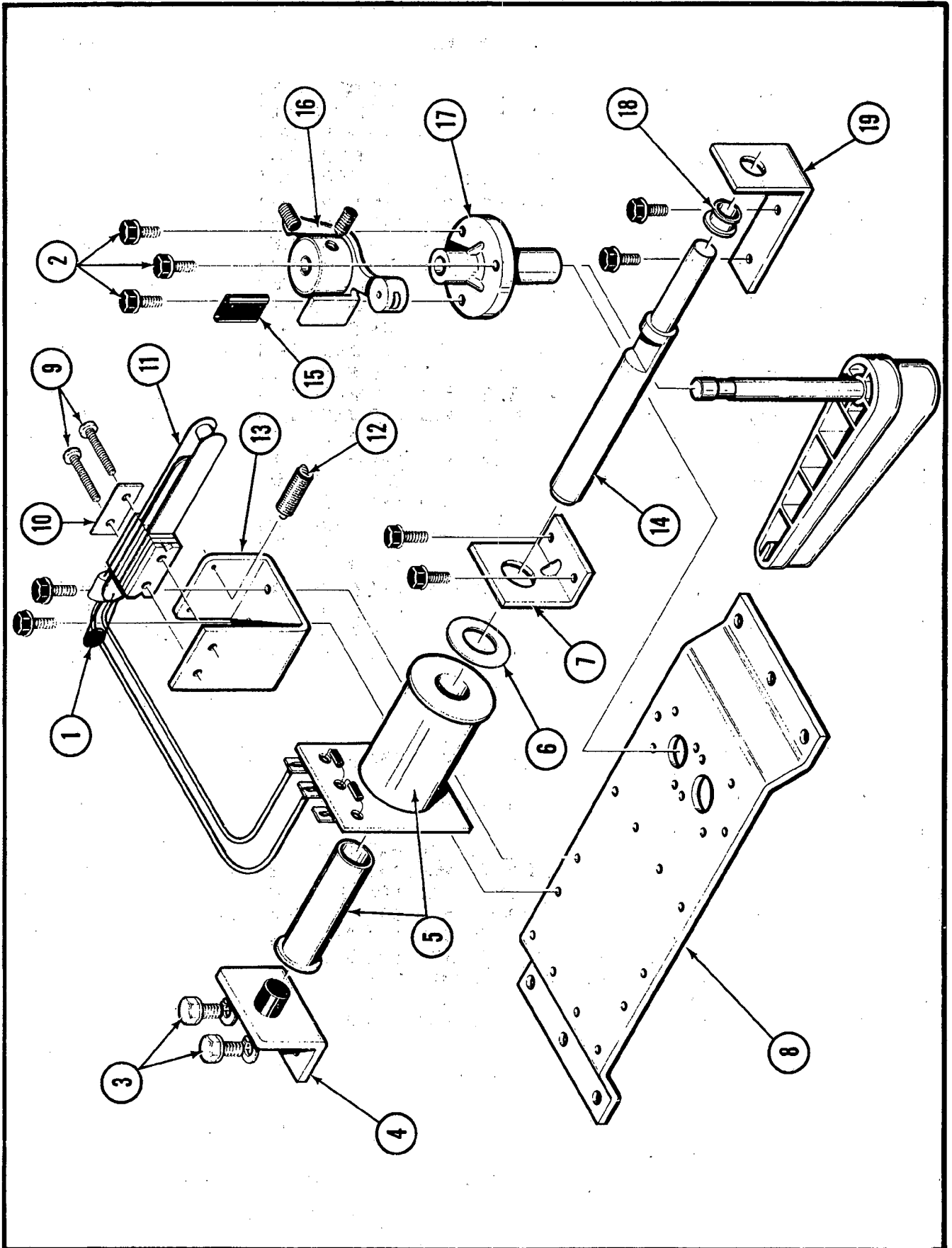


ELEVATOR KICKER ASSEMBLY—PARTS LIST
PART NO. AH05-00037-0000

ITEM	PART NO.	DESCRIPTION	QTY
1	0017-00101-0462	#8-32 X 5/16" PHILLIPS ROUND HEAD MACHINE SCREW	2
2	0017-00041-0635	BUMPER: PLUG, BLACK	1
3	0360-00909-00XF	FRAME: COIL	1
4	0H05-00112-00XF	BRACKET: COIL	1
5	0017-00032-0162	SWITCH: MICRO	1
6	0017-00101-0155	#4-40 X 5/16" PHILLIPS PAN HEAD SCREW	2
7	A360-00046-0000	COIL & TUBING ASSEMBLY 2-LUG	1
	A365-00067-0006	COIL: 2-LUG	1
	103E-00002-0015	DIODE: 1N4004GP, 400V, 1 AMP	1
	0017-00041-0611	TUBING: COIL—L = 1.844" X 5/8"	1
8	0017-00104-0073	WASHER: SPRING—.515" I.D., .875" O.D., .013" TH.	1
9	0360-00318-00XF	BRACKET: COIL	1
10	0017-00101-0161	#80-32 X 1/4" PHILLIPS PAN HEAD SCREW	2
11	0010-00274-0175	SPRING: COMPRESSION	1
12	A360-00011-00XF	PLUNGER & STRIKER ASSEMBLY	1
	0360-00716-00XF	PLUNGER	1
	0360-00724-0000	STRIKER	1
13	A365-00390-0000	KICKER ASSEMBLY: LUG RIGHT	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

FLIPPER ASSEMBLY: SINGLE SWITCH—LEFT
PART NO. A365-00386-0200

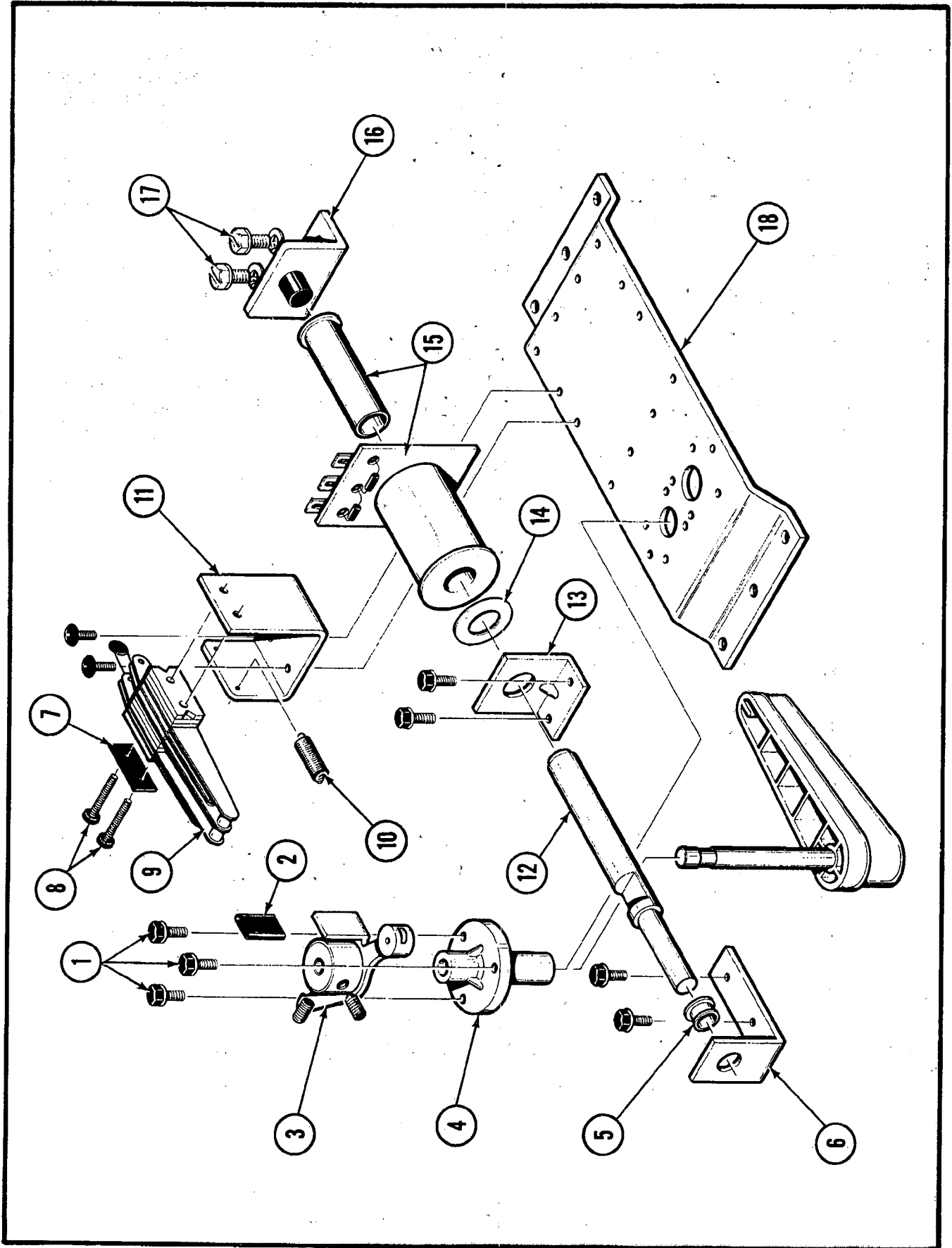


**FLIPPER ASSEMBLY PARTS LIST—SINGLE SWITCH LEFT
PART NO. A365-00386-0200**

ITEM	PART NO.	DESCRIPTION	QTY
1	0017-097P6-AXPC	CAPACITOR: .01 MFD, 500V, CERAMIC DISC	1
2	0017-00101-0184	#8-32 X 3/8" HEX HEAD SCREW	9
3	0017-00101-0816	#10-32 X 3/8" SLOTTED HEX HEAD SCREW	2
4	A365-00024-0000	CORE PLUG & BRACKET ASSEMBLY	1
5	A365-00389-0000	COIL & TUBING ASSEMBLY: 3-LUG	1
	A365-00067-0033	COIL: 3-LUG	1
	0017-00041-0605	TUBING: COIL, L = 1.686" X 3/8"	1
	103E-00002-0015	DIODE: 1N4004GP, 400VAC, 1 AMP	2
6	0017-00104-0073	WASHER: SPRING: .515" I.D., .875" O.D., .013" TH	1
7	0360-00318-00XF	BRACKET: COIL	1
8	0365-00101-00XF	BRACKET: FLIPPER MOUNTING	1
9	0017-00101-0528	#5-40 X 3/4" PHILLIPS ROUND HEAD SCREW	2
10	0020-00202-0000	PLATE: SWITCH	1
11	A365-00315-0400	SWITCH ASSEMBLY: FLIPPER MECHANISM	1
12	0010-00275-0353	SPRING EXTENSION	1
13	0360-00145-00XF	BRACKET: SWITCH	1
14	0360-00718-00XF	PLUNGER	1
15	0360-00945-0000	TUBING: 5/16" X 1/2"	1
16	A360-00038-0000	LEVER ARM HUB & CAP ASSEMBLY: LEFT	1
	0017-00101-0186	SET SCREW	2
17	0017-00042-0413	BEARING: FLIPPER	1
18	0017-00042-0418	NYLINER: SNAP-IN COIL	1
19	0360-00152-01XF	BRACKET: LEFT FLIPPER	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

FLIPPER ASSEMBLY: DOUBLE SWITCH—RIGHT
PART NO. AC70-00023-0100

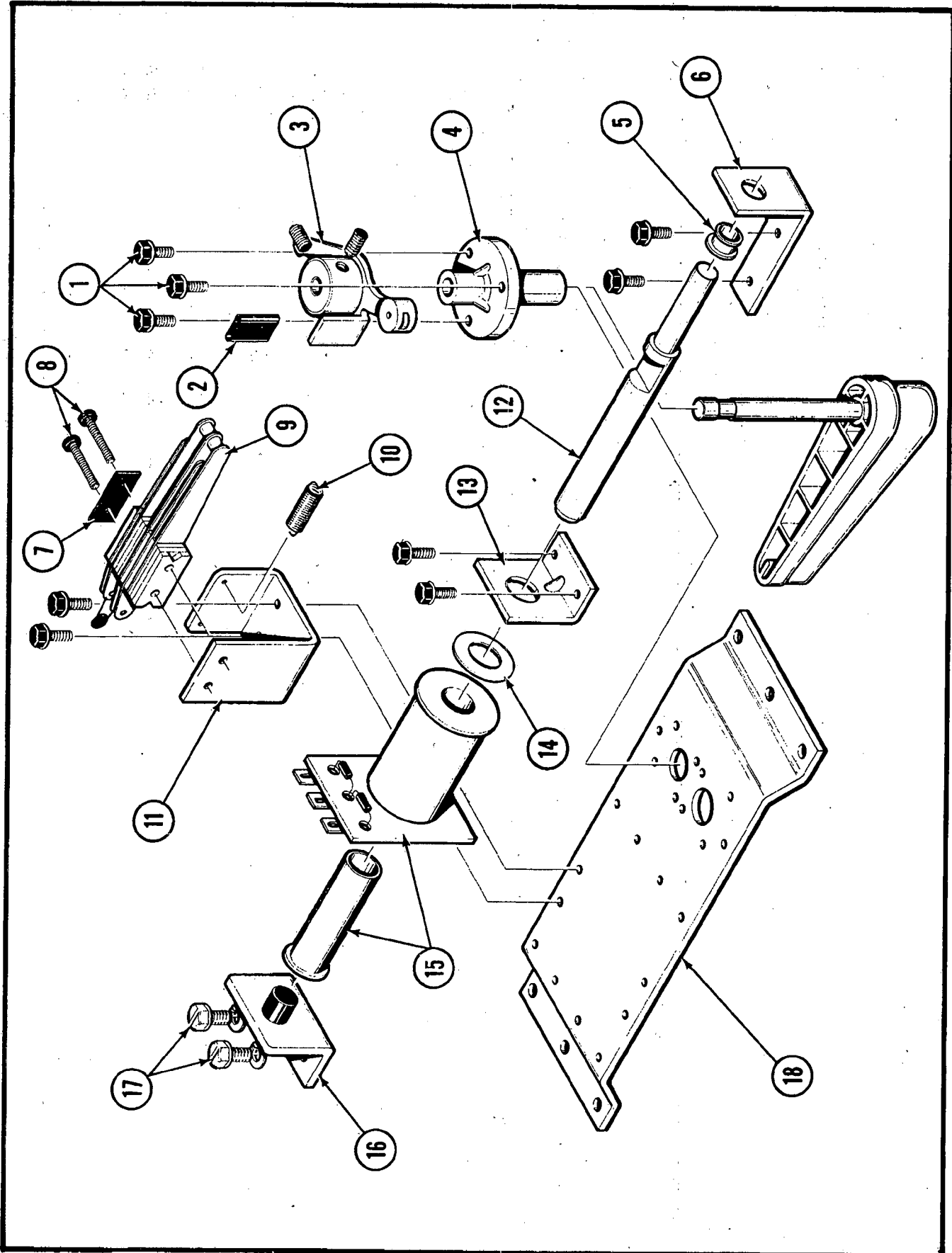


**FLIPPER ASSEMBLY PARTS LIST—DOUBLE SWITCH RIGHT
PART NO. AC70-00023-0100**

ITEM	PART NO.	DESCRIPTION	QTY
1	0017-00101-0184	#8-32 X 3/8" HEX HEAD SCREW	9
2	0360-00945-0000	TUBING: 5/8" X 1/2"	1
3	A360-00039-0000	LEVER ARM, HUB & CAP ASSEMBLY: RIGHT	1
	0017-00101-0186	SET SCREW	2
4	0017-00042-0413	BEARING: FLIPPER	1
5	0017-00042-0418	NYLINER: SNAP-IN COIL	1
6	0360-00152-02XF	BRACKET: RIGHT FLIPPER STOP	1
7	0020-00202-0000	PLATE: SWITCH	1
8	0017-00101-0530	#5-40 X 1" PHILLIPS ROUND HEAD SCREW	2
9	A365-00315-0300	SWITCH ASSEMBLY W/CAP: FLIPPER MECHANISM	1
	A365-00371-0000	SWITCH: FLIPPER MECHANISM	1
	0171-097P6-AXPC	CAPACITOR: .01 MF., 500V, 20%, CERAMIC DISC (NOT SHOWN)	2
10	0010-00275-0353	SPRING: EXTENSION	1
11	0360-00145-00XF	BRACKET: SWITCH	1
12	0360-00718-00XF	PLUNGER	1
13	0360-00318-00XF	BRACKET: COIL	1
14	0017-00104-0073	WASHER: SPRING .515" I.D., .875" O.D., & .013" TH.	1
15	AC70-00026-0000	COIL & TUBING ASSEMBLY: 3-LUG	1
	A365-00067-0021	COIL: 3-LUG	1
	0017-00041-0605	TUBING: COIL, L = 1.686" X 5/8"	1
	103E-00002-0015	DIODE: 1N4004GP, 400V, 1 AMP	2
16	A365-00024-0000	CORE PLUG & BRACKET ASSEMBLY	1
17	0017-00101-0816	#10-32 X 3/8" SLOTTED HEX HEAD SCREW	2
18	0365-00101-00XF	BRACKET: FLIPPER MOUNTING	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

FLIPPER ASSEMBLY: DOUBLE SWITCH-LEFT
PART NO. AC70-00023-0200

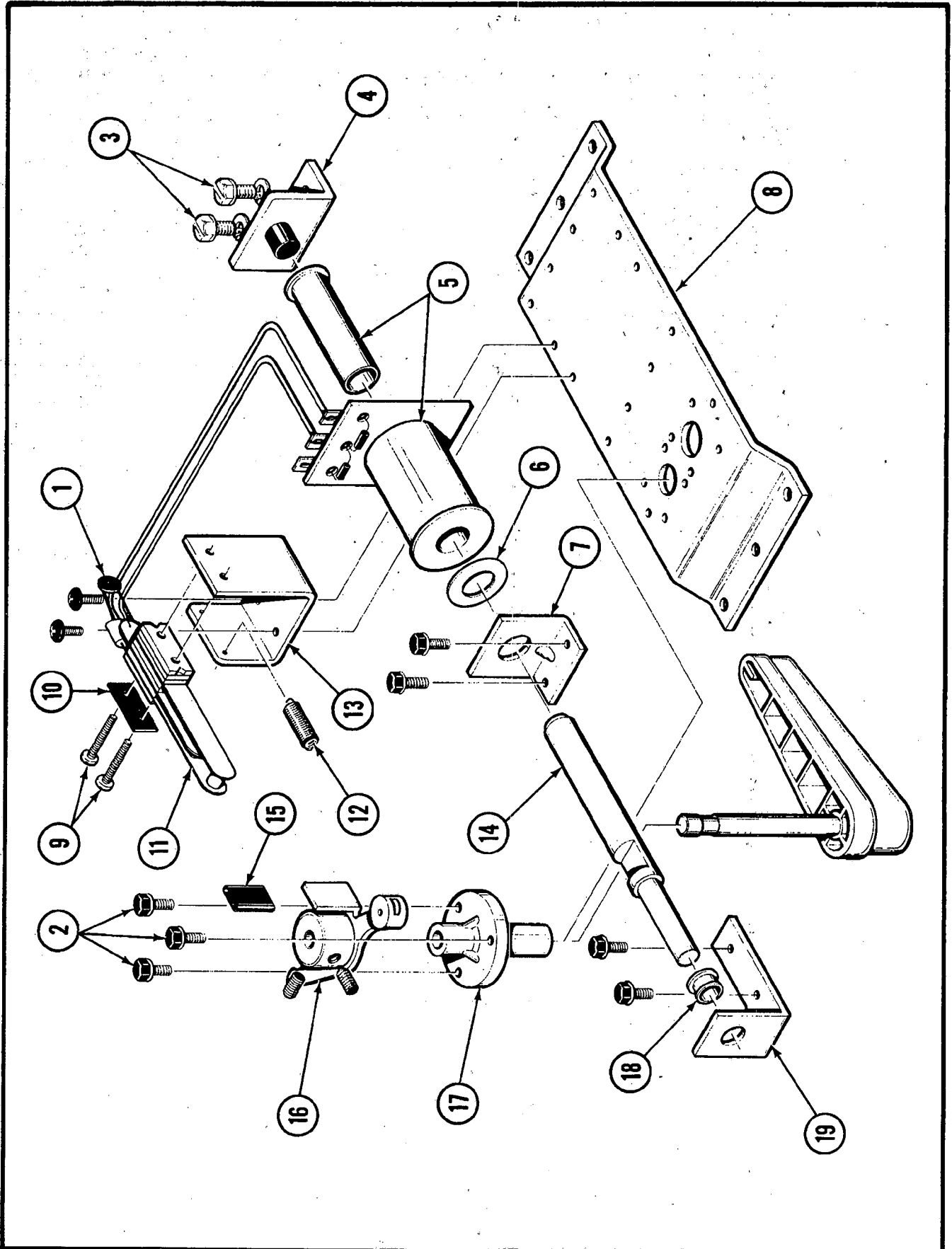


**FLIPPER ASSEMBLY PARTS LIST—DOUBLE SWITCH LEFT
PART NO. AC70-00023-0200**

ITEM	PART NO.	DESCRIPTION	QTY
1	0017-00101-0184	#8-32 X 3/8" HEX HEAD SCREW	9
2	0360-00945-0000	TUBING: 5/16" X 1/2"	1
3	A360-00038-0000	LEVER ARM, HUB & CAP ASSEMBLY: LEFT	1
	0017-00101-0186	SET SCREW	2
4	0017-00042-0413	BEARING: FLIPPER	1
5	0017-00042-0418	NYLINER: SNAP-IN COIL	1
6	0360-00152-01XF	BRACKET: LEFT FLIPPER STOP	1
7	0020-00202-0000	PLATE: SWITCH	1
8	0017-00101-0530	#5-40 X 1" PHILLIPS ROUND HEAD SCREW	2
9	A365-00315-0300	SWITCH ASSEMBLY W/CAP: FLIPPER MECHANISM	1
	A365-00371-0000	SWITCH: FLIPPER MECHANISM	1
	0171-097P6-AXPC	CAPACITOR: .01 MF., 500V, 20%, CERAMIC DISC (NOT SHOWN)	2
10	0010-00275-0353	SPRING: EXTENSION	1
11	0360-00145-00XF	BRACKET: SWITCH	1
12	0360-00718-00XF	PLUNGER	1
13	0360-00318-00XF	BRACKET: COIL	1
14	0017-00104-0073	WASHER: SPRING .515" I.D., .875" O.D., & .013" TH.	1
15	AC70-00026-0000	COIL & TUBING ASSEMBLY: 3-LUG	1
	A365-00067-0021	COIL: 3-LUG	1
	0017-00041-0605	TUBING: COIL, L = 1.686" X 5/8"	1
	103E-00002-0015	DIODE: 1N4004GP, 400V, 1 AMP	2
16	A365-00024-0000	CORE PLUG & BRACKET ASSEMBLY	1
17	0017-00101-0816	#10-32 X 3/8" SLOTTED HEX HEAD SCREW	2
18	0365-00101-00XF	BRACKET: FLIPPER MOUNTING	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

FLIPPER ASSEMBLY: SINGLE SWITCH—RIGHT
PART NO. A365-00386-0100

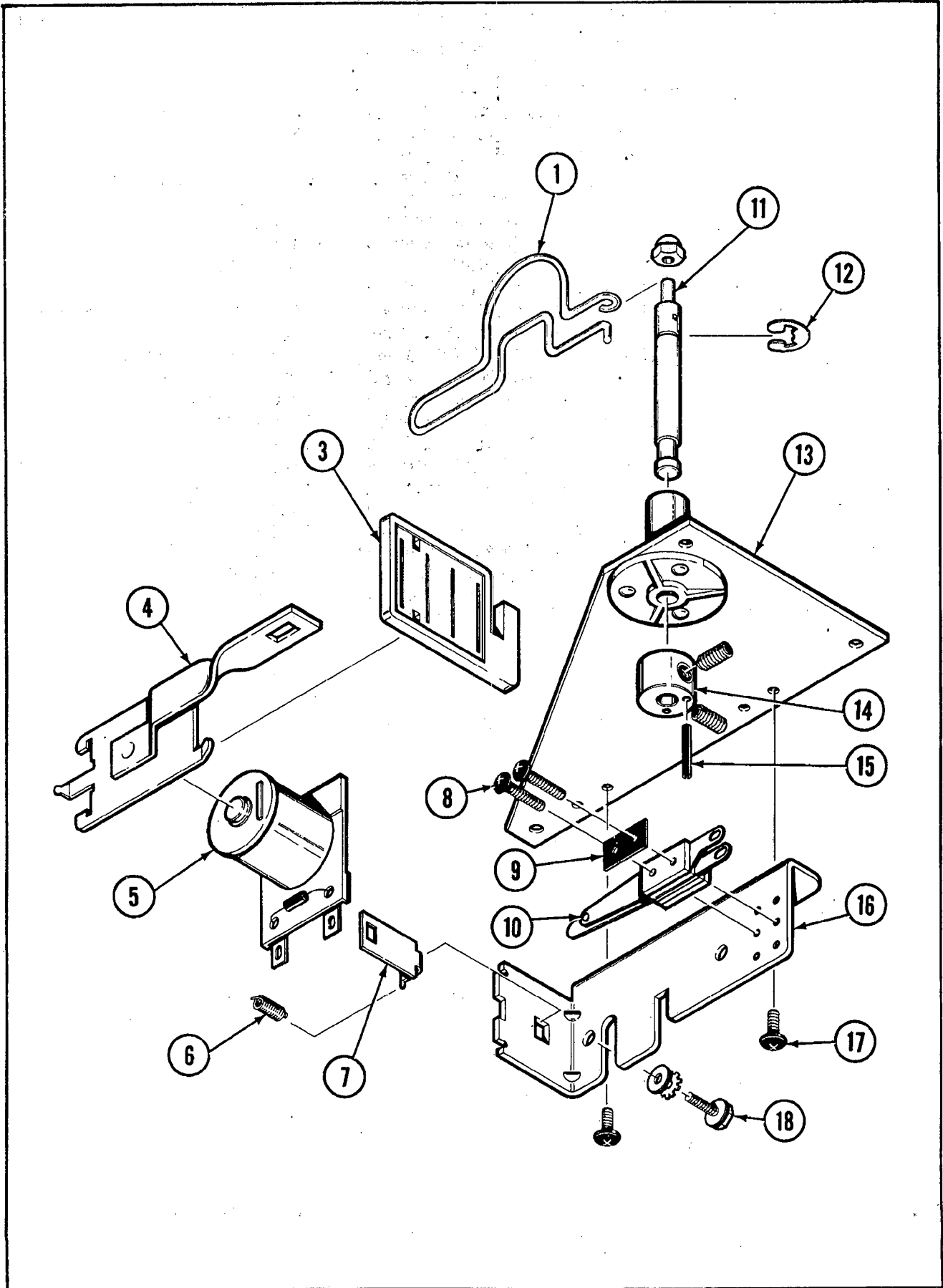


**FLIPPER ASSEMBLY PARTS LIST—SINGLE SWITCH RIGHT
PART NO. A365-00386-0100**

ITEM	PART NO.	DESCRIPTION	QTY
1	0017-097P6-AXPC	CAPACITOR: .01 MFD, 500V, CERAMIC DISC	1
2	0017-00101-0184	#8-32 X 3/8" HEX HEAD SCREW	7
3	0017-00101-0816	\$10-32 X 3/8" SLOTTED HEX HEAD SCREW	2
4	A365-00024-0000	CORE PLUG & BRACKET ASSEMBLY	1
5	A365-00389-0000	COIL & TUBING ASSEMBLY: 3-LUG	1
	A365-00067-0033	COIL: 3-LUG	1
	0017-00041-0605	TUBING: COIL, L = 1.686" X 3/8"	1
	103E-00002-0015	DIODE: 1N4004GP, 400VAC, 1 AMP	2
6	0017-00104-0073	WASHER: SPRING: .515" I.D., .875" O.D., .013" TH	1
7	0360-00318-00XF	BRACKET: COIL	1
8	0365-00101-00XF	BRACKET: FLIPPER MOUNTING	1
9	0017-00101-0528	#5-40 X 3/4" PHILLIPS ROUND HEAD SCREW	2
10	0020-00202-0000	PLATE: SWITCH	1
11	A365-00315-0400	SWITCH ASSEMBLY: FLIPPER MECHANISM	1
12	0010-00275-0353	SPRING EXTENSION	1
13	0360-00145-00XF	BRACKET: SWITCH	1
14	0360-00718-00XF	PLUNGER	1
15	0360-00945-0000	TUBING: 5/16" X 1/2"	1
16	A360-00039-0000	LEVER ARM HUB & CAP ASSEMBLY: RIGHT	1
	0017-00101-0186	SET SCREW	2
17	0017-00042-0413	BEARING: FLIPPER	1
18	0017-00042-0418	NYLINER: SNAP-IN COIL	1
19	0360-00152-01XF	BRACKET: RIGHT FLIPPER	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

FREE BALL GATE ASSEMBLY
PART NO. A365-05910-0001

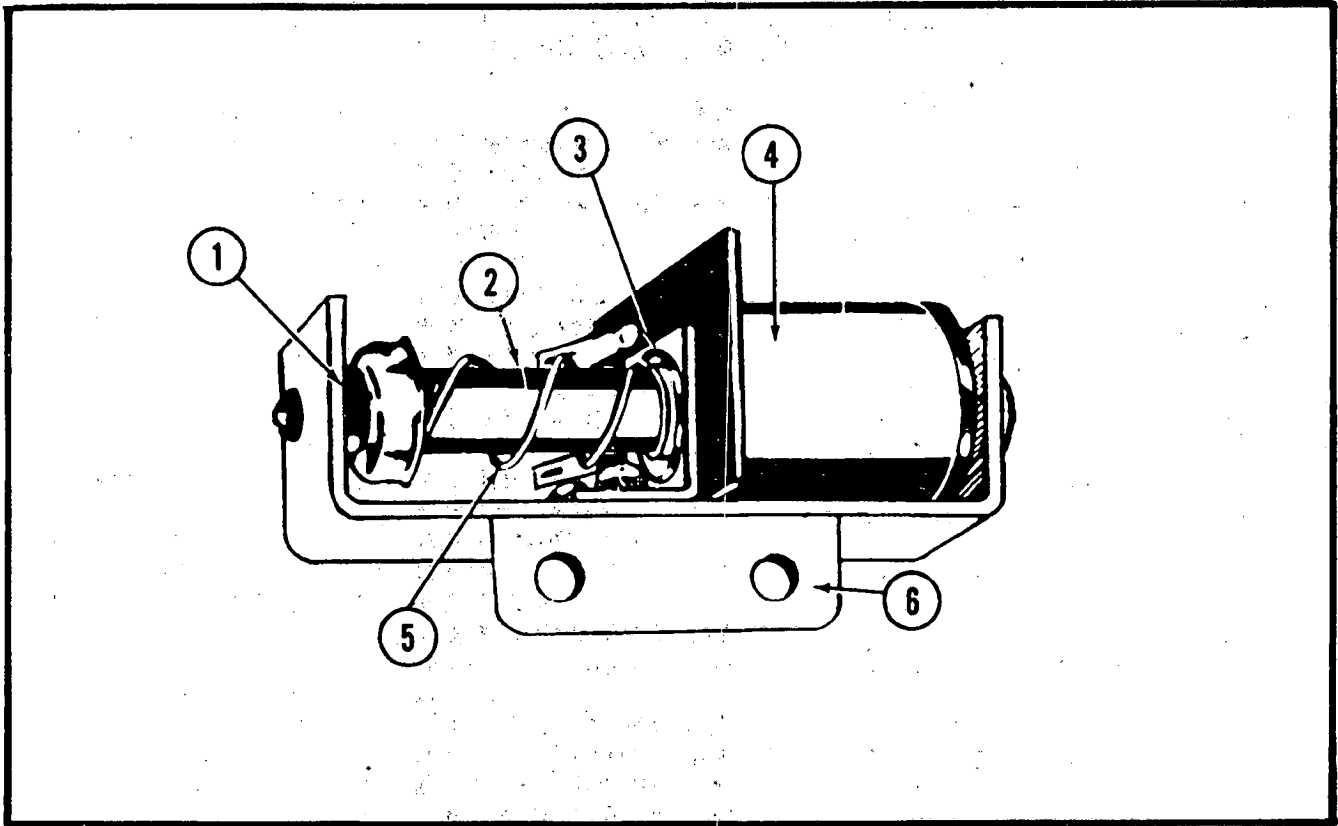


**FREE BALL GATE ASSEMBLY PARTS LIST—CLOCKWISE (LONG)
PART NO. A365-05910-0001**

ITEM	PART NO.	DESCRIPTION	QTY.
1	0H05-00152-0000	WIRE: BALL GATE	1
2	A365-07400-0001	RELAY & COIL ASSEMBLY	1
3	0017-00042-0627	ACTUATOR: RELAY SWITCH	1
4	A390-00030-0000	ARMATURE & BRACKET ASSEMBLY	1
	0390-00104-00XF	BRACKET: ARMATURE	1
	0390-00105-00XF	ARMATURE	1
5	A365-00067-0032	COIL: 2-LUG	1
	A365-08800-0001	POLE PIECE: COIL	1
	103E-00002-0015	DIODE: 1N4004GP, 400VAC, 1 AMP	1
6	0010-00275-0249	SPRING: EXTENSION	1
7	0390-00107-00XF	RETAINER: SPRING	1
8	0017-00101-0150	#5-40 X 1/2" PHILLIPS PAN HEAD	2
9	0020-00243-0000	PLATE: SPRING	1
10	AE34-00022-0000	SWITCH ASSEMBLY: FREE BALL GATE RELAY	1
11	0H05-00700-00XF	ROD: ESCAPE GATE	1
12	0017-00100-0120	RING: RETAINER, .250" DIA.	1
13	A365-00084-0000	BASE PLATE & BEARING ASSEMBLY	1
	0390-00907-0001	BEARING: BASE PLATE	1
14	0390-00703-00XF	HUB	1
	0017-00101-0187	SET SCREW	2
15	0017-00007-0066	PIN: ROLL; 3/32" X 5/8"	1
16	0390-00106-00XF	FRAME: RELAY	1
17	0017-00101-0161	#8-32 X 1/4" PHILLIPS PAN HEAD	2
18	0017-00101-0160	#8-32 X 3/8" HEX MACHINE SCREW W/WASHER	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

**KNOCKER ASSEMBLY
PART NO. A365-00381-0000**



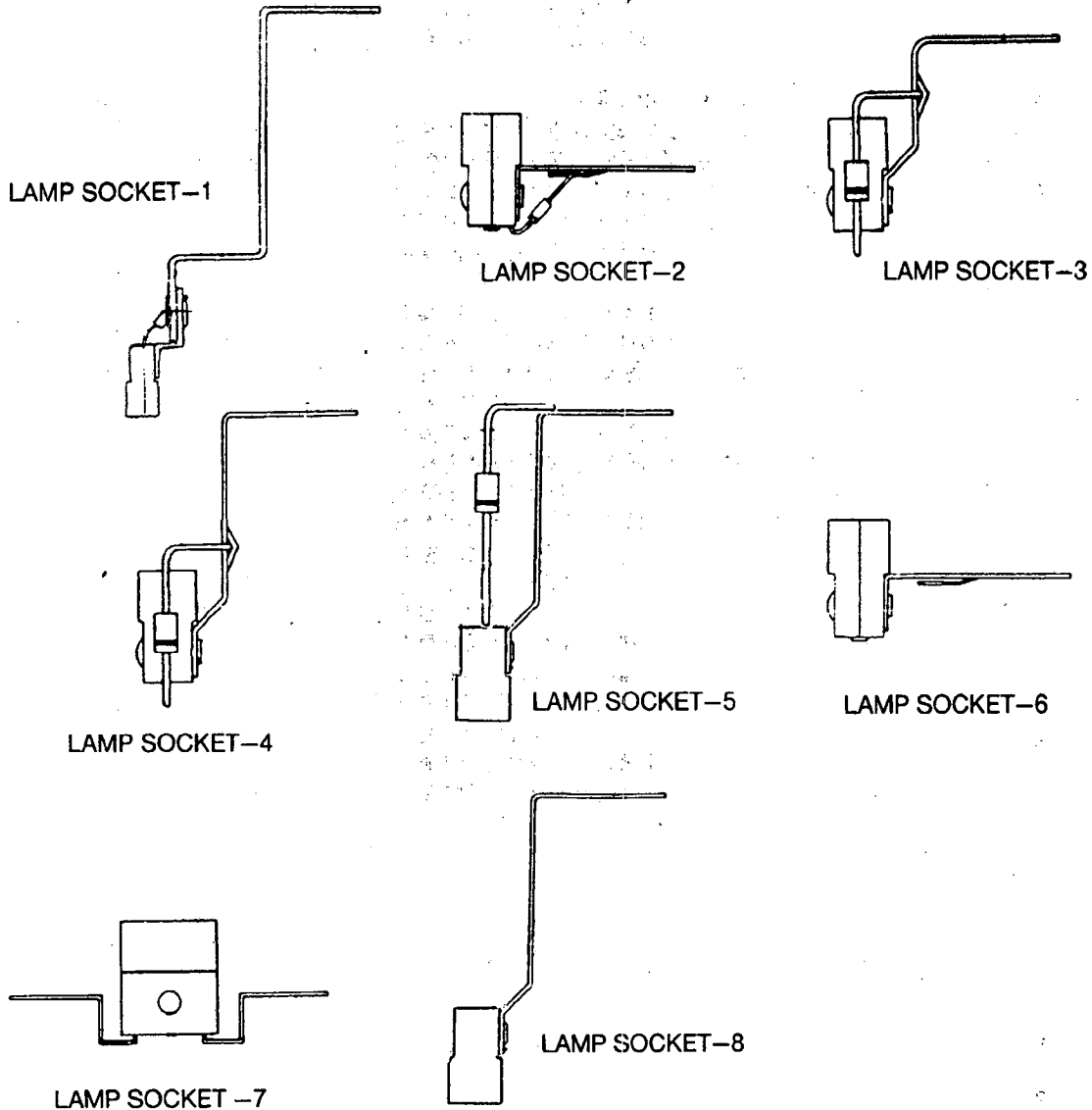
**KNOCKER ASSEMBLY: 2 LUG LEFT--ILLUSTRATION & PARTS LIST
PART NO. A365-00381-0000**

ITEM	PART NO.	DESCRIPTION	QTY
1	0017-00041-0635	BUMPER: PLUG, BLACK	1
2	A360-00011-00XF	PLUNGER & STRIKER ASSEMBLY	1
3	0360-00318-00XF	BRACKET & COIL	1
4	A360-00046-0000	COIL & TUBING ASSEMBLY: 2-LUG	1
	A365-00067-0006	COIL: 2-LUG	1
	0017-00041-0611	TUBING: COIL, L = 1.844" X 5/8"	1
	103E-00002-0015	DIODE: 1N4004GP, 400VAC, 1 AMP	1
5	0010-00274-0212	SPRING: COMPRESSION	1
6	0A40-00104-00XF	FRAME: KICKER	1
7	0017-00101-0161	#8-32 X 1/4" PHILLIPS PAN HEAD SCREW (NOT SHOWN)	2

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY.

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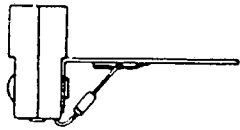
PLAYFIELD LAMP SOCKETS ILLUSTRATION & PARTS LIST



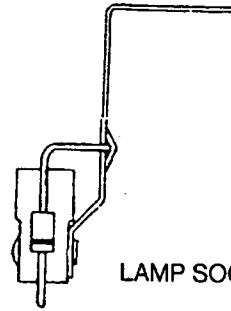
ITEM	PART NO.	DESCRIPTION	QTY
1	AH05-00045-0000	LAMP BRACKET & SOCKET ASSEMBLY—LONG	1
2	A365-00077-0200	LAMP SOCKET W/DIODE ASSEMBLY	7
3	A365-00077-0300	LAMP SOCKET W/DIODE ASSEMBLY	33
4	A365-00077-0400	LAMP SOCKET W/DIODE ASSEMBLY	2
5	A365-00332-0000	LAMP SOCKET W/DIODE & TERMINAL ASSEMBLY	3
6	0017-00031-0075	LAMP SOCKET W/O DIODE	5
7	0017-00031-0077	LAMP SOCKET W/O DIODE	4
8	0017-00031-0082	LAMP SOCKET W/O DIODE	4

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

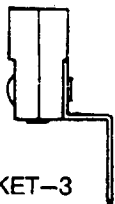
TOP PLATFORM LAMP SOCKETS ILLUSTRATION & PARTS LIST



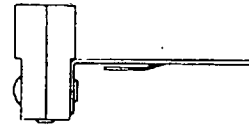
LAMP SOCKET-1



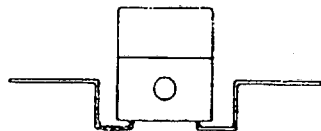
LAMP SOCKET-2



LAMP SOCKET-3



LAMP SOCKET-4

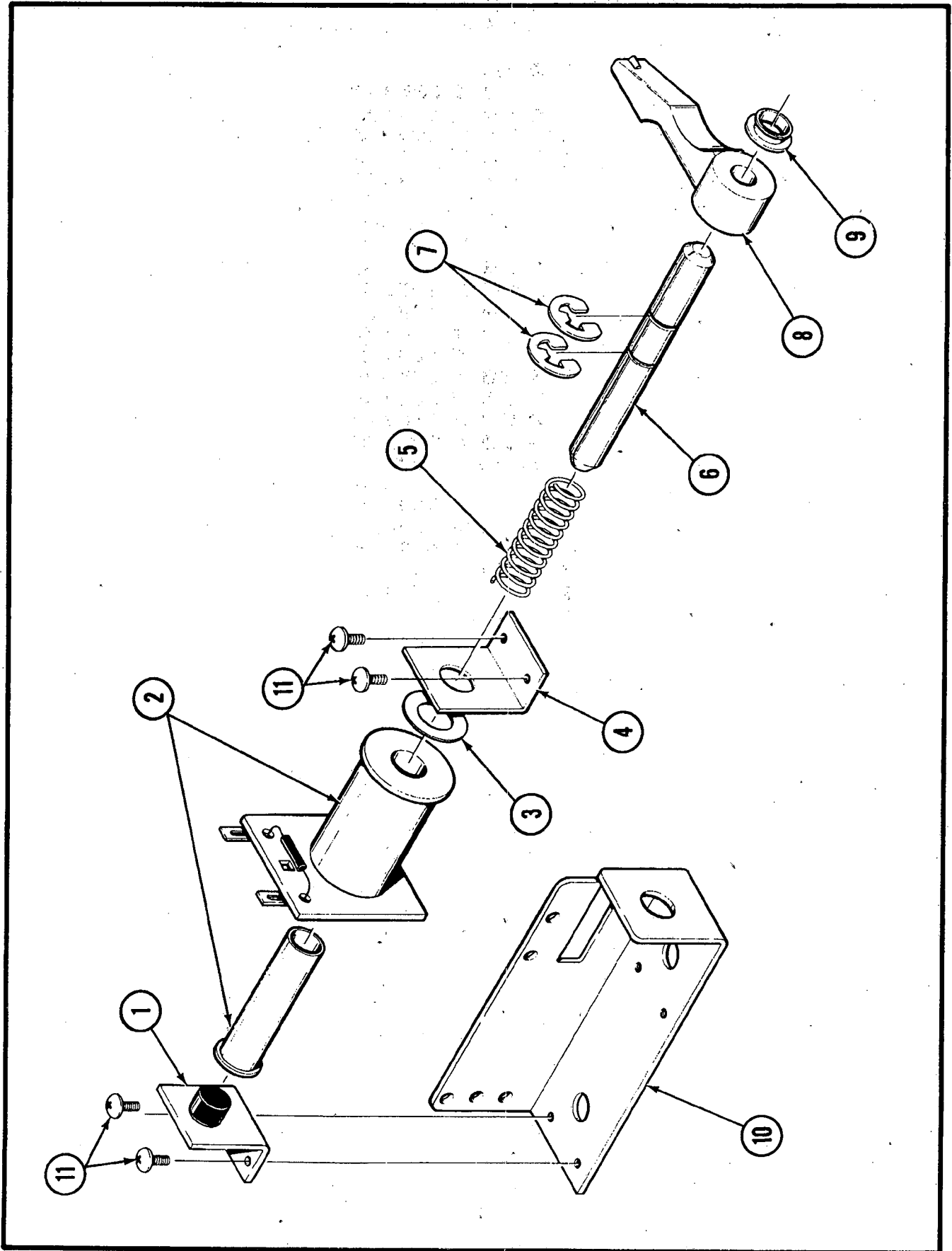


LAMP SOCKET-5

ITEM	PART NO.	DESCRIPTION	QTY
1	A365-00077-0200	LAMP SOCKET W/DIODE ASSEMBLY	4
2	A365-00332-0000	LAMP SOCKET W/DIODE & TERMINAL ASSEMBLY	1
3	0017-00031-0074	LAMP SOCKET W/O DIODE	1
4	0017-00031-0075	LAMP SOCKET W/O DIODE	2
5	0017-00031-0077	LAMP SOCKET W/O DIODE	4

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

SLINGSHOT KICKER ASSEMBLY
PART NO. A967-00059-0000

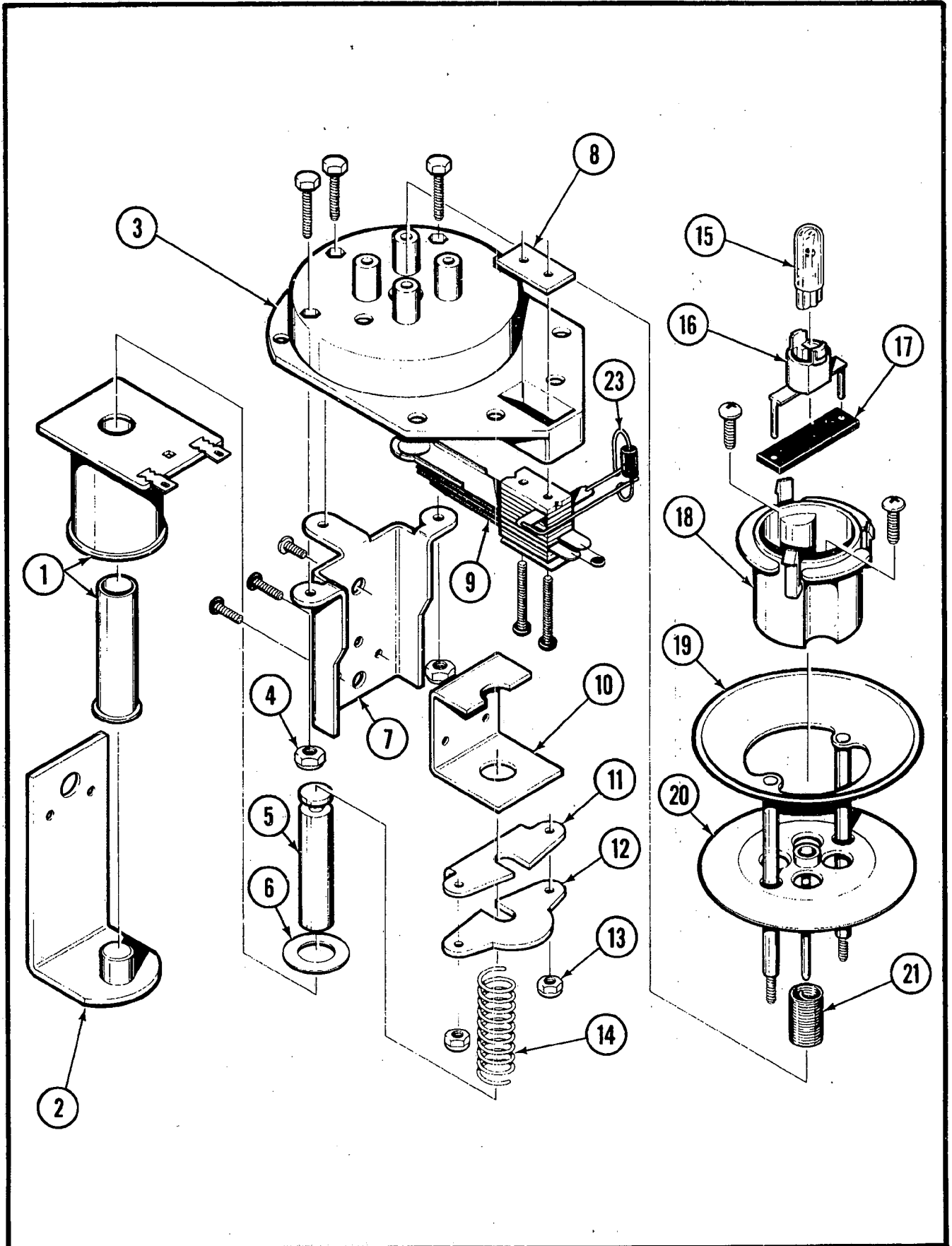


**SLINGSHOT KICKER ASSEMBLY PARTS LIST
PART NO. A967-00059-0000**

ITEM	PART NO.	DESCRIPTION	QTY
1	A967-00011-0000	CORE PLUG & BRACKET ASSEMBLY	1
2	A967-00046-0000	COIL & TUBING ASSEMBLY 2-LUG	1
	A365-00067-0006	COIL: 2-LUG	1
	0017-00041-0605	TUBING: COIL L = 1.686" X 5/8"	1
	103E-00002-0015	DIODE: 1N4004GP, 400V, 1 AMP	1
3	0017-00104-0073	WASHER: SPRING .515" I.D., .875" O.D., .013" TH.	1
4	0360-00318-00XF	BRACKET: COIL	1
5	0010-00274-0212	SPRING: COMPRESSION	1
6	0967-00701-00XF	PLUNGER	1
7	0017-00100-0115	RING: RETAINING .438" DIA.	2
8	0967-00901-0000	KICKER ARM: SLINGSHOT	1
9	0017-00042-0430	NYLINER: SNAP-IN COIL	1
10	0967-00130-00XF	BRACKET: SLINGSHOT MOUNTING	1
11	0017-00101-0190	#8-32 X 1/4" PHILLIPS PAN HEAD SCREW	4

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

THUMPER BUMPER ASSEMBLY
PART NO. A967-00053-0100



**THUMPER BUMPER ASSEMBLY PARTS LIST
PART NO. A967-00053-0100**

ITEM	PART NO.	DESCRIPTION	QTY
1	A360-00044-0000	COIL & TUBING ASSEMBLY: 2-LUG	1
	A365-00067-0006	COIL: 2-LUG	1
	0017-00041-0605	TUBING: COIL L = 1.686" X 5/8"	1
	103E-00002-0015	DIODE: 1N4004GP, 400VAC, 1A	1
2	A967-00010-0000	CORE PLUG & BRACKET ASSEMBLY	1
3	0017-00042-0452	BASE: THUMPER BUMPER, WHITE	1
4	0017-00103-0041	NUT: #8-32 LOCKING	3
5	0967-00705-00XF	PLUNGER	1
6	0017-00104-0073	WASHER: SPRING, .515" I.D., .875" O.D., .013" TH.	1
7	0967-00129-00XF	BRACKET: MOUNTING, THUMPER BUMPER	1
8	0020-00202-0000	PLATE: SWITCH	1
9	A967-00074-0100	SWITCH ASSEMBLY: THUMPER BUMPER	1
10	0967-00117-00XF	BRACKET: PLUNGER, THUMPER BUMPER	1
11	0967-00116-00XF	PLATE: THUMPER BUMPER	1
12	0967-00904-0000	PLATE: THUMPER BUMPER	1
13	0017-00103-0052	NUT: #6-32 LOCKING	2
14	0010-00274-0196	SPRING: COMPRESSION	1
15	0017-00003-0501	LAMP: WEDGE BASE, 6.3VAC, .25 AMP, #555	1
16	0017-00031-0060	SOCKET: LAMP, WEDGE BASE, THUMPER BUMPER	1
17	0090-00409-00XF	PLATE: SWITCH	1
18	0017-00042-0460	BODY: THUMPER BUMPER, WHITE	1
19	A967-00013-0000	FLANGE & STUD ASSEMBLY	1
20	0017-00042-0444	WAFER: THUMPER BUMPER, WHITE	1
21	0010-00274-0177	SPRING: COMPRESSION	1
22	0171-122E6-AXGF	CAPACITOR: .05MF, .25VA, 20%, CERAMIC DISC (NOT SHOWN)	1
23	103E-00002-0005	DIODE: 1N4148, 100V, 500MA	1

ADDITIONAL ASSEMBLY MOUNTING HARDWARE

ITEM	PART NO.	DESCRIPTION	QTY
	0017-00101-0171	#5-40 X 1 1/2" PHILLIPS ROUND HEAD SCREW	2
	0017-00101-0190	#8-32 X 1/4" PHILLIPS PAN HEAD SCREW	1
	0017-00101-0191	#8-32 X 3/8" PHILLIPS PAN HEAD SCREW	2
	0017-00101-0192	#8-16 X 1/2" PHILLIPS PAN HEAD SCREW	2
	0017-00101-0460	#8-32 X 7/8" HEX HEAD MACHINE SCREW	3

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

**SPARE PARTS KIT ASSEMBLY PARTS LIST
PART NO. AH05-00032-0000**

ITEM	PART NO.	DESCRIPTION	QTY
	0017-00003-0007	FUSE: MDA 3AG 3A 250V SLOW-BLOW	1
	0017-00003-0008	FUSE: AGC 3AG 6A 32V MEDIUM-BLOW	1
	0017-00003-0010	FUSE: AGC 3AG 3/4A 250V FAST-BLOW	1
	0017-00003-0011	FUSE: AGC 3AG 15A 32V MEDIUM-BLOW	1
	0017-00003-0103	FUSE: MDL 3AG 1A 250V SLOW-BLOW	1
	0017-00003-0206	FUSE: AGX 8AG 3/16A 250V FAST-BLOW	1
	0017-00003-0383	FUSE: AGC 3AG 3/8A 250V FAST-BLOW	1
	0017-00003-0387	FUSE: AGC 3AG 8A 32V MEDIUM-BLOW	1
	0017-00003-0492	FUSE: GLH 3AG 7A 125V FAST-BLOW	1
	0017-00003-0501	LAMP: WEDGE BASE 6.3V .25A #555	5
	0017-00003-0525	LAMP: WEDGE BASE 12.8V 1.0A #912	2
	0017-00003-0638	FUSE: MDQ 3/4A 250V SLOW-BLOW	2
	0017-00101-0141	#8 X 1 1/8" UNSLOTTED HEX HEAD SCREW W/WASHER	4

GAME PARTS LOCATED IN THE SPARE PARTS KIT ASSEMBLY

ITEM	PART NO.	DESCRIPTION	QTY
	0017-00009-0522	KEY: LONG ARM TAMPER RESISTANT	1
	0017-00009-0709	BALL: 1 1/16" DIAMETER, STEEL	2
	0360-00900-0000	PLUMB-BOB: TILT	1
*	0017-00101-0471	3/8" X 16 X 4 1/2" UNSLOTTED HEX HEAD BOLT	2
	0017-00102-0063	3/8" X 16 X 2 3/8" UNSLOTTED HEX HEAD BOLT	8
	0017-00102-0082	HEX NUT: 3/8" 16 X 3"	4
	0017-00103-0026	HEX NUT: 3/8" X 16	4
*	0017-00104-0050	WASHER: FLAT, STEEL - .375", 1.0", .062"	2

*THESE ITEMS ARE USED TO ASSEMBLE THE BACKBOX TO THE CABINET IN THE UPRIGHT POSITION.

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

SECTION 13
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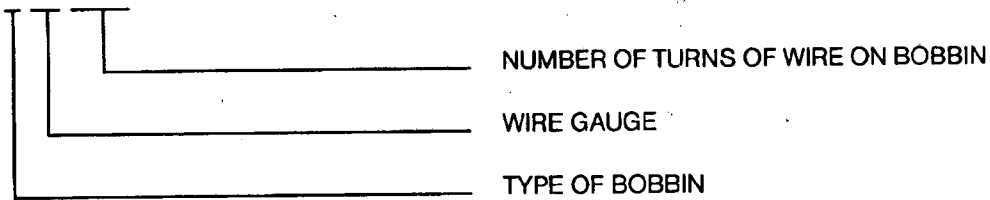
DESCRIPTION	PAGE
COIL & SOLENOID CROSS-REFERENCE LISTING	13-2
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LABEL & TAG PART NUMBER LIST	13-4

ESCAPE FROM THE LOST WORLD COIL & SOLENOID CROSS-REFERENCE LIST

<u>BALLY PART NUMBER</u>	<u>MIDWAY PART NUMBER</u>	<u># OF LUGS</u>
A-24-570/A-34-3600	AC70-00026-0000	3
A-25-600/A-34-4000	A365-00389-0000	3
A-26-1200	A360-00044-0000	2
A-26-1200	A360-00046-0000	2
A-26-1200	A967-00046-0000	2
G-33-2800	A365-08800-0001	2

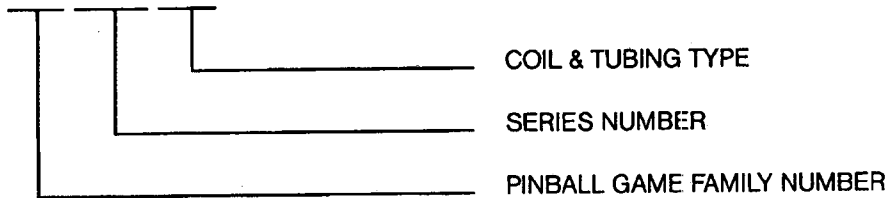
BALLY COIL & SOLENOID PART NUMBER DESCRIPTION

A-26-1200



MIDWAY COIL & SOLENOID PART NUMBER DESCRIPTION

A967-00046-0000



FINAL GAME ASSEMBLY PART NUMBER LIST

<u>GAME NUMBER</u>	<u>DESCRIPTION</u>
AH05-00001-0000	UNITED STATES (USA)
AH05-00001-0100	UNITED KINGDOM (UK)
AH05-00001-0300	FRANCE
AH05-00001-0400	GERMANY
AH05-00001-0600	BELGIUM
AH05-00001-0900	HOLLAND
AH05-00001-1000	ITALY
AH05-00001-1100	JAPAN
AH05-00001-1800	SWEDEN

LABEL & TAG PART NUMBER LISTING

A. FINAL GAME LABELS & TAGS

<u>PART NUMBER</u>	<u>DESCRIPTION</u>
M051-00H05-A001	GAME CONTROL TAG
M051-00H05-A007	REGISTER SETTING TAG
M051-00049-0000	WARNING LABEL; RED/WHITE
M051-00103-A000	POWER CORD WARNING LABEL
M051-00111-B001	MADE IN THE U.S.A. TAG
M051-00113-0000	FCC CLASS A COMPLIANCE LABEL
M051-00115-A005	PROGRAM LABEL-1987
M051-00134-A000	FBI WARNING STICKER
M051-00365-A020	U.S. PATENT LABEL
M051-00365-A072	GAME BALL QUANTITY LABEL
M051-00365-A082	SELECT INITIALS LABEL
M051-00365-A083	INSTRUCTION LABEL-BOTTOM ARCH
M051-00365-A084	INSTRUCTION LABEL-BOTTOM ARCH

B. BACK BOX LABELS & TAGS

<u>PART NUMBER</u>	<u>DESCRIPTION</u>
M051-00133-A008	3 AMP SLO-BLO FUSE TAG
M051-00140-A001	CAUTION HIGH VOLTAGE LABEL
M051-00365-A063	BACK BOX WARNING LABEL
M051-00365-B060	BRIGHT LIGHT FUSE BOARD FUSE TAG

C. PLAYFIELD LABELS & TAGS

<u>PART NUMBER</u>	<u>DESCRIPTION</u>
FORM-00372-8305	PLAYFIELD INSPECTION TAG
M051-00360-A084	1 AMP SLO-BLO FUSE TAG
M051-00365-A001	PLAYFIELD CLEANING INSTRUCTIONS
M051-00365-A019	PLAYFIELD SUPPORT ARM LABEL