

GAME 0E94

FORM NO. 0E94-00300-0100

# **H**ARDBODY™



## Operating Manual

**Bally/MIDWAY**™ MFG. CO.

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**WARNING**

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

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

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

**CAUTION:** TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

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

***Bally*/MIDWAY**  
T.M.

*Invites You To Use*

**OUR TOLL FREE NUMBER FOR  
SERVICE INFORMATION CONCERNING THIS GAME, OR ANY  
OTHER BALLY/MIDWAY™ GAME YOU NOW HAVE ON LOCATION.**

**CALL US FOR PROMPT, COURTEOUS  
ANSWERS TO YOUR PROBLEMS.**

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

***Bally*/MIDWAY**  
T.M.

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Printed in U.S.A.

# HARDBODY TABLE OF CONTENTS

## SECTION 1 INSTALLATION AND GENERAL GAME OPERATION INSTRUCTIONS

| DESCRIPTION                                              | PAGE |
|----------------------------------------------------------|------|
| I. INSTALLATION .....                                    | 1-1  |
| II. GENERAL GAME OPERATION .....                         | 1-1  |
| III. TAILORING & TESTING THE GAME .....                  | 1-2  |
| IV. GAME REGISTERS & OPTIONS .....                       | 1-4  |
| V. RECOMMENDED 3 & 5 BALL REGISTER OPTION SETTINGS ..... | 1-6  |
| VI. TROUBLESHOOTING ON LOCATION .....                    | 1-7  |
| VII. SOLENOID & SWITCH IDENTIFICATION TABLES .....       | 1-10 |
| VIII. ROUTINE MAINTENANCE ON LOCATION .....              | 1-11 |
| IX. SWITCH ASSEMBLY ADJUSTMENTS .....                    | 1-11 |
| X. SERVICE HINTS .....                                   | 1-11 |
| XI. PANEL TOP PARTS LIST .....                           | 1-12 |
| XII. RAMP PARTS, RUBBER RINGS & POSTS LIST .....         | 1-13 |
| XIII. PLATFORM PARTS, RUBBER RINGS & POST LIST .....     | 1-14 |
| XIV. FEATURE OPTION AND SCORING .....                    | 1-16 |

## SECTION 2 COMPONENT LAYOUTS, SCHEMATICS & WIRING DIAGRAMS

| DESCRIPTION                                             | PAGE              |
|---------------------------------------------------------|-------------------|
| 6803 PINBALL POWER MODULE P.C.B.-COMPONENT LAYOUT ..... | 2-1               |
| 6803 PINBALL POWER MODULE P.C.B.-SCHEMATIC .....        | 2-3               |
| PINBALL SOUND P.C.B.-COMPONENT LAYOUT .....             | 2-4               |
| PINBALL SOUND P.C.B.-SCHEMATIC .....                    | 2-7               |
| DUAL DISPLAY P.C.B.-COMPONENT LAYOUT .....              | 2-10              |
| DUAL DISPLAY P.C.B.-SCHEMATIC .....                     | 2-13              |
| 6803 CONTROL BOARD P.C.B.-COMPONENT LAYOUT .....        | 2-14              |
| 6803 CONTROL BOARD P.C.B.-SCHEMATIC .....               | 2-18              |
| WIRING DIAGRAM-CABINET .....                            | 2-22              |
| WIRING DIAGRAM-PLAYFIELD .....                          | 2-23              |
| WIRING DIAGRAM-BACKBOX .....                            | 2-26              |
| EPROM LIST .....                                        | INSIDE BACK COVER |

## TABLE OF FIGURES

| FIGURE                                                 | PAGE |
|--------------------------------------------------------|------|
| I. BLOCK DIAGRAM .....                                 | ii   |
| IIa. TOP PANEL: SOLENOID & SWITCH IDENTIFICATION ..... | 1-10 |
| IIb. TOP PANEL: PARTS .....                            | 1-12 |
| IIc. TOP PANEL: RUBBER RINGS & POSTS .....             | 1-13 |
| IId. TOP PLATFORM: PARTS, RUBBER RINGS & POSTS .....   | 1-14 |
| III. ELECTRONIC PINBALL MACHINE .....                  | 1-15 |

## BLOCK DIAGRAM—ELECTRONIC PINBALL GAME

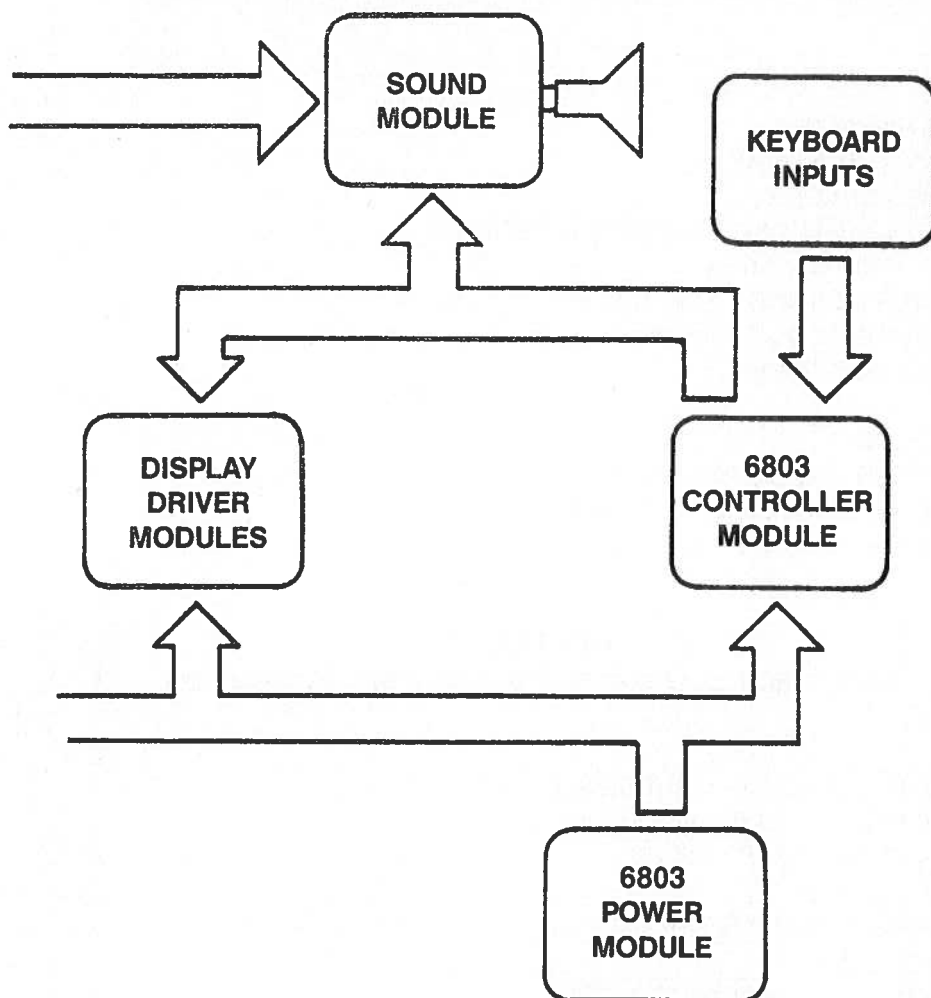


FIGURE I.

### 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.

**"IMPORTANT NOTICE – 1 BALL"**

**THE PLAYFIELD BALL MUST BE INSERTED  
IN THE OUTHOLE TROUGH.**

**GAME WILL START IF THERE IS A BALL IN  
SHOOTER LANE IN GAME OVER MODE.**

**M051-00365-A055**



# SECTION 1

## I. INSTALLATION

First, bolt legs to cabinet. Second, feed line cord between back box and cabinet then lift the back box and secure with bolts. Insert the smaller ball (15/16" dia.) into the ball tilt assembly, and adjust the bracket so the ball will roll free to the contact switch blade, if the front of the cabinet is raised.

On all games these are certain items that should be checked after shipment.

1. Check that all cable connectors are completely seated on printed circuit assemblies.
2. Check that all cables are clear of moving parts.
3. Check for wires that may have been 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 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 and adjust the plumb bob tilt on the left side of the cabinet.
8. Check wiring of the plug on the transformer to correspond to location voltage.
  - 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
9. Place ball into playfield by outhole (or balls if the game requires more than one ball).
10. Plug in line cord.

## II. GENERAL GAME OPERATION

Move the ON/OFF switch at the bottom right front corner of the cabinet to "ON" position. The game will play a power-up sequence and reset the drop targets. If any switches are stuck they will be displayed at this time. After a short delay "1-4 can play" will indicate that the game is ready to play. The game should accept the coin and post the appropriate credits. Pressing the credit button on the cabinet will cause the outhole kicker to serve the ball to the shooter alley. A game-up sequence is played to announce play-readiness.

Each time the credit button is pressed it posts one player and the credits are reduced by one.

Shooting the ball initiates play.

The game awards all points earned by the player. If a 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 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. At this time a random Match number appears. 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 are not advanced for extra score before the game serves the extra ball for play.

Slamming the machine results in loss of the game. This causes all feature lights to go out, the game goes "dead" and a time delay occurs. This occurs anytime either one of the slam switches make contact. This is to discourage unnecessary abuse to the game. After the delay, "1 to 4 can play" is displayed followed by the power-up sound sequence.

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.

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

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.

**NOTE:** These are general instructions. Therefore, if a spinner or Drop Target is not used on your specific pinball game, please disregard any operating instructions related to these devices.

### III. TAILORING & TESTING THE GAME

#### INTRODUCTION

We at Bally/Midway are very proud to introduce our new system which not only provides more information to the operator but it also communicates with the player thru the use of alphanumerics.

It was our aim to design a system which could be used without a manual. This will come to light the moment you press the Self-test button and the displays come to life with their messages of assistance. This allows you to change game features, awards and threshold settings and monitor specific special awards, game percent and income just by reading what is displayed. The registers are now described with useful titles such as "Book-keeping Data" or "Self-Testing"

If you've ever changed the replay thresholds on a machine and you forgot to change the replay card because you were distracted by a customer, listen to this: "It will never happen again!" For when you change this replay threshold to 2,000,000 in "Percent Options" the corresponding message; "First Replay at 2,000,000" will be displayed on Game Over.

#### OPERATION

The keyboard is located on the right inside wall of the game near the front door. The cable is long enough, so that once the keyboard is removed, it may be operated from outside the machine. **Note:** The keypad is mounted with a 1/4" Hex screw for shipping purposes.

1. Press the Test button located on the front door. This tells the processor to do the following:
  - A. It checks the switches wired in parallel with the keypad. If any switches are closed the game automatically jumps to Stuck Switch Test and displays a stuck switch message.
  - B. If there were no stuck switches you will be welcomed with "Bally's Testing Is Easy As ABC."
2. When appropriate heading appears on backglass display, press "Enter" on keypad once.  
Within each heading, there are categories which are operator selectable. When the appropriate category appears on the backglass display, press "Enter" once to access that category.
3. Set your registers with keypad.
4. Press "Enter" again to advance to next category setting. Press "CLR" to re-start Self-Test. Press "Game" to lock-in option settings.

#### STEPPING THROUGH

To choose a category quickly once the Test Mode has been selected just use the "A" button to step to the desired category. If you pass by the category you desired, use the "B" button to back-up to the appropriate position. Once you read the category desired, press the "ENTER" button to select that topic. The display will now show the first item in that category.

Again, use the "A" and "B" buttons to quickly step to the item you wish to look at or change. The "A" button allows you to step to the end of a category and then out to the next category. The "B" button allows you to step backwards in the same manner. **Please note:** When in the Self-Test category, the display will cycle automatically from one test to the next. Because the "A", "B", and "C" buttons are used for different functions in this category. They cannot be used to step from one test to another properly. To exit a test in this category just press the ENTER button & step to the next test.

#### SELF-PERCENTAGING

1. The term Self-Percentaging refers to the game's ability to automatically adjust the score level of Threshold 1 to attain a desired replay percentage, also known as the TARGET PERCENT. (see article #8)
2. Self-Percentaging also applies to extra balls, when used instead of replays.
3. Initially, a minimum of 200 games must be played before the Self-Percentaging Process goes into effect. It then monitors the current replay percentage of Threshold 1 ONLY and makes an adjustment, if necessary, every 50 games.
4. The Self-Percentaging Process will automatically adjust the score level of Threshold 1 ONLY. It makes NO adjustments to OTHER "Award" features in the game.
5. Located within the "PERCENT OPTIONS" category of your game's test mode are the following registers:
  - THRESHOLD 1
  - SELF PERCENT
  - TARGET PERCENT
  - THRESHOLD 1 PERCENT

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

6. To set or check the current score level of Threshold 1:
- "Step through" your game's test mode, using the "A" or "B" button on the keypad, until you reach a category titled: "PERCENT OPTIONS."
  - Press the "ENTER" button to select this category.
  - The first register displayed will be THRESHOLD 1.

**THRESHOLD 1**—This register displays the current score level of the 1st Replay Threshold. Enter any value from 0 to 9,999,999 to set the desired score level.

7. To activate the Self-Percentaging Process:
- "Step through" your game's test mode, using the "A" or "B" button on the keypad, until you reach a category titled "PERCENT OPTIONS."
  - Press the "ENTER" button to select this category.
  - Again, use the "A" button to "step through" until you reach a register titled: "SELF PERCENT."

**SELF PERCENT**—This register displays whether the Self-Percentaging Process is OFF or ON. Enter "O" to turn OFF or "1" to turn ON.

8. To adjust the desired Replay Percentage for Threshold 1:
- "Step through" your game's test mode, using the "A" or "B" button on the keypad, until you reach a category titled "PERCENT OPTIONS."
  - Press the "ENTER" button to select this category.
  - Again, use the "A" button to "step through" until you reach a register titled: "TARGET PERCENT."

**TARGET PERCENT**—This register displays the desired percentage of replays to be awarded for reaching Threshold 1. For example, if you want Threshold 1 to award a replay in 15% of the games played, you would press keys "1," "5" and then "ENTER." This register will then display "15%" as your goal or "TARGET PERCENT."

NOTE: This register automatically defaults to a factory setting of "10%," when the "FACTORY RESET" register is enabled.

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

10. To manually check the current replay percentage of Threshold 1 ONLY:
- "Step through" your game's test mode, using the "A" or "B" button on the keypad, until you reach a category titled "PERCENT OPTIONS."
  - Press the "ENTER" button to select this category.
  - Again, use the "A" button to "step through" until you reach a register titled: "THRESHOLD 1 PERCENT."

**THRESHOLD 1 PERCENT**—The figure displayed in this register is the actual percentage of replays awarded for reaching Threshold 1. Progress of the Self-Percentaging Process may be monitored by comparing the current value displayed in this register with the "TARGET PERCENT."

11. The size of adjustment, made by the Self-Percentaging Process to the score level of Threshold 1, is determined by the current difference between the "TARGET PERCENT" (entered by the operator) and the actual percentage of replays awarded for reaching Threshold 1.
- A difference of 10% or more will result in a 10% adjustment.
  - A difference equal to or greater than 5%, but less than 10%, will result in a 5% adjustment.
  - A difference less than 5% will result in a 1% adjustment.

12. To check the current score level of Threshold 1, refer to article #6.

13. When the "CLEAR BOOKKEEPING" register is enabled, the Self-Percentaging Process is reinitiated.

## HARDBODY

### IV. GAME REGISTERS & OPTIONS

#### BOOKKEEPING DATA

|               |                                                                                                   |
|---------------|---------------------------------------------------------------------------------------------------|
| Total Coins   | Number of coins thru chutes 1, 2, & 3                                                             |
| Game Percent  | Percentage of replays                                                                             |
| Coins Chute 1 | # of coins thru chute 1                                                                           |
| Coins Chute 2 | # of coins thru chute 2                                                                           |
| Coins Chute 3 | # of coins thru chute 3                                                                           |
| Bonus Credits | Number of Bonus Credits Given                                                                     |
| Total Plays   | Number of plays both paid and replays                                                             |
| Total Replays | Number of awarded games                                                                           |
| Service Meter | Total # of service credits                                                                        |
| Game Credits  | Current game credits—Enter 0 thru 5. Added to Service Meter.<br>Not added to current Game Credits |
| Special Meter | Total # of Playfield Specials awarded                                                             |
| Clear Booking | To clear bookkeeping press "65" then "Enter"                                                      |

#### SELF-TESTING

|                 |                                                                                                     |
|-----------------|-----------------------------------------------------------------------------------------------------|
| Single Lamp     | Steps one lamp at a time, and Connector I.D. Press "A" to advance, "B" to back up, and "C" to cycle |
| All Lamps       | All lamps light alternately, 1st "A" phase, then "B"                                                |
| Display         | Steps thru alphanumeric character set                                                               |
| Solenoid        | Fires one driver at a time, and Displays Driver and Connector I.D.                                  |
| Single Solenoid | Fires one driver at a time. Press A for same solenoid, B for next                                   |
| Sound           | Plays game sounds                                                                                   |
| Game Rom I.D.   | Displays your Rom or Roms I.D.                                                                      |
| Switch Test     | Displays stuck switch by description                                                                |

**PRESS TEST BUTTON ON DOOR TO EXIT SWITCH TEST**

#### PERCENT DATA VALUES

|                      |                                                                  |
|----------------------|------------------------------------------------------------------|
| Game Percent         | Percentage of replays                                            |
| Total Plays          | Number of plays both paid and replays                            |
| Game Time            | Total number of minutes                                          |
| Total Replays        | Total number of replays                                          |
| Threshold 1          | # of times the first threshold was beaten                        |
| Threshold 2          | # of times the second threshold was beaten                       |
| Threshold 3          | # of times the third threshold was beaten                        |
| HiScore Beaten       | Total number of times the high score was beaten                  |
| Free Balls           | # of non-timed extra balls that were awarded                     |
| Top Special          | # of specials awarded by making flashing Special rollover switch |
| Bottom Special       | # of specials awarded by completing Tournament light columns     |
| Top Hoop Made        | # of times Top Hoop ("Blaster Loop") was completed               |
| Bottom Hoop Made     | # of times Bottom Hoop was completed (to raise or lower ramps)   |
| Lower Ramp Completed | # of times "Power Reps" Loop was completed                       |
| Novice Level         | # of times "Muscle Beach" Tournament light column was completed  |
| Amateur Level        | # of times "North Shore" Tournament light column was completed   |
| Pro Level            | # of times "Hardbody" Tournament light column was completed      |
| Inline X-balls       | # of extra balls awarded by completing all inline targets        |
| Hoop X-balls         | # of "Blaster Loop" extra balls that were awarded                |
| Ramp X-balls         | # of "Power Reps" extra balls that were awarded                  |

#### PERCENT OPTIONS

|                     |                                                                                            |
|---------------------|--------------------------------------------------------------------------------------------|
| Threshold 1         | Enter 0 thru 9,999,999; sets award level and display                                       |
| Self Percent        | Enter 0 or 1; 0 disables Self-Percentaging Process,<br>1 enables Self-Percentaging Process |
| Target Percent      | Enter desired percentage of replays awarded for reaching Threshold 1                       |
| Threshold 1 Percent | Displays actual percentage of replays awarded reaching Threshold 1                         |
| Threshold 2         | Enter 0 thru 9,999,999; sets award level and display                                       |
| Threshold 3         | Enter 0 thru 9,999,999; sets award level and display                                       |
| Highest Score       | Enter 0 thru 9,999,999; sets the HiScore replay level                                      |

#### FACTORY SETTINGS

|           |
|-----------|
| 900,000   |
| 1         |
| 10        |
| Unchanged |
| 1,800,000 |
| 00        |
| 3,624,360 |

#### BASIC OPTION VALUES

|                  |                                                                                                                        |    |
|------------------|------------------------------------------------------------------------------------------------------------------------|----|
| Credit Limit     | Enter 1 thru 40                                                                                                        | 10 |
| Balls per Game   | Enter 1 thru 5                                                                                                         | 3  |
| Threshold Mode   | Enter 0 thru 3; 0=0, 1=Points, 2=Extra Ball, 3=Replay                                                                  | 3  |
| Special Mode     | Enter 0 thru 3; 0=0, 1=Points, 2=Extra Ball, 3=Replay                                                                  | 3  |
| HiScore Mode     | Enter 0 thru 3; 0=0, 1=1 Replay, 2=2 Replays, 3=3 Replays                                                              | 3  |
| Sound Mode       | Enter 0 thru 3; 0=Chimes w/o background, 2=Sounds w/o background<br>1=Chimes with background, 3=Sounds with background | 3  |
| German Prize     | German Meter                                                                                                           | 0  |
| Match Option     | Enter 0 or 1; 0 disables match, 1 enables match                                                                        | 1  |
| Credit Display   | Enter 0 or 1; 0=No credits displayed, 1=Displayed credits                                                              | 1  |
| No Limit Replays | Enter 0 or 1; 0=Only 1 award per game, 1=More than 1 per game                                                          | 1  |
| Free Play        | Enter 0 or 65; 0=Coins, 65=Free Play                                                                                   | 0  |
| Slingshot        | Enter 0 or 1; 0=No slingshots, 1=slingshots                                                                            | 1  |
| Tilt Warning     | Enter 0 thru 3; 0=No warning, 1=1, 2=2, 3=3                                                                            | 1  |

## FEATURE OPTIONS

| Reset Factory           | Enter 65 for factory selected scores and features                                                                                                                                                                                                                                                                                                                                                               |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------|---|-------------|----|-------------|----|--------------|---|--------------|----|--------------|---|--------------|---|--------------|---|--------------|
| Center Special          | Enter 0 thru 2; This entry controls number of tournament light column completions required to award special                                                                                                                                                                                                                                                                                                     |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
|                         | <table> <tr> <th>ENTER</th><th>TOURNAMENT LIGHT COLUMN</th></tr> <tr> <td>0</td><td>3</td></tr> <tr> <td>1</td><td>2</td></tr> <tr> <td>2*</td><td>1</td></tr> </table>                                                                                                                                                                                                                                         | ENTER | TOURNAMENT LIGHT COLUMN    | 0 | 3           | 1  | 2           | 2* | 1            |   |              |    |              |   |              |   |              |   |              |
| ENTER                   | TOURNAMENT LIGHT COLUMN                                                                                                                                                                                                                                                                                                                                                                                         |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 0                       | 3                                                                                                                                                                                                                                                                                                                                                                                                               |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 1                       | 2                                                                                                                                                                                                                                                                                                                                                                                                               |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 2*                      | 1                                                                                                                                                                                                                                                                                                                                                                                                               |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| Inline X-ball           | Enter 0 or 1*; This entry controls method of completion of inline targets required to award extra ball<br>0=Conservative: make all 4 inline targets to qualify flashing X-ball light; hit standing target again to award extra ball<br>1=Liberal: make 3 inline drop targets to qualify flashing X-ball light; hit standing target to award extra ball                                                          |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| Top Special Timer       | Enter 0 thru 4; This entry controls length of time Top Special light remains flashing after it's activated                                                                                                                                                                                                                                                                                                      |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
|                         | <table> <tr> <th>ENTER</th><th>LENGTH OF TIME</th></tr> <tr> <td>0</td><td>4 seconds</td></tr> <tr> <td>1</td><td>6 seconds</td></tr> <tr> <td>2*</td><td>8 seconds</td></tr> <tr> <td>3</td><td>10 seconds</td></tr> </table>                                                                                                                                                                                  | ENTER | LENGTH OF TIME             | 0 | 4 seconds   | 1  | 6 seconds   | 2* | 8 seconds    | 3 | 10 seconds   |    |              |   |              |   |              |   |              |
| ENTER                   | LENGTH OF TIME                                                                                                                                                                                                                                                                                                                                                                                                  |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 0                       | 4 seconds                                                                                                                                                                                                                                                                                                                                                                                                       |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 1                       | 6 seconds                                                                                                                                                                                                                                                                                                                                                                                                       |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 2*                      | 8 seconds                                                                                                                                                                                                                                                                                                                                                                                                       |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 3                       | 10 seconds                                                                                                                                                                                                                                                                                                                                                                                                      |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| Reset Top Hoop          | Enter 0* or 1; This entry controls whether or not Blaster Loop's Weight Meter value is reset after this value is collected by completing all 3 orange stand-up targets<br>0=Reset      1=No Reset                                                                                                                                                                                                               |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| Top Hoop Advance        | Enter 0 or 1*; This entry controls whether or not Blaster Loop's Weight Meter value advances each time all 3 orange drop targets are completed<br>0=No Advance      1=Advance                                                                                                                                                                                                                                   |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| Auto Saver              | Enter 0 thru 3; This entry controls level of total game points beyond which Auto Saver feature is disabled                                                                                                                                                                                                                                                                                                      |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
|                         | <table> <tr> <th>ENTER</th><th>GAME POINT LEVEL</th></tr> <tr> <td>0</td><td>None</td></tr> <tr> <td>1</td><td>100,000</td></tr> <tr> <td>2*</td><td>200,000</td></tr> <tr> <td>3</td><td>300,000</td></tr> </table>                                                                                                                                                                                            | ENTER | GAME POINT LEVEL           | 0 | None        | 1  | 100,000     | 2* | 200,000      | 3 | 300,000      |    |              |   |              |   |              |   |              |
| ENTER                   | GAME POINT LEVEL                                                                                                                                                                                                                                                                                                                                                                                                |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 0                       | None                                                                                                                                                                                                                                                                                                                                                                                                            |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 1                       | 100,000                                                                                                                                                                                                                                                                                                                                                                                                         |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 2*                      | 200,000                                                                                                                                                                                                                                                                                                                                                                                                         |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 3                       | 300,000                                                                                                                                                                                                                                                                                                                                                                                                         |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| Circle Timer            | Enter 0 thru 3; This entry controls length of time allowed for each completion of "Power Reps Loop" (with ramps raised) required to advance "Power Reps" value                                                                                                                                                                                                                                                  |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
|                         | <table> <tr> <th>ENTER</th><th>LENGTH OF TIME</th></tr> <tr> <td>0</td><td>6 seconds</td></tr> <tr> <td>1*</td><td>8 seconds</td></tr> <tr> <td>2</td><td>10 seconds</td></tr> <tr> <td>3</td><td>12 seconds</td></tr> </table>                                                                                                                                                                                 | ENTER | LENGTH OF TIME             | 0 | 6 seconds   | 1* | 8 seconds   | 2  | 10 seconds   | 3 | 12 seconds   |    |              |   |              |   |              |   |              |
| ENTER                   | LENGTH OF TIME                                                                                                                                                                                                                                                                                                                                                                                                  |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 0                       | 6 seconds                                                                                                                                                                                                                                                                                                                                                                                                       |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 1*                      | 8 seconds                                                                                                                                                                                                                                                                                                                                                                                                       |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 2                       | 10 seconds                                                                                                                                                                                                                                                                                                                                                                                                      |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 3                       | 12 seconds                                                                                                                                                                                                                                                                                                                                                                                                      |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| Unlimited X-balls       | Enter 0 or 1*; This entry controls whether one extra ball only is awarded or an unlimited number of extra balls are awarded by completing any feature which awards extra ball<br>0=one extra ball      1=unlimited extra balls                                                                                                                                                                                  |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| Recall Station          | Enter 0 or 1*; This entry recalls all station stand-up target lights<br>0=No Memory      1=Memory                                                                                                                                                                                                                                                                                                               |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| SPSA Recall             | Enter 0 or 1*; After the "Shoot Again" light is activated, all features' positions are recalled for the next new ball<br>0=No Memory      1=Memory                                                                                                                                                                                                                                                              |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| Gate On Timer           | Enter 0 thru 7; This entry sets initial length of time (for each player) either manual Return Lane Gate remains closed after being activated. During game, this time length is also controlled by Control Gate Time option (See Note)                                                                                                                                                                           |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
|                         | <table> <tr> <th>ENTER</th><th>LENGTH OF TIME</th></tr> <tr> <td>0</td><td>0.83 second</td></tr> <tr> <td>1</td><td>1.00 second</td></tr> <tr> <td>2</td><td>1.16 seconds</td></tr> <tr> <td>3</td><td>1.33 seconds</td></tr> <tr> <td>4*</td><td>1.50 seconds</td></tr> <tr> <td>5</td><td>1.66 seconds</td></tr> <tr> <td>6</td><td>1.83 seconds</td></tr> <tr> <td>7</td><td>2.00 seconds</td></tr> </table> | ENTER | LENGTH OF TIME             | 0 | 0.83 second | 1  | 1.00 second | 2  | 1.16 seconds | 3 | 1.33 seconds | 4* | 1.50 seconds | 5 | 1.66 seconds | 6 | 1.83 seconds | 7 | 2.00 seconds |
| ENTER                   | LENGTH OF TIME                                                                                                                                                                                                                                                                                                                                                                                                  |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 0                       | 0.83 second                                                                                                                                                                                                                                                                                                                                                                                                     |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 1                       | 1.00 second                                                                                                                                                                                                                                                                                                                                                                                                     |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 2                       | 1.16 seconds                                                                                                                                                                                                                                                                                                                                                                                                    |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 3                       | 1.33 seconds                                                                                                                                                                                                                                                                                                                                                                                                    |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 4*                      | 1.50 seconds                                                                                                                                                                                                                                                                                                                                                                                                    |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 5                       | 1.66 seconds                                                                                                                                                                                                                                                                                                                                                                                                    |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 6                       | 1.83 seconds                                                                                                                                                                                                                                                                                                                                                                                                    |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 7                       | 2.00 seconds                                                                                                                                                                                                                                                                                                                                                                                                    |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| Control Gate Time       | Enter 0 thru 7*; For each player, this entry controls length of time (along with Gate On Timer option), either manual Return Lane Gate remains closed after being activated (See Note)                                                                                                                                                                                                                          |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
|                         | <table> <tr> <th>ENTER</th><th>RETURN LANE GATE ACTIVATED</th></tr> <tr> <td>0</td><td>6 times</td></tr> <tr> <td>1</td><td>8 times</td></tr> <tr> <td>2</td><td>10 times</td></tr> <tr> <td>3</td><td>12 times</td></tr> <tr> <td>4*</td><td>14 times</td></tr> <tr> <td>5</td><td>16 times</td></tr> <tr> <td>6</td><td>18 times</td></tr> <tr> <td>7</td><td>20 times</td></tr> </table>                     | ENTER | RETURN LANE GATE ACTIVATED | 0 | 6 times     | 1  | 8 times     | 2  | 10 times     | 3 | 12 times     | 4* | 14 times     | 5 | 16 times     | 6 | 18 times     | 7 | 20 times     |
| ENTER                   | RETURN LANE GATE ACTIVATED                                                                                                                                                                                                                                                                                                                                                                                      |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 0                       | 6 times                                                                                                                                                                                                                                                                                                                                                                                                         |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 1                       | 8 times                                                                                                                                                                                                                                                                                                                                                                                                         |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 2                       | 10 times                                                                                                                                                                                                                                                                                                                                                                                                        |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 3                       | 12 times                                                                                                                                                                                                                                                                                                                                                                                                        |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 4*                      | 14 times                                                                                                                                                                                                                                                                                                                                                                                                        |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 5                       | 16 times                                                                                                                                                                                                                                                                                                                                                                                                        |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 6                       | 18 times                                                                                                                                                                                                                                                                                                                                                                                                        |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| 7                       | 20 times                                                                                                                                                                                                                                                                                                                                                                                                        |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |
| Game Over Attract Sound | Enter 0 thru 1*; When game is over, this entry enables or disables Attract Sound Mode while displaying hi-scores and instructions.<br>0=No Sound      1=Sound                                                                                                                                                                                                                                                   |       |                            |   |             |    |             |    |              |   |              |    |              |   |              |   |              |   |              |

\*Factory Setting

NOTE: Gate On Timer is initialized for each player at beginning of game (See Gate On Timer Option). Game counts number of times Return Lane Gates are activated by a particular player. If a match is found when compared to number of times allowed as set in Control Gate Time Option, next lower time setting in Gate On Timer Option is selected.

## PRICING OPTIONS

- Chute 1 Options  
XX coin for yy credit; Coins (xx) will flash first. Enter 1 thru 99 coins. Then credits (yy) will flash. Enter 1 thru credit limit. Then coins will flash again. Either press Enter if the values are correct or repeat the data entry
- Chute 1 Bonus; Enter 0 thru 40; 0=No Bonus Credit  
1 thru 40 sets the number of credits at which 1 Bonus Credit will be awarded
- Chute 2 Options  
XX coin for yy credit; Coins (xx) will flash first. Enter 1 thru 99 coins. Then credits (yy) will flash. Enter 1 thru credit limit. Then coins will flash again. Either press Enter if the values are correct or repeat the data entry
- Chute 2 Bonus; Enter 0 thru 40; 0=No Bonus Credit  
1 thru 40 sets the number of credits at which 1 Bonus Credit will be awarded
- Chute 3 Options  
XX coin for yy credit; Coins (xx) will flash first. Enter 1 thru 99 coins. Then credits (yy) will flash. Enter 1 thru credit limit. Then coins will flash again. Either press Enter if the values are correct or repeat the data entry
- Chute 3 Bonus; Enter 0 thru 40; 0=No Bonus Credit  
1 thru 40 sets the number of credits at which 1 Bonus Credit will be awarded

### Example:

To set Coin Chute 1 for 3 credits/2 Coins with no credits on the first coin;

Enter 02 Coin for 03 Credit Chute

Chute 1 Bonus 00

To set it for 3 Credits/2 Coins with one credit delivered on the 1st coin and 2 credits delivered on the second

Enter 01 Coin for 01 Credit

Chute 1 Bonus 02

If all 3 Chute Options and Bonus Registers are set the same, then all Chutes will work "together."

## V. RECOMMENDED 3 & 5 BALL OPTION SETTINGS

| REPLAYS                                       | 3-BALL    | 5-BALL                 |
|-----------------------------------------------|-----------|------------------------|
| Special Mode                                  | 3         | 3                      |
| Match Option                                  | 1         | 1                      |
| High Score Mode                               | 3         | 3                      |
| 1st replay at                                 | 900,000   | 1,500,000              |
| 2nd replay at                                 | 1,800,000 | 3,000,000              |
| <b>X-BALL</b>                                 |           |                        |
| Special Mode                                  | 2         | 2                      |
| Match Option                                  | 0         | 0                      |
| High Score Mode                               | 0         | 0                      |
| 1st Extra Ball at                             | 900,000   | 900,000                |
| 2nd Extra Ball at                             | 1,800,000 | 1,800,000              |
| <b>NOVELTY</b>                                |           |                        |
| Special Mode                                  | 1         | 1                      |
| Match Option                                  | 0         | 0                      |
| High Score Mode                               | 0         | 0                      |
| <b>HIGH GAME TO DATE</b> (reset periodically) |           |                        |
| 3-BALL .....                                  | 3,624,360 | 5-BALL ..... 3,624,360 |

## HARDBODY OPTION SETTINGS

| FEATURE OPTIONS REGISTER | 3-BALL | 5-BALL |
|--------------------------|--------|--------|
| CENTER SPECIAL           | 2      | 0      |
| INLINE X-BALL            | 1      | 0      |
| TOP SPECIAL TIMER        | 2      | 2      |
| RESET TOP HOOP           | 0      | 0      |
| TOP HOOP ADVANCE         | 1      | 1      |
| AUTO SAVER               | 2      | 2      |
| CIRCLE TIMER             | 1      | 1      |
| UNLIMITED X-BALLS        | 1      | 0      |
| RECALL STATION           | 1      | 0      |
| SPSA RECALL              | 1      | 1      |
| GATE ON TIMER            | 4      | 4      |
| CONTROL GATE TIME        | 4      | 4      |
| GAME OVER ATTRACT SOUND  | 1      | 1      |
| <b>In Basic Options:</b> |        |        |
| SLINGSHOT                | 1      | 1      |
| TILT WARNING             | 2      | 1      |

## VI. TROUBLESHOOTING ON LOCATION

### SYMPTOM: WON'T POWER UP

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

#### ACTION:

- A. Check Fuses.
- B. Turn power OFF. Open back box. Locate light emitting diode (LED) on Control Board.
- C. Turn power ON. LED must flash 9X to indicate that the module is good. Correct sequence is flash-pause-flash and then seven more flashes and LED goes out.
- D. If LED does not come on or does not flash, or flashes, but less than 9X, 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.

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

### SYMPTOM: LAMPS

One or some switched lamps always ON or not all feature lamps light during play.

#### ACTION:

- A. With power ON, open front door. Select SELF TEST-Lamp Tests with 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 Bally-Midway service department.

### SYMPTOM: DISPLAYS

- I. 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.

#### ACTION:

- A. With power ON, open front door. Select SELF TEST-Display Test with keyboard. If the game is correct, each digit on each Display displays the count 0 through 9 and alphabet 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.

- II. All displays improper. Improper: Digit(s) always on or off/segment(s) always on or off, all displays.

#### ACTION:

- A. With power ON, open front door. Select SELF TEST-Display Test with keyboard. If the game is correct, each digit on each Display displays the count 0 through 9 and alphabet in all 7 digit positions. Note defective Display Driver modules.
- B. Replace Control Board. Turn power ON. Repeat A.

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

- C. If game is correct, it is now ready to play. If game is not correct, contact Bally-Midway service department.

- III. One or several displays always off.

#### ACTION:

- A. With power ON, open front door. Select SELF TEST-Display Test with keyboard. If the game is correct, each digit on each Display displays the count 0 through 9 and alphabet in all 7 digit positions. Note defective Display Driver modules.
- B. Turn power 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.

### **SYMPTOM: SOLENOIDS**

- I. One or more solenoids do not pull-in during course of game.

#### **ACTION:**

- A. With power ON, open front door. Select SELF TEST-Solenoid Test with keyboard.
  - B. If game was correct, each solenoid would be energized. The Solenoid name appears with the Driver Q Number and connector jack and pin numbers. (**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.)
  - 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 A & B. 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 A & B. If game is correct it is now ready to play. If game is not correct, contact the Bally-Midway service department.
- II. Solenoid(s) are 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:**

- A. With power ON, open front door. Select SELF TEST-Solenoid Test with keyboard.
- B. If game was correct, each solenoid would be energized. The Solenoid name appears with the Driver Q Number and connector jack and pin numbers. (**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.)
- 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 A & B. 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 A & B. If game is correct, it is now ready to play. If game is not correct contact the Bally-Midway service department.

### **SYMPTOM: NO SOUND**

#### **ACTION:**

- A. With power ON, open front door. Select SELF TEST-Sound Test with the 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.

### **SYMPTOM: SWITCHES**

Feature (Drop Targets, Stand-up, etc.) does not score.

#### **ACTION:**

- A. With power ON, open front door. Select SELF TEST-Switch Test with the keyboard.
- B. If game is correct, "All Switches Open" is displayed. Otherwise, the name of the switch(es) will be displayed with jack and pin numbers.
- C. Carefully lift the playfield. Locate the switch assembly identified from the display. Visually inspect the switch assembly. If the contacts are stuck, re-gap them to 1/16." Repeat A & B. If the game is correct, it is now ready to play. If the game is not correct, turn power OFF.
- D. Replace Control board. See CAUTION NOTE.
- 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.

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

## GAME: MOTORHOME PINBALL & FUTURE GAMES

### SUBJECT: 6803 CONTROL BOARD POWER UP TEST SEQUENCE

The following is an abbreviated self-test routine for the 6803 Control Board used in Motordome and future pinballs:

- 1st Flash —(U1) Determines if the internal RAM is good. (6803)
- 2nd Flash—(U2) Checks to see if the program ROM is good. (27128)
- 3rd Flash —(U3) Checks to see if the program ROM is good. (27128)
- 4th Flash —(U4) Checks the C-MOS RAM. (6116P-3)
- 5th Flash —(U8) Tests PIA0. (6821)
- 6th Flash —(U7) Tests PIA1. (6821)
- 7th Flash —(U1) Checks the internal display interrupt generator. (6803)
- 8th Flash —(U12 & U8) Verifies operation of the phase B switched ill. voltage. NOTE: F5 fuse on the Power Module provides the phase B signal to the Control Board. (U12, 14584) (U8, 6821)
- 9th Flash —(U1, U11 & U12) Verifies operation of the Phase A switched ill. voltage. NOTE: F4 fuse on the Power Module provides the phase A signal to the Control Board. (U1, 6803) (U11, 4011) (U12, 14584)

The following is an abbreviated self-test routine for the T.C.S. (6809) Sound Board:

- 1st Flash —(U7) Determines if the ROM is good.
- 2nd Flash—(U6) Checks to see if the RAM is good.
- 3rd Flash —(U8) Checks the PIA. (68B21)

The following is an abbreviated self-test routine for the Sounds Deluxe (68000) Board:

- 1st Flash —Determines if the ROM (U11) is good.
- 2nd Flash—Determines if the ROM (U12) is good.
- 3rd Flash —Determines if the ROM (U13) is good.
- 4th Flash —Determines if the ROM (U14) is good.
- 5th Flash —Checks to see if the RAM (U9, U10) is good.
- 6th Flash —Checks the PIA (6821) (U7).

## VII OE94 HARDBODY



### SOLENOID IDENTIFICATION TABLE

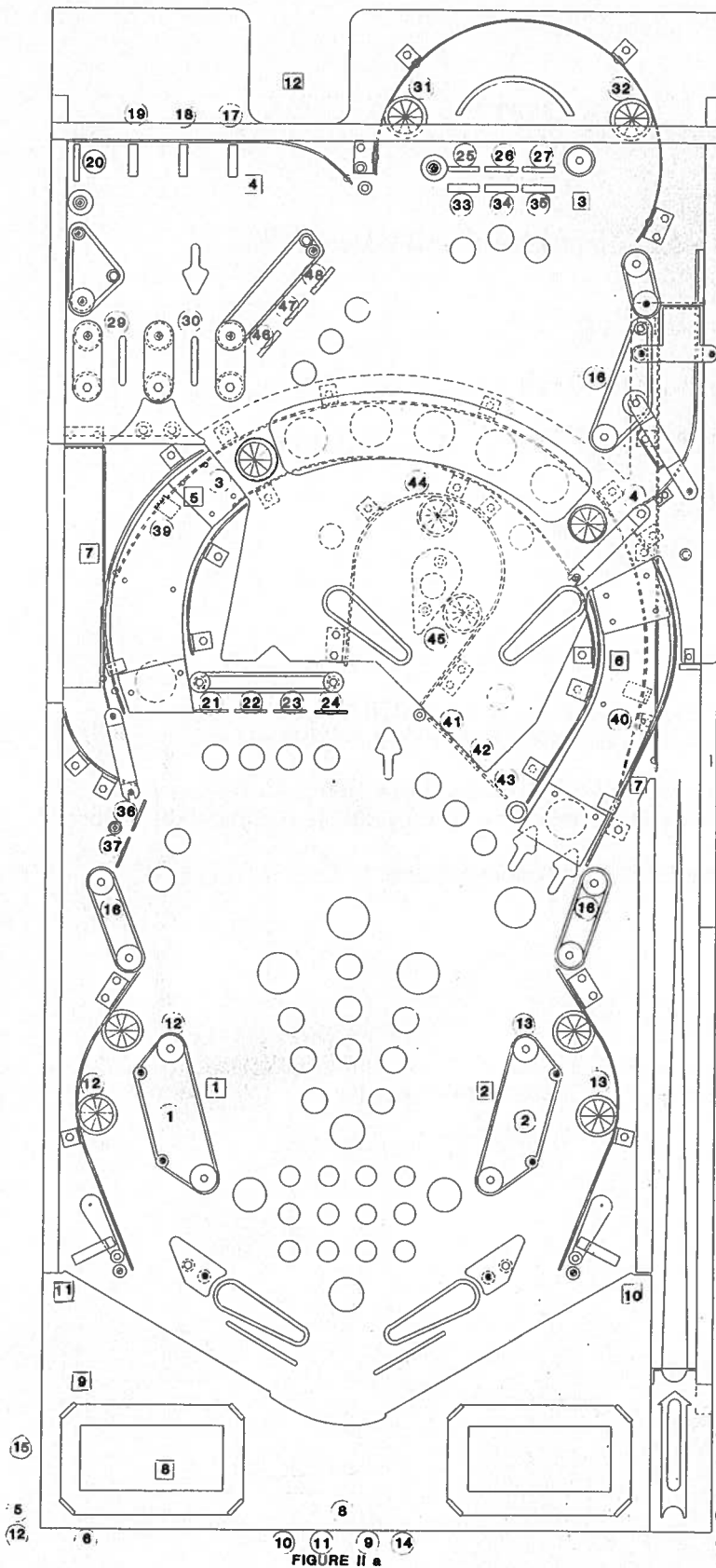
| SELF TEST # | SEQUENCE             |
|-------------|----------------------|
| 1           | SLINGSHOT LEFT       |
| 2           | SLINGSHOT RIGHT      |
| 3           | ORANGE DROP TARGETS  |
| 4           | IN-LINE DROP TARGETS |
| 5           | RAMP UP LEFT         |
| 6           | RAMP UP RIGHT        |
| 7           | RAMP DOWN            |
| 8           | OUTHOLE              |
| 9           | KNOCKER              |
| 10          | RIGHT GATE           |
| 11          | LEFT GATE            |
| 12          | FLIPPER (BACKBOX)    |



### SWITCH ASSEMBLY IDENTIFICATION TABLE

| SELF TEST # | SEQUENCE                          |
|-------------|-----------------------------------|
| 1           | LEFT SLINGSHOT                    |
| 2           | RIGHT SLINGSHOT                   |
| 3           | LEFT RAMP R.O.                    |
| 4           | RIGHT RAMP R.O.                   |
| 5           | LEFT CABINET (FLIPPER)            |
| 6           | NEW GAME (CABINET)                |
| 7           | RIGHT CABINET (FLIPPER)           |
| 8           | OUTHOLE                           |
| 9           | RIGHT COIN (DOOR)                 |
| 10          | LEFT COIN (DOOR)                  |
| 11          | MIDDLE COIN (DOOR)                |
| 12          | LEFT RETURN LANE                  |
| 13          | RIGHT RETURN LANE                 |
| 14          | SLAM                              |
| 15          | TILT (CABINET)                    |
| 16          | REBOUND                           |
| 17          | IN-LINE DROP TARGET RIGHT         |
| 18          | IN-LINE DROP TARGET MIDDLE        |
| 19          | IN-LINE DROP TARGET LEFT          |
| 20          | SWITCH BEHIND IN-LINE DROP TARGET |
| 21          | BLUE TARGET QUADS                 |
| 22          | BLUE TARGET HAMS                  |
| 23          | BLUE TARGET GLUTES                |
| 24          | BLUE TARGET CALVES                |
| 25          | ORANGE TARGET BICEPS              |
| 26          | ORANGE TARGET TRICEPS             |
| 27          | ORANGE TARGET DELTOIDS            |
| 28          | NOT USED                          |
| 29          | TOP 50K LANE                      |
| 30          | TOP SPECIAL LANE                  |
| 31          | HOOP TOP LEFT                     |
| 32          | HOOP TOP RIGHT                    |
| 33          | ORANGE DROP TARGET BICEPS         |
| 34          | ORANGE DROP TARGET TRICEPS        |
| 35          | ORANGE DROP TARGET DELTOIDS       |
| 36          | DOUBLE POWER                      |
| 37          | NORMAL POWER                      |
| 38          | NOT USED                          |
| 39          | RAMP SENSE LEFT                   |
| 40          | RAMP SENSE RIGHT                  |
| 41          | YELLOW TARGET TRANS ABS           |
| 42          | YELLOW TARGET RECT ABS            |
| 43          | YELLOW TARGET OBLIQUE ABS         |
| 44          | HOOP MIDDLE LEFT                  |
| 45          | HOOP MIDDLE RIGHT                 |
| 46          | GREEN TARGET PECS                 |
| 47          | GREEN TARGET LATS                 |
| 48          | GREEN TARGET TRAPS                |

**\*NOTE:** SEQUENCE NUMBERS SHOWN HERE ARE USED AS AN AID IN LOCATING FAULTY SOLENOID OR SWITCH USING DRAWING SHOWN.



### **VIII. 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.

### **IX. 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 contacts 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.

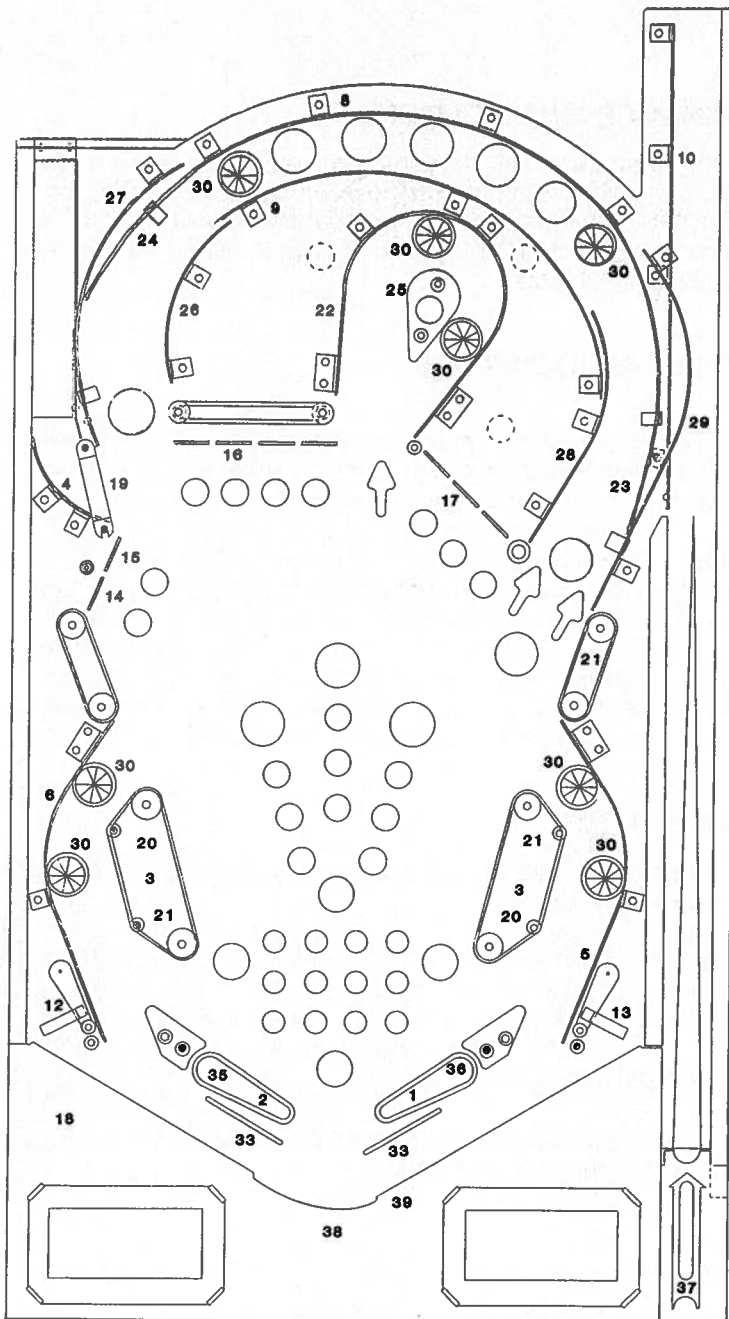
### **X. SERVICE HINTS:**

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** **OE94 HARDBODY** **PANEL TOP PARTS**



**FIGURE II b**

1. FLIPPER ASSY. DOUBLE SW. RT. AC70-00023-0100
2. FLIPPER ASSY. DOUBLE SW. LT. AC70-00023-0200
3. SLINGSHOT KICKER ASSY. A967-00059-0000
4. BALL-GUIDE ASSY.: LEFT-CENTER AE94-00017-0000
5. BALL-GUIDE ASSY.: SPRING, RT. AE94-00018-0000
6. BALL-GUIDE ASSY.: SPRING, LT. AE94-00018-0200
7. EXIT RAMP ASSY.: LEFT AE94-00024-0000
8. POWER-REPS ASSY.: REAR AE94-00025-0000
9. POWER-REPS ASSY.: FRONT AE94-00026-0000
10. LANE-ENTRANCE RAIL ASSY. AE94-00029-0000
11. TOP PLATFORM ASSY. (SEE PAGE 1-14) AE94-00038-0000
12. BALL-SAVER ASSY.: LT. AE94-00040-0000
13. BALL-SAVER ASSY.: RT. AE94-00041-0000
14. TARGET, SWITCH, BRKT., DIODE & CAP: RED LG.-RT. A365-R0300-F111
15. TARGET, SWITCH, BRKT., DIODE & CAP: WHITE LG.-RT. A365-R0300-F115
16. TARGET, SWITCH, BRKT., DIODE & CAP: BLUE LG.-RT. A365-R0300-F112
17. TARGET, SWITCH, BRKT., DIODE & CAP: YELLOW LG.-RT. A365-R0307-F113
18. TOP MOUNTED KICKER-ASSY. A360-00234-0000
19. GATE-BRKT. & WIRE-FORM ASSY. A967-00058-0000
20. SWITCH W/BRKT. & PLATE ASSY.: SLINGSHOT A360-00230-0000
21. SWITCH W/BRKT. & DIODE ASSY.: SLINGSHOT A360-00239-0000
22. BALL-SCOOP ASSY.: CENTER AE94-00013-0000
23. RAMP-LIFT ASSY.: RIGHT AE94-00044-0000
24. RAMP-LIFT ASSY.: LEFT AE94-00045-0000
25. TEAR-DROP ASSY. AE94-00050-0000
26. SCOOP ASSY.: INSIDE, LEFT AE94-00051-0000
27. SCOOP ASSY.: OUTSIDE, LEFT AE94-00052-0000
28. SCOOP ASSY.: INSIDE, RIGHT AE94-00053-0000
29. SCOOP ASSY.: OUTSIDE, RIGHT AE94-00054-0000
30. ROLLOVER BUTTON SWITCH A360-00603-0002
31. WIRE-FORM: BALL GUIDE OE94-00101-0000
32. WIRE-FORM: BALL GUIDE 0365-00151-1125
33. WIRE-FORM: BALL GUIDE 0360-00175-5300
34. GUIDE: BALL RETURN 0365-00190-00XF
35. MOLDED FLIPPER W/CAP ASSY. (WHITE) LT. A365-00312-0100
36. MOLDED FLIPPER W/CAP ASSY. (WHITE) RT. A365-00312-0200
37. SHOOTER GAUGE OE94-00117-00XF
38. BOTTOM ARCH OE94-00118-00XF
39. BOTTOM ARCH EXTENSION 0370-00918-0300

## XII OE94 HARDBODY PANEL TOP

### RUBBER RINGS

|                   |                 |
|-------------------|-----------------|
| A. RING:          | 0017-00041-0633 |
| B. RING: 5/16"    | 0017-00041-0637 |
| C. RING: 15/64"   | 0017-00041-0641 |
| D. RING: 1"       | 0017-00041-0643 |
| E. RING: 1-1/2"   | 0017-00041-0644 |
| F. RING: 2"       | 0017-00041-0645 |
| G. RING: 2-1/2"   | 0017-00041-0646 |
| H. RING: (RED) 3" | 0017-00041-0682 |

### POSTS

|                                                    |                 |
|----------------------------------------------------|-----------------|
| J. POST (BLUE PLASTIC)                             | 0017-00042-0594 |
| K. NICKEL POST<br>(NO THREADS)                     | 0360-00733-00XF |
| L. METAL MINI-POST<br>(W/THREADS FOR 10-32<br>NUT) | 0365-00700-00XF |

### RUBBER BUMPER FOR

|                     |                 |
|---------------------|-----------------|
| L. -METAL MINI-POST | 0017-00041-0633 |
| J. -PLASTIC POST    | 0017-00041-0637 |
| K. -NICKEL POST     | 0017-00041-0641 |

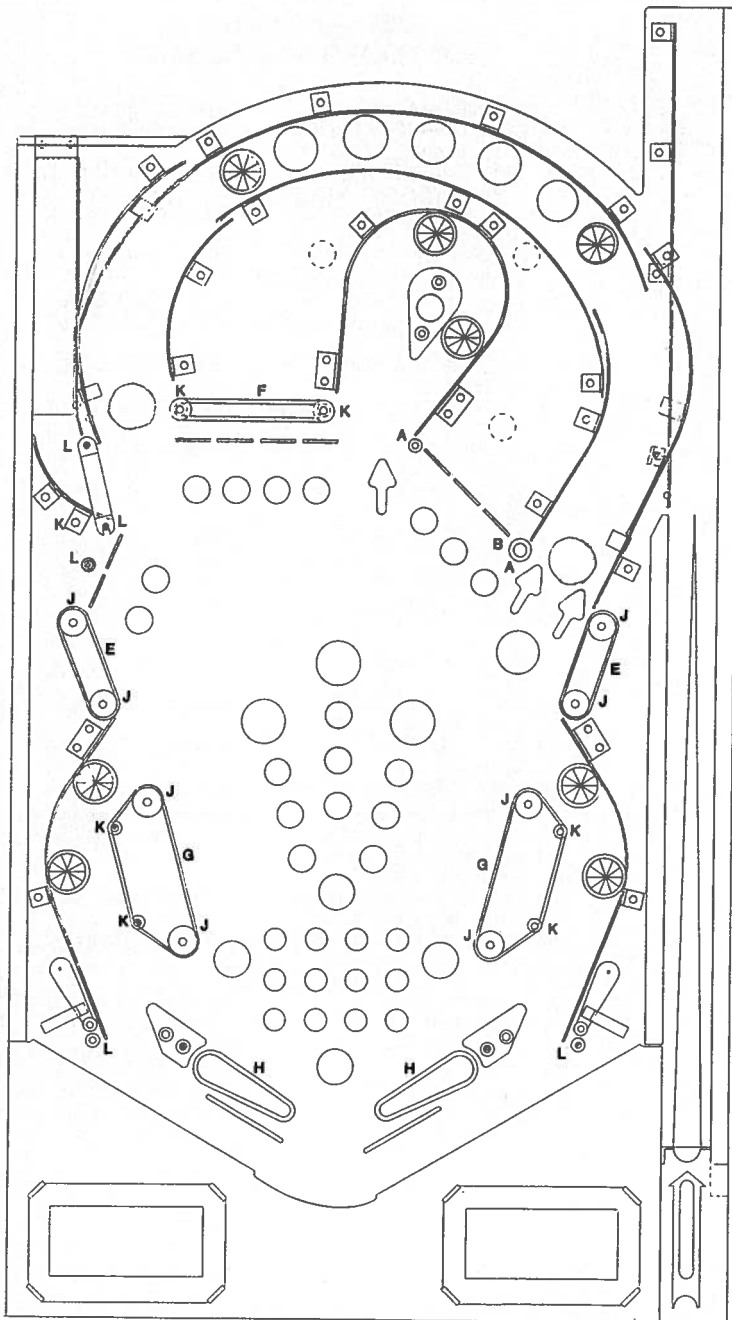
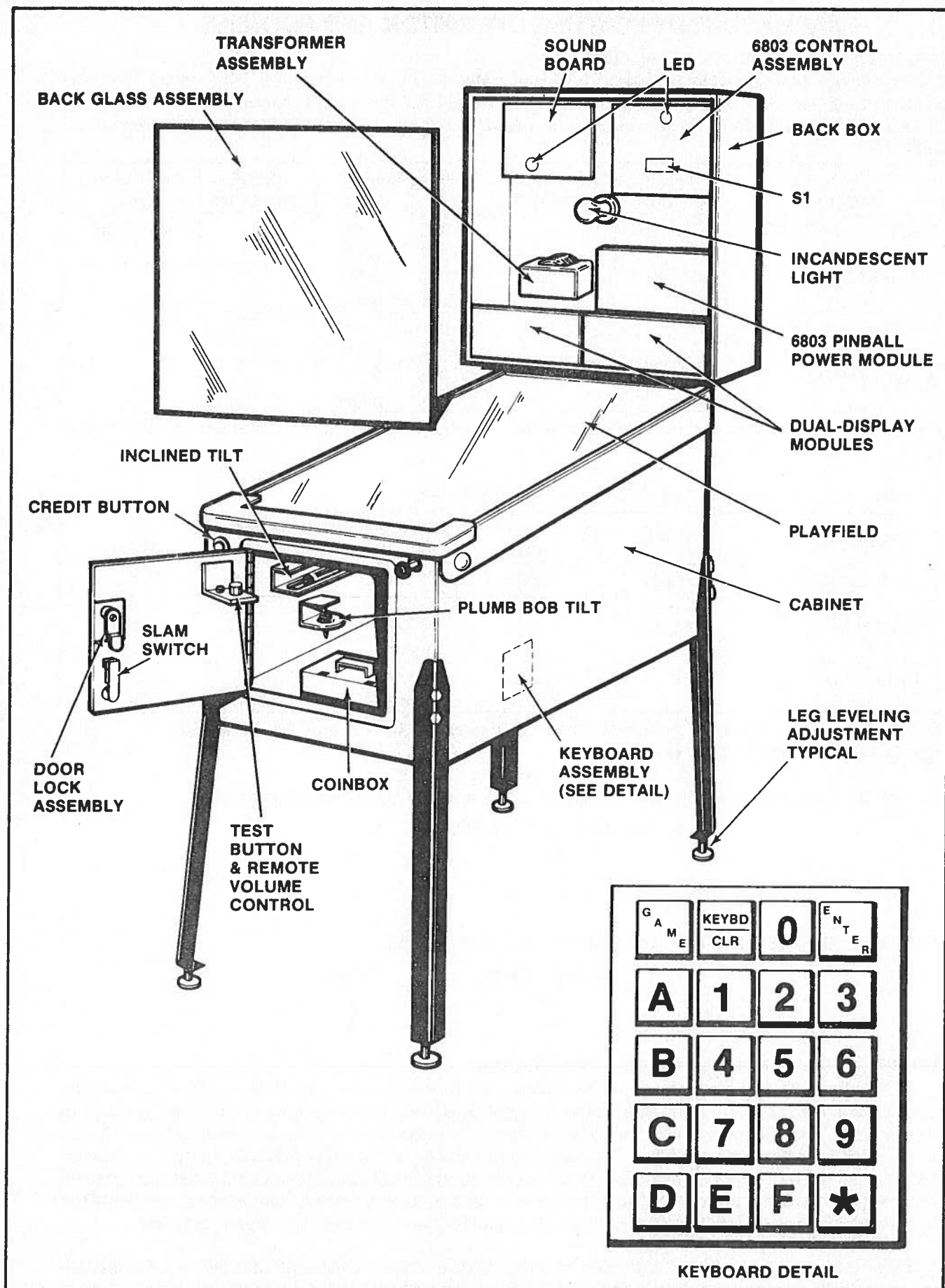


FIGURE II c

|                                                        |                 |
|--------------------------------------------------------|-----------------|
| 1. BACKBOARD ASSY.                                     | AE94-00009-0000 |
| 2. DROP TARGET ASSY.:<br>3-IN-LINE (YELLOW)            | AE94-00033-0000 |
| 3. DROP TARGET ASSY.:<br>3-SIDE-BY-SIDE (ORANGE)       | AE94-00035-0000 |
| 4. TARGET W/SPECIAL MTG.<br>BRKT.: RED LG-RT.          | AE94-00042-0000 |
| 5. TARGET, SWITCH, BRKT.,<br>DIODE & CAP: GREEN LG-RT. | A365-R0307-F114 |
| 6. BRKT.-TO-GUARD ASSY.                                | AE94-00027-0000 |
| 7. BRKT. W/WIRE-FORM ASSY.:<br>ROLLOVER LT.            | A331-00042-0000 |
| 8. GATE-BRKT. & WIRE-FORM<br>ASSY.                     | AE94-00047-0000 |
| 9. GATE-BRKT. & WIRE-FORM<br>ASSY.                     | A391-00027-0000 |
| 10. SWITCH W/BRKT. & DIODE<br>ASSY.: SLINGSHOT         | A360-00239-0000 |
| 11. SWITCH W/DIODE & PLATE<br>ASSY.                    | A365-00035-0000 |
| 12. FACE-PLATE ASSY.                                   | AE94-00055-0000 |
| 13. WIRE-FORM: BALL GUIDE                              | OE94-00101-0000 |
| 14. WIRE-FORM: BALL GUIDE                              | 0365-00151-1125 |
| 15. GUSSET BRKT.                                       | OE52-00109-00XF |
| 16. RAMP LOCK BRKT. ASSY.-<br>RIGHT                    | AE94-00058-0000 |
| 17. RAMP LOCK BRKT. ASSY.-<br>LEFT                     | AE94-00059-0000 |
| 18. BALL-SCOOP ASSY.:<br>UPPER-LEFT                    | AE94-00014-0000 |
| 19. BALL-SCOOP ASSY.:<br>UPPER-RIGHT                   | AE94-00015-0000 |
| 20. BALL-SCOOP ASSY.: TOP                              | AE94-00016-0000 |
| 21. RAMP ASSY.: LEFT                                   | AE94-00064-0000 |
| 22. RAMP ASSY.: RIGHT                                  | AE94-00063-0000 |
| 23. MOLDED FLIPPER W/CAP<br>ASSY. (WHITE) LT.          | AE94-00049-0100 |
| 24. MOLDED FLIPPER W/CAP<br>ASSY. (WHITE) RT.          | AE94-00049-0200 |
| 25. ROLLOVER BUTTON SWITCH                             | A360-00603-0002 |

|                   |                 |
|-------------------|-----------------|
| A. RING:          | 0017-00041-0633 |
| B. RING: 5/16"    | 0017-00041-0637 |
| C. RING: 23"      | 0017-00041-0641 |
| D. RING: 1"       | 0017-00041-0643 |
| E. RING: 1-1/2"   | 0017-00041-0644 |
| F. RING: 2"       | 0017-00041-0645 |
| G. RING: (RED) 3" | 0017-00041-0682 |



**FIGURE III. ELECTRONIC PIN BALL MACHINE**

## XIV. HARDBODY FEATURE OPERATION AND SCORING

### 1. BONUS FEATURE & CENTER SPECIAL FEATURE

Bonus points are awarded when a "Circuit" light is activated in any one of the three "Tournament" columns located in the center lower playfield area. A "Circuit" is awarded by completing all targets of Work-out Stations 1 thru 4 or by completing all targets of any one Station three times. Work-out Station target awards are as follows:

| WORK-OUT STATION    | TARGET COLOR | STAND-UP TARGETS | AWARD PER HIT |              | DROP TARGETS | AWARD PER HIT |
|---------------------|--------------|------------------|---------------|--------------|--------------|---------------|
|                     |              |                  | LIT           | UNLIT        |              |               |
| 1: ARMS & SHOULDERS | ORANGE       | 3                | 10,000 points | 2,000 points | 3            | 10,000 pts.   |
| 2: CHEST & BACK     | GREEN        | 3                | 10,000 points | 2,000 points |              |               |
| 3: LEGS             | BLUE         | 4                | 10,000 points | 2,000 points |              |               |
| 4: ABDOMINALS       | YELLOW       | 3                | 10,000 points | 2,000 points |              |               |

An additional 10,000 points are awarded when all stand-up targets (or drop targets) are completed at each Station.

Bonus Awards for Tournament Circuit Completions are as follows:

| TOURNAMENT   | LEVEL   | CIRCUIT BONUS AWARD VALUE |               |               |                |
|--------------|---------|---------------------------|---------------|---------------|----------------|
|              |         | FIRST                     | SECOND        | THIRD         | FINAL          |
| MUSCLE BEACH | NOVICE  | 20,000 points             | 20,000 points | 20,000 points | 40,000 points  |
| NORTH SHORE  | AMATEUR | 20,000 points             | 20,000 points | 20,000 points | 40,000 points  |
| HARD BODY    | PRO     | 25,000 points             | 25,000 points | 25,000 points | 350,000 points |

The completion of all Circuits in the Muscle Beach Tournament column awards the Center Special. (Adjustable—see **REGISTER Center Special**.)

- **REGISTER "Center Special"** controls the number of Tournament light column completions:

| TOURNAMENT LIGHT COLUMNS | ENTER |
|--------------------------|-------|
| All 3                    | 0     |
| 2 (Novice & Amateur)     | 1     |
| 1 (Novice)               | 2     |

- **REGISTER "Recall Station"** recalls all Station stand-up target lights.

| STATION RECALL | ENTER |
|----------------|-------|
| No             | 0     |
| Yes            | 1     |

### 2. RETURN LANE GATE FEATURE & AUTO SAVER FEATURE

Two flexible Return Lanes are in this game. Two rollover buttons are in each one of these combination return/out lanes. Each lane contains a flexible spring steel ball guide which can be moved to a closed position by a Return Lane Gate. The left Return Lane Gate is manually activated with a pushbutton located under the left Flipper pushbutton on the cabinet. The right Return Lane Gate is manually activated with a pushbutton located under the right Flipper pushbutton. When either Return Lane Gate is manually activated, its respective lane changes from being an "outlane" to a "return lane" for a fixed length of time (adjustable—see **REGISTER "Gate on Timer"** and **REGISTER "Control Gate Time"**) after which it returns to being an "outlane."

Whenever the two rollover button lights are flashing in either Return Lane and after the ball passes over both buttons, the Auto Saver feature automatically activates the Return Lane Gate to close the lane's flexible ball guide, for a fixed length of time, returning the ball to the Flipper.

At the start of each ball, the Auto Saver feature remains active (two flashing rollover button lights in each Return Lane) until the game score is greater than 200,000 points (adjustable—see **REGISTER “Auto Saver”**). The Auto Saver feature is then disabled for both Return Lanes but the player can still earn one Auto Save per lane at a time. Completing all four stand-up targets of Station 3 awards the left Return Lane's Auto Save. Completing all three stand-up targets of Station 4 awards the right Return Lane's Auto Save. The player can retain a Return Lane's Auto Save if he can manually activate the Return Lane Gate before the Auto Save is used.

Completing either Return Lane with its rollover buttons flashing awards 10,000 points. Completing either Return Lane with its rollover buttons unlit awards 5,000 points.

- **REGISTER “Auto Saver”** controls the level of game points beyond which the Auto Saver feature is disabled.

| GAME POINT LEVEL | ENTER |
|------------------|-------|
| None             | 0     |
| 100,000          | 1     |
| 200,000          | 2     |
| 300,000          | 3     |

- **REGISTER “Gate on Timer”** sets the initial length of time (for each player) either Return Lane Gate remains closed after being manually activated. During the game, this time length is also controlled by the REGISTER “Control Gate Time” (see note).

| LENGTH OF TIME | ENTER |
|----------------|-------|
| 0.83 second    | 0     |
| 1.00 second    | 1     |
| 1.16 seconds   | 2     |
| 1.33 seconds   | 3     |
| 1.50 seconds   | 4     |
| 1.66 seconds   | 5     |
| 1.83 seconds   | 6     |
| 2.00 seconds   | 7     |

- **REGISTER “Control Gate Time”** for each player, controls the length of time (along with **REGISTER “Gate on Timer”**) either Return Lane Gate remains closed after being manually activated (see note).

| RETURN LANE GATE MANUALLY ACTIVATED | ENTER |
|-------------------------------------|-------|
| 6 times                             | 0     |
| 8 times                             | 1     |
| 10 times                            | 2     |
| 12 times                            | 3     |
| 14 times                            | 4     |
| 16 times                            | 5     |
| 18 times                            | 6     |
| 20 times                            | 7     |

**NOTE:** The Gate on Timer is initialized for each player at the beginning of the game (see **REGISTER “Gate on Timer”**). The game counts the number of times the Return Lane Gates are manually activated by a particular player. If a match is found when compared to the number of times allowed as set in **REGISTER “Control Gate Time,”** the next lower time setting in the **REGISTER “Control Gate Time”** is selected.

### 3. BONUS MULTIPLIER FEATURE & TOP SPECIAL FEATURE

In-line targets in the upper left corner of the playfield consist of three yellow drop targets and one red stand-up target. Points, Bonus Multiplier values and an extra ball are scored as follows:

| TARGET POSITION | TYPE     | POINT AWARD | BONUS MULTIPLIER<br>VALUE AWARD | FLASHING<br>"EXTRA BALL" LIGHT |
|-----------------|----------|-------------|---------------------------------|--------------------------------|
| 1st In-line     | Drop     | 25,000 pts. |                                 |                                |
| 2nd In-line     | Drop     | 30,000 pts. | 2X                              |                                |
| 3rd In-line     | Drop     | 35,000 pts. | 3X                              | Activated*                     |
| 4th In-line     | Stand-up | 50,000 pts. |                                 | Extra Ball Awarded*            |

\*Adjustable—see REGISTER "In-line X-ball"

**NOTE:** If the drop targets are hit out of sequence, "2X" is awarded for any two drop targets knocked down, and "3X" (with the flashing "Extra Ball" light\*) is awarded for all three drop targets knocked down in any order.

The Top Special is scored as follows:

- Complete the top three in-line drop targets.
- Complete the rollover buttons in the left Return Lane to activate the timed flashing "Special" light located above the "25K" rollover switch.
- Complete the "25K" rollover switch before the timed "Special" light stops flashing (adjustable—see REGISTER "Top Special Timer").

• REGISTER "In-line X-ball" controls the method of completion of in-line targets required to award the extra ball.

#### METHOD OF COMPLETION ENTER

Conservative: Make all 4 in-line targets to qualify the flashing "Extra Ball" light; hit the stand-up target again to award the extra ball. 0

Liberal: Make all 3 in-line drop targets to qualify the flashing "Extra Ball" light; hit stand-up target to award the extra ball. 1

• REGISTER "Top Special Timer" controls the length of time the top "Special" light remains flashing after it's activated.

#### LENGTH OF TIME ENTER

4 seconds 0  
6 seconds 1  
8 seconds 2  
10 seconds 3

### 4. POWER RAMP FEATURE & POWER REPS FEATURE

Two Power Ramps are in this game to provide paths to move the ball from the lower playfield area to the upper playfield area. The "Power Reps" feature is available only when the Power Ramps are raised.

The Ramps are raised as follows:

- Completing any one of the four Circuits lights the Center Hoop ("Raise Ramps When Lit") arrow.
- Making either one of the Center Hoop's rollover buttons raises both Ramps and exposes the Power Reps lights. (At this point, the Center Hoop arrow is flashing. Making either one of the Center Hoop's rollover buttons will lower both Ramps.)

With the Power Ramps raised, each time the ball passes thru the Power Reps Loop within a set time limit (by completing two rollover buttons), points and an extra ball are awarded as follows:

| POWER REPS LOOP COMPLETION | POWER REPS LIGHT LIT | POWER REPS VALUE AWARD       | ROLLOVER BUTTONS AWARD | TIME ALLOWED BETWEEN LOOP COMPLETIONS* |
|----------------------------|----------------------|------------------------------|------------------------|----------------------------------------|
| 1st time                   | 50K                  | 50,000 pts.                  | 5,000 pts.             | 8 seconds                              |
| 2nd time                   | 100K                 | 100,000 pts.                 | 5,000 pts.             | 8 seconds                              |
| 3rd time                   | 200K                 | 200,000 pts.                 | 5,000 pts.             | 8 seconds                              |
| 4th time                   | 400K                 | 400,000 pts.<br>& Extra Ball | 5,000 pts.             | 8 seconds                              |

\*Adjustable—see **REGISTER “Circle Timer”**

**NOTE:** If successive Power Reps Loop completions fall behind the set time limit, the Power Reps value will decrease in steps back to the “50K” level.

Each Center Hoop (or Power Reps Loop) rollover button scores 5,000 points separately. But when both are made together, in completing the Center Hoop (or the Power Reps Loop), only 5,000 points for the first rollover button is awarded.

- **REGISTER “Circle Timer”** controls the length of time allowed for each completion of the Power Reps Loop (with ramps raised) required to advance the Power Reps value.

| LENGTH OF TIME | ENTER |
|----------------|-------|
| 6 seconds      | 0     |
| 8 seconds      | 1     |
| 10 seconds     | 2     |
| 12 seconds     | 3     |

## 5. BLASTER LOOP FEATURE

The Blaster Loop is located in the upper right area of the playfield behind Station 1 (Arms & Shoulders). The Blaster Loop is completed by making both of its rollover buttons (with each button always awarding 5,000 points).

The Weight Meter’s initial value is 20,000 points (20 pounds). Completing the Blaster Loop advances the Weight Meter value from 20,000 points thru 100,000 points and, finally, an extra ball. Completing all three Station 1 drop targets will not prevent further Blaster Loop completions from advancing the Weight Meter value unless a register option setting is changed (see **REGISTER “Top Hoop Advance”**).

The Weight Meter value is collected by completing all three Station 1 stand-up targets. The Weight Meter value is then reset to 20,000 points (adjustable—see **REGISTER “Reset Top Hoop”**).

- **REGISTER “Top Hoop Advance”** controls whether or not the Blaster Loop’s Weight Meter value will advance after all three Station 1 drop targets are completed.

| WEIGHT METER VALUE ADVANCE | ENTER |
|----------------------------|-------|
| No                         | 0     |
| Yes                        | 1     |

- **REGISTER “Reset Top Hoop”** controls whether or not the Blaster Loop’s Weight Meter value is reset after the value is collected by completing all three Station 1 stand-up targets.

| WEIGHT METER VALUE RESET | ENTER |
|--------------------------|-------|
| Yes                      | 0     |
| No                       | 1     |

## 6. MUSCLE POWER FEATURE

The Muscle Power feature consists of a red "Normal" stand-up target and a white "Double Playfield Values" stand-up target. At the beginning of each new ball, only the red target's light is lit ("normal" playfield values are awarded during this time). Hitting either target awards 2,000 points.

Completing either Return Lane qualifies the white target (its light flashes while the red target's light is still lit). If the white target is hit:

- A. 8,000 points are awarded.
- B. The white target's light remains lit.
- C. The red target's light remains lit.
- D. Subsequent playfield values double.

Hitting the lit white target now awards 4,000 points but if the unlit red target is hit:

- A. 4,000 points are awarded.
- B. The red target's light turns on.
- C. The white target's light turns off.
- D. Subsequent playfield values return to "normal."

Hitting either target will once again award 2,000 points.

## 7. MISCELLANEOUS FEATURES

Each Sling Shot awards 10 points.

Each Rebound awards 100 points.

- **REGISTER "Unlimited X-balls"** controls whether one extra ball only or an unlimited number of extra balls are awarded by completing any feature which awards extra balls.

| # OF EXTRA BALLS | ENTER |
|------------------|-------|
| One              | 0     |
| Unlimited        | 1     |

- **REGISTER "SPSA Recall"** recalls, after the "Shoot Again" light is activated, all features for the next new ball.

| RECALL ALL FEATURES | ENTER |
|---------------------|-------|
| No                  | 0     |
| Yes                 | 1     |

- **REGISTER "Attract Sound"** enables or disables, after the game is over, the Sound Mode while displaying hi-score or instructions.

| ENABLES SOUND MODE | ENTER |
|--------------------|-------|
| No                 | 0     |
| Yes                | 1     |

In Basic Options:

- **REGISTER "Sling Shot"** controls the Sling Shot:

| SLINGS SHOTS: ACTIVE | ENTER |
|----------------------|-------|
| No                   | 0     |
| Yes                  | 1     |

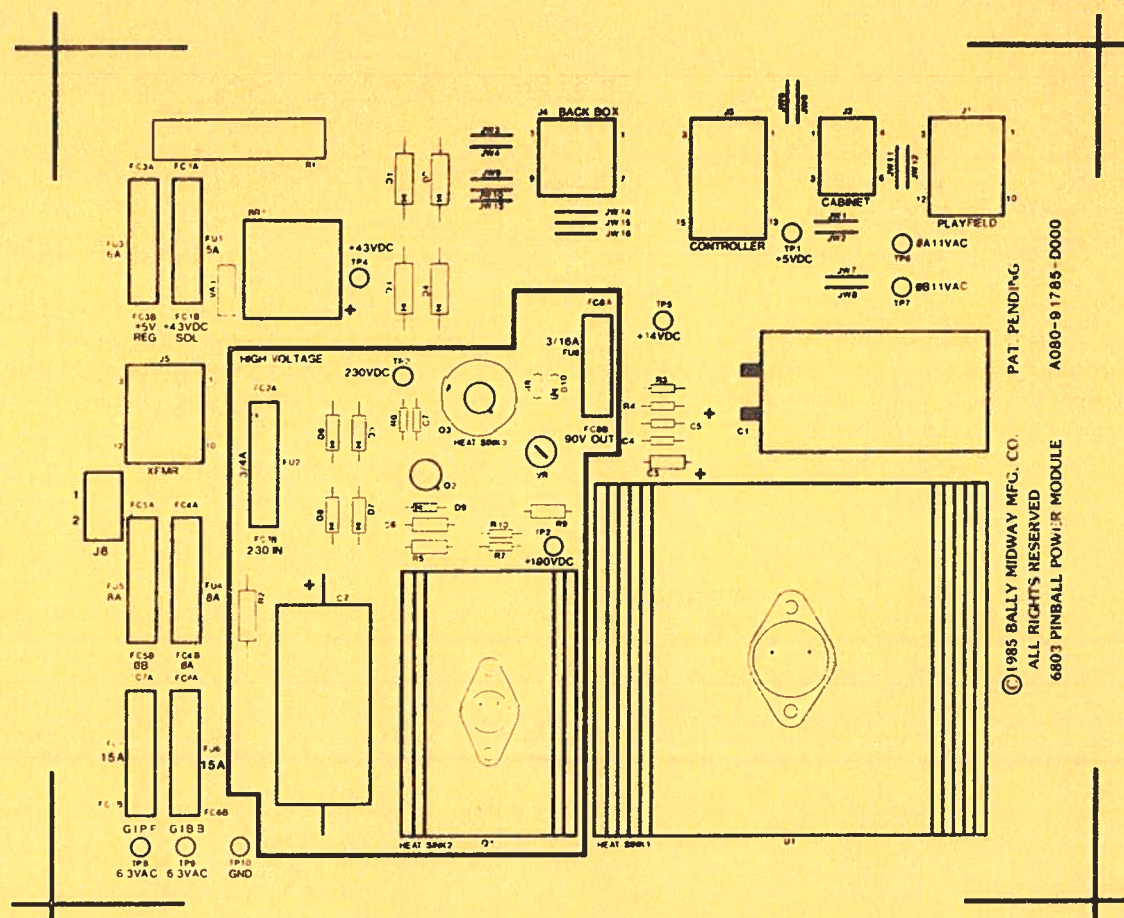
- **REGISTER "Tilt Warning"** controls the number of Tilt Warnings:

| # OF TILT WARNINGS | ENTER |
|--------------------|-------|
| None               | 0     |
| 1                  | 1     |
| 2                  | 2     |
| 3                  | 3     |

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



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



|                                                                                                                                                                                     |                                                                                                  |                                                           |                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------|
| THIS DWG. IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG. CO.                                                                                                                             |                                                                                                  |                                                           |                                               |
| <b>DWG. TOLERANCES</b><br>UNLESS OTHERWISE SPEC.<br>CONCENTRICITY T I R 000<br>FRACTIONAL ± 1/64<br>DECIMAL ± 0.005<br>HOLE DIA ± 0.002 - 0.003<br>ANGLE ± 1/2°<br>DO NOT SCALE DWG | FIRST USED ON<br>JAN CL DATE 04/08/86<br>SEC CON CL DATE<br>TERT CON CL DATE<br>QUAT CON CL DATE | <b>MIDWAY MFG. CO.</b><br>FRANKLIN, PA. 15031 A BALDY CO. | <b>REVISIONS</b><br>PART NO<br>M051-00C53-000 |
| ASSY DRAWING<br>6803 PINBALL PWR MODULE<br>A084-91785-0000                                                                                                                          |                                                                                                  |                                                           |                                               |

## DESIGNATION LIST

## DESIGNATION

C1  
P/O C1  
P/O C1  
P/O C1  
C2  
P/O C2  
C3  
C4, C5  
C6, C7  
R1  
R2  
R3  
R4  
R5  
R6  
R7  
R8  
R9  
R10  
VR1  
D1 - D4  
D5 - D9  
D10  
RR1  
P/O BR1  
O1  
P/O O1  
P/O O1  
P/O O1  
P/O O1  
P/O O1  
P/O O1  
P/O O1  
P/O O1  
P/O O1  
P/O O1  
P/O O1  
Q2, Q3  
P/O Q2, Q3  
P/O Q3  
U1  
P/O U1  
P/O U1  
P/O U1  
P/O U1  
P/O U1  
P/O U1  
VA1

### DESCRIPTION

|                            |      |
|----------------------------|------|
| 11,000uf 20V ELEC.         | JW1  |
| TY-WRAP                    | TP1  |
| SOLDER LUG                 | F1*  |
| WIRE 20AWG                 | F2   |
| 160uf 350V ELEC.           | F3   |
| TY-WRAP                    | F4,  |
| 2uf 25V ELEC.              | F6,  |
| .1uf 25V CER.              | F8   |
| .01uf 500V CER.            | FC1A |
| 600 OHM 10W                | FC8B |
| 100K 1W 5%                 | FC4A |
| 2.2 OHM 1/4W 5%            | J1   |
| 100 OHM 1/2W 5%            | J2   |
| 22K 1/2W 5%                | J3   |
| 100K 1/4W 5%               | J4   |
| 390 OHM 1/4W 5%            | J5   |
| 1.2K 1/4W 5%               | J6   |
| 82K 1/2W 5%                | 6803 |
| 8.2K 1/4W 5%               |      |
| 0 - 25K 1/4W POT.          | 4-23 |
| MR751                      |      |
| IN4004                     |      |
| IN5275A ZENER              |      |
| KBPC-35-02-W               |      |
| BRIDGE SPACER              |      |
| 2N3584                     | * TW |
| SHIELD                     |      |
| HEX SPACER                 |      |
| 6-32 X 5 SCREW             |      |
| 6-32 X 12 SCREW            |      |
| LOCKWASHER EXT.            |      |
| LOCKWASHER INT.            |      |
| FLAT WASHER                |      |
| 6-32 HEX NUT               |      |
| LABEL - CAUTION HIGH VOLT. |      |
| HEATSINK 2                 |      |
| INSULATOR TO-66            |      |
| 2N3440                     |      |
| INSULATOR TO-5             |      |
| HEATSINK 3                 |      |
| 78H05C REG.                |      |
| 6-32 X 12 SCREW            |      |
| 6-32 HEX NUT               |      |
| LOCKWASHER EXT.            |      |
| FLAT WASHER                |      |
| HEATSINK 1                 |      |
| INSULATOR TO-3             |      |
| VARISTOR                   |      |

## DESIGNATION

JW1 - JW16  
TP1 - TP10  
F1\*  
F2  
F3  
F4, F5  
F6, F7  
F8  
FC1A - FC3B, FC8A  
FC8B  
FC4A - FC7B  
J1  
J2  
J3  
J4  
J5  
J6  
6803 POWER MODULE

### DESCRIPTION

ZERO OHM RES. JUMPER  
TEST POINTS  
5 AMP 3AG FUSE  
3/4 AMP 3AG FUSE  
6 AMP 3AG FUSE  
8 AMP 3AG FUSE  
15 AMP 3AG FUSE  
3/16 AMP 8AG FUSE  
FUSE CLIPS  
  
FUSE CLIPS  
12 PIN M-N-L CONN. FEMALE  
6 PIN M-N-L CONN. MALE  
15 PIN M-N-L CONN. MALE  
9 PIN M-N-L CONN. MALE  
12 PIN M-N-L CONN. MALE  
2 PIN M-N-L CONN. MALE  
P.C. BOARD

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

\* TWO FLIPPER GAMES ONLY - SEE SCHEMATIC

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

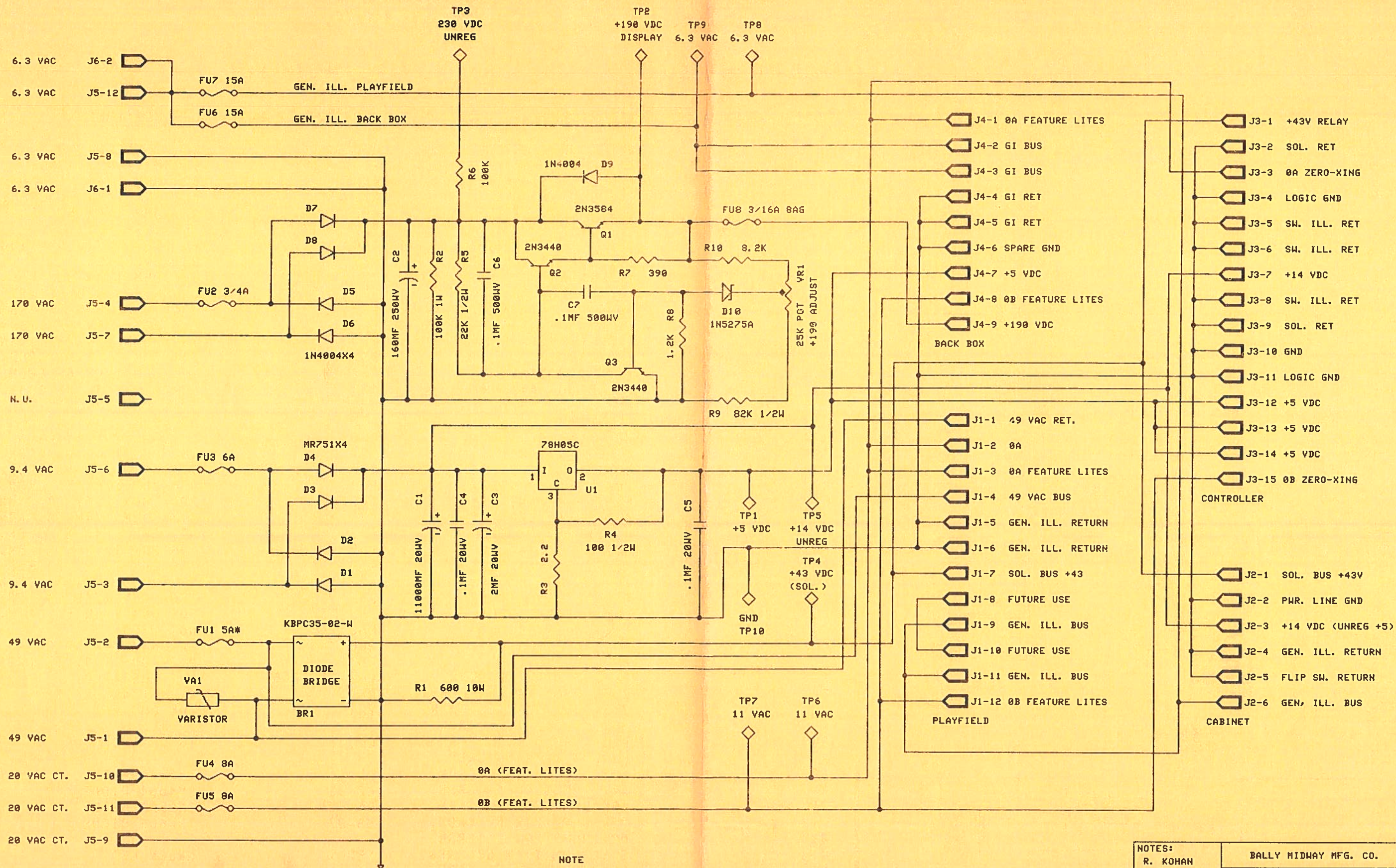
CROSS REFERENCE LIST

| <u>DESCRIPTION</u>       | <u>QTY.</u> | <u>DESIGNATION NO.</u>  | <u>PART NOS.</u> |
|--------------------------|-------------|-------------------------|------------------|
| .01UF 500V CER.          | 2           | C6,C7                   | 0360-00800-0013  |
| .1UF 25V CER.            | 2           | C4,C5                   | 0360-00800-0026  |
| 2UF 25V ELEC.            | 1           | C3                      | 0360-00800-0019  |
| 160UF 350V ELEC.         | 1           | C2                      | 0360-00800-0020  |
| 11,000UF 20V ELEC.       | 1           | C1                      | 0360-00800-0024  |
| 2.2 OHM 1/4W 5%          | 1           | R3                      | 100E-00005-0003  |
| 100 OHM 1/2W 5%          | 1           | R4                      | 100E-00006-0021  |
| 390 OHM 1/4W 5%          | 1           | R7                      | 100F-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           | RR1                     | 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,<br>FC8A,FC8B | 0017-00071-0033  |
| FUSE CLIP                | 8           | FC4A-FC7A               | 0017-00071-0034  |
| 3/16 AMP 8AG FUSE        | 1           | F8                      | 0017-00003-0206  |
| 3/4 AMP 3AG FUSE         | 1           | F2                      | 0017-00003-0010  |
| 5 AMP 3AG FUSE           | 1           | F1*                     | 0017-00003-0175  |
| 6 AMP 3AG FUSE           | 1           | F3                      | 0017-00003-0008  |

CROSS REFERENCE LIST

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

\* TWO FLIPPER GAMES ONLY - SEE SCHEMATIC



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

# DESIGNATION LIST

## DESIGNATION NO.

## DESCRIPTION

|                   |                        |
|-------------------|------------------------|
| C1                | NOT INSERTED           |
| C2                | 10 UF 20V TANT         |
| C3                | 4700 UF 25V AX ELEC    |
| C4                | 4.7 UF 25V TANT        |
| C5                | .01 UF 50V AX CER      |
| C6                | 4.7 UF 25V TANT        |
| C7                | .01 UF 50V AX CER      |
| C8                | 6.8 UF 25V TANT        |
| C9                | NOT INSERTED           |
| C10,C11           | .22 UF 50V AX CER      |
| C12               | 1000 UF 16V AX ELEC    |
| C13               | .1 UF 50V AX CER       |
| C14               | 470 UF 6V AX ELEC      |
| C15               | .05 UF CER             |
| C16               | 1 UF 20V TANT          |
| C17               | .1 UF 50V AX CER       |
| C18-C22           | NOT INSERTED           |
| C23               | 82 PF AX CER 5%        |
| C24               | 68 PF AX CER 5%        |
| C25               | 1 UF 20V TANT          |
| C26               | .001 UF AX CER 10%     |
| C27               | .01 UF AX CER 10%      |
| C28               | 1 UF 20V TANT          |
| C29               | 470 PF AX CER 10%      |
| C30               | 47 UF 16V AX ELEC      |
| C31               | .01 UF 50V AX CER      |
| C32               | 18 PF 50V AX CER       |
| C33-C36           | 100 PF 50V AX CER      |
| C37               | 470 PF 50V AX CER      |
| C38,C39           | .1 UF 50V AX CER       |
| C40-C43           | NOT INSERTED           |
| CP1-CP4, CP6-CP10 | .01 UF 50V AX CER      |
| R1                | 1K OHM 1/4W 5% CRBN.   |
| R2,R3             | 2.7K OHM 1/4W 5% CRBN. |
| R4                | 7.5K OHM 1/4W 5% CRBN. |
| R5                | 39K OHM 1/4W 5% CRBN.  |
| R6                | 9.1K OHM 1/4W 5% CRBN. |
| R7                | 82 OHM 1/4W 5% CRBN.   |
| R8                | 100 OHM 1/4W 5% CRBN.  |
| R9                | 47K OHM 1/4W 5% CRBN.  |
| R10,R11           | 10K OHM 1/4W 5% CRBN.  |
| R12               | 82K OHM 1/4W 5% CRBN.  |
| R13               | 62K OHM 1/4W 5% CRBN.  |
| R14               | 5.6K OHM 1/4W 5% CRBN. |
| R15               | 910 OHM 1/4W 5% CRBN.  |

# DESIGNATION LIST

## DESIGNATION NO.

## DESCRIPTION

|             |                             |
|-------------|-----------------------------|
| R16-R18     | NOT INSERTED                |
| R19         | 1 OHM 1/4W 5% CRBN.         |
| R20         | 430 OHM 1/4W 5% CRBN.       |
| R21         | 2.2 OHM 1/4W 5% CRBN.       |
| R22         | 220 OHM 1/4W 5% CRBN.       |
| R23         | NOT INSERTED                |
| R24         | 4.7K OHM 1/4W 5% CRBN.      |
| R25         | NOT INSERTED                |
| R26         | 33K OHM 1/4W 5% CRBN.       |
| R27         | 0 OHM RESISTOR (JUMPER WIRE |
| R28         | 150K OHM 1/4W 5% CRBN.      |
| R29         | 82K OHM 1/4W 5% CRBN.       |
| R30         | 150K OHM 1/4W 5% CRBN.      |
| R31         | 33K OHM 1/4W 5% CRBN.       |
| R32         | 18K OHM 1/4W 5% CRBN.       |
| R33         | 33K OHM 1/4W 5% CRBN.       |
| R34         | 120K OHM 1/4W 5% CRBN.      |
| R35         | 62K OHM 1/4W 5% CRBN.       |
| R36         | 68 OHM 1/4W 5% CRBN.        |
| R37         | 180 OHM 1/4W 5% CRBN.       |
| R38         | 75K OHM 1/4W 5% CRBN.       |
| R39         | 47K OHM 1/4W 5% CRBN.       |
| R40         | 200K OHM 1/4W 5% CRBN.      |
| R41-R47     | 4.7K OHM 1/4W 5% CRBN.      |
| R48         | 47K OHM 1/4W 5% CRBN.       |
| R49         | 100 OHM 1/4W 5% CRBN.       |
| R50         | 150 OHM 1/4W 5% CRBN.       |
| R51         | 3.3K OHM 1/4W 5% CRBN.      |
| R52         | 100K OHM 1/4W 5% CRBN.      |
| R53-R57     | 10K OHM 1/4W 5% CRBN.       |
| R58,R59     | NOT USED                    |
| R60         | 1K OHM 1/4W 5% CRBN.        |
| R61         | 2.7K OHM 1/4W 5% CRBN.      |
| R62-R64,R66 | NOT INSERTED                |
| R65         | 4.7K 1/4W 5% CRBN.          |
| VR1         | 10K OHM POT                 |
| L1,L2       | 10 UH INDUCTOR              |
| D1          | VR330 DIODE                 |
| D2,D3       | 1N4004 DIODE                |
| D4          | 1N958B DIODE                |
| D5-D7       | 1N4606 DIODE                |
| LED 1       | GREEN LED                   |

T.C.S. FOR PINBALL  
A084-91855-E000  
M051-00114-E176

DESIGNATION LIST

| <u>DESIGNATION NO.</u> | <u>DESCRIPTION</u>                |
|------------------------|-----------------------------------|
| Q1                     | 2N3904 XSTR.                      |
| Q2                     | 2N4403 XSTR.                      |
| Q3                     | 2N3904 XSTR.                      |
| Q4                     | 2N4403 XSTR.                      |
| Q5                     | NOT INSERTED                      |
| Q6                     | 2N5305 XSTR.                      |
| Q7                     | MPS3646 XSTR.                     |
| Q8                     | 2N5305 XSTR.                      |
| Q9                     | NOT INSERTED                      |
| OSC1                   | 8 MHZ COSC                        |
| IC U1                  | 74LS76                            |
| IC U2                  | 74LS00                            |
| IC U3                  | 16L8A-2 PAL                       |
| IC U5                  | MC68B09E                          |
| IC U6                  | 6116 2KX8 RAM 200NS.              |
| IC U7                  | PROG EPROM 512K 250NS.            |
| IC U8                  | MC68B21                           |
| IC U9                  | AD7533                            |
| IC U10                 | LM3900                            |
| IC U11                 | NOT INSERTED                      |
| IC U12                 | TDA2002                           |
| IC U13                 | MC7805                            |
| IC U14                 | NOT INSERTED                      |
| ICS U5                 | 40 PIN IC SOCKET (.600)           |
| ICS U6,U7              | 28 PIN IC SOCKET (.600)           |
| ICS U8                 | 40 PIN IC SOCKET (.600)           |
| ICS U9                 | 16 PIN IC SOCKET (.300)           |
| HS U12                 | 6030B-TT HEAT SINK                |
| HS U13                 | 6100B HEAT SINK                   |
| MH U12                 | 1 SCREW, 1 WASHER, 1 NUT          |
| MH U13                 | 1 SCREW, 1 WASHER, 1 NUT          |
| INS U12, U13           | SIL PAD THERMAL WASHER, TO 220    |
| FB1,FB2                | FERRITE BEAD                      |
| FB3-FB5                | NOT INSERTED                      |
| SW1                    | SWITCH PC. MTG.                   |
| JW1-JW11               | JUMPER                            |
| JW12                   | NOT INSERTED                      |
| J1,J2                  | AUTO INSERT PINS TIN .045 SQ. PIN |
| TP1,TP2                | TEST POINTS                       |
| T.C.S. FOR PINBALL     | A080-91855-E000                   |

CROSS REFERENCE LIST

| <u>DESCRIPTION</u>     | <u>QTY.</u> | <u>DESIGNATION NO.</u>         | <u>PART NOS.</u> |
|------------------------|-------------|--------------------------------|------------------|
| 18 PF 50V AX CER.      | 1           | C32                            | 0365-00800-0026  |
| 100 PF 50V AX CER.     | 4           | C33-C36                        | 0360-00800-0046  |
| 82 PF 50V AX CER.      | 1           | C23                            | 0E47-00800-0002  |
| 68 PF 50V AX CER.      | 1           | C24                            | 0360-00800-0028  |
| 470 PF 50V AX CER.     | 2           | C29,C37                        | 0307-00800-0008  |
| .001 AX. CER. 10%      | 1           | C26                            | 0E47-00800-0003  |
| .01 UF 50V AX CER.     | 1           | C27                            | 0E47-00800-0001  |
| .01 UF 50V AX CER.     | 12          | C5,C7,C31,CP1-CP4,<br>CP6-CP10 | 0360-00800-0005  |
| .05 UF CER.            | 1           | C15                            | 0360-00800-0006  |
| .1 UF 50V AX CER.      | 4           | C13,C17,C38,C39                | 0360-00800-0058  |
| .22 UF 50V AX CER.     | 2           | C10,C11                        | 0360-00800-0057  |
| 1 UF 20V TANT.         | 3           | C16,C25,C28                    | 0986-00800-1400  |
| 4.7 UF 25V TANT.       | 2           | C4,C6                          | 0360-00800-0008  |
| 6.8 UF 25V TANT.       | 1           | C8                             | 0360-00800-0048  |
| 10 UF 20V TANT.        | 1           | C2                             | 0986-00800-0700  |
| 47 UF 16V AX ELEC.     | 1           | C30                            | 0360-00800-0042  |
| 470 UF 6V AX ELEC.     | 1           | C14                            | 0360-00800-0021  |
| 1000 UF 16V AX ELEC.   | 1           | C12                            | 0360-00800-0044  |
| 4700 UF 25V AX ELEC.   | 1           | C3                             | 0360-00800-0023  |
| 1 OHM 1/4W 5% CRBN.    | 1           | R19                            | 100E-00005-0002  |
| 2.2 OHM 1/4W 5% CRBN.  | 1           | R21                            | 100E-00005-0003  |
| 68 OHM 1/4W 5% CRBN.   | 1           | R36                            | 100E-00005-0029  |
| 82 OHM 1/4W 5% CRBN.   | 1           | R7                             | 100E-00005-0031  |
| 100 OHM 1/4W 5% CRBN.  | 2           | R8,R49                         | 100E-00005-0033  |
| 150 OHM 1/4W 5% CRBN.  | 1           | R50                            | 100E-00005-0037  |
| 180 OHM 1/4W 5% CRBN.  | 1           | R37                            | 100E-00005-0039  |
| 220 OHM 1/4W 5% CRBN.  | 1           | R22                            | 100E-00005-0041  |
| 430 OHM 1/4W 5% CRBN.  | 1           | R20                            | 100E-00005-0050  |
| 910 OHM 1/4W 5% CRBN.  | 1           | R15                            | 100E-00005-0059  |
| 1K OHM 1/4W 5% CRBN.   | 2           | R1,R60                         | 100E-00005-0061  |
| 2.7K OHM 1/4W 5% CRBN. | 3           | R2, R3,R61                     | 100E-00005-0071  |
| 3.3K OHM 1/4W 5% CRBN. | 1           | R51                            | 100E-00005-0074  |
| 4.7K OHM 1/4W 5% CRBN. | 9           | R24,R41-R47,R65                | 100E-00005-0079  |
| 5.6K OHM 1/4W 5% CRBN. | 1           | R14                            | 100E-00005-0082  |
| 7.5K OHM 1/4W 5% CRBN. | 1           | R4                             | 100E-00005-0085  |
| 9.1K OHM 1/4W 5% CRBN. | 1           | R6                             | 100E-00005-0087  |
| 10K OHM 1/4W 5% CRBN.  | 7           | R10,R11,R53-R57                | 100E-00005-0088  |
| 18K OHM 1/4W 5% CRBN.  | 1           | R32                            | 100E-00005-0093  |
| 33K OHM 1/4W 5% CRBN.  | 3           | R31,R33,R26                    | 100E-00005-0100  |
| 39K OHM 1/4W 5% CRBN.  | 1           | R5                             | 100E-00005-0102  |
| 47K OHM 1/4W 5% CRBN.  | 3           | R9,R39,R48                     | 100E-00005-0104  |
| 62K OHM 1/4W 5% CRBN.  | 2           | R13,R35                        | 100E-00005-0107  |
| 75K OHM 1/4W 5% CRBN.  | 1           | R38                            | 100E-00005-0110  |
| 82K OHM 1/4W 5% CRBN.  | 2           | R12,R29                        | 100E-00005-0112  |
| 100K OHM 1/4W 5% CRBN. | 1           | R52                            | 100E-00005-0115  |
| 120K OHM 1/4W 5% CRBN. | 1           | R34                            | 100E-00005-0118  |
| 150K OHM 1/4W 5% CRBN. | 2           | R28,R30                        | 100E-00005-0120  |
| 200K OHM 1/4W 5% CRBN. | 1           | R40                            | 100E-00005-0123  |

**T.C.S FOR PINBALL**  
**A084-91855-E000**  
**M051-00114-E176**

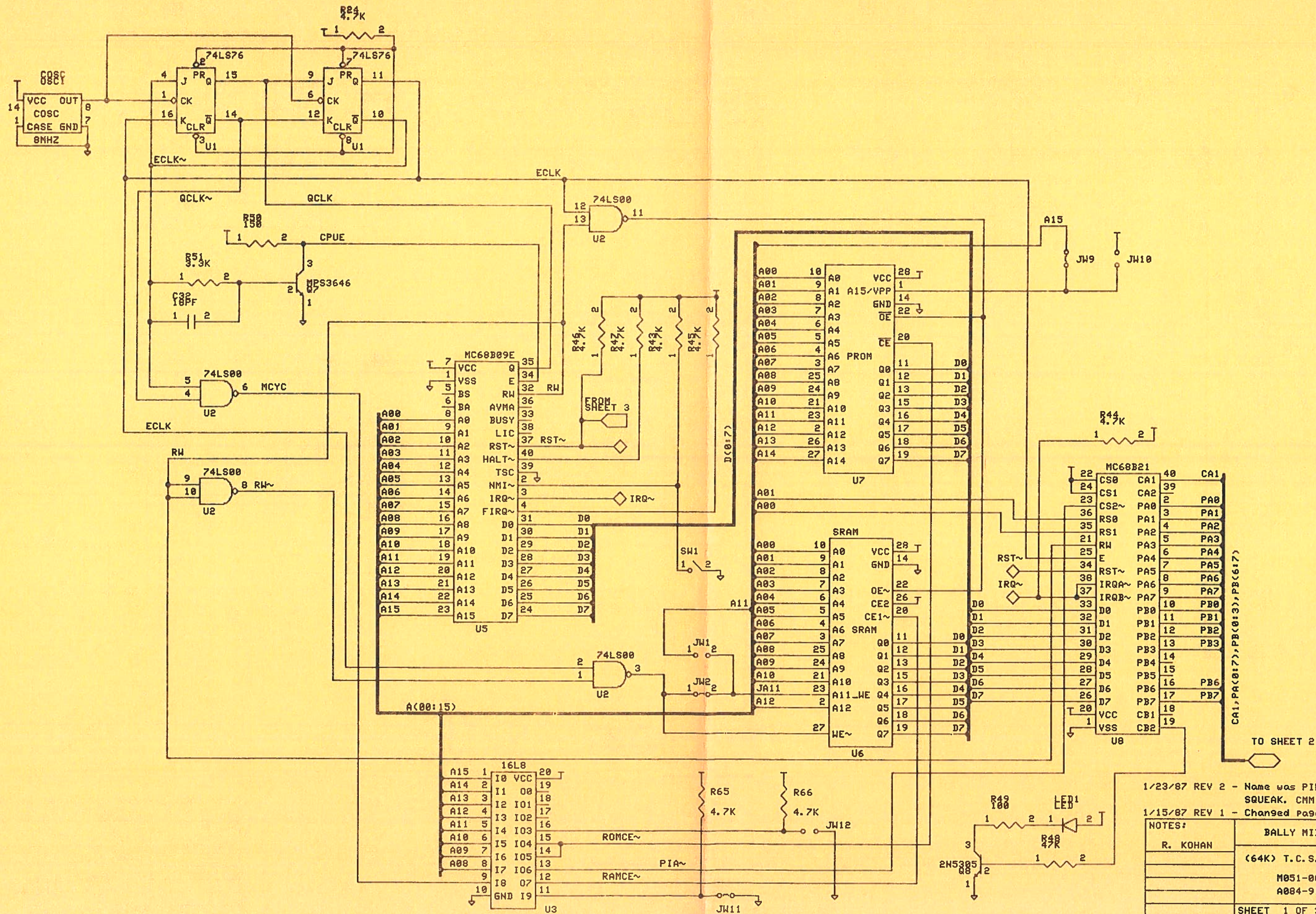
**CROSS REFERENCE LIST**

| <u>DESCRIPTION</u>     | <u>QTY.</u> | <u>DESIGNATION NO.</u> | <u>PART NOS.</u>    |
|------------------------|-------------|------------------------|---------------------|
| 10K OHM POT            | 1           | VR1                    | 0360-00804-0024     |
| 10 UH INDUCTOR         | 2           | L1,L2                  | 0360-00804-0031     |
| 1N958B DIODE           | 1           | D4                     | 103E-00001-0002     |
| 1N4004 DIODE           | 2           | D2,D3                  | 103E-00003-0005     |
| 1N4606 DIODE           | 3           | D5-D7                  | 103E-00002-0006     |
| VR330 DIODE            | 1           | D1                     | 0360-00801-0007     |
| LED, GREEN             | 1           | LED1                   | 119E-00001-0001     |
| 2N3904                 | 2           | Q1,Q3                  | 104E-00001-0006     |
| 2N4403                 | 2           | Q2,Q4                  | 104E-00002-0006     |
| 2N5305                 | 2           | Q6,Q8                  | 0360-00802-0012     |
| MPS3646                | 1           | Q7                     | 104E-00001-0019     |
| COSC, 8 MHZ            | 1           | OSC1                   | 119E-00002-0009     |
| 16L8A-2 PAL            | 1           | IC U3                  | 0E79-00803-0001     |
| 6116 2KX8 RAM 200NS.   | 1           | IC U6                  | 0304-00803-0057     |
| 74LS00                 | 1           | IC U2                  | 0A15-00803-0046     |
| 74LS76                 | 1           | IC U1                  | 0A15-00803-0072     |
| AD7533                 | 1           | IC U9                  | 0304-00803-0055     |
| LM3900                 | 1           | IC U10                 | 0360-00803-0002     |
| MC68B09E               | 1           | IC U5                  | 0C48-00803-0001     |
| MC68B21                | 1           | IC U8                  | 0A15-00803-0074     |
| MC7805                 | 1           | IC U13                 | 0360-00803-0050     |
| PROG EPROM             | 1           | U7                     | SEE ROM/EPROM SHEET |
| TDA2002                | 1           | IC U12                 | 0360-00803-0009     |
| 16 PIN I.C. SOCKET     | 1           | ICS U9                 | 110E-00001-0003     |
| 28 PIN I.C. SOCKET     | 2           | ICS U6,U7              | 110E-00001-0010     |
| 40 PIN I.C. SOCKET     | 2           | ICS U5,U8              | 110E-00001-0011     |
| 6030B-TT HEAT SINK     | 1           | HS U12                 | 112E-00001-0011     |
| 6100B HEAT SINK        | 1           | HS U13                 | 0360-00804-0032     |
| SCREW, 6-32            | 1           | MH U12                 | 0017-00101-0339     |
| NUT, 6-32              | 1           | MH U12                 | 0017-00103-0005     |
| WASHER, #6 STAR        | 1           | MH U12                 | 0017-00104-0009     |
| SCREW, 4-40            | 1           | MH U13                 | 0017-00101-0731     |
| NUT, 4-40              | 1           | MH U13                 | 0017-00103-0002     |
| WASHER, #4 STAR        | 1           | MH U13                 | 0017-00104-0071     |
| SIL PAD THERMAL WASHER | 2           | INS U12,U13            | 0017-00042-0319     |
| FERRITE BEAD           | 2           | FB1,FB2                | 0316-00804-0002     |
| SWITCH, PC. MTG.       | 1           | SW1                    | 0986-00804-3100     |

**CROSS REFERENCE LIST**

| <u>DESCRIPTION</u>                   | <u>QTY.</u> | <u>DESIGNATION NO.</u> | <u>PART NOS.</u> |
|--------------------------------------|-------------|------------------------|------------------|
| JUMPER (0 OHM RESISTOR)              | 12          | JW1-JW11,R27           | 117E-00001-0003  |
| AUTO INSERT PINS TIN<br>.045 SQ. PIN | 14          | J1                     | 0304-00804-0010  |
| AUTO INSERT PINS TIN<br>.045 SQ. PIN | 5           | J2                     | 0304-00804-0010  |
| TEST POINTS                          | 2           | TP1 TP2                | 0017-00007-0131  |
| P.C. BOARD                           |             |                        | A080-91855-E000  |

REV. 1 - 25 NOV. 1986 - CHANGED C24 QTY. TO 1 ON PAGE 5. RK/CMM  
REV. 2 - 15 JAN. 1987 - CHANGED CP1-CP10 to CP1-CP4, CP6-CP10 on page 1.  
and page 5. .01uf cap. qty. changed to 12 on page  
5. RK/CMM

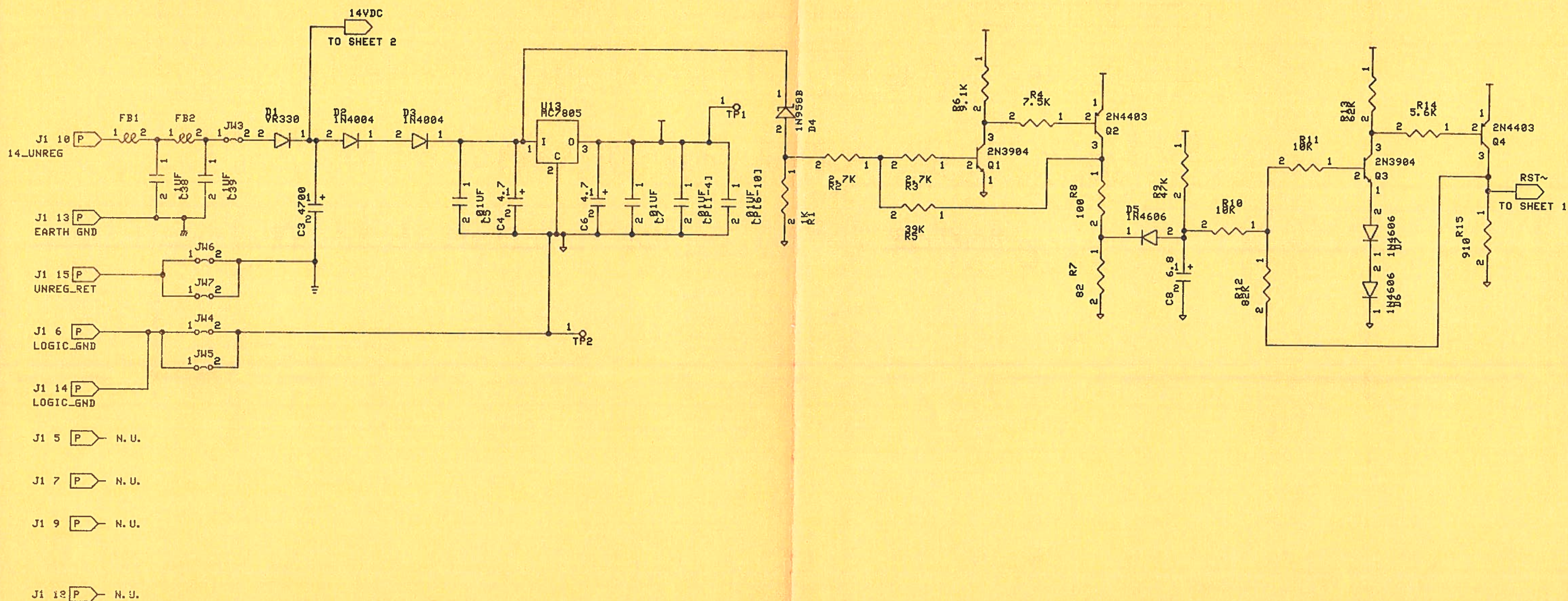


1/23/87 REV 2 - Name was PINBALL 64K CHEAP SQUEAK. CMM (FOR RK)  
 1/15/87 REV 1 - Changed Page 3. CMM (FOR RK)

NOTES:

|          |                       |
|----------|-----------------------|
| R. KOHAN | BALLY MIDWAY MFG. CO. |
|          | (64K) T.C.S. PINBALL  |
|          | M051-00114-E147       |
|          | A084-91855-E000       |
|          | SHEET 1 OF 3 REV      |



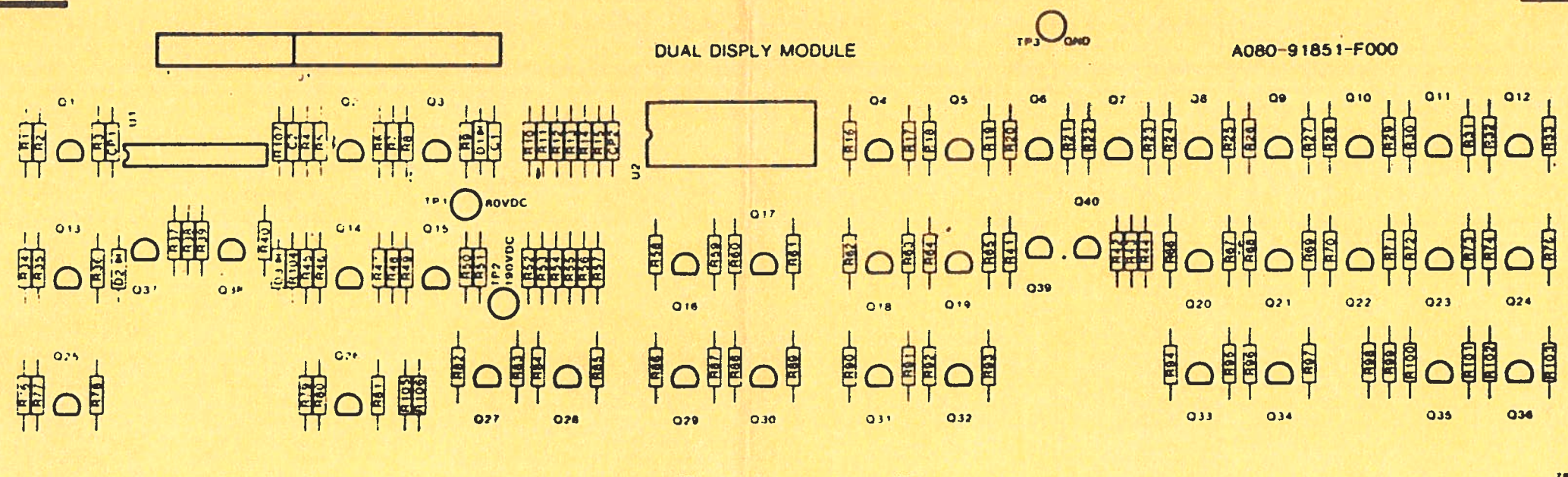


1/23/87 REV 2 - Name was PINBALL 64K CHEAP SQUEAK. CMM (FOR RK)

1/15/87 REV 1 - Removed CP5. CMM (FOR RK)

| NOTES:   |                       |
|----------|-----------------------|
| R. KOHAN | BALLY MIDWAY MFG. CO. |
|          | (64K) T.C.S. PINBALL  |
|          | M051-00114-E147       |
|          | A084-91855-E000       |
|          | SHEET 3 OF 3          |
|          | REV                   |

LAST USED: C43, CP10, D7, FB5, J2, JW12, L2, LED1, OSC1, Q9, R66, SW1, TP2, U14, VR1  
 NOT INSERTED: C1, C9, C18-C22, C40-C43, FB3-FB5, Q5, Q9, R16-R18, R23, R25, R62-R64, R66, JW12, U11, U14  
 NOT USED: CP5, R58, R59



PAT. PENDING

DISPL V  
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|                                                                                                                                                                            |                                                     |                                    |                                                                                                                  |                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>DIM. TOLERANCES</b><br>UNLESS OTHERWISE SPEC<br>CONCENTRICITY TIR .002<br>FRACTIONAL 1/64<br>DECIMAL .005<br>HOLE DIA + .002 - .000<br>ANGLE ± 1/2°<br>DO NOT SCALE DWG | FIRST USED ON<br>DATE 04/08/86<br>SCALE<br>MECH CHG | DATE 04/08/86<br>SCALE<br>MECH CHG | <b>Bally/MIDWAY MFG. CO</b><br>FRANKLIN PARK, IL 60131<br>ASSY DRAWING<br>DUAL DISPLAY MODULE<br>A084-91851-F000 | PART NO<br>M051-00365-F00 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------|

DUAL DISPLAY MODULE  
A084-91851-F000  
M051-00365-F042 (Page 1 of 4)

DESIGNATION LIST

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

DUAL DISPLAY MODULE  
A084-91851-F000  
M051-00365-F042 (Page 2 of 4)

DESIGNATION LIST

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

DUAL DISPLAY MODULE  
A084-91851-F000  
M051-00365-F042 (Page 3 of 4)

DESIGNATION LIST

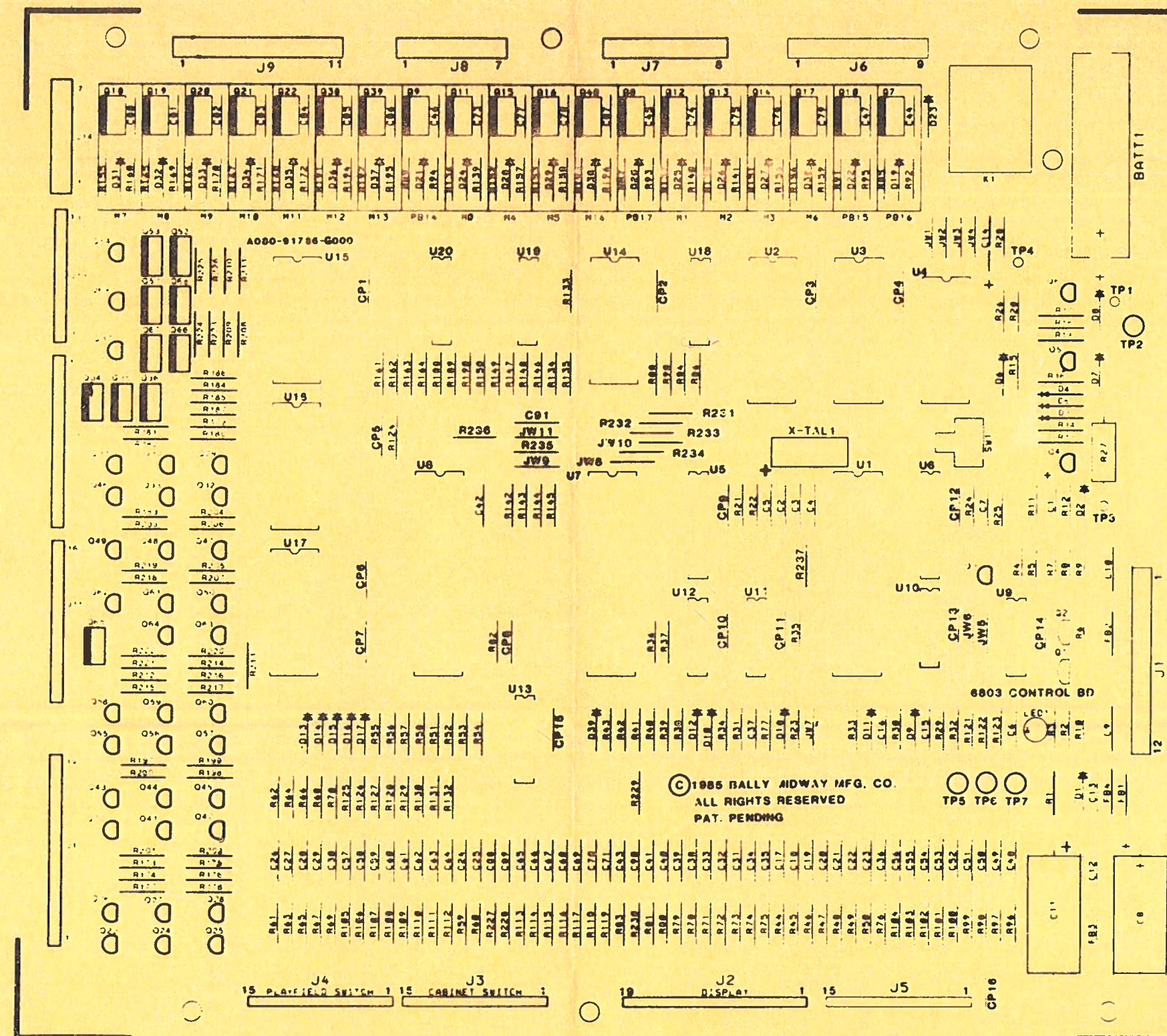
| <u>DESIGNATION NO.</u> | <u>DESCRIPTION</u>                        |
|------------------------|-------------------------------------------|
| C1                     | .01UF 500V CER.                           |
| C2                     | 100PF 50V AX. CER.                        |
| CP1, CP2               | .01UF 50V CER.                            |
| D1                     | 1M110ZS10 110V ZENER DIODE                |
| D2,D3                  | 1N4148 DIODE                              |
| Q1 - Q4                | MPS-A-42 NPN XSTR                         |
| Q5                     | 2N5401 PNP XSTR                           |
| Q6                     | MPS-A-42                                  |
| Q7                     | 2N5401                                    |
| Q8                     | MPS-A-42                                  |
| Q9                     | 2N5401                                    |
| Q10 - Q21              | MPS-A-42                                  |
| Q22 - Q24              | 2N5401                                    |
| Q25                    | MPS-A-42                                  |
| Q26                    | MPS-A-42                                  |
| Q27                    | 2N5401                                    |
| Q28                    | MPS-A-42                                  |
| Q29 - Q35              | 2N5401                                    |
| Q36 - Q40              | MPS-A-42                                  |
| U1                     | 74HC373 CMOS OCTAL LATCH                  |
| U2                     | 14514 1-16 DECODER                        |
| DISPLAY 1              | 14 DIGIT, 9 SEGMENT GAS DISCHARGE DISPLAY |
| J1                     | .025 SQ. PINS                             |
| TP1, TP2, TP3          | TEST LOOPS                                |
|                        | FOAM TAPE                                 |
|                        | BUMPER                                    |
|                        | DISPLAY MTG. CLIPS                        |
|                        | SCREWS                                    |
|                        | DISPLAY MTG. PROCEDURE                    |
|                        | DUAL DISPLAY MODULE P.C.B.                |
| M051-00365- A014       |                                           |
| A080-91851-F000        |                                           |

DUAL DISPLAY MODULE  
A084-91851-F000  
M051-00365-F042 (Page 4 of 4)

CROSS REFERENCE LIST

| <u>DESCRIPTION</u>         | <u>QTY.</u> | <u>DESIGNATION NO.</u> | <u>PART NOS.</u> |
|----------------------------|-------------|------------------------|------------------|
| 510 OHM 1/4W 5% CARBON     | 1           | R5                     | 100E-00005-0053  |
| 820 OHM 1/4W 5% CARBON     | 7           | R2,R8,R35,R46          | 100E-00005-0058  |
|                            |             | R49,R77,R80            |                  |
| 1K 1/4W 5% CARBON          | 2           | R39,R42                | 100E-00005-0061  |
| 1.5K 1/4W 5% CARBON        | 10          | R1,R4,R7,R34,R38       | 100E-00005-0065  |
|                            |             | R43,R45,R48            |                  |
|                            |             | R76,R79                |                  |
| 2.2K 1/4W 5% CARBON        | 14          | R18,R22,R26,R71        | 100E-00005-0069  |
|                            |             | R73,R75,R83,R87        |                  |
|                            |             | R88,R91,R93,R95        |                  |
|                            |             | R97,R101               |                  |
| 9.1K 1/4W 5% CARBON        | 14          | R16,R20,R24,R28        | 100E-00005-0087  |
|                            |             | R30,R32,R58,R61        |                  |
|                            |             | R62,R64,R66,R68        |                  |
|                            |             | R85,R103               |                  |
| 10K 1/4W 5% CARBON         | 1           | R107                   | 100E-00005-0088  |
| 20K 1/4W 5% CARBON         | 6           | R10 - R15              | 100E-00005-0095  |
| 100K 1/4W 5% CARBON        | 2           | R40,R41                | 100E-00005-0115  |
| 100K 1/4W 5% METAL FILM    | 15          | R17,R21,R25,R29        | 100E-00001-0011  |
|                            |             | R31,R33,R51,R59        |                  |
|                            |             | R60,R63,R65,R67        |                  |
|                            |             | R69,R84,R102           |                  |
| 150K 1/4W 5% CARBON        | 1           | R104                   | 100E-00005-0120  |
| 300K 1/4W 5% CARBON        | 24          | R3,R6,R9,R19,R23       | 100E-00005-0127  |
|                            |             | R27,R36,R37,R44,       |                  |
|                            |             | R47,R50,R70,R72,       |                  |
|                            |             | R74,R78,R81,R82,       |                  |
|                            |             | R86,R89,R90,R92,       |                  |
|                            |             | R94,R96,R100           |                  |
| 1.0M OHM 1/4W 5% CARBON    | 2           | R99,R106               | 100E-00005-0140  |
| 2.2M OHM 1/4W 5% CARBON    | 6           | R52 - R57              | 100E-00005-0147  |
| 10.0M OHM 1/4W 5% CARBON   | 2           | R98,R105               | 100E-00005-0162  |
| 100PF AX. CER.             | 1           | C2                     | 0639-00800-0003  |
| .01UF                      | 2           | CP1,CP2                | 0360-00800-0005  |
| .01UF 500V                 | 1           | C1                     | 0360-00800-0013  |
| 1N4148                     | 2           | D2,D3                  | 103E-00002-0005  |
| 1M110ZS10 110V ZENER DIODE | 1           | D1                     | 103E-00001-0028  |
| 2N5401 PNP XSTR            | 14          | Q5,Q7,Q9,Q22,Q23       | 0360-00802-0006  |
|                            |             | Q24,Q27,Q29,Q30        |                  |
|                            |             | Q31,Q32,Q33,Q34        |                  |
|                            |             | Q35                    |                  |
| MPS-A-42 NPN XSTR          | 26          | Q1-Q4,Q6,Q8,Q10-       | 0360-00802-0007  |
|                            |             | Q21,Q25,Q26,Q28        |                  |
|                            |             | Q36-Q40                |                  |
| 14514 1-16 DECODER         | 1           | U2                     | 0360-00803-0013  |
| 74HC373 OCTAL LATCH        | 1           | U1                     | 0365-00803-0015  |
| .025SQ. PINS               | 23          | J1                     | 0304-00804-0009  |
| 14 DIGIT, 9 SEGMENT        |             |                        |                  |
| GAS DISCHARGE DISPLAY      | 1           | DISPLAY 1              | 119E-00002-0006  |
| TEST LOOPS                 | 3           | TP1 - TP3              | 0017-00007-0131  |
| FOAM TAPE                  | 2           |                        | 0017-00081-0289  |
| BUMPER                     | 1           |                        | 0017-00041-0598  |
| DISPLAY MTG. CLIP          | 2           |                        | 0365-00174-00XE  |
| SCREW                      | 2           |                        | 0017-00101-0175  |
| DISPLAY MTG. PROCEDURE     | 1           |                        | M051-00365-A014  |
| DUAL DISPLAY MODULE PCB    | 1           |                        | A080-91851-F000  |





THIS DWG IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG CO

| DIM. TOLERANCES       |             | FIRST USED ON |    | DATE                   |  | SCALE |  | REVISIONS |  |
|-----------------------|-------------|---------------|----|------------------------|--|-------|--|-----------|--|
| UNLESS OTHERWISE SPEC |             | DRN           | CL | 04/08/86               |  |       |  | PART NO   |  |
| CONCENTRICITY T.I.R.  | 002         | MECH CHR      |    |                        |  |       |  |           |  |
| FRACTIONAL            | ± 1/64      | MAT'L         |    |                        |  |       |  |           |  |
| DECIMAL               | ± 005       | ELEC CHR      |    |                        |  |       |  |           |  |
| HOLE DIA              | + 002 - 000 | FINISH        |    |                        |  |       |  |           |  |
| ANGLE                 | ± 1/2°      |               |    |                        |  |       |  |           |  |
| DO NOT SCALE DWG      |             |               |    |                        |  |       |  |           |  |
|                       |             |               |    | MIDWAY MFG. CO.        |  |       |  |           |  |
|                       |             |               |    | FRANKLIN PK., IL 60131 |  |       |  |           |  |
|                       |             |               |    | A BALLY CO             |  |       |  |           |  |
|                       |             |               |    | ASSY DRAWING           |  |       |  |           |  |
|                       |             |               |    | 6803 CONTROL BD.       |  |       |  |           |  |
|                       |             |               |    | A084-91786-G000        |  |       |  |           |  |
|                       |             |               |    |                        |  |       |  |           |  |

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

**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,        | 0307-00800-0008  |
|                    |             | 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, P35, 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  |

**CROSS REFERENCE LIST**

| <u>DESCRIPTION</u>   | <u>QTY.</u> | <u>DESIGNATION NO.</u> | <u>PART NOS.</u> |
|----------------------|-------------|------------------------|------------------|
| 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     | 100E-00005-0106  |
|                      |             | R70, R125-R132, R229   |                  |
| 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  |
| IN958R 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, | 104E-00015-0001  |
|                      |             | Q54-Q64, Q69, Q70      |                  |
| 2N5305               | 1           | Q1                     | 104E-00007-0003  |
| MCR106-1             | 10          | Q34-Q36, Q51-Q53       | 0360-00802-0009  |
|                      |             | Q65-Q68                |                  |
| 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,    | 117E-00001-0001  |
|                      |             | JW10                   |                  |
| 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           | FR1-FR4                | 0316-00804-0002  |

# DESIGNATION LIST

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

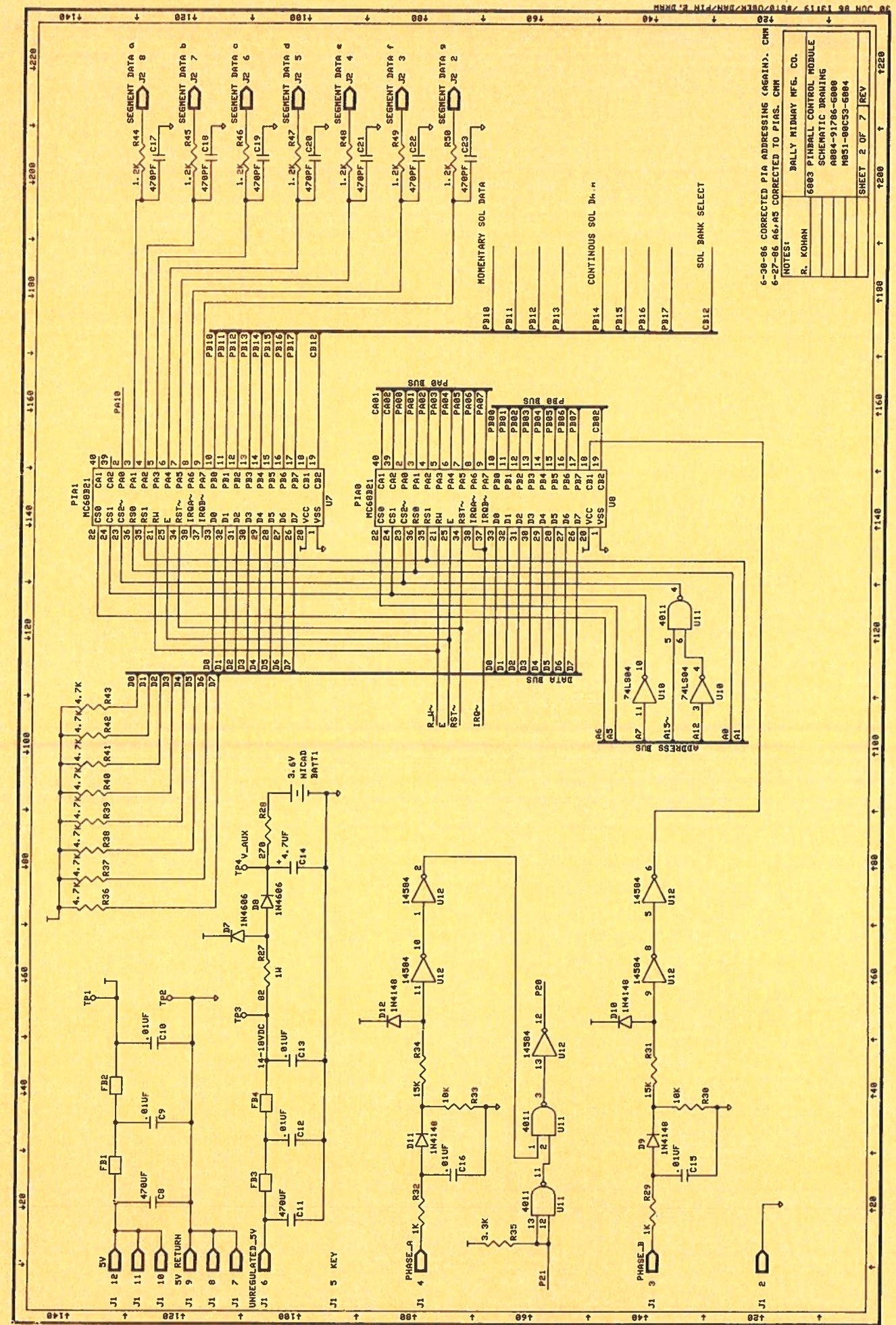
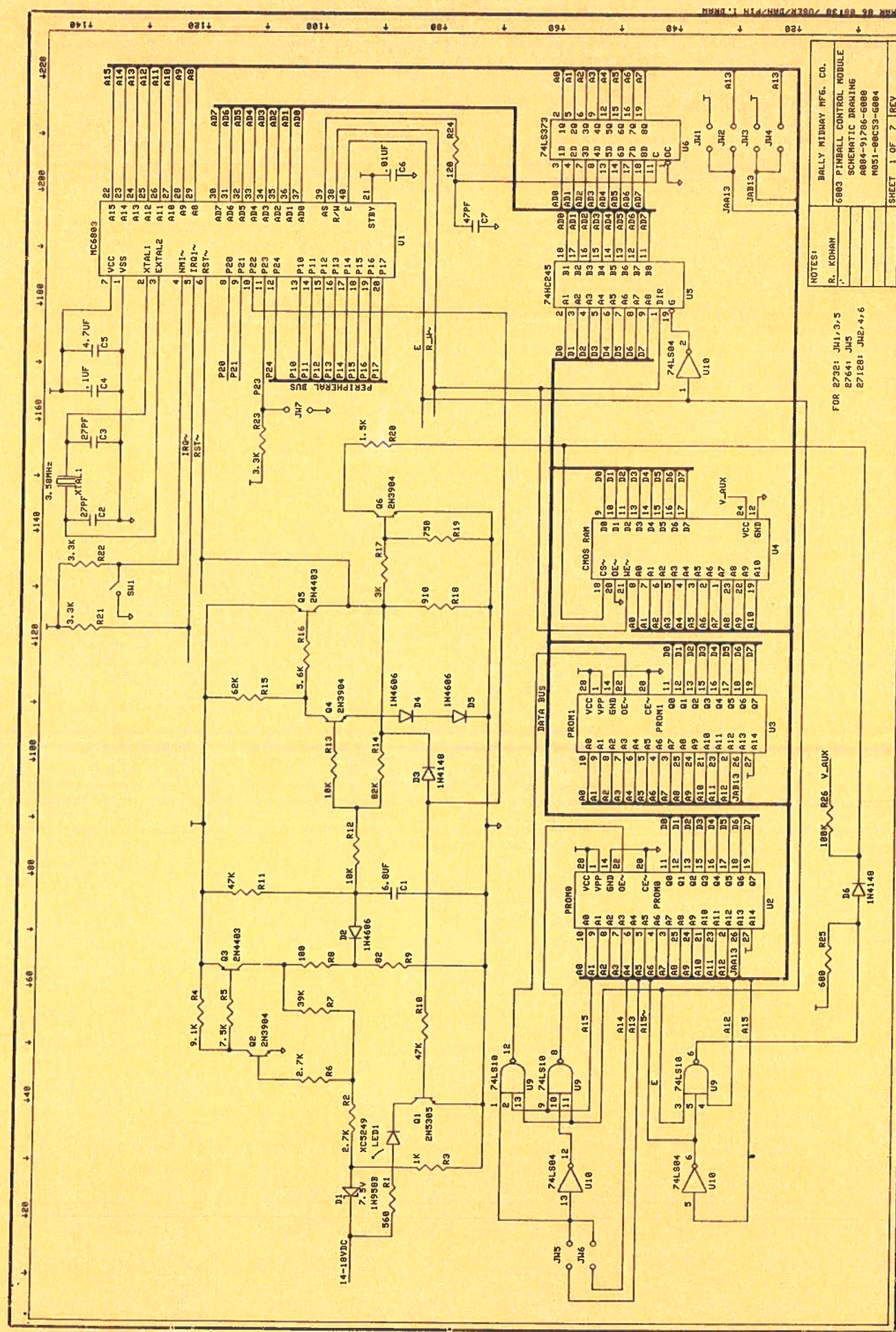
| DESIGNATION | DESCRIPTION     | DESIGNATION | DESCRIPTION      | DESIGNATION | DESCRIPTION      | DESIGNATION      | DESCRIPTION          |
|-------------|-----------------|-------------|------------------|-------------|------------------|------------------|----------------------|
| C1          | 6.8UF 25V TANT. | R28         | 270 OHM 1/4W 5%  | R165 - R168 | 120 OHM 1/4W 5%  | U15 - U17        | 4514B                |
| C2,C3       | 27PF 50V CER.   | R29         | 1K 1/4W 5%       | R169 - R172 | 330 OHM 1/4W 5%  | U18 - U20        | CA3081               |
| C4          | .1UF 50V CER.   | R30         | 10K 1/4W 5%      | R173 - R187 | 2K 1/4W 5%       | XTAL-1           | 3.580 MHZ CRYSTAL    |
| C5          | 4.7UF 25V TANT. | R31         | 15K 1/4W 5%      | R188 - R190 | 1.2K 1/4W 5%     | LED 1            | LED GREEN            |
| C6          | .01UF 50V CER.  | R32         | 1K 1/4W 5%       | R191 - R193 | 120 OHM 1/4W 5%  | TP1 - TP7        | TEST POINTS          |
| C7          | 47PF 50V CER.   | R33         | 10K 1/4W 5%      | R194 - R196 | 330 OHM 1/4W 5%  | SW1              | SWITCH P.B.          |
| C8          | 470UF 16V FLEC. | R34         | 15K 1/4W 5%      | R197 - R226 | 2K 1/4W 5%       | BATT-1           | BATTERY 3.6V         |
| C9,C10      | .01UF 50V CER.  | R35         | 3.3K 1/4W 5%     | R227,R228   | 1.2K 1/4W 5%     | JW2              | ZERO OHM RES. JUMPER |
| C11         | 470UF 25V FLEC. | R36 - R43   | 4.7K 1/4W 5%     | R229        | 56K 1/4W 5%      | JW4              | ZERO OHM RES. JUMPER |
| C12,C13     | .01UF 50V CER.  | R44 - R50   | 1.2K 1/4W 5%     | R230        | 1.2K 1/4W 5%     | JW6              | ZERO OHM RES. JUMPER |
| C14         | 4.7UF 25V TANT. | R51 - R58   | 3.3K 1/4W 5%     | R231 - R234 | 330 OHM 1/4W 5%  | JW8              | ZERO OHM RES. JUMPER |
| C15,C16     | .01UF 50V CER.  | R59 - R61   | 1.2K 1/4W 5%     | R235        | 3.3K 1/4W 5%     | JW10             | ZERO OHM RES. JUMPER |
| C17 - C23   | 470PF 1KV CER.  | R62         | 56K 1/4W 5%      | R236        | 1.2K 1/4W 5%     | K1               | RELAY 48V DC         |
| C24 - C30   | 390PF 50V CER.  | R63         | 1.2K 1/4W 5%     | R237        | 100K OHM 1/4W 5% | XU1,XU7,XU8      | 40 PIN IC SOCKET     |
| C31 - C36   | 470PF 1KV CER.  | R64         | 56K 1/4W 5%      | D1          | 1N958B           | XU2, XU3         | 28 PIN IC SOCKET     |
| C37         | .05UF 16V CER.  | R65         | 1.2K 1/4W 5%     | D2          | 1N4606           | XU4              | 24 PIN IC SOCKET     |
| C38 - C41   | 470PF 1KV CER.  | R66         | 56K 1/4W 5%      | D3          | 1N4148           | FB1 - FB4        | FERRITE BEAD         |
| C42         | .01UF 50V CER.  | R67         | 1.2K 1/4W 5%     | D4,D5       | 1N4606           | J1               | 11 - .045 SQ. PINS   |
| C43         | .003UF 1KV CER. | R68         | 56K 1/4W 5%      | D6          | 1N4148           | J2               | 18 - .025 SQ. PINS   |
| C44 - C47   | .002UF 1KV CER. | R69         | 1.2K 1/4W 5%     | D7,D8       | 1N4606           | J3               | 14 - .025 SQ. PINS   |
| C48 - C56   | 470PF 1KV CER.  | R70         | 56K 1/4W 5%      | D9 - D18    | 1N4148           | J4               | 14 - .025 SQ. PINS   |
| C57 - C71   | 390PF 50V CER.  | R71 - R76   | 1.2K 1/4W 5%     | D19 - D38   | 1N4004           | J5               | 14 - .025 SQ. PINS   |
| C73 - C87   | .002 1KV CER.   | R77         | 270K 1/4W 5%     | D39         | 1N4148           | J6               | 8 - .045 SQ. PINS    |
| C88 - C90   | 390PF 50V CER.  | R78 - R82   | 1.2K 1/4W 5%     | Q1          | 2N5305           | J7               | 7 - .045 SQ. PINS    |
| C91         | 470PF 1KV CER.  | R83         | 110 OHM 1/4W 5%  | Q2          | 2N3904           | J8               | 6 - .045 SQ. PINS    |
| CP1 - CP16  | .01 50V CER.    | R84         | 3.9K 1/4W 5%     | Q3          | 2N4403           | J9               | 10 - .045 SQ. PINS   |
| R1          | 560 OHM 1/4W 5% | R85         | 120 OHM 1/4W 5%  | Q4          | 2N3904           | J10              | 18 - .025 SQ. PINS   |
| R2          | 2.7K 1/4W 5%    | R86         | 3.9K 1/4W 5%     | Q5          | 2N4403           | J11              | 17 - .025 SQ. PINS   |
| R3          | 1K 1/4W 5%      | R87         | 120 OHM 1/4W 5%  | Q6          | 2N3904           | J12              | 16 - .025 SQ. PINS   |
| R4          | 9.1K 1/4W 5%    | R88         | 3.9K 1/4W 5%     | Q7 - Q22    | SF9302           | J13              | 12 - .025 SQ. PINS   |
| R5          | 7.5K 1/4W 5%    | R89         | 120 OHM 1/4W 5%  | Q23 - Q33   | 2N5060           | J14              | 5 - .045 SQ. PINS    |
| R6          | 2.7K 1/4W 5%    | R90         | 3.9K 1/4W 5%     | Q34 - Q36   | MCR 106-1        | P/O BATT-1       | TY-WRAP              |
| R7          | 39K 1/4W 5%     | R91         | 120 OHM 1/4W 5%  | Q37         | 2N5060           | 6803 CONTROL RD. | P.C. BOARD           |
| R8          | 100 OHM 1/4W 5% | R92 - R95   | 330 OHM 1/4W 5%  | Q38 - Q40   | SF9302           |                  |                      |
| R9          | 82 OHM 1/4W 5%  | R96 - R104  | 470 OHM 1/4W 5%  | Q41 - Q50   | 2N5060           |                  |                      |
| R10,R11     | 47K 1/4W 5%     | R105 - R119 | 1.2K 1/4W 5%     | Q51 - Q53   | MCR 106-1        |                  |                      |
| R12,R13     | 10K 1/4W 5%     | R121        | 120 OHM 1/4W 5%  | Q54 - Q64   | 2N5060           |                  |                      |
| R14         | 82K 1/4W 5%     | R122        | 1.2K 1/4W 5%     | Q65 - Q68   | MCR 106-1        |                  |                      |
| R15         | 62K 1/4W 5%     | R123        | 2K 1/4W 5%       | Q69,Q70     | 2N5060           |                  |                      |
| R16         | 5.6K 1/4W 5%    | R124        | 3.3K 1/4W 5%     | U1          | 6803             |                  |                      |
| R17         | 3K 1/4W 5%      | R125 - R132 | 56K 1/4W 5%      | U4          | 6116 RAM         |                  |                      |
| R18         | 910 OHM 1/4W 5% | R133 - R135 | 1.2K 1/4W 5%     | U5          | 74HCT245         |                  |                      |
| R19         | 750 OHM 1/4W 5% | R136 - R138 | 120 OHM 1/4W 5%  | U6          | 74LS373          |                  |                      |
| R20         | 1.5K 1/4W 5%    | R139 - R141 | 330 OHM 1/4W 5%  | U7,U8       | 6821             |                  |                      |
| R21 - R23   | 3.3K 1/4W 5%    | R142 - R145 | 3.3K 1/4W 5%     | U9          | 74LS10           |                  |                      |
| R24         | 120 OHM 1/4W 5% | R146 - R150 | 1.2K 1/4W 5%     | U10         | 74LS04           |                  |                      |
| R25         | 680 OHM 1/4W 5% | R151 - R155 | 120 OHM 1/4W 5%  | U11         | 4011             |                  |                      |
| R26         | 100K 1/4W 5%    | R156 - R160 | 330 OHM 1/4W 5%  | U12         | 4584             |                  |                      |
| R27         | 82 OHM 1W 10%   | R161 - R164 | 1.2K OHM 1/4W 5% | U13         | 4502             |                  |                      |
|             |                 |             |                  | U14         | 74LS154          |                  |                      |

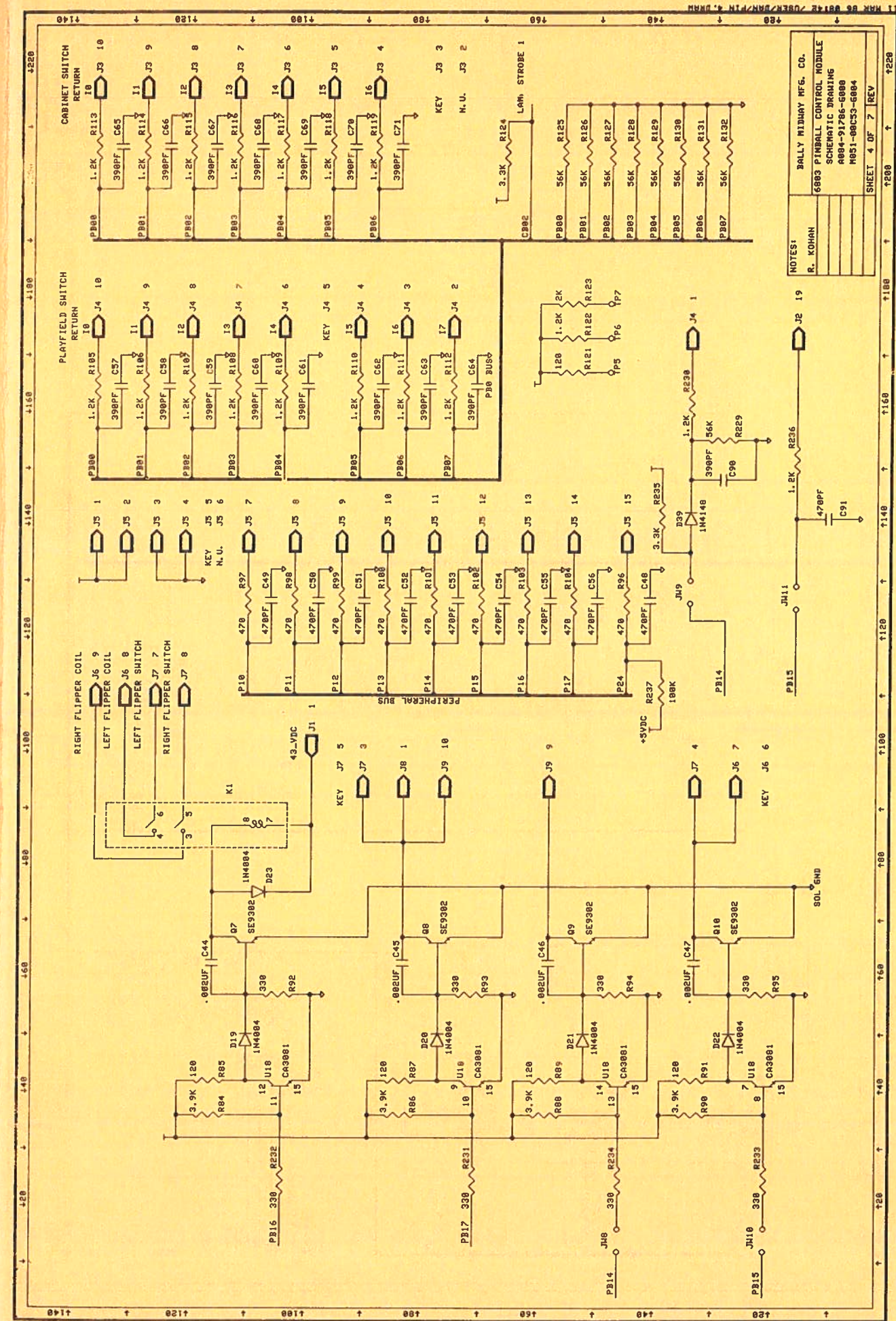
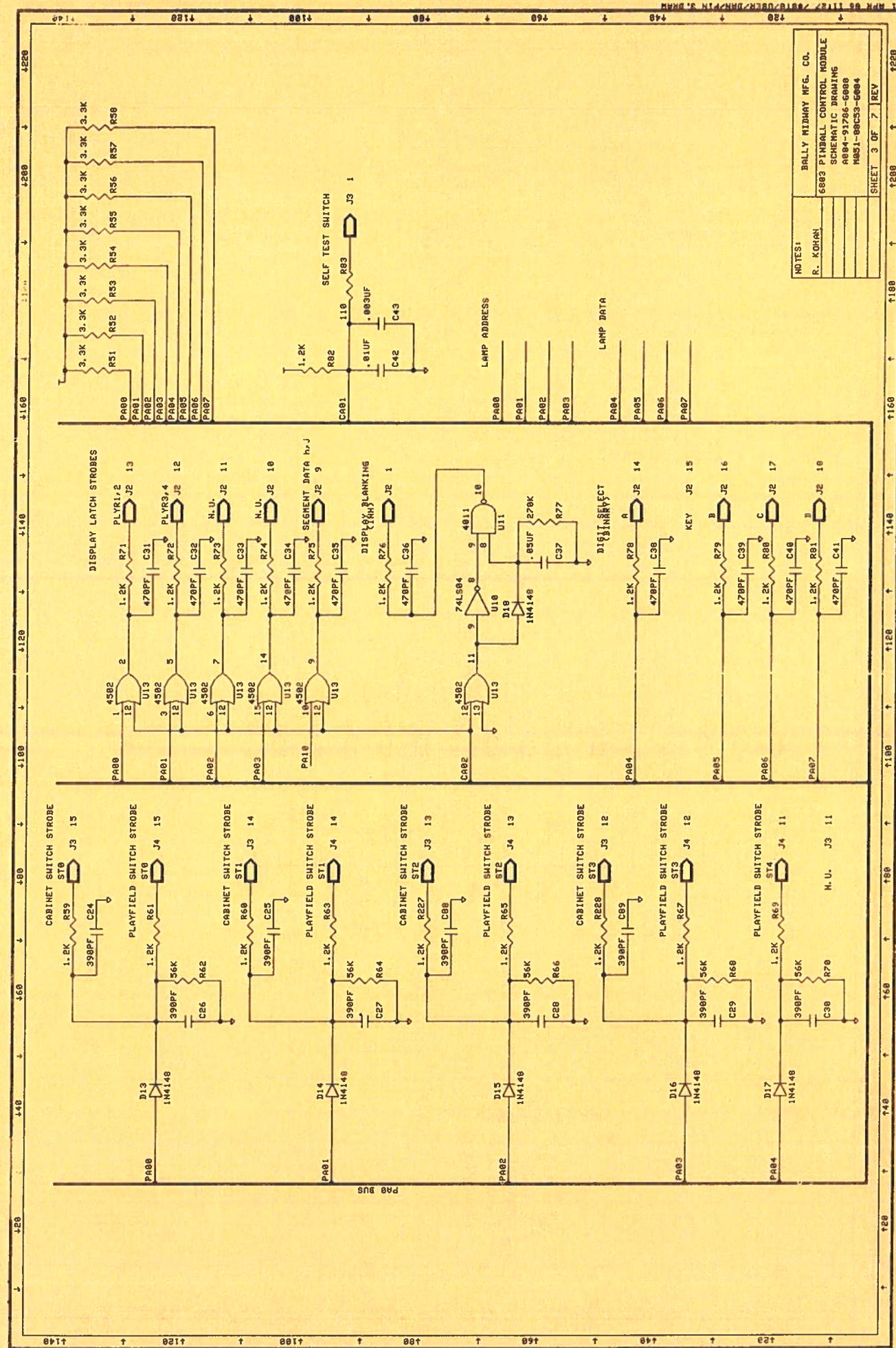
6803 CONTROL BOARD  
A084-91786-G000  
M051-000C53-G003

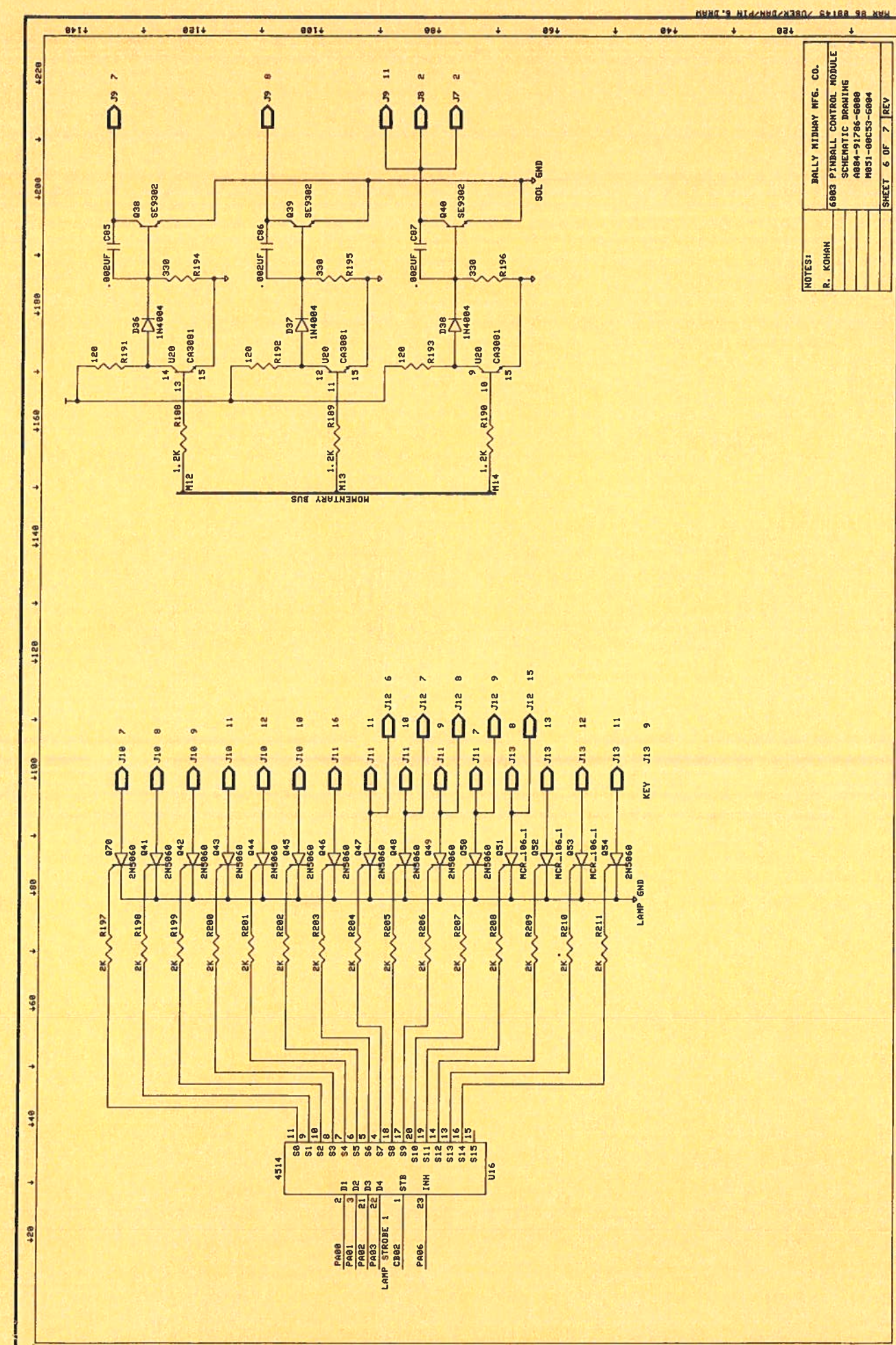
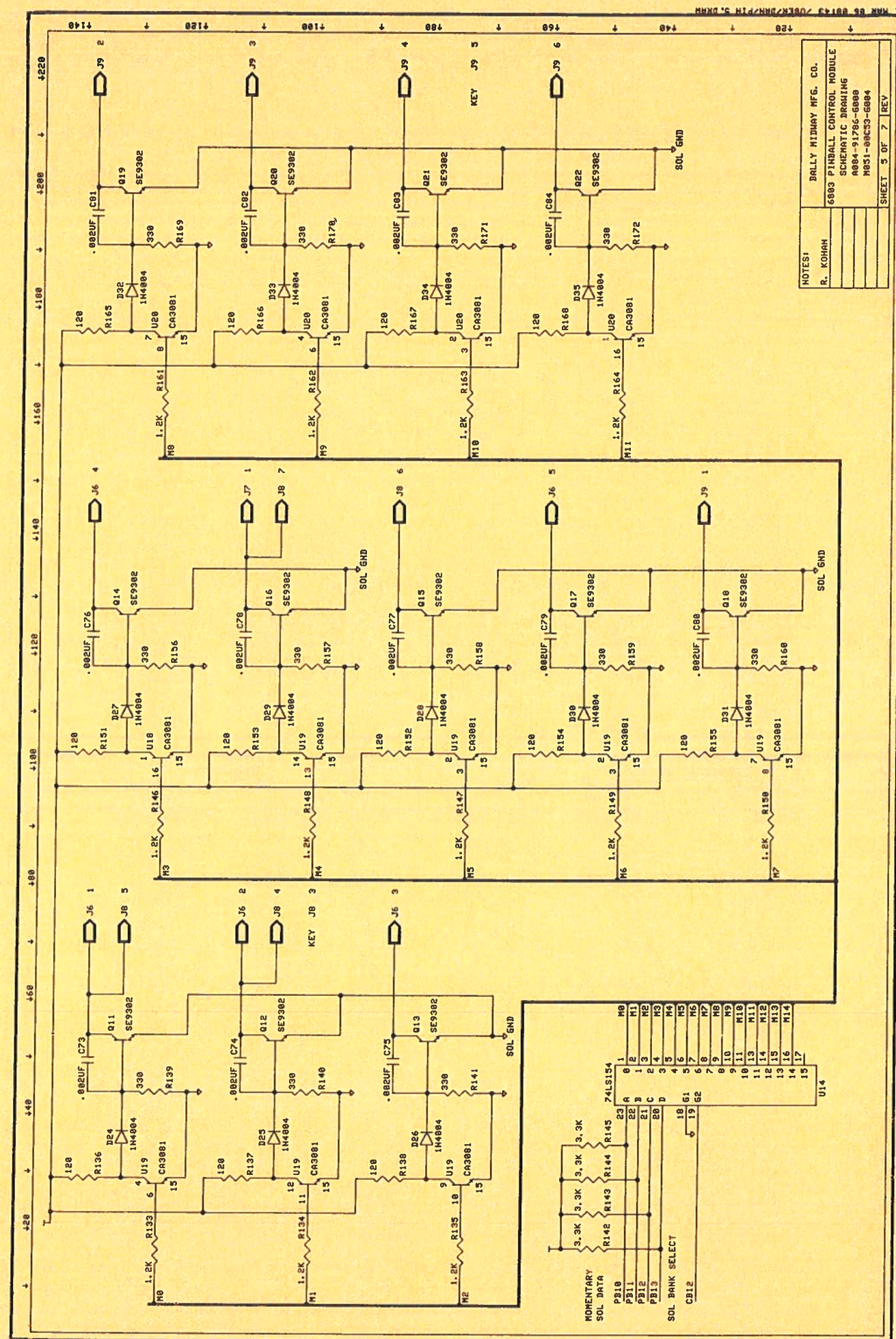
CROSS REFERENCE LIST

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

4-23-86 REV. 1.0 Fixed Part Number for 470PF Cap.







HARDBODY  
M051-00E94-A012

LAMP DRIVER LOCATIONS

| RIVER | CONNECTOR | PIN | PHASE | WIRE | DESCRIPTION             |
|-------|-----------|-----|-------|------|-------------------------|
| Q55   | J10       | 16  | A     | 38   | BLUE BONUS BOTTOM       |
| Q33   | J11       | 15  | A     | 75   | BLUE BONUS MIDDLE       |
| Q63   | J11       | 3   | A     | 59   | BLUE BONUS TOP          |
| Q62   | J11       | 4   | A     | 61   | BLUE TARGET CALVES      |
| Q47   | J11       | 11  | A     | 71   | BLUE TARGET GLUTES      |
| Q30   | J11       | 12  | A     | 72   | BLUE TARGET HAMS        |
| Q61   | J11       | 6   | A     | 62   | BLUE TARGET QUADS       |
| Q37   | J13       | 4   | A     | 85   | BONUS 2X                |
| Q54   | J13       | 11  | A     | 95   | BONUS 3X                |
| Q45   | J10       | 10  | A     | 28   | BONUS MIDDLE 25K BOTTOM |
| Q60   | J10       | 13  | A     | 36   | BONUS MIDDLE 25K MIDDLE |
| Q29   | J11       | 8   | A     | 64   | BONUS MIDDLE 25K TOP    |
| Q46   | J11       | 16  | A     | 78   | BONUS MIDDLE 300K       |
| Q65   | J11       | 1   | D     | 48   | BRIGHT BLUE             |
| Q52   | J13       | 13  | C     | 97   | BRIGHT DT INLINE        |
| Q34   | J13       | 1   | D     | 81   | BRIGHT GREEN            |
| Q67   | J13       | 5   | C     | 86   | BRIGHT LEFT SLING       |
| Q67   | J13       | 5   | D     | 86   | BRIGHT LEFT UP RAMP     |
| Q35   | J13       | 2   | C     | 83   | BRIGHT MIDDLE HOOP      |
| Q66   | H13       | 6   | D     | 87   | BRIGHT RAMP LEFT 1      |
| Q35   | J13       | 2   | D     | 83   | BRIGHT RAMP LEFT 2      |
| Q65   | J11       | 1   | C     | 48   | BRIGHT RAMP MIDDLE      |
| Q34   | J13       | 1   | C     | 81   | BRIGHT RAMP RIGHT 2     |
| Q51   | J13       | 8   | C     | 93   | BRIGHT RAMP RIGHT 1     |
| Q36   | J13       | 3   | C     | 84   | BRIGHT RIGHT SLING      |
| Q36   | J13       | 3   | D     | 84   | BRIGHT RIGHT UP RAMP    |
| Q66   | J13       | 6   | C     | 87   | BRIGHT TOP HOOP         |
| Q52   | J13       | 13  | D     | 97   | BRIGHT TOP LANE         |
| Q51   | J13       | 8   | D     | 93   | BRIGHT YELLOW           |
| Q25   | J10       | 3   | A     | 14   | CENTER SPECIAL          |
| Q41   | J10       | 8   | A     | 25   | DOUBLE POWER            |
| Q70   | J10       | 7   | A     | 24   | GREEN BONUS BOTTOM      |
| Q64   | J11       | 2   | A     | 58   | GREEN BONUS MIDDLE      |
| Q48   | J11       | 10  | A     | 68   | GREEN BONUS TOP         |
| Q59   | J10       | 14  | B     | 37   | GREEN TARGET LATS       |
| Q44   | J10       | 12  | B     | 32   | GREEN TARGET PECS       |
| Q28   | J10       | 6   | B     | 21   | GREEN TARGET TRAPS      |
| Q56   | J10       | 17  | B     | 41   | HOOP 100K               |
| Q23   | J10       | 1   | B     | 12   | HOOP 20K                |

HARDBODY  
M051-00E94-A012

LAMP DRIVER LOCATIONS

| DRIVER | CONNECTOR | PIN | PHASE | WIRE | DESCRIPTION            |
|--------|-----------|-----|-------|------|------------------------|
| Q70    | J10       | 7   | B     | 24   | HOOP 35K               |
| Q55    | J10       | 16  | B     | 38   | HOOP 50K               |
| Q24    | J10       | 2   | B     | 13   | HOOP 65K               |
| Q41    | J10       | 8   | B     | 25   | HOOP 80K               |
| Q69    | J13       | 7   | A     | 91   | HOOP ARROW             |
| Q25    | J10       | 3   | B     | 14   | HOOP EXTRA BALL        |
| Q31    | J11       | 13  | B     | 73   | INLINE DT 25K          |
| Q48    | J11       | 10  | B     | 68   | INLINE DT 2X           |
| Q63    | J11       | 3   | B     | 59   | INLINE DT 3X           |
| Q32    | J11       | 14  | B     | 74   | INLINE DT EXTRA BALL   |
| Q57    | J10       | 18  | A     | 43   | LEFT BONUS 20K BOTTOM  |
| Q26    | J10       | 4   | A     | 15   | LEFT BONUS 20K MIDDLE  |
| Q43    | J10       | 11  | A     | 31   | LEFT BONUS 20K TOP     |
| Q58    | J10       | 19  | A     | 45   | LEFT BONUS 40K         |
| Q53    | J13       | 12  | A     | 96   | LEFT RETURN            |
| Q56    | J10       | 17  | A     | 41   | NORMAL POWER           |
| Q23    | J10       | 1   | A     | 12   | ORANGE BONUS BOTTOM    |
| Q49    | J11       | 9   | A     | 67   | ORANGE BONUS MIDDLE    |
| Q31    | J11       | 13  | A     | 73   | ORANGE BONUS TOP       |
| Q69    | J13       | 7   | B     | 91   | ORANGE DT DELTOID      |
| Q37    | J13       | 4   | B     | 85   | ORANGE DT TRICEPS      |
| Q54    | J13       | 11  | B     | 95   | ORANGE DT TRICEPS      |
| Q57    | J10       | 18  | B     | 43   | RAMP 50K               |
| Q26    | J10       | 4   | B     | 15   | RAMP 100K              |
| Q43    | J10       | 11  | B     | 31   | RAMP 200K              |
| Q58    | J10       | 19  | B     | 45   | RAMP EXTRA BALL        |
| Q59    | J10       | 14  | A     | 37   | RIGHT BONUS 20K TOP    |
| Q27    | J10       | 5   | A     | 18   | RIGHT BONUS 20K BOTTOM |
| Q44    | J10       | 12  | A     | 32   | RIGHT BONUS 20K MIDDLE |
| Q28    | J10       | 6   | A     | 21   | RIGHT BONUS 40K        |
| Q68    | J13       | 10  | A     | 94   | RIGHT RETURN           |
| Q42    | J10       | 9   | A     | 26   | SHOOT AGAIN            |
| Q42    | J10       | 9   | B     | 26   | SPECIAL ARROW          |
| Q24    | J10       | 2   | A     | 13   | YELLOW BONUS BOTTOM    |
| Q50    | J11       | 7   | A     | 63   | YELLOW BONUS MIDDLE    |
| Q32    | J11       | 14  | A     | 74   | YELLOW BONUS TOP       |
| Q62    | J11       | 4   | B     | 61   | YELLOW TARGET OBLIQUE  |
| Q47    | J11       | 11  | B     | 71   | YELLOW TARGET RECTABS  |
| Q30    | J11       | 12  | B     | 72   | YELLOW TARGET TRANSAB  |

HARDBODY  
M051-00E94-A012

SOLENOID DRIVER LOCATIONS

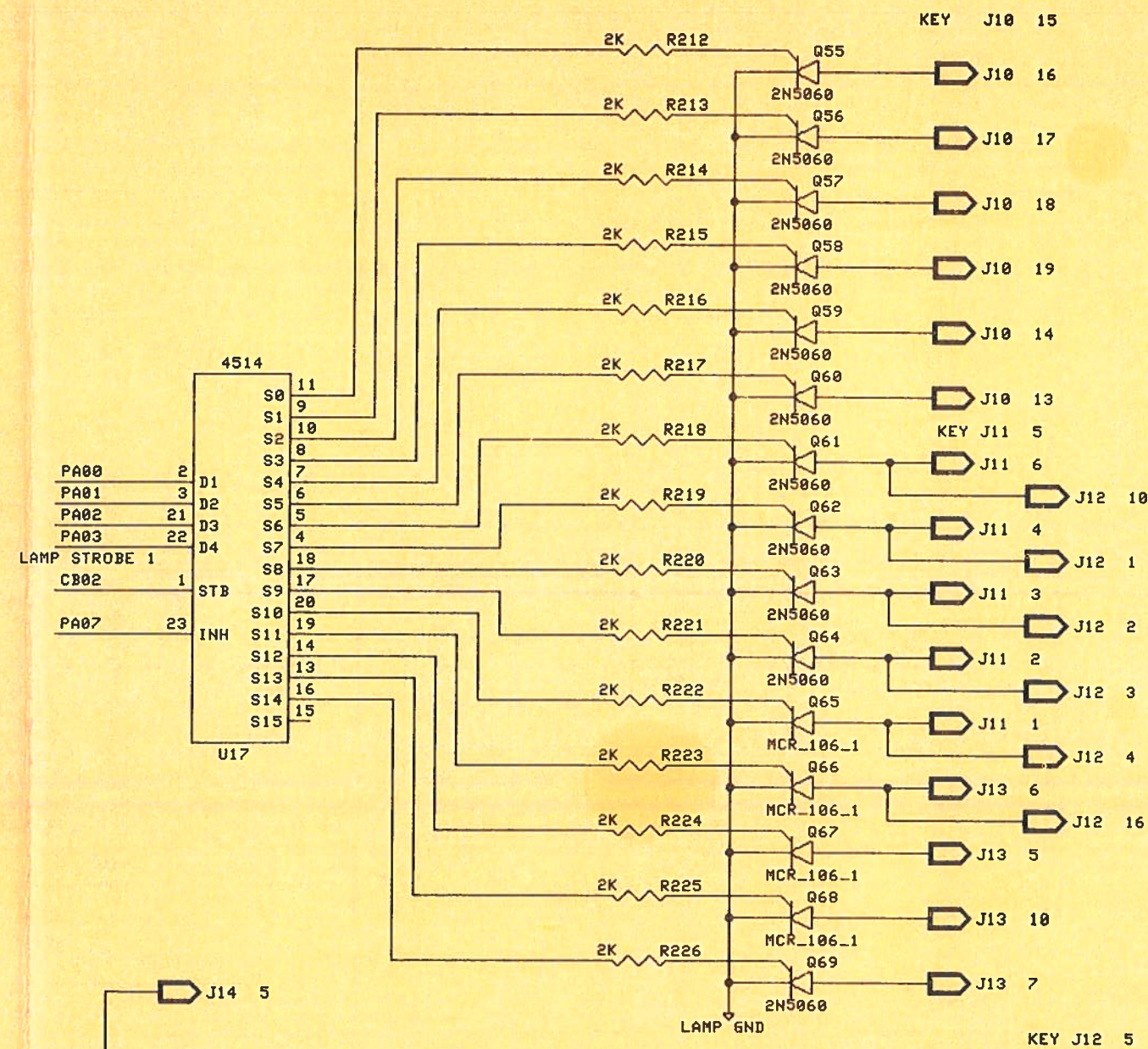
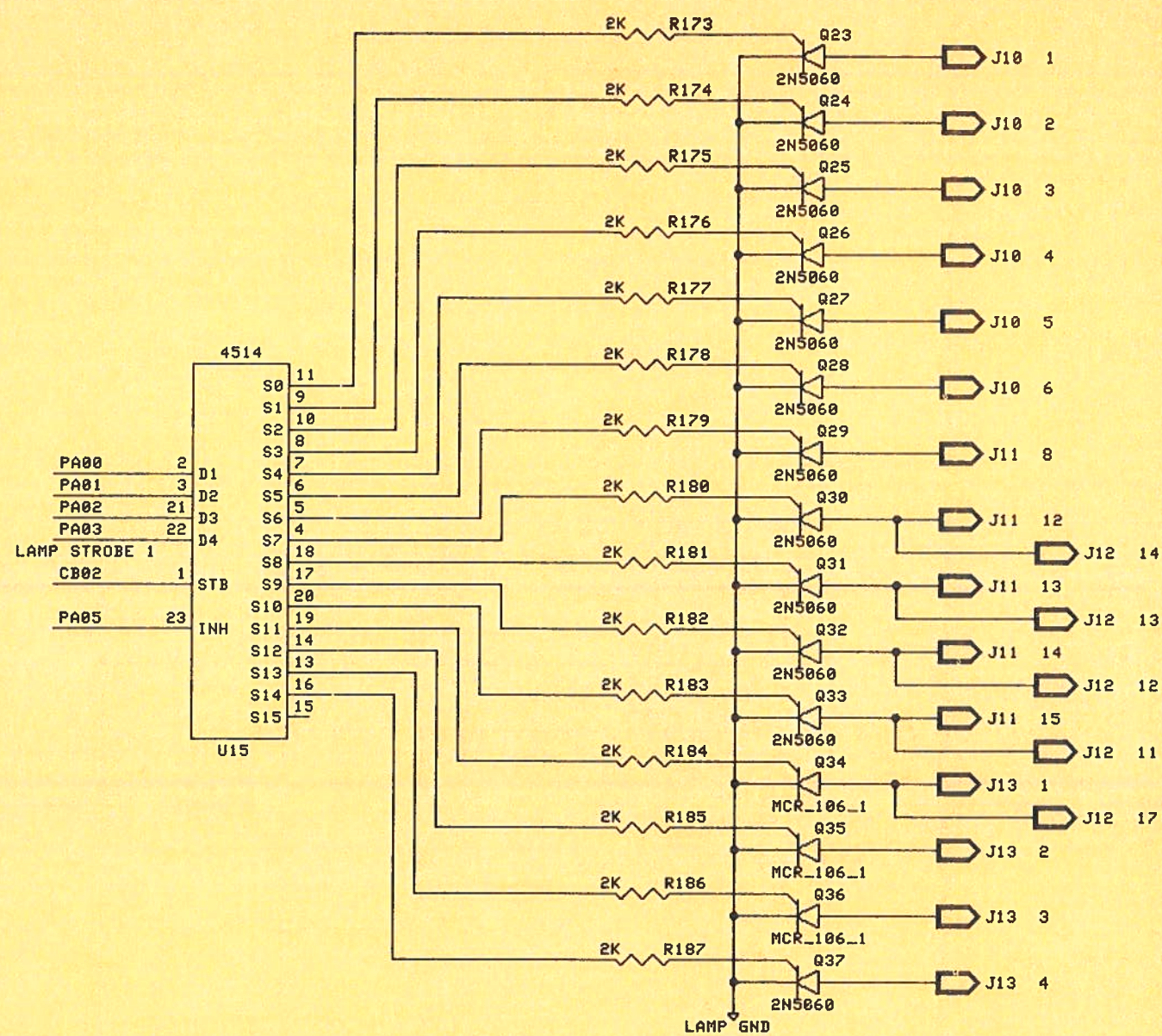
| TRANSISTOR | CONNECTOR PIN | DESCRIPTION         | WIRE CODE |
|------------|---------------|---------------------|-----------|
| Q7         | J6-8          | * LEFT FLIPPER      | 90        |
| Q15        | J8-6          | LEFT RAMP UP        | 25        |
| Q8         | J8-1          | LEFT RETURN LANE    | 24        |
| Q11        | J6-1          | LEFT SLINGSHOT      | 31        |
| Q40        | J9-11         | KNOCKER             | 59        |
| Q39        | J9-8          | OUTHOLE             | 58        |
| Q17        | J6-5          | RAMPS DOWN          | 36        |
| Q38        | J9-7          | RESERVED FOR GERMAN | 57        |
| Q16        | J8-7          | RESET INLINE DT     | 27        |
| Q13        | J6-3          | RESET TOP DT        | 34        |
| Q7         | J6-9          | * RIGHT FLIPPER     | 95        |
| Q10        | J6-7          | RIGHT RETURN LANE   | 311       |
| Q18        | J9-1          | RIGHT RAMP UP       | 51        |
| Q12        | J6-2          | RIGHT SLINGSHOT     | 32        |

\* FLIPPERS CONNECTED THROUGH K1, THE FLIPPER RELAY.

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

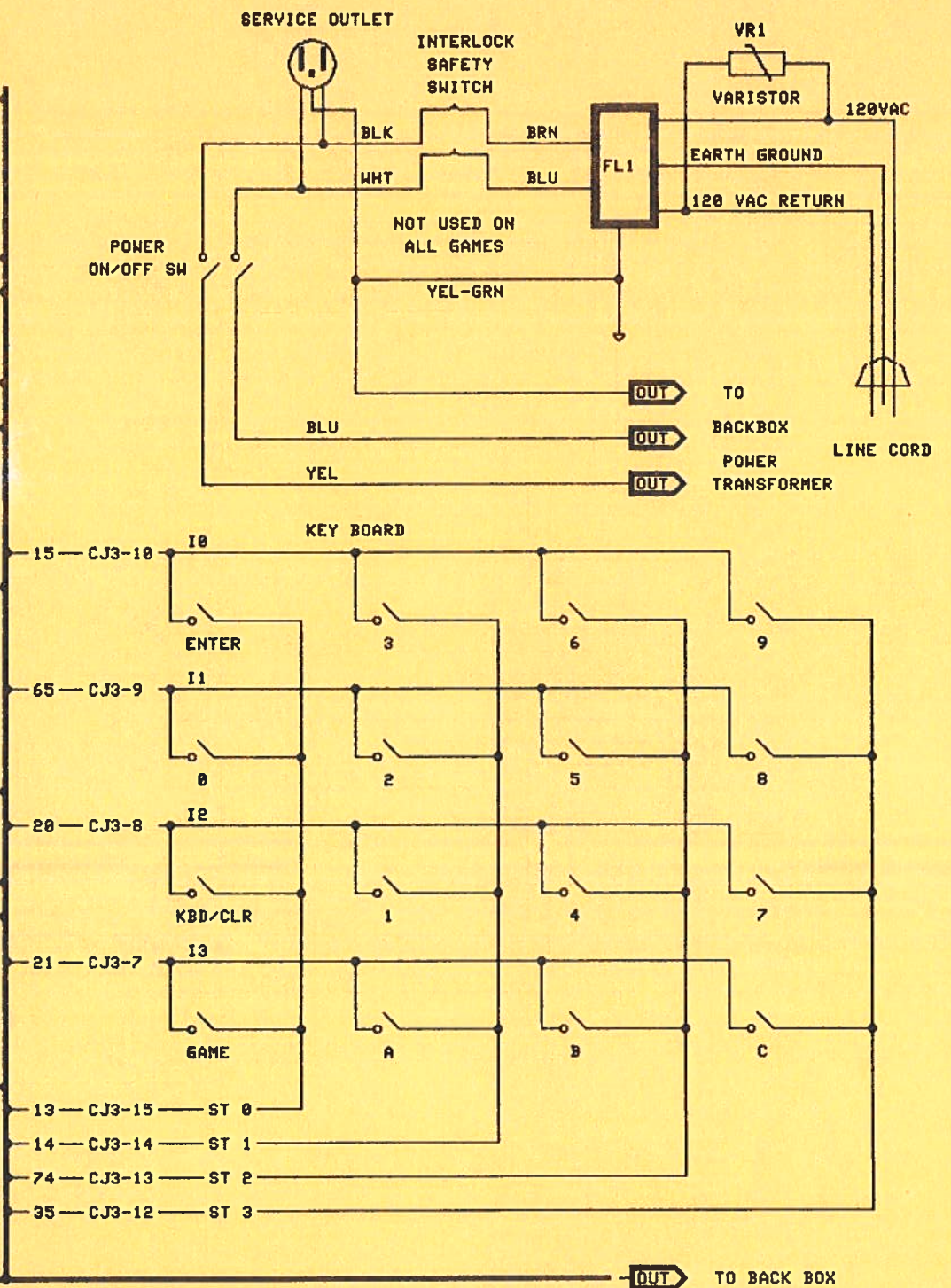
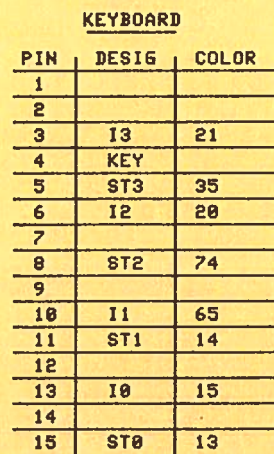
NOTE: C&D PHASES ARE BRIGHT LIGHTS





|          |                             |
|----------|-----------------------------|
| NOTES:   | BALLY MIDWAY MFG. CO.       |
| R. KOHAN | 6803 PINBALL CONTROL MODULE |
|          | SCHEMATIC DRAWING           |
|          | A084-91786-G000             |
|          | M051-00C53-G004             |
|          | SHEET 7 OF 7 REV            |

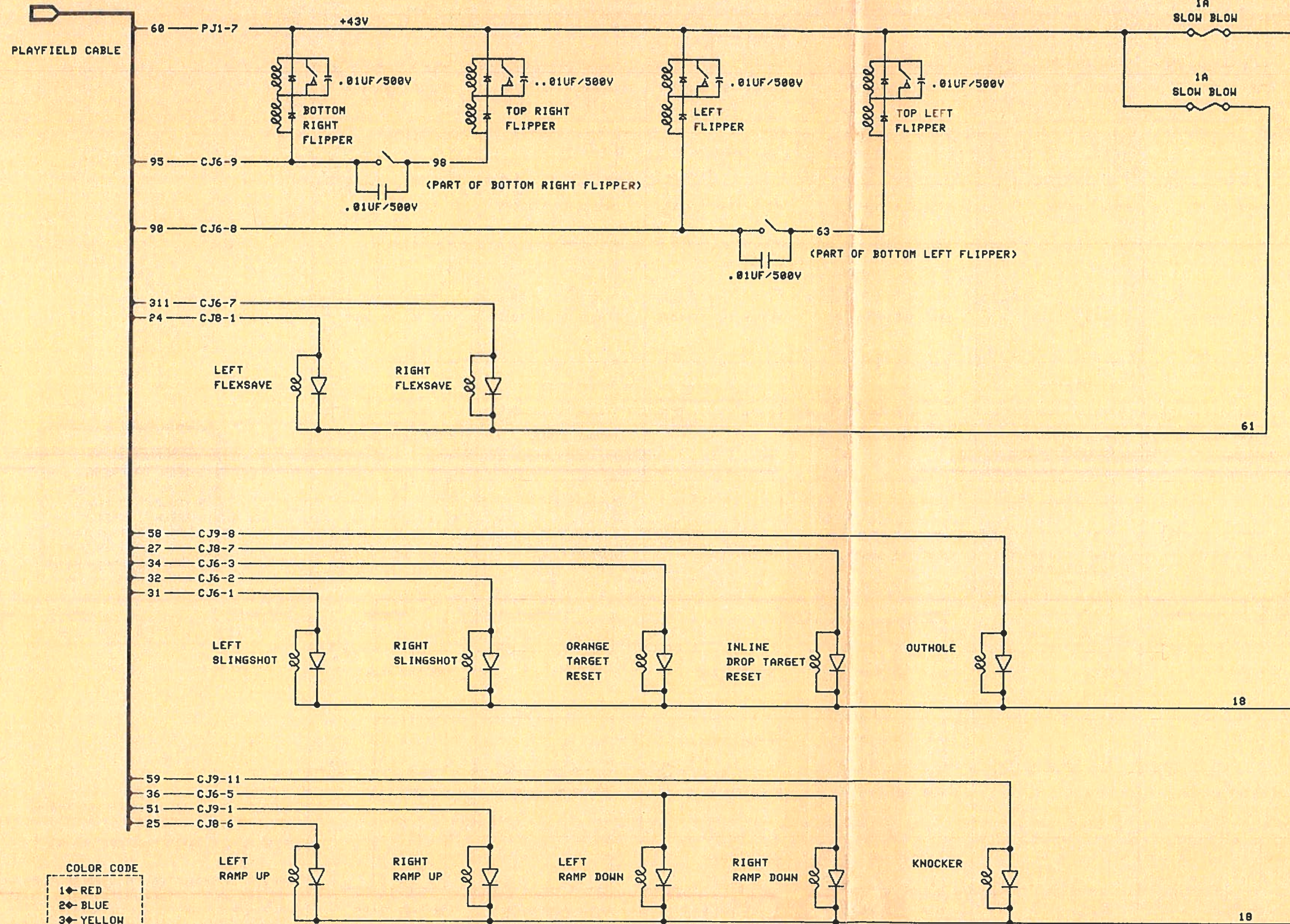
11 MAR 86 08:46 USER/DAN/PIN 7.DRAW



**COLOR CODE**

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

|          |                                                |        |     |
|----------|------------------------------------------------|--------|-----|
| NOTES:   | BALLY MIDWAY MFG. CO.                          |        |     |
| D. STERN | HARDBODY<br>CABINET DIAGRAM<br>M051-00E94-A003 |        |     |
| 2/20/87  |                                                |        |     |
|          |                                                |        |     |
|          |                                                |        |     |
|          |                                                |        |     |
|          | SHEET                                          | 1 OF 1 | REV |

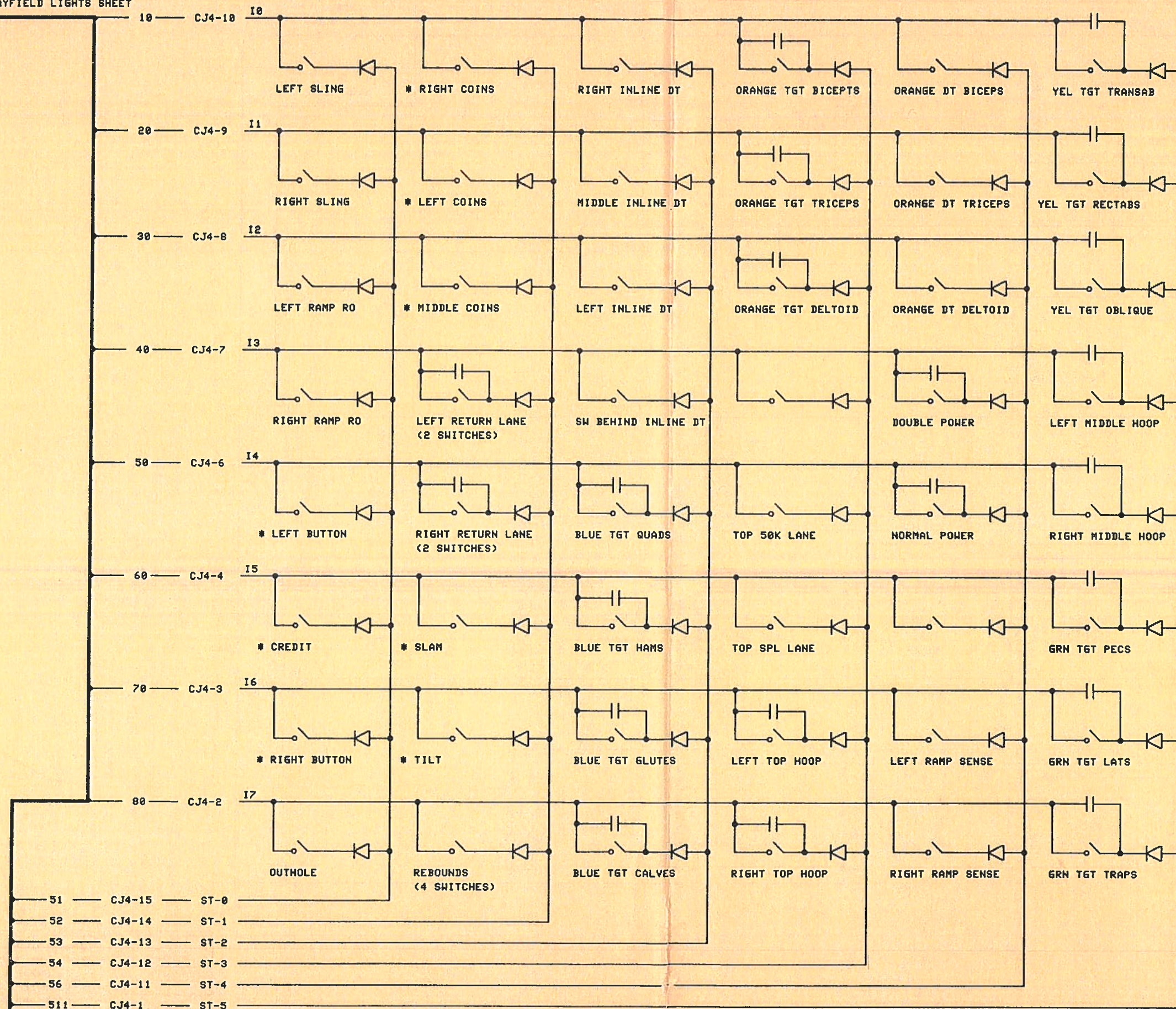


| COLOR CODE |          |
|------------|----------|
| 1          | RED      |
| 2          | BLUE     |
| 3          | YELLOW   |
| 4          | GREEN    |
| 5          | WHITE    |
| 6          | BROWN    |
| 7          | ORANGE   |
| 8          | BLACK    |
| 9          | GRAY     |
| 0          |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

|          |                       |
|----------|-----------------------|
| NOTES:   | BALLY MIDWAY MFG. CO. |
|          | HARDBODY              |
|          | PLAYFIELD DIAGRAM     |
|          | M051-00E94-A005       |
| D. STERN |                       |
| 2/20/87  |                       |
|          |                       |
|          |                       |
|          |                       |
|          | SHEET 1 OF 3          |
|          | REV                   |

25 FEB 87 07153 705K2704N/HARD/PLAYFIELD 1.000

TO PLAYFIELD LIGHTS SHEET



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

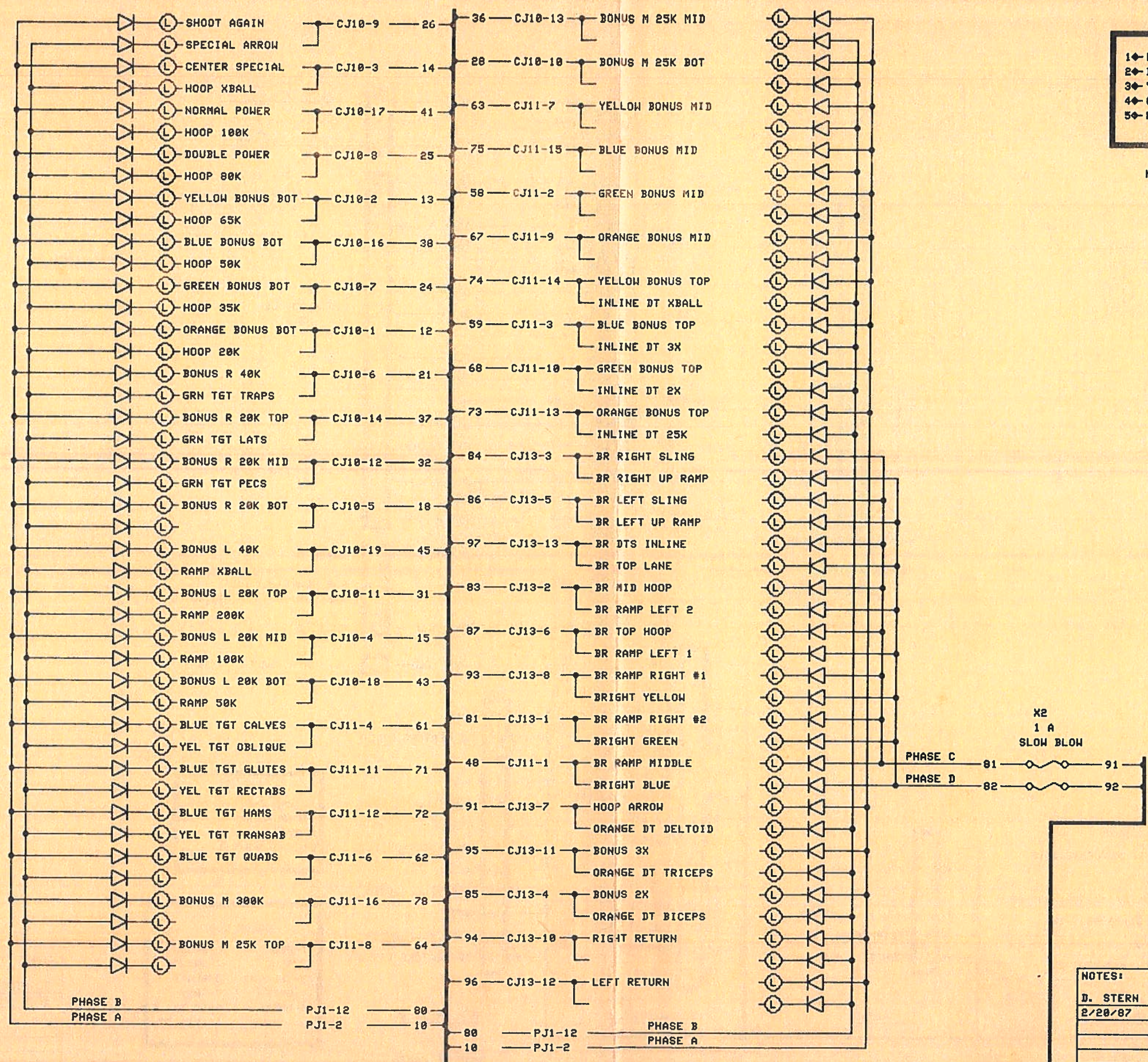
NOTE 1. ALL SWITCH DIODES ARE 1N4148

NOTE 2. ALL CAPACITORS ARE .05 MF

NOTE 3. \* INDICATES NOT USED ON PLAYFIELD. DRAWING ONLY TO SHOW RESPECTIVE CABINET SWITCH POSITION IN SWITCH MATRIX.

|          |                       |
|----------|-----------------------|
| NOTES:   | BALLY MIDWAY MFG. CO. |
| 2/20/87  |                       |
| D. STERN |                       |
|          | HARDBODY              |
|          | PLAYFIELD DIAGRAM     |
|          | M051-00E94-A005       |
|          | SHEET 2 OF 3          |
|          | REV                   |

25 FEB 87 15104 USER/JAN/HARD/300/PLAYFIELD 2. DRAM

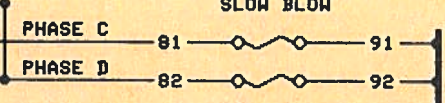


COLOR CODE

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

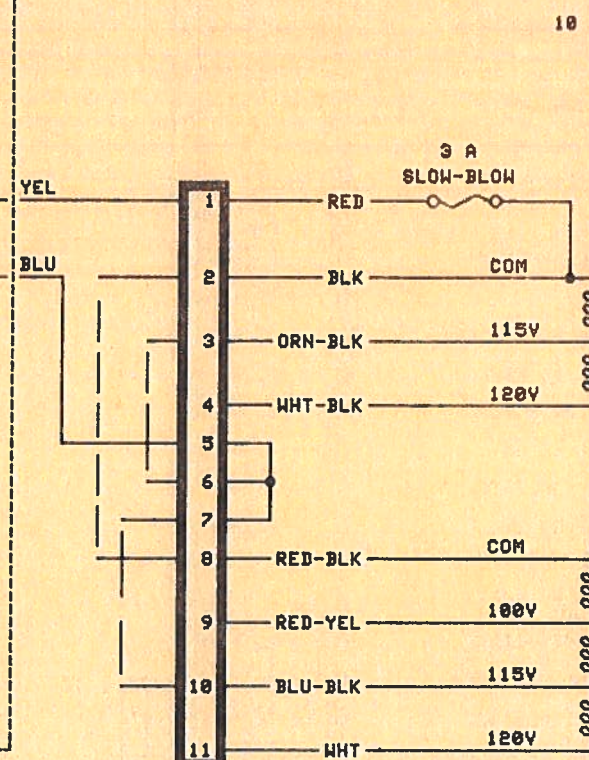
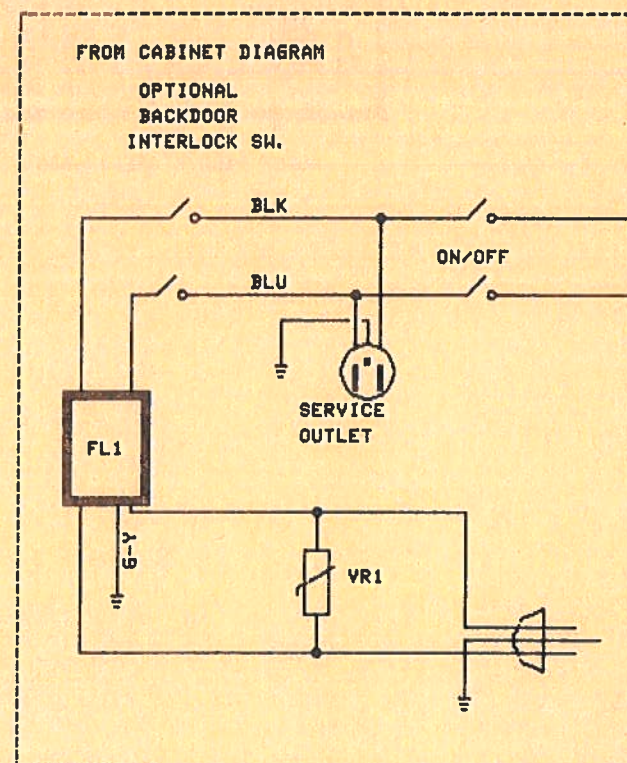
NOTE: DIODES ARE 1N4004

X2  
1 A  
SLOW BLOW



|          |                       |
|----------|-----------------------|
| NOTES:   | BALLY MIDWAY MFG. CO. |
| D. STERN |                       |
| 2/20/87  |                       |
|          | HARDBODY              |
|          | PLAYFIELD DIAGRAM     |
|          | M051-00E94-A005       |
|          | SHEET 3 OF 3 REV      |

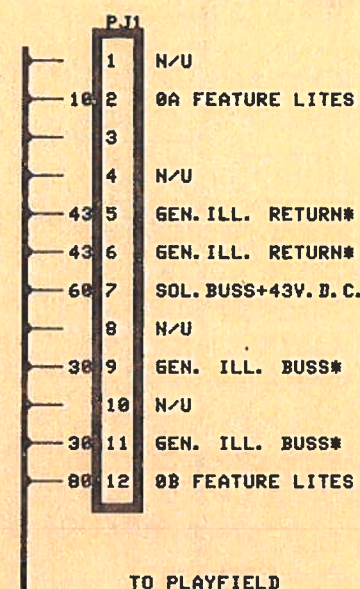
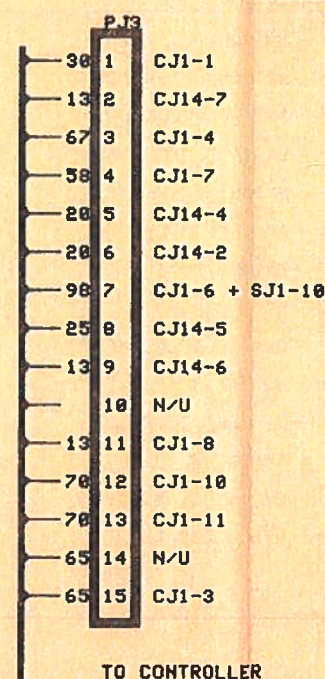
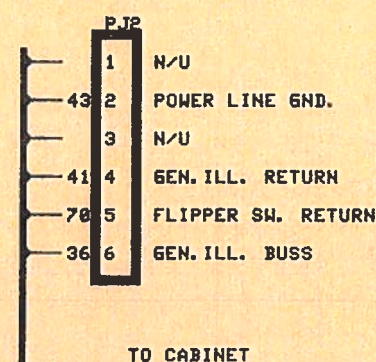
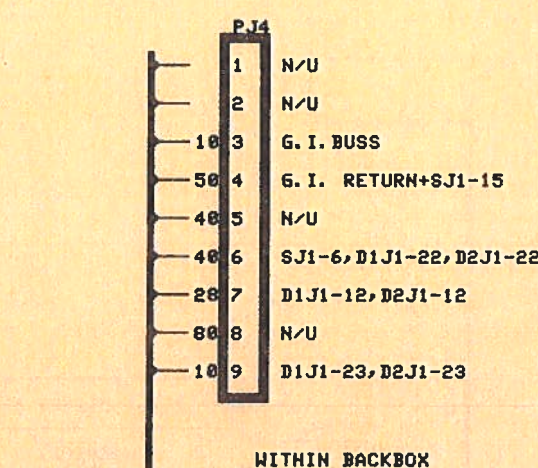
26 FEB 87 11118 70507JAN/HARD BODY/PLAYFIELD 3.DRAW



SHOWN JUMPED FOR 115V

NOTE: SEE TABLE "A" FOR  
JUMPER OPTIONS.

NOTE: PJ1-PJ4 ARE PART OF  
POWER MODULE.



\*=27 GI LAMPS

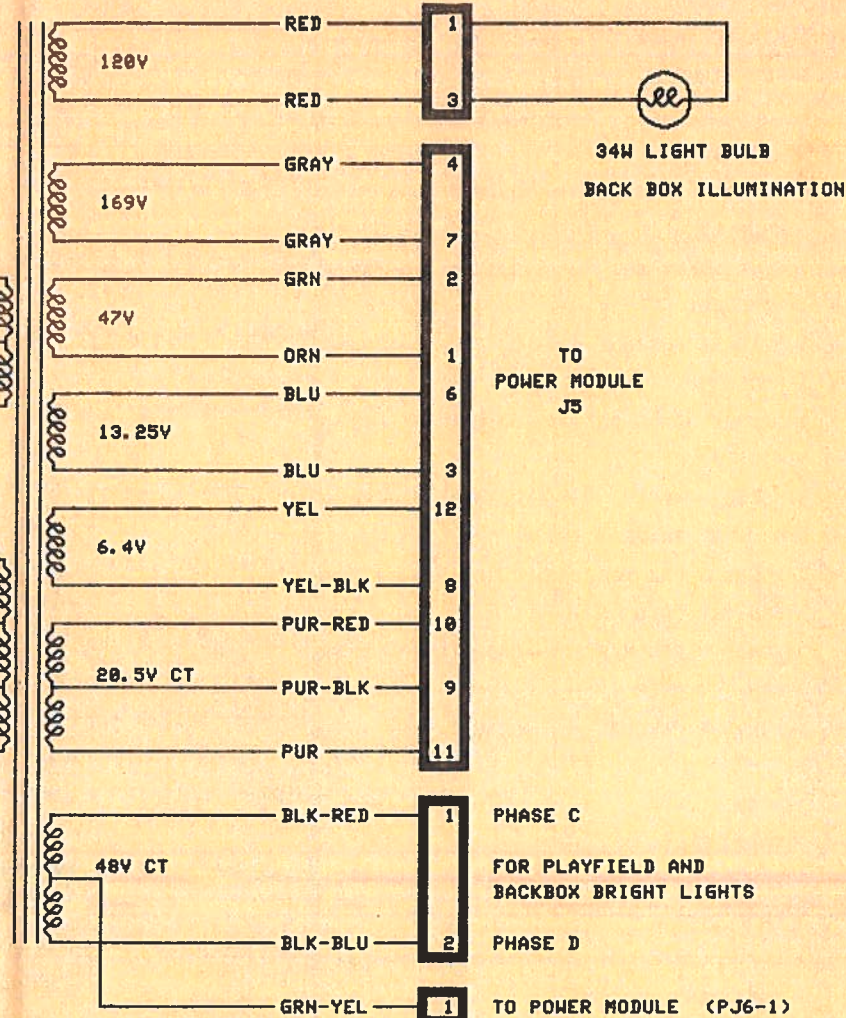


TABLE "A"

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

COLOR CODE

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

|          |                       |
|----------|-----------------------|
| NOTES:   | BALLY MIDWAY MFG. CO. |
| D. STERN |                       |
| 2/20/87  |                       |
|          | HARDBODY<br>BACKBOX   |
|          | M051-00E94-A006       |
|          | SHEET 1 OF 3 REV      |

| CJ-10 |    | "A" PHASE                           | "B" PHASE                            |
|-------|----|-------------------------------------|--------------------------------------|
| 12    | 1  | ORANGE BOW BOT                      | HOOP 20K                             |
| 13    | 2  | YELLOW BOW BOT                      | HOOP 65K                             |
| 14    | 3  | CENTER SPECIAL                      | HOOP XBALL                           |
| 15    | 4  | BONUS L 20K MID                     | RAMP 30K                             |
| 18    | 5  | BONUS R 20K BOT                     |                                      |
| 21    | 6  | BONUS R 40K                         | GRN TGT TRAPS                        |
| 24    | 7  | GREEN BOW BOT                       | HOOP 35K                             |
| 25    | 8  | DOUBLE POWER                        | HOOP 80K                             |
| 26    | 9  | SHOOT AGAIN                         | SPECIAL ARROW                        |
| 28    | 10 | BONUS M25K BOT                      |                                      |
| 31    | 11 | BONUS L 20K TOP                     | RAMP 50K                             |
| 32    | 12 | BONUS R 20K MID                     | GRN TGT PECS                         |
| 36    | 13 | BONUS M25K MID                      |                                      |
| 37    | 14 | BONUS R 20K TOP                     | GRN TGT LATS                         |
|       | 15 | KEY                                 |                                      |
| 38    | 16 | BLUE BOW BOT                        | HOOP 100K                            |
| 41    | 17 | NORMAL POWER                        | HOOP 200K                            |
| 43    | 18 | BONUS L 20K BOT                     | RAMP 50K                             |
| 45    | 19 | BONUS L 40K                         | RAMP XBALL                           |
| CJ-11 |    | "A" PHASE<br>* DENOTES<br>"C" PHASE | "B" PHASE<br>** DENOTES<br>"D" PHASE |
| 48    | 1  | BR RAMP MID*                        | BRIGHT BLUE**                        |
| 58    | 2  | GREEN BOW MID                       |                                      |
| 59    | 3  | BLUE BOW TOP                        | INLINE DT 3X                         |
| 61    | 4  | BLU TGT CALVES                      | YEL TGT OBLIQUE                      |
|       | 5  | KEY                                 |                                      |
| 62    | 6  | BLU TGT QUADS                       |                                      |
| 63    | 7  | YELLOW BOW MID                      |                                      |
| 64    | 8  | BONUS M 25K TOP                     |                                      |
| 67    | 9  | ORANGE BOW MID                      |                                      |
| 68    | 10 | GREEN BOW TOP                       | INLINE DT 2X                         |
| 71    | 11 | BLU TGT GLUTES                      | YEL TGT RECTABS                      |
| 72    | 12 | BLU TGT HAMS                        | YEL TGT TRANSAB                      |
| 73    | 13 | ORANGE BOW TOP                      | INLINE DT 25K                        |
| 74    | 14 | YELLOW BOW TOP                      | INLINE DT XBALL                      |
| 75    | 15 | BLUE BOW MID                        |                                      |
| 78    | 16 | BONUS M300 K                        |                                      |

## LAMP OUTPUTS

## COLOR CODE

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

## NOTES

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

| CJ-12 |  | "A" PHASE | "B" PHASE |
|-------|--|-----------|-----------|
| 1     |  |           |           |
| 2     |  |           |           |
| 3     |  |           |           |
| 4     |  |           |           |
| 5     |  | KEY       |           |
| 6     |  |           |           |
| 7     |  |           |           |
| 8     |  |           |           |
| 9     |  |           |           |
| 10    |  |           |           |
| 11    |  |           |           |
| 12    |  |           |           |
| 13    |  |           |           |
| 14    |  |           |           |
| 15    |  |           |           |
| 16    |  |           |           |
| 17    |  |           |           |

| CJ-13 |    | "A" PHASE<br>* DENOTES<br>"C" PHASE | "B" PHASE<br>** DENOTES<br>"D" PHASE |
|-------|----|-------------------------------------|--------------------------------------|
| 81    | 1  | BR RAMP R #2 *                      | BRIGHT GREEN**                       |
| 83    | 2  | BR MID HOOP*                        | BR RAMP LEFT 2**                     |
| 84    | 3  | BR RIGHT SLING*                     | BR RT UP RAMP**                      |
| 85    | 4  | BONUS 2X                            | ORNG DT TRICEPS                      |
| 86    | 5  | BR LEFT SLING*                      | BR LEFTUP RAMP**                     |
| 87    | 6  | BR TOP HOOP*                        | BR RAMP LEFT 1**                     |
| 91    | 7  | HOOP ARROW                          | ORNG DT DELTOID                      |
| 93    | 8  | BR RAMP R #1 *                      | BRIGHT YELLOW**                      |
|       | 9  | KEY                                 |                                      |
| 94    | 10 | RIGHT RETURN                        |                                      |
| 95    | 11 | BONUS 3X                            | ORN DT TRICEPS                       |
| 96    | 12 | LEFT RETURN                         |                                      |
| 97    | 13 | BR DT INLINE*                       | BR TOP LANE**                        |

| CJ-6 |   |                  |
|------|---|------------------|
| 31   | 1 | LEFT SLING       |
| 32   | 2 | RIGHT SLING      |
| 34   | 3 | ORANGE DTS RESET |
| 35   | 4 |                  |
| 36   | 5 | RAMPS DOWN       |
|      | 6 | KEY              |
| 311  | 7 | RIGHT FLEXSAVE   |
| 90   | 8 | LEFT FLIPPER     |
| 95   | 9 | RIGHT FLIPPER    |

| CJ-8 |   |                 |
|------|---|-----------------|
| 24   | 1 | LEFT FLEXSAVE   |
|      | 2 |                 |
|      | 3 | KEY             |
|      | 4 |                 |
|      | 5 |                 |
| 25   | 6 | RAMP UP LEFT    |
| 27   | 7 | INLINE DT RESET |

| CJ-7 |   |  |
|------|---|--|
| 1    |   |  |
| 2    |   |  |
| 3    |   |  |
| 4    |   |  |
| 5    |   |  |
| 6    |   |  |
| 20   | 7 |  |
| 10   | 8 |  |

| CJ-9 |    |                     |
|------|----|---------------------|
| 51   | 1  | RAMP UP RIGHT       |
| 52   | 2  |                     |
| 53   | 3  |                     |
| 54   | 4  |                     |
|      | 5  |                     |
| 56   | 6  |                     |
| 57   | 7  | RESERVED FOR GERMAN |
| 58   | 8  | OUTHOLE             |
| 511  | 9  |                     |
| 24   | 10 |                     |
| 59   | 11 | KNOCKER             |

## SOLENOID OUTPUTS

| CJ-5 |    |       |
|------|----|-------|
| 1    |    |       |
| 2    |    |       |
| 3    |    |       |
| 4    |    |       |
| 5    |    | KEY   |
| 6    |    |       |
| 20   | 7  | SJ1-1 |
| 25   | 8  | SJ1-2 |
| 28   | 9  | SJ1-3 |
| 21   | 10 | SJ1-4 |
|      | 11 |       |
|      | 12 |       |
|      | 13 |       |
|      | 14 |       |
| 27   | 15 | SJ1-8 |

## SOUND INFO. OUTPUT

| CJ-4 |    |     |
|------|----|-----|
| 511  | 1  | ST5 |
| 80   | 2  | I7  |
| 70   | 3  | I6  |
| 60   | 4  | I5  |
|      | 5  | KEY |
| 50   | 6  | I4  |
| 40   | 7  | I3  |
| 30   | 8  | I2  |
| 20   | 9  | I1  |
| 10   | 10 | I0  |
| 56   | 11 | ST4 |
| 54   | 12 | ST3 |
| 53   | 13 | ST2 |
| 52   | 14 | ST1 |
| 51   | 15 | ST0 |

## PLAYFIELD SWITCHES

| CJ-3 |    |             |
|------|----|-------------|
| 10   | 1  | TEST BUTTON |
|      | 2  |             |
|      | 3  | KEY         |
| 27   | 4  | I6          |
| 30   | 5  | I5          |
| 97   | 6  | I4          |
| 21   | 7  | I3          |
| 20   | 8  | I2          |
| 65   | 9  | I1          |
| 15   | 10 | I0          |
|      | 11 |             |
| 35   | 12 | ST3         |
| 74   | 13 | ST2         |
| 14   | 14 | ST1         |
| 13   | 15 | ST0         |

## CABINET SWITCHES

| CJ-2 |    |                          |
|------|----|--------------------------|
| 30   | 1  | D1J1-16 + D2J1-16        |
| 14   | 2  | D1J1-3, D1J1-14, D2J1-3  |
| 18   | 3  | D1J1-5, D2J1-5, D1J1-11  |
| 21   | 4  | D1J1-7, D2J1-7, D2J1-14  |
| 23   | 5  | D1J1-8, D2J1-8, D2J1-11  |
| 20   | 6  | D1J1-6, D2J1-6           |
| 15   | 7  | D1J1-4, D2J1-4           |
| 13   | 8  | D1J1-2, D2J1-2           |
| 12   | 9  | D1J1-1, D2J1-1           |
|      | 10 | N/U                      |
|      | 11 | N/U                      |
| 38   | 12 | D2J1-9                   |
| 24   | 13 | D1J1-9, D1J1-21, D2J1-21 |
| 35   | 14 | D1J1-20, D2J1-20         |
|      | 15 | KEY                      |
| 34   | 16 | D1J1-19, D2J1-19         |
| 32   | 17 | D1J1-18, D2J1-18         |
| 31   | 18 | D1J1-17, D2J1-17         |
|      | 19 | N/U                      |

## DIGITAL DISPLAY OUTPUTS

| CJ-1 |    |        |
|------|----|--------|
| 30   | 1  | PJ3-1  |
|      | 2  |        |
| 65   | 3  | PJ3-15 |
| 67   | 4  | PJ3-3  |
|      | 5  | KEY    |
| 98   | 6  | PJ3-7  |
| 58   | 7  | PJ3-4  |
| 13   | 8  | PJ3-11 |
|      | 9  |        |
| 70   | 10 | PJ3-12 |
| 70   | 11 | PJ3-13 |
|      | 12 |        |

## CJ-14

| CJ-14 |   |       |
|-------|---|-------|
| 1     |   |       |
| 20    | 2 | PJ3-6 |
|       | 3 | KEY   |
| 20    | 4 | PJ3-5 |
| 25    | 5 | PJ3-8 |
| 13    | 6 | PJ3-9 |
| 13    | 7 | PJ3-2 |

## POWER INPUTS

NOTES:  
D. STERN  
2/20/87

BALLY MIDWAY MFG. CO.

HARDBODY  
BACKBOX  
M051-00E94-A006

SHEET 2 OF 3 REV

# DISPLAYS-D

PLYR 1&2

PLYR 3&4

SOUND MODULE

D1J1

D2J1

SJ1

|       |          |    |
|-------|----------|----|
| 12    | — CJ2-9  | 1  |
| 13    | — CJ2-8  | 2  |
| 14    | — CJ2-2  | 3  |
| 15    | — CJ2-7  | 4  |
| 18    | — CJ2-3  | 5  |
| 20    | — CJ2-6  | 6  |
| 21    | — CJ2-4  | 7  |
| 23    | — CJ2-5  | 8  |
| 24    | — CJ2-13 | 9  |
| KEY   | — KEY    | 10 |
| 18    | — CJ2-3  | 11 |
| 28    | — PJ4-7  | 12 |
| N/U   | — N/U    | 13 |
| 14    | — CJ2-2  | 14 |
| N/U   | — N/U    | 15 |
| 30    | — CJ2-1  | 16 |
| 31    | — CJ2-18 | 17 |
| 32    | — CJ2-17 | 18 |
| 34    | — CJ2-16 | 19 |
| 35    | — CJ2-14 | 20 |
| 24    | — CJ2-13 | 21 |
| 40    | — PJ4-6  | 22 |
| 10    | — PJ4-9  | 23 |
| — N/U |          | 24 |

|       |          |    |
|-------|----------|----|
| 12    | — CJ2-9  | 1  |
| 13    | — CJ2-8  | 2  |
| 14    | — CJ2-2  | 3  |
| 15    | — CJ2-7  | 4  |
| 18    | — CJ2-3  | 5  |
| 20    | — CJ2-6  | 6  |
| 21    | — CJ2-4  | 7  |
| 23    | — CJ2-5  | 8  |
| 38    | — CJ2-12 | 9  |
| KEY   | — KEY    | 10 |
| 23    | — CJ2-5  | 11 |
| 28    | — PJ4-7  | 12 |
| N/U   | — N/U    | 13 |
| 21    | — CJ2-4  | 14 |
| N/U   | — N/U    | 15 |
| 30    | — CJ2-1  | 16 |
| 31    | — CJ2-18 | 17 |
| 32    | — CJ2-17 | 18 |
| 34    | — CJ2-16 | 19 |
| 35    | — CJ2-14 | 20 |
| 24    | — CJ2-13 | 21 |
| 40    | — PJ4-6  | 22 |
| 10    | — PJ4-9  | 23 |
| — N/U |          | 24 |

|    |    |        |
|----|----|--------|
| 20 | 1  | CJ5-7  |
| 25 | 2  | CJ5-8  |
| 28 | 3  | CJ5-9  |
| 21 | 4  | CJ5-10 |
|    | 5  |        |
| 40 | 6  | PJ4-6  |
|    | 7  |        |
| 27 | 8  | CJ5-15 |
|    | 9  |        |
| 98 | 10 | PJ3-7  |
|    | 11 | KEY    |
|    | 12 |        |
|    | 13 |        |
|    | 14 |        |
| 50 | 15 | PJ4-4  |

SJ2

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|

50 00

TO CABINET  
(SPEAKERS & VOLUME CONTROL)

PAGE 3 OF 3 (BACKBOX)

## COLOR CODE

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

NOTES:  
D. STERN  
2/20/87

BALLY MIDWAY MFG. CO.

HARDBODY  
BACKBOX  
M051-00E94-A006

SHEET 3 OF 3 REV

BALLY/MIDWAY'S HARD BODY

#E94

ROM/EPROM PART NUMBERS

UNPROGRAMMED CONTROL BOARD A084-91786-G000

PROGRAMMED CONTROL BOARD A084-91786-AE94

| POS. | MIDWAY PART NUMBER |
|------|--------------------|
| U2   | E94A-12601-0000    |
| U3   | E94A-12602-0000    |

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

UNPROGRAMMED TURBO CHEAP SQUEAK FOR PINBALL A084-91855-E000

PROGRAMMED TURBO CHEAP SQUEAK FOR PINBALL A084-91855-AE94

| POS. | MIDWAY PART NUMBER |
|------|--------------------|
| U7   | E94A-12603-0000    |

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

|                 |                        |
|-----------------|------------------------|
| M051-00E94-A008 | REVISIONS              |
| 02-09-87        | RELEASE FOR PRODUCTION |

