

# LADY Luck

## Operating Manual



**Bally** **MIDWAY** MFG. CO

10601 W. Belmont Ave. Franklin Park, Illinois 60131

Telephone (312) 454-0200



**WARNING**

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

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

ELECTRICAL BULLETIN: FOR ALL APPARATUS COVERED BY THE CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD C22.2 NO. 1, WHICH EMPLOYS A SUPPLY CORD TERMINATED WITH A POLARIZED 2-PRONG ATTACHMENT PLUG.

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

**Bally/MIDWAY**  
T.M.

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**Video or Pinball - Continental U.S. 800-323-7182**

**Bally/MIDWAY**  
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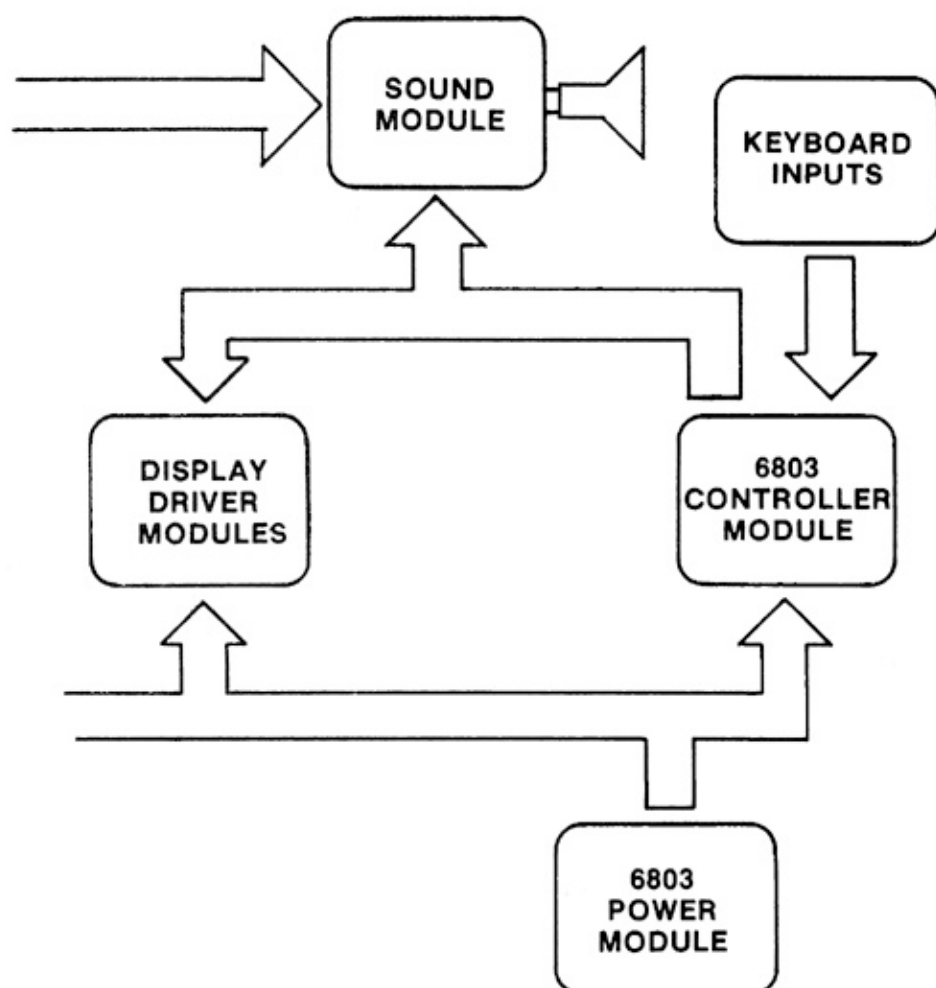
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## BLOCK DIAGRAM—ELECTRONIC PINBALL GAME



### 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.

# **SECTION 1**

## **Installation and General Game Operation Instructions**

### **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.

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 26** as discussed on page 1-10).

Tilting the game results in loss of a ball. Bonus points are not scored. The flippers, thumper bumpers, etc. go 'dead'. 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 through 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) and 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. sound options) 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 14 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)

## STEPPING THROUGH

Once you have looked at a REGISTER or changed it, you have three options:

**1. Press (ENTER)...** This causes the game to step to the next REGISTER. Example: If you're looking at the information in REGISTER 23 and press (ENTER), the Match/Credit display changes to 24 and the information contained in REGISTER 24 is displayed in the Player #1 position. This means we can single-step through the REGISTERS just pressing the (ENTER) key.

**2. Press (KEYBRD/CLR)...** This puts 00 back in the Match/Credit display allowing us to enter a number of a new REGISTER or FUNCTION we wish to see.

**3. Press (GAME)...** This causes the microprocessor to exit KEYBOARD ENTRY Mode and return to gameover condition.

## TESTING

To gain entry to the standard tests we follow the same procedure we used to get to the REGISTERS. Just operate the black Test Button on the front door once. If you followed the instructions outlined under OPERATION, you're ready to proceed. If you haven't please READ THEM NOW. The KEYBOARD treats these Test Functions in the same manner.

- (9), (0), (ENTER)....Turns on the LAMP Test  
Or
- (9), (1), (ENTER)....Turns on the DISPLAY Test  
Or
- (9), (2), (ENTER)....Turns on the SOLENOID Test  
Or
- (9), (3), (ENTER)....Turns on the SOUND Test

To EXIT any of these tests do one of the following:

**Press (KEYBRD/CLR)** - Same result as step 2) above....or

**Press (ENTER)** - This steps the game to the next test....or

**Press (GAME)** - Same results as step 3) above....

The STUCK-SWITCH Test is function 94 and since the KEYBOARD is in parallel to the game switches this test may only be EXITED by operating the RED Test button on the front door.

One Quick Tip: If you don't remember how to EXIT a Test, just turn the game off and then on again. We humans can't be expected to remember everything.

## 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 - GAME FEATURE OPTIONS

REG. #	DESCRIPTION	VALID ENTRY
1	TOTAL PLAYS	
2	TOTAL REPLAYS	
3	COIN CHUTE #1	
4	COIN CHUTE #2	
5	COIN CHUTE #3	
6	# OF TIMES HIGH SCORE BEAT	
7	GAME PERCENTAGE	
8	GAME TIME (MINUTES)	
9	SERVICE METER	
10	CREDITS	0 THROUGH 5
11	# OF SPCLS AWARDED FROM PANEL	
12	THRESHOLD #1	0 THROUGH 9999999
13	THRESHOLD #2	0 THROUGH 9999999
14	THRESHOLD #3	0 THROUGH 9999999
15	HIGH SCORE	0 THROUGH 9999999
16	MAX CREDITS ALLOWED	1 THROUGH 40
17	COINS OPTION	0 THROUGH 99
18	COINS OPTION CHUTE #1	1 THROUGH 50
19	COINS OPTION CHUTE #2	1 THROUGH 50
20	COINS OPTION CHUTE #3	1 THROUGH 50
21	COINS FACTOR	1 THROUGH 50
22	BONUS CREDITS	0 THROUGH 50
23	BALLS PER GAME	1 THROUGH 5
24	SCORING THRESHOLD MODE	0 THROUGH 3
25	SPECIAL MODE	0 THROUGH 3
26	HIGH SCORE MODE	0 THROUGH 3
27	SOUNDS MODE	0 THROUGH 3
28	GERMAN PRIZE METER	0 THROUGH 9999999
29	MATCH OPTION	1 = YES      0 = NO
30	DISPLAY CREDIT	1 = YES      0 = NO
31	FREE GAMES/GAMES ALLOWED	1 = UNLIMITED      0 = ONE
32	FREE PLAY	65=FREE PLAY
33	# OF SPCLS AWARDED FROM THRES. #1	
34	# OF SPCLS AWARDED FROM THRES. #2	
35	# OF SPCLS AWARDED FROM THRES. #3	
36	# OF SPCLS AWARDED FROM LEFT	
37	ROLL-UP	
38	# OF SPCLS AWARDED FROM DOUBLE/TRIPLE	
39	# OF SPCLS AWARDED FROM CARDS COMPLETE	
40	(NOT USED)	
41	(NOT USED)	
42	(NOT USED)	
43	# OF EXTRA BALLS AWARDED	
44	CLEAR ALL BOOKKEEPING METERS	65 = CLEAR ALL BOOKKEEPING
45	RESET OPTIONS TO FACTORY RECOMMENDED	65 = RESET OPTIONS
46	LEFT ROLL-UP SPECIAL ON WITH RECALL LIGHTED LEFT	7 = 30K      0 = 100K
47	ROLL-UP VALUE	1 = YES      0 = NO
48	DOUBLE/TRIPLE SPECIAL ON WITH CARDS COMPLETED SPECIAL ON WITH (Steps by 100K)	1 = DOUBLE      0 = TRIPLE 3 = 100K      0 = 400K
49	CHANGE SUIT WITH DROP TARGETS DOWN	1 = YES      0 = NO
50	SPINNER VALUE LIGHT STARTS WITH RECALL LIGHTED SPINNER VALUE	1 = 2K      0 = OFF 1 = YES      0 = NO
51	# OF COLUMNS TO AWARD EXTRA BALL (Steps by 1 Column)	3 = 2 COLUMNS      0 = 5 COLUMNS
52	RECALL LIGHTED JOKER TARGETS	1 = YES      0 = NO
53	# OF STARS FLASHING AT A TIME	1 = BOTH      0 = ONE
54	COUNTDOWN TIMER LENGTH (Steps by 5 Sec.)	3 = 25 SEC.      0 = 10 SEC.
55	E/R ROLL-OVER LANES TO CHANGE SUIT	1 = YES      0 = NO
56	RECALL LIGHTED DEUCE TARGETS	1 = YES      0 = NO
57	SLING SHOTS ACTIVE	1 = YES      0 = NO
58	# OF TILT WARNINGS	3 = 3 WARNINGS      0 = 0 WARNING

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## 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)**

<b>OPTION INDEX</b>	<b>CREDITS/COINS CHUTE #1</b>	<b>CREDITS/COINS CHUTE #2</b>	<b>CREDITS/COINS CHUTE #3</b>	<b>BONUS CREDIT AT</b>
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
<b>would become</b>	
COIN CHUTE OPTION #1	2 credit / 2 coin
<b>and</b>	
COIN CHUTE OPTION #2	2 credit / 1 coin
<b>would become</b>	
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.

## 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 a Free game at each of the two or three score levels.

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

### PLAYFIELD SPECIALS FEATURE; REGISTER 25

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

AWARD	REGISTER 25
REPLAY	ENTER '3'
EXTRA BALL	ENTER '2'
NOVELTY (POINTS)	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'

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. See **REGISTER 24** description.

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 27**

### **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 27.

#### **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.

## **NUMBER OF GAMES REPLAYS PER GAME ADJUSTMENT; REGISTER 31**

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

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

## **FREE PLAY; REGISTER 32**

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; REGISTERS 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.

## **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.**

## **TO CLEAR ALL BOOKKEEPING METERS**

\*REGISTER #43 Clears **all** Bookkeeping Meters Quickly And Easily:

<b>BOOKKEEPING METERS</b>	<b>ENTER</b>
CLEAR ALL	65

When REGISTER #43 is set to the CLEAR ALL (65) position, the following REGISTERS are reset to the values indicated:

REGISTERS 1 through 11 are reset to "0"  
REGISTER 16 is reset to "10"  
REGISTERS 17 through 21 are reset to "1"  
REGISTER 22 is reset to "0"  
REGISTERS 24 through 27 are reset to "3"  
REGISTER 28 is reset to "0"  
REGISTERS 29 through 31 are reset to "1"  
REGISTERS 32 through 43 are reset to "0"

**\*NOTE:** When "65" is entered into either REGISTERS 43 or 44, the REGISTER will revert back to "0" and the respective meters will be updated **only when the test mode is exited**. This allows the operator to change his mind before such a drastic change has been made to the bookkeeping functions.

## C. LADY LUCK FEATURE OPERATION AND SCORING

### 1. P-O-K-E-R FEATURE

Located at the top section of the playfield are three roll-over lane switches identified with the illuminated letters P, O, and K. Located near the lower section of the playfield are two roll-over lane switches identified with the illuminated letters E and R. Each time a roll-over lane switch is activated by the ball, 3,000 points are awarded and the light for the corresponding letter goes out. The lights illuminating the letters in P-O-K-E-R will change position when the right flipper is operated for simplicity and skill. Each time **all** of the P-O-K-E-R lane lights are completed, the value of the bonus multiplier is increased, starting at 2X and increasing to a maximum of 5X.

The two roll-over lane switches identified with the illuminated letters E and R have a dual purpose. They may also be used during the game to change suits in the card suit grid. (Explained later in this text.)

### 2. A-K-Q-J-10 FEATURE

In the center of the playfield, twenty playing cards are arranged into four rows to form a grid. Each row in the grid represents a different card suit (hearts, clubs, spades, and diamonds). Along the left side of the grid, next to each of the four rows, there is an arrow indicating which suit is represented in the row. Located above the grid are five drop targets labeled A-K-Q-J-10. When the suit indicator light is flashing next to a row, knocking down a drop target will light the corresponding card in that particular row, scoring 3,000 points. When all of the drop targets are knocked down, the suit indicator light begins to flash for the next row of cards. When all of the cards in one row are lit, that suit is completed.

When a ball is lost through the outhole, all drop targets will reset.

As mentioned earlier, the flashing suit indicator will move to the next row/suit automatically when all of the drop targets are knocked down. This changing of suits can be defeated.

\*REGISTER #49 Controls The Drop Targets To Change Suit Option:

ALL DROP TARGETS DOWN	ENTER
Change Suit	1
Have No Effect	0

**NOTE:** At the beginning of the game and until the first target is hit, each row of cards in the card suit grid will flash sequentially. When the first target is hit, the card suit indicator light will remain flashing on the last row lit.

### 3. JOKER FEATURE

The JOKER targets are located behind the A-K-Q-J-10 drop targets and become exposed as the drop targets are knocked down. When **all** of the drop targets are knocked down, the JOKER targets become active. This is indicated with flashing JOKER lights. As each JOKER target is hit, 5,000 points are awarded and the light corresponding with that target stops flashing and becomes solid. When **all** of the JOKER targets are hit, the row of cards next to the flashing suit indicator will light, completing that suit. The A-K-Q-J-10 drop targets will then reset and the following bonus awards will be given:

1st Completed Suit - Doubles Playfield Bonus Score Values

2nd Completed Suit - Triples Playfield Bonus Score Values

\*REGISTER #47 Controls The Double/Triple "SPECIAL" Award:

"SPECIAL" LIGHT ON WITH	ENTER
Double	1
Triple	0

If the ball is lost through the outhole before all of the JOKER targets have been hit, the activated JOKER lights may or may not be recalled.

\*REGISTER #53 Controls The JOKER Lights Recall:

JOKER LIGHTS RECALL	ENTER
Yes	1
No	0

When all four suits in the card suit grid are lit and completed by using the A-K-Q-J-10 drop targets and/or the JOKER targets, the player is awarded a Bonus score of 100,000 points. Each time all four suits are completed, the point value of this Bonus increases in increments of 100,000 until reaching a maximum of 400,000 points.

\*REGISTER #48 Controls The Cards Completed "SPECIAL":

CARDS COMPLETED "SPECIAL" LIGHT ON WITH	ENTER
100k	3
200k	2
300k	1
400k	0

#### 4. CHANGE SUIT FEATURE

Located along the left and right side walls of the playfield are two targets labeled "CHANGE SUIT". Each time one of these targets is hit, the flashing suit indicator light will move to the next row or suit in the grid.

The two lower roll-over lanes labeled E and R can be made to activate the CHANGE SUIT feature.

\*REGISTER #56 Controls The E/R Lanes To Change Suit Option:

E/R LANES CHANGE SUIT	ENTER
Yes	1
No	0

#### 5. COUNTDOWN FEATURE

Located along the left and right side of the playfield are two targets identified with a star. Each target awards 3,000 points when hit. Hitting both of these targets, while they are flashing, will activate the COUNTDOWN TIMER. This countdown timer is shown as a scale of flashing lights on the lower section of the playfield. If all A-K-Q-J-10 drop targets are knocked down or in the "down" position while the countdown timer is running, all playfield target values are multiplied by 10. In addition, the A-K-Q-J-10 drop targets have a double effect. For each drop target knocked down, TWO corresponding cards of different suits in the grid will light, increasing the player's ability to complete the suit grid. As the timer counts down, the number of flashing lights in the scale will gradually decrease. The timer has expired when all of the lights in the scale have stopped flashing.

\*REGISTER #55 Controls The Length Of The Countdown Timer:

COUNTDOWN TIMER LENGTH	ENTER
25 seconds	3
20 seconds	2
15 seconds	1
10 seconds	0

An adjustment can be made to allow either both or only one of the star targets to flash at a time.

\*REGISTER #54 Controls The Number Of Flashing Star Targets:

STARS FLASHING AT ONE TIME	ENTER
Both	1
One	0

#### 6. SPINNER FEATURE

Located in the upper left section of the playfield is a trapped ball target. Each time the trapped ball target is hit, the lit value of the spinner target steps-up to the next higher value. Spinner values range from 2,000 to 10,000 points and are awarded each time the ball is shot through the spinner target. Stepped-up spinner values can be adjusted to either reset or be recalled when the ball is lost through the outhole.

\*REGISTER #51 Controls The Spinner Value Recall Option:

SPINNER VALUE RECALL	ENTER
Yes	1 *
No	0

The spinner target may start with a lit value of 2,000 points or no lit value, awarding 100 points.

\*REGISTER #50 Controls The Starting Value Of The Spinner Target:

SPINNER VALUE LIGHT STARTS AT	ENTER
2K	1
Off	0

#### 7. LEFT ROLL-UP LANE

Awards the lit value and advances to the next value. The roll-up award lit values can range from 10,000 to 130,000 points. A "SPECIAL" is awarded when the "SPECIAL" light is lit. The stepped-up values for the roll-up lane may be adjusted to either reset or be recalled after the ball is lost through the outhole.

\*REGISTER #45 Controls Which Value Level Turns On "SPECIAL":

LEFT ROLL-UP "SPECIAL" LIGHT ON WITH	ENTER
30K	7
40K	6
50K	5
60K	4
70K	3
80K	2
90K	1
100K	0

\*REGISTER #46 Controls The Left Roll-Up Value Level Recall Option:

RECALL VALUE LEVEL	ENTER
Yes	1
No	0

## 8. RIGHT SIDE GATE FEATURE

There are three targets on the playfield, each identified with a flashing deuce. When each target is hit, it stops flashing and awards 1,000 points. When all three are lit and not flashing, the right side gate opens to block the exit of the ball. As a result, the ball rolls back into play toward the right flipper. The gate closes after one use or when the ball is lost through the outhole.

\*REGISTER #57 Controls The Lighted Deuce Recall Option:

RECALL LIGHTED DEUCES	ENTER
Yes	1
No	0

## 9. EXTRA BALL FEATURE

The suit grid is made up of twenty cards arranged into four rows. Each row represents a different suit and contains five cards, an Ace, King, Queen, Jack, and 10 respectively. One of the five verticle columns would consist of four cards, equal in value and each from a different suit. In a single column, an Ace, for example, would appear in each of the four suits. When a certain (adjustable) number of columns are lit, an extra ball is awarded.

\*REGISTER #52 Controls The Number Of Lit Columns Required To Earn An Extra Ball:

EXTRA BALL AWARDED WITH	ENTER
2 Columns	3
3 Columns	2
4 Columns	1
5 Columns	0

## 10. MISCELLANEOUS FEATURES

Each THUMPER BUMPER awards 100 points when hit.

Each SLINGSHOT awards 30 points when hit.

Each REBOUND awards 10 points when hit.

The LEFT and RIGHT OUTLANE each award 1,000 points.

When a ball is lost through the outhole, the Bonus Points are awarded. These bonus points include 5,000 points per card lit in the suit grid times any multipliers earned during the game.

\*REGISTER #59 Controls The Number Of Tilt Warnings Allowed Per Ball:

TILT WARNINGS PER BALL	ENTER
3	3
2	2
1	1
None	0

\*REGISTER #58 Controls The Sling Shots:

SLING SHOTS ACTIVE	ENTER
Yes	1
No	0

\*REGISTER #44 Controls The Default Values:

SET ALL OPTIONS TO	ENTER
Factory Recommended Settings	65



## 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 High Score Is Beaten
7	Game Percentage
8	Total Game Time (Minutes)
11	Total Specials Awarded From Playfield Only
33	Total Specials Awarded From Threshold #1
34	Total Specials Awarded From Threshold #2
35	Total Specials Awarded From Threshold #3
42	Total Number Of Extra Balls Awarded

### SPECIAL REGISTERS

REGISTER #	DISPLAYS
36	Total Specials Awarded From The Roll-Up Feature
37	Total Specials Awarded From The Double/Triple Feature
38	Total Specials Awarded From The Cards Completed Feature
39	(NOT USED)
40	(NOT USED)
41	(NOT USED)

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:** None of the above REGISTERS can be altered - they may ONLY be reset by entering "0".

## V. RECOMMENDED 3 & 5 BALL REGISTER SETTINGS

REGISTER	FUNCTION	3-BALLS	5-BALLS
45	Left Rollover Special	3	0
46	Left Rollover Memory	1	1
47	Double/Triple Special	0	0
48	Card Complete Special	2	1
49	Find Open Suit	1	1
50	Spinner Start Value	1	1
51	Spinner Memory	1	1
52	X-Ball Adjust	0	0
53	Joker Memory	1	1
54	Star Targets	1	1
55	Countdown Timer	2	2
56	E-R Lanes Change Suit	1	1
57	Deuces Memory	1	0
58	Slingshot Active	1	1
59	# of Tilt Warnings	1	1
60	Bonus Multipliers Memory	1	1
61	Game Over Attract Music	1	1



## VI. RECOMMENDED INSTRUCTIONS, SCORE CARDS & HIGH SCORE FEATURE SETTINGS

### REPLAYS

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

### 3-BALL

M051-00E34-A030  
M051-00E34-A038  
Register 25, enter "3"  
Register 29, enter "1"  
Register 26, enter "3"

### 5-BALL

M051-00E34-A030  
M051-00E34-A039  
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

M051-00E34-A030  
M051-00E34-A038  
w/M051-00E34-A074  
Register 25, enter "2"  
Register 26, enter "0"  
Register 26, enter "0"

M051-00E34-A030  
M051-00E34-A039  
w/M051-00E34-A077  
Register 25, enter "2"  
Register 26, enter "0"  
Register 26, enter "0"

### NOVELTY

Instruction Card  
Score Card  
Playfield Specials  
Match  
High Score to Date

M051-00E34-A030  
M051-00E34-A036  
Register 25, enter "1"  
Register 29, enter "0"  
Register 26, enter "0"

M051-00E34-A030  
M051-00E34-A037  
Register 25, enter "1"  
Register 29, enter "0"  
Register 26, enter "0"

### HIGH GAME TO DATE (reset periodically)

3-BALL .....5,000,000

5-BALL .....7,000,000

## VII. 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 for 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/Ball 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.

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

# LADY LUCK VIII.

## SOLENOID IDENTIFICATION TABLE

<input type="checkbox"/> SELF TEST #	SOLENOID IDENTIFICATION	<input type="checkbox"/> SELF TEST #	SOLENOID IDENTIFICATION
01	LEFT THUMPER BUMPER	07	BRIGHT LIGHTS
02	MIDDLE THUMPER BUMPER	08	OUTHOLE
03	RIGHT THUMPER BUMPER	09	KNOCKER
04	LEFT SLINGSHOT	10	RIGHT GATE
05	RIGHT SLINGSHOT	11	FLIPPERS
06	DROP TARGET RESET		

## SWITCH ASSEMBLY IDENTIFICATION TABLE

<input type="radio"/> SWITCH SELF TEST #	DESCRIPTION	<input type="radio"/> SWITCH SELF TEST #	DESCRIPTION
01	DROP TARGET "T"	20	SLINGSHOT LEFT
02	DROP TARGET "J"	21	SLINGSHOT RIGHT
03	DROP TARGET "Q"	22	OUTLANE RIGHT
04	DROP TARGET "K"	23	OUTLANE LEFT
05	DROP TARGET "A"	24	ROLLOVER LEFT
06	CREDIT	25	POKER "P"
07	CAPTIVE BALL	26	POKER "O"
08	OUTHOLE	27	POKER "K"
09	COIN RIGHT	28	POKER "E"
10	COIN LEFT	29	POKER "R"
11	COIN MIDDLE	30	CARD "DEUCE" LEFT
12	LANE CHANGE (CABINET)	31	CARD "DEUCE" MIDDLE
13	SPINNER	32	CARD "DEUCE" RIGHT
14	SLAM	33	JOKER 1
15	TILT	34	JOKER 2
16	REBOUND	35	JOKER 3
17	THUMPER BUMPER LEFT	36	JOKER 4
18	THUMPER BUMPER MIDDLE	37	STAR RIGHT
19	THUMPER BUMPER RIGHT	38	STAR LEFT

# #0E34 LADY LUCK

○ INDICATES SWITCH  
ASSEMBLY IDENTIFICATION  
NUMBERS

NOTE: CABINET: 06, 12, 14, 15  
DOOR: 09, 10, 11

□ INDICATES SOLENOID  
IDENTIFICATION NUMBERS

NOTE: BACKBOX: 11  
CABINET: 09

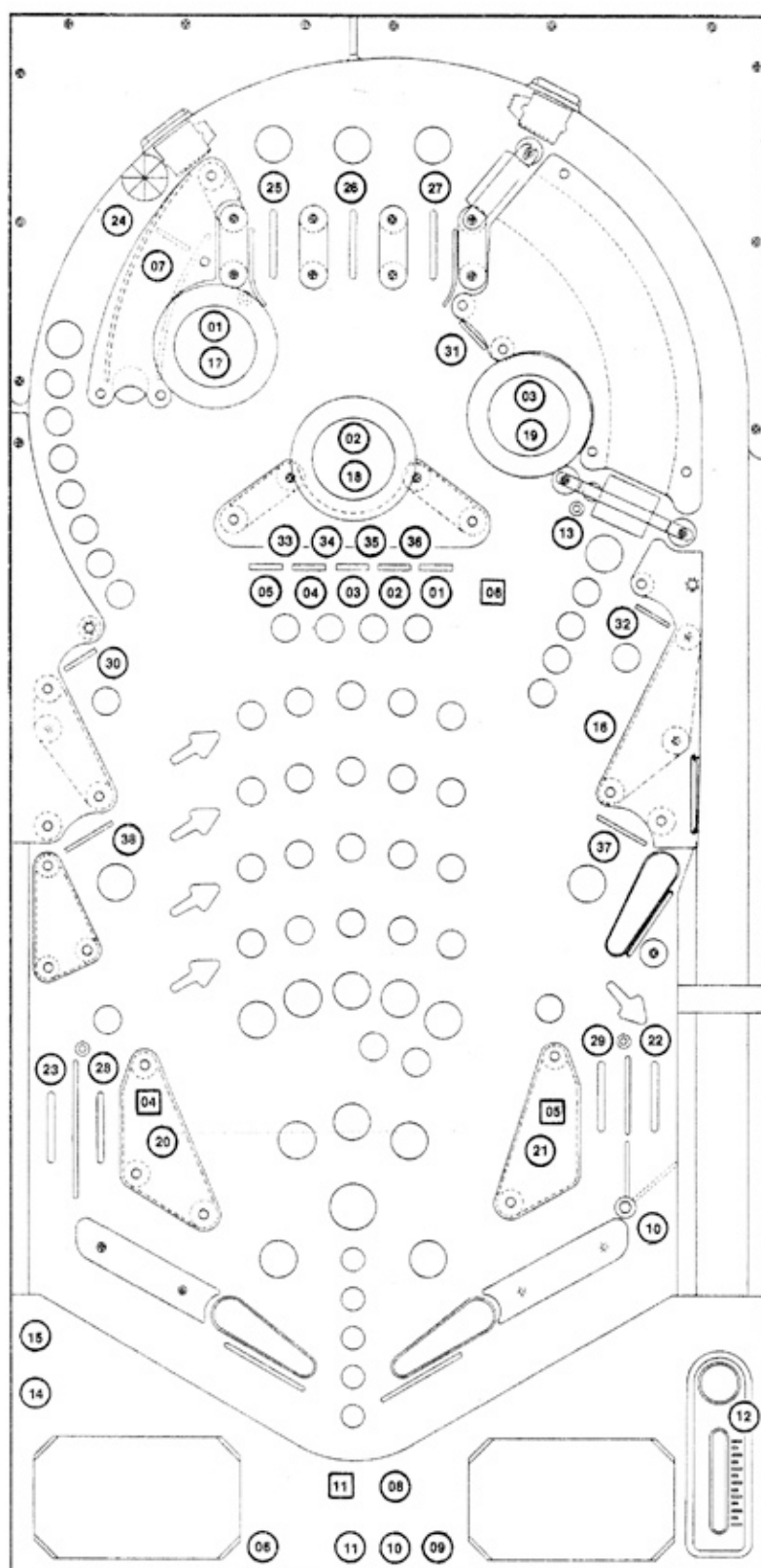


FIGURE I

## IX. 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.

## XI. 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.

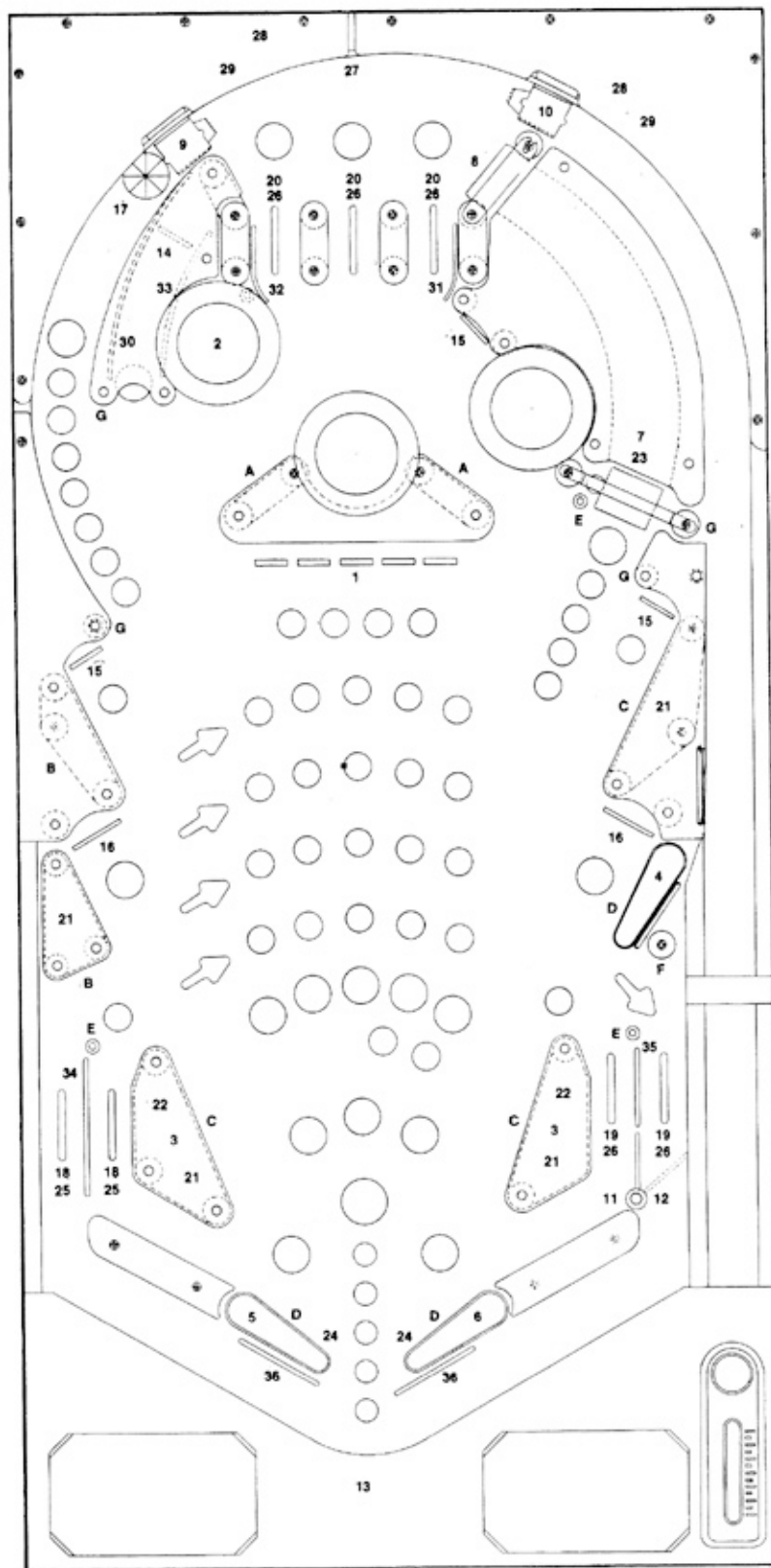
**DON'T:** Use water in large quantities, highly caustic cleaners, abrasive cleaners and cleaning pads on the playfield, or allow a wax or polish build up. Waxes yellow with age and spoil appeal.

## X. 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.

**0E34 LADY LUCK  
RUBBER RINGS & BUMPERS**



**FIGURE II**

**RINGS**

A.	0017-00041-0643	I.D. 1"
B.	0017-00041-0644	I.D. 1 1/2"
C.	0017-00041-0646	I.D. 2 1/2"

**BUMPERS**

D.	0017-00041-0682	FLIPPER RED - I.D. 3"
E.	0017-00041-0633	METAL MINI-POST
F.	0017-00041-0637	PLASTIC POST (TYP.)
G.	0017-00041-0641	METAL POST

**PANEL TOP PARTS**

1.	DROP TARGET ASSY. 5 DT & 4 ST	AE34-00013-0000
2.	THUMPER BUMPER ASSY.	A967-00053-0000
3.	SLINGSHOT KICKER ASSY.	A967-00059-0000
4.	FLIPPER ASSY.-SINGLE SWITCH RT.	AC70-00022-0100
5.	FLIPPER ASSY.-SINGLE SWITCH LT.	AC70-00022-0200
6.	FLIPPER ASSY.-DOUBLE SWITCH RT.	AC70-00023-0100
7.	SPINNER & GATE ASSY.	AE34-00018-0000
8.	WIRE GATE ASSY.	A967-00058-0000
9.	BALL GATE ASSY.-LT.	A360-00022-0000
10.	BALL GATE ASSY.-RT.	A360-00023-0000
11.	FREE GATE RELAY ASSY.	AE34-00021-0000
12.	FREE BALL GATE WIRE FORM	0390-00110-0000
13.	BOTTOM ARCH ASSY. - LADY LUCK	AE34-00016-0000
14.	YELLOW TARGET SW., DIODE & CAP ASSY.	A360-00603-0006
15.	WHITE TARGET SW., DIODE & CAP ASSY.	A360-00603-0007
16.	SQUARE RED TARGET SW., BRACKET, DIODE & CAP ASSY.	A390-00017-0000
17.	ROLLOVER BUTTON SW., DIODE, PLT. & CAP ASSY.	AB38-00028-0000
18.	ROLLOVER WIRE SW. & DIODE ASSY.-LT.	A967-00067-0000
19.	ROLLOVER WIRE SW. & DIODE ASSY.-RT.	A360-00035-0000
20.	ROLLOVER WIRE SW., DIODE & CAP ASSY.	A360-00603-0003
21.	SLINGSHOT/REBOUND SWITCH, BRACKET & DIODE ASSY.	A360-00239-0000
22.	SLINGSHOT SWITCH & BRKT. ASSY.	A360-00230-0000
23.	SPINNER SWITCH ASSY.	A360-00245-0000
24.	MOLDED FLIPPER ASSY.-WHITE	A967-00031-0000
25.	WIRE ACTUATOR ASSY. -LT.	A967-00062-0000
26.	WIRE ACTUATOR ASSY. -RT.	A360-00215-0000
27.	ROD	0011-00008-35XF
28.	RAIL POST-NYLON	0017-00042-0125
29.	RAIL POST CAP-NYLON	0017-00042-0126
30.	BALL GUIDE WIRE	0E34-00100-0000
31.	BALL GUIDE WIRE (SMALL)	0E34-00101-0000
32.	BALL GUIDE WIRE 1-3/8	0360-00175-8800
33.	BALL GUIDE WIRE 4	0360-00175-6700
34.	BALL GUIDE WIRE 3-5/8	0360-00175-0106
35.	BALL GUIDE WIRE 2	0360-00175-5600
36.	BUFFER WIRE	0360-00175-5300



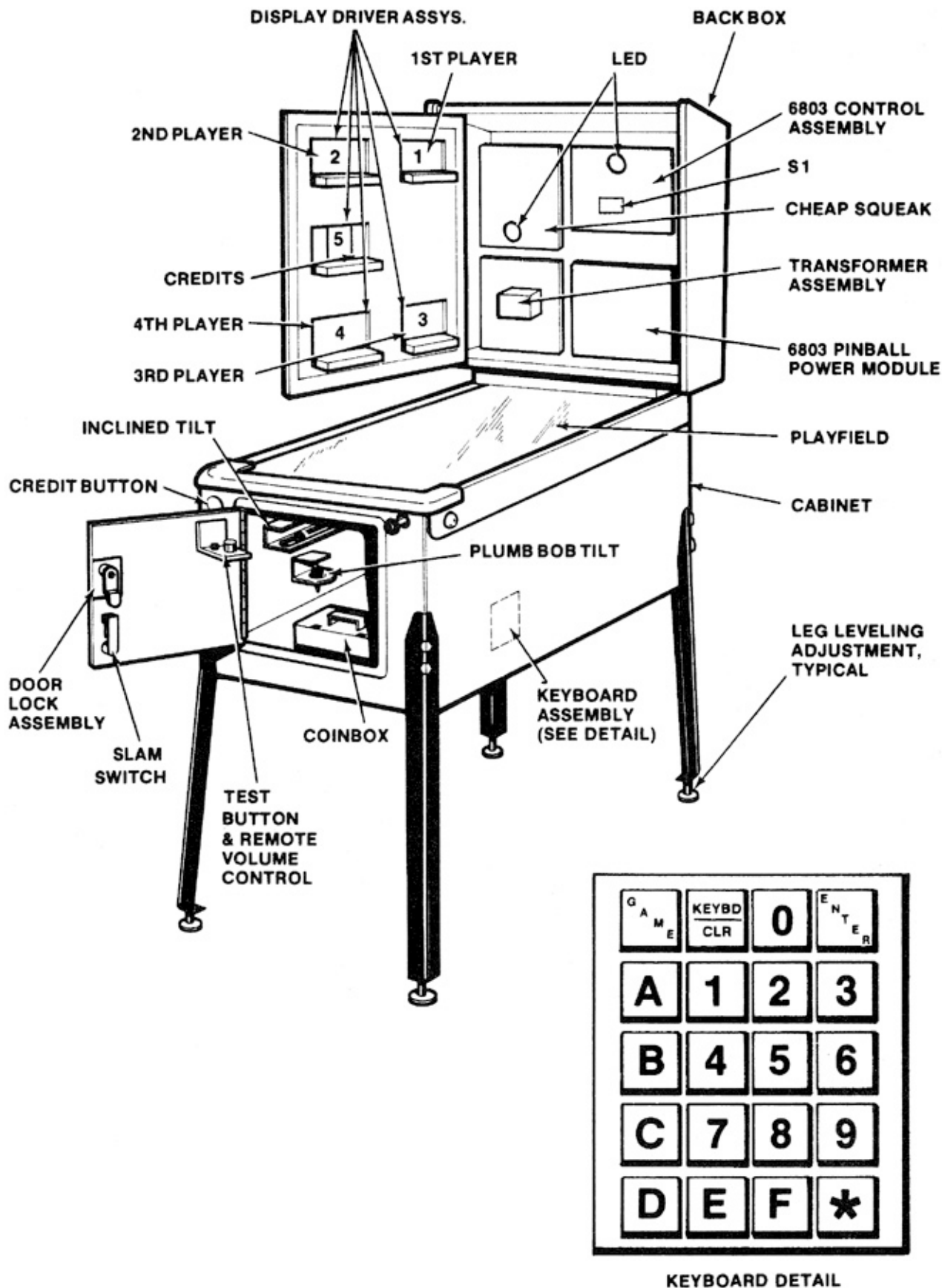


FIGURE III. ELECTRONIC PIN BALL MACHINE



**SECTION 2**  
**Component Layouts,  
Schematics & Wiring Diagrams**

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	IN4004
D10	IN5275A 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

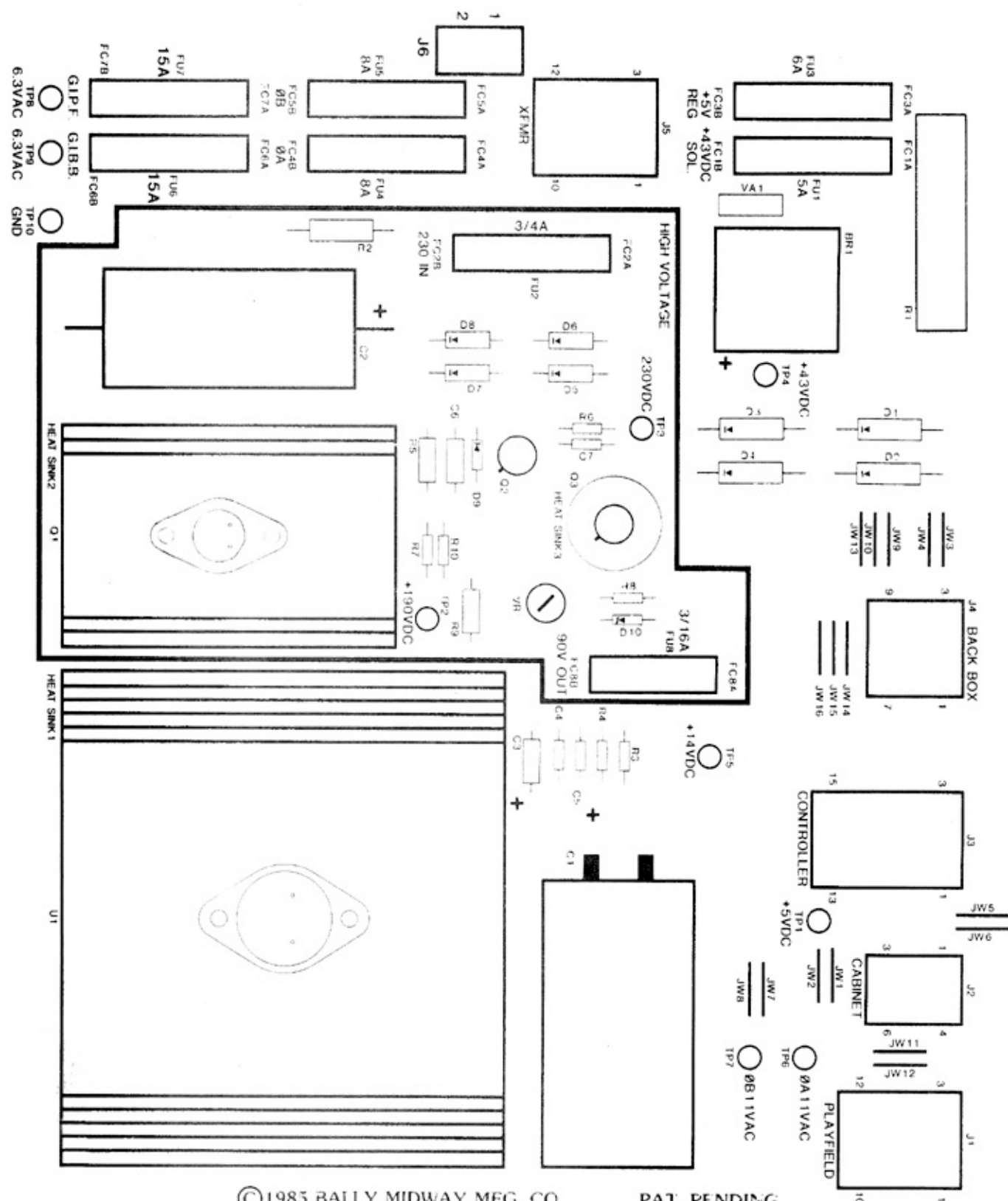
DESCRIPTION

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, FC8B	FUSE CLIPS
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

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6803 PINBALL POWER MODULE

PAT. PENDING  
A080-91785-C000



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

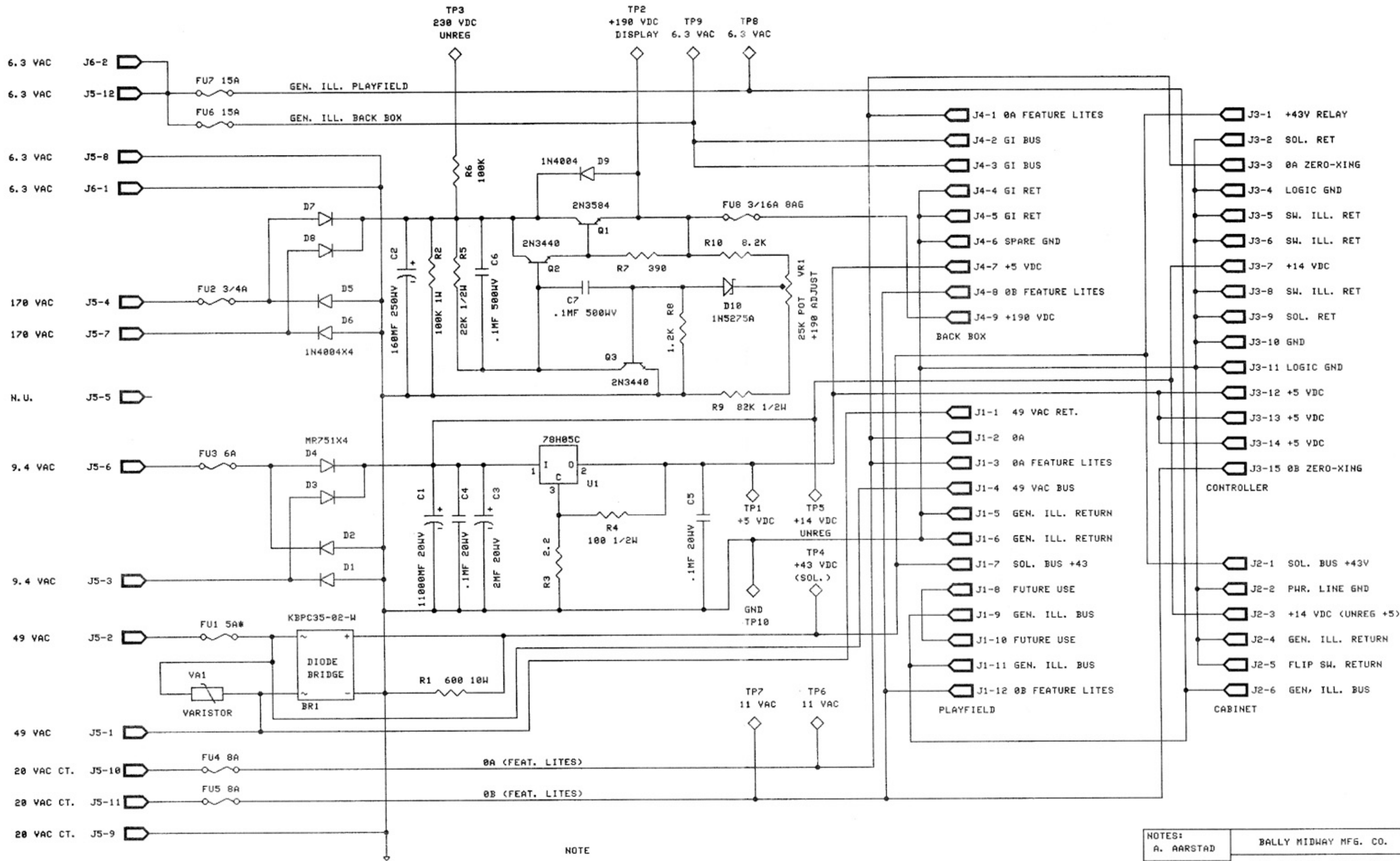
CROSS REFERENCE LIST

<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
VARIATOR METAL OXIDE 60V	1	VA1	115E-00001-0002
TY-WRAP	4	P/O C1,C2	0017-00042-0048
ZERO OHM RES. JUMPER	16	JW1-JW16	117E-00001-0001
TEST POINTS	10	TP1-TP10	0017-00007-0131
SOLDER LUG	2	P/O C1	0017-00021-0257
JUMPER WIRE 20AWG	2	P/O C1	0017-00033-0448
INSULATOR T0-3	1	P/O U1	0017-00042-0119
INSULATOR T0-5	2	P/O Q2,Q3	0017-00042-0151
INSULATOR T0-66	1	P/O Q1	0017-00042-0158
HEX SPACER	2	P/O Q1	0017-00042-0248
SHIELD	1	P/O Q1	0365-00952-0000
HEATSINK 1	1	P/O U1	112E-00001-0003
HEATSINK 2	1	P/O Q1	112E-00001-0002
HEATSINK 3	1	P/O Q3	112E-00001-0004
BRIDGE SPACER	1	P/O BR1	118E-00001-0001
6-32 X 12 SCREW	4	P/O Q1,U1	0017-00101-0132
6-32 X 5 SCREW	2	P/O Q1	0017-00101-0555
6-32 HEX NUT	4	P/O Q1,U1	0017-00103-0005
LOCKWASHER INT.	4	P/O Q1,	0017-00104-0008
LOCKWASHER EXT.	4	P/O Q1,U1	0017-00104-0009
FLAT WASHER	4	P/O Q1,U1	0017-00104-0106
FUSE CLIP	8	FC1A-FC3B, FC8A,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



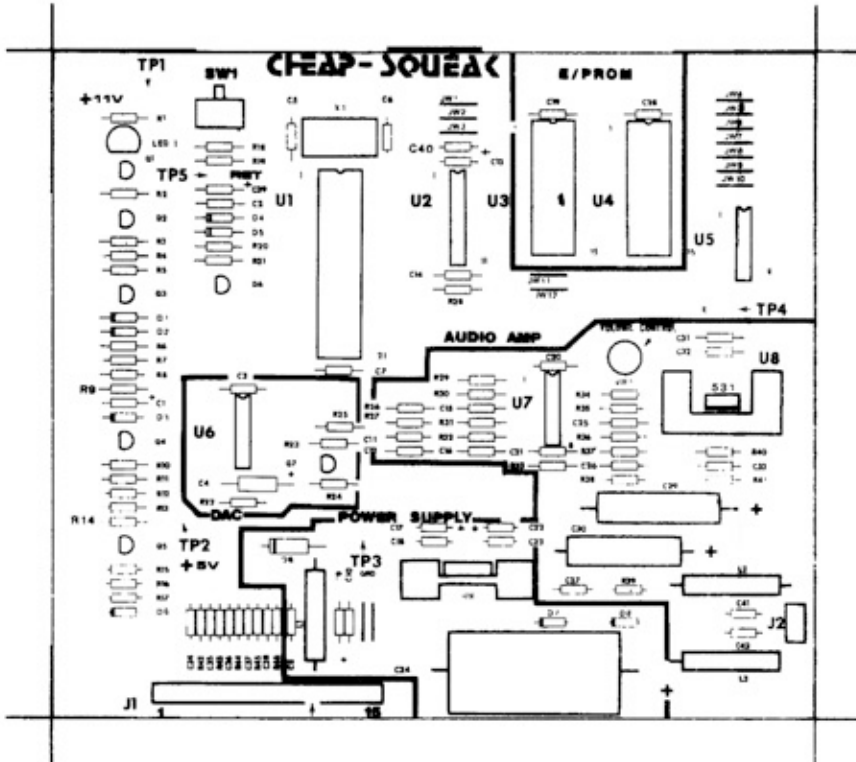
NOTES:	BALLY MIDWAY MFG. CO.
A. AARSTAD	
1PER	6803 PINBALL PWR MODULE
06/19/85	SCHEMATIC DRAWING
	A004-91785-C000
	M051-00C53-C002
	SHEET 1 OF 1
	REV

# DESCRIPTION LIST

# CROSS REFERENCE LIST

DESIGNATION NO.	DESCRIPTION	DESIGNATION NO.	DESCRIPTION
C1	6.8 UF @ 25V.	D1-D3	1N4006
C2,C3	TANT	D4,D5	1N4004
C4	.01 UF	D6	VR330
C5,C6	47 UF @ 16V	D7,D8	1N4004
C7-C9	27 PF, 5%	D9	1N9588
C10	.01 UF		
C11	4.7 UF @ 25V.	Q1	2N5305
C12,C13	3000 PF	Q2	2N4403
C14	.01 UF	Q3	2N3904 NPN
C15	47 PF	Q4	2N4403 PNP
C16	150 PF	Q5	2N3904 NPN
C17	220 PF	Q6	2N4403 PNP
C18	4.7 UF @ 25V.	Q7	2N5305 NPN
C19	TANT	U1	MC 6801
C20	.01 UF	U2	LS173
C21	0.1 UF	U3,U4	8PM07
C22	4.7 UF @ 25V.	U5	LS10
C23	TANT	U6	2N4291-R
C24	.01 UF	U7	LM 3900
C25	4700 UF @ 25V	U8	TDA 2002
C26	100 PF	U9	MC 7805
C27	300 PF		
C28	0.1 UF	L1,L2,L3	10 OHM
C29	.01 UF	XU1	40 PIN SOCKET
C30	470 UF @ 6V	XU3,XU4	28 PIN SOCKET
C31	1000 UF @ 16V		
C32	.33 UF	J1	.045 PIN
C33	0.1 UF	J2	.045 PIN
C34-C38	.05 UF		
C39,C40	820 PF	TP1-TP5	TEST POINT
	4.7 UF @ 25V		
C41,C42	TANT	LED 1	WV5254
	.22 UF		
R1	560 OHM	HEATSINK P/O U8	60308-TT
R2	47K OHM	HEATSINK P/O U9	61008
R3	910 OHM	SCREW P/O U8	SCREW 6-32
R4	5.6K OHM	NUT P/O U8	NUT 6-32
R5	62K OHM	SCREW P/O U9	SCREW 4-40
R6	10K OHM	NUT P/O U9	NUT 4-40
R7	82K OHM		
R8	10K OHM	STAR WASHER P/O U9	
R9	47K OHM		
R10	100 OHM	P/O U8,U9	INSULATOR
R11	82 OHM		
R12	9.1K OHM	SW1	SWITCH P.C.B.
R13	7.5K OHM		
R14	39K OHM	X1	3.579 MHZ
R15,R16	2.7K OHM		
R17	1K OHM		
R18,R19	3.3K OHM		
R20	10K OHM		
R21	16K OHM		
R22	2.7K OHM		
R23	68 OHM		
R24	180 OHM		
R25,R26	100K OHM		
R27	47K OHM		
R28	120 OHM		
R29	120K OHM		
R30	130K OHM		
R31	100K OHM		
R32	200K OHM		
R33	390K OHM		
R34	470K OHM		
R35	24K OHM		
R36	180K OHM		
R37	390K OHM		
R38	2.2 OHM		
R39	1 OHM		
R40	430 OHM		
R41	220 OHM		
R42-R46	470 OHM		

VR 1 PHAN. POT 0-1K 1/2W



DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.	DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.
27 PF, 5%	2	C5,C6	0360-00800-0052	PHAN. POT 0-1K 1/2 W	1	VR1	0360-00804-0003
47 PF	1	C14	0360-00800-0027				
100 PF	1	C25	0360-00800-0046				
150 PF	1	C15	0360-00800-0053				
220 PF	1	C16	0360-00800-0054	1N4006	3	D1-D3	103E-00002-0006
300 PF	1	C28	0360-00800-0055	1N4004	4	D4,D5,D7,D8	103E-00003-0005
820 PF	5	C34-C38	0360-00800-0004	VR 330	1	D6	0360-00801-0007
3000 PF	1	C11	0360-00800-0056	1N9588 ZENER	1	D9	103E-00001-0002
.01 UF	9		0360-00800-0005				
		C2,C3,C7-C9,	0360-00800-0006	2N3904 NPN	2	Q3,Q5	104E-00001-0006
.05 UF	1	C18,C19,C23,	0360-00800-0058	2N4403 PNP	3	Q2,Q4,Q6	104E-00002-0006
0.1 UF	6	C28	0360-00800-0058	2N5305 DARL NPN	2	Q1,Q7	104E-00007-0003
.22 UF	2	C33	0360-00800-0006				
.33 UF	1	C12,C13,C20,	0360-00800-0057	74LS10	1	U5	0360-00803-0046
4.7 UF @ 25V,	5	C41,C42	0360-00800-0057	74LS373	1	U2	0360-00803-0059
TANT	1	C31	0360-00800-0059	MC 6803 MPU	1	U1	0360-00803-0048
6.8 UF @ 25V,	1	C10,C17,C22,	0360-00800-0008	2N4291-R, DAC	1	U6	0360-00803-0049
TANT	1	C39,C40	0360-00800-0048	LM 3900, OP AMP	1	U7	0360-00803-0002
47 UF @ 16V	1		0360-00800-0042	TDA 2002, AUD AMP	1	U8	0360-00803-0009
470 UF @ 6V	1	C4	0360-00800-0042	MC 7805, +5V REG.	1	U9	0360-00803-0050
1000 UF @ 16V	1	C29	0360-00800-0021				
4700 UF @ 25V	1	C30	0360-00800-0044	INDUCTOR 10 UH	3	L1,L2,L3	0360-00804-0031
		C24	0360-00800-0023	28 PIN IC SOCKET	2	XU3,XU4	0360-00804-0028
				40 PIN IC SOCKET	1	XU1	0360-00804-0018
1 OHM	1	R39	100E-00005-0002	.045 SQ. PIN	15	J1	0017-00033-0480
2.2 OHM	1	R38	100E-00005-0003	.045 SQ. PIN	2	J2	0017-00033-0480
68 OHM	1	R23	100E-00005-0029	TEST POINTS	5	TP1-TP5	0017-00007-0131
82 OHM	1	R11	100E-00005-0031	LED MV5254	1	LED 1	0360-00804-0015
100 OHM	1	R10	100E-00005-0031	HEATSINK, 60308-TT	1	P/O U8	0360-00804-0010
120 OHM	1	R26	100E-00005-0031	HEATSINK, 61008	1	P/O U9	0360-00804-0032
180 OHM	1	R24	100E-00005-0031	NUT 6 X 32	1	P/O U8	0017-00103-0035
220 OHM	1	R41	100E-00005-0031	SCREW 6 X 32	1	P/O U8	0017-00101-0339
430 OHM	1	R40	100E-00005-0031	NUT 4-40	1	P/O U9	0017-00103-0002
470 OHM	5	R42-R46	100E-00005-0031	SCREW 4-40	1	P/O U9	0017-00101-0731
560 OHM	1	P1	100E-00005-0031	STAR WASHER	1	P/O U9	0017-00104-0071
910 OHM	1	R3	100E-00005-0031	INSULATOR, THERMAL	1	P/O U8,U9	0017-00042-0319
1K OHM	1	R17	100E-00005-0031	SWITCH	1	SW1	0017-00032-0058
2.7K OHM	3	R15,R16,R22	100E-00005-0031	CRYSTAL, 3.579 MHZ	1	X1	0360-00804-0019
3.3K OHM	2	R18,R19	100E-00005-0031	P.C.B.	1		A080-91603-C000
5.6K OHM	1	R4	100E-00005-0031				
7.5K OHM	1	R13	100E-00005-0031				
9.1K OHM	1	R12	100E-00005-0031				
10K OHM	3	R6,R8,R20	100E-00005-0031				
16K OHM	1	R21	100E-00005-0031				
24K OHM	1	R35	100E-00005-0031				
39K OHM	1	R14	100E-00005-0031				
47K OHM	3	R2,R9,R27	100E-00005-0031				
62K OHM	1	R5	100E-00005-0031				
82K OHM	1	R7	100E-00005-0031				
100K OHM	3	R25,R26,R31	100E-00005-0031				
120K OHM	1	R29	100E-00005-0031				
130K OHM	1	R30	100E-00005-0031				
180K OHM	1	R36	100E-00005-0031				
200K OHM	1	R32	100E-00005-0031				
390K OHM	2	R33,R37	100E-00005-0031				
470K OHM	1	R34	100E-00005-0031				

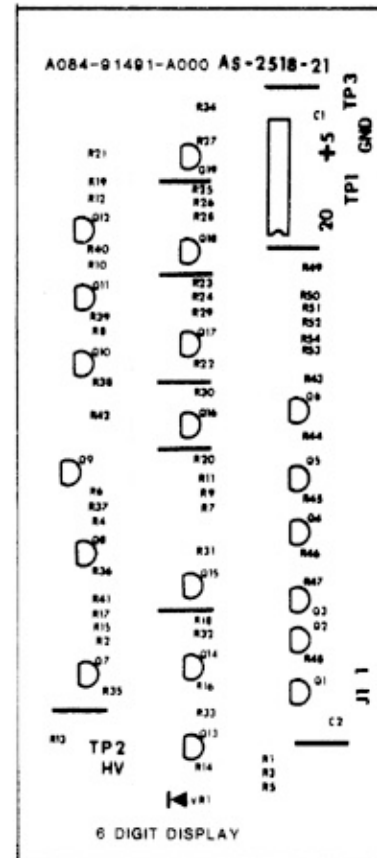
PROJECT ENG: D. MACDONALD		USED ON		REVISIONS	
DO NOT SCALE DIMS		SCALE	FULL	NO. REQ'D	1 PER
DIM. TOLERANCES UNLESS SPECIFIED		CHEAP SQUEAK PC BD. ASSY.		PART NO	
DATE 01/18/84		A080-91603-C000		M001 - 00114 - C044	





# 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%		
P34	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%		
VR1	1N3045A		
Q1-Q6	MPS-A42		
Q7-Q12	2N5401		
Q13-Q20	MPS-A42		
U1	MC14543		
DS1	6 DIGIT DISPLAY PANEL		



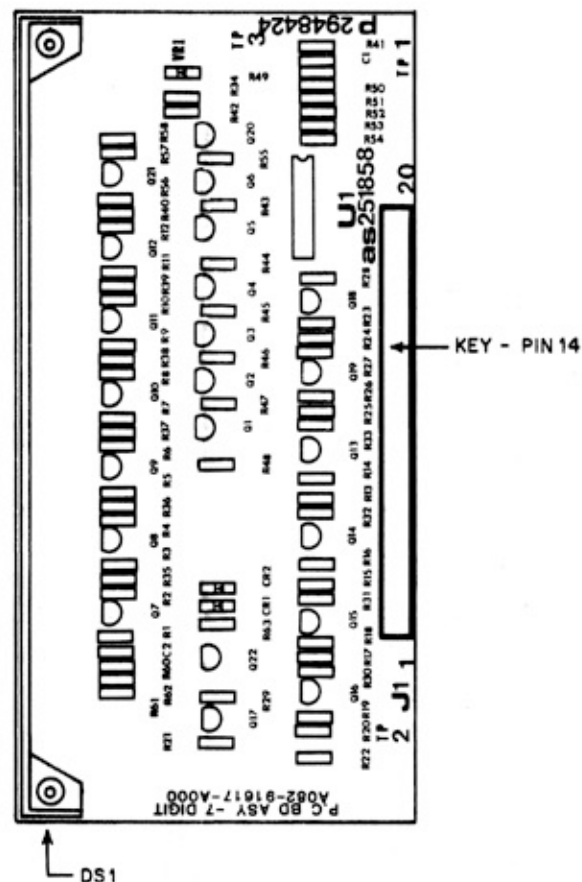
# CROSS REF. LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NUMBER
.01 MF 25V	1	C1	0360-00800-0005
.01 MF 500V	1	C2	0360-00800-0013
1.2K 1/4W 5%	7	R27-R33	100E-00005-0063
1.5K 1/4W 5%	7	R13, R15, R17, R19	100E-00005-0065
2.2K 1/4W 5%	6	R21, R23, R25	100E-00005-0064
9.1K 1/4W 5%	6	R2, R4, R6, R8, R10	100E-00005-0064
20K 1/4W 5%	6	R12	100E-00005-0067
39K 1/4W 5%	1	R43-R48	100E-00005-0095
100K 1/4W 5%	7	P49-R54	100E-00005-0102
METAL FILM	1	R41	100E-00005-0102
240K 1/4W 5%	1	R1, R3, R5, R7, R9	100E-00005-0103
300K 1/4W 5%	1	R11, R34	100E-00005-0125
		R42	100E-00005-0125
		R14, R16, R18, R20, R22, R24, R26, R35	100E-00005-0127
		R40	
1N3045A	1	VR1	108E-00001-0028
2N5401	6	Q7-Q12	104E-00002-0007
MPS-A42	13	Q1-Q6 Q13-Q20	104E-00001-0016
MC14543	1	U1	0360-00800-0014
6 DIGIT DISPLAY	1	DS1	0360-00804-0016
DS1 MTG. HDW	2		
TACK-SCREW RPLCMNT	1	DS1MH	0095-00900-0000
DISPLAY MTG. TOP	1		0017-00042-0155
DISPLAY MTG. BOTTOM	1		0017-00042-0156
PRESSURE SENSITIVE TAPE			0017-00081-0095
BUMPER	1		0017-00041-0598
.045 SQ. PIN	1	J1	0304-00604-0010
TEST POINTS	3	TP1-TP3	0017-00007-0131
JUMPER TIN 22 AWC	9		117E-00001-0001
6 DIGIT DISPLAY PCB.	1		A080-91491-A000

PROJECT ENG: A. AARSTAD		USED ON		REVISIONS	
DO NOT SCALE DWG		SCALE	NO. REQ'D	PER	
DIM TOLERANCES UNLESS SPECIFIED		FULL	1	Bally / MIDWAY MFG. CO.	
OWN: BAK				FRANKLIN PK ILL	
CHKD:		ASSEMBLY DWG. SIX DIGIT DISPLAY		PART NO.	
DATE 11/14/84		A082-91491-A000		M051 - 00114 - A028	

## DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION	DESIGNATION NO.	DESCRIPTION
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%	U1	MC14543
R7	100K OHM 1/4W 5%	DS1	DISPLAY ASS'Y
R8	2.2K OHM 1/4W 5%	J1	10 PIN WAFER KK-156 (2)
R9	100K OHM 1/4W 5%	TP1-TP3	TEST LOOPS
R10	2.2K OHM 1/4W 5%		7 DIGIT DISPLAY PCB
R11	100K OHM 1/4W 5%		BUMPER
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%		



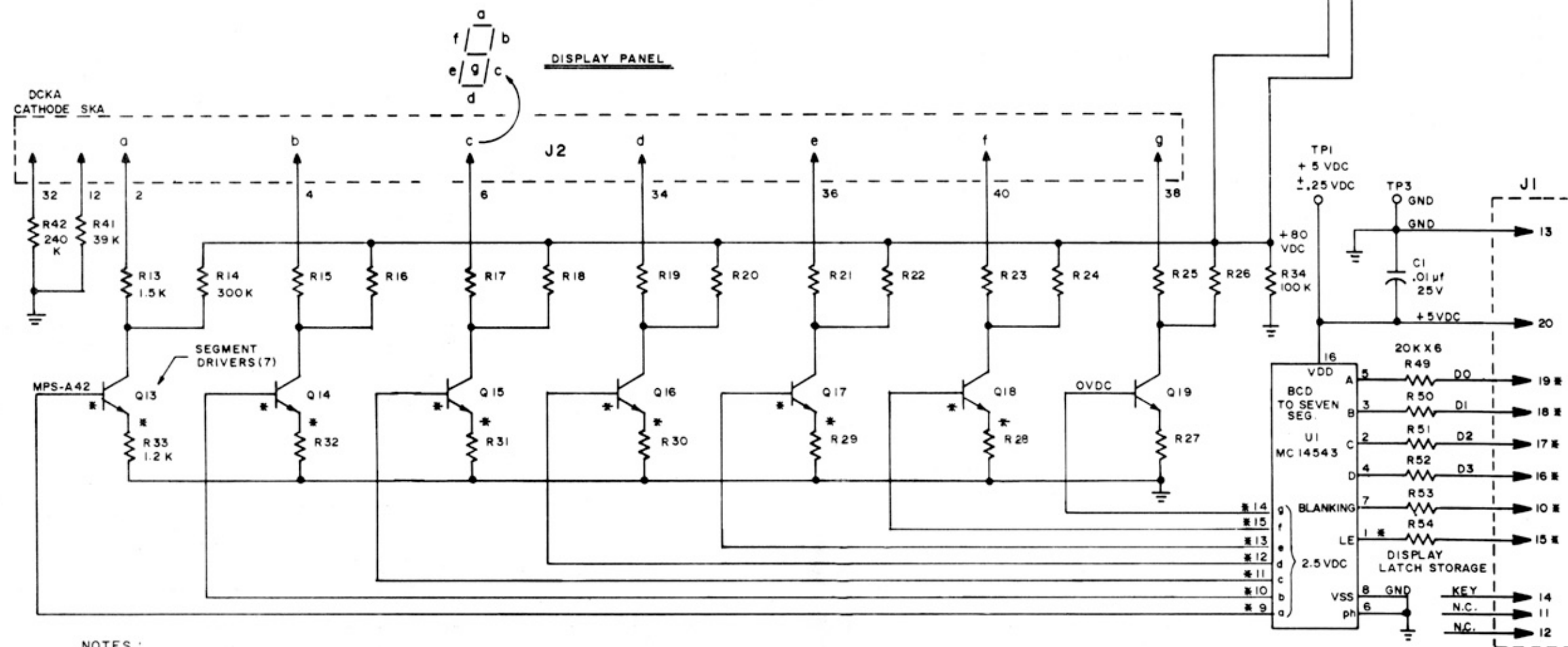
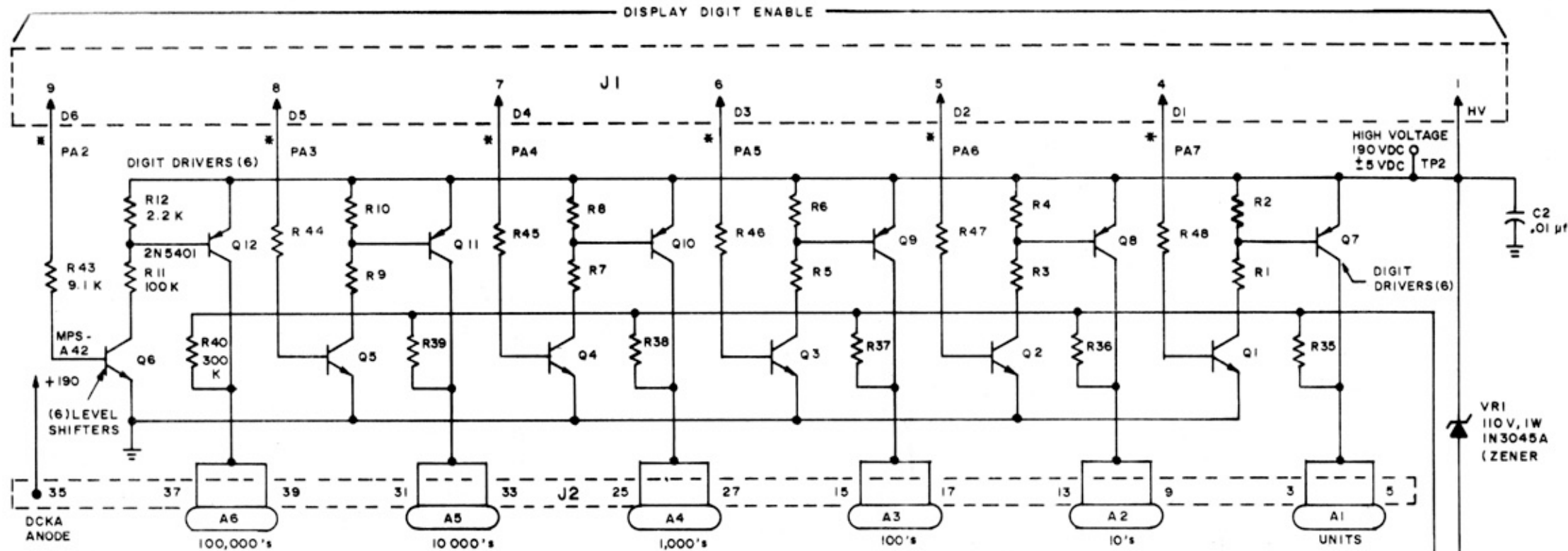
## CROSS REFERENCE LIST

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-00005-006J
1.5K 1/4W 5%	9	R13, R15, R17, R19 R21, R23, R25, R60 R61	E-105-229	100E-00005-006'
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 DS1 MTG. HDW TACK-SCREW REPLACEMENT	1 2	DS1	E-680-7	0360-00804-0022
DISPLAY MTG. TOP	1		P-2399	0017-00042-0155
DISPLAY MTG. BOTTOM	1		P-2399-1	0017-00042-0156
PRESSURE SENSITIVE TAPE				0017-00081-0095
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 PCB.	1		P-2948-424	A080-91617-A000

## REVISIONS

PROJECT ENG: D. MACDONALD		USED ON		Bally / MIDWAY MFG. CO. FRANKLIN PK. ILL.
DO NOT SCALE DWG.		HEAT TREAT	SCALE FULL	
DIM. TOLERANCE UNLESS SPECIFIED		DRW. TDB	NO. REQ'D 1 PER	PART NO. M051 - 00114 - A 056
DATE 12 09 83		CHKD.	SEVEN DIGIT DISPLAY ASSY DWG. A082-91617-A000	





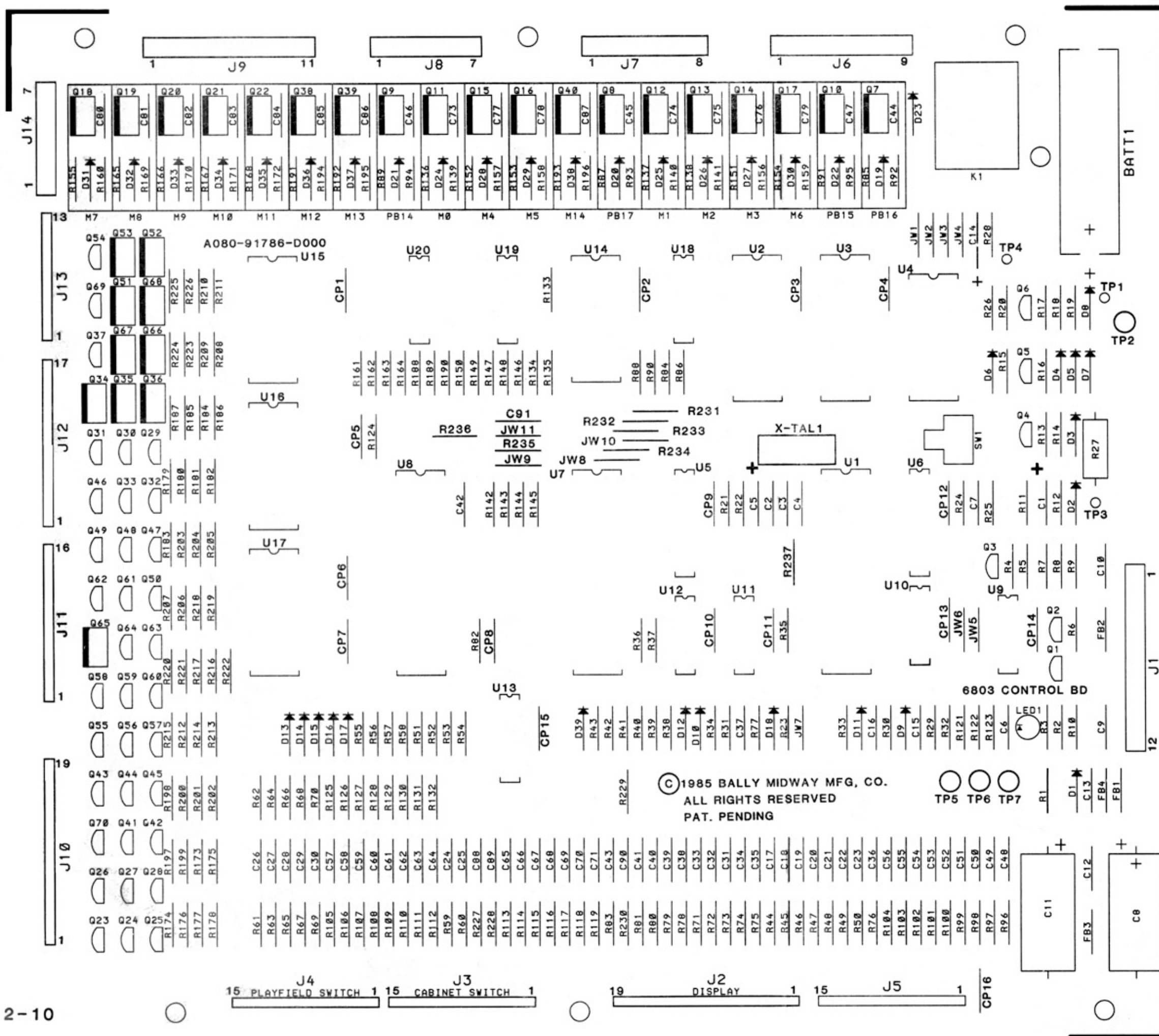
# NOTES:

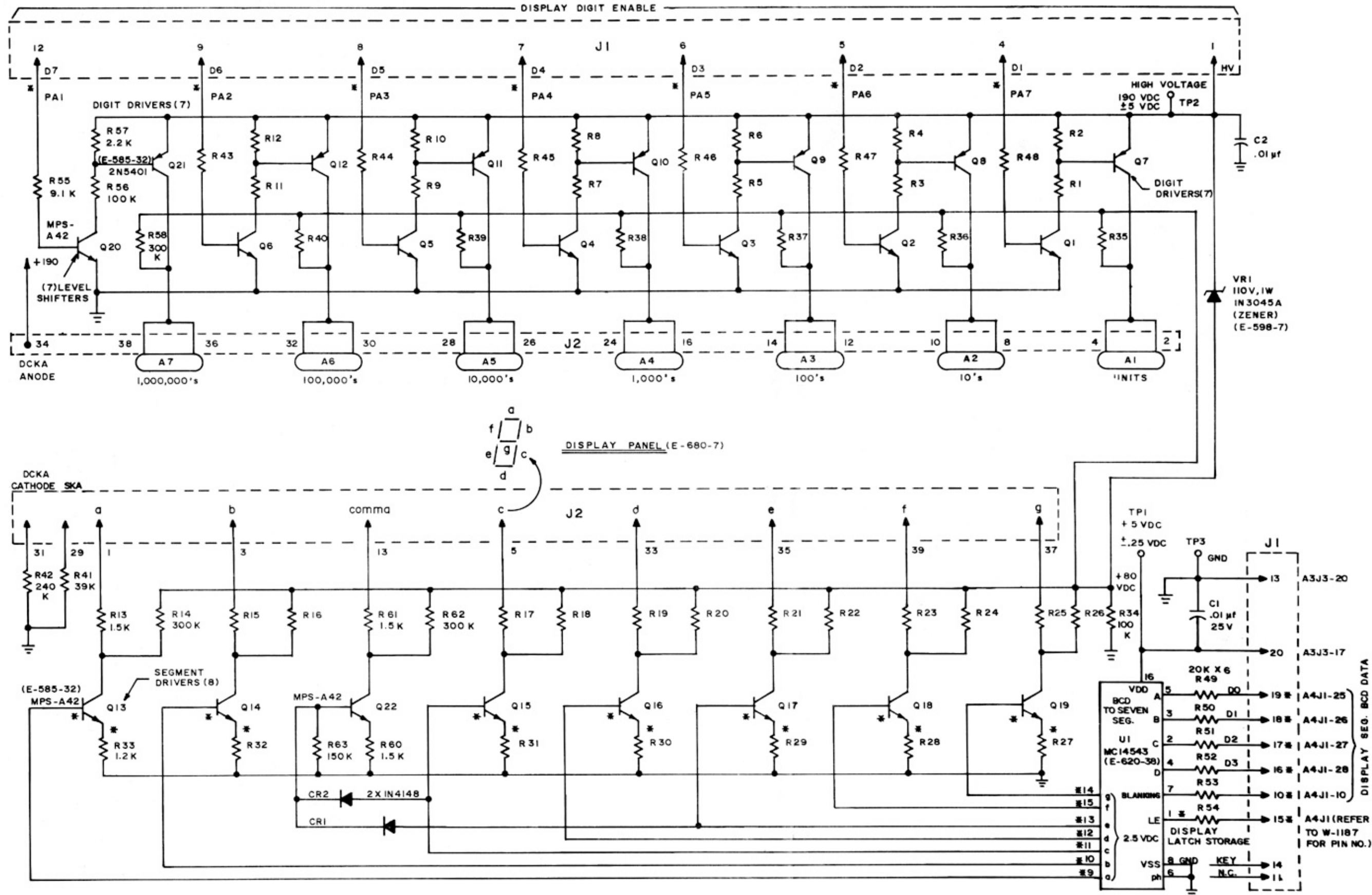
- 1) UNLESS OTHERWISE SPECIFIED ALL RESISTORS ARE  $\pm 5\%$ , 1/4 W.
- 2) PREFIX ALL REFERENCE DESIG. WITH ASSY REF. DESIG. "A1"
- 3) \* INDICATES "AID" TEST POINT.

PROJECT ENG: D. MACDONALD		USED ON PINBALL		Bally / MIDWAY MFG. CO.	
DO NOT SCALE DWG		SCALE FULL		FRANKLIN PK ILL	
DIM TOLERANCES UNLESS SPECIFIED		NO. REQ'D I PER		PART NO.	
DATE 5/17/83		SIX DIGIT DISPLAY BOARD SCHEMATIC "A1"		M051-00114 - A029	
DATE 5/17/83		A084-91491-A000			

# DESIGNATION LIST

DESIGNATION	DESCRIPTION
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%





# 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		REVISIONS	
DO NOT SCALE DRG.		SCALE: FULL		NO. REQ'D: 1 PER	
DIM. TOLERANCES UNLESS SPECIFIED		DATE: 5/13/83		SEVEN DIGIT DISPLAY BOARD SCHEMATIC "A1"	
CONCENTRICITY $\pm .001$		FRACTIONAL $\pm .001$		DECIMAL $\pm .001$	
HOLE DIA. $\pm .002$		DATE: 5/13/83		PART NO. M051-00114-A057	
				FRANKLIN PK. ILL.	

DESIGNATION LIST

<u>DESIGNATION</u>	<u>DESCRIPTION</u>
U15 - U17	4514B
U18 - U20	CA3081
XTAL-1	3.580 MHZ CRYSTAL
LED 1	LED GREEN
TP1 - TP7	TEST POINTS
SW1	SWITCH P.B.
BATT-1	BATTERY 3.6V
JW2	ZERO OHM RES. JUMPER
JW4	ZERO OHM RES. JUMPER
JW6	ZERO OHM RES. JUMPER
JW8	ZERO OHM RES. JUMPER
JW10	ZERO OHM RES. JUMPER
K1	RELAY 48V DC
XU1,XU7,XU8	40 PIN IC SOCKET
XU2, XU3	28 PIN IC SOCKET
XU4	24 PIN IC SOCKET
FB1 - FR4	FERRITE BEAD
J1	11 - .045 SQ. PINS
J2	18 - .025 SQ. PINS
J3	14 - .025 SQ. PINS
J4	14 - .025 SQ. PINS
J5	14 - .025 SQ. PINS
J6	8 - .045 SQ. PINS
J7	7 - .045 SQ. PINS
J8	6 - .045 SQ. PINS
J9	10 - .045 SQ. PINS
J10	18 - .025 SQ. PINS
J11	17 - .025 SQ. PINS
J12	16 - .025 SQ. PINS
J13	12 - .025 SQ. PINS
J14	5 - .045 SQ. PINS
P/O BATT-1	TY-WRAP
6803 CONTROL BD.	P.C. BOARD

CROSS REFERENCE LIST

<u>DESCRIPTION</u>	<u>QTY.</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
27pf 50V CER.	2	C2, C3	0360-00800-0052
47pf 50V CER.	1	C7	0360-00800-0027
390pf 50V CER.	25	C24-C30, C57-C71	0360-00800-0001
		C88-C90	
470pf 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
4.7uf 25V TANT	2	C5, C14	0360-00800-0008
6.8uf 25V TANT	1	C1	0360-00800-0048
470uf 16V ELEC	1	C8	0360-00800-0022
470uf 25V ELEC	1	C11	0360-00800-0024
82 OHM 1/4W 5%	1	R9	100E-00005-0031
100 OHM 1/4W 5%	1	R8	100E-00005-0033
110 OHM 1/4W 5%	1	R83	100E-00005-0034
120 OHM 1/4W 5%	21	R24, R85, R87, R89,	100E-00005-0035
		R91, R121, R136-R138,	
		R151-R155, R165-R168,	
		R191-R193	
270 OHM 1/4W 5%	1	R28	100E-00005-0044
330 OHM 1/4W 5%	23	R92-R95, R139-R141,	100E-00005-0047
		R156-R160, R169-R172,	
		R194-R196, R231-R234	
470 OHM 1/4W 5%	9	R96-R104	100E-00005-0051
560 OHM 1/4W 5%	1	R1	100E-00005-0054
680 OHM 1/4W 5%	1	R25	100E-00005-0056
750 OHM 1/4W 5%	1	R19	100E-00005-0057
910 OHM 1/4W 5%	1	R18	100E-00005-0059
1K 1/4W 5%	3	R3, R29, R32	100E-00005-0061
1.2K 1/4W 5%	60	R44-R50, R59-R61, R63,	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	
1.5K 1/4W 5%	1	R20	100E-00005-0065
2K 1/4W 5%	46	R123, R173-R187	100E-00005-0068
		R197-R226	
2.7K 1/4W 5%	2	R2, R6	100E-00005-0071
3K 1/4W 5%	1	R17	100E-00005-0073
3.3K 1/4W 5%	18	R21-R23, R35, R51-R58,	100E-00005-0074
		R124, R142-R145, R235	
3.9K 1/4W 5%	4	R84, R86, R88, R90	100E-00005-0077
4.7K 1/4W 5%	8	R36-R43	100E-00005-0079
5.6 1/4W 5%	1	R16	100E-00005-0082

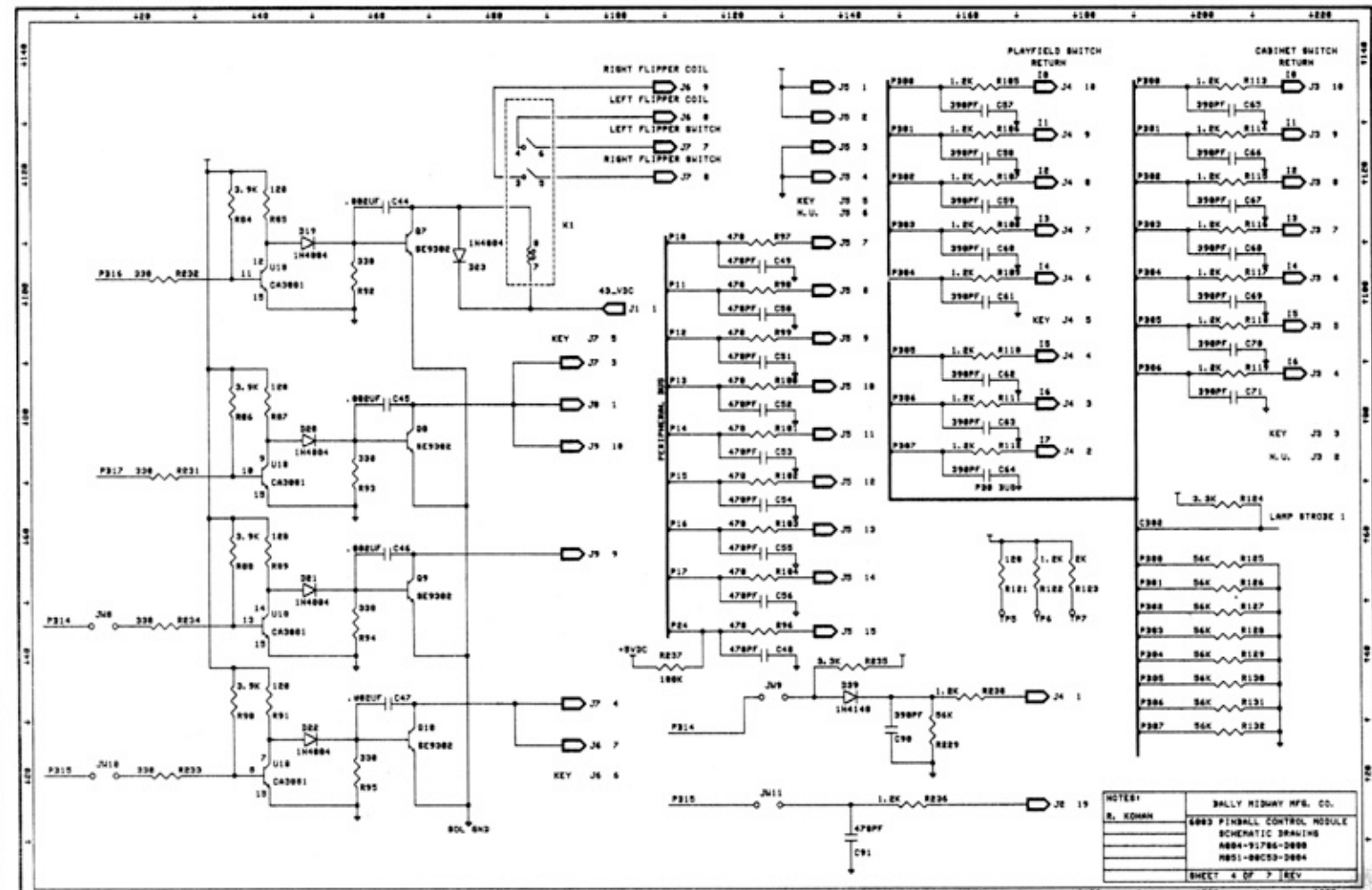
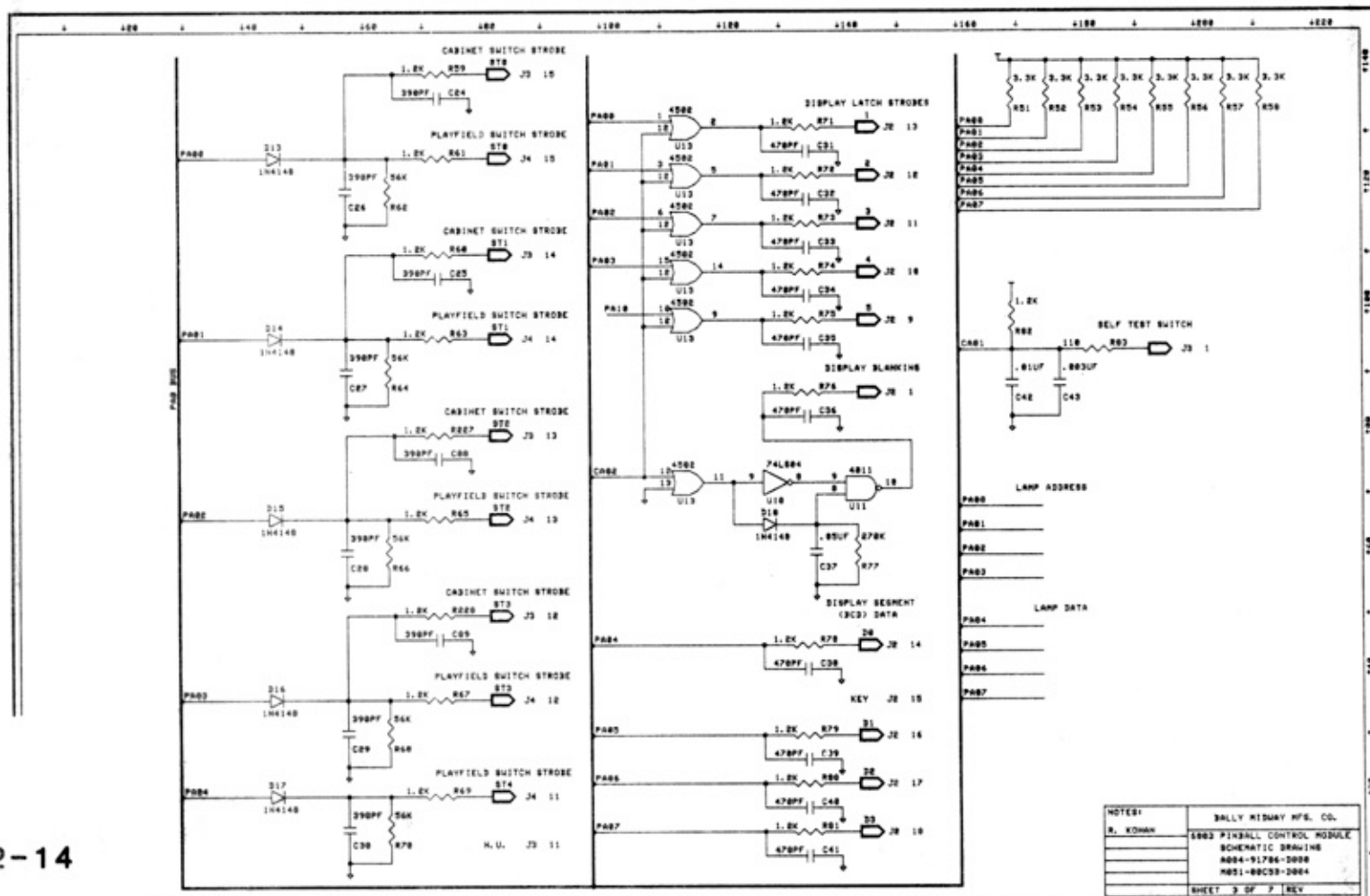
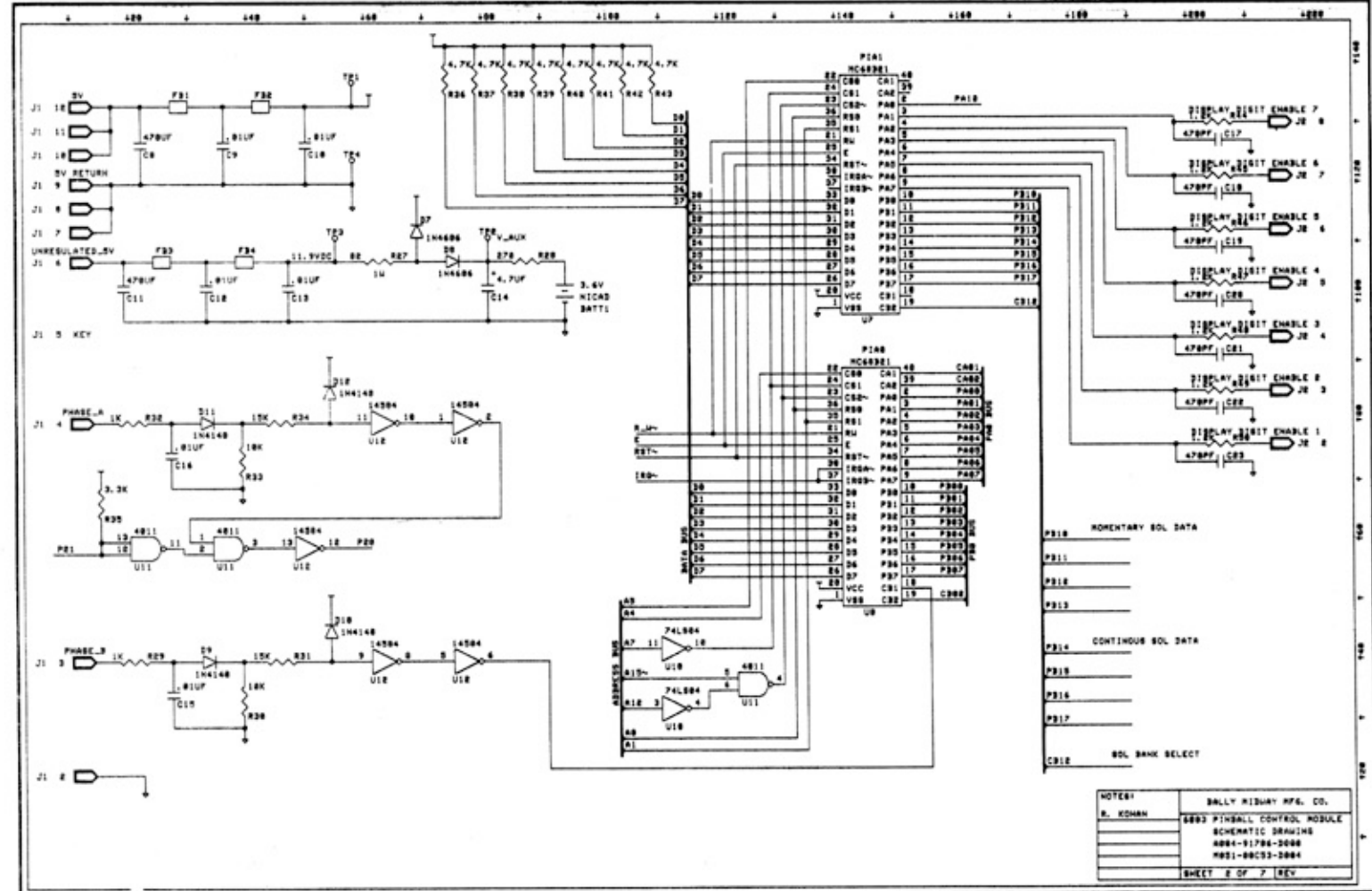
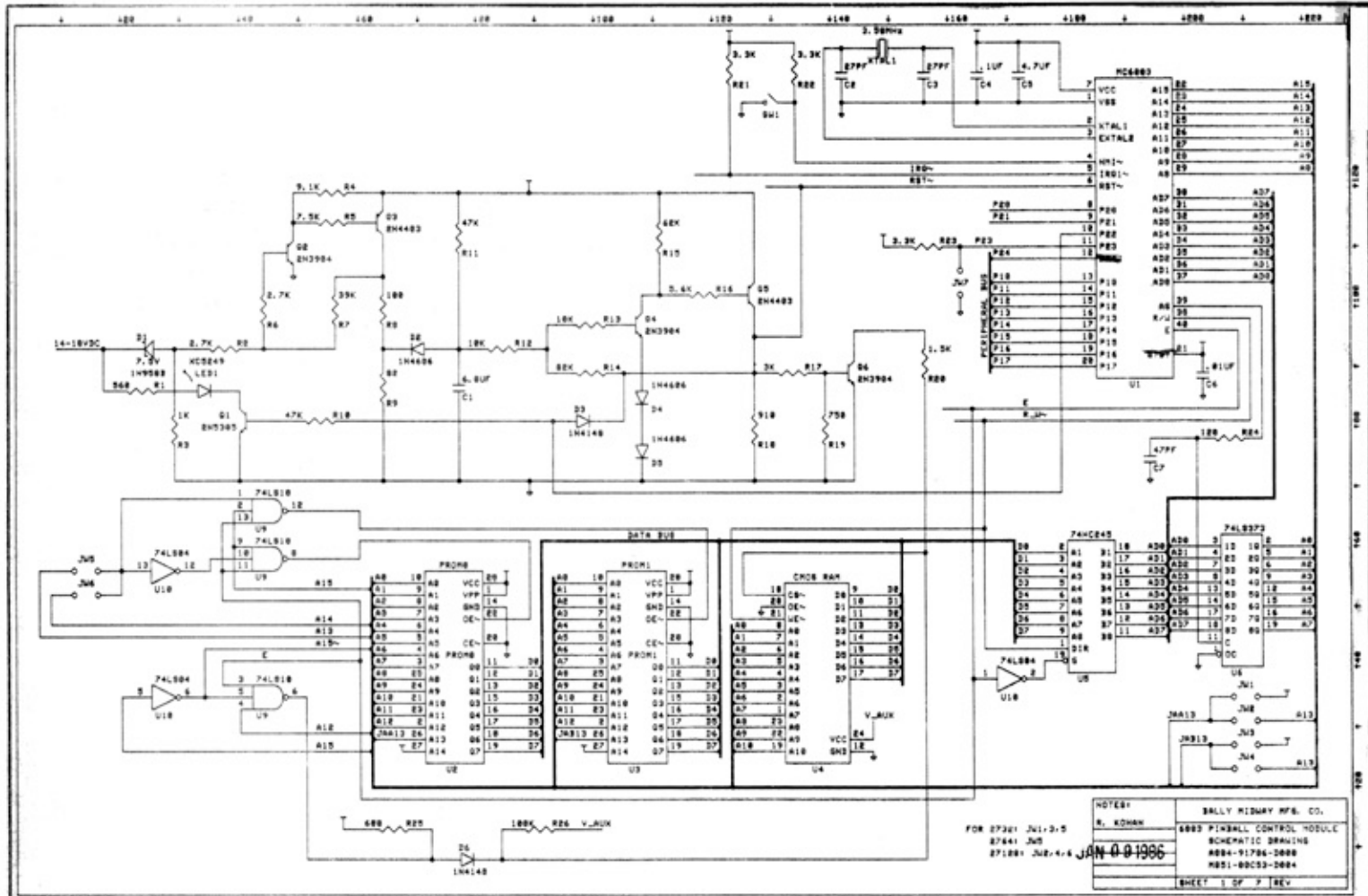


DESIGNATION LIST

<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%

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%
R237	100K OHM 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



CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
7.5 1/4W 5%	1	R5	100E-00005-0085
9.1 1/4W 5%	1	R4	100E-00005-0087
10K 1/4W 5%	4	R12, R13, R30, R33	100E-00005-0088
15K 1/4W 5%	2	R31, R34	100E-00005-0092
39K 1/4W 5%	1	R7	100E-00005-0102
47K 1/4W 5%	2	R10, R11	100E-00005-0104
56K 1/4W 5%	14	R62, R64, R66, R68 R70, R125-R132, R229	100E-00005-0106
62K 1/4W 5%	1	R15	100E-00005-0107
82K 1/4W 5%	1	R14	100E-00005-0112
100K 1/4W 5%	2	R26, R237	100E-00005-0115
270K 1/4W 5%	1	R77	100E-00005-0126
82 OHM 1W 10%	1	R27	100E-00007-0014
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	0066-090RX-XXDX
6116 RAM	1	U4	0365-00803-0013
6803 MPU	1	U1	0360-00803-0048
6821 PIA	2	U7, U8	0360-00803-0017
74LS04	1	U10	0A15-00803-0010
74LS10	1	U9	0A89-00803-0007
75LS154	1	U14	0360-00803-0024
74HCT245	1	U5	0365-00803-0014
74LS373	1	U6	0A89-00803-0006
CA3081	3	U18-U20	0360-00803-0007
3.580 MHz CRYSTAL	1	XTAL-1	109E-00001-0003
LED GREEN	1	LED 1	0017-00007-0131
TEST POINTS	7	TP1-TP7	0017-00007-0131
SWITCH P.B.	1	SW1	0017-00032-0038
BATTERY 3.6V	1	BATT-1	0017-00003-0172
ZERO OHM RES. JUMPER	5	JW2, JW4, JW6, JW8, JW10	117E-00001-0001
RELAY 48VDC	1	K1	114E-00001-0011
40 PIN I.C. SOCKET	3	XU1, XU7, XU8	110E-00001-0011
28 PIN I.C. SOCKET	2	XU2, XU3	110E-00001-0010
24 PIN I.C. SOCKET	1	XU4	110E-00001-0007
FERRITE BEAD	4	FB1-FB4	0316-00804-0002

CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
.025 SO. PINS	123	J2, J3, J4, J5, J10, J11, J12, J13	0304-00804-0009
.045 SO. 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-D000



# LADY LUCK LAMP DRIVER LOCATIONS

SCR	CONNECTOR PIN	LAMP	PHASE	WIRE CODE
Q41	J10-8	BALL IN PLAY	A	15
Q30	J11-12	CARD 7	A	40
Q47	J11-11	CARD 8	A	41
Q62	J11-4	CARD 9	A	43
Q53	J13-12	CARDS 100K	B	60
Q68	J13-10	CARDS 200K	B	61
Q37	J13-4	CARDS 300K	B	62
Q54	J13-11	CARDS 400K	B	63
Q69	J13-7	CARDS SPCL.	B	65
Q70	J10-7	CLUBS	B	12
Q61	J11-6	CLUBS "A"	B	37
Q60	J10-13	CLUBS "J"	B	35
Q46	J11-16	CLUBS "K"	B	36
Q29	J11-8	CLUBS "Q"	B	38
Q45	J10-10	CLUBS "T"	B	34
Q53	J13-	CNT DWN #1	A	65
Q54	J13-11	CNT DWN #2	A	63
Q37	J13-4	CNT DWN #3	A	62
Q68	J13-10	CNT DWN #4	A	61
Q53	J13-12	CNT DWN #5	A	60
Q24	J10-2	CREDIT	A	14
Q55	J10-16	DIAMONDS	B	13
Q49	J11-9	DIAMOND "A"	B	52
Q45	J11-10	DIAMOND "J"	B	48
Q32	J11-14	DIAMOND "K"	B	51
Q63	J11-3	DIAMOND "Q"	B	50
Q31	J11-13	DIAMOND "T"	B	45
Q64	J11-2	DROP TARGET DOUBLE	A	53
Q33	J11-15	DROP TARGET TRIPLE	A	54
Q50	J11-7	DROP TARGET SPCL.	A	58
Q25	J10-3	GAME OVER	A	20
Q65	J11-1	GATE	A	56
Q23	J10-1	HEARTS	B	10
Q27	J10-5	HEARTS "A"	B	26
Q26	J10-4	HEARTS "J"	B	24
Q58	J10-19	HEARTS "K"	B	28
Q43	J10-11	HEARTS "Q"	B	25
Q57	J10-18	HEARTS "T"	B	23
Q56	J10-17	HIGH SCORE	A	18
Q41	J10-8	JOKER #1	B	15
Q56	J10-17	JOKER #2	B	18
Q25	J10-3	JOKER #3	B	20
Q42	J10-9	JOKER #4	B	21
Q28	J10-6	LEFT STAR	B	32
Q55	J10-16	MATCH	A	13
Q32	J11-14	POKER "E"	A	51
Q63	J11-3	POKER "K"	A	50
Q45	J11-10	POKER "O"	A	48
Q31	J11-13	POKER "P"	A	45
Q49	J11-9	POKER "R"	A	52
Q59	J10-14	RIGHT STAR	B	31
Q57	J10-18	ROLLOVER 10K	A	23
Q26	J10-4	ROLLOVER 20K	A	24
Q43	J10-11	ROLLOVER 30K	A	25

SCR	CONNECTOR PIN	LAMP	PHASE	WIRE CODE
Q58	J10-19	ROLLOVER 40K	A	28
Q27	J10-5	ROLLOVER 50K	A	26
Q44	J10-12	ROLLOVER 60K	A	30
Q59	J10-14	ROLLOVER 70K	A	31
Q28	J10-6	ROLLOVER SPCL.	A	32
Q66	J13-6	SCORES 10X	A	80
Q24	J10-2	SPADES	B	14
Q35	J13-2	SPADES "A"	B	61
Q34	J13-1	SPADES "J"	B	57
Q66	J13-6	SPADES "K"	B	80
Q51	J13-8	SPADES "Q"	B	59
Q65	J11-1	SPADES "T"	B	56
Q45	J10-10	SPINNER 2K	A	34
Q60	J10-13	SPINNER 4K	A	35
Q29	J11-8	SPINNER 6K	A	38
Q46	J11-16	SPINNER 8K	A	36
Q61	J11-6	SPINNER 10K	A	37
Q23	J10-1	SPSA (INSERT)	A	10
Q51	J13-8	SPSA LEFT	A	59
Q34	J13-1	SPSA RIGHT	A	57
Q42	J10-9	TILT	A	21
Q35	J13-2	2X	A	81
Q52	J13-13	3X	A	83
Q67	J13-5	4X	A	84
Q36	J13-3	5X	A	85

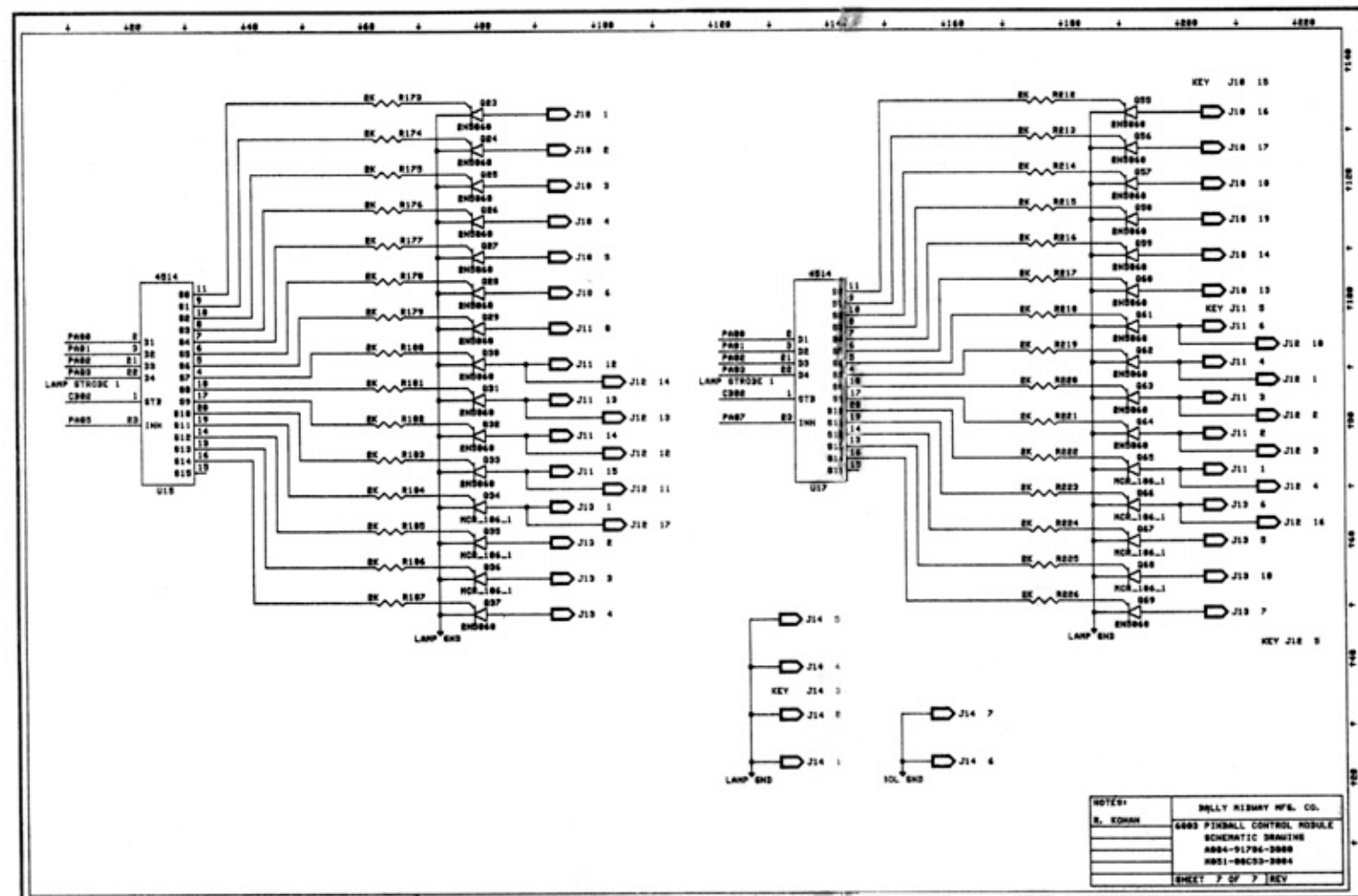
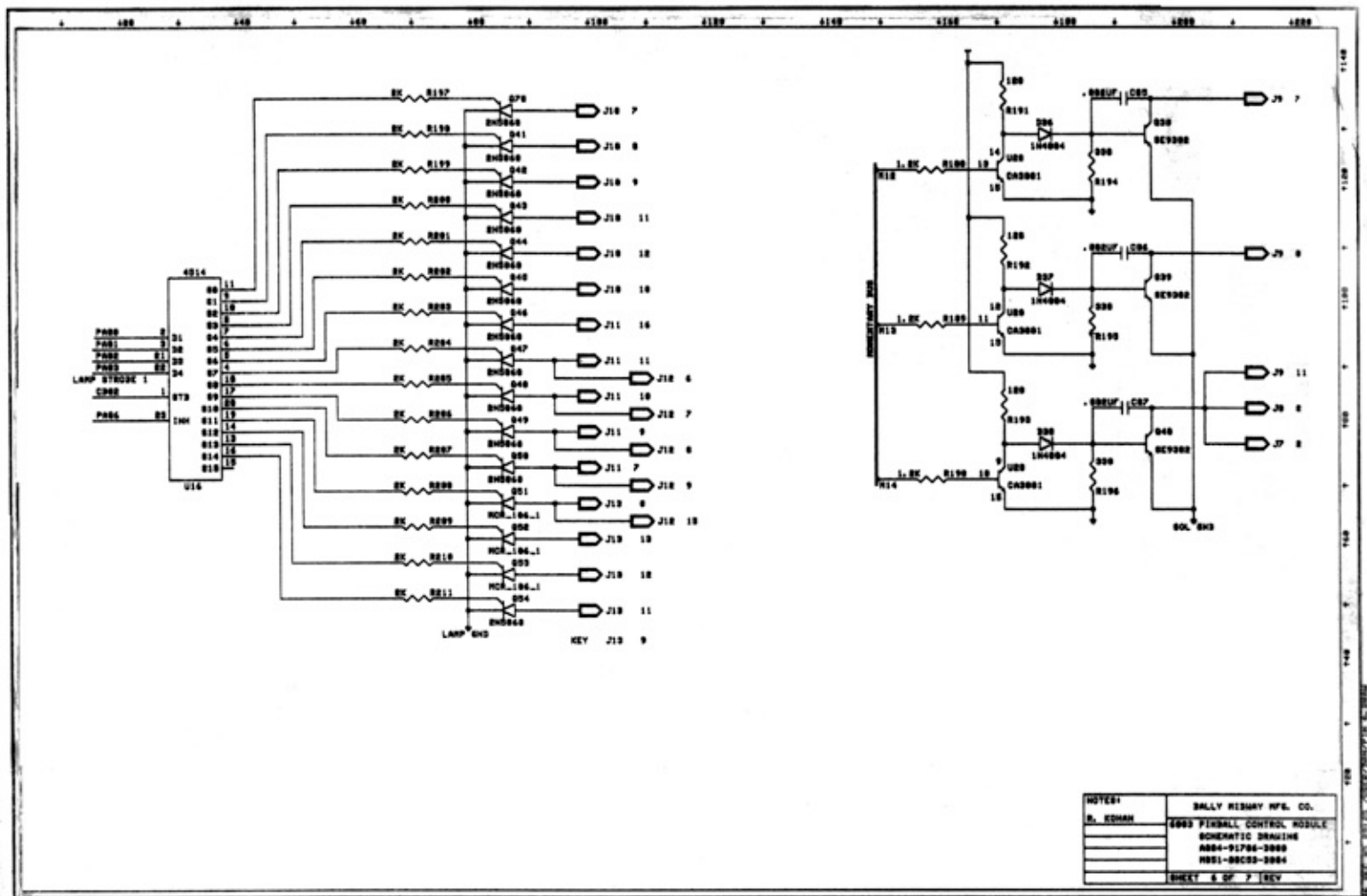
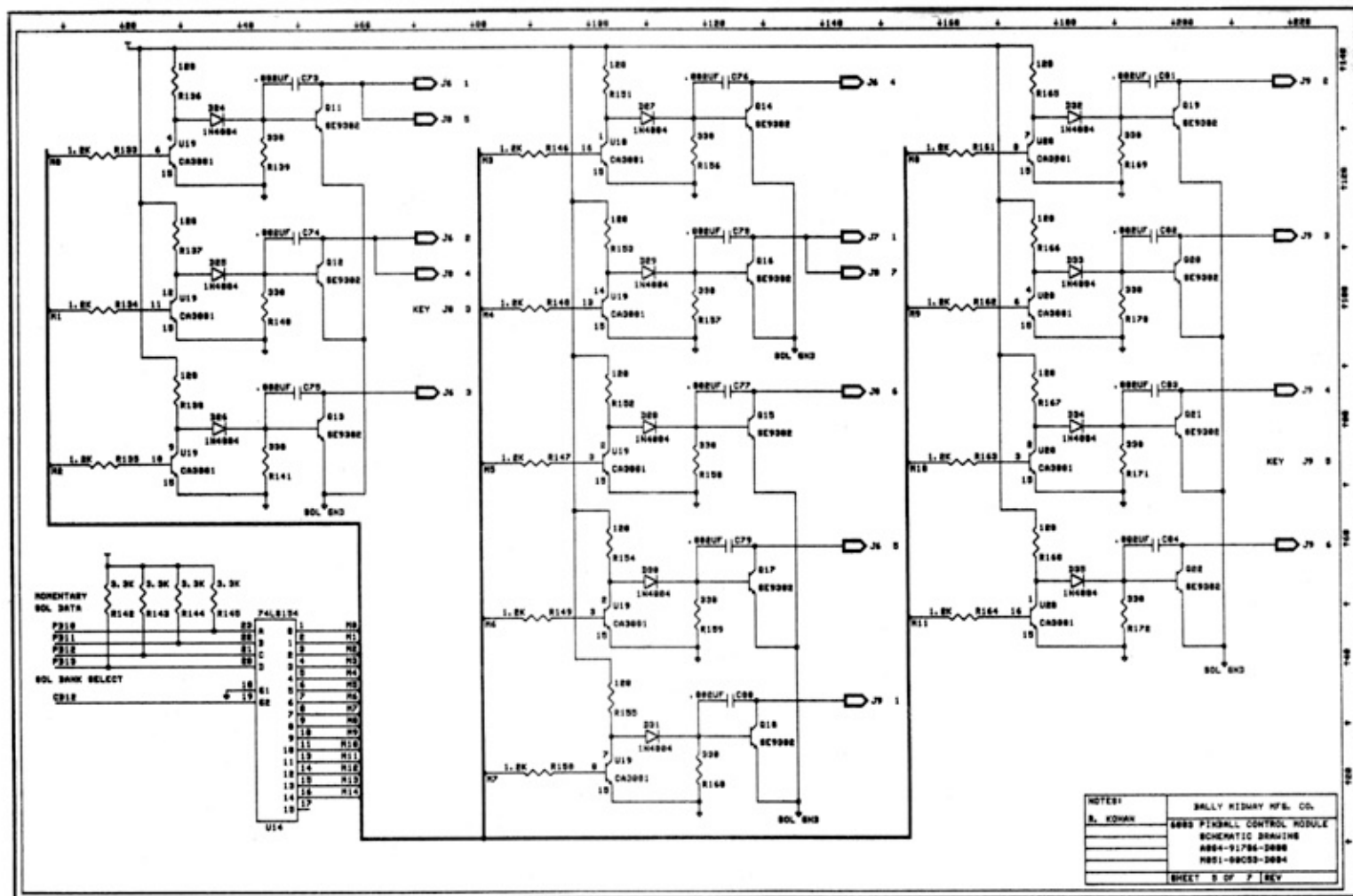
## LADY LUCK SOLENOID DRIVER LOCATIONS

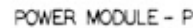
TRANSISTOR	CONNECTOR	COIL	WIRE CODE
	J6-5	43V. LIGHTS	32
Q40	J7-2	KNOCKER	54
Q7	ON CONTROL BOARD	K1 FLIPPER RELAY	87
Q11	J6-1	LEFT BUMPER	65
Q14	J6-4	LEFT SLINGSHOT	81
Q12	J6-2	MIDDLE BUMPER	62
Q39	J9-8	OUTHOLE	54
Q13	J6-3	RIGHT BUMPER	67
Q9	J9-9	RIGHT GATE	51
Q16	J8-7	RIGHT SLINGSHOT	87
Q15	J8-6	1-4 DT. RESET	82

### 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
2- BLUE	7- ORANGE
3- YELLOW	8- BLACK
4- GREEN	9- GRAY
5- WHITE	0- NO TRAC

PROJECT ID#		ISSUE NO.	<b>Daly / MCMURRAY MPFS CO.</b>
NO INST SCALE BY#0	DATE ISSD	REV. 0000	PASADENA, CA. U.S.A.
FOR TOLERANCES UNLESS SPECIFIED:	BY <b>M. KONGORA</b>	LADY LUCK BACK BOX WIRING DIA.	POST NO. <b>MO51-00E34-00</b>

# BALLY/MIDWAY'S LADY LUCK

#E34

## ROM/EPROM PART NUMBERS

UNPROGRAMMED CONTROL BOARD A084-91786-C000

PROGRAMMED CONTROL BOARD B084-91786-AE34

POS.	MIDWAY PART NUMBER
U3	0E34-00803-0005

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

UNPROGRAMMED CHEAP SQUEAK A084-91603-C000

PROGRAMMED CHEAP SQUEAK B084-91603-AE34

POS.	MIDWAY PART NUMBER
U3	0E34-00803-0003

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

MO51-00E34-A008	REVISIONS
01-31-86	RELEASE FOR PRODUCTION