Bally®

CONTINENTAL

Bally

Manufacturing Corporation

CONTENTS

I. INTRODUCTION

The Continental is the first bingo game from Bally to fully employ digital techniques and self-monitoring microprocessor control. Based on the well received six card games offered previously, it has a number of accounting and self-diagnostic features which provide business information and quicker, easier maintenance.

As in other 11 coin games, the initial six coins put all cards in play, the seventh and eighth coins make diagonal winners possible.

MAGIC NUMBERS

After the ninth coin is inserted and the first ball shot, the magic numbers flash and one or two remain lit on a random basis. If a player gets a ball into a hole corresponding to a lit magic number, all scores in cards 1-2-3 are doubled, the tenth coin extends this feature for cards 4-5-6.

DOUBLE DOUBLE SCORES

When the eleventh coin or credit (replay) is played, upon shooting the first ball, in addition to magic numbers, double-double selection lights are activated under two cards, chosen at random.

Winners on these cards receive double-double scores when a ball is in the hole corresponding with a lit magic number. With subsequent use of the Double or Nothing feature button, even double-double-double scores become possible. Other favorite scoring highlights continued in the Continental are: (when lit) corners score as 5-in-line, Superlines in which 3-in-line scores as 4-in-line and 4-in-line as 5-in-line.

SCORE MULTIPLIER
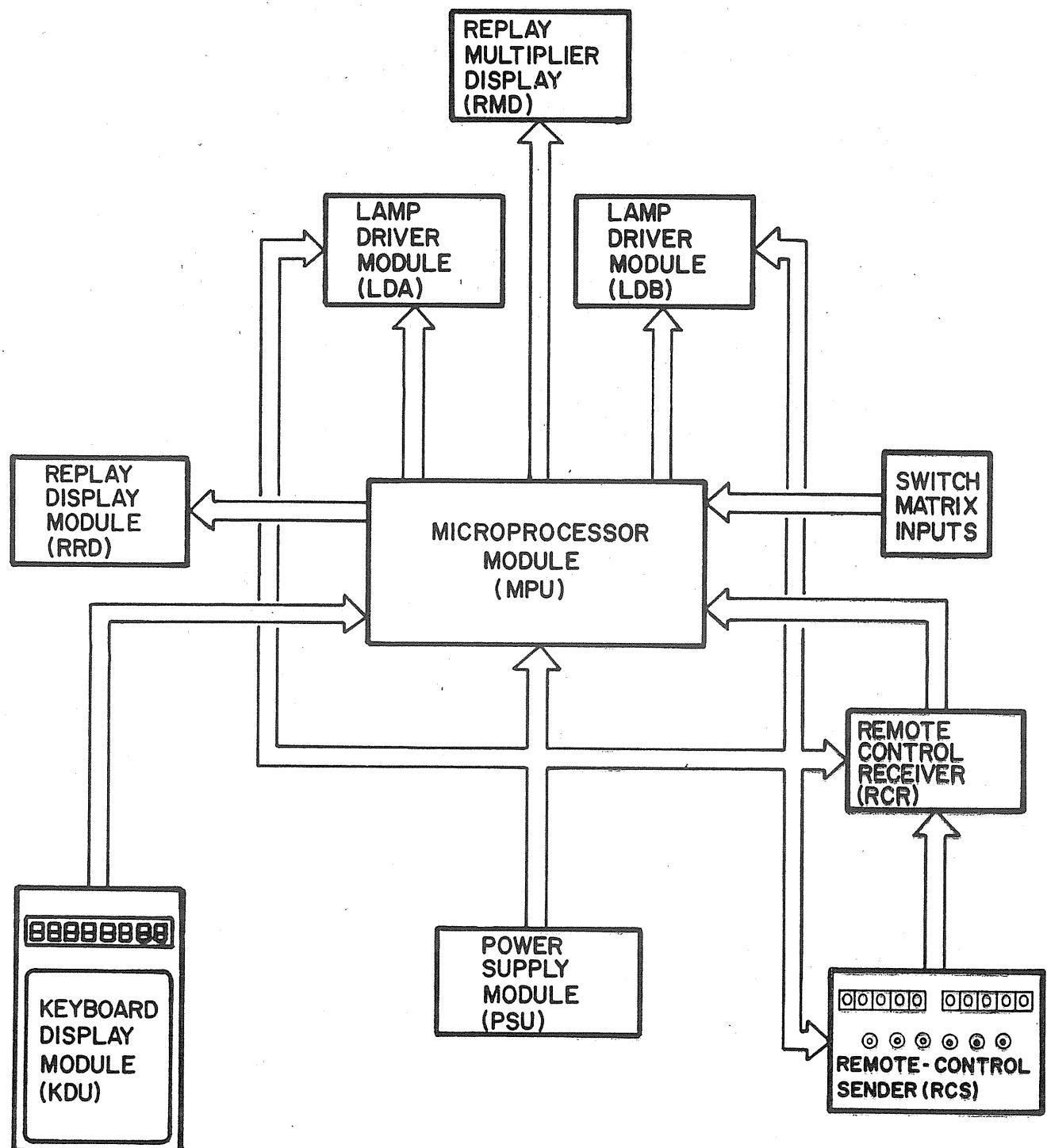
Winning scores may be multiplied up to X10 when additional credits are played after the first eleven. Each addition eleven credits played increases the multiplier to the next whole number. For example, playing 22 credits makes possible a X2 score and when the maximum 110 credits are played, the X10 multiplier circuits are activated. This feature may be turned off or limited to a X6 factor (see section V).

REMOTE CONTROL UNIT

This device can be used to register any number of credits or reset the game to zero from a remote location.

Schematic diagrams are in the final section of the manual. Appearance items, cabinet parts and mechanical assemblies are listed at the end of Section VII.

BLOCK DIAGRAM-ELECTRONIC BINGO GAME
1195E-1

```
                    ┌─────────────┐
                    │   REPLAY    │
                    │ MULTIPLIER  │
                    │   DISPLAY   │
                    │    (RMD)    │
                    └─────────────┘
                          ▲

     ┌──────────┐                    ┌──────────┐
     │   LAMP   │                    │   LAMP   │
     │  DRIVER  │                    │  DRIVER  │
     │  MODULE  │                    │  MODULE  │
     │   (LDA)  │                    │   (LDB)  │
     └──────────┘                    └──────────┘
          ▲                               ▲

┌──────────┐    ┌─────────────────┐    ┌──────────┐
│  REPLAY  │    │                 │    │  SWITCH  │
│ DISPLAY  │◄───│ MICROPROCESSOR  │◄───│  MATRIX  │
│  MODULE  │    │     MODULE      │    │  INPUTS  │
│  (RRD)   │    │     (MPU)       │    └──────────┘
└──────────┘    └─────────────────┘
                          ▲              ┌──────────┐
                                         │  REMOTE  │
┌──────────┐    ┌──────────┐             │ CONTROL  │
│ KEYBOARD │    │  POWER   │             │ RECEIVER │
│ DISPLAY  │    │  SUPPLY  │             │  (RCR)   │
│  MODULE  │    │  MODULE  │             └──────────┘
│  (KDU)   │    │  (PSU)   │             ┌──────────┐
└──────────┘    └──────────┘             │ REMOTE-  │
                                         │ CONTROL  │
                                         │ SENDER   │
                                         │  (RCS)   │
                                         └──────────┘
```

CIRCUIT FUNCTIONS

The block diagram shows the signal flow between the component modules of the 1195E-1 bingo game. The points where arrows enter the Microprocessor Module lead to Input Ports — the communication link between the microprocessor and data from the Keyboard Display Module, Remote Control Sender and the Switch Matrix which acts as the "eyes" of the microprocessor. Arrows emerging from the MPU board are from Output Ports, by which instructions and data are transferred from the microprocessor or memory components to output devices such as the lamp driver modules, displays, solenoids and motors.

The microprocessor is a *programmed* integrated circuit which performs a wide variety of electronic tasks. It is connected to other integrated circuits on the MPU module thru the data bus and address bus by which data and instructions pass back and forth. A control bus links the components to synchronize system functions.

Specific sequential instructions to be carried out by the microprocessor are stored in the *program* memory. When the "power up" state is reached, the first instruction will be obtained from this memory via the data bus. After executing this instruction the microprocessor will signal for the second, etc.

The microprocessor tests the MPU module first, then makes the game ready for play. A large part of the MPU activity consists of monitoring the memory record of the switches on the playfield and in the cabinet, other tasks include servicing display updates, motors, solenoids and scanning lamps and momentary switches. Several additional memory IC's store more data and instructions for the microprocessor.

II. INSTALLATION

A. Assembly (See Figure 1)

1. Using flat washers under bolt heads, bolt legs to cabinet.

2. Unlock and remove back glass from back box, loosen screws on light panel retaining brack

3. Position back box on cabinet, lift and tilt light panel forward to rest on cabinet for acces main cable and printed circuit board.

4. Bolt back box to cabinet.

5. Gently feed cable connectors and ground braids from cabinet through port in back box.

6. Bolt ground braids to stud on power supply chassis.

7. Carefully and fully insert (4) back box cable connectors into cabinet connectors.

8. Insert power supply cable connector completely into receptacle on chassis.

B. Inspection

After assembly, a visual inspection of the game must be made to correct loose connections or proper switch adjustments that may occur due to rough handling during shipment.

Caution: Do not plug in line cord before completing the following steps:

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

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

3. Check for any wires that may have become disconnected.

4. Check switches for loose solder or other foreign material that may be shorting contacts.

5. Check that fuses are firmly seated and making good contact.

6. Check that integrated circuits mounted on P.C. sockets are firmly seated.

(Continued)

INSTALLATION
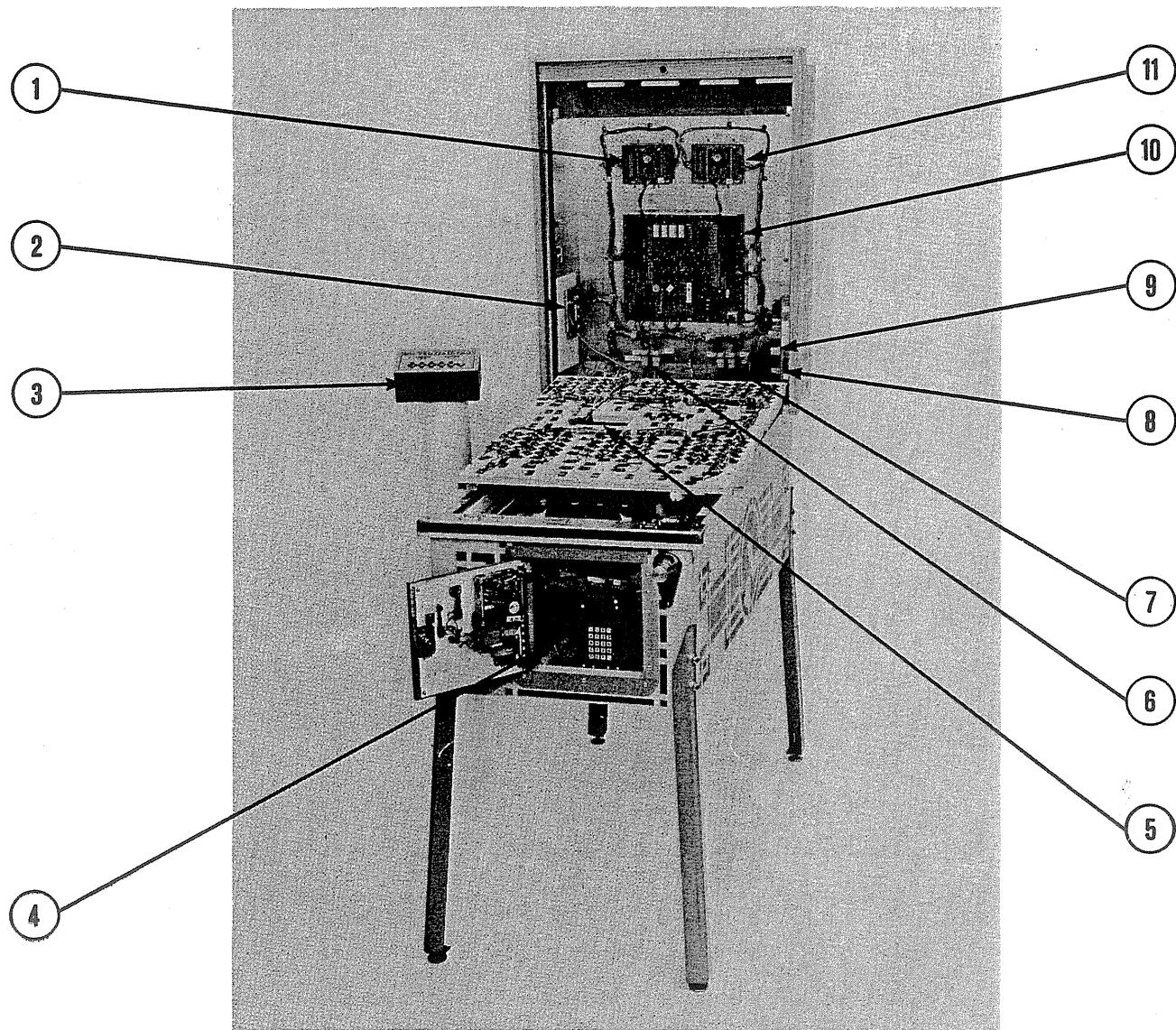
FIGURE 1 MODEL 1195E-1 BINGO GAME

1. Lamp Driver Unit (LDA)
2. Remote Control Receiver (RCR)
3. Remote Control Sender (RCS)
4. Keyboard Display Unit (KDU)
5. Replay Display (RRD)
6. Panel Plugs

7. Front Cabinet Plugs
8. Power Supply Plug
9. Line Code Plug
10. Microprocessor Unit (MPU)
11. Lamp Driver Unit (LDB)

(Continued)

7

INSTALLATION

7. Check adjustment of the (3) tilt switches (normally open).

    a. Slam switch on front door.
    b. Slam switch on bottom right side of cabinet.
    c. Plumb bob tilt switch on left side of cabinet.

NOTE: Game should be placed on desired location and leg levelers adjusted before setting plumb bob tilt switch.

8. Check power supply for any foreign material shorting across components.

9. Check location line voltage and adjust power supply to suitable value.

TO ADJUST POWER SUPPLY:

Insert correct "line code" plug into receptacle on power supply chassis to match power input available, as shown in Figure 1. Games are normally supplied with two plugs, one wired for 120 VAC and the other for 220 VAC operation. Figure 2 shows wiring of "line code" plugs.
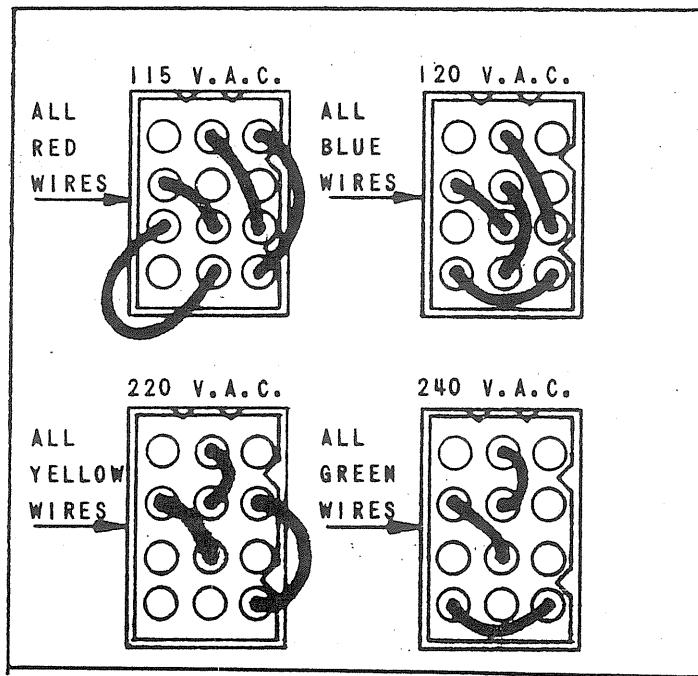

FIGURE 2

III. GAME OPERATION

A. GENERAL

Plug in line cord. Move power On-Off master switch to "On" position. The general illumination panel and back glass lamps will light. After several seconds the electronic replay display will light. The display will show all zeros. If there is a value other than zero on the display it will change to zero after a few seconds. The game is ready for play.

One card or feature is granted for each coin or credit that is played. The credits are reduced by one each time the credit button is depressed until the credits are reduced to zero or the maximum credits per game is reached.

Upon buying the first card or feature (either by coin or credit) any balls remaining on the play-field from the previous game will be dumped. When all balls have reached the ball trough the first ball will lift to the ball shooter. The game is now ready to play. In the case where a ball was left at the ball shooter, from the previous game, if the remaining four balls are allowed to settle to the ball trough, the ball at the shooter will be the first ball of the game.

Shooting the ball initiates game play. Attaining three, four or five lights in a row or at corners when the feature is lit, awards credits according to the replay schedule.

Closing any of the tilt switches, results in ending the game. The hole lights and all feature lights go out and the tilt light turns on. Any winning combinations attained but not credited are void.

The multiplication factor for a game being played is shown on the Score Multiplier Display, located at the lower left corner of the playfield.

When scores are increased up to X10 using the Score Multiplier, the number of credits awarded may exceed 9999. If this should occur, the replay display will return to zero and resume counting. At the same time the "L" in "CONTINENTAL" lites up on the back glass to indicate overflow. Maximum capacity of the credit (replay) memory is 19,999, after which the game tilts out.
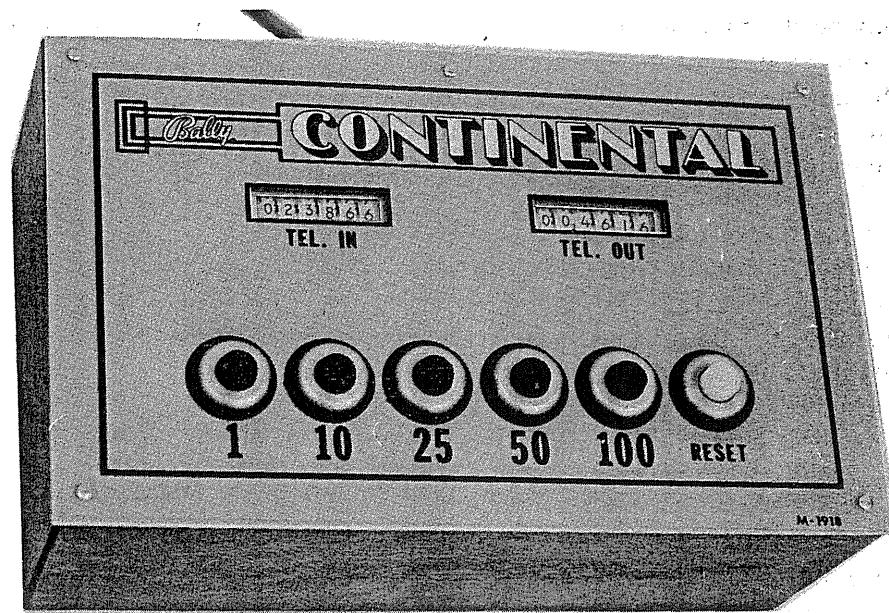
(Continued)

GAME OPERATION

B. REMOTE CONTROL

From a remote location, the game may be reset to zero or credits may be awarded in amounts of 1, 10, 25, 50 or 100 by pressing the proper button on the Remote Control Unit. When the reset button is actuated, the game cannot be operated until all credits have run off and the Replay Display returns to zero.

The unit has two meters, one records credits registered on the game by remote control (telephone in) and the other meter shows credits removed by using the reset button (telephone out).

AS-3062 REMOTE CONTROL SENDER (RCS)

IV. BOOKKEEPING FUNCTIONS—KEYBOARD DISPLAY UNIT (KDU)

A. ELECTRONIC

A large part of the design effort realized in the game is devoted to help the operator perform accounting tasks.
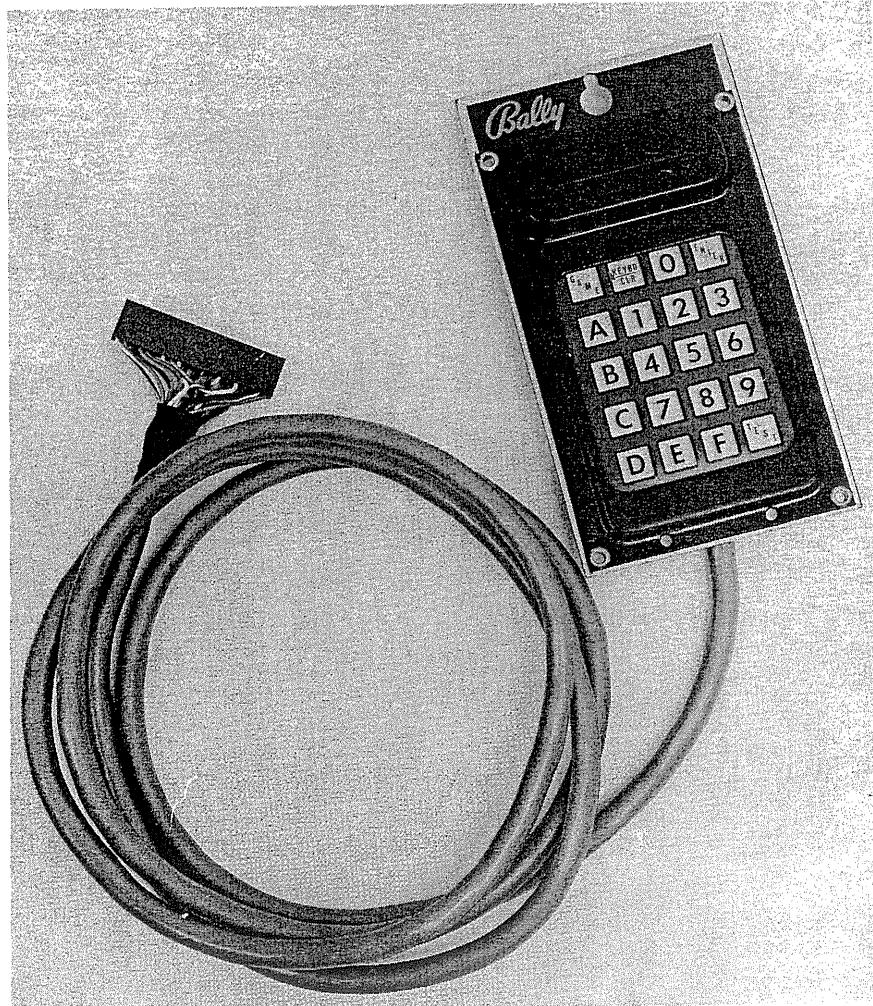
Bookkeeping functions are obtained and displayed by means of a hand held Keyboard Display Unit (AS-3051) supplied with the game. For use, connect the attached extension cable to terminal J23-B, which is located just inside and slightly left of the cabinet door.

There are two states of operation for the Bally Electronic Bingo game. One is the normal (play) mode and the other is a diagnostic mode obtained by pressing the KEYBD/CLR button on the Keyboard Display Unit (KDU). When not in use, the KDU may be left connected and stored in the front cabinet.

To return game to the normal (play) mode, depress the "Game" button.

Caution: Position the KDU and cable carefully in the cabinet to avoid moving parts and terminals.

To view a particular function, switch the game to the diagnostic mode as described and enter the code unique to that function on the keypad. The value contained in the memory reserved for the function will then be displayed.

AS-3051 KEYBOARD DISPLAY UNIT (KDU)
(Continued)

11

BOOKKEEPING FUNCTIONS—KEYBOARD DISPLAY UNIT (KDU)

Note: When using the Keyboard Display Unit, the information shown on the replay display should be ignored.

The bookkeeping functions and their keypad entry codes are as follows:

Code	Function
0A	Total number of coins inserted into the coin chute.
1A	Telephone in — Number of credits put onto the game by the Remote Control Unit.
2A	Telephone Out — Number of credits removed using the reset button.
2B	Total in (Coins and Replays).
3A	Total actual number of games played.
4A	Total Out (Replays).
5A	Number of times Double or Nothing was played.
6A	Number of Double winners.

After the data in all the bookkeeping registers has been recorded they can be set to zero by entering the key code 99B. Note: The coin-in count (OA) is not affected by the reset code.

The game retains in its memory the number of coins dropped through the coin chute, total number of coins and credits (replays) and the actual number of games played. In addition, occurrences of certain features specific to the game model will be recorded to aid in monitoring overall revenue performance. This data is stored in U45 and U49 on the MPU module (non-volatile CMOS RAMS). A storage battery, connected to U45 and U49 only, provides power whenever the game is turned off (see schematic W-1222, sheet 1, left side). The battery is charged through CR29 while the game is on. Since the standby (quiescent) power consumption of U45 and U49 is in microwatts, a fully charged battery can maintain storage of bookkeeping and score information for months. If memory retention is affected, check for battery failure and/or a leaky charging diode.

B. MECHANICAL

Meters located in the cabinet, near the front door, monitor the following functions:

1. Coins In — All coins passing through the coin chute.

2. Total In — All credits and coins played.

3. Total Out — Credits won on the game.

4. Telephone In — Credits awarded from the Remote Control Unit.

5. Telephone Out — Credits removed from the game with the Reset button on the Remote Control Unit.

The Telephone in and out meters are in parallel with the meters in the Remote Control Unit and duplicate the information on them.

V. GAME ADJUSTMENTS

A. PLAYFIELD PANEL POST ADJUSTMENT

Rebound of the ball on the playfield may be adjusted by changing the rubber rings on the play-field posts. A soft rubber ring will increase the ball rebound and a hard rubber ring will decrease rebound.

B. BACK BOX GAME ADJUSTMENTS (SEE SECTION VII, P. 24)

Caution: Turn off power to game before making back box adjustments. Touch the ground braid frequently to avoid damage to the IC modules from static discharge.

Each game has eight switches located on the MPU module in the back box. These switches allow play to be customized to the location. The switches are contained in one sixteen lead package num-bered S1-8. The "On" position is marked on the assembly.

Credits/Coin Adjustments:

The credits per coin are selectable by means of S1-S3. The switch settings allow credits per coin as follows:

S1	S2	S3	Credits/Coin	
Off	Off	Off	1/1	Coin
On	On	On	1/1	Coin
On	On	Off	10/1	Coin
Off	On	On	4/1	Coin
On	Off	Off	5/1	Coin
Off	Off	On	1/2	Coin
On	Off	On	5/2	Coin
Off	On	Off	1/3	Coin

Score Multiplier Adjustments:

The position of switches S5 and S6 determines the maximum score multiplication allowed.

S5	S6	Multiplier Limit
Off	On	X6
On	Off	X10
Off	Off	X1
On	On	X1

(Continued)

GAME ADJUSTMENTS

Mechanical Meter Counting Rate

Switch S4 controls the rate of impulses transmitted to the mechanical meters. With the factory-installed meters which are not designed to count more than 10 impulses per second, this switch must remain in the "Off" position. For user-installed high-speed meters, switch S4 should be moved to "On" to obtain a 25 impulse per second counting rate.

C. FRONT DOOR GAME ADJUSTMENTS

Several functions of the Reflex Unit are accessible using the Keyboard Display Unit (see section IV-A).

Code	Function
10A	Reflex Factor
11A	Reflex Ratio

Reflex Unit Adjustments:

The Reflex Factor may be adjusted over a range of one to nine to allow the operator to immediately adjust the game play without changing the long term percentage associated with changing the Reflex Ratio.

Changing the Reflex Factor is accomplished as follows:

Display the Reflex Factor by entering the factor code into the Keyboard (10A). Enter the new value (between 1 and 9) into the keyboard. Depress "Enter". The new value is now loaded into the Reflex Factor register.

The Reflex Ratio may be set to any value between 70 and 99. It comes pre-set from Bally at 76, which approximates a number 3 gear ratio of a mechanical game.

To adjust the Reflex Ratio, display the present value of the ratio by entering the Reflex Ratio code (11A) into the keyboard. Next, enter into the keyboard the new, two digit ratio followed by depressing the "Enter" key. The new value is now stored in the register and the Reflex Circuit will stop at this new ratio during game play.

Note: The range of adjustment for the Reflex Ratio is limited to between 70 and 99 percent. Should the ratio be set to a value outside this range, the game will initialize the ratio back to 76 percent.

VI. ROUTINE MAINTENANCE

A. DIAGNOSTIC TESTS

Prior to activating the built-in test routines, the game must be switched from its normal (play) mode to the diagnostic mode (see Keyboard Display Unit installation, section IV). This is done with the game on, by depressing the KEYBD/CLR Button on the Keyboard Display Unit (KDU). As the game enters the diagnostic mode, all feature lights are turned off, the replay display blanks out and the tilt light is turned on. The KDU (Keyboard Display Unit) may now be used to aid service personnel in the performance of diagnostic routines which either indicate that the game is functioning properly or help isolate faulty circuits for repair.

B. KEYBOARD OPERATION

To start any diagnostic routine, the specific code for that routine must be entered on the keyboard. The codes and the routines they initiate are:

Code	Function
1B	Lamp Test
3B	Cyclic Lamp, Coil & Motor Test
2B	Switch Test

C. TEST PROCEDURE

1. LAMP TEST (1B)

After entering the "1B" code, repeated depressing of the "B" button (8 additional times), sequentially energizes eight groups of lamp circuits. As each group of circuits is energized, the number designating that group will appear on the KDU readout.

The circuit groups are listed in the order they are energized.

Code	Lamp Circuits
8	#25 Magic number
	4th card double hit
	5th card double hit
	6th card double hit
7	3rd card double-double hit
	3rd card double hit
	#22 magic number
	#3 & #6 double-double card feature
	6th card regular win
	6th card double-double hit

(Continued)

ROUTINE MAINTENANCE

Code	Lamp Circuits
6	2nd card double-double hit
	2nd card double hit
	#9 magic number
	#2 & #5 double-double card feature
	5th card double-double hit
5	1st card double-double hit
	1st card double hit
	#7 magic number
	#1 & #4 double-double coin feature
	4th card double-double hit
	5th card regular win
4	2nd card nothing
	All card ball lights:
	#4, #8, #12, #16, #20, #24
	All cards red diagonals
	Double or nothing features
	8th coin feature
	Tilt
	#1 magic number
	4th card
	4th card nothing
	6th card nothing
3	2nd card regular win
	2nd card double
	3rd card
	All cards ball lights:
	#3, #7, #11, #15, #19, #23
	7th coin feature
	9th coin feature
	11th coin feature
	Magic number feature
	Magic number feature hit
	4th card regular win
	4th card double win
	6th card double win
2	1st card nothing
	2nd card lite
	3rd card nothing
	All cards hole lights:
	#2, #6, #10, #14, #18, #22
	All cards super line feature
	10th coin feature
	5th card nothing
	6th card
	Corner and Super Line panel rollovers

(Continued)

Code	Lamp Circuits
1	1st card
	All cards corner
	1st card regular win
	1st card double win
	All card ball lights:
	#1, #5, #9, #13, #17, #21, #25
	3rd card regular win
	3rd card double win
	5th card
	5th card double win

Note: After completing the 1B test, codes for other routines may be entered directly, if any difficulty arises, press the "KEYBD/CLR" button and re-enter the desired code.

2.   CYCLIC LAMP, COIL AND MOTOR TEST (3B)

   This routine is similar to the 1B lamp test except that the coil and motor circuits of the game are energized with the lamp groups and no further action is required after entering the 3B code. When this is done, the groups of circuits are energized automatically in the same order (#8 thru #1).

   The sequence will cycle continuously until another code is entered on the keyboard or the KEYBD/CLR button (or "Game" button) is pressed.

Note: The (3B) cyclic routine was designed as a factory burn-in test to assure proper functioning of components after a period of use.

(Continued)

ROUTINE MAINTENANCE

3. SWITCH TEST (2B)

Remove (5) balls from the game before running the switch test. After entering the 2B code, the keyboard display should read 8 00. The "8" indicates the switch group being monitored and the "00" reports all switches open in that group. Each additional time the "B" button is pressed, the code for the next group of switches being checked will appear on the left hand side of the keyboard display. At the same time, in a game that is working properly, "00" will be displayed on the right hand side of the keyboard readout, to report all switches open. This repeated pressing of the "B" button commands the Main Processing Unit (MPU) to identify and monitor each group of switches sequentially (#8 thru #1, see chart) and return to group #8.

Each switch in the game also has a unique code, based on its group and position numbers. This specific code will be shown only if that particular switch is closed when its group number is selected. Switch codes appear in place of the "00" on the right hand side of the Keyboard display.

Example: If the Key Switch in group #8 is closed, the display will show 8 04.

When two or more switches in the same group are closed, the sum of all closed switches are displayed.

Example: In group #8, if the Replay Button Switch is closed along with the Key Switch, the display will show 8 05.

Note: The code numbers differ sufficiently to allow switch identification by subtraction of the individual switch codes.

If the KDU shows any closed switches during the test described, locate and check for adjustment, tracing associated circuits if necessary.

To complete the 2B routine, step the KDU to group #8 and manually close switches in the group, one at a time. As each switch is actuated, the correct code should appear in the keyboard display. Repeat with groups #7 thru #2 (group #1 is not used). If response is intermittent or does not occur, clean contacts.

Caution: Do not burnish or file switch contacts or damage to gold plating will occur. Clean with unused business card or equivalent only.

(Continued)

ROUTINE MAINTENANCE

GROUP CODE	SWITCH CODE	SWITCH
8	01	Replay Button
	04	Key Switch
	08	"C" Button
	10	"D" Button
	20	"R" Button
	80	Tilt
7	02	Ball Elevator Switch
	04	Ball Trough 1
	08	Ball Trough 2
	10	Ball Trough 3
	20	Ball Trough 4
	80	Coin Switch
6	01	Gate
	02	Super Line Rollover
	04	Corner Rollover
	20	Ball Shooter
5	01	Hole #1
	02	Hole #2
	04	Hole #3
	08	Hole #4
	10	Hole #5
	20	Hole #6
	40	Hole #7
4	01	Hole #8
	02	Hole #9
	04	Hole #10
	08	Hole #11
	10	Hole #12
	20	Hole #13
	40	Remote Control Data 2
	80	Remote Control Data 1
3	01	Hole #14
	02	Hole #15
	04	Hole #16
	08	Hole #17
	10	Hole #18
	40	Remote Control Data 0
	80	Remote Control Qualifier
2	01	Hole #19
	02	Hole #20
	04	Hole #21
	08	Hole #22
	10	Hole #23
	20	Hole #24
	40	Hole #25
1	NOT USED	

(Continued)

ROUTINE MAINTENANCE

D. SERVICE HINTS

1. ELECTRONIC

Bally recommends checking out electronic games weekly by performing the diagnostic tests described in Section VI. A complete set of schematic diagrams is provided in Section VIII to use in conjunction with the tests and help locate faulty components.

2. MECHANICAL SWITCHES

a. Tilt Switches

Front door and cabinet tilt switches should be adjusted to have about a 1/16" gap between contacts. The *weighted* blade should be positioned to achieve this gap. A larger gap is less sensitive to tripping and a smaller gap increases sensitivity.

b. Other Switch Assemblies

Tighten assembly mounting screws (closest to contact end first) before adjusting to prevent leaves from fanning out. Leaf springs should be adjusted for a 1/16" gap between contacts in the open position and .010 additional travel upon closing. All contacts are gold plated and must not be filed. Clean by closing on a clean business card and pulling it back and forth three times.

CAUTION: Damage to contacts may occur if abrasive tools are used. Pitted or damaged contacts must be replaced as an assembly. Lubrication should not be used.

3. General
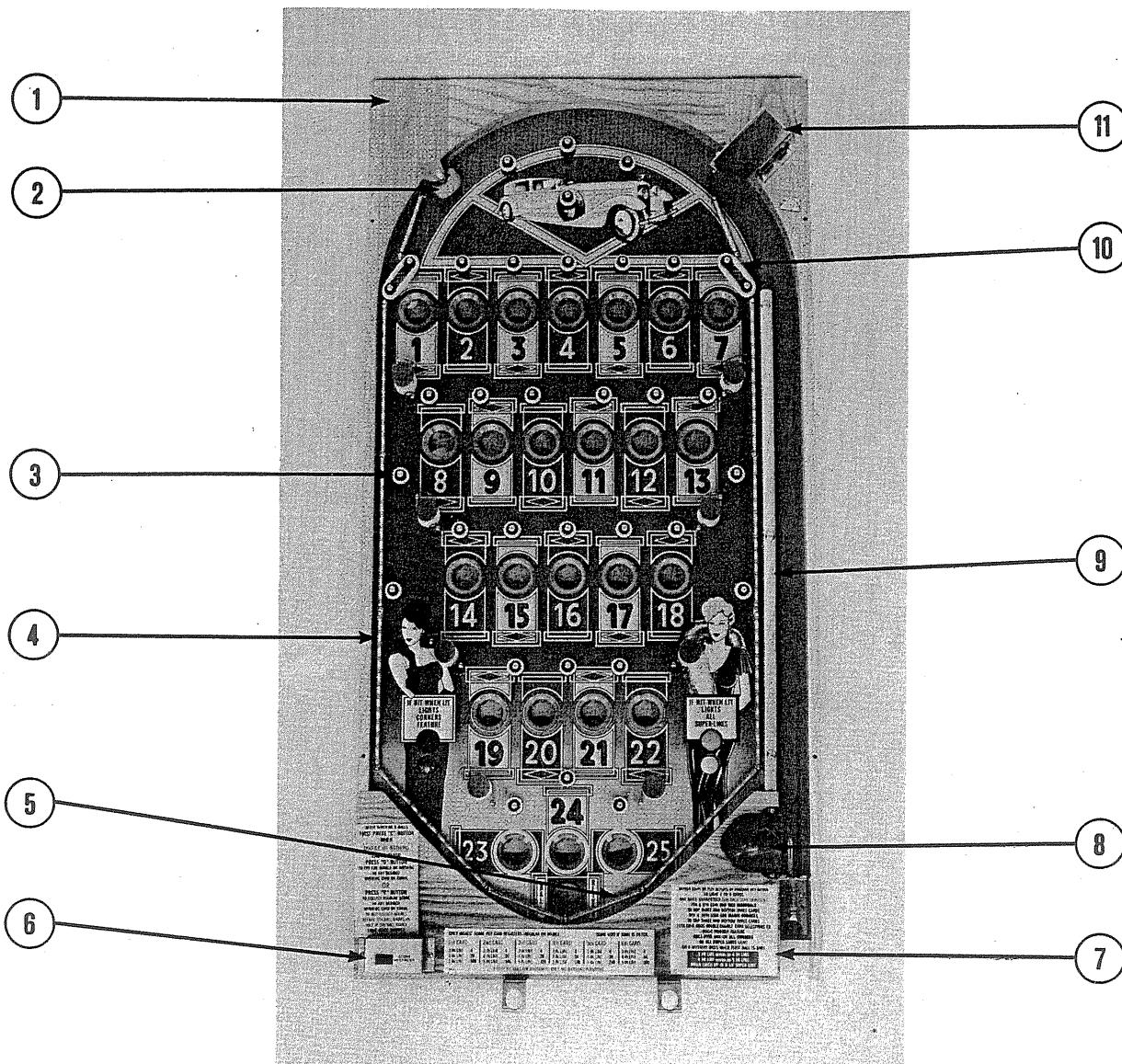
Periodic cleaning of the playfield will extend the life and maintain the appearance of its finish. An excellent cleaner to use is Wildcat #125 compound. If not available locally, ask your distributor to order it from the Wildcat Chemical Company, 1333 Seminary Drive, Ft. Worth, Texas, 76115. Avoid waxing or polishing with products that accumulate residue and yellow with age.

CAUTION: Do not use large amounts of water, caustic or abrasive cleaners.

Inspect each ball every month and polish with a clean cloth. Replace any chipped balls promptly — a chipped ball can damage the playfield in a short time.

Use the printed circuit board removal tool (M-1651-96) when replacing or working on modules. Always disconnect game from main power source *first* and touch the ground braid.
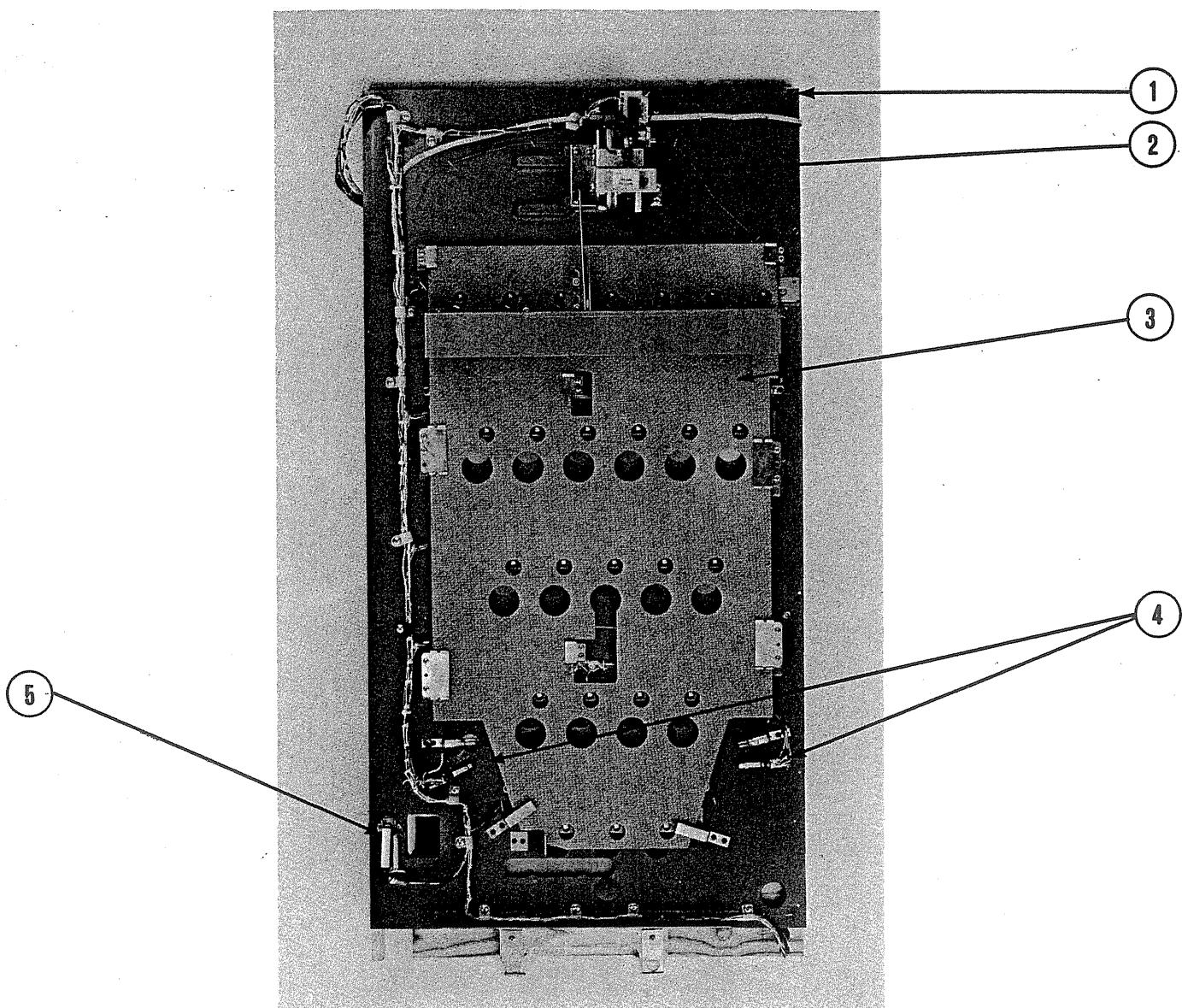
PANEL ASSEMBLY—PLAYFIELD

NOTE: ALL SWITCHES ARE DIODE PROTECTED (E-587-6).

Key No.	Part No.	Description	Page
1	CA-1104	Arch Top	
2	R-115-4	Rebound Rubber	
3	R-243	Bumper Rubber — White.	13
4	SP-112	Long Panel Spring	
5	SP-112-1	Short Panel Spring	
6	AS-3069	Multiplier Display Assy.	2
7	CA-1100-12	Front Arch (BEL)	
8	C-153	Ball Lifter Cover	
9	R-243-2	Bumper Rubber — Grey	13
10	CA-1103	Arch Guide Strip	
11	R-521-1	Bumper Rubber — Two Post	13
12	AS-1315-9	Ball Gate & Switch Assy.	

PANEL ASSEMBLY—BOTTOM
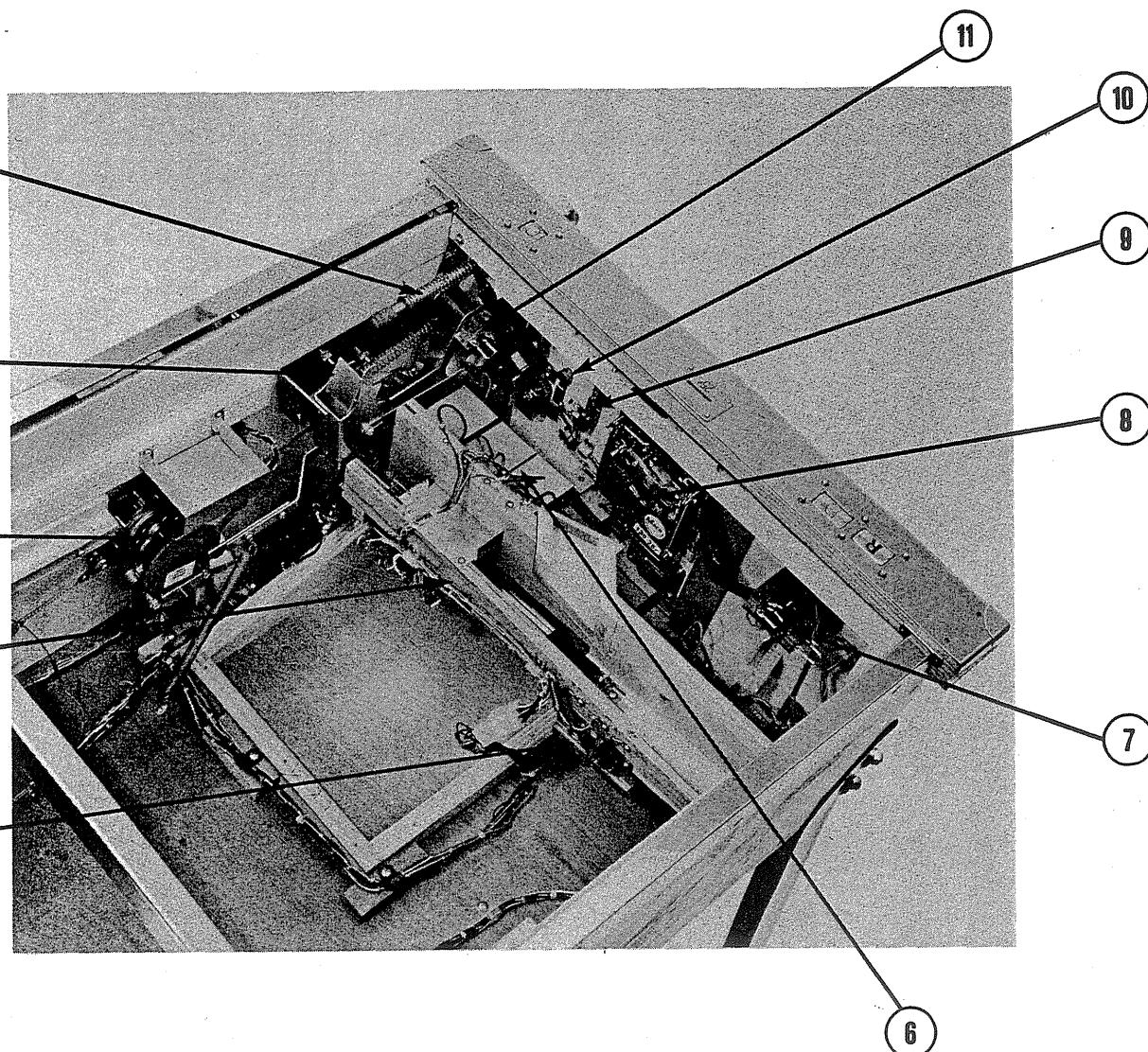
ALL SWITCHES ARE DIODE PROTECTED (E-587-6).

Key No.	Part No.	Description
1	CAP-638-117	Panel
2	AS-232-107	Shutter Motor Assy. (BEL)
3	AS-1433-20	Shutter Assy.
4	ASW-A1-177	Rollover Switches
5	ASW-A1-178	Ball Runway Switch
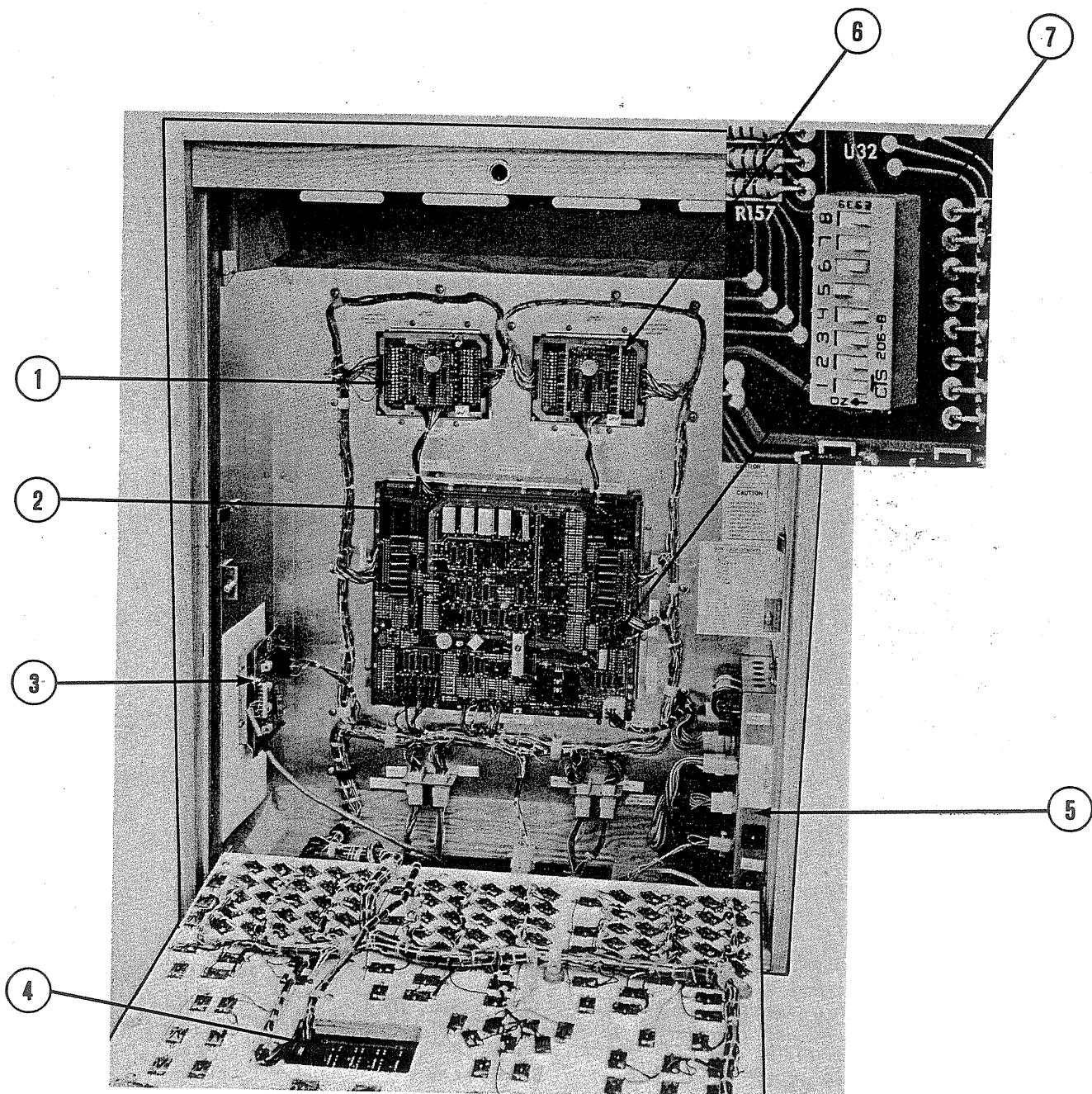
OCE
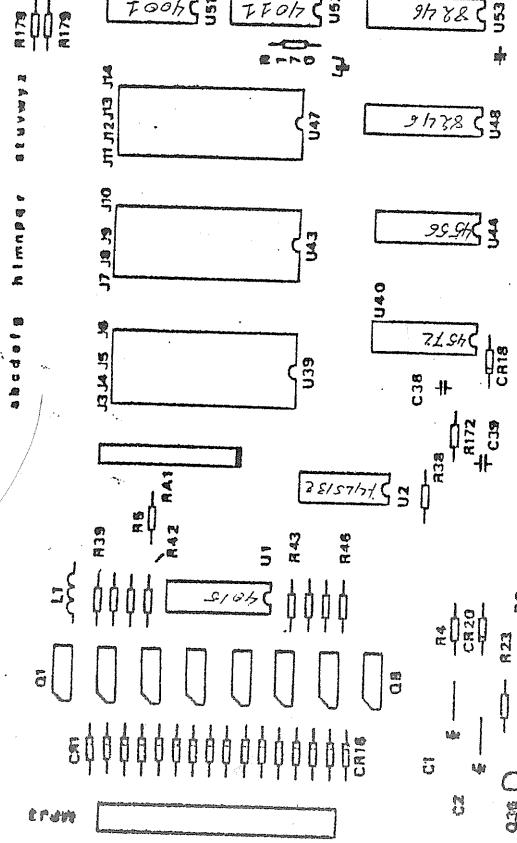
No.	Part No.	Description	Page
1	AS-187-20	Ball Shooter Assy.	
2	AS-186-18	Ball Lifter Assy.	
3	AS-1139-39	Ball Lifter Motor Assy.	
	AS-1145-61	Ball Trough & Switch Assy.	
	E-130-29	Tele In & Out Meters	12
6	E-130-29	Coin and Total In & Out Meters	12
	AS-982-1281	"R" & "D" Switch & Bracket Assy.	
	AS-277-172	Coin Switch	
9	ASW-A1-180	Red Button Switch	
10	ASW-A1-183	Tilt Switch	
1	ASW-A1-173	"C" Button Switch	

BACK BOX
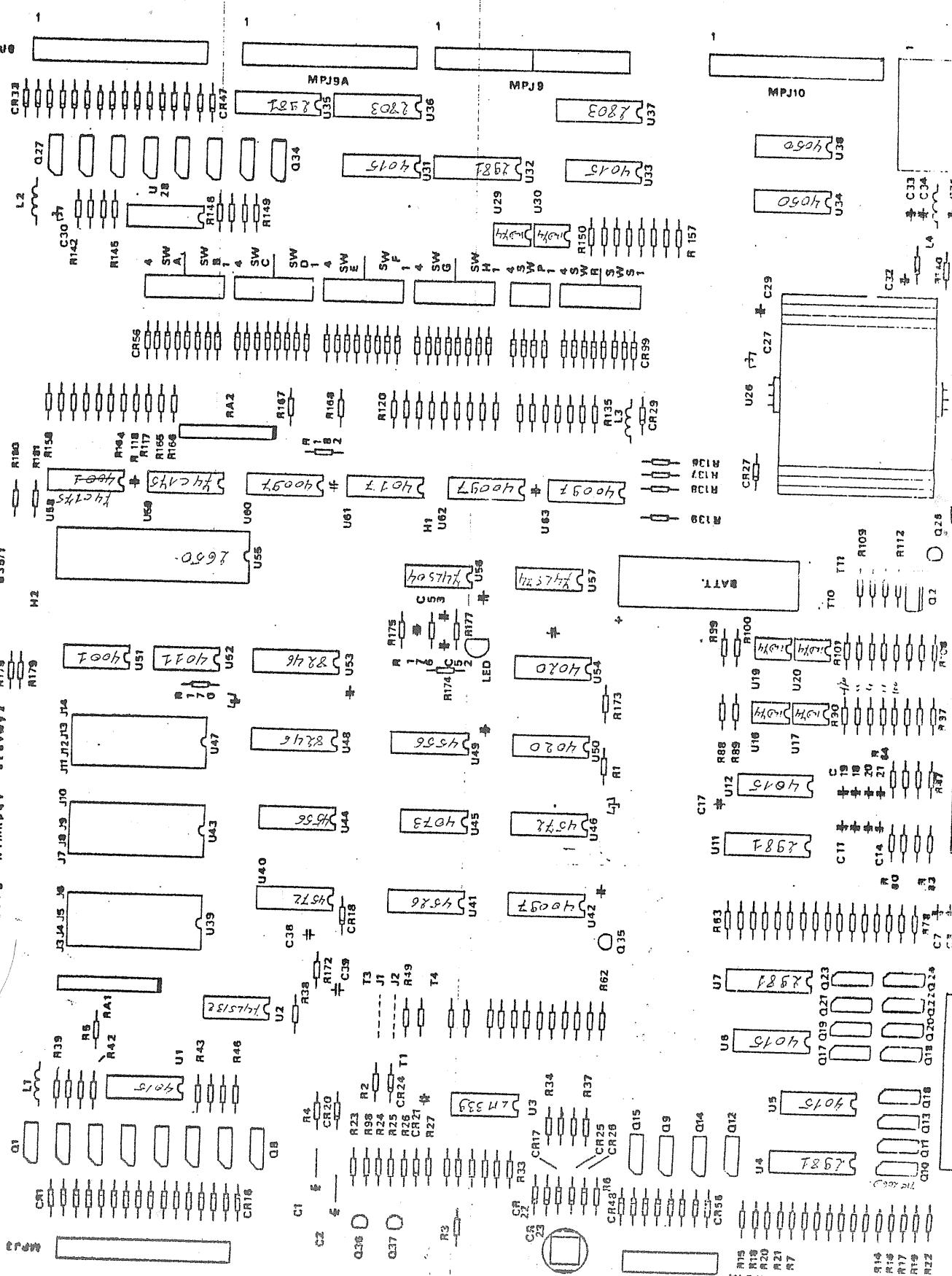
Key No.	Part No.	Description	Page
1	AS-3050	Lamp Driver Assy. (LDA)	25
2	ASE-3044	Microprocessor Assy. (MPU)	26
3	AS-3058	Remote Control Receiver (RCR)	10
4	ASE-3042	Electronic Replay Assy.	9
5	AS-3040	Power Supply Assy. (PSU)	
6	AS-3045	Lamp Driver Assy. (LDB)	25
7	E-677	Adjustment Switches (Detail)	13

MPJ12, MPJ8, MPJ9A, MPJ9, MPJ10, MPJ11, MPJ3, MPJ4A, MPJ14

U1–U63, Q1–Q37, R1–R180, C1–C39, CR16–CR56, CR17–CR29, CR47

SW A, SW B, SW C, SW D, SW E, SW F, SW G, SW H, SW P, SW R, SW S

BATT., LED, L1, L2, L3, L4, T1, T3, T4, T10, T11

RA1, RA2, RA3

abcdefg hijkmpqr stuvwxyz

LAMP DRIVER UNIT—HIGH CURRENT (LDB)

REF.	DESCRIPTION	VALUE
U1 · U2	DUAL 4-BIT SHIFT REGISTER	MC14015BCP
Q1 THRU Q16	S.C.R.	MCR106-1 (OR EQUIV)
CR1 THRU CR32	DIODE	1N4004
R*		
R2 THRU R9	RESISTOR	4.7K OHM, 1/4 W. 5%
R10 THRU R12	RESISTOR	2.2K OHM, 1/4 W. 5%
R13	RESISTOR	1 MEG OHM, 1/4 W. 5%
R14 THRU R21	RESISTOR	4.7K OHM, 1/4 W. 5%
R22 THRU R24	RESISTOR	2.2K OHM, 1/4 W. 5%
C1	CAPACITOR (AXL)	.1 MFD, 100 V
C2	CAPACITOR (TANT)	4.7 MFD, 25 V
		-5 PIN
J24 AND J27	KK-100 WAFER	18 PIN
J-28 - J29	KK 100 WAFER	M 645.456
	P C BOARD	

LAMP DRIVER UNIT—LOW CURRENT (LDA)

REF.	DESCRIPTION	VALUE
U1 · U2	DUAL 4-BIT SHIFT REGISTER	MC14015BCP
Q1 THRU Q16	S.C.R.	2N5060
CR1 THRU CR32	DIODE	1N4004
R1		
R2 THRU R9	RESISTOR	4.7K OHM, 1/4 W. 5%
R10 THRU R12	RESISTOR	2.2K OHM, 1/4 W. 5%
R13	RESISTOR	1 MEG OHM, 1/4 W. 5%
R14 THRU R21	RESISTOR	4.7K OHM, 1/4 W. 5%
R22 THRU R24	RESISTOR	2.2K OHM, 1/4 W. 5%
C1	CAPACITOR (AXL)	.1 MFD, 100 V
C2	CAPACITOR (TANT)	4.7 MFD, 25 V
J24 AND J27	KK-100 WAFER	15 PIN
J28 - J29	KK 100 WAFER	18 PIN
	P.C. BOARD	M 645-455

MAIN PROCESSING UNIT SH 1 OF 5

unmarked resistors are all 2.2K
unmarked diodes are all 1N4004

MAIN PROCESSING UNIT SH.2 OF 5

U61 74C174
U57 LS74
U60 80C97
U42 80C97
U63 80C97
U62 80C97
U58 74C175
U59 74C175
U33 4015
U31 4015
U37 ULN 2803A
U36 ULN 2803A
U32 UDN 2981A
U35 UDN 2981A
U12 4015
U11 UDN 2981A
U63 80C97
U42 80C97
U62 80C97

RESET SH.1
DISPLAY STROBE1 SH.2
DISPLAY STROBE2 SH.2
RESET I/O SH.1
ENKDB SH.2
MATRIX STROBE SH.2
RESET I/O SH.1
ENSMTX SH.2

VCC B
VCC A
VUR

23 x 2.2K
R120 R121 R122 R123 R124 R125
R126
R131 2.2K
R164 2.2K
R110 R117 R52 R58 R139 R138 R136 R137
R163 R160 R161 R162 R67 R165 R166
R130 R129 R128 R127
R151 470 R150 470
R152 470 R153 470
R154 R155 R156 R157
4 x 2.2K
4 x 4.7K
R57 2.2K
8 x 2.2K
8 x 10n
R60 R67 R85 R83 R86 R81 R82 R84
R54 R53 R55 R56 R132 R135 R133 R134
R66 R100 R89 R99 R110 R112 R109 R111
R93 R102 R90 R103 R91 R101 R92 R104
R97 R106 R94 R107 R95 R105 R96 R108
8 x 470
8 x 100
8 x 4.7K

CR99
CR56

MP19
MP9
MP9
MP9A
MP19
MP15
MP16

KEY
23-5 RRJ19-1 SEG. A
25-5 RRJ19-2 SEG. B
27-5 RRJ19-3 SEG. C
32-5 RRJ19-4 SEG. D
34-5 RRJ19-5 SEG. E
35-5 RRJ19-6 SEG. F
36-5 RRJ19-7 SEG. G

12-5 RRJ19-16 ST01
21-5 RRJ19-18 ST02
31-5 RRJ19-19 ST03
12-5 RRJ19-12 ST04
51-5 RRJ19-17 ST05
61-5 RRJ19-14 ST06
71-5 RRJ19-13 ST07
81-5 RRJ19-20 ST08

RRJ19A-11 DIG.STR.1
RRJ19A-13 DIG.STR.2
RRJ19A-14 DIG.STR.3
RRJ19A-8 DIG.STR.4
RRJ19A-15 DIG.STR.5
RRJ19A-9 DIG.STR.6
RRJ19A-10 DIG.STR.7
RRJ19A-12 DIG.STR.8

RRJ19A-1 SEG. A
RRJ19A-2 SEG. B
RRJ19A-3 SEG. C
RRJ19A-4 SEG. D
RRJ19A-5 SEG. E
RRJ19A-6 SEG. F
RRJ19A-7 SEG. G

16-5 RRJ19-8 KBRD7
15-5 RRJ19-9 KBRD6
14-5 RRJ19-10 KBRD5
13-5 RRJ19-11 KBRD4

KEY
12-1 BBC4-1 ST01
21-1 BBC4-3 ST02
31-1 BBP1-3 ST03
41-1 BBP1-5 ST04
51-1 BBP1-7 ST05
61-1 BBP1-9 ST06
71-1 BBP1-11 ST07
N.U.
23 BBC3-6 & BBP2-3 ANT.

13-1 BBC4-2 & BBP1-1 RTN1
23-1 BBC4 & BBP1-4   RTN2
32-1 BBC4-5 & BBP1-4 RTN3
43-1 BBC4-6 & BBP1-6 RTN4
52-1 BBC4-7 & BBP1-8 RTN5
62-1 BBC4-8 & BBP1-10 RTN6
72-1 BBP1-12 RTN7
82-1 BBC4-9 RTN8
N.U.
KEY

DB0 DB5 DB6 DB0 DB7 DB8 DB6 DB10 DB7
DB4 DB7
D0 B D7 B D2 B

MAIN PROCESSING UNIT SH. 5 OF 5

MAIN PROCESSING UNIT SH.4 OF 5

ALL RESISTORS ARE 100Ω 1/2 W
ALL DISPLAYS ARE FND 500

RRJ20

Pin		
11	13-5	KDUP 19 11
10	14-5	KDUP 19 10
9	15-5	KDUP 19 9
8	16-5	KDUP 19 8
16	12-5	KDUP 19 16
18	61-5	KDUP 19 18
19	71-5	KDUP 19 19
12	31-5	KDUP 19 12
00	KEY	
15		
20	41-5	KDUP 19 20
13	21-5	KDUP 19 13
14	51-5	KDUP 19 14
17	12-5	KDUP 19 17
01		
7	36-5	KDUP 19 7
6	35-5	KDUP 19 6
5	34-5	KDUP 19 5
4	32-5	KDUP 19 4
3	27-5	KDUP 19 3
2	25-5	KDUP 19 2
1	23-5	KDUP 19 1

RRJ19

Pin			Signal
11	13-5	MPJ9 11	KEYBOARD RETURN D4
10	14-5	MPJ9 10	KEYBOARD RETURN D5
9	15-5	MPJ9 9	KEYBOARD RETURN D6
8	16-5	MPJ9 8	KEYBOARD RETURN D7
16	12-5	MPJ9 16	DIGIT STROBE 1
18	21-5	MPJ9 18	DIGIT STROBE 2
19	31-5	MPJ9 19	DIGIT STROBE 3
12	41-5	MPJ9 12	DIGIT STROBE 4
00	KEY		
15			
20	81-5	MPJ9 20	DIGIT STROBE 8
13	71-5	MPJ9 13	DIGIT STROBE 7
14	61-5	MPJ9 14	DIGIT STROBE 6
17	51-5	MPJ9 17	DIGIT STROBE 5
01			
7	36-5	MPJ9 7	SEGMENT "G"
6	35-5	MPJ9 6	SEGMENT "F"
5	34-5	MPJ9 5	SEGMENT "E"
4	32-5	MPJ9 4	SEGMENT "D"
3	27-5	MPJ9 3	SEGMENT "C"
2	25-5	MPJ9 2	SEGMENT "B"
1	23-5	MPJ9 1	SEGMENT "A"

RRJ19A

DIGIT STROBE 1
DIGIT STROBE 2
DIGIT STROBE 4
SEGMENT A
SEGMENT B
SEGMENT C
SEGMENT D
SEGMENT E
SEGMENT F
SEGMENT G
DIGIT STROBE 5
DIGIT STROBE 6
DIGIT STROBE 7
DIGIT STROBE 8

Resistors: R1 R2 R3 R4 R5 R6 R7
R8 R9 R10 R11 R12 R13 R14

U1 TENS OF THOUSAND COUNTER
U2 THOUSAND COUNTER
U3 HUNDRED COUNTER
U4 TENS COUNTER
U5 UNITY COUNTER
U6 TENS OF THOUSAND WINS
U7 THOUSAND WINS
U8 HUNDRED WINS
U9 TENS WINS
U10 UNITY WINS
U11 MULTIPLIER x3:x5

POWER SUPPLY SCHEMATIC

CABINET CONNECTOR

PSJ7

- 10-1-BBP2-1
- 10-2-INSERT
- 10-3-INSERT
- N/U
- 30-2-INSERT
- 30-3-INSERT
- 51 VAC -70-1-BBC3-10
- -70-2-BBP2-8
- GENERAL ILL -20-1-BBC3-5
- -20-2 BBP2-2 & INSERT
- GND -80-1-BBC3-11
- -80-2-BBP2-9 & INSERT

6 5 7 9 10 1 4 3 2 12 11

MPU CONNECTORS

PSJ5

- ZCR -18-MPJ7-10
- 51 VAC-N/U
- VUR -15-MPJ7-11
- B REFF -14-MPJ7-4
- LOGIC GND-81-1-MPJ7-7
- GND-80-1-MPJ7-3
- GND-80-2-MPJ7-6
- GND-80-5-MPJ7-12
- GND-80-4-MPJ7-9

2 3 4 1 7 6 5 8 9

PSJ6

- GND
- ØA
- ØB
- 51 VAC
- B REF
- Z C R
- VUR
- G.I
- KEY

1 9 2 3 6 5 7 4 8 10

67 VAC
0.4 VAC

R4 580 Ω

C1 11000 MFD

66 VDC

10 VDC

R1 680 Ω

3.6 VDC

R2 680 Ω

4.7 VDC
R3 1K
PRI
V3RO R711A
4.7 VDC
51 VAC
RET

CR3 1N4004
V1 V222A1
CR5 1N4004
CR1 1N4004

CR2 CR4
A3FX4
CR6 CR7

V3 V242A1
V2 V242A1
V4 V002A3

15A F4
3A F1
3A F3
6A F2

PSP21 PSP21

92
9C
9I
SW

PSP21 PSP21
1 2 3 4

60
90
20
91
92

PSP3 PSP3
2 4 3 1
3 1

80

LINE FILTER

PSJ8
8 11 4 5 6 9 3 10 7 2 1 12

115 VAC @ 10 AMP
50 VAC @ 3 AMP
9.0 VAC @ 3 AMP
67 VAC @ 6 AMP
PURPLE
PURPLE

PSJ22
11 12 8 9 4 7 5 2 6 3 10

80 81 85 83 10 20 50

PSP22
120 V LINE CODE
12 8 4 5 2 6 1

20
20
20

50
40

220 VAC

NOTE ALL VOLTAGE MEASUREMENTS ARE TAKEN WITH A VOLM METER WHILE GAME IS IN A TILT CONDITION

AUX. LAMP DRIVER (L)
LOW CURRENT

R2 THRU R9, 47K OHM, 1/4 W, 5%
R14 THRU R21, 47K OHM, 1/4 W, 5%
Q1 THRU Q16, 2N5060
CR1 THRU CR32, 1N4004

R1 N/U

U2 MCI4015
U1 MCI4015

LDAJ26

Pin	Signal
1	67-2 — 1st CARD A.S.D. SPOT
2	75-3 — 4th CARD A.S.E.D. SPOT
4	68-2 — 11th COIN-D/D-1st CARD
5	78-3 — COIN-D/D-4th CARD
6	71-2 — REGULAR SCORE-5th CAF
7	63-1 — 1st CARD A.S.D. SPOT
8	64-9 — MAGIC NUMBER 2
9	81-3 — KEY
3	N/U
10	
17	72-2 © — 2nd CARD A.S.D.D. SPOT
18	82-3 — 5th CARD A.S.D. SPOT
15	74-2 — COIN-D/D-2nd CARD
16	83-3 — COIN-D/D-5th CARD
13	65-9 — 2nd CARD A.S.D. SPOT
14	85-3 —
11	47-9 — MAGIC NUMBER 3
12	84-3 —

LDAJ25

Pin	Signal
12	65-3 — 6th CARD A.S.D.D. SPOT
11	75-2 — 3rd CARD A.S.D. SPOT
14	67-3 — 11th COIN-D/D-6th CARD
13	82-2 — 11th COIN-D/D-3rd CARD
16	74-3 — 3rd CARD A.S.D. SPOT
15	81-2 — REGULAR SCORE-6th CARD
18	68-3 — MAGIC NUMBER 4
17	51-9 —
10	N/U
5	KEY
2	47-3 — 6th CARD A.S.D. SPOT
1	52-9 —
4	72-3 — 5th CARD A.S.D. SPOT
3	53-9 —
6	95-3 — 4th CARD A.S.D. SPOT
7	54-9 —
9	71-3 — MAGIC NUMBER 5
8	56-9 —

LDAJ27

Pin	Signal	
3	KEY	
4	SDBI 4	35 — MPJI-13
13	SDBI 5	34 — MPJI-12
12	SDBI 6	27 — MPJI-9
9	SDBI 7	25 — MPJI-8
8	LAMP DATA STROBE	32 — MPJI-11
11	RESET I/O	31 — MPJI-10
10	Vcc	36 — MPJI-14
14	LOGIC GND	81-1 — MPJI-15
15	VPD	21 — MPJI-6
6	POWER GND	80-4 — MPJI-4
5		80-3 — MPJI-3
4		80-2 — MPJI-2
2		80-1 — MPJI-1
1	ANT.	23 — MPJI-7
7		

LDAJ24

Pin	Signal	
7	POWER GND	N/U
4		N/U
3		N/U
2		N/U
1	VPD	N/U
6	LOGIC GND.	N/U
15	Vcc	N/U
14	RESET I/O	N/U
10	LAMP DATA STROBE	N/U
11	KEY	N/U
5	SDBO 5	N/U
13	SDBO 4	N/U
12	SDBO 7	N/U
9	SDBO 5	N/U
8		N/U

Diodes: CR17, CR19, CR21, CR23, CR18, CR20, CR22, CR24, CR31, CR29, CR27, CR25, CR32, CR30, CR28, CR26, CR7, CR5, CR3, CR1, CR8, CR6, CR4, CR2, CR15, CR13, CR11, CR9, CR16, CR14, CR12, CR10

Transistors: Q9, Q10, Q11, Q12, Q16, Q15, Q14, Q13, Q4, Q3, Q2, Q1, Q8, Q7, Q6, Q5

Resistors: R14, R15, R16, R17, R21, R22, R19, R18, R5, R4, R3, R2, R9, R8, R7, R6

R24 2.2K, R23 2.2K, R22 2.2K, R10 2.2K, R13 1M, R12 2.2K, R11 2.2K, R1
C1 .1MFD, C2 47MFD

AUX. LAMP DRIVER (14)
HIGH CURRENT

LDB J29

Pin	Signal
1	43-2 — 5th COIN
2	56-3 — HOLE LITE 17
3	84-2 — REGULAR SCORE 1st C
4	57-3 — HOLE LITE 21
6	47-2 — REGULAR-SCORE 3rd C
7	58-3 — HOLE LITE 25
8	48-2 — CORNER SCORE 5 IN
9	65-3 — LETTER S
10	N/U
5	KEY
17	51-2 — 6th COIN
18	61-3 — HOLE LIGHT #18
15	52-2 — BBP2-6 CORNER RO
16	62-3 — HOLE LIGHT #22
13	53-2 — BBP2-7 SUPER
14	
11	54-2 — SUPER LINE LITE
12	64-3 — 10th COIN

CR17, CR18, CR19, CR20, CR21, CR22, CR23, CR24
CR31, CR32, CR29, CR30, CR27, CR28, CR25, CR26

Q9, Q10, Q11, Q12, Q16, Q15, Q14, Q13
R14, R15, R16, R17, R21, R20, R19, R18

LDB J28

Pin	Signal
12	43-3 — HOLE LIGHT 19
11	56-2 — 7th COIN
14	45-3 — HOLE LIGHT #23
13	57-2 — REGULAR SCORE 2nd C
16	
15	58-2 — REGULAR SCORE 4th CAP
18	48-2 — 9th COIN D.A.S. 1,2,3
17	61-2 — 11th COIN
10	N/U
6	KEY
2	51-3 — HOLE LIGHT 20
1	62-2 — 8th COIN
3	52-3 — HOLE LITE 24
4	63-2 — TILT LITE
7	53-3 — DOUBLE/NOTHING FLASH
5	64-2 — RED DIAGONAL CARD 1,2,3
9	54-3 — MAGIC NUMBER 1
8	65-2 — RED DIAGONAL CARDS 4,5,

CR7, CR8, CR5, CR6, CR3, CR4, CR1, CR2
CR15, CR16, CR13, CR14, CR11, CR12, CR9, CR10

Q4, Q3, Q2, Q1, Q8, Q7, Q6, Q5
R5, R4, R3, R2, R9, R8, R7, R6

R2 THRU R9, 47K OHM, 1/4 W, 5%
R14 THRU R21, 47K OHM, 1/4 W, 5%
Q1 THRU Q16, MCR106-1
CR1 THRU CR32, 1N4004

R1 N/U

U2 MC14015   **U1 MC14015**

R24 2.2K
R23 2.2K
R22 2.2K
R10 2.2K
R13 1M
R12 2.2K
R11 8.2K
C2 4.7MFD
C1 .1MFD
ANT.

LDB J27

Pin	Signal	
3	KEY	35-MPJ2-3
13	SDBI 0	34-MPJ2-12
12	SDBI 1	27-MPJ2-9
9	SDBI 2	25-MPJ2-8
8	SDBI 3	32-MPJ2-11
11	LAMP DATA STROBE	31-MPJ2-10
10	RESET I/O	36-MPJ2-14
14	Vcc	81-1-MPJ2-15
15	LOGIC GND	21-MPJ2-6
6	POWER GND	80-4-MPJ2-4
5	Vpp	80-3-MPJ2-3
4		80-2-MPJ2-2
2		80-1-MPJ2-1
1		23-MPJ2-7
7	ANT	

LDB J24

Pin	Signal	
7	POWER GND	N/U
4		N/U
3		N/U
2		N/U
1		N/U
6	Vpp	N/U
15	LOGIC GND	N/U
14	Vcc	N/U
10	RESET I/O	N/U
11	LAMP DATA STROBE	N/U
5	KEY	N/U
13	SDBO 1	N/U
12	SDBO 0	N/U
9	SDBO 3	N/U
8	SDBO 2	N/U

CONNECTOR DIAGRAM

DA AG61012 NA22

61-2—LDBJ28-17-11th COIN
62-2—LDBJ28-1—8th COIN
63-2—LDBJ28-3-TILT
64-2—LDBJ28-5-RED DIAGONALS 1-2-3 (7th COIN)
65-2—LDBJ28-8-RED DIAGONALS 4-5-6 (8th COIN)
67-2—LDAJ26-1—1st CARD-A.S.D.D. SPOT
68-2—LDAJ26-4-11th CON-DOUBLE/DOUBLE-1st CARD
71-2—LDAJ26-6-REGULAR SCORE- 5th CARD
72-2—LDAJ26-17-2nd CARD-A.S.D.D. SPOT
74-2—LDAJ26-15-11th COIN-DOUBLE/DOUBLE-2nd CARD
75-2—LDAJ25-17-3rd CARD- A.S.D.D. SPOT
81-2—LDAJ25-15-REGULAR SCORE- 6th CARD
82-2—LDAJ25-13-11th COIN-DOUBLE/DOUBLE-3rd CARD
83-2—MPJ8-3—NOTHING - 1st CARD
84-2—LDBJ29-3-REGULAR SCORE- 1st CARD
85-2—MPJ8-15—DOUBLE WIN - 3rd CARD
95-2—MPJ8-1—2nd COIN
96-2—MPJ3-15—DOUBLE WIN - 6th CARD

12-2—MPJ8-17—DOUBLE WIN-1st CARD
14-2—MPJ8-13—DOUBLE WIN-5th CARD
15-2—MPJB-11—1st COIN
21-2—MPJ8-6—NOTHING-3rd CARD
23-2—MPJ8-8—NOTHING-5th CARD
27-2—MPJ3-10—DOUBLE WIN-2nd CARD
31-2—MPJ3-12—DOUBLE WIN-4th CARD
34-2—MPJ3-17—3rd COIN
35-2—MPJ3-1—NOTHING-2nd CARD
36-2—MPJ3-3—NOTHING-4th CARD
38-2—MPJ3-5—NOTHING-6th CARD
41-2—MPJ3-7—4th COIN
43-2—LDBJ29-1—5th COIN
47-2—LDBJ29-6-REGULAR SCORE-3rd CARD
48-2—LDBJ29-8-CORNER SCORE-5 IN LINE
51-2—LDBJ29-17-6th COIN
54-2—LDBJ29-11-SUPERLINE LITE
56-2—LDBJ28-11-7th COIN
57-2—LDBJ28-13-REGULAR WIN-2nd CARD
58-2—LDBJ28-15-REGULAR WIN-4th CARD

10-2 —— PSJ17-5
10-3 —— PSJ17-7 —— 31A

20-2 —— PSJ17-2
90-2 —— PSJ17-11

(7) GENERAL ILLUMINATION
GND.

NOTE:
VALUES INSIDE LAMP SYMBOLS INDICATE
THE NUMBER OF LAMPS PER CIRCUIT.

GENERAL ILLUMINATION CIRCUIT IS
CONNECTED TO BOTH PHASES.

82-3—LDAJ26-18—5th CARD-A.S.D.D. SPOT
83-3—LDAJ26-16—11th COIN DOUBLE/DOUBLE-5th CARD
84-3—LDAJ26-12—MAGIC NUMBER 3
85-3—LDAJ26-14—2nd CARD-A.S.D. SPOT
95-3—LDAJ25-7—4th CARD-A.S.D. SPOT
65-3—LDBJ29-9—LETTER S

51-3—LDBJ28-2—HOLE LIGHT 20
52-3—LDBJ28-4—HOLE LIGHT 24
53-3—LDBJ28-7—DOUBLE OR NOTHING
54-3—LDBJ28-18—MAGIC NUMBER 1
56-3—LDBJ29-2—HOLE LIGHT 17
57-3—LDBJ29-4—HOLE LIGHT 21
58-3—LDBJ29-7—HOLE LIGHT 25
61-3—LDBJ29-18—HOLE LIGHT 18
62-3—LDBJ29-16—HOLE LIGHT 22
63-3—LDAJ26-7—1st CARD-A.S.D. SPOT
64-3—LDBJ29-12—10th COIN-D.A.S.-4,5,6
65-3—LDAJ25-12—6th CARD-A.S.D. SPOT
67-3—LDAJ25-14—11th COIN DOUBLE/DOUBLE-6th CARD
68-3—LDAJ25-18—MAGIC NUMBER 4
71-3—LDAJ25-9—MAGIC NUMBER 5
72-3—LDAJ25-4—5th CARD-A.S.D. SPOT
74-3—LDAJ25-16—3rd CARD-A.S.D. SPOT
75-3—LDAJ26-2—4th CARD-A.S.D. SPOT
78-3—LDAJ26-5—11th COIN DOUBLE/DOUBLE-4th CARD
81-3—LDAJ26-9—MAGIC NUMBER 2

12-3—MPJ3-11—HOLE LIGHT 3
13-3—MPJ3-14—HOLE LIGHT 7
14-3—MPJ3-16—HOLE LIGHT 11
15-3—MPJ3-18—HOLE LIGHT 15
18-3—MPJ3-2—HOLE LIGHT 4
21-3—MPJ3-4—HOLE LIGHT 8
23-3—MPJ3-6—HOLE LIGHT 12
25-3—MPJ3-8—HOLE LIGHT 16
27-3—MPJ8-18—HOLE LIGHT 1
31-3—MPJ8-16—HOLE LIGHT 5
32-3—MPJ8-14—HOLE LIGHT 9
34-3—MPJ8-12—HOLE LIGHT 13
35-3—MPJ8-4—HOLE LIGHT 2
36-3—MPJ8-7—HOLE LIGHT 6
38-3—MPJ8-9—HOLE LIGHT 10
41-3—MPJ8-2—HOLE LIGHT 14
43-3—LDBJ28-12—HOLE LIGHT 19
45-3—LDBJ28-14—HOLE LIGHT 23
47-3—LDAJ25-2—6th CARD-A.S.D. SPOT
48-3—LDBJ28-18—9th COIN-D.A.S.-1,2,3

30-2 —— PSJ17-8
30-3 —— PSJ17-10 —— ØB

NOTE:
VALUES INSIDE LAMP SYMBOLS INDICATE
THE NUMBER OF LAMPS PER CIRCUIT.

NOTE:
ALL DIODES ARE IN4004

PLAY FIELD WIRING

SUPER LINE ROLLOVER
53-2 — BBP2-7
10-1 — BBP2-1

CORNER ROLLOVER
52-2 — BBP2-6
10-1 — BBP2-1

TO

REPLAY MULTIPLIER DISPLAY BOARD AS 3042-1

RM40 J 33

Pin		
53 — BBP3-4	1	U2-E
52 — BBP3-3	2	U2-O
51 — BBP3-2	3	U2-C
KEY	4	KEY
56 — BBP3-6	5	U2-G
47 — BBP3-1	6	U2-B
54 — BBP3-5	7	U2-F
10 — PLAYFIELD	8	A PHASE SUPPLY
55 — BBP3-8	9	U2-A
64 — BBP3-7	10	U1-B&C

KK-100
10 PIN

FROM BBP-3

SHUTTER MOTOR
70-2 — BBP2-8 50 VAC
(M)
48-4 — BBP2-5 RET

SHUTTER MOTOR
CARRY-OVER SWITCH
43-4 — BBP2-5
1 MFD 100 V
TAZ100
80-2 — BBP2-9

STROBES

	HOLE No 19	HOLE No 20	HOLE No 21	HOLE No 22	HOLE No 23	HOLE No 24	HOLE No 25
	HOLE No 14	HOLE No 15	HOLE No 16	HOLE No 17	HOLE No 18	N/U	N/U
	HOLE No 8	HOLE No 9	HOLE No 10	HOLE No 11	HOLE No 12	HOLE No 13	N/U
	HOLE No 1	HOLE No 2	HOLE No 3	HOLE No 4	HOLE No 5	HOLE No 6	HOLE No 7	N/U

GENERAL ILLUMINATION
20-2 — BBP2-2 6.7 VAC
(B)
80-2 — BBP2-9 RET

RETURNS

13-1 — BBP1-1
23-1 — BBP1-2 GATE
32-1 — BBP1-4 SUPER LINE ROLLOVER
43-1 — BBP1-6 CORNERS ROLLOVER
52-1 — BBP1-8 N/U
62-1 — BBP1-10 N/U
72-1 — BBP1-12 RUNWAY
82-1 — BBC4-9 N/U
31-1 — BBP1-3 ST03
41-1 — BBP1-5 ST04
51-1 — BBP1-7 ST05
61-1 — BBP1-9 ST06
71-1 — BBP1-11 ST07
23 — BBP2-3 ANT

TO BACKBOX
(BBP1, BBP2 & BBP3)

CABINET WIRING DIAGRAM

ON-OFF SWITCH

90 — PSP21-2
91 — PSP21-3
TO PSP21

V2 E

LIFTER
23-1 — BBC4-4
KEY SW.
32-1 — BBC4-5
C BUTTON
43-1 — BBC4-6
N BUTTON
52-1 — BBC4-7
R BUTTON
62-1 — BBC4-8
TILTS
82-1 — BBC4-9
STO1
12-1 — BBC4-1
STO2
21-1 — BBC4-3
SWITCH STROBES

CHIME
14-4 — BBC3-1
70-1 — BBC3-10

23-1

FRONT DOOR

TELEPHONE OUT METER
83-4 — BTP2-10
70-1 — BTP2-8
TELEPHONE IN METER
84-4 — BTP2-11
70-1 — BTP2-8
TOTAL OUT METER
81-4 — BTP2-9
70-1 — BTP2-8
METER 1. TOTAL IN
15-4 — BTP2-1
70-1 — BTP2-8
METER 2. COIN METER
18-4 — BTP2-2
70-1 — BTP2-8

BALL LIFTER MOTOR
38-4 — BBC3-8 RET.
70-1 — BBC3-10 51 VAC

BALL LIFTER CARRYOVER SWITCH
38-4 — BBC3-8
80-1 — BBC3-11
1 MFD 100 V
100ZA3
MANUAL BALL LIFTER BUTTON

SERVICE LITE
20-1 — BBC3-4
80-1 — BBC3-11 DOOR SWITCH

SWITCH RETURNS
TROUGH 1
32-1 — BTP2-4
43-1 — BTP2-5
TROUGH 2
52-1 — BTP2-6
TROUGH 3
62-1 — BTP2-7
TROUGH 4
21-1 — BTP2-3 — STC2
SWITCH STROBE

BALL TROUGH PLUG
15-4 — BTP2-1
18-4 — BTP2-2
21-1 — BTP2-3
32-1 — BTP2-4
43-1 — BTP2-5
52-1 — BTP2-6
62-1 — BTP2-7
70-1 — BTP2-8
81-4 — BTP2-9
83-4 — BTP2-10
84-4 — BTP2-11

SOUNDER
67-4 — BBC3-9
70-1 — BBC3-10

23 — BBC3-6 ANT

FRONT DOOR

COIN SWITCH 2
REPLAY BUTTON X5
SWITCH STROBES
COIN SW. 1
72-1 — FDP1-3
13-1 — FDP1-4
SWITCH RETURNS
13-1 — FDP1-4
REPLAY BUTTON x 3
TILT
82-1 — FDP1-1
STO1
12-1 — FDP1-6
STO2
21-1 — FDP1-2

FRONT DOOR PLUG
81-1 — FDP1-1
21-1 — FDP1-2
72-1 — FDP1-3
13-1 — FDP1-4
70-1 — FDP1-5
82-1 — FDP1-6

TO BACKBOX
(BBC3 & BBC4)

REMOTE CONTROL RECEIVER