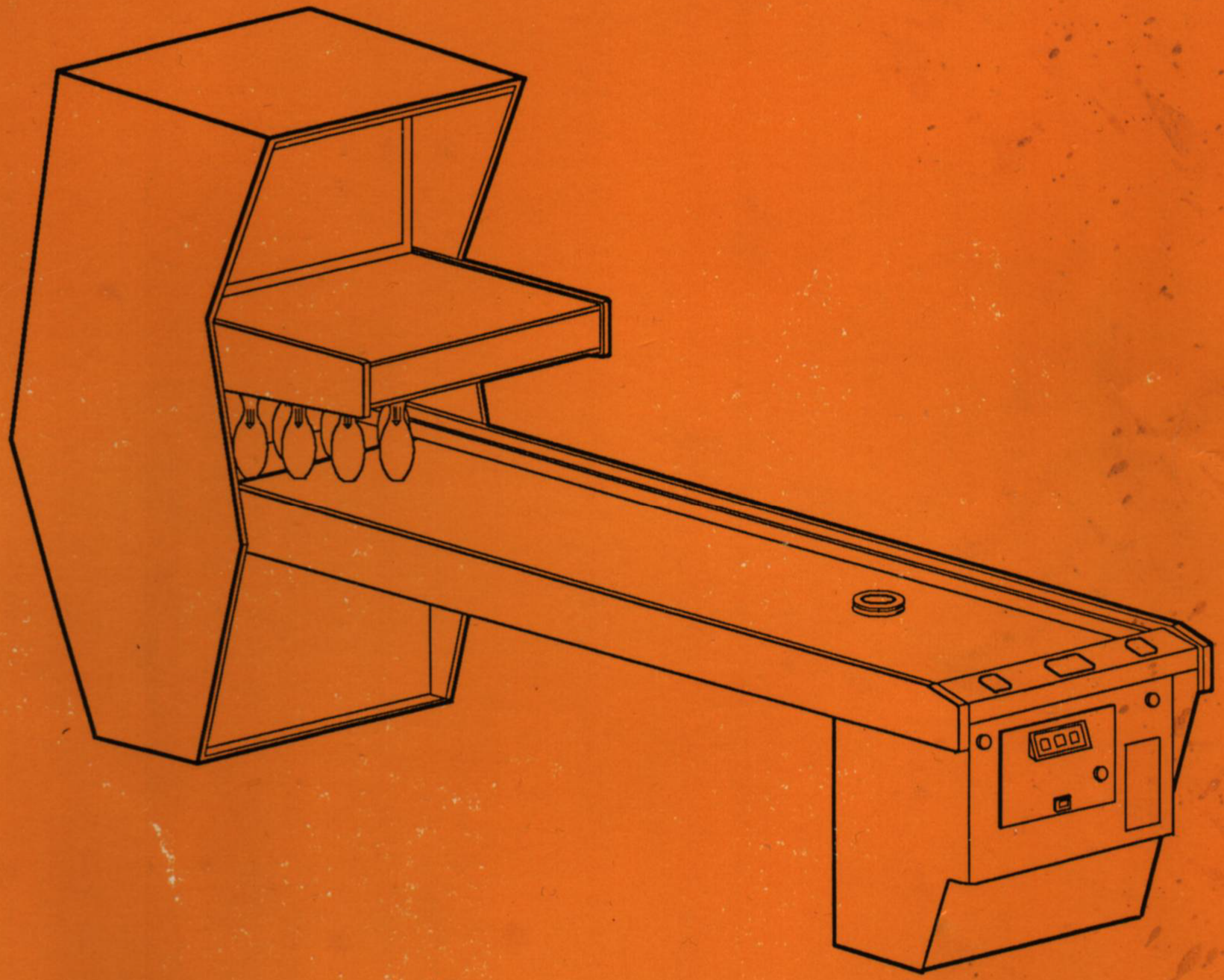
16-10002-101
September, 1991

STRIKE MASTER™



OPERATIONS MANUAL

Including:

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

WILLIAMS ELECTRONIC GAMES, INC.
3401 N. California Avenue, Chicago, Il 60618

Game Selection/Scoring

Five different games are available. At the start of a game, press the button on the right of the coin door to select the type of scoring desired.

1. REGULATION.

   Scoring is identical to official bowling.

2. STRIKE MASTER

   Player scoring is as follows:

Frame	Strike	Spare	Blow
1 & 2	4000	1500	Pin Count
3 & 4	6000	2500	Pin Count
5, 6 & 7	8000	4500	Pin Count
8, 9 & 10	10,000	6500	Pin Count

3. TRIPLE STRIKE

   Player is given 3 shots per frame. A Strike in any shot awards 300 points. A Spare in 2 shots awards 200 points. A Spare in 3 shots awards 100 points. A Blow scores total pin count.

4. STRIKE 90

   Player receives 90 points for a Strike, and keeps playing as long as Strikes continue. A Spare scores 60 points. A Blow scores downed pin count after second shot.

5. FLASH.

   Player receives higher value of Flashing Score lights for a Strike. A Spare scores lower value of Flashing Score lights. A Blow scores total down pin count after second shot.

STRIKE MASTER

Williams®
ELECTRONICS GAMES, INC.
3401 N. California Avenue
Chicago, IL 60618

16-10002-2

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

Solenoid/Flasher Table

Sol. No.	Function	Solenoid Type	Wire Color	Connection	Driver Trnstr	Solenoid Part Number Flashlamp Type
01	Pin 1	High Power	Vio-Brn	J130-1	Q82	B-31-2500
02	Pin 2	High Power	Vio-Red	J130-2	Q80	B-31-2500
03	Pin 3	High Power	Vio-Orn	J130-4	Q78	B-31-2500
04	Pin 4	High Power	Vio-Yel	J130-5	Q76	B-31-2500
05	Pin 5	High Power	Vio-Grn	J130-6	Q64	B-31-2500
06	Pin 6	High Power	Vio-Blu	J130-7	Q66	B-31-2500
07	Pin 7	High Power	Vio-Blk	J130-8	Q68	B-31-2500
08	Pin 8	High Power	Vio-Gry	J130-9	Q70	B-31-2500
09	Pin 9	Low Power	Brn-Blk	J129-1	Q58	B-31-2500
10	Pin 10	Low Power	Brn-Red	J129-2	Q56	B-31-2500
11	Pin Reset Motor	Low Power	Brn-Org	J129-4	Q54	14-7950 48V 60HZ
12	Not Used	Low Power	Brn-Yel		Q52	
13	Not Used	Low Power	Brn-Grn		Q50	
14	Not Used	Low Power	Brn-Blu		Q48	
15	Not Used	Low Power	Brn-Vio		Q46	
16	Not Used	Low Power	Brn-Gry		Q44	
17	Flasher 1	Flasher	Blk-Brn	J125-1	Q42	#906
18	Flasher 2	Flasher	Blk-Red	J125-2	Q40	#906
19	Flasher 3	Flasher	Blk-Org	J125-3	Q38	#906
20	Flasher 4	Flasher	Blk-Yel	J125-5	Q36	#906
21	Flasher 5	Flasher	Blu-Grn	J125-6	Q28	#906 (2)
22	Flasher 6	Flasher	Blu-Blk	J125-7	Q30	#906 (2)
23	Flasher 7	Low Power	Blu-Vio	J125-8	Q34	#906 (2)
24	Flasher 8	Low Power	Blu-Gry	J125-9	Q32	#906 (2)
25	Flasher 9	Special	Blu-Brn	J123-1	Q26	#906 (3)
26	Not Used	Special	Blu-Red		Q24	
27	Ticket Motor	Special	Blu-Org	J124-3	Q22	See Deltronic Tkt Kit
28	Low Ticket Lamp	Special	Blu-Yel	J124-5	Q20	See Deltronic Tkt Kit
	General Illumination Circuits					
01	Illumination String 1	G.I.	Brown	J120-1	Q18	#555
02	Illumination String 2	G.I.	Orange	J120-2	Q10	#555
03	Illumination String 3	G.I.	Yellow	J120-3	Q14	#555
04	Not Used	G.I.	Green		Q16	
05	Illumination String 5	G.I.	Violet	J121-6	Q12	#555

Table of Contents

STRIKE MASTER

Section 1

Operation, Adjustment and Testing Information

ROM Summary

IC	TYPE	LOCATION	BOARD	PART NUMBER
Game ROM 1	27020	U6	CPU	A-5343-10002-1
Sound ROM 2	27010	U15	Audio	A-5343-10002-2
Sound ROM 3	27010	U18	Audio	A-5343-10002-3
Sound ROM 4	27010	U14	Audio	A-5343-10002-4

NOTICE

To order a replacement ROM from your authorized MIDWAY MANUFACTURING CO. distributor, specify:

(1) Part number (if available).
(2) ROM label color.
(3) ROM level (number) on the label.
(4) The game in which the ROM is used.

⚠ 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.

LOCATION REQUIREMENTS:

Strike Master (Full Size)

Length:	100 3/4"	Width:	27 1/8"
Height:	71 3/8"	Weight:	440 Lbs (crated)

Strike Master Jr.

Length:	76 3/4	Width:	27 1/8"
Height:	71 3/8"	Weight:	380(crated)

ASSEMBLY INSTRUCTIONS

1. Remove all cartons, parts and other items from shipping container.

2. Unpack the carton labelled "Coin Box". Remove the parts from inside the coin door vault, and set them aside.

3. Place coin door vault upside down on floor with coin door facing you and open the coin door.

4. Place the front legs with their smooth edge toward the coin door side of the coin door vault. Align the holes on the inside of the legs with holes on the inside of the coin door vault.

5. Attach the legs with the four bolts (provided in the cash box).

6. Remove the back leg assembly from its carton. Stand it upright several feet forward of its desired location (for access during installation). Block the back leg assembly wheels to prevent accidental movement.

7. Carefully remove playfield frame assembly from shipping carton, and place pin panel end of playfield frame assembly on back leg assembly. Align the holes and bolt the back leg assembly to the playfield frame assembly.

CAUTION

Be careful not to pinch wires between playfield frame assembly and backleg assembly.

8. Place a support (chair or stool) under front end of playfield frame assembly.

9. Locate the volume control cable, the switches and lamps cable, and the ground braid. Place these cables in the "U" notch provided, making sure they are not pinched.

10. Align the two holes on each side of the outer edge of the front legs with the mounting holes in the playfield frame assembly, and bolt the legs to the playfield frame assembly.

11. Attach the coin box vault to the playfield frame assembly, using the two bolts provided.

12. Mate the two cable connectors, and attach the ground braid under the wing nut inside the coin door vault.

13. Release cables from shipping retaining rubber in rear of pin panel. Place them through the hole at the top rear of the playfield frame assembly.

14. Remove backbox from its carton. Remove backglass and set aside.

15. Carefully set the backbox on top of the playfield frame assembly (above the pin panel), and place the cables from the playfield frame assembly through the bottom of the backbox.

16. Loosen the shipping screws on the insert board to gain access to the boards and connectors.

17. Mate the connectors (do not use excessive force) between the playfield frame assembly and the backbox. Ensure that the wire colors match from the male to the female connectors.

18. Position the backbox to align the mounting holes, then bolt it to the top of the playfield frame.

19. Attach the five ground braids under the wing nut near the speaker. (Ground braids come from: coin door, playfield frame assembly, speaker, pin panel, and backbox.

20. Install back cover (wing nuts facing in), then secure the cover by tightening the nuts, reaching from inside the back box.

21. Check for properly mated connectors, then close the insert board and install the backglass.

22. Move the game into the desired location; level the game (side-to-side), using the front leg levelers.

CONTROL LOCATIONS

Cabinet Switches

The ON-OFF SWITCH is located on the back left side of the front leg.assembly.
The START BUTTON is the pushbutton to the left of the coin door. Press the start button to begin a game or during the diagnostic mode, for HELP.

Coin Door Switches

The operator controls all game adjustments, obtains bookkeeping information, and diagnoses problems, using only four pushbutton switches mounted on the inside of the coin door. The Coin Door Switches have two modes of operation Normal Function and Test Function.

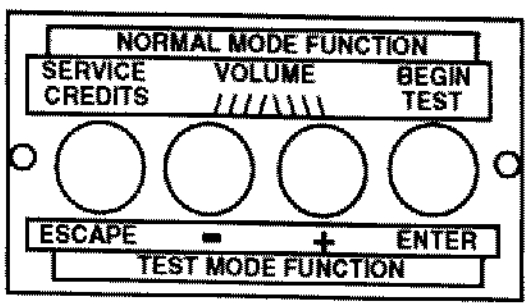
Normal Function

The SERVICE CREDITS switch puts credits on the game that are not included in the game audits.
The VOLUME UP switch raises the sound level of the game. Press and hold the button until the desired level is reached.
The VOLUME DOWN switch 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 switch starts the Menu System Operation and changes the Coin Door Switches from Normal Function to Test Function.

Test Function

The ESCAPE switch allows you to get out of a menu selection or return to the Attract Mode.
The UP switch allows you to cycle forward through the menu selections or adjustment choices.
The DOWN switch allows you to cycle backward through the menu selections or adjustment choices.
The ENTER switch allows you to get into a menu selection or lock in an adjustment choice.

Coin Door Switches



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, using the On-Off Switch. 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 (playfield and backbox lamps flashing, sounds heard, etc., if the operator does not change the Factory Setting).

> ***Note:*** After the game has been on location for a period of time, the Start-Up Tests may contain messages concerning game problems. The section entitled 'Problem Analysis Messages' contains more detail concerning messages displayed at each game turn-on.

Open the coin door and press the Begin Test Switch. The display shows the game name, game number and game 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:

STRIKE MASTER	**Sound Rev. P-1**
10002 Rev. P-1	**Sy.132 6/25/91**

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. Successful completion of the tests in the Test Menu routine will show the game is ready to begin earning your investment return.

ATTRACT MODE*. After completing the Test Menu routine, press the Escape button three times to enter the Attract Mode. During the Attract Mode, playfield and backbox lamps blink. The display exhibits a series of messages informing the player concerning:

A. Recent highest scores*
B. A "custom message"

These (or similar) displays reappear occasionally, accompanied by sounds and music, until a player initiates game play by inserting a coin, or when credits are available, pressing the Start button.

* - Operator-adjustable feature.

CREDIT POSTING. Insert coin(s). A sound is heard for each coin. The display will show 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. A startup sound plays. The number of credits shown in the display decreases by one. The display flashes 00 (until the first playfield switch is actuated), and shows ball 1. Additional players may enter the game by pressing the Start button once for each player, before the end of play on the frame.

TILTS. Actuating the Slam Tilt switch on the inside of the front legbox assembly ends the current game and proceeds to the Game Over Mode.

END OF GAME (STRIKE MASTER ONLY). A random digit set* appears in the display. Match, high score and game over sounds are made, as appropriate.

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

* - Operator-adjustable feature.

GAME PLAY

GAME SELECTION. If the player wants to play a game other than REGULATION, before beginning play, the player must press the Game/Scoring Selection pushbutton switch (the upper right pushbutton on the front legbox assembly) to select the desired game and scoring from among the five games available.

REGULATION

Scoring is identical to official bowling. This is the Factory Selection.

STRIKE MASTER

Player scoring is as follows:

	Strike	Spare	Blow
Frames 1 & 2	4000	1500	Pin Count
Frames 3 & 4	6000	2500	Pin Count
Frames 5, 6 & 7	8000	4500	Pin Count
Frames 8, 9 & 10	10,000	6500	Pin Count

TRIPLE STRIKE

Player is given 3 shots per frame. A Strike in any shot awards 300 points. A Spare in 2 shots awards 200 points. A Spare in 3 shots awards 100 points. A Blow scores total pin count.

STRIKE-90

Player receives 90 points for a Strike, and plays as long as Strikes continue. A Spare scores 60 points. A Blow scores total downed pin count after second shot.

FLASH

Player receives higher value of flashing lights for Strike. A Spare scores lower value of flashing lights. A Blow scores total downed pin count after second shot.

GENERAL TICKET INFORMATION

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.

To Order a Ticket Dispenser

You will need a "dispenser interface kit" from your distributor, and you will need to order a dispenser. The "Deltronic Ticket dispenser" Model DL-1275 with outside mount case from Deltronic Labs Inc., Lansdale, Pennsylvania 19446, (215) 362-7159 is compatible.

When & How to Dispense Tickets:

Tickets can be programmed to be dispensed during the game or at the end of a game (see the "Dispense tickets" function). There is also a function (see "SERVICE PERSON ON LOCATION") to determine how tickets are dispensed and how problems in dispensing are resolved. In any case, if there is a jam in the dispenser or if it becomes empty, the "optional ticket dispenser low" lamp will blink (see "ticket jams" below).

Ticket Jams

If a ticket should jam or the dispenser become empty, the ticket dispenser is turned off and the "optional ticket dispenser low" lamp will blink. After the operator corrects the problem, he or she then may reload the dispenser so that the next ticket is just showing through the dispenser's exit hole, then press the "SW 1 ticket unjammed" button in the dispenser. The optional blinking lamp will stop flashing and the game will then continue to dispense the remaining tickets. Note, if you wish to make the game stop dispensing the remaining tickets, just turn the game OFF then ON.

The "Optional Ticket Dispenser Low" Lamp

It should be normally OFF. If it is ON, then the ticket dispenser is low on tickets. Reload the dispenser to turn off the "ticket dispenser low" lamp. If the lamp is BLINKING, the dispenser is either empty or jammed (see ticket jams).

Moving Tickets In The Ticket Dispenser

The Deltronic dispenser has an easy method of releasing the tension on the tickets. Squeeze the 2 top spacer blocks together. While squeezing, you can easily move the tickets. This allows you to load tickets into the dispenser, remove tickets from the dispenser, and also, remove untorn jammed tickets.

Replace pages 1.8 and 1.9 with the updated ticket information.

GENERAL TICKET INFORMATION

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.

To Order a Ticket Dispenser

You will need a "dispenser interface kit" from your distributor, and you will need to order a dispenser. The "Deltronic Ticket dispenser" Model DL-1275 with outside mount case from Deltronic Labs Inc., Lansdale, Pennsylvania 19446, (215) 362-7159 is compatible.

Ticket Jams

If a ticket should jam or the dispenser become empty, the ticket dispenser is turned off and the " ticket dispenser low" lamp will blink. After the operator corrects the problem, he or she then may reload the dispenser so that the next ticket is just showing through the dispenser's exit hole, then press the "SW 1 ticket unjammed" button in the dispenser. The blinking lamp will stop flashing and the game will then continue to dispense the remaining tickets. Note, if you wish to make the game stop dispensing the remaining tickets, just turn the game OFF then ON.

The "Ticket Dispenser Low" Lamp

It should be normally OFF. If it is ON, then the ticket dispenser is low on tickets. Reload the dispenser to turn off the "ticket dispenser low" lamp. If the lamp is BLINKING, the dispenser is either empty or jammed (see ticket jams).

Moving Tickets In The Ticket Dispenser

The Deltronic dispenser has an easy method of releasing the tension on the tickets. Squeeze the 2 top spacer blocks together. While squeezing, you can easily move the tickets. This allows you to load tickets into the dispenser, remove tickets from the dispenser, and also, remove untorn jammed tickets.

The "SW 1 Ticket Unjammed" Button in the Ticket Dispenser

Use this switch when a jam or empty dispenser condition occurs, (it tells the game when to continue dispensing tickets, see "ticket jams" above). This button will also manually dispense 1 ticket. No audits are effected.

After proper installation of all ticket dispenser hardware as per instructions, the following menu selections need to be adjusted:

U.9 Presets

U.9	09	Install tickets	

A.1 Standard Adjustments

A.1	14	Replay Award	Ticket

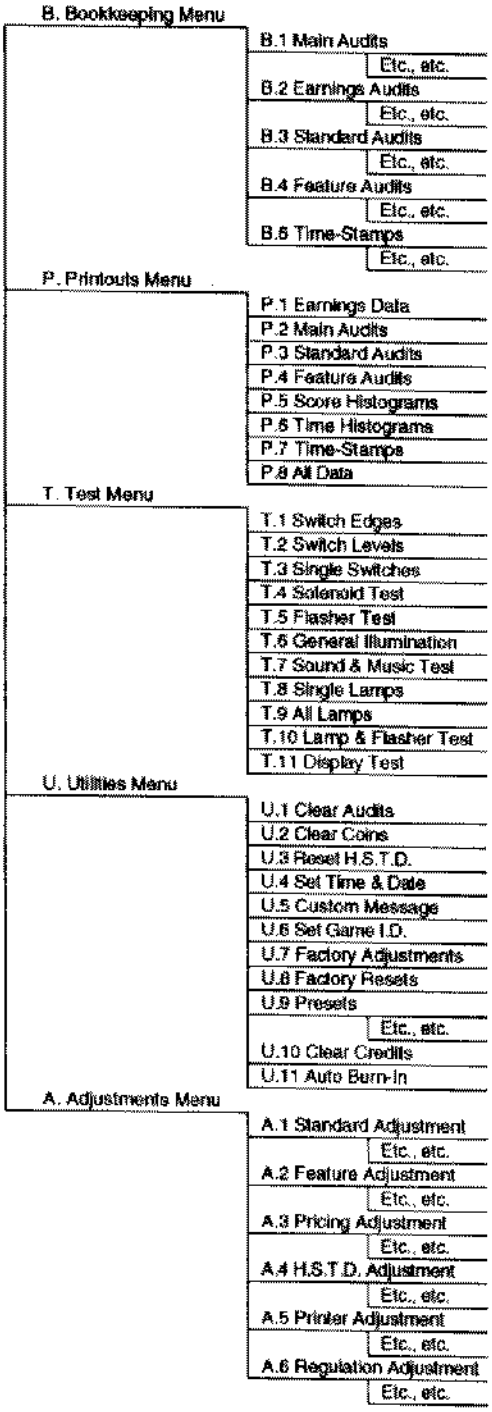
A.4 H.S.T.D. Adjustments

A.4	05	H.S.T.D. 1 Awards	1-10 (Tickets)
A.4	06	H.S.T.D. 2 Awards	1-10 (Tickets)
A.4	07	H.S.T.D. 3 Awards	1-10 (Tickets)
A.4	08	H.S.T.D. 4 Awards	1-10 (Tickets)

A.6 Regulation Adjustments

A.6	01	Ticket Level 1
A.6	01	Ticket Level 2
A.6	01	Ticket Level 3
A.6	01	Ticket Level 4
A.6	01	Ticket Level 5
A.6	01	Ticket Level 6
A.6	01	Ticket Level 7
A.6	01	Ticket Level 8
A.6	01	Award Level 1
A.6	01	Award Level 2
A.6	01	Award Level 3
A.6	01	Award Level 4
A.6	01	Award Level 5
A.6	01	Award Level 6
A.6	01	Award Level 7
A.6	01	Award Level 8

Menu Table



Press Escape
To move out off 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.

Strike Master 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. To return to the Attract Mode while viewing the Main Menu, or to return to a previous menu selection, press the Escape button. Press the Start button for HELP at any time.

MAIN MENU

B. Bookkeeping
P. Printouts (optional board required)
T. Tests
U. Utilities
A. Adjustments

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 the desired Bookkeeping group when it appears on the display.

B. BOOKKEEPING MENU

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

Once you have entered the desired Bookkeeping Group, press the Up or Down button to cycle through the available audits in that group. Audits cannot be set, they can only be cleared by using U1 and U2 from the Utilities Menu.

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

Add Main Audit B.1 07 and 08 (page 1.12).

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	05	Average Game Time	00
B.1	06	Total Plays	00
B.1	07	Replay Awards	00
B.1	08	Percent Replays	00

Add Standard Audits B.3 05, 06, 11, and 12. Omit audit B.3 21 & 24. Renumber audits B.3 35 & 36, to 33 & 34. Renumber audits B.3 29 thru 34 as follows, from 36 thru 40 (page 1.12).

B.3 Standard Audits

B.3	01	Games Started	00
B.3	02	Total Plays•	00
B.3	03	Total Free Play	00
B.3	04	Free Play Percent	00
B.3	05	Replay Awards	00
B.3	06	Percent Replays	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	22	Minutes On	00
B.3	33	H.S.T.D. Reset Count	00
B.3	34	Burn-in Cycles	00
B.3	36	1 Player Games	00
B.3	37	2 Player Games	00
B.3	38	3 Player Games	00
B.3	39	4 Player Games	00
B.3	40	5 Player Games	00
B.3	41	6 Player Games	00

Add Feature Audits B.4 06 thru 13. Renumber audits 06 thru 09, as 14 thru 17 (page 1.13).

B.4 Feature Audits

B.4	01	Regulation Plays	00
B.4	02	Strike Master Plays	00
B.4	03	Triple Strike Plays	00
B.4	04	Strike 90 Plays	00
B.4	05	Flash Plays	00
B.4	06	Award Level 1	00
B.4	07	Award Level 2	00
B.4	08	Award Level 3	00
B.4	09	Award Level 4	00
B.4	10	Award Level 5	00
B.4	11	Award Level 6	00
B.4	12	Award Level 7	00
B.4	13	Award Level 8	00
B.4	14	Strike Master Match 500 Points	00
B.4	15	Strike Master Match 1000 Points	00
B.4	16	Strike Master Match 5000 Points	00
B.4	17	Strike Master Match 10,000 Points	00

Add Standard Adjustments A.1 14 and 21. Add the factory setting on adjustment 18 (page 1.22).

A.1 14 Replay Award

For either Auto% Replay or Fixed Replay, the operator can choose the form of the award automatically provided when the player exceeds any replay level. The choices are:

Audit - Reaching each Replay level awards nothing to the player; it does increase the entry value of the Audit Item(s) maintaining a tally of these awards. Audit is factory setting.

Ticket - Reaching each Replay level awards a ticket.

A.1 18 Maximum Ticket/Player

The operator can choose the amount of Tickets each player can earn. Factory setting is 25. The range of this setting is 00 to 100.

A.1 21 Language

The operator chooses what language the game uses. The choices are, English, French, or German.

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 when that group appears in the displays.

P. PRINTOUTS MENU

(optional board required)

P.1	**Earnings Data**
P.2	**Main Audits**
P.3	**Standard Audits**
P.4	**Feature Audits**
P.5	**Score Histograms**
P.6	**Time Histograms**
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 the message "Waiting for Printer" appears in the displays. Note: Set the print specification from the Adjustment Menu, A.5 Printer Adjustments.

Press the Escape button to return to the Printouts Menu. Then, either press the Up or Down button to return to a previous Printouts Menu Group, or press the Escape button again to return to the Main Menu. Once in the Main Menu press the Up button to advance to the next menu selection, the Test Menu, or press the Down button to return to a previous Main Menu selection.

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 the desired test when that test appears in the displays.

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.1 Switch Edges

For all switches, the number on the left indicates the column, the number on the right indicates the row. Example- Switch 23 means 2nd column, 3rd row.

To activate the Switch Edges Test, from the Test Menu, press the Enter button. The name and number of each switch that is pressed is shown in the displays. If any other switch, or no switch at all is indicated, the system has detected a problem with the switch circuit.

Press Escape to return to the Test Menu. Press the Up button to display the next test, (or the Down button to return to a previous test). Press the Enter button to activate that test.

T.2 Switch Levels

Once the test name is shown under the Test Menu, press the Enter button. The name and number of each switch that is activated is shown in the displays. This test automatically cycles through all switches that are detected closed. Current switch is indicated by a filled square.

Press the Escape button to return to the Test Menu. Press the Up button to display the next test, (or the Down button to return to a previous test). Press the Enter button to activate that test.

T.3 Single Switches

Once the test name is shown under the Test Menu, press the Enter button. 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. During the Single Switch Test, a flashing cross indicates your location in the matrix, a square indicates a closed switch, and a dot indicates an open switch. Press the Start button to obtain wire color, connector, and fuse information of any switch when that switch is displayed.

Press the Escape button to return to the Test Menu. Press the Up button to display the next test, (or the Down button to return to a previous test). Press the Enter button to activate that test.

T.4 Solenoid Test

Once the test name is shown under the Test Menu, press the Enter button. The Solenoid Test has three modes, Repeat, Stop, and Running. Only one solenoid should turn On at a time. The system has detected a problem if, more then one solenoid turns On, a solenoid comes On and stays On, or no solenoid turns On during the Repeat or Running test modes. Press the Start button to see the wire color, driver number, connector and, fuse information of any coil, when that coil is displayed.

Repeat - This test allows you to stop and pulse a single coil or flashlamp. Once you have entered the Solenoid Test, coil 1 shows in the displays and the corresponding solenoid activates. Press the Up or Down button to cycle through the solenoids, one at a time, manually. The same solenoid pulses until you press the Up or Down button to move to the next one. Either press the Escape button to return to the Test Menu, or press the Enter button to move to the next test mode.

Stop - This test allows you to stop the Solenoid Test at any point. Press Enter during the Repeat test mode and the Solenoid Test stops. There should not be any solenoids activated while the test is stopped. Either press the Escape button to return to the Test Menu, or the Enter button to move to the next test mode.

Running - This test allows you to cycle through the solenoids automatically. Press the Enter button during the Stop test mode. The displays show you the name and number of the solenoid currently being pulsed.

Either press the Enter button to return to the Repeat test mode, or press the Escape button to return to the Test Menu. Once in the Test Menu press, the Up button to display the next test, (or the Down button to return to a previous test). Press the Enter button to activate that test.

T.5 Flasher Test

Once the test name is shown under the Test Menu, press the Enter button. This test allows you to test the flashlamp part of the solenoid circuit exclusively. This test, like the Solenoid Test, has three test modes Repeat, Stop, and Running. During this test, only one flashlamp circuit should turn On at a time. If, more then one flashlamp circuit turns On, or stays On, or no flashlamp circuit turns On at all during the Repeat or Running test modes the system has detected a problem. Press the Start button to see the wire color, driver number, connector, and fuse information of any flashlamp circuit when that circuit appears in the displays.

Repeat - This test allows you to stop and pulse a single flashlamp. Once you have entered the Flasher Test the name and number of the first flashlamp circuit shows in the displays and the corresponding bulb(s) flashes. Press the Up or Down button to cycle through all of the flashlamps circuits one at a time, manually. The same flashlamp circuit pulses until you press the Up or Down button to move to the next one. Either, press the Escape button to return to the Test Menu, or press the Enter button to advance to the next test mode.

Stop - This test allow you to stop the Flasher Test at any time. Press the Enter button during the Repeat test mode. The Flasher Test stops. There should not be any flashlamp circuit turned On during this test mode. Either press the Escape button to return to the Test Menu, or press the Enter button to advance to the next test mode.

Running - This test allows you to cycle through the flashlamps automatically. Press the Enter button during the Stop test mode. The displays show you the name and number of the flashlamp currently being pulsed, and the corresponding bulb(s) flashes.

Either press the Enter button to return to the Repeat test mode or, press the Escape button to return to the Test Menu. Once in the Test Menu, press the Up button to display the next test, (or the Down button to return to a previous test). Press the Enter button to activate that test.

T.6 General Illumination

Once the test name is shown under the Test Menu, press the Enter button. This test allows you to check all of the General Illumination circuits. There are two modes of operation, Stop and Run. To obtain wire color, driver number, connector, and fuse information, press the Start button when the desired General Illumination circuit appears in the displays.

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 shows in the displays while the corresponding lamps lights. 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.

Either press the Enter button to return to Stop test mode, or the Escape button to return to the Test Menu. Once in the Test Menu press the Up button to advance to the next test, (or the Down button to return to a previous test). Press the Enter button to activate that test.

T.7 Sound and Music Test

Once the test name is shown under the Test Menu, press the Enter button. The Sound and Music Test allows you to check the audio circuits. This test has three modes for testing the sound and music circuits, Running, Repeat and Stop.

Running - This test steps through a sequence of sounds and music. Pressing the Up or Down button during this portion of the Sound and Music test allows you to advance to a particular sound or tune without having to wait for the program to play all the sounds available in the test. For each name and number that appears in the displays a sound or tune should be heard. Any other results indicates the system has detected a problem.

Repeat - Press the Enter button at any time during the Running test mode to cause the program to stop and repeat a particular sound or 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 test mode to stop this test altogether. Nothing should be heard. Any other results indicates the system has detected a problem.

Use the Enter button to return to the Running test mode, or the Escape button to return to the Test Menu. Once in the Test Menu press the Up button to display the next test, (or the Down button to return to a previous test) . Press the Enter button to activate that test.

T.8 Single Lamp Test

For all lamps, the number on the left indicates the column, the number on the right indicates the row. Example- Lamp 23 means 2nd column, 3rd row.

Once the test name is shown under the Test Menu, press the Enter button. This test allows you to test 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 displays the corresponding lamp should light. Any other results indicates the system has detected a problem. Press the Start button to obtain wire color, connector, and fuse information when the desired lamp is lit.

Press the Escape button to return to the Test Menu. Press the Up button to display the next test, (or the Down button to return to a previous test). Press the Enter button to activate that test.

T.9 All Lamps Test

Once the test name is shown under the Test Menu, press the Enter button. This test causes all the controlled lamps to flash at the same time. Every controlled lamp should flash. Any other results indicates the system has detected a problem.

Press the Escape button to return to the Test Menu. Press the Up button to display the next test, (or the Down button to return to a previous test). Press the Enter button to activate that test.

T.10 Lamp and Flasher Test

Once the test name is shown under the Test Menu, press the Enter button. 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.

Press the Escape button to return to the Test Menu. Press the Up button to display the next test, (or the Down button to return to a previous test). Press the Enter button to activate that test.

T.11 Display Test

Once the test name is shown under the Test Menu, press the Enter button. This Test automatically turns On and Off every dot in the Dot Matrix Display. A series of patterns appear in sequence. It starts with one line, turned On, moving across the screen vertically, then horizontally. The screen inverses and one line, turned Off, moves across the screen vertically, then horizontally. The second pattern is a series of lines, turned On, moving across the screen diagonally. The screen inverses and there is a series of lines, turned Off, moving across the screen diagonally. The third pattern is gridlines turned On, then turned Off. The last pattern is a box forming an outline of dots around the matrix that are turned On. After the box outline the test repeats itself.

Press the Escape button to return to the Test Menu. Then, either press the Up or Down button to return to a previous Test, or press the Escape button again to return to the Main Menu. Once in the Main Menu, press the Up button to move to the next menu selection, the Utilities Menu, or press the Down button to return to a previous Main Menu selection.

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 the desired Utility or Utility Group when it appears in the displays. If you change a utility setting and realize you have made a mistake, press the Escape button while "Saving Adjustment Value" is still in the displays. The original setting is retained and the new setting is ignored.

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.9	**Presets**
U.10	**Clear Credits**
U.11	**Auto Burn-in**

U.1 Clear Audits

Press the Enter button to clear the Standard Audits, Feature Audits, and Histograms.Press the Up button to display the next utility.

U.2 Clear Coins

Press the Enter button to clear the Earnings Audits. Press the Up button to display the next utility.

U.3 Reset H.S.T.D.

Press the Enter button to clear the High Score to Date Table and the Grand Champion. Press the Up button to display the next utility.

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 you make a mistake press the Escape button while "Saving Adjustment Value" is displayed. Press the Up button to move to the next utility.

U.5 Custom Message

This utility allows the operator to install a message that appears in the displays during the Attract Mode. Press the Enter button to activate the Custom Message. Use the Up or Down button to rotate letters. Use the Start button to rotate punctuation marks, (if desired). Press the Enter button to lock in the desired letter and punctuation. Note: Set Adjustment A.1 20 to YES before trying to write a Custom Message.

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 rotate letters.

Use the Start button to rotate punctuation marks, (if desired). 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, then press the Up button to display the next utility.

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. Press the Up button to display the next utility.

U.9 Presets

Press the Enter button to activate the Presets Group. Use the Up or Down buttons to cycle through the available Presets. When the desired Preset is displayed, press the Enter button to lock in that Preset. If you realize you have made a mistake, press the Escape button while "Saving Adjustment Value" is displayed. The new value is ignored and the original value is retained.

U.9 09 Install Ticket

The operator utilizes this option to delete Credit awards and replace them with Ticket awards. Individual adjustments are affected as follows.

Ad	Name	New Settings
A.1 14	Replay Award	Ticket
A.1 31	Ticket Expansion Board	Yes
A.4 02	H.S.T.D. Award	Ticket

U.9 11 Install Buy-in

The operator uses this option to automatically set game pricing to 1 for 50¢/2 for $1.00 and 1 Coin Buy-in (A.3 19) to YES.

Press the Escape button to return to the Presets menu. Then press the Up button to display the next utility, (or the Down button to return to a previous utility).

U.10 Clear Credits

Press the Enter button to clear the game Credits. Press the Up button to display the next utility.

U.11 Auto Burn-in

Press the Enter button to activate Auto Burn-in. This utility allows you to automatically cycle through several tests. This helps in finding intermittent problems. The tests that Auto Burn-in cycles through are the Display Test, the Sound and Music Test, the All Lamps Test, the Solenoid Test, the Flashers Test, and the General Illumination Test.

Press the Escape button to return to the Utilities Menu. Then, either press the Up or Down button to return to a previous Utilities group, or press the Escape button again to return to the Main Menu. Once in the Main Menu, press the Up button to move to the next menu selection, the Adjustments Menu, or press the Down button to return to a previous Main Menu selection.

Press the Enter button to activate the Adjustments Menu. Press the Up or Down button to cycle through the Adjustment Menu selections. Press the Enter button to activate the desired Adjustment group when it appears on the display.

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.6 Regulation Adjustments

When an adjustment is activated, the setting value begins to flash. Use the Up or Down button to raise or lower the setting value. When the desired value is displayed press Enter to lock in the value. If you realize you have made an error, press the Escape button while "Saving Adjustment Value" is displayed. The new value is ignored and the original value is retained.

A.1 18 Maximum Ticket/Player

The operator can choose the amount of Tickets each player can earn. The range of this setting is 00 to 100.

A.1 20 Custom Message

The operator chooses if a message is displayed during the Attract Mode. The choices are:

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

A.1 22 Clock Style

The operator chooses what style of clock the game uses. The choices are A.M./P.M. or 24 Hours.

A.1 23 Date Style

The operator chooses what style of date the game uses. The choices are Month/Date/Year, or Date/Month/Year.

A.1 24 Show Date and Time

The operator chooses whether the date and time show in the Attract Mode. The choices are:

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

Omit Standard Adjustment A.1 31 (page 1.23).

A.1 31 Ticket Expansion Board

Change Feature Adjustments A.2 05 thru 09 (pages 1.24 and 1.25).

A.2 05 Strike Master Match ON/OFF
The operator chooses whether the Strike Master Match feature can be played. When ON, and a player reaches the match value, only points will be awarded. Factory setting is OFF. The choices are:

ON Strike Master Match feature is played.
OFF No Match feature will occur.

A.2 06 1st Match Range
The operator chooses the frequency in which the 1st Match value will be awarded. At the default setting the first match value will pay out once every 50 plays. Player is awarded 500 points for this match range.

A.2 07 2nd Match Range
The operator chooses the frequency in which the 2nd Match value will be awarded. At the default setting the second match value will pay out once every 100 plays. Player is awarded 1000 points for this match range.

A.2 08 3rd Match Range
The operator chooses the frequency in which the 3rd Match value will be awarded. At the default setting the third match value will pay out once every 500 plays. Player is awarded 5000 points for this match range.

A.2 09 4th Match Range
The operator chooses the frequency in which the 4th Match value will be awarded. At the default setting the fourth match value will pay out once every 1000 plays. Player is awarded 10,000 points for this match range.

A. 3 Pricing Adjustments

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

A.3 16 Maximum Credits
The operator can specify 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 10. Reaching the specified setting prevents the award of any credits.

A.3 17 Free Play
The operator can specify whether a player can operate the game without a coin (free play) or with a coin. The choices are:

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

A.3 18 Hide Coin Audits
The operator chooses whether or not to show the coin audits. The choices are:

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

A.3 19 1 Coin Buy-in
If the game pricing is set to 1 for 50¢/2 for $1.00 the operator chooses whether 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. The choices are:

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

Press the Escape button to return to the Adjustment Menu. Press the Up button to advance to the next desired Adjustment Group, (or press the Down button to return to a previous Adjustment Group). Press the Enter button to activate that group. Press the Up or Down button to cycle through the available adjustments in that group.

Pricing Table

Country	Coin Chute Left	Center	Right	4th Chute	Games/Coin	Display	Pricing Adjustments A,3 02 03 04 05 06 07 08 09
USA	25 ¢	*$1.00	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	
Austria	5 Sch 5 Sch	10 Sch -	10 Sch 10 Sch	- -	1/2x5 Sch, 3/2x10 Sch [2] 2/5 Sch, 5/10 Schilling	AUSTRIA CUSTOM	 02 00 05 00 01 00 01 00
Australia	20¢	$1	$1	$2	1$1, 3/$2 [2]	AUSTRALIA	
United Kingdom	1L	50 P	-	20 P	1/2x10 P, 3/50 P, 7/1£ [2]	U. KINGDOM	
Switzerland	1 Fr	2 Fr	5 Fr	-	1/1 Fr, 3/2 Fr, 7/5 Franc [2]	SWISS	
Belgium	5 Fr	20 Fr	50 Fr	-	1/4 x 5F, 1/20 F, 3/50 Franc [2]	BELGIUM	
West Germany	1DM	2DM	5DM	-	1/1 DM, 2/2 DM, 7/5 DMark [2] 1/1 DM, 2/2 DM, 6/5 DM [1,2] 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. 7/6 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
Netherlands	1HFl 25 ¢ 1G	2.5HFl - -	2.5HFl 1G 1G	- - -	1/1 HFl, 3/2.5 Holland Florin [2] 1/25¢, 5/1 Guilder 1/1 Guilder [2]	NETHERLAND CUSTOM HOLLAND	 01 00 05 00 01 00 01 00
Sweden	5 Kr	5 Kr	5 Kr	-	1/5 Krona [2]	SWEDEN	
France	1 Fr 1 Fr 1 Fr 1 Fr 1 Fr 1 Fr	5 Fr 5 Fr 5 Fr 5 Fr 5 Fr 5 Fr	10 Fr 10 Fr 10 Fr 10 Fr 10 Fr 10 Fr	- - - - - -	1/3x1 F, 2/5 F, 5/10 Franc [2,3] 1/2x1 F, 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	
Italy	500L	500L	500L	-	1/500 Lire [2]	ITALY	
Spain	100 P 25 P 25 P 25 P 25 P	- - - - -	500 P 100 P 100 P 100 P 100 P	- - - - -	1/100 P, 6/500 Peseta [2] 1/25 P, 5/100 Peseta [2] 1/25 P, 4/100 Peseta 1/2x25 P, 2/100 Peseta 1/25x25 P, 3/100 Peseta	SPAIN CUSTOM CUSTOM CUSTOM CUSTOM	 05 00 20 00 04 00 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
Japan	100 ¥	-	100 ¥	-	1/100 Yen [2]	JAPAN	
Antilles, Nthrlnd	25 ¢	-	1G	-	1/25¢, 4/1 Guilder [2]	ANTILLES	
Chile	Token	-	Token	-	1/1 Token [2]	CHILE	
Denmark	1 Kr	5 Kr	10 Kr	-	1/2x1 Kr, 3/5 Kr, 7/10 Krone [2]	DENMARK	
Finland	1Mka	-	5 Mka	-	1/2x1 Mka, 3/5 Markka [2]	FINLAND	
New Zealand	20 ¢	-	20¢	-	1/3x20¢ [2]	NEW ZEALAND	
Norway	5 Kr	-	10 Kr	-	1/5 Kr, 2/10 Kr, 5/20 Krone [2]	NORWAY	
Argentina	10 ¢	10¢	10¢	-	1/1 Token [2]	ARGENTINA	
Greece	10 D	20 D	50 K	-	1/2x10D, 1/20D, 3/50 Drachma [2]	GREECE	
Hungary	10 F	-	20 F	-	1/1x20F, 1/2x10F, 3/2x20 Forint	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.

Add H.S.T.D. Adjustments A.4 05 thru 08 (page 1.28).

A.4 05 H.S.T.D. 1 Credits
The operator selects the number of credits or tickets to be awarded whenever a player exceeds the previous Highest Score. The range of this setting is 00 to 10.

A.4 06 H.S.T.D. 2 Credits
The operator selects the number of credits or tickets to be awarded whenever a player exceeds the second highest score. The range of this setting is 00 to 10.

A.4 07 H.S.T.D. 3 Credits
The operator selects the number of credits or tickets to be awarded whenever a player exceeds the third highest score. The range of this setting is 00 to 10.

A.4 08 H.S.T.D. 4 Credits
The operator selects the number of credits or tickets to be awarded whenever a player exceeds the fourth highest score. The range of this setting is 00 to 10.

A.4 16 Strike Master Backup H.S.T.D. 2
The operator can set the second Strike Master Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 94,000. Factory setting is 81,000.

A.4 17 Strike Master Backup H.S.T.D. 3
The operator can set the third Strike Master Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 94,000. Factory setting is 79,000.

A.4 18 Strike Master Backup H.S.T.D. 4
The operator can set the fourth Strike Master Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 94,000. Factory setting is 75,000.

A.4 19 Triple Strike Backup H.S.T.D. 1
The operator can set the Triple Strike Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 9000. Factory setting is 7900.

A.4 20 Triple Strike Backup H.S.T.D. 2
The operator can set the second Triple Strike Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 9000. Factory setting is 6900.

A.4 21 Triple Strike Backup H.S.T.D. 3
The operator can set the third Triple Strike Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 9000. Factory setting is 5900.

A.4 22 Triple Strike Backup H.S.T.D. 4
The operator can set the fourth Triple Strike Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 9000. Factory setting is 4900.

A.4 23 Strike 90 Backup H.S.T.D. 1
The operator can set the Strike 90 Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 9,9000. Factory setting is 7900.

A.4 24 Strike 90 Backup H.S.T.D. 2
The operator can set the second Strike 90 Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 99,000. Factory setting is 1800.

A.4 25 Strike 90 Backup H.S.T.D. 3
The operator can set the third Strike 90 Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 99,000. Factory setting is 900.

A.4 26 Strike 90 Backup H.S.T.D. 4
The operator can set the fourth Strike 90 Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 99,000. Factory setting is 400.

A.4 27 Flash Backup H.S.T.D. 1
The operator can set the Flash Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 9600. Factory setting is 8500.

A.4 28 Flash Backup H.S.T.D. 2
The operator can set the second Flash Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 9600. Factory setting is 7500.

A.4 29 Flash Backup H.S.T.D. 3
The operator can set the third Flash Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 9600. Factory setting is 6500.

A.4 30 Flash Backup H.S.T.D. 4
The operator can set the fourth Flash Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 9600. Factory setting is 5500.

Press the Up button to advance to the next desired Adjustment Group, (or press the Down button to return to a previous Adjustment Group). Press the Enter button to activate that group. Press the Up or Down button to cycle through the available adjustments in that group.

A.5 Printer Adjustments (optional board required)

A.5 01 Column Width

The operator chooses the column width to be printed. The range of this setting is 22 through 80.

A.5 02 Lines Per Page

The operator chooses the amount of lines per page. The range of this setting is 20 through 80.

A.5 03 Pause Every Page

The operator chooses whether the printer pauses at the end of a page. The choices are:

YES	The printer does pause.
NO	The printer doesn't pause.

A.5 04 Printer Type

The operator selects which kind of printer to use. The choices are Parallel, Serial or ADP.

A.5 05 Serial Baud Rate

The operator selects which baud rate to use for Serial or ADP communications (bit rate). The choices are 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., low signal indicates the printer is not ready.
Inverted	Inverted D.T.R. (busy), high signal indicates printer is not ready.
Ignore	D.T.R. signal is ignored.

Press the Up button to advance to the next desired Adjustment Group, (or press the Down button to return to a previous Adjustment Group). Press the Enter button to activate that group. Press the Up or Down button to cycle through the available adjustments in that group.

A.6 Regulation Adjustments

A.6 01 Ticket Level 1

In Regulation play, when a players reaches the Ticket Level score, as set by the operator, the player will be awarded the specified number of tickets in the corresponding Award Level. The range is 00 - 300. The factory setting is 90.

A.6 02 Ticket Level 2

In Regulation play, when a players reaches the Ticket Level score, as set by the operator, the player will be awarded the specified number of tickets in the corresponding Award Level. The range is 00 - 300. The factory setting is 120.

A.6 03 Ticket Level 3

In Regulation play, when a players reaches the Ticket Level score, as set by the operator, the player will be awarded the specified number of tickets in the corresponding Award Level. The range is 00 - 300. The factory setting is 160.

A.6 04 Ticket Level 4

In Regulation play, when a players reaches the Ticket Level score, as set by the operator, the player will be awarded the specified number of tickets in the corresponding Award Level. The range is 00 - 300. The factory setting is 190.

A.6 05 Ticket Level 5

In Regulation play, when a players reaches the Ticket Level score, as set by the operator, the player will be awarded the specified number of tickets in the corresponding Award Level. The range is 00 - 300. The factory setting is 230.

A.6 06 Ticket Level 6

In Regulation play, when a players reaches the Ticket Level score, as set by the operator, the player will be awarded the specified number of tickets in the corresponding Award Level. The range is 00 - 300. The factory setting is 250.

A.6 07 Ticket Level 7

In Regulation play, when a players reaches the Ticket Level score, as set by the operator, the player will be awarded the specified number of tickets in the corresponding Award Level. The range is 00 - 300. The factory setting is 280.

A.6 08 Ticket Level 8

In Regulation play, when a players reaches the Ticket Level score, as set by the operator, the player will be awarded the specified number of tickets in the corresponding Award Level. The range is 00 - 300. The factory setting is 290.

A.6 09 Award Level 1

The operator can set the amount of tickets to be dispensed when a player reaches a specified score as set by the corresponding Ticket Levels above. The range is 00-99. Factory setting is 01.

A.6 10 Award Level 2
The operator can set the amount of tickets to be dispensed when a player reaches a specified score as set by the corresponding Ticket Levels above. The range is 00-99. Factory setting is 01.

A.6 11 Award Level 3
The operator can set the amount of tickets to be dispensed when a player reaches a specified score as set by the corresponding Ticket Levels above. The range is 00-99. Factory setting is 01.

A.6 12 Award Level 4
The operator can set the amount of tickets to be dispensed when a player reaches a specified score as set by the corresponding Ticket Levels above. The range is 00-99. Factory setting is 01.

A.6 13 Award Level 5
The operator can set the amount of tickets to be dispensed when a player reaches a specified score as set by the corresponding Ticket Levels above. The range is 00-99. Factory setting is 01.

A.6 14 Award Level 6
The operator can set the amount of tickets to be dispensed when a player reaches a specified score as set by the corresponding Ticket Levels above. The range is 00-99. Factory setting is 01.

A.6 15 Award Level 7
The operator can set the amount of tickets to be dispensed when a player reaches a specified score as set by the corresponding Ticket Levels above. The range is 00-99. Factory setting is 01.

A.6 16 Award Level 8
The operator can set the amount of tickets to be dispensed when a player reaches a specified score as set by the corresponding Ticket Levels above. The range is 00-99. Factory setting is 01.

Press the Escape button to return to the Adjustments Menu. Then, either press the Up or Down button to return to a previous Adjustments Group, or press the Escape button again to return to the Main Menu. Once in the Main Menu either use the Up or Down buttons to return to a previous menu selection, or press the Escape button again to return to the Attract Mode.

PROBLEM ANALYSIS MESSAGES

The WPC game program has the capability to assist 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 a 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 **Strike Master** game.

Check Switch ##.

This message indicates that at least one switch was stuck 'On' at game turn-on or has NOT been actuated during game play by displaying the message "Adjust Switch ##", listing each problem switch by number. (The game program compensates the game play requirements affected by each disabled switch to allow 'nearly normal' play. This helps keep **Strike Master** earning, until the service technician can repair the problem, bringing the game back to its normal good profits!)

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 puck, to simulate game conditions. (Switch problems may often be resolved by adjusting the wire switch actuators, fixing switch circuitry problems, securing loose connectors, etc.

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.

Frequent appearance of this message requires activation of the Switch Levels Test to locate the switch causing the "WHT-xxx ROW x SHORT" message. Possible 'row short' causes are: 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 hangers, 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).

Factory Settings Restored.

Repeated appearance of 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.

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.

CPU L.E.D.s

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

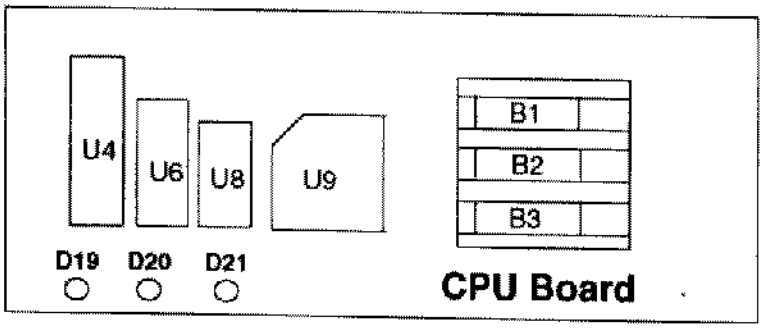
CPU Board L.E.D. Error Codes

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

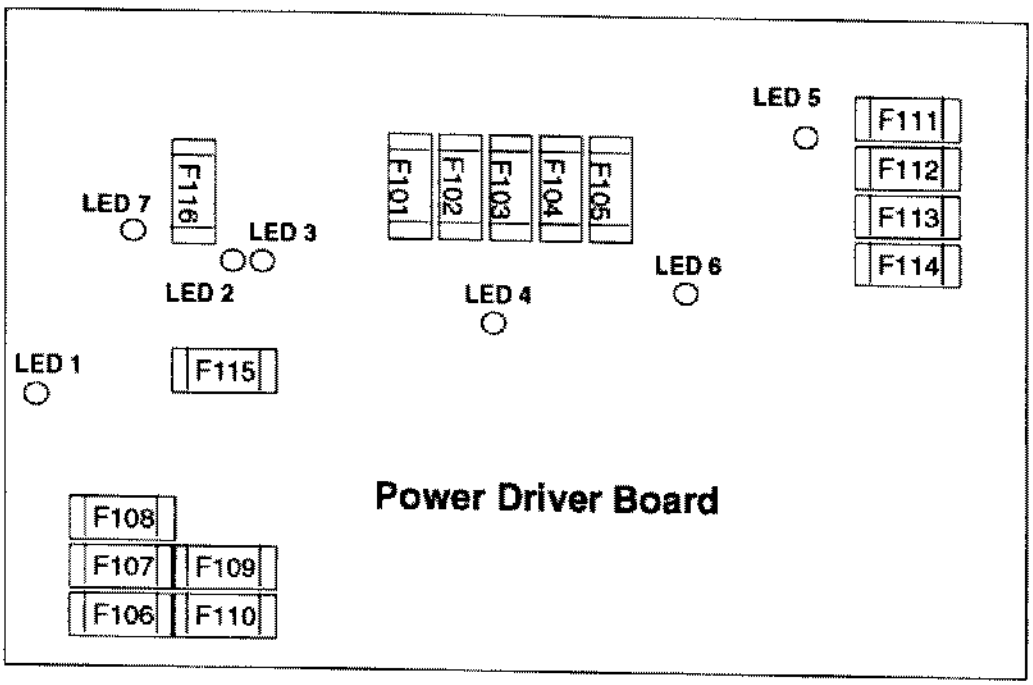
Sound Board Beep Error Codes Upon Game Turn-On:

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

LED List

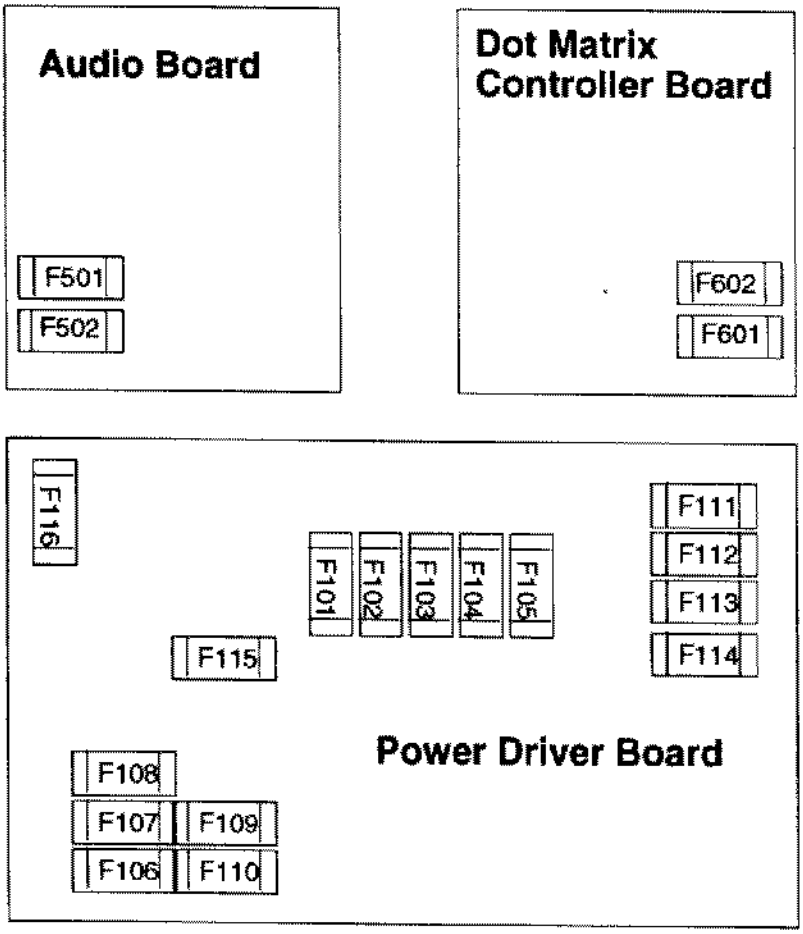


CPU Board
D19, Blanking
D20, Diagnostic
D21, +5vdc
At Game Turn-On = D19 & D21 On, D20 Off
During Normal Operation = D19 Off, D20 flashing, D21 On



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

Dot Matrix Controller Board
F601 +80VAC 3/8A, S.B.
F602 +100VAC 3/8A, S.B.

Power Driver Board

F101	Left Flipper	2.5A, S.B.	F113	+5V Logic	5A, S.B.
F102	Right Flipper	2.5A, S.B.	F114	+18V Lamp Matrix	8A, N.B.
F103	Solenoid 25-28	3A, S.B.	F115	+12V Switch Matrix	3/4A, S.B.
F104	Solenoids 9-16	3A, S.B.	F116	+12V Secondary	3A, S.B.
F105	Solenoids 1-8	3A, S.B.			
F106	G.I. #2 Wht-Vio	5A, S.B.	**Line Filter**		
F107	G.I. #3 Wht-Yel	5A, S.B.	Domestic Game		8A, N.B.
F108	G.I. #5 Wht-Grn	5A, S.B.	Foreign Game-		4A, S.B.
F109	G.I. #4 Wht-Orn	5A, S.B.			
F110	G.I. #1 Wht-Brn	5A, S.B.	**Triac Board**		
F111	Flasher Secondary	5A, S.B.	F1	+48VAC	5A, S.B.
F112	Solenoid Secondary	5A, S.B.			

MAINTENANCE INFORMATION

Routine Care

During the stop to empty the coinbox and record the earnings from the bookkeeping data, the technician can perform a regular routine of game servicing to maintain the profit-making potential of the game. Among these maintenance tasks should be backglass cleaning, playfield cleaning, any necessary adjustment of playfield switches, adjustment of the the pin hanger mechanism when necessary, and replacement of any broken parts, including darkened/burned-out lamps.

A replacement part should duplicate the original, whenever possible. Do NOT replace a blown fuse with one of a greater ampere rating; excess current can destroy electronic components. Following any servicing activity, the technician should make a general check of game operation to verify that the game is now in proper operating condition.

A shuffleboard should be periodically sprinkled with some "Shuffleboard Wax". This is a powdered wax to keep the playfield slippery. During the normal course of a game, the powdered wax falls through the switch holes into the wax collection pan located under the switch holes. We highly recommend that you dispose of this used wax BEFORE 6 (1 lb.) containers of "Shuffleboard Wax" have been used up. Access to the collection pan is from under the playfield, unscrew the two phillips screws then gently slide the pan towards the front of the game. We also recommend that you test/adjust the playfield switches at this time. Open the coin door, go into the diagnostic "switch test" by setting manual/down, press advance, set auto/up, & press advance until 03 is in the CREDIT display. Next, with the shuffle puck, cover the switches 1 at a time & make sure that the number is displayed in FRAMES display. Note, 4 of the switches require a pair of switches be closed at the same time. They are; F needs E also covered, C needs D, V needs W, and U needs T covered.

Access to the Pin Panel

When access to the Pin Panel in the Hood is necessary, the following procedure may be helpful:

1. Unplug the game. Unscrew the phillips head screw on the top of the pin panel hood (just above pin #1). Open the backbox; then, open the insert board, and lay it on top of the pin panel hood.

2. Reach through the hole in the bottom of the backbox, and turn the two latches securing the back cover. Remove the back cover to gain access to the wire harnesses (cables).

3. Disconnect the cables leading to the pin panel. Also, disconnect the pin panel ground braid from the common grounding post, by loosening the wingnut.

4. Take care not to snag or break any wires, and slide the pin panel toward the frontbox. CAUTION: This assembly has considerable mass (weight and bulk). Take care to avoid dropping or tipping it onto the playfield.

STRIKE MASTER

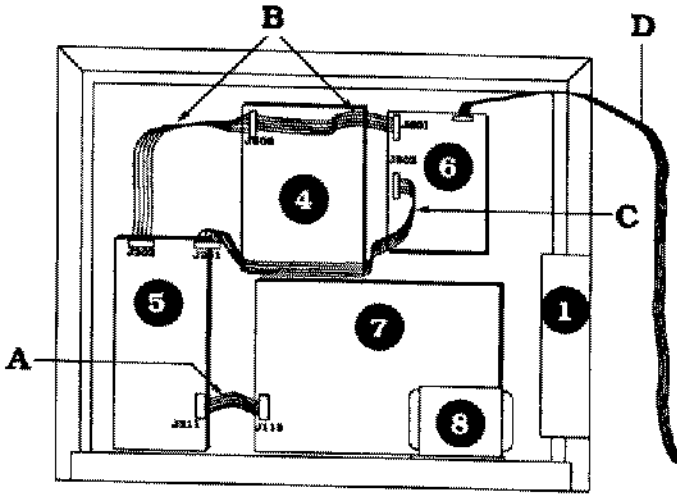
Section 2

Game Parts Information

Inside this section:

- Circuit Board Locations
- Cabinet Assembly
- Front Box
- WPC Audio Board (A-12738-10002)
- WPC CPU Board (A-12742-10002)
- WPC Power Driver Board (A-12697-1)
- Dot Matrix Controller Assy (A-14039)
- Triac Driver Assembly
- WPC Coin Door Interface Board
- Interconnect Board
- Pin Panel Assembly
- Pin Hanger Assembly
- Pin Panel Motor Assembly
- Ticket Dispenser Board
- Ticket Dispenser
- Coin Door Assembly

Board Locations



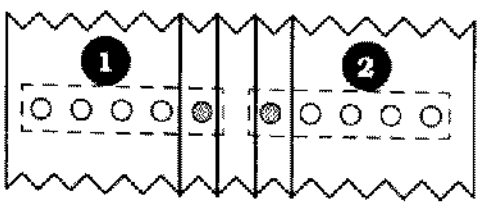
Upper Backbox, Front View

(above Pin Panel)

1.	A-15023-US	Line Filter Assembly
2.	A-8552-10002	Score Glass Assembly
3.	A-14092-1	Mounting Plate Assembly
4.	A-12738-10002	WPC Sound Board
5.	A-12742-10002	WPC CPU Assembly
6.	A-14039	Dot Matrix Controller Assy.
7.	A-12697-1	Power Driver Assembly
8.	5610-12835-00	WPC Transformer, 115/230v
A.	5795-12653-03	Ribbon Cable, 3"
B.	5795-12837-01	Ribbon Cable, 36"
C.	5795-10938-14	Ribbon Cable, 14"
D.	5795-12838-60	Ribbon Cable, 60"

Insert Board

1.	10002-SC-IN	Score Insert
2.	5901-12784-00	Dot Matrix Display

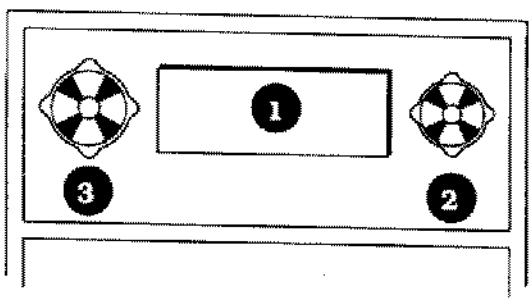


Left & Right Playfield Lamps

(Dashed boxes are Lamp Boards mounted on under side of playfield)

1.	D-12327-L	Playfield Lamp Board
2.	D-12327-R	Playfield Lamp Board

Note: 24-8768 Bulb #555(6.3V) used on lamp boards.



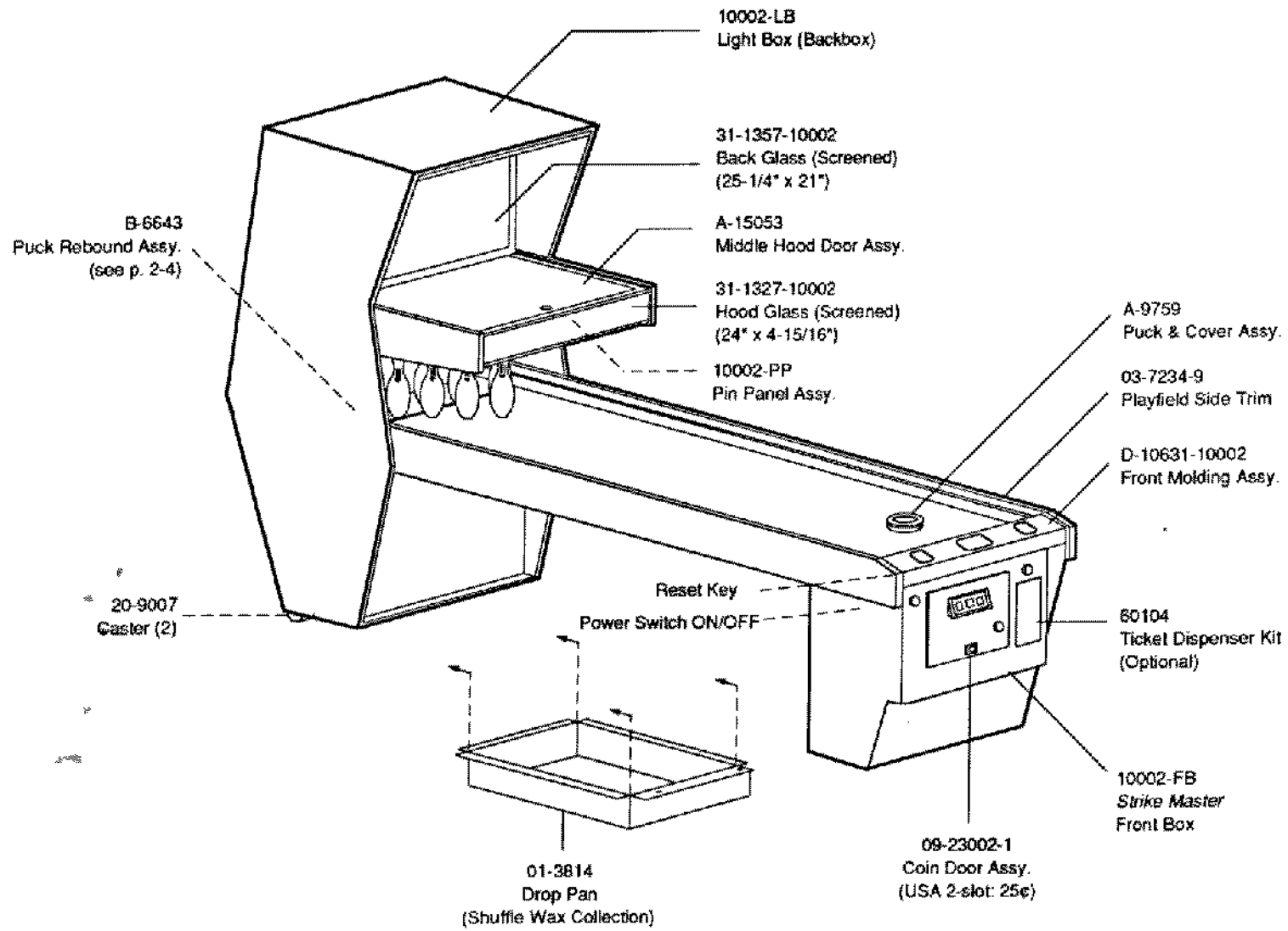
Lower Backbox, Back View

(behind Pin Panel)

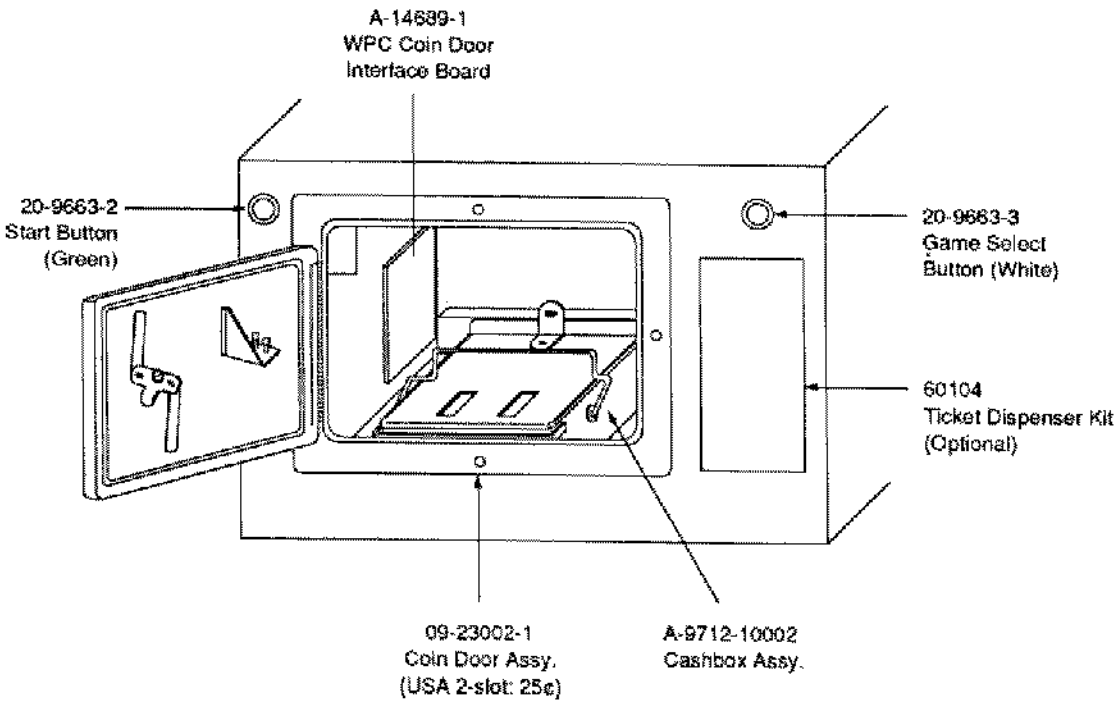
1.	A-15052	PCB Interconnect Board
2.	5555-12924-00	Speaker, 4Ω, 15w, 3-1/2"
3.	5555-12929-00	Speaker, 4Ω, 6", 25w

Cabinet Parts

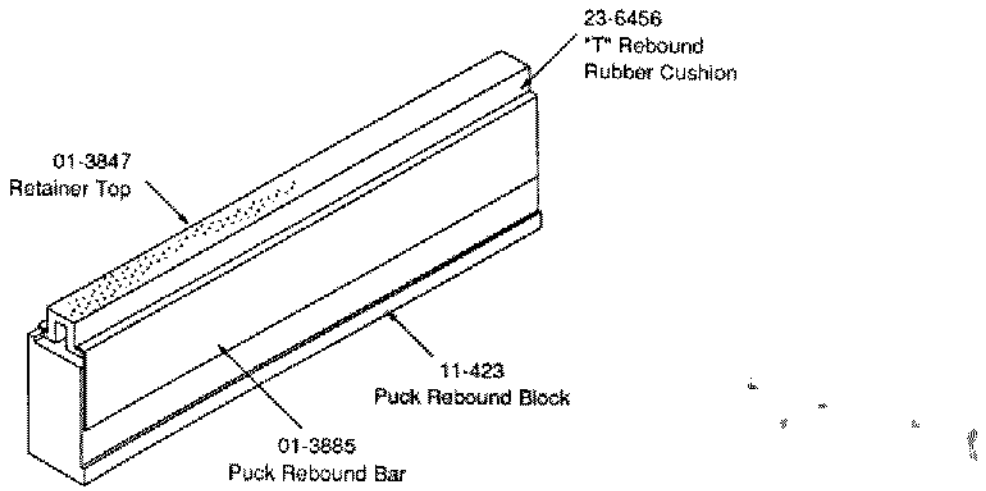
Note: All parts for Strike Master Jr. (10005) are the same as Strike Master (10002), the only difference being 2' shorter in sizes of the playfield and frame.



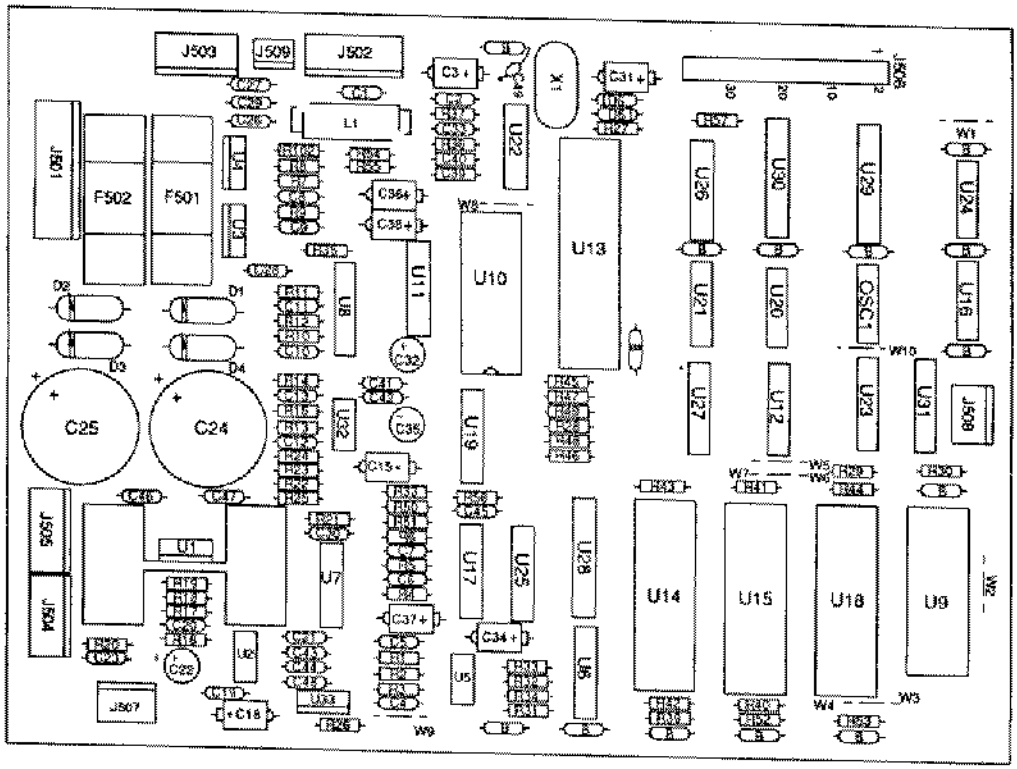
Strike Master **Front Box**



B-6643 Puck Rebound Assembly



A-12738-10002 WPC Audio Board



Part No.	Designator	Description
01-9980		Shield: Wire Protector
*	U1	Thermal Compound
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
5010-08722-00	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%
5010-08288-00	R15	Resistor, 12KΩ, 1/4w, 5%
5010-09358-00	R18, R32	Resistor, 1KΩ, 1/4w, 5%
5010-09416-00	R28, R39, R40-R44 R52, R53, R57, R36, R37	Resistor, 470Ω, 1/4w, 5%
5010-09534-00	W3, W5, W7-W10	Resistor, 0Ω
5010-10171-00	R38, R56	Resistor, 562Ω, 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%
5040-08996-00	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
5043-08960-00	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%
*		PCB Label
5048-12746-00	C5, C7	Capacitor, 330pfd., 50V
5048-12748-00	C9, C11, C30	Capacitor, 220pfd., 50V

Part No.	Designator	Description
5070-09919-00	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 O/B Bfr
5370-11086-00	U10	IC, YM2151 Sound
5371-11087-00	U11	IC, YM3012 D/A
5400-10320-00	U13	IC, MPU 68B09E
5284-12851-00	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"
A-5343-10002-4	U18	IC, Audio ROM
A-5343-10002-3	U15	IC, Audio ROM
A-5343-10002-2	U14	IC, Audio ROM
5700-12068-00		Socket, IC 32-pin (U14, U15, U18)
5705-12755-00	U1	Heatsink 5299B-220
5731-10356-00	F501, F502	Fuse, 3A, S-B
5733-12060-01		Fuse Holder (F501, F502)
*	*	PCB-Sound 90
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

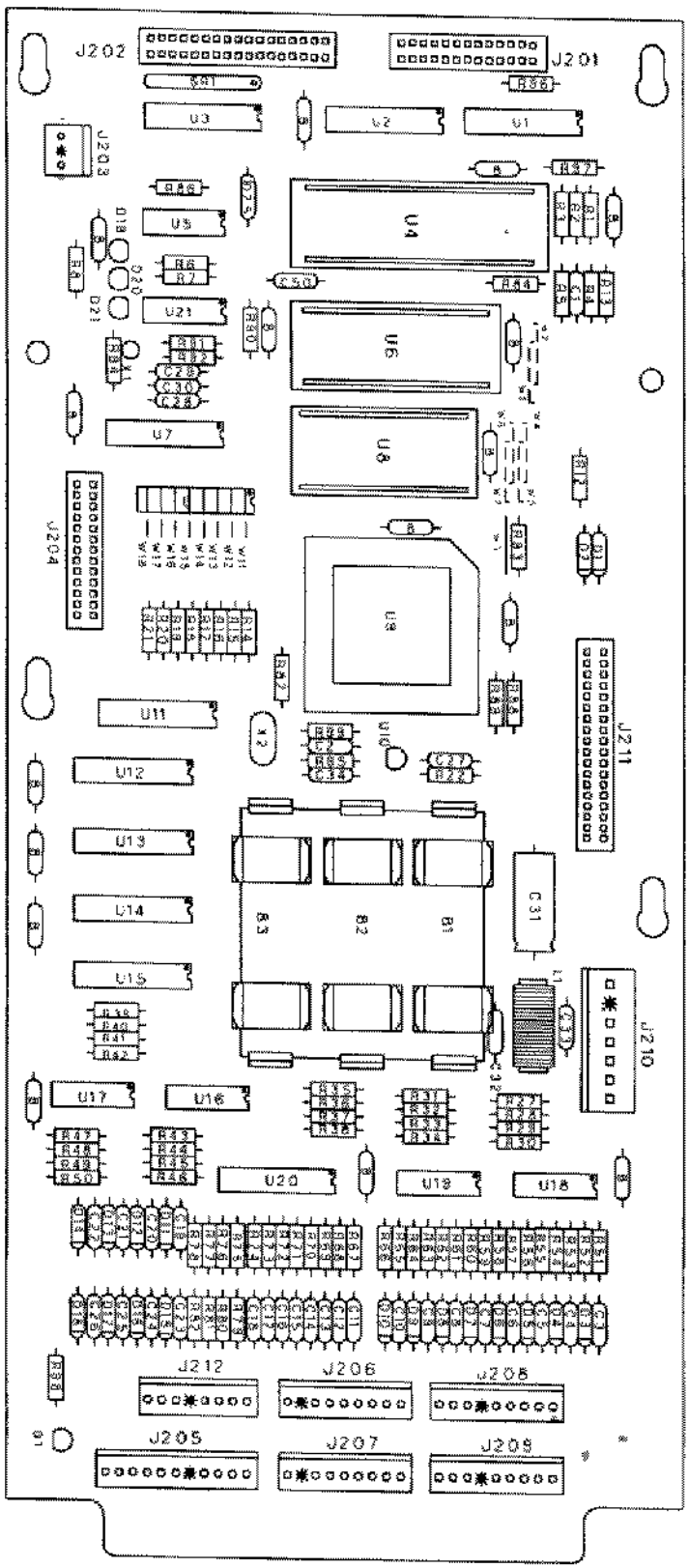
NOTES: 1. See separate manual for schematics.
2. * = Not available for individual sale.

A-12742-10002 WPC CPU Board

Item	Part Number	Designator	Description
1	5010-09034-00	R14-R22, R27-R42, R86, R90, R94, R98	Resistor, 10KΩ, 1/4w, 5%
2	5010-09085-00	R1, R2, R4, R93, R96, R97	Resistor, 1.5KΩ, 1/4w, 5%
3	5010-09314-00	R52, R54, R56, R58, R60, R62, R64, R66, R75-R82	Resistor, 1.2KΩ, 1/4w, 5%
4	5010-09358-00	R3, R43-R51, R53, R55, R57, R59, R61, R63, R65, R67-R74, R84	Resistor, 1KΩ, 1/4w, 5%
5	5010-09416-00	R5-R8, R12, R13, R87-R89	Resistor, 470Ω, 1/4w, 5%
6	5010-09534-00	W1, W4, W7, W13 - W18	Resistor, 0Ω
7	5010-10258-00	R95, R99	Resistor, .01µfdΩ, 1/4w, 5%
8	5010-10989-00	R92	Resistor, 470KΩ, 1/4w, 5%
9	5010-12104-00	R91	Resistor, 22µfd, 1/4w, 5%
10	5019-09362-00	SIP 1	SIP, 9R, 10-pin, 4.7KΩ, 5%
11	5040-08986-00	C31	Capacitor, 100µfd, 10v (±20%)
12	5043-08980-00	B	Capacitor, .01µfd, 50v, (+80, -20%)
13	5043-09030-00	C27	Capacitor, 0.047µfd, 50v (±20%)
14	5043-09065-00	C3 - C26	Capacitor, 470pfd, 50v (±20%)
15	5043-09491-00	C2, C29, C30, C34	Capacitor, 22pfd, 1KV, (±10%)
16	5043-09492-00	C28	Capacitor, 100pfd, 50v, (±10%)
17	5043-09845-00	C32, C33	Capacitor, 1KP, 50v, (±20%)
18	5070-08919-00	D2 - D18	Diode, 1N4148, 150MA
19	5070-09266-00	D1, D25	Diode, 1N5817, 1.0A.
20	5160-10269-00	Q1	Transistor, 2N3904, NPN
21	5162-12422-00	U20	IC, ULN, 2803A
22	5281-09308-00	U3	IC, 74LS245, Octal Bus Tmcv
23	5281-09466-00	U14	IC, 74LS374, 8D F/F
24	5281-09851-00	U5	IC, 74LS14, SMT/TRG
25	5281-09867-00	U1, U2, U7	IC, Octal Buffer, 74LS244
26	5281-10182-00	U11, U12, U13, U15	IC, 74LS240 Driver
27	5284-12651-00	U21	IC, 4584
28	5340-12278-00	U8	S/RAM 2064
29	5370-12272-00	U16 - U19	IC, LM339, Quad. Comp
30	5370-12687-00	U10	MC, 34064 Reset Chip
31	5520-10438-00	X2	Crystal, 8.0MHz.
32	5520-12084-00	X1	Crystal 32.768 KHz
33	5551-09822-00	L1	ILN, 4.7 UH 3A
34	5671-09019-00	D19 - D21	DSPL LED RED
35	5700-08985-00	U4	Socket, IC 40P, .6"
36	5700-12088-00	U6	Socket, IC 32P, .6"
37	5700-12424-00	U9	Socket, 84 Pin PLCC
38	5791-10850-00	J201, J204	Connector, 26-pin Header Str Sq.
39	5791-10862-07	J210	Connector, 7-pin Header Str Sq.
40	5791-12461-08	J212	Connector, 8-pin Header Str Sq.
41	5791-12461-09	J206 - J209	Connector, 9-pin Header Sq. pin
42	5791-12461-12	J205	Connector, 12-pin Header Sq. pin
43	5791-12516-00	J202, J211	34 Hen 2x17 STR
44	5881-09021-00	B1 - B3	Battery Holder "AA"
45	5048-11033-00	C50	Capacitor, 0.022µf, 10v
46	*		PCB Label
47	A-5343-10002-1	U6	Game PROM Assembly
48	5410-12426-00	U9	WPC-89 ASIC
49	5400-10320-00	U4	IC MPU 68B09E
50	5880-09022-00	B1 - B3	Battery, Alkaline, 1.5v ("AA")
51	*		Bare PC Board

Notes: 1. See separate manual for schematics.
2. * = Not available for individual sale.

A-12742-10002 WPC CPU Board

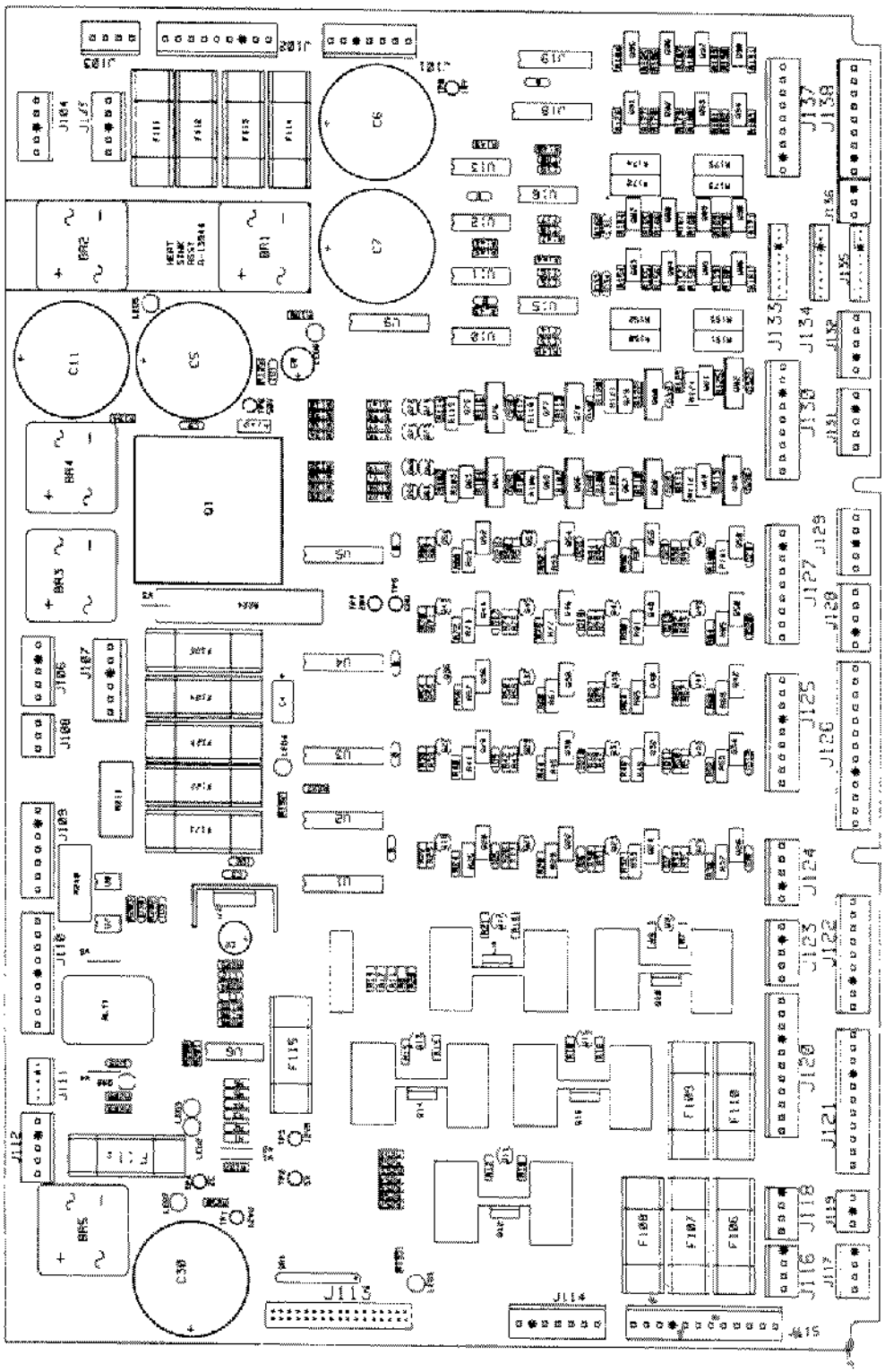


A-12697-1 WPC Power Driver Assembly

Item	Part Number	Ckt Designator	Description
1	*	Q2, Q10, Q12, Q14, Q16, Q18	Thermal Compound
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, 1/4w, 5%
8	5010-08992-00	R8, R11, R14, R17, R20, R177, R179, R181, R183, R185, R187, R189, R191, R208	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, 86Ω, 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	Resistor, 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	5010-09418-00	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	5012-12236-00	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	5046-10994-00	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	5100-09890-00	BR3-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	5291-10182-00	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 8VDC5A VS
52	5671-09019-00	LED1 - LED7	Display LED Red
53	5701-09852-00	Q1	Thermal Pad TO-3
54	5705-09199-00	Q2	Heatsink, #6030B
55	A-13944	Bridge Assembly	WPC Heatsink Rectifier Assy
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	*		Bare PC Board
60	5791-10862-03	J106, 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, J126, J129, J131, J132, J105	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	J128	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	*		ID Label
102	5730-09071-00	F114	Fuse, 8A, 32v
103	5731-09128-00	F101, F102	Fuse, S-B, 2.5A., 250v
104	Not Used		
105	5731-09651-00	F106-F113	Fuse, S-B, 5A., 250v
106	Not Used		
107	5731-10356-00	F103-F105, F116	Fuse, S-B, 3A., 250v
108	5730-09797-00	F115	Fuse, S-B, 3/4A., 250v

NOTES:
1. See separate manual for schematics.
2. * = Not available for individual sale.

A-12697-1 WPC Power Driver Assembly

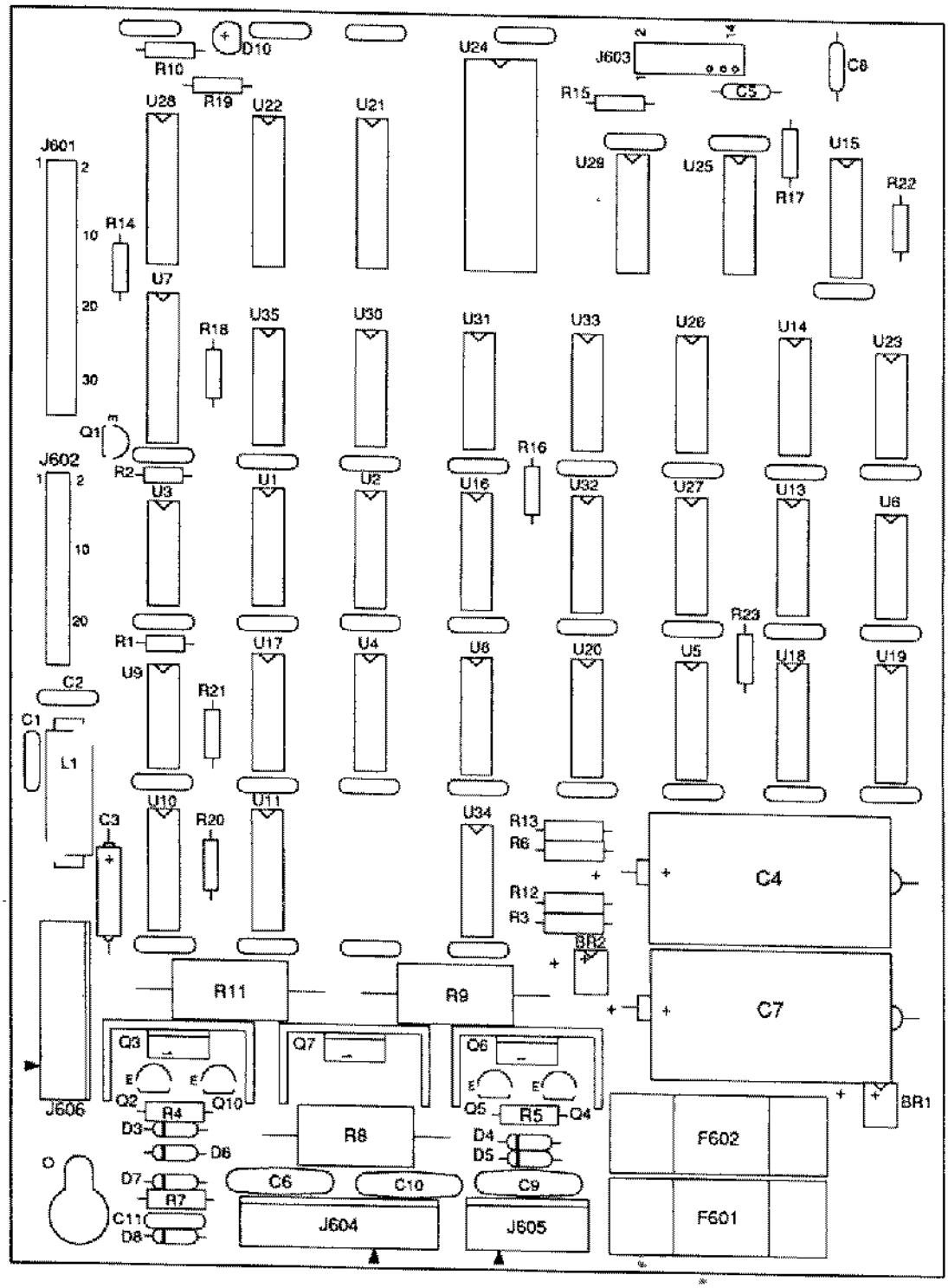


A-14039 Dot Matrix Controller Assembly

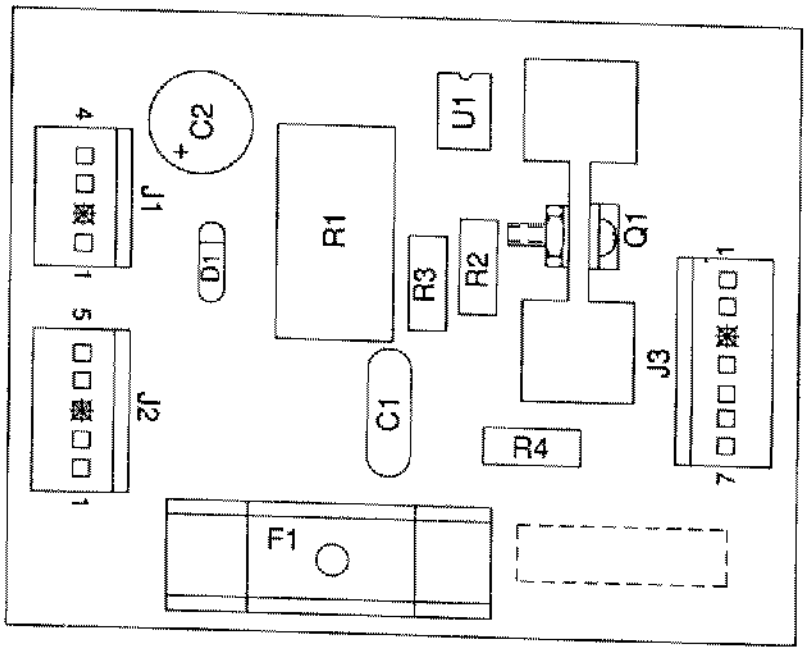
Item	Part Number	Ckt Designator	Description
1	5010-08991-00	R1	Resistor, 4.7KΩ, 1/4w, 5%
2	5010-09224-00	R10	Resistor, 270Ω, 1/4w, 5%
3	5010-09534-00	R7	Resistor, 0Ω
4	5010-12832-00	R3, R6, R12, R13	Resistor, 47KΩ, 1/2w, 5%
5	5010-12841-00	R4, R5	Resistor, 120Ω, 1/2w, 5%
6	5012-12830-00	R9	Resistor, 1.8KΩ, 5w, 5%
7	5012-12842-00	R11	Resistor, 120Ω, 5w, 5%
8	5012-12843-00	R8	Resistor, 4.7K, 5w, 5%
9	5040-08986-00	C3	Capacitor, 100µfd., 10v, (±20%)
10	5040-12324-00	C4, C7	Capacitor, 150µfd., 160v, (±50%)
11	5043-08980-00	BYPASS	Capacitor, .01µfd., 50v, (+80, -20%)
12	5043-09072-00	C6, C9, C10	Capacitor, .1µfd., 500v, (+80, -20%)
13	5043-09845-00	C1, C2, C11	Capacitor, 1KP, 50v, (±20%)
14	5070-09054-00	D7	Diode, 1N4004, 1.0A.
15	5075-12824-00	D6, D8	Zener, 1N4742A, 12v
16	5075-12823-00	D9 - D5	Zener, 1N4758A, 62v
17	5100-12833-00	BR1, BR2	Bridge, 400v, 1A.
18	5160-10269-00	Q1	Transistor, 2N3904 NPN
19	5164-09056-00	Q2, Q10	Transistor, MPSD02, NPN
20	5164-12154-00	Q3, Q7	Transistor, MJE15030 NPN
21	5194-09055-00	Q4, Q5	Transistor, MPSD52 PNP
22	5194-12155-00	Q6	Transistor, MJE15031 PNP
23	5281-09738-00	U16, U25 - U27	IC, 74LS157
24	5281-10033-00	U3	IC, 74LS30
25	5281-10043-00	U31 - U33, U35	IC, 74LS175
26	5311-10946-00	U4, U5, U17, U18, U20	IC, 74HC74
27	5311-10947-00	U9	IC, 74HC125
28	5311-10951-00	U10, U11	IC, 74HC161
29	5311-10977-00	U6	IC, 74HC04
30	5311-12817-00	U29	IC, 74HC165
31	5311-12819-00	U21	IC, 74HC688
32	5311-12820-00	U23	IC, 74HC27
33	5311-12822-00	U13 - U15	IC, 74HC193
34	5315-12009-00	U22	IC, 74HCT374
35	5315-12812-00	U1, U2, U30	IC, 74HCT138
36	5281-09308-00	U28	IC, 74HCT245
37	5315-12815-00	U8, U34	IC, 74HCT08
38	5315-12816-00	U19	IC, 74HCT32
39	5315-12821-00	U7	IC, 74HCT240
40	5340-12278-00	U24	S/RAM 2064 150NS
41	5551-09822-00	L1	IND 4.7µH, 3.0A.
42	5671-09019-00	D10	Display LED Red
43	5705-09199-00	Q3, Q6, Q7	Heatsink 6030B
44	5731-12328-00	F601, F602	Fuse, 3/8A.,SB, 250v
45	5733-12060-00		Fuse Holder (F601, F602)
46	5791-10850-00	J602	Connector, 26-pin STR Sq.
47	5791-10862-05	J605	Connector, 5-pin Header Sq.
48	5791-10862-07	J606	Connector, 7-pin Header Sq.
49	5791-10862-08	J604	Connector, 8-pin Header Sq.
50	5791-12516-00	J601	34 Hen 17x2 STR
51	5791-12827-00	J603	14 Hen 7x2 STR
52	5010-09036-00	R14-R23	Resistor, 100Ω, 1/4w, 5%
53		Q3, Q6, Q7	Thermal Compound
54	4006-01003-06	Q3, Q6, Q7	Mach. Screw, 6-32 x 3/8
55	4406-01128-00	Q3, Q6, Q7	Nut, 6-32 KEPS
56	5043-09492-00	C5, C8	Capacitor, 100P, 50v, (±10%)
57	5010-10171-00	R7	Resistor, 56Ω, 1/4w, 5%
58	*		Bare PC Board

Notes: 1. See separate manual for schematics.
2. * = Not available for individual sale.

A-14039 Dot Matrix Controller Assembly



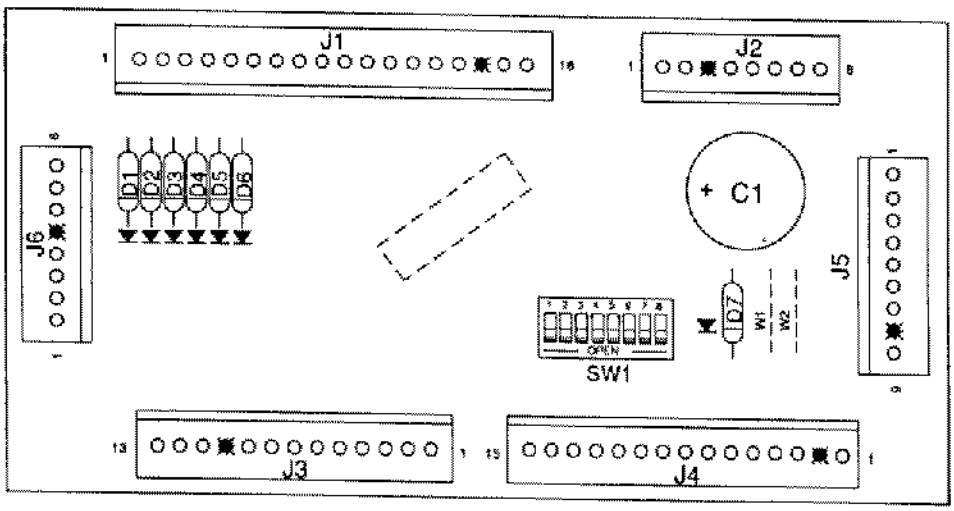
A-13088-2 Triac Driver Assembly



Part Number	Designator	Description
*	-	Bare PC Board
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
5010-09200-00	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
4404-01117-00		Nut, 4-40 Hex.
4703-00015-00		Lockwasher, #4 External
*		Label

NOTES: 1. See section 3 for schematic.
2. * = Not available for individual sale.

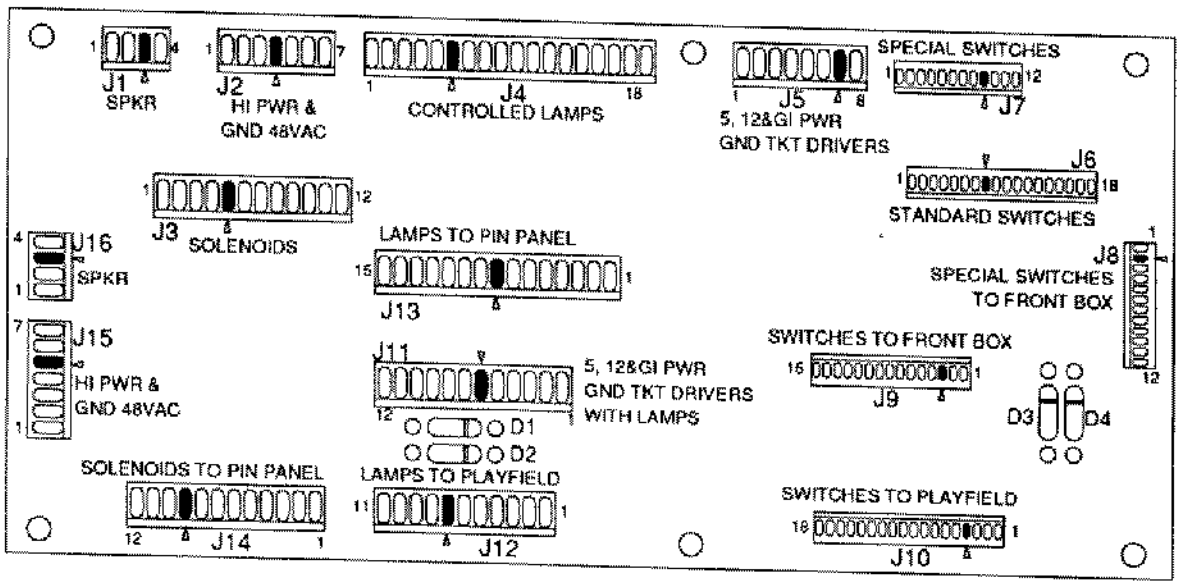
A-14689-1 WPC Coin Door Interface Board



Part Number	Designator	Description
*		WPC Bare PC Board
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.
5645-09025-00	SW1	Switch DIP 8 Pos.
5010-09534-00	W2	Resistor, 0Ω (Jumper)
*		I.D. Label

NOTES: 1. See section 3 for schematic.
2. * = Not available for individual sale.

A-15052 Interconnect Board



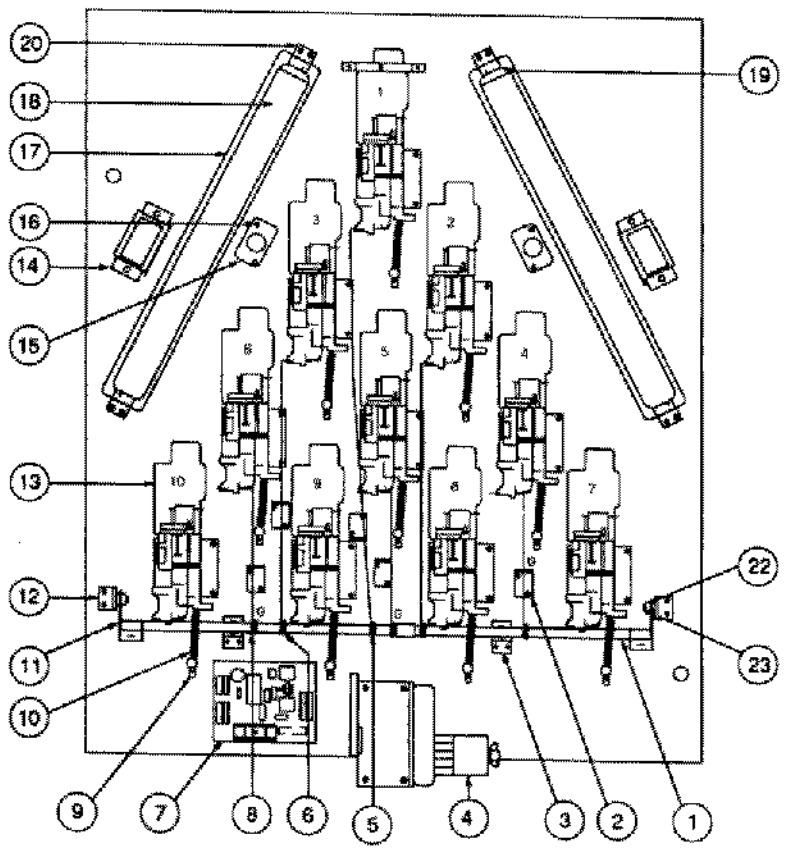
Part Number	Designator	Description
*	-	Bare PC Board
5070-09054-00	D1 - D4	Diode 1N4004
5791-10862-04	J1, J16	Connector, 4-pin Header Str Sq. Pin
5791-10862-07	J2, J15	Connector, 7-pin Header Str Sq. Pin
5791-10862-12	J3, J11, J14	Connector, 12-pin Header Str Sq. Pin
5791-10862-18	J4	Connector, 18-pin Header Str Sq. Pin
5791-10862-08	J5	Connector, 8-pin Header Str Sq. Pin
5791-10862-15	J13	Connector, 15-pin Header Str Sq. Pin
5791-10862-11	J12	Connector, 11-pin Header Str Sq. Pin
5791-12462-12	J7, J8	Connector, 12-pin Header Str Sq. Pin
5791-12462-18	J6, J10	Connector, 18-pin Header Str Sq. Pin
5791-12462-15	J9	Connector, 15-pin Header Str Sq. Pin

NOTES: 1. See section 3 for schematic.
2. * = Not available for individual sale.

Change the item number, (as listed below) on page **2-15** of the Pin Panel Assembly, 10002-PP.

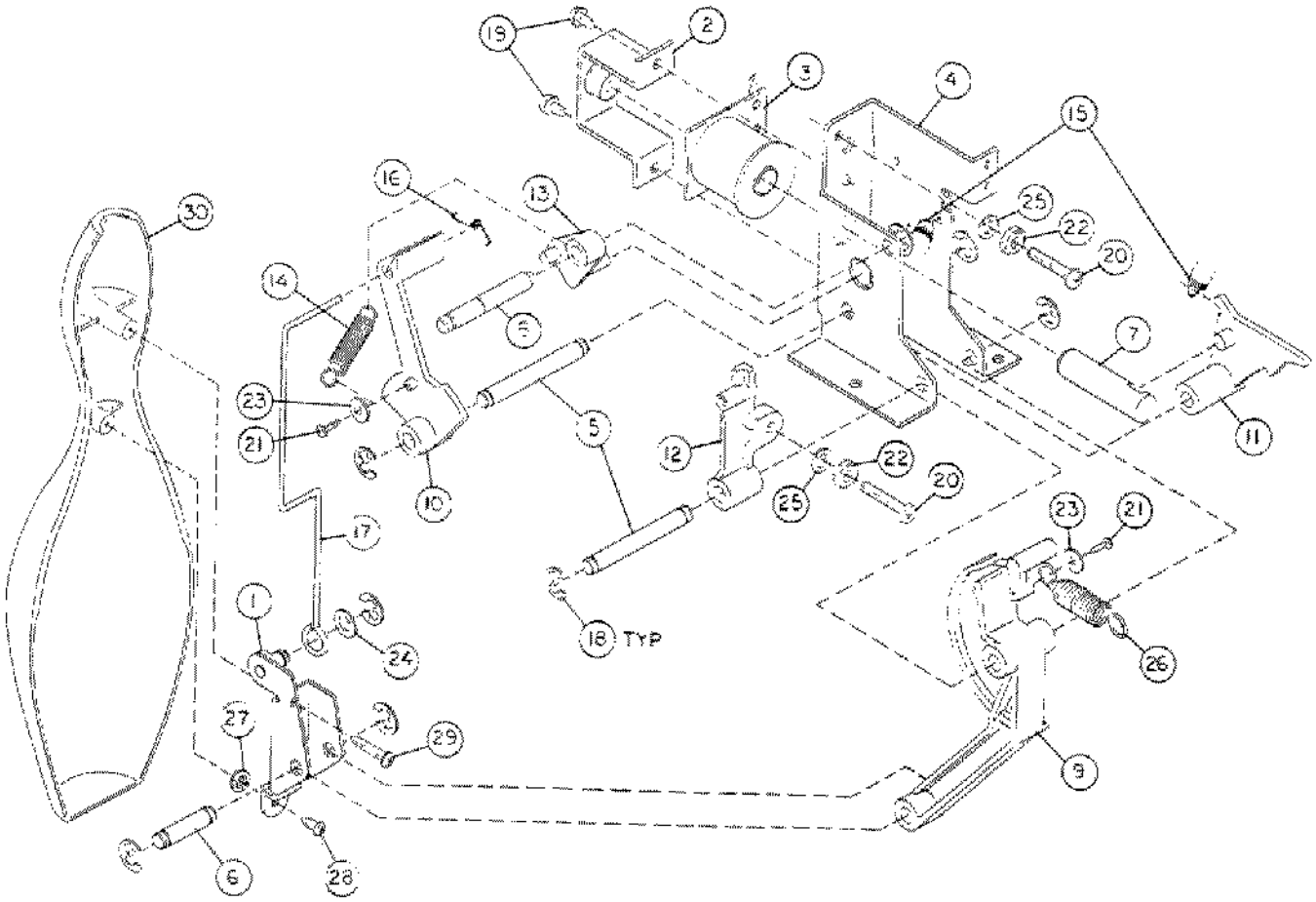
Item No.	Old Part No.	New Part No.
5	12-6410	12-7029
6	12-6394	12-7028
8	12-6393	12-7027

10002-PP Pin Panel Assembly



Item	Part Number	Description	Item	Part Number	Description
1.	02-3325	Reset Bar - Rear	13.	A-14966	Pin Hanger Assembly
2.	01-3895	Guide, Pin Hanger	14.	20-8749-8	Fluorescent Ballast
3. a)	01-5325	Reset Bar Support	15.	20-8748-1	Fluorescent Starter
b)	23-6313	Rubber Grommet	16.	20-8747	Starter Fixture
4.	C-12096-1	Pin Panel Motor Assembly	17.	01-3822-2	Fluor. Reflector
5.	12-7029	Reset Wire	18.	24-6597-5	Fluorescent Lamp
6.	12-7028	Reset Wire	19.	20-8746	Fluor. Lamp Holders
7.	A-13088-2	Triac Driver Assembly	20.	01-3827-5	Fluor. Mounting Bracket
8.	12-7027	Reset Wire	21.	01-6687	Pin Panel Front Brace
9.	01-3896	Spring Hanger - Pin Panel	22.	20-8790-7	Nylined Bearing
10.	10-295	Main Spring	23.	20-8712-25	"E" Ring, 1/4" Shaft
11.	01-3710-A1	Arm - Reset Bar	24.	23-6450	Foam Rubber, 1/2 x 3/4"
12.	A-6821	Bracket & Stud Assembly	25.	D-12328	Lamp Board

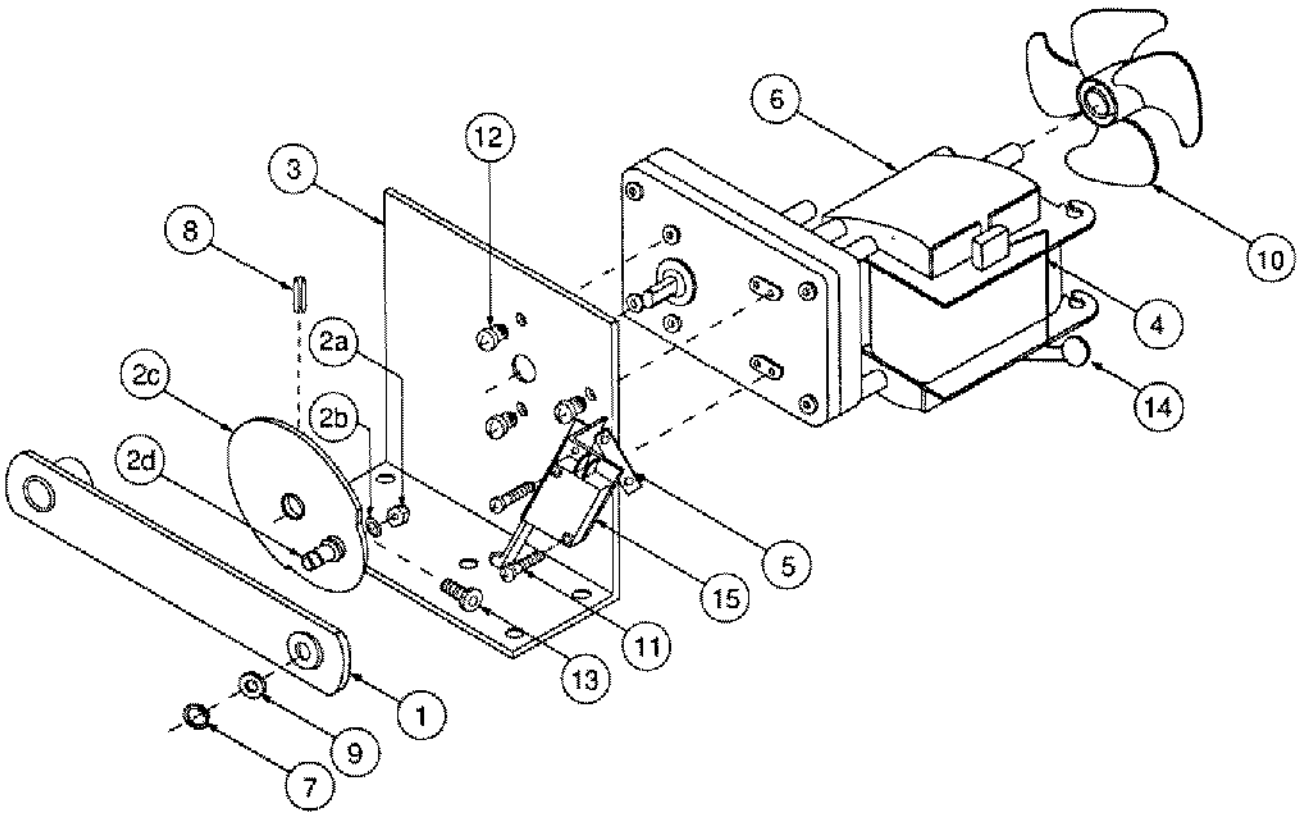
A-14966 Pin Hanger Assembly (WPC)



Item	Part Number	Description	Item	Part Number	Description
1	A-6587	Pin Hanger Bracket Ass'y	16	12-6351	Rollover Wireform
2	A-6867	Coil Stop Assembly	17	12-6371	Pin Hanger Wire
3	B-31-2500	Coil Assembly	18	20-8712-25	"E" Ring, 1/4" Shaft (8)
4	01-3869	Pin Reset Mounting Brkt	19	4008-01017-04	Mach. Screw 8-32 x 1/4 (2)
5	02-3137	Main Lever Shaft (2)	20	4010-01025-14	Mach. Screw 10-32 x 7/8 (2)
6	02-3138	Pin Suspension Shaft	21	4104-01001-06	SMS #4 x 3/8 (2)
7	02-3140	Solenoid Plunger	22	4410-01130-00	Hex Nut, 10-32 (2)
8	02-3141	Trip Actuator Shaft	23	4700-00011-00	FW 11/64 x 7/16 x 16 ga. (2)
9	03-7201	Pin Hanger	24	4700-00103-00	FW 17/64 x 1/2 x 28 ga.
10	03-7202	Pin Reset Lever	25	4701-00004-00	Lockwasher #10 Split (2)
11	03-7203	Pin Release Latch	26	10-295	Main Spring
12	03-7204	Reset Lever	27	12-6357	Reinforcing Clip
13	03-7205	Pin Trip Actuator	28	4106-01019-06	Sheet Metal Screw #6 x 3/8
14	10-255	Secondary Lever Spring	29	4106-01022-12	Sheet Metal Screw #6 x 3/4
15	10-321	Secondary Lever Spring	30	31-1445	Bowling Pin

Note: Lubricate friction points.

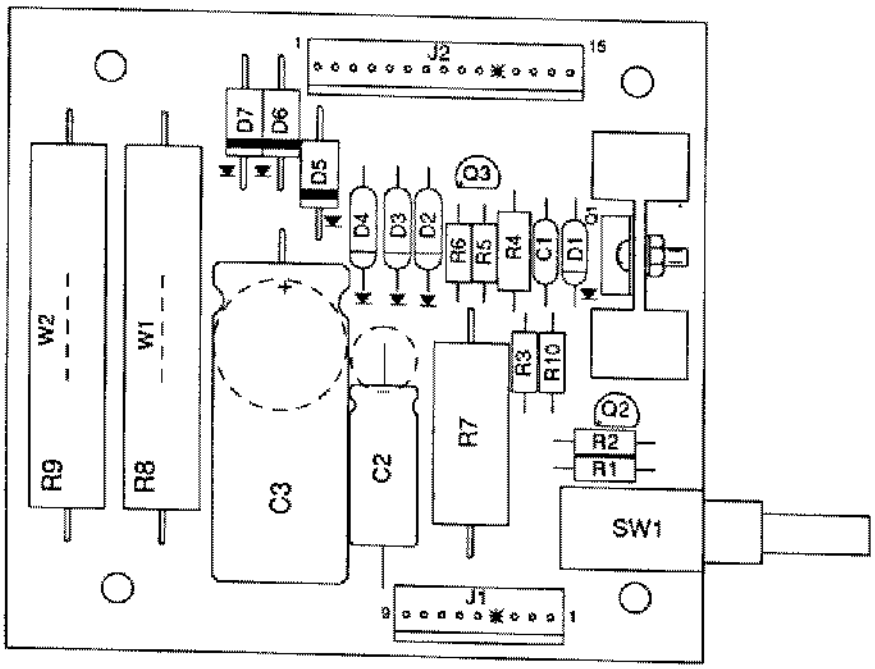
C-12096-1 Pin Panel Motor Assembly



Item	Part Number	Description
1.	B-13091	Drive Link & Bushing Assy.
2.	B-13090	Cam & Drive Post Assembly
a)	*	Nut, 1/4-20 ESN
b)	*	Flatwasher, 17/64 x 1/2 x 15ga.
c)	*	Cam & Hub Assembly
d)	*	Drive Arm Post
3.	B-12095	Motor Mounting Bracket Assy.
4.	*	Tubing #18
5.	01-7543	Nut Plate, 4-40
6.	14-7950	Motor, 60 Hz, 48V
7.	20-8712-25	"E" Ring, 1/4" Shaft
8.	20-8716-2	Roll Pin, 3/32 x 5/8"
9.	4700-00103-00	Flatwasher, 17/64 x 1/2 x 28ga.
10.	20-9246	Fan Blade
11.	4004-01003-10	Mach. Screw, 4-40 x 5/8
12.	4008-01017-04	Mach. Screw, 8-32 x 1/4
13.	4008-01074-08	Cap Screw, 8-32 x 1/2
14.	5017-12180-00	Varistor, 100V, 20J
15.	5647-10915-00	Microswitch, E34-51KL

Note: * = Not available for individual sale.

A-14206 Ticket Dispenser Assembly

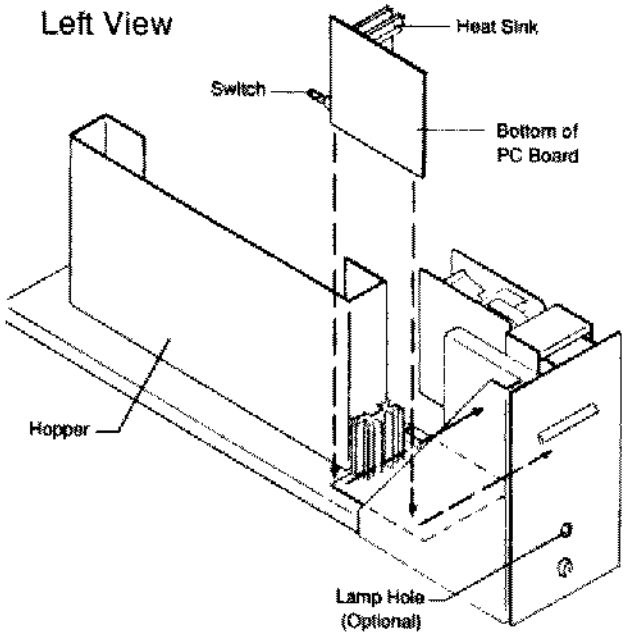


Part Number	Designation	Desription
*		Bare PC Board
5791-12462-09	J1	Connector, 9-pin Header .100
5791-12462-15	J2	Connector, 15-pin Header .100
5641-09312-00	SW1	Switch DPDT, 100v, 5A.
5162-12635-00	Q1	Transistor, TIP102
5705-12464-00	-	Heatsink
4004-01005-06	-	Mach. Screw, 4-40 x 3/8
4404-01119-00	-	Lockwasher Nut, 4-40
5012-10865-00	R8	Resistor, 5Ω, 10w, 10%
5012-12529-00	R9	Resistor, 10Ω, 10w, 10%
5012-10860-00	R7	Resistor, .27Ω, 5w, 5%
5010-09314-00	R2, R3, R6, R10	Resistor, 1.2 KΩ, 1/4w, 5%
5010-08998-00	R1	Resistor, 2.2KΩ, 1/4w, 5%
5010-09416-00	R5	Resistor, 470Ω, 1/4w, 5%
5010-12465-00	R4	Resistor, 2KΩ, 1/4w, 5%
5043-08996-00	C1	Capacitor, .1µfd, 50v, Ax.
5040-09421-00	C2	Capacitor, 100µfd, 25v, (+50, -10%)
5040-12466-00	C3	Capacitor, 1000µfd, 50v, Ax.
5070-09054-00	D2 - D4	Diode, 1N4004, 1.0A.
5075-12467-00	D1	Zener, 1N5243B, 13v.
5070-09045-00	D5 - D7	Diode, MR501, 3.0A.
5160-10269-00	Q3	Transistor, 2N3904, NPN
5190-10270-00	Q2	Transistor, 2N3906, PNP

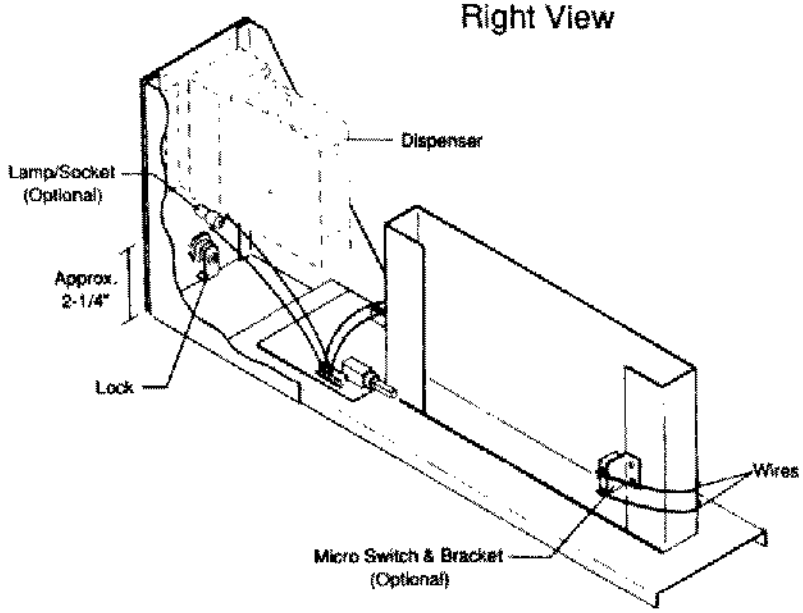
Note: * = Not available for individual sale.

60104 Ticket Dispenser Kit
(Optional Feature)

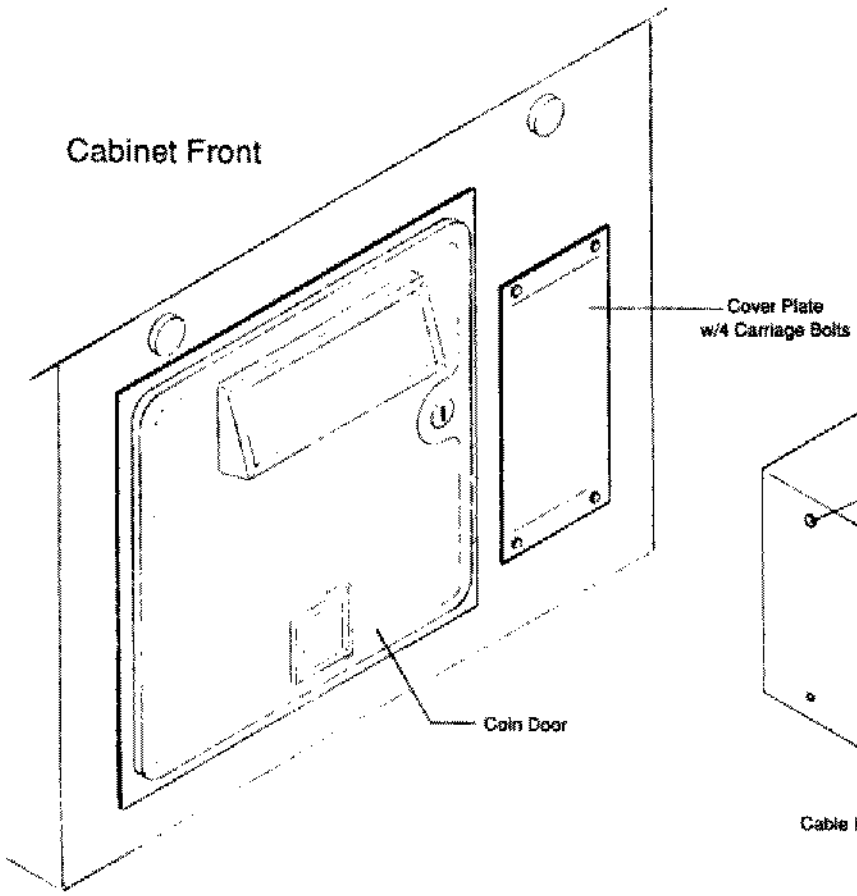
Left View



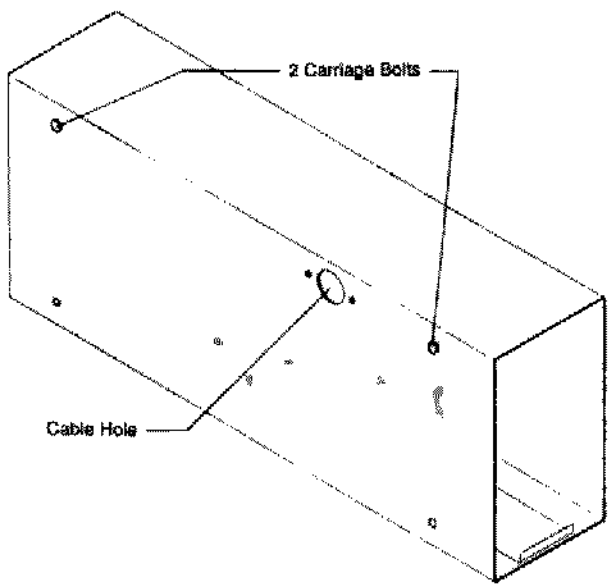
Right View



Cabinet Front



Left View of Dispenser Case



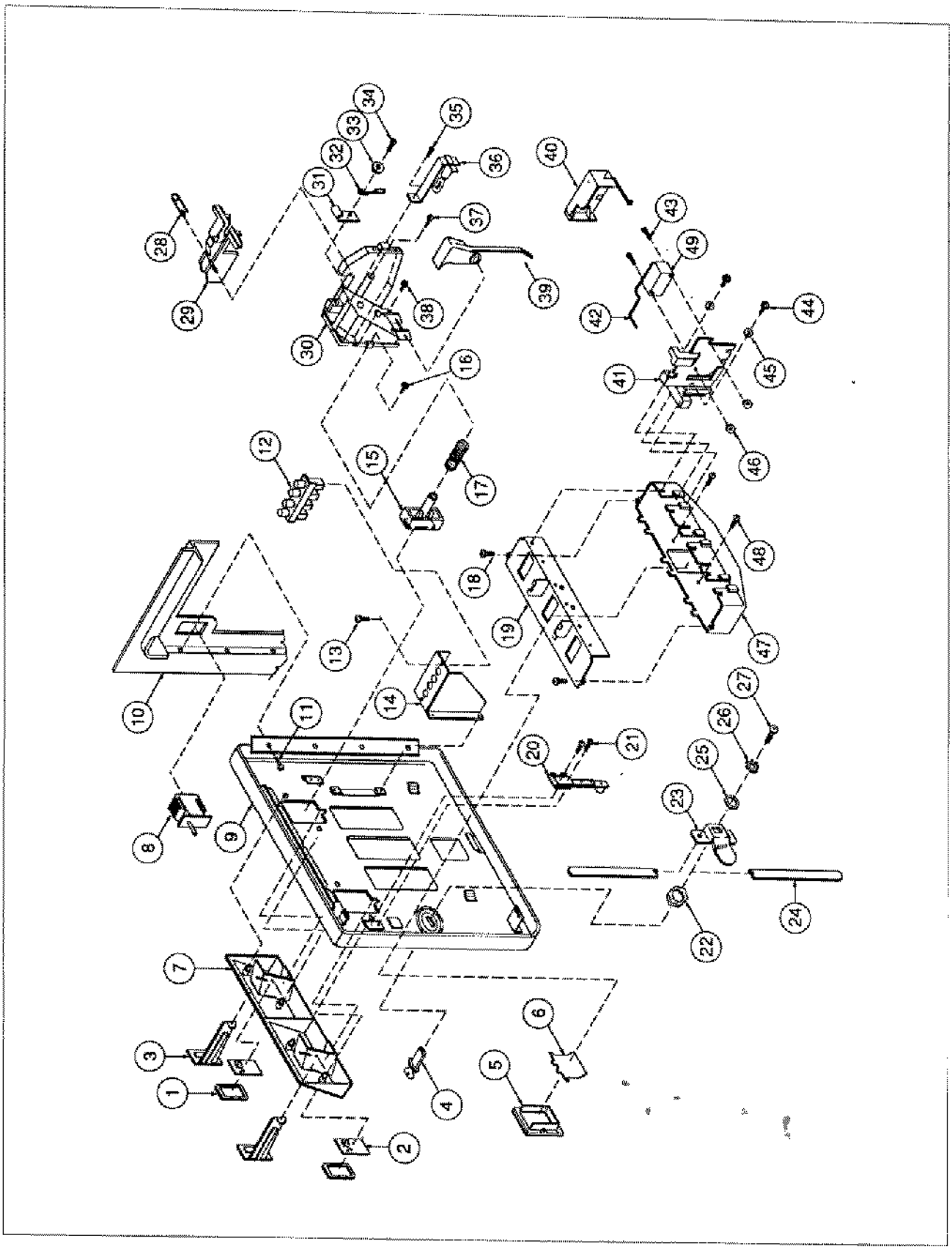
A-14148-1 Coin Door Assembly

U.S.A. Door with Decals

Item	Part No.	Description	Quantity
1	27-1038	Button Cover	2 or 3
2	27-1041-1→58	Price Panel	2 or 3
3	27-1026-1→17	Coin Entry Plate	2 or 3
4	27-1016	Lock Assembly	1
5	27-1061-1	Coin Return - Bezel	1
6	27-1062	Coin Return Flap	1
7	27-1021	Button Housing - 2-slot	1
	27-1022	Button Housing - 3-slot	1
8	27-1111	Interlock Switch	1
9	27-1006-1	Coin Door , 2-Slot	1
	27-1007-1	Coin Door , 3-Slot	1
10	27-1005	Coin Door Frame	1
11	27-1003	M/C Screw, 6-32 x 3/16	4
12	5641-12724-00	Diagnostic Switch	1
13	27-1101	M/C Screw, 4-40 x 1/4	2
14	01-9885	Bracket, Diagnostic Switch	1
15	03-7601-4	Button, Red	2
	03-7601-7	Button, Black	2
16	27-1078	M/C Screw, 6-32 x 3/8	2 or 3
17	27-1039	Conical Spring	2 or 3
18	27-1079	Self-tapping Screw, #6 x 1/4	2
19	27-1077-1	Coinbox Cover	1
20	27-1066	Slam Switch	1
21	27-1067	M/C Screw, 4-40 x 1/2	2
22	27-1017	Nut (key)	1
23	27-1012	Locking Cam	1
24	27-1011	Locking Arm	2
25	27-1020	Washer	1
26	27-1018	Star Washer	1
27	27-1019	M/C Screw, 1/4-28 x 5/16	1
28	27-1089	R-Ring	1
29	27-1083	Retainer	1
30	27-1112	Coin Inlet Chute	2 or 3
31	27-1088	Cable Clamp	2 or 3
32	27-1025	Key Hook	1
33	27-1086	Washer, #6	2 or 3
34	27-1078	M/C Screw, 6-32 x 3/8	1 or 2
	27-1113	M/C Screw, 6-32 x 7/16	1
35	27-1079	Self-tapping Screw, #6 x 1/4	2 or 3
36	27-1084	Lamp Socket	2 or 3
	27-1085	Lamp	2 or 3
37	27-1096	Self-tapping Screw, #5 x 3/8	2 or 3
38	27-1087	M/C Screw, 6-32 x 5/8	2 or 3
39	27-1082	Lever Arm	2 or 3
40	27-1097	Switch Cover	2 or 3
41	27-1091-1	Coin Accept Chute	2 or 3
42	27-1075	Wire Form (Small)	2 or 3
	or		
	27-1093	Wire Form (Large)	
43	27-1094	M/C Screw, 4-40 x 7/8	4 or 6
44	27-1087	M/C Screw, 6-32 x 5/8	4 or 6
45	27-1086	Washer, #6	4 or 6
46	27-1095	Nut, 4-40 ESNA	4 or 6
47	27-1076-1	Coin Return Box	1
48	27-1078	M/C Screw, 6-32 x 3/8	2
49	27-1092	Microswitch	2 or 3

A-14148-1 Coin Door Assembly

U.S.A. Door with Decals



Cable List

Part Number	Description
H-12376-1922	AC Toggle Switch Cable
H-14583	Logic Power Cable
H-14584	Dot Matrix Display
H-14993	AC Line Filter Cable
H-14994	AC Cabinet Cable
H-14995	Secondary Cable
H-14996	GI Input Cable
H-14997	Cabinet Cable
H-14998	Front Box Cable
H-14999	Playfield Cable
H-15000	Speaker Cable
H-15001	Pin Panel Cable
H-15002	Backbox Cable
H-15004	Insert Cable

STRIKE MASTER

Section 3

Wiring Diagrams and Schematics

CONNECTOR & COMPONENT IDENTIFICATION

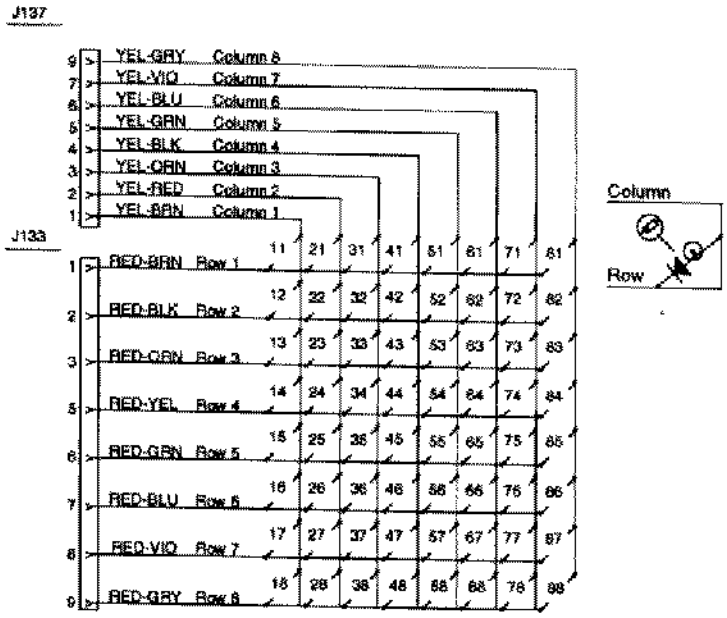
Since **Strike Master** uses WILLIAMS ELECTRONIC GAMES, INC. WPC Electronics System, a new technique to identify connectors and other game components must be introduced. Each plug or jack receives a number that identifies the circuit board and position on that board that it connects to. J-designations 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

Lamp Matrix

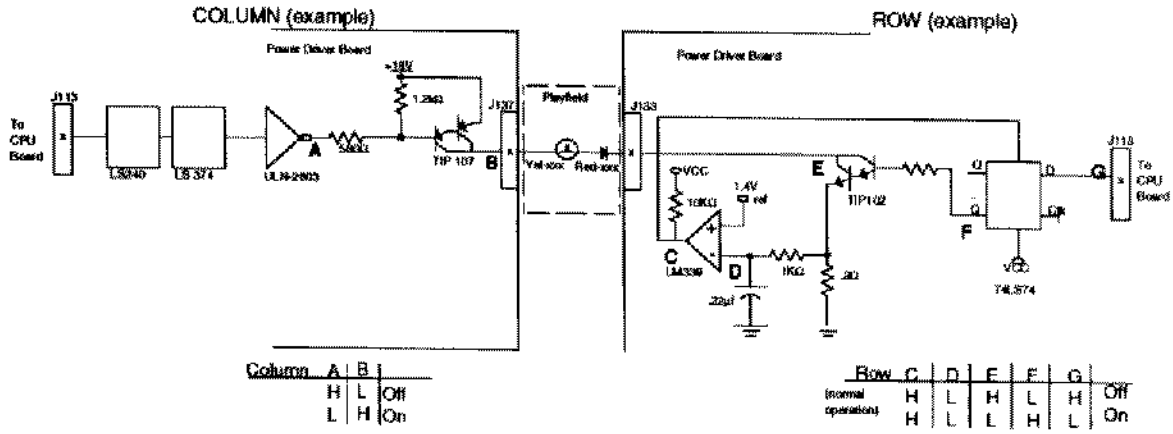


Lamp Matrix

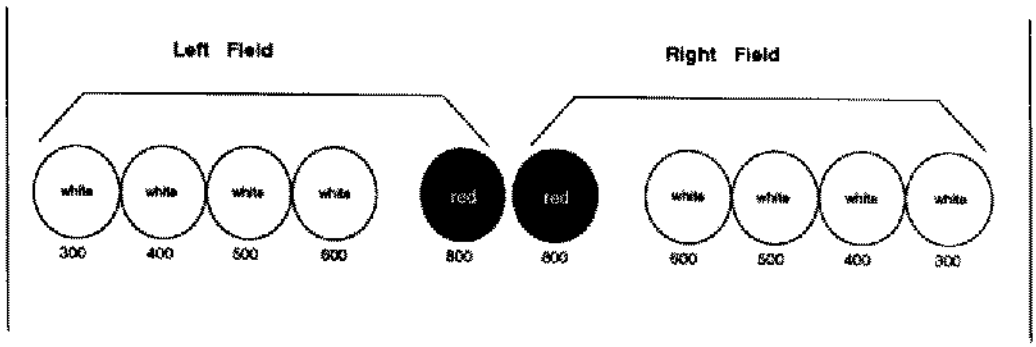
Yellow (B+) — Red

Row \ Column	1 Yellow-Brown J137-1 Q96	2 Yellow-Red J137-2 Q97	3 Yellow-Orange J137-3 Q98	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	Strike 90 Lamp 11	Not Used 21	Not Used 31	Left Hood 600 41	10th Frame 51	Not Used 61	Start Button 71	Right 500 Field 81
2 Red-Black J133-2 Q89	Flash Lamp 12	Not Used 22	Not Used 32	Center Hood 600 42	10th Frame 1st X 52	Not Used 62	Game Select 72	Right 400 Field 82
3 Red-Orange J133-4 Q88	Not Used 13	Not Used 23	Not Used 33	Right Hood 600 43	10th Frame 2nd X 53	Not Used 63	Left 300 Field 73	Right 300 Field 83
4 Red-Yellow J133-5 Q87	Not Used 14	Regulation Lamp 24	Strike Master Lamp 34	Right Hood 500 44	10th Frame Spare 54	Not Used 64	Left 400 Field 74	Right 800 Field 84
5 Red-Green J133-6 Q86	Not Used 15	Not Used 25	Triple Strike Lamp 35	Right Hood 400 45	Not Used 55	Not Used 65	Left 500 Field 75	Not Used 85
6 Red-Blue J133-7 Q85	Not Used 16	Not Used 26	Left Hood 300 36	Right Hood 300 46	Not Used 56	Not Used 66	Left 600 Field 76	Not Used 86
7 Red-Violet J133-8 Q84	Not Used 17	Not Used 27	Left Hood 400 37	Game Over 47	Not Used 57	Not Used 67	Left 800 Field 77	Not Used 87
8 Red-Gray J133-9 Q83	Not Used 18	Not Used 28	Left Hood 500 38	Far Right Hood 48	Not Used 58	Not Used 68	Right 600 Field 78	Not Used 88

Lamp Circuit



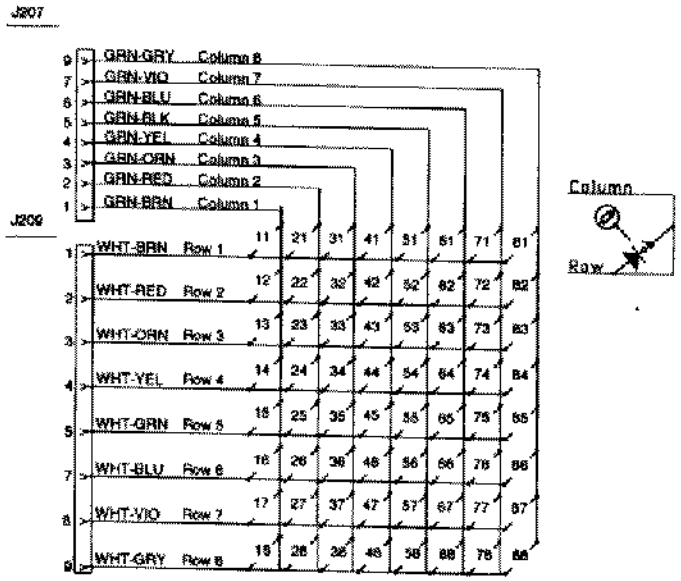
Playfield Lamps Diagram



Shuffle Alley Lamps

- Lamps used in Frontbox, Pin Panel Hood (except fluorescent), and Backbox Insert Board are **#44**, part number **24-6549.**
- Lamps on Playfield and Insert Lamp Boards are **#555**, part number **24-8768.**
- Fluorescent Lamps in Pin Panel Hood are 14-watt Cool White (GE F14T12-CW, or equivalent), part number **24-6597-5.**

Switch Matrix



Switch Matrix

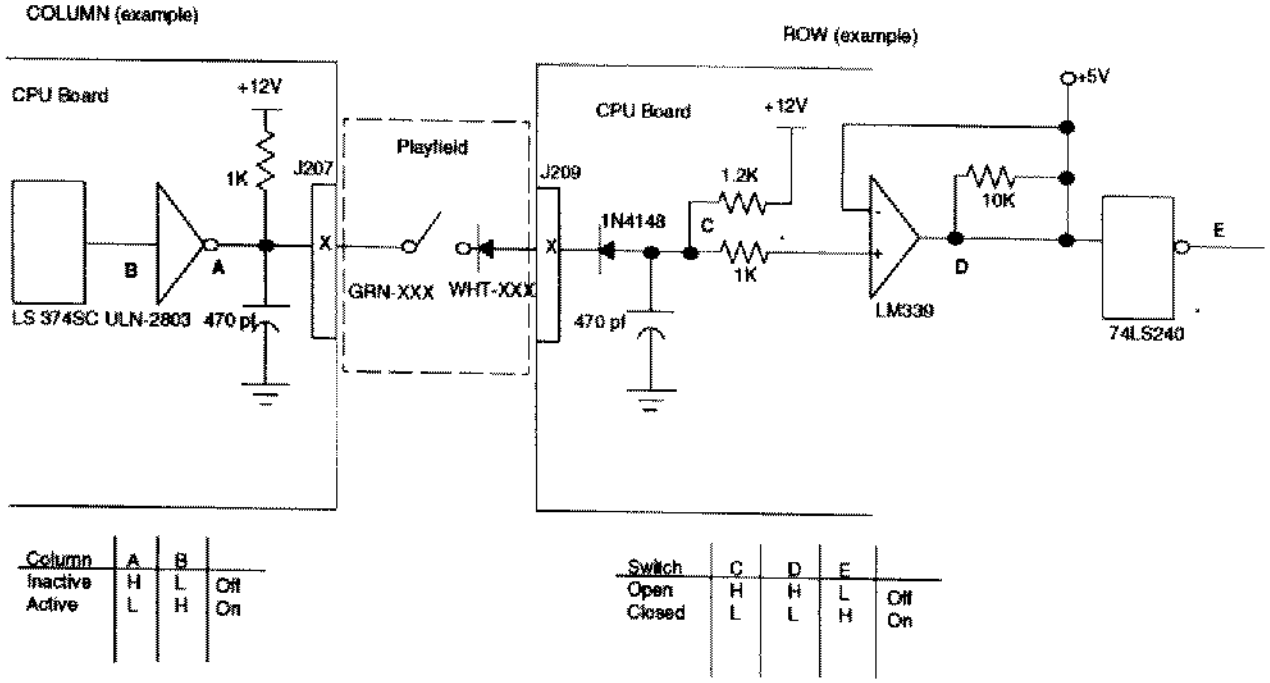
Dedicated Grounded Switches

- **Orange-Brown** (1) — J205-1 U17-8 — **Left Coin Chute** — D1
- **Orange-Red** (2) — J205-2 U17-7 — **Center Coin Chute** — D2
- **Orange-Black** (3) — J205-3 U17-11 — **Right Coin Chute** — D3
- **Orange-Yellow** (4) — J205-4 U17-9 — **4th Coin Chute** — D4
- **Orange-Green** (5) — J205-5 Normal Function: U18-9 — **Service Credits**; Test Function: **Escape** — D5
- **Orange-Blue** (6) — J205-7 Normal Function: U18-11 — **Volume Down**; Test Function: **Down** — D6
- **Orange-Violet** (7) — J205-8 Normal Function: U18-7 — **Volume Up**; Test Function: **Up** — D7
- **Orange-Gray** (8) — J205-9 Normal Function: U18-5 — **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 J207-3 U20-16	4 Green-Yellow J207-4 U20-15	5 Green-Black J207-5 U20-14	6 Green-Blue J207-6 U20-13	7 Green-Violet J207-7 U20-12	8 Green-Gray J207-8 U20-11
1 White-Brown J209-1 U18-11	Not Used 11	**Slam Tilt** 21	High Score Reset 31	Pin Switch P 41	Pin Switch Z 51	Pin Switch F 61	Not Used 71	Not Used 81
2 White-Red J209-2 U18-9	Not Used 12	**Coin Door Closed** 22	Not Used 32	Pin Switch O 42	Pin Switch Y 52	Pin Switch E 62	Not Used 72	Not Used 82
3 White-Orange J209-3 U18-5	**Start Button** 13	**Ticket Opto** 23	Pin Switch H 33	Pin Switch N 43	Pin Switch X 53	Pin Switch B 63	Not Used 73	Not Used 83
4 White-Yellow J209-4 U18-7	**Plumb Bob Tilt** 14	**Always Closed** 24	Pin Switch AA 34	Pin Switch M 44	Switch Back Row 54	Pin Switch A 64	Not Used 74	Not Used 84
5 White-Green J209-5 U19-11	Game Select 15	Not Used 25	Pin Switch G 35	Pin Switch W 45	Pin Switch K 55	Pin Switch D 65	Not Used 75	Not Used 85
6 White-Blue J209-7 U19-9	Not Used 16	Not Used 26	Pin Switch S 36	Pin Switch V 46	Pin Switch L 56	Pin Switch C 66	Not Used 76	Not Used 86
7 White-Violet J209-8 U18-5	Not Used 17	Low Ticket Sense 27	Pin Switch R 37	Pin Switch U 47	Not Used 57	Pin Switch J 67	Not Used 77	Not Used 87
8 White-Gray J209-9 U19-7	Not Used 18	Man. Ticket Disp. 28	Pin Switch Q 38	Pin Switch T 48	Not Used 58	Pin Switch I 68	Not Used 78	Not Used 88

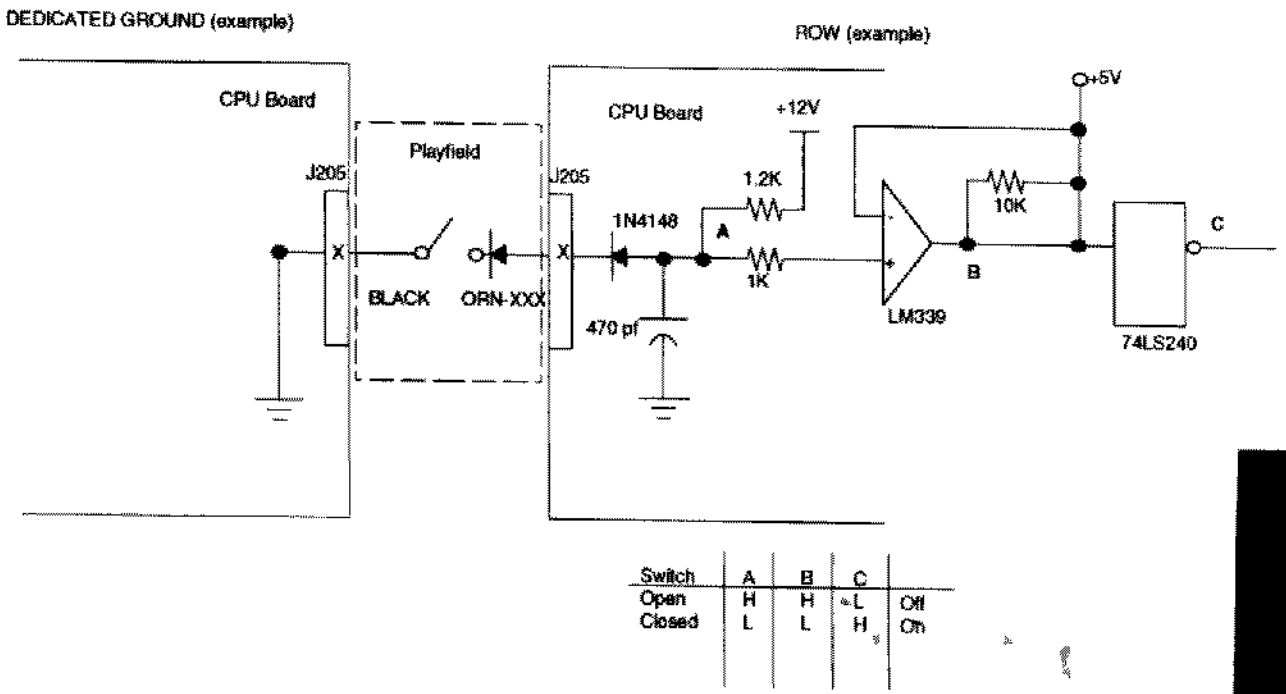
Switch Matrix Circuit



Column	A	B	
Inactive	H	L	Off
Active	L	H	On

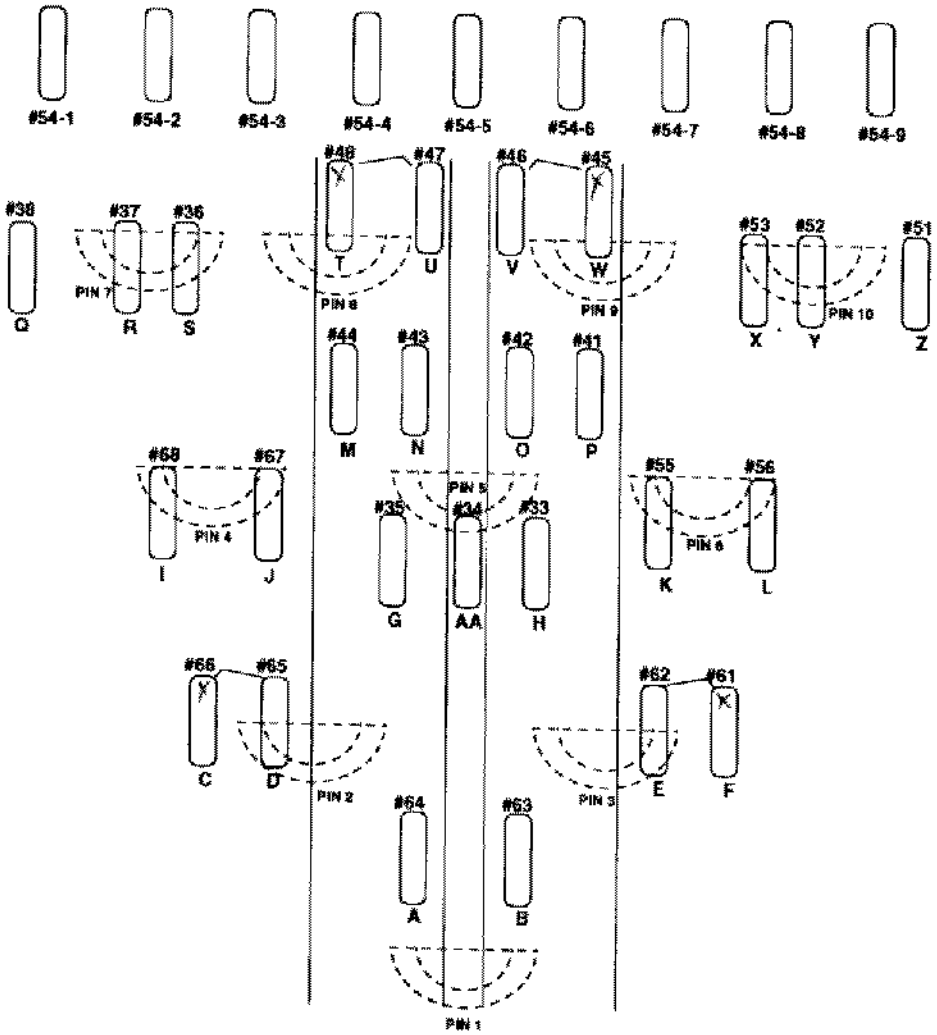
Switch	C	D	E	
Open	H	H	L	Off
Closed	L	L	H	On

Dedicated Switch Circuit



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

Playfield Switches Layout



Switch No.	Switch Actuator No.	Location*
A-9702	B-7752-L	E, W
A-9703	B-7752-L	#54-1, 54-3, 54-5, 54-6
A-9700	B-7752-L	A, F, G, AA, H, K, L, M, N, Q, S, V, Y, #54-2

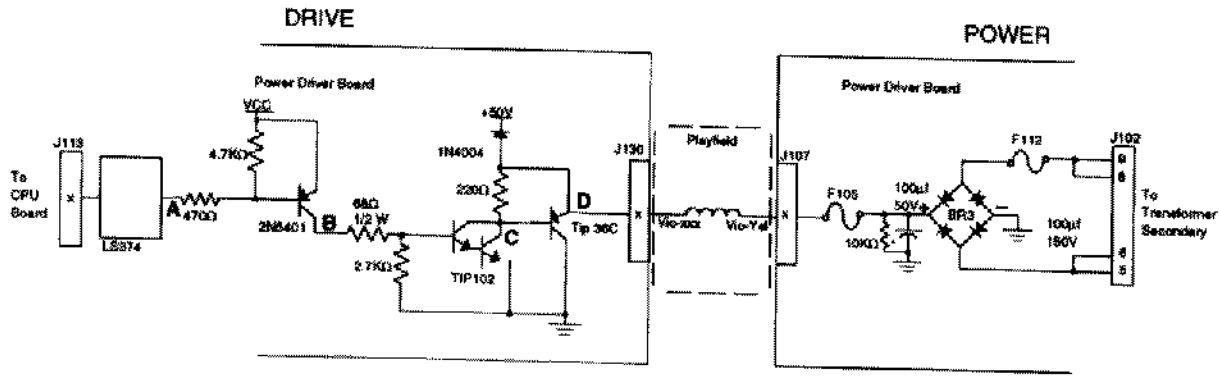
Switch No.	Switch Actuator No.	Location*
A-9701	B-7752-R	D, T
A-9703	B-7752-R	#54-4, 54-7, 54-8, 54-9
A-9699	B-7752-R	B, C, I, J, O, P, R, U, X, Z

***Based on Playfield Switches Layout Diagram**

Solenoid Table

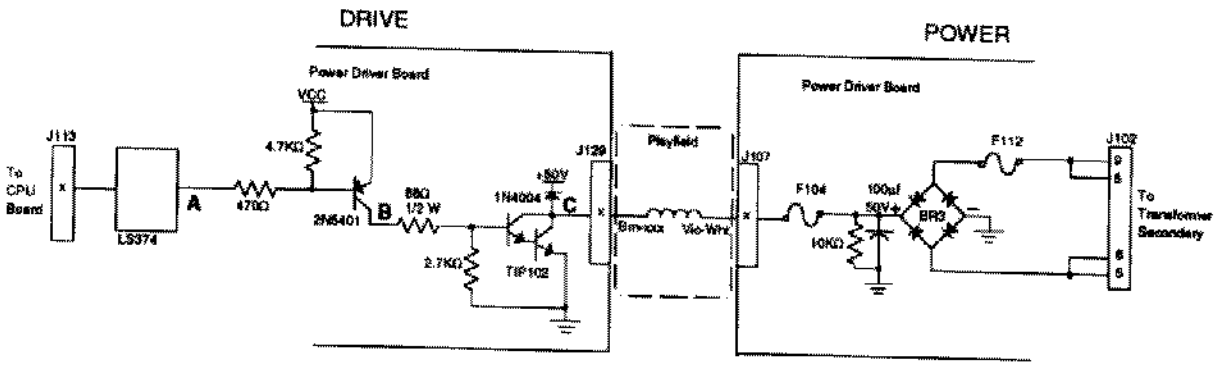
Sol. No.	Function	Solenoid Type	Wire Color	Connection	Driver Trnstr	Solenoid Part Number Flashlamp Type
01	Pin 1	High Power	Vio-Brn	J130-1	Q82	B-31-2500
02	Pin 2	High Power	Vio-Red	J130-2	Q80	B-31-2500
03	Pin 3	High Power	Vio-Orn	J130-4	Q78	B-31-2500
04	Pin 4	High Power	Vio-Yel	J130-5	Q76	B-31-2500
05	Pin 5	High Power	Vio-Grn	J130-6	Q64	B-31-2500
06	Pin 6	High Power	Vio-Blu	J130-7	Q66	B-31-2500
07	Pin 7	High Power	Vio-Blk	J130-8	Q68	B-31-2500
08	Pin 8	High Power	Vio-Gry	J130-9	Q70	B-31-2500
09	Pin 9	Low Power	Brn-Blk	J129-1	Q58	B-31-2500
10	Pin 10	Low Power	Brn-Red	J129-2	Q56	B-31-2500
11	Pin Reset Motor	Low Power	Brn-Org	J129-4	Q54	14-7950 48V 60HZ
12	Not Used	Low Power	Brn-Yel		Q52	
13	Not Used	Low Power	Brn-Grn		Q50	
14	Not Used	Low Power	Brn-Blu		Q48	
15	Not Used	Low Power	Brn-Vio		Q46	
16	Not Used	Low Power	Brn-Gry		Q44	
17	Flasher 1	Flasher	Blk-Brn	J125-1	Q42	#906
18	Flasher 2	Flasher	Blk-Red	J125-2	Q40	#906
19	Flasher 3	Flasher	Blk-Org	J125-3	Q38	#906
20	Flasher 4	Flasher	Blk-Yel	J125-5	Q36	#906
21	Flasher 5	Flasher	Blu-Grn	J125-6	Q28	#906 (2)
22	Flasher 6	Flasher	Blu-Blk	J125-7	Q30	#906 (2)
23	Flasher 7	Low Power	Blu-Vio	J125-8	Q34	#906 (2)
24	Flasher 8	Low Power	Blu-Gry	J125-9	Q32	#906 (2)
25	Flasher 9	Special	Blu-Brn	J123-1	Q26	#906 (3)
26	Not Used	Special	Blu-Red		Q24	
27	Ticket Motor	Special	Blu-Org	J124-3	Q22	See Deltronic Tkt Kit
28	Low Ticket Lamp	Special	Blu-Yel	J124-5	Q20	See Deltronic Tkt Kit
	General Illumination Circuits					
01	Illumination String 1	G.I.	Brown	J120-1	Q18	#555
02	Illumination String 2	G.I.	Orange	J120-2	Q10	#555
03	Illumination String 3	G.I.	Yellow	J120-3	Q14	#555
04	Not Used	G.I.	Green		Q16	
05	Illumination String 5	G.I.	Violet	J121-6	Q12	#555

High Power Solenoid Circuit



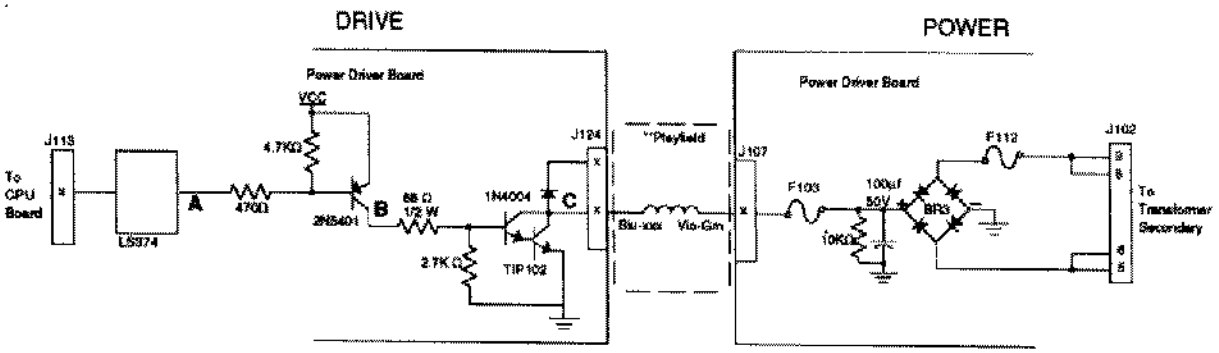
The microprocessor toggles the outpot of the 74LS374. When point "A" drops low, point "B" the collector of the 2N5401 transistor is high. A high at point "B" causes point "C" the collector of the TIP102 transistor, and point "D" the emitter of the TIP36 transistor to drop low. When point "D" is low the 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 outpot 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.

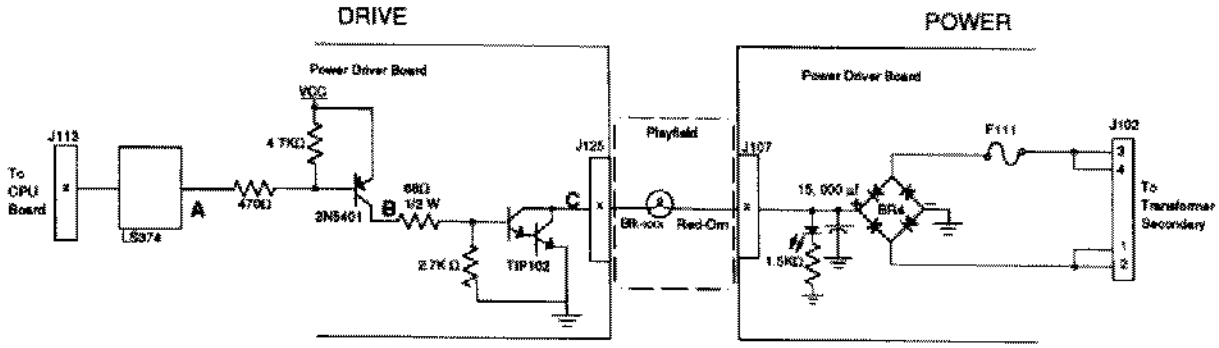
Special (General Purpose) Solenoid Circuit



**Playfield Circuit when used for coil driver only (either +50V or +20V). If used for flashlamp driver see playfield circuit below. Tieback Diode is not used for flashlamp 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.

Flashlamp Circuit



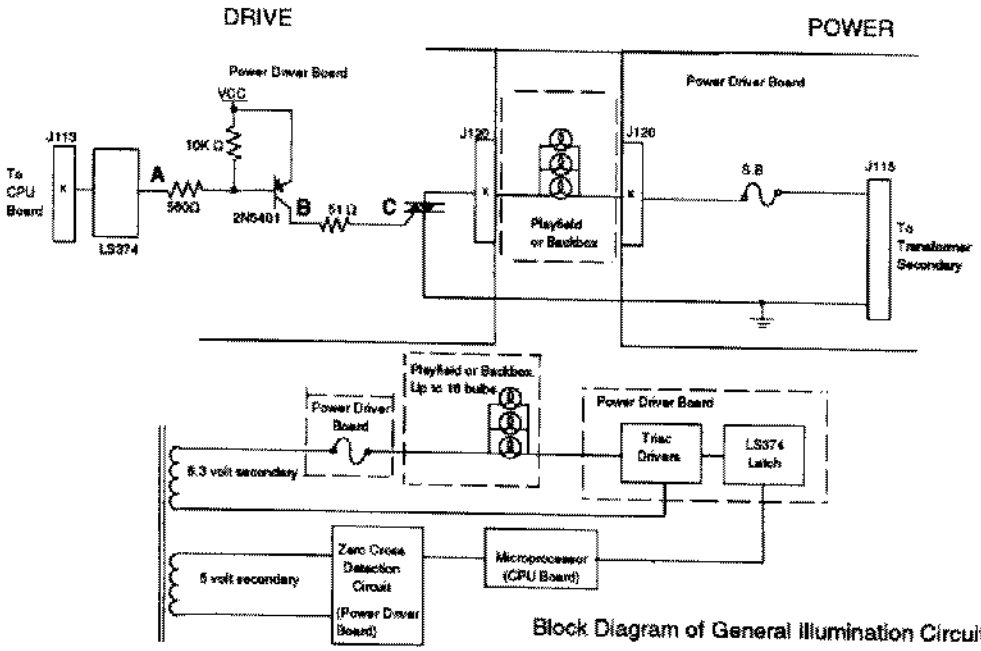
The Microprocessor toggles the output of the 74LS374. When point "A" is low, point "B" the collector of the 2N5401 transistor is high. Once point "B" is high, point "C" the collector of the TIP102 transistor is low. When Point "C" is low the flashlamp is grounded through the transistor and the flashlamp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

General Illumination

The General Illumination circuit contains five separate strings of up to 18 bulbs each for a maximum total of 90 bulbs. Each string of bulbs is controlled by a triac that in turn, is controlled by the microprocessor. The microprocessor has control of the triacs through a latch that it uses to store the control signals.

The General Illumination circuit can be dimmed. The microprocessor, by using a Zero Cross Detection circuit, has the ability to know when the AC line-voltage is passing through a zero cross. Dimming is achieved by the microprocessor sending a control signal to the 74LS374 latch which turns the triac On at some point after the zero cross has been detected. The longer the delay the dimmer the bulbs. Once the triac is turned On, the control signal must be removed immediately to allow the bulbs to turned Off at the next zero cross. The microprocessor then delays the turn On again. This is repeated for every AC cycle that the bulbs are dimmed. The zero cross circuit uses a LM339 comparator to detect the point when the AC line-voltage crosses zero.

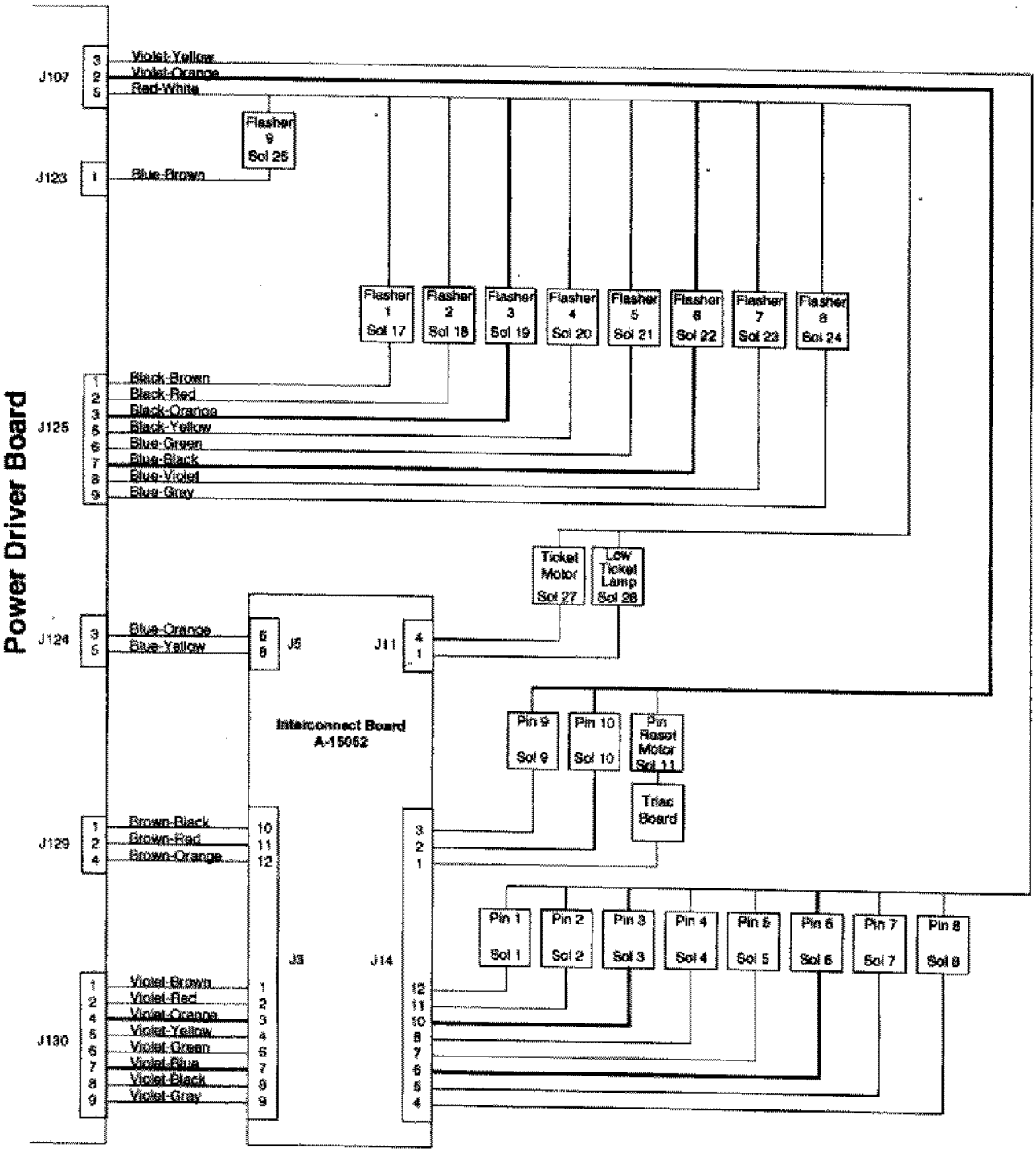
To turn the bulbs On without dimming the processor sends a control signal to the triac and leaves the signal applied.



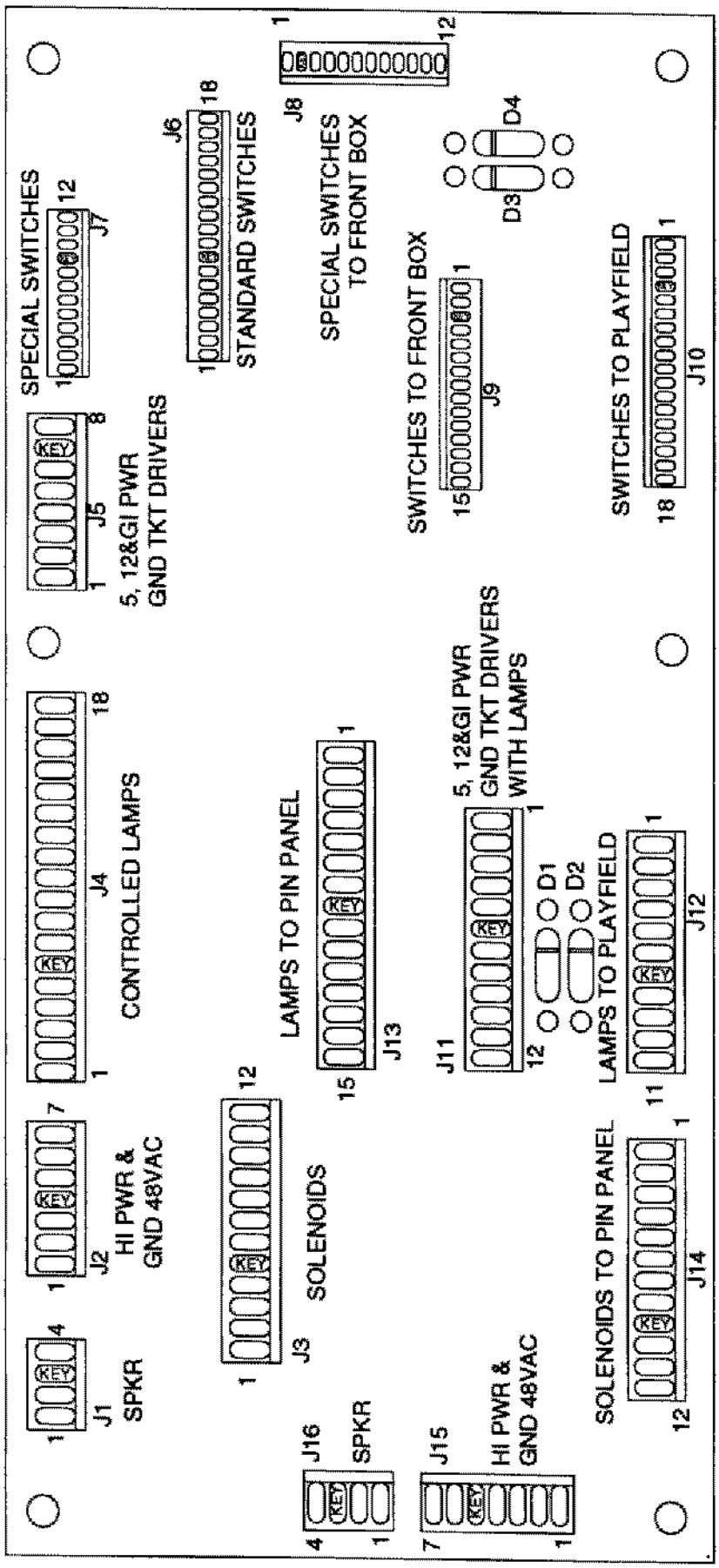
Block Diagram of General Illumination Circuit

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

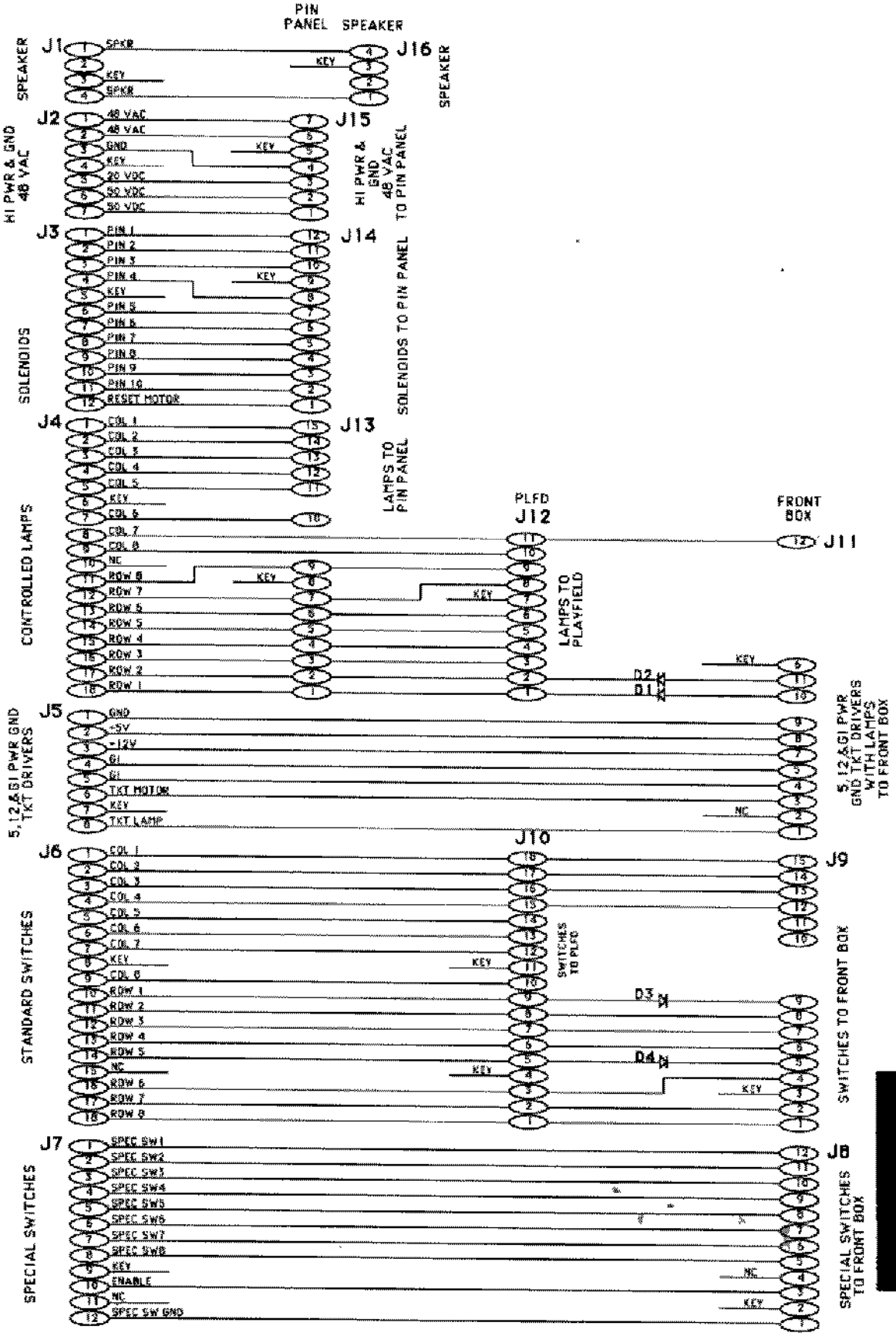
Replace Solenoid Wiring Chart (page 3.11).



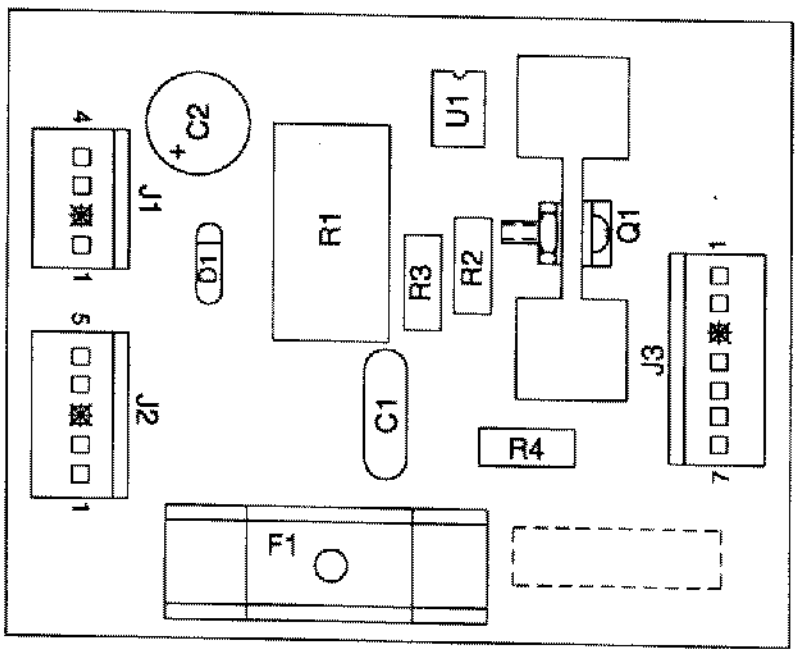
A-15052 Interconnect Board



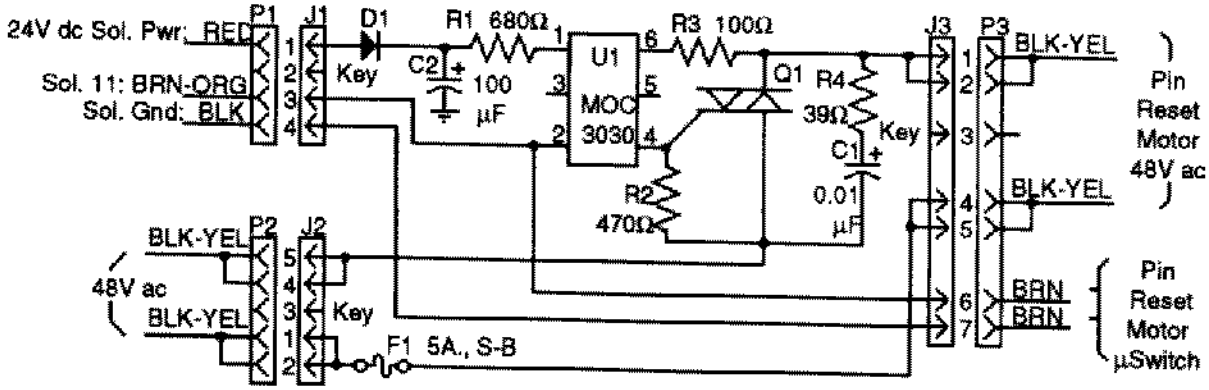
Interconnect Board Schematic



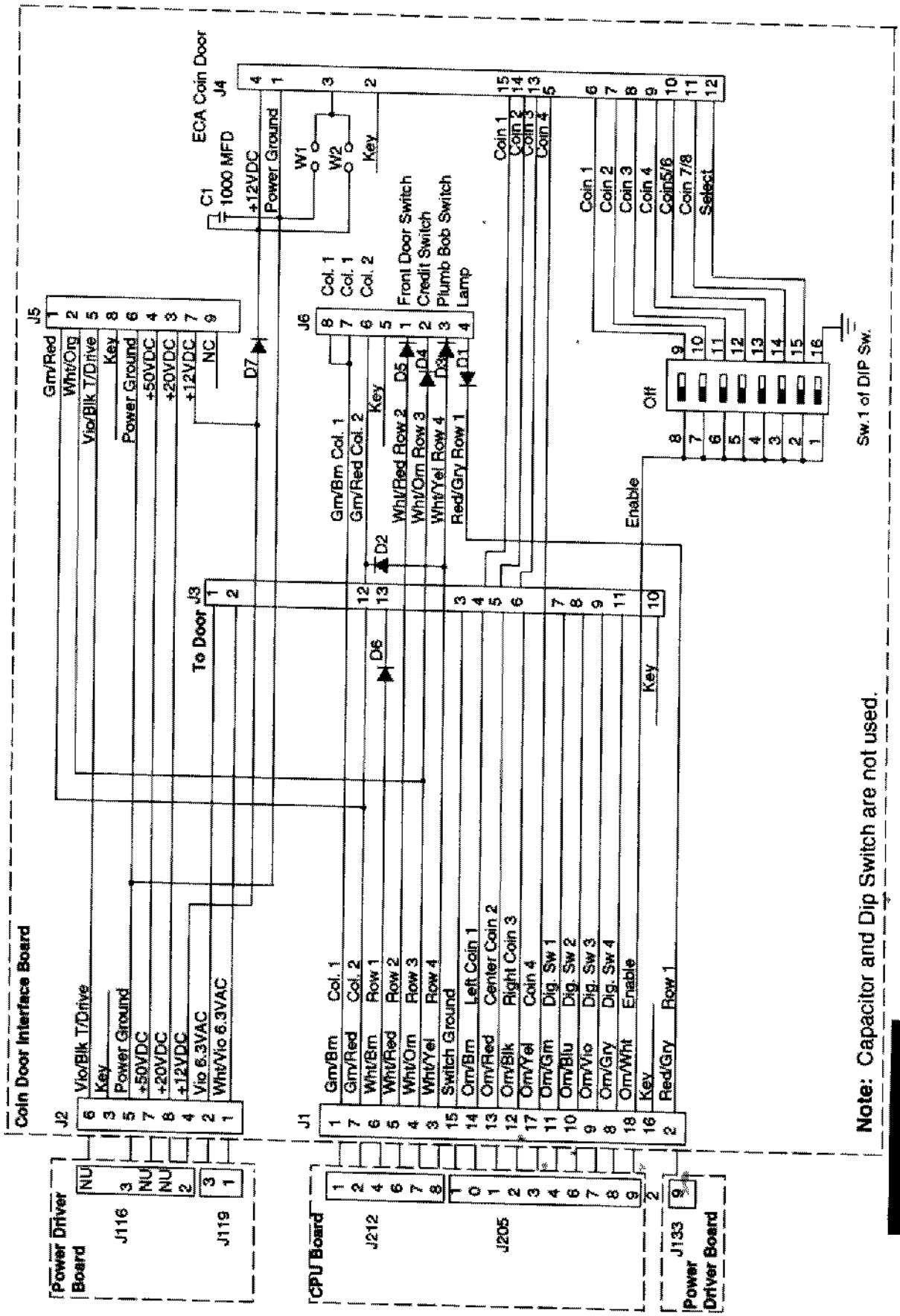
A-13088-2
Triac PCB Assembly



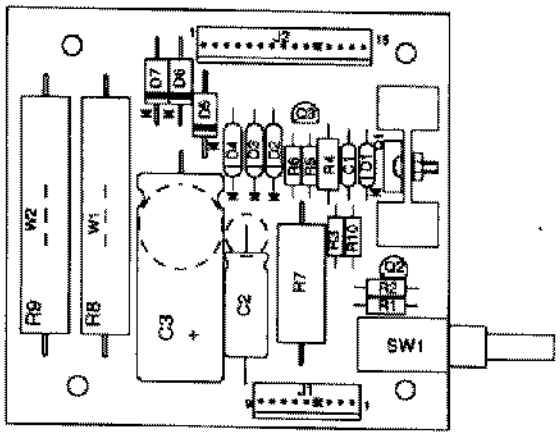
(Pin Panel) Triac PCB Assembly Schematic

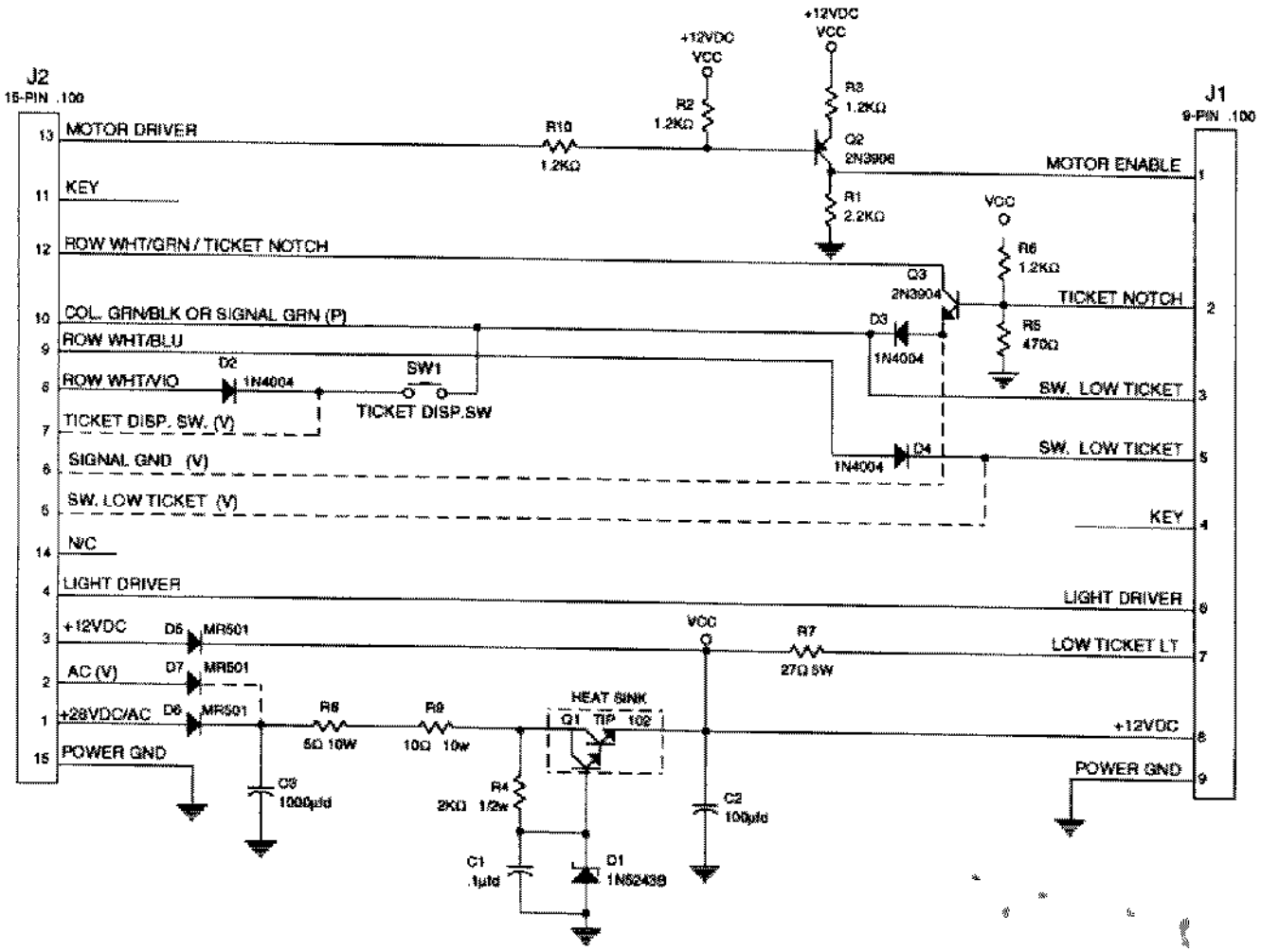


Coin Door Interface Board Schematic
A-14689

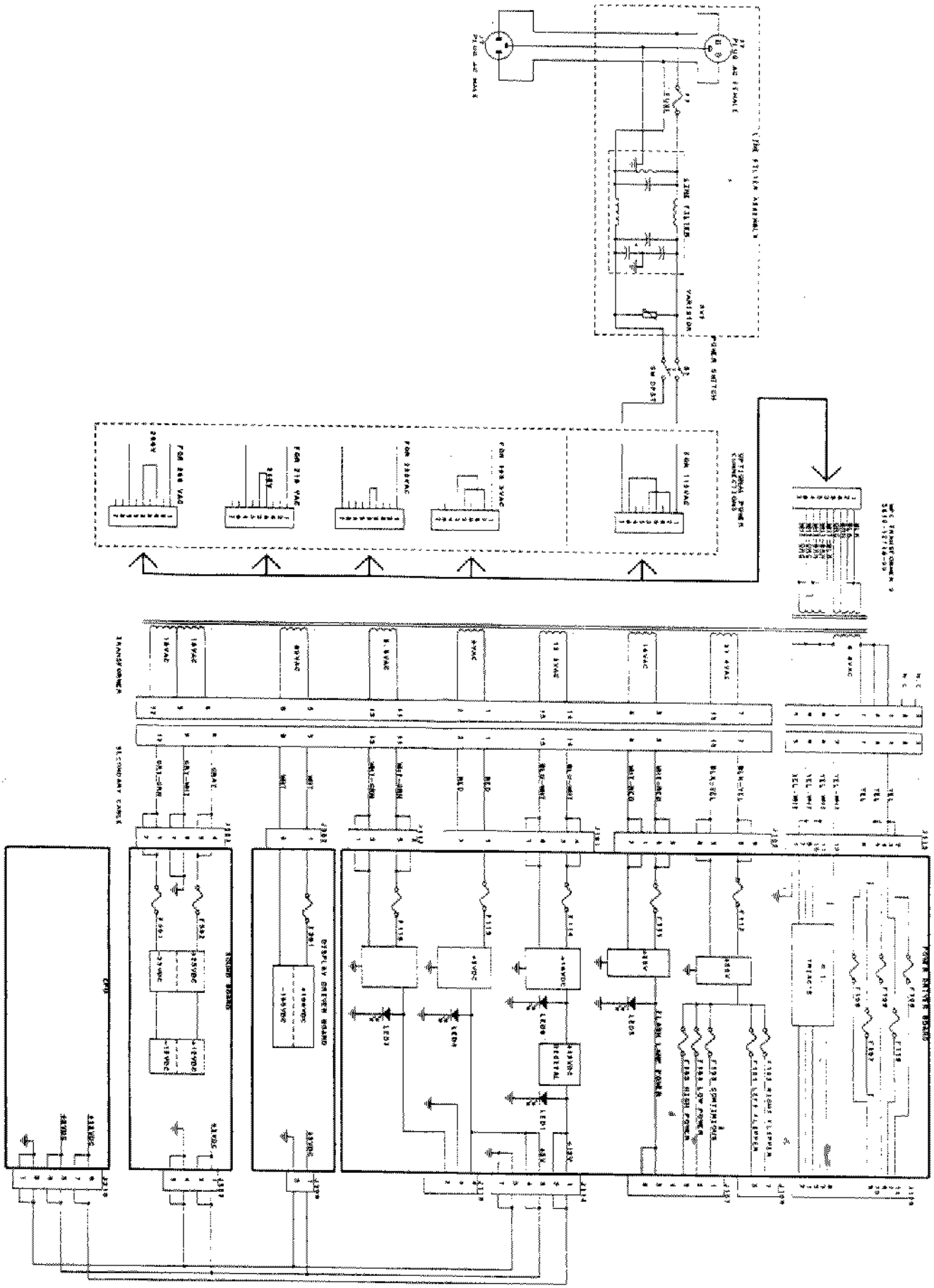


A-14206
Ticket Dispenser Board & Schematic





POWER WIRING



INTERBOARD WIRING

Switch Circuits

Wire Color	Function		I.C.'s	From: CPU	To: Interconnect Board
Green/Brown	Column 1		U20-18	J207-1	J6-1
Green/Red	Column 2		U20-17	J207-2	J6-2
Green/Orange	Column 3		U20-16	J207-3	J6-3
Green/Yellow	Column 4		U20-15	J207-4	J6-4
Green/Black	Column 5		U20-14	J207-5	J6-5
Green/Blue	Column 6		U20-13	J207-6	J6-6
Green/Violet	Column 7		U20-12	J207-7	J6-7
Green/Gray	Column 8		U20-11	J207-9	J6-9
White/Brown	Row 1		U18-11	J209-1	J6-10
White/Red	Row 2		U18-9	J209-2	J6-11
White/Orange	Row 3		U18-5	J209-3	J6-12
White/Yellow	Row 4		U18-7	J209-4	J6-13
White/Green	Row 5		U19-11	J209-5	J6-14
White/Blue	Row 6		U19-9	J209-7	J6-16
White/Violet	Row 7		U19-5	J209-8	J6-17
White/Gray	Row 8		U19-7	J209-9	J6-18
Orange/Brown	Direct 1	Left Coin	U17-5	J205-1	J7-1
Orange/Red	Direct 2	Center Coin	U17-7	J205-2	J7-2
Orange/Black	Direct 3	Right Coin	U17-11	J205-3	J7-3
Orange/Yellow	Direct 4	4th Coin	U17-9	J205-4	J7-4
Orange/Green	Direct 5	Escape/Service	U16-9	J205-6	J7-5
Orange/Blue	Direct 6	Down/Vol. Down	U16-11	J205-7	J7-6
Orange/Violet	Direct 7	Up/Vol. Up	U16-7	J205-8	J7-7
Orange/Gray	Direct 8	Enter/Test	U16-5	J205-9	J7-8
Black		Ground		J205-10	J7-12
Orange/White		Enable		J205-12	J7-10

Lamp Circuits

Wire Color	Function	Transistor	From: Power Driver Board	To: Interconnect Board
Yellow/Brown	Column 1	Q98	J137-1	J4-1
Yellow/Red	Column 2	Q97	J137-2	J4-2
Yellow/Orange	Column 3	Q96	J137-3	J4-3
Yellow/Black	Column 4	Q95	J137-4	J4-4
Yellow/Green	Column 5	Q94	J137-5, *J138-5	J4-5
Yelow/Blue	Column 6	Q93	J137-6	J4-7
Yellow/Violet	Column 7	Q92	J137-7	J4-8
Yellow/Gray	Column 8	Q91	J137-9	J4-9
Red/Brown	Row 1	Q90	J133-1, *J134-1	J4-18
Red/Black	Row 2	Q89	J133-2, *J134-2	J4-17
Red /Orange	Row 3	Q88	J133-4, *J134-4	J4-16
Red/Yellow	Row 4	Q87	J133-5, *J134-5	J4-15
Red/Green	Row 5	Q86	J133-6	J4-14
Red/Blue	Row 6	Q85	J133-7	J4-13
Red/Violet	Row 7	Q84	J133-8	J4-12
Red/Gray	Row 8	Q83	J133-9	J4-11

***Connects Directly To Insert**

NOTE: For connector locations coming out of the Interconnect Board see Schematic on page 3.12

Solenoid Circuits

Wire Color	Function	Transistor	From: Power Driver Board	To: Interconnect Board
Violet/Brown	Solenoid 1, High Power	Q82	J130-1	J3-1
Violet/Red	Solenoid 2, High Power	Q80	J130-2	J3-2
Violet/Orange	Solenoid 3, High Power	Q78	J130-4	J3-3
Violet/Yellow	Solenoid 4, High Power	Q76	J130-5	J3-4
Violet/Green	Solenoid 5, High Power	Q64	J130-6	J3-6
Violet/Blue	Solenoid 6, High Power	Q66	J130-7	J3-7
Violet/Black	Solenoid 7, High Power	Q68	J130-8	J3-8
Violet/Gray	Solenoid 8, High Power	Q70	J130-9	J3-9
Brown/Black	Solenoid 9, Low Power	Q58	J129-1	J3-10
Brown/Red	Solenoid 10, Low Power	Q56	J129-2	J3-11
Brown/Orange	Solenoid 11, Low Power	Q54	J129-4	J3-12
Black/Brown	Sol. 17, Flasher 1, No Diode	Q42	*J125-1	
Black/Red	Sol. 18, Flasher 2, No Diode	Q40	*J125-2	
Black/Orange	Sol. 19, Flasher 3, No Diode	Q38	*J125-3	
Black/Yellow	Sol. 20, Flasher 4, No Diode	Q36	*J125-5	
Blue/Green	Sol. 21, Special 1 Drive	Q28	*J125-6	
Blue/Black	Sol. 22, Special 2 Drive	Q30	*J125-7	
Blue/Violet	Sol. 23, Special 3 Drive	Q34	*J125-8	
Blue/Gray	Sol. 24, Special 4 Drive	Q32	*J125-9	
Blue/Brown	Sol. 25, Special 5 Drive	Q26	*J123-1	
Blue/Orange	Sol. 27, Special 7 Drive	Q22	J124-3	J5-6
Blue/Yellow	Sol. 28, Special 8 Drive	Q20	J124-5	J5-8

***Connects Directly To Insert**

NOTE: For connector locations coming out of the Interconnect Board see Schematic on page 3.12

INTERBOARD WIRING

General Illumination Circuits

Wire Color	Function	Triac	From: Power Driver Board	To: Interconnect Board
Brown	Illum. String 1	Q18	*J120-1	
Orange	Illum. String 2	Q10	*J120-2	
Yellow	Illum. String 3	Q14	*J120-3	
Green	Illum. String 4	Q16		
Violet	Illum. String 5	Q12	J-119-1	J5-4
		Fuses		
White/Brown	Return 1	F110	*J120-7	
White/Orange	Return 2	F109	*J120-8	
White/Yellow	Return 3	F108	*J120-9	
White/Green	Return 4	F107		
White/Violet	Return 5	F106	J-119-3	J5-5

***Directly to Insert**

Power Circuits

Wire Color	Function	From: Power Driver Board: To: Cabinet	To: Dot Matrix Controller	To: Playfield	To: CPU Board
Gray	Digital +5VDC	J116-4	J117-4		J114-3,4
Gray/Green	Switch +12VDC				J114-1,2
Gray/Yellow	Analog +12VDC	J116-2	J117-2		
Black	Ground	J116-3	J117-3		J114-5,7

Power Circuits

Wire Color	Function	From: Power Driver Board	To: Interconnect Board
Violet/Yellow	High Power 50V	J107-3	J2-7
Violet/Orange	Low Power 50V	J107-2	J2-6
Violet/Green	Continuous Duty	Not Used	
Red	Flasher 20V	*J107-5	
Red/White	Flasher 20V	J106-5	J2-5
White/Blue	50VAC	J104-1	J2-1
White/Blue	50VAC	J104-2	J2-1
Black	Ground	J103-2	J2-3

***Connects Directly to Insert**

Logic Circuits

Wire Color	Function	
Ribbon Cable	Data	J201 To/From: Dot Matrix Controller
Ribbon Cable	Data	J202 To/From: Sound Board & Dot Matrix Controller
Ribbon Cable	Data	J204 Not Used

		From: Power Driver Board
Black	Ground	J210-1
Black	Ground	J210-3
Gray	+5VDC	J210-4
Gray	+5VDC	J210-5
Gray/Green	+12VDC	J210-6
Gray/Green	+12VDC	J210-7
Ribbon Cable	Data	J211

NOTE: For connector locations coming out of the Interconnect Board see Schematic on page 3.12

Display Circuits

Wire Color	Function	To:	From: CPU Bd.	From: Sound Bd.
Ribbon Cable	Data	J601	J202	J506
Ribbon Cable	Data	J602	J201	
Ribbon Cable	Data	J603 To/From Dot Matrix Display/Driver Board		
		To: Dot Matrix Display/Driver		
Orange	-125V	J604-1		
Blue	-113V	J604-2		
Black	Ground	J604-4		
Black	Ground	J604-5		
Gray	+5V	J604-6		
Gray/Yellow	+12V	J604-7		
Brown	+62V	J604-8		
		To: Transformer (AC)		
White	80VAC	J605-1		
White	80VAC	J605-2		
Violet	100VAC	J605-3		
Violet	100VAC	J605-5		
		From: Power Driver Board		
Black	Ground	J606-1		
Black	Ground	J606-3		
Gray	+5V	J606-4		
Gray	+5V	J606-5		
Gray/Yellow	+12V	J606-6		
Gray/Yellow	+12V	J606-7		

Sound Circuits

Wire Color	Function			
Ribbon Cable	Data	J506 To/From CPU Board & Dot Matrix Controller		
		From: Transformer Secondary		
Gray/Green	18VAC	J501-1		
Gray/Green	18VAC	J501-2		
Gray	18VAC	J501-4		
Gray	18VAC	J501-5		
Gray/White	Ground	J501-6		
Gray/White	Ground	J501-7		
		Power From CPU/Power Driver Board		
Gray	+5VDC	J502-1		
Gray	+5VDC	J502-3		
Black	Ground	J502-4		
Black	Ground	J502-5		
		From: Backbox Speaker Connection	**To Interconnect Board**	
Black/Yellow	Speaker	J505-4	J1-4	
Black		J505-1	J1-1	

NOTE: For connector locations coming out of the Interconnect Board see Schematic on page 3.12

Lamp Matrix

Yellow (B+) ——— Red

Column / Row	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 Q90	Strike 90 Lamp 11	Not Used 21	Not Used 31	Left Hood 800 41	10th Frame 51	Not Used 61	Start Button 71	Right 800 Field 81
2 Red-Black J133-2 Q89	Flash Lamp 12	Not Used 22	Not Used 32	Center Hood 800 42	10th Frame 1st X 52	Not Used 62	Game Select 72	Right 400 Field 82
3 Red-Orange J133-4 Q88	Not Used 13	Not Used 23	Not Used 33	Right Hood 800 43	10th Frame 2nd X 53	Not Used 63	Left 300 Field 73	Right 300 Field 83
4 Red-Yellow J133-5 Q87	Not Used 14	Regulation Lamp 24	Strike Master Lamp 34	Right Hood 500 44	10th Frame Spare 54	Not Used 64	Left 400 Field 74	Right 500 Field 84
5 Red-Green J133-6 Q86	Not Used 15	Not Used 25	Triple Strike Lamp 35	Right Hood 400 45	Not Used 55	Not Used 65	Left 500 Field 75	Not Used 85
6 Red-Blue J133-7 Q85	Not Used 16	Not Used 26	Left Hood 300 36	Right Hood 300 46	Not Used 56	Not Used 66	Left 600 Field 76	Not Used 86
7 Red-Violet J133-8 Q84	Not Used 17	Not Used 27	Left Hood 400 37	Game Over 47	Not Used 57	Not Used 67	Left 800 Field 77	Not Used 87
8 Red-Gray J133-9 Q83	Not Used 18	Not Used 28	Left Hood 500 38	Far Right Hood 48	Not Used 58	Not Used 68	Right 600 Field 78	Not Used 88

Switch Matrix

Dedicated Grounded Switches

Orange-Brown (1)
J209-1 U17-5
Left Coin Chute
D1

Orange-Red (2)
J209-2 U17-7
Center Coin Chute
D2

Orange-Black (3)
J209-3 U17-11
Right Coin Chute
D3

Orange-Yellow (4)
J209-4 U17-9
4th Coin Chute
D4

Orange-Green (5)
J209-5 U18-5
Normal Function: **Service Credits**
U18-5 Test Function: **Escape**
D5

Orange-Blue (6)
J209-7 U18-11
Normal Function: **Volume Down**
U18-11 Test Function
D6

Orange-Violet (7)
J209-8 U18-7
Normal Function: **Volume Up**
U18-7 Test Function
D7

Orange-Gray (8)
J209-9 U19-7
Normal Function: **Begin Test**
U18-5 Test Function: **Enter**
D8

White ——— Green

Column / Row	1 Green-Brown J207-1 U20-18	2 Green-Red J207-2 U20-17	3 Green-Orange J207-3 U20-16	4 Green-Yellow J207-4 U20-15	5 Green-Black J207-5 U20-14	6 Green-Blue J207-6 U20-13	7 Green-Violet J207-7 U20-12	8 Green-Gray J207-9 U20-11
1 White-Brown J209-1 U18-11	Not Used 11	Slam Tilt 21	High Score Reset 31	Pin Switch P 41	Pin Switch Z 51	Pin Switch F 61	Not Used 71	Not Used 81
2 White-Red J209-2 U18-9	Not Used 12	Coin Door Closed 22	Not Used 32	Pin Switch O 42	Pin Switch Y 52	Pin Switch E 62	Not Used 72	Not Used 82
3 White-Orange J209-3 U18-5	Start Button 13	Ticket Opto 23	Pin Switch H 33	Pin Switch N 43	Pin Switch X 53	Pin Switch B 63	Not Used 73	Not Used 83
4 White-Yellow J209-4 U18-7	Plumb Bob Tilt 14	Always Closed 24	Pin Switch AA 34	Pin Switch M 44	Switch Back Row 54	Pin Switch A 64	Not Used 74	Not Used 84
5 White-Green J209-5 U19-11	Game Select 15	Not Used 25	Pin Switch G 35	Pin Switch W 45	Pin Switch K 55	Pin Switch D 65	Not Used 75	Not Used 85
6 White-Blue J209-7 U19-9	Not Used 16	Not Used 26	Pin Switch S 36	Pin Switch V 46	Pin Switch L 56	Pin Switch C 66	Not Used 76	Not Used 86
7 White-Violet J209-8 U19-5	Not Used 17	Low Ticket Sense 27	Pin Switch R 37	Pin Switch U 47	Not Used 57	Pin Switch J 67	Not Used 77	Not Used 87
8 White-Gray J209-9 U19-7	Not Used 18	Man. Ticket Disp. 28	Pin Switch Q 38	Pin Switch T 48	Not Used 58	Pin Switch I 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-WILLIAMS 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.

BECAUSE THIS GAME IS PROTECTED by Federal copyright, trademark, and patent laws, unauthorized game conversions may be illegal under Federal law.

THIS 'CONVERSION' PRINCIPLE ALSO APPLIES to unauthorized facsimiles of WILLIAMS equipment, logos, designs, publications, assemblies and games (or game feature not deemed to be public domain), whether manufactured with WILLIAMS components or not.

NOTICE

WARNING

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

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 WILLIAMS 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 WILLIAMS 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 WILLIAMS Distributor.

WILLIAMS ELECTRONICS GAMES, INC.
3401 N. California
Chicago, IL 60618