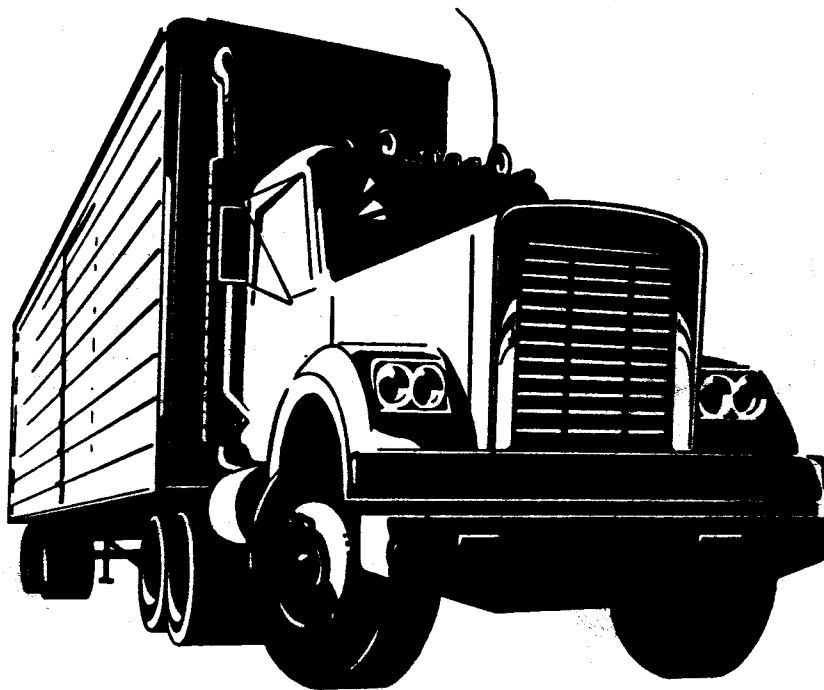


16-2001-101P
October 21, 1988



Operating Manual



MIDWAY MANUFACTURING CO.
Manufacturers of **BALLY** Amusement Games
3401 N. California Avenue
Chicago, IL 60618
(312) 267-2240

ROM Summary

6803 CPU A084-91786-G000 Memory & Jumper Combinations

Game Name	Game No.	Released	U2	U3	Jumpers
Eight Ball Champ	0B38	Aug 1985	Not Used	0838-00803-0005	2,4,6,8,10
Beat The Clock	0C70	Nov 1985	Not Used	0C70-00803-0005	2,4,6,9,10
Lady Luck	0E34	Feb 1986	Not Used	0E34-00803-0005	2,4,6,8,10
Motor Dome	0E14	May 1986	E14A-42AAE-BX40	E14A-42AAE-CX4D	2,4,6,8,10
Black Belt	0E52	Jul 1986	0E52-00803-0001	0E52-00803-0002	2,4,6,8,10
Special Force	0E47	Sep 1986	0E47-00803-0004	0E47-00803-0005	2,4,6,9,10
Strange Science	0E35	Dec 1986	0E35-00803-0001	0E35-00803-0002	2,4,6,9,10
City Slicker	0E79	Feb 1987	0E79-00803-0002	0E79-00803-0003	2,4,6,9,10
Hard Body	0E94	Mar 1987	E94A-12601-0000	E94A-12602-0000	2,4,6,9,10
Party Animal	0H01	May 1987	H01A-12601-0000	H01A-12602-0000	2,4,6,9,10
Heavy Metal	0H03	Jun 1987	H03A-12601-0000	H03A-12602-0000	2,4,6,9,10
Dungeons & Dragons	0H06	Oct 1987	H06A-12601-0000	H06A-12602-0000	2,4,6,9,10
Escape From Lost World	0H05	Jan 1988	H05A-12601-0000	H05A-12602-0000	2,4,6,8,10
Blackwater 100	0H07	Mar 1988	H07A-12601-0000	H07A-12602-0000	2,4,6,9,10
Truck Stop	2001	Oct 1988	H08A-12601-0000	H08A-12602-0000	2,4,6,9,10

Note: See BALLY-MIDWAY Service Bulletin dated December 26, 1985, summarized below...

Subject: BEAT THE CLOCK and subsequent pinball games.

Symptom: LED flashes eight times, but game fails to power up.

Cause: Starting with BEAT THE CLOCK, game 300, the U3 program was modified for internal testing.

Cure: Current boards include a 100K ohm, 1/4-watt pullup resistor. This runs between the +5-volt bus and pin 12 of microprocessor U1.

Coil Table including Flipper Coils

Sol. No.	Solenoid Description	Solenoid Type	Wire Color	Connections		Solenoid Part No.
				Control Board	Driver Transistor	
01	Left Kicker (Truck Stop)	Momentary	White-Red	CJ9-1	Q18	A365-00067-0029
02	Right Saucer	Momentary	Yellow-White	CJ6-4	Q14	A365-00067-0010
03	Right Kicker (Dock)	Momentary	Yellow-Blue	CJ6-2	Q12	A360-00211-0000
04	Inline Target Reset	Momentary	Blue-White	CJ8-6	Q15	A365-00067-0019
05	Left, Top Slingshot	Momentary	Blue-Orange	CJ8-7	Q16	A365-00067-0029
06	Right, Top Slingshot	Momentary	Yellow-Brown	CJ6-5	Q17	A365-00067-0029
07	Left, Bottom Slingshot	Momentary	Yellow-Red	CJ6-1	Q11	A365-00067-0029
08	Right, Bottom Slingshot	Momentary	Yellow-Green	CJ6-3	Q13	A365-00067-0029
09	Ball Eject	Momentary	White-Brown	CJ9-6	Q22	A360-00211-0000
10	Outhole	Momentary	White-Black	CJ9-8	Q39	A360-00044-0000
11	Knocker	Continuous	White-Gray	CJ9-11	Q40	A360-00046-0000
12	Lane Steering*	Continuous	Yellow-Violet	CJ6-7	Q10	A365-00067-0027
13	SS Relay Bd (Backbox)*	Continuous	Blue-Green	CJ9-10	Q8	A080-91786-G000
14	Flipper-Enabling Relay*	Continuous	Gray-White	--	Q7	114E-00001-0011
15	Not Used	Momentary	White-Blue	CJ9-2	Q19	--
16	Not Used	Momentary	White-Yellow	CJ9-3	Q20	--
17	Not Used	Momentary	White-Green	CJ9-4	Q21	--
18	Not Used	Momentary	White-Orange	CJ9-7	Q38	--
19	Not Used*	Continuous	Brown-Violet	CJ9-9	Q9	--
Flipper Description		Wire Colors and Connectors				Part Number
Top Left Flipper		Orn-Gry: CJ6-8, CBJ7-2; Blk-Grn: CBJ7-6				A365-00067-0021
Bottom Left Flipper		Orn-Gry: CJ6-8, CBJ7-2; Blu-Gry: CBJ7-4				FL11630/50VDC
Top Right Flipper		Orn-Vio: CJ6-9, CBJ7-1; Blk-Yel: CBJ7-5				A365-00067-0021
Bottom Right Flipper		Orn-Vio: CJ6-9, CBJ7-1; Blu-Vio: CBJ7-3				FL11630/50VDC

NOTES:

- To use continuous solenoid 12, install jumper JW10. Remove jumper JW11.
- To use continuous solenoid 19, install jumper JW8. Remove jumper J9.
- To use switch strobe at CJ4-01, install jumper JW9. Remove jumper JW8.
- To use extra display at CJ2-19, install jumper JW11. Remove jumper JW10.
- Coils marked with an asterisk (*) are on the playfield backboard or in the backbox.
- Apply heatsink 112-00001-0047 and compound 0017-00009-0204 to drivers Q11, Q13, Q16, Q17 and Q18. Spread the thermal compound on the back and upper tab area of each transistor.

TRUCK STOP Operating Manual

Sound Board Summary SOUND MODULES USED WITH 6803 CPU MEMORY & JUMPER COMBINATIONS

SQUAWK & TALK A084-91625-A000 (Unprogrammed)							
GAME NAME	U1	U2	U3	U4	U5	U6	JUMPERS
Eight Ball Champ	N/U	N/U	0B38-803-2	0B38-803-3	0B38-803-4	N/U	C,D,E,G,H,L,N,Q, S,U,W,Y,AA,DD,FF
Beat The Clock	N/U	N/U	0C70-803-2	0C70-803-3	0C70-804-4	N/U	Same as Eight Ball Champ

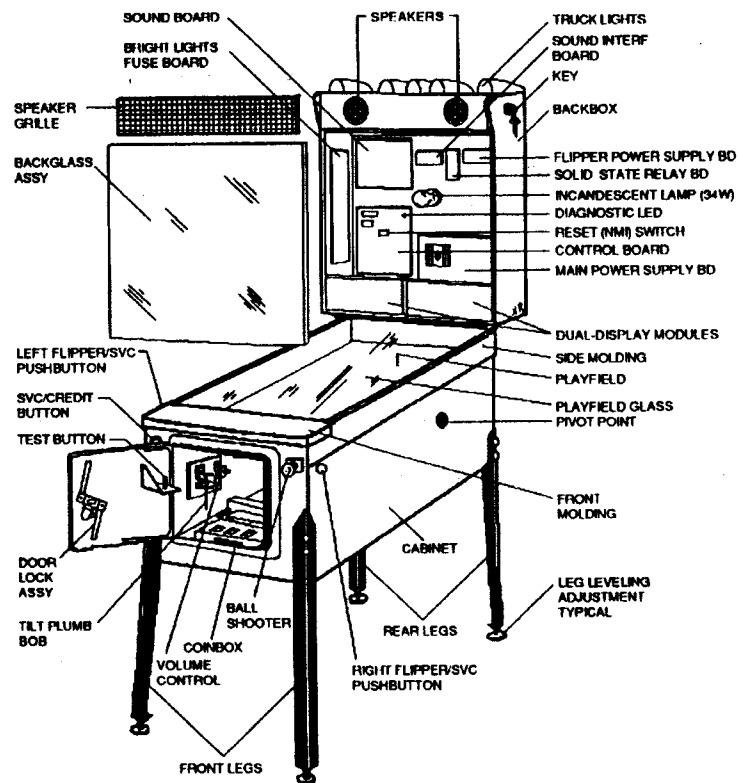
CHEAP SQUEAK A084-91603-C000 (Unprogrammed)							
GAME NAME	U1	U2	U3	U4	U5	U6	JUMPERS
Lady Luck	N/U	N/U	0B38-803-2	0B38-803-3	0B38-803-4	N/U	C,D,E,G,H,L,N,Q, S,U,W,Y,AA,DD,FF

TURBO CHEAP SQUEAK FOR PINBALL A084-91855-C000 (Unprogrammed)		
GAME NAME	U7	JUMPERS
Motor Dome	E14A-47AAE-AX4D	2,3,4,5,6,7,8
Black Belt	0E52-00803-0003	2,3,4,5,6,7,8
Strange Science	0E35-00803-0003	2,3,4,5,6,7,8
City Sliker	0E79-00803-0004	2,3,4,5,6,7,8,9,11
Hard Body	E94A-12603-0000	2,3,4,5,6,7,8,9,11

SOUNDS DELUXE A084-91864-C000 (Unprogrammed)					
GAME NAME	U11	U12	U13	U14	JUMPERS
Special Force	0E47-803-10	0E47-803-11	0E47-803-12	0E47-803-13	1,2,4,7-12
Party Animal	H10A-12603-0000	H01A-12604-0000	H01A-12606-0000	H01A-12606-0000	1,2,4,7-12
Heavy Metal	H03A-12603-0000	H03A-12604-0000	N/U	N/U	1,2,4,7,8
Dungeons & Drags	H06A-12603-0000	H06A-12604-0000	H06A-12605-0000	H06A-12606-0000	1,2,4,7-12
Lost World	H05A-12603-0000	H05A-12604-0000	H05A-80605-0000	H05A-12606-0000	1,2,4,7-12
Blackwater 100	H07A-12603-0000	H07A-12605-0000	H07A-12605-0000	H07A-12606-0000	1,2,4,7-12

WILLIAMS D-11581 Board (Unprogrammed)				
GAME NAME	U4	U19	U20	JUMPERS
Truck Stop	A-5343-2001-1	A-5343-2001-2	A-5343-2001-3	W1, W9

PINBALL GAME PARTS LOCATION



CHAPTER 1: INSTALLATION AND GAMEPLAY

Connector Identification
Circuitboards
Control Locations

Installation Procedure
Game Operation
Buy-In Feature

Select Initials Feature
Game Theme
Game Rules

Game Features

CONNECTOR IDENTIFICATION

BALLY games use a special technique to identify connectors. Each connector receives a prefix letter, followed by "J" (for jack) and a number. Connector pins are expressed by a suffix number.

- The prefix letter identifies the circuitboard where the connector resides.
- J-designations refer to a connector.
- The number identifies which connector we're referring to.
- The suffix number (-1, -15, etc.) refers to a pin number on the connector.

For example, CJ1 designates connector 1 on the Control Board. PJ6-1 designates the first pin of connector 6 on the Power Supply Board. Prefix letters for your game are listed below.

C - 6803 Control Board	PL - Playfield
P - Main Power Supply	S - Sound Board
D1 - Left Display Board	SI - Sound Interface Board
D2 - Right Display Board	L - Lamp Fuse Board
BB - Backbox	R - Solid State Relay Board
CB - Cabinet	F - Flipper Power Supply

CIRCUITBOARDS

Most circuitboards are in the backbox. To access the boards, remove the backbox glass.

CONTROL BOARD. The Control Board is part number A080-91786-G000. It contains the 6803 microprocessor. The Control Board must be equipped with ROMs and jumpers specified in the ROM Summary.

SOUND BOARD. The D-11581-2001 Sound Board is supplied with ROMs and microprocessor. This is a stereo board with speech capabilities and Yamaha organ circuitry. The Sound Board must be equipped with ROMs and jumpers specified in the Sound Board Summary.

DISPLAY BOARDS. There are two, 14-digit display tubes. Each tube is attached to its own printed circuit board. Either tube and its board comprises a Dual Display Module, part number B084-91851-H000.

MAIN POWER SUPPLY BOARD. The Power Supply Board is part number A080-91785-D000. This board incorporates rectifier and regulator circuitry. Each power supply is fused on the board. The power transformer (part MT00-00163-A000) is in the lower cabinet. Power Supply DC voltages include...

- Positive five-volt, logic power
- Positive 190V for displays
- 6.3VAC for general illumination
- 11VAC for feature lamps
- 14VDC for controlled lamps

FLIPPER POWER SUPPLY BOARD. The 50VDC Flipper Power Supply is part number C-9939-2001. This board incorporates rectifier and passive filter circuitry. The power supply includes a 4ASB fuse. The Flipper Power Supply derives AC voltage from an auxiliary power transformer. This flipper power transformer (part 5610-10355-00) is in the lower cabinet.

SOUND INTERFACE BOARD. The Sound Interface Board is part number C-12417. This board includes a regulator for the -12VDC sound power amplifier. Also present is a reset circuit for the Sound Board.

BRIGHT LIGHT FUSE BOARD. The Bright Light Fuse Board is part number A080-91901-B000. This board includes 16 fuses. The fuses protect SCRs in the phase C and phase D lamp drive circuits.

SOLID STATE RELAY BOARD. The Solid State Relay Board is part number A080-91902-A000. This board controls the large, incandescent, backbox-illumination bulb.

BOARDS NOT IN THE BACKBOX

Two other boards are located on the playfield. Emitter Board A084-91895-B000 and Detector Board A084-91894-B000 are under the bottom arch. They optically detect balls on the ball ramp.

CONTROL LOCATIONS

THE ON-OFF SWITCH is on the bottom of the cabinet, near the right, front leg.

THE VOLUME CONTROL is inside the coin door. Look at the left, inner wall of the cabinet, on the tilt mechanism board.

THE CREDIT BUTTON is left of the coin door on the front of the cabinet.

GAME ADJUSTMENT/DIAGNOSTIC SWITCHES. The SELF TEST button switch is inside the coin door. This switch assists you during game adjustments, bookkeeping, and problem diagnosis. Details appear in Chapter 2.

INSTALLATION PROCEDURE

[] 1. Open the shipping container. Remove cartons, parts and other items. Set them aside.

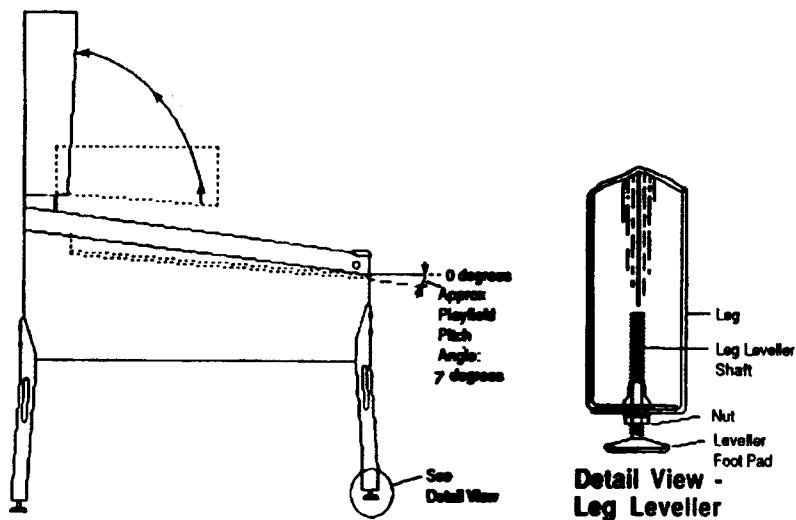
[] 2. Leg levellers and bolts are provided in the cashbox. Install levellers on the game's rear legs. Set the game on a flat surface or dolly. Bolt the rear legs to the game.

[] 3. Install leg levellers on the front legs. Bolt the front legs to the game.

[] 4. Reach into the cabinet and backbox. Check that cable connectors are properly seated on their printed circuit boards. Check the mating of interconnecting cables. Match several wire colors at each connector. Assure that connections are secure.

CAUTION

Assure that cables are free to move (not kinked or pinched). During assembly, be careful not to damage wires.



Pinball Assembly, Playfield Pitch Angle, and Leg Leveller Details

[] 5.Raise the hinged backbox upright. Latch the clamp on the back of the cabinet and backbox.

[] 6.Unlock the backbox. Remove the backbox glass. To avoid scratches, carefully store the glass. Install mounting bolts and flat washers through the bottom holes of the backbox. The bolts mate with threaded fasteners in the cabinet and secure the backbox.

WARNING

NEVER transport a pinball game with the hinged backbox erect. Prevent equipment damage and personal injury! When you lower the backbox, insert a layer of protective material between cabinet and backbox.

[] 7.Extend each leg leveller slightly below the leg bottom. All four foot pads should be extended about the same distance. Remove the cabinet from its support and place it on the floor.

[] 8.Raise the playfield and examine the following areas...

- Are cables clear of moving parts?
- Have wires come loose during shipment?
- Is there loose solder or other foreign material in switches or sockets? Such material may come loose in shipment. It could short switches or lamp sockets.
- Is the power transformer jumpered for local line conditions? Transformer plug wiring must correspond to location voltage. See the table below. Also examine the BACKBOX WIRING SCHEMATIC.
- Are coils properly soldered? Vibration in shipment may cause loss of contact.

Transformer Wiring for USA/Europe

Use Main Transformer MT00-00163-A000
& Flipper Transformer 5610-10355-00

Local Line Voltage	Install Main Transformer Wiring	Install Flipper Transformer Wiring
115 VAC	Xfmr Inputs 1 & 5 at CBJ1; 2-8, 3-6, 7-10 at CBJ1	Xfmr Inputs 1 & 3; jumpers 1-5, 3-7 at transformer
230 VAC	Xfmr Inputs 1 & 5; jumpers 3-8, 7-10 at CBJ1	Xfmr Inputs 1 & 7; jumpers 3-5 at transformer

Transformer Wiring for Japan

Use Main Transformer MT00-00164-A000
& Flipper Transformer 5610-10355-00

Local Line Voltage	Install Main Transformer Wiring	Install Flipper Transformer Wiring
103.5 VAC	Xfmr Inputs 1 & 3 at CBJ1; no jumpers	Xfmr Inputs 1 & 2; jumpers 1-5, 2-6 at transformer

[] 8. Lower the playfield. Adjust leg levellers for proper playfield level (side-to-side). Rest your level on the playfield, not the cabinet nor the playfield cover glass.

[] 9. Adjust leg levellers for a playfield pitch (incline) of seven degrees. Rest your level on the playfield, not the cabinet nor the playfield cover glass. To maintain step 7 and 8 settings, tighten the nut on each leg leveller shaft.

CAUTION

Playfield pitch adjustments can affect the operation of the plumb bob tilt. The plumb bob tilt is inside the cabinet. After completing playfield pitch adjustments, set this mechanism for desired operation.

[] 10. Move the game into the desired location. Recheck the level and pitch angle of the playfield.

[] 11. Check that the required number of balls are installed in the game. *TRUCK STOP* uses three balls.

[] 12. Clean and reinstall playfield glass. Prepare the game for play.

GAME OPERATION

STUCK SWITCH INDICATION. Turn on the power switch (at the bottom, right front corner of the cabinet). The game resets its drop targets. When the game powers up, names of the closed switches are briefly displayed. Then the phrase GAME OVER appears, indicating that the game is ready for play.

CREDITS. The game should accept coins and display the appropriate number of credits. Pressing the CREDIT button causes the Multi-Ball™ Kicker to kick out the first ball. This ball enters the shooter lane. Initially, the game holds its three balls in the ball trough.

Each time a player presses the CREDIT button, the game posts one player. Remaining credits are reduced by one. The game awards points earned by the players.

BONUS SCORE. The Multi-Ball kicker serves the first ball to the shooter lane. This serve initiates play. Eventually each player's last ball enters the outhole. Then the top-mounted kicker sends the ball to the Multi-Ball™ kicker. Sensors in the ball trough pick up the ball. Reacting, the game computer adds the bonus score to the total game score. Meanwhile the game advances the player-up or current ball indication by one position.

MATCH. After each player completes his game, a random matching number appears in the display. This number may equal the last two digits in a player's score. If so, the player earns another game.

EXTRA BALLS are played immediately after the player's third and last ball enters the outhole. The player-up and current ball aren't advanced before the game serves the extra ball.

BONUS GAME. At the end of the game, the game computer reads the Hiscore Award register. According to the setting of this register, free games may be awarded. Free games result when a player beats the score (or the score exceeds) 10 million.

TILT. Tilting the game results in loss of the ball in play. Bonus points are not awarded, the flippers go dead, and none of the playfield switches score. The purpose of the tilt penalty is to discourage the player from jostling the game in an attempt to prolong gameplay. Game action returns to normal after the kicker serves the ball. Then the Multi-Ball kicker kicks the ball to the shooter lane. At this point, a new turn commences.

SELECT INITIALS FEATURE

The player can use the right flipper button to advance through displayed letters. Or he can use the left flipper button to back up through displayed letters. A player enters each of his three letters by pressing the CREDIT button. The player is given a certain period of time to enter a letter. Otherwise the game enters the default letter "A."

During Attract Mode, initials and scores appear on the display. To view scores and initials, players press the lower left button.

GAME THEME

TRUCK STOP captures America at its most manic, and spins it on eighteen big rubber wheels... The player (truck driver) is pitted against the Interstate System and other gearjammers. The truck route winds between five proud cities of the sun belt and rust belt: LA, Denver, Dallas, Chicago and New York. Each has its own spirit and its own adventure. The player must show his true grit over long stretches of open road. A long tank of gasoline is a job. And it's power, light and the way back home.

GAME RULES

- The ramp shot **scores** city letters.
- To qualify for **locking a ball**, spot flashing city lights.
- To reach the **destination** city and qualify for release, spell C-I-T-Y **five times**.

- When "Multi-Ball" is lit, the Gas Station releases Multi-Ball.
- When the ball lock is lit, the Gas Station locks the ball.
- Center drop targets qualify the center target to advance the bonus multiplier.
- When lit, mushrooms spot city letters.

GAME FEATURES

CITY BONUS FEATURE

The "City" bonus is a grid of five lamp columns. (Sometimes we refer to this grid as a "card.") Each column contains four "City" letter indicators and one "City" indicator. There are also three "Destination Log" lamps.

A turn is one ball of the game, played by one individual. After each turn, players collect the "City" bonus at the out-hole. The value of this bonus is affected by the bonus multiplier. The maximum multiplier value is seven.

The "City" indicator reads from left to right as follows: LA, Denver, Dallas, Chicago, New York.

Players can light "City" indicators by lighting C-I-T-Y in the column above the city. Another way to light a "City" indicator is to collect a "Spot City" feature.

A completed grid lamp advances when two conditions occur: (1) All lamps in the grid are complete. (2) The "Jackpot" bonus is either completed or the timer runs out.

The points awarded are...

- 5,000 for each lit "City" letter.
- 100,000 for the first lit "Destination Log" indicator.
- 200,000 for the second lit "Destination Log" indicator and 300,000 for the third.

BONUS MULTIPLIER FEATURE

The Bonus Multiplier has three parts: (1) Four green indicator lights, (2) three inline drop targets and (3) one green stationary target. Bonus Multiplier values are from one to seven times the base score. Knocking down all three inline drop targets starts the timer.

While the timer is running, the inline drop targets remain down. The center, green target advances the multiplier.

When a player hits the center target, the multiplier advances and the inlines reset.

The earned multiplier level determines how long the timer runs.

Example: The timer runs longer for a 3X multiplier than it does for 2X. Likewise, it runs longer for 4X than for 3X; etc.

JACKPOT FEATURE

Players who complete a "City" indicator grid qualify for the Jackpot feature. This award is controlled by a timer.

The object of this feature is to collect the Jackpot before the timer runs out. While the timer runs, the player must make all four ramp shots (C-I-T-Y).

Turning on the Load Lamp increments the Jackpot value by 100,000. A player sets the Jackpot value when he collects the Jackpot. Once set, the Jackpot value applies to all players. That is, after one player receives the Jackpot, his opponents qualify for that same value. They may each try for the Jackpot. However, once a player sets the Jackpot value, no player can raise it. After the game is over, Jackpot reverts to one million. The maximum jackpot is six million.

MULTI-BALL CHALLENGE

Locking both balls back into the timer-controlled "Truck Stop" awards the following:

- First, the player wins all the unlit "City" grid (card) indicators.
- After the entire card lights, the game animates card lamps as a player reward. When the animation effect is completed, the game enters Jackpot Mode, releasing both balls.

CAPTIVE BALL FEATURE

When the "Truck Stop" is lit, a player can lock balls there. After the player lights a number of cities, the "Truck Stop" lights for ball capture. (The required number of cities is operator adjustable. See Chapter 2.)

To lock a ball, a player must shoot the ball into the "Truck Stop." The game transports the locked ball to the "Dock Storage Area" on the right. Then the game serves the next ball to the shooter.

At this time, "Truck Stop" lights indicate readiness for ball release. If the player misses the opening "Truck Stop" shot, the Release Light goes out. To relight Release, the player must make a city.

EXTRA BALL FEATURE

This feature consists of two orange targets. When activated and hit, these targets light the "Dock" Saucer, indicating a potential extra ball. When lit, the "Dock" awards the extra ball. The player earns this extra ball by activating the "Dock."

To activate the "Dock," the player makes both targets within a certain amount of time. (Adjustable feature. See Chapter 2.)

BLUE TARGET FEATURE

There are six blue targets. Completing the six targets lights the ramp for "Spots City."

CHAPTER 2: TAILORING THE GAME TO YOUR PLAYERS

Making Game Adjustments

**Game Adjustments: Register Access And Modification
Registers & Options Table**

Coin Setup Procedure

Pricing Table

Game Checkup Registers

Self-Percentaging

MAKING GAME ADJUSTMENTS

INTRODUCTION

The game system is designed to be user friendly. Your game provides you with a wealth of easily accessible information. Press the TEST button and the displays light up with assistance messages. Just by reading the displays and using three cabinet buttons, you can make numerous adjustments...

- Alter difficulty levels
- Change awards
- Modify threshold level settings
- Check special awards
- Monitor replay percent
- Keep track of income

GAME ADJUSTMENTS

REGISTER ACCESS AND MODIFICATION

- [] 1. Enter Test Mode by pressing the TEST button inside the front door.
- [] 2. Change the category by pressing either flipper button.
- [] 3. Select the category and open its directory by pressing the CREDIT button.
- [] 4. Change the directory by pressing either flipper button.
- [] 5. Select and open a register in the directory by pressing the CREDIT button.
- [] 6. Change register values by pressing either flipper button.
- [] 7. Lock in selected register values by pressing CREDIT.
- [] 8. For more register changes or changes in the same category, repeat steps 4 through 7. To exit Test Mode, press the TEST button.

Registers and Options Table

Category	Register Directory			
	Player #1 & 2 Displays	Player #3 & 4 Displays	See Notes	Register Description
Game Status	Total coins	XXXXXXX	1	Total, all chutes
	Games played	XXXXXXX	1	Number of games
	Replays awarded	XXXXXXX	1	Number of replays
	Replays percent	XX	1	Percent of replays
	Avg game time	XX XX	1	Minutes: seconds
	Balls played	XXXXXXX	1	Number of heats
	X-balls awarded	XXXXXXX	1	Number of extra balls
	X-ball percent	XX	1	Percent extra balls awarded
	Avg ball time	XX XX	1	Minutes: seconds
	Clear account	NO**	2	Clear account time
Replay Status	Level 1 special	XXXXXXX	1	No. of 1st Threshold specials awarded
	Level 2 special	XXXXXXX	1	No. of 2nd Threshold specials awarded
	Level 3 special	XXXXXXX	1	No. of 3rd Threshold specials awarded
	High score spcl	XXXXXXX	1	No. of high score specials awarded
	Playfield special	XXXXXXX	1	No. of playfield specials awarded
	Match special	XXXXXXX	1	No. of match feature specials awarded
Scoring Status	Level 1 score	XXXXXXX	3	Set and display first award level
	Level 2 score	XXXXXXX	3	Set and display second award level
	Level 3 score	XXXXXXX	3	Set and display third award level
	High score =	XXXXXXX	3	Set high score replay level
	Times HS beaten	XXXXXXX	1	Times point total exceeded high score
	Level 1 percent	XX	1	% of first level replays awarded
	Level 2 percent	XX	1	% of second level replays awarded
	Level 3 percent	XX	1	% of third level replays awarded
	Target percent	XX	4	Enter desired % replays awarded for reaching first threshold level
Coin Status	Left coins =	XXXXXXX	1	No. of coins through left coin chute
	Middle coins =	XXXXXXX	1	No. of coins through middle coin chute
	Right coins =	XXXXXXX	1	No. of coins through right coin chute
	Total coins =	XXXXXXX	1	Total coins through all chutes
	Bonus credits	XXXXXXX	1	No. of bonus credits awarded
Coin Setup***	Left XX Coin	YY CRDT, ZZ BONS	10	Left coin chute setup
	Middle XX Coin	YY CRDT, ZZ BONS	10	Middle coin chute setup
	Right XX Coin	YY CRDT, ZZ BONS	10	Right coin chute setup

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

**Factory Setting.

***See Coin Setup Procedure examples

Category	Register Directory			
	Player #1 & 2 Displays	Player #3 & 4 Displays	See Notes	Register Description
Misc. Information	Total Time =	XXXXXXX	1	Time (in minutes) that the game is powered up. Starts when the game is ready for play.
Game Setup	Factory setting	No**	2	Reset to factory selected options
	Credit limit =	10**	5	Set credit limit from 1 through 4
	Balls allowed	03**	5	Number of balls allowed (1-5)
	Levels award	Replay**	6	Set award for exceeding thresholds
	Special award	Replay**	6	Set award for lighting Special lights
	HiScore award	3 Replay**	7	Set award for exceeding high score
	Bkground sound	On**	8	Provide background music
	Match percent	10**	5	Set allowed match percent, 00-10%
	Display credits	Yes**	2	Display credits when game is over
	No limit replay	Yes**	2	Allow more than 1 special per player
	Free play	No**	2	NO = coins, or YES = Free Play Mode
	Tilt warning	01**	5	Number of tilt warnings
	Attract sounds	On**	8	Attract sound in Game-Over Mode
Game Checkup	Slingshots	On**	8	Activate slingshots
	Game options	Medium**	9	Set difficulty level
	Maximum players	04**	5	Number of players allowed (1-4)
	Buy-in balls	02**	5	Number of buy-in turns (0-3)
	All lamps			Flashes playfield lamps.
	Single lamps			Lamps flash sequentially until you press either lower cabinet button. Advance to next lamp in test by pressing lower right cabinet button. Press lower left cabinet button to back up to previous test.
	Display Test			Continuously cycles through all segments of a selected digit in either display module. Press the lower right cabinet button to advance to the next digit to the right. Press the lower left cabinet button to back up one digit.
	Coil Test			To advance to the next solenoid, press the lower right cabinet button. To test the same solenoid, press the lower left cabinet button.
	Program version			Program version of U2 and U3
	Switch Test			Game displays name of stuck switch

NOTES:

1. Feature can only be reset to 00.
2. Feature can only be changed to YES (enabled) or NO (disabled).
3. Feature can be changed in 100,000 point steps.
4. Feature has a value from 00 through 20. If this setting is 00, self-percentaging feature is off (disabled).
5. Feature can be changed in unit steps.
6. Feature can be changed to REPLAY, XBALL, POINTS or NOTHING.
7. Feature can be changed to 3 REPLAYS, 2 REPLAYS, 1 REPLAY or NOTHING.
8. Feature can be changed to ON (enabled) or OFF (disabled).
9. Feature can be changed to XX-EASY, X-EASY, MEDIUM, HARD, X-HARD or XX-HARD.
10. Coin value XX buys YY credits. The game awards bonus credits when the player buys ZZ credits.

Category	Register Directory	
	Player #1, 2, 3 & 4 Displays	Register Description
Help Read Me Help	AV BALL TIME IS HIGH XX YY	If average ball time is more than 60 seconds.
	AV BALL TIME IS LOW XX YY	If average ball time is less than 30 seconds.
	RAISE LEVEL 1 TO X,X00,000	The next adjustable threshold appears as X,X00,000 when both of these conditions occur: (1) "Threshold #1 Percent" exceeds "Target Percent." (2) At least 100 games have been played.
	LOWER LEVEL 1 TO X,X00,000	Adjustable threshold appears as X,X00,000 when both of these conditions occur: (1) "Threshold #1 Percent" is less than "Target Percent." (2) At least 100 games have been played.
	CHECK SWITCHS IN GAME CHECKUP	One or more playfield switches remain closed.
	SWITCH XX MAY BE OPEN	During at least five minutes of play, one switch hasn't closed.
	CHECK LEFT COINS CHUTE	Left coin switch is stuck.
	CHECK MIDDLE COINS CHUTE	Middle coin switch is stuck.
	CHECK RIGHT COINS CHUTE	Right coin switch is stuck.
	All OK	Game is okay. If the game detects a problem, assistance information appears on game displays.

COIN SETUP PROCEDURE

You may use factory settings for convenience, or price a game of pinball as you desire. Coin Setup is a simple procedure involving three settings for each coin chute. (U.S. games have two coin chutes.) Suggested settings are provided in the Pricing Table, later in this chapter.

Your coin settings alter values in the Coin Setup Category of game registers. (See the Registers and Options Table.) First you select the left or right coin chute. Then you set the cost of a game. You do this by adjusting the ratio, number of coins per number of credits (games). Finally you set the

bonus value. We'll define "bonus" in a moment. But first, let's get the hang of coin setup with a few examples...

EXAMPLE 1

You want to set the right coin chute at three credits for two coins. Also, you don't want to award any credits for the first coin.

[] 1. Enter the Coin Setup category.

[] 2. Enter the directory

[] 3. Set the directory to RIGHT, 02 COIN, 03 CREDIT and 00 BONS.

See Example	Step	Player 1 Display	Player 2 Display	Player 3 Display	Player 4 Display
1	1	RIGHT	XX COIN	YYCREDIT	XX BONS
1	2	RIGHT	02 COIN	03 CREDIT	00 BONS
2	1	RIGHT	XX COIN	YY CREDIT	XX BONS
2	2	RIGHT	01 COIN	01 CREDIT	02 BONS

EXAMPLE 2

You want to set the right coin chute at three credits for two coins. The game must award one credit for the first coin. You also desire the game to award two credits on the second coin.

BONUS CONCEPT. To achieve the Example 2 coin setting, you must specify bonus credits (XX BONS). You may specify any two-digit number. Select the number of coins that enter a coin chute before bonus is awarded. No more than one bonus credit can be awarded.

[] 1. Enter the Coin Setup category.

[] 2. Enter the directory.

[] 3. Set the directory to RIGHT, 01 COIN, 01 CREDIT and 02 BONS.

Pricing Table

*Indicates recommended setting

Country	Coin Chute			Games/Coin	Player 1 Display	Player 2 Display	Player 3 Display	Player 4 Display
	Left	Center	Right					
USA	25c	-	25c	1/25, 4/\$1* (1)	LEFT RIGHT	01 COIN 01 COIN	01 CREDIT 01 CREDIT	00 BONS 00 BONS
				1/50, 2/75, 3/\$1	LEFT RIGHT	02 COIN 02 COIN	01 CREDIT 01 CREDIT	03 BONS 03 BONS
				1/50, 2/\$1	LEFT RIGHT	02 COIN 02 COIN	01 CREDIT 01 CREDIT	00 BONS 00 BONS
				1/25, 3/50, 6/\$1	LEFT RIGHT	01 COIN 01 COIN	01 CREDIT 01 CREDIT	02 BONS 02 BONS
				2/25, 8/\$1	LEFT RIGHT	01 COIN 01 COIN	02 CREDIT 02 CREDIT	00 BONS 00 BONS
Canada	25c	-	\$1	1/25, 5/\$1*	LEFT RIGHT	01 COIN 01 COIN	01 CREDIT 04 CREDIT	00 BONS 04 BONS
West Germany	1DM, 2DM, 5DM			1/1, 2/2, 7/5 DM	LEFT MIDDLE RIGHT	01 COIN 01 COIN 01 COIN	01 CREDIT 02 CREDIT 07 CREDIT	00 BONS 00 BONS 00 BONS
				1/1, 2/2, 6/5 DM*	LEFT MIDDLE RIGHT	01 COIN 01 COIN 01 COIN	01 CREDIT 02 CREDIT 06 CREDIT	00 BONS 00 BONS 00 BONS
				1/1, 3/2, 9/5 DM	LEFT MIDDLE RIGHT	01 COIN 01 COIN 01 COIN	01 CREDIT 02 CREDIT 09 CREDIT	00 BONS 01 BONS 00 BONS
				1/2x1DM, 1/2, 3/5DM	LEFT MIDDLE RIGHT	02 COIN 01 COIN 01 COIN	01 CREDIT 02 CREDIT 05 CREDIT	00 BONS 00 BONS 00 BONS
				2/1, 5/2, 14/5DM	LEFT MIDDLE RIGHT	01 COIN 01 COIN 01 COIN	02 CREDIT 05 CREDIT 14 CREDIT	00 BONS 00 BONS 00 BONS
France	1F, 5F, 10F			1/1, 3/5, 7/10F*	LEFT MIDDLE RIGHT	01 COIN 01 COIN 01 COIN	01 CREDIT 03 CREDIT 07 CREDIT	00 BONS 00 BONS 00 BONS
Belgium	20F - 20F			1/20, 1/20*	LEFT RIGHT	01 COIN 01 COIN	01 CREDIT 01 CREDIT	00 BONS 00 BONS
Switzer- land	1F - 2F			1/1, 7/2*	LEFT RIGHT	01 COIN 01 COIN	01 CREDIT 07 CREDIT	00 BONS 00 BONS
Japan	100Y - 100Y			1/100*	LEFT RIGHT	01 COIN 01 COIN	01 CREDIT 01 CREDIT	00 BONS 00 BONS
Italy	200L - 500L			1/2x200, 3/2x500*	LEFT RIGHT	02 COIN 02 COIN	01 CREDIT 03 CREDIT	00 BONS 00 BONS
Australla	20c - 20c			1/3x20, 1/3x20*	LEFT RIGHT	03 COIN 03 COIN	01 CREDIT 01 CREDIT	00 BONS 00 BONS

Pricing Table, Continued

*Indicates recommended setting

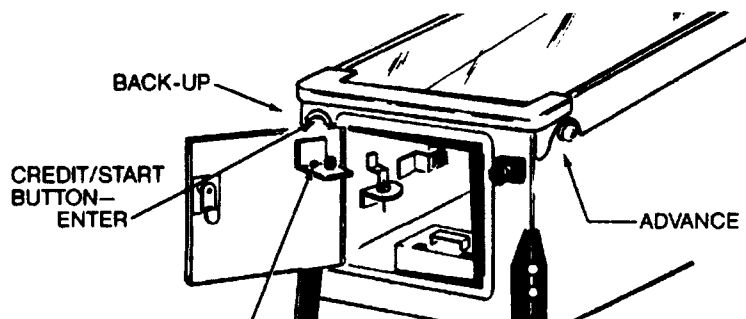
Country	Coin Chute			Games/Coin	Player 1	Player 2	Player 3	Player 4
	Left	Center	Right		Display	Display	Display	Display
United Kingdom	10 Pence-1 Pound			1/2x10P, 6/1L*	LEFT RIGHT	02 COIN 01 COIN	01 CREDIT 06 CREDIT	00 BONS 00 BONS
Denmark	1Kroner-10Kroner			1/2x1Kr, 7/10 Kr*	LEFT RIGHT	02 COIN 01 COIN	01 CREDIT 07 CREDIT	00 BONS 00 BONS
Finland	1Markka-5 Mka			1/2x1 Mka, 3/5 Mka*	LEFT RIGHT	02 COIN 01 COIN	01 CREDIT 03 CREDIT	00 BONS 00 BONS
Norway	1Kroner-5 Kroner			1/3x1 Kr, 2/5 Kr*	LEFT RIGHT	03 COIN 01 COIN	01 CREDIT 02 CREDIT	00 BONS 00 BONS
Sweden	5 Kroner-5 Kroner			2/5 Kr*	LEFT RIGHT	01 COIN 01 COIN	02 CREDIT 02 CREDIT	00 BONS 00 BONS
Holland	1 Guilder - 1 G			1/1 G*	LEFT RIGHT	01 COIN 01 COIN	01 CREDIT 01 CREDIT	00 BONS 00 BONS

GAME CHECKUP REGISTERS

The following registers are located in the Game Checkup category of Test Mode...

- Lamps
- Single lamps
- Display Test
- Coil Test
- Program version
- Switch Test

Except the Program Version register, these are Diagnostic Test registers. The Program Version register displays EPROM program version information. The application of each Diagnostic Test register is explained in Chapter 4. An abbreviated description of these registers is given in the Game Checkup category of the *Registers & Options Table*.



DIAGNOSTIC TESTS

Operate Diagnostic Tests as follows:

NOTICE

At any time, you can exit from Test Mode by pressing the TEST button.

[] 1. Enter the Game Checkup category's directory. Select a register by using the CREDIT button and either of the flipper buttons. The procedure is described at Steps 1 through 4 of Game Adjustments.

[] 2. When the selected register appears in the display, press the CREDIT button. Pressing CREDIT opens the register and begins tests. Until you exit the directory, flipper buttons are used in sequencing through register tests.

[] 3. When the test is completed, (except Switch Test), press the CREDIT button again. Pressing CREDIT causes the game to enter the next register. Repeating this procedure advances you to the end of the directory. The last register in the directory is Switch Test.

[] 4. After completing Switch Test, exit from the register and the directory. Do this by holding in the CREDIT button for one full second. Or exit from Test Mode by pressing the TEST button.

NOTICE

SINGLE LAMPS TEST OR COIL TEST. Holding in the right flipper button advances the display from driver to driver. Holding in the left flipper button displays drivers in reverse.

Chapter 4, Troubleshooting contains Diagnostic Test procedures for the following test registers...

- All Lamps
- Single Lamps
- Display Test
- Coil Test
- Switch Test

SELF-PERCENTAGING

Self-Percentaging is the game's ability to automatically adjust the First Replay Threshold score. This score is adjusted to attain a desired replay percentage known as Target Percent.

Self-Percentaging also applies to extra balls, when used instead of replays.

Self-Percentaging only adjusts the score level of the First Replay Threshold. Other award features aren't adjusted. The Second Replay Threshold Level and the Third Threshold Level aren't affected by Self-Percentaging.

The Self-Percentaging routine goes into effect after 200 games are played. Then the game program monitors the current replay percentage of the First Replay Threshold. If necessary, the program makes an adjustment after every 50 games.

The following registers are located in the Scoring Status category of your game's Test Mode...

- | | |
|---------------------------|-------------------|
| A.Level 1 Score | F.Level 1 Percent |
| B.Level 2 Score | G.Level 2 Percent |
| C.Level 3 Score | H.Level 3 Percent |
| D.Highest Score | I.TARGET Percent |
| E.Times High Score Beaten | |

These registers are described in this section.

FIRST, SECOND OR THIRD REPLAY THRESHOLD. To set or check the current score level of a replay threshold:

[] 1.Step through the Test Mode categories until you reach SCORING STATUS.

[] 2.To select SCORING STATUS and enter its directory, press the CREDIT button.

[] 3.The first register displayed is LEVEL 1 SCORE. You'll find similar registers entitled LEVEL 2 SCORE and LEVEL 3 SCORE. These registers display the current score levels of the first, second and replay thresholds. Choose the desired register.

[] 4.Use either flipper button to select any value from zero to 9,900,000. This value can only be changed in steps of 100,000 points.

[] 5.To set the desired score level, press the CREDIT button.

[] 6.Use either flipper button to exit the directory. Or press the TEST button and exit the Test Mode.

REPLAY PERCENTAGE. To adjust replay percentage for the First Replay Threshold...

[] 1.Step through the game's Test Mode until you reach the category titled SCORING STATUS.

[] 2.To select this category, press the CREDIT button and enter the category's directory.

[] 3. Select the Target Percent register in the directory with either flipper button. This register displays the desired percentage of replays to be awarded for reaching the First Replay Threshold Level.

[] 4. Suppose that you want to award a replay in 15 percent of games. Use either flipper button to select 15 percent. Then press the CREDIT button to set the percentage. The register will then display 15 percent as your goal or Target Percent.

[] 5. To exit the directory, use either flipper button. To exit Test Mode, press the TEST button.

NOTICE

When the Target Percent register is set at zero, the Self-Percentaging feature is disabled. This register defaults to 10 percent when the Factory Setting register is disabled. The Factory Setting register appears in the Game Setup category.

TOTAL REPLAY PERCENTAGE will be 10 or 15 percent higher with the addition of Match, Special and High Score credits.

FIRST, SECOND AND THIRD REPLAY THRESHOLD. To manually check the replay percentage of the three replay threshold levels...

[] 1. Step through Test Mode until you reach the category titled Scoring Status.

[] 2. Select Scoring Status and enter its directory by pressing the CREDIT button.

[] 3. Use either flipper button to select the register in the desired directory. (That is, Level 1 Percent, Level 2 Percent or Level 3 Percent.) This register displays the replay percentage awarded for reaching the desired replay threshold

level. Monitor self-percentaging progress by comparing the displayed value with Target Percent.

[] 4.To exit the directory, use either flipper button. Or press the TEST button and exit Test Mode.

ADJUSTMENT SIZE. You can determine the size of Self-Percentaging adjustments to the First Replay Threshold score. Check the difference between Target Percent and replay percentage awarded for reaching First Replay Threshold. (Target Percent is an operator entry.)

- A 10 percent or greater difference results in a 10 percent adjustment.
- A five to 10 percent difference results in a five percent adjustment.
- A difference less than five percent results in a one percent adjustment.

CLEAR ACCOUNT REGISTER. To reinitiate the Self-Percentaging process, enable the Clear Account register (enter YES).

HIGH SCORE LEVEL. To adjust the high score level at which a replay (or replays) is awarded...

[] 1.Step through the game's Test Mode until you reach the category titled Scoring Status.

[] 2.Press the CREDIT button to select Scoring Status and enter its directory.

[] 3.Use either flipper button to select the Highest Score register in the directory. This register displays the high score for which the replay level is set. High score is also known as High Score to Date, HS and HSTD.

[] 4. Use either flipper button to select any value from zero to 990,000. The Highest Score register value can only be changed in steps of 100,000 points.

[] 5. Set the desired score level by pressing the CREDIT button.

[] 6. Use either flipper button to exit the directory. Or exit Test Mode by pressing the TEST button.

HIGH SCORE LEVEL. To check the number of times the high score was exceeded...

[] 1. Step through the game's Test Mode until you reach the category Scoring Status.

[] 2. Press the CREDIT button to select this category and enter its directory.

[] 3. Use either flipper button to select the Times HS Beaten register in the directory. This register displays the number of times the high score was exceeded. This information aids you in deciding what point level the Highest Score register will contain.

[] 4. Use either flipper button to select any value from zero to 9,900,000. The Highest Score register value can be changed only in steps of 100,000 points.

[] 5. Press the CREDIT button to set the desired score level.

[] 6. Use either flipper button to exit the directory. Exit Test Mode by pressing the TEST button.

CHAPTER 5: UNIQUE PARTS

ELECTRICAL PARTS

Cables
Electronics

Electromechanical Parts

HARDWARE

Backbox, Cabinet and Playfield Parts
Ballguides, Plates, Ramps, Rails and Wireforms

Brackets With Switches
Brackets Without Switches
Bumpers, Posts and Studs

Glass and Plastic Parts
Miscellaneous Hardware

ELECTRICAL PARTS

CABLES

Cabinet Cable	H-12411
City Switches Cable	A365-00H08-0032
Display/Cont Cable	H-12410
Marquee Cable Assembly	A365-00H08-0031
Playfield Cable Assembly	A365-00H08-0005
Playfield Lamp Cable	H-12416
Playfield Solenoid Cable	H-12417
Playfield Switch Cable	H-12415
Top Light Cable	H-12412

ELECTRONICS

Electro Cap, 11,000 uF/20V	0175-323D8-FXBX
Electro Cap, 160 uF/250V	0175-242NA-EXJX
General Illum PCB	A365-07260-0002
Power Module	A365-00H08-0013
Sound Board	D-1158-2001
Sound Interface Assembly	C-12417
Sound Interface PCB	5768-12345-00

ELECTROMECHANICAL PARTS

Ball Kicker Assembly	A365-05250-0001
Ball-Scoop Assembly	A365-06400-0002
Ball-Scoop Assembly: Notched	A365-06400-0003
Flipper with Shaft	0365-04800-0005
Lane-Change™ Mech	A365-07500-0011
Left Ejector	A365-05320-0013
Mushroom Assembly, red	A365-05750-0001
Mushroom Assembly, yellow	A365-05750-0003
Right Ejector, S/L	A365-05310-0013

Right Ejector, S/L, U/A
Vertical Kicker Assembly

A365-05310-0023
A365-05250-0003

HARDWARE

BACKBOX, CABINET AND PLAYFIELD PARTS

Backboard Assembly	A365-00H08-0009
Backboard, Screened	0365-00H08-1005
Backbox Assembly	2001-BB

Bottom Arch, Screened	31-1008-2001
Cabinet Assembly	2001-CAB
Logo Nameplate	0365-17009-0001

Pinball Cabinet	11-881
Pinball Backbox	11-882
Playfield & Insert Assy	A-11-2001-PL

Playfield Assembly	2001-PL
Playfield, Screened	31-1002-2001
Screened Shooter Gauge	31-1009-2001

Side Molding Assembly	A-12359-1
Speaker Grille	01-8996
Speaker Panel	0365-04200-0011

U.S.A. Cashbox Assembly	A-8567-2001
Vent Grille	01-8998

BALLGUIDES, PLATES, RAMPS, RAILS AND WIREFORMS

Ballguide Plate w/3 holes	0365-04750-0008
Ballguide Plate w/5 holes	0365-04750-0009
Channel Ballguide	0365-03760-0001

Channel Ballguide-Left	0365-03760-0002
Channel Ballguide, Overhead	0365-03760-0003
Flat Plate	0365-04700-0019

L. Flipper Return Frame	01-6794-L-2
Lock Mounting Plate	0365-04700-0016
Main Ramp Assembly	A365-00H08-0023
Rail, 1/2 x 33-1/2"	0365-04200-0113
Ramp Entry Plate, Top	0365-04600-0005
Ramp Entry Plate, Bottom	0365-04600-0006
Ramp Entry Plate, Shooter	0365-04600-0007
R. Flipper Return Frame	01-6794-R-2
Right Outrail	0365-00H08-1017
Wireform Ballguide, 1-1/8"	0365-00151-1125
Wireform Ballguide, 2-1/4"	0365-00151-2250
Wireform Ballguide, 1-5/8"	0365-00157-1625
Wireform for Microswitch	0365-02160-0102
Vacuformed, Main Ramp	0365-00H08-1015

BRACKETS WITH SWITCHES

Switch Assembly, Eject hole	A365-06900-0012
Switch Assembly Lane-select	A365-06900-0022
Switch Assy, Spinner Microsw	A365-06900-0026
Switch Assembly, Mushroom	A365-06900-0016
Switch Assembly, Slingshot	A365-06901-0001
Switch Assembly, Right Spinner	A365-06900-0020
Switch Assembly, 3-inline target	A365-06900-0025
Switch Assembly, sling, w/Diode	A365-06901-0002

BRACKETS WITHOUT SWITCHES

Back Panel Bracket	0365-00172-0001
Backbox-mtg Bracket, R	0365-02700-0054
Ballstop Bracket	0365-02700-0056
Backboard Bracket	0365-02700-0042
Gusset Bracket	0365-03000-0013
Hanger Bracket Assembly	A-12360
Hinge Backup Bracket	01-8992

Hold-Down Bracket	0365-02800-0007
Lamp Bkt, Vacuformed	0365-02950-0010
1" L, Scoop Bracket	0365-02700-0005

PCB-Mounting Bracket	0365-02860-0001
Ramp Bracket	0365-02700-0055
Ramp Support Bracket	0365-02700-0040

3" L, Scoop Bracket	0365-02700-0006
Vacuformed Support "C" Bkt	0365-02950-0011

BUMPERS, POSTS AND STUDS

Hex, #6-20 x 1 Stud, 1-1/16" L	0365-04400-0003
Hex, #6-20 x 1 Stud, 1-1/2" L	0365-04400-0004
Hex, #6-32 x 1 Stud, 1-11/16" L	0365-04400-0005

Mini Post, 1-3/4" L	0365-04400-0013
Post, 2-1/4" L	0365-04400-0011
Post, 2-3/32" L	0365-04400-0012

Rubber Bumper 7/16" diameter	0365-17041-0011
Rubber Bumper 3/4" diameter	0365-17041-0013
3/8" x 1" Post	0365-17042-2201

Willy Post, Transpnt Red Plastic	03-8044-9
----------------------------------	-----------

GLASS AND PLASTIC PARTS

Actuator Button	0365-17042-5015
Backbox Glass	08-7463
Backglass, Screened	31-1357-2001

Game Decals	0365-00H08-1021
Glass Assembly	A-12361
Mylar Insulator	0365-03050-0002

Nylon, PCB Spacer, 1/4"	0365-17042-2003
Nylon, PCB Spacer, 3/8"	0365-17042-2004
Nylon Spacer, 1.095"	0365-17042-2002

Playfield Mylar	0365-00H08-1009
Screened Plastics	31-1006-2001

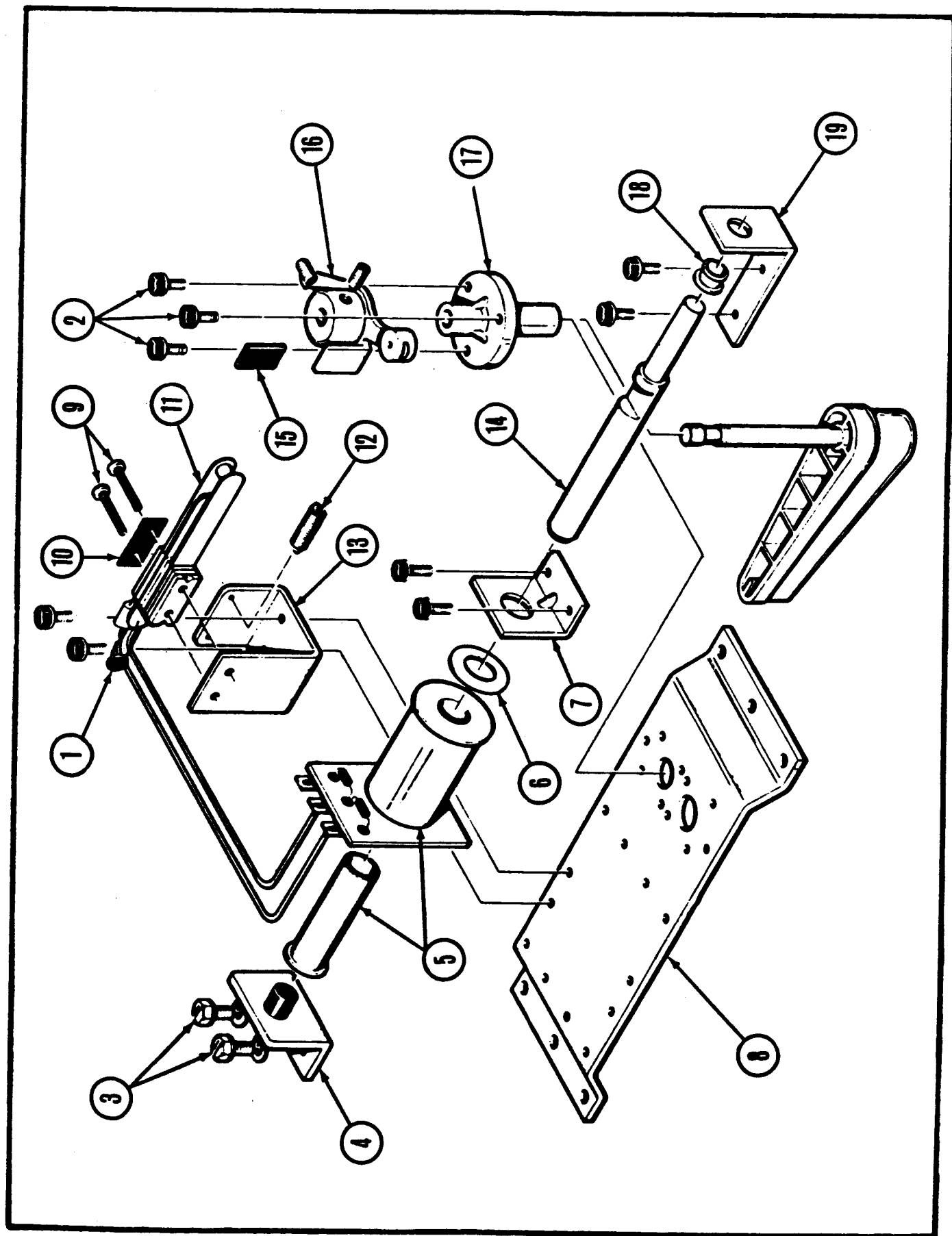
MISCELLANEOUS HARDWARE

Glass-Locking Cam	0365-04300-0020
Lamp Arch Assembly	A365-07500-0011
Left Flipper Rtn Frame	A-8108-L-2

Marquee Support Bar	A365-00H08-0033
Right Flipper Rtn Frame	A-8108-R-2
Shooter Gauge	0365-00H08-1010

Tag	M051-00H08-A007
-----	-----------------

Top-Left Flipper: Parallel-Wired, Single Switch

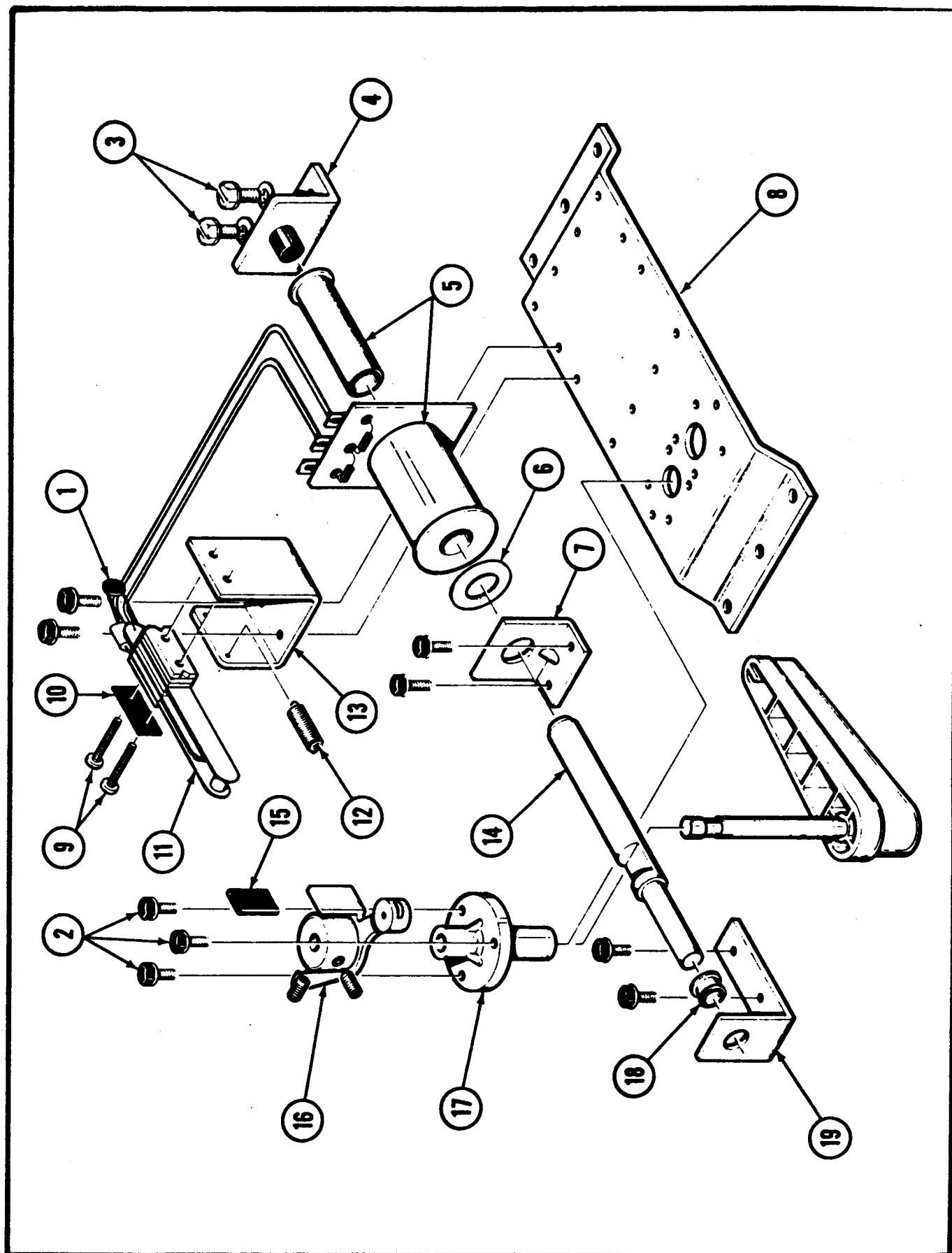


Flipper Assembly Parts List--Single Switch, Top-Left Flipper

Part No. A365-05040-0001

Item	Part Number	Description	Qty
1	0171-097P6-AXPC	Capacitor: 0.01uF/500V ceramic disc	1
2	0017-00101-0184	#8-32 x 3/8" hex head screw	9
3	0017-00101-0816	#10-32 x 3/8" slotted hex head screw	2
4	A365-00024-0000	Core plug and bracket assembly	1
5	AC70-00026-0000	Coil and tubing assembly: 3-lug	1
	A365-00067-0021	Coil: 3-lug	1
	0017-00041-0605	Tubing: Coil, L = 1.686 x 5/8"	1
	5070-09054-00	Diode, 1N4004GP, 400VAC, 1A	2
6	0017-00104-0073	Washer: Spring: 0.515" ID, 0.875" OD, 0.13" th.	1
7	0360-00318-00XF	Coil bracket	1
8	0365-00101-00XF	Flipper mounting bracket	1
9	4005-01016-07	#5-40 x 7/16" Phillips round head screw	2
10	0020-00202-0000	Switchplate	1
11	A365-00315-0400	Switch assembly for flipper mechanism	1
12	0010-00275-0353	Extension spring	1
13	0360-00145-00XF	Switch bracket	1
14	0360-00718-00XF	Plunger	1
15	0360-00945-0000	Tubing: 5/16 x 1/2"	1
16	A360-00038-0000	Lever arm hub and cap assembly: left	1
	0017-00101-0186	Set screw	2
17	0017-00042-0413	Flipper bearing	1
18	0017-00042-0418	Nyliner: snap-in coil type	1
19	0360-00152-01XF	Left flipper stop bracket	1

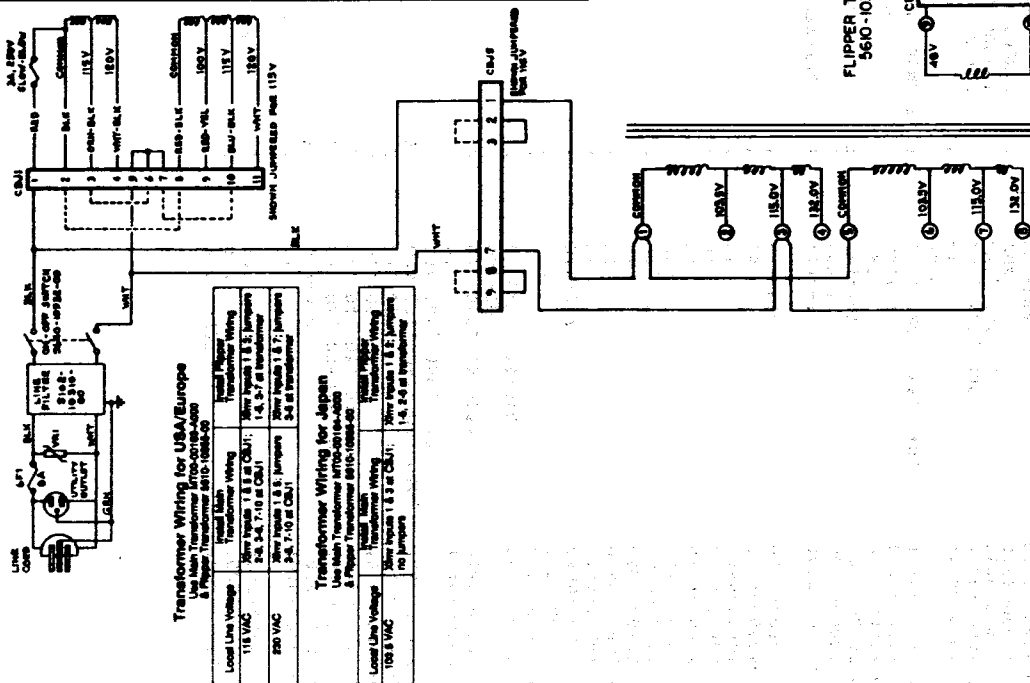
Top-Right Flipper: Parallel-Wired, Single Switch



Flipper Assembly Parts List--Single Switch, Top-Right Flipper

Part No. A365-05030-0001

Item	Part Number	Description	Qty
1	0171-097P6-AXPC	Capacitor: 0.01uF/500V ceramic disc	1
2	0017-00101-0184	#8-32 x 3/8 hex head screw	9
3	0017-00101-0816	#10-32 x 3/8 slotted hex head screw	2
4	A365-00024-0000	Core plug and bracket assembly	1
5	AC70-00026-0000	Coil and tubing assembly: 3-lug	1
	A365-00067-0021	Coil: 3-lug	1
	0017-00041-0605	Tubing: Coil, L = 1.686 x 5/8	1
	5070-09054-00	Diode, 1N4004GP, 400VAC, 1A	2
6	0017-00104-0073	Washer: Spring: 0.515" ID, 0.875" OD, 0.13" th.	1
7	0360-00318-00XF	Coil bracket	1
8	0365-00101-00XF	Flipper mounting bracket	1
9	4005-01016-07	#5-40 x 7/16 Phillips round head screw	2
10	0020-00202-0000	Switchplate	1
11	A365-00315-0400	Switch assembly for flipper mechanism	1
12	0010-00275-0353	Extension spring	1
13	0360-00145-00XF	Switch bracket	1
14	0360-00718-00XF	Plunger	1
15	0360-00945-0000	Tubing: 5/16 x 1/2	1
16	A360-00039-0000	Lever arm hub and cap assembly: right	1
	0017-00101-0186	Set screw	2
17	0017-00042-0413	Flipper bearing	1
18	0017-00042-0418	Nylon: snap-in coil type	1
19	0360-00152-02XF	Right flipper stop bracket	1

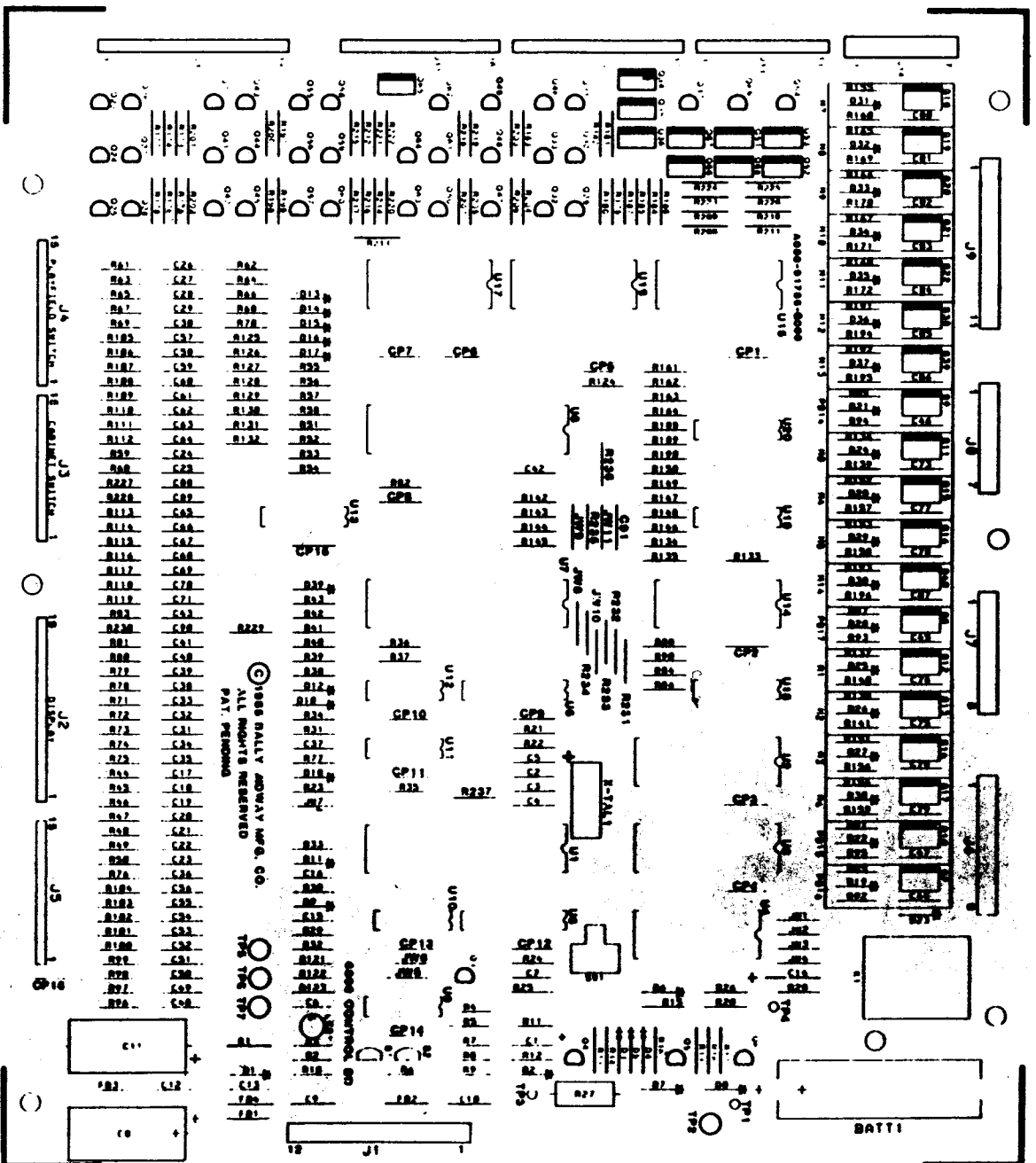


6803 CONTROL BOARD
A084-91786-6000
M051-00C53-6003

CROSS REFERENCE LIST

CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.	DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
27P 50V CER.	2	C2, C3	0360-00800-0052	7.5 1/4W 5%	1	R5	100E-00005-0085
47P 50V CER.	1	C7	0360-00800-0027	9.1 1/4W 5%	1	R4	100E-00005-0087
390P 50V CER.	25	C24-C30, C57-C71	0360-00800-0001	10K 1/4W 5%	4	R12, R13, R30, R33	100E-00005-0088
470P 1KV CER.	27	C88-C90	0307-00800-0008	15K 1/4W 5%	2	R31, R34	100E-00005-0092
.002uF 1KV CER.	19	C17-C23, C31-C36, C38-C41, C48-C56, C91	0360-00800-0012	39K 1/4W 5%	1	R7	100E-00005-0102
.003uF 1KV CER.	1	C43	0360-00800-0025	47K 1/4W 5%	2	R10, R11	100E-00005-0104
.01uF 50V CER.	24	C44-C47, C73-C87	0365-00800-0014	56K 1/4W 5%	14	R62, R64, R66, R68	100E-00005-0106
.05uF 16V CER.	1	C6, C9, C10, C12, C13	0360-00800-0006	62K 1/4W 5%	1	R70, R125-R132, R229	100E-00005-0107
.1uF 50V CER.	1	C15, C16, C42, C41-C46	0360-00800-0006	82K 1/4W 5%	1	R15	100E-00005-0112
.1uF 25V TANT	2	C37	0360-00800-0058	100K 1/4W 5%	2	R14	100E-00005-0115
4.7uF 25V TANT	1	C4	0360-00800-0008	270K 1/4W 5%	1	R26, R237	100E-00005-0126
470uF 16V ELEC	1	C5, C14	0360-00800-0048	82 OHM 1W 10%	1	R27	100E-00007-0014
R2 OHM 1/4W 5%	1	C1	0360-00800-0048	IN58B ZENER	1	D1	103E-00001-0002
100 OHM 1/4W 5%	1	C11	0360-00800-0022	IN4004	20	D19-D38	103E-00003-0005
110 OHM 1/4W 5%	1	R8	100E-00005-0031	IN4148	13	D5, D6, D9-D18, D39	103E-00002-0005
120 OHM 1/4W 5%	21	R9	100E-00005-0033	IN4606	5	D2, D4, D5, D7, D8	103E-00002-0006
		R83	100E-00005-0034	2N3904	3	D2, D4, D6	104E-00001-0006
		R24, R85, R87, R89	100E-00005-0035	2N4403	2	D3, D5	104E-00002-0006
		R91, R121, R136-R138, R151-R155, R165-R168, R191-R193		2N5060	35	D23-D33, D37, D41-D50, D54-D64, D69, D70	104E-00015-0001
		R28	100E-00005-0044	2N5305	1	D1	104E-00007-0003
		R92-R95, R139-R141, R156-R160, R169-R172, R194-R196, R231-R234	100E-00005-0047	MCRI106-1	10	D34-D36, D51-D53	0360-00802-0009
270 OHM 1/4W 5%	1	R96-R104		SE9302	19	D55-D68	0360-00802-0008
330 OHM 1/4W 5%	23	R1	100E-00005-0051	4011	1	D69-D72, D38-D40	0360-00803-0010
470 OHM 1/4W 5%	9	R2	100E-00005-0054	4502	1	D73	0360-00803-0013
560 OHM 1/4W 5%	1	R25	100E-00005-0056	4514B	3	D74-D77	0360-00803-0013
680 OHM 1/4W 5%	1	R19	100E-00005-0057	4584	1	D78	0366-0080X-XXDX
750 OHM 1/4W 5%	1	R18	100E-00005-0059	6116 RAM	1	D79	0365-00803-0013
910 OHM 1/4W 5%	1	R3	100E-00005-0061	6803 MPU	1	D80	0360-00803-0048
1K 1/4W 5%	3	R44-R50, R59-R61, R63, R65, R67, R69, R71-R76	100E-00005-0065	6821 PIA	2	D81	0360-00803-0017
1.2K 1/4W 5%	60	R78-R82, R105-R119, R122		74LS04	1	D82	0A15-00803-0010
		R133-R135, R146-R150, R161-R164, R188-R190, R227, R228, R230, R236		74LS154	1	D83	0A89-00803-0007
		R20	100E-00005-0065	74HCT245	1	D84	0365-00803-0014
1.5K 1/4W 5%	1	R123, R173-R187	100E-00005-0068	74LS373	1	D85	0A89-00803-0006
2K 1/4W 5%	46	R2, R6	100E-00005-0071	CA3081	3	D86	0360-00803-0007
2.7K 1/4W 5%	2	R17	100E-00005-0073	3.580 MHZ CRYSTAL	1	D87	109E-00001-0003
3K 1/4W 5%	1	R21-R23, R35, R51-R58, R124, R142-R145, R235	100E-00005-0074	LED GREEN	1	D88	0017-00007-0131
3.3K 1/4W 5%	18	R84, R86, R88, R90	100E-00005-0077	TEST POINTS	7	D89	0017-00007-0131
3.9K 1/4W 5%	4	R36-R43	100E-00005-0079	SWITCH P.R.	1	D90	0017-00032-0038
4.7K 1/4W 5%	8		100E-00005-0082	BATTERY 3.6V	1	D91	0017-00003-0172
5.6 1/4W 5%	1			ZERO OHM RES. JUMPER	5	D92	117E-00001-0001
				RELAY 48VDC	1	D93	114E-00001-0011
				40 PIN I.C. SOCKET	3	D94	110E-00001-0011
				28 PIN I.C. SOCKET	2	D95	110E-00001-0010
				24 PIN I.C. SOCKET	1	D96	110E-00001-0007
				FERRITE BEAD	4	D97	0316-00804-0002



DIM TOLERANCES UNLESS OTHERWISE SPEC DECIMAL FRACTIONS HOLE DIA ANGLE DO NOT SCALE DIMS		DATE 04/08/86 BY CL CHECKED DATE 04/08/86 BY CL		THIS DWG IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG CO MIDWAY MFG. CO. FRANKLIN, PA. 15035 ASSY DRAWING 6803 CONTROL BO. A084-91786-6000		PART NO M0-5-1-0-0-C-5-3-G-0-0-3 REVISIONS	
--	--	---	--	---	--	--	--

6803 CONTROL BOARD
A084-9176-0000
M031-00C53-0003

DESIGNATION LIST

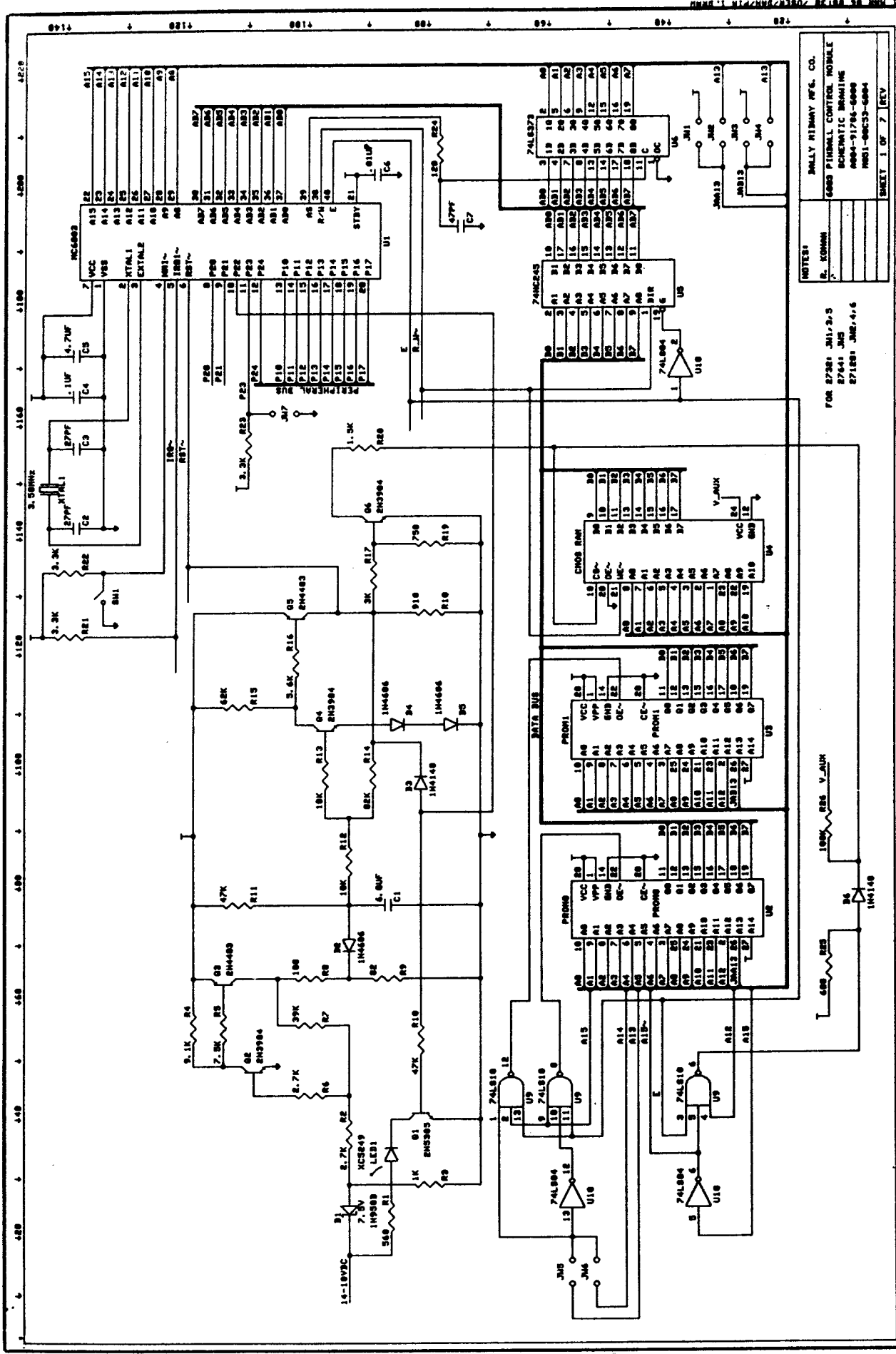
DESIGNATION	DESCRIPTION	DESIGNATION	DESCRIPTION	DESIGNATION	DESCRIPTION	DESIGNATION	DESCRIPTION
C1	6.8UF 25V TANT.	R28	270 OHM 1/4W 5%	R165 - R168	120 OHM 1/4W 5%	U15 - U17	4514B
C2,C3	27PF 50V CER.	R29	1K 1/4W 5%	R169 - R172	330 OHM 1/4W 5%	U18 - U20	CA3081
C4	.01UF 50V CER.	R30	10K 1/4W 5%	R173 - R187	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.R.
C8	470UF 16V FLEC.	R34	15K 1/4W 5%	R197 - R226	2K 1/4W 5%	RATT-1	BATTERY 3.6V
C9,C10	.01UF 50V CER.	R35	3.3K 1/4W 5%	R227,R228	56K 1/4W 5%	JW2	1.2K 1/4W 5%
C11	470UF 25V FLEC.	R36 - R43	4.7K 1/4W 5%	R229	56K 1/4W 5%	JW4	1.2K 1/4W 5%
C12,C13	.01UF 50V CER.	R44 - R50	1.2K 1/4W 5%	R230	1.2K 1/4W 5%	JW6	330 OHM 1/4W 5%
C14	4.7UF 25V TANT.	R51 - R58	3.3K 1/4W 5%	R231 - R234	330 OHM 1/4W 5%	JW8	3.3K 1/4W 5%
C15,C16	.01UF 50V CER.	R59 - R61	1.2K 1/4W 5%	R235	1.2K 1/4W 5%	JW10	1.2K 1/4W 5%
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 - C41	.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	FBI - FB4	FERRITE BEAD
C42	.01UF 50V CER.	R67	1.2K 1/4W 5%	D4,D5	1N4606	J1	11 - .045 SO. PINS
C43	.002UF 1KV CER.	R68	56K 1/4W 5%	D6	1N4148	J2	18 - .025 SO. PINS
C44 - C47	.002UF 1KV CER.	R69	1.2K 1/4W 5%	D7,D8	1N4606	J3	14 - .025 SO. PINS
C48 - C56	470PF 1KV CER.	R70	56K 1/4W 5%	D9 - D18	1N4148	J4	14 - .025 SO. PINS
C57 - C71	390PF 50V CER.	R71 - R76	1.2K 1/4W 5%	D19 - D38	1N4004	J5	14 - .025 SO. PINS
C72 - C87	.002 1KV CER.	R77	270K 1/4W 5%	D39	1N4148	J6	8 - .045 SO. PINS
C88 - C90	390PF 50V CER.	R78 - R82	1.2K 1/4W 5%	D40	2N5305	J7	7 - .045 SO. PINS
C91	470PF 1KV CER.	R83	110 OHM 1/4W 5%	D41	2N5904	J8	6 - .045 SO. PINS
CP1 - CP16	.01 50V CER.	R84	3.9K 1/4W 5%	D42	2N4403	J9	10 - .045 SO. PINS
R1	560 OHM 1/4W 5%	R85	120 OHM 1/4W 5%	D43	2N3904	J10	18 - .025 SO. PINS
R2	2.7K 1/4W 5%	R86	3.9K 1/4W 5%	D44	2N4403	J11	17 - .025 SO. PINS
R3	1K 1/4W 5%	R87	120 OHM 1/4W 5%	D45	2N3904	J12	16 - .025 SO. PINS
R4	9.1K 1/4W 5%	R88	3.9K 1/4W 5%	D46	SF9302	J13	12 - .025 SO. PINS
R5	7.5K 1/4W 5%	R89	120 OHM 1/4W 5%	D47	2N5060	J14	5 - .045 SO. PINS
R6	2.7K 1/4W 5%	R90	3.9K 1/4W 5%	D48	MCR 104-1	P/O RATT-1	TY-WRAP
R7	39K 1/4W 5%	R91	100 OHM 1/4W 5%	D49	SF9302	6803 CONTROL RD.	P.C. BOARD
R8	100 OHM 1/4W 5%	R92 - R95	330 OHM 1/4W 5%	D50	2N5060		
R9	47K 1/4W 5%	R96 - R104	470 OHM 1/4W 5%	D51	SF9302		
R10,R11	10K 1/4W 5%	R105 - R119	1.2K 1/4W 5%	D52	MCR 106-1		
R12,R13	10K 1/4W 5%	R120	120 OHM 1/4W 5%	D53	2N5060		
R14	82K 1/4W 5%	R121	1.2K 1/4W 5%	D54	MCR 106-1		
R15	62K 1/4W 5%	R122	2K 1/4W 5%	D55 - D68	2N5060		
R16	5.6K 1/4W 5%	R123	3.3K 1/4W 5%	D69,D70	6803		
R17	3K 1/4W 5%	R124	56K 1/4W 5%	D71	6116 RAM		
R18	910 OHM 1/4W 5%	R125 - R132	1.2K 1/4W 5%	D72	74HC7245		
R19	750 OHM 1/4W 5%	R133 - R135	120 OHM 1/4W 5%	D73	74LS373		
R20	1.5K 1/4W 5%	R136 - R138	330 OHM 1/4W 5%	D74	6821		
R21 - R23	3.3K 1/4W 5%	R139 - R141	3.3K 1/4W 5%	D75	74LS10		
R24	120 OHM 1/4W 5%	R142 - R145	1.2K 1/4W 5%	D76	74LS04		
R25	680 OHM 1/4W 5%	R146 - R150	330 OHM 1/4W 5%	D77	4011		
R26	100K 1/4W 5%	R151 - R155	1.2K 1/4W 5%	D78	4584		
R27	82 OHM 1W 10%	R156 - R160	330 OHM 1/4W 5%	D79	4502		
		R161 - R164	1.2K OHM 1/4W 5%	D80	74LS154		

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

CROSS REFERENCE LIST

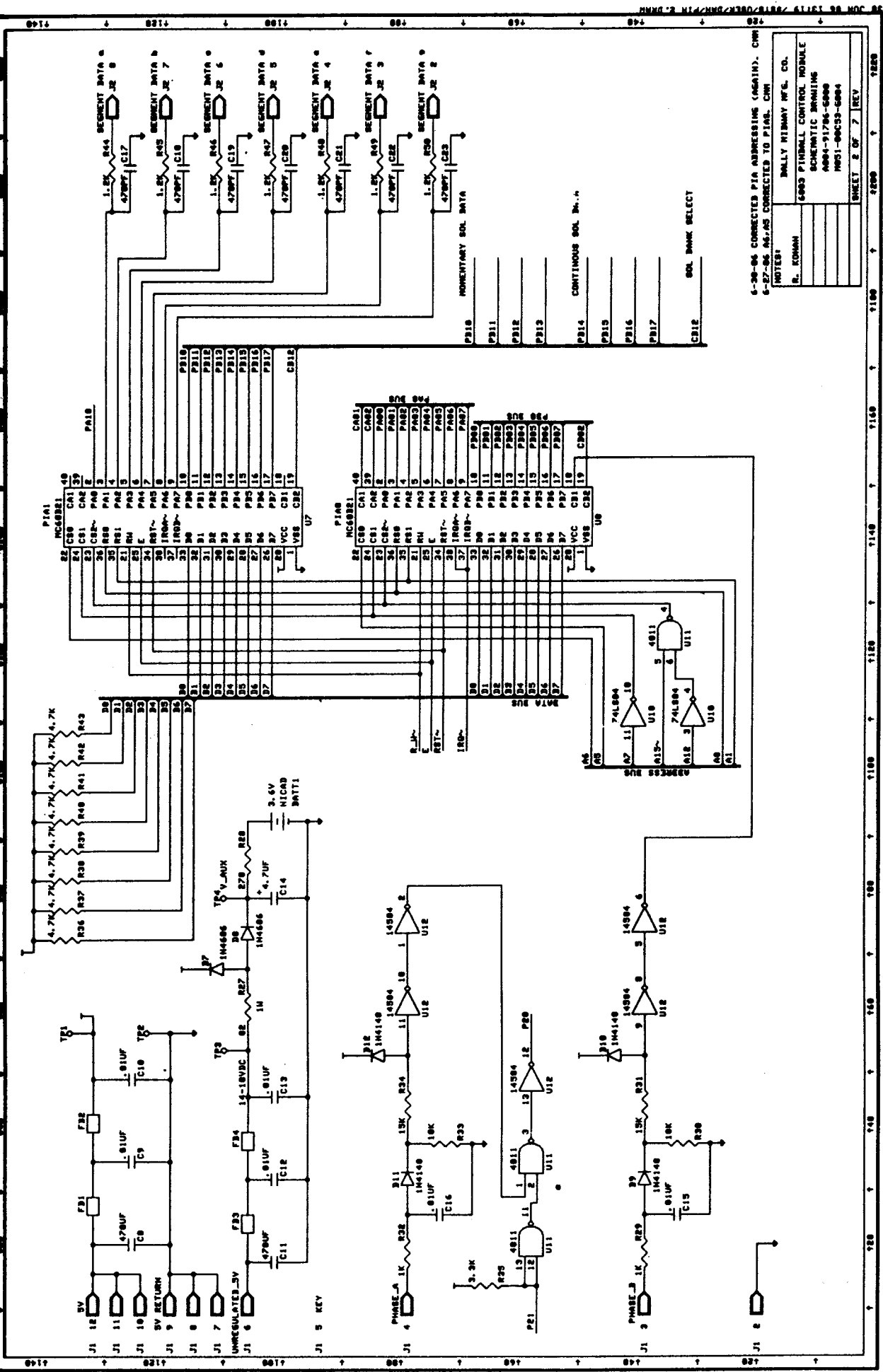
<u>DESCRIPTION</u>	<u>QTY.</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
.025 SO. PINS	123	J2, J3, J4, J5, J10, J11, J12, J13	0304-00804-0009
.045 SO. PINS	47	J1, J6, J7, J8, J9, J14	0304-00804-0010
TY-WRAP	1	P/O BATT-1	0017-00042-0622
P.C. BOARD	1	6803 CONTROL BOARD	A080-91786-G000

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



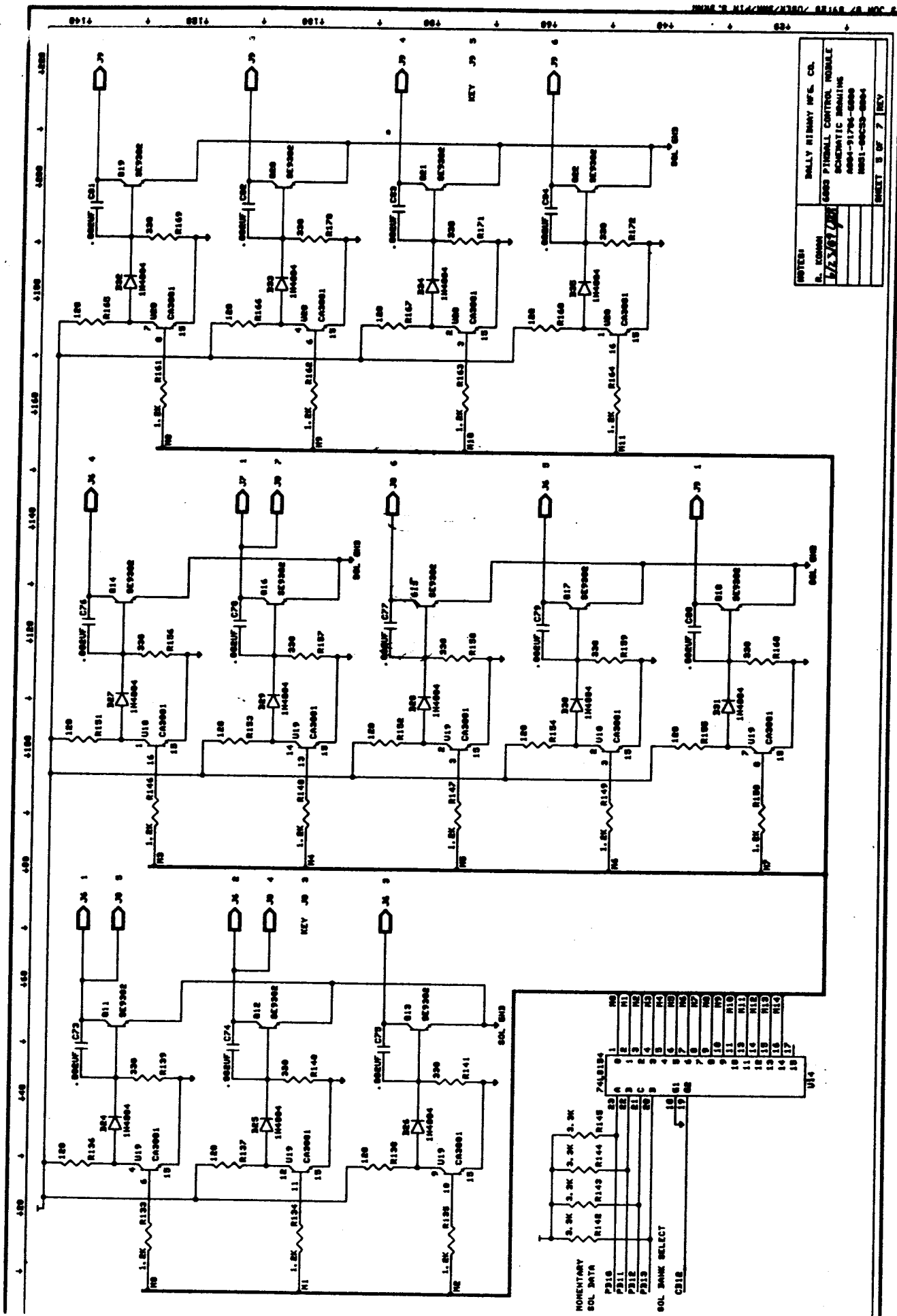
NOTES:
1. COMMON
2. 6800 PINBALL CONTROL MODULE
3. SCHEMATIC DRAWING
4. 6800-91786-0000
5. 6801-00C33-0004
6. SHEET 1 OF 7 REV

FOR 2728: J31, 2, 3
2744: J35
27188: J32, 4, 6

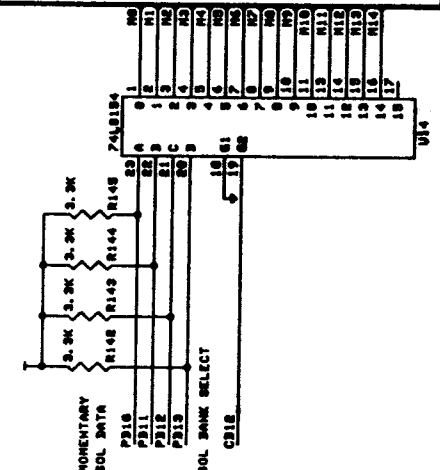


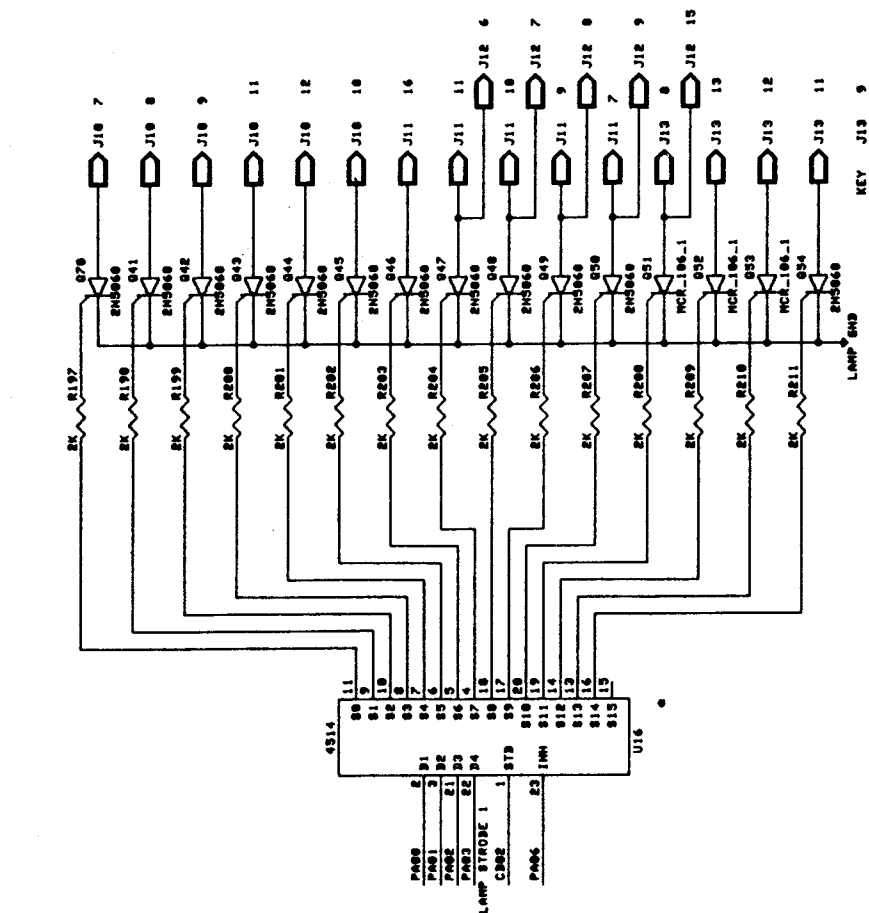
6-20-84 CORRECTED PIA ADDRESSING (AGAIN). CWN
6-27-84 M7AS CORRECTED TO FINAL CWN

NOTES:	BALLY HIGHWAY MFG. CO.
6403 PINGBALL CONTROL MODULE	
SCHEMATIC DRAWING	
A004-91784-0000	
M051-00C53-0004	
SHEET 2 OF 7 REV	

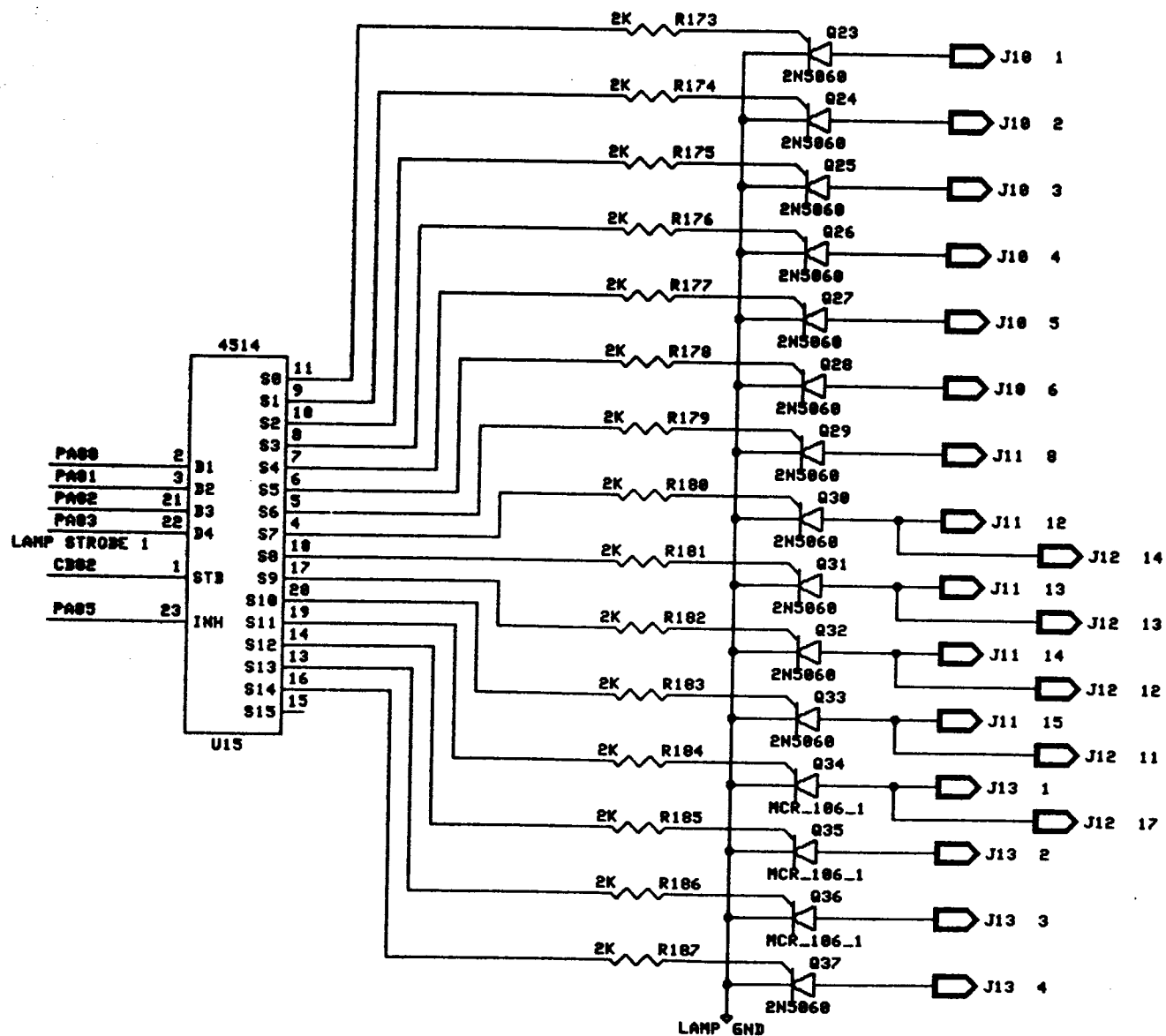


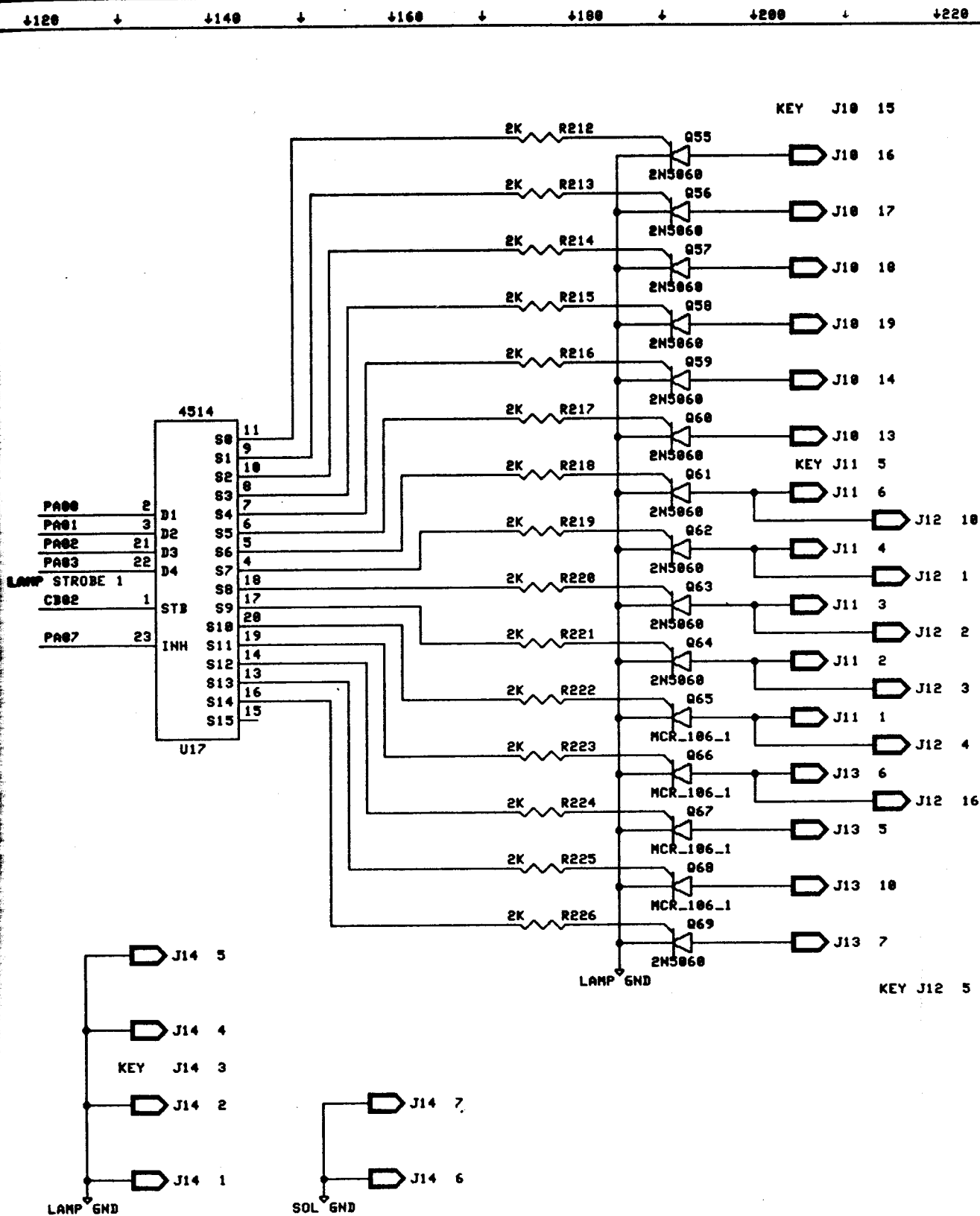
NOTES:
1. COMMON
2. 6800 PPMALL CONTROL MODULE
3. SCHEMATIC DRAWING
4. 6800-21704-0000
5. 6800-21704-0000
6. 6800-21704-0000
7. REV





NOTES:	DAILY RIBBAY MFG. CO.
R. KONNAN	6003 PIRBALL CONTROL MODULE
	SCHEMATIC DRAWING
	0004-91784-0000
	MS1-00C33-0004
	QUANTITY 4 OF 2 BULK





NOTES:	BALLY MIDWAY MFG. CO.	
	R. KOHAN	
	6803 PINBALL CONTROL MODULE	
	SCHEMATIC DRAWING	
	A084-91786-6000	
	M051-00C53-6004	
	SHEET 7 OF 7	REV

11 MAR 86 08146 USER/JAN/PIN 7.DRAW

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

DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION
C1	.01UF 500V CER.
C2	.01UF 50V AX. CER.
CP1, CP2	.01UF 50V CER.
D1	1M10Z510 110V ZENER DIODE
D2-D3	1M4148 DIODE
Q1 - Q4	MPS-A-42 MPN 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
J1	14 DIGIT, 9 SEGMENT GAS DISCHARGE DISPLAY
TP1, TP2, TP3	TEST POINTS
	FLAME TAPE
	BUMPER
	DISPLAY MTG. CLIPS
	SCREWS
	DISPLAY MTG. PROCEDURE
	DUAL DISPLAY MODULE P.C.B.

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

DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION
R59	100K 1/4W 1% METAL FILM
R60	100K 1/4W 1% METAL FILM
R61	9.1K 1/4W 5% CARBON
R62	9.1K 1/4W 5% CARBON
R63	100K 1/4W 1% METAL FILM
R64	9.1K 1/4W 5% CARBON
R65	9.1K 1/4W 5% METAL FILM
R66	100K 1/4W 5% CARBON
R67	100K 1/4W 1% METAL FILM
R68	9.1K 1/4W 5% CARBON
R69	100K 1/4W 1% METAL FILM
R70	300K 1/4W 5% CARBON
R71	2.2K 1/4W 5% CARBON
R72	300K 1/4W 5% CARBON
R73	2.2K 1/4W 5% CARBON
R74	300K 1/4W 5% CARBON
R75	2.2K 1/4W 5% CARBON
R76	1.5K 1/4W 5% CARBON
R77	820 OHM 1/4W 5% CARBON
R78	300K 1/4W 5% CARBON
R79	1.5K 1/4W 5% CARBON
R80	820 OHM 1/4W 5% CARBON
R81	300K 1/4W 5% CARBON
R82	300K 1/4W 5% CARBON
R83	2.2K 1/4W 5% CARBON
R84	100K 1/4W 1% METAL FILM
R85	9.1K 1/4W 5% CARBON
R86	300K 1/4W 5% CARBON
R87	2.2K 1/4W 5% CARBON
R88	2.2K 1/4W 5% CARBON
R89	300K 1/4W 5% CARBON
R90	300K 1/4W 5% CARBON
R91	2.2K 1/4W 5% CARBON
R92	300K 1/4W 5% CARBON
R93	2.2K 1/4W 5% CARBON
R94	300K 1/4W 5% CARBON
R95	2.2K 1/4W 5% CARBON
R96	300K 1/4W 5% CARBON
R97	2.2K 1/4W 5% CARBON
R98	1M 1/4W 5% CARBON
R99	1M 1/4W 5% CARBON
R100	300K 1/4W 5% CARBON
R101	2.2K 1/4W 5% CARBON
R102	100K 1/4W 1% METAL FILM
R103	9.1K 1/4W 5% CARBON
R104	150K 1/4W 5% CARBON
R105	10M 1/4W 5% CARBON
R106	1M 1/4W 5% CARBON
R107	10K 1/4W 5% CARBON
R108-R115	20K 1/4W 5% CARBON
R11	100K 10 PIN SIP

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

DESIGNATION LIST

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

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

CROSS REFERENCE LIST

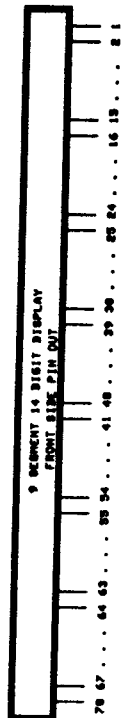
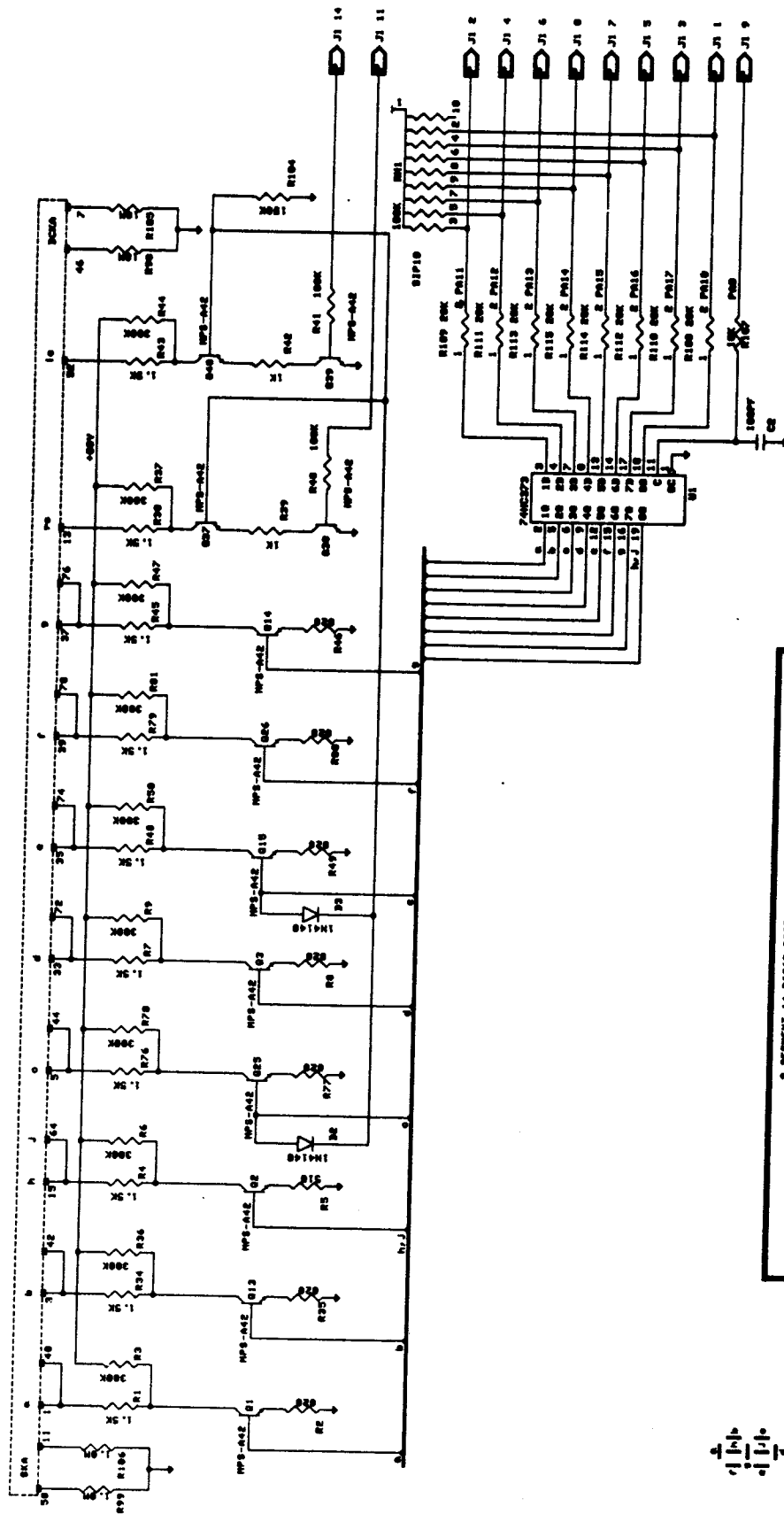
DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
510 OHM 1/4W 5% CARBON	1	R5	100E-00005-0053
820 OHM 1/4W 5% CARBON	7	R2,R8,R35,R46 R49,R77,R80	100E-00005-0058
1K 1/4W 5% CARBON	2	R39,R42	100E-00005-0061
1.5K 1/4W 5% CARBON	10	R1,R4,R7,R34,R38 R43,R45,R48 R76,R79	100E-00005-0065
2.2K 1/4W 5% CARBON	14	R18,R22,R26,R71 R73,R75,R83,R87 R88,R91,R93,R95 R97,R101	100E-00005-0069
9.1K 1/4W 5% CARBON	14	R16,R20,R24,R28 R30,R32,R58,R61 R62,R64,R66,R68 R85,R103	100E-00005-0087
10K 1/4W 5% CARBON	1	R107	100E-00005-0088
20K 1/4W 5% CARBON	14	R10-R15,R108-R115	100E-00005-0095
100K 1/4W 5% CARBON	2	R40,R41	100E-00005-0115
100K 1/4W 1% METAL FILM	15	R17,R21,R25,R29 R31,R33,R51,R59 R60,R63,R65,R67 R69,R84,R102	100E-00001-0046
150K 1/4W 5% CARBON	1	R104	100E-00005-0120
300K 1/4W 5% CARBON	24	R3,R6,R9,R19,R23 R27,R36,R37,R44, R47,R50,R70,R72, R74,R78,R81,R82, R86,R89,R90,R92, R94,R96,R100 R99,R106	100E-00005-0127
1.0M OHM 1/4W 5% CARBON	2	R52 - R57	100E-00005-0140
2.2M OHM 1/4W 5% CARBON	6	RM1	100E-00005-0147
100K 10 PIN SIP	1	R98,R105	102E-00004-0045
10.0M OHM 1/4W 5% CARBON	2	C2	100E-00005-0162
100PF AX. CER.	1	CP1,CP2	0639-00800-0003
.01UF	2	C1	0360-00800-0005
.01UF 500V	1	D2,D3	0360-00800-0013
1N4148	2	D1	103E-00002-0005
1M110ZS10 110V ZENER DIODE	1	Q5,Q7,Q9,Q22,Q23 Q24,Q27,Q29,Q30 Q31,Q32,Q33,Q34 Q35	103E-00001-0028
2N5401 PNP XSTR	14	Q1-Q4,Q6,Q8,Q10- Q21,Q25,Q26,Q28 Q36-Q40	0360-00802-0006
MPS-A-42 NPN XSTR	26	U2	0360-00802-0007
14514 1-16 DECODER	1	U1	0360-00803-0013
74HC373 OCTAL LATCH	1	J1	0365-00803-0015
.0255Q. PINS	23	DISPLAY 1	0304-00804-0009
14 DIGIT, 9 SEGMENT GAS DISCHARGE DISPLAY	1	TP1 - TP3	119E-00002-0006
TEST LOOPS	3		0017-00007-0131

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

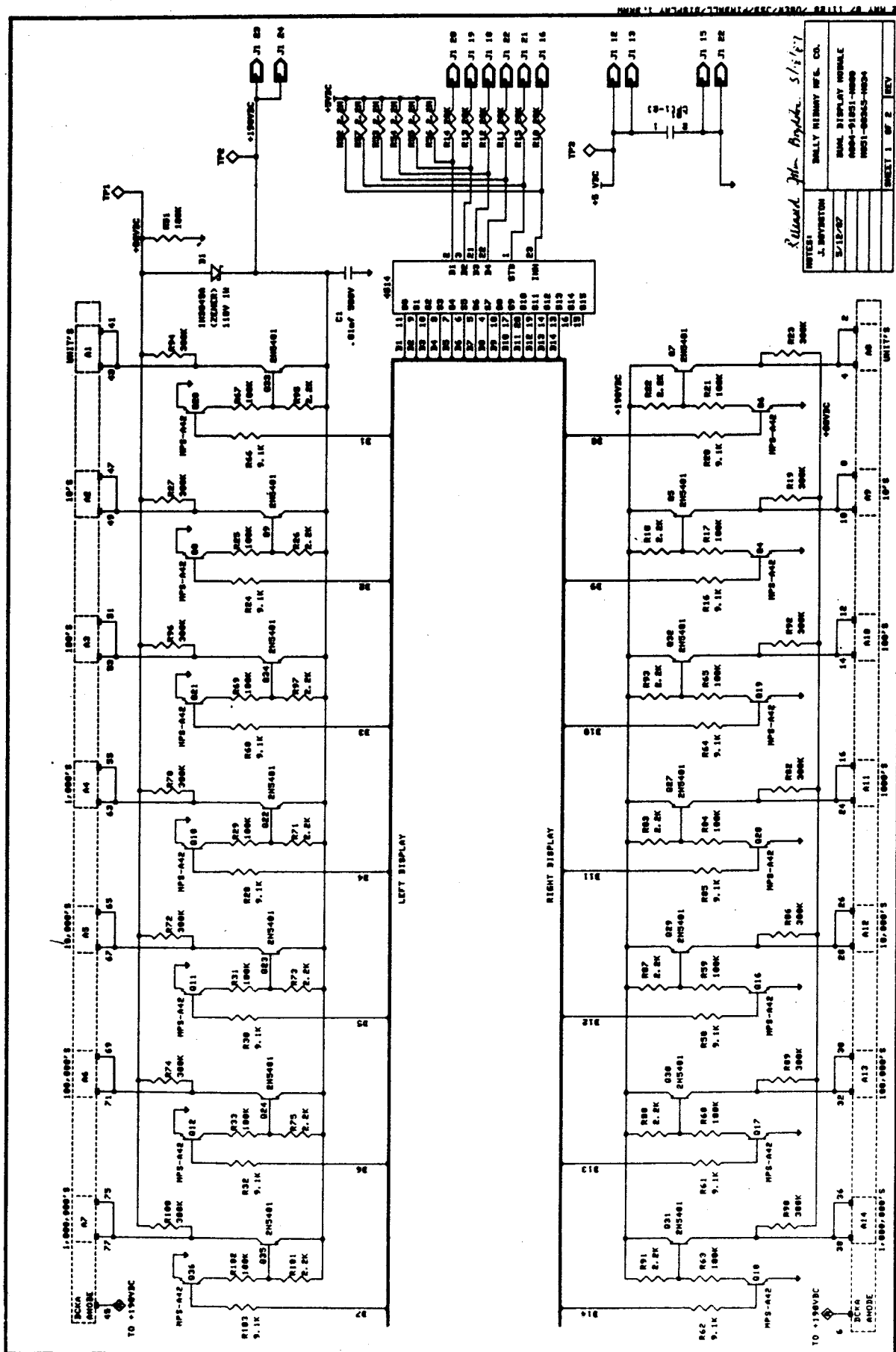
CROSS REFERENCE LIST

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

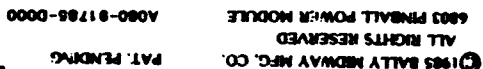
5/20/87 REV. 1 - CORRECTION TO DISPLAY MTG. PROCEDURE PART NO. *955*



NOTES:	BALLY BINARY MFL. CO.
1. BATTERY	2. DISPLAY MODULE
3. BATTERY	4. DISPLAY MODULE
5. BATTERY	6. DISPLAY MODULE
7. BATTERY	8. DISPLAY MODULE
9. BATTERY	10. DISPLAY MODULE
11. BATTERY	12. DISPLAY MODULE
13. BATTERY	14. DISPLAY MODULE
15. BATTERY	16. DISPLAY MODULE
17. BATTERY	18. DISPLAY MODULE
19. BATTERY	20. DISPLAY MODULE
21. BATTERY	22. DISPLAY MODULE
23. BATTERY	24. DISPLAY MODULE
25. BATTERY	26. DISPLAY MODULE
27. BATTERY	28. DISPLAY MODULE
29. BATTERY	30. DISPLAY MODULE
31. BATTERY	32. DISPLAY MODULE
33. BATTERY	34. DISPLAY MODULE
35. BATTERY	36. DISPLAY MODULE
37. BATTERY	38. DISPLAY MODULE
39. BATTERY	40. DISPLAY MODULE
41. BATTERY	42. DISPLAY MODULE
43. BATTERY	44. DISPLAY MODULE
45. BATTERY	46. DISPLAY MODULE
47. BATTERY	48. DISPLAY MODULE
49. BATTERY	50. DISPLAY MODULE
51. BATTERY	52. DISPLAY MODULE
53. BATTERY	54. DISPLAY MODULE
55. BATTERY	56. DISPLAY MODULE
57. BATTERY	58. DISPLAY MODULE
59. BATTERY	60. DISPLAY MODULE
61. BATTERY	62. DISPLAY MODULE
63. BATTERY	64. DISPLAY MODULE
65. BATTERY	66. DISPLAY MODULE
67. BATTERY	68. DISPLAY MODULE
69. BATTERY	70. DISPLAY MODULE
71. BATTERY	72. DISPLAY MODULE
73. BATTERY	74. DISPLAY MODULE
75. BATTERY	76. DISPLAY MODULE
77. BATTERY	78. DISPLAY MODULE
79. BATTERY	80. DISPLAY MODULE
81. BATTERY	82. DISPLAY MODULE
83. BATTERY	84. DISPLAY MODULE
85. BATTERY	86. DISPLAY MODULE
87. BATTERY	88. DISPLAY MODULE
89. BATTERY	90. DISPLAY MODULE
91. BATTERY	92. DISPLAY MODULE
93. BATTERY	94. DISPLAY MODULE
95. BATTERY	96. DISPLAY MODULE
97. BATTERY	98. DISPLAY MODULE
99. BATTERY	100. DISPLAY MODULE







MIDWAY MFG. CO.
CHAMBERSBURG, PA. 17003 A SALLY CO.

ASSY DRAWING
6803 PINBALL PWR MODULE
A084-91785-0000

10-9

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

DESIGNATION LIST

DESIGNATION

DESCRIPTION

C1	11.000uf 20V ELEC.
P/O C1	TY-WRAP
P/O C1	SOLDER LUG
P/O C1	WIRE 20AWG
C2	160uf 350V ELEC.
P/O C2	TY-WRAP
C3	2uf 25V ELEC.
C4, C5	.1uf 25V CER.
C6, C7	.01uf 500V CER.
R1	600 OHM 10W
R2	100K 1W 5%
R3	2.2 OHM 1/4W 5%
R4	100 OHM 1/2W 5%
R5	22K 1/2W 5%
R6	100K 1/4W 5%
R7	390 OHM 1/4W 5%
R8	1.2K 1/4W 5%
R9	82K 1/2W 5%
R10	8.2K 1/4W 5%
VR1	0 - 25K 1/4W POT.
D1 - D4	MR751
D5 - D9	IN4004
D10	IN5275A ZENER
RR1	KRPG-35-02-W
P/O RR1	BRIDGE SPACER
O1	2N3584
P/O O1	SHIELD
P/O O1	HEX SPACER
P/O O1	6-32 X 5 SCREW
P/O O1	6-32 X 12 SCREW
P/O O1	LOCKWASHER EXT.
P/O O1	LOCKWASHER INT.
P/O O1	FLAT WASHER
P/O O1	6-32 HEX NUT
P/O O1	LABEL - CAUTION HIGH VOLT.
P/O O1	HEATSINK 2
P/O O1	INSULATOR T0-66
O2, O3	2N3440
P/O O2, O3	INSULATOR T0-5
P/O O3	HEATSINK 3
U1	78H05C REG.
P/O U1	6-32 X 12 SCREW
P/O U1	6-32 HEX NUT
P/O U1	LOCKWASHER EXT.
P/O U1	FLAT WASHER
P/O U1	HEATSINK 1
P/O U1	INSULATOR T0-3
VA1	VARISTOR

DESIGNATION

DESCRIPTION

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

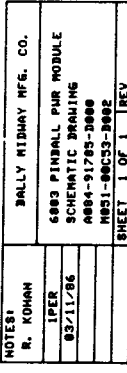
CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
100UF 500V CER.	2	C6, C7	0360-00800-0013
100UF 25V CER.	2	C4, C5	0360-00800-0026
100UF 25V ELEC.	1	C3	0360-00800-0019
100UF 350V ELEC.	1	C2	0360-00800-0020
100UF 20V ELEC.	1	C1	0360-00800-0024
2 OHM 1/4W 5%	1	R3	100E-00005-0003
2 OHM 1/2W 5%	1	R4	100E-00006-0021
2 OHM 1/4W 5%	1	R7	100E-00005-0049
2 OHM 1/4W 5%	1	R1	100E-00002-0049
2 OHM 10W 10%	1	R8	100E-00005-0063
2K 1/4W 5%	1	R10	100E-00005-0086
2K 1/4W 5%	1	R5	100E-00006-0065
2K 1/2W 5%	1	R9	100E-00006-0072
2K 1/4W 5%	1	R6	100E-00005-0115
2K 1W 5%	1	R2	100E-00007-0037
25K 1/4W POT	1	VR1	0360-00804-0004
7291	4	D1-D4	103E-00003-0016
74004	5	D5-D9	103E-00003-0005
7275	1	D10	103E-00001-0027
PC-35-02-W	1	RR1	104E-00003-0002
440	2	O2, O3	104E-00005-0005
3384	1	O1	104E-00003-0002
505C REG	1	U1	0360-00803-0021
DI-WRAP	1	VA1	112E-00001-0002
60V	4	P/O C1, C2	0017-00042-0048
16	10	JW1-JW16	117E-00001-0001
10	2	TP1-TP10	0017-00007-0131
1	2	P/O C1	0017-00021-0257
1	2	P/O C1	0017-00033-0448
1	2	P/O U1	0017-00042-0119
1	2	P/O O2, O3	0017-00042-0151
1	2	P/O O1	0017-00042-0158
1	1	P/O O1	0365-00952-0000
1	1	P/O O1	112E-00001-0002
1	1	P/O O1	112E-00001-0004
1	1	P/O R1	118E-00001-0001
1	4	P/O O1, U1	0017-00101-0132
1	2	P/O O1	0017-00101-0595
1	4	P/O O1, U1	0017-00103-0005
1	4	P/O O1	0017-00104-0008
1	4	P/O O1, U1	0017-00104-0009
1	4	P/O O1, U1	0017-00104-0106
1	8	FC1A-FC38, FC8A, FC8B	0017-00071-0033
1	8	FC4A-FC7A	0017-00071-0034
1	1	F8	0017-00003-0206
1	1	F2	0017-00003-0010
1	1	F1*	0017-00003-0175
1	1	F3	0017-00003-0008

CROSS REFERENCE LIST

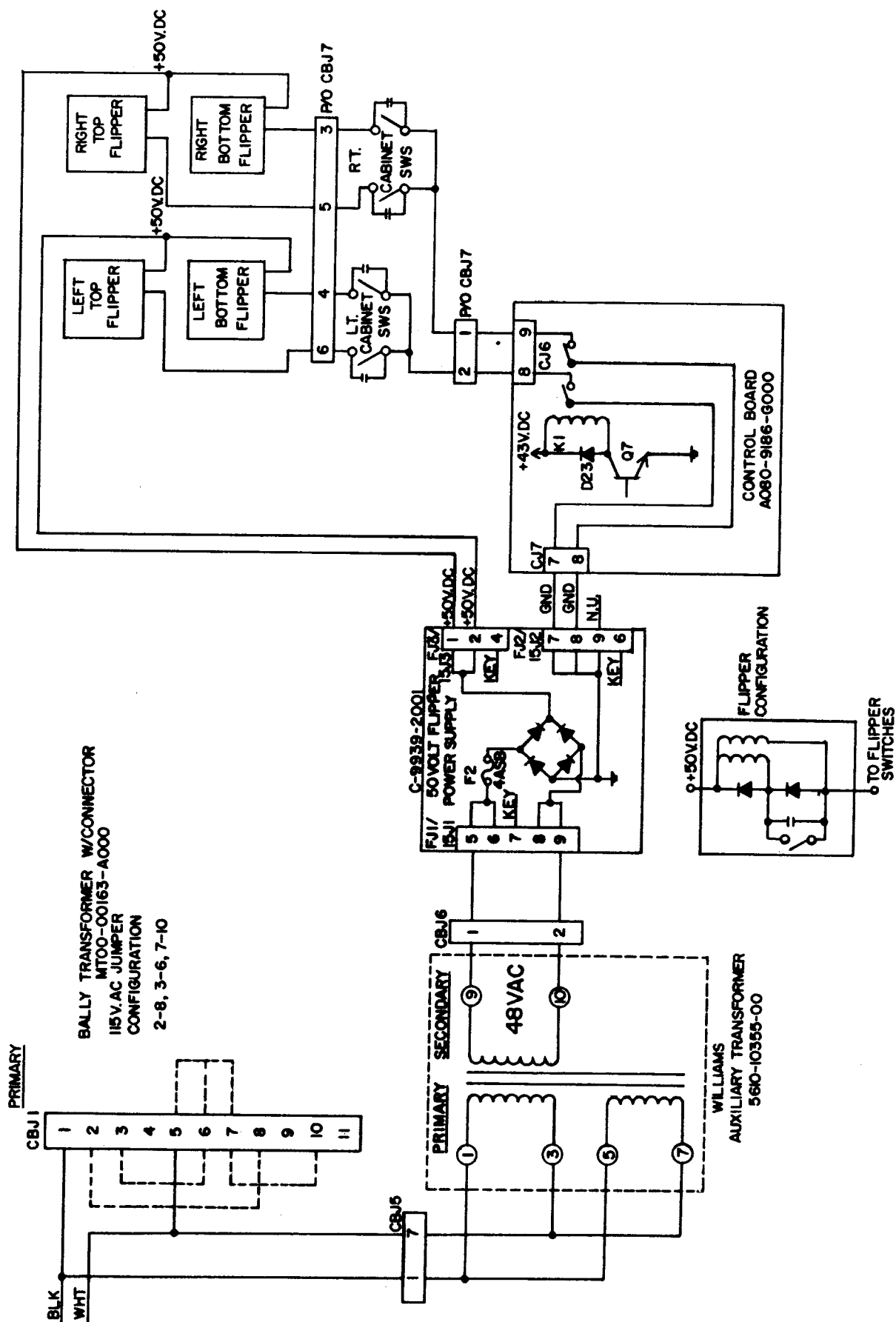
DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
8 AMP 3AG FUSE	2	F4, F5	0017-00003-0387
15 AMP 3AG FUSE	2	F6, F7	0017-00003-0011
12 PIN M-N-L CONN. FEMALE	1	J1	0017-00021-0532
6 PIN M-N-L CONN. MALE	1	J2	0017-00021-0424
15 PIN M-N-L CONN. MALE	1	J3	0017-00021-0434
9 PIN M-N-L CONN. MALE	1	J4	0017-00021-0425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

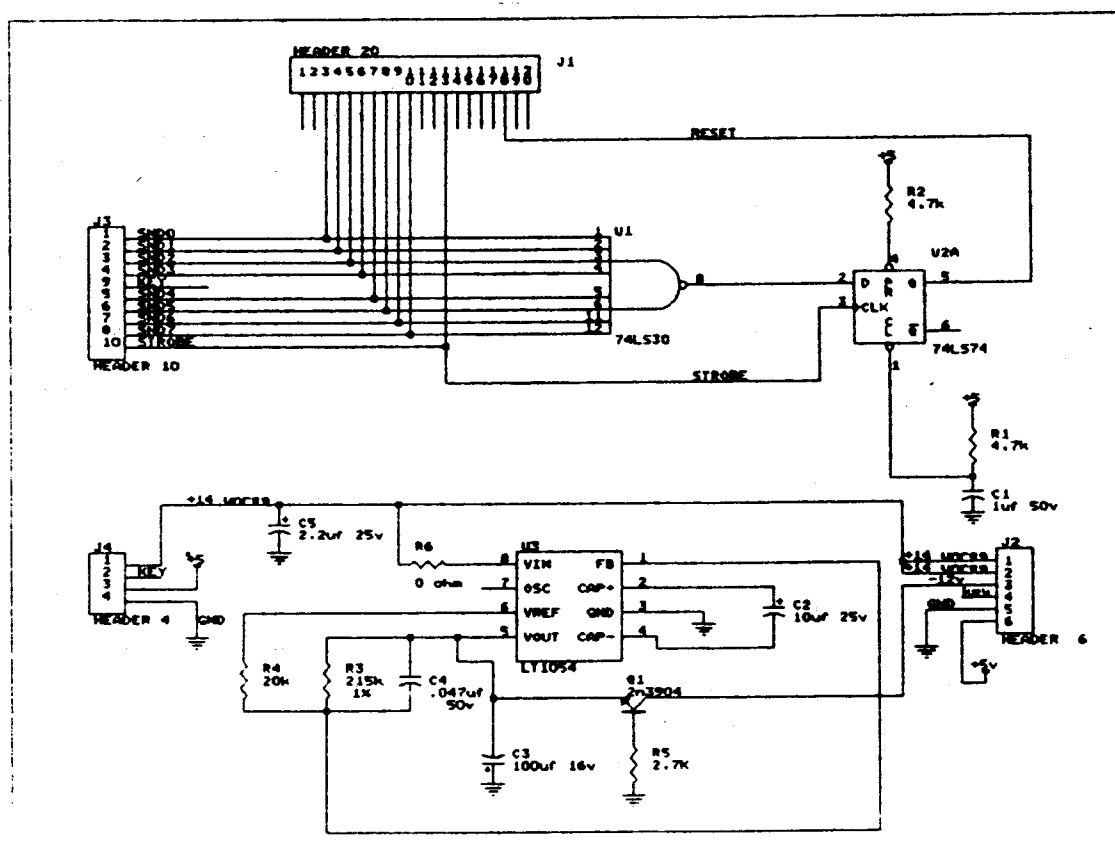
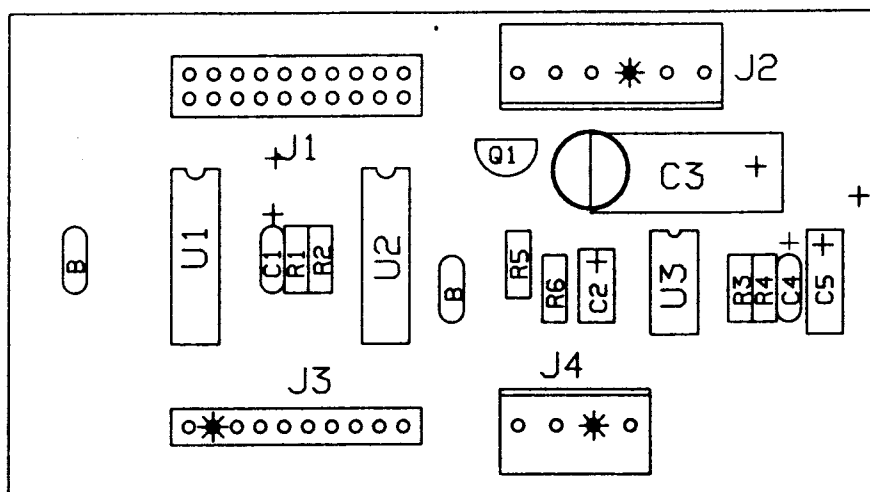
* TWO FLIPPER GAMES ONLY - SEE SCHEMATIC



NOTE

• WHEN 3FLIPPERS ARE USED FUI SHOULD BE 6AMP
WHEN 4FLIPPERS ARE USED FUI SHOULD BE 7AMP





ITEM		PART NUMBER		DESCRIPTION		QTY	ITEM		PART NUMBER		DESCRIPTION		QTY
PROJ ENGR		DO NOT SCALE WORK TO DIMENSIONS SHOWN		REMOVE BURRS - BREAK SHARP CORNERS & EDGES			WILLIAMS ELECTRONICS, INC.						
OWN BY DATE				TOLERANCES UNLESS OTHERWISE SPECIFIED			3401 N. CALIFORNIA AVE		CHICAGO IL		60618		
CHECKED BY DATE		FIRST PROJECT NO		DECIMAL $\frac{\quad}{\quad}$ ANGULAR $\frac{\quad}{\quad}$			NAME						
				XXX $\frac{\quad}{\quad}$ FRACTIONAL $\frac{\quad}{\quad}$			SOUND INTERFACE ASSY						
APPROVAL DATE		FIRST USAGE		MATERIAL			SCALE		SHT OF		PART NO		REV
											C-1247		

REV	DESCRIPTION OF CHANGE	ESN NO DATE
-----	-----------------------	----------------

D

C

B

A

BRUNING 40 51003 310724

20	5010-09534-00	R6	0 OHM 1/4W	1
19	5010-08997-00	R5	2.7K OHM 1/4W	1
18	5160-10269-00	Q1	2N3904	1
17	5043-08980-00	B	CAP .01MF 50V axial	2
16	5768-12345-00	PCB	SMD INTERFACE PCB	1
15	5041-12360-00	C4	CAP .047MF 50V	1
14	5041-12358-00	C2	CAP 10MF 25V	1
13	5010-08991-00	R1, R2	RES 4.7K 1/4W	2
12	5013-12359-00	R3	RES 215K 1/4W 1%	1
11	5010-10985-00	R4	RES 20K 1/4W	1
10	5041-12361-00	C5	CAP 2.2MF 25V	1
9	5041-12357-00	C3	CAP 100MF 15V	1
8	5791-10862-06	J2	HEADER 6 PIN	1
7	5370-12356-00	U3	LT1054	1
6	5791-10862-04	J4	HEADER 4 PIN	1
5	5791-09437-00	J1	HEADER 20 PIN	1
4	5791-12362-00	J3	HEADER 10 PIN	1
3	5041-09031-00	C1	CAP 1MF 25V axial	1
2	5281-09487-00	U2	IC 74LS74	1
1	5281-10033-00	U1	IC 74LS30	1
ITEM	PART NO.	PART DESIGNATION	DESCRIPTION	QTY
BILL OF MATERIALS				

MIDWAY MFG. CO.
01901-B000

J1

NOTICE
NO. 3/4 AMP
FUSES ONLY

F1

F2

F3

F4

F5

F6

F7

F8

F9

F10

F11

F12

F13

F14

F15

F16

F17

F18

F19

F20

F21

F22

F23

F24

F25

F26

F27

F28

F29

F30

F31

F32

F33

F34

F35

F36

F37

F38

F39

F40

F41

F42

F43

F44

F45

F46

F47

F48

F49

F50

F51

F52

F53

F54

F55

F56

F57

F58

F59

F60

F61

F62

F63

F64

F65

F66

F67

F68

F69

F70

BRIGHT LIGHT FUSE BOARD

A084-91901-B000

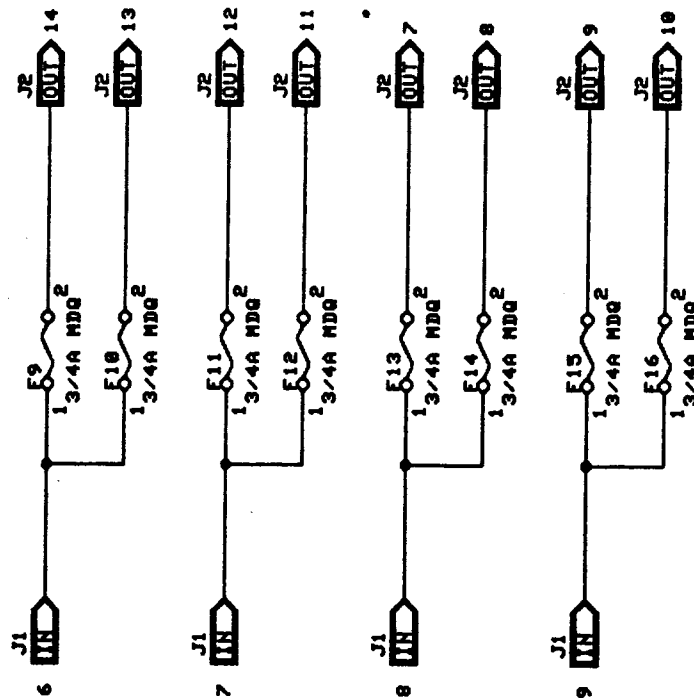
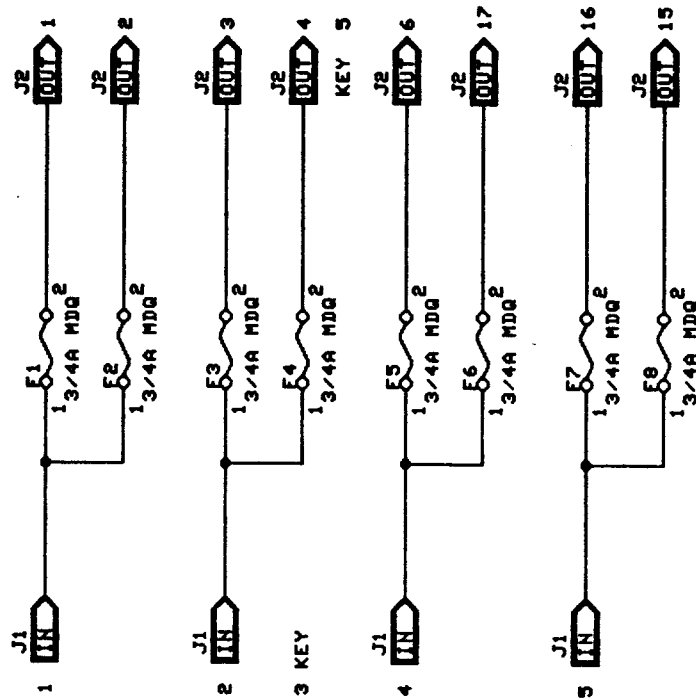
M051-00114-B211

CROSS REFERENCE/DESIGNATION LIST

DESCRIPTION	QTY	DESIGNATION	PART NUMBER
AUTO INSERT PINS .025	8	J1	0304-00804-B000
AUTO INSERT PINS .025	16	J2	0304-00804-B000
PCB FUSE CLIPS	32	F1-F16	0017-00071-0034
BRIGHT LIGHT FUSE BOARD	1	PCB	A084-91901-B000

Released for Production
988 2/4/88

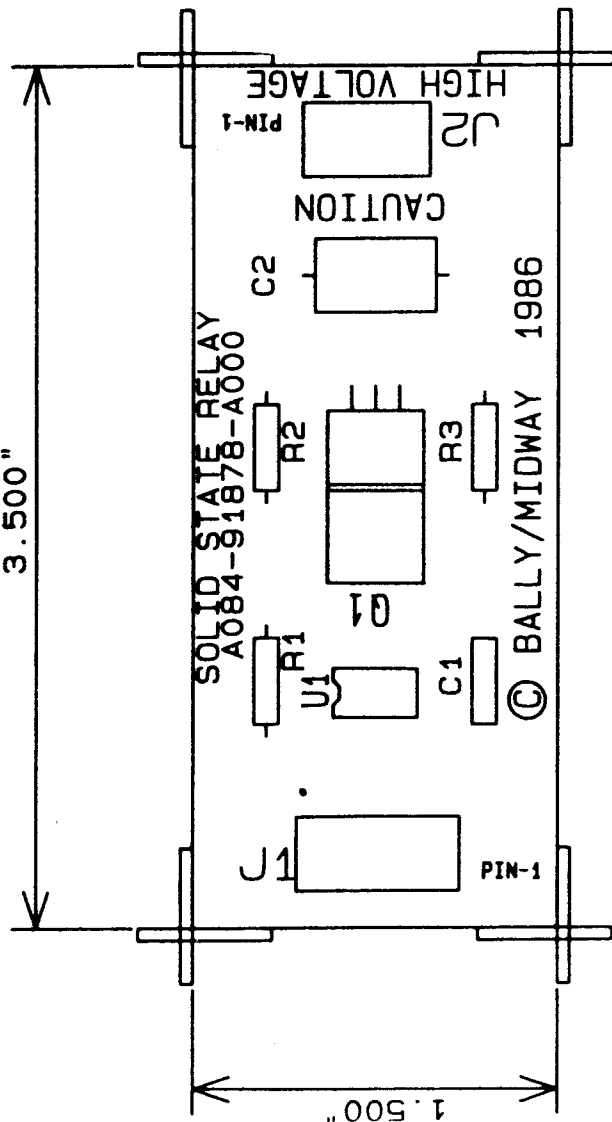
PROJECT ENG: J. BOYDSTON			USED ON 0365		BALLY/MIDWAY MFG	
DO NOT SCALE DIMS.			SCALE FULL		FRANKLIN PARK ILL.	
TOLERANCES		DRW. D.B.S.	MATERIAL .062" FR-4		PART NO.	
DECIMAL +/- .005		CHD.	FINISH		M051-00114-B	
HOLE DIA. +.002-.004		DATE 01/18/88	ASSEMBLY DRAWING BRIGHT LIGHTS FUSE PCB			



10-33

Released for Production JBB 2/1/88

NOTES:	BALLY MIDWAY MFG. CO.
J. BOYDSTON	BRIGHT LIGHTS FUSE PCB
02-04-88	A084-91901-3000
	M051-00114-3212
	SHEET 1 OF 1 REV



DESIGNATION LIST

DESIGNATION NO.

DESCRIPTION

C1	.1UF 50V AX. CER. CAP
C2	.1UF 400V POLYESTER CAP
R1	100 OHM 1/4W 5%
R2	180 OHM 1/4W 5%
R3	1.8K 1/4W 5%
Q1	T2322 TRIAC
U1	MOC3031 OPTO COUPLER
J1	KK156 MACHINE INSERT PINS
J2	CABLE CONNECTION
PCMHI-PCMH4	P.C. MTG. HARDWARE
A080-91878-A000	P.C. BOARD

CROSS REFERENCE LIST

DESCRIPTION

.1UF 50V AX. CER.
.1UF 400V POLYESTER
100 OHM 1/4W 5%
180 OHM 1/4W 5%
1.8K 1/4W 5%
T2322 TRIAC
MOC3031 OPTO COUPLER
KK156 PLUS
CABLE CONNECTION
P.C. MTG. HDR W
P.C. BOARD

QTY.

DESIGNATION NO.

PART NOS.

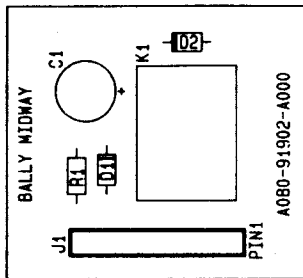
1	C1	0C68-00800-0005
1	C2	0E35-00800-0001
1	R1	100E-00005-0033
1	R2	100E-00005-0039
1	R3	100E-00005-0067
1	Q1	0365-00804-0019
1	U1	120E-00002-0002
3	J1	0304-00804-0010
1	J2	A639-00024-0000
4	PCMHI-PCMH4	0017-00042-0320
1	-	A080-91878-A000

Revised 12-2-86 RK

BALLY MIDWAY MFG. CO.

.062" J.S.
FR-400 10/17/86
ASSEMBLY DRAWING
SOLID STATE RELAY PC
A084-01878-A000

M051-00114-A173

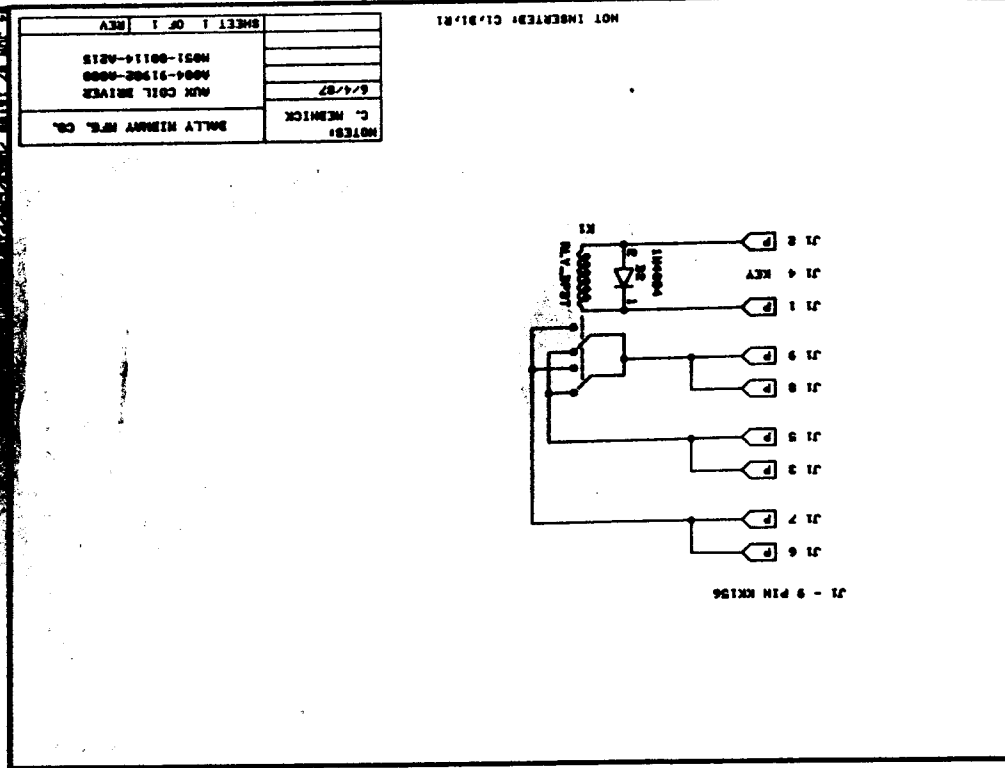


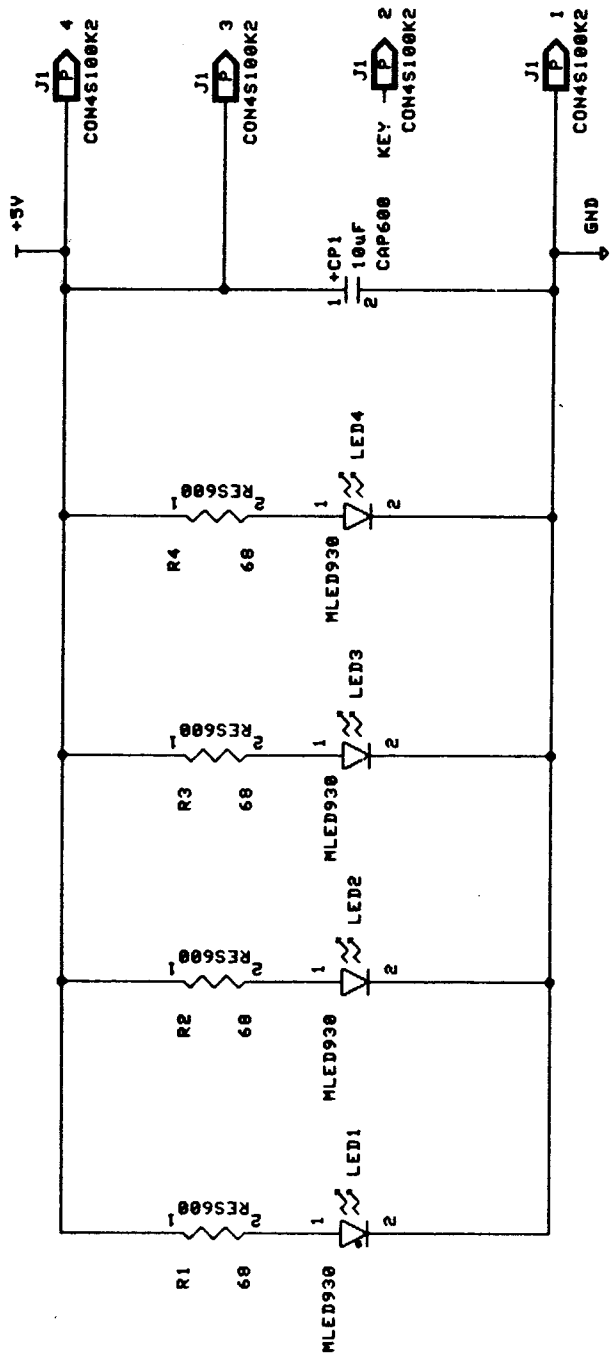
CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NO.
1N4004 DIODE	1	D2	103E-00003-0005
.045 SQ. PIN	8	J1	0304-00804-0010
RELAY	1	K1	114E-00001-0011
NOT INSERTED	3	C1, D1, R1	
AUX COIL DRIVER PCB	1		A080-91902-A000

6/4/87 - Released for Production. CMH

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





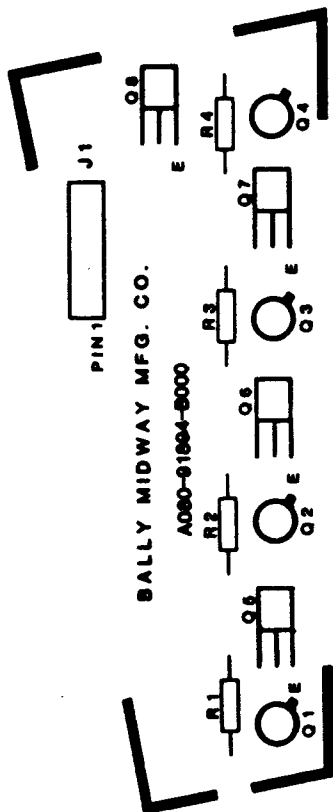
NOTES:

8/3/87	BALLY MIDWAY MFG. CO.
J. BOYDSTON	4 POSITION EMITTER PCB
	9884-91895-8000
	M051-00114-8206
	SHEET 1 OF 1 REV

84 AUG 87 09144 /USER/BB/PINBALL/8806/EMITTER 1.DRAW

CROSS REFERENCE LIST

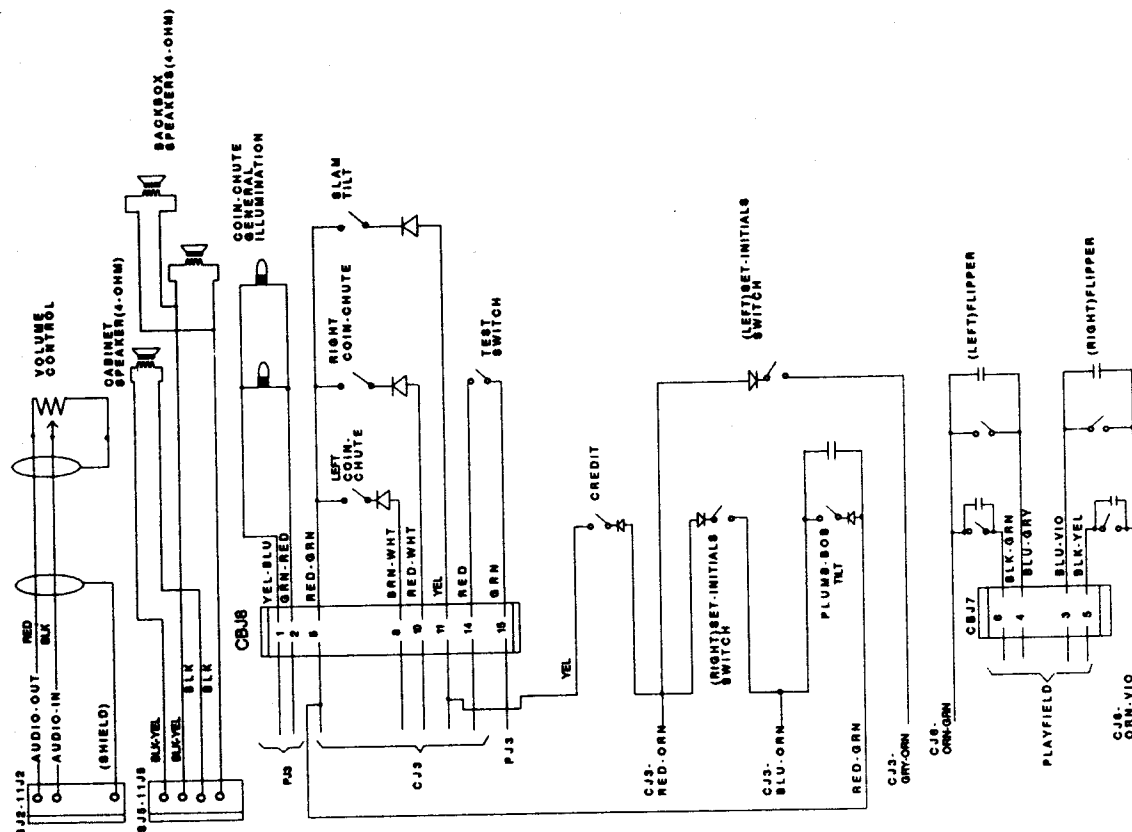
8/3/87 - RELEASED FOR PRODUCTION JBB
088 8/6/87 - REV. 1 Conn. Chng. JBB



PROJECT ENG:						J. BOYDSTON					
DIM. TOLERANCES UNLESS SPECIFIED						DRAW.					
						CONCENTRICITY T.Y.R. .003					
DO NOT SCALE DWG.						SCALE					
						FULL					
						USED ON OH06					
						NO. REQ'D 1 PER					
						ASSEMBLY DRAWING					
						4-POS. DETECTOR PCB					
						(A084-91894-B000)					
						PART NO.					
						M051-00114-B201					
						REVISIONS					
						New Release JAB					
						DATE					
						9/3/57					
						BY					
						CHECKED					
						APPROVED					
						SHEET					
						413187					
						FRONT					
						BACK					
						TOP					
						BOTTOM					

Truck Stop Cabinet Wiring

Playfield Coils

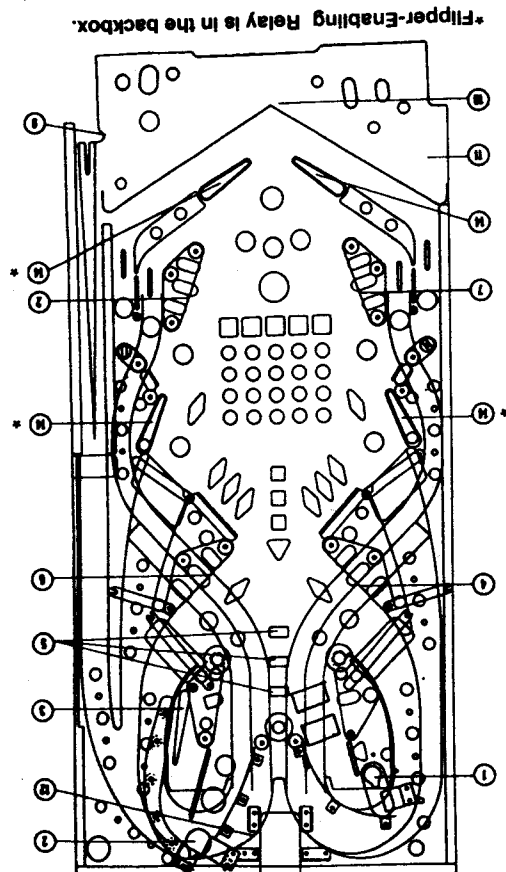


Coll Table Including Flipper Coils

Solenoid No.	Solenoid Description	Solenoid Type	Wire Color	Connections		Solenoid Part No.
				Control	Driver/Transfer	
01	Left Saver (Truck Stop)	Momentary	White-Red	Cb3-1	C18	A396-00067-0029
02	Right Saver	Momentary	White-White	Cb3-4	C18	A396-00067-0010
03	Right Kicker (Door)	Momentary	Yellow-Blue	Cb3-2	C12	A390-00211-0000
04	Inline Target (Seat)	Momentary	Yellow-White	Cb3-5	C12	A396-00067-0019
05	Left, Top Slingshot	Momentary	Blue-Orange	Cb3-7	C17	A396-00067-0029
06	Left, Top Slingshot	Momentary	Yellow-Brown	Cb3-5	C17	A396-00067-0029
07	Left, Bottom Slingshot	Momentary	Yellow-Red	Cb3-1	C13	A396-00067-0029
08	Right, Bottom Slingshot	Momentary	Yellow-Green	Cb3-1	C13	A396-00067-0029
09	Ball Eject	Momentary	White-Brown	Cb3-6	C39	A390-00211-0000
10	Out Hole	Momentary	White-Black	Cb3-8	C39	A390-00044-0000
11	Kicker	Continual	White-Gray	Cb3-11	C40	A390-00048-0000
12	Lane Steering*	Continual	Yellow-Violet	Cb3-7	C10	A396-00067-0027
13	88 Relay Bd (Backbox)*	Continual	White-Green	Cb3-10	C8	A390-01786-0000
14	Flipper-Enabling Relay*	Continual	Gray-White	-	C7	114E-00001-0011
15	Not Used	Continual	White-Blue	Cb3-2	C19	-
16	Not Used	Momentary	White-White	Cb3-3	C18	-
17	Not Used	Momentary	White-Yellow	Cb3-9	C21	-
18	Not Used	Momentary	White-Orange	Cb3-4	C21	-
19	Not Used*	Momentary	White-Green	Cb3-7	C38	-
20	Not Used*	Continual	Brown-Violet	Cb3-9	C9	-
Wire Colors and Connectors						
01	Left Flipper	On-Gr.	Cb3-9, CB37-2, Blk-Grn.	CB37-3	Part Number	A396-00067-0021
02	Top Left Flipper	On-Gr.	Cb3-9, CB37-2, Blk-Gr.	CB37-4		FL11630/500/DC
03	Bottom Left Flipper	On-Mo.	Cb3-9, CB37-2, Blk-Yel.	CB37-5		A396-00067-0021
04	Top Right Flipper	On-Mo.	Cb3-9, CB37-1, Blk-Yel.	CB37-6		FL11630/500/DC
05	Bottom Right Flipper	On-Mo.	Cb3-9, CB37-1, Blk-Mo.	CB37-5		FL11630/500/DC

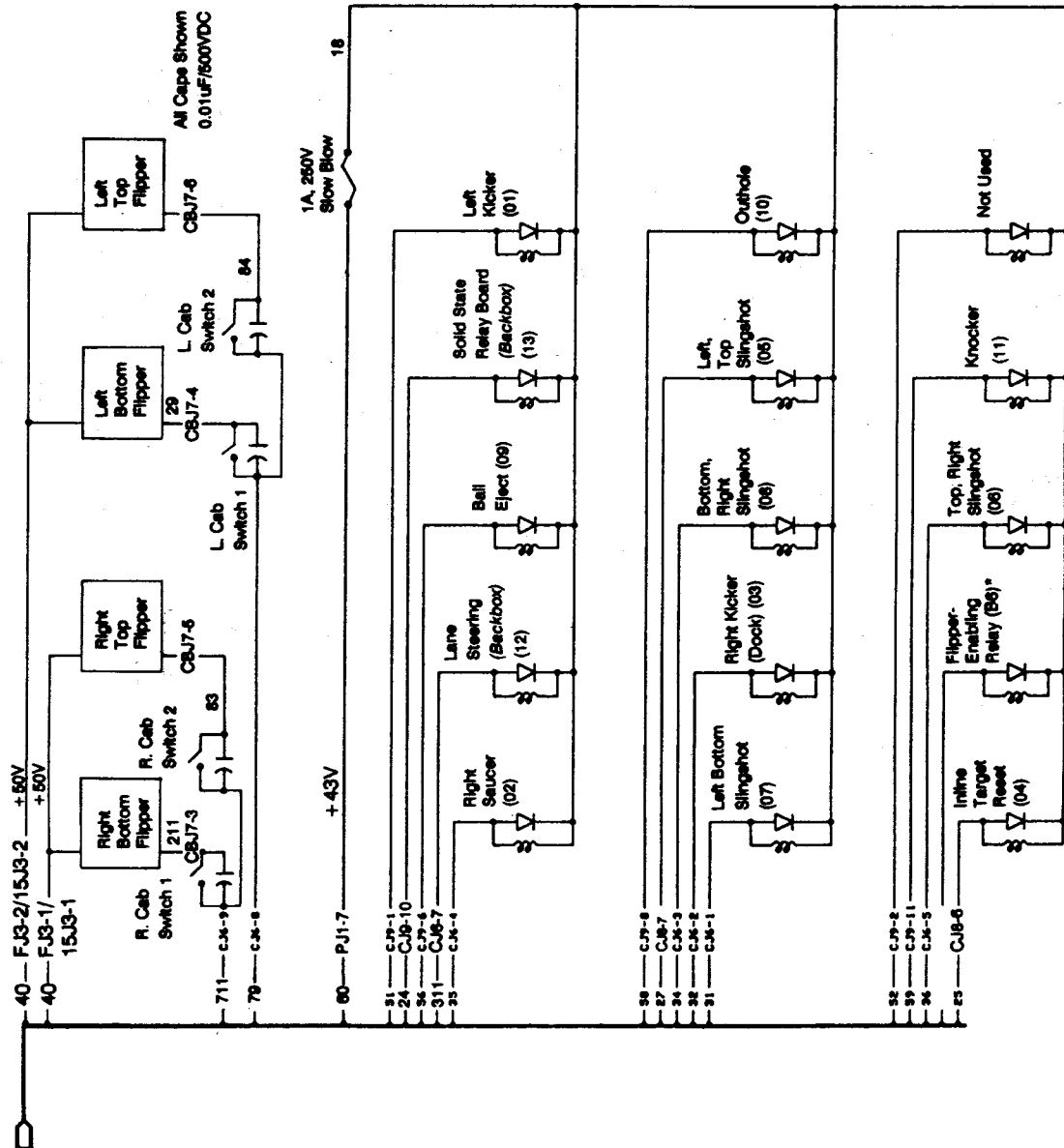
NOTES:

- To use continuous asteroid 12, install jumper, JW11. Remove jumper, JW11.
 To use continuous asteroid 19, install jumper, JW6. Remove jumper, JW6.
 To use continuous asteroid 20, install jumper, JW8. Remove jumper, JW8.
 To use auto display at C14-01, install jumper, JW11. Remove jumper, JW10.
 To use auto display at C12-19, install jumper, JW11. Remove jumper, JW10.
 Cable marked with an asterisk () are on the playfield backboard or in the backbox.
 Apply heatshrink 112-00001-0017 and compound 0017-00008-0204 to drivers
 311, Q13, Q16, Q17 and Q18. Spread the thermal compound on the back
 of each driver.
 311, Q13, Q16, Q17 and Q18. Spread the thermal compound on the back
 of each driver.

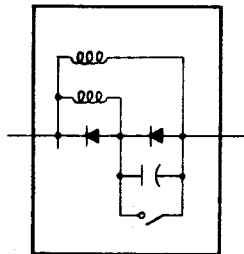
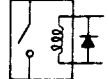


Cabinet Wiring

Playfield Coil Location Drawing



Flipper Configuration

Flipper
Enabling
Relay (14)

Control Board (Backbox)

COLOR CODE	
10- RED	20- BLUE
30- YELLOW	40- GREEN
50- WHITE	60- BROWN
70- ORANGE	80- BLACK
90- GRAY	00- NO COLOR
11- VIOLET	

SOLENOIDS

NOTES:

M. STONE

3/22/85

HINMAN MFG. CO.

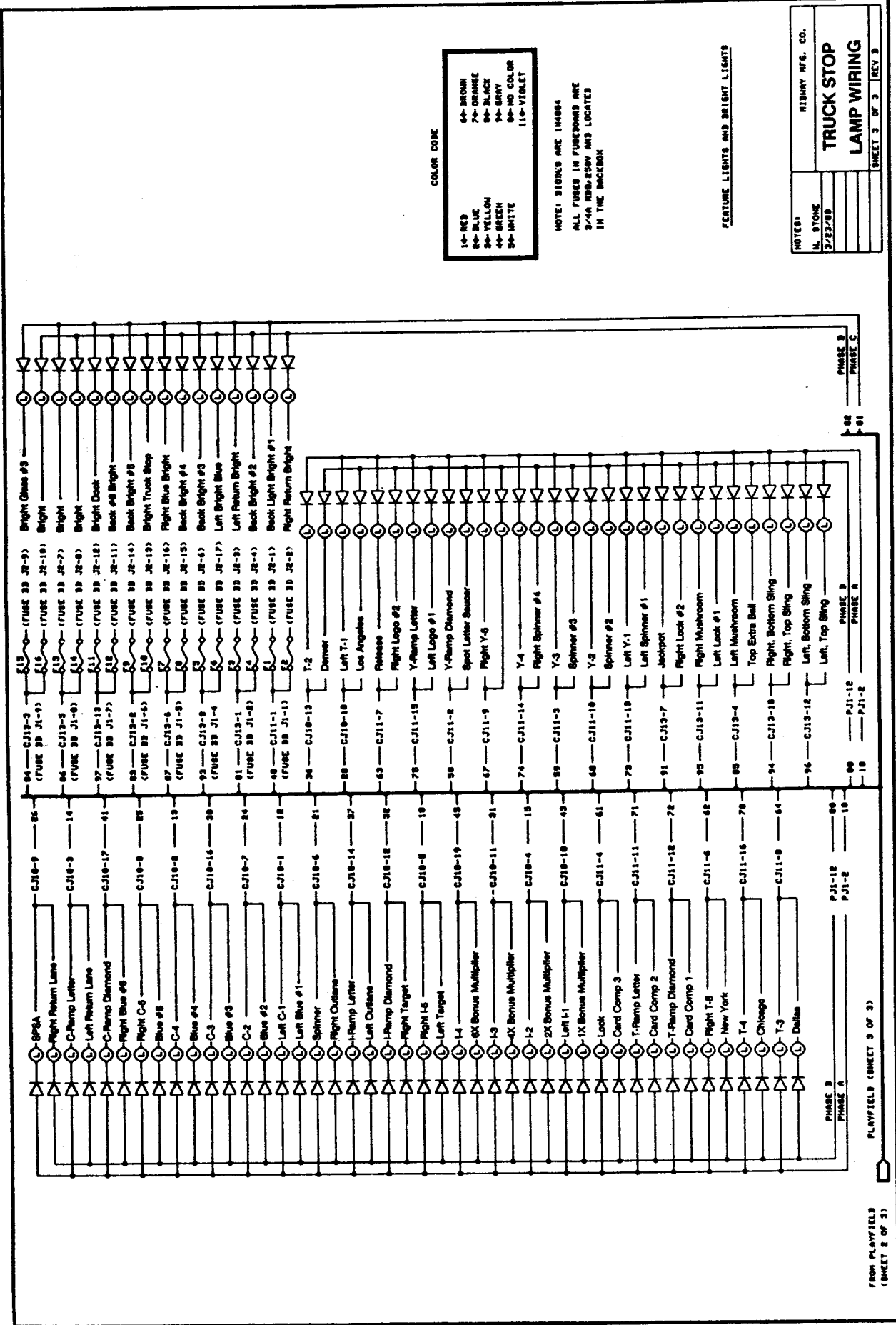
TRUCK STOP

COIL WIRING

SHEET 1 OF 3 REV A

Coil Wiring

6-25



COLOR CODE	
14-RED	64-BROWN
30-BLUE	74-ORANGE
50-YELLOW	84-BLACK
40-GREEN	94-GRAY
90-WHITE	00-NO COLOR
	110-VIOLET

NOTE: BROWN ARE 14-0004
ALL FUSES IN FUSEBOARDS ARE
3/4" 100-250V AND LOCATED
IN THE BACKBOX

FEATURE LIGHTS AND BRIGHT LIGHTS

NOTES:	HINWAY MFG. CO.
M. STONE	TRUCK STOP
3/23/88	LAMP WIRING
	SHEET 3 OF 3 REV. 3

Phase "A" and "C" Lamp Table

CJ10-01 Red-Blue Left C-1 (1)	CJ10-18 Green-Yellow Left L-1 (9)	CJ10-10 Blue-Black Left T-1 (17)	CJ11-13 Orange-Yellow Left Y-1 (25)	CJ12-01 Green-Black Bright #1* (33)	CJ13-12 Green-Black Left L-1 (41)
CJ10-07 Blue-Green C-2 (2)	CJ10-04 Red-White T-2 (10)	CJ10-13 Yellow-Brown T-2 (18)	CJ11-10 Brown-Black Y-2 (28)	CJ12-01 Black-Red Bright #2* (34)	CJ13-10 Gray-Green Left L-1 (42)
CJ10-18 Yellow-Black C-3 (3)	CJ11-08 Brown-Black T-3 (11)	CJ11-03 White-Gray Y-3 (19)	CJ11-03 Gray-Yellow Bright #3* (35)	CJ12-01 Black-Red Bright #3* (35)	CJ13-04 Black-White Left L-1 (43)
CJ10-02 Red-Yellow C-4 (4)	CJ10-19 Green-White T-4 (12)	CJ11-18 Orange-Black Y-4 (20)	CJ11-14 Orange-Green Y-4 (29)	CJ12-01 Black-Red Bright #4* (36)	CJ13-11 Black-White Left L-1 (44)
CJ10-08 Blue-White R. C-5 (5)	CJ10-05 Red-Black Right T-5 (21)	CJ11-08 Brown-Blue Right T-5 (21)	CJ11-08 Brown-Orange Right T-5 (29)	CJ12-01 Black-Red Bright #5* (37)	CJ13-07 Gray-Red Jackpot (45)
CJ10-17 Green-Red Diamond (6)	CJ10-12 Yellow-Orange T-Ramp Diamond (14)	CJ11-12 White-Black Y-Ramp Diamond (22)	CJ11-02 White-Black Y-Ramp Diamond (30)	CJ12-01 Black-Red Bright #6* (38)	
CJ10-03 Red-Green C-Ramp L-1 (7)	CJ11-11 Orange-Red Y-Ramp L-1 (15)	CJ11-16 Orange-White Y-Ramp L-1 (23)	CJ11-16 Orange-White Y-Ramp L-1 (31)	CJ12-01 Black-Red Bright #7* (39)	
CJ10-09 Blue-Brown SPSA (8)	CJ11-04 Brown-Red Look (24)	CJ11-07 Brown-Yellow Release (32)	CJ11-07 Brown-Yellow Release (32)	CJ12-01 Black-Red Bright #8* (40)	

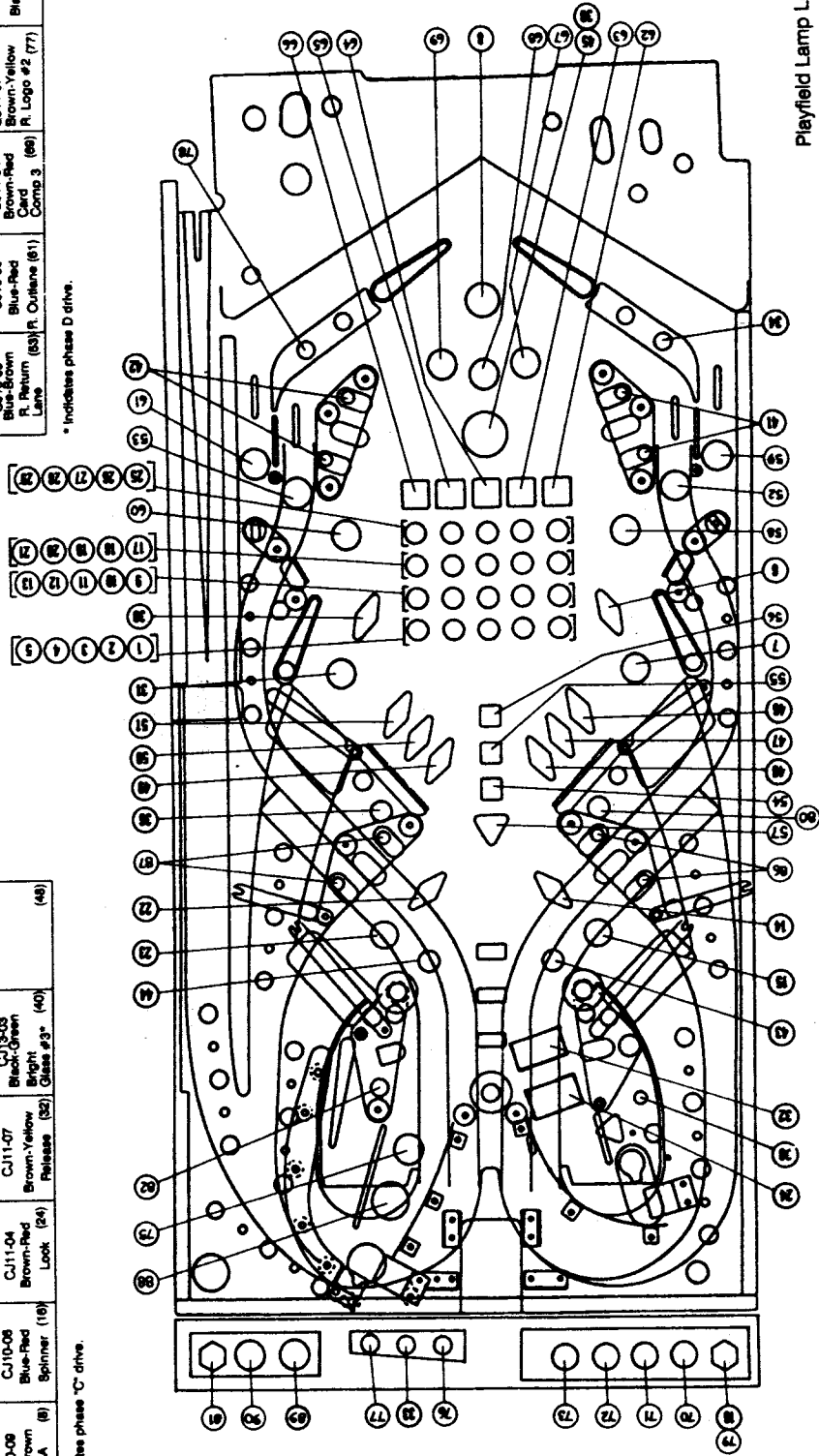
* Indicates phase "C" drive.

Phase "B" and "D" Lamp Table

CJ10-01 Red-Blue L. Blue #1 (46)	CJ10-18 Green-Yellow 1X Bonus Multiplier (54)	CJ10-10 Blue-Black Los Angeles (62)	CJ11-13 Orange-Yellow L. Spinner #1 (70)	CJ12-01 Green-Black Bright #9* (78)	CJ13-12 Green-Black Left L-1 (86)
CJ10-07 Blue-Green Blue #2 (47)	CJ10-11 Red-White 2X Bonus Multiplier (55)	CJ10-13 Yellow-Brown Denver (63)	CJ11-10 Brown-Black Spinner #2 (71)	CJ12-01 Black-Red Bright #10* (79)	CJ13-10 Gray-Green Right L-1 (87)
CJ10-18 Yellow-Black Blue #3 (48)	CJ10-11 Red-White 3X Bonus Multiplier (56)	CJ11-08 Brown-Green Dallas (64)	CJ11-03 White-Gray Spinner #3 (72)	CJ12-01 Black-Red Bright #11* (80)	CJ13-04 Black-White Top Ball (88)
CJ10-02 Red-Yellow Blue #4 (49)	CJ10-18 Green-White 4X Bonus Multiplier (57)	CJ11-18 Orange-Black Chicago (65)	CJ11-14 Orange-Green R. Spinner #4 (73)	CJ12-01 Black-Red Bright #12* (81)	CJ13-11 Gray-White L. Look #1 (89)
CJ10-08 Blue-White Blue #5 (50)	CJ10-05 Red-Black Left Target (58)	CJ11-08 Brown-Blue New York (66)	CJ11-08 Brown-Blue New York (74)	CJ12-01 Black-Red Bright #13* (82)	CJ13-07 Gray-Red R. Look #2 (90)
CJ10-17 Green-Red R. Blue #6 (51)	CJ10-12 Yellow-Orange Card Comp 1 (59)	CJ11-12 Orange-Blue Card Comp 1 (67)	CJ11-12 Orange-Blue Card Comp 1 (75)	CJ12-01 Black-Red Bright #14* (83)	
CJ10-03 Red-Green Lane (52)	CJ10-14 Yellow-Blue R. Target (60)	CJ11-11 Orange-Red Card Comp 2 (68)	CJ11-15 Orange-White L. Logo #1 (76)	CJ12-01 Black-Red Bright #15* (84)	
	CJ10-08 Blue-Red R. Outlane (61)	CJ11-04 Brown-Red Card Comp 3 (69)	CJ11-07 Brown-Yellow R. Logo #2 (77)	CJ12-01 Black-Red Bright #16* (85)	

* Indicates phase D drive.

Playfield Lamps



WARNINGS & NOTICES

WARNING

FOR SAFETY AND RELIABILITY, substitute parts and equipment modifications are not recommended.

USE OF NON-BALLY PARTS or circuit modifications may cause injuries or equipment damage.

SUBSTITUTE PARTS OR MODIFICATIONS may void FCC Type Acceptance.

THIS GAME IS PROTECTED by Federal copyright, trademark and patent laws. Unauthorized software or hardware modifications may be illegal under Federal law.

THIS "MODIFICATION" PRINCIPLE ALSO APPLIES to unauthorized facsimiles of *BALLY* logos, designs, publications and assemblies. Moreover, facsimiles of *BALLY* equipment (or any feature thereof) may be illegal under Federal law. Whether or not such facsimiles are manufactured with *BALLY* components, this rule applies.

WARNING

This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions 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.

WARNING

Transport this game **ONLY** with hinged backbox down!

WARNING

FCC STICKER. Check the back of your game for an FCC sticker. When *BALLY* ships a game, the game has been found to comply with FCC Rules. The sticker is proof. If the sticker is missing, legal repercussions to the owner and distributor of the game may result. If your game (manufactured after December 1982) has no FCC sticker, call *BALLY* for advice. Or write us a note on your game-registration card. Be sure the card bears your game's serial number.

WARNING

THREE-WIRE PLUG. Prevent shock hazard and assure proper game operation! Only plug this game into a properly grounded outlet. **DO NOT** use a "cheater" plug to defeat the power cord's ground pin. **DO NOT** cut off the ground pin.

RF-INTERFERENCE NOTICE

YOUR GAME'S CABLE-HARNESS PLACEMENT and ground-strap routing are very important. They are designed to keep RF radiation and conduction within levels accepted by FCC Regulations.

MAINTAIN THESE LEVELS. Servicing may require that you disconnect harnesses or ground straps. When you're finished, reposition and reconnect them as they were.

NOTICE

BALLY, *MIDWAY* and *TRUCK STOP* are trademarks of Midway Manufacturing Company. *WILLIAMS*, *LANE-CHANGE* and *MULTI-BALL* are trademarks of *WILLIAMS ELECTRONICS GAMES, INC.* Entire contents of this manual copyright (C) 1988 *MIDWAY MANUFACTURING CO.*, Manufacturers of *BALLY* Amusement Games. All rights reserved.