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Eight ball CHAMP

Parts and Operating Manual



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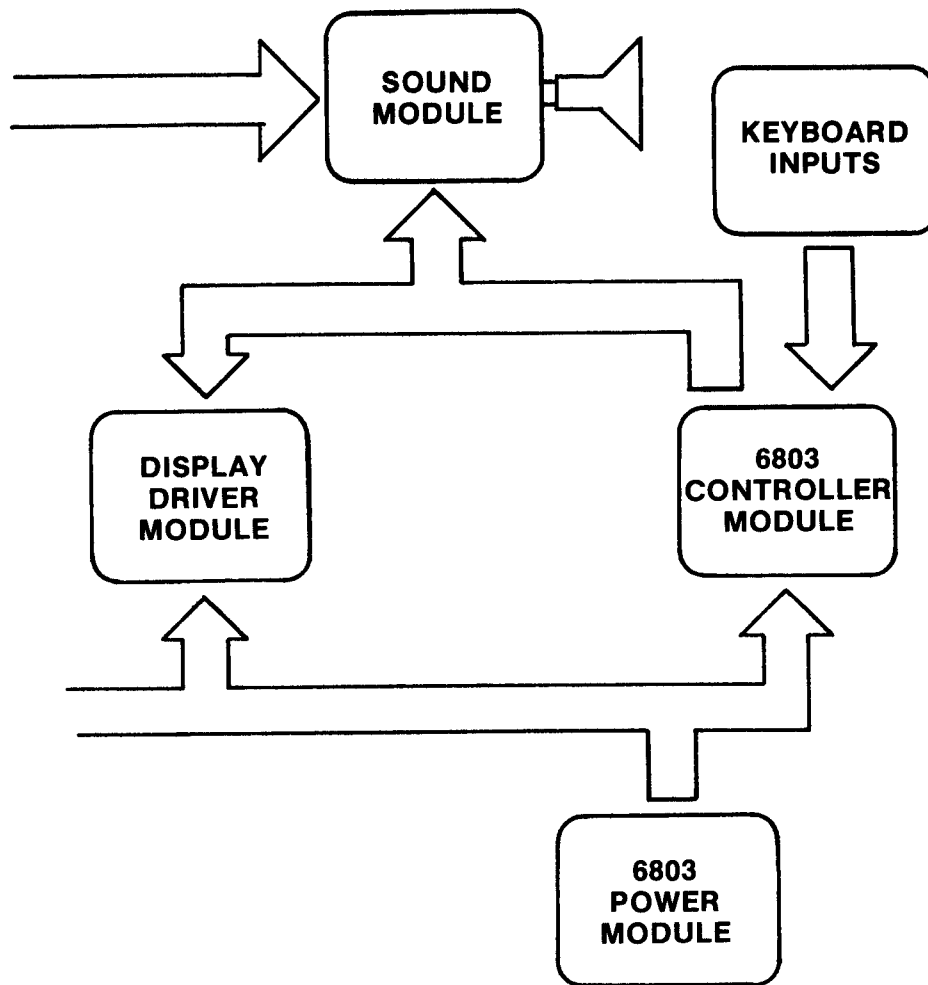
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BLOCK DIAGRAM—ELECTRONIC PINBALL GAME



DETACHING OF PIN-GAME BACK BOX

When the back box is in an up-right position and the 3/8" hold-down bolts are removed, the back box can be removed from the main cabinet by lifting the right corner of the back box (about 3/4") and pulling it slightly towards you. Now both hinges are disengaged and the back box can be removed.

I. INSTALLATION

Assemble the game as follows:

Bolt legs to cabinet. Bolt back box to cabinet. Use flat washers under bolt heads. Gently feed cable connectors and ground braid through cable port in back box. Screw ground braid to braid in back box. Carefully and fully insert connectors on printed circuit assemblies.

On all games there are certain items that should be checked after shipment. These are visual inspections which may avoid time consuming service work later. Minor troubles caused by abusive handling in shipment are unavoidable. Cable connectors may be loosened, switches (especially tilt switches) may go out of adjustment. Plumb bob tilt switch should always be adjusted after game is set on location and leg levelers are adjusted.

Visual inspections before plugging in line cord:

1. Check that all cable connectors are completely seated on printed circuit assemblies.
2. Check that cables are clear of all moving parts.
3. Check for any wires that may have become disconnected.
4. Check switches for loose solder or other foreign material that may have come loose in shipment and could cause shorting of contacts.
5. Check wires on coils for proper soldering. Cold solder connections may not show up in factory inspection, but vibration in shipment may break contact.
6. Check that fuses are firmly seated and making good contact.
7. Check the transformer for any foreign material shorting across wiring lugs.
8. Check wiring of transformer to correspond to location voltage. See figure 1.

Check adjustment of the two (normally open) tilt switches:

1. Plumb bob tilt on left side of cabinet near front door.
2. Ball tilt above plumb bob tilt. Insert the smaller ball (15/16" dia.) into the ball tilt assembly, and adjust the bracket so the ball will roll free to contact the switch blade, if front of cabinet is raised.

TRANSFORMER CONNECTION INSTRUCTIONS

REFER TO BACK BOX WIRING DIAGRAM IN GAME MANUAL FOR TABLE "A"

Figure 1.

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

PART OF POWER TRANSFORMER MODULE
LOCATED IN BACK BOX

II. GENERAL GAME OPERATION

Place ball into playfield by outhole.

Coin game. Coin should be rejected. Plug in line cord. Move power ON-OFF master switch at bottom right front corner of cabinet to "ON" position. The game will play a power-up tune to announce game-readiness. Drop targets are reset, scores are set to zero, alternating with the "High Score to Date", and the game is ready to play. Coin Game. The game should accept the coin and post credits* for coins accepted (adjustable). Pressing the credit button on the cabinet will cause the outhole kicker to serve the ball to the shooter alley. A game-up tune* is played to announce play-readiness.

One player is posted each additional time the credit button is pressed (one to four can play). The credits are reduced by one each time the credit button is pressed until the credits are reduced to zero.

Shooting the ball initiates play.

The game awards all points earned by the player. If spinner is turned and scoring when the ball hits a target, the spinner and the target scores are awarded.

When the ball enters the outhole, the bonus score is added to the total score. The player-up and/or ball in play on the back box is advanced one position. The outhole kicker serves the ball to the shooter alley and play is resumed. This continues until each player has played the allowable number of balls per game (adjustable). At this time 'Game Over' light is lit. A random Match* number appears and the "Match" light is lit. If the number is the same as the last two digits in a player's score, a free game is awarded.

Extra balls won during the course of the game are played immediately after the player's regular ball enters the outhole. The player-up and/or ball in play on the back box are not advanced for extra ball play. Bonus score is added to the player's score before the game serves the extra ball for play.

Scoring over 10,000,000 gives "High Score to Date" award.

At the end of the game, a "High Score to Date" is alternately flashed with all 4 player scores. If the "High Score to Date" is beat, this feature* awards free games (adjustable, using **REGISTER 15** as discussed on page 1-10).

Tilting the game results in loss of a ball. The flippers, thumper bumpers, etc. go 'dead'. Bonus points are not scored. The purpose of the tilt penalty is to discourage the player from jostling the machine in an attempt to prolong play. Game action becomes normal after the ball kicker assembly serves the ball to the shooter alley.

Slamming the machine results in loss of the game. All feature lights go out, the game goes "dead", and a time delay occurs. The purpose of the time delay is to discourage unnecessary abuse of the machine. After the delay, the "Game Over" light lights and the power-up tune is played. The time delay occurs anytime one of the slam switches is made to contact. There are two factory installed slam switches, one on the front door, and one on the left side of the cabinet. (Any number of slam switches could be installed by the operator, to meet his individual requirement.) The switch should be adjusted to have approximately 1/16" gap between the contacts. The weighted blade should be adjusted to attain the desired sensitivity. Decreasing the gap between contacts will make the switch more sensitive. Opening the gap will reduce sensitivity.

* Some tunes and features can be disabled or adjusted by operator if so desired. See Standard Game Feature Options on pages 1-9 and 1-10.

NOTE: Scoring and feature units will differ from game to game.

III. TAILORING & TESTING THE GAME

INTRODUCTION

One of the reasons for developing this new system is to provide more information to the operator. In the past, if a game was performing too liberally an operator could only guess what feature might be affecting his income. Through the process of trial and error a "good businessman" eventually found the problem and either changed score thresholds or flipped switches to get the game to perform in accordance with its location.

The new system introduces a subroutine that gives the operator more feedback on how the awards are being delivered. This subroutine allows the operator to change game features, awards and threshold settings. It also monitors specific specials awarded, game percentage and income.

All of this information is stored in memory locations or REGISTERS located in integrated circuit U4. This memory remains intact with the game off through the use of a battery. Should erroneous information "sneak into" certain REGISTERS due to a weak battery, a flag is set telling the processor that the information stored is no longer valid. When this occurs, the processor resets these REGISTERS to factory settings, the next time the game is turned on. Also, the high score to date will flash all 5's on the 1st thru 4th player digital displays during the attract mode. In addition, the credit/coin code in REGISTER 17 goes to 01 (1 credit/1 coin for all coin chutes used) & the balls per game register (REGISTER 23) will default to 3. (3 balls per game.)

To simplify entry to the REGISTERS and SELF-TEST functions BALLY/MIDWAY has provided a keypad that allows the operator to go directly to the function or register in question. This eliminates the tedious procedure of repeatedly pressing the Self-Test Button to look at a certain REGISTER. It also ends the aggravation of having to open the backbox just to flip switches on the MPU Board.

For example, to look at the TOTAL PLAY REGISTER in the old system, you had to press the test button 11 times! Of course this gave you time to chat with the local Repair Expert and learn how he and Ernie always "put chewin' gum on the legs to keep the game from slidin'." But occasionally, the conversation caused you to pass the REGISTER you were looking for, and you had to start over again.

With the new system, we simply hit the test button once and go to the specific REGISTER by using the keyboard.

If the REGISTER is used for Bookkeeping, (i.e. total coins chute #1) it is protected from change and may only be observed or reset to zero. No fabricated numbers may be introduced.

If the REGISTER is a game feature option (i.e. balls per game) it can be changed directly from the keyboard.

OPERATION

The keyboard is located on the right inside wall of the game near the front door. The cable has been lengthened, so that once the keyboard is removed, it may be easily operated from outside the game.

The first step is to press the black Test Button located on the front door once. This tells the processor to do the following:

1. Check to make sure that no switches wired in parallel with the keypad are closed.
2. If any of these switches are closed the game automatically jumps to STUCK-SWITCH Test (94 is shown in the Match/Credit Display) and flashes the number of the conflicting switch in all four player displays. By referring to the STUCK-SWITCH I.D. Table on page 1-18, we can pin-point the culprit immediately. When the switch is opened up the stuck-switch test now checks all of the other switches to insure that they're open. A flashing 00 in all four player displays indicates the switches are now open. Pressing the black Test Button should cause the game to exit STUCK-SWITCH Test and go into LAMP Test. (90 in the Match/Credit display) Pressing (KEYBD/CLR) button takes the game out of Lamp Test, displays 00 in the Match/Credit Display and the game is now ready for KEYBOARD ENTRY.
3. If there were no stuck switches in parallel with the keyboard, the game enters Keypad Mode and displays 00 in the Match/Credit display. The game is now ready for KEYBOARD ENTRY.

PLEASE NOTE: Some of the buttons on the KEYBOARD are not used but have been provided for future expansion. They are the keys (D), (E), (F), and (*).

KEYBOARD ENTRY

If you've reached this point with no problems you should find the rest of the procedure simple. Just press the number(s) of the REGISTER you want to see and press (ENTER). Use the REGISTER Table inside the game for a reference. As you press the number(s), they should appear in the Match/Credit Display. When you operate the (ENTER) button, the current information of the REGISTER will be shown in the Player #1 Display. If this REGISTER is not "protected" by the program, new information may be installed. Just press the numbers you want installed and they appear on the Player #2 Display. This allows you to compare the "old" information with the "new". Now press (ENTER) and both displays show the "new"

information. If you made a mistake, just punch in the correct number so it appears in Player #2 and press (ENTER) again. This inserts the corrected information into the REGISTER and both displays again show the new numbers.

Example: Let's say you want to change a game from 5 balls per game to 3 balls per game. We look up this function in the REGISTER Table and find the feature is located in REGISTER 23. Just press buttons (2), (3), and (ENTER). The Match/Credit Display shows 23 and Player #1 should show a 5. Now press (3) (3 appears in the Player #2 Display) and (ENTER). The 3 is now also in Player #1 and therefore in the REGISTER.

Suppose you accidentally pressed (4) instead of (3) then (ENTER). The number 4 is now in the REGISTER. To correct this, simply press (3),(ENTER) and the REGISTER now shows a 3.

NOTE: If the number you entered is invalid, the game will make a funny noise and send you back to REGISTER 00. (the start)

DESCRIPTION OF TESTS

LAMPS- (Function 90) This causes all of the switched illumination lites to flash on and off repeatedly until the test is EXITED.

DISPLAYS- (Function 91) When the game is placed in this test, each display will cycle from 0 thru 9 in all of its digits. While this isn't as fascinating as gazing into an open fireplace it can usually help you localize a problem to a specific display or component.

SOLENOIDS - (Function 92) All of the game solenoids energize in sequence as defined by the SOLENOID IDENTIFICATION TABLE on page 1-18. **PLEASE NOTE:** The flipper buttons must be held closed to allow the flippers to pull-in during this test, YOUR COOPERATION IS APPRECIATED.

SOUND - (Function 93) This test allows the Controller Board to talk to the Sound Board. The Sound Board doesn't talk back to the Controller Board, but it should to you. About once a second it will generate a noise (from the Programmer's top 40 favorites) almost guaranteed to drive your location crazy. So please keep the volume low if you intend to stay in this test any length of time.

STUCK-SWITCH - (Function 94) With this test we can pinpoint a troublesome switch quickly by looking at the Displays. If 00 is flashing in the 4 Player Displays - to the computer that means there are no stuck-switches. When a number other than 00 is flashing in these displays, just refer to the STUCK-SWITCH IDENTIFICATION TABLE on page 1-18. This table, along with its associated playfield drawing should allow you to find the switch immediately.

In addition to locating stuck-switches this test is very useful in confirming the validity of a switch. Sometimes when a serviceman is repairing a connector or soldering a bunch of wires he is pressed for time. Using this test and the Table in the book is the easiest and most accurate way of proving he's connected the wires for the '10 Point Rebound' rather than a parallel circuit to the Coin Switch.

IV. KEYBOARD GAME ADJUSTMENTS

TEST FUNCTIONS

FUNCTION #	TEST
90	LAMP TEST
91	DISPLAY TEST
92	SOLENOIDS TEST
93	SOUND TEST
94	STUCK SW. TEST

REGISTER TABLE

REG. #	DESCRIPTION	VALID ENTRY
1	TOTAL PLAYS	
2	TOTAL REPLAYS	
3	COINS CHUTE #1	
4	COINS CHUTE #2	
5	COINS CHUTE #3	
6	# TIMES HI SCORE BEATEN	
7	GAME PERCENTAGE	
8	GAME TIME (MINUTES)	
9	SERVICE METER	
10	CURRENT CREDITS	0 thru 5
11	SPECLS AWARDED FROM PANEL	
12	THRESHOLD #1	0 thru 9,999,999
13	THRESHOLD #2	0 thru 9,999,999
14	THRESHOLD #3	0 thru 9,999,999
15	HI SCORE TO DATE	0 thru 9,999,999
16	MAX CREDITS ALLOWED	1 thru 40
17	COINS OPTION	0 thru 99
18	COINS OPTION CHUTE #1	1 thru 50
19	COINS OPTION CHUTE #2	1 thru 50
20	COINS OPTION CHUTE #3	1 thru 50
21	COINS FACTOR	1 thru 50
22	BONUS CREDITS	0 thru 50
23	BALLS PER GAME	1 thru 5
24	SCORING THRESHOLD MODE	0 thru 3
25	SPECIAL MODE	0 thru 3
26	HI SCORE AWARD	0 thru 3
27	SOUNDS MODE	0 thru 3
28	GERMAN ONLY	0 thru 9,999,999
29	MATCH OPTION	1 = ON 0 = OFF
30	DISPLAY CREDITS	1 = YES 0 = NO
31	FREE GAMES/GAMES ALLOWED	1 = UNLIMITED 0 = ONE PER GAME
32	# OF SPCLS AWARDED FROM THRES. #1	
33	# OF SPCLS AWARDED FROM THRES. #2	
34	# OF SPCLS AWARDED FROM THRES. #3	
35	# OF SPCLS AWARDED FROM 120K	
36	# OF SPCLS AWARDED FROM 'EIGHT'	
37	# OF SPCLS AWARDED FROM ROLL UP LANES	
38	# OF SPCLS AWARDED FROM LEFT OUTLANE	
39	# OF SPCLS AWARDED FROM RIGHT OUTLANE	
40	(NOT USED)	
41	# OF EXTRA BALLS AWARDED	
42	FREE PLAY	65 = FREE PLAY/ANY OTHER # = COIN OPERATED
43	X-BALL OPTION	1 = X-BALL FLASH AT BEGINNING
		0 = FLASH WHEN 'B' OF 'BALL' MADE
44	SPECIAL AT 120K/240K	1 = AWARD WITH 120 K 0 = AWARD WITH 240K
45	# OF SPCL FROM 120/240K	1 = UNLIMITED 0 = ONE PER GAME
46	RECALL 'CHAMP' LITES OUT	1 = YES 0 = NO
47	ATTRACT SPEECH	1 = YES 0 = NO
48	RECALL ROLL UP VALUES	1 = YES 0 = NO
49	SPINNER START AT	1 = 1000 POINTS 0 = 100 POINTS
50	CHEAP SQK/SQK & TALK	1 = SQUAWK & TALK 0 = CHEAP SQUEAK
51	ROLL UP LANES SPCL FLASH WITH	7 = 30K, 6 = 10K, 5 = 50K, 4 = 60K, 3 = 70K, 2 = 80K, 1 = 90K, 0 = 100K

A. CREDITS PER COIN ADJUSTMENT

Register tables 17, 18, 19, 20 and 21 have been reserved for setting coin/credit options. Please read the following instructions carefully so that you may take full advantage of these registers.

REGISTER NO. 17 - CREDITS PER COIN MENU

This register contains a menu of up to 79 preset credit/coin option settings. Each option setting is numbered. Below you will find a sample portion of the main menu.

Say, for example, you want your game to give 1 credit when 2 coins are dropped through any coin chute. First you would look at the menu to see if this setting is included. Once you find it, refer to the left column for the OPTION INDEX. The example menu below includes the setting you're looking for...1 credit for 2 coins. The number listed in the left column is the OPTION INDEX, which in this case is 36. Using the keypad, go to register no. 17 and enter the number 36 into it.

Say for example, you want your game to give 1 credit when 2 coins are dropped through any coin chute. However, this time you want to give the player a bonus credit when he pays for two. In other words, when the player inserts four coins to pay for two credits, he will receive a bonus credit for a total of three credits. First you would look at the menu to see if this setting is included. Once you find it, refer to the left column for the OPTION INDEX. The example menu below includes the setting you're looking for...1 credit for 2 coins, 3 credits for 4 coins. The number listed in the left column is the OPTION INDEX, which in this case is 37. Using the keypad, go to register #17 and enter the number 37. **When register #17 is set to any value other than zero (0), the values in registers #18, #19, #20, and #21 will be ignored.**

*See CUSTOM CREDITS PER COIN OPTIONS for the use of the registers.

OPTION INDEX	CREDITS/COINS CHUTE #1	CREDITS/COINS CHUTE #2	CREDITS/COINS CHUTE #3	BONUS CREDIT AT
35	14 / 1 coin	14 / 1 coin	14 / 1 coin	2 credits
36	1 / 2 coins	1 / 2 coins	1 / 2 coins	
37	1 / 2 coins	1 / 2 coins	1 / 2 coins	

CREDITS PER COINS MENU - REGISTER #17

OPTION INDEX	CREDITS/COINS CHUTE #1	CREDITS/COINS CHUTE #2	CREDITS/COINS CHUTE #3	BONUS CREDIT AT
1	1 / 1 coin	1 / 1 coin	1 / 1 coin	2 credits 3 credits 4 credits 5 credits
2	1 / 1 coin	1 / 1 coin	1 / 1 coin	
3	1 / 1 coin	1 / 1 coin	1 / 1 coin	
4	1 / 1 coin	1 / 1 coin	1 / 1 coin	
5	1 / 1 coin	1 / 1 coin	1 / 1 coin	
6	1 / 1 coin	2 / 1 coin	2 / 1 coin	4 credits 6 credits 8 credits 10 credits
7	1 / 1 coin	3 / 1 coin	3 / 1 coin	
8	1 / 1 coin	4 / 1 coin	4 / 1 coin	
9	1 / 1 coin	5 / 1 coin	5 / 1 coin	
10	1 / 1 coin	1 / 2 coins	1 / 2 coins	
11	1 / 1 coin	1 / 3 coins	1 / 3 coins	
12	1 / 1 coin	1 / 4 coins	1 / 4 coins	
13	1 / 1 coin	1 / 5 coins	1 / 5 coins	
14	2 / 1 coin	2 / 1 coin	2 / 1 coin	
15	2 / 1 coin	2 / 1 coin	2 / 1 coin	
16	2 / 1 coin	2 / 1 coin	2 / 1 coin	
17	2 / 1 coin	2 / 1 coin	2 / 1 coin	
18	2 / 1 coin	2 / 1 coin	2 / 1 coin	
19	2 / 1 coin	1 / 1 coin	1 / 1 coin	
20	2 / 1 coin	3 / 1 coin	3 / 1 coin	
21	2 / 1 coin	4 / 1 coin	4 / 1 coin	
22	2 / 1 coin	5 / 1 coin	5 / 1 coin	
23	2 / 1 coin	1 / 2 coins	1 / 2 coins	
24	2 / 1 coin	1 / 3 coins	1 / 3 coins	

CREDITS PER COINS MENU - REGISTER #17 (cont'd)

OPTION INDEX	CREDITS/COINS CHUTE #1	CREDITS/COINS CHUTE #2	CREDITS/COINS CHUTE #3	BONUS CREDIT AT
25	2 / 1 coin	1 / 4 coins	1 / 4 coins	
26	2 / 1 coin	1 / 5 coins	1 / 5 coins	
27	3 / 1 coin	3 / 1 coin	3 / 1 coin	
28	4 / 1 coin	4 / 1 coin	4 / 1 coin	
29	5 / 1 coin	5 / 1 coin	5 / 1 coin	
30	6 / 1 coin	6 / 1 coin	6 / 1 coin	
31	7 / 1 coin	7 / 1 coin	7 / 1 coin	
32	8 / 1 coin	8 / 1 coin	8 / 1 coin	
33	9 / 1 coin	9 / 1 coin	9 / 1 coin	
34	12 / 1 coin	12 / 1 coin	12 / 1 coin	
35	14 / 1 coin	14 / 1 coin	14 / 1 coin	
36	1 / 2 coins	1 / 2 coins	1 / 2 coins	
37	1 / 2 coins	1 / 2 coins	1 / 2 coins	2 credits
38	1 / 2 coins	1 / 2 coins	1 / 2 coins	3 credits
39	1 / 2 coins	1 / 2 coins	1 / 2 coins	4 credits
40	1 / 2 coins	1 / 2 coins	1 / 2 coins	5 credits
41	1 / 2 coins	1 / 1 coin	1 / 1 coin	
42	1 / 2 coins	2 / 1 coin	2 / 1 coin	
43	1 / 2 coins	3 / 1 coin	3 / 1 coin	
44	1 / 2 coins	4 / 1 coin	4 / 1 coin	
45	1 / 2 coins	5 / 1 coin	5 / 1 coin	
46	1 / 2 coins	1 / 3 coins	1 / 3 coins	
47	1 / 2 coins	1 / 4 coins	1 / 4 coins	
48	1 / 2 coins	1 / 5 coins	1 / 5 coins	
49	3 / 2 coins	3 / 2 coins	3 / 2 coins	6 credits
50	3 / 2 coins	3 / 2 coins	3 / 2 coins	9 credits
51	3 / 2 coins	3 / 2 coins	3 / 2 coins	12 credits
52	3 / 1 coin	3 / 1 coin	3 / 1 coin	6 credits
53	4 / 1 coin	4 / 1 coin	4 / 1 coin	8 credits
54	5 / 1 coin	5 / 1 coin	5 / 1 coin	10 credits
55	1 / 3 coins	1 / 3 coins	1 / 3 coins	
56	1 / 3 coins	1 / 3 coins	1 / 3 coins	2 credits
57	1 / 3 coins	1 / 3 coins	1 / 3 coins	3 credits
58	1 / 3 coins	1 / 3 coins	1 / 3 coins	4 credits
59	1 / 3 coins	1 / 3 coins	1 / 3 coins	5 credits
60	2 / 3 coins	2 / 3 coins	2 / 3 coins	
61	2 / 3 coins	2 / 3 coins	2 / 3 coins	4 credits
62	2 / 3 coins	2 / 3 coins	2 / 3 coins	6 credits
63	2 / 3 coins	2 / 3 coins	2 / 3 coins	8 credits
64	2 / 3 coins	2 / 3 coins	2 / 3 coins	10 credits
65	5 / 3 coins	5 / 3 coins	5 / 3 coins	
66	1 / 4 coins	1 / 4 coins	1 / 4 coins	
67	3 / 4 coins	3 / 4 coins	3 / 4 coins	
68	1 / 5 coins	1 / 5 coins	1 / 5 coins	
69	2 / 5 coins	2 / 5 coins	2 / 5 coins	
70	3 / 5 coins	3 / 5 coins	3 / 5 coins	
71	4 / 5 coins	4 / 5 coins	4 / 5 coins	
72	1 / 1 coin	0 / 1 coin	6 / 1 coin	
73	0 / 1 coin	6 / 1 coin	3 / 1 coin	
74	1 / 2 coin	3 / 1 coin	7 / 1 coin	
75	1 / 1 coin	2 / 1 coin	5 / 1 coin	
76	1 / 1 coin	3 / 1 coin	10 / 1 coin	
77	4 / 1 coin	0 / 1 coin	1 / 1 coin	
78	0 / 1 coin	1 / 2 coins	1 / 1 coin	
79	2 / 1 coin	4 / 1 coin	12 / 1 coin	

REGISTERS #18, #19, #20, and #21 -CUSTOM CREDITS PER COIN OPTIONS

These registers are used only when the desired credit/coin setting does not appear on the **CREDITS PER COIN MENU** (see register #17). **Register #17 MUST be set for zero (0) in order to use these four registers.** This procedure allows you to set any credit/coin combination manually. Please read the following instructions carefully. Registers #18, #19 and #20 represent the three coin chute options. Each coin chute option may be set to give a different number of credits per coin, or they may be set the same. Register #21 represents the coin factor. All four of these registers work together to deliver virtually any combination desired.

The coin chute options represent the credits awarded at each coin chute and the coin factor represents the coins. Although each coin chute option may be set differently, they must have a common denominator...the coin factor, register #21. To arrive at the common denominator, (the coin factor), you must first decide what you want each coin chute option to be. Let's say, for example, you want coin chute #1 to give 1 credit for 1 coin, coin chute #2 to give 2 credits for 1 coin and coin chute #3 to give 1 credit for 2 coins.

This is how it would look:

COIN OPTIONS / COIN FACTOR

COIN CHUTE OPTION #1	1 credit / 1 coin
COIN CHUTE OPTION #2	2 credit / 1 coin
COIN CHUTE OPTION #3	1 credit / 2 coin

The COIN FACTOR must be equal from one Coin Chute to another and above it is not. Therefore you must find a common denominator. In most cases, this will be the largest number. In the illustration above, the largest number under COIN FACTOR is 2 at Coin Chute #3. In order to change the COIN FACTOR in the other two coin chutes to equal 2, we must also change the COIN OPTIONS in those chutes. Since we must double the COIN FACTOR in chute #1 and #2 to equal 2, we must also double the COIN OPTIONS in those coin chutes. Whatever we do to the COIN FACTOR to make it equal to the largest number, we must also do to the COIN OPTION. For example:

COIN OPTIONS / COIN FACTOR

COIN CHUTE OPTION #1	1 credit / 1 coin
would become	
COIN CHUTE OPTION #1	2 credit / 2 coin
and	
COIN CHUTE OPTION #2	2 credit / 1 coin
would become	
COIN CHUTE OPTION #2	4 credit / 2 coin

The finished layout would then look like this:

COIN OPTIONS/COIN FACTOR

Register #18 = COIN CHUTE OPTION #1 = 2 credit/ 2 coin
Register #19 = COIN CHUTE OPTION #2 = 4 credit/ 2 coin
Register #20 = COIN CHUTE OPTION #3 = 1 credit/ 2 coin
Register #21 = COMMON COIN FACTOR = 2

As you see, we now have **one** COIN FACTOR that is common to all three coin chutes...2. We now have what we need to enter the correct values into registers #18, #19, #20, and #21.

REGISTER #18 = 2
REGISTER #19 = 4
REGISTER #20 = 1
REGISTER #21 = 2

REGISTER NO. 22 - BONUS CREDITS

This register is used in conjunction with the Custom Coin Option Register #18, #19, #20, and #21. The number entered in register #22 determines when a bonus credit will be delivered while purchasing credits.

For example, entering a '4' into register #22 will give the player an extra credit for every 4 credits purchased prior to starting the game. This allows the operator the ability to provide an incentive to the player when the Custom Coin Option Registers are used.

PLEASE NOTE: When register #17 is set to any number other than '0' registers #18 through #22 will be ignored.

INCOME BOOKKEEPING REGISTERS

Specific registers have been assigned to keep track of coins dropped into the game.

REGISTER #	DISPLAYS
3	Coin Chute #1 (Left)
4	Coin Chute #2 (Center)
5	Coin Chute #3 (Right)

These registers may not be altered, but can be RESET by entering '0'.

One additional meter is provided to record the total number of Service Credits entered. This information is stored in register #9. The Service Credits feature is provided to allow the operator to test the game under normal conditions without altering the Coin Chute or setting the game on free play.

To enter Service Credits simply go to register #10 - Current Credits - and enter a number from 1 through 5. **NOTE:** This feature will not allow any credits to be entered if the Current Credits register is displaying 5 or greater. Then press the game button on the keyboard and you're ready to start playing by operating the Credit Button.

B. STANDARD GAME FEATURE OPTIONS

MAXIMUM CREDITS; REGISTER 16

The maximum credits accepted by the machine limits the number of games that can be accumulated by coining, by winning replays, or both. The maximum number of credits is selectable by means of setting REGISTER 16. Any number entered between '1' and '40' will set the corresponding credit limit.

BALLS PER GAME; REGISTER 23

The number of balls per game can be set by REGISTER 23. Any number entered from 1 through 5 will set the corresponding number of balls per game.

MATCH FEATURE; REGISTER 29

When the Match Feature is ON, a random number appears on the Match/Credit window and the word Match is illuminated. If the number matches the tens digit in a player's score, a free game is awarded. The Match Feature creates an incentive to play.

MATCH	REGISTER 29
ON	1
OFF	0

CREDIT DISPLAY; REGISTER 30

CREDITS DISPLAYED	REGISTER 30
YES	1
NO	0

HIGH SCORE FEATURE; REGISTER 24

The game is designed to award an Extra Ball or Free Game at each of the two or three score levels.

AWARD	REGISTER 24
REPLAY	ENTER '3'
EXTRA BALL	ENTER '2'
NOVELTY	ENTER '1'
NO AWARD	ENTER '0'

PLAYFIELD SPECIALS FEATURE; REGISTER 25

This feature allows the operator the flexibility to award a REPLAY, EXTRA BALL, or SCORE (NOVELTY) when a special is scored.

AWARD	REGISTER 25
REPLAY	ENTER '3'
EXTRA BALL	ENTER '2'
NOVELTY	ENTER '1'
NO AWARD	ENTER '0'

HIGH SCORE TO DATE OR OVER 10,000,000 SCORE FEATURE; REGISTER 26

The game is designed to award free games as an option if high score to date is beat or player exceeds 10,000,000 points. Each time this happens, the high score will reset to 1,999,990 as new high score to beat. This score is displayed on all 4 player score displays at the end of each game as an incentive to play.

HIGH SCORE TO DATE FEATURE

NO AWARD
ONE CREDIT
TWO CREDITS
THREE CREDITS

REGISTER 26

ENTER '0'
ENTER '1'
ENTER '2'
ENTER '3'

State and local laws may regulate the use of the above features, and they have been designed to allow for appropriate adjustment in order to conform to such requirements.

SOUND OPTIONS; REGISTER 28

SOUND MODE

The game is designed to make several tones and noises to announce power-up, game-up, etc. The tones are intended to attract to the game and increase game usage.

Four options may be selected by REGISTER 28.

Enter '0'

Most switches associated chimes without feature background.

Enter '1'

Playfield switches associated chimes with background.

Enter '2'

Most scoring will have a noise effect without background.

Enter '3'

Most all scoring will have a noise effect with background.

GAME OVER ATTRACT SOUND; REGISTER 47

This game has been designed to attract attention in the game over mode by periodically saying "Quit Talking and Start Chalking". This feature is an option that can be removed by setting REGISTER 47 to '0'. When this REGISTER is set to '1', the game will utter it's attract phrase approximately every 5 minutes.

ALTERNATE SOUND BOARDS; REGISTER 50

This game has been programmed to talk to either the Squawk & Talk or Cheap Squeak sound boards. Setting REGISTER 50 to '1' only allows communication to the Squawk & Talk sound board. Entering '0' only allows it to talk to the Cheap Squeak sound board.

NUMBER OF GAMES REPLAYS PER GAME ADJUSTMENT; REGISTER 29

LIBERAL - ENTER '1' All replays earned will be collected.

CONSERVATIVE - ENTER '0' Only 1 replay per player per game.

FREE PLAY; REGISTER 42

This feature is designed to enable the operator to set the game on FREE PLAY. Entering 65 sets the game into FREE PLAY mode. Entering any number other than 65 sets the game into the coin operated mode.

HIGH SCORE FEATURE ADJUSTMENTS; REGISTER 12,13 & 14

The game is designed to award an extra ball (option) or a free game at each of three score levels. The recommended levels are on the score card in the game.

Any level from 0 to 9,999,999 can be set, as desired. It is also possible to reset or turn off any or all of the levels by entering '00' in the respective REGISTER.

HIGH SCORE TO DATE FEATURE

NO AWARD
ONE CREDIT
TWO CREDITS
THREE CREDITS

REGISTER 26

ENTER '0'
ENTER '1'
ENTER '2'
ENTER '3'

HIGH SCORE TO DATE AND 10,000,000 FEATURE; REGISTER 15

The game is designed to award free games when 'High Score to Date' is beat or if the player exceeds 10,000,000 points.

It is recommended that the level, which will build with play, be periodically reset to the factory recommended level to encourage game play. The adjustment procedure is the same as for the High Score Feature Adjustment.

NOTE: THE HI-SCORE REGISTERS WILL REVERT BACK TO FACTORY SETTINGS IF THE CONTROL BOARD BATTERY FAILS. ALSO, THE HI-SCORE-TO-DATE WILL FLASH ALL 5's IN ALL DISPLAYS DURING THE ATTRACT MODE.

C. 8 BALL CHAMP FEATURE, OPERATION AND SCORING

CHAMP FEATURE

This feature is achieved by operating the C-H-A-M-P roll-over lane switches. Each switch scores 3000 points and turns off its respective lane lite. C-H-A-M-P lane lites **change** lanes when the right 'Flipper Button' is operated for simplicity and skill.

1st time C-H-A-M-P completed:

'Playfield Scores Double' lite starts flashing-playfield scores double. 'Spinner' value will increase.*

2nd time C-H-A-M-P completed:

'Playfield Scores Triple' lite starts flashing-playfield scores Triple. 'Spinner' value will increase.*

3rd time C-H-A-M-P completed:

'Spinner' value will increase.*

Left outlane 'special' lite starts flashing and alternates with right outlane 'Special' lite each time a sling shot switch is operated.

4th time C-H-A-M-P completed:

Both left & right outlane 'Special' lites start flashing. Operating either switch awards a special, after which, both 'Special' lites go out.

*Initial 'Spinner' value can be set by REGISTER 46. Entering '0' initializes 'Spinner' value at 100 points. Entering '1' initializes 'Spinner' value at 1000 points. Each time C-H-A-M-P is completed, the 'Spinner' value increases, lighting the corresponding lite up to a maximum of 5000 points.

NOTE: Recall 'CHAMP' can be set by REGISTER 46. Entering '0' will re-lite all C-H-A-M-P lites that were turned off on a previous ball. Entering '1' will recall any C-H-A-M-P lites that were on or off on a previous ball.

8 BALL FEATURE

First and third players shoot for 1 through 7 solid balls. Second and fourth players shoot for 9 through 15 striped balls. However, all 14 ball lites (stripes & solids) are on the 'Pool Table' in the center of the playfield. Each player can spot his respective ball lites from the 'Pool Table' to the 'Bonus Rack' by operating 5 single 'Drop Targets', each of which score 500 points.

To complete a 1 through 7 or 9 through 15 'Bonus Rack', the upper left & right 'Pool Table Drop Targets' must be dropped two times each, as each pocket has two lites to spot. In order to achieve this, operate the 'I' and the 'H' 'Stand Up Targets', which will reset it's respective 'Pool Table Drop Target' so it can be dropped again to spot the second ball lite. When the 'Bonus Rack' is

completed, the Top Saucer '8 Ball' lite will start flashing. To make the '8 Ball', the player must shoot the ball up thru the upper left scoop and into the saucer. Making the '8 Ball' shot lites the '120,000 Bonus' lite and resets the '8 Ball' feature. Completing the '8 Ball' feature the second time lites the '240,000' lite and resets the '8 Ball' feature.

When the ball drains to the outhole, each lit 'Bonus Rack' ball lite scores 15,000 points.

NOTE: 'Special at 120/240K' can be set by REGISTER 44. Entering '0' causes the 'Special Lite' to be turned on when the 120K lite is turned on so the special will be awarded at 240K. Entering '1' turns on the 'Special Lite' at the start of the game and awards the Special when 120K is achieved.

'Number of Specials from 120/240K' can be set by REGISTER 45. Entering '0' will allow only one Special for the feature. Entering '1' will award a Special every time the '8 Ball' feature is completed and another 120K is added to the bonus.

TOP SAUCER FEATURE

Every time the ball lands in the top 'Saucer' it will award the flashing bonus multiplier value and start flashing the next highest multiplier. When '5X Multiplier' is achieved the saucer will award 100,000 points each successive time the ball is dropped in the saucer.

E-I-G-H-T FEATURE

Operating the E-I-G-H-T 'Stand Up Targets' will spot the respective E-I-G-H-T Rack lites. Completing E-I-G-H-T the first time will award an 'Extra Ball' * and lite the 'B' in the word B-A-L-L. Completing E-I-G-H-T the second time will award a 'Special' and lite the 'A' in the word B-A-L-L.

When the ball drains to the outhole, each lit E-I-G-H-T lite scores 10,000 points and each lit B-A-L-L lite scores 50,000 bonus points. All lit E-I-G-H-T & B-A-L-L lites remain lit from ball to ball.

*'X-Ball Option' can be set by REGISTER 43. Entering '0' will cause the 'Extra Ball' lite to flash after the 'B' lite in B-A-L-L is lit. Entering '1' will flash the 'Extra Ball' lite at start of the game.

LEFT & RIGHT ROLL UP LANE FEATURE

When the ball rolls over either of the upper left or right roll-over buttons the first time, 5000 points will be scored and the 10,000 feature lite on both sides will lite. The second time...10,000 points will be awarded, the 10,000 lites go out & the 20,000 lites lite. This sequence will continue until a maximum of 100,000 points is achieved.

'Roll-Up Lanes Special' can be set by REGISTER 51 to flash with:

ROLL-UP BONUS SPECIAL VALUE	ENTER
30K	7
40K	6
50K	5
60K	4
70K	3
80K	2
90K	1
100K	0

The lit Roll-Up lite values may be recalled from ball to ball by entering '1' in REGISTER 48. Entering '0' in this register turns off the recall feature.

THUMPER BUMPERS

Always score 1,000 points.

D. BOOKKEEPING METERS

The program in this game has been structured to provide the operator with what we believe to be a simple and efficient method of determining **how** game specials are being awarded. The following

REGISTERS display specific 'Special Award' areas so the operator can readily see how liberal or conservative a particular feature or group of features is performing:

STANDARD REGISTERS

REGISTER #	DISPLAYS
1	Total Plays
2	Total Replays
6	Total Number of Times the Hi-Score is Beaten
7	Game Percentage
8	Total Game Time (Minutes)
11	Total Specials Awarded from Playfield Only
32	Total Specials Awarded from Threshold #1
33	Total Specials Awarded from Threshold #2
34	Total Specials Awarded from Threshold #3
41	Total Number of Extra Balls Awarded

SPECIAL REGISTERS

REGISTER #	DISPLAYS
35	Total Specials Awarded from the 120K Feature
36	Total Specials Awarded from the E-I-G-H-T Feature
37	Total Specials Awarded from Roll-Up Lanes Feature
38	Total Specials Awarded from Left Out Lane Feature
39	Total Specials Awarded from Right Out Lane Feature

After reviewing the above **REGISTERS**, you may wish to tailor a feature or two for your location. Simply review the game's **FEATURE, OPERATION AND SCORING** section of this manual.

NOTE: All the above registers can not be altered - they may only be reset by entering '0'.

V. PLAYFIELD PANEL POST ADJUSTMENTS:

Posts that control left and right outlane opening on panel can be removed to make access to outlanes easier or harder for ball to enter. See Figure II.

Easier entry will decrease playing time and scoring (conservative).
Harder entry will increase playing time and scoring (liberal).

VI. RECOMMENDED 3 & 5 BALL REGISTER SETTINGS

REGISTER	FUNCTION	3-BALLS	5-BALLS
23	Balls per Game	03	05
43	X-Ball option	01	00
44	Special at 120K/240K	01	00
45	# of Specials from 120K/240K	01	01
46	Recall "C-H-A-M-P"	01	01
47	Attract Speech	01	01
48	Recall Roll-over Values	01	01
49	Spinner start at 1K	01	01
50	Cheap Squeak/Squawk & Talk	01	01
51	Roll-over Lanes Special Flash	03	00

REPLAYS

Instruction Card
Score Cards
Playfield Specials
Match
High Score to Date (3 Replays)

3-BALL

M051-00B38-A030
M051-00B38-A036
Register 25, enter "3"
Register 29, enter "1"
Register 26, enter "3"

5-BALL

M051-00B38-A030
M051-00B38-A035
Register 25, enter "3"
Register 29, enter "1"
Register 26, enter "3"

X-BALL

Instruction Card
Score Card
Playfield Specials
Match
High Score to Date

M051-00B38-A031
M051-00B38-A035
w/M051-00B38-A074
Register 25, enter "2"
Register 29, enter "0"
Register 26, enter "0"

NOVELTY

Instruction Card
Score Card
Playfield Specials
Match
High Score to Date

M051-00B38-A032
M051-00B38-A038
Register 25, enter "1"
Register 29, enter "0"
Register 26, enter "0"

M051-00B38-A032
M051-00B38-A037
Register 25, enter "1"
Register 29, enter "0"
Register 26, enter "0"

EIGHT BALL CHAMP

RECOMMENDED INSTRUCTIONS, SCORE CARDS & HIGH SCORE FEATURE SETTINGS

3-BALL

REPLAYS

Instruction Card	M051-00B38-A030
Score Card	M051-00B38-A036
1 Replay at 1,500,000	
1 Replay at 3,000,000	

5-BALL

REPLAYS

Instruction Card	M051-00B42-A030
Score Card	M051-00B42-A035
1 Replay at 2,000,000	
1 Replay at 4,000,000	

EXTRA BALL

Instruction Card	M051-00B38-A031
Score Card	M051-00B-A035 w/M051-00B38-A074
1 Extra Ball at 2,000,000	
1 Extra Ball at 3,700,000	

HIGH GAME TO DATE (reset periodically)

3-BALL4,000,000

5-BALL5,000,000

ADDITIONAL CARDS

REPLAYS

M051-00B38-A040	1,000,000	2,500,000
M051-00B38-A041	1,100,000	2,600,000
M051-00B38-A042	1,200,000	2,700,000
M051-00B38-A043	1,300,000	2,800,000
M051-00B38-A044	1,400,000	2,900,000
M051-00B38-A045	1,600,000	3,100,000
M051-00B38-A046	1,700,000	3,200,000
M051-00B38-A047	1,800,000	3,300,000
M051-00B38-A048	1,900,000	3,400,000
M051-00B38-A049	2,000,000	3,500,000
M051-00B38-A050	2,100,000	3,600,000
M051-00B38-A051	2,200,000	3,700,000
M051-00B38-A052	2,300,000	3,800,000
M051-00B38-A053	2,400,000	3,900,000
M051-00B38-A054	2,600,000	4,100,000
M051-00B38-A055	2,700,000	4,200,000
M051-00B38-A056	2,800,000	4,300,000
M051-00B38-A057	2,900,000	4,400,000
M051-00B38-A058	3,000,000	4,500,000

EXTRA BALL

M051-00B38-A072	1,500,000	3,200,000
M051-00B38-A073	1,800,000	3,500,000
M051-00B38-A075	2,600,000	5,500,000
M051-00B38-A076	2,900,000	5,800,000
M051-00B38-A077	3,100,000	6,000,000

CARDS:

NOVELTY: M051-00B38-A032
M051-00B38-A038
M051-00B38-A037

IX. TROUBLESHOOTING ON LOCATION

1A)

SYMPTOM:

Game does not play power-up tune when power is turned on. General illumination is present.

ACTION:

- A) Turn power OFF. Open back box. Locate light emitting diode (LED) on Control Board.
- B) Turn power ON. LED must flash 8X to indicate that the module is good. Correct sequence is flash-pause-flash and then six more flashes and LED goes out.
- C) If LED does not come on, or does not flash, or flashes, but less than 8X, turn off power. Check fuses. If fuses are good, replace Control Board.

CAUTION: Replacement Control Board must have same Part Number or incorrect operation will result! See Parts List for Control Board.

Turn power ON.

- D) If game is correct, it is now ready for play. If game is not correct, contact the Bally-Midway service department.

2A)

SYMPTOM:

Not all feature lamps light during play.

ACTION:

- A) With power ON, open front door. Enter '90' on keyboard. If game is correct all feature lamps flash ON and OFF.
- B) Carefully raise playfield or open back box to gain access to lamps.
- C) Replace bulbs that do not flash.
- D) If game is correct, it is now ready for play.
- E) If game is not correct, turn power OFF. Replace Control Board. Turn power ON and repeat A.
- F) If game is correct, it is now ready for play.* If game is not correct, contact the Bally-Midway service department.

2B)

SYMPTOM:

One or some switched lamps always ON.

ACTION:

Repeat 2AA, AN, AE, and AF.

3A)

SYMPTOM:

Display digits improper on **one** or **several**, but less than all Display Driver Module(s). Improper: One or several segments always OFF, digits mottled or several segments or digit(s) always ON.

*Turn power ON-OFF switch OFF and then ON.

ACTION:

- A) With power ON, open front door. Enter '91' on keyboard. If the game is correct, each digit on each Display Driver Module (5 used/game) displays the count 0 - 9 continuously in all 7 digit positions. Note defective Display Driver modules.

- B) Turn power OFF.

WARNING: High Voltage is supplied to the Display Driver Modules, from the Power Module. Wait 30 seconds for High Voltage to Bleed Off.

- C) Replace Display Driver module(s). Turn power ON. Repeat A.
- D) If game is correct, it is now ready for play.* If game is not correct contact Bally-Midway service department.

3B)

SYMPTOM:

All displays improper (all five Display Driver Modules). Improper: Digit(s) always on or off/ segment(s) always on or off, all displays.

ACTION:

- A) Repeat 3AA, and AB.
- B) Replace Control Board. See CAUTION NOTE, 1C. Turn power ON. Repeat A.
- C) If game is correct, it is now ready to play.* If game is not correct, contact the Bally-Midway service department.

3C)

SYMPTOM:

One or several displays always off.

ACTION:

- A) Do 3AA, AB, AC, and AD.
- B) Repeat 3BB and BC, if necessary

4A)

SYMPTOM:

Solenoid(s) do(es) not pull-in during course of game.

ACTION:

- A) With power ON, open front door. Enter '92' on keyboard.
- B) If game was correct, each solenoid would be energized. A number is flashed on the Player Score displays as each solenoid is pulsed. Note any numbers that do not have the sound of an associated solenoid. (**NOTE:** If most of the Playfield Solenoids DO NOT operate, check the Playfield Fuse to see if it is blown. It is generally found near the Flipper Assemblies.) See Solenoid Identification Table on page 1-18.

- C) Carefully lift the playfield (or open the back box) to gain access to the solenoid. Turn power OFF. Inspect the solenoid.
 - D) If a lead is broken off, repair. Repeat A & B. If game is correct, it is now ready for play.* If solenoid wiring was correct, turn power OFF.
 - E) Replace Control Board. See CAUTION NOTE.
 - F) Repeat AA & AB. If game is correct, it is now ready to play.* If game is not correct, turn power OFF.
 - G) Replace Sound Module A8.
 - H) Repeat AA & AB if game is correct. It is now ready to play. If game is not correct, turn power OFF.
 - I) Replace Control Board. See CAUTION NOTE, 1C.
 - J) Repeat A & B. If game is correct, it is now ready to play.* If game is not correct contact the Bally-Midway service department.
- B) If the game is correct, Match/Bill in Play display would flash '94' and the Player Score displays flash '0'. If a number other than '0' appears on the Player Score displays, see SWITCH ASSEMBLY IDENTIFICATION TABLE on page 1-18.
 - C) Carefully lift the playfield. Locate the switch assembly identified from the number. Visually inspect the switch assembly. If the contacts are stuck, re-gap them to 1/16". See section under SWITCH ASSEMBLY ADJUSTMENTS On page 1-20. Repeat A & B. If the game is correct, it is now ready to play.* If game is not correct, turn power OFF.
 - D) Replace Control Board. See CAUTION NOTE, 1C.
 - E) Repeat A & B. If game is correct, it is now ready to play.* If game is not correct, contact the Bally-Midway service department.

4B)

SYMPTOM:

Solenoid(s) always energized. **NOTE:** If impulse solenoids (ball ejects, slingshots, thumper-bumpers, etc.) are energized continuously, they are subject to damage. Limit troubleshooting to one minute with power ON, followed by **five minutes with power OFF**. Repeat as necessary. Replace damaged solenoids. (**NOTE:** When troubleshooting Playfield Solenoid Circuits, be advised that a constantly energized Solenoid (i.e. Thumper-Bumper) will blow the Playfield Fuse in a few seconds. To avoid replacing the Fuse repeatedly, try to isolate the faulty Solenoid Circuit as soon as the game power switch is flipped ON.)

ACTION:

Do 4AA, AB, AE, & AF.

5A)

SYMPTOM:

No sound.

ACTION:

- A) With power ON, open front door. Enter '93' on keyboard.
- B) Turn volume control clockwise to Max.
- C) If correct, sound will be heard. If incorrect, try seating speaker lead connector (J2) and input connector (J1).
- D) If correct, sound will be heard. If incorrect, contact the Bally-Midway service department.

6A)

SYMPTOM:

Feature (Drop Targets, etc.) does not score.

ACTION:

- A) With power ON, open front door. Enter '94' on keyboard.

EIGHT BALL CHAMP

SOLENOID IDENTIFICATION TABLE

SELF □ TEST #	SOLENOID IDENTIFICATION	SELF □ TEST #	SOLENOID IDENTIFICATION
01	Saucer	08	Drop Target 7,15
02	Left Thumper Bumper	09	Right Slingshot
03	Right Thumper Bumper	10	Left Slingshot
04	Drop Target 1,2,9,10	11	Outhole
05	Drop Target 3,11	12	Knocker
06	Drop Target 4,5,12,13	13	K1 Relay (Flipper Enable)
07	Drop Target 6,14		

SWITCH ASSEMBLY IDENTIFICATION TABLE

Switch Self ○ Test #	DESCRIPTION	Switch Self ○ Test #	DESCRIPTION
01	Right Thumper Bumper	20	"M" Top Lane
02	Left Thumper Bumper	21	"P" Return Lane
03	Right Slingshot	22	Not Used
04	Left Slingshot	23	Left Outlane
05	Saucer	24	Right Outlane
06	Credit	25	Drop Target 1,2,9,10
07	Rebound	26	Spinner
08	Outhole	27	Drop Target 3,11
09	Coin III (Right)	28	Drop Target 4,5,12,13
10	Coin I (Left)	29	Center Rollover Button
11	Coin II (Middle)	30	Drop Target 6,14
12	Left Rollover Button	31	Drop Target 7,15
13	Right Rollover Button	32	Lane Change (Cabinet)
14	Not Used	33	Drop Target "E"
15	Tilt	34	Drop Target "I"
16	Slam	35	Drop Target "G"
17	"C" Return Lane	36	Drop Target "H"
18	"H" Top Lane	37	Drop Target "T"
19	"A" Top Lane		

#OB42 8-BALL CHAMP

- INDICATES SWITCH
ASSEMBLY IDENTIFICATION
NUMBERS
NOTE: CABINET: 06, 15, 16, 32
DOOR: 09, 10, 11

- INDICATES SOLENOID
IDENTIFICATION NUMBERS
NOTE: BACKBOX: 13
CABINET: 12

VECTOR SHOWING FOR
EJECT SAUCER
BALL SHOULD EXIT AS
SHOWN

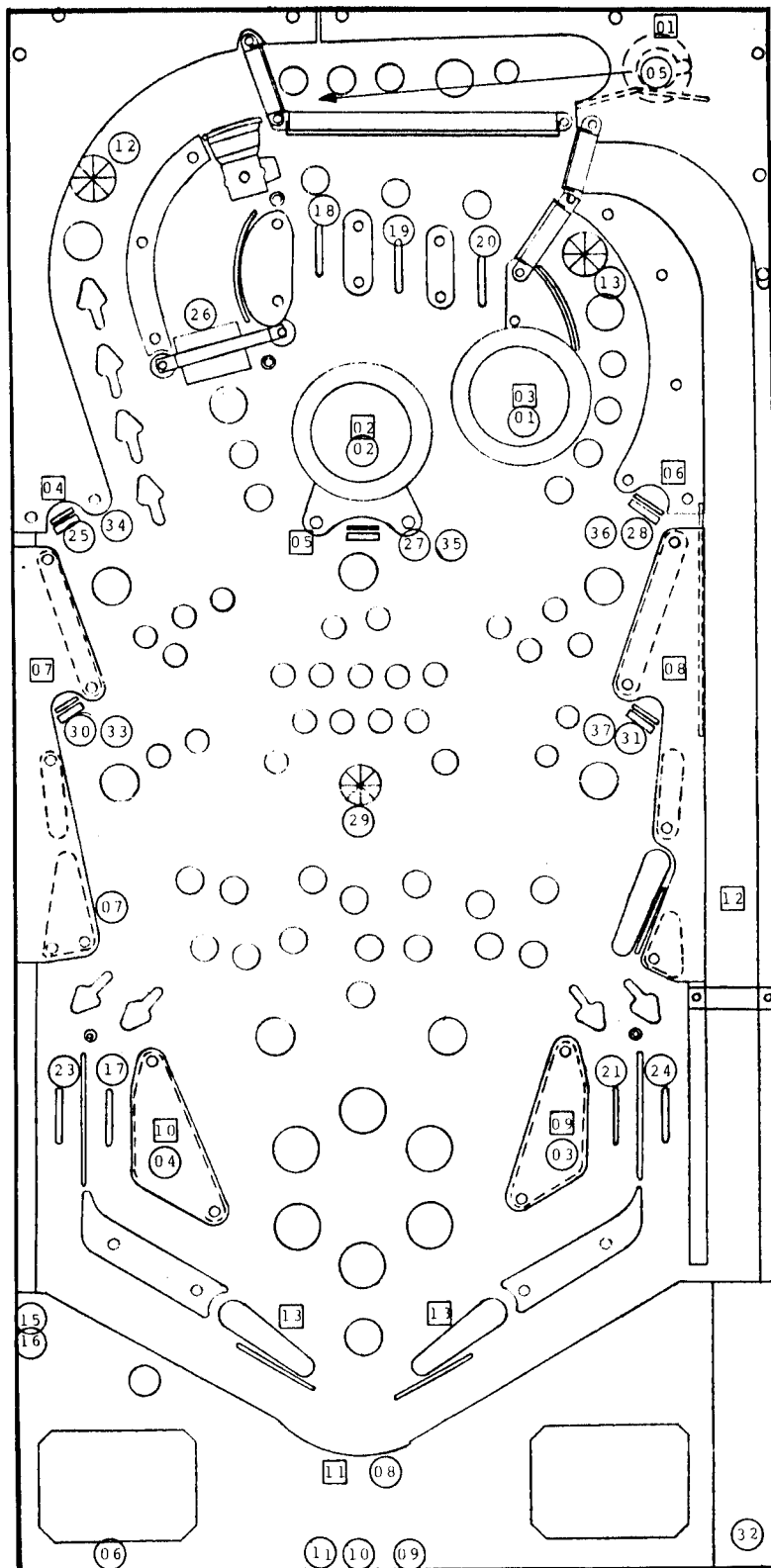


FIGURE I

X. ROUTINE MAINTENANCE ON LOCATION:

After successful completion of the Self Diagnostic Test Procedure, set the game up for play. Exercise each roll-over, thumper bumper, slingshot, etc., by hand 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 contacts by gently closing them on a clean business card or piece of paper and wiping until they wipe clean. Re-gap, if necessary, to 1/16". Do not burnish or file Gold Plated Switch Contacts.

XII. SERVICE HINTS:

The Bally 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 you clean your playfield with Wildcat #125 (Wildcat Chemical Co. 1349 East Seminary Drive; Fort Worth, Texas 76115; Phone 1-817/924-8321). Wildcat #125 is a combination cleaner and polish. Bally has tried and tested this product and found it to be very effective. If Wildcat #125 is not available, Bally suggests you ask your distributor to order it. Inspect and hand polish the ball in a clean cloth. A chipped ball must be replaced. It can ruin the finish on the playfield in a short period of time.

DON'T: 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 appeal.

XI. SWITCH ASSEMBLY ADJUSTMENTS:

GENERAL:

All switch assemblies consist of leaf springs, contacts, separators, plastic tubing and screws to hold them to the mounting surface. Before attempting to adjust a switch assembly, make sure that these screws are tight. If not, tighten screw closest to the contact end of the leaf spring first. This will prevent the assembly from being secured in such a manner that the leaf springs tend to fan out. In general, all leaf springs are adjusted for a 1/16" gap in the open position and .010" over-travel or wipe in the closed position. All contact should be in good condition. Unless otherwise instructed, they should be dry or non-lubricated. All 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 breaks the finish and encourages corrosion. Clean by closing the contacts over a clean piece of paper (e.g. a lint free business card) and wiping gently until the contacts are clean. For the flipper button switch assemblies **ONLY:** Tarnish can be removed with a contact file followed by burnishing tool. Severely pitted contacts must be placed and adjusted only when they are found to be a source of game malfunction.

OB38 8-BALL CHAMP RUBBER PARTS

- | | |
|--------------|-----------------|
| A. 17-41-633 | (5) POST |
| B. 17-41-637 | (19) POST |
| C. 17-41-641 | (1) POST |
| D. 17-41-643 | (3) I.D. 1" |
| E. 17-41-644 | (1) I.D. 1-1/2" |
| F. 17-41-645 | (2) I.D. 2" |
| G. 17-41-646 | (2) I.D. 2-1/2" |
| H. 17-41-682 | (3) FLIPPER RED |

PANEL TOP PARTS

- | | |
|--|-----------------|
| 1. BOTTOM ARCH ASSY. | AB38-00025-0000 |
| 2. DROP TARGET ASSY.-
L.H. SINGLE (E) | AB38-00023-0100 |
| 3. DROP TARGET ASSY.-
L.H. SINGLE (I) | AB38-00023-0200 |
| 4. DROP TARGET ASSY.-
L.H. SINGLE (G) | AB38-00023-0300 |
| 5. DROP TARGET ASSY.-
L.H. SINGLE (H) | AB38-00023-0400 |
| 6. DROP TARGET ASSY.-
L.H. SINGLE (T) | AB38-00023-0500 |
| 7. SPINNER & GATE ASSY. | AB38-00014-0000 |
| 8. BALL GATE & WIRE ASSY. | AB38-00021-0000 |
| 9. BALL GATE & WIRE ASSY. | AB38-00033-0000 |
| 10. BALL GATE & WIRE ASSY. | A391-00030-0000 |
| 11. BALL GATE & WIRE ASSY. | A967-00058-0000 |
| 12. BALL GUIDE ASSY. | AB38-00017-0000 |
| 13. BALL GUIDE ASSY. | AB38-00022-0000 |
| 14. THUMPER BUMPER
ASSY. | A967-00053-0000 |
| 15. FLIPPER ASSY. (LEFT) | A365-00069-0200 |
| 16. FLIPPER ASSY.
(MIDDLE RIGHT) | A365-00069-0100 |
| 17. FLIPPER ASSY. (RIGHT) | A365-00070-0100 |
| 18. SAUCER ASSY. | AA44-00034-0000 |
| 19. SAUCER SWITCH ASSY. | A365-00036-0000 |
| 20. SLINGSHOT ASSY. | A967-00059-0000 |
| 21. SLINGSHOT &
PT. SWITCH | A360-00239-0000 |
| 22. SPINNER SWITCH ASSY. | A360-00245-0000 |
| 23. SWITCH ASSY.
WITH DIODE | A967-00067-0000 |
| 24. SWITCH ASSY. WITH
DIODE & CAPACITOR | AB38-00026-0000 |
| 25. ROLLOVER BUTTON
SWITCH | AB38-00028-0000 |
| 26. BALL GATE ASSY. | A360-00022-0000 |
| 27. BALL GUIDE WIRE | OB38-00902-0000 |
| 28. BALL GUIDE WIRE | OB38-00903-0000 |
| 29. BALL GUIDE WIRE | OB38-00904-0000 |
| 30. BALL GUIDE WIRE | OB38-00905-0000 |
| 31. BALL GUIDE WIRE 3-3/8 | 0360-00175-1800 |
| 32. BALL GUIDE WIRE 2 | 0360-00175-5600 |
| 33. BALL GUIDE WIRE 6-1/16 | 0360-00175-0107 |
| 34. BUFFER WIRE | 0360-00175-5300 |
| 35. WIRE ACTUATOR ASSY. | A360-00216-0000 |
| 36. WIRE ACTUATOR ASSY. | A331-00042-0000 |

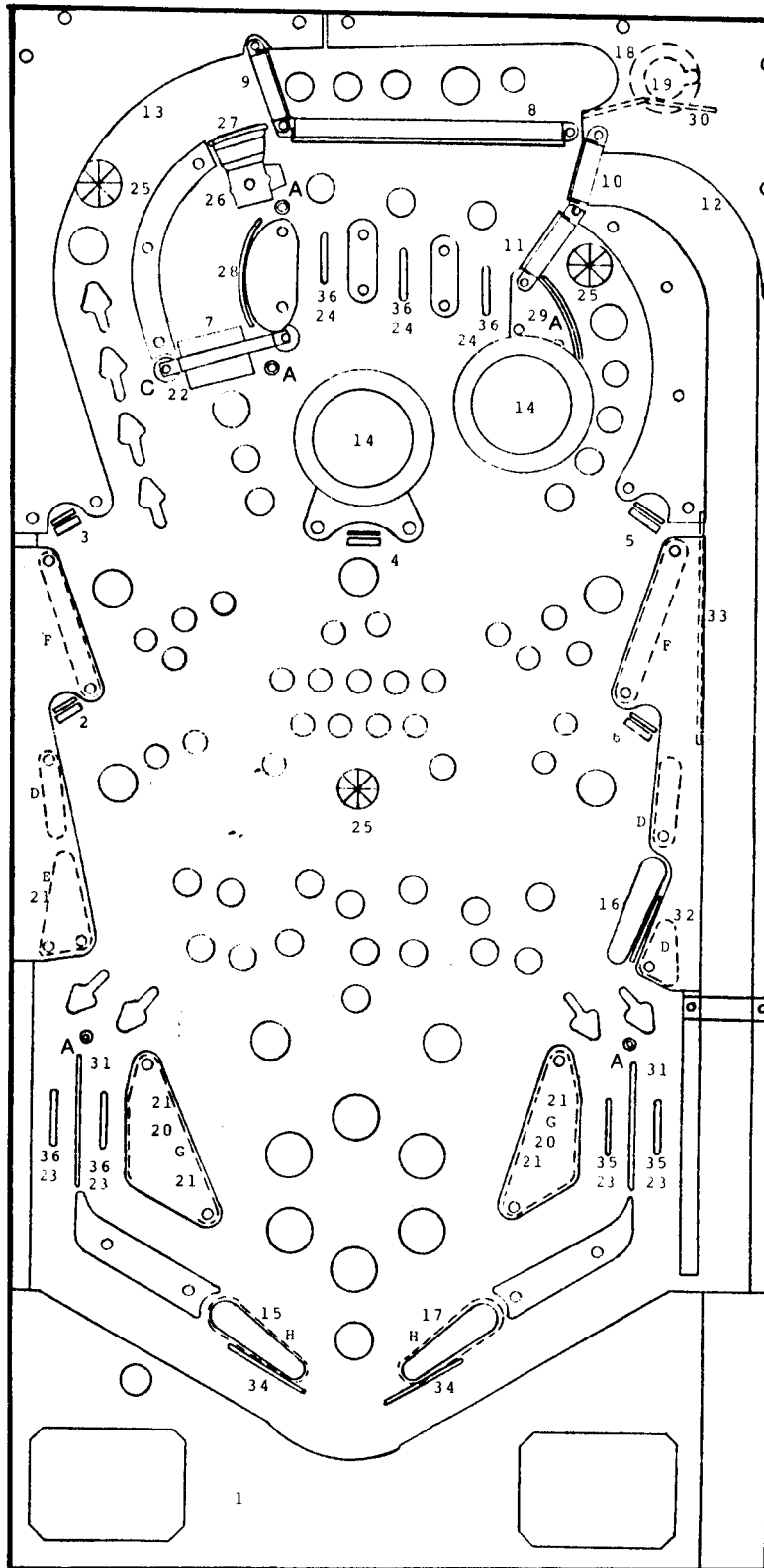


FIGURE II

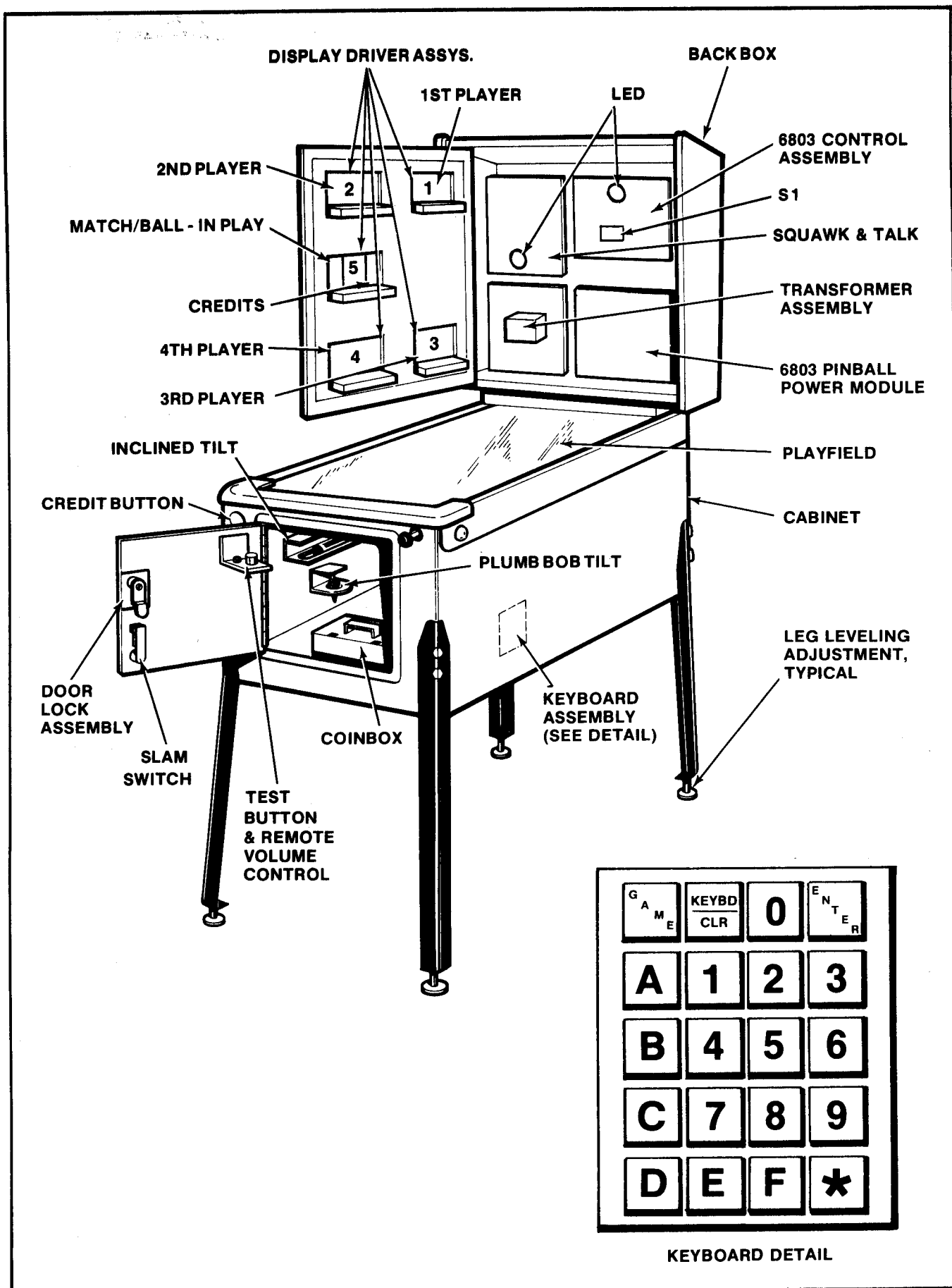


FIGURE III. ELECTRONIC PIN BALL MACHINE

XIII. ABBREVIATED PARTS LIST EIGHT BALL CHAMP

MISCELLANEOUS	MIDWAY PART NUMBER	BALLY PART NUMBER
Transformer (Domestic or Export)	MT00-00141-000	
Bulbs, #555	0017-00003-0501	
Lamp Socket w/Diode (IN4004)	0017-00031-0052	E-120-198
Lamp Socket w/Diode (IN4004)	0017-00031-0053	E-120-200
Lamp Socket w/Diode (IN4004)	0017-00031-0054	E-120-201
Lamp Socket w/o Diode	0017-00031-0055	E-120-186
Lamp Socket w/o Diode	0017-00031-0056	E-120-188
Lamp Socket w/o Diode	0017-00031-0058	E-120-210
Fuse, 1 Amp. 3 AG Slow Blow (Playfield Solenoid Protection)	0017-00003-0103	E-133-44
Fuse, 3A, 3 AG Slow Blow	0017-00003-0007	
Fuse, 6A, 3 AG	0017-00003-0008	
Front Molding Assy.	A360-00086-0000	A-3080-14
Keypad Assy.	A365-00074-0000	
Back Glass	0A42-00914-00XF	
Ball Shooter Rod & Spring Assy. (Cabinet)	A360-00280-0000	ASE-2378-5
Plumb-Bob: Tilt	0360-00900-0000	E-138-3
Keyhook: Door	0017-00009-0019	
Credit Pushbutton - Red/White (Cabinet)	0017-00042-0684	
Overlay - Start Button (Cabinet)	0365-00121-0000	
Pushbutton - Orange (Cabinet) (2)	0151-00804-0011	
Back-Box: Hinged Front	0365-00517-0400	
Playfield Support	0360-00114-00XF	P-1455-1
Allen Wrench: 1/8"	0017-00009-0551	M-1718-7
Ball: 1-1/16" Dia. Steel	0017-00009-0546	M-168-26
Ball: 15/16" Dia. Steel	0017-00009-0547	M-168-50
 ASSEMBLY SWITCHES		
Roll-over Button (3)	A360-00059-0000	ASW-A1-152
Saucer	A967-00075-0000	ASW-A1-209
Credit Button (Cabinet)	A365-00060-0100	
Ball Return	0017-00005-0183	
Coin (2) (Door)	0017-00005-0195	
Lane Change (Cabinet)	A370-00078-0000	ASW-A1-56
Rebound	A360-00069-0000	ASW-A1-47
Right Sling Shot (2)	A360-00069-0000	ASW-A1-47
Left Sling Shot (2)	A360-00069-0000	ASW-A1-47
Thumper Bumper - Make (2)	A967-00074-0000	ASW-A1-195
Tilt (Cabinet)	A360-00054-0000	ASW-A0-13
Slam (Cabinet)	A360-00076-0000	ASW-A2-73
Tilt (Door)	A090-00038-0000	
Right Lanes (Out Lane & Ball Lane) (2)	A360-00069-0000	ASW-A1-47
Left Lanes (Out Lane & Ball Lane) (2)	A360-00069-0000	ASW-A1-47
Flipper - Double Sw. - Make	A365-00046-0000	
Flipper - Double Sw. - Break	A365-00045-0000	
Flipper - Break (2)	A365-00045-0000	
Flipper - Make (2) (Cabinet)	A360-00071-0000	ASW-A1-61
Back-Up Target ("E", "I", "G", "H", & "T") (5)	AB38-00020-0000	
Left Hand Single Drop Target (5)	A360-00062-0000	ASW-A1-168
Spinner	A360-00058-0000	ASW-A1-151
Top Roll-over Lanes (3)	A360-00065-0000	ASW-A1-152

XIII. ABBREVIATED PARTS LIST (cont'd) EIGHT BALL CHAMP

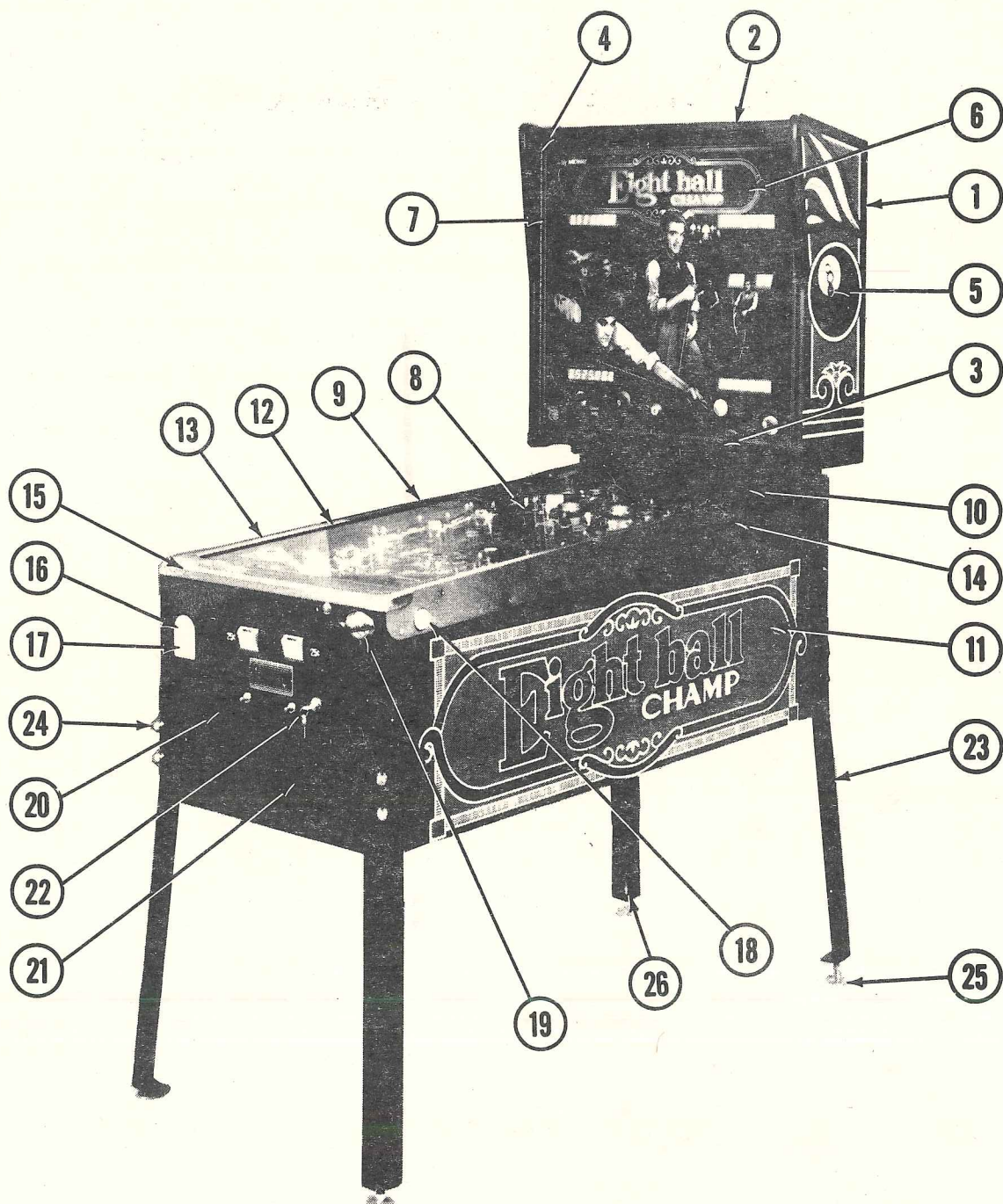
ASSEMBLY COILS	MIDWAY PART NUMBER	BALLY PART NUMBER
Flipper (3)	A360-00045-0000	AQ-25-500/ 34-4500
Knocker	A360-00046-0000	AR-26-1200
Outhole Kicker	A360-00044-0000	AN-26-1200
Thumper Bumper (2)	A360-00044-0000	AN-26-1200
Saucer	A360-00211-0000	A0-27-1300
Sling Shot (2)	A967-00046-0000	A0-26-1200
Drop Target (5)	AB38-00018-0000	
PLAYFIELD PARTS	See Figure II	
Playfield Glass	0360-00921-0000	G-409
Playfield & Inserts	AB38-00501-00XF	
Roll-over Button - White (3)	0017-00042-0405	C-900
Button: Roll-over Mounting - Green (2)	0017-00042-0541	C-901-4
Button: Roll-over Mounting - Amber	0017-00042-0544	C-901-8
Playfield Mylar	0B38-00901-0000	
Screened Plastic Set	AB38-00012-00XF	
Post: L=1" Red Plastic (10)	0017-00042-0588	
Post: L=1-3/16" Red Plastic (26)	0017-00042-0596	
Acorn Nut: Nylon (19)	0017-00009-0302	M-1794-1
Thumper Bumper Cap & Tape Assembly (2)	AB38-00011-0000	
Collar-Thumper Bumper - Red (2)	0017-00042-0566	C-1018-1
Thumper Bumper Locking Ring (2)	0017-00042-0414	
Thumper Bumper Mylar (2)	0B38-00911-0000	
Flipper - White (3)	A967-00031-0000	A-3994-5
MODULES		
6803 Pinball Power Module w/Fuses	A084-91785-AB38	
Squawk & Talk	A084-91625-AB38	AS-2518-61
6-Digit Display Driver (1 used)	A084-91491-A000	AS-2518-21
7-Digit Display Driver (4 used)	A084-91617-A000	AS-2518-58
6803 Pinball Control Module	A084-91786-AB38	

MODULE COMPONENTS

SEE MODULE PARTS LIST

SECTION 2
Illustrated Parts Breakdown

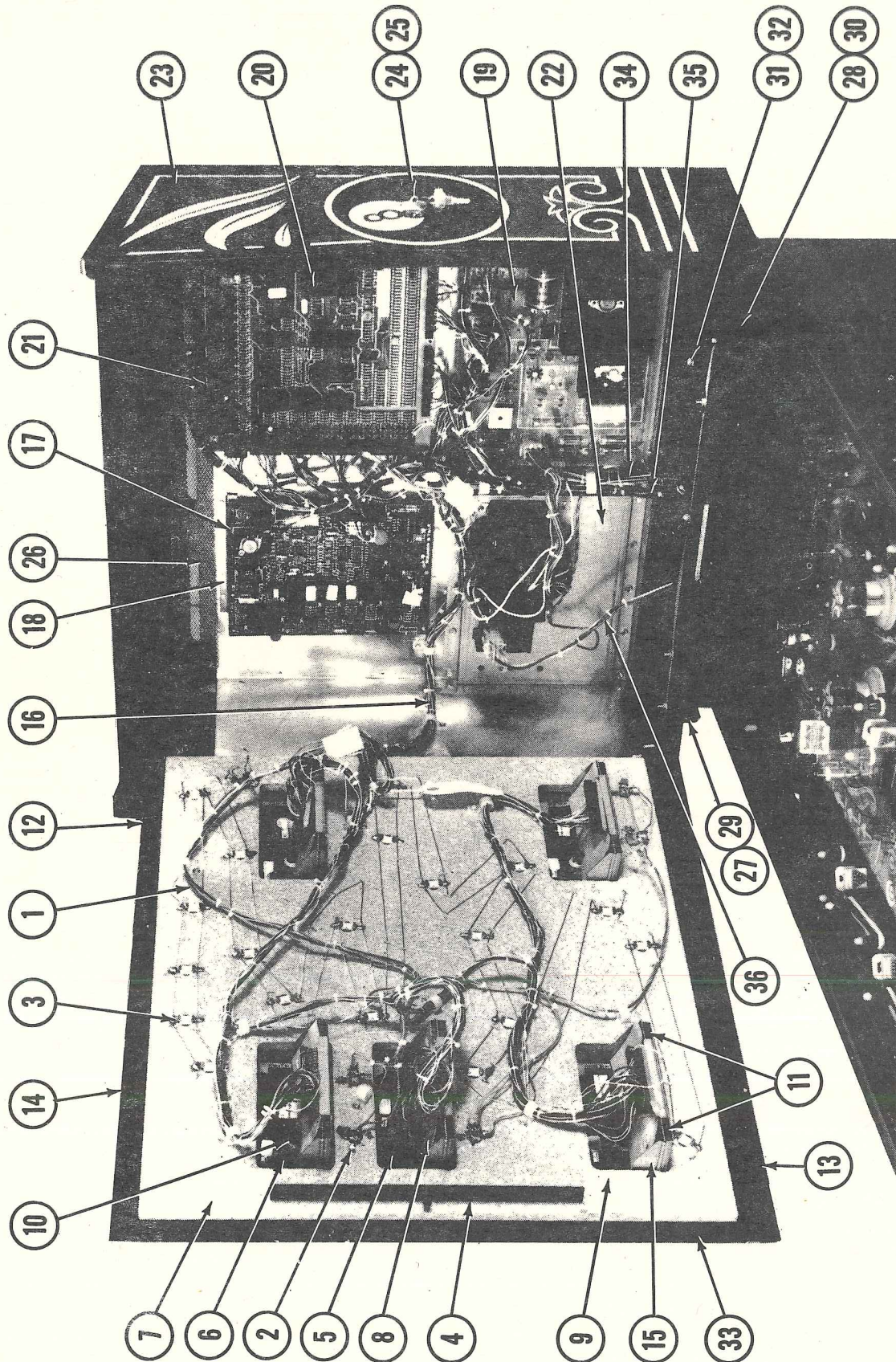
NO. 0B38 - EIGHT BALL CHAMP PINBALL GAME - FRONT



NO. 0B38 - EIGHT BALL CHAMP PINBALL GAME - FRONT PARTS LIST
ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	AB38-00008-0000	BACKBOX ASSY. - EIGHT BALL CHAMP (INCLUDES ITEMS 2 THRU 4)
2	0365-00934-0000	EXTRUSION (MOLDING): BACKGLASS TOP
3	0365-00933-0000	EXTRUSION (MOLDING): BACKGLASS BOTTOM
4	0365-00118-00XF	HINGE: LITE PANEL
5	0017-00005-0050	DOOR LOCK - INDIV. KEYED W/2 KEYS
6	0B38-00907-00XF	BACK GLASS: SCREENED
7	0905-00903-0600	GLASS - CHANNEL EDGE (2 REQ'D.)
8	AB38-00004-0000	PLAYFIELD ASSY. - EIGHT BALL CHAMP
9	0360-00921-0000	PLAYFIELD GLASS: CLEAR
10	0365-00924-0000	EXTRUSION (MOLDING): PLAYFIELD GLASS
11	AB38-00500-0000	CABINET ASSY. (CABINET W/DOUBLE TEENUTS <u>ONLY</u>)
12	0017-00042-0630	GLASS-CHANNEL L (2 REQ'D.)
13	0360-00178-0100	SIDE MOLDING: LEFT
14	0360-00178-0200	SIDE MOLDING: RIGHT
15	A360-00086-0000	FRONT MOLDING ASSY.
16	0017-00042-0684	CREDIT PUSHBUTTON - RED/WHITE
17	0365-00948-0000	OVERLAY: CREDIT BUTTON
18	0151-00804-0011	FLIPPER PUSHBUTTON - ORANGE (2 REQ'D.)
19	A360-00280-0000	BALL SHOOTER ROD & SPRING ASSY.
20	A982-00014-0013	COIN DOOR W/CABLE ASSY.
21	0090-00002-04RK	DOUBLE ENTRY COIN DOOR FRAME
22	0017-00005-0200	DOOR LOCK - INDIV. KEYED W/2 KEYS
23	0360-00937-00XF	LEG: CABINET (4 REQ'D.)
24	0017-00102-0063	3/8-16 X 3/8" UNSLOTTED HEX HD. BOLT (8 REQ'D.)
25	0017-00102-0082	LEG ADJUSTER (4 REQ'D.)
26	0017-00103-0026	HEX NUT 3/8-16 (4 REQ'D.)

EIGHT BALL CHAMP - BACKBOX ASSEMBLY
AB38-00008-0000



EIGHT BALL CHAMP - BACKBOX ASSEMBLY - PARTS LIST
AB38-00008-0000
ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
	AB38-00006-0000	INSERT ASSY. (ITEMS 1 THRU 15)
1	AB38-00007-0000	INSERT CABLE ASSY.
2	A365-00007-0000	LAMP & SOCKET ASSY. (6 REQ'D.)
	0017-00003-0501	6.3 VOLT LAMP - WEDGE BASE - #555
	103E-00002-0003	1N4004 400V 1A DIODE
	0017-00031-0053	WEDGE SOCKET: W/DIODE
3	A365-00010-0000	LAMP & SOCKET ASSY. (21 REQ'D.)
	0017-00003-0501	6.3 VOLT LAMP - WEDGE BASE - #555
	0017-00003-0058	WEDGE SOCKET: W/O DIODE
4	A365-00058-0000	LOCKING BRACKET ASSY.
5	A084-91491-A000	6 DIGIT DISPLAY ASSY.
*	0017-00087-0187	TAPE: FOAM PVC SINGLE .38" X .16" (8 REQ'D.)
6	A084-91617-A000	7 DIGIT DISPLAY ASSY (4 REQ'D.)
*	0017-00087-0187	TAPE: FOAM PVC SINGLE .38" X .16" (2 REQ'D.)
7	0B38-00506-0000	INSERT (WOOD)
8	0360-00903-00XF	SHIELD: P.C. BD. "CAUTION-HI-VOLT" (5 REQ'D.)
9	0360-00935-0000	SHADOWBOX: WHITE (ON OPPOSITE SIDE OF LITE PANEL) (5 REQ'D.)
10	0017-00041-0640	BUMPER: SELF STICK, ROUND, BLACK (5 REQ'D.)
11	0017-00041-0654	BUMPER: SELF STICK, SQUARE, BLACK (10 REQ'D.)
12	0365-00118-0000	HINGE: LITE PANEL
13	0365-00933-0000	EXTRUSION (MOLDING): GLASS BOTTOM 26-11/32"
14	0365-00934-0000	EXTRUSION (MOLDING): GLASS TOP 26-11/32"
15	0967-00137-0000	DISPLAY BOARDS TRAY (5 REQ'D.)
16	AB38-00009-0000	BACK CABINET CABLE ASSY.
*		NOT PART OF ABOVE ASSEMBLY & MUST BE ORDERED SEPARATELY

EIGHT BALL CHAMP - BACKBOX ASSEMBLY - PARTS LIST (CON'T.)

AB38-00008-0000

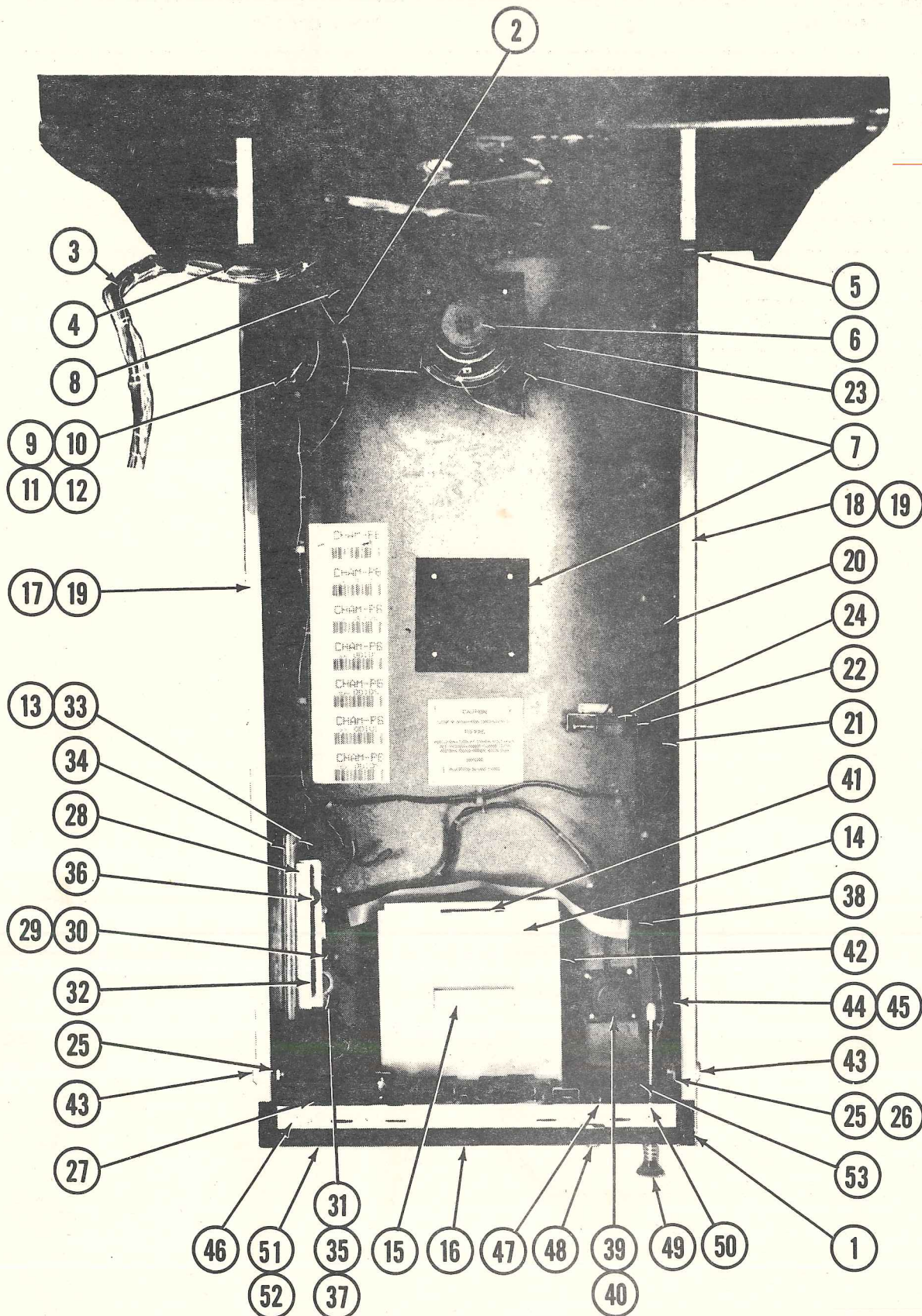
ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
17	A084-91625-AB38	PROGRAMMED SQUAWK & TALK P.C. BD. ASSY.
18	0360-00190-01XF	MTG. BRKT. 7-1/2" - P.C. BD. (2 REQ'D.)
19	A084-91785-AB38	6803 POWER MODULE W/FUSES
	A084-91785-C000	6803 POWER MODULE W/O FUSES
	0017-00003-0008	FUSE: ACG 3AG, 6A, 32V, M-B (+43V SOL.)
	0365-00952-0000	SHIELD: POWER SUPPLY
20	A084-91786-AB38	PROGRAMMED 6803 CONTROL BD. ASSY.
21	0360-00190-02XF	MTG. BRKT. 10" - P.C. BD. (4 REQ'D.)
22	A365-00068-0000	TRANSFORMER POWER SUPPLY
	MT00-00141-A000	ISOLATION TRANSFORMER
	0017-00003-0007	FUSE: MDA 3AG, 3A, 250V, S-B
	0017-00003-0444	FUSE - HOLDER: QUICK CONNECT
	0360-00191-00XF	FUSE BRKT.
	0365-00127-0000	PLATE: TRANSFORMER
23	AB38-00517-0400	BACKBOX: HINGED FRONT
24	0017-00005-0000	KEYS: DOOR LOCK W/2 INDIV. KEYS
25	0017-00005-0209	LOCK PLATE
26	0365-00104-00XF	VENT GRILLE
27	0365-00105-00XF	PIVOT BRACKET
28	0365-00114-00XF	PIVOT BRACKET (OPEN)
		ADDITIONAL PARTS LIST (NOT PART OF BACKBOX ASSEMBLY)
29	A365-00032-00XF	BRACKET & PIN ASSY.: LEFT HAND
30	A365-00050-00XF	BRACKET & PIN ASSY.: RIGHT HAND
31	0017-00101-0471	3/8"-16 X 4-1/2" UNSLOTTED HEX HD. BOLT (2 REQ'D.)

EIGHT BALL CHAMP - BACKBOX ASSEMBLY - PARTS LIST (CON'T.)**AB38-00008-0000****ORDER BY PART NUMBER ONLY**

ITEM	PART NO.	DESCRIPTION
32	0017-00104-0050	FLAT WASHER: .375" O.D., .100" I.D., .062" TH. (2 REQ'D.)
33	AB38-00010-0000	BACK GLASS ASSY.
	0B38-00907-00XF	BACK GLASS: SCREENED
	0905-00903-0600	GLASS-CHANNEL EDGE: 23-11/16" (2 REQ'D.)
34	AB38-00005-0000	PLAYFIELD CABLE ASSY.
35	AB38-00031-0000	CABINET CABLE ASSY.
36	AB38-00032-0000	HIGH VOLTAGE CABLE ASSY.

EIGHT BALL CHAMP - CABINET ASSEMBLY



EIGHT BALL CHAMP - CABINET ASSEMBLY - PARTS LIST

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	AB38-00500-0000	CABINET ASSY.
	0365-00519-0100	CABINET: MIDWAY DOOR/8-BALL CHAMP
	0360-00953-00XF	DOUBLE TEE-NUT (4 REQ'D.)
2	AB38-00032-0000	HIGH VOLTAGE CABLE
3	AB38-00005-0000	PLAYFIELD CABLE (PART OF PLAYFIELD ASSY. ONLY)
4	A365-00032-00XF	BRACKET & PIN ASSY. - LEFT HAND
5	A365-00050-00XF	BRACKET & PIN ASSY. - RIGHT HAND
6	0017-00003-0476	SPEAKER: 4-OHM 10W 6-1/2" DIA.
7	0360-00302-00XF	GRILLE (2 REQ'D.)
	0365-00003-0001	COUNTRY PIN KIT-BLK DR: USA (ITEMS 8 THRU 15)
	A365-00043-0000	LINE CORD & FILTER ASSY. (ITEMS 8 THRU 12)
8	0151-00804-0012	LINE CORD: 3 CONDUCTOR 18 AWG
9	0017-00003-0114	LINE FILTER: 5A 115V
10	115E-00001-0001	VARISTOR: METAL OXIDE 130V
11	0017-00042-0315	BUSHING: STRAIN RELIEF
12	0945-00106-0000	PLATE: STRAIN RELIEF
13	0017-00003-0475	OUTLET: CONVENIENCE
	A365-00064-0000	COIN DOOR COVER & HANDLE ASSY. (ITEMS 13 & 14)
14	0365-00121-0000	COIN BOX COVER: P.B. CABINET
15	0365-00122-00XF	HANDLE: P.B. COIN BOX
16	A982-00014-0013	COIN DOOR W/CABLE: USA-BLK-PIN
17	0360-00178-0100	MOLDING: LEFT SIDE
18	0360-00178-0200	MOLDING: RIGHT SIDE
19	0017-00042-0630	GLASS-CHANNEL L (2 REQ'D.)

EIGHT BALL CHAMP - CABINET ASSEMBLY - PARTS LIST (CON'T.)

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
20	0365-00116-00XF	BRACKET: PLAYFIELD STAYARM
21	0365-00115-00XF	STAYARM: PLAYFIELD
22	0360-00116-00XF	PLATE: STOP (KNOCKER)
	AB38-00030-0000	CABINET CABLE W/ASSEMBLIES (ITEMS 23 THRU 35)
23	AB38-00031-0000	CABINET CABLE ASSY.
24	A360-00235-0000	KNOCKER ASSY.
	A360-00011-00XF	PLUNGER & STRIKER ASSY.
	A360-00046-0000	COIL & TUBING ASSY. (INCLUDES FOLLOWING ITEM)
	103E-00002-0015	IN4004GP 400V 1A DIODE
	0010-00274-0175	SPRING: COMPRESSION
	0017-00041-0635	RUMPER: PLUG
	0360-00318-00XF	BRACKET: COIL
	0360-00909-00XF	FRAME COIL
25	0360-00071-0000	SWITCH ASSEMBLY: LEFT & RIGHT FLIPPERS (2 REQ'D.)
26	0370-00078-0000	SWITCH ASSEMBLY: LEFT & RIGHT BALL LANES
27	A365-00060-0000	SWITCH ASSEMBLY: CREDIT PUSH BUTTON
	A360-00264-0000	TILT BOARD ASSY. (ITEMS 28 THRU 35)
28	A360-00089-0000	BALL TILT BRACKET ASSY.
	A360-00054-0000	SWITCH ASSEMBLY: TILT
	0360-00199-0000	BRACKET: BALL TILT
29	A360-00246-0000	SLAM SWITCH & BRACKET ASSY.
	103E-00002-0005	IN4148 20V 10MA DIODE
	A360-00229-0000	SLAM SW. & BRKT. ASSY. (INCLUDES FOLLOWING 3 ITEMS)
	A360-00076-0000	SWITCH ASSEMBLY: SLAM

EIGHT BALL CHAMP - CABINET ASSEMBLY - PARTS LIST (CON'T.)

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
	0020-00202-0000	PLATE: SWITCH
	0360-00102-00XF	BRACKET: SLAM/TILT SWITCH
30	E100-00080-0305	CAPACITOR .05MF 12/16V
31	0360-00168-0000	BRACKET: TILT CONTACT
32	0360-00170-0000	TILT HANGER
33	0360-00312-0000	BRACKET: CONVENIENCE OUTLET
34	0360-00502-0000	TILT BOARD
35	0360-00922-00XF	WIRE: PLUMB-BOB
*	0020-00202-0000	PLATE: SWITCH (USED W/LANE CHANGE & FLIPPER SWITCHES)
36	0017-00009-0547	BALL: 15/16" DIA. - STEEL
37	0360-00900-0000	PLUMB-BOB: TILT
38	A365-00074-0000	KEYPAD ASSY.
	A365-00075-0000	KEYPAD W/CONNECTOR ASSY.
	0017-00009-0516	ESCUTCHEON (FACING): KEYBOARD
	0017-00081-0088	TAPE: TRANSPARENT P.V.C.
	0365-00953-0000	HOLDER: KEYPAD STYRENE
39	A945-00062-0000	ON/OFF SWITCH & PLATE ASSY.
	0017-00032-0015	SWITCH: 2PST 6 AMP
40	0017-00042-0370	COVER: ON/OFF SWITCH
41	0365-00124-0000	BRACKET: LOCATING - P.B. COIN BOX
42	0365-00123-0000	COIN - BOX: P.B. CABINET
43	0151-00804-0011	PUSH BUTTON: ORANGE (FLIPPERS & LANE CHANGE SWITCHES) (2 REQ'D.)
44	M051-00R38-A007	KEYBOARD GAME ADJUSTMENTS & TEST FUNCTIONS CARD
		NOT PART OF ABOVE ASSEMBLY & MUST BE PURCHASED SEPARATELY

EIGHT BALL CHAMP - CABINET ASSEMBLY - PARTS LIST (CON'T.)ORDER BY PART NUMBER **ONLY**

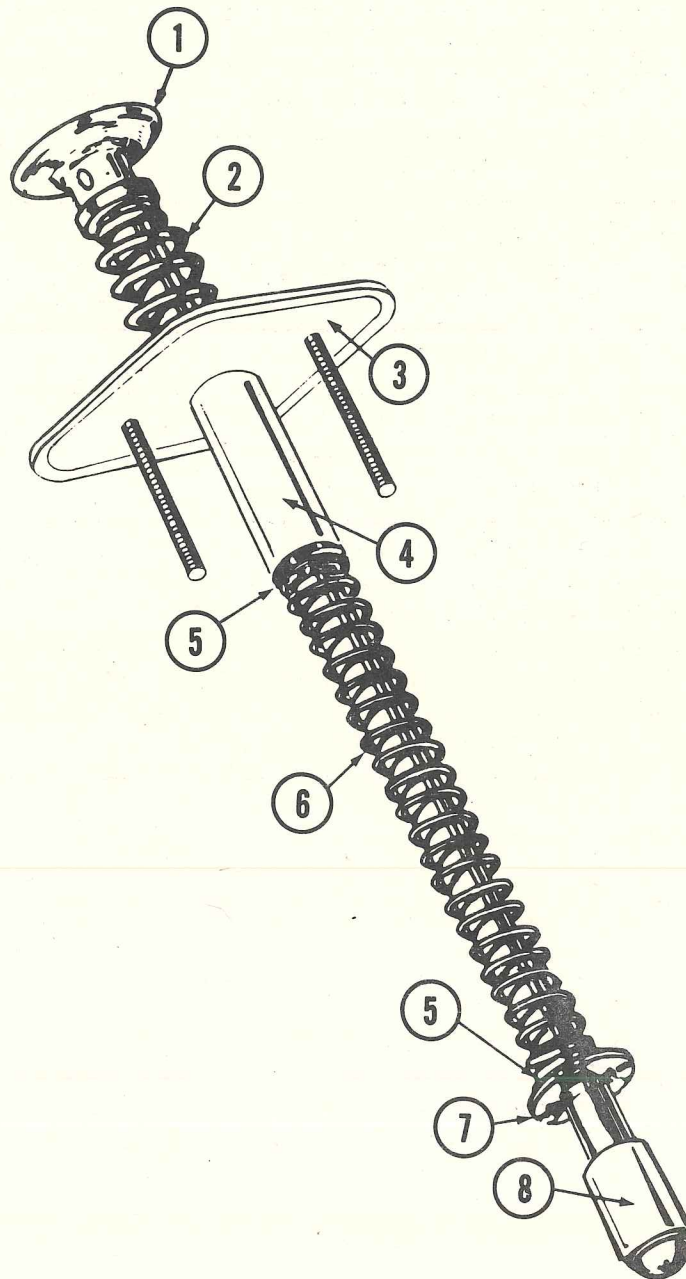
ITEM	PART NO.	DESCRIPTION
45	0017-00004-0211	BAG: 5" X 5" POLY (MTD. TO CABINET SIDE)
46	A360-00281-0000	FRONT RAIL ASSY.
	0012-00008-22XF	BUSHING: CASE HARDENED (3 REQ'D.)
	0012-00008-45XF	BUSHING: CASE HARDENED
	0017-00104-0126	SPRING WASHER: .390" I.D., .740" O.D., .013" TH.
	0360-00189-00XF	LATCH
	0360-00308-00XF	BRACKET: FRONT RAIL
47	0360-00140-00XF	LEVER: LATCH
48	0017-00102-0639	1/4-20 X 1-1/4" UNSLOTTED CARRIAGE BOLT
49	A360-00280-0000	BALL SHOOTER ROD & SPRING ASSY.
50	0967-00115-00XF	PLATE: BALL SHOOTER
51	0017-00042-0684	PUSH BUTTON: RED (CREDIT SWITCH)
52	0365-00948-0000	OVERLAY: CREDIT BUTTON
53	0360-00127-0000	ARMOR: LEG BOLT (4 REQ'D.)
		ADDITIONAL PARTS LIST
	M051-00B38-A087	LABEL: KEYPAD LOCATOR (MTD. ON COIN BOX COVER)
	0017-00007-0019	KEY-HOOK: DOOR (MTD. ON CABINET INSIDE NEAR COIN DR.)
	A360-00086-0000	FRONT MOLDING ASSY.
	A360-00946-0000	MOLDING: FOAM 21-3/4" X 7/8" X 1/4" (USED W/FRONT MOLDING ASSY.)
	0090-00002-04BK	DOUBLE COIN DOOR FRAME: BLACK
	0360-00937-00XF	LEG: CABINET (4 REQ'D.)
	0017-00102-0063	3/8-16 X 3/8" UNSLOTTED HEX HD. BOLT (8 REQ'D.)
	0017-00102-0082	LEG ADJUSTER (4 REQ'D.)
	0017-00103-0026	HEX NUT 3/8-16 (4 REQ'D.)

EIGHT BALL CHAMP - CABINET ASSEMBLY - PARTS LIST (CON'T.)

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
	0017-00009-0551	ALLEN WRENCH: 1/8"
	0360-00709-0000	REMOVAL TOOL: P.C. BOARD
	AB38-00300-0000	CATALOG & BAG ASSY. (INCLUDES FOLLOWING 3 ITEMS)
	0B38-00300-0000	CATALOG: 8-BALL CHAMP
	AB38-00013-0000	SCORE CARD SET ASSY.
	A365-00019-0000	SCORE CARD INSERTS SET/ASSY. (INCLUDES FOLLOWING 7 ITEMS)
	M051-00365-A010	SCORE CARD 1 REPLAY
	M051-00365-A011	SCORE CARD 1 & 1 REPLAY
	M051-00365-A012	SCORE CARD 2 & 1 REPLAY
	M051-00365-A013	SCORE CARD 3 & 2 REPLAY
	M051-00365-A014	SCORE CARD 1 REPLAY HI SCORE
	M051-00365-A015	SCORE CARD 2 REPLAY HI SCORE
	M051-00365-A016	SCORE CARD 3 REPLAY HI SCORE

BALL SHOOTER ROD & SPRING ASSEMBLY
A360-00280-0000



BALL SHOOTER ROD & SPRING ASSEMBLY - PARTS LIST

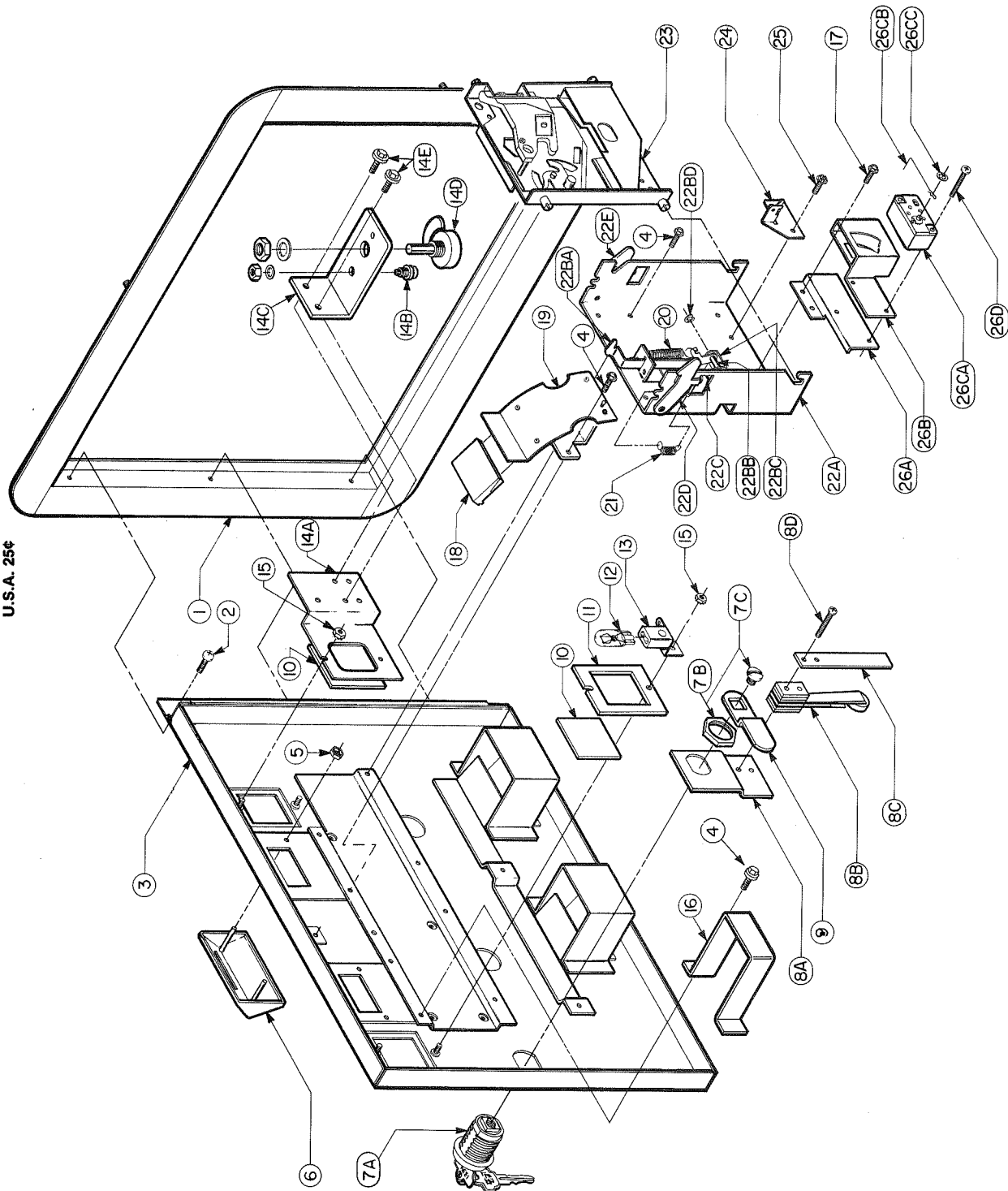
A360-00280-0000

ORDER BY PART NUMBER ONLY

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

COIN DOOR WITH CABLE ASSEMBLY - PINBALL GAME - U.S.A. 25¢
A982-00014-0013

FRONT DOOR ASSEMBLY - PINBALL GAME
U.S.A. 25¢



COIN DOOR WITH CABLE ASSEMBLY - PINBALL GAME - U.S.A. 25¢ - PARTS LIST

A982-00014-0013

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1*	0090-00002-04BK	DOUBLE ENTRY COIN DOOR FRAME
2*	0017-00101-0121	#6-32 X 5/16 PHIL. TRS. HD. SCR. (3 REQ'D.)
3	A090-00072-06BK	COIN DOOR: 2-HOLE PAINTED
4	0017-00101-0123	#8 X 1/4 UNSLOT. HEX HD. SCREW (9 REQ'D.)
5	0017-00103-0059	PUSH NUT (4 REQ'D.)
6	0090-00912-0000	COIN ENTRY PLATE - (2 REQ'D.)
7A	0017-00005-0200	LOCK - INDIV. KEYED W/2 KEYS
7B	0017-00103-0079	3/4 HEX NUT
7C	0017-00101-0125	#10 - 32 X 1/4 SLOT. PAN HD. SCREW
8	A090-00096-0000	ANTI-SLAM SWITCH & BRKT. ASSY.
8A	0090-00185-00XF	DOOR TILT SWITCH BRKT.
8B	A090-00095-0000	DOOR ANTI-SLAM SWITCH
8C	0090-00126-01XF	SWITCH BACK-UP PLATE
8D	0017-00101-0155	#4-40 X 9/16 PHIL. PAN HD. (2 REQ'D.)
9	0017-00005-0238	DOOR CAM
10	0090-00903-9500	25¢ WINDOW (2 REQ'D.)
11	0090-00143-0000	COIN PLEX RETAINER
12	0017-00003-0501	6.3 VOLT LAMP - WEDGE BASE #555 (2 REQ'D.)
13	0017-00031-0048	WEDGE SOCKET W/BRKT. (2 REQ'D.)
14	A090-00647-0000	BRKT. & SWITCH ASSY.
14A	0090-00179-0000	CABLE & SWITCH MTG. BRKT.
14B	0017-00032-0120	PUSH-BUTTON SWITCH
14C	0360-00171-00XF	BRACKET: VOLUME CONTROL MOUNTING
14D	105E-00003-0001	POT: 0-100 OHMS WIREWOUND
14E	0017-00101-0123	#8 X 1/4 UNSLOT. HEX HD. SCR. (2 REQ'D.)
*		NOT PART OF ABOVE ASSEMBLY & MUST BE ORDERED SEPARATELY

COIN DOOR WITH CABLE ASSEMBLY - U.S.A. 25¢ - BLACK - PIN - PARTS LIST (CON'T.)

A982-00014-0013

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
15	0017-00103-0084	#6-32 HEX NUT W/SEMS (4 REQ'D.)
16	0090-00434-00XF	SWITCH GUARD
17	0017-00101-0124	#6 X 1/4 UNSLOT HEX HD. SCR. (4 REQ'D.)
18	0090-00911-0000	INSULATOR (2 REQ'D.)
19	A090-00087-0000	COIN CHUTE & TOP ASSY. (2 REQ'D.)
	A090-00081-00XF	COIN CHUTE & BRKT. ASSY.
	0090-00172-00XF	COIN CHUTE TOP
	0017-00101-0140	#4-40 X 5/16 PHIL. PAN HD. (3 REQ'D.)
	0017-00007-0162	COTTER PIN (4 REQ'D.)
20	0010-00134-0000	SPRING
21	0010-00181-0000	SPRING
22	A090-00115-0000	COIN ACCEPTOR FRAME SUB-ASSY. (2 REQ'D.)
22A	A090-00118-0000	COIN ACCEPTOR & BUSH. ASSY.
22B	A090-00116-0000	REJECT LEVER ASSY. (2 REQ'D.)
22BA	0090-00182-00XF	REJECT LEVER
22BB	0090-00129-00XF	POST: PIVOT REJECTOR
22BC	0090-00167-00XF	PIVOT LEVER
22BD	0017-00100-0012	E-RING .125 DIA.
22C	0017-00007-0083	1/8 X 1-5/8 ROLL PIN
22D	0093-00145-01XF	LATCH - LEFT
22E	0093-00145-00XF	LATCH - RIGHT
	0017-00072-0036	120 X .218 X 7/32 RIVET (2 REQ'D.)
	0090-00910-00XF	REJECT BUTTON

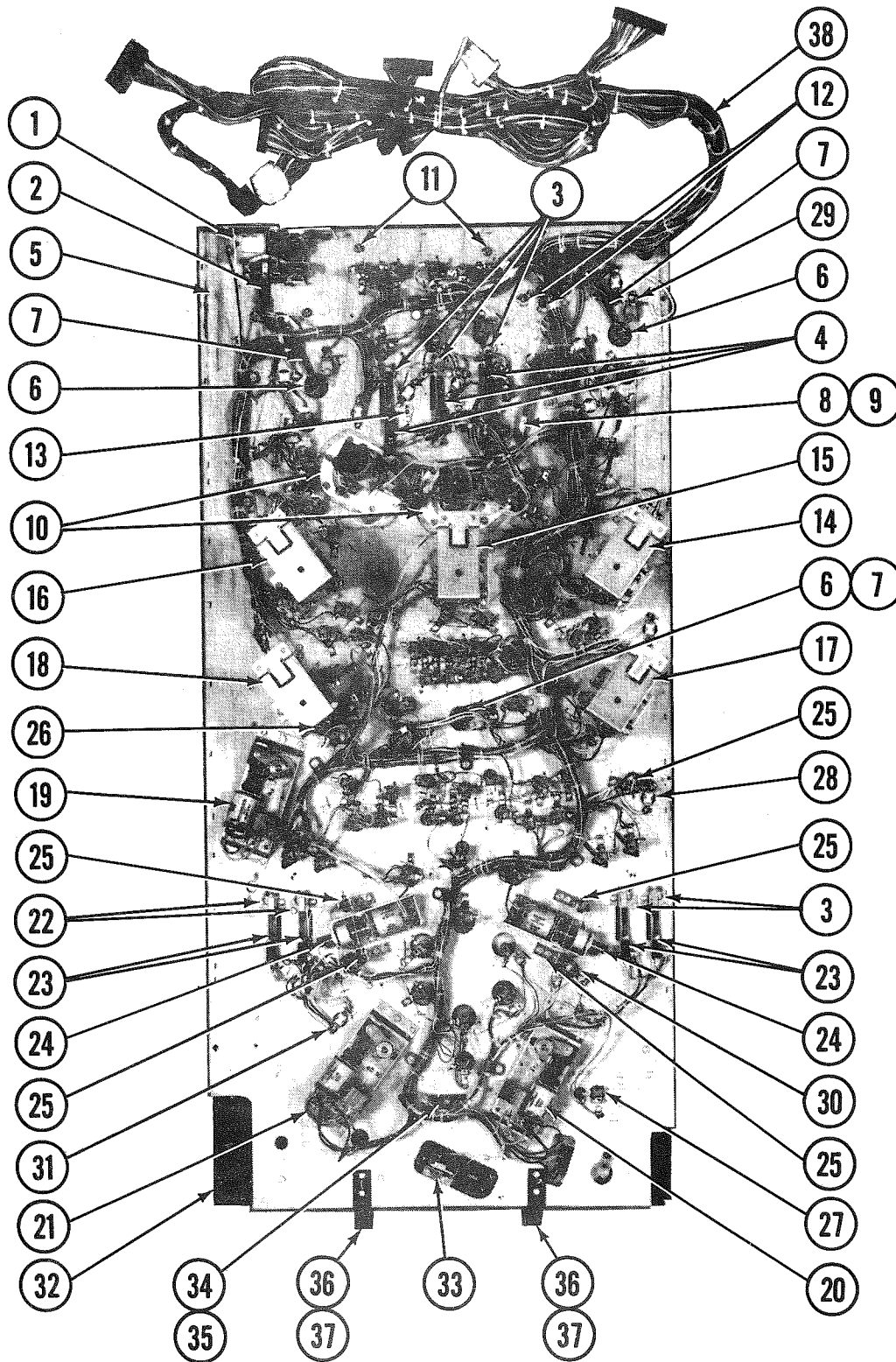
COIN DOOR WITH CABLE ASSEMBLY - U.S.A. 25¢ - BLACK - PIN - PARTS LIST (CON'T.)

A982-00014-0013

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
	0090-00183-0000	BUTTON STOP
	0017-00101-0140	#4-40 X 5/16 PHIL. PAN HD.
23	0151-00086-0000	COIN ACCEPTOR W/STRING CUTTER (2 REQ'D.)
24	A090-00064-0100	ANTI-PENNY DEVICE (2 REQ'D.)
25	0017-00101-0099	#6 X 1/4 SLT. HEX HD. M.S. (4 REQ'D.)
26	A090-00077-0000	COIN GUIDE & SWITCH ASSY.
26A	0090-00162-00XF	COIN SWITCH MTG. BRKT.
26B	0017-00005-0203	COIN SWITCH CHUTE
26C	A090-00059-0400	COIN SWITCH & WIRE ASSY.
26CA	0017-00005-0195	COIN SWITCH
26CB	0010-00599-0000	COIN SWITCH WIRE
26CC	0017-00007-0015	PUSH-ON RING
26D	0017-00101-0147	#4-40 X 3/4 PHIL. PAN. HD. (4 REQ'D.)
		ADDITIONAL PARTS LIST
	0090-00184-0000	COIN SWITCH COVER (2 REQ'D.)
	A982-00015-0007	PINBALL COIN DOOR CABLE (STANDARD)

EIGHT BALL CHAMP - PLAYFIELD ASSEMBLY - REAR
AB38-00004-0000



EIGHT BALL CHAMP - PLAYFIELD ASSEMBLY - REAR PARTS LIST

AB38-00004-0000

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	AA44-00034-0000	EJECT HOLE (SAUCER) ASSY.
2	A365-00036-0000	SWITCH, DIODE & PLATE ASSY. (SAUCER)
	0020-00202-0000	PLATE: SWITCH
	A967-00068-0000	SWITCH & DIODE ASSY. (INCLUDES FOLLOWING 2 ITEMS)
	A967-00075-0000	SWITCH ASSY.
	103E-00002-0005	IN4148 20V 10MA DIODE
3	A331-00042-0000	WIRE ACTUATOR ASSY.(ROLLOVER LANES)(3 TOP & 2 LOWER LEFT)5 REQ'D.
	0360-00135-0000	BRACKET: ROLLOVER WIRE-LEFT
	0360-00929-0200	WIRE-FORM: ROLLOVER-LEFT
4	AB38-00026-0000	SWITCH, DIODE & CAPACITOR ASSY. (TOP ROLLOVER LANES) (3 REQ'D.)
	E100-00800-0305	CAPACITOR: .05 MF 12/16V
	A967-00067-0000	SWITCH & DIODE ASSY. (R/O WIRE) (FOLLOWING 3 ITEMS)
	A360-00065-0000	SWITCH ASSY.
	0020-00202-0000	PLATE: SWITCH
	103E-00002-0005	IN4148 20V 10MA DIODE
5	AB38-00501-00XF	PLAYFIELD & INSERTS, SCREENED & PIERCED (INCLUDES ITEM 6)
6	0017-00042-0405	BUTTON: ROLLOVER - WHITE (3 REQ'D.)
7	AB38-00028-0000	SWITCH, DIODE, PLATE & CAPACITOR ASSY. (ROLLOVER BUTTONS)3 REQ'D.
	0020-00202-0000	PLATE: SWITCH
	E100-00800-0305	CAPACITOR: .05MF 12/16V
	A360-00244-0000	SWITCH & DIODE ASSY. (INCLUDES FOLLOWING 2 ITEMS)
	A360-00059-0000	SWITCH ASSY.
	103E-00002-0005	IN4148 20V 10 MA DIODE
8	0360-00926-0000	WIRE-FORM (SPINNER & GATE ASSY.)

EIGHT BALL CHAMP - PLAYFIELD ASSEMBLY - REAR PARTS LIST, (CONT'D.)

AB38-00004-0000

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
9	A360-00245-0000	SWITCH & DIODE ASSY. (SPINNER & GATE ASSY.)
	0020-00202-0000	PLATE: SWITCH
	A360-00058-0000	SWITCH ASSY.
	103E-00002-0000	1N4148 20V 10 MA DIODE
10	A967-00053-0000	THUMPER BUMPER ASSY. (2 REQ'D.)
11	0017-00103-0094	NUT: 8-32 LOCKING (2 REQ'D.)
12	0017-00103-0098	TEENUT: 8-32 (2 REQ'D.)
13	0017-00103-0100	TEENUT: 6-32 (10 REQ'D.)
14	AB38-00023-0100	DROP TARGET ASSY. - LEFT HAND SINGLE "E"
15	AB38-00023-0200	DROP TARGET ASSY. - LEFT HAND SINGLE "I"
16	AB38-00023-0300	DROP TARGET ASSY. - LEFT HAND SINGLE "G"
17	AB38-00023-0400	DROP TARGET ASSY. - LEFT HAND SINGLE "H"
18	AB38-00023-0500	DROP TARGET ASSY. - LEFT HAND SINGLE "T"
19	A365-00069-0100	FLIPPER UNIT ASSY. - SINGLE SWITCH RIGHT
20	A365-00069-0200	FLIPPER UNIT ASSY. - SINGLE SWITCH LEFT
21	A365-00070-0100	FLIPPER UNIT ASSY. - DOUBLE SWITCH RIGHT
22	A360-00216-0000	WIRE ACTUATOR ASSY.: ROLLOVER LANES (2 LOWER RIGHT) (2 REQ'D.)
	0360-00134-0000	BRACKET: ROLLOVER-WIRE - RIGHT
	0360-00930-0200	WIRE-FORM: ROLLOVER-RIGHT
23	A967-00067-0000	SWITCH & DIODE ASSEMBLY (LOWER 4 ROLLOVER LANES) (4 REQ'D.)
	A360-00065-0000	SWITCH ASSY.
	0020-00202-0000	PLATE: SWITCH
	103E-00002-0005	1N4148 20V 10MA DIODE
24	A967-00059-0000	SLINGSHOT KICKER ASSEMBLY: LEFT & RIGHT (2 REQ'D.)
25	A360-00239-0000	SWITCH & DIODE ASSY. (LEFT & RIGHT SLINGSHOTS & REBOUND) 5 REQ'D.
	103E-00002-0005	1N4148 20V 10MA DIODE

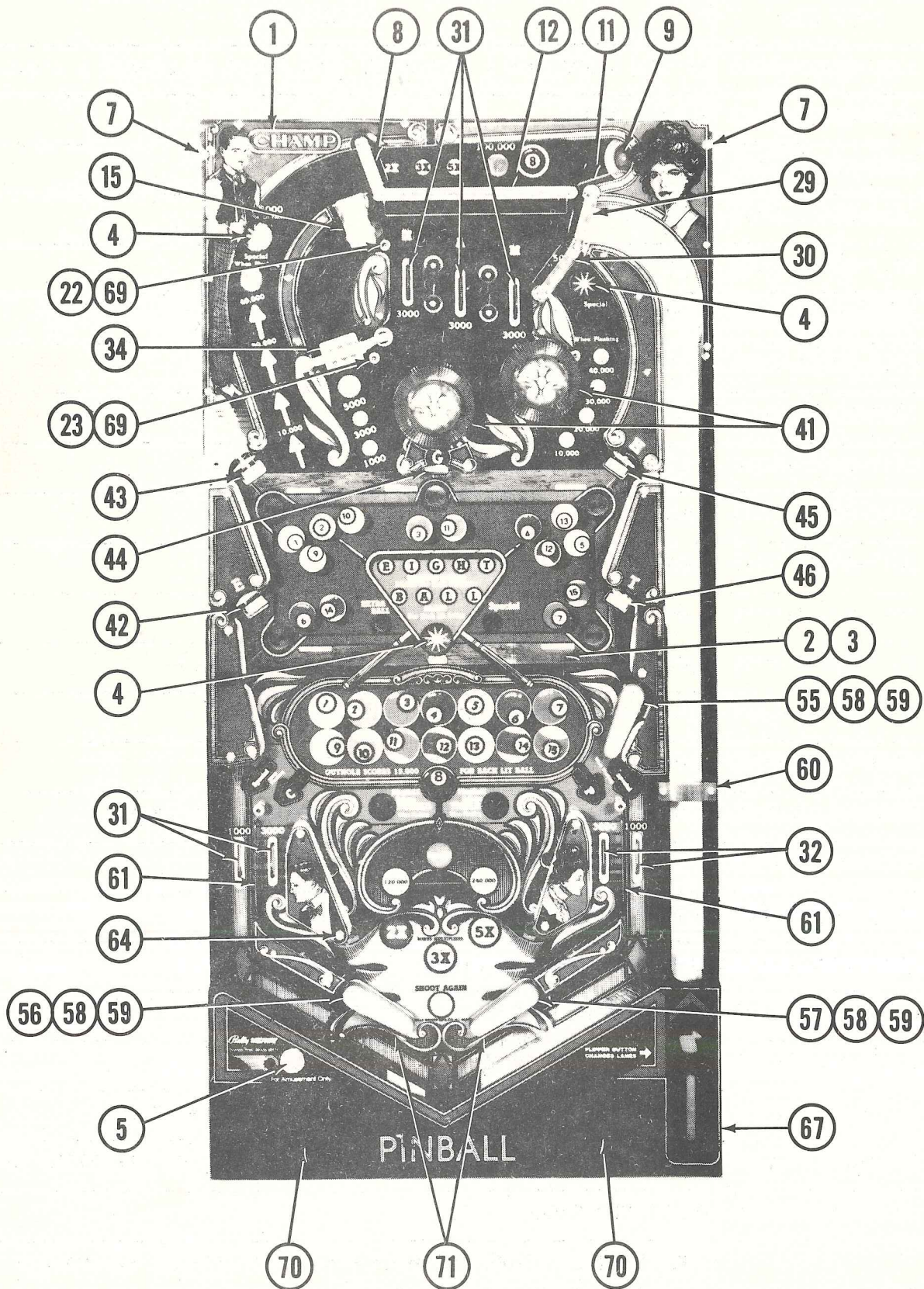
EIGHT BALL CHAMP - PLAYFIELD ASSEMBLY - REAR PARTS LIST, (CONT'D.)

AB38-00004-0000

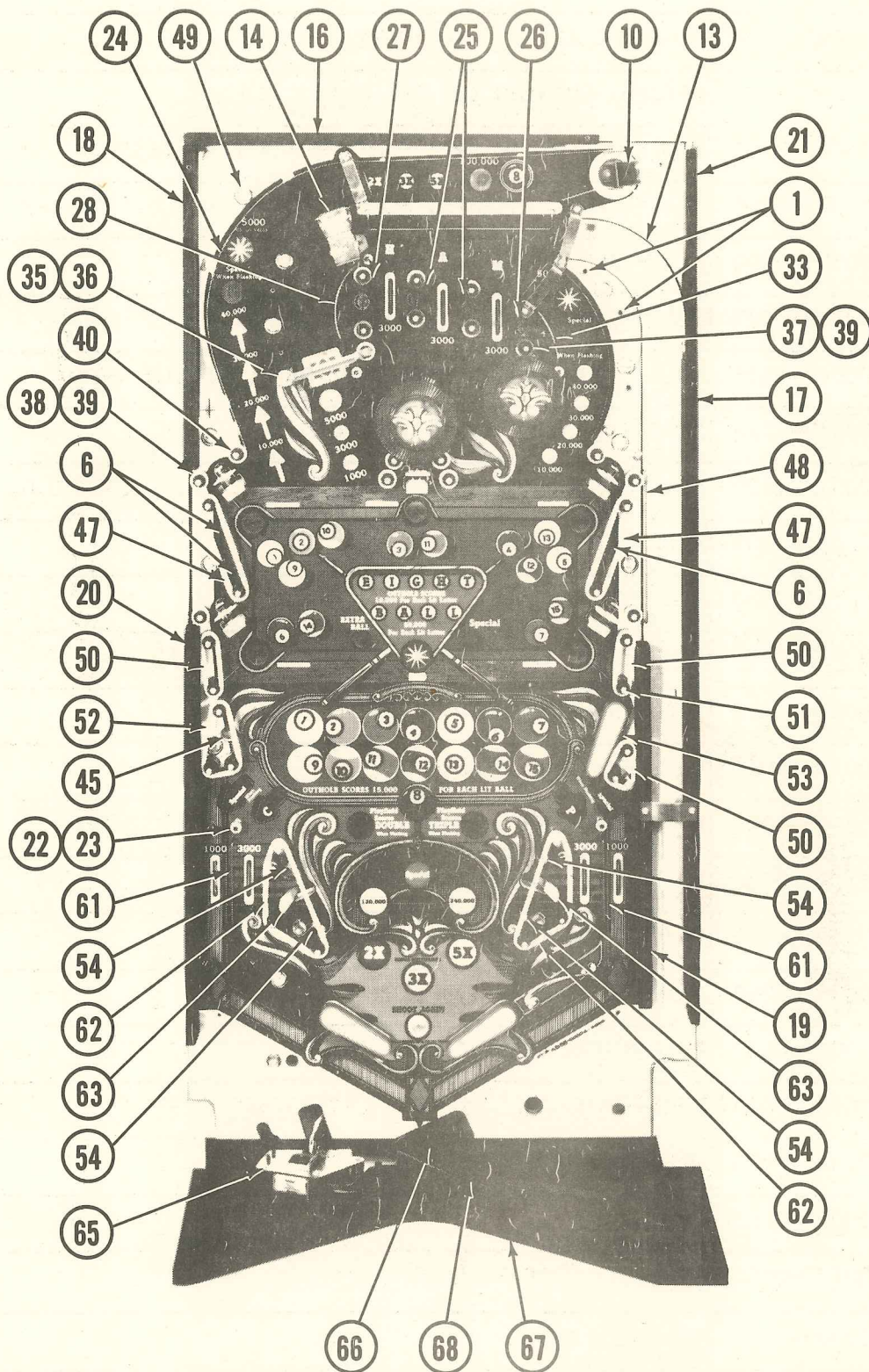
ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
	A360-00230-0000	SWITCH & BRACKET - SLINGSHOT (INCLUDING FOLLOWING 3 ITEMS)
	A360-00069-0000	SWITCH ASSY.
	0020-00202-0000	PLATE: SWITCH
	0360-00103-0000	BRACKET
26	0017-00031-0052	LAMP SOCKET ASSEMBLY: W/DIODE (5 REQ'D.)
	103E-00002-0003	IN4004 400V 1A DIODE
27	0017-00031-0053	LAMP SOCKET ASSEMBLY: W/DIODE
	103E-00002-0003	IN4004 400V 1A DIODE
28	0017-00031-0054	LAMP SOCKET ASSEMBLY: W/DIODE (74 REQ'D.)
	103E-00031-0003	IN4004 400V 1A DIODE
29	0017-00031-0055	LAMP SOCKET ASSEMBLY: W/O DIODE (3 REQ'D.)
30	0017-00031-0056	LAMP SOCKET ASSEMBLY: W/O DIODE (2 REQ'D.)
31	0017-00031-0058	LAMP SOCKET ASSEMBLY: W/O DIODE (15 REQ'D.)
*	0017-00003-0501	LAMP: WEDGE BASE, 6.3V, #555 (100 REQ'D.)
32	AB38-00025-0000	BOTTOM ARCH ASSY. (INCLUDES ITEM 33)
33	AB38-00024-0000	SWITCH, DIODE & BRACKET ASSY. (BOTTOM ARCH ASSY.)
	0017-00005-0183	SWITCH: BALL RETURN
	0614-00102-0000	BRACKET: BALL KICKOUT SWITCH
	103E-00002-0015	IN4004 GP 400V 1A DIODE
34	0720-00001-0000	FUSE - CLIP ASSEMBLY: 1 POSITION
35	0017-00031-0103	FUSE: MDL 3AG 1A 250V S-B
36	0360-00114-00XF	PLAYFIELD SUPPORT (NOT PART OF PLAYFIELD ASSY.)
37	0360-00947-0000	MOLDING: FOAM 2" X 3/4" X 1/4" (NOT PART OF PLAYFIELD ASSY.)
38	AB38-00005-0000	PLAYFIELD CABLE
*		NOT PART OF ABOVE ASSEMBLY & MUST BE ORDERED SEPARATELY

EIGHT BALL CHAMP - PLAYFIELD ASSEMBLY - FRONT AB38-00004-0000



EIGHT BALL CHAMP - PLAYFIELD ASSEMBLY - FRONT
(WITHOUT SCREENED PLASTICS & ACORN NUTS)
AB38-00004-0000



EIGHT BALL CHAMP PLAYFIELD ASSEMBLY - FRONT PARTS LIST

AB38-00004-0000

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	AB38-00012-00XF	SCREENED PLASTICS SET, D-CUT, W/BUSHINGS
	0B38-00090-00XF	SCREENED & D-CUT BUTYRATE
	0967-00710-00XF	SPACER: BUSHING (23 REQ'D.)
2	0B38-00901-0000	PLAYFIELD MYLAR (NOT PART OF PLAYFIELD ASSY.)
	AB38-00501-00XF	PLAYFIELD & INSERTS, SCREENED & PIERCED (INCLUDES ITEMS 3 THRU 4)
3	AB38-00501-0000	PLAYFIELD W/ROUTING ONLY
4	0017-00042-0405	BUTTON: ROLLOVER - WHITE (3 REQ'D.)
5	0017-00042-0336	HOLE PLUG - NYLON (NOT PART OF PLAYFIELD ASSY.)
6	0017-00042-0348	SPACER: 1.095" NYLON (3 REQ'D.)
7	0012-00010-1400	BUSHING: GRAY PVDC .916" L, .195" I.D. & .36" O.D. (3 REQ'D.)
8	AB38-00033-0000	BALL GATE & WIRE ASSY.
	0360-00131-0000	BRACKET: GATE
	0391-00913-0000	WIRE-FORM: GATE L=1-9/32"
9	AA44-00034-0000	EJECT HOLE (SAUCER) ASSY.
10	0360-00147-0000	BRACKET: BALL STOP
11	0B38-00905-0000	WIRE-FORM: BALL GUIDE
12	AB39-00021-0000	BALL GATE & WIRE ASSY.
	0B38-00101-0000	BRACKET: GATE
	0B38-00906-0000	WIRE-FORM: GATE
13	AB38-00017-0000	BALL GUIDE ASSY.
14	0B38-00902-0000	WIRE-FORM: BALL GUIDE L=1-43/64"
15	A360-00022-0000	BALL GATE ASSY. - LEFT
	0011-00002-0900	ROD
	0360-00179-0000	BRACKET: GATE-BALL
	0360-00304-0000	BRACKET: GATE
16	0B38-000502-0000	RAIL: TOP

EIGHT BALL CHAMP PLAYFIELD ASSEMBLY - FRONT PARTS LIST (CON'T.)

AB38-00004-0000

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
17	0B38-00503-0000	RAIL: SIDE-RIGHT (WOOD)
18	0B38-00504-0000	RAIL: SIDE-UPPER LEFT (WOOD)
19	0B38-00505-0000	RAIL: INSIDE-RIGHT (WOOD)
20	0B38-00507-0000	RAIL: LOWER-LEFT (WOOD)
21	0B38-00508-0000	RAIL: TOP-RIGHT
22	0360-00732-00XF	MINI-POST: BUMPER 7 X 10 (WOOD SCREW) (4 REQ'D.)
23	0017-00041-0633	BUMPER: WHITE, RUBBER (5 REQ'D.)
24	AB38-00022-0000	BALL GUIDE ASSY.
25	0017-00042-0330	GUIDE RAIL: 1-1/2" - RED PLASTIC (2 REQ'D.)
26	0017-00042-0527	GUIDE RAIL: 1-1/2" - RED PLASTIC
27	0017-00042-0546	GUIDE RAIL: 2-1/8" - RED PLASTIC
28	0B38-00903-0000	WIRE-FORM: BALL GUIDE L=2-31/32"
29	A391-00030-0000	BALL GATE & WIRE ASSY.
	0360-00131-0000	BRACKET: GATE
	0391-00917-0000	WIRE-FORM: GATE L=1-9/32"
30	A967-00058-0000	BALL GATE & WIRE ASSY.
31	A331-00042-0000	WIRE ACTUATOR ASSY.: ROLLOVER LANES (3 TOP & 2 LOWER LEFT)
		(5 REQ'D.)
	0360-00135-0000	BRACKET: ROLLOVER WIRE - LEFT
	0360-00929-0200	WIRE-FORM: ROLLOVER - LEFT
32	A360-00216-0000	WIRE ACTUATOR ASSY.: ROLLOVER LANES (2 LOWER RIGHT) (2 REQ'D.)
	0360-00134-0000	BRACKET: ROLLOVER WIRE - RIGHT
	0360-00930-0000	WIRE-FORM: ROLLOVER - RIGHT
33	0B38-00904-0000	WIRE-FORM: BALL GUIDE L=2-7/32"
34	AB38-00014-0000	SPINNER & GATE ASSY.
	AB38-00015-00XF	SPINNER & WIRE/8-BALL CHAMP

EIGHT BALL CHAMP PLAYFIELD ASSEMBLY - FRONT PARTS LIST (CON'T.)

AB38-00004-0000

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
	0360-00926-0000	WIRE-FORM: SPINNER TARGET
	0627-00148-0000	BRACKET: TARGET HOLDER
35	0360-00744-00XF	POST: BUMPER (NICKEL) (11 REQ'D.)
36	0017-00041-0641	BUMPER: RUBBER, WHITE
37	0017-00042-0588	POST: L=1" - RED PLASTIC (10 REQ'D.)
38	0017-00042-0596	POST: L=1-3/16" - RED PLASTIC (26 REQ'D.)
39	0017-00041-0637	BUMPER: RUBBER, WHITE (19 REQ'D.)
40	0967-00707-01XF	STUD: HEX COLLAR 6-32 X 11/16" (6 REQ'D.)
41	A967-00053-0000	THUMPER BUMPER ASSY. (2 REQ'D.)
*	AB38-00011-0000	CAP & TAPE ASSEMBLY.: THUMPER BUMPER (2 REQ'D.) (NOT PART OF
		PLAYFIELD ASSY.)
*	0017-00042-0566	COLLAR: THUMPER BUMPER (2 REQ'D.) (NOT PART OF PLAYFIELD ASSY.)
*	0017-00042-0414	LOCKING RING: THUMPER BUMPER (2 REQ'D.) (NOT PART OF PLAYFIELD
		ASSY.)
*	0B38-00911-0000	MYLAR PROTECTIVE SHIELD: THUMPER BUMPER (2 REQ'D.)
42	AB38-00023-0100	DROP TARGET ASSY. - LEFT HAND SINGLE "E"
43	AB38-00023-0200	DROP TARGET ASSY. - LEFT HAND SINGLE "I"
44	AB38-00023-0300	DROP TARGET ASSY. - LEFT HAND SINGLE "G"
45	AB38-00023-0400	DROP TARGET ASSY. - LEFT HAND SINGLE "H"
46	AB38-00023-0500	DROP TARGET ASSY. - LEFT HAND SINGLE "T"
47	0017-00041-0645	BUMPER: I.D. = 2" RUBBER, WHITE (2 REQ'D.)
48	0360-00175-0107	WIRE-FORM: BALL GUIDE L=6-1/16"
49	0017-00003-0501	LAMP: WEDGE BASE, 6.3V, #555 (100 REQ'D.)
50	0017-00041-0643	BUMPER: I.D. = 1" RUBBER (3 REQ'D.)
51	0360-00738-01XF	STUD: HEX COLLAR 6 X 1-11/16" (14 REQ'D.)
*		NOT PART OF ABOVE ASSEMBLY & MUST BE ORDERED SEPARATELY

EIGHT BALL CHAMP PLAYFIELD ASSEMBLY - FRONT PARTS LIST (CON'T.)

AB38-00004-0000

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
52	0017-00041-0644	BUMPER: I.D. = 1-1/2" RUBBER
53	0360-00175-5600	WIRE-FORM: BALL GUIDE L=2"
54	A360-00239-0000	SWITCH & DIODE ASSY.: LEFT & RIGHT SLINGSHOTS & REBOUND (5 REQ'D.)
	103E-00002-0005	IN4148 20V 10MA DIODE
	A360-00230-0000	SWITCH & BRKT. - SLINGSHOT (INCLUDES FOLLOWING 3 ITEMS)
	A360-00069-0000	SWITCH ASSY.
	0020-00202-0000	SWITCH PLATE
	0360-00103-0000	BRACKET
55	A365-00069-0100	FLIPPER UNIT ASSY. - SINGLE SWITCH RIGHT
56	A365-00069-0200	FLIPPER UNIT ASSY. - SINGLE SWITCH LEFT
57	A365-00070-0100	FLIPPER UNIT ASSY. - DOUBLE SWITCH RIGHT
58	A967-00031-0000	MOLDED FLIPPER ASSY. - WHITE (3 REQ'D.)
59	0017-00041-0682	BUMPER: FLIPPER 3" RED RUBBER (3 REQ'D.)
60	0967-00107-00XF	HOOD: SHOOTER LANE
61	0360-00175-1800	WIRE-FORM: BALL GUIDE L=3-3/8" (2 REQ'D.)
62	0017-00041-0646	BUMPER: L=2-1/2" RUBBER (2 REQ'D.)
63	A967-00059-0000	SLINGSHOT KICKER ASSY.: LEFT & RIGHT (2 REQ'D.)
64	0017-00009-0302	NUT: ACORN (NYLON) (19 REQ'D.)
	AB38-00025-0000	BOTTOM ARCH ASSY. (INCLUDES ITEMS 65 THRU 68)
65	A360-00234-0000	TOP MOUNTED KICKER (BALL RETURN) ASSY.
66	AB38-00024-0000	SWITCH, BRKT. & DIODE ASSY. (NOT SHOWN)
67	0365-00955-0100	BOTTOM ARCH: 8-BALL CHAMP - PLASTIC
68	0614-00905-0300	BALL RUNWAY: PLASTIC N/SCREENED
69	0967-00700-00XF	MINI-POST: BUMPER 10-32 X 12
70	0360-00923-0000	COVER: SCORE CARD (2 REQ'D.) (NOT PART OF PLAYFIELD ASSY.)
71	0360-00175-5300	WIRE-FORM: BALL GUIDE L = 2-3/8" (2 REQ'D.)

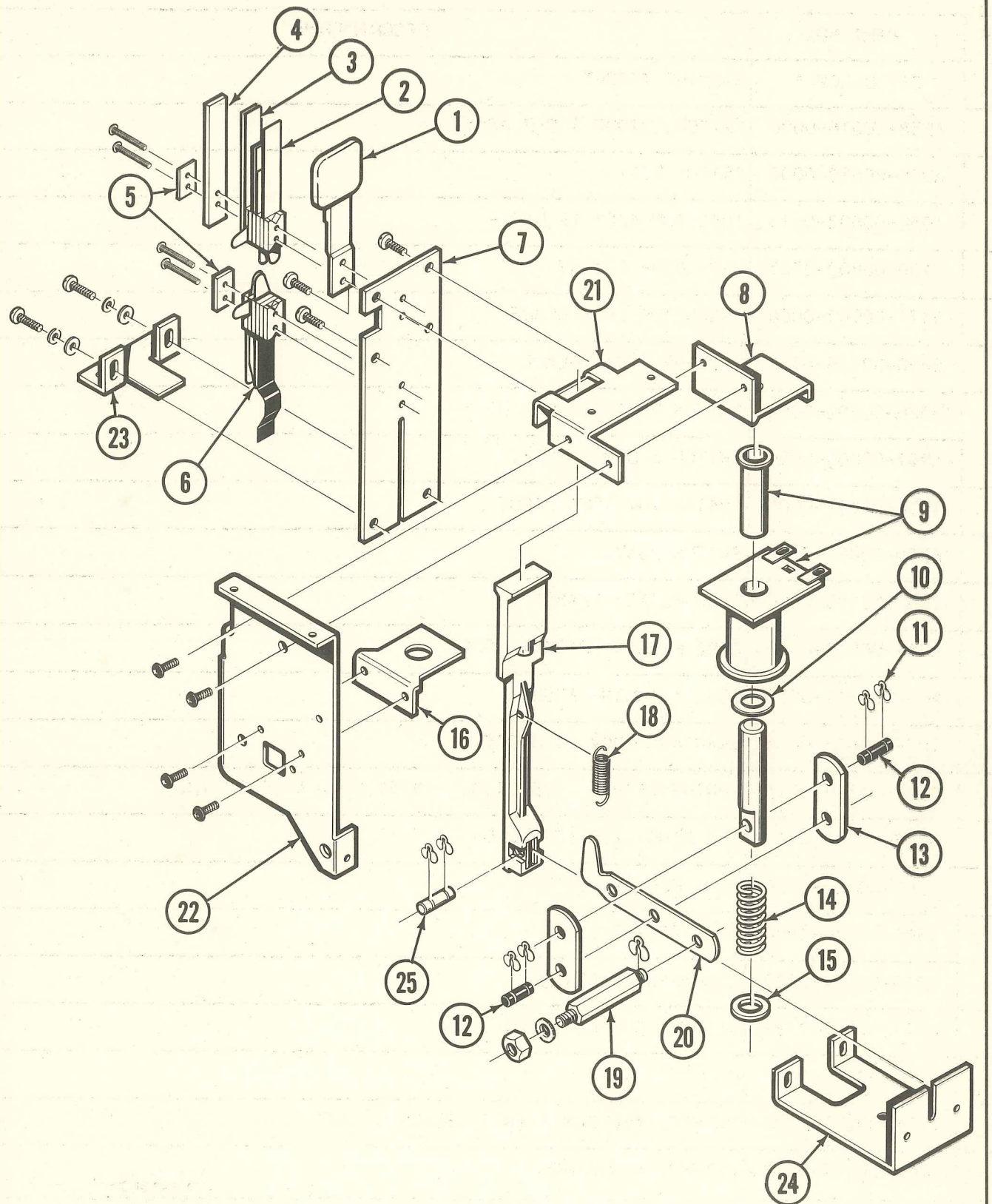
EIGHT BALL CHAMP PLAYFIELD ASSEMBLY - FRONT PARTS LIST (CON'T.)

AB38-00004-0000

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
		ADDITIONAL PARTS LIST (NOT PART OF PLAYFIELD ASSEMBLY)
	0017-00091-0071	SHIELD: PROTECTIVE - MYLAR (SLINGSHOT AREAS) (2 REQ'D.)
	0017-00009-0546	BALL: 1-1/16" DIA. - STEEL

DROP TARGET: LEFT HAND SINGLE: "E", "I", "G", "H", "T"
PART NO. AB38-00023-0100, 0200, 0300, 0400 & 0500



DROP TARGET: LEFT HAND SINGLE: "E", "I", "G", "H", "T" - PARTS LIST
PART NO. AB38-00023-0100, 0200, 0300, 0400, & 0500
ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	SEE BELOW *	BACK-UP TARGET
2	AB38-00016-0000	SWITCH, DIODE & CAP ASSY.
	AB38-00020-0000	SWITCH ASSY.
	103E-00002-0015	IN4004GP 400V 1A DIODE
	E100-00800-0305	CAP .05MF 12/16V
3	0371-00909-0000	INSULATOR LEAF BLADE
4	0090-00126-01XF	BACK-UP STRIP BLADE
5	0020-00202-0000	SWITCH PLATE (2 REQ'D)
6	A967-00066-0000	SWITCH & DIODE ASSY.
	103E-00002-0005	IN4148 20V 10MA DIODE
	A360-00062-0000	SWITCH ASSY.
7	0B38-00100-0000	SIDE PLATE: FRAME
8	A967-00012-0000	CORE PLUG & BRACKET ASSY.
9	A360-00211-0000	COIL & TUBING ASSY.
	103E-00002-0015	IN4004GP 400V 1A DIODE
10	0017-00104-0073	SPRING WASHER .515" I.D., .875" O.D. & .013" TH.
11	0017-00100-0117	KL1 RING .250 (7 REQ'D)
12	0360-00721-00XF	LINK PIN (2 REQ'D)
13	0360-00118-0000	LINK (2 REQ'D)
14	0010-00274-0189	COMPRESSION SPRING
15	0017-00042-0428	WASHER: CUPPED NYLON
16	0967-00105-00XF	COIL BRACKET
17	AB38-00018-0000	TARGET (YELLOW) & TAPE (BLACK): RACK
18	0010-00279-0310	EXTENSION SPRING
19	0011-00006-00XF	LINK STUD

DROP TARGET: LEFT HAND SINGLE: "E", "I", "G", "H", "T" - PARTS LIST (CON'T.)
PART NO. AB38-00023-0100, 0200, 0300, 0400, & 0500
ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
20	0967-00109-00XF	LINK
21	0967-00144-20XF	LATCH PLATE
22	0967-00124-00XF	END PLATE
23	0967-00113-00XF	BOTTOM PLATE: ADJUSTABLE
24	0967-00106-00XF	BOTTOM PLATE
25	0360-00720-00XF	PIN: TARGET PIVOT
* THE "BACK-UP TARGET" PART CHANGES WITH EACH OF THE DROP TARGET ASSEMBLIES AS FOLLOWS:		

DROP TARGET: LEFT HAND SINGLE: "E" (PART #AB38-00023-0100)

ITEM	PART NO.	DESCRIPTION
1	AB38-00019-0100	BACK-UP TARGET (WHITE) & TAPE (BLACK) "E"

DROP TARGET: LEFT HAND SINGLE: "I" (PART #AB38-00023-0200)

ITEM	PART NO.	DESCRIPTION
1	AB38-00019-0200	BACK-UP TARGET (WHITE) & TAPE (BLACK) "I"

DROP TARGET: LEFT HAND SINGLE: "G" (PART #AB38-00023-0300)

ITEM	PART NO.	DESCRIPTION
1	AB38-00019-0300	BACK-UP TARGET (WHITE) & TAPE (BLACK) "G"

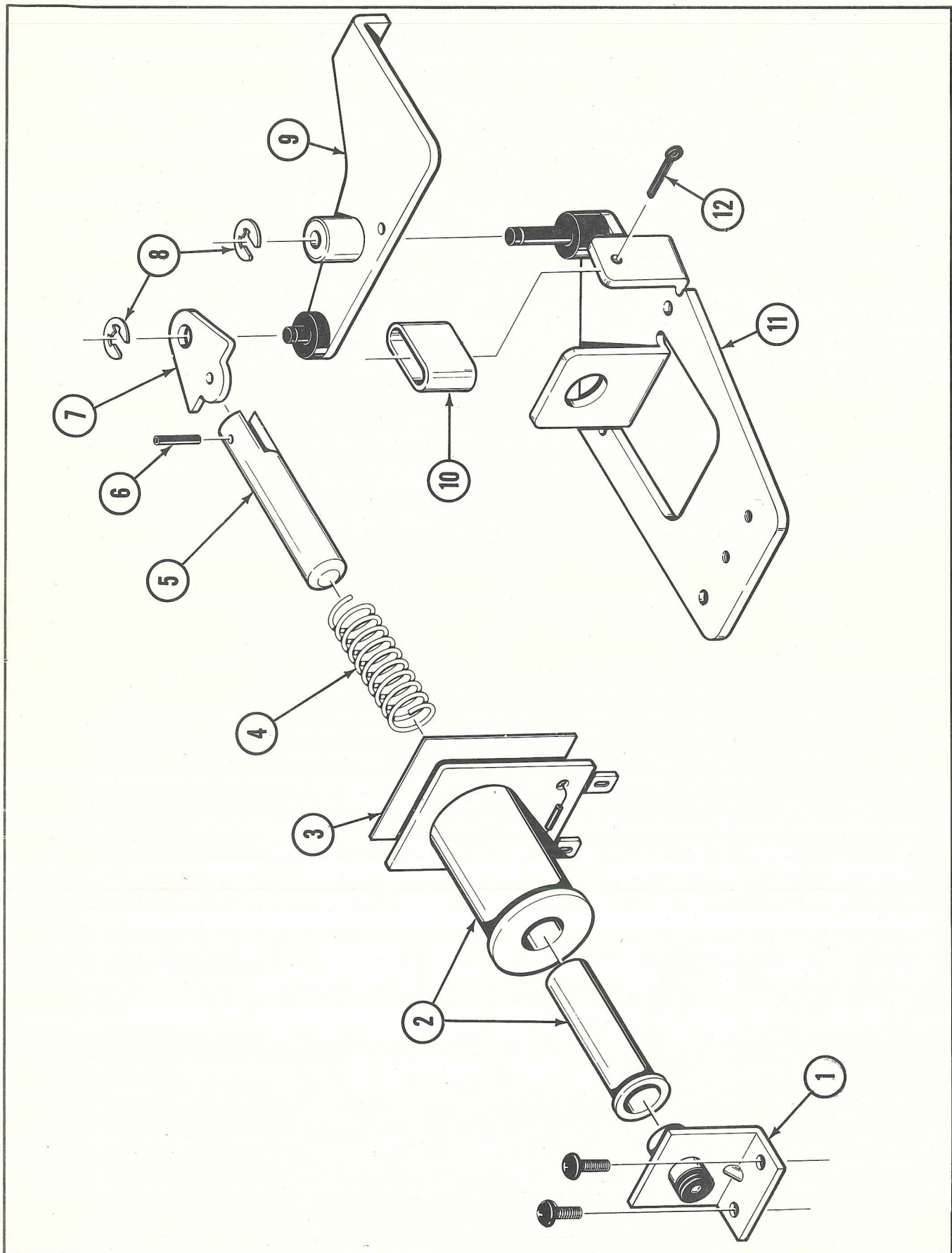
DROP TARGET: LEFT HAND SINGLE: "H" (PART #AB38-00023-0400)

ITEM	PART NO.	DESCRIPTION
1	AB38-00019-0400	BACK-UP TARGET (WHITE) & TAPE (BLACK) "H"

DROP TARGET: LEFT HAND SINGLE: "T" (PART #AB38-00023-0500)

ITEM	PART NO.	DESCRIPTION
1	AB38-00019-0500	BACK-UP TARGET (WHITE) & TAPE (BLACK) "T"

TOP MOUNTED KICKER (BALL RETURN) ASSEMBLY
A360-00234-0000



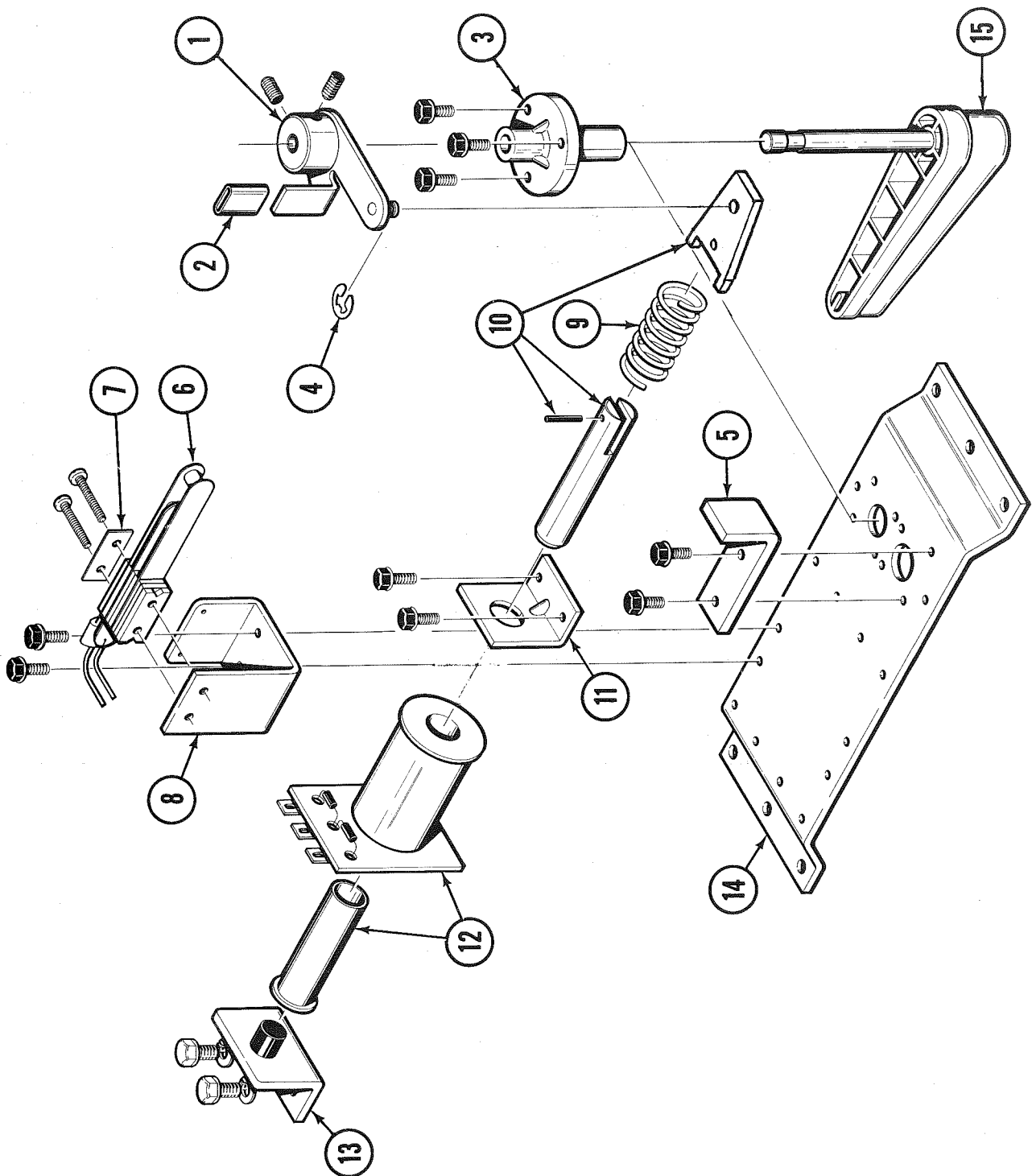
TOP MOUNTED KICKER (BALL RETURN) ASSEMBLY - PARTS LIST

PART NO. A360-00234-0000

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	A360-00013-0000	CORE PLUG ASSY.
2	A360-00044-0000	COIL & TUBING ASSY.
	103E-00002-0015	IN4004GP 400V 1A DIODE
3	0360-00901-0000	FISHPAPER INSULATOR
4	0010-00274-0189	COMPRESSION SPRING
	A360-00278-0000	PLUNGER & LINK ASSY. (ITEMS 5, 6, & 7)
5	0360-00735-00XF	PLUNGER
6	0017-00007-0073	ROLL PIN
7	0360-00941-0000	KICKER LINK
8	0017-00100-0116	RING RER .218" DIA, (2 REQ'D)
9	A360-00036-0000	KICKER ARM ASSY. (BALL RETURN)
10	0017-00042-0346	STRIKER RING
11	A360-00037-0000	BASE PLATE ASSY.
12	0017-00007-0124	COTTER PIN

FLIPPER ASSEMBLY - SINGLE SWITCH RIGHT
A365-00069-0100



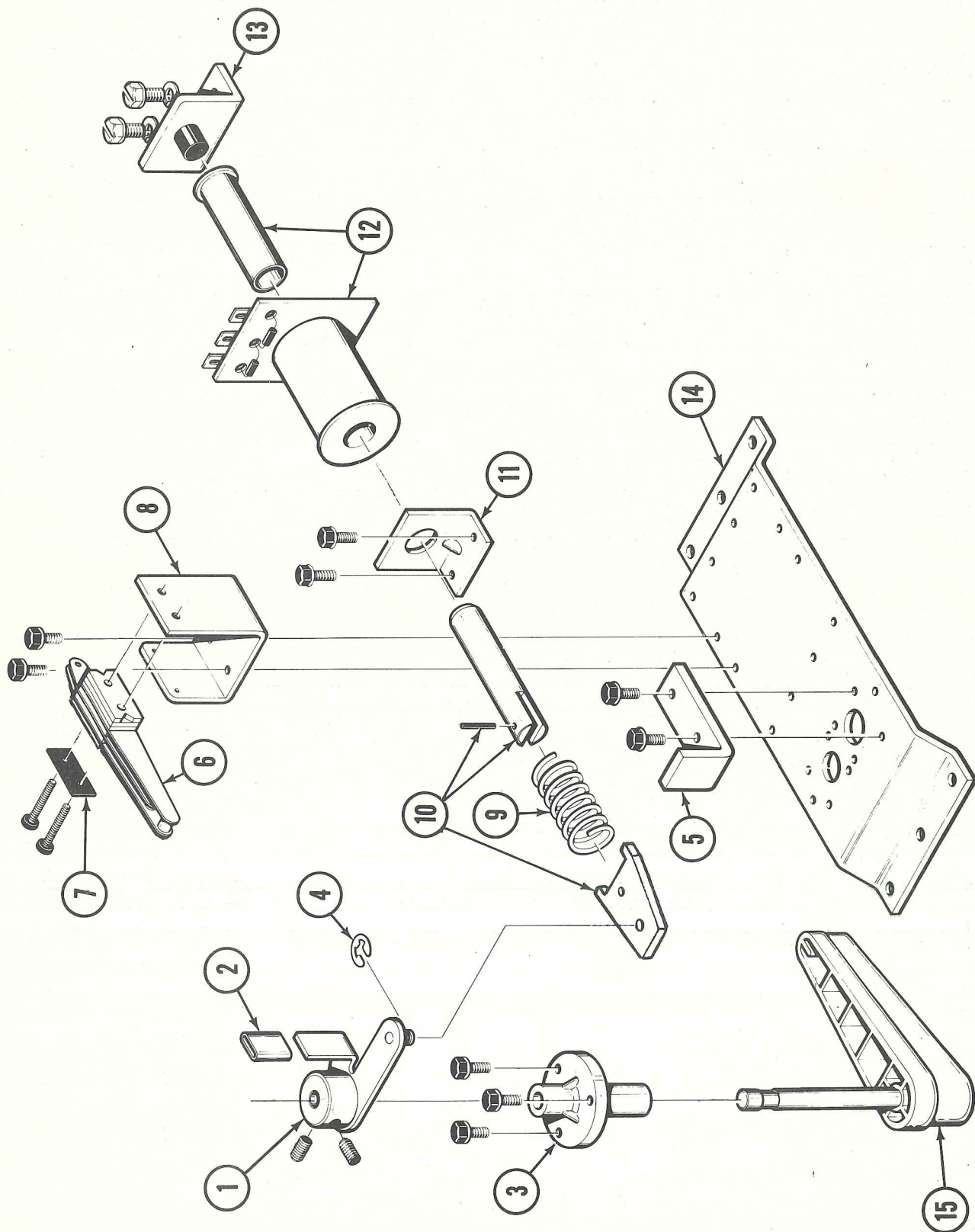
FLIPPER ASSEMBLY - SINGLE SWITCH RIGHT - PARTS LIST

PART NO. A365-00069-0100

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
	A365-00071-0100	LEVER ARM ASSY. (RIGHT) (ITEMS 1 & 2)
1	A370-00016-0100	LEVER ARM ASSY. (LEFT)
2	0360-00945-0000	TUBING: 5/16 X 1/2
3	0017-00042-0413	FLIPPER BEARING
4	0017-00100-0021	E-RING .219" DIA.
5	0370-00120-00XF	FLIPPER ARM BRACKET
6	A365-00045-0000	FLIPPER BREAK SWITCH ASSY.
7	0020-00202-0000	SWITCH PLATE
8	0365-00130-00XF	SWITCH BRACKET
9	0010-00274-0206	COMPRESSION SPRING
10	0606-00029-0000	PLUNGER & LINK ASSY.
11	0360-00318-00XF	COIL BRACKET
12	A365-00045-0000	COIL & TUBING ASSY.
	103E-00002-0015	IN4004GP 400V 1A DIODE
13	0365-00024-0000	CORE PLUG & BRACKET ASSEMBLY
14	0365-00101-00XF	FLIPPER MOUNTING BRACKET
15*	A967-00031-0000	MOLDED FLIPPER ASSEMBLY - WHITE
*	0017-00041-0682	BUMPER: FLIPPER 3" RED RUBBER
*		NOT PART OF ABOVE ASSEMBLY & MUST BE ORDERED SEPARATELY

FLIPPER ASSEMBLY - SINGLE SWITCH LEFT
A365-00069-0200



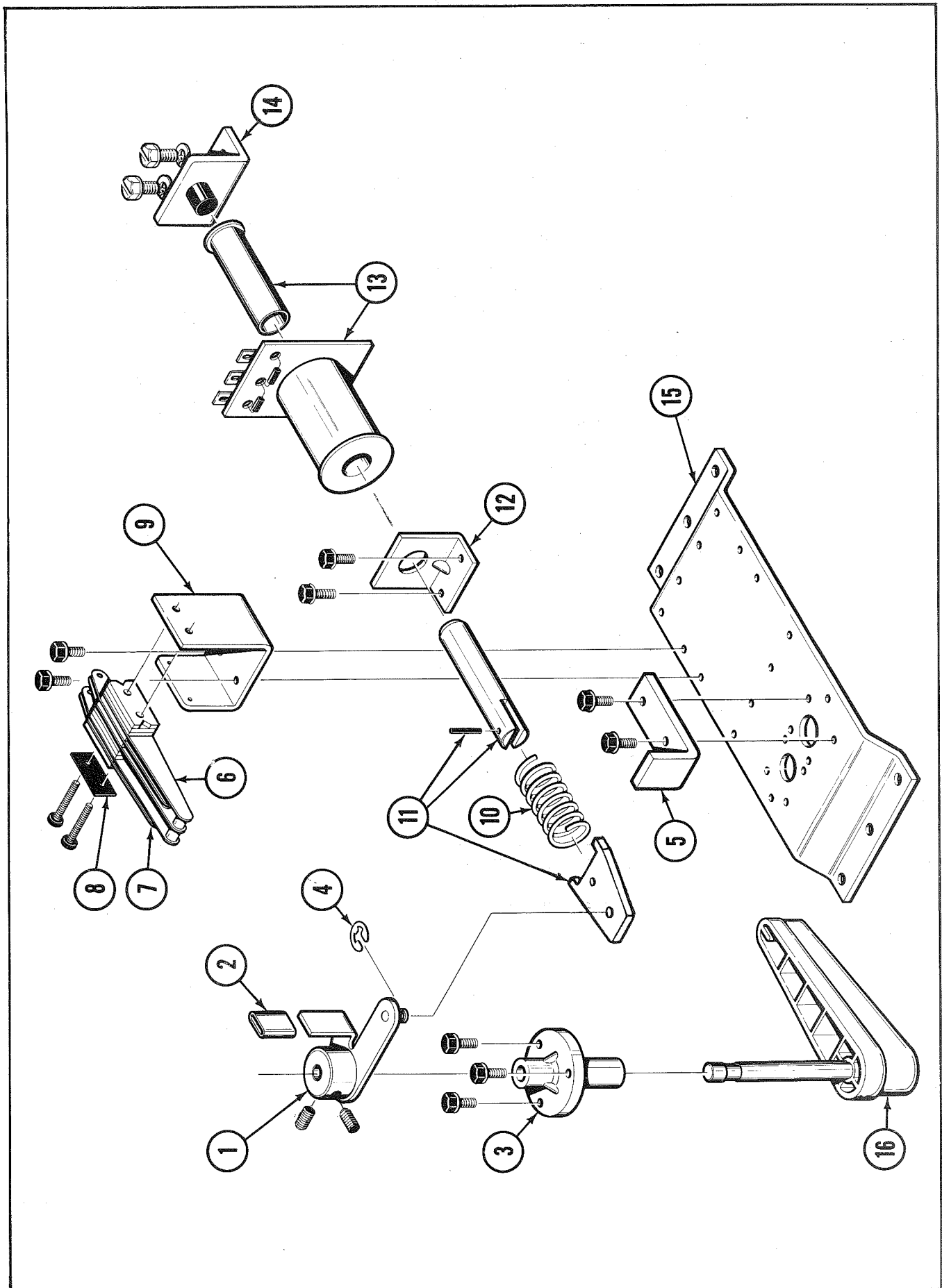
FLIPPER ASSEMBLY - SINGLE SWITCH LEFT - PARTS LIST

PART NO. A365-00069-0200

ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
	A365-00071-0200	LEVER ARM ASSY. (RIGHT) (ITEMS 1 & 2)
1	A365-00073-00XF	LEVER ARM ASSY. (LEFT)
2	0360-00945-0000	TUBING: 5/16 X 1/2
3	0017-00042-0413	FLIPPER BEARING
4	0017-00100-0021	E-RING .219" DIA.
5	0370-00120-00XF	FLIPPER ARM BRACKET
6	A365-00045-0000	FLIPPER BREAK SWITCH ASSY.
7	0020-00202-0000	SWITCH PLATE
8	0365-00130-00XF	SWITCH BRACKET
9	0010-00274-0206	COMPRESSION SPRING
10	0606-00029-0000	PLUNGER & LINK ASSY.
11	0360-00318-00XF	COIL BRACKET
12	A365-00045-0000	COIL & TUBING ASSY.
	103E-00002-0015	IN4004GP 400V 1A DIODE
13	0365-00024-0000	CORE PLUG & BRACKET ASSEMBLY
14	0365-00101-00XF	FLIPPER MOUNTING BRACKET
15*	A967-00031-0000	MOLDED FLIPPER ASSEMBLY - WHITE
*	0017-00041-0682	BUMPER: FLIPPER 3" RED RUBBER
*		NOT PART OF ABOVE ASSEMBLY & MUST BE ORDERED SEPARATELY

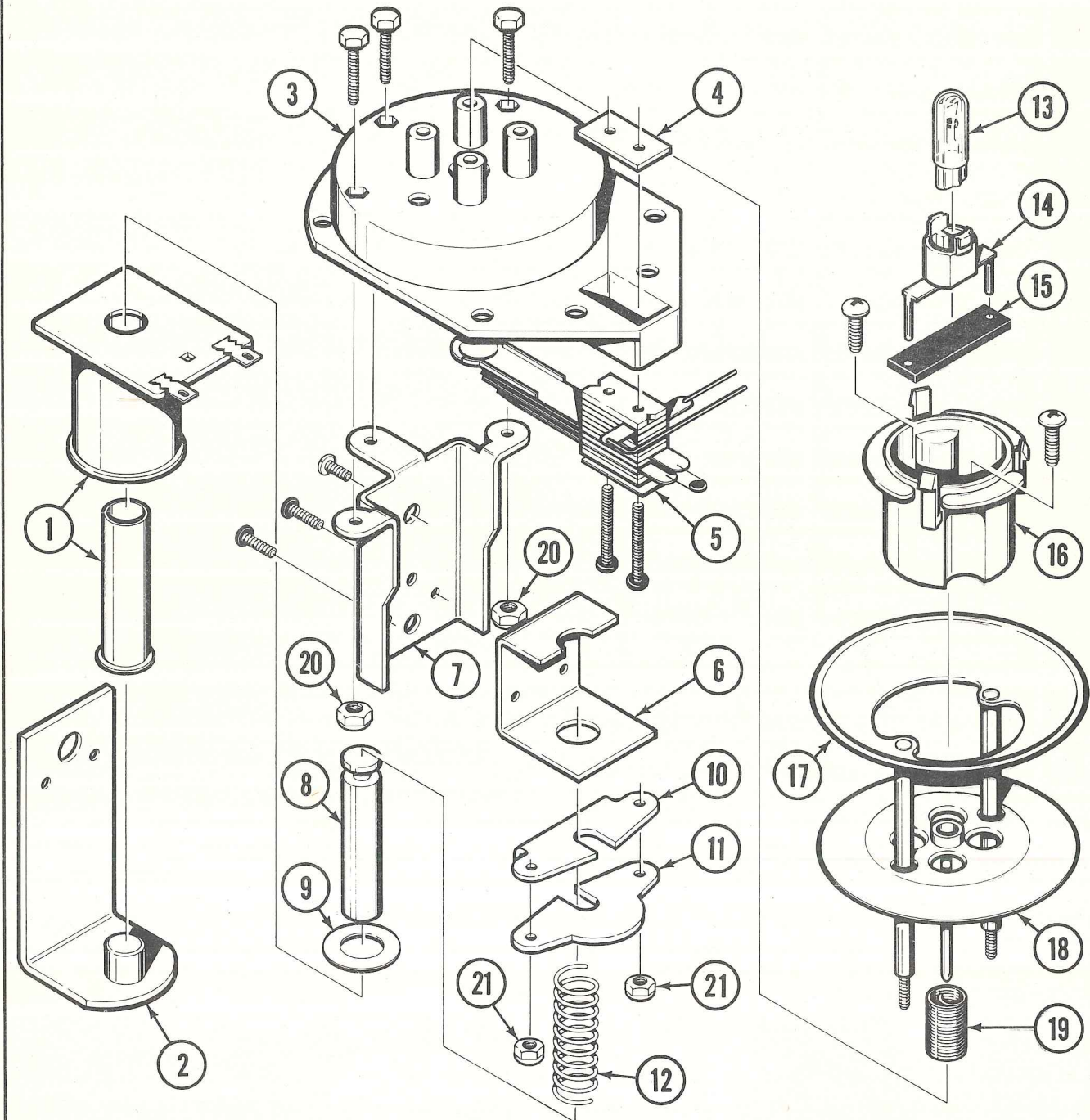
FLIPPER ASSEMBLY - DOUBLE SWITCH RIGHT
A365-00070-0100



FLIPPER ASSEMBLY - DOUBLE SWITCH RIGHT - PARTS LIST
PART NO. A365-00070-0100
ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
	A365-00071-0100	LEVER ARM ASSY. (RIGHT) (ITEMS 1 & 2)
1	A370-00016-0100	LEVER ARM ASSY. (LEFT)
2	0360-00945-0000	TUBING: 5/16 X 1/2
3	0017-00042-0413	FLIPPER BEARING
4	0017-00100-0021	E-RING .219" DIA.
5	0370-00120-00XF	FLIPPER ARM BRACKET
6	A365-00045-0000	FLIPPER BREAK SWITCH ASSY.
7	A365-00046-0000	FLIPPER MAKE SWITCH ASSY.
8	0020-00202-0000	SWITCH PLATE
9	0365-00130-00XF	SWITCH BRACKET
10	0010-00274-0206	COMPRESSION SPRING
11	0606-00029-0000	PLUNGER & LINK ASSY.
12	0360-00318-00XF	COIL BRACKET
13	A365-00045-0000	COIL & TUBING ASSY.
	103E-00002-0014	1N4004GP 400V 1A DIODE
14	0365-00024-0000	CORE PLUG & BRACKET ASSEMBLY
15	0365-00101-00XF	FLIPPER MOUNTING BRACKET
16*	A967-00031-0000	MOLDED FLIPPER ASSEMBLY - WHITE
*	0017-00041-0682	BUMPER: FLIPPER 3" RED RUBBER
*		NOT PART OF ABOVE ASSEMBLY & MUST BE ORDERED SEPARATELY

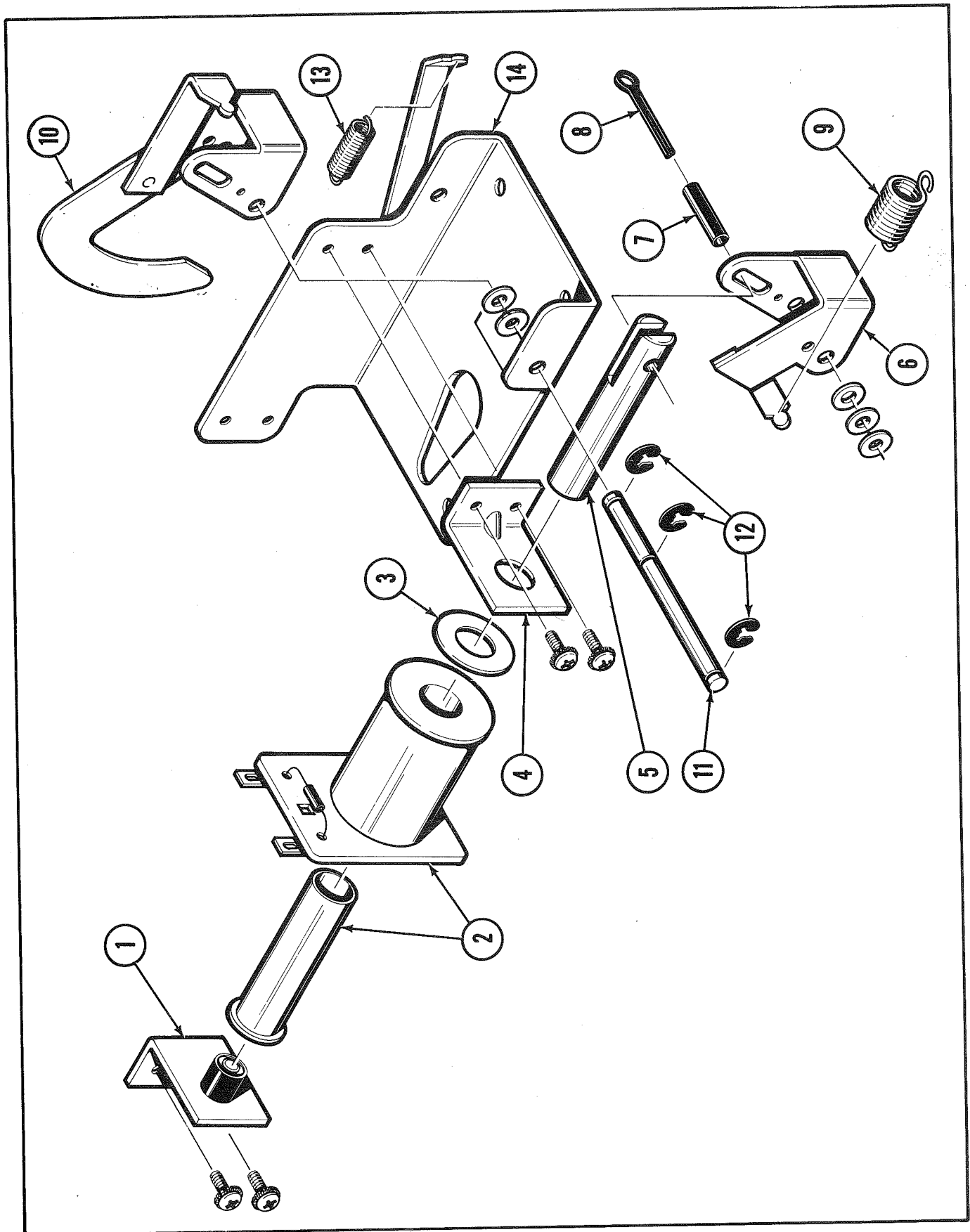
THUMPER BUMPER ASSEMBLY A967-00053-0000



THUMPER BUMPER ASSEMBLY - PARTS LIST
PART NO. A967-00053-0000
ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	A360-00044-0000	COIL & TUBING ASSY.
	103E-00002-0015	IN4004GP 400V 1A DIODE
2	A967-00010-0000	CORE PLUG ASSY.
3	0017-00042-0452	BASE: THUMPER BUMPER - WHITE
4	0020-00202-0000	SWITCH PLATE
5	A967-00074-0000	MAKE SWITCH ASSY. - THUMPER BUMPER
6	0967-00117-00XF	BRACKET - THUMPER BUMPER PLUNGER
7	0967-00129-00XF	MOUNTING BRACKET: THUMPER BUMPER
8	0967-00705-00XF	PLUNGER
9	0017-00104-0073	SPRING WASHER .515" I.D., .875" O.D. & .013" TH.
10	0967-00116-00XF	PLATE
11	0967-00904-0000	PLATE
12	0010-00274-0196	COMPRESSION SPRING
13	0017-00003-0501	LAMP, #555: WEDGE BASE
14	0017-00031-0060	SOCKET: LAMP (WEDGE BASE)
15	0090-00409-0000	PLATE
16	0017-00042-0460	BODY: THUMPER BUMPER - WHITE
17	A967-00013-0000	FLANGE & STUD ASSY.
18	0017-00042-0444	WAFER: THUMPER BUMPER - WHITE
19	0010-00274-0177	COMPRESSION SPRING
20	0017-00103-0041	NUT: 8-32 LOCKING (3 REQ'D.)
21	0017-00103-0052	NUT: 6-32 LOCKING (2 REQ'D.)

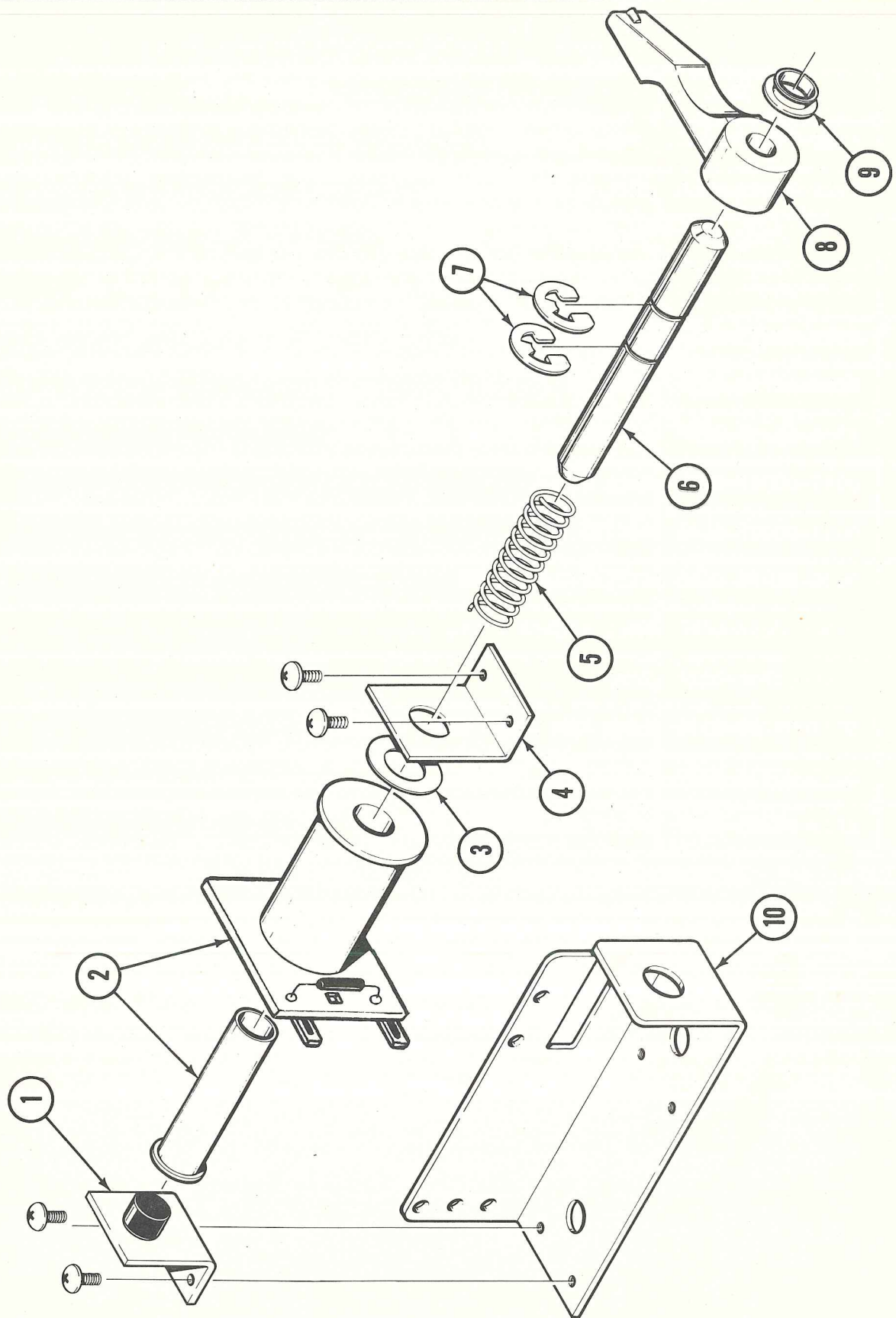
EJECT HOLE (SAUCER) ASSEMBLY
AA44-00034-0000



EJECT HOLE ASSEMBLY - PARTS LIST
PART NO. AA44-00034-0000
ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	A360-00012-0000	CORE PLUG ASSY.
2	A360-00211-0000	COIL & TUBING ASSY.
	103E-00002-0015	IN4004GP 400V 1A DIODE
3	0017-00104-0073	SPRING WASHER .515" I.D., .875" O.D. & .013" TH.
4	0360-00313-00XF	SOLENOID BRACKET
5	0360-00714-00XF	PLUNGER
6	A360-00018-00XF	BRACKET & SPRING HOOD ASSY.
7	0017-00007-0089	ROLL PIN
8	0017-00007-0043	COTTER PIN
9	0010-00270-0000	EXTENSION SPRING
10	A360-00019-00XF	BALL KICKER ASSY.
11	0360-00708-00XF	SHAFT
12	0017-00100-0110	RING RER .188" DIA. (3 REQ'D)
13	0010-00275-0230	EXTENSION SPRING
14	AA43-00033-00XF	MOUNTING BRACKET ASSY.

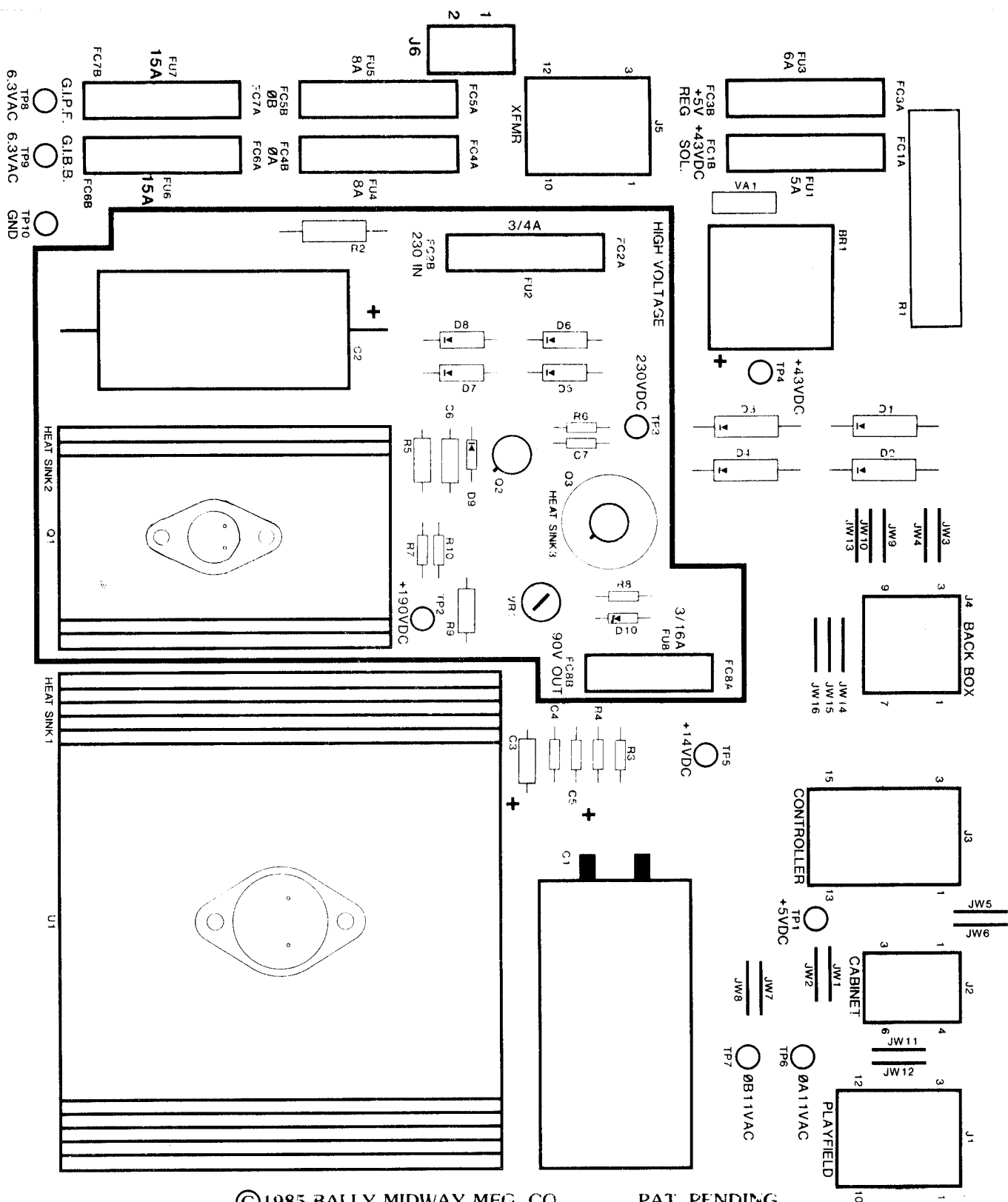
SLINGSHOT KICKER ASSEMBLY
A967-00059-0000



SLINGSHOT KICKER ASSY.
PART NO. A967-00059-0000
ORDER BY PART NUMBER ONLY

ITEM	PART NO.	DESCRIPTION
1	A967-00011-0000	CORE PLUG & BRACKET ASSY.
2	A967-00046-0000	COIL & TUBING ASSY.
	103E-00002-0015	IN4004GP 400V 1A DIODE
3	0017-00104-0073	SPRING WASHER .515" I.D., .875" O.D. & .013" TH.
4	0360-00318-00XF	COIL BRACKET
5	0010-00274-0212	COMPRESSION SPRING
6	0967-00701-00XF	PLUNGER
7	0017-00100-0115	RING RER .438" DIA. (2 REQ'D)
8	0967-00901-0000	KICKER-ARM: SLINGSHOT
9	0017-00042-0430	NYLINER: SNAP-IN, COIL
10	0967-00130-00XF	MOUNTING BRACKET: SLINGSHOT

SECTION 3
Component Layouts,
Schematics & Wiring Diagrams



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6803 PINBALL POWER MODULE

PAT. PENDING

A080-91785-C000

6803 PINBALL POWER MODULE
A084-91785-C000
M051-00C53-C001

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 1/4W 5%
R3 2.2 OHM 1/4W 5%
R4 100 OHM 1/2W 5%
R5 22K 1/2W 5%
R6 100K 1W 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 1N4004
D10 1N5275A ZENER
BR1 KBPC-35-02-W
P/O BR1 BRIDGE SPACER
Q1 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 LIST

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 MOD. P.C. BOARD

*** TWO FLIPPER GAMES ONLY - SEE SCHEMATIC**

6803 PINBALL POWER MODULE
A084-91785-C000
M051-00C53-C001

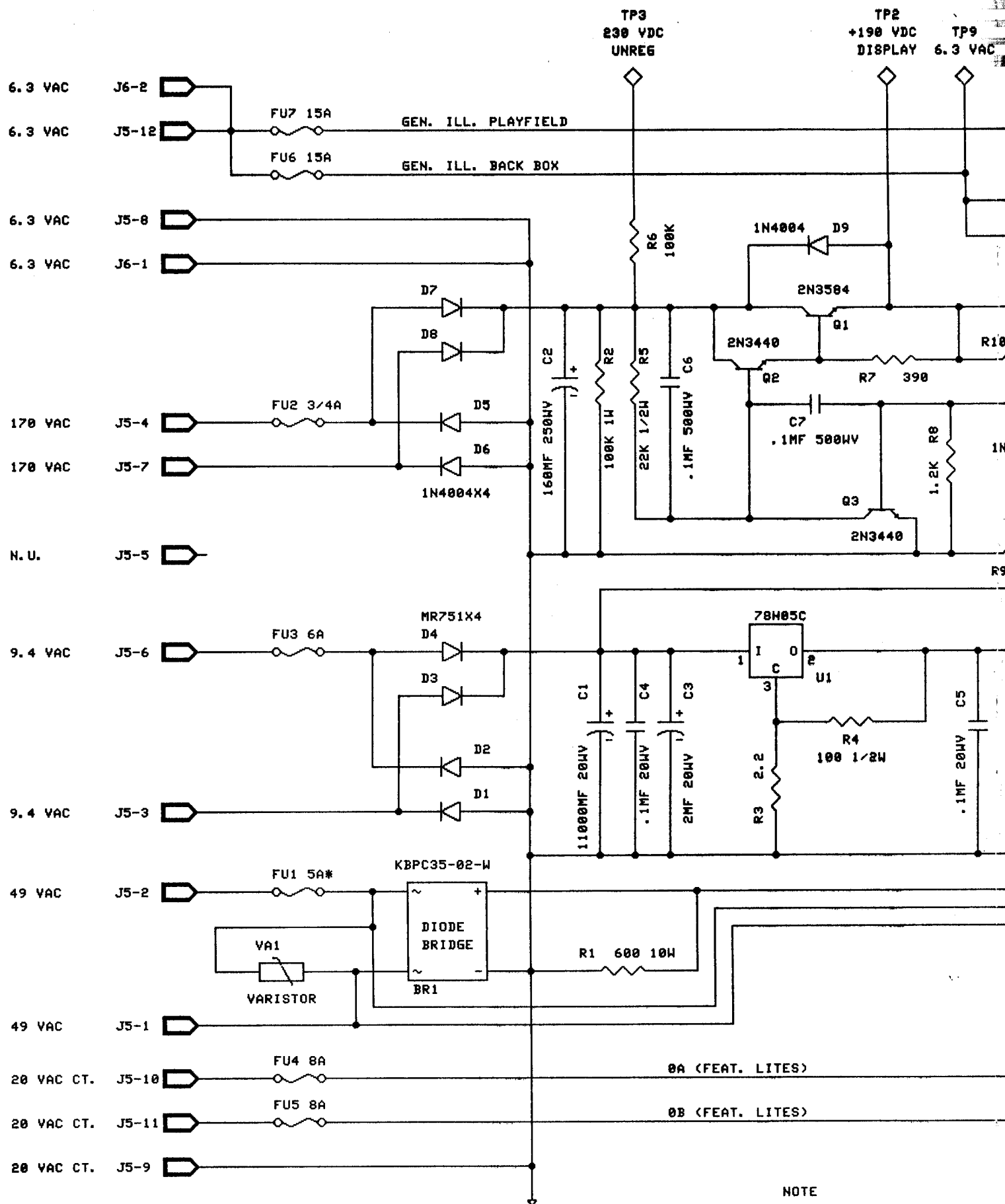
CROSS REFERENCE LIST

<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
VARISTOR 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,FC8R	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

* TWO FLIPPER GAMES ONLY - SEE SCHEMATIC

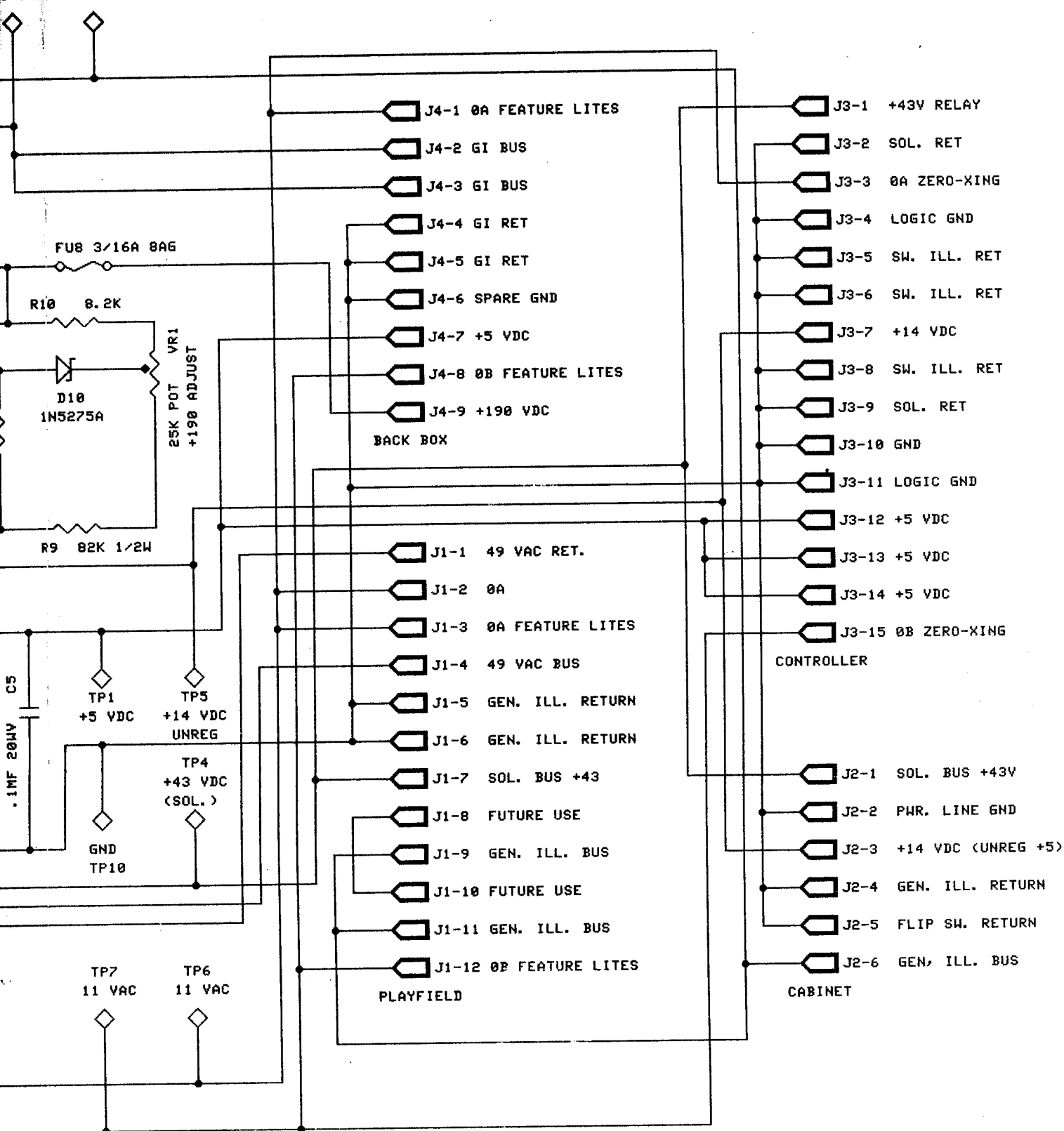


NOTE

* WHEN 3FLIPPERS ARE USED
WHEN 4FLIPPERS ARE USED

TP9
3 VAC

TP8
6.3 VAC



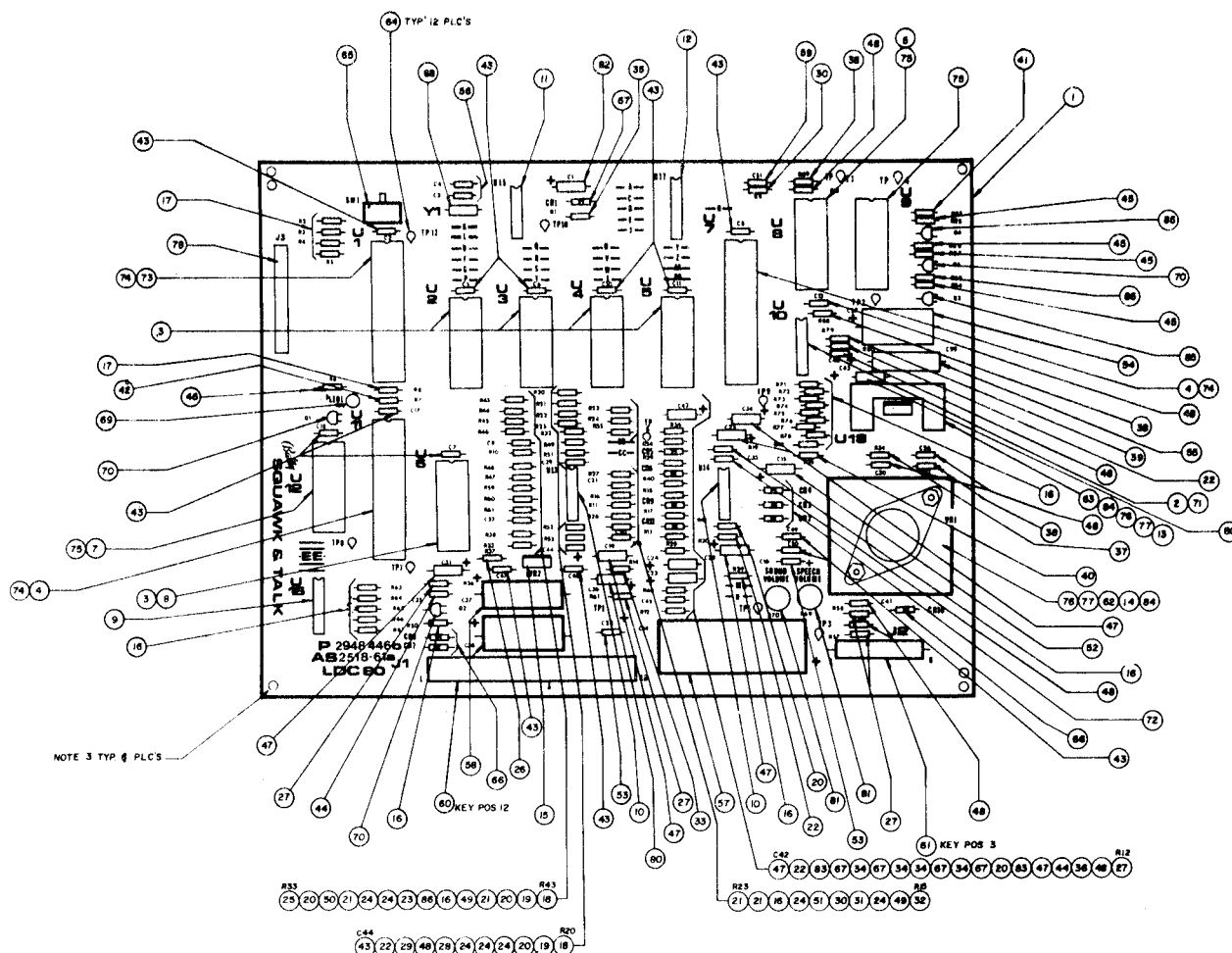
IF USED FU1 SHOULD BE 6AMP
IF USED FU1 SHOULD BE 7AMP

NOTES:		BALLY MIDWAY MFG. CO.	
A. AARSTAD		6803 PINBALL PWR MODULE	
1PER		SCHEMATIC DRAWING	
06/19/85		A084-91785-C000	
		M051-00C53-C002	
		SHEET 1 OF 1	
		REV	

62/6-D

17 JUN 85 10:35 / USER/CHUN/AAAA 8. DRAM

SQUAWK & TALK MODULE AS 2518-61A

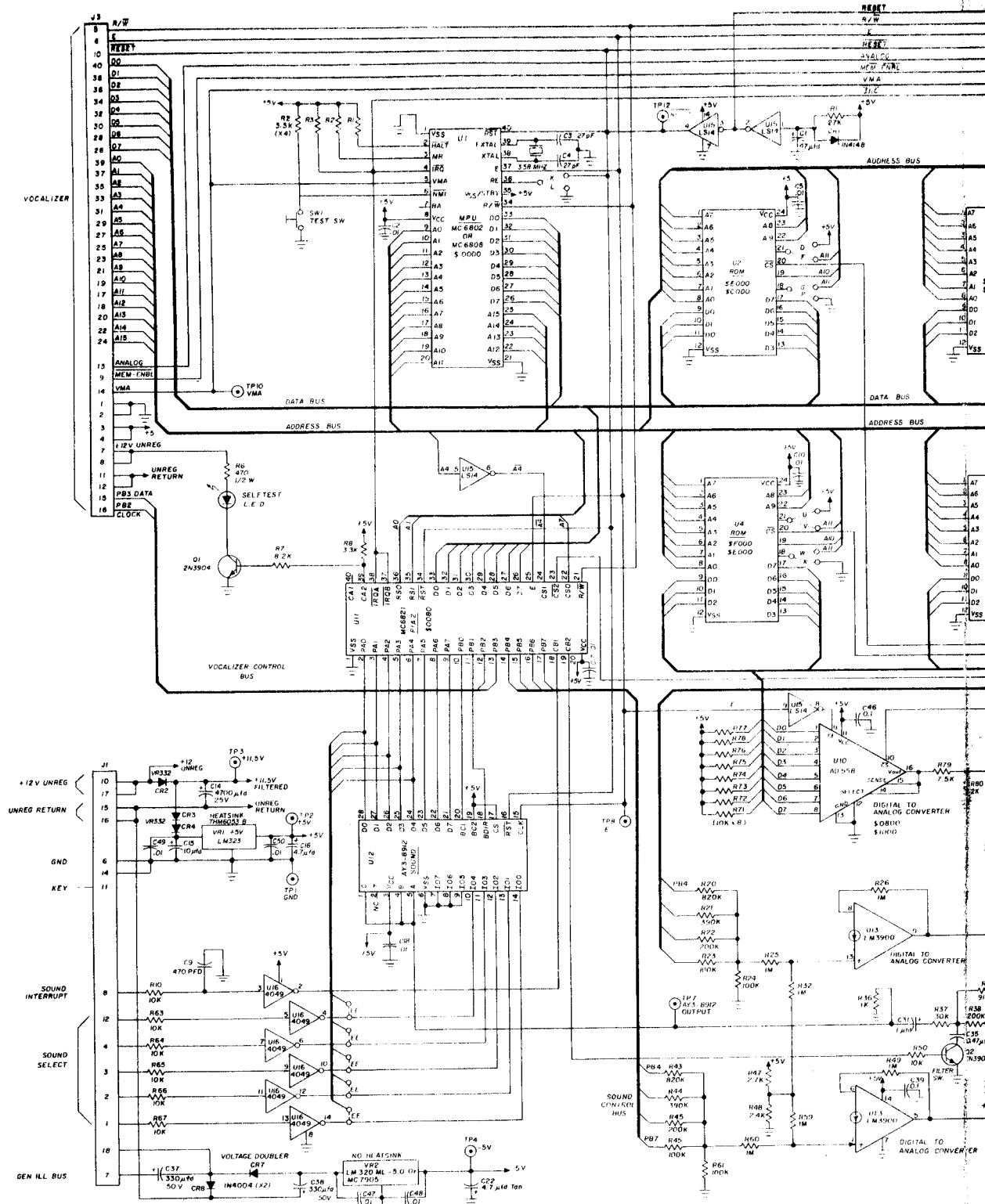


ITEM	QTY.	REFERENCE DESIGNATION	DESCRIPTION	BALLY PART #
1	1	PWB	M-645-577b	P-2948-446b
2	1	U10	AD 558 DAC	E-620-171
3	5	Used with U2 thru U6	24 Pin I.C. Socket	E-712
4	2	U7, U11	6821 P.I.A.	E-620-29
5	1	U8	Tms 5200 Speech	E-620-167
7	1	U12	AY3-8912 Sound	E-620-166
8	1	U6	6810 RAM (SEE NOTE 1)	E-620-30
9	1	U16	4049 Hex Inverter	E-620-33
10	2	U13, U14	LM 3900	E-620-126
11	1	U15	74LS14 Schmidt Inverter	E-620-169
12	1	U17	74LS155	E-620-168
13	1	U18	TDA 2002 Power Amp	E-620-127
14	1	VR1	LM323, 5V Regulator	E-710
15	1	VR2	7905, -5V Regulator	E-620-165
16	19	R10, 19, 29, 42, 50, 63-67, 71-78, 55	Resistor, 1/4W, 10K	E-105-185
17	5	R2-5,8	Resistor, 1/4W, 5%, 3.3K	E-105-238
18	2	R20, 43	Resistor, 1/4W, 5%, 820K	E-105-343
19	2	R21, 44	Resistor, 1/4W, 5%, 390K	E-105-310
20	5	R13, 22, 38, 41, 45	Resistor, 1/4W, 200K	E-105-225
21	4	R23, 24, 46, 61	Resistor, 1/4W, 5% 100K	E-105-226
22	4	R30, 53, 56, 80	Resistor, 1/4W, 5% 2K	E-105-237
23	1	R47	Resistor, 1/4W, 5%, 2.7K	E-105-151
24	7	R25, 26, 27, 32, 49, 59, 60	Resistor, 1/4W, 5% 1m	E-105-285
25	1	R33	Resistor, 1/4W, 5%, 91K	E-105-313

SQUAWK & TALK MODULE AS 2518-61A

COMPONENTS PARTS LIST

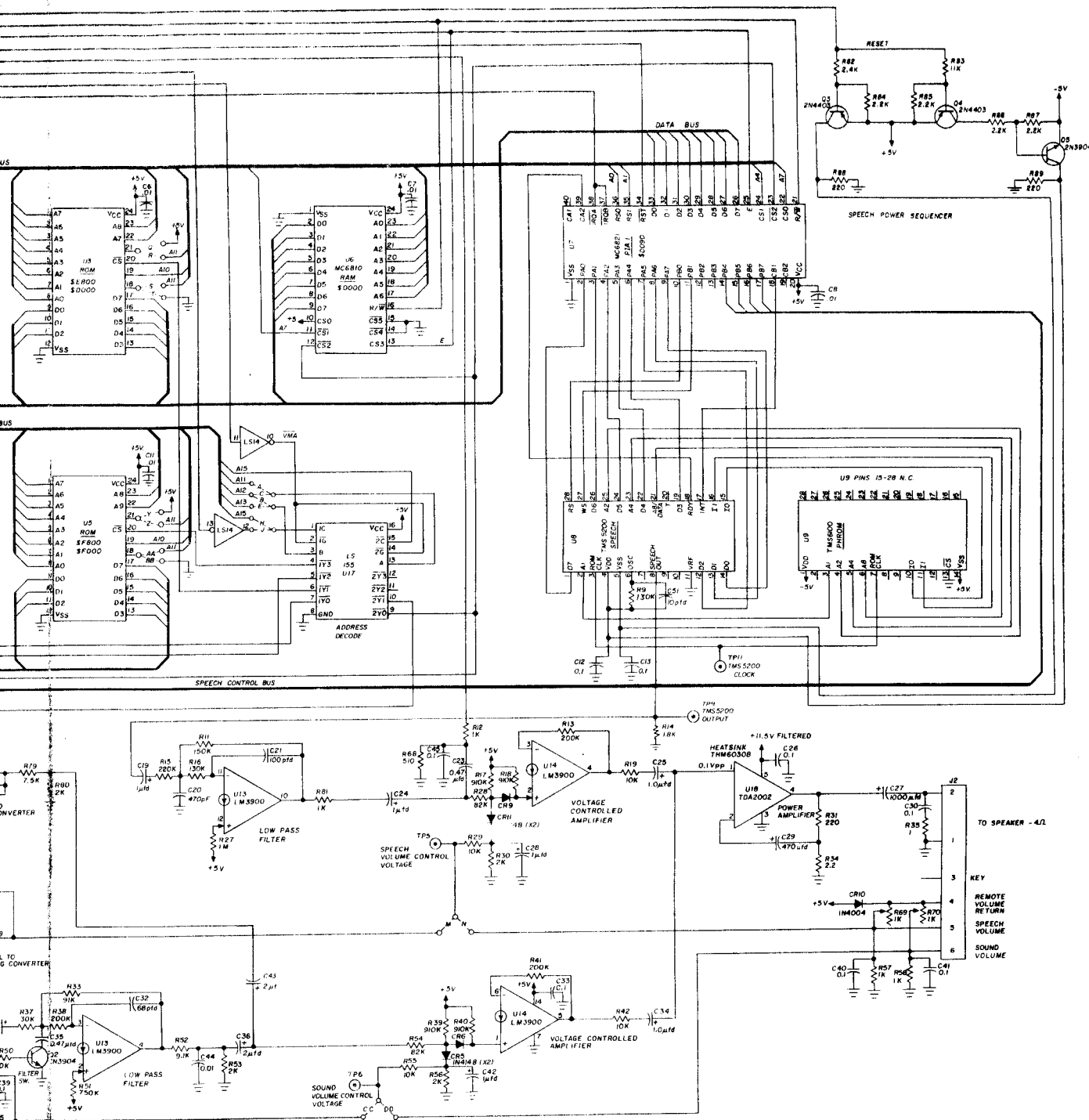
ITEM	QTY.	REFERENCE DESIGNATION	DESCRIPTION	BALLY PART #
26	1	R37	Resistor, 1/4W, 5%, 30K	E-105-245
27	5	R12, 36, 57, 58, 81	Resistor, 1/4W, 5%, 1K	E-105-230
28	1	R51	Resistor, 1/4W, 5%, 750K	E-105-344
29	1	R52	Resistor, 1/4W, 5%, 9.1K	E-105-228
30	2	R9, 16	Resistor, 1/4W, 5%, 130K	E-105-203
31	1	R11	Resistor, 1/4W, 5%, 150K	E-105-248
32	1	R15	Resistor, 1/4W, 5%, 220K	E-105-161
33	1	R14	Resistor, 1/4W, 5%, 1.8K	E-105-346
34	4	R17, 18, 39, 40	Resistor, 1/4W, 5%, 910K	E-105-347
35	1	R1	Resistor, 1/4W, 5%, 27K	E-105-243
36	1	R68	Resistor, 1/4W, 5%, 510 Ω	E-105-311
37	1	R34	Resistor, 1/4W, 5%, 2.2 Ω	E-105-211
38	3	R31, 88, 89	Resistor, 1/4W, 5%, 220 Ω	E-105-303
39	1	R79	Resistor, 1/4W, 5%, 7.5K	E-105-345
40	1	R35	Resistor, 1/4W, 5%, 1 Ω	E-105-196
41	1	R83	Resistor, 1/4W, 5%, 11K	E-105-360
42	1	R7	Resistor, 1/4W, 5%, 8.2K	E-105-223
43	14	C2, 5-8, 10, 11, 17, 18, 44, 47-50	Capacitor, Ceramic, .01 μ F, 25V	E-586-85
44	2	C23, 35	Capacitor, Ceramic, .47 μ F, 16V	E-586-130
45	4	R84-87	Resistor, 1/4W, 5%, 2.2K	E-105-287
46	1	R6	Resistor, 1/4W, 470 Ω	E-105-342
47	7	C19, 24, 25, 28, 31, 34, 42	Capacitor, Electrolytic, 1 μ F, 25V	E-586-90
48	10	C12, 13, 26, 30, 33, 39, 40, 41, 45, 46	Capacitor, Ceramic, .1 μ F, 25V	E-586-89
49	2	C9, 20	Capacitor, Ceramic, 470pF, 50V	E-586-83
50	1	C32	Capacitor, Ceramic, 68pF	E-586-120
51	1	C21	Capacitor, Ceramic, 100pF	E-586-68
52	1	C15	Capacitor, Electrolytic, 10 μ F, 16V	E-586-135
53	2	C16, 22	Capacitor, Tantalum, 4.7 μ F, 25V	E-586-73
54	1	C27	Capacitor, Electrolytic, 1000 μ F, 16V	E-586-136
55	1	C29	Capacitor, Electrolytic, 470 μ F, 6V	E-586-124
56	2	C3, 4	Capacitor, Ceramic, 27pF	E-586-121
57	1	C14	Capacitor, Electrolytic, 4700 μ F, 25V	E-586-123
58	2	C37, 38	Capacitor, Electrolytic, 330 μ F, 50V	E-586-147
59	1	C51	Capacitor, Monolithic, 10pF	E-586-150
60	1	J1	18 Pin Wafer Connector (156)	E-736-18
61	1	J2	6 Pin Wafer Connector (156)	E-736-6
62	1	Used with VR1	Heatsink, 6053B	E-682-11
63	1	Used with U18	Heatsink, 6030B	E-682-8
64	12		Test Points	P-5399
65	1	SW. 1	P.C.B. Switch	E-658-1
66	3	CR7, 8, 10	Diode (1N4004)	E-587-15
67	5	CR1, 5, 6, 9, 11	Diode (1N4148)	E-587-14
68	1	Y1	Crystal, 3.579	E-744-5
69	1	LED1	LED	E-679
70	3	Q1-2, 5	Transistor, 2N3904	E-585-31
71	1	Used with U10	Socket I.C. 16 Pin	E-712-16
72	3	CR2-4	Diode, VR332	E-587-22
73	1	U1	6808 or 6802 (SEE NOTE 1)	
			Microprocessor	E-620-125 or 128
74	3	Used with U1, 7, 11	Socket, I.C. 40 Pin	E-712-1
75	3	Used with U8, 9, 12	Socket, I.C. 28 Pin	E-712-28
76	3	Used with U18, VR1	Screw	LSPR-00632-1106
77	3	Used with U18, VR1	Nut	N-00632-2112
78	2	J3	Header, 20 Pin	E-766-20
80	2	C36, 43	Capacitor, 2 μ F, 16V	E-586-63
81	2	R69, 70	Pot. 1K	E-599-16
82	1	C1	Capacitor, Electrolytic, 47 μ F	E-586-148
83	2	R28, 54	Resistor, 82K	E-105-341
84	AR	Used with U18, VR1	Thermal Compound	M-1834
85	2	Q3, 4	Transistor, 2N4403	E-585-23
86	2	R82, 48	Resistor, 1/4W, 5%, 2.4K	E-105-312
			JUMPERS—SEE NOTES	



NOTES:
1. UNLESS OTHERWISE INDICATED ALL RESISTOR VALUES ARE IN OHMS.

LAST NUMBERS USED
R89
C51
C10
U18
VR2
Q5
TP12
EE

SQUAWK & TALK TEST POINTS
TP1: GND
TP2: +5VDC
TP3: +11.5VDC
TP4: -5VDC
TP5: SPEECH VOLUME CONTROL VOLTAGE
TP6: SOUND VOLUME CONTROL VOLTAGE
TP7: AY3-8912 OUTPUT
TP8: PULSE
TP9: TMS 5200 OUTPUT
TP10: 1MA
TP11: TMS 5200 CLOCK
TP12: RESET



SQUAWK & TALK JUMPERS

PRGM: ROM JUMPERS
2716 2316 A,B,D,G,T,U,Y,X,BB
2532 9332 C,E,G,Q,S,U,W,Y,AA
NO VOCALIZER H
WITH VOCALIZER J
6808 MPU L (WITH 6810 RAM)
6802 MPU K (NO 6810 RAM)
NO AY3-6912 EE

COMPUTER VOLUME CONTROL
REMOTE VOLUME CONTROL

SPEECH SOUND
CC M
DD N

REVISED ALL DATA BY DATE CHECKED BY DATE APPROVED BY DATE NAME TITLE HARDWARE CODE		OR BY DATE CHECKED BY DATE APPROVED BY DATE NAME TITLE HARDWARE CODE		Bally MANUFACTURING CORP. 3410 BELMONT AVENUE CHICAGO, ILLINOIS 60618 C.C. FT. PER. M. LBS. PER. M. ASSEMBLY NO. USED PART NO. W-1250-1	
TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS - 1/16 DECIMALS - 0.01 DIMENSIONS - 0.001 DIMENSIONS - 0.001 DIMENSIONS - 0.001		NAME TITLE HARDWARE CODE		ASSEMBLY NO. USED PART NO. W-1250-1	

DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION	DESIGNATION NO.	DESCRIPTION
C1	.01 MF 25V	DS1MH	TACK-SCREW RPLCMNT
C2	.01 MF 500V		DISPLAY MTG. TOP
			DISPLAY MTG. BOTTOM
			PRESSURE SENSITIVE
			TAPE
R1	100K OHM 1/4W 5%		BUMPER
R2	2.2K OHM 1/4W 5%		
R3	100K OHM 1/4W 5%		
R4	2.2K OHM 1/4W 5%		
R5	100K OHM 1/4W 5%		
R6	2.2K OHM 1/4W 5%	J1	.045 SQ. PIN
R7	100K OHM 1/4W 5%		
R8	2.2K OHM 1/4W 5%	TP1-TP3	TEST POINTS
R9	100K OHM 1/4W 5%		
R10	2.2K OHM 1/4W 5%		JUMPER TIN 22 AWC
R11	100K OHM 1/4W 5%		
R12	2.2K OHM 1/4W 5%	A080-91491-A000	6 DIGIT DISPLAY
R13	1.5K OHM 1/4W 5%		
R14	300K OHM 1/4W 5%		
R15	1.5K OHM 1/4W 5%		
R16	300K OHM 1/4W 5%		
R17	1.5K OHM 1/4W 5%		
R18	300K OHM 1/4W 5%		
R19	1.5K OHM 1/4W 5%		
R20	300K OHM 1/4W 5%		
R21	1.5K OHM 1/4W 5%		
R22	300K OHM 1/4W 5%		
R23	1.5K OHM 1/4W 5%		
R24	300K OHM 1/4W 5%		
R25	1.5K OHM 1/4W 5%		
R26	300K OHM 1/4W 5%		
R27-R33	1.2K OHM 1/4W 5%		
R34	100K OHM 1/4W 5%		
R35-P40	300K OHM 1/4W 5%		
R41	39K OHM 1/4W 5%		
R42	240K OHM 1/4W 5%		
R43-R48	9.1K OHM 1/4W 5%		
R49-R54	20K OHM 1/4W 5%		
VR1	IN3045A		
Q1-Q6	MPS-A42		
Q7-Q12	2N5401		
Q13-Q20	MPS-A42		
U1	MC14543		
DS1	6 DIGIT DISPLAY PANEL		

A084-914

R21

R19

R12

R17

R40

R10

R11

R39

R8

R10

R38

R42

R42

R42

R42

R42

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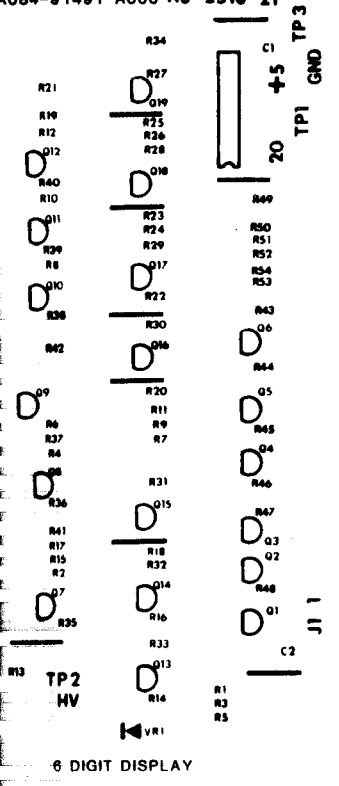
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A084-91491-A000 AS-2518-21

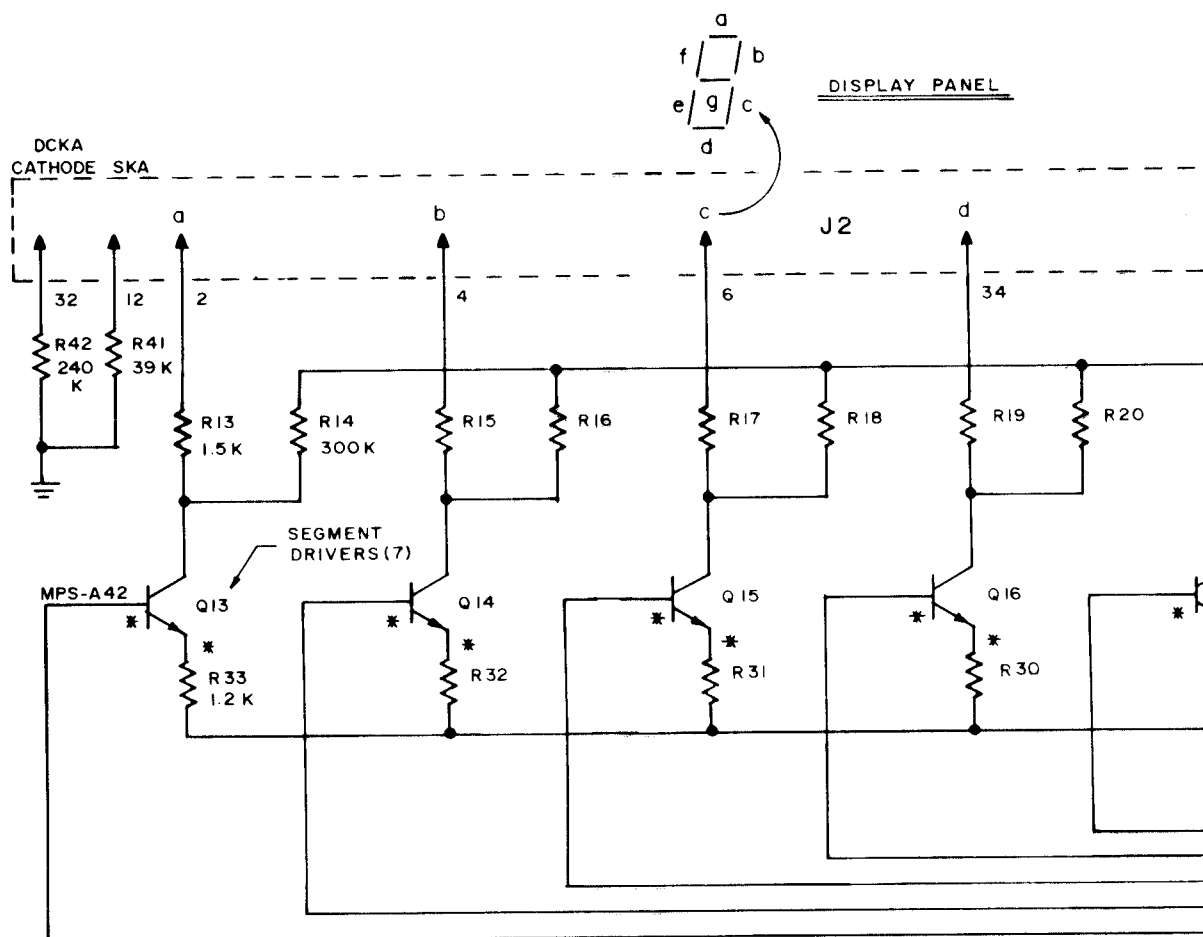
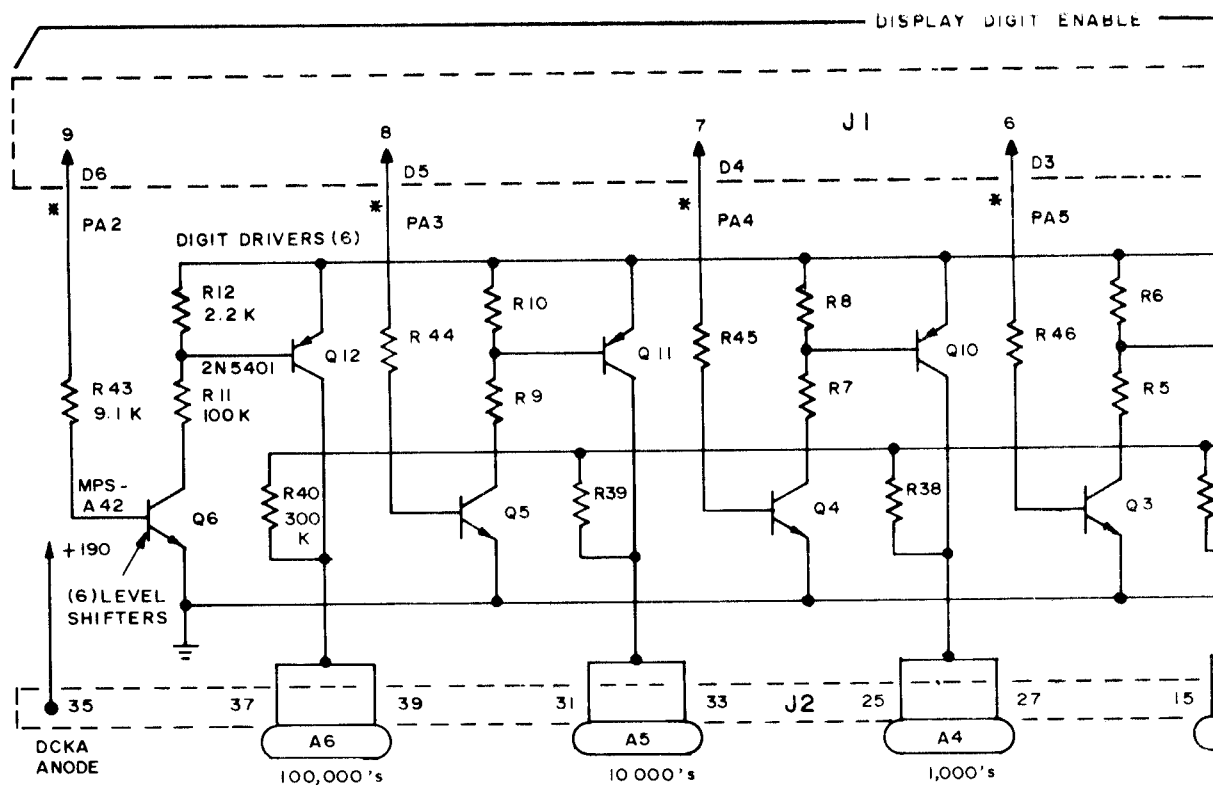


CROSS REF. LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NUMBER
.01 MF 25V	1	C1	0360-00800-0005
.01 MF 500V	1	C2	0360-00800-0015
1.2K 1/4W 5%	7	R27-R33	100E-00005-0063
1.5K 1/4W 5%	7	R13, R15, R17, R19	100E-00005-0065
		R21, R23, R25	100E-00005-0102
2.2K 1/4W 5%	6	R2, R4, R6, R8, R10	100E-00005-0069
		R12	100E-00005-0087
9.1K 1/4W 5%	6	R43-R48	100E-00005-0095
20K 1/4W 5%	6	R49-R54	100E-00005-0102
39K 1/4W 5%	1	R41	100E-00001-0011
100K 1/4W 5%	7	R1, R3, R5, R7, R9	100E-00001-0011
METAL FILM		R11, R34	100E-00005-0125
240K 1/4W 5%	1	R42	100E-00005-0127
300K 1/4W 5%	13	R14, R16, R18, R20, R22, R24, R26, R35	100E-00001-0011
		R40	100E-00001-0028
IN3043A	1	VP1	104E-00002-0007
2N5401	6	Q7-Q12	104E-00001-0016
MPS-A42	13	Q1-Q6 Q13 Q20	0360-00803-0014
MC14543	1	U1	0360-00804-0016
6 DIGIT DISPLAY	1	DS1	0095-00900-0000
DSI MTG. HDW			0017-00042-0155
TACK SCREW REPLCMNT	2	DS1MH	0017-00042-0156
DISPLAY MTG. TOP	1		0017-00041-0598
DISPLAY MTG. BOTTOM	1		0304-00804-0010
PRESSURE SENSITIVE TAPE			0017-00007-0131
BUMPER	1		117E-00001-0001
.045 SQ. PIN	1	J1	A080-91491-A000
TEST POINTS	3	TP1-TP3	
JUMPER TIN 22 AWG	9		
6 DIGIT DISPLAY PCB.	1		

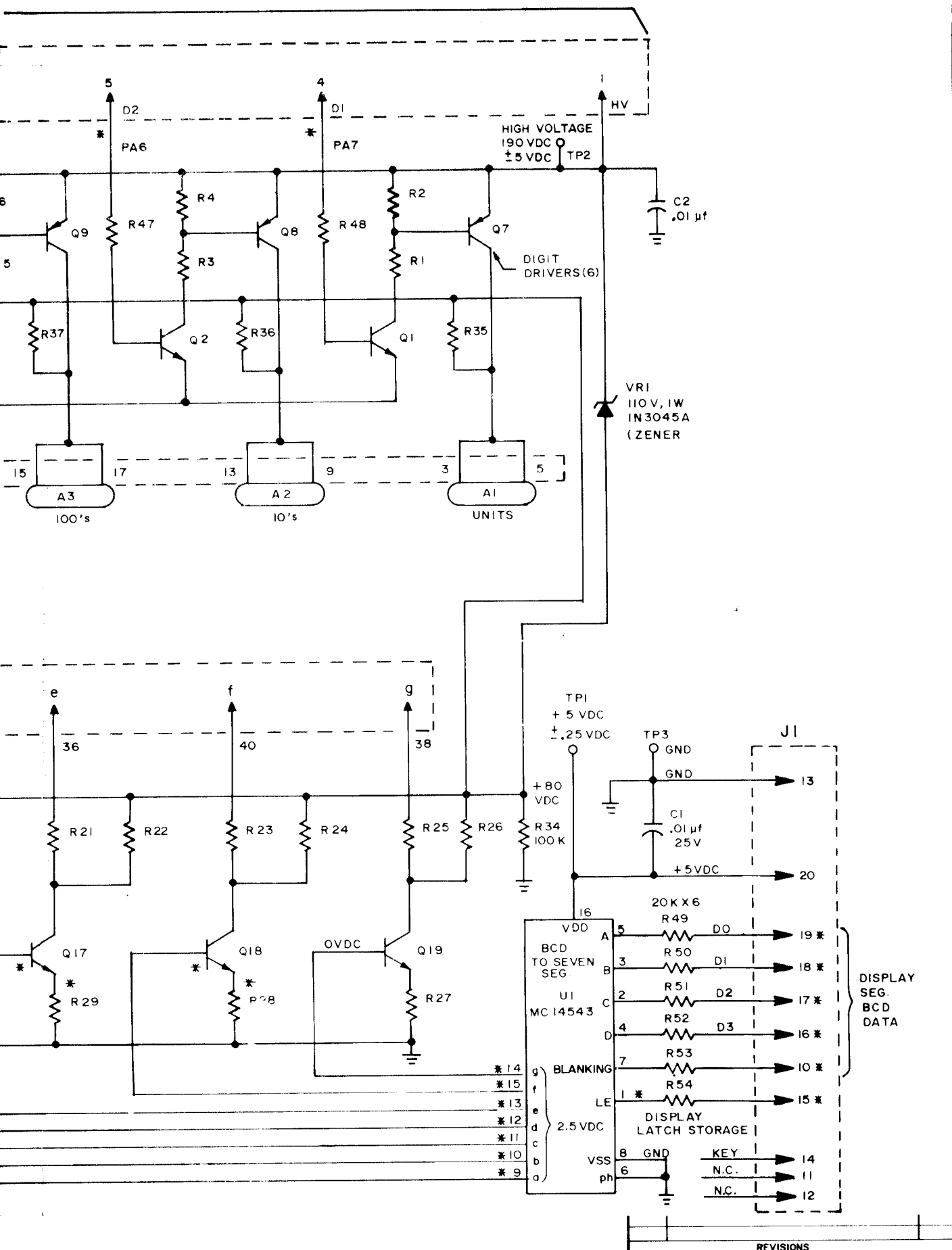
REVISIONS

PROJECT ENG: A. AARSTAD			USED ON		Bally / MIDWAY MFG. CO. FRANKLIN PK ILL
DO NOT SCALE DWG			NO. REQ'D 1 PER		
DIM TOLERANCES UNLESS SPECIFIED		DRG. BAK	HEAT TREAT	SCALE FULL	ASSEMBLY DWG. SIX DIGIT DISPLAY A082-91491-A000
CONCENTRICITY ± .002 HOLE DIA ± .002		CKD.	MAT'L	FINISH	
DATE 11/14/84		PART NO. MO51-00114 -A028			



NOTES:

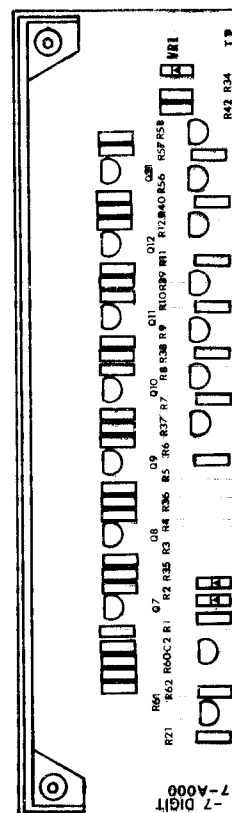
- 1) UNLESS OTHERWISE SPECIFIED ALL RESISTORS ARE $\pm 5\%$, 1/4 W.
- 2) PREFIX ALL REFERENCE DESIG. WITH ASSY REF. DESIG. "A1"
- 3) * INDICATES "AID" TEST POINT.



PROJECT ENG: D. MACDONALD				USED ON PINBALL		Bally / MIDWAY MFG. CO. FRANKLIN PK ILL
DO NOT SCALE DVS		HEAT TREAT	SCALE	FULL NO REQ'D I PER		
DIM TOLERANCES UNLESS SPECIFIED	ORN <i>BC</i>	MAT'L	SIX DIGIT DISPLAY BOARD SCHEMATIC "A1" A084-91491-A000			PART NO M051-00114 -A029
CONST TOLERANCES UNLESS SPECIFIED DIM C-0.005 HOLE DIA +0.02 0.00	CKD <i>Don 5/13/83</i>	FINISH				
DATE 5/17/83						

DESIGNATION LIST

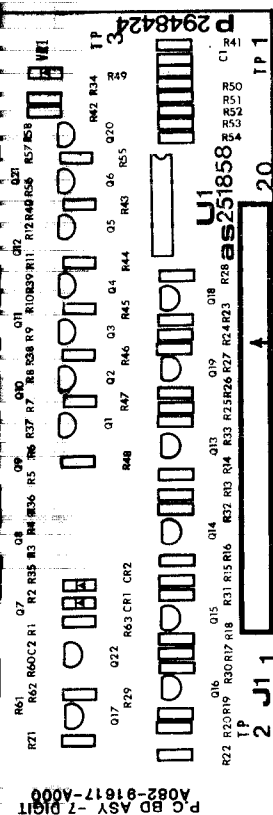
<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>	<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>
C1	.01 MF 25V	CR1, CR2	1N4148
C2	.01 MF 500V	VR1	1N3045A/110V ZENER
R1	100K OHM 1/4W 5%	Q1-Q6	MPS-A42
R2	2.2K OHM 1/4W 5%	Q7-Q12	2N5401
R3	100K OHM 1/4W 5%	Q13-Q20	MPS-A42
R4	2.2K OHM 1/4W 5%	Q21	2N5401
R5	100K OHM 1/4W 5%	Q22	MPS-A42
R6	2.2K OHM 1/4W 5%		
R7	100K OHM 1/4W 5%	U1	MC14543
R8	2.2K OHM 1/4W 5%	DS1	DISPLAY ASS'Y
R9	100K OHM 1/4W 5%	J1	10 PIN WAFER KK-156 (2)
R10	2.2K OHM 1/4W 5%	TP1-TP3	TEST LOOPS
R11	100K OHM 1/4W 5%		
R12	2.2K OHM 1/4W 5%		
R13	1.5K OHM 1/4W 5%		
R14	300K OHM 1/4W 5%		
R15	1.5K OHM 1/4W 5%		
R16	300K OHM 1/4W 5%		
R17	1.5K OHM 1/4W 5%		
R18	300K OHM 1/4W 5%		
R19	1.5K OHM 1/4W 5%		
R20	300K OHM 1/4W 5%		
R21	1.5K OHM 1/4W 5%		
R22	300K OHM 1/4W 5%		
R23	1.5K OHM 1/4W 5%		
R24	300K OHM 1/4W 5%		
R25	1.5K OHM 1/4W 5%		
R26	300K OHM 1/4W 5%		
R27-R33	1.2K OHM 1/4W 5%		
R34	100K OHM 1/4W 5%		
R35-R40	300K OHM 1/4W 5%		
R41	39K OHM 1/4W 5%		
R42	240K OHM 1/4W 5%		
R43-R48	9.1K OHM 1/4W 5%		
R49-R54	20K OHM 1/4W 5%		
R55	9.1K OHM 1/4W 5%		
R56	100K OHM 1/4W 5%		
R57	2.2K OHM 1/4W 5%		
R58	300K OHM 1/4W 5%		
R59	NOT USED		
R60, R61	1.5K OHM 1/4W 5%		
R62	300K OHM 1/4W 5%		
R63	150K OHM 1/4W 5%		



DS1

CROSS REFERENCE LIST

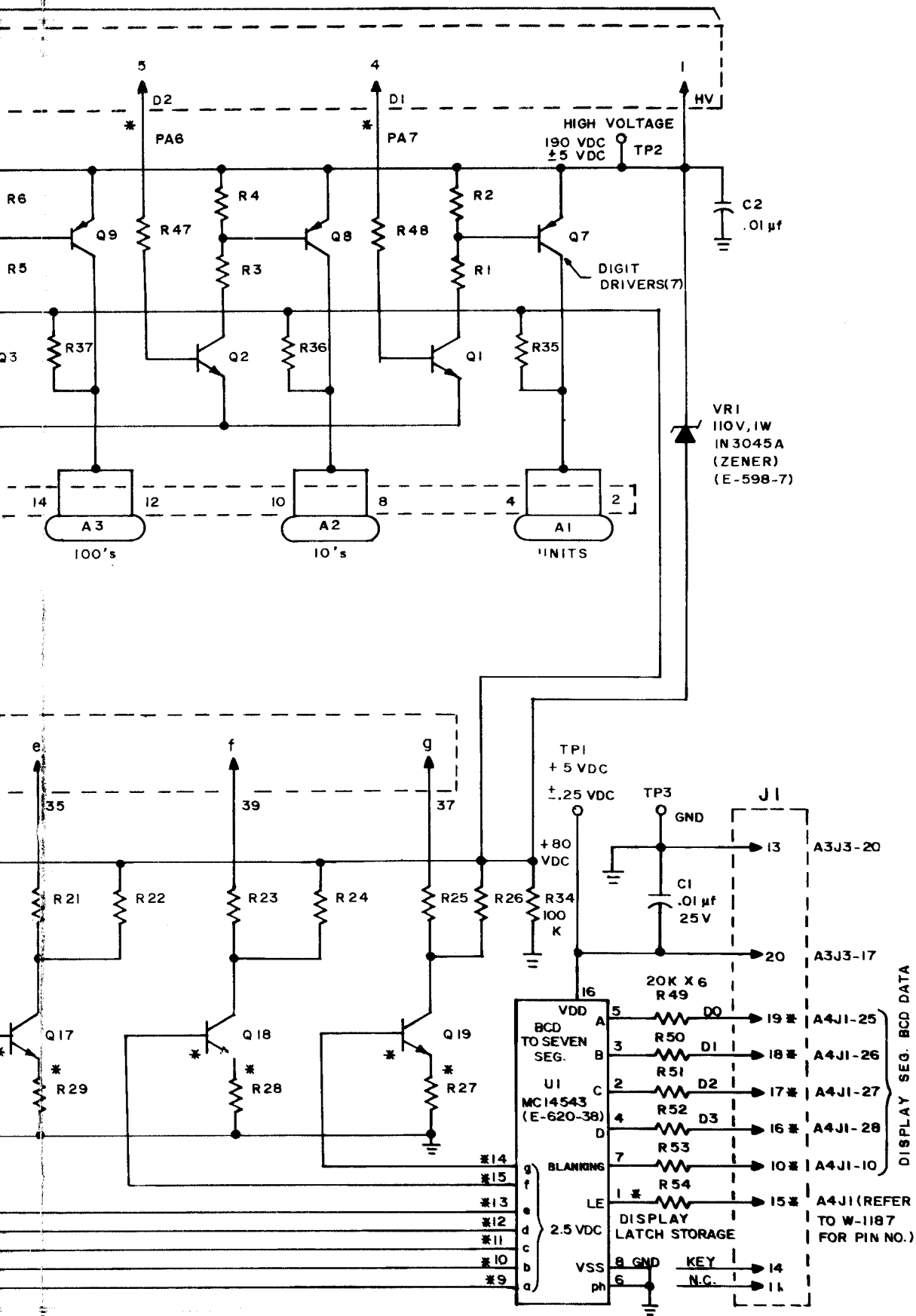
DESCRIPTION	QTY	DESIGNATION NO.	BALLY'S PART NOS.	MIDWAY'S PART NOS.
.01 MF 25V	1	C1	E-586-85	0360-00800-0005
.01 MF 500V	1	C2	E-586-65	0360-00800-0013
1.2K 1/4W 5%	7	R27-R33	E-105-222	100E-00005-0063
1.5K 1/4W 5%	9	R13,R15,R17,R19 R21,R23,R25,R60 R61	E-105-229	100E-00005-0065
2.2K 1/4W 5%	7	R2,R4,R6,R8,R10 R12,R57	E-105-287	100E-00005-0069
9.1K 1/4W 5%	7	R43-R48,R55	E-105-228	100E-00005-0087
20K 1/4W 5%	6	R49-R54	E-105-242	100E-00005-0095
39K 1/4W 5%	1	R41	E-105-231	100E-00005-0102
100K 1/4W 5%	8	R1,R3,R5,R7,R9, R11,R34,R56	E-105-331	100E-00001-0011
150K 1/4W 5%	1	R63	E-105-248	100E-00001-0120
240K 1/4W 5%	1	R42	E-105-271	100E-00001-0125
300K 1/4W 5%	15	R14,R16,R18,R20, R22,R24,R26,R35- R40,R58,R62	E-105-227	100E-00001-0127
1N3045A /110V ZENER	1	VR1	E-598-7	103E-00001-0028
1N4148	2	CR1,CR2	E-587-14	103E-00002-0005
2N5401	7	Q7-Q12,Q21	E-585-32	0360-00802-0006
MPS-A42	15	Q1-Q6,Q13-Q20,Q22	E-585-33	0360-00802-0007
MC14543	1	U1	E-620-38	0360-00803-0014
7 DIGIT DISPLAY	1	DS1	E-680-7	0360-00804-0022
DS1 MTG. HDW	2			0095-00900-0000
TACK - SCREW				
REPLACEMENT				
DISPLAY MTG. TOP	1		P-2399	0017-00042-0155
DISPLAY MTG.	1		P-2399-1	0017-00042-0156
BOTTOM				
PRESSURE SENSITIVE				0017-00081-0095
TAPE				
BUMPER	1		R-206-9	0017-00041-0598
10 PIN WAFER KK156	2	J1	E-736-10	0151-00031-10XB
TEST LOOPS	3	TP1-TP3	P-5399	0017-00007-0131
7 DIGIT DISPLAY	1		P-2948-424	A080-91617-A000
PCB.				



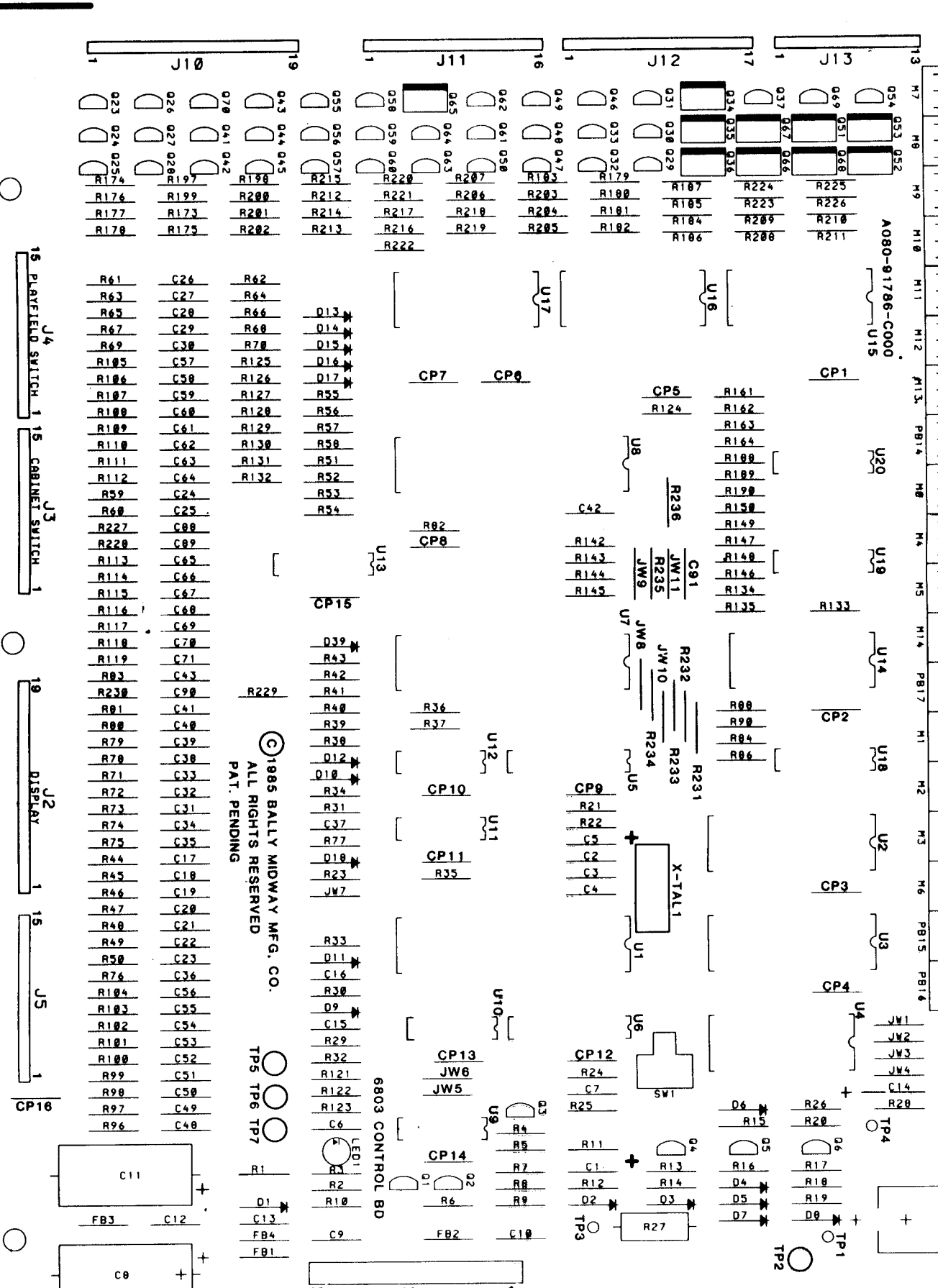
KEY - PIN 14

REVISIONS

PROJECT ENG: D. MACDONALD		USED ON		Bally / MIDWAY MFG. CO. FRANKLIN, PA. U.S.A.
DO NOT SCALE DRAWING		NO. REQ'D 1 PER		
HEAT TREAT		SCALE FULL		PART NO. M051 - 00114 - A05
MATERIAL		SEVEN DIGIT DISPLAY		
FINISH		ASSY DWG.		
DATE 12 09 83		A082 - 91617 - A000		



DESIGN: D. MACDONALD				USED ON PINBALL		REVISIONS
DO NOT SCALE DWG.		HEAT TREAT	SCALE	NO. REQ'D PER		
TOLERANCES LESS SPECIFIED	DRW. <i>BBB</i>	MAT'L.	SEVEN DIGIT DISPLAY BOARD SCHEMATIC "A1" A084-91617-A000			PART NO. M051 - 00114 - A057
CENTRICITY ±.001	CRD. <i>BBB 5/17/83</i>	FINISH				
AL. ±.002	DATE 5/13/83					



6803 CONTROL BOARD
A084-91786-C000
M051-00C53-C003 (Page 1 of 4)

DESIGNATION LIST

<u>DESIGNATION</u>	<u>DESCRIPTION</u>
C1	6.8UF 25V TANT.
C2,C3	27PF 50V CER.
C4	.1UF 50V CER.
C5	4.7UF 25V TANT.
C6	.01UF 50V CER.
C7	47PF 50V CER.
C8	470UF 16V ELEC.
C9,C10	.01UF 50V CER.
C11	470UF 25V ELEC.
C12,C13	.01UF 50V CER.
C14	4.7UF 25V TANT.
C15,C16	.01UF 50V CER.
C17 - C23	470PF 1KV CER.
C24 - C30	390PF 50V CER.
C31 - C36	470PF 1KV CER.
C37	.05UF 16V CER.
C38 - C41	470PF 1KV CER.
C42	.01UF 50V CER.
C43	.003UF 1KV CER.
C44 - C47	.002UF 1KV CER.
C48 - C56	470PF 1KV CER.
C57 - C71	390PF 50V CER.
C73 - C87	.002 1KV CER.
C88 - C90	390PF 50V CER.
C91	470PF 1KV CER.
CP1 - CP16	.01 50V CER.
R1	560 OHM 1/4W 5%
R2	2.7K 1/4W 5%
R3	1K 1/4W 5%
R4	9.1K 1/4W 5%
R5	7.5K 1/4W 5%
R6	2.7K 1/4W 5%
R7	39K 1/4W 5%
R8	100 OHM 1/4W 5%
R9	82 OHM 1/4W 5%
R10,R11	47K 1/4W 5%
R12,R13	10K 1/4W 5%
R14	82K 1/4W 5%
R15	62K 1/4W 5%
R16	5.6K 1/4W 5%
R17	3K 1/4W 5%
R18	910 OHM 1/4W 5%
R19	750 OHM 1/4W 5%
R20	1.5K 1/4W 5%
R21 - R23	3.3K 1/4W 5%
R24	120 OHM 1/4W 5%
R25	680 OHM 1/4W 5%
R26	100K 1/4W 5%
R27	82 OHM 1W 10%

6803 CONTROL BOARD

A084-91786-C000

M051-00C53-C003 (Page 2 of 4)

DESIGNATION LIST

<u>DESIGNATION</u>	<u>DESCRIPTION</u>
R28	270 OHM 1/4W 5%
R29	1K 1/4W 5%
R30	10K 1/4W 5%
R31	15K 1/4W 5%
R32	1K 1/4W 5%
R33	10K 1/4W 5%
R34	15K 1/4W 5%
R35	3.3K 1/4W 5%
R36 - R43	4.7K 1/4W 5%
R44 - R50	1.2K 1/4W 5%
R51 - R58	3.3K 1/4W 5%
R59 - R61	1.2K 1/4W 5%
R62	56K 1/4W 5%
R63	1.2K 1/4W 5%
R64	56K 1/4W 5%
R65	1.2K 1/4W 5%
R66	56K 1/4W 5%
R67	1.2K 1/4W 5%
R68	56K 1/4W 5%
R69	1.2K 1/4W 5%
R70	56K 1/4W 5%
R71 - R76	1.2K 1/4W 5%
R77	270K 1/4W 5%
R78 - R82	1.2K 1/4W 5%
R83	110 OHM 1/4W 5%
R84	3.9K 1/4W 5%
R85	120 OHM 1/4W 5%
R86	3.9K 1/4W 5%
R87	120 OHM 1/4W 5%
R88	3.9K 1/4W 5%
R89	120 OHM 1/4W 5%
R90	3.9K 1/4W 5%
R91	120 OHM 1/4W 5%
R92 - R95	330 OHM 1/4W 5%
R96 - R104	470 OHM 1/4W 5%
R105 - R119	1.2K 1/4W 5%
R121	120 OHM 1/4W 5%
R122	1.2K 1/4W 5%
R123	2K 1/4W 5%
R124	3.3K 1/4W 5%
R125 - R132	56K 1/4W 5%
R133 - R135	1.2K 1/4W 5%
R136 - R138	120 OHM 1/4W 5%
R139 - R141	330 OHM 1/4W 5%
R142 - R145	3.3K 1/4W 5%
R146 - R150	1.2K 1/4W 5%
R151 - R155	120 OHM 1/4W 5%
R156 - R160	330 OHM 1/4W 5%
R161 - R164	1.2K OHM 1/4W 5%

6803 CONTROL BOARD
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DESIGNATION LIST

<u>DESIGNATION</u>	<u>DESCRIPTION</u>
R165 - R168	120 OHM 1/4W 5%
R169 - R172	330 OHM 1/4W 5%
R173 - R187	2K 1/4W 5%
R188 - R190	1.2K 1/4W 5%
R191 - R193	120 OHM 1/4W 5%
R194 - R196	330 OHM 1/4W 5%
R197 - R226	2K 1/4W 5%
R227, R228	1.2K 1/4W 5%
R229	56K 1/4W 5%
R230	1.2K 1/4W 5%
R231 - R234	330 OHM 1/4W 5%
R235	3.3K 1/4W 5%
R236	1.2K 1/4W 5%
D1	1N958B
D2	1N4606
D3	1N4148
D4, D5	1N4606
D6	1N4148
D7, D8	1N4606
D9 - D18	1N4148
D19 - D38	1N4004
D39	1N4148
Q1	2N5305
Q2	2N3904
Q3	2N4403
Q4	2N3904
Q5	2N4403
Q6	2N3904
Q7 - Q22	SE9302
Q23 - Q33	2N5060
Q34 - Q36	MCR 106-1
Q37	2N5060
Q38 - Q40	SE9302
Q41 - Q50	2N5060
Q51 - Q53	MCR 106-1
Q54 - Q64	2N5060
Q65 - Q68	MCR 106-1
Q69, Q70	2N5060
U1	6803
U4	6116 RAM
U5	74HCT245
U6	74LS373
U7, U8	6821
U9	74LS10
U10	74LS04
U11	4011
U12	4584
U13	4502
U14	74LS154

6803 CONTROL BOARD
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DESIGNATION LIST

DESIGNATION

DESCRIPTION

U15 - U17
U18 - U20
XTAL-1
LED 1
TP1 - TP7
SW1
BATT-1
JW2
JW4
JW6
JW8
JW10
K1
XU1,XU7,XU8
XU2, XU3
XU4
FB1 - FB4
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
P/O BATT-1
6803 CONTROL BD.

4514B
CA3081
3.580 MHZ CRYSTAL
LED GREEN
TEST POINTS
SWITCH P.B.
BATTERY 3.6V
ZERO OHM RES. JUMPER
ZERO OHM RES. JUMPER
ZERO OHM RES. JUMPER
ZERO OHM RES. JUMPER
ZERO OHM RES. JUMPER
RELAY 48V DC
40 PIN IC SOCKET
28 PIN IC SOCKET
24 PIN IC SOCKET
FERRITE BEAD
11 - .045 SQ. PINS
18 - .025 SQ. PINS
14 - .025 SQ. PINS
14 - .025 SQ. PINS
14 - .025 SQ. PINS
8 - .045 SQ. PINS
7 - .045 SQ. PINS
6 - .045 SQ. PINS
10 - .045 SQ. PINS
18 - .025 SQ. PINS
17 - .025 SQ. PINS
16 - .025 SQ. PINS
12 - .025 SQ. PINS
5 - .045 SQ. PINS
TY-WRAP
P.C. BOARD

CROSS

DESCR I

27pf 5
47pf 5
390pf
470pf
.002uf
.003uf
.01uf
.05uf
.1uf 5
4.7uf
6.8uf
470uf
470uf
82 OHM
100 OHM
110 OHM
120 OHM
270 OHM
330 OHM
470 OHM
560 OHM
680 OHM
750 OHM
910 OHM
1K 1/4
1.2K

1.5K
2K 1/4
2.7K
3K 1/4
3.3K
3.9K
4.7K
5.6 1/4

6803 CONTROL BOARD

A084-91786-C000

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CROSS REFERENCE LIST

<u>DESCRIPTION</u>	<u>QTY.</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
7pf 50V CER.	2	C2, C3	0360-00800-0052
7pf 50V CER.	1	C7	0360-00800-0027
90pf 50V CER.	25	C24-C30, C57-C71	0360-00800-0001
		C88-C90	
70pf 1KV CER.	27	C17-C23, C31-C36,	0360-00800-0003
		C38-C41, C48-C56, C91	
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	0365-00800-0014
		C15, C16, C42, CP1-CP16	
05uf 16V CER.	1	C37	0360-00800-0006
1uf 50V CER.	1	C4	0360-00800-0058
.7uf 25V TANT	2	C5, C14	0360-00800-0008
.8uf 25V TANT	1	C1	0360-00800-0048
70uf 16V ELEC	1	C8	0360-00800-0022
70uf 25V ELEC	1	C11	0360-00800-0024
2 OHM 1/4W 5%	1	R9	100E-00005-0031
00 OHM 1/4W 5%	1	R8	100E-00005-0033
10 OHM 1/4W 5%	1	R83	100E-00005-0034
20 OHM 1/4W 5%	21	R24, R85, R87, R89,	100E-00005-0035
		R91, R121, R136-R138,	
		R151-R155, R165-R168,	
		R191-R193	
70 OHM 1/4W 5%	1	R28	100E-00005-0044
30 OHM 1/4W 5%	23	R92-R95, R139-R141,	100E-00005-0047
		R156-R160, R169-R172,	
		R194-R196, R231-R234	
70 OHM 1/4W 5%	9	R96-R104	100E-00005-0051
60 OHM 1/4W 5%	1	R1	100E-00005-0054
80 OHM 1/4W 5%	1	R25	100E-00005-0056
50 OHM 1/4W 5%	1	R19	100E-00005-0057
10 OHM 1/4W 5%	1	R18	100E-00005-0059
K 1/4W 5%	3	R3, R29, R32	100E-00005-0061
.2K 1/4W 5%	60	R44-R50, R59-R61, R63,	100E-00005-0063
		R65, R67, R69, R71-R76	
		R78-R82, R105-R119, R122	
		R133-R135, R146-R150,	
		R161-R164, R188-R190,	
		R227, R228, R230, R236	
.5K 1/4W 5%	1	R20	100E-00005-0065
K 1/4W 5%	46	R123, R173-R187	100E-00005-0068
		R197-R226	
.7K 1/4W 5%	2	R2, R6	100E-00005-0071
K 1/4W 5%	1	R17	100E-00005-0073
.3K 1/4W 5%	18	R21-R23, R35, R51-R58,	100E-00005-0074
		R124, R142-R145, R235	
.9K 1/4W 5%	4	R84, R86, R88, R90	100E-00005-0077
.7K 1/4W 5%	8	R36-R43	100E-00005-0079
.6 1/4W 5%	1	R16	100E-00005-0082

6803 CONTROL BOARD

A084-91786-C000

M051-00C53-C003 (Page 2 of 3)

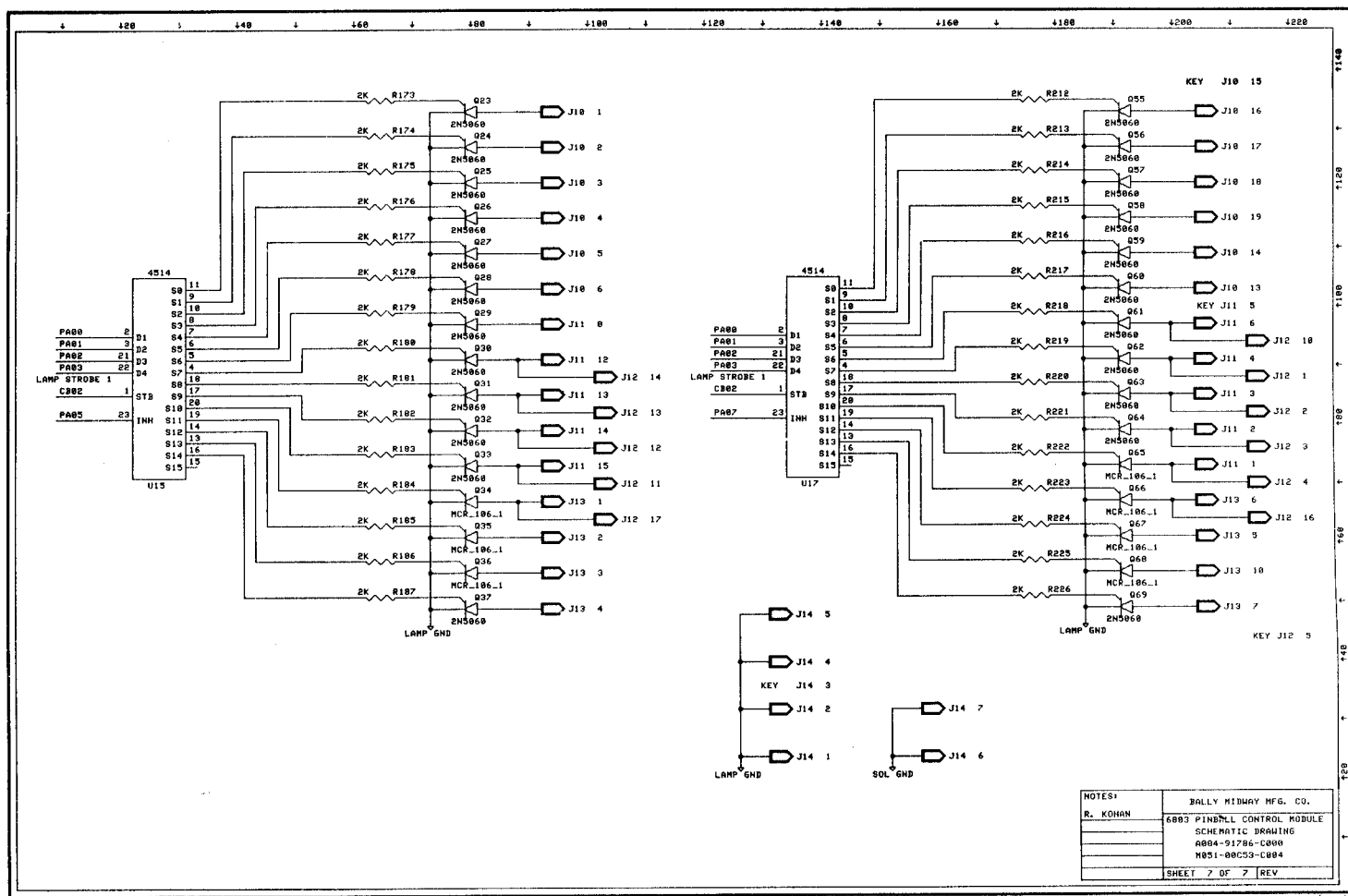
CROSS REFERENCE LIST

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%	1	R26	100E-00005-0115
270K 1/4W 5%	1	R77	100E-00005-0126
82 OHM 1W 10%	1	R27	100E-00007-0014
IN958B ZENER	1	D1	103E-00001-0002
IN4004	20	D19-D38	103E-00003-0005
IN4148	13	D3, D6, D9-D18, D39	103E-00002-0005
IN4606	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	0066-090BX-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
28 PIN I.C. SOCKET	2	XU2, XU3, XU8	110E-00001-0010
24 PIN I.C. SOCKET	1	XU4	110E-00001-0007
FERRITE BEAD	4	FB1-FB4	0316-00804-0002

6803 CONTROL BOARD
A084-91786-C000
M051-000C53-C003 (Page 3 of 3)

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-C000



EIGHT BALL CHAMP LAMP DRIVER LOCATIONS

SCR	CONNECTOR/PIN	LAMP	PHASE	WIRE CODE	SCR
Q55	J10 - 16	'A' ROLLOVER	B	71	
Q57	J10 - 18	B A L L	B	58	028
Q26	J10 - 4	B A L L	B	41	030
Q43	J10 - 11	B A L L	B	43	056
Q58	J10 - 19	R A L L	B	10	025
Q41	J10 - 8	BALL IN PLAY	A	62	042
Q31	J11 - 13	BONUS 1	A	61	023
Q45	J11 - 10	BONUS 2	A	52	042
Q63	J11 - 3	BONUS 3	A	25	044
Q32	J11 - 14	BONUS 4	A	73	049
Q49	J11 - 9	BONUS 5	A	18	064
Q64	J11 - 2	BONUS 6	A	23	033
Q33	J11 - 15	BONUS 7	A	98	053
Q50	J11 - 7	BONUS 8	A	81	068
Q65	J11 - 1	BONUS 9	A	15	037
Q34	J12 - 17	BONUS 10	A	34	054
Q51	J12 - 15	BONUS 11	A	40	069
Q66	J12 - 16	BONUS 12	A	14	
Q35	J13 - 2	BONUS 13	A	78	
Q52	J13 - 13	BONUS 14	A	25	
Q67	J13 - 5	BONUS 15	A	30	
Q52	J13 - 13	BONUS 120,000	B	25	
Q67	J13 - 5	BONUS 240,000	B	30	
Q36	J13 - 3	BONUS SPECIAL	B	95	
Q23	J10 - 1	'C' ROLLOVER	B	91	
Q24	J10 - 2	CREDIT	A	45	
Q27	J10 - 5	DOUBLES PLAYFIELD VALUE	B	60	011
Q57	J10 - 18	DROP TARGET 1	A	58	012
Q26	J10 - 4	DROP TARGET 2	A	41	013
Q43	J10 - 11	DROP TARGET 3	A	43	014
Q58	J10 - 19	DROP TARGET 4	A	10	016
Q27	J10 - 5	DROP TARGET 5	A	60	040
Q44	J10 - 12	DROP TARGET 6	A	34	07
Q59	J10 - 14	DROP TARGET 7	A	36	022
Q45	J10 - 10	DROP TARGET 9	A	57	020
Q60	J10 - 13	DROP TARGET 10	A	51	039
Q29	J11 - 8	DROP TARGET 11	A	67	021
Q46	J11 - 16	DROP TARGET 12	A	53	019
Q61	J11 - 6	DROP TARGET 13	A	12	018
Q30	J11 - 12	DROP TARGET 14	A	45	
Q47	J11 - 11	DROP TARGET 15	A	13	
Q53	J13 - 12	E I G H T	B	80	
Q68	J13 - 10	E I G H T	B	57	
Q37	J13 - 4	E I G H T	B	70	
Q54	J13 - 11	E I G H T	B	72	
Q69	J13 - 7	E I G H T	B	54	
Q50	J12 - 9	'EIGHT BALL' AWARDS E/BALL	B	81	
Q36	J13 - 3	'EIGHT BALL' AWARDS SPECIAL	A	95	
Q70	J10 - 7	EXTRA BALL	A	56	
Q25	J10 - 3	GAME OVER	A	95	
Q70	J10 - 7	'H' ROLLOVER	B	56	
Q56	J10 - 17	HIGH SCORE TO DATE	A	97	
Q59	J10 - 14	LEFT OUTLANE	B	36	
Q24	J10 - 2	'M' ROLLOVER	B	45	
Q55	J10 - 16	MATCH	A	71	
Q41	J10 - 8	'P' ROLLOVER	B	62	
Q28	J10 - 6	RIGHT OUTLANE	B	21	
Q65	J12 - 4	ROLLOVER LANES 10,000	B	15	
Q34	J13 - 1	ROLLOVER LANES 20,000	B	34	
Q51	J13 - 8	ROLLOVER LANES 30,000	B	40	
Q66	J13 - 6	ROLLOVER LANES 40,000	B	14	
Q35	J13 - 2	ROLLOVER LANES SPECIAL	B	78	
Q31	J12 - 13	SAUCER 2X	B	61	
Q48	J12 - 7	SAUCER 3X	B	52	
Q63	J12 - 2	SAUCER 5X	B	25	

TRANSISTOR

EIGHT BALL CHAMP LAMP DRIVER LOCATIONS

CONNECTOR/PIN	LAMP	PHASE	WIRE CODE
J10 - 6	SAUCER 8-BALL	A	21
J12 - 14	SAUCER 100K	B	73
J10 - 17	SPINNER 1,000	B	97
J10 - 3	SPINNER 3,000	B	95
J10 - 9	SPINNER 5,000	B	35
J10 - 1	S.P.S.A.	A	91
J10 - 9	TILT	A	35
J10 - 12	TRIPLES PLAYFIELD VALUE	B	34
J12 - 8	2X	B	18
J12 - 3	3X	B	23
J12 - 11	5X	B	98
J13 - 12	5,000 DROP TARGET 1/2	A	80
J13 - 10	5,000 DROP TARGET 3	A	57
J13 - 4	5,000 DROP TARGET 4/5	A	70
J13 - 11	5,000 DROP TARGET 6	A	72
J13 - 7	5,000 DROP TARGET 7	A	54

EIGHT BALL CHAMP SOLENOID DRIVER LOCATIONS

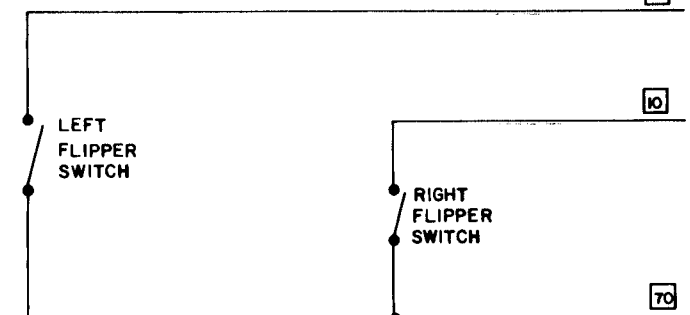
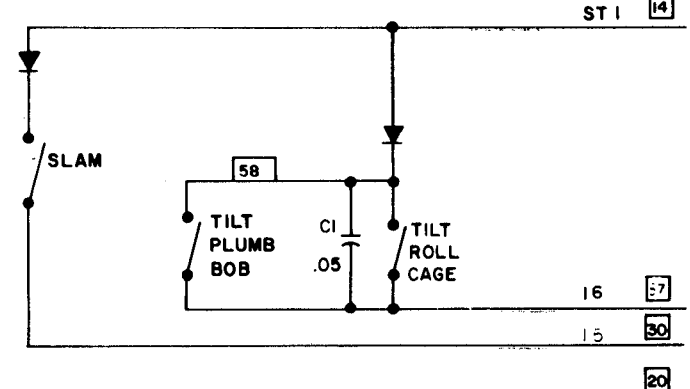
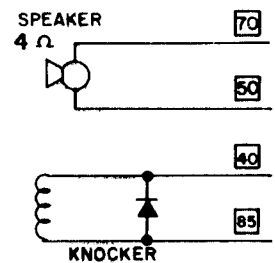
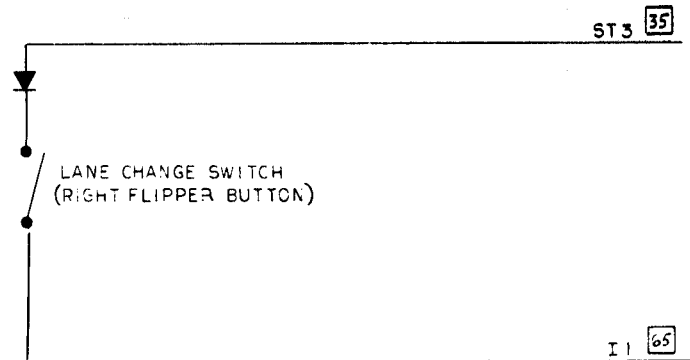
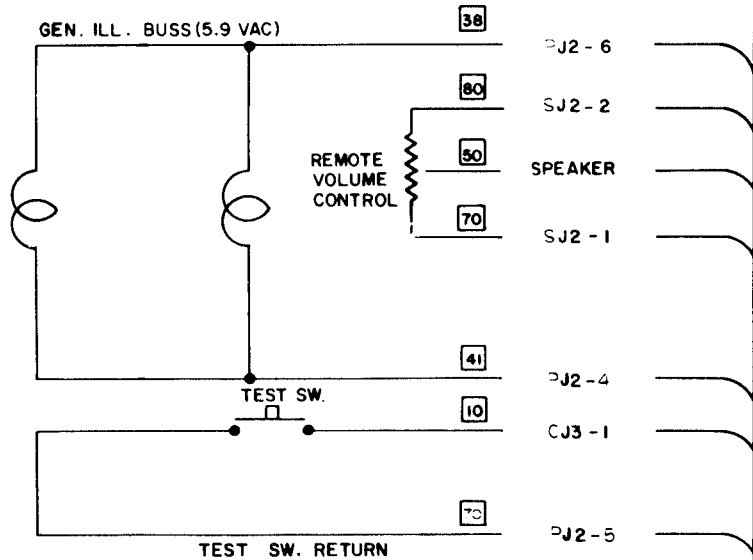
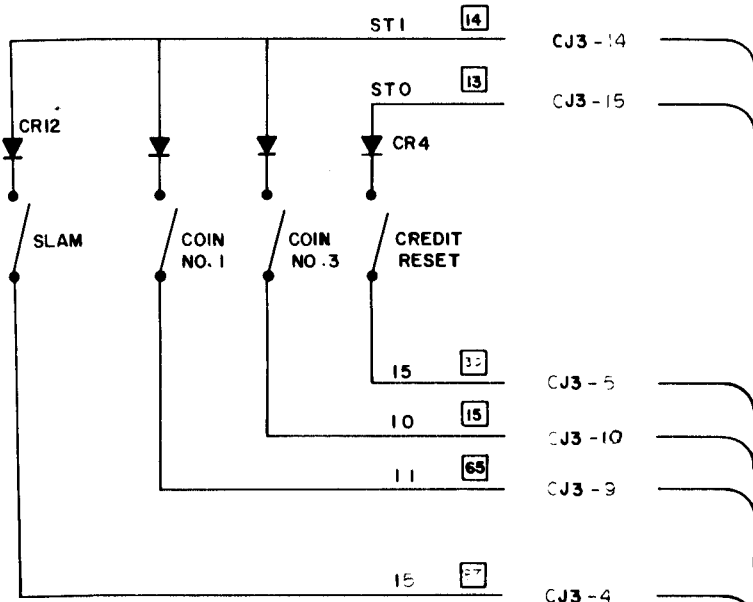
CONNECTOR/PIN	COIL	WIRE CODE
J6 - 1	DROP TARGET 1/2	74
J6 - 2	DROP TARGET 3	78
J6 - 3	DROP TARGET 4/5	71
J6 - 4	DROP TARGET 6	86
J8 - 7	DROP TARGET 7	81
J7 - 2	KNOCKER	85
ON CONTROL BOARD	K1 FLIPPER RELAY	
J9 - 6	LEFT SLING SHOT	67
J9 - 3	LEFT THUMPER BUMPER	71
J9 - 8	OUTHOLE	83
J9 - 4	RIGHT SLING SHOT	74
J9 - 2	RIGHT THUMPER BUMPER	78
J9 - 1	SAUCER	80

WIRE COLOR CODE

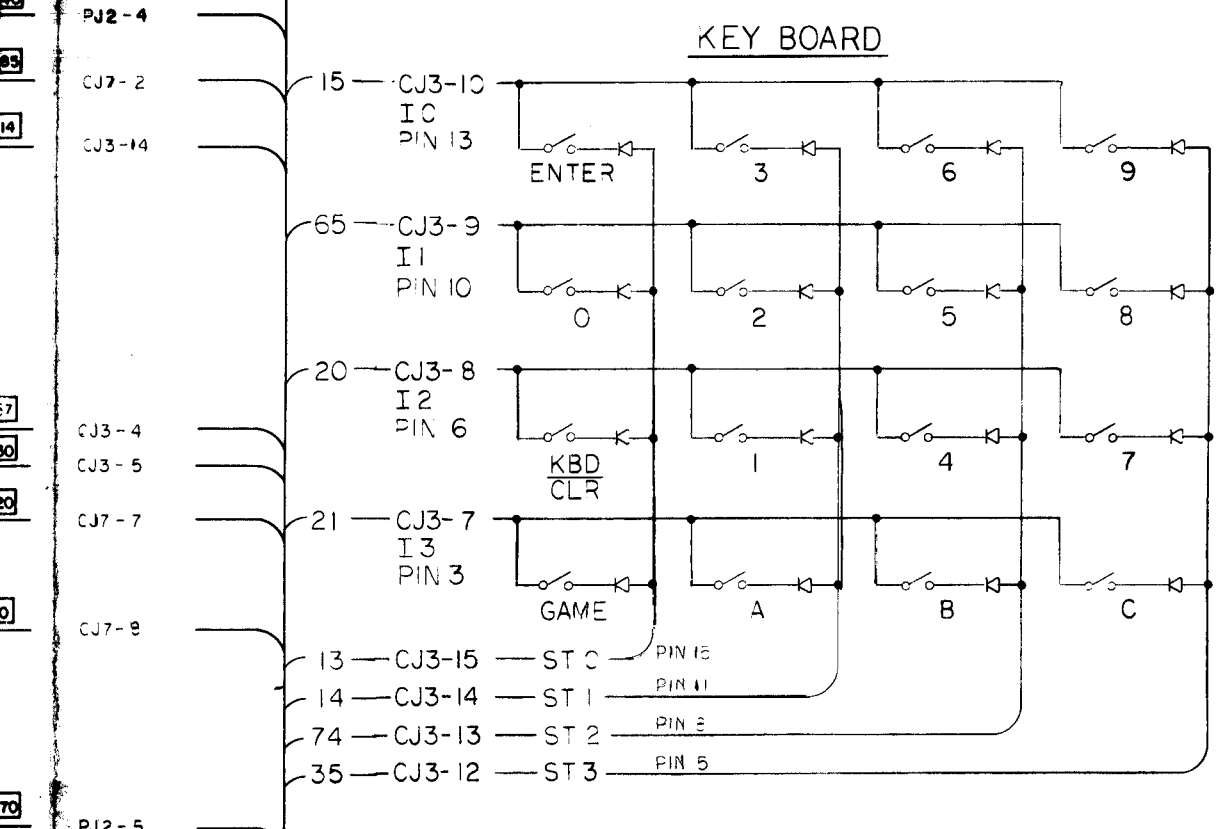
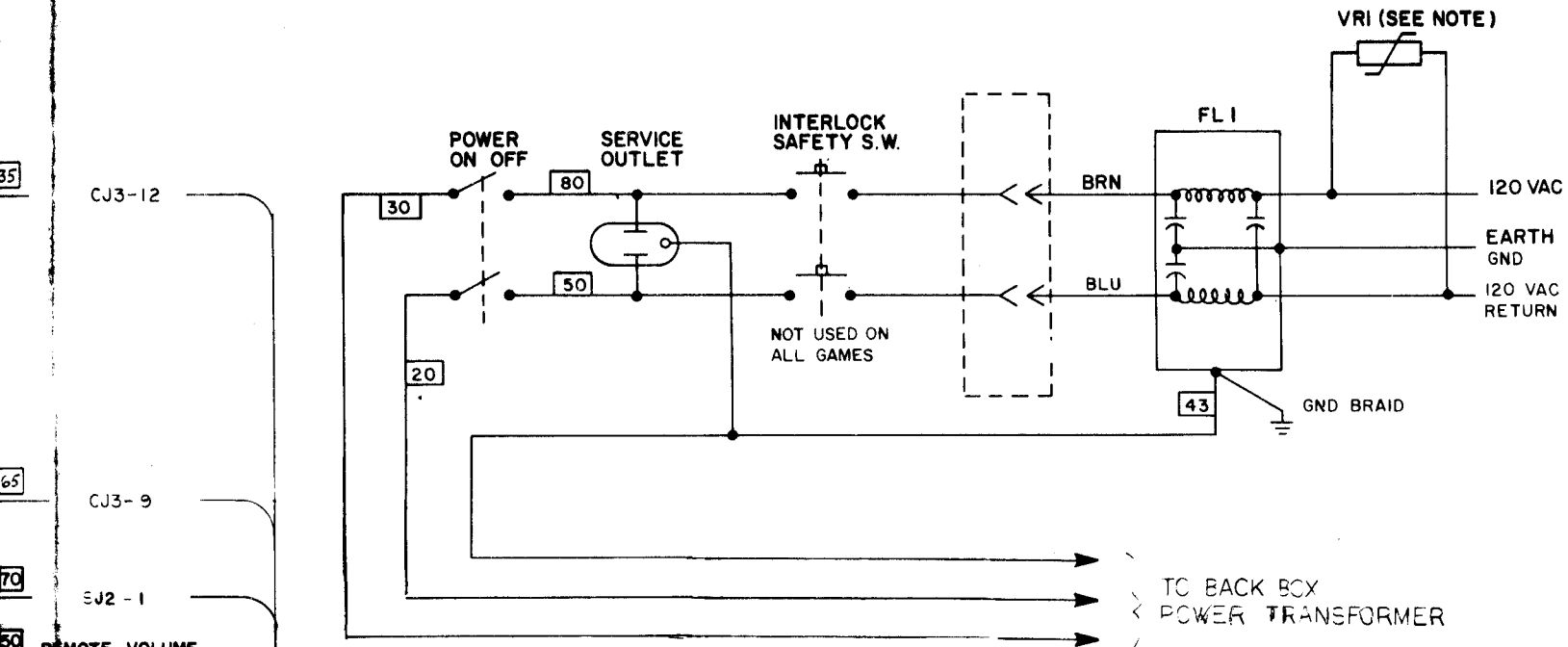
1 - RED -R-	6 - BROWN -BR-
2 - BLUE -BLU-	7 - ORANGE -O-
3 - YELLOW -Y-	8 - BLACK -B-
4 - GREEN	9 - GRAY
5 - WHITE -W-	0 - NO TRACER
J - JUMPER	
1 - FIRST NUMBER-BODY COLOR	
2 - SECOND NUMBER-TRACER COLOR	
EXAMPLE: 50 - WHITE	
51 - WHITE-RED	

WIRE COLOR CODE

1-RED -R-	6-BROWN -BR-
2-BLUE -BLU-	7-ORANGE -O-
3-YELLOW -Y-	8-BLACK -B-
4-GREEN	9-GRAY
5-WHITE -W-	0-NO TRACER
J-JUMPER	
1-FIRST NUMBER-BODY COLOR	
2-SECOND NUMBER-TRACER COLOR	
EXAMPLE: 50 -WHITE	
51 -WHITE-RED	



COLOR CODE			
1 RED	6 BROWN	11 BLACK	16 NO TRACE
2 BLUE	7 ORANGE	12 WHITE	
3 YELLOW	8 BLACK	13 GRAY	
4 GREEN	9 GRAY	14 NO TRACE	
5 WHITE	10 NO TRACE		



KEY BOARD

PIN	DESIG	COLOR
1		
2		
3	I3	21
4	KEY	
5	ST3	35
6	I2	20
7		
8	ST2	74
9		
10	I1	65
11	ST1	14
12		
13	I0	15
14		
15	ST0	13

3-16

CODE

BROWN

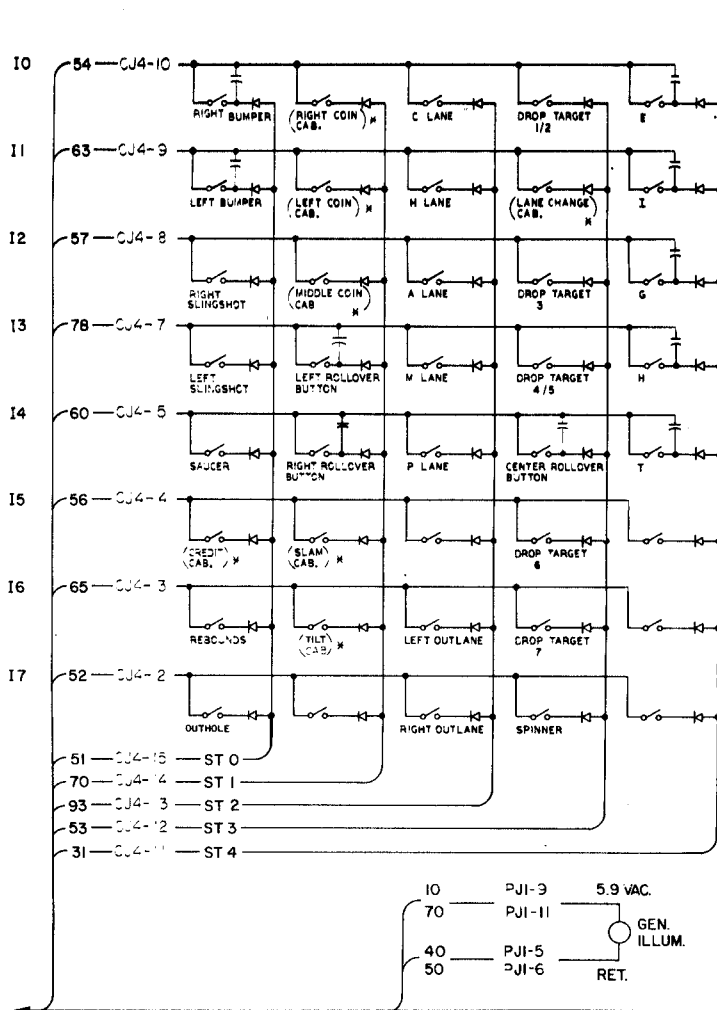
ORANGE

BLACK

GRAY

NO TRACE

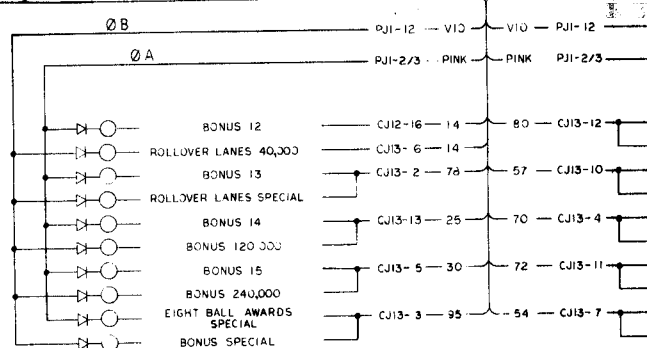
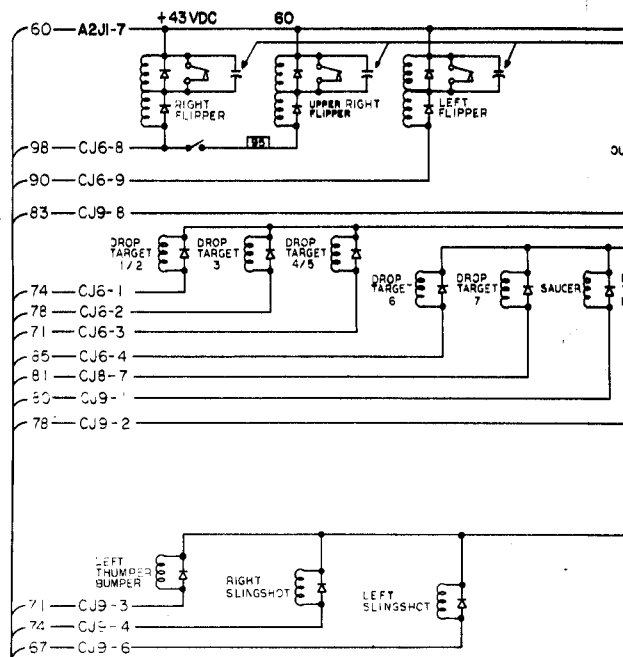
PROJECT ENG.		HEAT TREAT		SCALE		USED ON	
DO NOT SCALE DWG						NO REQ'D	
DIM TOLERANCES UNLESS SPECIFIED		DES. j.ketza		E BALL CHAMP		PART NO	
CONTINUEDLY T.M. 001		CHK. 8/13/85		CABINET WIRING SCHEMATIC		M051-00B38-A090	
HOLE DIA. ± .002 01		DATE		FINISH		REVISIONS	
						Bally / MIDWAY MFG. CO. FRANKLIN, PA. U.S.A.	



PLAYFIELD

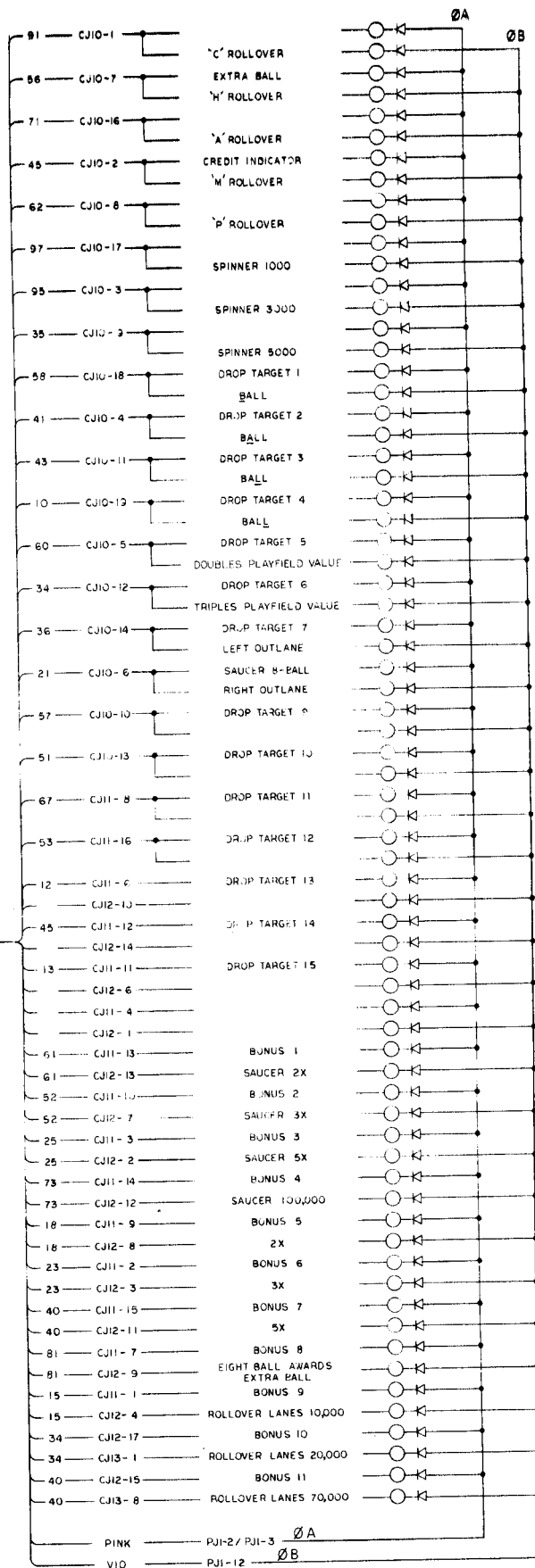
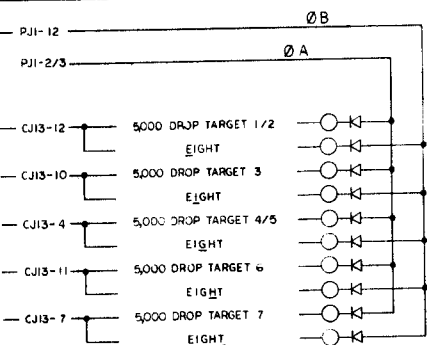
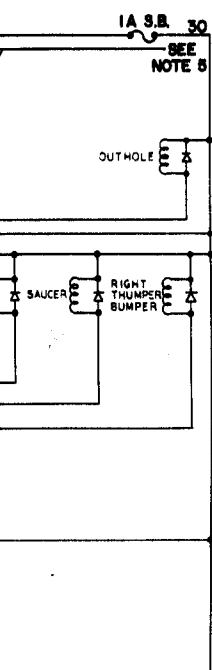
NOTES

1. INDICATES NOT USED
2. N/U=NOT USED ON PLAYFIELD
3. COIL DIODES ARE IN4004 SWITCH DIODES ARE IN4148
- ALL CAPACITORS ARE .05 MFD.
4. GERMANY ONLY-CAPACITOR .01 MFD. @ 500V.
5. * INDICATES- NOT USED ON PLAYFIELD, DRAWING ONLY TO SHOW POSITION IN SWITCH MATRIX.

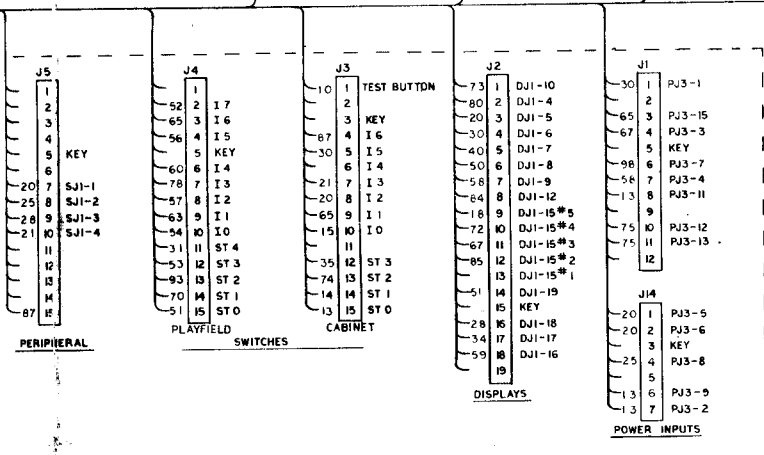


COLOR CODE

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



PROJECT ENG:		REVISED	
DO NOT SCALE DIMS	DATE	USED ON 8 BALL CHAMP	DATE
DIM TOLERANCES UNLESS SPECIFIED	BY J. KETZ	NO REV	DATE
FRANKLIN, ILL.	8/2/85	8 BALL CHAMP PLAYFIELD DIAGRAM	
PART NO.		PART NO.	
MO51-00B38-A089		MO51-00B38-A089	



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

PROJECT 888: _____		DO NOT SCALE OR W		USED ON 8 BALL CHAMP		REVISIONS <table border="1"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>											
DATE TOLERANCES UNLESS SPECIFIED		NEW YEAR		NO REVD		Brady / MIDWAY MFG. CO. FRANKLIN, PA. ILL.											
DIM. TOLERANCES FRACTIONS DECIMALS ANGLES HOLE DIA. TAP DIA.		7 28/85 7 28/85		8 BALL CHAMP BACK BOX DIAGRAM		PART NO. M051-00B38 -A088											

BALLY/MIDWAY'S EIGHT BALL CHAMP PIN**#B38****ROM/EPROM PART NUMBERS**

UNPROGRAMMED CONTROL BOARD A084-91786-C000
PROGRAMMED CONTROL BOARD A084-91786-AB38

POS.	MIDWAY PART NUMBER
U3	0B38-00803-0005

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

UNPROGRAMMED SQUAWK & TALK A084-91625-A000
PROGRAMMED SQUAWK & TALK A084-91625-AB38

POS.	MIDWAY PART NUMBER
U3	0B38-00803-0002
U4	0B38-00803-0003
U5	0B38-00803-0004

JUMPERS	IN	OUT
A		**
B		**
C	**	
D	**	
E	**	
F		**
G	**	
H	**	
J		**
K		**
L	**	
M		**
N	**	
P		**
Q	**	
R		**
S	**	
T		**
U	**	
V		**
W	**	
X		**
Y	**	
Z		**
AA	**	
BB		**
CC		**
DD	**	
EE		**
FF	**	

MO51-00B38-A009	REVISIONS
7-17-85	RELEASE FOR PRODUCTION