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MIDWAY HOTSHOT® BASKETBALL

Operations Manual Includes

Operations & Adjustments
Testing & Problem Diagnosis
Parts Information
Reference Diagrams & Schematics

MIDWAY MANUFACTURING COMPANY
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JUMPER CHARTS

Display	W1	W2
1MEG, 2MEG, 4 MEG EPROM	In	Out
512K, 1 MEG EPROM	Out	In

Country	W14	W15	W16	W17	W18
America	In	In	In	In	In
European	In	In	Out	In	In
French	In	In	In	Out	In
German	In	In	In	In	Out
Spain	In	Out	In	In	In

SOLENOID/FLASHER TABLE

Sol. No.	Function	Solenoid Type	Voltage Connections			Drive Xister	Drive Connections			Drive Wire Color	Solenoid Part Number Flashlamp Type
			Playfield	Backbox	Cabinet		Playfield	Backbox	Cabinet		
01	Not Used	High Power				Q82				Vio-Brn	---
02	Not Used	High Power				Q80				Vio-Red	---
03	Release Ball Power	High Power	J106-3			Q78	J132-3			Vio-Org	A-15943
04	Release Hold Down	High Power	J106-3			Q76	J132-5			Vio-Yel	A-15943
05	Not Used	High Power				Q64				Vio-Grn	---
06	Not Used	High Power				Q66				Vio-Blu	---
07	Not Used	High Power				Q68				Vio-Blk	---
08	Not Used	High Power				Q70				Vio-Gry	---
09	Not Used	Low Power				Q58				Brn-Blk	---
10	Not Used	Low Power				Q56				Brn-Red	---
11	Not Used	Low Power				Q54				Brn-Org	---
12	Not Used	Low Power				Q52				Brn-Yel	---
13	Not Used	Low Power				Q50				Brn-Grn	---
14	Not Used	Low Power				Q48				Brn-Blu	---
15	Not Used	Low Power				Q46				Brn-Vio	---
16	Not Used	Low Power				Q44				Brn-Gry	---
17	Basket Motor Forward	Flasher	J118-2			Q42	J126-1			Blk-Brn	14-7980 12VDC
18	Basket Motor Reverse	Flasher	J118-2			Q40	J126-2			Blk-Red	14-7980 12VDC
19	De-jamming Motor	Flasher	J106-5			Q38	J126-3			Blk-Org	14-7979 50VAC
20	Back Left Flasher	Flasher	J106-5			Q36	J126-4			Blk-Yel	#89
21	Dome Light	Flasher	J106-5			Q28	J126-5			Blu-Grn	#906
22	Front Left Flasher	Flasher	J106-5			Q30	J126-6			Blu-Blk	#89
23	Back Right Flasher	Low Power	J106-5			Q34	J126-7			Blu-Vio	#89
24	Front Right Flasher	Low Power	J106-5			Q32	J126-8			Blu-Gry	#89
25	Upper Left Flasher	Flasher		J106-5		Q26		J124-1		Blu-Brn	#906
26	Upper Right Flasher	Flasher		J106-5		Q24		J124-2		Blu-Red	#906
27	Dispenser Motor	Flasher			J116-2	Q22			J123-4	Blu-Org	14-7962
28	Dispenser Low	Flasher			J116-2	Q20			J123-5	Blu-Yel	20-9679
	General Illumination		**Playfield**	**Backbox**	**Cabinet**		**Playfield**	**Backbox**	**Cabinet**		
01	Upper Back Panel	G.I.		J120-1		Q18		J120-7		Wht-Brn	#555
02	Shooter Panel	G.I.	J120-2			Q10	J120-8			Wht-Org	#555
03	Basket Backboard	G.I.	J120-3			Q14	J120-9			Wht-Yel	#555
04	Not Used	G.I.				Q16				Wht-Grn	---
05	Cabinet/Coins	G.I.			J119-3	Q12			J119-1	Wht-Vio	#555

HOTSHOT

BASKETBALL

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THE SPECIFICATIONS AND PARTS IDENTIFIED IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE.

* IMPORTANT! EQUIPPING AN ELECTRONIC GAME WITH A REDEMPTION DEVICE MAY BE PROHIBITED UNDER APPLICABLE LAWS. CHECK WITH LOCAL AUTHORITIES CONCERNING THESE LAWS PRIOR TO INSTALLING ANY TICKET OR OTHER REDEMPTION DEVICE.

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HOTSHOT BASKETBALL

GAME #1 3 POINT LINE

Baskets made in front of the line (the flashing bar of lights on the playfield), are worth 2 points each, baskets made at or behind the line are worth 3 points each.

GAME #2 4TH QUARTER

All baskets are worth 2 points each, until the last 15 seconds of the game, then all baskets are worth 3 points each.

GAME #3 REPEAT-A-SHOT

Make consecutive baskets to raise the point value by 2, until a miss occurs. Example: If 5 baskets in a row are made, point scoring is 2, 4, 6, 8, 10, etc. If the next basket is missed, the point value will start over at 2 points.

GAME #4 AROUND THE WORLD

Wait for the basket to move to the front of the playfield, then every shot made moves the basket back slightly. Each basket represents a different country and bonus points are awarded for every 5 baskets made. Make the basket go all the way back and forward for a trip AROUND THE WORLD.

GAME #5 PUSH BACK

As the basket moves forward, every shot made will push the basket back slightly. If no basket is made within a short time, the basket will begin to move forward again. The farther back the basket is pushed, the more points each basket is worth.

THESE ADDITIONAL GAMES ARE AVAILABLE ONLY WHEN PLAYING A LINKED GAME:

GAME #6 TUG-O-WAR

Every time you make a shot, your opponents basket moves forward and your basket moves backward slightly. Shots made while basket is farther back are worth more points. Push you opponents basket forward to the low scoring area, while pushing yours back to the high scoring area.

GAME #7 REPEAT RACE

Wait for all players baskets to move to the front of the playfield, then every shot made will push the basket back slightly. The first person to push their basket all the way to the back, ends the game. The person with the highest score wins. Scoring is the same as Game #3 above.
HINT: The player who makes the most shots in a row, the fastest, will win.

Notes...

SECTION 1

GAME OPERATION AND TEST INFORMATION

HOT SHOT (System WPC) ROM Summary

IC	TYPE	LOCATION	BOARD	PART NUMBER
Game ROM 1	27040	U6	CPU	A-5343-60017-1
Sound/Speech ROM 2	27010	U14	Audio	A-5343-60017-2
Sound/Speech ROM 3	27040	U18	Audio	A-5343-60017-3

NOTICE

Order replacement ROMs from your authorized **MIDWAY MANUFACTURING CO.** distributor. Specify: (1) part number (if available); (2) ROM level (number) on the label; (3) game the ROM is used in.

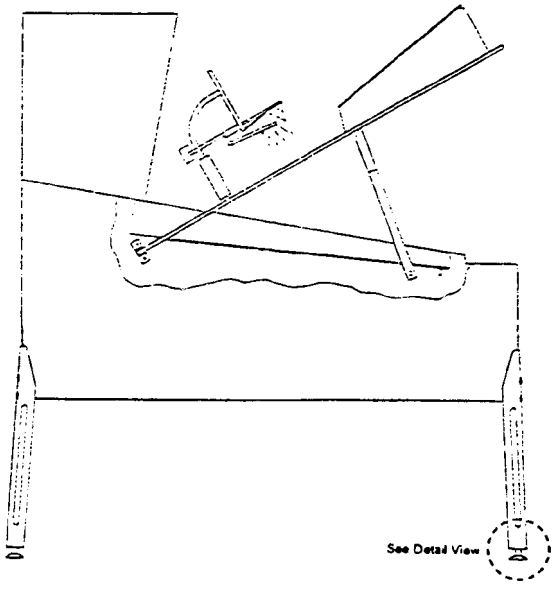
GAME ASSEMBLY INSTRUCTIONS

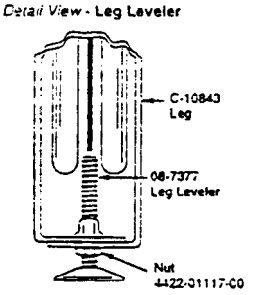
Power:	Domestic 120V @ 60 Hz Foreign 230V @ 50 Hz Japan 100V @ 50 Hz	***Dimensions:***	Width: 24" Approx. Depth: 58" Approx. Height: 72" Approx.
Temp:	32° F to 100° F (0° C to 38° C)		
Humidity:	Not to exceed 95% relative.	***Weight:***	Approx. 286 lbs. (crated)

1. Open the shipping container and remove the two cartons that rest on the control panel. These cartons contain the parts necessary to finish assembly of the game. Open and remove the parts contained in the cash box, set aside. Remove the legs and red plastic dome.

2. Slide the cabinet out of the shipping container and remove all the corrugated shipping blocks. Place cabinet on a support.

3. Attach leg levelers to legs. Attach legs to cabinet using the leg bolts provided.

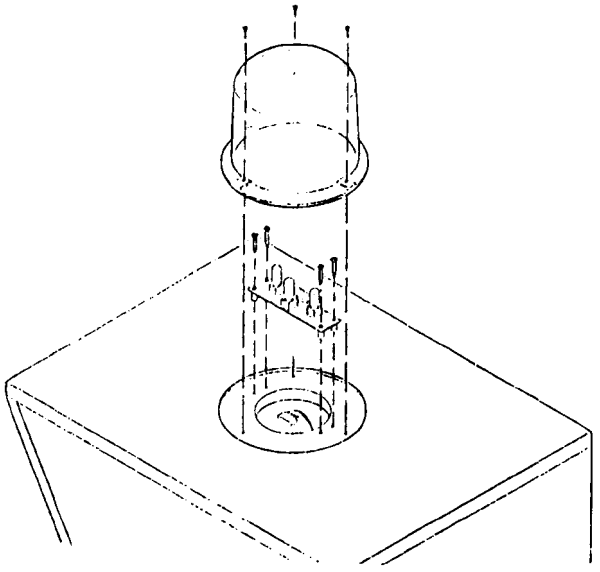




4. Extend each leg leveler slightly below the leg bottom, so that all four foot pads protrude approximately the same distance. Tighten the nut on each leg leveler shaft to maintain this setting. Remove the cabinet from its support and place it on the floor.

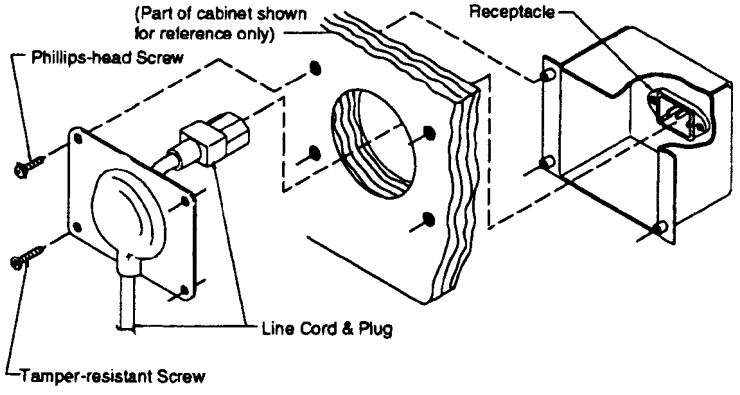
5. Unlock and open the coin door. Reach inside the coin door opening and unlock the control panel latches located on the left and right side of the cabinet, directly under the control panel. Lift the control panel off the game and set aside. **Carefully slide the plastic dome toward the front of the game lifting it slightly to clear the shooter plunger, and set aside.** Remove foam packing in shooter hole. Cut tie wrap at back of basket assembly to free basket lever. Insert five basketballs. Reinstall dome and control panel.

6. Locate cable for dome light printed circuit board directly through opening on top of game. Attach connector to printed circuit board. Aline the spacers of printed circuit board over the pre-drilled holes. *Printed circuit board should be parallel to the front edge of game.* Using four (4) screws (P/N 4106-01115-16), mount printed circuit board to game. Place red plastic dome inside counter-bore and mount using three (3) tamperproof screws (P/N 4108-01092-10B).



7. Insert cash box inside coin door opening. Tab cut-out on rear of cash box should lay over the tab at rear of opening. If desired the rear tab can be used for locking purposes.

8. To attach line cord, remove envelope stapled to the inside cabinet (near cashbox). Remove the four Phillips-head screws that mount the line cord cover plate to the rear cabinet. Match the prongs on the plug with the holes in the receptacle and push line cord securely into place. Make sure cord is aligned with the indentation of plate (indentation should point toward bottom of cabinet). Remount line cord cover plate. If desired, tamper resistant screws have been provided in an envelope marked "Security Screws" to remount cover plate.



A "Linking Kit" (optional equipment) is now available that can link up to four (4) games for head-to-head competition. The kit should be installed at this point, before game has been moved into its final location. See kit instructions for installation procedures.

9. Move the game into the desired location.

GAME CONTROL LOCATIONS

Cabinet Switches

The On-Off switch is located on the bottom of the cabinet, near the right front leg.

Diagnostic Switches

The operator controls all game adjustments, obtains bookkeeping information, and diagnoses problems using four pushbutton switches. The Diagnostic Switch Assembly is mounted on the cabinet crossbar, directly in back of the coin door. The diagnostic switches have two modes of operation, Normal Function and Test Function.

Normal Function

The Service Credits button puts credits on the game that are not included in any of the game audits.

The Volume Up button raises the sound level of the game. Press and hold the button until the desired level is reached.

The Volume Down button lowers the sound level of the game. Press and hold the button until the desired level is reached. See Adjustment A.1 28 to shut sound OFF completely.

The *Begin Test button starts the Menu System Operation and changes the Diagnostic Switches from Normal Function to Test Function.

Test Function

The Escape button allows you to get out of a menu selection or return to the Attract Mode.

The Up button allows you to cycle forward through the menu selections or adjustment choices.

The Down button allows you to cycle backward through the menu selections or adjustment choices.

The *Enter button allows you to get into a menu selection or lock in an adjustment choice.

To reset High Score, hold down the Begin Test/Enter switch for 5 seconds while in the Attract Mode.

GAME OPERATION

△ CAUTION

After assembly and installation at the site location, this game must be plugged into a properly grounded outlet to prevent shock hazard, and to assure proper game operation. DO NOT use a 'cheater' plug to defeat the ground pin on the line cord. DO NOT cut off the ground pin.

POWERING UP. With the coin door closed, plug the game in and switch it On. In normal operation, testing will show in the display as the game performs Start-Up Tests. Once the Start-Up Tests have been successfully completed the last score is displayed. Afterward, the game goes into the Attract Mode.

Note: After the game has been on location for a period of time, the Start-Up Tests may contain messages concerning game problems. See 'Error Messages' for more detailed information regarding messages.

Open the coin door and press the Begin Test Switch. The display shows the game name, number, and software revision. The message changes. The display shows the sound software revision, revision level of the system software and date the game software was revised.

Example:

HOT SHOT		**Sound Rev. L-1**	
60017	**Rev. P-2**	**Sy. 2.31**	**6/24/92**

Press the Enter button to enter the WPC Menu System (refer to the section entitled 'Menu System Operation' for more information). Perform the entire Test Menu routine to verify the game is operating satisfactorily.

ATTRACT MODE*. After completing the Test Menu routine, press the Escape button three times to enter the Attract Mode. During the Attract Mode the display shows a series of messages informing the player of the recent highest scores*, "custom messages*", and the score to achieve to obtain an overtime award.

CREDIT POSTING. Insert coin(s). A sound is heard for each coin and the display shows the number of credits purchased. So long as the number of maximum allowable credits* are NOT exceeded by coin purchase or high score, credits are posted correctly.

STARTING A GAME. Press the Start button once. Press the Select Game Button repeatedly to view the different games. Press the Serve Ball Button when the desired game is showing on the display, to begin that game.

TILTS. Actuating the Slam Tilt switch inside the cabinet causes the coins to be ignored for two seconds.

END OF GAME. All earned scores and bonuses are awarded. If a player's final score exceeds the specified value, the player receives a designated award for achieving the current highest score. Credit* may be awarded if H.S.T.D. is achieved. High score and game over sounds are made, as appropriate.

GAME OVER MODE. Game Over will show in the display. Afterward, the high scores flash on the display. The game proceeds to the Attract Mode.

*Operator-adjustable feature.

GAME CONFIGURATION

(Redemption Tickets, Basketball Cards, Coin-op)

This game can dispense basketball cards or tickets, or can be used as a regular coin-operated game. It comes shipped card dispenser and ticket dispenser ready (adapter kits required). The game type can be easily changed by using the Configuration Menu. This chapter explains how to change and operate the game in any of the configurations.

Conversion to a Basketball Card Dispensing Game:

IMPORTANT! EQUIPPING AN ELECTRONIC GAME WITH A REDEMPTION DEVICE MAY BE PROHIBITED UNDER APPLICABLE LAWS. CHECK WITH LOCAL AUTHORITIES CONCERNING THESE LAWS PRIOR TO INSTALLING ANY TICKET OR OTHER REDEMPTION DEVICE.

Note, the dispenser is not guaranteed to operate properly when the humidity is at or above 90° level.
Note, it is REQUIRED that the PICTURE SIDE OF ALL CARDS face the back of the dispenser.
Note, use only Vending Machine Basketball Cards. DO NOT use individually wrapped cards (packaged with gum or food) because the dispenser will not operate properly.

The basketball card dispenser (part #63329) is optional equipment on the game, and can be ordered from your distributor. The following adjustments will need to be set if the card dispenser is used:

1) A.6 01 Dispenser Type - Set to either Tickets, Cards, or Nothing.
2) A.6 02 Dispenser Rate - Select a dispense rate of either, 1-10 for tickets, or 1-10 for cards.

See Dispenser Adjustments for more information.

If the game was converted to tickets or coin-op, then attach the card dispenser and card catcher onto the machine, and use configuration C.1 "Set Cards".

To load the basketball card dispenser hopper, turn the game off. Then unlock and pull the dispenser open. Move the spring loaded pressure plate to the back of the dispenser. Then, tilt the top of the pressure plate towards the back of the dispenser to lock it in place. Next, add cards from the back of the hopper to the front of the hopper. It is REQUIRED that the PICTURE SIDE OF ALL CARDS face the back of the dispenser. After the dispenser has been filled, push the cards toward the front of the dispenser, then straighten the pressure plate to allow it to compress the cards. Turn the game on and test the dispenser by pressing the "Unjammed" button on the circuit board. The dispenser should grab and dispense 1 card. Then, turn off the game, push the dispenser back in the cabinet (making sure the cable does not get tangled). Last, lock the dispenser and turn the game back on.

Conversion to a Ticket Dispensing Game:

IMPORTANT! EQUIPPING AN ELECTRONIC GAME WITH A REDEMPTION DEVICE MAY BE PROHIBITED UNDER APPLICABLE LAWS. CHECK WITH LOCAL AUTHORITIES CONCERNING THESE LAWS PRIOR TO INSTALLING ANY TICKET OR OTHER REDEMPTION DEVICE.

TO ORDER A TICKET DISPENSER, purchase 1) "Dispenser Interface Kit" (part #60604) and 2) ticket dispenser from your distributor. The "Deltronics Ticket Dispenser" Model DL-1275 with outside mount case from Deltronic Lab Inc., Chalfont, Pennsylvania 18914, (215) 977-8616 is compatible. Some assembly is required.

OPTIONAL DISPENSER ITEMS. The Deltronic Dispenser Does Not have a ticket low indicator (lamp and switch). If you supply your own switch, lamp, and mounting hardware, the "Dispenser Interface Kit" provides wires to use these optional items.

AFTER THE DISPENSER IS IN PLACE, The following adjustments will need to be set:

1) A.6 01 Dispenser Type - Set to either Tickets, Cards, or Nothing.
2) A.6 02 Dispenser Rate - Select a dispense rate of either, 1-10 for tickets, or 1-10 for cards.

See Dispenser Adjustments for more information.

Conversion to a Coin-op Game:

REMOVE THE BASKETBALL CARD DISPENSER AND CARD CATCHER, use the black cover plates to cover the dispenser and card catcher holes.

Operating a Dispenser

SELECTING A DISPENSER RATE. See page 32, A.6 Dispenser Adjustments.

OPERATING THE DISPENSER. The "Dispenser Low" lamp turns on when the dispenser is low on tickets or basketball cards. It also blinds when the dispenser is empty or jammed (requiring service). During normal operation, it should be off.

DISPENSER JAMS. If the dispenser should jam or become empty, it is turned off and the ticket low lamp will blink. There is a game adjust A.6 06 "Dispenser Errors" which can direct the game to announce the problem on the display with sound for 5 seconds, or ignore the problem and continue the game (for dispensing cards). After the problem is corrected (tickets are re-loaded to just show through the dispenser exit hole, and basketball cards can be in any position), press the "ticket unjammed" switch located inside the dispenser on the printed circuit board. The game will then dispense the remaining tickets that have accumulated. **Note**: If this amount is excessive, turn the game "OFF" then "ON".

TO MANUALLY DISPENSE A TICKET OR BASKETBALL CARD. Press the "ticket unjammed" switch (located inside the dispenser) during the game or during the attract mode (assuming that there are no jams). The dispenser will dispense 1 item, without effecting any audits.

MENU SYSTEM OPERATION

This game operates on a Menu System. The Main Menu allows you to choose from several main categories, which in turn lead to other menus to choose from. To enter the Menu System, open the coin door and press the Begin Test button. The displays show the Game I.D. Mode. Press the Enter button and the Main Menu appears. To cycle through the Main Menu selections press either the Up or Down button. Activate any selection by pressing the Enter button when the desired selection appears in the displays. Return to the Attract Mode or a previous menu selection, press the Escape button. Press the Start button for HELP at any time.

Main Menu

B. Bookkeeping Menu
- B.1 Main Audits
- B.2 Earnings Audits
- B.3 Standard Audits
- B.4 Feature Audits
- B.6 Time-Stamps

P. Printouts Menu
- P.1 Earnings Data
- P.2 Main Audits
- P.3 Standard Audits
- P.4 Feature Audits
- P.7 Time-Stamps
- P.8 All Data

T. Test Menu
- T.1 Switch Edges
- T.2 Switch Levels
- T.3 Single Switches
- T.4 Solenoid Test
- T.5 Flasher Test
- T.6 General Illumination
- T.7 Sound & Music Test
- T.8 Single Lamps
- T.9 All Lamps
- T.10 Lamp & Flasher Test
- T.11 Display Test
- T.13 Ordered Lamp Test
- T.14 Smart Basket Test
- T.15 Manual Basket Test
- T.16 Ball Release Coil Test

U. Utilities Menu
- U.1 Clear Audits
- U.2 Clear Coins
- U.3 Reset H.S.T.D.
- U.4 Set Time & Date
- U.5 Custom Message
- U.6 Set Game I.D.
- U.7 Factory Adjustments
- U.8 Factory Resets
- U.10 Clear Credits
- U.11 Auto Burn-In

A. Adjustments Menu
- A.1 Standard Adjustments
- A.2 Feature Adjustments
- A.3 Pricing Adjustments
- A.4 H.S.T.D. Adjustments
- A.5 Printer Adjustments
- A.6 Dispenser Adjustments

Press Escape
To move out of a menu selection.

Press Enter
To get into a menu selection.

Press Up
Increases sequence; Example A.1, A.2, A.3, A.4.

Press Down
Decreases sequence; Example A.4, A.3, A.2, A.1.

Use Up and Down to cycle through the selections in a menu.

Use Escape and Enter to move into and out of the selected menu

Bookkeeping is the first category available from the Main Menu. Press the Enter button to activate the Bookkeeping Menu. Press the Up or Down button to cycle through the selections. Press the Enter button to activate a selection. Once activated, press the Up or Down button to cycle through the available audits. Audits cannot be set, they can only be cleared by using U1 and U2 from the Utilities Menu. Press the Escape button to return to the Bookkeeping Menu. Press it again to return to the Main Menu.

B. BOOKKEEPING MENU

B.1 Main Audits
B.2 Earning Audits
B.3 Standard Audits
B.4 Feature Audits
B.6 Time-Stamps

One Button Audit System. The Bookkeeping Menu is obtainable directly from the Attract Mode. Repeatedly pressing the Enter button, while in the Attract Mode, will cycle through all of the game audits.

B.1 Main Audits

B.1	01	Total Earnings	00
B.1	02	Recent Earnings	00
B.1	03	Free Play Percent	00
B.1	04	Average Ball Time	00
B.1	05	Average Game Time	00
B.1	06	Total Plays	00
B.1	11	Number of Tickets/Cards Awarded	00
B.1	12	% of Tickets/Cards Awarded Per Coin	00

B.2 Earning Audits*

B.2	01	Recent Earnings	00
B.2	02	Recent Left Slot	00
B.2	03	Recent Center Slot	00
B.2	04	Recent Right Slot	00
B.2	05	Recent 4th Slot	00
B.2	06	Recent Paid Credits	00
B.2	07	Recent Service Credits	00
B.2	08	Total Earnings*	00
B.2	09	Total Left Slot*	00
B.2	10	Total Center Slot*	00
B.2	11	Total Right Slot*	00
B.2	12	Total 4th Slot*	00
B.2	13	Total Paid Credits*	00
B.2	14	Total Service Credits*	00
B.2	15	Recent Number of Tickets Awarded	00
B.2	16	Recent % of Tickets/Cards Awarded Per Coin	00
B.2	17	Total Number of Tickets/Cards Awarded	00
B.2	18	Total % of Tickets/Cards Awarded Per Coin	00

*These audits are NOT resettable. They are a record of the earnings of the game since the "CLOCK 1ST SET" Time-Stamp.

B.3 Standard Audits

B.3	01	Games Started	00
B.3	02	Total Plays*	00
B.3	11	H.S.T.D. Credits	00
B.3	12	Percent H.S.T.D	00
B.3	15	Tickets Awarded	00
B.3	16	Percent Tickets	00
B.3	20	Average Game Time	00
B.3	21	Play Time	00:00:00
B.3	22	Minutes On	00
B.3	29	1 Player Games	00
B.3	30	2 Player Games**	00
B.3	31	3 Player Games**	00
B.3	32	4 Player Games**	00
B.3	33	H.S.T.D. Reset Count	00
B.3	34	Burn-in Time †	00:00:00

** "Total Plays" only records completed games. A game is considered complete when the GAME OVER message appears. Audit information from incomplete games is ignored, therefore test and servicing operations do not affect the Audits.*
***Only used with Link Option.*
† This Audit is not resettable.

B.4 Feature Audits

B.4	01	Overtime Level 1 for Game #1	00
B.4	02	Overtime Level 2 for Game #1	00
B.4	03	Overtime Level 3 for Game #1	00
B.4	04	Overtime Level 1 for Game #2	00
B.4	05	Overtime Level 2 for Game #2	00
B.4	06	Overtime Level 3 for Game #2	00
B.4	07	Overtime Level 1 for Game #3	00
B.4	08	Overtime Level 2 for Game #3	00
B.4	09	Overtime Level 3 for Game #3	00
B.4	10	Overtime Level 1 for Game #4	00
B.4	11	Overtime Level 2 for Game #4	00
B.4	12	Overtime Level 3 for Game #4	00
B.4	13	Overtime Level 1 for Game #5	00
B.4	14	Overtime Level 2 for Game #5	00
B.4	15	Overtime Level 3 for Game #5	00
B.4	16	Overtime Level 1 for Game #6	00
B.4	17	Overtime Level 2 for Game #6	00
B.4	18	Overtime Level 3 for Game #6	00
B.4	19	Overtime Level 1 for Game #7	00
B.4	20	Overtime Level 2 for Game #7	00
B.4	21	Overtime Level 3 for Game #7	00
B.4	22	Number of Times Game #1 was Played	00
B.4	23	Number of Times Game #2 was Played	00
B.4	24	Number of Times Game #3 was Played	00
B.4	25	Number of Times Game #4 was Played	00
B.4	26	Number of Times Game #5 was Played	00
B.4	27	Number of Times Game #6 was Played	00
B.4	28	Number of Times Game #7 was Played	00
B.4	29	Number of Tickets/Cards Awarded	00
B.4	30	% of Tickets/Cards Awarded Per Coin	00
B.4	31	Number of Cow Ticket Jackpots	00

B.6 Time-Stamps

The Time-Stamps Menu allows you to view dates and times that are important to game software.

B.6	01	Current Time
B.6	02	Clock 1st Set
B.6	03	Clock Last Set
B.6	04	Audits Cleared
B.6	05	Coins Cleared
B.6	06	Factory Setting
B.6	07	Last Game Start
B.6	09	Last H.S.T.D. Reset
B.6	10	Champion Reset
B.6	11	Last Printout
B.6	12	Last Service Credit

Press the Enter button to activate the Printouts Menu, once the menu name is shown under the Main Menu. Then, use the Up or Down button to cycle through the Printouts Menu selections. Press the Enter button to activate the desired Printouts group. Press again to return to the Main Menu.

P. PRINTOUTS MENU

(optional board required)

P.1 Earnings Data
P.2 Main Audits
P.3 Standard Audits
P.4 Feature Audits
P.7 Time-Stamps
P.8 All Data

The Printouts Menu is a combination of the other menus. This menu allows you to access and print information in the available menu selections.

If no printer is attached the message "Waiting for Printer" appears in the displays.
Note: Set print specification from the Adjustment Menu, A.5 Printer Adjustments.

Press the Enter button to activate the Test Menu, once the menu name is shown under the Main Menu. Then, use the Up or Down button to cycle through the Test Menu selections. Press the Enter button to activate a test. Press the Escape button to return to the Test Menu. Press again to return to the Main Menu. Note: During any test, press the Start button (Help) to obtain the wire color, driver number, connector number, and fuse location.

T. TEST MENU

T.1 Switch Edges
T.2 Switch Levels
T.3 Single Switch
T.4 Solenoid Test
T.5 Flasher Test
T.6 General Illumination
T.7 Sound & Music Test
T.8 Single Lamps
T.9 All Lamps
T.10 Lamp & Flasher Tests
T.11 Display Test
T.13 Ordered Lamp Test
T.14 Smart Basket Test
T.15 Manual Basket Test
T.16 Ball Release Coil Test

The switch matrix, on the left side of the display, shows the state of all switches. A dot indicates the switch is open, and a square indicates the switch is closed. The numbers assigned to each switch indicate where the switch is located in the matrix. The number on the left indicates the column, and the number on the right indicates the row. Example: Switch 23 is 2nd column, 3rd row.

A short to ground, on either the row or column wire, appears as a shorted row(s). However, a column wire shorted to ground disappears when all the indicated row switches are open. A row wire shorted to ground does not disappear.

A shorted diode in the switch matrix can cause other switches to appear closed. These "phantom" switches (though not actually closed) complete a rectangle in the switch matrix. Therefore, if two switches in the same column are closed (example; #22 and #24), and a third switch is pressed in another column but in the same row as one of the first two (example; #32), the "phantom" switch #34 is falsely indicated as closed. The switch with the shorted diode is diagonally opposite the "phantom " switch (in this case#22).

T.1 Switch Edges Press each switch one at a time. The name and number of the switch is shown in the display. If a switch other than the one pressed, or no switch at all is indicated, the system has detected a problem with the switch circuit.

T.2 Switch Levels This test automatically cycles through all switches that are detected closed. The name and number of each switch that is detected is shown in the display. A filled square indicates the switch's position in the matrix.

T.3 Single Switches The Single Switch Test isolates a particular switch by blocking signals from all other switches. Use the Up or Down buttons to select the switch to be tested.

T.4 Solenoid Test The Solenoid Test has three modes: Repeat, Stop, and Run. Only one solenoid should pulse at a time. The system has detected a problem if; more then one solenoid pulses, a solenoid comes On and stays On, or during the Repeat or Run modes, no solenoid pulses.

Repeat - The Repeat mode pulses a single solenoid. After entering this test, Solenoid 1 shows in the display. and the corresponding solenoid activates. Press the Up or Down button to cycle through the solenoids, one at a time. The same solenoid pulses until the Up or Down button is pressed. Either press the Escape button to return to the Test Menu, or press the Enter button to advance to the next mode.

Stop - The Stop mode halts the Solenoid Test. Press Enter during the Repeat mode and the Solenoid Test Stops. No solenoids should be activated while the test is stopped. Either press the Escape button to return to the Test Menu, or the Enter button to advance to the next mode.

Running - The Run mode cycles through the solenoids automatically. The display shows the name and number of the solenoid currently being pulsed. Either press the Escape button to return to the Test Menu, or the Enter button to advance to the next mode.

T.5 Flasher Test This tests the flashlamp part of the solenoid circuit exclusively. This, like the Solenoid Test has three test modes: Repeat, Stop, and Run. During this test, only one flashlamp circuit should pulse at a time. The system has detected a problem if more than one circuit pulses, a circuit stays On, or during the Repeat or Run modes, no circuit pulses.

Repeat - The Repeat mode pulses a single flashlamp. After entering this test, the name and number of the first flashlamp circuit will show in the display and the corresponding bulb(s) flash. Press the Up or Down button to cycle through all of the flashlamp circuits one at a time. The same circuit pulses until the Up or Down button is pressed. Either press the Escape button to return to the Test Menu, or press the Enter button to advance to the next mode.

Stop - The Stop mode halts the Flasher Test. No flashlamp circuit should be active during this mode. Either press the Escape button to return to the Test Menu, or the Enter button to advance to the next mode.

Running - The Run mode cycles through the flashlamps automatically. The display shows the name and number of the flashlamp circuit currently being pulsed and the corresponding bulb(s) flash. Either press the Escape button to return to the Test Menu, or the Enter button to advance to the next mode.

T.6 General Illumination This test checks all of the General Illumination circuits. There are two modes of operation: Stop and Run.

Stop - Press the Up or Down buttons to cycle through the General Illumination Test manually. All illumination is tested first, followed by an individual circuit test. The circuit name and number will show in the display while the corresponding lamps light. If any other results occur the system has detected an error.

Run - Press the Enter button any time during Stop test mode and the General Illumination Test cycles through automatically. For each circuit shown in the displays the corresponding bulbs should light. If any other results occurs the system has detected a problem.

T.7 Sound and Music Test The Sound and Music Test allows you to check the audio circuits. This test has three modes for testing the sound and music circuits: Run, Repeat, and Stop.

Run - This Run mode steps through a sequence of sounds and music. Pressing the Up or Down button during this portion of the Sound and Music test advances to a particular sound/tune without having to wait for the program to play all the sounds available in the test. A sound/tune should be heard for each name and number that appears in the display. Any other results indicate the system has detected a problem.

Repeat - Press the Enter button at any time during the Run mode to cause the program to stop and repeat a particular sound/tune. The same sound should repeat continuously until the Up or Down button is pressed. Any other results indicates the system has detected a problem.

Stop - Press the Enter button at any time during the Repeat mode to stop this test altogether. No sound/tune should be heard. Any other results indicates the system has detected a problem.

T.8 Single Lamp Test The number assigned to each lamp indicates the lamp's position in the matrix. The number on the left indicates the column. The number on the right indicates the row. Example: Lamp 23 means 2nd column, 3rd row.

This test checks each lamp circuit individually. Press the Up or Down button to cycle through this test. For each name and number that is shown in the display the corresponding lamp should light. Any other results indicate the system has detected a problem.

T.9 All Lamps Test This test causes all the controlled lamps to flash at the same time. Every controlled lamp should flash. Any other results indicate the system has detected a problem.

T.10 Lamp and Flasher Test This test causes all the flashlamps and the controlled lamps to flash at the same time. The controlled lamps blink, while the flashlamps cycle from highest to lowest. Any other results indicates the system has detected a problem.

T.11 Display Test This test automatically lights every dot in the Dot Matrix Display. A series of patterns appear in sequence. Each pattern turns On and Off a section of dots. Every dot on the display should be turned On and Off during this test.

T.13 Ordered Lamp Test The number assigned to each lamp indicates the lamp's position in the matrix. The number on the left indicates the column. The number on the right indicates the row. Example - Lamp 23 means 2nd column, 3rd row.

This test checks each lamp circuit individually. Press the Up or Down button to cycle through the lamps. Lamps light in a clock-wise or counter clock-wise direction starting from the bottom of the playfield. Direction depends on which button, Up or Down, is pressed. For each name and number that is shown in the display the corresponding lamp should light. Any other results indicates the system has detected a problem.

T.14 Smart Basket Test This test will allow the operator to check out a basket mover motor to see if it is able to calibrate. Upon entering this test if the basket mover is not calibrated it will try to calibrate it. If it fails, the test will be entered, but the position will not be valid. It is suggested that if this happens, use test T.14 Manual Basket test until the problem preventing calibration is solved. If the basket calibrates successfully (or was already calibrated), then enter the test. The position of the basket on the playfield should be approximately the same as the picture on the left side of the display. The basket can be moved 20 steps up and 20 steps down. There are two modes in this test: Single Step and Continuous. The enter button will toggle between them.

In the Single Step mode, pressing the up and down buttons will move the basket up or down one position until it has reached the end of its travel.

In the Continuous mode, the basket will move continuously between steps in one direction until the limit is reached, then to the other direction. This will continue until the enter button is pressed (to go to Single Step mode) or the up/down buttons are pressed to change the direction of the motor.

At all times the state of switches 31, 32, and 33, and the position of the basket are shown in the display. The test buttons have the following uses:

UP	-	Tells the basket to go forward (according to mode).
DOWN	-	Tells the basket to go in reverse (according to mode).
ENTER	-	Switches between modes: 1. Single Step (basket moves 1 position at a time). 2. Continuous (basket moves continuously up and down).
ESCAPE	-	Will return to the Test Menu at any time it is pressed during this test.

T.15 Manual Basket Test This test will allow the operator to adjust and test the moving basket motor when it will not calibrate. This test will simply turn the basket motor on clockwise or counter-clockwise. It will also show the state of switches: 32 Basket Motor Top; 33 Basket Mover Bottom; and 31 Basket Made. This test will allow you to move the basket up/down to make sure switches 32 and 33 trigger and that the motor rod is able to rotate clockwise and counter-clockwise. The test buttons have the following use:

UP	-	Toggle on/off the basket mover rod to spin clockwise.
DOWN	-	Toggle on/off basket mover rod to spin counter-clockwise.
ENTER	-	Toggle basket mover rod on and off.
ESCAPE	-	Will return to the Test Menu at any time it is pressed during this test.

T.16 Ball Release Coil Test This test will allow the operator to adjust and test the ball release coil mechanism as it is used in the game. The release coil is a double wound coil, consisting of a large outside power coil and a small inside holding coil. In normal coil test the holding coil does not have enough power to cause the movement of the release ball mechanism. This test will fire both the power and the holding coil the same way they are fired during a game. The coil will stay energized for approximately 2/3 of a second. If the shaft only stays down for an instant, then the coil or power supply to the holding coil may be bad. If the shaft does not move at all, then the power coil or power supply may be bad. A count of the total number of coil firings since the test was first started, is shown at the bottom of the display. The test buttons have the following use:

UP	-	Not Used
DOWN	-	Not Used
ENTER	-	Toggles between firing coil ON (repeat), and OFF (stopped).
ESCAPE	-	Will return to the Test Menu at any time it is pressed during this test.

Press the Enter button to activate the Utilities Menu, once the menu name is shown under the Main Menu. Then, use the Up or Down button to cycle through the Utility Menu selections. Press the Enter button to activate a selection. Use the Up or Down button to rotate the settings. Press the Enter button to lock in a setting. If a mistake is made while changing a setting, press the Escape button while "Saving Adjustment Value" is still in the display. The original setting is retained and the new setting is ignored. Press the Escape button to return to the Utilities Menu. Press it again to return to the Main Menu.

U. UTILITIES MENU

U.1 Clear Audits
U.2 Clear Coins
U.3 Reset H.S.T.D.
U.4 Set Time & Date
U.5 Custom Message
U.6 Set Game I.D.
U.7 Factory Adjustments
U.8 Factory Resets
U.10 Clear Credits
U.11 Auto Burn-in

U.1 Clear Audits Press the Enter button to clear the Standard Audits (except Burn-In Time), Feature Audits, and Histograms.

U.2 Clear Coins Press the Enter button to clear the Earnings Audits.

U.3 Reset H.S.T.D. Press the Enter button to clear the High Score to Date Table and the Grand Champion.

U.4 Set Time and Date Press the Enter button to activate the time and date. Use the Up or Down button to change the value, then press the Enter button to lock in that value. If a mistake is made, press the Escape button while "Saving Adjustment Value" is displayed. The new value is ignored and the original value is retained.

U.5 Custom Message Set A.1 20 to YES before writing a Custom Message. Press the Enter button to begin entry of the custom message. Use the Up or Down button to cycle through letters. Use the Start button to cycle through punctuation marks. Press the Enter button to lock in the desired letter and punctuation. If you make a mistake, use Up and Down to select the "back-arrow" character. The "back-arrow" character is located before the space character and after the number nine. Press Enter while the back-arrow shows to erase the previously entered character. Once your message is complete, press and hold the Enter button until "Message Stored" is displayed.

Press the Escape button to cancel the new message. The message "Press Enter to Reset" appears. If you press Enter, the custom message is cleared and no message is displayed. If Escape is pressed, the original message remains intact.

U.6 Set Game I.D. This utility allows the operator to install a message, such as game location, that only appears on printouts . Press the Enter button to activate Set Game I.D.. Use the Up or Down button to cycle through letters. Use the Start button to cycle through punctuation marks. Press the Enter button to lock in the desired letter and punctuation.

U.7 Factory Adjustment Press the Enter button to restore the adjustments to factory settings.

U.8 Factory Reset Press the Enter button to restore the adjustments to their factory setting, clear the Audits, H.S.T.D Table, and Custom Message/Game I.D.

U.10 Clear Credits Press the Enter button to clear the game Credits.

U.11 Auto Burn-in Press the Enter button to activate Auto Burn-in. This utility automatically cycles through several tests. This will help in find intermittent problems. The tests that Auto Burn-in cycle through are: the Display Test, Sound and Music Test, All Lamps Test, Solenoid Test, Flashers Test, General Illumination Test, and the Flipper Coil Test. All of the tests are run concurrently. The time spent on the current burn-in cycle, and the total time the game has spent in burn-in are displayed.

Press the Enter button to activate the Adjustments Menu, once the menu name is shown under the Main Menu. Press the Up or Down button to cycle through the Adjustment Menu selections. Press the Enter button to activate the selection. Press the Up or Down button to cycle through the available adjustments. Press the Enter button to activate an adjustment. When an adjustment is activated, the setting value begins to flash. Use the Up or Down button to raise or lower the setting value. Press Enter to lock in the value. If a mistake is made, press the Escape button while "Saving Adjustment Value" is displayed. The new value is ignored and the original value is retained. Press the Enter button to return to the Adjustments Menu. Press it again to return to the Main Menu.

A. ADJUSTMENTS MENU

A.1 Standard Adjustments
A.2 Feature Adjustments
A.3 Pricing Adjustments
A.4 H.S.T.D Adjustments
A.5 Printer Adjustments (optional board required)

A.1 Standard Adjustments

A.1 20 Custom Message The message displayed during the Attract Mode.

YES - A message is displayed
NO - A message is not displayed.

A.1 21 Language The language the game uses: English, French, or German.

A.1 22 Clock Style The style of clock the game uses: A.M./P.M., or 24 Hours.

A.1 23 Date Style The style of date the game uses: Month/Date/Year, or Date/Month/Year.

A.1 24 Show Date and Time The date and time show in the Attract Mode.

YES - Show date and time in status report, or Attract Mode.
NO - Do Not show date and time in status report or Attract Mode.

A.1 25 Allow Dim Illumination The game program dims the General Illumination for special effects during the Attract Mode.

YES - Dim General Illumination during Attract Mode.
NO - Do Not dim General Illumination.

A.1 26 Tournament Play Equalize game play during multi-player games. The basket must return to the home position (center of slot) before a new game is started.

YES - Do not allow a game to start until basket is centered on playfield.
NO - Allow a game to start even if basket is not centered on playfield.

A.1 28 Minimum Volume Control The volume can be turned Off.

YES - Volume can be turned Off.
NO - Volume can be turned Down but not Off.

A.1 29 General Illumination Power Saver This allows the general illumination and controlled lamps to be dimmed following a time interval after a game is played. Power Saver Level (A.1 30) determines how dimness of lamps. Using this feature will substantially increase the life of the lamps.

Setting: - Off, 2-60 Minutes

A.1 30 Power Saver Level When General Illumination Power Saver (A.1 29) is set to On, this controls the intensity of the G.I. and controlled lamps once the game has been idle for a specified period of time.

Range: 4-7

A.2 Feature Adjustments

A.2 01 Game Time The operator selects how long a game is. This does not include any overtimes that may be possible. The setting range is from 10 to 240 seconds.

Factory Default: 45 Seconds

A.2 02 Start Difficulty The operator selects the number of baskets that a player must make before the basket starts moving. This allows first time players to get familiar with the game before it gets harder. The setting range is OFF through 100 shots.

Factory Default: 3 Shots

A.2 03 Linked Game Number The operator selects the game number for this game if two or more games are linked (requires optional linking kit). The choices are:

Link Off	-	The games are not linked.
Number 1 - Number 4	-	Number of this linked game. All linked games MUST have a unique number starting from Number 1.

Factory Default: Link Off

A.2 04 Select A Game Time Out Timer The operator selects how long the player is allowed to select a game before it automatically starts. The choices are:

Off - Unlimited time	-	Game will not start until the player hits the start/serve button.
10 - 120 Seconds	-	The number of seconds a player is allowed to select a game before it automatically starts.

Factory Default: 30 Seconds

A.2 05 Linked Game - Waiting for Players Timer The operator selects the amount of time a linked game waits for other linked games to join in. The setting range is from 5 to 60 seconds.

Factory Default: 8 Seconds

A.2 06 Game Number 1 Available To Play The operator selects whether or not the player has the option of playing game #1 - *Three Point Line*. The choices are:

Yes	-	The player may select the game to play.
No	-	The player can not select this game to play (it will not show up in the select a game menu).

Factory Default: On

A.2 07 Game Number 2 Available To Play The operator selects whether or not the player has the option of playing game #2 - *4th Quarter.* The choices are:

Yes - The player may select the game to play.
No - The player cannot select this game to play (it will not show up in the select a game menu).

Factory Default: On

A.2 08 Game Number 3 Available To Play The operator selects whether or not the player has the option of playing game #3 - *Repeat-A-Shot.* The choices are:

Yes - The player may select the game to play.
No - The player cannot select this game to play (it will not show up in the select a game menu).

Factory Default: On

A.2 09 Game Number 4 Available To Play The operator selects whether or not the player has the option of playing game #4 - *Around the World.* The choices are:

Yes - The player may select the game to play.
No - The player cannot select this game to play (it will not show up in the select a game menu).

Factory Default: On

A.2 10 Game Number 5 Available To Play The operator selects whether or not the player has the option of playing game #5 - *Pushback.* The choices are:

Yes - The player may select the game to play.
No - The player cannot select this game to play (it will not show up in the select a game menu).

Factory Default: On

A.2 11 Game Number 6 Available To Play

Note: This game is only available when 2 or more games are linked together (optional linking kit required).

The operator selects whether or not the player has the option of playing game #6 - *Tug-O-War.* The choices are:

Yes - The player may select the game to play.
No - The player cannot select this game to play (it will not show up in the select a game menu).

Factory Default: On

A.2 12 Game Number 7 Available To Play

Note: This game is only available when 2 or more games are linked together (optional linking kit required).

The operator selects whether or not the player has the option of playing game #7 - *Repeat-A-Race*. The choices are:

Yes - The player may select the game to play.
No - The player cannot select this game to play (it will not show up in the select a game menu).

Factory Default: On

A.2 13 Attract Mode Sounds The operator can select whether or not the attract mode has sound to attract the player. The Attract Mode Sounds will begin after the game has flashed "GAME OVER" on the display. Sound plays for approximately 10 seconds, then shuts OFF. Sounds will repeat every 4 1/2 minutes. The choices are:

On - The attract mode does have sound.
Off - The attract mode does not have sound.

Factory Default: Off

A.2 14 Overtime Time The operator selects the amount of additional time a player is awarded when an overtime level is passed. The choices are:

Off - This turns the overtime feature off. All games will last the amount of time set in Adjustment A.2 01, Game Time.
1-120 Seconds - The amount of seconds added to the players game timer when awarded.

Factory Default: 15 Seconds

A.2 15 Overtime Difficulty Level This adjustment allows the operator to set all the overtime levels, on all seven games, to one of ten levels. This adjustment is provided to make it easier to set all the games overtime levels to a certain difficulty level. The operator may optionally change each overtime level on every game individually. But, since there are a large number of adjustments to change, using this adjustment will allow a mass setting of all games to a certain level. The choices are:

Overtime Level 1-10 - Will set the following adjustments to certain values (see table below). The lower the level, the easier it is to get an overtime.
Overtime Level 6 - Recommended for 50¢ play for 45 seconds.
Overtime Level 3 - Recommended for 25¢ play for 30 seconds.

Factory Default: Overtime Level 6

See Overtime Level Settings Table, next page.

OVERTIME LEVEL SETTINGS TABLE

	1	2	3	4	5	6	7	8	9	10
Game#1 OT #1 -	10 PT	16 PT	22 PT	26 PT	28 PT	30 PT	35 PT	40 PT	50 PT	60 PT
Game#1 OT #2 -	30 PT	40 PT	45 PT	50 PT	60 PT	70 PT	75 PT	80 PT	90 PT	110 PT
Game#1 OT #3 -	60 PT	70 PT	80 PT	90 PT	100 PT	110 PT	120 PT	130 PT	150 PT	200 PT
Game#2 OT #1 -	10 PT	16 PT	22 PT	24 PT	26 PT	30 PT	35 PT	40 PT	50 PT	60 PT
Game#2 OT #2 -	30 PT	35 PT	40 PT	50 PT	50 PT	64 PT	70 PT	80 PT	90 PT	100 PT
Game#2 OT #3 -	60 PT	70 PT	80 PT	90 PT	100 PT	110 PT	120 PT	130 PT	150 PT	180 PT
Game#3 OT #1 -	30 PT	35 PT	40 PT	45 PT	50 PT	60 PT	65 PT	70 PT	80 PT	100 PT
Game#3 OT #2 -	80 PT	100 PT	140 PT	180 PT	200 PT	250 PT	260 PT	280 PT	300 PT	350 PT
Game#3 OT #3 -	50 PT	200 PT	300 PT	350 PT	400 PT	500 PT	525 PT	550 PT	600 PT	800 PT
Game#4 OT #1 -	20 PT	25 PT	30 PT	35 PT	40 PT	50 PT	60 PT	70 PT	80 PT	90 PT
Game#4 OT #2 -	90 PT	100 PT	110 PT	130 PT	150 PT	180 PT	200 PT	210 PT	220 PT	230 PT
Game#4 OT #3 -	120 PT	150 PT	180 PT	200 PT	300 PT	400 PT	500 PT	540 PT	600 PT	700 PT
Game#5 OT #1 -	40 PT	55 PT	70 PT	80 PT	100 PT	160 PT	200 PT	220 PT	250 PT	300 PT
Game#5 OT #2 -	150 PT	200 PT	250 PT	275 PT	300 PT	500 PT	600 PT	650 PT	700 PT	750 PT
Game#5 OT #3 -	250 PT	300 PT	350 PT	400 PT	500 PT	900 PT	925 PT	950 PT	975 PT	999 PT
Game#6 OT #1 -	10 PT	16 PT	22 PT	26 PT	30 PT	30 PT	35 PT	40 PT	50 PT	60 PT
Game#6 OT #2 -	40 PT	45 PT	50 PT	55 PT	60 PT	70 PT	75 PT	80 PT	90 PT	100 PT
Game#6 OT #3 -	70 PT	80 PT	90 PT	100 PT	110 PT	120 PT	130 PT	150 PT	180 PT	200 PT
Game#7 OT #1 -	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Game#7 OT #2 -	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Game#7 OT #3 -	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

A.2 16 1st Overtime, Game Number 1 This is the first overtime level of game #1. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 30 Points

A.2 17 2nd Overtime, Game Number 1 This is the second overtime level of game #1. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 70 Points

A.2 18 3rd Overtime, Game Number 1 This is the third overtime level of game #1. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 110 Points

A.2 19 1st Overtime, Game Number 2 This is the first overtime level of game #2. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 30 Points

A.2 20 2nd Overtime, Game Number 2 This is the second overtime level of game #2. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 64 Points

A.2 21 3rd Overtime, Game Number 2 This is the third overtime level of game #2. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 110 Points

A.2 22 1st Overtime, Game Number 3 This is the first overtime level of game #3. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 60 Points

A.2 23 2nd Overtime, Game Number 3 This is the second overtime level of game #3. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 250 Points

A.2 24 3rd Overtime, Game Number 3 This is the third overtime level of game #3. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 500 Points

A.2 25 1st Overtime, Game Number 4 This is the first overtime level of game #4. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 50 Points

A.2 26 2nd Overtime, Game Number 4 This is the second overtime level of game #4. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 180 Points

A.2 27 3rd Overtime, Game Number 4 This is the third overtime level of game #4. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 400 Points

A.2 28 1st Overtime, Game Number 5 This is the first overtime level of game #5. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 160 Points

A.2 29 2nd Overtime, Game Number 5 This is the second overtime level of game #5. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 500 Points

A.2 30 3rd Overtime, Game Number 5 This is the third overtime level of game #5. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 900 Points

A.2 31 1st Overtime, Game Number 6 This is the first overtime level of game #6. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 30 Points

A.2 32 2nd Overtime, Game Number 6 This is the second overtime level of game #6. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 70 Points

A.2 33 3rd Overtime, Game Number 6 This is the third overtime level of game #6. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: 120 Points

A.2 34 1st Overtime, Game Number 7 This is the first overtime level of game #7. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: Off

A.2 35 2nd Overtime, Game Number 7 This is the second overtime level of game #7. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: Off

A.2 36 3rd Overtime, Game Number 7 This is the third overtime level of game #7. The setting range is Off through 999 points (Off will disable this overtime level).

Factory Default: Off

A.3 Pricing Adjustments

A.3 01 Game Pricing (if set to custom, then 02 to 09 are available) The cost of a game is selected from the Standard Pricing Table or by installing Custom pricing.

A.3 02 Left Coin Units
A.3 03 Center Coin Units
A.3 04 Right Coin Units
A.3 05 4th Slot Units The number of coin units purchased by a coin passing through the left, right, center, and fourth coin chutes.

A.3 06 Units/Credits Defines the number of coin units required to obtain 1 credit. A coin unit counter in the game program totals the number of coin units purchased through all coin chutes prior to each game. If the total number of these coin units exceeds or matches the Unit per Credit value by a multiple (or more, coin units) of the specified Units per Credit value the Credits display shows the proper number of credits. The coin unit counter retains any remaining coin units, until the start of Ball 2; then the coin unit counter is cleared (its contents are zeroed).

A.3 07 Units/Bonus Additional credits are to be indicated in the credits display, when a certain number of coin units are accumulated.

A.3 08 Bonus Credits The number of credits that are awarded when the Units/Bonus level is achieved.

A.3 09 Minimum Units No credits are to be posted (indicated in the credit display), until the credits unit counter reaches a particular value, by setting this value to 02 (or more).

A.3 10 Coin Door Type (if set to custom, then 11 to 15 are available) This adjustment is used to preset adjustments 11 through 15, based on standard coin doors (U.S.A., German, Etc.).

A.3 11 Collection Text The coin system used to display the Earning Audits.

A.3 12 Left Slot Value
A.3 13 Center Slot Value
A.3 14 Right Slot Value
A.3 15 4th Slot Value The monetary value of the left, center, right, and 4th coin chutes.

A.3 16 Maximum Credits The maximum number of credits the game can accumulate, either through game play awards or coin purchases. The range of this setting is 5 through 99. Reaching the specified setting prevents the award of any credits. The factory default is 10.

A.3 17 Free Play The player can operate the game without a coin (free play) or with a coin.

NO	-	A coin is necessary for game play.
YES	-	Game play is free; no coin required.

A.3 18 Hide Coin Audits The coin audits may, or may not be displayed.

YES	-	The coin audits are not displayed.
NO	-	The coin audits are displayed.
HIDE NAMES	-	The coin audit value is shown but not the audit name.

A.3 19 1 Coin Buy-in If game pricing is set to 1 for 50¢/2 for $1.00 the player is allowed to 'buy-in' a subsequent game for 1 coin. The number of games that may be purchased at this cost is determined by the number of players in the previous game; that is, if the previous game had three players, 3 Credits can be purchased at the rate of 1 coin per credit.

YES	-	The player has 10 seconds to buy-in at 1 coin per game.
NO	-	The buy-in feature is disabled.

A.3 20 Base Coin Size The number of ticket per coin calculations.

A.3 21 Coin Meter Units It is possible to connect a coin meter to the knocker coil driver which will log all coins through all slots. This adjustment activates the use of the knocker driver for this purpose, and determines the value of each unit on the meter. For example, to show the total amount of money collected as "total quarters", set this adjustment to "0.25". To show the amount of money collected as "total dollars", set this adjustment to "1.00".

Setting this adjustment to anything other than Off establishes the coin unit for a meter attached to the knocker driver, and overrides use of the knocker during awards.

A.3 22 Dollar Bill Slot The system normally requires 150 microseconds between coin pulses. This is too long a delay for a fast-pulsing dollar bill validator. This adjustment may be used to tell the game that there is a fast pulsing dollar bill validator connected to one of the coin switches. The options are:

NONE	=	No validator connected.
LEFT	=	Validator connected to left slot.
CENTER	=	Validator connected to center slot.
RIGHT	=	Validator connected to right slot.
FOURTH	=	Validator connected to fourth slot.

A.3 23 Minimum Coin Microseconds This is the minimum width required for coin pulses to be accepted as valid coins. This may be changed to prevent certain kinds of cheating.

Pricing Table

Country	Coin Chute Left	Coin Chute Right	Games/Coin	Display	Pricing Adjustments A.3 02 03 04 05 06 07 08 09
USA	.25¢	.25¢	1/25¢, 4/$1 [2] 1/50¢, 2/75¢, 3/$1 [1,2] 1/50¢, 2/$1 [2] 1/25¢, 3/$1 [2] 1/25¢, 3/50¢, 6/$1 1/25¢, 5/$1	U.S.A. 4/$1.00 50-75-1.00 U.S.A. 2/$1.00 U.S.A. 3/$1.00 CUSTOM CUSTOM	 01 04 01 00 01 02 01 00 01 00 01 00 01 04 01 00
Canada	.25¢	$1.00	1/50¢, 2/75¢, 3/$1 [2] 1/50¢, 2/$1 [2]	CANADA 1 CANADA 2	
Australia	.20¢	$1	1$1, 3/$2 [2]	AUSTRALIA	
United Kingdom	10Pence	50Pence	1/3x10P, 2/50P	U. KINGDOM	
Belgium	20Fr	50Fr	1/20 F, 3/50 Franc [2]	BELGIUM	
West Germany	1DM	5DM	1/2DM, 2/3DM, 3/4DM, 5/5DM [1,2] 1/1 DM, 2/2 DM, 5/5 DMark [2] 1/1 DM, 2/2 DM, 6/5 DM [2] 1/1 DM, 3/2 DM, 9/5 DM 1/2x1 DM, 1/2 DM, 3/5 DM 2/1 DM, 5/2 DM, 14/5 DM	GER. 1/2DM GER. 1/1 DM GER. 6/5 DM CUSTOM CUSTOM CUSTOM	 09 18 45 00 05 00 01 00 03 06 15 00 05 00 01 00 13 26 65 00 05 65 01 00
France	5Fr 5Fr 5Fr 5Fr 5Fr 5Fr	10Fr 10Fr 10Fr 10Fr 10Fr 10Fr	2/5 F, 5/10 Franc [2,3] 3/5 F, 7/10 Franc [2,3] 1/5 F, 3/10 F, 7/2x10 Franc [2,3] 2/5 F, 4/10 F, 9/2x10 Franc [1,2,3] 2/5 F, 5/10 F, 11/2x10 Franc [2,3] 1/5 F, 3/10 Franc [2,3]	TARIF 1 TARIF 2 TARIF 3 TARIF 4 TARIF 5 TARIF 6	
Spain	100 P 25 P 25 P 25 P 25 P	500 P 500 P 100 P 100 P 100 P	1/100 P, 6/500 Peseta [2] 1/25 P, 5/100 Peseta 1/25 P, 4/100 Peseta 1/2x25 P, 2/100 Peseta 1/25x25 P, 3/100 Peseta	SPAIN CUSTOM CUSTOM CUSTOM CUSTOM	 01 00 04 00 01 04 01 00 01 00 04 00 01 00 01 00 01 00 04 00 02 00 01 00 03 00 12 00 04 00 01 06
Italy	500L	500L	1/500 Lire [2]	ITALY	
Japan	100 ¥	100 ¥	1/100 Yen [2]	JAPAN	
New Zealand	$1.00 .20¢	$2.00 .20¢	1/$1.00, 3/$2.00 1/3x20¢ [2]	NEW ZEALAND CUSTOM	 01 00 01 0 03 00 00 01
Hungary	10F	20F	1/1x20F, 1/2x10F, 3/2x20F [2]	HUNGARY	

NOTES: 1. Factory Default. 2. Standard Setting - Change by pressing Enter button. 3. Other functions are also affected.
* Only if center coin chute and dollar bill acceptor are available.

A.4 H.S.T.D. Adjustments

A.4 01 Highest Scores The game maintains a record of the four highest scores achieved to date.

OFF - No high scores are recorded, or displayed.

ON - The four highest scores for each game are stored in memory and displayed in the Attract Mode.

A.4 02 H.S.T.D. Award The award given for achieving the High Score To Date, or the Champion H.S.T.D: Credit or Ticket/Card.

A.4 03 Champion H.S.T.D. The "Highest" High Score is displayed in the Attract Mode. This score is not cleared when "High Score Reset Every" occurs.

ON - The "Highest" High Score is retained in memory and is displayed.

OFF - The "Highest" High Score for each game is not retained.

A.4 04 Champion Credits The operator chooses the number of credits or tickets awarded for a Grand Champion Score.

Range: 00 - 10.

A.4 05 H.S.T.D. 1 Credits
A.4 06 H.S.T.D. 2 Credits
A.4 07 H.S.T.D. 3 Credits
A.4 08 H.S.T.D. 4 Credits The number of credits or tickets to be awarded whenever a player exceeds the 1st, 2nd, 3rd, and 4th highest scores.

Range: 00 - 10.

A.4 09 High Score Reset Every The number of games to be played before an automatic reset of the displayed "Highest Score" occurs. The values provided upon reset are those selected by the operator in the Back-up High Scores.

Range: OFF (disabled); 250 to 20,000.

A.5 Printer Adjustments (optional board required)

A.5 01 Column Width The column width to be printed. Range: 22 - 80.

A.5 02 Lines Per Page The amount of lines per page. Range: 20 - 80.

A.5 03 Pause Every Page Choose whether the printer pauses at the end of a page.

YES - The printer does pause.

NO - The printer does not pause.

A.5 04 Printer Type Select the type of printer . Choices: Parallel, Serial, or ADP.

A.5 05 Serial Baud Rate The baud rate used for Serial or ADP communications (bit rate). Choices: 300, 600, 1200, 2400, 4800, or 9600.

A.5 06 Serial D.T.R. (Data Terminal Ready) When a Serial Printer is used, this line may be connected to a printer output line signaling that the printer is busy.

Normal - Normal D.T.R. signal goes low to indicate the printer is not ready.

Inverted - Inverted D.T.R. (busy) signal goes high to indicate printer is not ready.

Ignore - D.T.R. signal is ignored.

A.6 Dispenser Adjustments

IMPORTANT! EQUIPPING AN ELECTRONIC GAME WITH A REDEMPTION DEVICE MAY BE PROHIBITED UNDER APPLICABLE LAWS. CHECK WITH LOCAL AUTHORITIES CONCERNING THESE LAWS PRIOR TO INSTALLING ANY TICKET OR OTHER REDEMPTION DEVICE.

A.6 01 Dispenser Type The operator chooses whether the game has a dispenser and which dispenser is being used. The choices are:

Nothing	-	No dispenser is being used.
Tickets	-	A ticket dispenser is being used.
Cards	-	A basketball card dispenser is being used.

A.6 02 Dispense Rate The operator chooses that rate at which cards or tickets will be dispensed. This adjustment is provided to make it easier to set the dispensing rate of all the games. When a dispense rate is selected all the dispenser adjustments for all the games will be set. You may still change any dispensing adjustment manually, but this adjustment allows the mass setting of 63 adjustments. Dispensing rates will vary according to the skill level of the player. The current percentage of tickets being dispensed per quarter is shown on the bottom of the display when viewing this audit. It is suggested that the dispense rate be changed, up or down, to get the desired dispensing rate. The lower the dispense rate level the lower the number of tickets/cards that will be dispensed. Also, note these settings are designed for a game time start of 45 seconds, if this time is lowered, the dispensing rate must be made higher to compensate. If the game time is increased, the dispensing rate must be lowered to compensate. The choices are:

Ticket 1 - 10	-	Set to dispense tickets at a certain rate (see table for setting values).
Card 1 - 10	-	Set to dispense cards at a certain rate (see table for setting values).

Factory Default: Ticket 8

Recommended card Start: Card 5

TICKET DISPENSE RATE LEVEL (1-10)

Dispense Rate	1	2	3	4	5	6	7	8	9	10
Dispense Show	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
Attract Sound	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Max. Tickets	3 TK	6 TK	10 TK	16 TK	20 TK	26 TK	30 TK	36 TK	40 TK	40 TK
H.S.T.D. Award	TICKET	TICKET	TICKET	TICKET	TICKET	TICKET	TICKET	TICKET	TICKET	TICKET
Grand Champ	2 TK	2 TK	3 TK	4 TK	5 TK	5 TK	5 TK	5 TK	5 TK	5 TK
H.S.T.D. 1	1 TK	1 TK	2 TK	2 TK	3 TK	3 TK	3 TK	3 TK	3 TK	3 TK
H.S.T.D. 2	1 TK	1 TK	2 TK	2 TK	3 TK	3 TK	3 TK	3 TK	3 TK	3 TK
H.S.T.D. 3	1 TK	1 TK	2 TK	2 TK	3 TK	3 TK	3 TK	3 TK	3 TK	3 TK
H.S.T.D. 4	1 TK	1 TK	2 TK	2 TK	3 TK	3 TK	3 TK	3 TK	3 TK	3 TK
At Game Start	0 TK	0 TK	0 TK	0 TK	0 TK	0 TK	1 TK	1 TK	1 TK	2 TK
Overtime #1	1 TK	1 TK	1 TK	1 TK	1 TK	2 TK	1 TK	2 TK	2 TK	2 TK
Overtime #2	OFF	1 TK	1 TK	1 TK	1 TK	2 TK	1 TK	2 TK	2 TK	2 TK
Overtime #3	OFF	1 TK	1 TK	1 TK	1 TK	2 TK	1 TK	2 TK	2 TK	2 TK
T/C Per Level	OFF	OFF	1 TK	1 TK	1 TK	1 TK	2 TK	2 TK	2 TK	2 TK
Game #1 Level #1	OFF	OFF	4 PT	4 PT	4 PT	4 PT	4 PT	4 PT	4 PT	4 PT
Game #1 Level #2	OFF	OFF	60 PT	30 PT	10 PT	10 PT	10 PT	10 PT	10 PT	10 PT
Game #1 Level #3	OFF	OFF	OFF	50 PT	20 PT	20 PT	20 PT	20 PT	20 PT	20 PT
Game #1 Level #4	OFF	OFF	OFF	100 PT	30 PT	30 PT	30 PT	30 PT	30 PT	30 PT
Game #1 Level #5	OFF	OFF	OFF	OFF	60 PT	60 PT	60 PT	50 PT	40 PT	40 PT
Game #1 Level #6	OFF	OFF	OFF	OFF	70 PT	70 PT	70 PT	60 PT	50 PT	50 PT
Game #1 Level #7	OFF	OFF	OFF	OFF	90 PT	90 PT	90 PT	80 PT	60 PT	60 PT
Game #1 Level #8	OFF	OFF	OFF	OFF	100 PT	100 PT	100 PT	100 PT	100 PT	100 PT
Game #2 Level #1	OFF	OFF	4 PT	4 PT	4 PT	4 PT	4 PT	4 PT	4 PT	4 PT
Game #2 Level #2	OFF	OFF	60 PT	30 PT	10 PT	10 PT	10 PT	10 PT	10 PT	10 PT
Game #2 Level #3	OFF	OFF	OFF	50 PT	20 PT	20 PT	20 PT	20 PT	20 PT	20 PT
Game #2 Level #4	OFF	OFF	OFF	100 PT	30 PT	30 PT	30 PT	30 PT	30 PT	30 PT
Game #2 Level #5	OFF	OFF	OFF	OFF	50 PT	50 PT	50 PT	40 PT	40 PT	40 PT
Game #2 Level #6	OFF	OFF	OFF	OFF	70 PT	70 PT	70 PT	60 PT	50 PT	50 PT
Game #2 Level #7	OFF	OFF	OFF	OFF	90 PT	90 PT	90 PT	80 PT	60 PT	60 PT
Game #2 Level #8	OFF	OFF	OFF	OFF	100 PT	100 PT	100 PT	100 PT	100 PT	100 PT
Game #3 Level #1	OFF	OFF	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT
Game #3 Level #2	OFF	OFF	70 PT	60 PT	16 PT	16 PT	16 PT	16 PT	16 PT	16 PT
Game #3 Level #3	OFF	OFF	OFF	150 PT	30 PT	30 PT	30 PT	30 PT	30 PT	30 PT
Game #3 Level #4	OFF	OFF	OFF	300 PT	80 PT	80 PT	80 PT	60 PT	50 PT	50 PT
Game #3 Level #5	OFF	OFF	OFF	OFF	150 PT	150 PT	150 PT	100 PT	80 PT	80 PT
Game #3 Level #6	OFF	OFF	OFF	OFF	200 PT	200 PT	200 PT	150 PT	150 PT	150 PT
Game #3 Level #7	OFF	OFF	OFF	OFF	300 PT	300 PT	300 PT	250 PT	200 PT	200 PT
Game #3 Level #8	OFF	OFF	OFF	OFF	400 PT	400 PT	400 PT	400 PT	400 PT	400 PT

TICKET DISPENSE RATE LEVEL (1-10) Continued

Dispense Rate	1	2	3	4	5	6	7	8	9	10
Game #4 Level #1	OFF	OFF	6 PT	6 PT	6 PT	6 PT	6 PT	6 PT	6 PT	6 PT
Game #4 Level #2	OFF	OFF	80 PT	40 PT	20 PT	20 PT	20 PT	20 PT	20 PT	20 PT
Game #4 Level #3	OFF	OFF	OFF	100 PT	40 PT	40 PT	40 PT	40 PT	40 PT	40 PT
Game #4 Level #4	OFF	OFF	OFF	200 PT	80 PT	80 PT	80 PT	70 PT	60 PT	60 PT
Game #4 Level #5	OFF	OFF	OFF	OFF	90 PT	90 PT	90 PT	80 PT	80 PT	80 PT
Game #4 Level #6	OFF	OFF	OFF	OFF	100 PT	100 PT	100 PT	100 PT	100 PT	100 PT
Game #4 Level #7	OFF	OFF	OFF	OFF	160 PT	160 PT	160 PT	150 PT	120 PT	120 PT
Game #4 Level #8	OFF	OFF	OFF	OFF	220 PT	220 PT	220 PT	210 PT	200 PT	200 PT
Game #5 Level #1	OFF	OFF	10 PT	10 PT	10 PT	10 PT	10 PT	10 PT	10 PT	10 PT
Game #5 Level #2	OFF	OFF	100 PT	80 PT	30 PT	30 PT	30 PT	30 PT	30 PT	30 PT
Game #5 Level #3	OFF	OFF	OFF	200 PT	50 PT	50 PT	50 PT	50 PT	50 PT	50 PT
Game #5 Level #4	OFF	OFF	OFF	500 PT	120 PT	120 PT	120 PT	90 PT	80 PT	80 PT
Game #5 Level #5	OFF	OFF	OFF	OFF	200 PT	200 PT	200 PT	170 PT	120 PT	120 PT
Game #5 Level #6	OFF	OFF	OFF	OFF	300 PT	300 PT	300 PT	250 PT	200 PT	200 PT
Game #5 Level #7	OFF	OFF	OFF	OFF	600 PT	600 PT	600 PT	500 PT	400 PT	400 PT
Game #5 Level #8	OFF	OFF	OFF	OFF	900 PT	900 PT	900 PT	800 PT	600 PT	600 PT
Game #6 Level #1	OFF	OFF	4 PT	4 PT	10 PT	10 PT	10 PT	10 PT	10 PT	10 PT
Game #6 Level #2	OFF	OFF	60 PT	30 PT	20 PT	20 PT	20 PT	20 PT	20 PT	20 PT
Game #6 Level #3	OFF	OFF	OFF	50 PT	40 PT	40 PT	40 PT	40 PT	40 PT	40 PT
Game #6 Level #4	OFF	OFF	OFF	100 PT	80 PT	80 PT	80 PT	60 PT	50 PT	50 PT
Game #6 Level #5	OFF	OFF	OFF	OFF	100 PT	100 PT	100 PT	90 PT	60 PT	60 PT
Game #6 Level #6	OFF	OFF	OFF	OFF	120 PT	120 PT	120 PT	110 PT	70 PT	70 PT
Game #6 Level #7	OFF	OFF	OFF	OFF	140 PT	140 PT	140 PT	130 PT	90 PT	90 PT
Game #6 Level #8	OFF	OFF	OFF	OFF	160 PT	160 PT	160 PT	150 PT	110 PT	110 PT
Game #7 Level #1	OFF	OFF	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT
Game #7 Level #2	OFF	OFF	70 PT	60 PT	16 PT	16 PT	16 PT	16 PT	16 PT	16 PT
Game #7 Level #3	OFF	OFF	OFF	150 PT	30 PT	30 PT	30 PT	30 PT	30 PT	30 PT
Game #7 Level #4	OFF	OFF	OFF	300 PT	80 PT	80 PT	80 PT	60 PT	50 PT	50 PT
Game #7 Level #5	OFF	OFF	OFF	OFF	150 PT	150 PT	150 PT	110 PT	80 PT	80 PT
Game #7 Level #6	OFF	OFF	OFF	OFF	200 PT	200 PT	200 PT	175 PT	150 PT	150 PT
Game #7 Level #7	OFF	OFF	OFF	OFF	300 PT	300 PT	300 PT	250 PT	200 PT	200 PT
Game #7 Level #8	OFF	OFF	OFF	OFF	400 PT	400 PT	400 PT	400 PT	400 PT	400 PT

TICKET DISPENSE RATE LEVEL (11-20)

Dispense Rate	11	12	13	14	15	16	17	18	19	20
Dispense Show	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Attract Sound	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Max. Tickets	40 TK	40 TK	40 TK	40 TK	40 TK	40 TK	40 TK	50 TK	50 TK	50 TK
H.S.T.D. Award	TICKET	TICKET	TICKET	TICKET	TICKET	TICKET	TICKET	TICKET	TICKET	TICKET
Grand Champ	8 TK	8 TK	8 TK	8 TK	8 TK	8 TK	10 TK	10 TK	10 TK	15 TK
H.S.T.D. 1	4 TK	4 TK	4 TK	4 TK	4 TK	4 TK	5 TK	5 TK	5 TK	8 TK
H.S.T.D. 2	4 TK	4 TK	4 TK	4 TK	4 TK	4 TK	5 TK	5 TK	5 TK	8 TK
H.S.T.D. 3	4 TK	4 TK	4 TK	4 TK	4 TK	4 TK	5 TK	5 TK	5 TK	8 TK
H.S.T.D. 4	4 TK	4 TK	4 TK	4 TK	4 TK	4 TK	5 TK	5 TK	5 TK	8 TK
At Game Start	2 TK	2 TK	2 TK	2 TK	2 TK	2 TK	2 TK	2 TK	2 TK	3 TK
Overtime #1	2 TK	2 TK	2 TK	2 TK	3 TK	3 TK	3 TK	3 TK	3 TK	4 TK
Overtime #2	2 TK	2 TK	2 TK	2 TK	3 TK	3 TK	3 TK	3 TK	3 TK	4 TK
Overtime #3	2 TK	2 TK	2 TK	2 TK	3 TK	3 TK	3 TK	3 TK	3 TK	4 TK
T/C Per Level	2 TK	2 TK	2 TK	2 TK	2 TK	2 TK	2 TK	2 TK	2 TK	3 TK
Game #1 Level #1	4 PT	4 PT	4 PT	2 PT	2 PT	2 PT	2 PT	2 PT	2 PT	2 PT
Game #1 Level #2	10 PT	10 PT	8 PT	8 PT	8 PT	8 PT	8 PT	4 PT	4 PT	4 PT
Game #1 Level #3	20 PT	20 PT	10 PT	10 PT	10 PT	10 PT	10 PT	8 PT	8 PT	8 PT
Game #1 Level #4	25 PT	25 PT	20 PT	20 PT	20 PT	20 PT	20 PT	12 PT	12 PT	12 PT
Game #1 Level #5	30 PT	30 PT	30 PT	25 PT	25 PT	25 PT	25 PT	20 PT	20 PT	20 PT
Game #1 Level #6	40 PT	35 PT	35 PT	30 PT	30 PT	30 PT	30 PT	30 PT	25 PT	25 PT
Game #1 Level #7	60 PT	40 PT	40 PT	40 PT	40 PT	35 PT	35 PT	35 PT	30 PT	30 PT
Game #1 Level #8	100 PT	100 PT	90 PT	80 PT	80 PT	60 PT	40 PT	40 PT	40 PT	35 PT
Game #2 Level #1	4 PT	4 PT	4 PT	2 PT	2 PT	2 PT	2 PT	2 PT	2 PT	2 PT
Game #2 Level #2	10 PT	10 PT	8 PT	8 PT	8 PT	8 PT	8 PT	4 PT	4 PT	4 PT
Game #2 Level #3	20 PT	20 PT	10 PT	10 PT	10 PT	10 PT	10 PT	8 PT	8 PT	8 PT
Game #2 Level #4	25 PT	25 PT	20 PT	20 PT	20 PT	20 PT	20 PT	12 PT	12 PT	12 PT
Game #2 Level #5	30 PT	30 PT	30 PT	25 PT	25 PT	25 PT	25 PT	20 PT	20 PT	20 PT
Game #2 Level #6	40 PT	35 PT	35 PT	30 PT	30 PT	30 PT	30 PT	30 PT	25 PT	25 PT
Game #2 Level #7	60 PT	40 PT	40 PT	40 PT	40 PT	35 PT	35 PT	35 PT	30 PT	30 PT
Game #2 Level #8	100 PT	100 PT	90 PT	80 PT	80 PT	60 PT	40 PT	40 PT	40 PT	35 PT
Game #3 Level #1	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	6 PT
Game #3 Level #2	16 PT	16 PT	14 PT	14 PT	14 PT	12 PT	12 PT	10 PT	10 PT	10 PT
Game #3 Level #3	30 PT	30 PT	20 PT	20 PT	20 PT	20 PT	20 PT	16 PT	16 PT	14 PT
Game #3 Level #4	40 PT	40 PT	30 PT	25 PT	25 PT	25 PT	25 PT	20 PT	20 PT	20 PT
Game #3 Level #5	60 PT	50 PT	40 PT	30 PT	30 PT	30 PT	30 PT	30 PT	25 PT	25 PT
Game #3 Level #6	150 PT	100 PT	90 PT	50 PT	50 PT	40 PT	40 PT	40 PT	30 PT	30 PT
Game #3 Level #7	200 PT	150 PT	150 PT	90 PT	90 PT	80 PT	50 PT	50 PT	40 PT	40 PT
Game #3 Level #8	400 PT	400 PT	400 PT	200 PT	200 PT	200 PT	100 PT	90 PT	60 PT	50 PT

TICKET DISPENSE RATE LEVEL (11-20) Continued

Dispense Rate	11	12	13	14	15	16	17	18	19	20
Game #4 Level #1	6 PT	6 PT	6 PT	6 PT	6 PT	6 PT	6 PT	4 PT	4 PT	4 PT
Game #4 Level #2	20 PT	20 PT	12 PT	10 PT	10 PT	10 PT	10 PT	10 PT	10 PT	10 PT
Game #4 Level #3	30 PT	30 PT	20 PT	20 PT	20 PT	20 PT	20 PT	20 PT	20 PT	20 PT
Game #4 Level #4	50 PT	40 PT	30 PT	30 PT	30 PT	30 PT	30 PT	25 PT	25 PT	25 PT
Game #4 Level #5	80 PT	70 PT	50 PT	40 PT	40 PT	35 PT	35 PT	30 PT	30 PT	30 PT
Game #4 Level #6	100 PT	100 PT	90 PT	80 PT	80 PT	70 PT	50 PT	35 PT	35 PT	35 PT
Game #4 Level #7	120 PT	120 PT	120 PT	100 PT	100 PT	90 PT	80 PT	50 PT	50 PT	40 PT
Game #4 Level #8	200 PT	200 PT	200 PT	200 PT	200 PT	150 PT	110 PT	100 PT	80 PT	60 PT
Game #5 Level #1	10 PT	10 PT	10 PT	10 PT	10 PT	10 PT	10 PT	8 PT	8 PT	8 PT
Game #5 Level #2	30 PT	30 PT	20 PT	20 PT	20 PT	20 PT	20 PT	16 PT	16 PT	16 PT
Game #5 Level #3	50 PT	50 PT	40 PT	30 PT	30 PT	30 PT	30 PT	30 PT	26 PT	26 PT
Game #5 Level #4	80 PT	60 PT	50 PT	40 PT	40 PT	40 PT	40 PT	40 PT	32 PT	32 PT
Game #5 Level #5	100 PT	100 PT	80 PT	60 PT	60 PT	50 PT	50 PT	50 PT	46 PT	40 PT
Game #5 Level #6	150 PT	120 PT	100 PT	90 PT	90 PT	80 PT	70 PT	60 PT	60 PT	50 PT
Game #5 Level #7	300 PT	200 PT	200 PT	200 PT	200 PT	100 PT	90 PT	70 PT	70 PT	65 PT
Game #5 Level #8	600 PT	500 PT	500 PT	400 PT	400 PT	300 PT	200 PT	100 PT	90 PT	80 PT
Game #6 Level #1	10 PT	8 PT	4 PT	4 PT	4 PT	2 PT	2 PT	2 PT	2 PT	2 PT
Game #6 Level #2	20 PT	10 PT	8 PT	8 PT	8 PT	8 PT	8 PT	4 PT	4 PT	4 PT
Game #6 Level #3	30 PT	20 PT	10 PT	10 PT	10 PT	10 PT	10 PT	8 PT	8 PT	8 PT
Game #6 Level #4	40 PT	30 PT	20 PT	20 PT	20 PT	20 PT	20 PT	12 PT	12 PT	12 PT
Game #6 Level #5	50 PT	40 PT	30 PT	25 PT	25 PT	25 PT	25 PT	20 PT	20 PT	20 PT
Game #6 Level #6	60 PT	50 PT	40 PT	30 PT	30 PT	30 PT	30 PT	30 PT	25 PT	25 PT
Game #6 Level #7	70 PT	60 PT	50 PT	40 PT	40 PT	35 PT	35 PT	35 PT	30 PT	30 PT
Game #6 Level #8	100 PT	100 PT	90 PT	90 PT	90 PT	60 PT	40 PT	40 PT	40 PT	35 PT
Game #7 Level #1	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT	8 PT
Game #7 Level #2	16 PT	16 PT	14 PT	14 PT	14 PT	12 PT	12 PT	10 PT	10 PT	10 PT
Game #7 Level #3	30 PT	30 PT	20 PT	20 PT	20 PT	20 PT	20 PT	16 PT	16 PT	14 PT
Game #7 Level #4	40 PT	40 PT	30 PT	25 PT	25 PT	25 PT	25 PT	20 PT	20 PT	20 PT
Game #7 Level #5	60 PT	50 PT	40 PT	30 PT	30 PT	30 PT	30 PT	30 PT	25 PT	25 PT
Game #7 Level #6	150 PT	100 PT	90 PT	50 PT	50 PT	40 PT	40 PT	40 PT	30 PT	30 PT
Game #7 Level #7	200 PT	150 PT	150 PT	90 PT	90 PT	80 PT	50 PT	50 PT	40 PT	40 PT
Game #7 Level #8	400 PT	400 PT	400 PT	200 PT	200 PT	200 PT	100 PT	90 PT	60 PT	50 PT

CARD DISPENSE RATE LEVEL (1-10)

Dispense Rate	1	2	3	4	5	6	7	8	9	10
Dispense Show	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
Attract Sound	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Max. Tickets	3 CD	6 CD	10 CD	16 CD	20 CD	26 CD	30 CD	36 CD	40 CD	40 CD
H.S.T.D. Award	CARD	CARD	CARD	CARD	CARD	CARD	CARD	CARD	CARD	CARD
Grand Champ	2 CD	2 CD	2 CD	2 CD	2 CD	2 CD	3 CD	3 CD	3 CD	5 CD
H.S.T.D. 1	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	2 CD	2 CD	2 CD	3 CD
H.S.T.D. 2	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	2 CD	2 CD	2 CD	3 CD
H.S.T.D. 3	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	2 CD	2 CD	2 CD	3 CD
H.S.T.D. 4	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	2 CD	2 CD	2 CD	3 CD
At Game Start	0 CD	0 CD	0 CD	0 CD	0 CD	0 CD	0 CD	1 CD	1 CD	1 CD
Overtime #1	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	2 CD
Overtime #2	OFF	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	2 CD
Overtime #3	OFF	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	2 CD
T/C Per Level	OFF	OFF	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD	1 CD
Game #1 Level #1	OFF	OFF	10 PT	10 PT	10 PT	4 PT	4 PT	4 PT	4 PT	4 PT
Game #1 Level #2	OFF	OFF	OFF	70 PT	50 PT	10 PT	10 PT	10 PT	10 PT	10 PT
Game #1 Level #3	OFF	OFF	OFF	OFF	80 PT	20 PT	20 PT	20 PT	20 PT	20 PT
Game #1 Level #4	OFF	OFF	OFF	OFF	120 PT	30 PT	30 PT	30 PT	25 PT	25 PT
Game #1 Level #5	OFF	OFF	OFF	OFF	OFF	60 PT	60 PT	50 PT	40 PT	40 PT
Game #1 Level #6	OFF	OFF	OFF	OFF	OFF	60 PT	40 PT	35 PT	30 PT	30 PT
Game #1 Level #7	OFF	OFF	OFF	OFF	OFF	70 PT	50 PT	40 PT	40 PT	35 PT
Game #1 Level #8	OFF	OFF	OFF	OFF	OFF	90 PT	60 PT	50 PT	50 PT	40 PT
Game #2 Level #1	OFF	OFF	10 PT	10 PT	10 PT	4 PT	4 PT	4 PT	4 PT	4 PT
Game #2 Level #2	OFF	OFF	OFF	70 PT	50 PT	10 PT	10 PT	10 PT	10 PT	10 PT
Game #2 Level #3	OFF	OFF	OFF	OFF	80 PT	20 PT	20 PT	20 PT	20 PT	20 PT
Game #2 Level #4	OFF	OFF	OFF	OFF	120 PT	30 PT	30 PT	30 PT	25 PT	25 PT
Game #2 Level #5	OFF	OFF	OFF	OFF	OFF	50 PT	40 PT	35 PT	30 PT	30 PT
Game #2 Level #6	OFF	OFF	OFF	OFF	OFF	70 PT	50 PT	40 PT	40 PT	35 PT
Game #2 Level #7	OFF	OFF	OFF	OFF	OFF	90 PT	60 PT	50 PT	50 PT	40 PT
Game #2 Level #8	OFF	OFF	OFF	OFF	OFF	100 PT	90 PT	80 PT	60 PT	50 PT
Game #3 Level #1	OFF	OFF	20 PT	20 PT	20 PT	8 PT	8 PT	8 PT	8 PT	8 PT
Game #3 Level #2	OFF	OFF	OFF	80 PT	50 PT	16 PT	16 PT	16 PT	16 PT	16 PT
Game #3 Level #3	OFF	OFF	OFF	OFF	100 PT	30 PT	30 PT	25 PT	25 PT	25 PT
Game #3 Level #4	OFF	OFF	OFF	OFF	200 PT	80 PT	50 PT	40 PT	40 PT	40 PT
Game #3 Level #5	OFF	OFF	OFF	OFF	OFF	150 PT	100 PT	90 PT	60 PT	50 PT
Game #3 Level #6	OFF	OFF	OFF	OFF	OFF	200 PT	150 PT	140 PT	100 PT	80 PT
Game #3 Level #7	OFF	OFF	OFF	OFF	OFF	300 PT	200 PT	200 PT	150 PT	110 PT
Game #3 Level #8	OFF	OFF	OFF	OFF	OFF	400 PT	300 PT	300 PT	300 PT	200 PT

CARD DISPENSE RATE LEVEL (1-10) Continued

Dispense Rate	1	2	3	4	5	6	7	8	9	10
Game #4 Level #1	OFF	OFF	20 PT	20 PT	20 PT	6 PT	6 PT	6 PT	6 PT	6 PT
Game #4 Level #2	OFF	OFF	OFF	50 PT	50 PT	20 PT	20 PT	20 PT	16 PT	16 PT
Game #4 Level #3	OFF	OFF	OFF	OFF	80 PT	40 PT	30 PT	30 PT	24 PT	24 PT
Game #4 Level #4	OFF	OFF	OFF	OFF	120 PT	80 PT	50 PT	40 PT	32 PT	32 PT
Game #4 Level #5	OFF	OFF	OFF	OFF	OFF	90 PT	80 PT	70 PT	50 PT	40 PT
Game #4 Level #6	OFF	OFF	OFF	OFF	OFF	100 PT	100 PT	90 PT	80 PT	60 PT
Game #4 Level #7	OFF	OFF	OFF	OFF	OFF	160 PT	150 PT	150 PT	120 PT	100 PT
Game #4 Level #8	OFF	OFF	OFF	OFF	OFF	220 PT	200 PT	200 PT	180 PT	150 PT
Game #5 Level #1	OFF	OFF	30 PT	30 PT	30 PT	10 PT	10 PT	10 PT	10 PT	10 PT
Game #5 Level #2	OFF	OFF	OFF	80 PT	80 PT	30 PT	20 PT	20 PT	20 PT	20 PT
Game #5 Level #3	OFF	OFF	OFF	OFF	120 PT	50 PT	40 PT	40 PT	30 PT	30 PT
Game #5 Level #4	OFF	OFF	OFF	OFF	220 PT	120 PT	120 PT	90 PT	50 PT	50 PT
Game #5 Level #5	OFF	OFF	OFF	OFF	OFF	200 PT	200 PT	180 PT	100 PT	80 PT
Game #5 Level #6	OFF	OFF	OFF	OFF	OFF	300 PT	300 PT	250 PT	200 PT	150 PT
Game #5 Level #7	OFF	OFF	OFF	OFF	OFF	600 PT	400 PT	350 PT	300 PT	200 PT
Game #5 Level #8	OFF	OFF	OFF	OFF	OFF	900 PT	700 PT	600 PT	500 PT	400 PT
Game #6 Level #1	OFF	OFF	10 PT	10 PT	10 PT	10 PT	4 PT	4 PT	4 PT	4 PT
Game #6 Level #2	OFF	OFF	OFF	70 PT	50 PT	20 PT	20 PT	20 PT	20 PT	20 PT
Game #6 Level #3	OFF	OFF	OFF	OFF	80 PT	40 PT	40 PT	30 PT	25 PT	25 PT
Game #6 Level #4	OFF	OFF	OFF	OFF	120 PT	80 PT	50 PT	40 PT	30 PT	30 PT
Game #6 Level #5	OFF	OFF	OFF	OFF	OFF	100 PT	80 PT	50 PT	35 PT	35 PT
Game #6 Level #6	OFF	OFF	OFF	OFF	OFF	120 PT	110 PT	90 PT	50 PT	40 PT
Game #6 Level #7	OFF	OFF	OFF	OFF	OFF	140 PT	130 PT	100 PT	90 PT	60 PT
Game #6 Level #8	OFF	OFF	OFF	OFF	OFF	160 PT	150 PT	120 PT	120 PT	100 PT
Game #7 Level #1	OFF	OFF	20 PT	20 PT	20 PT	8 PT	8 PT	8 PT	8 PT	8 PT
Game #7 Level #2	OFF	OFF	OFF	80 PT	50 PT	16 PT	16 PT	16 PT	16 PT	16 PT
Game #7 Level #3	OFF	OFF	OFF	OFF	100 PT	30 PT	30 PT	25 PT	25 PT	25 PT
Game #7 Level #4	OFF	OFF	OFF	OFF	200 PT	80 PT	50 PT	40 PT	30 PT	30 PT
Game #7 Level #5	OFF	OFF	OFF	OFF	OFF	150 PT	100 PT	90 PT	60 PT	50 PT
Game #7 Level #6	OFF	OFF	OFF	OFF	OFF	200 PT	150 PT	140 PT	100 PT	90 PT
Game #7 Level #7	OFF	OFF	OFF	OFF	OFF	300 PT	200 PT	200 PT	150 PT	110 PT
Game #7 Level #8	OFF	OFF	OFF	OFF	OFF	400 PT	300 PT	300 PT	300 PT	200 PT

A.6 03 Dispenser Errors The operator selects how to resolve dispenser problems. Note, the dispenser ALWAYS blinks its dispenser lamp when a problem has occurred. The choices are:

Announce - Display an error message with sound, for 5 seconds, to alert attendant every time a ticket was attempted to be dispensed.

Ignore - Do not announce a problem in the display, or with sound.

Factory Default: Ignore

A.6 04 Cards Till Empty When the dispenser is set to dispense CARDS, the operator chooses how many basketball cards it takes until the dispenser is considered "empty" after the "dispenser low" switch is activated. Note, the card dispenser should not dispense the last 30 cards. The choices are:

0-199 - Number of cards to dispense after the "Dispense low" switch has been activated.

Factory Default: 80 Cards

A.6 05 Maximum Tickets/Cards Per Game The operator chooses the MAXIMUM amount of tickets/cards that a player can earn per game. The range is 0 to 255.

Factory Default: 20 Cards

A.6 06 Dispense Tickets/Cards At: The operator selects WHEN tickets/cards are dispensed and if the display tells the player as it dispenses items. The choices are:

Game & Show - Tickets/Cards will be dispensed during the game and the display WILL SHOW this.

Game & No Show - Tickets/Cards will be dispensed during the game and the display WILL NOT SHOW this.

End & Show - Tickets/Cards will be dispensed only at the end of the game and the display WILL SHOW this.

End & No Show - Tickets/Cards will be dispensed only at the end of the game and the display WILL NOT SHOW this.

Factory Default: Game & Show

A.6 07 Tickets/Cards At Game Start: The operator selects the number of tickets/cards that will be dispensed at the start of a game. The range of this setting is 0 through 30 tickets/cards.

Factory Default: 0 Tickets/Cards

A.6 08 Ticket Jackpot Available: The operator selects how often the Cow Ticket Jackpot is available to the player. The Cow Ticket Jackpot awards a large amount of tickets (see Adjustment A.6 09 Ticket Jackpot Award below) to the player if they make a basket when the cow is on the screen. This feature only works when adjustment A.6 01 Dispenser Type is set to TICKETS. It may also be turned OFF by setting this Adjustment to OFF. The operator selects the number of games that must be played before the Cow Ticket Jackpot will appear. The choices are:

OFF - No Cow Ticket Jackpot is available.

25-5000 - Number of games that must be played before the Cow Ticket Jackpot is available

Factory Default: Every 250 games (only work if dispenser type is set to tickets).

A.6 09 Ticket Jackpot Award: The operator selects the number of tickets the Cow Ticket Jackpot will award. This should be balanced with Adjustment A.6 08 Ticket Jackpot Available, so that the correct ticket pay out percentage is obtained.
The setting range is 50, 100, 150, 200, 250, 300, 350, 400, 450,or 500 tickets.

Factory Default: 100 Tickets

A.6 10 Linked/Multi-player Winner Tickets/Cards Award: The operator selects the number of tickets a player gets when he WINS a multi-player linked game. This feature only works when games are linked together with the optional Link Kit. The choices are:

OFF - No extra tickets are given to the winner.

1-500 - Number of tickets given to the winner.

Factory Default: OFF

A.6 11 Tickets/Cards For Overtime Level 1: The operator selects the amount of tickets/cards that are dispensed when Overtime Level #1 is passed. The range of this setting is 0 through 30 tickets/cards.

Factory Default: 1 Ticket/Card

A.6 12 Tickets/Cards For Overtime Level 2: The operator selects the amount of tickets/cards that are dispensed when Overtime Level #2 is passed. The range of this setting is 0 through 30 tickets/cards.

Factory Default: 1 Ticket/Card

A.6 13 Tickets/Cards For Overtime Level 3: The operator selects the amount of tickets/cards that are dispensed when Overtime Level #3 is passed. The range of this setting is 0 through 30 tickets/cards.

Factory Default: 1 Ticket/Card

A.6 14 Tickets/Cards Per Level: The operator selects the amount of tickets/cards that are dispensed when a ticket/card level is passed. The range of this setting is 0 through 50 tickets/cards.

Factory Default: 1 Ticket/Card Per Level Passed

A.6 15 Tickets/Cards Level #1 - Game #1: This is the ticket/card dispense level #1 for game #1. The range of this setting is Off through 999 points.

Factory Default: 10 Points

A.6 16 Tickets/Cards Level #2 - Game #1: This is the ticket/card dispense level #2 for game #1. The range of this setting is Off through 999 points.

Factory Default: 20 Points

A.6 17 Tickets/Cards Level #3 - Game #1: This is the ticket/card dispense level #3 for game #1. The range of this setting is Off through 999 points.

Factory Default: 50 Points

A.6 18 Tickets/Cards Level #4 - Game #1: This is the ticket/card dispense level #4 for game #1. The range of this setting is Off through 999 points.

Factory Default: 60 Points

A.6 19 Tickets/Cards Level #5 - Game #1: This is the ticket/card dispense level #5 for game #1. The range of this setting is Off through 999 points.

Factory Default: 80 Points

A.6 20 Tickets/Cards Level #6 - Game #1: This is the ticket/card dispense level #6 for game #1. The range of this setting is Off through 999 points.

Factory Default: 100 Points

A.6 21 Tickets/Cards Level #7 - Game #1: This is the ticket/card dispense level #7 for game #1. The range of this setting is Off through 999 points.

Factory Default: 110 Points

A.6 22 Tickets/Cards Level #8 - Game #1: This is the ticket/card dispense level #8 for game #1. The range of this setting is Off through 999 points.

Factory Default: 120 Points

A.6 23 Tickets/Cards Level #1 - Game #2: This is the ticket/card dispense level #1 for game #2. The range of this setting is Off through 999 points.

Factory Default: 10 Points

A.6 24 Tickets/Cards Level #2 - Game #2: This is the ticket/card dispense level #2 for game #2. The range of this setting is Off through 999 points.

Factory Default: 20 Points

A.6 25 Tickets/Cards Level #3 - Game #2: This is the ticket/card dispense level #3 for game #2. The range of this setting is Off through 999 points.

Factory Default: 50 Points

A.6 26 Tickets/Cards Level #4 - Game #2: This is the ticket/card dispense level #4 for game #2. The range of this setting is Off through 999 points.

Factory Default: 60 Points

A.6 27 Tickets/Cards Level #5 - Game #2: This is the ticket/card dispense level #5 for game #2. The range of this setting is Off through 999 points.

Factory Default: 80 Points

A.6 28 Tickets/Cards Level #6 - Game #2: This is the ticket/card dispense level #6 for game #2. The range of this setting is Off through 999 points.

Factory Default: 100 Points

A.6 29 Tickets/Cards Level #7 - Game #2: This is the ticket/card dispense level #7 for game #2. The range of this setting is Off through 999 points.

Factory Default: 110 Points

A.6 30 Tickets/Cards Level #8 - Game #2: This is the ticket/card dispense level #8 for game #2. The range of this setting is Off through 999 points.

Factory Default: 120 Points

A.6 31 Tickets/Cards Level #1 - Game #3: This is the ticket/card dispense level #1 for game #3. The range of this setting is Off through 999 points.

Factory Default: 20 Points

A.6 32 Tickets/Cards Level #2 - Game #3: This is the ticket/card dispense level #2 for game #3. The range of this setting is Off through 999 points.

Factory Default: 40 Points

A.6 33 Tickets/Cards Level #3 - Game #3: This is the ticket/card dispense level #3 for game #3. The range of this setting is Off through 999 points.

Factory Default: 60 Points

A.6 34 Tickets/Cards Level #4 - Game #3: This is the ticket/card dispense level #4 for game #3. The range of this setting is Off through 999 points.

Factory Default: 80 Points

A.6 35 Tickets/Cards Level #5 - Game #3: This is the ticket/card dispense level #5 for game #3. The range of this setting is Off through 999 points.

Factory Default: 100 Points

A.6 36 Tickets/Cards Level #6 - Game #3: This is the ticket/card dispense level #6 for game #3. The range of this setting is Off through 999 points.

Factory Default: 150 Points

A.6 37 Tickets/Cards Level #7 - Game #3: This is the ticket/card dispense level #7 for game #3. The range of this setting is Off through 999 points.

Factory Default: 200 Points

A.6 38 Tickets/Cards Level #8 - Game #3: This is the ticket/card dispense level #8 for game #3. The range of this setting is Off through 999 points.

Factory Default: 250 Points

A.6 39 Tickets/Cards Level #1 - Game #4: This is the ticket/card dispense level #1 for game #4. The range of this setting is Off through 999 points.

Factory Default: 20 Points

A.6 40 Tickets/Cards Level #2 - Game #4: This is the ticket/card dispense level #2 for game #4. The range of this setting is Off through 999 points.

Factory Default: 40 Points

A.6 41 Tickets/Cards Level #3 - Game #4: This is the ticket/card dispense level #3 for game #4. The range of this setting is Off through 999 points.

Factory Default: 60 Points

A.6 42 Tickets/Cards Level #4 - Game #4: This is the ticket/card dispense level #4 for game #4. The range of this setting is Off through 999 points.

Factory Default: 80 Points

A.6 43 Tickets/Cards Level #5 - Game #4: This is the ticket/card dispense level #5 for game #4. The range of this setting is Off through 999 points.

Factory Default: 90 Points

A.6 44 Tickets/Cards Level #6 - Game #4: This is the ticket/card dispense level #6 for game #4. The range of this setting is Off through 999 points.

Factory Default: 100 Points

A.6 45 Tickets/Cards Level #7 - Game #4: This is the ticket/card dispense level #7 for game #4. The range of this setting is Off through 999 points.

Factory Default: 120 Points

A.6 46 Tickets/Cards Level #8 - Game #4: This is the ticket/card dispense level #8 for game #4. The range of this setting is Off through 999 points.

Factory Default: 180 Points

A.6 47 Tickets/Cards Level #1 - Game #5: This is the ticket/card dispense level #1 for game #5. The range of this setting is Off through 999 points.

Factory Default: 20 Points

A.6 48 Tickets/Cards Level #2 - Game #5: This is the ticket/card dispense level #2 for game #5. The range of this setting is Off through 999 points.

Factory Default: 50 Points

A.6 49 Tickets/Cards Level #3 - Game #5: This is the ticket/card dispense level #3 for game #5. The range of this setting is Off through 999 points.

Factory Default: 80 Points

A.6 50 Tickets/Cards Level #4 - Game #5: This is the ticket/card dispense level #4 for game #5. The range of this setting is Off through 999 points.

Factory Default: 110 Points

A.6 51 Tickets/Cards Level #5 - Game #5: This is the ticket/card dispense level #5 for game #5. The range of this setting is Off through 999 points.

Factory Default: 180 Points

A.6 52 Tickets/Cards Level #6 - Game #5: This is the ticket/card dispense level #6 for game #5. The range of this setting is Off through 999 points.

Factory Default: 250 Points

A.6 53 Tickets/Cards Level #7 - Game #5: This is the ticket/card dispense level #7 for game #5. The range of this setting is Off through 999 points.

Factory Default: 350 Points

A.6 54 Tickets/Cards Level #8 - Game #5: This is the ticket/card dispense level #8 for game #5. The range of this setting is Off through 999 points.

Factory Default: 450 Points

A.6 55 Tickets/Cards Level #1 - Game #6: This is the ticket/card dispense level #1 for game #5. The range of this setting is Off through 999 points.

Factory Default: 20 Points

A.6 56 Tickets/Cards Level #2 - Game #6: This is the ticket/card dispense level #2 for game #6. The range of this setting is Off through 999 points.

Factory Default: 40 Points

A.6 57 Tickets/Cards Level #3 - Game #6: This is the ticket/card dispense level #3 for game #6. The range of this setting is Off through 999 points.

Factory Default: 60 Points

A.6 58 Tickets/Cards Level #4 - Game #6: This is the ticket/card dispense level #4 for game #6. The range of this setting is Off through 999 points.

Factory Default: 80 Points

A.6 59 Tickets/Cards Level #5 - Game #6: This is the ticket/card dispense level #5 for game #6. The range of this setting is Off through 999 points.

Factory Default: 100 Points

A.6 60 Tickets/Cards Level #6 - Game #6: This is the ticket/card dispense level #6 for game #6. The range of this setting is Off through 999 points.

Factory Default: 120 Points

A.6 61 Tickets/Cards Level #7 - Game #6: This is the ticket/card dispense level #7 for game #6. The range of this setting is Off through 999 points.

Factory Default: 140 Points

A.6 62 Tickets/Cards Level #8 - Game #6: This is the ticket/card dispense level #8 for game #6. The range of this setting is Off through 999 points.

Factory Default: 160 Points

A.6 63 Tickets/Cards Level #1 - Game #7: This is the ticket/card dispense level #1 for game #7. The range of this setting is Off through 999 points.

Factory Default: 20 Points

A.6 64 Tickets/Cards Level #2 - Game #7: This is the ticket/card dispense level #2 for game #7. The range of this setting is Off through 999 points.

Factory Default: 40 Points

A.6 65 Tickets/Cards Level #3 - Game #7: This is the ticket/card dispense level #3 for game #7. The range of this setting is Off through 999 points.

Factory Default: 60 Points

A.6 66 Tickets/Cards Level #4 - Game #7: This is the ticket/card dispense level #4 for game #7. The range of this setting is Off through 999 points.

Factory Default: 80 Points

A.6 67 Tickets/Cards Level #5 - Game #7: This is the ticket/card dispense level #5 for game #7. The range of this setting is Off through 999 points.

Factory Default: 100 Points

A.6 68 Tickets/Cards Level #6 - Game #7: This is the ticket/card dispense level #6 for game #7. The range of this setting is Off through 999 points.

Factory Default: 140 Points

A.6 69 Tickets/Cards Level #7 - Game #7: This is the ticket/card dispense level #7 for game #7 The range of this setting is Off through 999 points.

Factory Default: 200 Points

A.6 70 Tickets/Cards Level #8 - Game #7: This is the ticket/card dispense level #8 for game #7. The range of this setting is Off through 999 points.

Factory Default: 250 Points

ERROR MESSAGES

The WPC game program has the capability to aid the operator and service personnel. At Game Turn-on, or after pressing the Begin Test switch, (once the game has been operating for an extended period), the display may signal with the message, "Press ENTER for Test Report". This indicates the game program has detected a possible problem with the game.

To obtain details of the problem, open the coin door and press the Begin Test switch. Press the Enter button to begin displaying the message(s). The following messages apply to your game.

Check Switch ##.

This message indicates that at least one switch was stuck 'On' at game turn-on or has NOT been actuated during ball play (for 90 balls or ≈30 games). The game program compensates the game play requirements affected by each disabled switch to allow 'nearly normal' play. This helps keep the game earning, until the service technician can repair the problem.

To verify the problem, refer to the Test Menu text describing Switch Testing, and check each reported switch using applicable switch tests. Always check switch operation using a ball, to simulate game conditions. Switch problems may often be resolved by adjusting the wire switch actuators, fixing switch circuitry problems, securing loose connectors, etc. Mechanisms using 'opto switches' (drop targets, etc.) need to be checked for proper power connections (+12V dc and ground).

xxxxx Sw. is Stuck On.

This message indicates that a switch, which is not usually On, remains in the On position after the game is switched On. The stuck switch is essential for game play (for example, a coin chute switch, the slam tilt switch, the plumb bob tilt switch), and should be cleared to permit proper game operation.

Ground Short Row-N, Wht-xxx.

This message indicates that the switch wires being called out are touching a grounded part on the playfield or coin door. The following should be checked:

1. Slam Tilt (or other coin door) switch touching the grounded coin door.
2. A leaf-type, playfield switch touching a grounded part.
3. Players poking metallic objects (wires, coat hanger, etc.) into the game
4. Switch cable insulation pierced or damaged allowing bare wire contact with a grounded part
5. All switches in a row closing at the same time. Note: This instance is NOT a switch problem; however, for most games this is a very rare possibility.

U6 Checksum Error.

The game ROM checksum is invalid. If this occurs replace the game ROM.

Time and Date Not Set.

The real time clock is not running. If this occurs go to U.4 of the Utilities Menu and set the time and date.

Factory Settings Restored

This message indicates that the CMOS RAM no longer retains any custom Pricing or Game Adjustment settings and has reverted to factory default settings. Generally, the following CPU checks will isolate the cause of the CMOS RAM memory failure. The voltage at pin 28 and pin 26 of U8 should be +5V (game turned On) and at least +4V (game turned Off). When the voltage drops below +4 V, memory reset occurs. Check the batteries and battery holder. Be sure that the batteries are good and that there is no contamination on the battery holder terminals. Turn the game OFF, and use an ohmmeter to check diodes D1 and D2 on the CPU Board. D1 should read 0 ohms when forward-biased and infinite ohms when reverse-biased. D2 should read 15 ohms when forward-biased and infinite ohms when reverse-biased. Note: Readings taken from Analog Meter. This message can also indicate that there is an open diode on a 50V coil, and noise is entering the circuit.

Card Dispenser Problem

The cards from the card dispenser are taking too long to dispense. This usually means that the cards are not falling freely into the card catcher. Possible problems are:

1) The card chute is adjusted too far towards the back of the dispenser, putting additional drag on the card after the cards leaves the motor. (See adjusting card dispenser in the Maintenance Information Section).

2) The card is hitting something when it goes through the cabinet hole to the card catcher. There should be no obstructions.

3) The cards have curled too much probably due to humidity, or the cards are too old. Replace all the cards with fresh cards.

4) The picture side of the basketball cards are NOT ALL facing to the back of the dispenser. The Dispenser cannot reliably grip the picture side of the cards. Remedy, ALL CARDS must have the picture side towards the back of the dispenser.

CPU L.E.D.'s

The CPU has three L.E.D.'s located on the upper left side of the board: D19, D20, and D21. On game power-up D19 and D21 turn On for a moment then, D19 turns Off and D20 starts to blink rapidly. D21 remains On. The system has detected a problem if the following happens:

CPU Board L.E.D. Error Codes

Center L.E.D. blinks one time	-	ROM Error U6
Center L.E.D. blinks two times	-	RAM Error U8
Center L.E.D. blinks three times	-	Custom Chip Failure U9

Sound Board Beep Error Codes
Upon Game Turn-On:

1 Beep	=	Sound Board O.K.
2 Beeps	=	U9 Failure (RAM)
3 Beeps	=	U18 Failure (ROM)
4 Beeps	=	U15 Failure (ROM), if used
5 Beeps	=	U14 Failure (ROM), if used

Error - Basket Is Not Calibrated

Check Basket Motor and Switch 32 & Switch 33.

This error means the moving basket mechanism was unable to calculate the amount of time it takes to get from the bottom to top, and from top to bottom. The moving basket will not operate correctly unless it is able to calibrate. The following could prevent it from calibrating, OR from staying in calibration:

1. The opto switches #32 Basket Motor Top and/or #33 Basket Motor Bottom are not working, or are not working consistently. Check both switches using the switch test or in T.14 Manual Basket test to make sure they are triggering.

2. The basket motor is dead. If the basket does not move at all, the motor may be defective or power is not being supplied to the motor. Check for voltage at the motor. Use T.14 Manual Basket test to see if the basket will move.

3. The basket mover motor directional P.C. board is defective. If in test T.14 Manual Basket, the motor shaft is not able to turn both clockwise and counter clockwise, then this P.C. board may be defective or the power supply may be defective in one direction.

4. The rotating shaft is jammed or blocked by an object. Make sure the basket mover cart is able to move freely up and down the playfield and that there are no wires or foreign objects on/in the grooves of the turning rod. Also see "Rotating Basket Motor Rod Adjustment" below.

NOTE: Once the basket mover has been fixed, test T.15 Smart Basket should be used to make sure basket can calibrate and move properly.

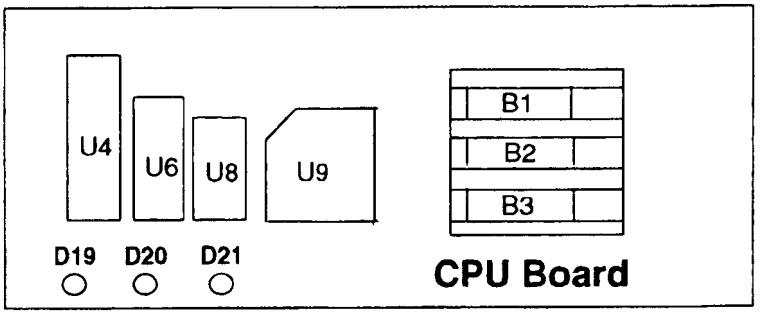
ROTATING BASKET MOTOR ROD ADJUSTMENT

Proper operation of the basket mover is only possible if the turning motor rod is adjusted properly. If it is not binding, damage to the motor, rod, and rod follower are possible. Adjustment of the turning motor rod that the basket mover rides on should be as follows.

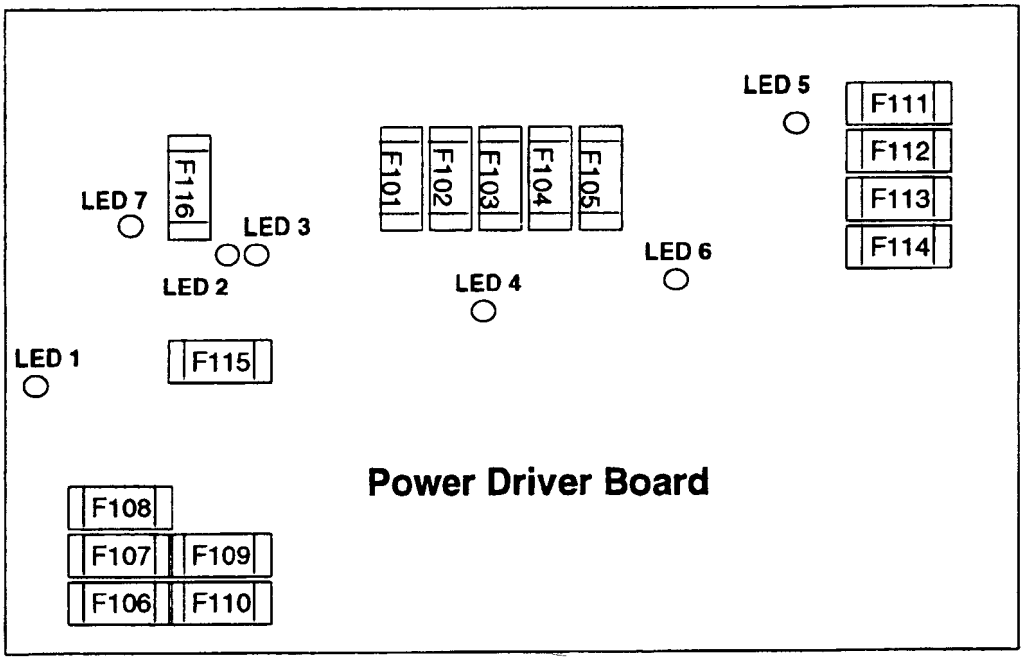
1. There should be approximately 1/8" "slop" in the up/down movement of the rod. It should NOT be pushed tightly against the motor gear box housing, but allowed to move slightly. There is a slotted bracket with 2 screws for adjustment on the end of the shaft, opposite the motor.

2. If you grad the motor rod in your hand, you should be able to turn it clockwise and counter-clockwise slightly without engaging the motor. If not, loosen the 2 nuts holding the rod follower (the part that is attached to and moves up and down the rod) slightly until a little "play" in the rod is felt.

LED List

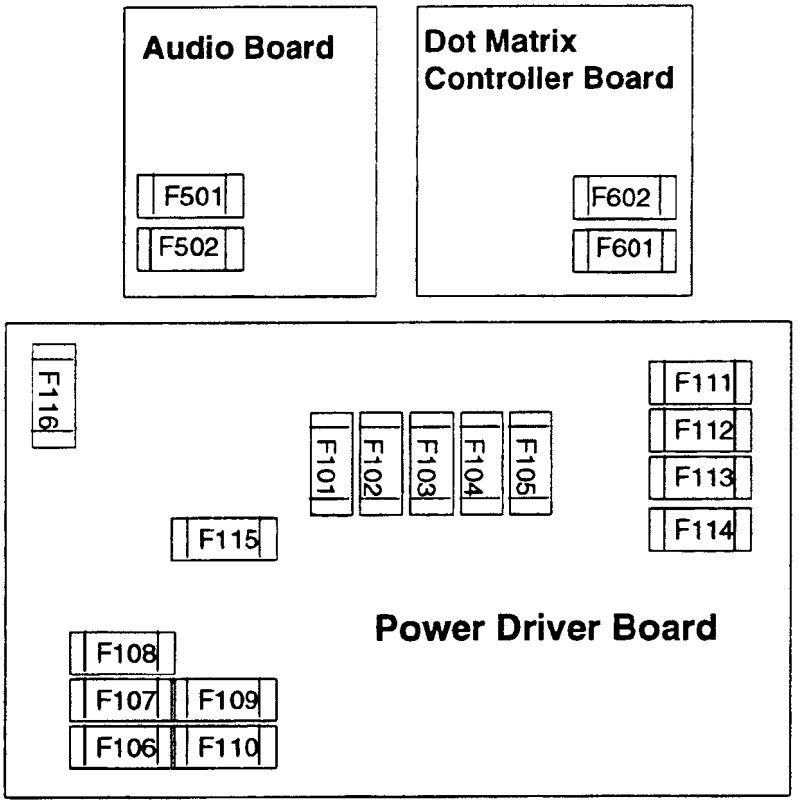


CPU Board
D19, Blanking
D20, Diagnostic
D21, +5vdc
At Game Turn-On = D19 & D21 On, D20 Off
During Normal Operation = D19 Off, D20 flashing, D21 On



Power Driver Board
LED 1, +12vdc, Switch Circuit, Normally On
LED 2, High/Low Line Voltage Sensor, Normally On
LED 3, High/Low Line Voltage Sensor, Normally Off
LED 4, +5vdc, Digital Circuit, Normally On
LED 5, +20vdc, Flashlamp Circuit, Normally On
LED 6, +18vdc, Lamps Circuit, Normally On
LED 7, +12vdc, Power Circuit (Motors, Relays, Etc.), Normally On

Fuse List



Audio Board

F501	-24V Circuit	3A, S.B.
F502	+25V Circuit	3A, S.B.

Dot Matrix Controller Board

F601	+62V Circuit	3/8A, S.B.
F602	-113V and -125V Circuits	3/8A, S.B.

Power Driver Board

F103	Solenoid #25-#28	3A, S.B.
F104	Solenoid #9-#16	3A, S.B.
F105	Solenoid #1-#8	3A, S.B.
F106	G.I. #5 Wht-Vio	5A, S.B.
F107	G.I. #4 Wht-Grn	5A, S.B.
F108	G.I. #3 Wht-Yel	5A, S.B.
F109	G.I. #2 Wht-Org	5A, S.B.
F110	G.I. #1 Wht-Brn	5A, S.B.
F111	Flasher Secondary	5A, S.B.
F112	Solenoid Secondary	5A, S.B.
F113	+5V Logic	5A, S.B.
F114	+18V Lamp Matrix	8A, N.B.
F115	+12V Switch Matrix	3/4A, S.B.
F116	+12V Secondary	3A, S.B.

Line Filter

Domestic Game	8A
Foreign Game	5A, S.B.

MAINTENANCE INFORMATION

SWITCH CONTACTS

For proper game operation, switch contacts should be free of dust, dirt, contamination, and corrosion. Blade switch contacts are plated to resist corrosion. Cleaning blade switch contacts requires gentle closing of the contacts on a clean business card or piece of paper, and then pulling the paper about 2 inches, which should restore the clean contact surface. Adjust the switch contacts to a 1/16-inch gap.

CLEANING

Good game action and extended playfield life are the results of regular playfield cleaning. During each collection stop, the dome should be removed (see Game Assembly Instructions, #5) and cleaned with glass cleaner and a soft nonabrasive cloth. The playfield should also be wiped off with a soft cloth. The game balls should be inspected for excessive wear and replaced when necessary.

Occasionally, more extensive, playfield cleaning is required. Avoid excessive use of water and caustic or abrasive cleaners because they tend to damage the playfield surface. Playfield wax (or any carnauba based wax), or polish may be used sparingly, to prevent a buildup on the playfield surface. Do not use cleaners containing petroleum distillates on any playfield plastics because they may dissolve the plastic material or damage the artwork.

CARD DISPENSER ADJUSTMENTS

Note, the dispenser is not guaranteed to operate properly when the humidity is at or above 90^{o} level.
Note, it is REQUIRED that the PICTURE SIDE OF ALL CARDS face the back of the dispenser.
Note, use only Vending Machine Basketball Cards. DO NOT use individually wrapped cards (packaged with gum or food) because the dispenser will not operate properly.

If your supply of baseball cards are to thick or too thin, on the left side of the dispenser are 4 slotted screws that adjust the motor assembly for various size cards. The motor assembly should be moved forward or backward, so that only 1 card is dispensed at a time.

If the card chute is not adjusted properly, cards will not fall when the card passes the motor's pinch roller. The adjustable screw slot on the front right side of the dispenser can widen the narrow gap that a card must fall through before it falls into the wide portion of the card chute. If this narrow path is too narrow, the next card can hold the currently dispensing card and prevent it from falling.

ROTATING BASKET MOTOR ROD ADJUSTMENT

Proper operation of the basket mover is only possible if the turning motor rod is adjusted properly. If it is not binding, damage to the motor, rod, and rod follower are possible. Adjustment of the turning motor rod that the basket mover rides on should be as follows.

1. There should be approximately 1/8" "slop" in the up/down movement of the rod. It should NOT be pushed tightly against the motor gear box housing, but allowed to move slightly. There is a slotted bracket with 2 screws for adjustment on the end of the shaft, opposite the motor.

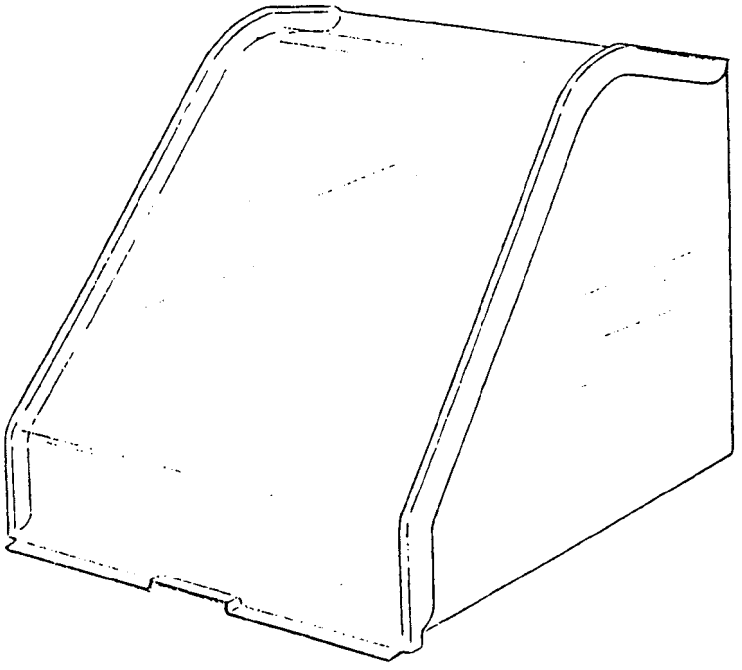
2. If you grad the motor rod in your hand, you should be able to turn it clockwise and counter-clockwise slightly without engaging the motor. If not, loosen the 2 nuts holding the rod follower (the part that is attached and moves up and down the rod) slightly until a little "play" in the rod is felt.

Notes...

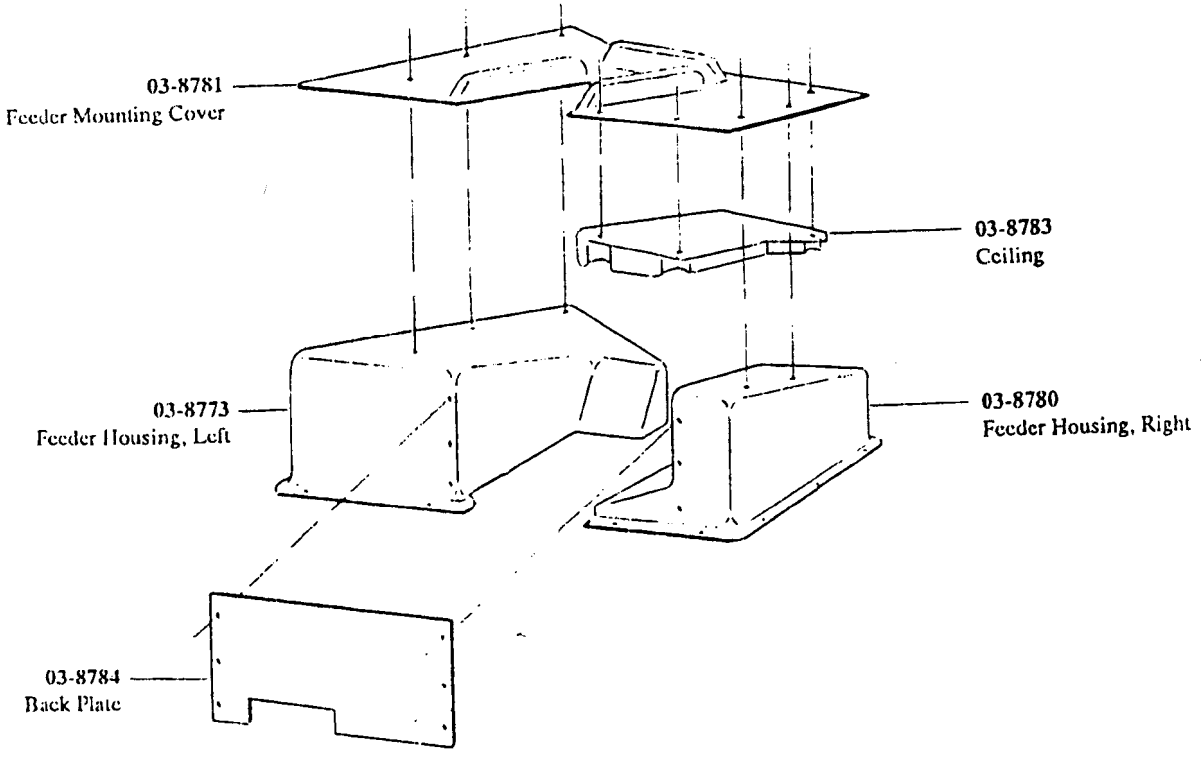
SECTION 2

GAME PARTS INFORMATION

03-8734 Cover Hood



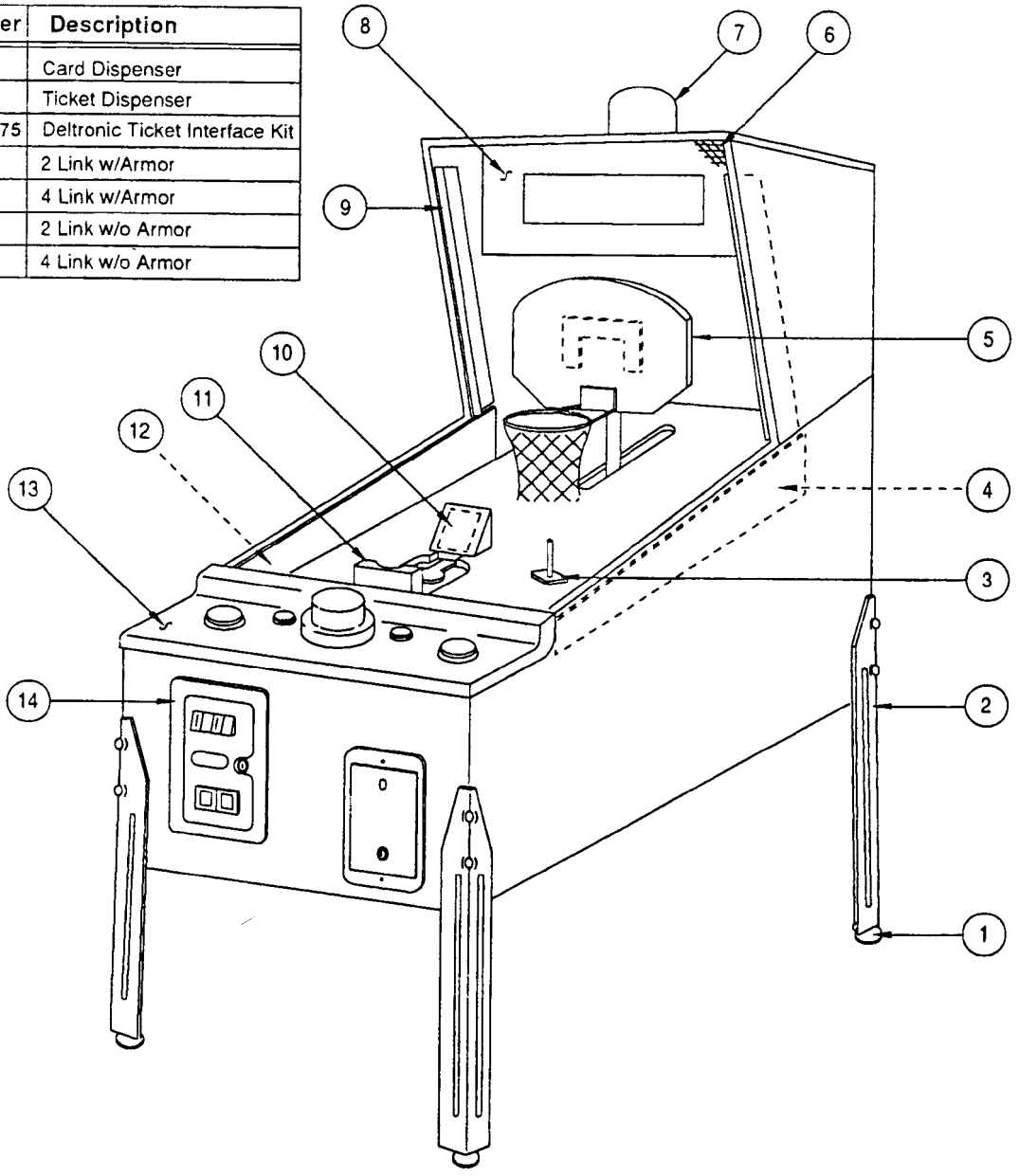
A-15992 Feeder Housing Assembly



HOTSHOT Cabinet

OPTIONAL EQUIPMENT (Not Shown)

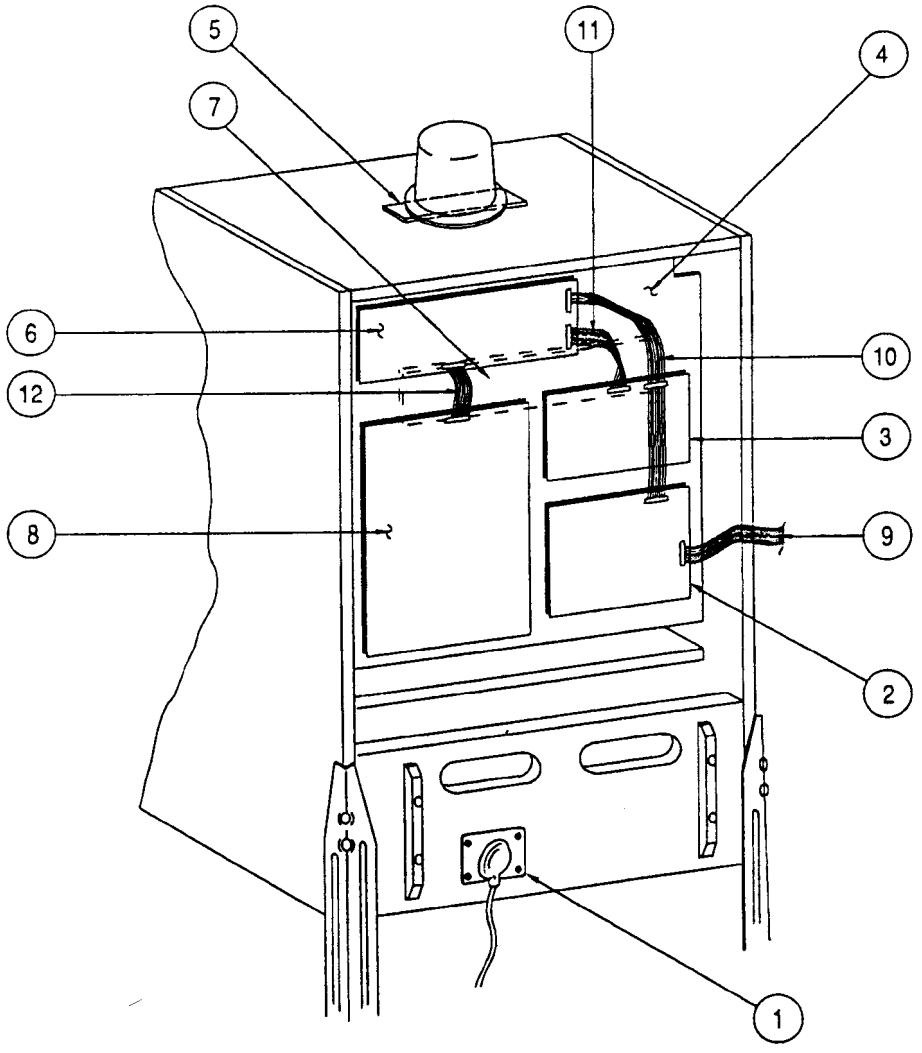
Part Number	Description
63329	Card Dispenser
60604	Ticket Dispenser
Model DL-1275	Deltronic Ticket Interface Kit
63117	2 Link w/Armor
63217	4 Link w/Armor
63317	2 Link w/o Armor
63417	4 Link w/o Armor



Item	Part Number	Description
1.	08-7377	Leg Adjuster 3"
2.	C-10843	Metal Leg (4 Used)
3.	03-8776	Cam
4.	01-10686-1	Hood Mounting Bracket - Right
5.	A-15809	Backboard & Hoop Assembly
6.	31-1707	Screened Panel Cover
7.	03-7981	Lens (Tr. Red)
8.	A-15804	Dot Matrix Display Assembly
a)	5901-12784-00	Dot Matrix Display/Driver Bd.

Item	Part Number	Description
9.	01-10869	Hood Retainer Bracket (2 Used)
10.	03-8798	Shade
11.	11-1096	Ball Deflector
12.	01-10868-2	Hood Mounting Bracket - Left
13.	A-15981	Control Panel Assy. (See p.2-22)
14.	09-35000-1	Mini-Coin Door USA 2-Slot

HOTSHOT Rear View



Item	Part Number	Description
1.	01-10714	Line Cord Cover
2.	A-12738-60017	WPC Sound Board
3.	A-14039	Dot Matrix Controller Assy.
4.	A-16001	PCB Mounting Plate
5.	A-16212	3-Flash Lamp Dome Assy.
6.	A-12742-60017	WPC CPU Board
7.	A-16049	18-Lamp Board Assy.
8.	A-12697-1	WPC Power Driver Board

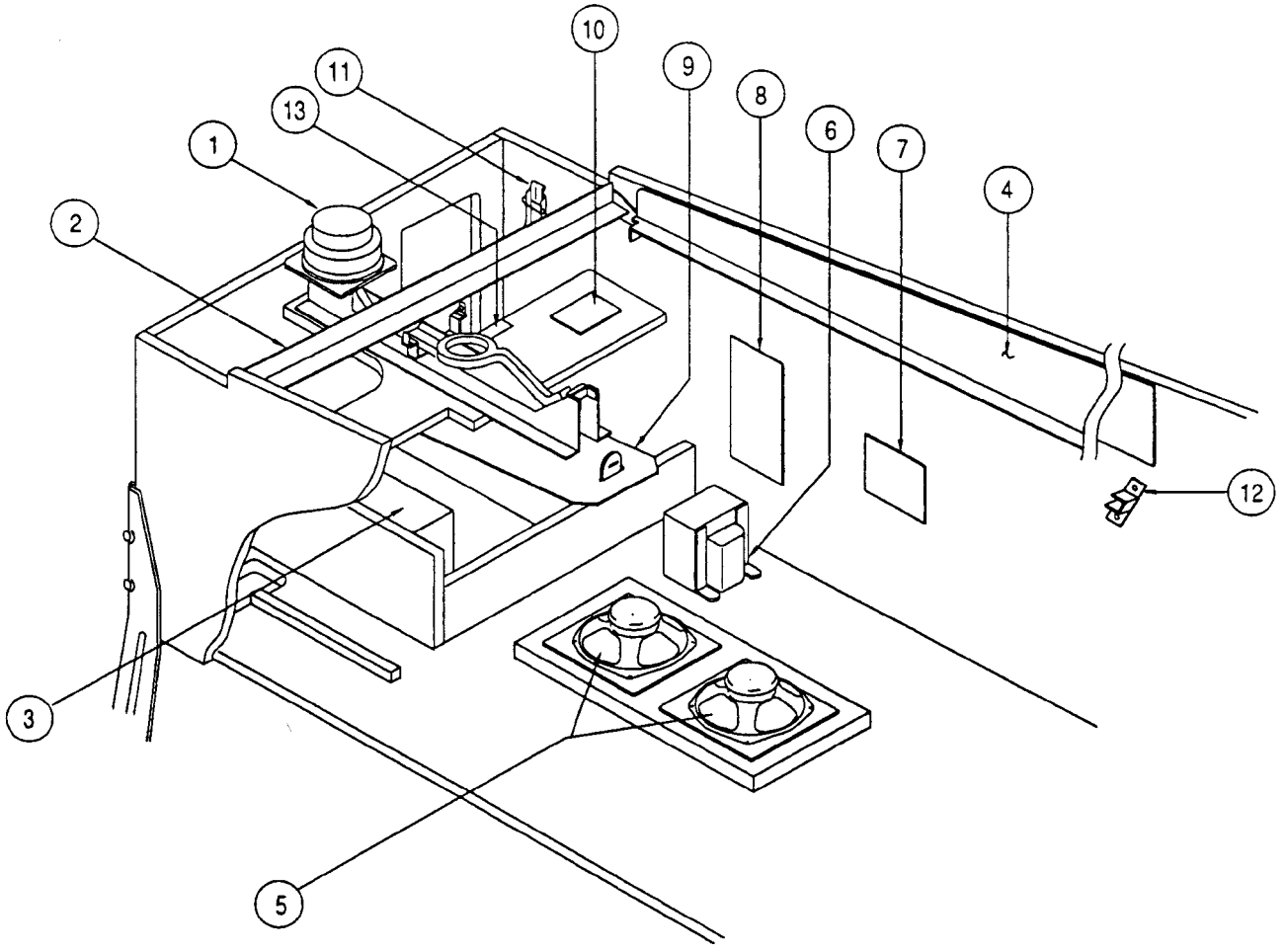
Ribbon Cables:

9.	5795-13434-02	Ribbon Cable, 32"
10.	5795-13018-00	Ribbon Cable, 22"
11.	5795-10938-09	Ribbon Cable, 9"
12.	5795-12653-03	Ribbon Cable, 3"

Line Filter/Cordset Application Chart

	LINE FILTER ASSY.			CORDSET								
COUNTRY	A-15707-120V	A-15707-230V		5850-13271-00	5850-13272-00	5850-13273-00	5850-13274-00	5850-13275-00	5850-13276-00	5850-13277-00	5850-13278-00	H-15756
AUSTRALIA		●			●							
BELGIUM		●			●							
FRANCE		●			●							
HUNGARY		●			●							
ITALY		●						●				
JAPAN	●										●	●
NEW ZEALAND		●								●		
UNITED KINGDOM		●				●						
UNITED STATES	●			●								
WEST GERMANY		●			●							

HOTSHOT Cabinet Interior Parts



Item	Part Number	Description	Item	Part Number	Description
1.	A-15811	Shooter Assembly	8.	A-14689	Coin Door Interface Board
2.	01-10865	Playfield Mounting Bracket	9.	A-15955	Cashbox Assembly
3.	*	Line Filter Assembly	10.	A-16048	8-Diode Switch Assembly
4.	01-10868-2	Hood Mounting Bracket, Left	11.	20-9347	Toggle Latch (2 Used)
5.	5555-12469-00	Speaker 4Ω (2 Used)	12.	01-11042	Service Bracket (2 Used)
6.	5610-12835-00	WPC Transformer 115/230V	13.	A-15982	Diagnostic Sw. Bracket Assy.
7.	A-15646	24-Switch Opto PC Board			

* See Application Chart (p.2-4)

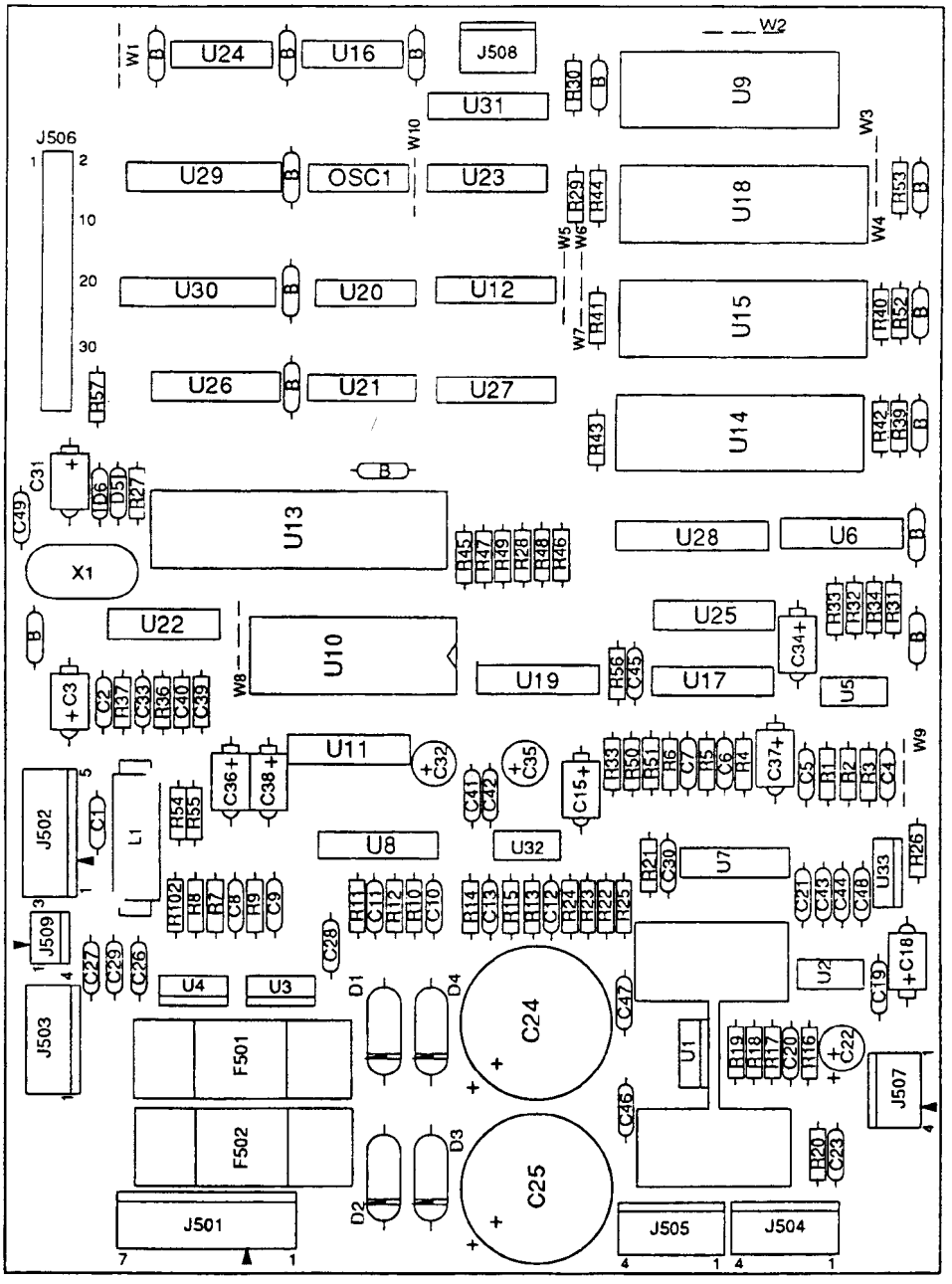
NOTE: To order replacement or additional basketball card contact your authorized **Midway** Distributor.

A-12738-60017 WPC Audio Board

Part No.	Designator	Description
01-9980		Shield: Wire Protector
4004-01005-06	U1	Mach. Screw, 4-40 x 3/8
4104-01012-04	U1	Sh. Mach. Screw, #4 x 1/4
4404-01119-00	U1	Nut, 4-40 SNUT
5010-08772-00	R21	Resistor, 15KΩ, 1/4w, 5%
5010-12065-00	R22, R25	Resistor, 120KΩ, 1/4w, 5%
5010-08991-00	R51	Resistor, 4.7KΩ, 1/4w, 5%
5010-10987-00	R23, R24	Resistor, 56KΩ, 1/4w, 5%
5010-09034-00	R13, R14, R29-R31, R33, R34, R50, R45-R49	Resistor, 10KΩ, 1/4w, 5%
5010-09035-00	R4	Resistor, 47KΩ, 1/4w, 5%
5010-09036-00	R35	Resistor, 100Ω, 1/4w, 5%
5010-09134-00	R1, R2, R6, R8, R9, R11,R12	Resistor, 150KΩ, 1/4w, 5%
5010-09162-00	R26, R102	Resistor, 100KΩ, 1/4w, 5%
5010-08774-00	R3, R5, R17, R19	Resistor, 22K, 1/4w, 5%
5010-09269-00	R15	Resistor, 12KΩ, 1/4w, 5%
5010-09358-00	R18, R32	Resistor, 1KΩ, 1/4w, 5%
5010-09416-00	R28, R36, R37, R39-R44 R52, R53, R57	Resistor, 470Ω, 1/4w, 5%
5010-09534-00	W3, W5, W7-W10	Resistor, 0Ω
5010-10171-00	R38, R56	Resistor, 56Ω, 1/4w, 5%
5010-10258-00	R16	Resistor, 1M, 1/4w, 5%
5010-10650-00	R7, R10	Resistor, 62K, 1/4w, 5%
5010-10989-00	R54, R55, R27	Resistor, 470K, 1/4w, 5%
5010-12752-00	R20	Resistor, 1Ω, 1/4w, 5%
5040-08986-00	C3	Capacitor, 100M, 10v (±20%)
5040-09332-00	C15, C18, C34, C36, C38	Capacitor, 47µfd., 25v, Axial
5040-11036-00	C32, C35	Capacitor, 47µfd., 16v, Rad
5040-12729-00	C24, C25	Capacitor, 4700µfd., 35v.
5040-12750-00	C22	Capacitor, 22µfd., 35v, Rad.
5041-09031-00	C26-C29, C37, C46-C48	Capacitor, 1µfd. TANT
5041-09243-00	C20, C21	Capacitor, 10µfd. TANT
5043-08980-00	C41-C44, B(15)	Capacitor, .01M, 50v, (+80, -20)
5043-08996-00	C1, C2	Capacitor, .1µfd., 50v, 10%
5048-11027-00	C8, C10	Capacitor, 33pfd., 50v, 10%
5048-11028-00	C45	Capacitor, 22pfd., 50V, Axial
5048-11029-00	C33, C49	Capacitor, 100pfd., 50v
5048-11030-00	C12	Capacitor, 470pfd., 50v
5048-11031-00	C19, C31	Capacitor, .001µfd., 50v, 10%
5048-11065-00	C13	Capacitor, .0022µfd., 50v, 10%, Ax.
5048-11072-00	C39, C40	Capacitor, .0033µfd.
5048-12036-00	C23	Capacitor, .22µfd., 10v, Ceramic
5048-12745-00	C4, C6	Capacitor, 1800pfd., 50V, 10%
5048-12746-00	C5, C7	Capacitor, 330pfd., 50V
5048-12748-00	C9, C11, C30	Capacitor, 220pfd., 50V

Part No.	Designator	Description
5070-08919-00	D5, D6	Diode, 1N4148
5070-09045-00	D1-D4	Diode MR501, 3.0A
5250-10495-00	U3	Reg. 7912 1.0A -12v.
5281-09215-00	U22	IC, 74LS04 Hex INV
5281-09246-00	U12	IC, 74LS139 2-4 Dec.
5281-09486-00	U28-U30	IC, 74LS374 8 Dual Flipflop
5281-09487-00	U6, U23-U25	IC, 74LS74 Dual Flipflop
5281-09500-00	U31	IC, 74LS32
5281-09745-00	U26, U27	IC, 74LS138 DMLTPX
5281-09850-00	U20	IC, 74LS11 Tripple AND
5281-10577-00	U16	IC, 74LS125 Q/B Bfr
5370-11086-00	U10	IC, YM2151 Sound
5371-11087-00	U11	IC, YM3012 D/A
5400-10320-00	U13	IC, MPU 68B09E
5284-12651-00	U21	IC 4584
5340-12278-00	U9	S/Ram 2064
5370-09691-00	U17	IC, 55536 CVSD
5370-12260-00	U2	IC, 3340 Elec Atten
5370-12728-00	U1	IC, Audio Amp LM1875
5370-12730-00	U7, U8	IC, Op Amp TL084
5370-12742-00	U32	IC, Op Amp TL082
5371-12727-00	U19	Dac AD7524
5432-12726-00	U5	EE Prom Pot X9503
5460-12423-00	U4	IC, LM7812
5460-12743-00	U33	LM7809 TO-220
5520-09020-00	X1	Crystal, 3.58 MHz.
5521-10931-00	OSC1	Oscillator, 8.0 MHz.
5551-09822-00	L1	Ind, 4.7UH 3.0A.
5700-08985-00	U13	Socket, IC 40-pin, .6"
5700-09004-00	U10	Socket, IC 24-pin, .6"
5700-09006-00	U11	Socket, IC 16-pin, .3"
Not Used	U15	
A-5343-60017-2	U14	IC, Audio ROM
A-5343-60017-3	U18	IC, Audio ROM
5700-12088-00	U1	Socket, IC 32-pin (U14, U18)
5705-12755-00		Heatsink 5299B-220
5731-10356-00	F501, F502	Fuse, 3A, S-B, 250v
5733-12060-01		Fuse Holder (F501, F502)
5791-10862-04	J504, J505	Connector, 4-pin Header Sq. .156
5791-10862-05	J502	Connector, 5-pin Header Sq. .156
5791-10862-07	J501	Connector, 7-pin Header Sq. .156
5791-12462-03	J509	Connector, 3-pin Header Sq. .100
5791-12462-04	J508	Connector, 4-pin Header Sq. .100
5791-12516-00	J506	34 Hen 2x17 STR

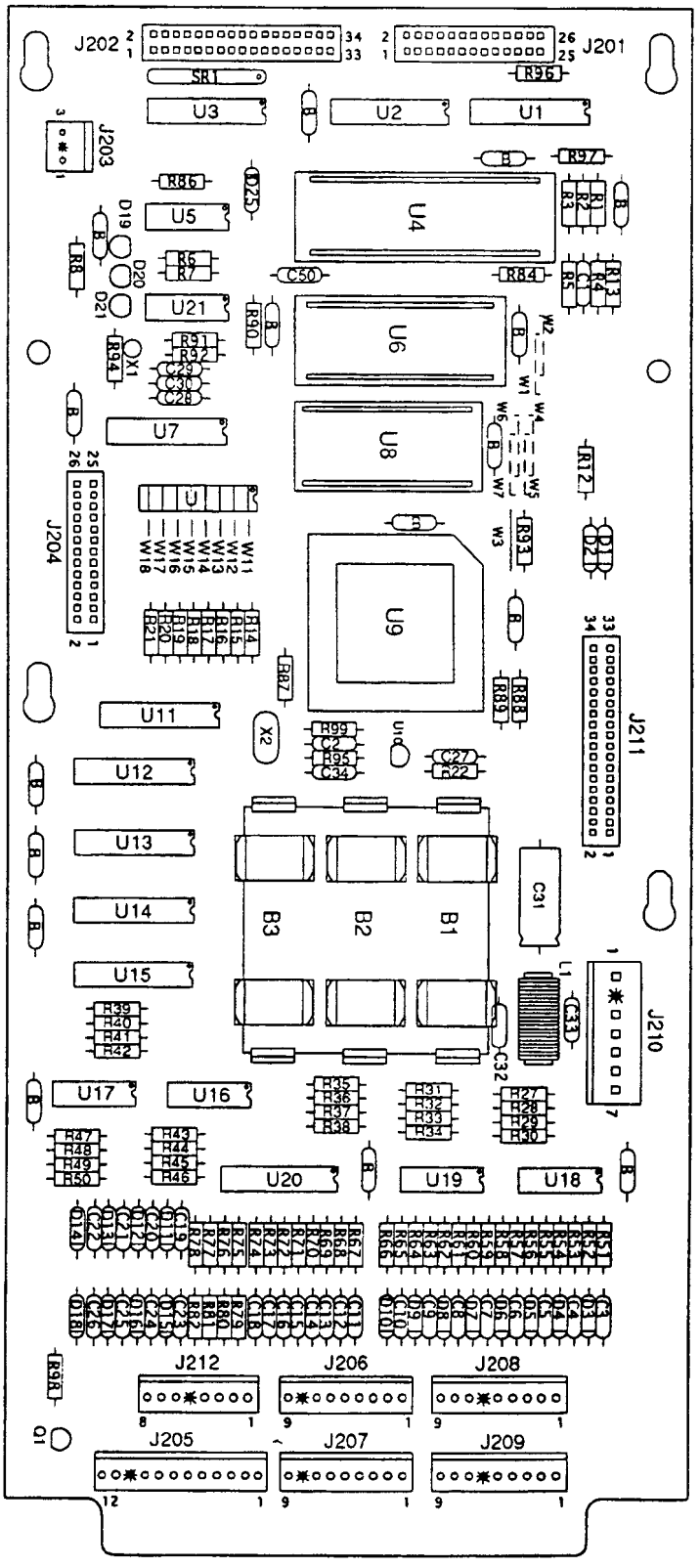
A-12738-60017 WPC Audio Board



A-12742-60017 WPC CPU Board

Part Number	Designator	Description
5010-09034-00	R14-R22, R27-R42, R86, R90, R94, R98	Resistor, 10KΩ, 1/4w, 5%
5010-09085-00	R1, R2, R4, R93, R96, R97	Resistor, 1.5KΩ, 1/4w, 5%
5010-09314-00	R52, R54, R56, R58, R60, R62, R64, R66, R75-R82	Resistor, 1.2KΩ, 1/4w, 5%
5010-09358-00	R3, R43-R51, R53, R55, R57, R59, R61, R63, R65, R67-R74, R84	Resistor, 1KΩ, 1/4w, 5%
5010-09416-00	R5-R8, R12, R13, R87-R89	Resistor, 470Ω, 1/4w, 5%
5010-09534-00	W1, W4, W7, W13 - W18	Resistor, 0Ω
5010-10258-00	R95, R99	Resistor, .01µfdΩ, 1/4w, 5%
5010-10989-00	R92	Resistor, 470KΩ, 1/4w, 5%
5010-12104-00	R91	Resistor, 22µfd, 1/4w, 5%
5019-09362-00	SIP 1	SIP, 9R, 10-pin, 4.7KΩ, 5%
5040-08986-00	C31	Capacitor, 100µfd, 10v (±20%)
5043-08980-00	B	Capacitor, .01µfd, 50v, (+80, -20%)
5043-09030-00	C27	Capacitor, 0.047µfd, 50v (±20%)
5043-09065-00	C3 - C26	Capacitor, 470pfd, 50v (±20%)
5043-09491-00	C2, C29, C30, C34	Capacitor, 22pfd, 1KV, (±10%)
5043-09492-00	C28	Capacitor, 100pfd, 50v, (±10%)
5043-09845-00	C32, C33	Capacitor, 1KP, 50v, (±20%)
5070-08919-00	D2 - D18	Diode, 1N4148, 150MA
5070-09266-00	D1, D25	Diode, 1N5817, 1.0A.
5160-10269-00	Q1	Transistor, 2N3904, NPN
5162-12422-00	U20	IC, ULN, 2803A
5281-09308-00	U3	IC, 74LS245, Octal Bus Trncv
5281-09486-00	U14	IC, 74LS374, 8D F/F
5281-09851-00	U5	IC, 74LS14, SMT/TRG
5281-09867-00	U1, U2, U7	IC, Octal Buffer, 74LS244
5281-10182-00	U11, U12, U13, U15	IC, 74LS240 Driver
5284-12651-00	U21	IC, 4584
5340-12278-00	U8	S/RAM 2064
5370-12272-00	U16 - U19	IC, LM339, Quad. Comp
5370-12687-00	U10	MC, 34064 Reset Chip
5520-10438-00	X2	Crystal, 8.0MHz.
5520-12084-00	X1	Crystal 32.768 KHz
5551-09822-00	L1	ILN, 4.7 UH 3A
5671-09019-00	D19 - D21	DSPL LED RED
5700-08985-00	U4	Socket, IC 40P, .6"
5700-12088-00	U6	Socket, IC 32P, .6"
5700-12424-00	U9	Socket, 84 Pin PLCC
5791-10850-00	J201, J204	Connector, 26-pin Header Str Sq.
5791-10862-07	J210	Connector, 7-pin Header Str Sq.
5791-12461-08	J212	Connector, 8-pin Header Str Sq.
5791-12461-09	J206 - J209	Connector, 9-pin Header Sq. pin
5791-12461-12	J205	Connector, 12-pin Header Sq. pin
5791-12516-00	J202, J211	34 Hen 2x17 STR
5881-09021-00	B1 - B3	Battery Holder "AA"
5048-11033-00	C50	Capacitor, 0.022µf, 10v
A-5343-60017-1	U6	Game PROM Assembly
5410-12426-00	U9	WPC-89 ASIC
5400-10320-00	U4	IC MPU 68B09E
5880-09022-00	B1 - B3	Battery, Alkaline, 1.5v ("AA")

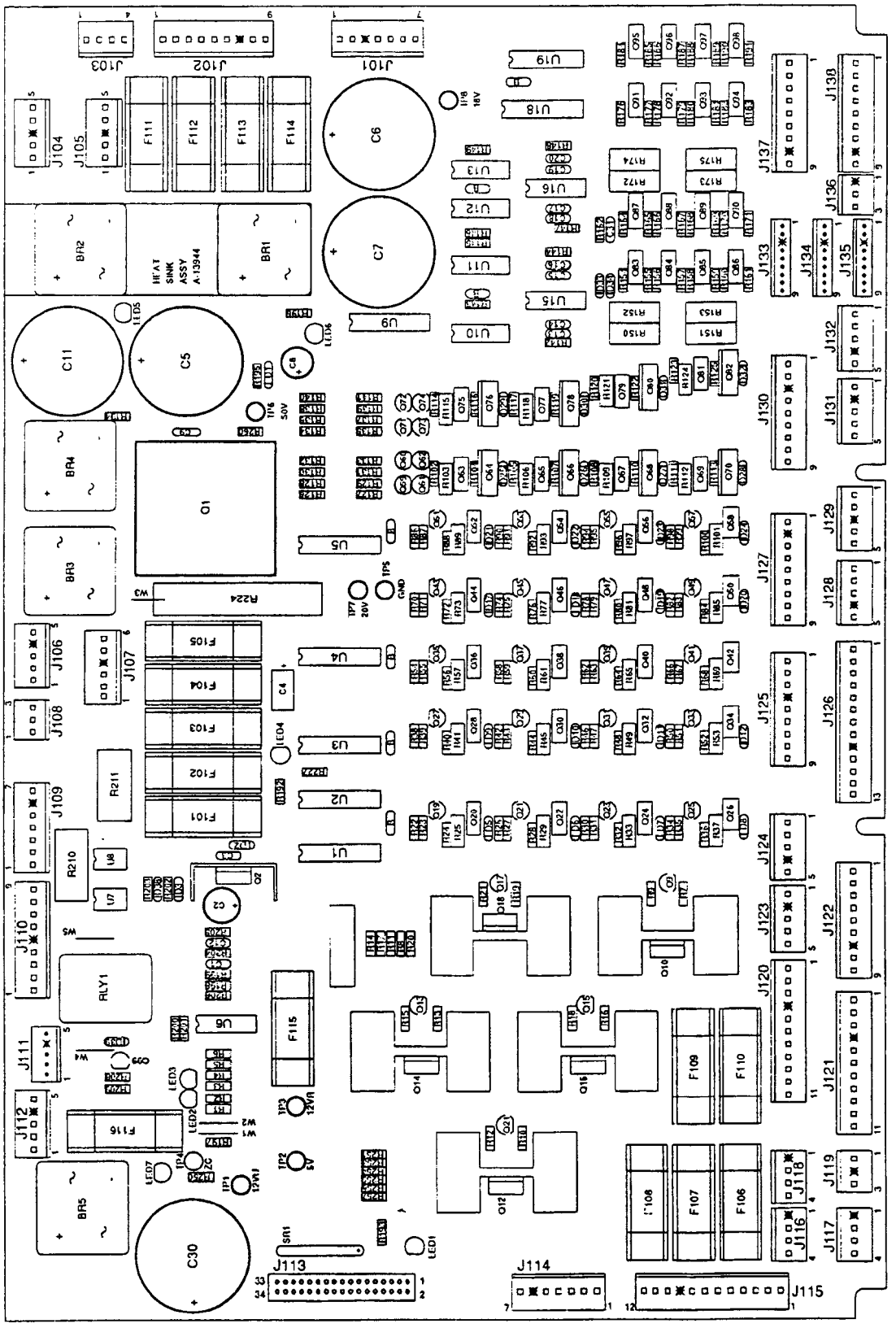
A-12742-60017 WPC CPU Board



A-12697-1 WPC Power Driver Assembly

Item	Part Number	Ckt Designator	Description
1	Not Used		
2	4006-01005-06	Q1, Q2	Mach. Screw, 6-32 x 3/8
3	4406-01128-00	Q1, Q2	Nut, 6-32 KEPS
4	4004-01005-06	Q10, Q12, Q14, Q16, Q18	Mach. Screw, 4-40 x 3/8
5	4404-01119-00	Q10, Q12, Q14, Q16, Q18	Nut, 4-40 SNUT
6	5010-08981-00	R260	Resistor, 10KΩ, 1/2w, 5%
7	5010-08991-00	R9, R12, R15, R18, R21, R23, R27, R31, R35, R39, R43, R47, R51, R55, R59, R63, R67, R71, R75, R79, R83, R87, R91, R95, R99, R126, R128, R130, R132, R134, R136, R138, R140, R209, R227	Resistor, 4.7KΩ, 14w, 5%
8	5010-08992-00	R8, R11, R14, R17, R20, R177, R179, R181, R183, R185, R187, R189, R191	Resistor, 560Ω, 1/4w, 5%
9	5010-08993-00	R25, R29, R33, R37, R41, R45, R49, R53, R57, R61, R65, R69, R73, R77, R81, R85, R89, R93, R97, R101, R103, R106, R109, R112, R115, R118, R121, R124	Resistor, 68Ω, 1/4w, 5%
10	5010-08997-00	R24, R28, R32, R36, R40, R44, R48, R52, R56, R60, R64, R68, R72, R76, R80, R84, R88, R92, R96, R100, R102, R105, R108, R111, R114, R117, R120, R123, R195	Resistor, 2.7KΩ, 1/4w, 5%
11	5010-08998-00	R155, R157, R159, R161, R165, R167, R169, R171	Resistor, 2.2KΩ, 1/4w, 5%
12	5010-09034-00	R3, R4, R6, R142-R149, R197-R198	Resistor, 10KΩ, 1/4w, 5%
13	5010-09085-00	R194, R196, R251, R253-R257	Resistor, 1.5KΩ, 1/4w, 5%
14	5010-09086-00	R252	Resistor, 6.8KΩ, 1/4w, 5%
15	5010-09224-00	R1, R2, R192, R201- R205, R208	Ressistor, 270Ω, 1/4w, 5%
16	5010-09314-00	R176, R178, R180, R182 R184, R186, R188, R190	Resistor, 1.2KΩ, 1/4w, 5%
17	5010-09324-00	R206	Resistor, 27KΩ, 1/4w, 5%
18	5010-09358-00	R154, R156, R158, R160, R164, R166, R168, R170, R162, R193, R199, R200 R250	Resistor, 1KΩ, 1/4w, 5%
19	5010-09361-00	R104, R107, R110, R113 R116, R119, R122, R125	Resistor, 220Ω, 1/4w, 5%
20	5010-09416-00	R22, R26, R30, R34, R38, R42, R46, R50, R54, R58, R62, R66, R70, R74, R78, R82, R86, R90, R94, R98, R127, R129, R131, R133, R135, R137, R139, R141	Resistor, 470Ω, 1/4w, 5%
21	5010-09534-00	W1, W2	Resistor, 0Ω
22	5010-11079-00	R7, R10, R13, R16, R19	Resistor, 51Ω, 1/4w, 5%
23	5010-12427-00	R150-R153, R172-R175	Resistor, .22Ω, 1w, 5%
24	5012-12632-00	R224	Resistor, .12Ω, 10w, 5%
25	5012-12238-00	R210, R211	Resistor, 3.3KΩ, 5w, 10%
26	5019-10143-00	SR1	SIP, 9R, 10 pin, 470Ω, 5%
27	5040-08986-00	C4	Capacitor, 100µfd, 10v (±20%)
28	5040-09421-00	C2	Capacitor, 100µfd, 25v (+50, -10%)
29	5040-09537-00	C8	Capacitor, 100µfd, 100v (±20%)
30	5040-12313-00	C5, C6, C7, C11, C30	Capacitor, 15,000µfd, 25v (±20%)
31	5043-08980-00	B-BYPASS	Capacitor, .01µfd, 50v (+80, -20%)
32	5043-08996-00	C13-C20, C31	Capacitor, .1µfd, 50v (±20%)
33	5043-09845-00	C1, C12	Capacitor, 1,000pfd, 50v (±20%)
34	5048-10994-00	C3	Capacitor, .33µfd, 50v (±20%) Ax.
35	5070-08919-00	D33, D34	Diode, 1N4148, 150MA.
36	5070-09054-00	D1-D3, D5-D12, D17-D32, D38, D39	Diode, 1N4004, 1.0A.
37	5100-09690-00	BR1-BR5	Bridge Rectifier, 35A., 200v
38	5131-12725-00	Q10, Q12, Q14, Q16, Q18	Triac, BT138E
39	5162-12422-00	U19	IC, ULN 2803
40	5162-12635-00	Q20, Q22, Q24, Q26, Q28 Q30, Q32, Q34, Q36, Q38, Q40, Q42, Q44, Q46, Q48, Q50, Q52, Q54, Q56, Q58, Q63, Q65, Q67, Q69, Q75, Q77, Q79, Q81, Q83 - Q90	Transistor, TIP 102
41	5194-09055-00	Q9, Q11, Q13, Q15, Q17, Q19, Q21, Q23, Q25, Q27, Q29, Q31, Q33, Q35, Q37, Q39, Q41, Q43, Q45, Q47, Q49, Q51, Q53, Q55, Q57, Q59-Q62, Q71-Q74, Q99	Transistor, 2N5401 PNP
42	5191-12179-00	Q64, Q66, Q68, Q70, Q76 Q78, Q80, Q82	Transistor, TIP36C PNP
43	5192-12428-00	Q91-Q98	Transistor, TIP 107
44	5250-12634-00	Q1	Reg LM 323 5v
45	5281-09486-00	U1-U5, U18	IC, 74LS374 8 Dual D Flipflop
46	5281-09487-00	U10-U13	IC, 74LS74 Dual D flipflop
47	5281-10182-00	U9	IC, 74LS240, L/Drvr
48	5370-12272-00	U6, U15, U16	IC, LM339 Quad. Comp
49	5460-12423-00	Q2	IC, LM 7812
50	5490-10892-00	U7, U8	Opto Isolator, 4N25
51	5580-08994-01	RLY 1	Relay 4PDT 6VDC5A VS
52	5671-09019-00	LED1 - LED7	Diaplay LED Red
53	5701-09652-00	Q1	Thermal Pad TO-3
54	5705-09199-00	Q2	Heatsink, #6030B
55	Not Used		
56	5705-12637-00	Q1	Heatsink 5054
57	5705-12638-00	Q10, Q12, Q14, Q16, Q18	Heatsink 5298B
58	5733-12060-01		Fuse Holder, F101-F116
59	Not Used		
60	5791-10862-03	J108, J119, J136	Connector, 3-pin Header STR Sq.
61	5791-10862-04	J103, J116-J118	Connector, 4-pin Header STR Sq.
62	5791-10862-05	J112, J104-J106, J123, J124, J128, J129, J131, J132	Connector, 5-pin Header STR Sq.
63	5791-10862-06	J107	Connector, 6-pin Header STR Sq.
64	5791-10862-07	J101, J109, J114	Connector, 7-pin Header STR Sq.
65	5791-10862-09	J102, J110, J122, J125, J127, J130, J137, J138	Connector, 9-pin Header STR Sq.
66	5791-10862-11	J120, J121	Connector, 11-pin Header STR Sq.
67	5791-10862-12	J115	Connector, 12-pin Header STR Sq.
68	5791-10862-13	J126	Connector, 13-pin Header STR Sq.
69	5791-12461-05	J111	Connector, 5-pin Header STR Sq.
70	5791-12461-09	J133-J135	Connector, 9-pin Header STR Sq.
71	5791-12516-00	J113	34 HEN 2x17 STR
72	5824-09248-00	TP1-TP8	Test Point #1502-1
73	5041-09163-00	C9	Capacitor, 2.2µfd TANT
74-100	Not Used		
101	Not Used		
102	5730-09071-00	F114	Fuse, 8A, 32v
103	Not Used		
104	5731-09432-00	F112	Fuse, S-B, 7A., 250v
105	5731-09651-00	F106 - F111, F113	Fuse, S-B, 5A., 250v
106	Not Used		
107	5731-10356-00	F101 - F105, F116	Fuse, S-B, 3A., 250v
108	5730-09797-00	F115	Fuse, S-B, 3/4A., 250v
109	5705-12698-00		Heatsink #62365
110	4010-01006-00		Mach. Screw, 10-32 x 5/8

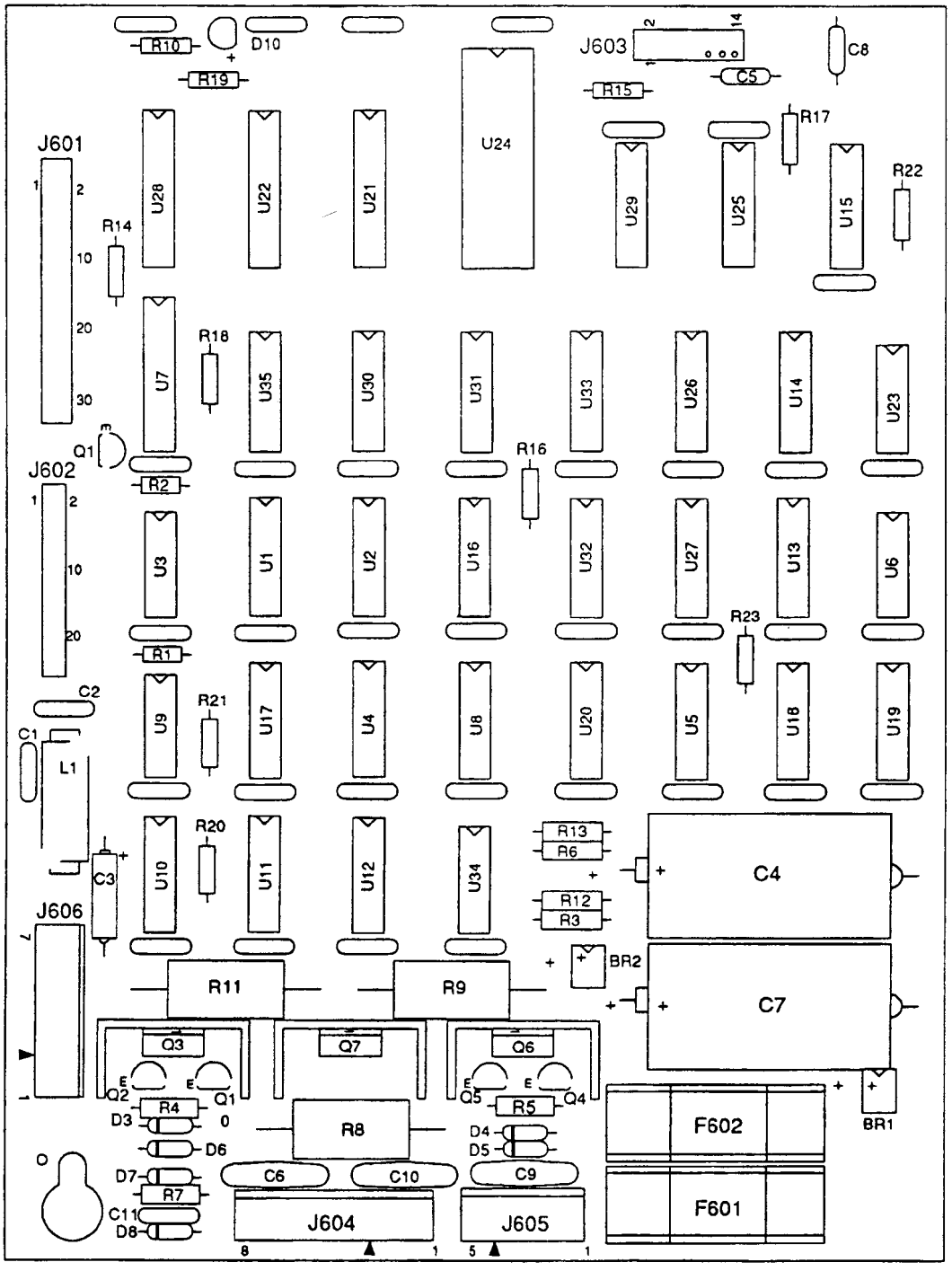
A-12697-1 WPC Power Driver Assembly



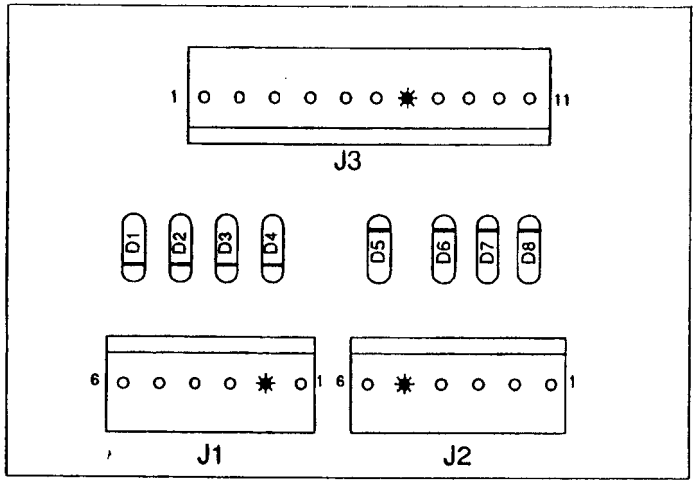
A-14039 Dot Matrix Controller Board

Part Number	Ckt Designator	Description
5010-08991-00	R1	Resistor, 4.7KΩ, 1/4w, 5%
5010-09224-00	R10	Resistor, 270Ω, 1/4w, 5%
5010-12832-00	R3, R6, R12, R13	Resistor, 47KΩ, 1/2w, 5%
5010-12841-00	R4, R5	Resistor, 120Ω, 1/2w, 5%
5012-12830-00	R9	Resistor, 1.8KΩ, 5w, 5%
5012-12842-00	R11	Resistor, 120Ω, 5w, 5%
5012-12843-00	R8	Resistor, 4.7K, 5w, 5%
5010-10171-00	R7	Resistor, 56Ω, 1/4w, 5%
5040-08986-00	C3	Capacitor, 100µfd., 10v, (±20%)
5040-12324-00	C4, C7	Capacitor, 150µfd., 160v, (±50%)
5043-08980-00	BYPASS	Capacitor, .01µfd., 50v, (+80, -20%)
5043-09072-00	C6, C9, C10	Capacitor, .1µfd., 500v, (+80, -20%)
5043-09845-00	C1, C2, C11	Capacitor, 1KP, 50v, (±20%)
5043-09492-00	C5, C8	Capacitor, 100P, 50v, (±10%)
5070-09054-00	D7	Diode, 1N4004, 1.0A.
5075-12824-00	D6, D8	Zener, 1N4742A, 12v
5075-12823-00	D4, D5	Zener, 1N4758A, 62v
5075-12826-00	D3	Zener, 1N4759A, 62v
5100-12833-00	BR1, BR2	Bridge, 400v, 1A.
5160-10269-00	Q1	Transistor, 2N3904 NPN
5164-09056-00	Q2, Q10	Transistor, MPSD02, NPN
5164-12154-00	Q3, Q7	Transistor, MJE15030 NPN
5194-09055-00	Q4, Q5	Transistor, MPSD52 PNP
5194-12155-00	Q6	Transistor, MJE15031 PNP
5281-09738-00	U16, U25 - U27	IC, 74LS157
5281-10033-00	U3	IC, 74LS30
5281-10043-00	U31 - U33, U35	IC, 74LS175
5311-10946-00	U4, U5, U17, U18, U20	IC, 74HC74
5311-10947-00	U9	IC, 74HC125
5311-10951-00	U10, U11	IC, 74HC161
5311-10977-00	U6	IC, 74HC04
5311-12817-00	U29	IC, 74HC165
5311-12819-00	U21	IC, 74HC688
5311-12820-00	U23	IC, 74HC27
5311-12822-00	U13 - U15	IC, 74HC193
5315-12009-00	U22	IC, 74HCT374
5315-12812-00	U1, U2, U30	IC, 74HCT138
5281-09308-00	U28	IC, 74HCT245
5315-12815-00	U8, U34	IC, 74HCT08
5315-12816-00	U19	IC, 74HCT32
5315-12821-00	U7	IC, 74HCT240
5340-12278-00	U24	S/RAM 2064 150NS
5551-09822-00	L1	IND 4.7µH, 3.0A.
5671-09019-00	D10	Display LED Red
5705-09199-00	Q3, Q6, Q7	Heatsink 6030B
5731-12328-00	F601, F602	Fuse, 3/8A.,SB, 250v
5733-12060-00		Fuse Holder (F601, F602)
5791-10850-00	J602	Connector, 26-pin STR Sq.
5791-10862-05	J605	Connector, 5-pin Header Sq.
5791-10862-07	J606	Connector, 7-pin Header Sq.
5791-10862-08	J604	Connector, 8-pin Header Sq.
5791-12516-00	J601	34 Hen 17x2 STR
5791-12827-00	J603	14 Hen 7x2 STR
5010-09036-00	R14-R23	Resistor, 100Ω, 1/4w, 5%
4006-01003-06	Q3, Q6, Q7	Mach. Screw, 6-32 x 3/8
4406-01128-00	Q3, Q6, Q7	Nut, 6-32 KEPS

A-14039 Dot Matrix Controller Assembly

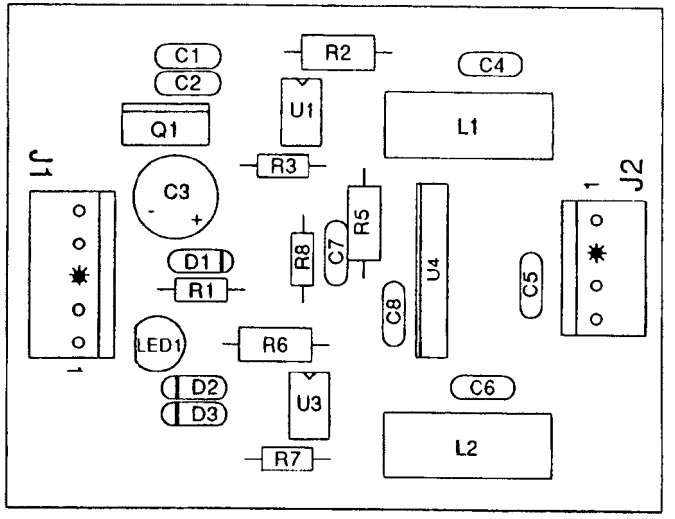


A-16048
8-Diode Switch & Lamp Assembly



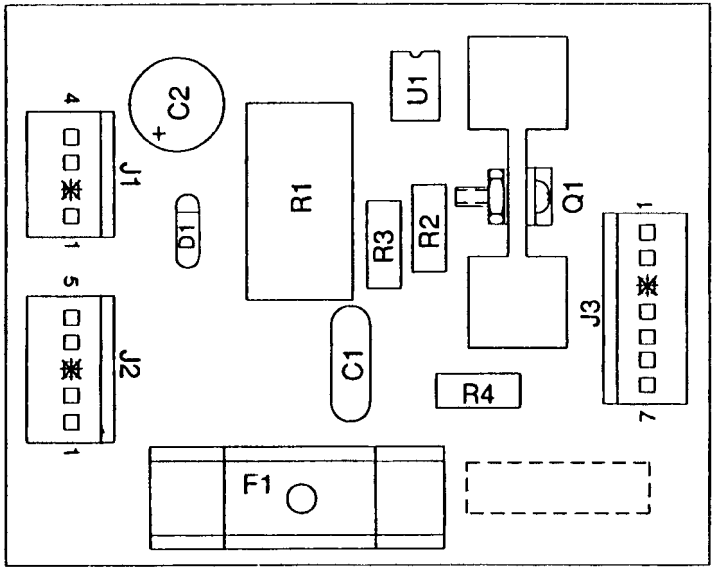
Part Number	Designator	Description
5791-10862-06	J1, J2	Connector, 6-pin Header Str. Sq Pin
5791-10862-11	J3	Connector, 11-pin Header Str. Sq Pin
5070-09054-00	D1 - D8	Diode 1N4004 1.0A.

A-15946
Bridge Driver Assembly



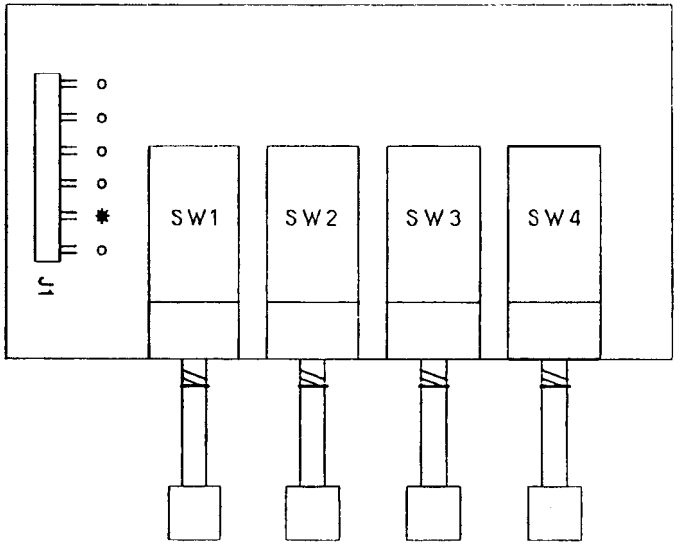
Part Number	Designator	Description
5791-12273-04	J2	Connector, 4-pin Header Str Sq.
5791-12273-05	J1	Connector, 5-pin Header Str Sq.
5671-09019-00	LED1	Display LED Red
5070-09054-00	D1-D3	Diode 1N4004, 1.0A.
5551-09822-00	L1,L2	Ind. 4.7µΩ, 3.0A.
5010-09061-00	R2, R6	Resistor, 680Ω, 1/2w, 5%
5010-10255-00	R5	Resistor, 10Ω, 1/2w, 5%
5010-09085-00	R1	Resistor, 1.5KΩ, 1/4w, 5%
5010-08997-00	R3, R7, R8	Resistor, 2.7KΩ, 1/4w, 5%
5040-10974-00	C3	Capacitor, 100µfd, 35v RAD
5370-13342-00	U4	I.C. 3A DMOS Bridge Driver
5490-10892-00	U1, U3	Opto Isolator 4N25
5250-09157-00	Q1	Reg 7805 1.A, 5V
5043-08980-00	C2, C4, C6-C8	Capacitor, 0.01µfd, 50v (+80, -20%)
5043-08996-00	C5	Capacitor, 0.1µfd, 50v (±20%)
5041-09031-00	C1	Capacitor, 1µfd, 25v (±20%) Axial

A-13088-2
Triac Driver Assembly



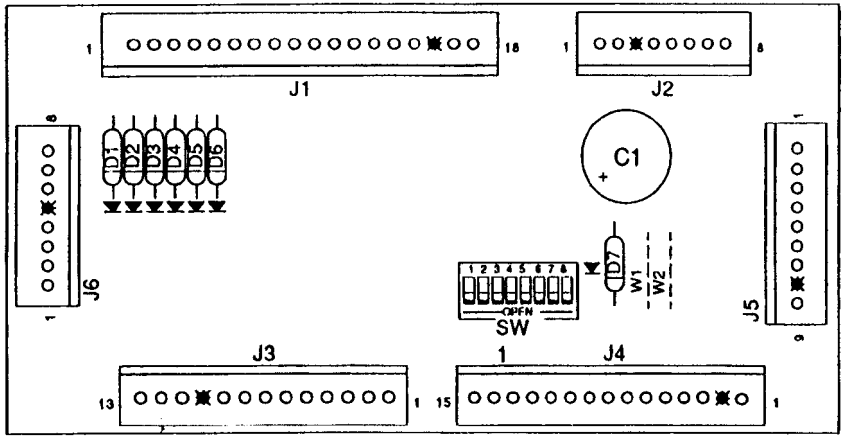
Part Number	Designator	Description
5791-10862-04	J1	Connector, 4-pin Hdr, Sq Pin
5791-10862-05	J2	Connector, 5-pin Hdr, Sq Pin
5791-10862-07	J3	Connector, 7-pin Hdr, Sq Pin
5733-12060-01	-	Fuse Holder (F1)
5731-09651-00	F1	Fuse, 5A, S-B, 250v
5131-12543-00	Q1	Triac ISL, 400V, 10A.
5705-12464-00	-	Heatsink
5011-13292-00	R1	Resistor, 330Ω, 2w, 5%
5010-08930-00	R2	Resistor, 470Ω, 1/2w, 5%
5010-09441-00	R3	Resistor, 100Ω, 1/2w, 5%
5010-09789-00	R4	Resistor, 39Ω, 1/2w, 5%
5045-09795-00	C1	Capacitor, .01µfd, 400V (±10%) Metalized Poly
5040-09537-00	C2	Capacitor, 100µfd, 100V (±20%)
5070-09054-00	D1	Diode, 1N4004, 1.0A.
5490-09805-00	U1	IC, 3030 Triac Driver
4004-01005-06		Mach. Screw, 4-40 x 3/8
4404-01119-00		Nut, 4-40 KEPS
03-8022-1		Spacer

A-16033
Diag. Switch Assembly



Part Number	Designator	Description
5791-10869-06	J1	Connector, 6-pin Header Sq. Pin .156
5641-09312-00	SW1 - SW4	Switch PDPDT 100V 5A
03-7601-7	SW1, SW4	Switch Button, Black
03-7601-4	SW2, SW3	Switch Button, Red

A-14689
WPC Coin Door Interface Board

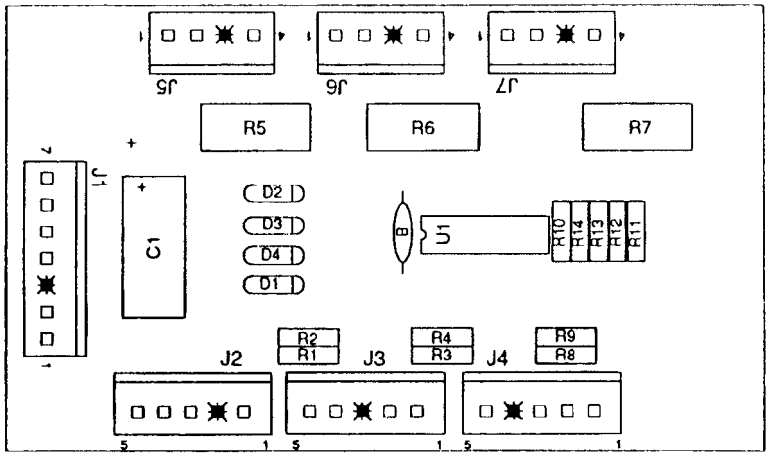


Part Number	Designator	Description
5070-09054-00	D1-D7	Diode, 1N4004, 1.0A.
5791-10862-18	J1	Connector, 18-pin Header Str Sq.
5791-10862-08	J2, J6	Connector, 8-pin Header Str Sq.
5791-10862-13	J3	Connector, 13-pin Header Str Sq.
*5791-10862-15	J4	Connector, 15-pin Header Str Sq.
*5791-10862-09	J5	Connector, 9-pin Header Str Sq.
*5645-09025-00	SW1	Switch DIP 8-Position

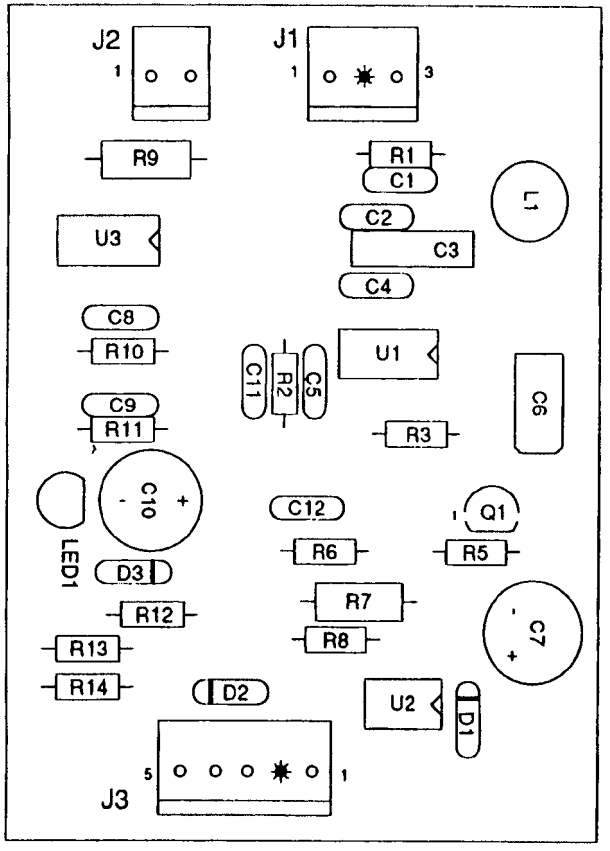
Notes:

1. For Belgium, France, Finland, Sweden and England use A-14689-1 Coin Door Interface Board.
2. * = Used on Electronic Coin Door only.

A-13901-2
Opto Ramp Switch Assembly



Part Number	Designator	Description
5010-08774-00	R10, R13	Resistor, 22KΩ, 1/4w, 5%
5010-09034-00	R14	Resistor, 10KΩ, 1/4w, 5%
5010-09162-00	R11, R12	Resistor, 100KΩ,1/4w, 5%
5010-09999-00	R1 - R4, R8, R9	Resistor, 2KΩ,1/4w, 5%
5010-12733-00	R5 - R7	Resistor, 220Ω, 1w, 5%
5040-12298-00	C1	Capacitor, 100µfd., 40v (+50, -10%)
5043-08980-00	B	Capacitor, .01µfd., 50v (+80, -20%)
5070-09054-00	D1 - D4	Diode, 1N4004
5370-12272-00	U1	IC, LM339 Quad.
5791-12273-05	J2, J3, J4	Connector, 5-pin Header Sq.
5791-12273-07	J1	Connector, 7-pin Header Sq.



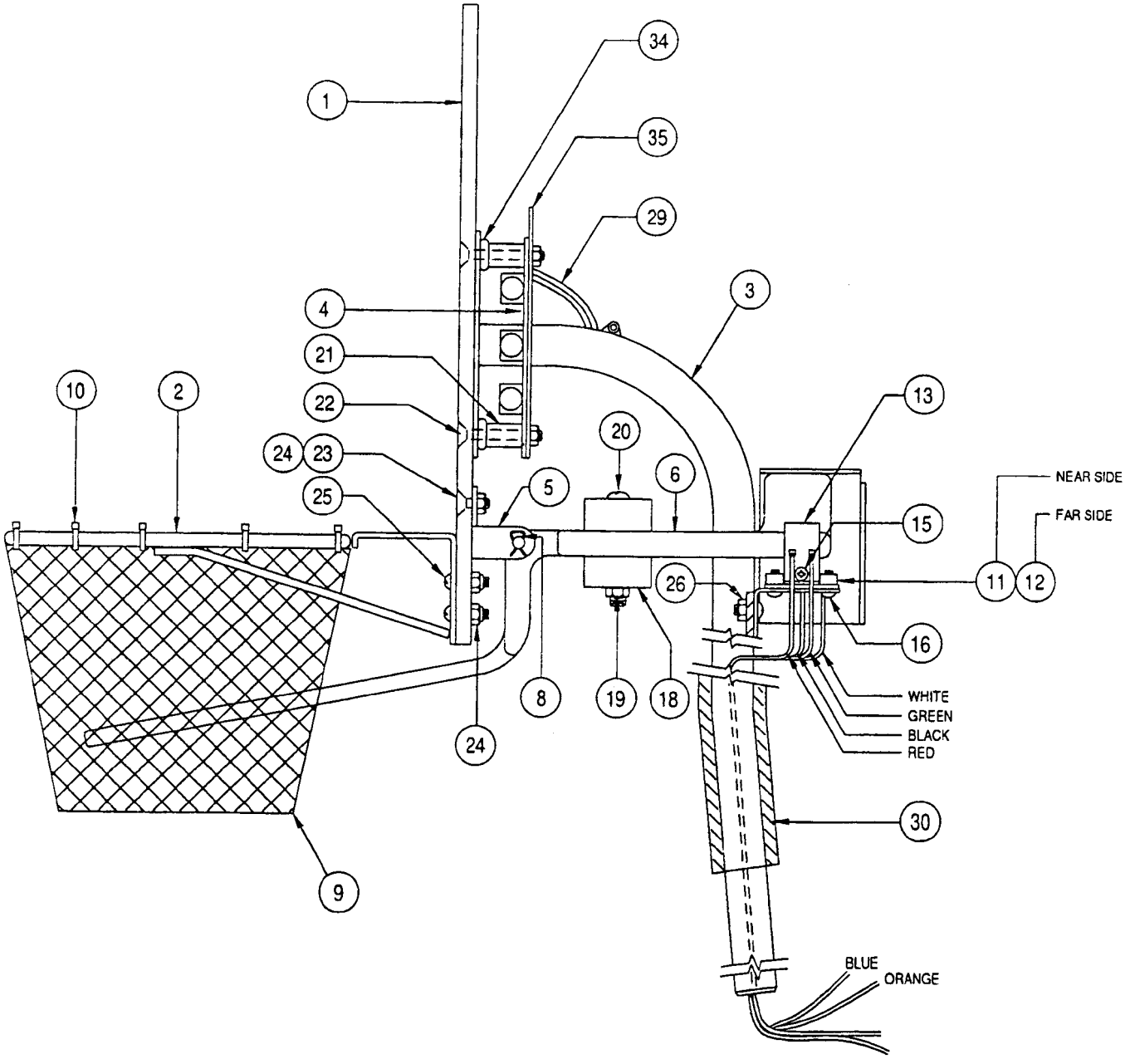
A-15646
24-Switch Opto Assembly

Part Number	Designator	Description
5370-10891-00	U1	I.C. Opto Receiver MC3373
5490-10892-00	U2	I.C. Opto Isolator
5431-10449-00	U3	I.C. 555 Timer
5192-13267-00	Q1	Transistor, MPSA77 PNP
5043-10893-00	C3	Capacitor, .0015µfd
5043-09065-00	C4, C12	Capacitor, 470µpf
5043-08996-00	C5, C11	Capacitor, .1µfd
5041-10588-00	C6	Capacitor, 6.8µfd
5043-08980-00	C8	Capacitor, .01µfd
5048-12577-00	C2	Capacitor, .47µfd
5043-09845-00	C1, C9	Capacitor, .001µfd
5070-09054-00	D1 - D3	Diode 1N4004, 1.0A.
5040-10974-00	C7, C10	Capacitor, 100µfd, 35v (+80, -20%)
5010-08997-00	R1	Resistor, 2.7KΩ, 1/4w, 5%
5010-09162-00	R2, R6	Resistor, 100KΩ, 1/4w, 5%
5010-09768-00	R3	Resistor, 180Ω, 1/4w, 5%
5010-09039-00	R4	Resistor, 10Ω, 1/4w, 5%
5010-09324-00	R5	Resistor, 27K, 1/4w, 5%
5010-08930-00	R7	Resistor, 470Ω, 1/2w, 5%
5010-09034-00	R8	Resistor, 10KΩ, 1/4w, 5%
5010-10022-00	R10	Resistor, 7.5KΩ, 1/4w, 5%
5010-08773-00	R11	Resistor, 18KΩ, 1/4w, 5%
5010-09085-00	R13	Resistor, 1.5KΩ, 1/4w, 5%
5010-09534-00	R12	Resistor, 0Ω Jumper
5010-13509-00	R9	Resistor, 330Ω, 1/2w, 5%
5671-09019-00	LED1	Display LED Red
5791-12273-03	J1	Connector, 3-pin Header STR SQ.
5791-12273-02	J2	Connector, 2-pin Header STR SQ.
5791-12273-05	J3	Connector, 5-pin Header STR SQ.
5551-10890-00	L1	Inductor 10µH

A-15809 Backboard & Hoop Assembly

Item	Part Number	Description
1.	03-8799	Backboard
2.	01-10881	Hoop Weldment
3.	01-10879	Backboard Support
4.	A-16052	9-Lamp G.I. Board
5.	01-10883	Opto Lever Pivot
6.	03-8736	Opto Lever
7.	02-4665	Opto Lever Pivot Pin
8.	12-6227	Hairpin Clip
9.	03-8772	Basketball Net
10.	03-7520-2	Ty-wrap
11.	03-8506-1	Opto Mounting Base (White)
12.	03-8506	Opto Mounting Base (Black)
13.	A-14231	LED Asembly (White)
14.	A-14232	Photo Transistor Assy. (Black)
15.	4104-01001-06	Sh. Metal Screw, #4-24 x 3/8 P-PH
16.	4106-01019-06	Sh. Metal Screw, #6-20 x 3/8 P-PH
17.	H-16019	Cable Assembly
18.	02-4701	Opto Lever Weight
19.	4408-01119-00	Nut 8-32 ESNA
20.	4008-01005-28	Mach. Screw, 8-32 x 1-3/4 P-PH-S
21.	03-8022-1	Spacer, .541" Long
22.	4006-01041-20	Mach. Screw, 6-32 x 1-1/4 P-F-H
23.	4006-01041-09	Mach. Screw, 6-32 x 9/16 P-F-H
24.	4406-01119-00	Nut 6-32 ESNA
25.	4006-01005-09	Mach. Screw, 6-32 x 9/16 P-PH
26.	4406-01128-00	Hex. Nut 6-32 KEPS
27.	01-11037	Opto Cover
28.	4006-01017-05	Mach. Screw, 6-32 x 5/16 P-RH-S
29.	H-16016	Harness Assembly
30.	23-6693	Post Pad
31.	5792-10817-05	5P MT END 156
32.	5791-10770-00	3P SM NMT
33.	5823-10820-00	PLZ Key 156
34.	23-6535	Grommet
35.	20-9845	Light Cover

A-15809 Backboard & Hoop Assembly

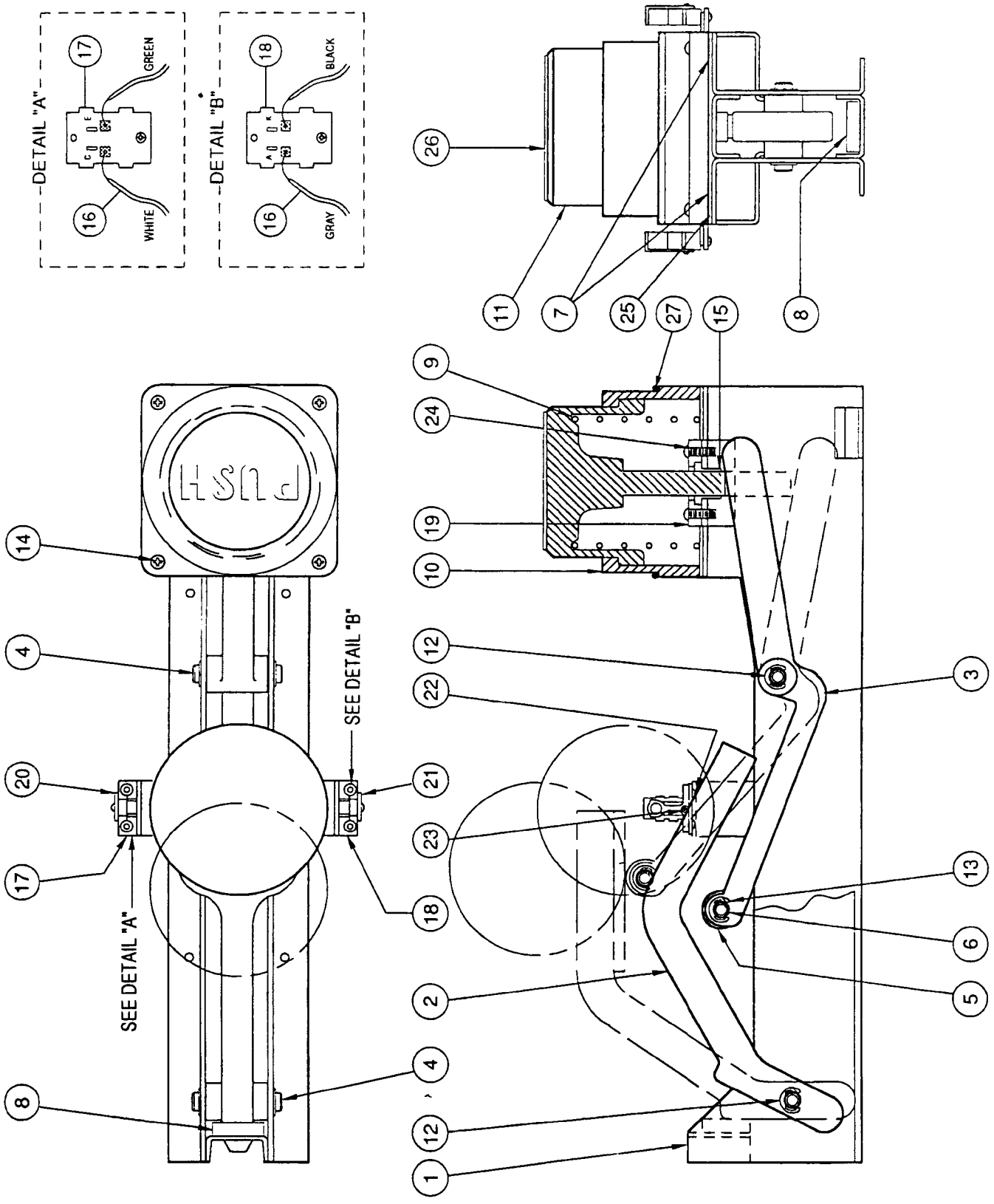


A-15811 Shooter Assembly

Item	Part Number	Description
1.	01-10888	Bracket Shooter
2.	03-8743	Arm Shooter
3.	03-8744	Actuator Arm Shooter
4.	02-4669	Shaft
5.	03-8738	Roller
6.	02-4670	Pin
7.	23-6534-16	Edge Protector
8.	23-6686	Bumper Plug 1" Dia.
9.	10-442	Spring
10.	03-8740	Housing Plunger
11.	03-8741	Plunger Shooter
12.	20-8712-31	"E" Ring, 5/16" Shaft
13.	20-8712-25	"E" Ring, 1/4" Shaft
14.	4008-01017-10	Mach. Screw, 8-32 x 5/8 P-PH SEMS
15.	20-9807	Bearing Flange
16.	H-16024-2	24" Transmitter Opto Cable
17.	03-8506	Opto Mounting Base (Black)
18.	03-8506-1	Opto Mounting Base (White)
19.	02-4771	Bearing Retainer Cap
20.	A-14232	Photo Transistor Assembly
21.	A-14231	LED Assembly
22.	4106-01019-06	Sh. Metal Screw, #6-20 x 3/8 P-RH
23.	4104-01001-06	Sh. Metal Screw, #4-24 x 3/8 P-PH
24.	4006-01005-08	Mach. Screw, #6-32 x 1/2 P-RH
25.	4700-00011-00	Flatwasher, 11/64 x 7/16 x 16ga.
* 26.	31-1741	Ball Shooter Decal
27.	23-6698	"O"-Ring Seal
28.	20-9807	Bearing - Flange

* Not available for individual sale. Order Decal Set 31-1741.

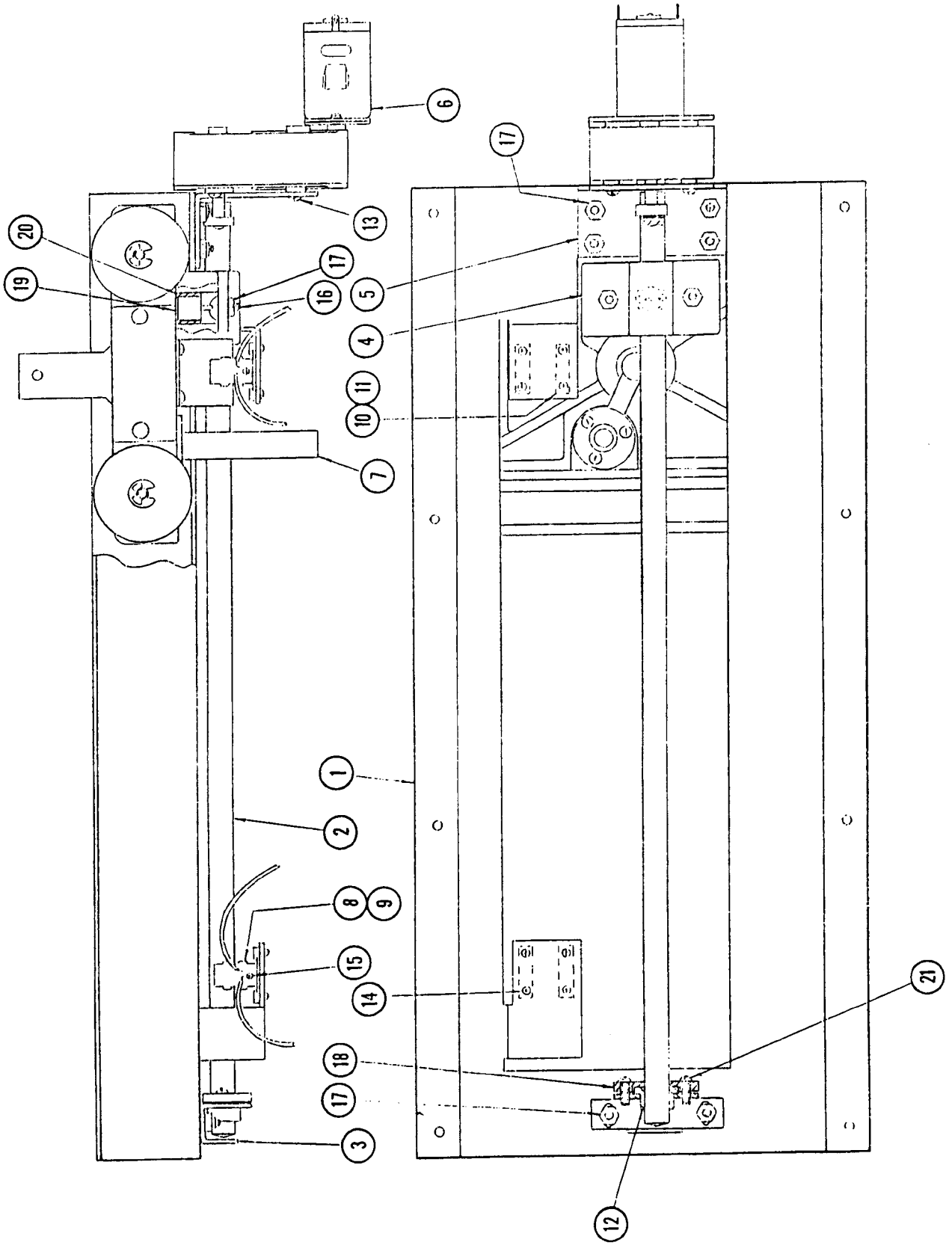
A-15811 Shooter Assembly



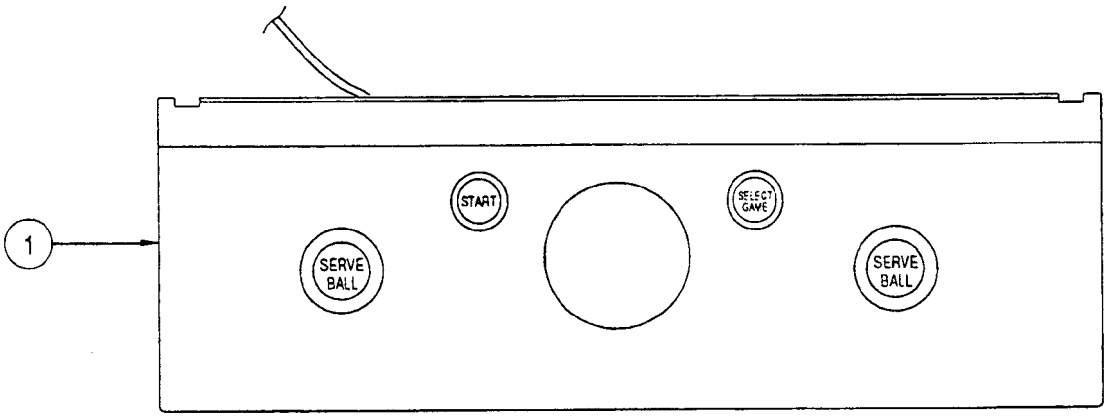
A-15822 Carrier Track Assembly

Item	Part Number	Description
1.	01-10826	Carrier Track
2.	02-4693	Reversing Screw
3.	01-11295	Thd. Rod Bearing Bracket
4.	03-8777	Retainer Rod, Threaded
5.	01-11013	Motor Mounting Bracket
6.	14-7980	Motor, 12VDC
7.	A-15810	Carrier Assembly
8.	03-8506	Opto Mounting Base (Black)
9.	A-14232	Photo Transistor Assembly
10.	03-8506-1	Opto Mounting Base (White)
11.	A-14231	LED Assembly
12.	20-9807	Bearing Flange
13.	4008-01017-05	Mach. Screw, #8-32 x 5/16 P-RH-S
14.	4106-01019-06	Sh. Metal Screw, #6-20 x 3/8
15.	4104-01001-06	Sh. Metal Screw, #4-24 x 3/8 P-PH
16.	4008-01003-04	Mach. Screw, #8-32 x 7/8P-RH-S
17.	4408-01119-00	Nut #8-32 ESNA
18.	02-4771	Bearing Retainer Cap
19.	02-4343	Follower-Reverse Screw
20.	20-9567	Bushing, Bronze
21.	4006-0005-08	Mach. Screw, 6-32 x 1/2 P-PH

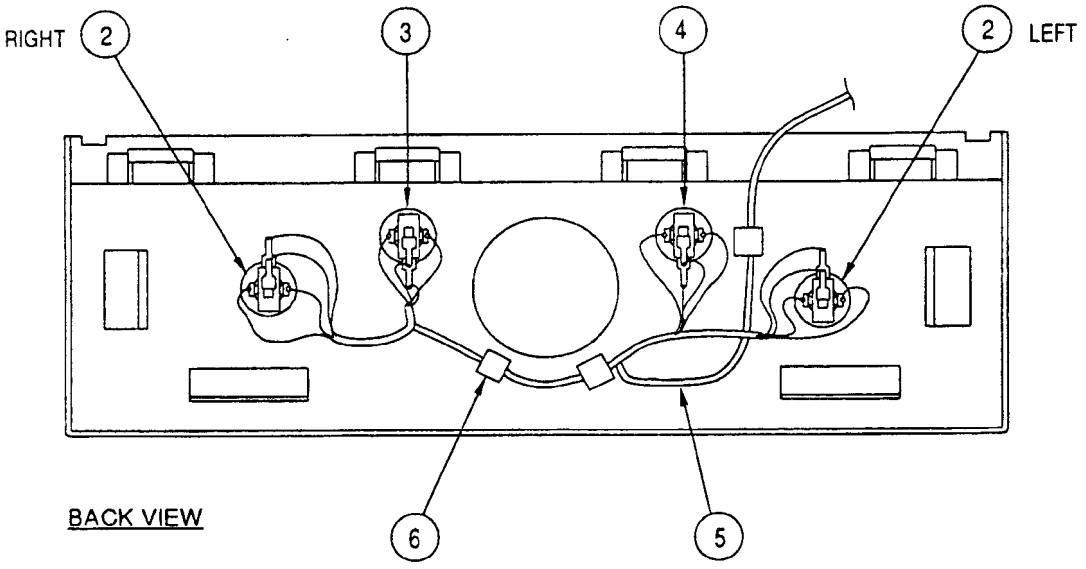
A-15822 Carrier Track Assembly



A-15981 Control Panel Assembly



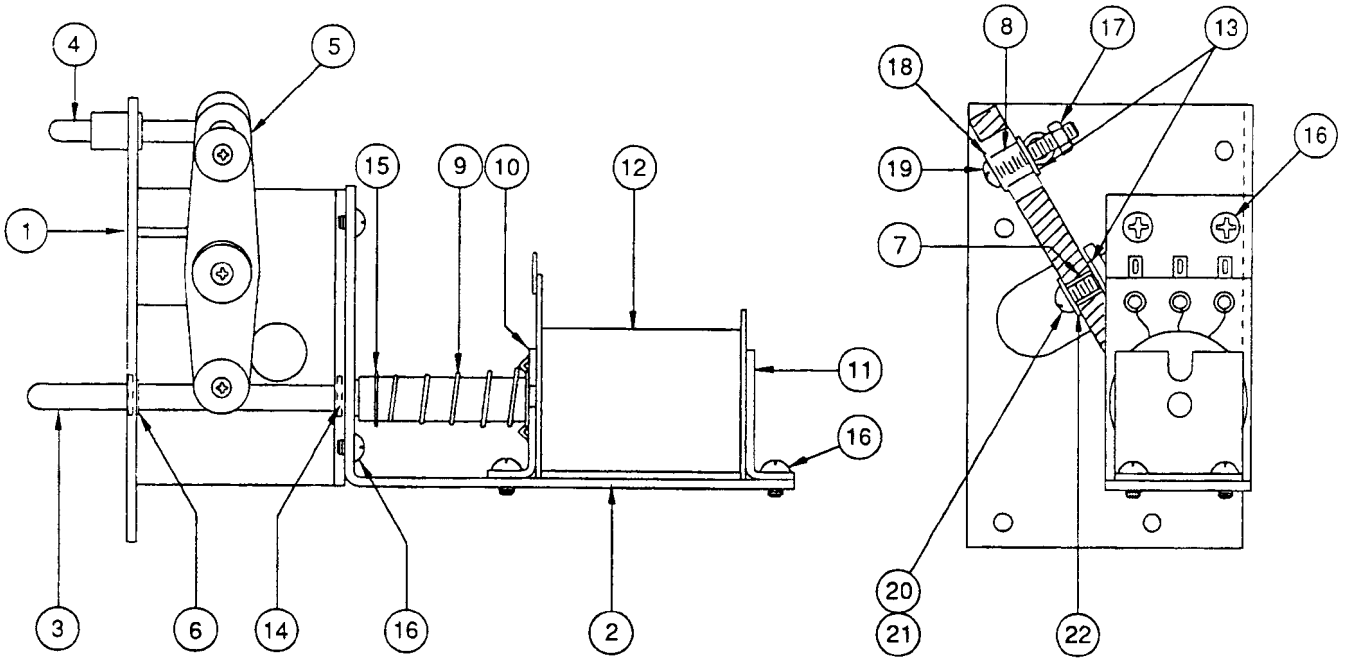
FRONT VIEW



BACK VIEW

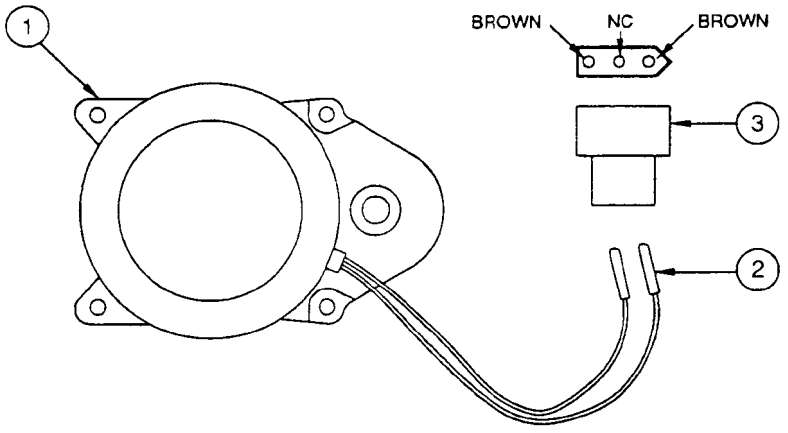
Item	Part Number	Description
1.	01-10864	Front Molding
2.	20-9663-B-3	Serve Ball, Right & Left
3.	20-9663-8	Select Game
4.	20-9663-1	Credit Button
5.	H-16018	Cable, Panel Switch
6.	03-7722-4	Kwik Klip

A-15991 Ball Mover Assembly



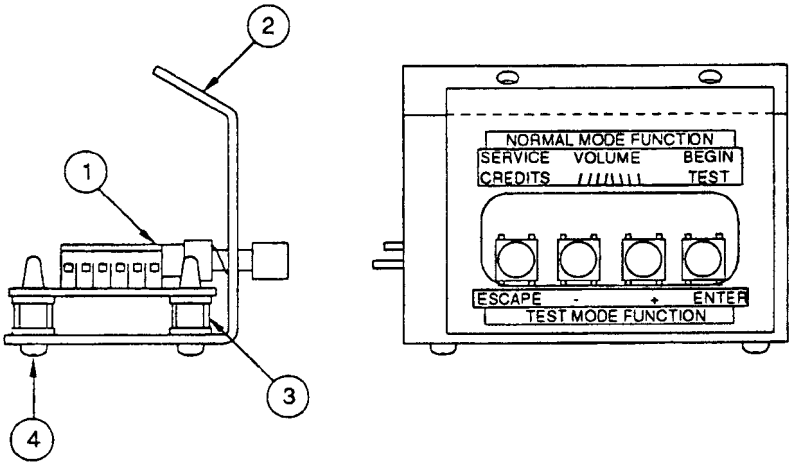
Item	Part Number	Description
1.	01-10991	Ball Mover Bracket
2.	01-10990	Coil Bracket
3.	02-4746	Push Rod
4.	02-4696	Drive Pin
5.	03-8778	Actuating Lever
6.	20-8790-2	Nyliner Bearing
7.	02-4694	Lever Sleve
8.	02-4695	Rod Sleeve
9.	10-399	Spring
10.	01-7695	Coil Mounting Bracket
11.	A-12111	Stop Bracket Assembly
12.	A-15943	Coil Assembly
13.	4700-00011-00	Flatwasher, 11/64 x 7/16 x 16ga.
14.	20-8790	Nyliner Bearing
15.	20-8712-43	"E" Ring
16.	4008-01017-05	Mach. Screw, #8-32 x 5/16 P-RH-S
17.	4406-01119-00	Nut #6-32 ESNA
18.	4700-00006-00	Flatwasher, 3/16 x 9/16 x 14ga.
19.	4008-01003-16	Mach. Screw, #6-32 x 1" P-RH-S
20.	4008-01003-16	Mach. Screw, #8-32 x 1" P-RH-S
21.	4408-01119-00	Nut #8-32 ESNA
22.	4700-00009-00	Flatwasher, 11/64 x 7/16 x 21ga.

A-16004-1 Motor Assembly



Item	Part Number	Description
1.	14-7979	Motor, 50VAC
2.	5820-09080-00	Pin
3.	5791-09111-00	Connector

A-15982 Diagnostic Sw. Bracket Assembly



Item	Part Number	Description
1.	A-16033	Diagnostic Switch
2.	01-10965	Mounting Bracket
3.	20-9678-2	Standoff
4.	4106-01036-05	Pt #6x5/16 Phil Pan Head

Unique Part List

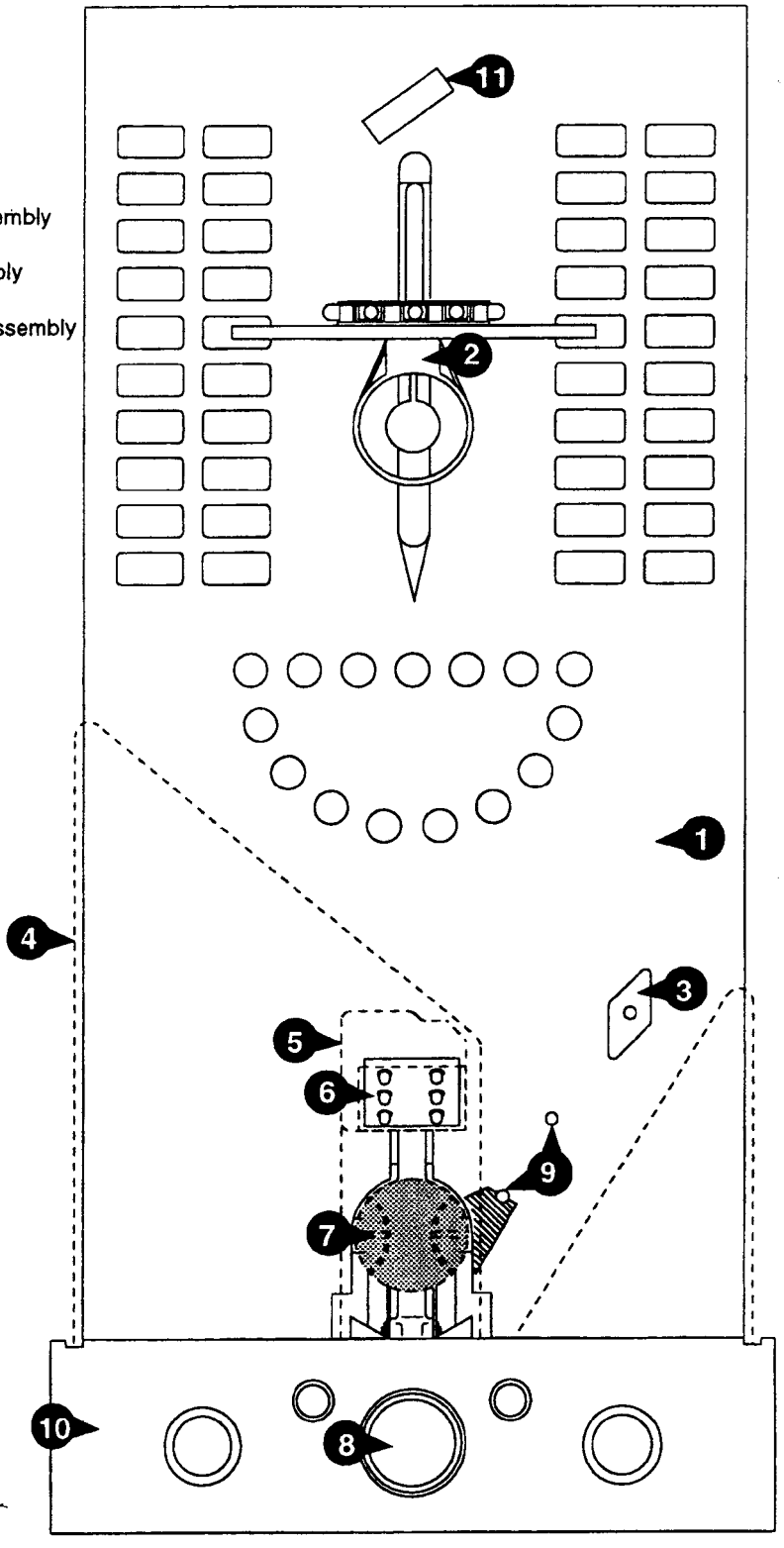
Part Number	Description
A-12738-60017	WPC Sound Board
A-12742-60017	WPC CPU Board
A-13769-60017	Playfield & Insert Assembly
A-15804	Dot Matrix Display Assy.
A-15809	Backboard & Hoop Assy.
A-15811	Shooter Assembly
A-15822	Carrier Track Assembly
A-15946	Bridge Driver Assembly
A-15955	Cashbox Assembly
A-15981	Control Panel Assembly
A-15982	Diagnostic Switch Brkt. Assy.
A-15991	Ball Mover Assembly
A-15992	Feeder Housing Assembly
A-16001	PCB Mounting Plate
A-16004-1	Motor Assembly
A-16028	20-Lamp Board Assembly
A-16033	Diagnostic Switch Board
A-16034	7-Lamp Board
A-16035	4-Lamp Board
A-16048	8-Diode Switch & Lamp Assy.
A-16049	18-Lamp Board Assembly
A-16052	9-Lamp Board Assembly
A-16053	6-Lamp Board Assembly
A-16154-1	Memory Switch & Bracket Assy.
A-16212	3-Flashlamp Dome Assy.
01-10865	Playfield Mounting Bracket
01-10868-1	Hood Mounting Bracket, Right
01-10868-2	Hood Mounting Bracket, Left
01-10869	Hook Retainer Bracket
01-10932	Cover Support Bracket
01-11168	Ball Guide
03-8252-3	Marquee Retainer
03-8772	Basketball Net
03-8776	Cam
03-8783	Ceiling
03-8798	Shade
03-8805	Speaker Screen
09-35000-1	Mini Coin Door, USA 2-Slot
11-1079	Wood Playfield
11-1081	Wood Cabinet
11-1082	Rear Door, Wood
11-1084	Wood Matrix Mtg. Panel
11-1096	Ball Deflector
14-7979	Motor, 12VDC
14-7980	Motor, 50VAC
23-6690	Basketball
23-6693	Post Pad
31-1002-60017	Screened Playfield
31-1707	Screened Panel, Cover Matrix
31-1732	Decal
31-1735-1	Playfield Plastic
31-1735-2	Playfield Plastic
36-60017	Playfield Hardcoat

Cable List

Part Number	Description
H-16011	Cabinet Cable
H-16012	Secondary Cable
H-16013	Logic Power Cable
H-16014	Dot Display Power Cable
H-16015	Switch Cable
H-16016	Lamp Cable
H-16017	Solenoid Cable
H-16018	Panel Switch Cable
H-16020	Up Opto Cable
H-16021	Down Opto Cable
H-16022	Motor Cable
H-16023	A.C. Motor Cable
H-16024	24" Ball Opto Cable
H-16173	Shooter Sol/Sw Cable
H-16176	Opto Cable

UPPER PLAYFIELD PARTS LOCATIONS

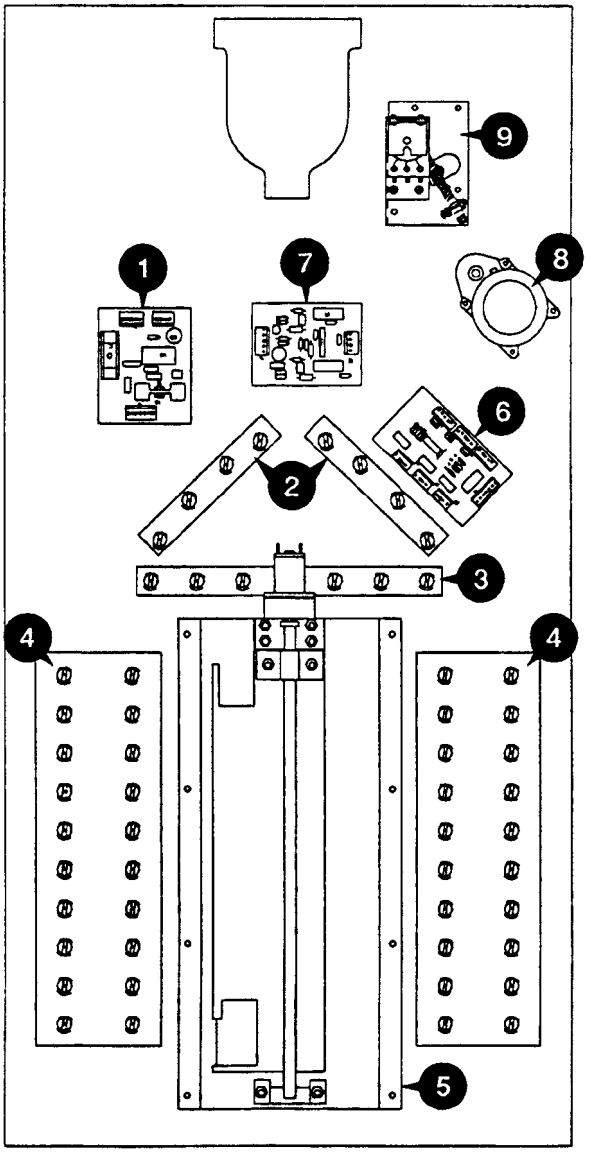
Item Number	Part Number	Description
1	A-13769-60017	Screened Playfield
2	A-15809	Backboard & Hoop Assembly
3	03-8776	Cam
4	A-15992	Feeder Housing Assembly
5	03-8798	Shade
6	A-16102	P.C. Board & Bracket Assembly
7	23-6690	Basketball (5)
8	A-15811	Shooter Assembly
9	A-15991	Ball Mover Assembly
10	A-15981	Control Panel Assembly
11	01-11168	Ball Guide



LOWER PARTS LOCATIONS

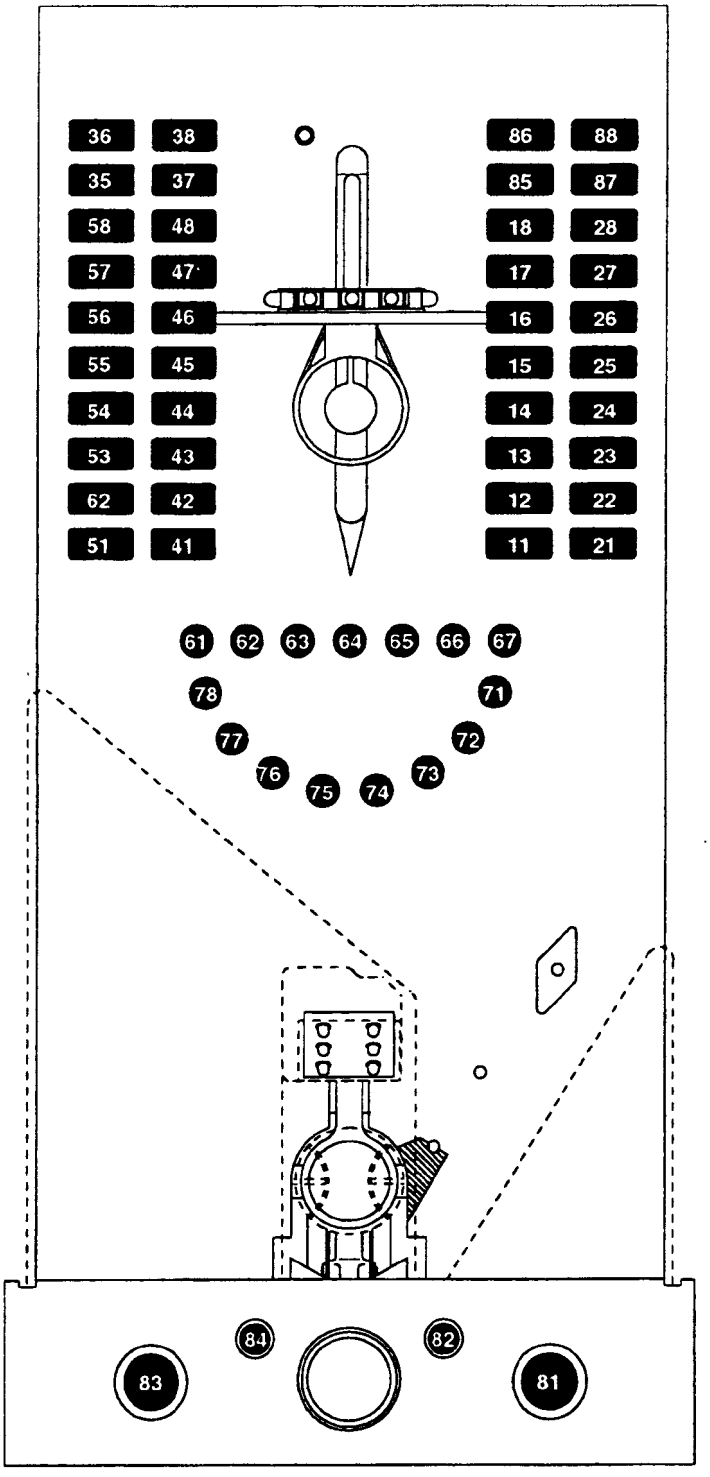
Underside of Playfield, Viewed in Raised Position

Item	Part Number	Description
1.	A-13088-2	Triac Board
2.	A-16035	4-Lamp Board (2 Used)
3.	A-16034	7-Lamp Board
4.	A-16028	20-Lamp Board (2 Used)
5.	A-15822	Carrier Track Assembly
6.	A-13901-2	Opto Ramp Board
7.	A-15946	Bridge Driver Assembly
8.	A-16004-1	Motor Assembly
9.	A-15991	Ball Mover Assembly



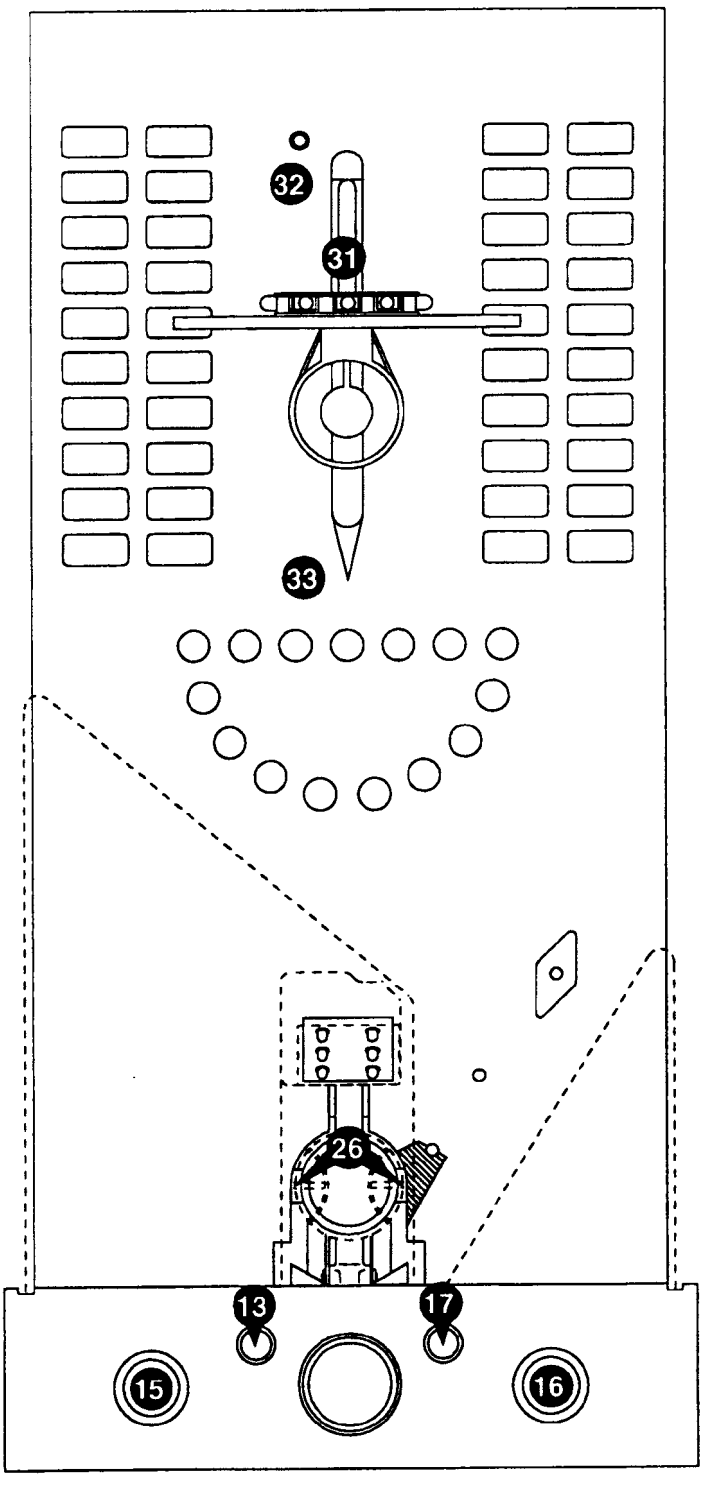
LAMP LOCATIONS

Item No.	Bulb No.	Lamp Assy. No.	Description
11	24-8768	A-16028	Middle Right Back 1 #555
12	24-8768	A-16028	Middle Right Back 2 #555
13	24-8768	A-16028	Middle Right Back 3 #555
14	24-8768	A-16028	Middle Right Back 4 #555
15	24-8768	A-16028	Middle Right Back 5 #555
16	24-8768	A-16028	Middle Right Back 6 #555
17	24-8768	A-16028	Middle Right Back 7 #555
18	24-8768	A-16028	Middle Right Back 8 #555
21	24-8768	A-16028	Right Back 1 #555
22	24-8768	A-16028	Right Back 2 #555
23	24-8768	A-16028	Right Back 3 #555
24	24-8768	A-16028	Right Back 4 #555
25	24-8768	A-16028	Right Back 5 #555
26	24-8768	A-16028	Right Back 6 #555
27	24-8768	A-16028	Right Back 7 #555
28	24-8768	A-16028	Right Back 8 #555
31-34	---	---	Not Used
35	24-8768	A-16028	Left Back 9 #555
36	24-8768	A-16028	Left Back 10 #555
37	24-8768	A-16028	Middle Left Back 9 #555
38	24-8768	A-16028	Middle Left Back 10 #555
41	24-8768	A-16028	Middle Left Back 1 #555
42	24-8768	A-16028	Middle Left Back 2 #555
43	24-8768	A-16028	Middle Left Back 3 #555
44	24-8768	A-16028	Middle Left Back 4 #555
45	24-8768	A-16028	Middle Left Back 5 #555
46	24-8768	A-16028	Middle Left Back 6 #555
47	24-8768	A-16028	Middle Left Back 7 #555
48	24-8768	A-16028	Middle Left Back 8 #555
51	24-8768	A-16028	Left Back 1 #555
52	24-8768	A-16028	Left Back 2 #555
53	24-8768	A-16028	Left Back 3 #555
54	24-8768	A-16028	Left Back 4 #555
55	24-8768	A-16028	Left Back 5 #555
56	24-8768	A-16028	Left Back 6 #555
57	24-8768	A-16028	Left Back 7 #555
58	24-8768	A-16028	Left Back 8 #555
61	24-8768	A-16034	Front Line 1 #555
62	24-8768	A-16034	Front Line 2 #555
63	24-8768	A-16034	Front Line 3 #555
64	24-8768	A-16034	Front Line 4 #555
65	24-8768	A-16034	Front Line 5 #555
66	24-8768	A-16034	Front Line 6 #555
67	24-8768	A-16034	Front Line 7 #555
68	---	---	Not Used
71	24-8768	A-16035	Front Circle 8 #555
72	24-8768	A-16035	Front Circle 7 #555
73	24-8768	A-16035	Front Circle 6 #555
74	24-8768	A-16035	Front Circle 5 #555
75	24-8768	A-16035	Front Circle 4 #555
76	24-8768	A-16035	Front Circle 3 #555
77	24-8768	A-16035	Front Circle 2 #555
78	24-8768	A-16035	Front Circle 1 #555
81	---	20-9663-B-3	Serve Ball Right
82	---	20-9663-8	Select Game
83	---	20-9663-B-3	Serve Ball Left
84	---	20-9663-1	Credit Button
85	24-8768	A-16028	Middle Right Back 9 #555
86	24-8768	A-16028	Middle Right Back 10 #555
87	24-8768	A-16028	Right Back 9 #555
88	24-8768	A-16028	Right Back 10 #555



SWITCH LOCATIONS

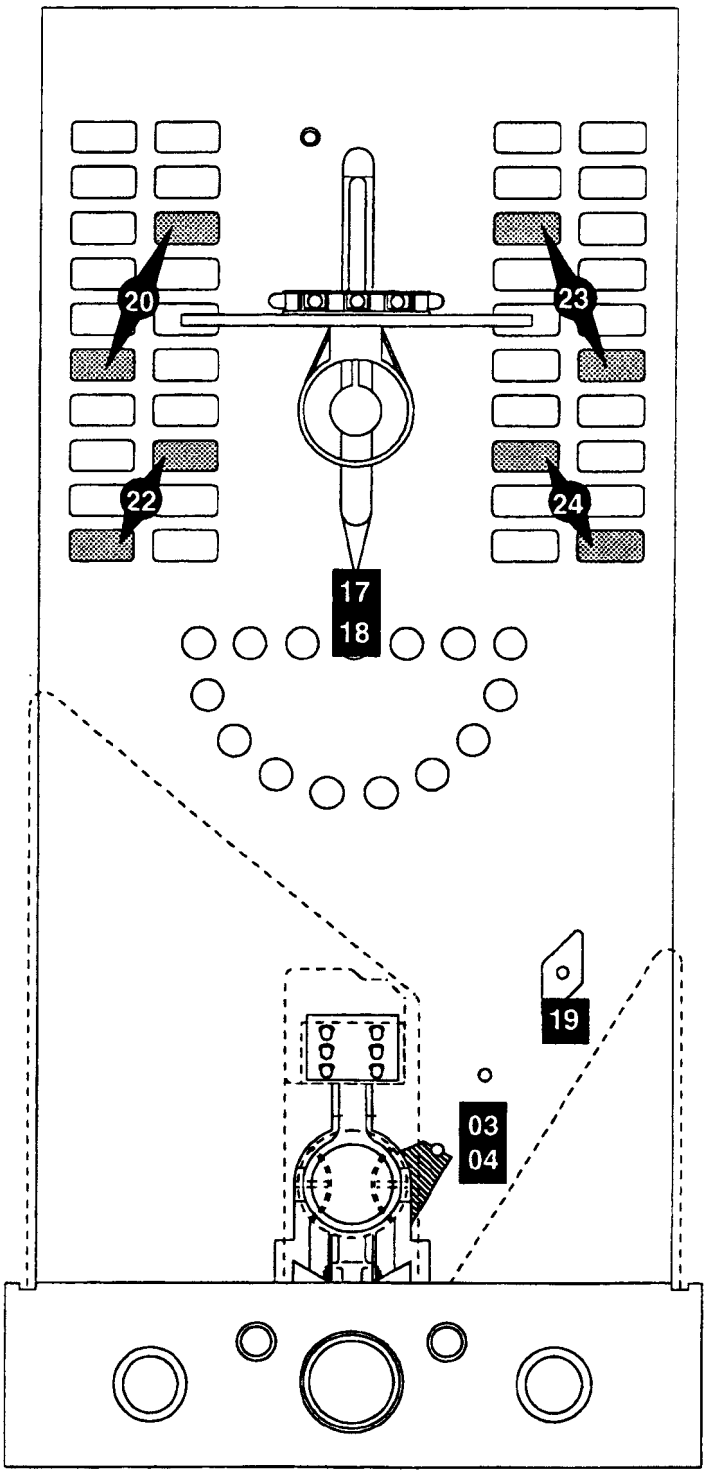
Item	Switch Number	Where Used
11-12	---	Not Used
13	20-9663-1	Start Button
14	---	Not Used
15	20-9663-B-3	Serve Ball Left
16	20-9663-B-3	Serve Ball Right
17	20-9663-8	Select Game
18	---	Not Used
21	27-1066	*Slam Tilt (Coin Door)
	SW-1A-117	*Slam Tilt (Cabinet)
22	5643-09268-00	*Coin Door Closed
23	Not Used	*Ticket Opto.
24	A-8630	*Always Closed
25	---	Not Used
26	A-14231 (LED)	†Ball In Shooter
	A-14232 (Photo Trans)	
27	5647-12693-01	*Dispenser Low
28	A-14231 (LED)	*Dispenser Unjam
	A-14232 (Photo Trans)	
31	A-14231 (LED)	†Basket
	A-14232 (Photo Trans)	
32	A-14231 (LED)	†Basket Motor Top
	A-14232 (Photo Trans)	
33	A-14231 (LED)	†Basket Motor Bottom
	A-14232 (Photo Trans)	
34-88	---	Not Used



* Not shown.
† Located on underside of playfield.

SOLENOID/FLASHER LOCATIONS

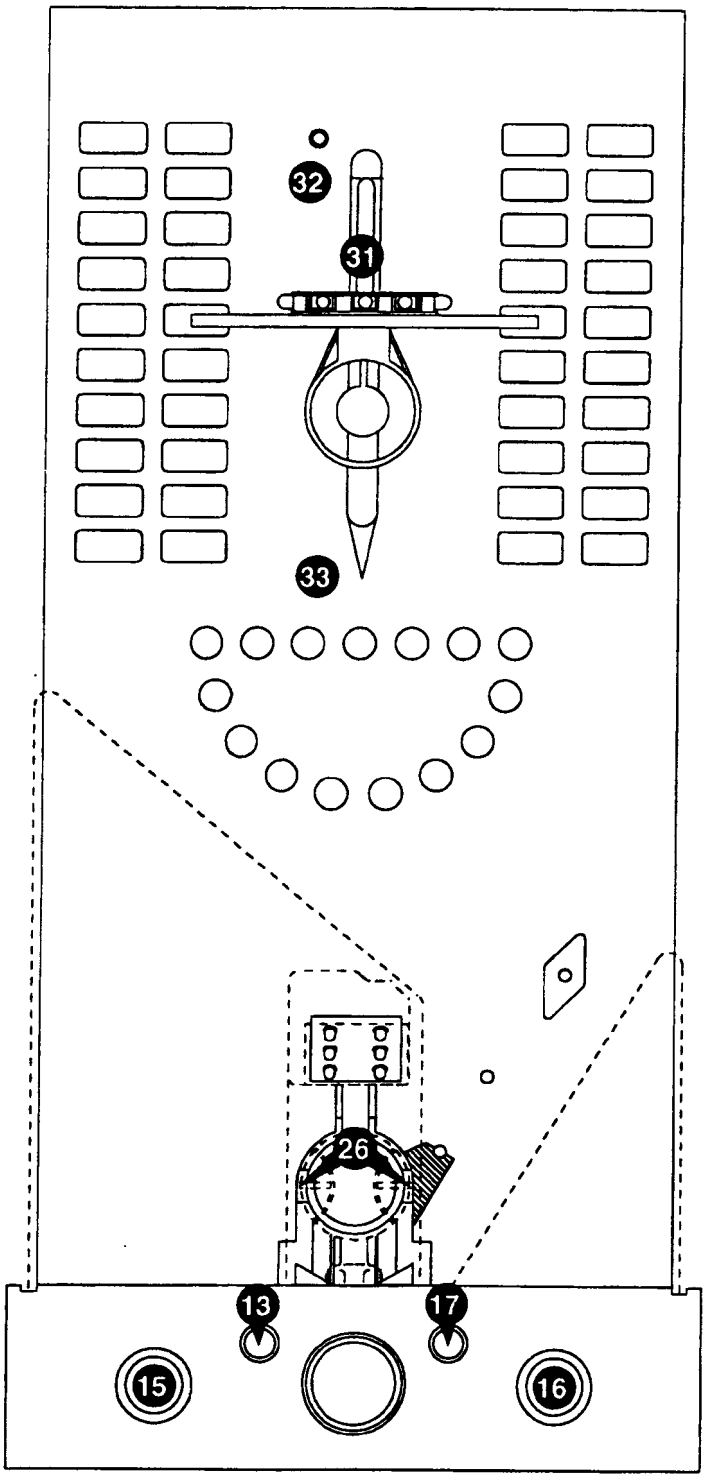
Item	Coil/Flasher Number	Assy. No.	Description
01	---	---	Not Used
02	---	---	Not Used
03	A-15943	A-15991	Release Ball Power
04	A-15943	A-15991	Release Hold Down
05-16	---	---	Not Used
17	14-7980 50VAC	A-15882	Basket Motor Forward
18	14-7980 50VAC	A-15882	Basket Motor Reverse
19	14-7979 12VDC	A-16004-1	De-jamming Motor
20	24-8704 (2)	A-9302	Back Left Flasher #89
21	24-8802 (3)	A-16212	*Dome Light #906
22	24-8704 (2)	A-9302	Front Left Flasher #89
23	24-8704 (2)	A-9302	Back Right Flasher #89
24	24-8704 (2)	A-9302	Front Right Flasher #89
25	24-8802 (2)	A-16049	†Upper Left Flasher #906
26	24-8802 (2)	A-16049	†Upper Right Flasher #906
27	14-7962	A-14469	*DIspenser Motor
28	20-9679	A-14560	*Dispenser Low
General Illumination Circuits			
*01	24-8768	A-16049	Upper Back Panel #555
*†02	24-8768	A-16053	Shooter Panel #555
*03	24-8768	A-16052	Basket Backboard #555
*04	---	---	Not Used
*05	24-8768	A-16052	Cabinet/Coins #555



* Not shown
† Located behind display panel

SWITCH LOCATIONS

Item	Switch Number	Switch Assy.	Description
11-12	---	---	Not Used
13	---	20-9663-1	Start Button
14	---	---	Not Used
15	---	20-9663-B-3	Serve Ball Left
16	---	20-9663-B-3	Serve Ball Right
17	---	20-9663-8	Select Game
18	---	---	Not Used
21	---	27-1066	*Slam Tilt (Coin Door)
	SW-1A-117	A-15487	*Slam Tilt (Cabinet)
22	5643-09268-00	A-16154-1	*Coin Door Closed
23	---	Not Used	*Ticket Opto.
24	---	A-8630	*Always Closed
25	---	---	Not Used
26	A-14231 (LED)	A-15811	†Ball In Shooter
	A-14232 (Photo Trans)		
27	5647-12693-01	A-14473-1	*Dispenser Low
28	A-14231 (LED)	A-14473-1	*Dispenser Unjam
	A-14232 (Photo Trans)		
31	A-14231 (LED)	A-15809	†Basket
	A-14232 (Photo Trans)		
32	A-14231 (LED)	A-15822	†Basket Motor Top
	A-14232 (Photo Trans)		
33	A-14231 (LED)	A-15822	†Basket Motor Bottom
	A-14232 (Photo Trans)		
34-88	---	---	Not Used



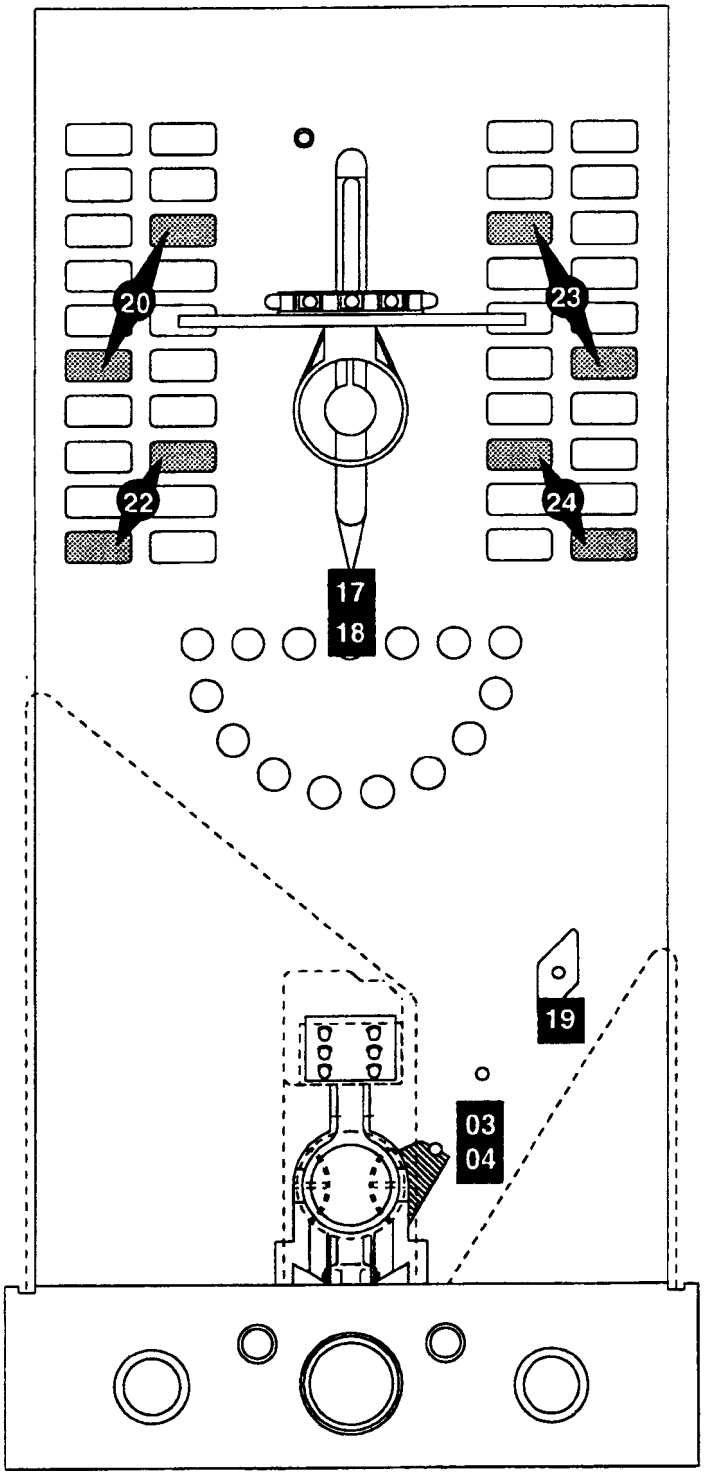
* Not shown.
† Located on underside of playfield.

SOLENOID/FLASHER LOCATIONS

Item	Coil/Flasher Number	Assy. No.	Description
01	---	---	Not Used
02	---	---	Not Used
03	A-15943	A-15991	Release Ball
04	A-15943	A-15991	Release Hold Down
05-16	---	---	Not Used
17	14-7980 50VAC	A-15882	Basket Motor Up
18	14-7980 50VAC	A-15882	Basket Motor Down
19	14-7979 12VDC	A-16004-1	De-jamming Motor
20	24-8704 (2)	A-9302	Back Left Flasher #89
21	24-8802 (3)	A-16212	*Dome Light #906
22	24-8704 (2)	A-9302	Front Left Flasher #89
23	24-8704 (2)	A-9302	Back Right Flasher #89
24	24-8704 (2)	A-9302	Front Right Flasher #89
25	24-8802 (2)	A-16049	†Upper Left Flasher #906
26	24-8802 (2)	A-16049	†Upper Right Flasher #906
27	14-7962	A-14469	*Dispenser Motor
28	20-9679	A-14560	*Dispenser Low

General Illumination Circuits

*01	24-8768	A-16049	Upper Back Panel #555
*†02	24-8768	A-16053	Shooter Panel #555
*03	24-8768	A-16052	Basket Backboard #555
*04	---	---	Not Used
*05	24-8768	A-16052	Cabinet/Coins #555



* Not shown
† Located behind display panel

SECTION 3

GAME WIRING AND SCHEMATICS

CONNECTOR & COMPONENT IDENTIFICATION

Each plug or jack receives a number that identifies the circuit board and position on that board that it connects to. J-designations refer to the male part of a connector. P-designations refer to the female part of a connector. For example, J101 designates jack 1 of board 1 (a Power Driver Board Board jack); P206 designates plug 6 of board 2 (a CPU Board plug). Identifying the specific pin number of a connector involves a hyphen, which separates the pin number from the plug or jack designation. For example, J101-3 refers to pin 3 of jack 1 on board 1.

Other game components may also have similar numbers to clarify their locations or related circuits. For example, F501 refers to a fuse located on the Sound Board.

Prefix numbers for the WPC circuit boards are listed below.

1 - Power Driver Board
2 - CPU Board
5 - Sound Board
6 - Dot Matrix Controller
Dot Matrix Display/Driver Board

Schematics for standard WPC backbox boards are found in the WPC Schematics Manual. Playfield, cabinet, and all other backbox board schematics are found in this section.

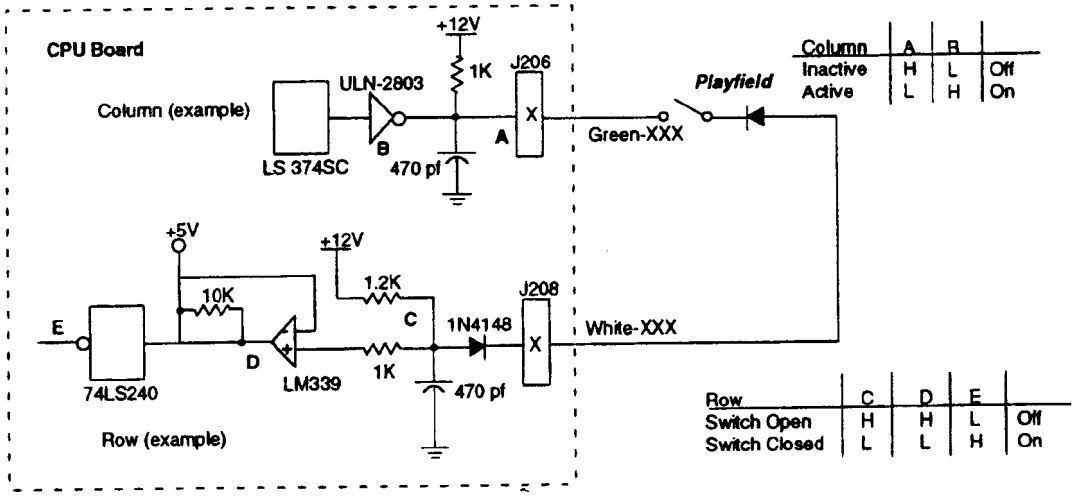
SWITCHES

Dedicated Grounded Switches	
Orange-Brown J205-1	(1)
Left Coin Chute	D1
Orange-Red J205-2	(2)
Center Coin Chute	D2
Orange-Black J205-3	(3)
Right Coin Chute	D3
Orange-Yellow J205-4	(4)
4th Coin Chute	D4
Orange-Green J205-6	(5)
Normal Function: Service Credits	Test Function: Escape D5
Orange-Blue J205-7	(6)
Normal Function: Volume Down	Test Function: Down D6
Orange-Violet J205-8	(7)
Normal Function: Volume Up	Test Function: Up D7
Orange-Gray J205-9	(8)
Normal Function: Begin Test	Test Function: Enter D8

White ——|/|—— Green

Row \ Column	1 Green-Brown J207-1 U20-18	2 Green-Red J207-2 U20-17	3 Green-Orange J206-3 U20-16	4 Green-Yellow J206-4 U20-15	5 Green-Black J206-5 U20-14	6 Green-Blue J206-6 U20-13	7 Green-Violet J206-7 U20-12	8 Green-Gray J206-9 U20-11
1 White-Brown J208-1 U18-11	NOT USED 11	SLAM TILT 21	BASKET 31	NOT USED 41	NOT USED 51	NOT USED 61	NOT USED 71	NOT USED 81
2 White-Red J208-2 U18-9	NOT USED 12	COIN DOOR CLOSED 22	BASKET MOTOR TOP 32	NOT USED 42	NOT USED 52	NOT USED 62	NOT USED 72	NOT USED 82
3 White-Orange J208-3 U18-5	START BUTTON 13	TICKET OPTO. 23	BASKET MOTOR BOTTOM 33	NOT USED 43	NOT USED 53	NOT USED 63	NOT USED 73	NOT USED 83
4 White-Yellow J208-4 U18-7	NOT USED 14	ALWAYS CLOSED 24	NOT USED 34	NOT USED 44	NOT USED 54	NOT USED 64	NOT USED 74	NOT USED 84
5 White-Green J208-5 U19-11	SERVE BALL LEFT 15	NOT USED 25	NOT USED 35	NOT USED 45	NOT USED 55	NOT USED 65	NOT USED 75	NOT USED 85
6 White-Blue J208-7 U19-9	SERVE BALL RIGHT 16	BALL IN SHOOTER 26	NOT USED 36	NOT USED 46	NOT USED 56	NOT USED 66	NOT USED 76	NOT USED 86
7 White-Violet J208-8 U19-5	SELECT GAME 17	DISPENSER LOW 27	NOT USED 37	NOT USED 47	NOT USED 57	NOT USED 67	NOT USED 77	NOT USED 87
8 White-Gray J208-9 U19-7	NOT USED 18	DISPENSER UNJAM 28	NOT USED 38	NOT USED 48	NOT USED 58	NOT USED 68	NOT USED 78	NOT USED 88

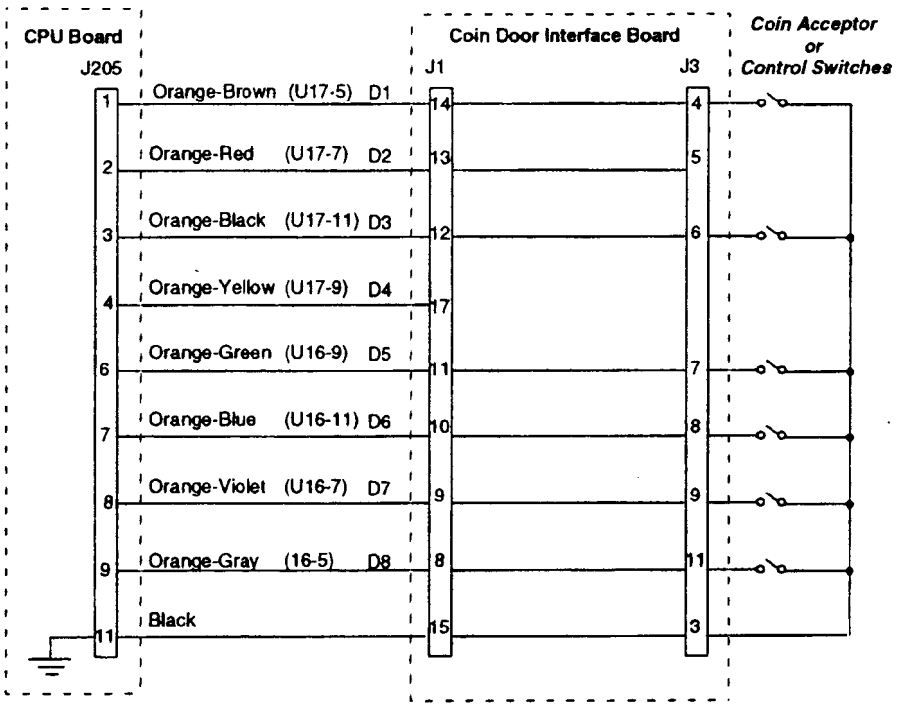
SWITCH MATRIX CIRCUIT



The microprocessor is constantly strobing the column side of the switch. When point "A" on the column circuit toggles low the column side is active.

When a switch closes, the row side of the circuit activates. The "+" input to the LM339 drops below +5V causing its output to go low. Corresponding row and column switches must be low at the same time, for the switch to be considered closed by the microprocessor. When the switch opens, the "+" input to the LM339 is above +5V, its output is high and the row is inactive.

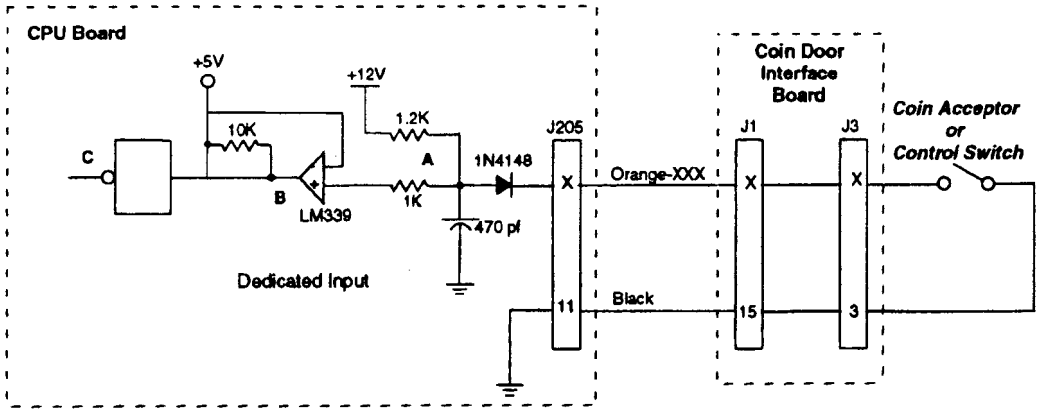
DEDICATED SWITCHES



Coin Acceptor Switches
- D1 Left Coin Chute
- D2 Center Coin Chute
- D3 Right Coin Chute
- D4 Forth Coin Chute

Control Switches
- D5 Normal Function: Service Credits
  Test Function: Escape
- D6 Normal Function: Volume Down
  Test Function: Down
- D7 Normal Function: Volume Up
  Test Function: Up
- D8 Normal Function: Begin Test
  Test Function: Enter

DEDICATED SWITCH CIRCUIT



Switch	A	B	C	
Open	H	H	L	Off
Closed	L	L	H	On

The dedicated switches operate similar to switches in the matrix except that instead of a column circuit there is a direct tie to ground. Therefore, the column side is constantly active (low).

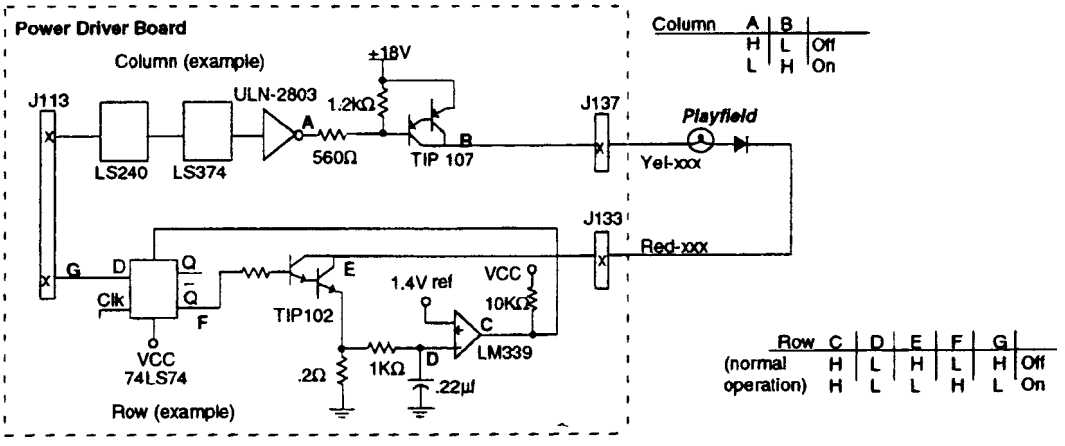
When a switch closes the row side (dedicated input) of the circuit activates. The "+" input to the LM339 drops below +5V causing its output to go low. Since the row circuit (dedicated input) is tied directly to ground through the switch, the switch is considered closed by the microprocessor. When the switch opens, the "+" input to the LM339 is above +5V, its output is high and the row is inactive.

LAMPS

Yellow (B+) —(L)→ Red

Row \ Column	1 Yellow-Brown J137-1 Q98	2 Yellow-Red J137-2 Q97	3 Yellow-Orange J137-3 Q96	4 Yellow-Black J137-4 Q95	5 Yellow-Green J137-5 Q94	6 Yellow-Blue J137-6 Q93	7 Yellow-Violet J137-7 Q92	8 Yellow-Gray J137-9 Q91
1 Red-Brown J133-1 Q90	MIDDLE RIGHT BACK 1 11	RIGHT BACK 1 21	NOT USED 31	MIDDLE LEFT BACK 1 41	LEFT BACK 1 51	FRONT LINE 1 61	FRONT CIRCLE 8 71	SERVE BALL RIGHT 81
2 Red-Black J133-2 Q89	MIDDLE RIGHT BACK 2 12	RIGHT BACK 2 22	NOT USED 32	MIDDLE LEFT BACK 2 42	LEFT BACK 2 52	FRONT LINE 2 62	FRONT CIRCLE 7 72	SELECT GAME 82
3 Red-Orange J133-4 Q88	MIDDLE RIGHT BACK 3 13	RIGHT BACK 3 23	NOT USED 33	MIDDLE LEFT BACK 3 43	LEFT BACK 3 53	FRONT LINE 3 63	FRONT CIRCLE 6 73	SERVE BALL LEFT 83
4 Red-Yellow J133-5 Q87	MIDDLE RIGHT BACK 4 14	RIGHT BACK 4 24	NOT USED 34	MIDDLE LEFT BACK 4 44	LEFT BACK 4 54	FRONT LINE 4 64	FRONT CIRCLE 5 74	CREDIT BUTTON 84
5 Red-Green J133-6 Q86	MIDDLE RIGHT BACK 5 15	RIGHT BACK 5 25	LEFT BACK 9 35	MIDDLE LEFT BACK 5 45	LEFT BACK 5 55	FRONT LINE 5 65	FRONT CIRCLE 4 75	MIDDLE RIGHT BACK 9 85
6 Red-Blue J133-7 Q85	MIDDLE RIGHT BACK 6 16	RIGHT BACK 6 26	LEFT BACK 10 36	MIDDLE LEFT BACK 6 46	LEFT BACK 6 56	FRONT LINE 6 66	FRONT CIRCLE 3 76	MIDDLE RIGHT BACK 10 86
7 Red-Violet J133-8 Q84	MIDDLE RIGHT BACK 7 17	RIGHT BACK 7 27	MIDDLE LEFT BACK 9 37	MIDDLE LEFT BACK 7 47	LEFT BACK 7 57	FRONT LINE 7 67	FRONT CIRCLE 2 77	RIGHT BACK 9 87
8 Red-Gray J133-9 Q83	MIDDLE RIGHT BACK 8 18	RIGHT BACK 8 28	MIDDLE LEFT BACK 10 38	MIDDLE LEFT BACK 8 48	LEFT BACK 8 58	NOT USED 68	FRONT CIRCLE 1 78	RIGHT BACK 10 88

LAMP MATRIX CIRCUIT



The processor sends a signal to the column circuit, causing the output of the UNL-2803 to toggle. When point "A" drops low, the TIP107 transistor conducts and point "B" changes to a high state. At the same time the processor drives the input of the 74LS74 low, causing a high at output "F". A high state at the base of TIP102 causes the transistor to conduct, bringing the row circuit to ground and turning the lamp On.

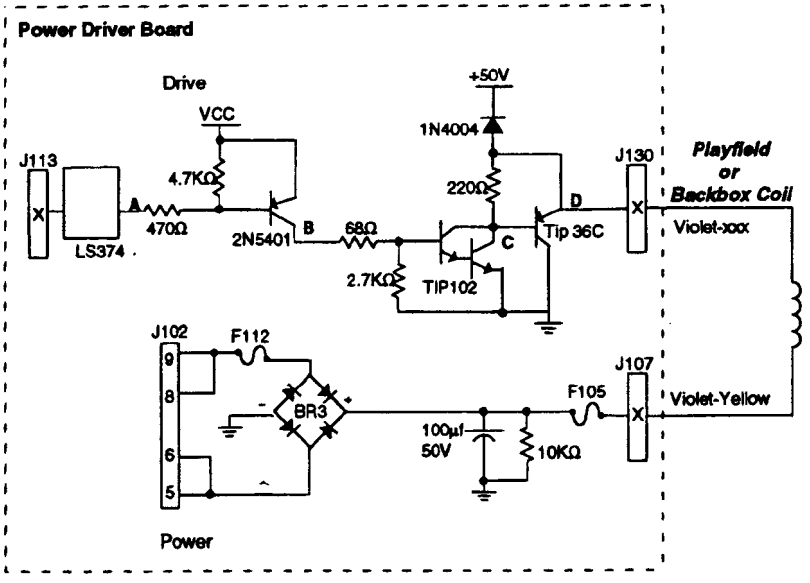
The processor changes the input of the 74LS74 to a high state to turn the lamp Off.

In overcurrent conditions the lamp is shut Off through the comparator. If the voltage at the negative input of the LM339 rises above 1.4V the output changes to a low, which is fed back to the 74LS74 and shuts the row circuit Off.

SOLENOID/FLASHER TABLE

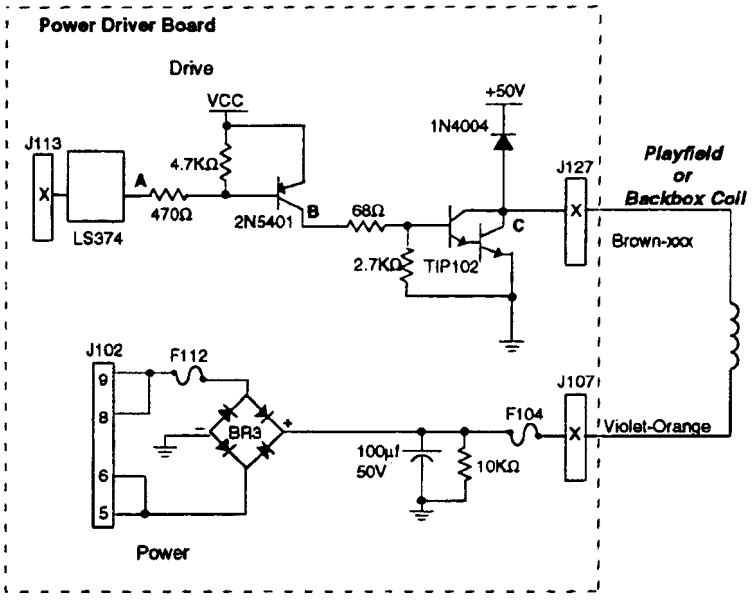
Sol. No.	Function	Solenoid Type	Voltage Connections			Drive Xister	Drive Connections			Drive Wire Color	Solenoid Part Number Flashlamp Type
			Playfield	Backbox	Cabinet		Playfield	Backbox	Cabinet		
01	Not Used	High Power				Q82				Vio-Brn	—
02	Not Used	High Power				Q80				Vio-Red	—
03	Release Ball Power	High Power	J106-3			Q78	J132-3			Vio-Org	A-15943
04	Release Hold Down	High Power	J106-3			Q76	J132-5			Vio-Yel	A-15943
05	Not Used	High Power				Q64				Vio-Grn	—
06	Not Used	High Power				Q66				Vio-Blu	—
07	Not Used	High Power				Q68				Vio-Blk	—
08	Not Used	High Power				Q70				Vio-Gry	—
09	Not Used	Low Power				Q58				Brn-Blk	—
10	Not Used	Low Power				Q56				Brn-Red	—
11	Not Used	Low Power				Q54				Brn-Org	—
12	Not Used	Low Power				Q52				Brn-Yel	—
13	Not Used	Low Power				Q50				Brn-Grn	—
14	Not Used	Low Power				Q48				Brn-Blu	—
15	Not Used	Low Power				Q46				Brn-Vio	—
16	Not Used	Low Power				Q44				Brn-Gry	—
17	Basket Motor Forward	Flasher	J118-2			Q42	J126-1			Blk-Brn	14-7980 12VDC
18	Basket Motor Reverse	Flasher	J118-2			Q40	J126-2			Blk-Red	14-7980 12VDC
19	De-jamming Motor	Flasher	J104-1,2			Q38	J126-3			Blk-Org	14-7979 50VAC
20	Back Left Flasher	Flasher	J106-5			Q36	J126-4			Blk-Yel	#89
21	Dome Light	Flasher	J106-5			Q28	J126-5			Blu-Grn	#906
22	Front Left Flasher	Flasher	J106-5			Q30	J126-6			Blu-Blk	#89
23	Back Right Flasher	Low Power	J106-5			Q34	J126-7			Blu-Vio	#89
24	Front Right Flasher	Low Power	J106-5			Q32	J126-8			Blu-Gry	#89
25	Upper Left Flasher	Flasher		J106-5		Q26		J124-1		Blu-Brn	#906
26	Upper Right Flasher	Flasher		J106-5		Q24		J124-2		Blu-Red	#906
27	Dispenser Motor	Flasher			J116-2	Q22			J123-4	Blu-Org	14-7962
28	Dispenser Low	Flasher			J116-2	Q20			J123-5	Blu-Yel	20-9679
	General Illumination		**Playfield**	**Backbox**	**Cabinet**		**Playfield**	**Backbox**	**Cabinet**		
01	Upper Back Panel	G.I.		J120-1		Q18		J120-7		Wht-Brn	#555
02	Shooter Panel	G.I.	J120-2			Q10	J120-8			Wht-Org	#555
03	Basket Backboard	G.I.	J120-3			Q14	J120-9			Wht-Yel	#555
04	Not Used	G.I.				Q16				Wht-Grn	—
05	Cabinet/Coins	G.I.			J119-3	Q12			J119-1	Wht-Vio	#555

High Power Solenoid Circuit



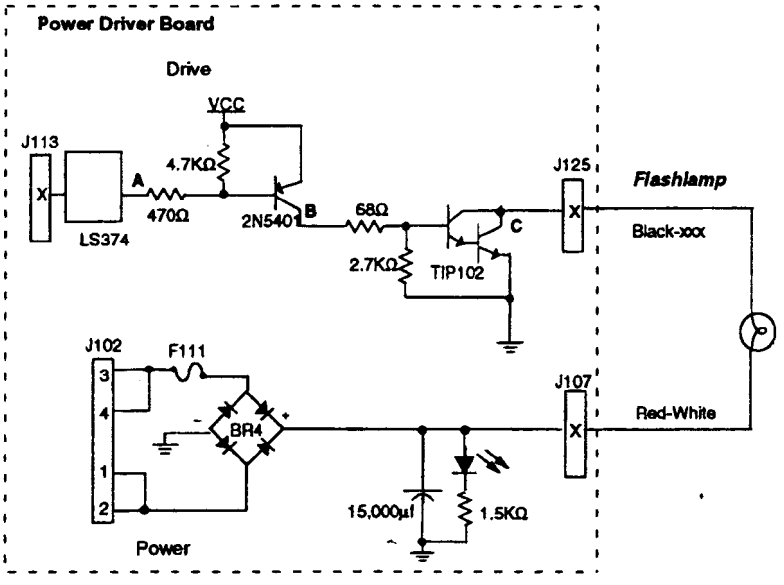
The microprocessor toggles the output of the 74LS374. When point "A" drops low, point "B" the collector of the 2N5401 transistor is high. A high at point "B" causes point "C" the collector of the TIP102 transistor, and point "D" the emitter of the TIP36 transistor to drop low. When point "D" is low the coil is grounded through the transistor and the coil turns On. The coil shuts Off when point "A" toggles high.

Low Power Solenoid Circuit



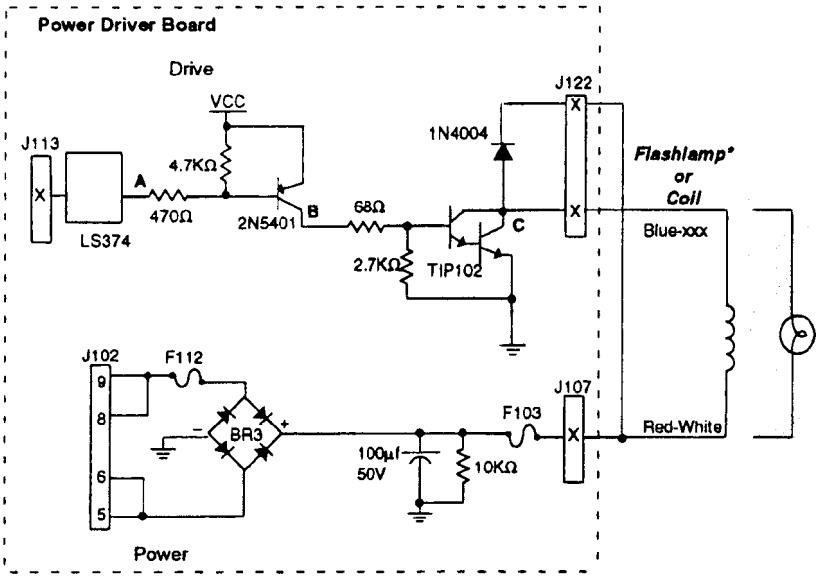
The microprocessor toggles the output of the 74LS374. When point "A" is low, point "B" the collector of the 2N5401 transistor is driven high. A high at point "B" turns On the TIP102 transistor and causes point "C" to drop low. When point "C" is low the coil is grounded through the transistor and the coil turns On. The coil shuts Off when point "A" toggles high.

Flashlamp Solenoid Circuit



The microprocessor toggles the output of the 74LS374. When point "A" is low, point "B" the collector of the 2N5401 transistor is high. Once point "B" is high, point "C" the collector of the TIP102 transistor is low. When Point "C" is low the flashlamp is grounded through the transistor and the flashlamp turns On. When point "A" toggles high the circuit shuts Off.

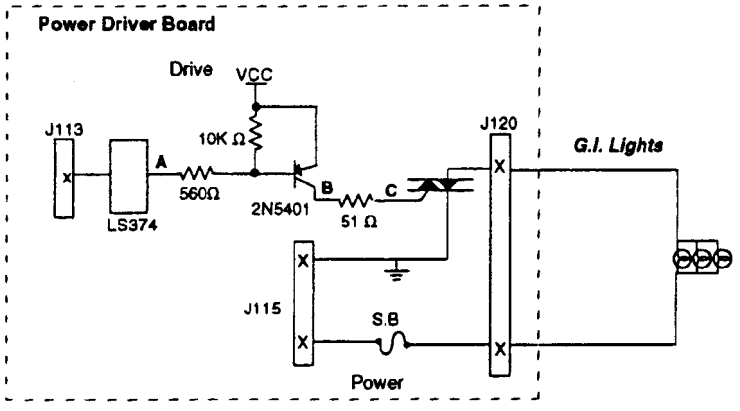
Special (General Purpose) Solenoid Circuit

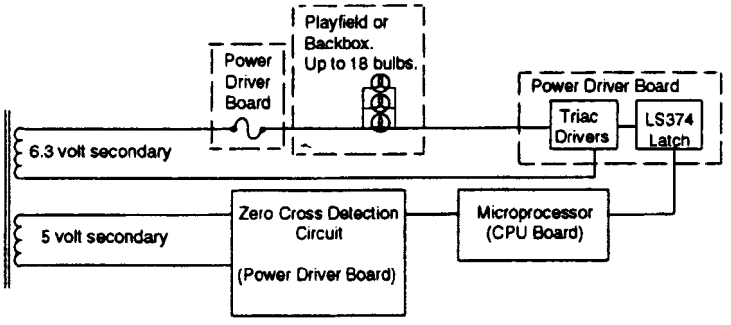


The microprocessor toggles the output of the 74LS374. When point "A" drops low, point "B" is high. A high at point "B" causes a low at point "C". When point "C" is low the coil/flashlamp is grounded through the transistor and the coil/flashlamp turns On. When point "A" toggles high the coil/flashlamp turns Off.

* Tieback Diode is not used for flashlamp circuit.

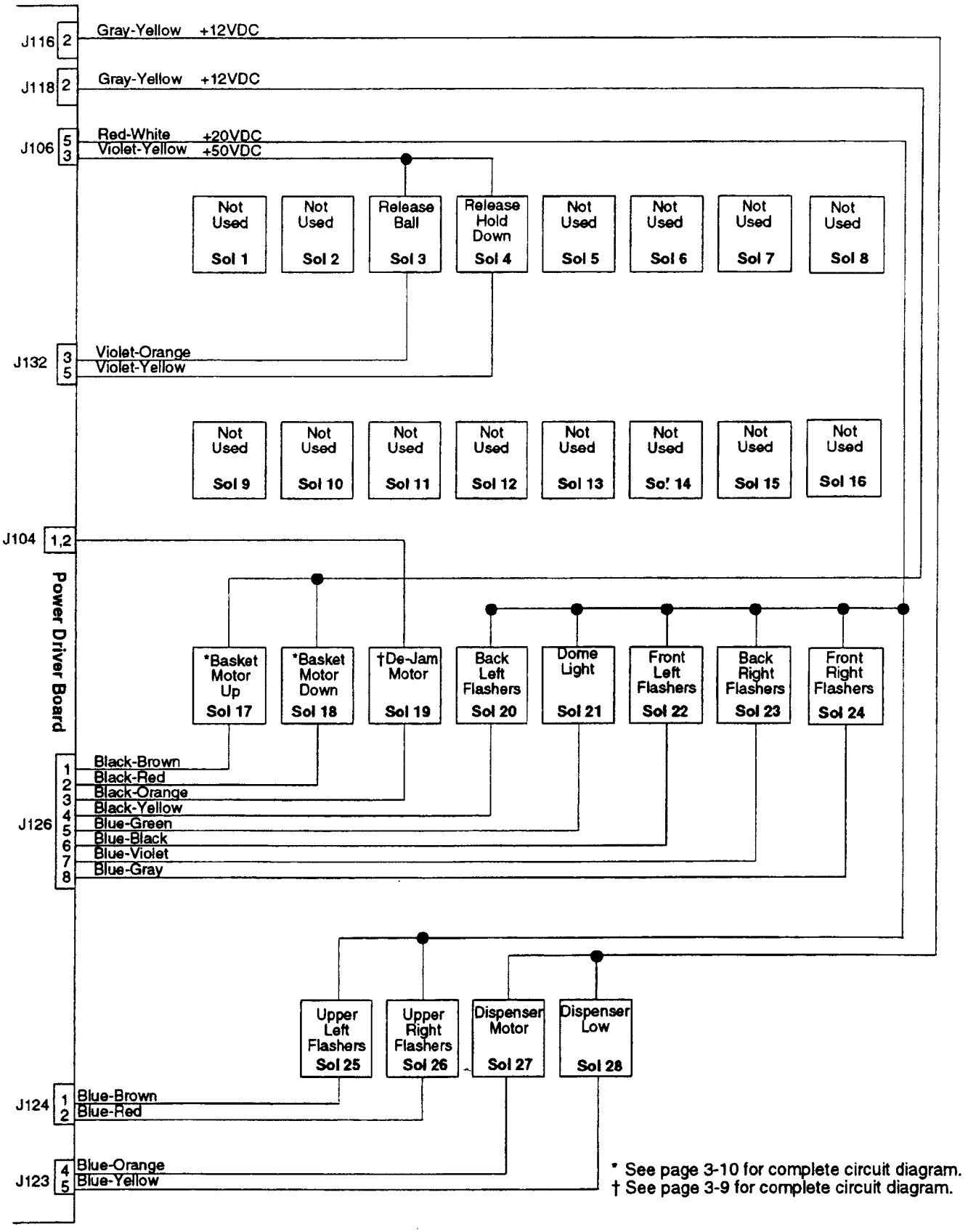
General Illumination Circuit





When point "A" toggles low, then points "B" and "C" are high. This turns On the triac and the desired General Illumination string lights.

SOLENOID WIRING



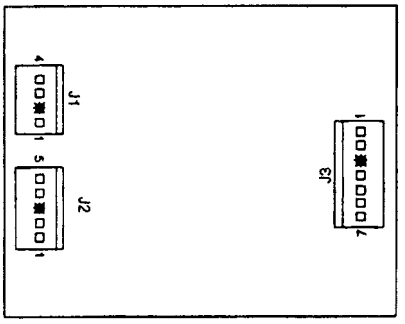
* See page 3-10 for complete circuit diagram.
† See page 3-9 for complete circuit diagram.

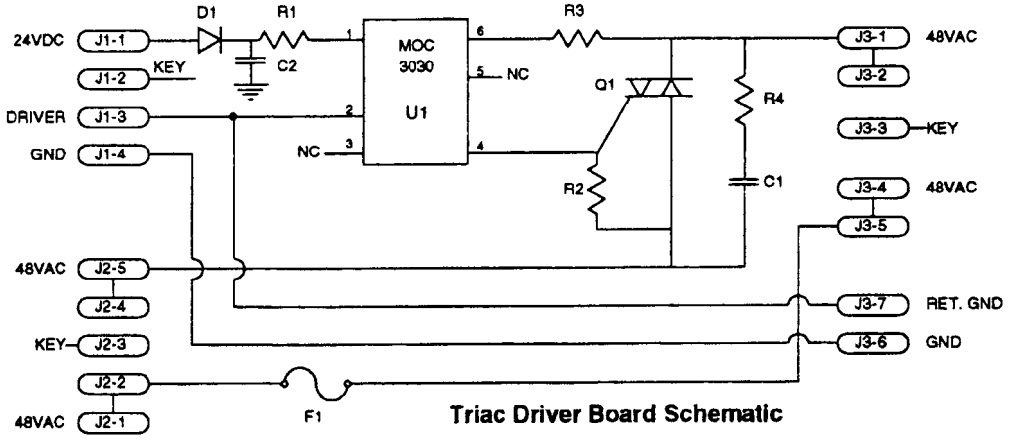
Triac Driver Board Assembly
A-13088-2

J1-1 Red-White from J106-5
J1-2 Key
J1-3 Black-Orange from J126-3
J1-4 Black, Ground from J118-1

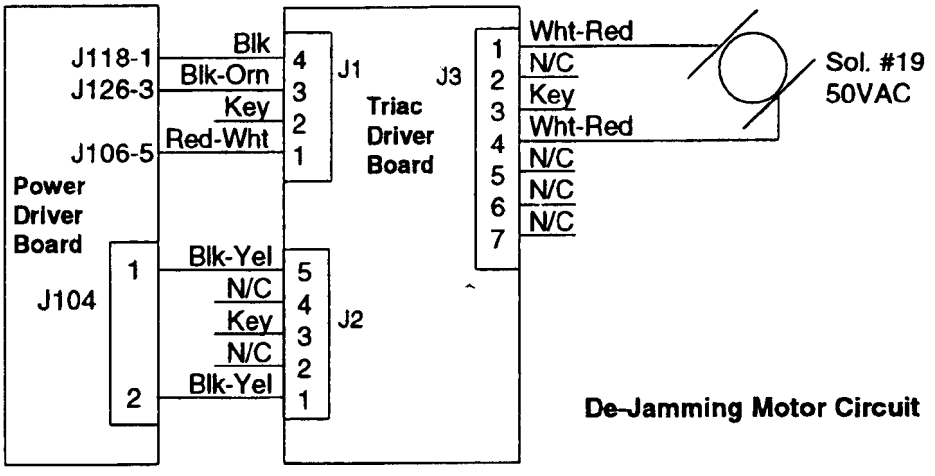
J2-1 Black-Yellow from J104-2
J2-2 Not Used
J2-3 Key
J2-4 Not Used
J2-5 Black-Yellow from J104-1

J3-1 White-Red to Motor
J3-2 Not Used
J3-3 Key
J3-4 White-Red to Motor
J3-5 Not Used
J3-6 Not Used
J3-7 Not Used





Triac Driver Board Schematic

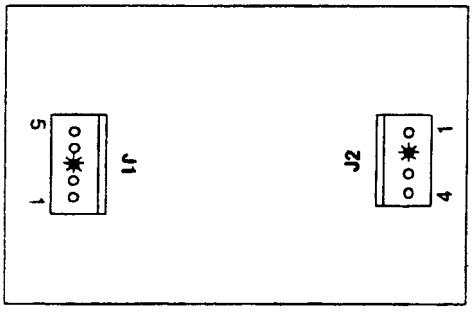


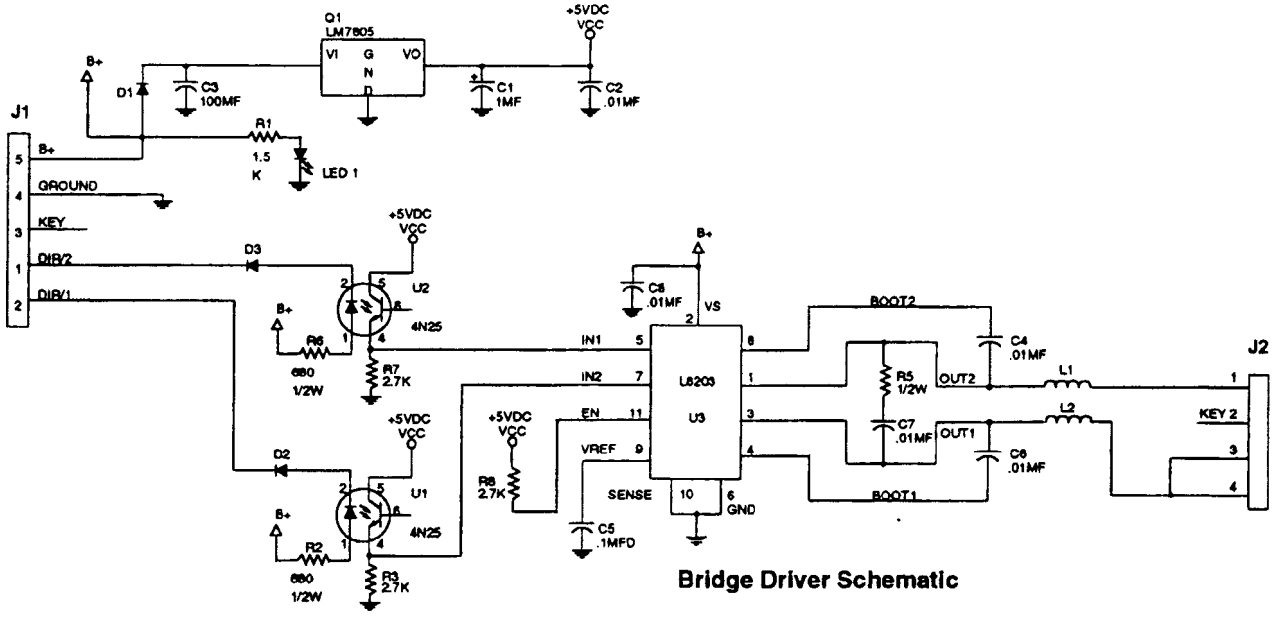
De-Jamming Motor Circuit

Bridge Driver Assembly
A-15946

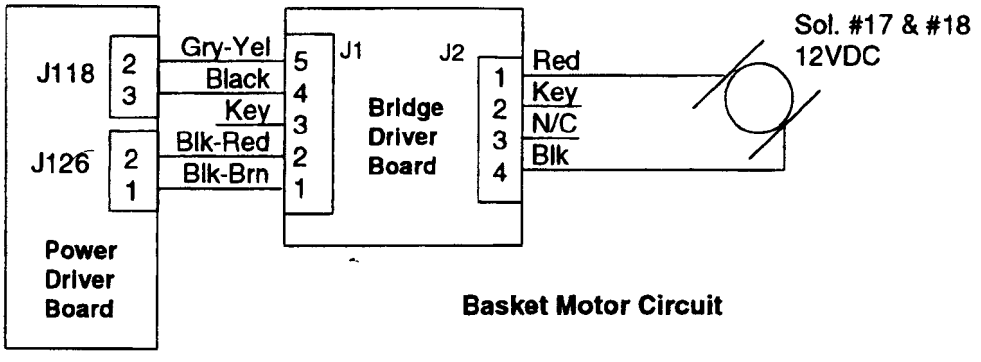
J1-1 Black-Brown from J126-1
J1-2 Black-Red from J126-2
J1-3 Key
J1-4 Black, Ground from J118-3
J1-5 Gray-Yellow from J118-2

J2-1 Red to Motor
J2-2 Key
J2-3 Not Used
J2-4 Black, Ground to Motor





Bridge Driver Schematic



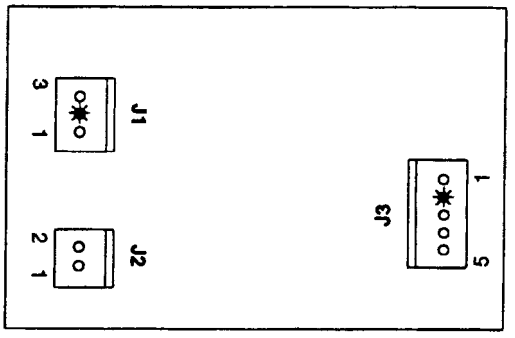
Basket Motor Circuit

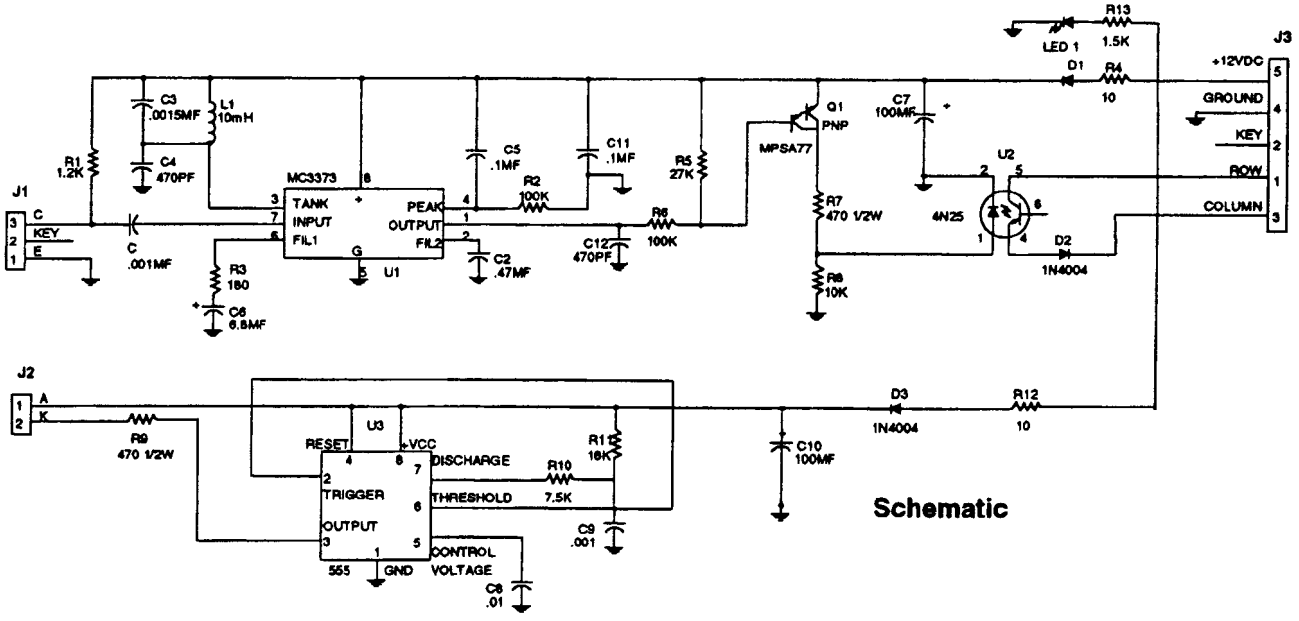
Opto Sw-24 P.C.B. Assembly
A-15646

J1-1 Green-Red to Opto Switch #28 (Photo Transistor)
J1-2 Key
J1-3 White-Blue to Opto Switch #28

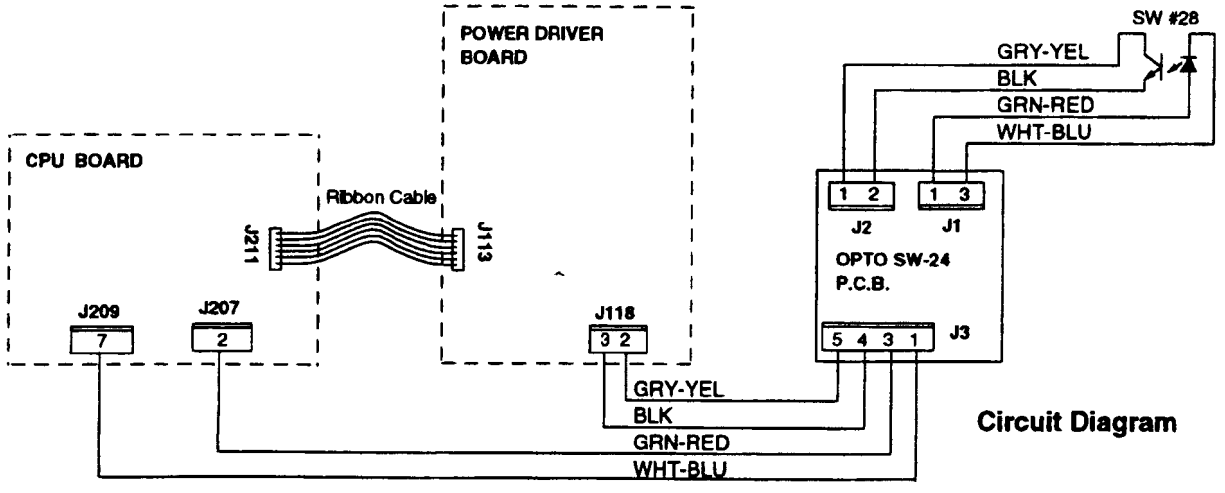
J2-1 Gray-Yellow to Opto Switch #28
J2-2 Black, Ground to Opto Switch #28

J3-1 White Blue from J209-7
J3-2 Key
J3-3 Green-Red from J207-2
J3-4 Black, Ground from J118-3
J3-5 Gray-Yellow from J118-2



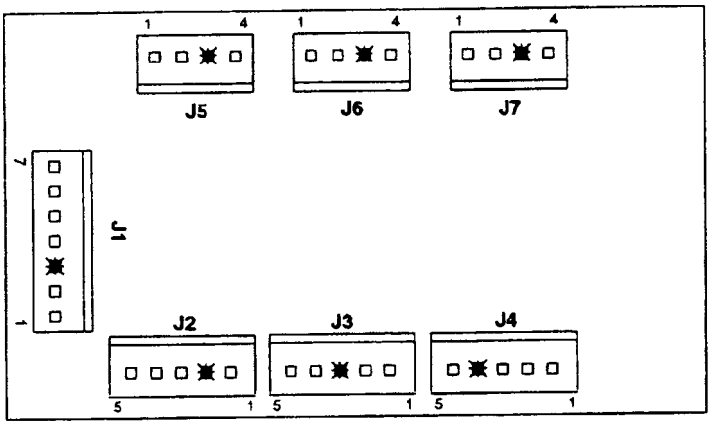


Schematic



Circuit Diagram

Opto Ramp Switch Board Assembly
A-13901-2



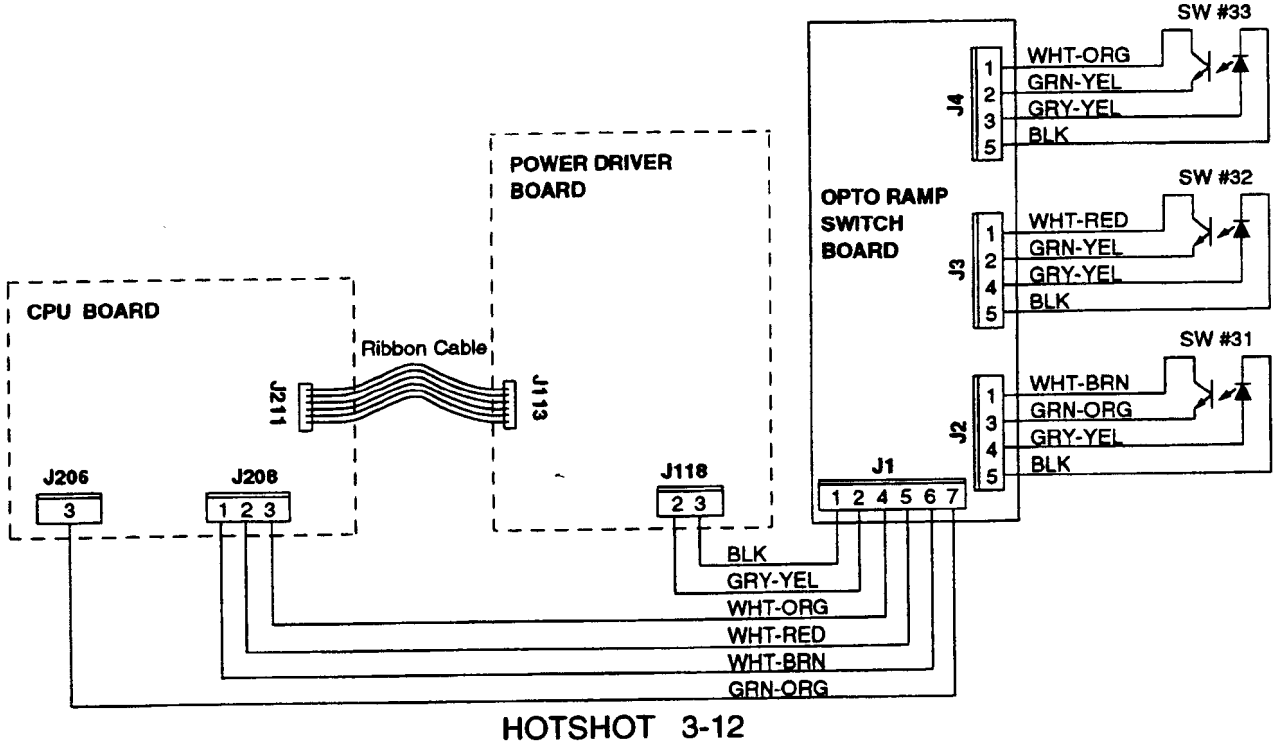
J1 - 1 Black (Ground) from J118-3
J1 - 2 Gray-Yellow (+12V) from J118-2
J1 - 3 Key
J1 - 4 White-Orange (Switch Row #3) from J208-3
J1 - 5 White-Red (Switch Row #2) from J208-2
J1 - 6 White-Brown (Switch Row #1) from J208-1
J1 - 7 Green-Orange (Switch Column #3) from J206-3

J2 - 1 White-Brown to Opto Sw #31 (Photo Transistor)
J2 - 2 Key
J2 - 3 Green-Orange to Opto Sw #31 (Photo Transistor)
J2 - 4 Gray-Yellow to Opto Sw #31 (LED)
J2 - 5 Black, Ground to Opto Sw #31 (LED)

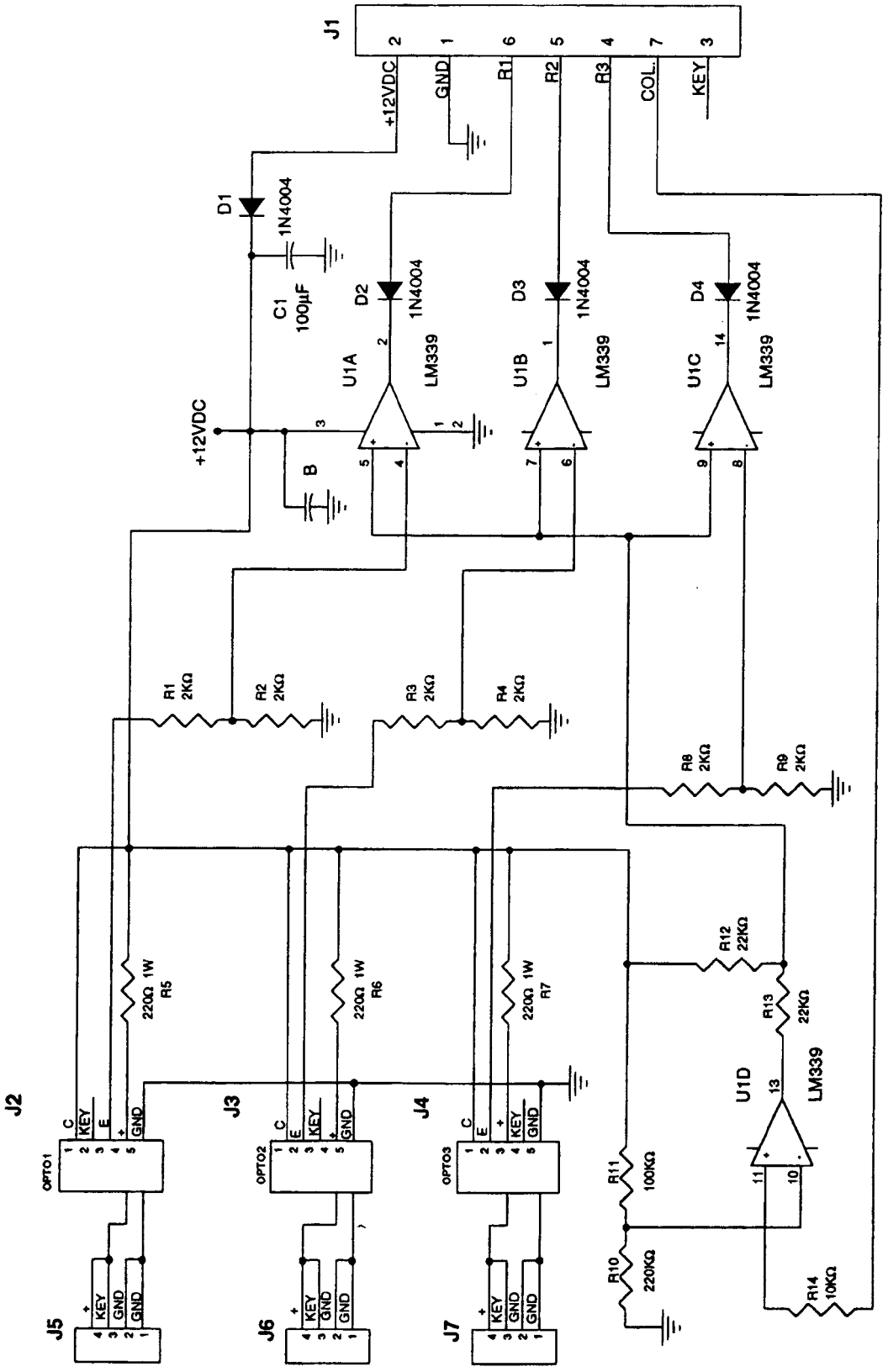
J3 - 1 White-Red to Opto Sw #32 (Photo Transistor)
J3 - 2 Green-Yellow to Opto Sw #32 (Photo Transistor)
J3 - 3 Key
J3 - 4 Gray-Yellow to Opto Sw #32 (LED)
J3 - 5 Black, Ground to Opto Sw #32 (LED)

J4 - 1 White-Orange to Opto Sw #33 (Photo Transistor)
J4 - 2 Green-Yellow to Opto Sw #33 (Photo Transistor)
J4 - 3 Gray-Yellow to Opto Sw #33 (LED)
J4 - 4 N/C
J4 - 5 Black, Ground to Opto Sw #33 (LED)

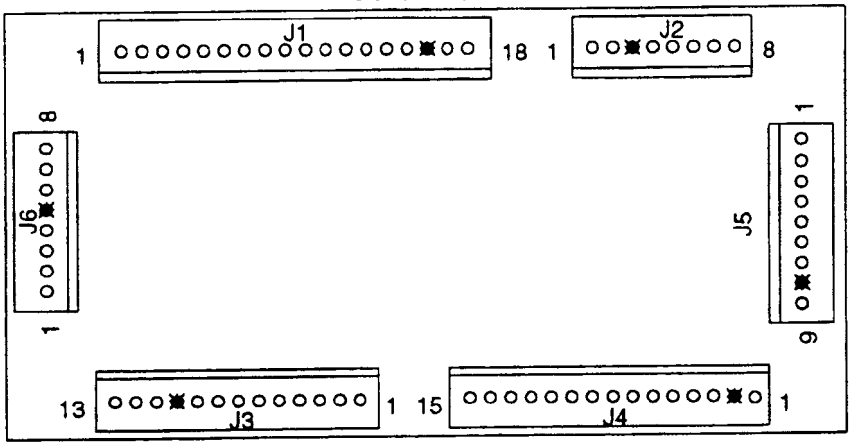
J5 through J7 are Not Used



Opto Ramp Switch Board Schematic



Coin Door Interface Board
A-14689



J1-1 Green-Brown, switch column 1 from J207-1
J1-2 Red-Gray, lamp row 8 from J133-5
J1-3 White-Yellow, switch row 4 from J209-4
J1-4 White-Orange, switch row 3 from J209-3
J1-5 White-Red, switch row 2 from J209-2
J1-6 White-Brown, switch row 1 from J209-1
J1-7 Green-Red, switch column 2 from J207-2
J1-8 Orange-Gray, dedicated switch row 8 from J205-9
J1-9 Orange-Violet, dedicated switch row 7 from J205-8
J1-10 Orange- Blue, dedicated switch row 6 from J205-7
J1-11 Orange-Green, dedicated switch row 5 from J205-6
J1-12 Orange-Black, dedicated switch row 3 from J205-3
J1-13 Orange-Red, dedicated switch row 2 from J205-2
J1-14 Orange-Brown, dedicated switch row 1 from J205-1
J1-15 Black, Ground from J205-10
J1-16 Key
J1-17 Orange-Yellow, dedicated switch row 4 from J205-4
J1-18 Orange-White, switch enable from J205-12

J2-1 Violet, G.I. return from J119-3
J2-2 White-Violet, G.I. 6.8VAC from J119-1
J2-3 Key
J2-4 Gray-Yellow, +12V from J116-2
J2-5 Black, Ground from J116-3
J2-6 Not Used
J2-7 Not Used
J2-8 Not Used

J3-1 Violet, G.I. return to coin door
J3-2 White-Violet, G.I. 6.8VAC to coin door
J3-3 Black, Ground to coin door
J3-4 Orange-Brown, dedicated switch row 1 to coin door
J3-5 Not Used
J3-6 Orange-Black, dedicated switch row 3 to coin door
J3-7 Orange-Green, dedicated switch row 5 to coin door
J3-8 Orange-Blue, dedicated switch row 6 to coin door
J3-9 Orange-Violet, dedicated switch row 7 to coin door
J3-10 Key
J3-11 Orange-Gray, dedicated switch row 8 to coin door
J3-12 Green-Red, switch column 2? to coin door
J3-13 White-Brown, switch row 1 to coin door

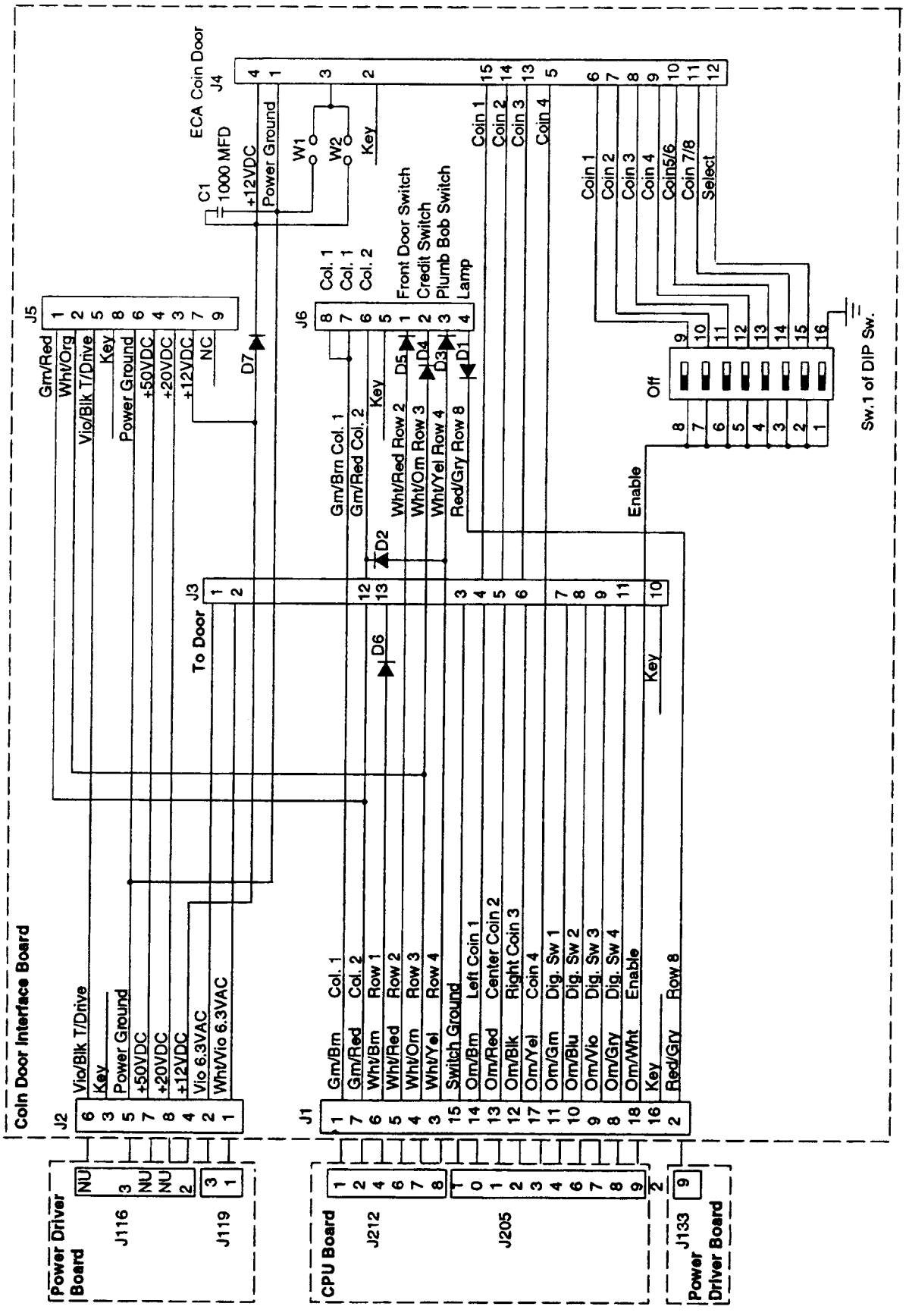
J4 Not Used

J5 Not Used

J6-1 White-Red, switch row 2 to cabinet
J6-2 White-Orange, switch row 3 to cabinet
J6-3 Not Used
J6-4 Not Used
J6-5 Key
J6-6 Green-Red, switch column 2 to cabinet
J6-7 Green-Brown, switch column 1 to cabinet
J6-8 Not Used

P.C. Board Legend	
J1-J6	Coin Door Interface Board
J1xx	Power Driver Board
J2xx	CPU Board
J5xx	Audio Board
J6xx	Dot Matrix Controller Board
J9xx	Fliptronic II Board

Coin Door Interface Board Schematic
A-14689



POWER DRIVER BOARD
A-12697-1

J101-1 Red, 9VAC from transformer secondary
J101-2 Red, 9VAC from transformer secondary
J101-3 Key
J101-4 Blue-White, 13VAC from transformer secondary
J101-5 Blue-White, loop from J101-4
J101-6 Blue-White, 13VAC from transformer secondary
J101-7 Blue-White, loop from J101-6

J102-1 White-Red, loop from J102-2
J102-2 White-Red, 16VAC from transformer secondary
J102-3 White-Red, loop from J102-4
J102-4 White-Red, 16VAC from transformer secondary
J102-5 Black-Yellow, loop from J102-6
J102-6 Black-Yellow, 51VAC from transformer secondary
J102-7 Key
J102-8 Black-Yellow, loop from J102-9
J102-9 Black-Yellow,51VAC from transformer secondary

J103 Not Used

J104-1 Black-Yellow, to J2-5 Triac Driver Board
J104-2 Black-Yellow, to J2-1 Triac Driver Board
J104-3 Key
J104-4 Not Used
J104-5 Not Used

J105 Not Used

J106-1 Not Used
J106-2 Not Used
J106-3 Violet-Yellow, to playfield coils
J106-4 Key
J106-5 Red-White, +20V to flashlamps

J107 Not Used

J108 Not Used

J109 Not Used

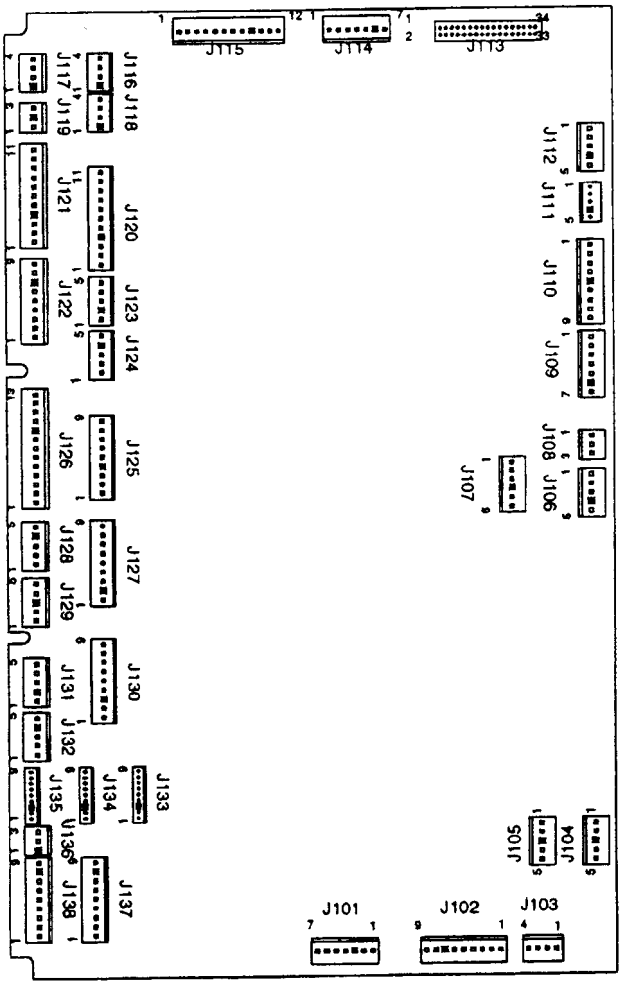
J110 Not Used

J111 Not Used

J112-1 White-Green, 9.8VAC from transformer secondary
J112-2 White-Green, loop from J112-1
J112-3 White-Green, 9.8VAC from transformer secondary
J112-4 Key
J112-5 White-Green, loop from J112-3

J113 Ribbon Cable, Data to/from J211

J114-1 Gray/Green, +12VDC to J210-7
J114-2 Gray/Green, +12VDC to J210-6
J114-3 Gray, +5VDC to J210-5; J502-3
J114-4 Gray, +5VDC to J210-4; J502-1
J114-5 Black, Ground to J210-3; J502-5
J114-6 Key
J114-7 Black, Ground to J210-1; J502-4



J115-1 Yellow-White, 6.8VAC from transformer secondary
J115-2 White-Brown, 6.8VAC from transformer secondary
J115-3 White-Brown, loop from J115-2
J115-4 White-Orange, 6.8VAC from transformer secondary
J115-5 White-Yellow, loop from J115-4
J115-6 White-Yellow, 6.8VAC from transformer secondary
J115-7 Orange, 6.8VAC from transformer secondary
J115-8 Orange, 6.8VAC loop from J115-7
J115-9 Key
J115-10 Green, 6.8VAC from transformer secondary
J115-11 Brown, 6.8VAC from transformer secondary
J115-12 Brown, 6.8VAC loop from J115-11

J116-1 Key
J116-2 Gray-Yellow, +12VDC to coin door; J2-4
J116-3 Black, Ground to coin door; J2-5
J116-4 Not Used

P.C. Board Legend

J1-J6	Coin Door Interface Board
J1xx	Power Driver Board
J2xx	CPU Board
J5xx	Audio Board
J6xx	Dot Matrix Controller Board
J9xx	Fliptronic II Board

POWER DRIVER BOARD CONTINUED...

J117-1 Key
J117-2 Gray-Yellow, +12VDC to J606-7
J117-3 Black, Ground to J606-3
J117-4 Gray, +5VDC to J606-5

J118-1 Key
J118-2 Gray-Yellow, +12VDC to opto switches
J118-3 Black, Ground
J118-4 Not Used

J119-1 White-Violet, 6.8VAC G.I. to coin door; J2-2
J119-2 Key
J119-3 Violet, Return G.I. to coin door; J2-1

J120 Not Used

J121-1 Brown, Return G.I. to backbox
J121-2 Orange, Return G.I. to playfield
J121-3 Yellow, Return G.I. to playfield
J121-4 Key
J121-5 Not Used
J121-6 Not Used
J121-7 White-Brown, 6.8VAC to backbox
J121-8 White-Orange, 6.8VAC to playfield
J121-9 White-Yellow, 6.8VAC to playfield
J121-10 Not Used
J121-11 Not Used

J122 Not Used

J123- 1 Not Used
J123- 2 Key
J123- 3 Not Used
J123- 4 Blue-Orange to cabinet Sol 27
J123- 5 Blue-Yellow to cabinet Sol 28

J124-1 Blue-Brown, Sol 25, to backbox flasher Sol 25
J124-2 Blue-Red, Sol 26, to backbox flasher Sol 26
J124-3 Not Used
J124-4 Key
J124-5 Not Used

J125 Not Used

J126-1 Black-Brown, Sol 17 to playfield motor
J126-2 Black-Red, Sol 18 to playfield motor
J126-3 Black-Orange, Sol 19 to playfield flashlamp
J126-4 Black-Yellow, Sol 20 to playfield flashlamp
J126-5 Blue-Green, Sol 21 to playfield flashlamp
J126-6 Blue-Black, Sol 22 to playfield flashlamp
J126-7 Blue-Violet, Sol 23 to playfield flashlamp
J126-8 Blue-Gray, Sol 24 to playfield flashlamp
J126-9 Key
J126-10 Not Used
J126-11 Not Used
J126-12 Not Used
J126-13 Not Used

J127 Not Used

J128 Not Used

J129 Not Used

J130 Not Used

J131 Not Used

J132-1 Not Used
J132-2 Not Used
J132-3 Violet-Orange, to playfield Sol 3
J132-4 Key
J132-5 Violet-Yellow, to playfield Sol 4

J133-1 Red-Brown, Row 1 to playfield lamps
J133-2 Red-Black, Row 2 to playfield lamps
J133-3 Key
J133-4 Red-Orange, Row 3 to playfield lamps
J133-5 Red-Yellow, Row 4 to playfield lamps
J133-6 Red-Green, Row 5 to playfield lamps
J133-7 Red-Blue, Row 6 to playfield lamps
J133-8 Red-Violet, Row 7 to playfield lamps
J133-9 Red-Gray, Row 8 to playfield lamps

J134 Not Used

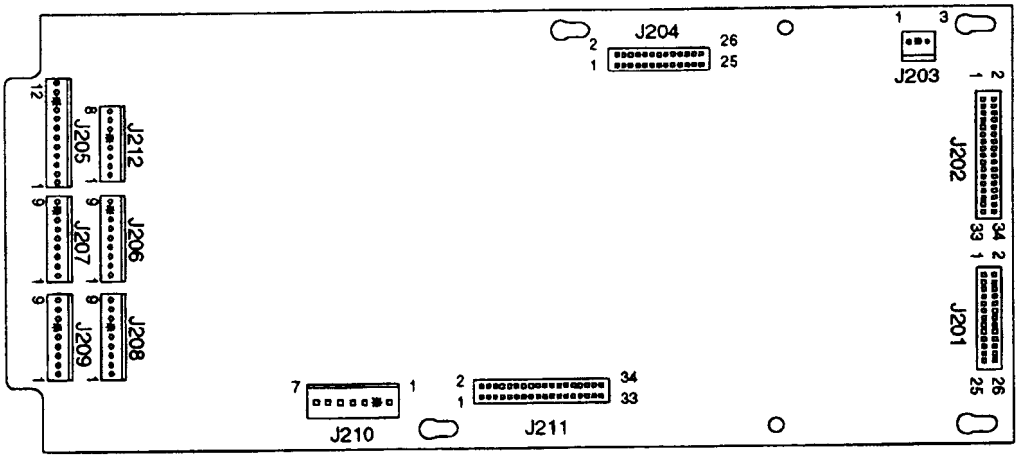
J135-1 Red-Brown, Row 1 to control panel lamp
J135-2 Red-Black, Row 2 to control panel lamp
J135-3 Key
J135-4 Red-Orange, Row 3 to control panel lamp
J135-5 Red-Yellow, Row 4 to control panel lamp
J135-6 Not Used
J135-7 Not Used
J135-8 Not Used
J135-9 Not Used

J136-1 Key
J136-2 Not Used
J136-3 Yellow/Gray , Col 8 to control panel lamps

J137-1 Yellow-Brown, Col 1 to playfield lamps
J137-2 Yellow-Red, Col 2 to playfield lamps
J137-3 Yellow-Orange, Col 3 to playfield lamps
J137-4 Yellow-Black, Col 4 to playfield lamps
J137-5 Yellow-Green, Col 5 to playfield lamps
J137-6 Yellow-Blue, Col 6 to playfield lamps
J137-7 Yellow-Violet, Col 7 to playfield lamps
J137-8 Key
J137-9 Yellow-Gray, Col 8 to playfield lamps

J138 Not Used

CPU BOARD
A-12742-60017



J201 Ribbon Cable, Data to J602

J202 Ribbon Cable, Data to J903; J506; J601

J203 Not Used

J204 Not Used

J205-1 Orange-Brown, Dir Sw 1, Left Coin to J1-14
J205-2 Orange-Red, Dir Sw 2, Center Coin to J1-13
J205-3 Orange-Black, Dir Sw 3, Right Coin to J1-12
J205-4 Orange-Yellow, Dir Sw 4, 4th Coin J1-17
J205-5 Key
J205-6 Orange-Green, Dir Sw 5, Escape/Service to J1-11
J205-7 Orange-Blue, Dir Sw 6, Down/Volume Down to J1-10
J205-8 Orange-Violet, Dir Sw 7, Up/Volume Up to J1-9
J205-9 Orange-Gray, Dir Sw 8, Enter/Test to J1-8
J205-10 Black, Ground to J1-15
J205-11 Not Used
J205-12 Orange-White, Enable to J1-18

J206-1 Not Used
J206-2 Not Used
J206-3 Green-Orange, Sw Col 3 to playfield opto switches
J206-4 Not Used
J206-5 Not Used
J206-6 Not Used
J206-7 Not Used
J206-8 Key
J206-9 Not Used

J207-1 Green-Brown, Sw Col 1 to control panel switches
J207-2 Green-Red, Sw Col 2 to cabinet/playfield switches
J207-3 Not Used
J207-4 Not Used
J207-5 Not Used
J207-6 Not Used
J207-7 Not Used
J207-8 Key
J207-9 Not Used

J208-1 White-Brown, Sw Row 1 to Opto Ramp Sw. Bd. J1-6
J208-2 White-Red, Sw Row 2 to Opto Ramp Sw. Bd. J1-5
J208-3 White-Orange, Sw Row 3 to Opto Ramp Sw. Bd. J1-4
J208-4 Not Used
J208-5 Not Used
J208-6 Key
J208-7 Not Used
J208-8 Not Used
J208-9 Not Used

J209-1 White-Brown, Sw Row 1 to J1-6
J209-2 White-Red, Sw Row 2 to J1-5
J209-3 White-Orange, Sw Row 3 to J1-4
J209-4 White-Yellow, Sw Row 4 to J1-3
J209-5 White-Green, Sw Row 5 to cabinet switch
J209-6 Key
J209-7 White-Blue, Sw Row 6 to cabinet opto switch
J209-8 White-Violet, Sw Row 7 to cabinet switch
J209-9 White-Gray, Sw Row 8 to cabinet switch

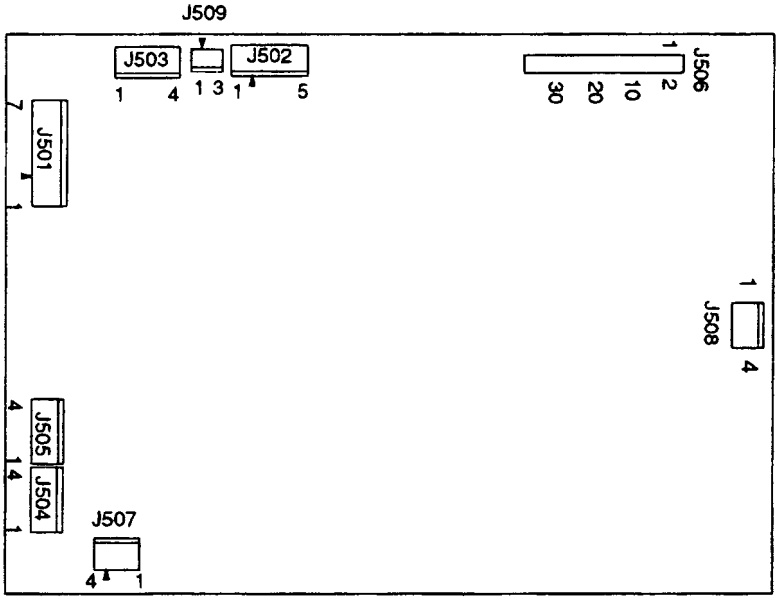
J210-1 Black, Ground from J114-7
J210-2 Key
J210-3 Black, Ground from J114-5
J210-4 Gray, +5VDC from J114-4
J210-5 Gray, +5VDC from J114-3
J210-6 Gray-Green, +12VDC from J114-2
J210-7 Gray-Green, +12VDC from J114-1

J211 Ribbon Cable, Data from J113

J212 Not Used

P.C. Board Legend	
J1-J6	Coin Door Interface Board
J1xx	Power Driver Board
J2xx	CPU Board
J5xx	Audio Board
J6xx	Dot Matrix Controller Board
J9xx	Fliptronic II Board

AUDIO BOARD
A-12738-60017



J501-1 Gray-Green, 20VAC from transformer secondary
J501-2 Gray-Green, loop from J501-1
J501-3 Key
J501-4 Gray, 20VAC from transformer secondary
J501-5 Gray, 20VAC loop from J501-4
J501-6 Gray-White, 20VAC loop from transformer secondary
J501-7 Gray-White, 20VAC loop from J501-6

J502-1 Gray, +5VDC from J114-4
J502-2 Key
J502-3 Gray , +5VDC from J114-3
J502-4 Black, Ground from J114-7
J502-5 Black, Ground from J114-5

J503 Not Used

J504 Not Used

J505-1 Black-Yellow, Signal to speaker
J505-2 Not Used
J505-3 Black, Ground to speaker
J505-4 Not Used

J506 Ribbon Cable, Data to/from J601; J903; J202

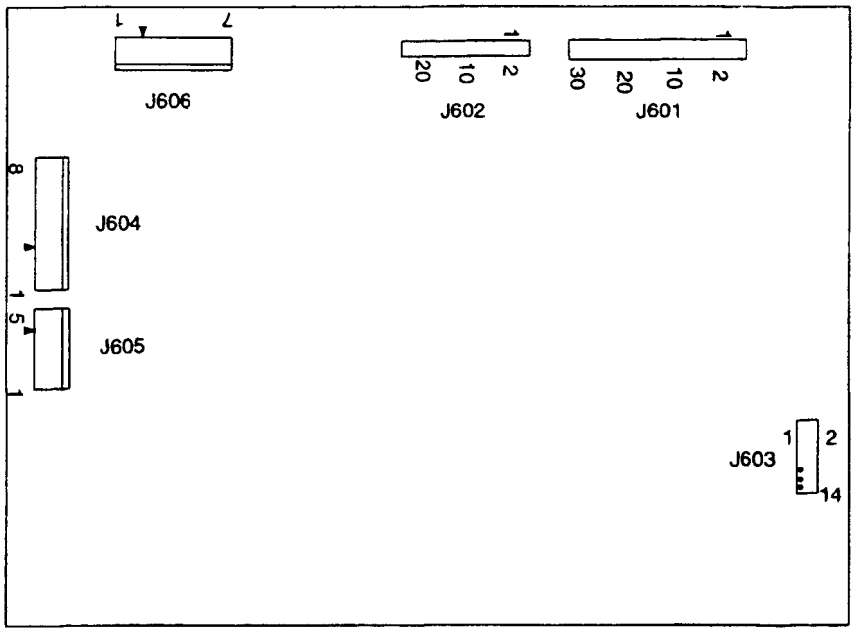
J507 Not Used

J508 Not Used

J509 Not Used

P.C. Board Legend	
J1-J6	Coin Door Interface Board
J1xx	Power Driver Board
J2xx	CPU Board
J5xx	Audio Board
J6xx	Dot Matrix Controller Board
J9xx	Fliptronic II Board

DOT MATRIX CONTROLLER BOARD
A-14039



J601 Ribbon Cable, Data to/from J202; J506

J602 Ribbon Cable, Data from J201

J603 Ribbon Cable ,Data to Dot Matrix Display Driver

J604-1 Orange, -125V to Dot Matrix Display Driver Pin 1
J604-2 Blue, -113V to Dot Matrix Display Driver Pin 2
J604-3 Key
J604-4 Black, Ground to Dot Matrix Display Driver Pin 4
J604-5 Black, Ground to Dot Matrix Display Driver Pin 5
J604-6 Gray , +5V to Dot Matrix Display Driver Pin 6
J604-7 Gray-Yellow, +12V to Dot Matrix Display Driver Pin 7
J604-8 Brown, +62 to Dot Matrix Display Driver Pin 8

J605-1 White, 80VAC from transformer secondary
J605-2 White, 80VAC from transformer secondary
J605-3 Violet, 100VAC from transformer secondary
J605-4 Key
J605-5 Violet, 100VAC from transformer secondary

J606-1 Black, Ground loop from J606-3
J606-2 Key
J606-3 Black, Ground from J117-3
J606-4 Gray, +5V loop from J606-5
J606-5 Gray, +5V from J117-4
J606-6 Gray-Yellow, +12V loop from J606-7
J606-7 Gray-Yellow, +12V from J117-2

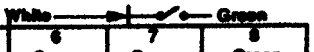
P.C. Board Legend	
J1-J6	Coin Door Interface Board
J1xx	Power Driver Board
J2xx	CPU Board
J5xx	Audio Board
J6xx	Dot Matrix Controller Board
J9xx	Fliptronic II Board

LAMPS



Row \ Column	1 Yellow-Brown J137-1 Q98	2 Yellow-Red J137-2 Q97	3 Yellow-Orange J137-3 Q96	4 Yellow-Black J137-4 Q95	5 Yellow-Green J137-5 Q94	6 Yellow-Blue J137-6 Q93	7 Yellow-Violet J137-7 Q92	8 Yellow-Gray J137-8 Q91
1 Red-Brown J133-1 Q80	MIDDLE RIGHT BACK 1 11	RIGHT BACK 1 21	NOT USED 31	MIDDLE LEFT BACK 1 41	LEFT BACK 1 51	FRONT LINE 1 61	FRONT CIRCLE 8 71	SERVE BALL RIGHT 81
2 Red-Black J133-2 Q89	MIDDLE RIGHT BACK 2 12	RIGHT BACK 2 22	NOT USED 32	MIDDLE LEFT BACK 2 42	LEFT BACK 2 52	FRONT LINE 2 62	FRONT CIRCLE 7 72	SELECT GAME 82
3 Red-Orange J133-4 Q88	MIDDLE RIGHT BACK 3 13	RIGHT BACK 3 23	NOT USED 33	MIDDLE LEFT BACK 3 43	LEFT BACK 3 53	FRONT LINE 3 63	FRONT CIRCLE 6 73	SERVE BALL LEFT 83
4 Red-Yellow J133-5 Q87	MIDDLE RIGHT BACK 4 14	RIGHT BACK 4 24	NOT USED 34	MIDDLE LEFT BACK 4 44	LEFT BACK 4 54	FRONT LINE 4 64	FRONT CIRCLE 5 74	CREDIT BUTTON 84
5 Red-Green J133-6 Q86	MIDDLE RIGHT BACK 5 15	RIGHT BACK 5 25	LEFT BACK 9 35	MIDDLE LEFT BACK 5 45	LEFT BACK 5 55	FRONT LINE 5 65	FRONT CIRCLE 4 75	MIDDLE RIGHT BACK 9 85
6 Red-Blue J133-7 Q85	MIDDLE RIGHT BACK 6 16	RIGHT BACK 6 26	LEFT BACK 10 36	MIDDLE LEFT BACK 6 46	LEFT BACK 6 56	FRONT LINE 6 66	FRONT CIRCLE 3 76	MIDDLE RIGHT BACK 10 86
7 Red-Violet J133-8 Q84	MIDDLE RIGHT BACK 7 17	RIGHT BACK 7 27	MIDDLE LEFT BACK 9 37	MIDDLE LEFT BACK 7 47	LEFT BACK 7 57	FRONT LINE 7 67	FRONT CIRCLE 2 77	RIGHT BACK 9 87
8 Red-Gray J133-9 Q83	MIDDLE RIGHT BACK 8 18	RIGHT BACK 8 28	MIDDLE LEFT BACK 10 38	MIDDLE LEFT BACK 8 48	LEFT BACK 8 58	NOT USED 68	FRONT CIRCLE 1 78	RIGHT BACK 10 88

SWITCHES



Dedicated Grounded Switches

Orange-Brown (1) J206-1
Left Coin Chute D1

Orange-Red (2) J206-2
Center Coin Chute D2

Orange-Black (3) J206-3
Right Coin Chute D3

Orange-Yellow (4) J206-4
4th Coin Chute D4

Orange-Green (5) J206-5
Normal Function: Service Credits
Test Function: Escape D5

Orange-Blue (6) J206-7
Normal Function: Volume Down
Test Function: Down D6

Orange-Violet (7) J206-8
Normal Function: Volume Up
Test Function: Up D7

Orange-Gray (8) J206-9
Normal Function: Begin Test
Test Function: Enter D8

Row \ Column	1 Green-Brown J207-1 U20-18	2 Green-Red J207-2 U20-17	3 Green-Orange J206-3 U20-16	4 Green-Yellow J206-4 U20-15	5 Green-Black J206-5 U20-14	6 Green-Blue J206-6 U20-13	7 Green-Violet J206-7 U20-12	8 Green-Gray J206-9 U20-11
1 White-Brown J208-1 U18-11	NOT USED 11	SLAM TILT 21	BASKET 31	NOT USED 41	NOT USED 51	NOT USED 61	NOT USED 71	NOT USED 81
2 White-Red J208-2 U18-9	NOT USED 12	COIN DOOR CLOSED 22	BASKET MOTOR TOP 32	NOT USED 42	NOT USED 52	NOT USED 62	NOT USED 72	NOT USED 82
3 White-Orange J208-3 U18-5	START BUTTON 13	TICKET OPTO. 23	BASKET MOTOR BOTTOM 33	NOT USED 43	NOT USED 53	NOT USED 63	NOT USED 73	NOT USED 83
4 White-Yellow J208-4 U18-7	NOT USED 14	ALWAYS CLOSED 24	NOT USED 34	NOT USED 44	NOT USED 54	NOT USED 64	NOT USED 74	NOT USED 84
5 White-Green J208-5 U19-11	SERVE BALL LEFT 15	NOT USED 25	NOT USED 35	NOT USED 45	NOT USED 55	NOT USED 65	NOT USED 75	NOT USED 85
6 White-Blue J208-7 U19-9	SERVE BALL RIGHT 16	BALL IN SHOOTER 26	NOT USED 36	NOT USED 46	NOT USED 56	NOT USED 66	NOT USED 76	NOT USED 86
7 White-Violet J208-8 U19-5	SELECT GAME 17	DISPENSER LOW 27	NOT USED 37	NOT USED 47	NOT USED 57	NOT USED 67	NOT USED 77	NOT USED 87
8 White-Gray J208-9 U19-7	NOT USED 18	DISPENSER UNJAM 28	NOT USED 38	NOT USED 48	NOT USED 58	NOT USED 68	NOT USED 78	NOT USED 88

WARNINGS & NOTICES

WARNING

FOR SAFETY AND RELIABILITY, substitute parts and equipment modifications are not recommended. Use of Non-MIDWAY parts or modifications of game circuitry, may adversely affect game play, or may cause injuries.

SUBSTITUTE PART OR EQUIPMENT MODIFICATIONS may void FCC Type Acceptance.

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Notice

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WARNING

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generated, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RF Interference Notice

CABLE HARNESS PLACEMENTS and ground strap routing on this game have been designed to keep RF radiation and conduction within levels accepted by the FCC Rules.

TO MAINTAIN THESE LEVELS, reposition harnesses and reconnect ground straps to their original placements, if they become disconnected during maintenance.

FCC STICKER. Check the back of your game to verify that an FCC-certification sticker was attached to your game at the factory. All Games that leave the MIDWAY plant have been tested and found to comply with FCC Rules. Because the sticker is proof of this fact, legal repercussions to the owner and distributor may result, if the sticker is missing. If you receive a game, manufactured after December 1982, that has no FCC sticker, call MIDWAY for advice or write us a note on your Game Registration Card. Be sure that the card bears your game's serial number.

FOR SERVICE...
CALL your authorized
MIDWAY Distributor

MIDWAY MANUFACTURING COMPANY
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