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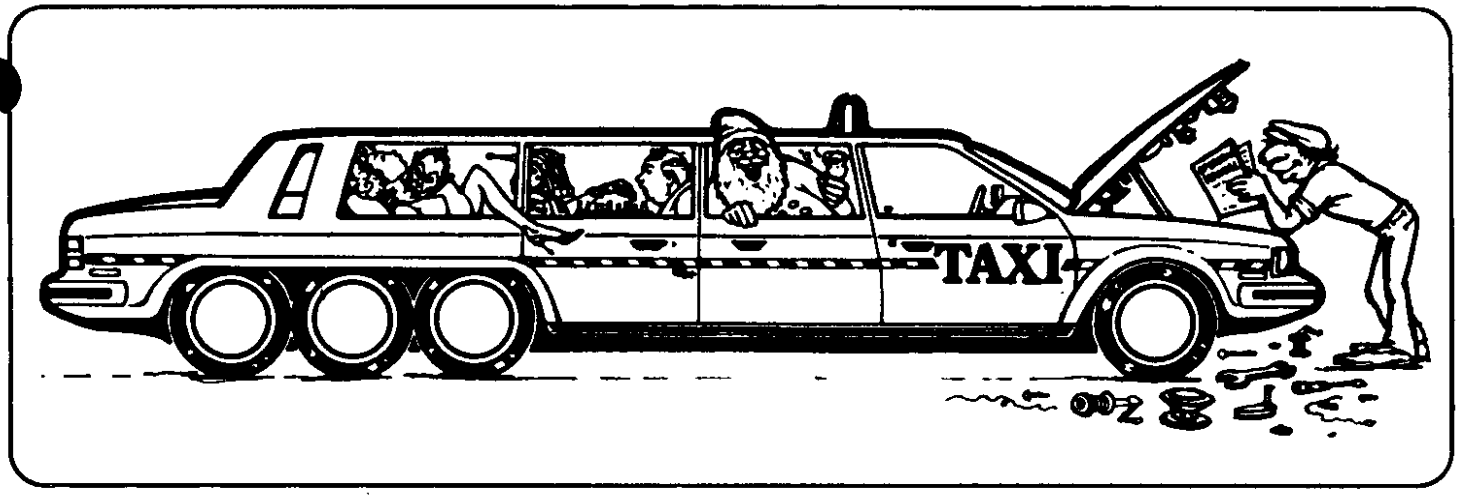

OPERATIONS MANUAL

including
Game Operation,
Test/Diagnostic Procedures,
Parts Information,
Reference Diagrams, &
Schematics

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Section 1
Game Operation & Test Information

- TAXI (System 11B) ROM Summary
- Pinball Game Assembly Instructions
- Game Play
- Game Status Displays
- Game Adjustment Procedure
- Game Pricing
- Test/Diagnostic Procedures

TAXI (System 11B) ROM Summary

IC	DESCRIPTION	TYPE	IDENTIFIER	BOARD	PART NUMBER
Game ROM 1	32K x 8 ROM	27256	U27	CPU	A-5343-553-2
Game ROM 2	32K x 8 ROM	27256	U26	CPU	A-5343-553-1
Sound ROM 1	32K x 8 ROM	27256	U21	CPU	A-5343-553-4
Sound ROM 2	32K x 8 ROM	27256	U22	CPU	A-5343-553-3
Music/Speech ROM 1	32K x 8 ROM	27256	U4	Audio	A-5343-553-5
Music/Speech ROM 2	32K x 8 ROM	27256	U19	Audio	A-5343-553-6

NOTICE

To order a replacement ROM from your authorized WILLIAMS ELECTRONICS GAMES distributor, specify: (1) part number (if available); (2) ROM label color; (3) ROM level (number) on the label; (4) which game the ROM is used in.

CONNECTOR & COMPONENT IDENTIFICATION

WILLIAMS ELECTRONICS GAMES uses a special technique to identify connectors and . Each plug or jack receives a prefix number (which identifies the circuit board), a letter, and a number. J-designations refer to the male part of a connector. P-designations refer to the female part of a connector. For example, 1J1 designates jack 1 of board 1 (a CPU Board jack); 3P6 designates plug 6 of board 3 (a Power Supply 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, 1J1-3 refers to pin 3 of jack 1 on board 1.

Other game components may also have similar prefixes preceding their designator to clarify their locations or related circuit.

Prefix numbers for the System 11B circuit boards and other major assemblies are listed below. A prefix number may precede a component designator to identify its associated unit (e.g., connector 1J1).

1 - CPU	5 - Aux Power Driver	9 - Insert Board
2 - Master Interconnect	6 - Backbox	10 - Audio
3 - Backbox Power Supply	7 - Cabinet	
4 - Alphanumeric Display	8 - Playfield	

TAXI CIRCUIT BOARDS

System 11B Circuit Boards for **TAXI** are in the backbox. They are accessible by unlocking the Backbox lock, removing the Backbox glass, unlatching the Insert Board (with lamps and the Taxi Meter display), and swinging it open.

The Master Display Board is mounted on the back of the Speaker/Display Panel, just below the Insert Board. To access the Master Display Board, carefully lift the Speaker/Display Panel out of its bottom guide and lay it forward onto the top of the game cabinet.

Lamp circuit boards are mounted on the Playfield, the Insert Board, and on top of the Backbox under the Taxi Dome.

CPU BOARD. The System 11B CPU Board (p/n D-11883-553) must be equipped with the ROMs specified in the **TAXI** (System 11B) ROM Summary. CPU Board jumpers W1, W2, W4, W5, W7, W8, W11, W14, W16, W17, and W19 must be connected.

AUDIO BOARD. The Audio Board is p/n D-11581-553, including ROMs and microprocessor.

DISPLAY BOARD. The Alphanumeric Display Unit Board is p/n D-12195-553.

POWER SUPPLY BOARD. The Power Supply Board is p/n D-12246-553.

AUX POWER DRIVER BOARD. The Aux Power Driver Board is D-12247-559.

MASTER INTERCONNECT BOARD. The Master Interconnect Board is D-12185-553.

Figure 1 shows the locations of these circuit boards, as well as other devices especially located to make **TAXI** a great game.

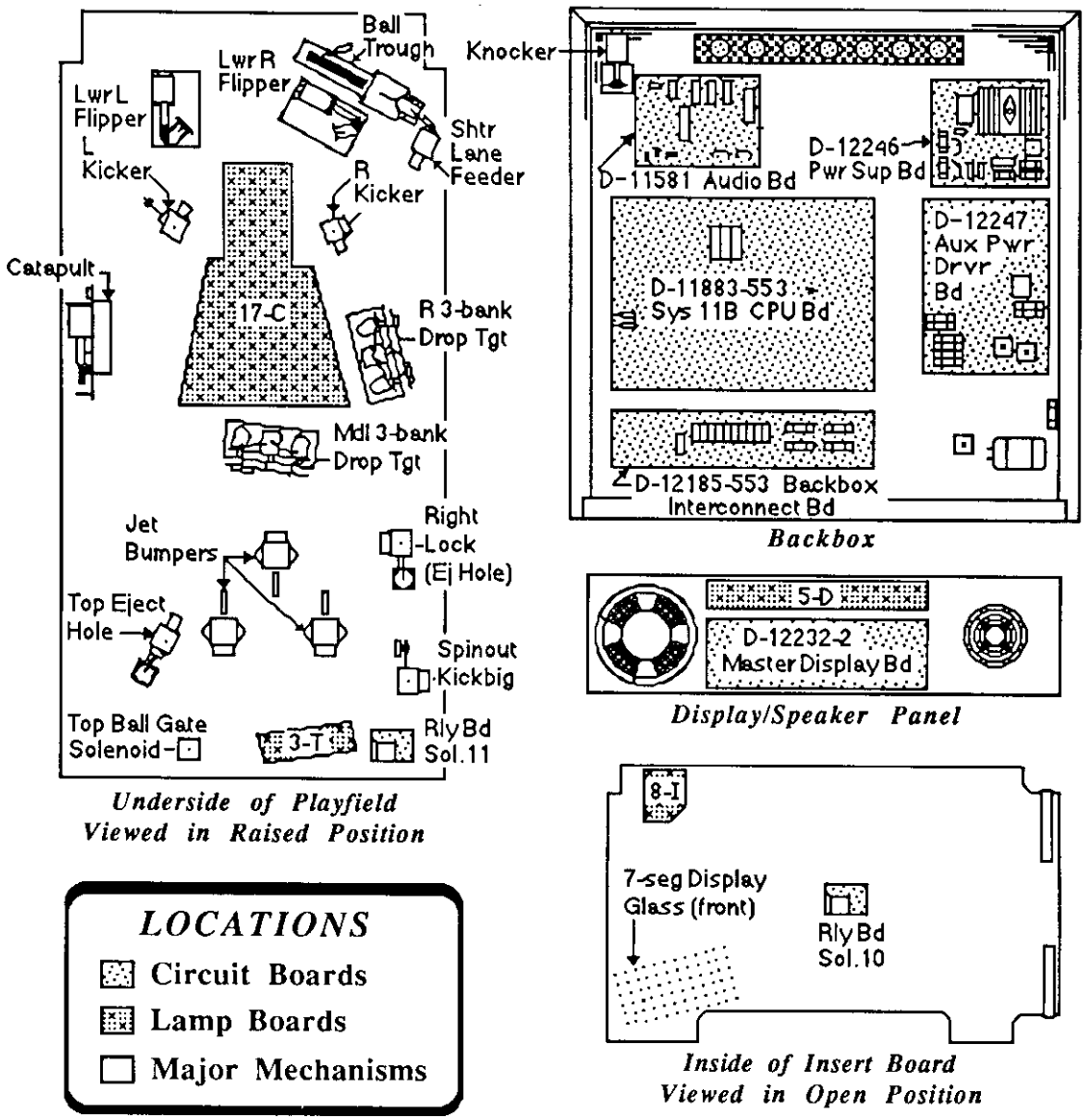


Figure 1. Locations Diagram - Game Circuit Boards and Major Mechanisms

TAXI GAME CONTROL LOCATIONS

Figure 2 shows the locations of the following switches, except for the last two (CPU and Sound Diagnostic switches, which are shown in the Backbox portion of Figure 1 on the CPU Board).

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

The Volume Control is on the left inner wall of the cabinet on the tilt mechanisms board. It is accessible by opening the coin box door.

The Credit switch is a pushbutton to the left of the coin door on the cabinet exterior.

GAME ADJUSTMENT/DIAGNOSTIC SWITCHES. **TAXI** allows the operator to control all game adjustments, obtain bookkeeping information, and diagnose problems, using only three switches mounted on the inside of the coin door, along with the Credit button beside the coin door.

> ADVANCE, AUTO-UP/MANUAL-DOWN, and HIGH-SCORE RESET are the switches located on the inside of the coin door. Refer to the text discussing Game Status Displays and the Test/Diagnostic Procedures for details concerning button operation.

The Memory Protect switch is on the inside frame of the coin door. This interlock switch must be open to clear bookkeeping totals and to make game adjustments. It automatically opens, when the coin door opens.

Figure 1 shows the locations of the two CPU Board switches (left edge of CPU Board, Backbox View).

The CPU Diagnostic switch (SW 2) is the lower switch (of the two switches mounted on the left edge of the CPU Board) near a large, socketed microprocessor chip. This switch initiates the Memory Chip Test explained in the Test/Diagnostic Procedures.

The Sound Diagnostic switch (SW 1) is the upper switch of the two mounted on the left edge of the CPU Board. This switch initiates the Sound Section Test. Refer to the Test/Diagnostic Procedures.

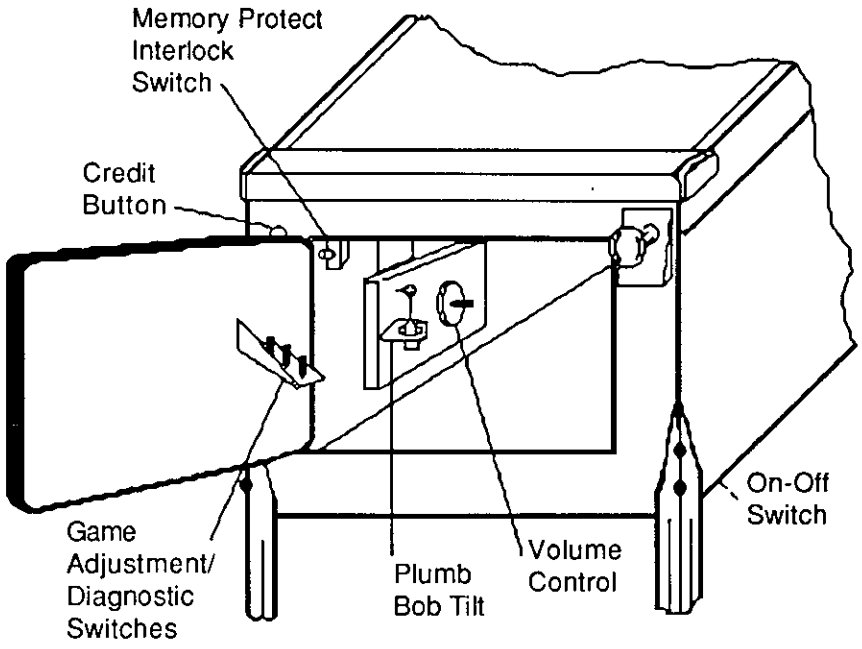


Figure 2. Pinball Game Controls Locations

PINBALL GAME ASSEMBLY INSTRUCTIONS

1. Open the shipping container; remove all cartons, parts, and other items, and set them aside.
2. Place cabinet on a support and attach rear legs (after installing leg levellers), using leg bolts. Leg levellers and leg bolts are both provided among the parts in the cash box.
3. Attach the front legs (after installing leg levellers), using leg bolts. See Figure 3 for details.

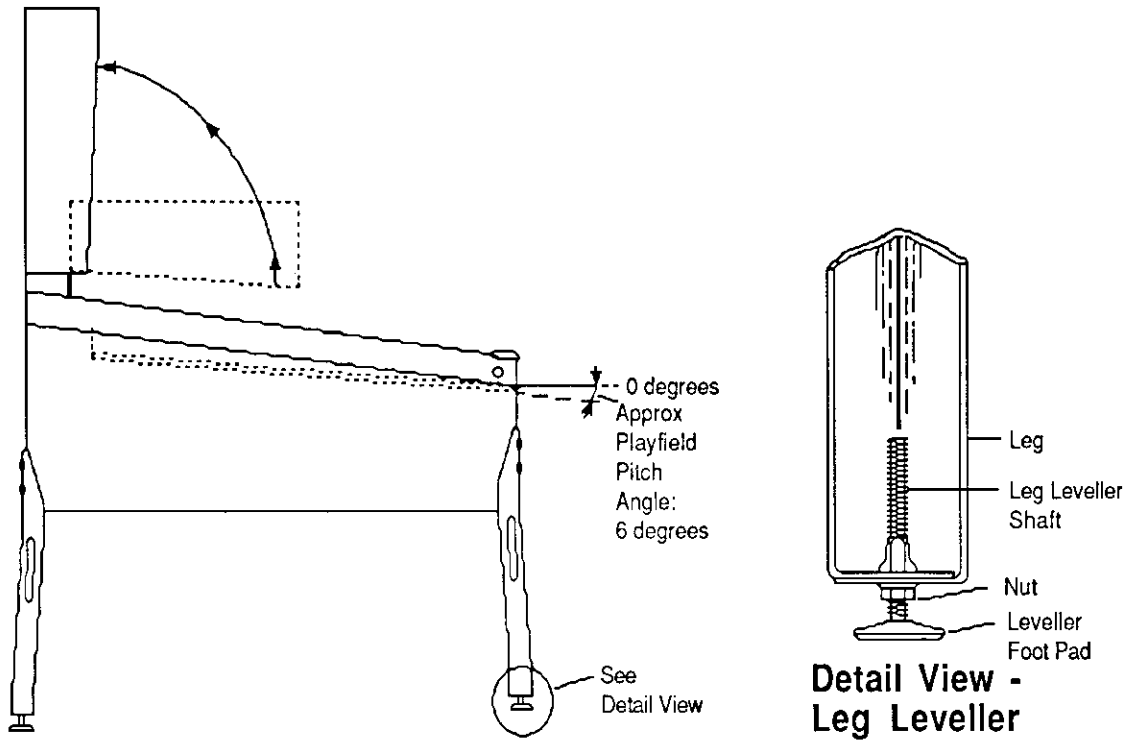


Figure 3. Pinball Assembly, Playfield Pitch Angle, and Leg Leveller Details.

4. Reach into the cabinet and backbox and check the mating of the interconnecting cables, matching several wire colors at each connector. Ensure that all connections are properly secure.

CAUTION

Ensure that the interconnecting cables are free to move (not kinked or pinched). Be careful not to damage wires at any stage of the assembly process.

5. Raise the hinged backbox upright and stabilize it into position, using the clamp on the back of the cabinet and backbox. Unlock the backbox, and remove the backbox glass, storing it carefully to avoid scratches. Remove the shipping block holding the Insert Board. Unlatch the Insert Board and open it, then lift the Speaker/Display Panel up and lay it forward on the playfield cabinet. This allows access to the bolt holes used for securing the backbox upright. Install the mounting bolts and flat washers through the bottom holes of the backbox into the threaded fasteners in the cabinet to secure the backbox.

WARNING

NEVER transport a pinball game with the hinged backbox erect. *Always* lower the backbox forward onto the playfield cabinet on a layer of protective material to prevent marring or damage and possible personal injury.

6. Extend each leg leveller *slightly* below the leg bottom, so that all four foot pads are extended about the same distance. Remove the cabinet from its support and place it on the floor.

7. Adjust the leg levellers for proper playfield level (side-to-side) *and* playfield pitch angle (incline) of approximately 6 degrees. (Again, it is recommended that these measurements be made ON the playfield, not the cabinet nor the playfield cover glass.) Tighten the nut on each leg leveller shaft to maintain this setting, as shown in Figure 3.

CAUTION

Playfield pitch angle adjustments can affect the operation of the plumb bob tilt, inside the cabinet. The plumb bob weight is among the parts in the cash box; the operator should install the weight and adjust this tilt mechanism for proper operation, after completion of the desired playfield pitch angle setting.

8. Move the game into the desired location; recheck the level and pitch angle of the playfield.
9. Verify that the ***required number*** of balls are installed in the game. (**TAXI**: 2 balls.)
10. Clean and re-install the playfield cover glass. Prepare the game for player operation.

GAME OPERATION

WARNING

After assembly and installation at its 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, the player 1 score display initially shows 00. Then, the game goes into the Attract Mode (playfield and backbox lamps flashing, sounds being heard, etc., if the operator does not change the Factory Setting).

Open the coin door and press the AUTO-UP/MANUAL-DOWN switch to MANUAL-DOWN. Press the ADVANCE button to begin the game test routine. Return to AUTO-UP and perform the entire test to verify that the game is operating satisfactorily.

NOTE

The SYSTEM 11B game program has a great capability to aid the operator and service personnel: At game Turn-On (and also at the beginning of the Test/Diagnostic Procedures), the player score displays now signal with a message, "Press ADVANCE for Report", that the game program has detected a possible problem with the game. Usually, this report indicates that at least one switch has NOT been actuated during ball play for 90 balls (≈ 30 games). However, the game program compensates the game play requirements affected by each disabled switch to allow 'nearly normal' play. This helps keep **TAXI** earning good profits! More information is available in the Test/ Diagnostic Procedures text describing the Switch Testing.

GAME OPERATION (Continued)

ATTRACT MODE*. Playfield and backbox lamps blink. The player score displays exhibit a series of messages informing the player concerning:

A. Recent highest scores*;
B. A "custom message"
("**GO FOR THE DRIVE ... OF YOUR LIFE ... PLAY TAXI**")*;
C. The score to achieve to obtain a Replay award*;

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 Credit button.

CREDIT POSTING. Insert coin(s). A sound is heard for each coin, and the player score displays 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. However, after this maximum credits value is reached, posting of additional credits won (not purchased) by the player does *not* occur. ONLY posting of *purchased* credits occurs beyond the maximum credits value.

STARTING A GAME. Press the Credit button once. A startup sound plays, and the Credit amount shown in the player score display decreases by one. Player display 1 flashes 00 (until the first playfield switch is actuated), and the Player 4 display shows **ball 1**, except for 4-player games where the **ball #** shows in the individual player's display. Additional players may enter the game by pressing the Credit button once for each player, before the end of play on the first ball.

TILT. Actuating the Slam Tilt switch on the coin door inside the cabinet ends the current game; **TAXI** then proceeds to the Game Over Mode. With the actuation of the playfield tilt switch, or the third closure* of the plumb bob tilt switch, the player loses the remaining play of that ball, but can complete the game.

END OF GAME. All earned scores and bonuses are awarded. If a player's final score exceeds the specified value, the player receives a designated award for achieving the current highest score. A random digit set* appears in the Match display. Credit* may be awarded, when the last two digits of any player's score display (1 through 4) match the random digits of the Match display. Match, high score, and game over sounds are made, as appropriate.

GAME OVER MODE. The GAME OVER display shows in the player score displays. Then, the high scores flash on the appropriate player score displays. The game proceeds to the Attract Mode.

* - operator-adjustable feature

STATUS DISPLAYS

...ith a display of information concerning the game's ...ments. Basically, three classes of information now become ...dentification); Au (Audit); Ad (Adjustment). Each of the ... classes appears in the Player 3 score display, while the ... displaying the items within each class.

...pen. and the AUTO-UP/MANUAL-DOWN switch in the ... the ADVANCE switch once, briefly. Player displays ... to the Game Status Display Mode. This is evident by the ... The column headings refer to the various backbox

	Player 3	Player 4
...	553	L-x*

...sion level; e.g., 1 is initial issue; 2, 3, etc. for later revisions.

...play. The game's identification number shows in the ...ion level appears in the Player 4 display. The Player 3 score ... abbreviated form, *Id*. The Player 3 score display also shows ... particular display.

... Id 01 display to appear. This display describes which of ... for example, if the YES option of the INSTALL FACTORY ... *FACTORY SETTING* appears on the player score displays. ... adjustment item, after selecting the YES option for Ad 70 ... *ALTERED*. Similarly, if the operator selects the YES op- ...play indicates *HARD SETTING*. Changing a game adjustment ... *HARD ALTERED*.

... Up position, the operator can press the ADVANCE switch ...ays of Audit (sometimes called "bookkeeping") Information. ... Calculation of the various factors is no longer necessary be- ... performs all the mathematical factor computations. This ...operator in evaluating how the game is performing in each ... which game features are receiving the most play. With this ... whether adjusting the game features to other settings ...

... button once to view each Audit Information display item. To ...tion, the operator only has to press and hold the ADVANCE ...erator can use the MANUAL-DOWN switch position with the ... item.

... of the Audit Information portion of the **TAXI** Game Status ...mation again utilizes the player score displays; however, the ... a descriptive phrase. The light type below the table's column ...splays where the information appears. Because the Player ...ends on game play, only a few example entries are shown in ... for all 49 audit items, so its entry is omitted from the tabular ...ecting any of the counters used in these audit items causes ... in the Player 3 display, during display of any audit item ... program does not analyze the cause of the error; it merely ... by the message.)

TAXI GAME STATUS DISPLAYS (Continued)

TAXI Audit Table

Audit Item (Player 3)	Descriptive Phrases (Player 1 and 2 Displays)	Audit Factor [1] Value (Player 4)
AU 01	LEFT COINS [chute next to coin door hinge]	432
02	CENTER COINS	0
03	RIGHT COINS	398
04	PAID CREDITS	830
05	TOTAL PLAYS	
06	TOTAL FREE (Total Free Plays)	
07	PERCENT FREE (% Free Plays)	
08	REPLAY AWARDS	
09	PERCENT REPLAY (% Replay Awards)	
10	SPECIAL AWARDS	
11	PERCENT SPECIAL (% Special Awards)	
12	MATCH AWARDS	
13	HSTD (High Score to Date) CREDITS	
14	PERCENT HSTD (% HSTD Credits)	
15	EXTRA BALLS	
16	PERCENT EX. BALL (% Extra Balls)	
17	AV. BALL TIME (Average Time in Seconds)	
18	MIN. OF PLAY (Minutes of Play)	
19	BALLS PLAYED	
20	REPLAY1 AWARDS	
21	REPLAY2 AWARDS	
22	REPLAY3 AWARDS	
23	REPLAY4 AWARDS	
24	1 PLAYR. GAMES	
25	2 PLAYR. GAMES	
26	3 PLAYR. GAMES	
27	4 PLAYR. GAMES	
28	BURN IN CYCLES	
29	LEFT OUTLANE (# of times ball drained via left outlane)	
30	RIGHT OUTLANE (# of times ball drained via right outlane)	
31	MILLION SHOTS (# of MILLION shots)	
32	JACKPOT SHOTS (# of JACKPOT shots)	
33	MULTI- BALLS (# of times Multi-Ball™ was obtained)	
34	E. B. VIA CATAPULT (# of Ex. Ball awards via Catapult shot)	
35	SPINOUT 100K (# of 100K shots at Spinout)	
36	JACKPOT / MILLION GAMES (# of Jackpots/Million Games)	
37	TIME LOCKS (# of times Time Lock occurred)	
38	JOY RIDES (# of JOYRIDE awards)	
39	H.S.RESET COUNTER	
40	0.0-0.4 M. SCORE (# of games <500K)	
41	0.5-0.9 M. SCORE (# of games ≥500K, <1M)	
42	1.0-1.9 M. SCORE (# of games ≥1M, <2.0M)	
43	2.0-2.9 M. SCORE (# of games ≥2.0M, <3.0M)	
44	3.0-3.9 M. SCORE (# of games ≥3.0M, <4.0M)	
45	4.0-5.9 M. SCORE (# of games ≥4.0M, <6.0M)	
46	6.0-7.9 M. SCORE (# of games ≥6.0M, <8.0M)	
47	8.0-99.9 M. SCORE (# of games ≥8.0M, <99.9M)	
48	1st REPLAY IS x,xxx,xxx	
49	AVG. GAME x.xx MIN.	

NOTE:
1. The numbers shown in this column for Items 1 through 4 are examples. Entries for all items depend on the amount of play; thus, they will vary from location to location.

TAXI GAME STATUS DISPLAYS (Continued)

TAXI Game Adjustment Table

Adjustment Item (Player 3)	Descriptive Phrases (Player 1 and 2 Displays)	Factory Setting (Player 4)
Ad 01	AUTO REPLAY [1] *or* FIXED REPLAY [1]	10 (%) SCORES[1]
02	REPLAY START (or REPLAY LEVEL 1) [1]	2,200,000
03	REPLAY LEVELS (or REPLAY LEVEL 2) [1]	01 (or OFF)
04	(REPLAY LEVEL 3) [1]	(see text)
05	(REPLAY LEVEL 4) [1]	(see text)
06	REPLAY AWARD	Credit
07	SPECIAL AWARD	Credit
08	MATCH FEATURE [Off, 1-50%]	8 (%)
09	BALLS / GAME	03
10	TILT WARNING	03
11	EX. BALL / B. I. P. {[00 = NO Ex. Ball; 1-9 E. B. /Ball; 1-9 E. B. /B. I. P.; 1-9 E. B. /Game]}	2/BIP
12	MAXIMUM CREDITS	10
13	HIGHEST SCORES	On
14	BACKUP HI. SCR.1	4,500,000
15	BACKUP HI. SCR. 2	4,000,000
16	BACKUP HI. SCR. 3	3,500,000
17	BACKUP HI. SCR. 4	3,000,000
18	HI. SCR.1 CREDITS	01
19	HI. SCR.2 CREDITS	01
20	HI. SCR.3 CREDITS	01
21	HI. SCR.4 CREDITS	01
22	H. S. RESET EVERY	3,000
23	FREE PLAY	NO
24	U.S.A. 1 COINAGE (1 COIN 1 PLAY) [2,3,6]	
25	LEFT UNITS	01
26	CENTER UNITS	04
27	RIGHT UNITS	01
28	UNITS/ CREDIT	01
29	UNITS/ BONUS	00
30	MINIMUM UNITS	00
31 - 48	Game-specific Adjustments (detailed in text and the Game Adjustment Setting Comparison Table)	
49 [4]	CUSTOM MESSAGE	ON
50	SW. ALARM KNOCKER [yes=knock for inop switch; no=no knock]	NO
51	1 COIN BUY-IN	NO
52	UNUSED ADJUST	
53 -58 [5,6]	Special Pricing Adjustments- See text for 53-58 details.	
59 [5]	INSTALL ADDABALL	NO
60 [5]	INSTALL 5-BALL	NO
61 [5]	INSTALL NOVELTY	NO
62 [5]	INSTALL EX. EASY	NO
63 [5]	INSTALL EASY	NO
64 [5]	INSTALL MEDIUM	NO
65 [5]	INSTALL HARD	NO
66 [5]	INSTALL EX. HARD	NO
67	AUTO BURN-IN	NO
68	CLEAR COINS	NO
69	CLEAR AUDITS	NO
70 [7]	INSTALL FACTORY	NO

NOTES:

1. Automatic Replay percentage value range is adjustable from 5 to 50%, via the Credit button. Item 02 permits changing the factory setting value for Replay Start Level (valid for next 500 games played). Item 03 permits setting up to four replay levels, with values as detailed in text describing item 03. For Fixed Replay Scores, set Auto Replay value to 1 less than 5(%) via the Credit button. Go to items 02, 03, 04, and 05; install their replay level scores. Turn off any replay level by setting 00 as its value.
2. Phrase in parentheses is Factory Setting. Phrase appears in player 2 and 4 displays. Press Credit button to change setting of the game pricing of item 24.
3. To change country OR coinage setting, press Credit button to obtain 16 Standard settings, followed by a Custom Setting. The Custom Setting activates items 25 through 30. When a Standard Setting is used, items 25 through 30 are set automatically, and cannot be changed.
4. To install Custom Message, press flipper button for alphabet and special characters. Press Credit button for next message letter or character.
5. Special Preset Adjustment, whose effects are noted in the Game Adjustment text.
6. Refer to **Pricing Table** and text describing these items.
7. Approximates Ad 64, yet includes all factors listed in Factory Setting column, not just Ad 31 through 47 provided by Ad 64.

TAXI GAME STATUS DISPLAYS (Continued)

Adjustment Information--Ad
At end of the Audit Information presentation, with the AUTO-UP switch in the Up position, the operator can press the ADVANCE button to proceed to the Adjustment Information portion of the **TAXI** Game Status Displays, as listed in the **TAXI Game Adjustment Table**.

The operator can press the ADVANCE button once to view each Adjustment Information display item. To proceed more rapidly through this information, the operator only has to press *and hold* the ADVANCE button. If a desired item is passed, the operator can use the MANUAL-DOWN switch position with the ADVANCE button to back up to the desired item.

The **TAXI Game Adjustment Table** lists the 70 items of the Adjustment Information portion of the **TAXI** Game Status Displays. Presentation of the displays is similar to that for the Audit Information (that is, the player 1 and 2 displays combine as a descriptive phrase; the light type below the column headings names the respective backbox displays where the information appears, etc.). The Player 3 display shows *Ad* for all 70 adjustment items, so its entry is omitted from the tabular listing.

The **TAXI Game Adjustment Setting Comparison Table** shows the five game 'difficulty' Adjustment Items (ranging from Ad 62 - Extra Easy through Ad 66 - Extra Hard). Installing any one of these 'difficulty' Adjustments causes the values shown for each of the included game play Adjustment Items to be installed as a group, changing the level of play from one difficulty level to another. The owner/operator can use the information provided by the Audit Table items to determine whether the 'difficulty level' for this game in this location needs to change to obtain a higher level of earnings from the game or to provide a greater challenge to the location's players.

Once the 'difficulty level' is changed, a careful review of the Audit Items will reveal whether the change has achieved this higher-earnings goal. Sometimes, one (or more) of the Adjustment Items needs further change to keep the number of plays high, while still keeping the earnings level high. "Fine-tuning" of the game's Adjustment Items is a key feature of Williams Electronic Games products.

TAXI Game Adjustment Setting Comparison Table

Adj #	Adj Description	Extra Easy Ad 62	Easy Ad 63	Medium (Factory) Ad 64	Hard Ad 65	Extra Hard Ad 66
31	C-A-B Ex. Ball	2	3	3	6	7
32	Raise JACKPOT Time	10 sec	10 sec	10 sec	7 sec	5 sec
33	JACKPOT Advance	10K	5K	2K	1K	1K
34	JACKPOT Difficulty	1	3	4	5	6
35	MILLION Difficulty	1	1	2	3	5
36	EXPRESS LANE Diff	1	1	1	2	3
37	JACKPOT Minimum	1 Million	1 Million	500K	500K	500K
38	JACKPOT Maximum	4 Million	4 Million	4 Million	3 Million	3 Million
39	JACKPOT Timer	20 sec	20 sec	15 sec	10 sec	10 sec
40	Ex. Ball Auto Adj	33%	33%	33%	20%	10%
41	SPECIAL Auto Adj	5%	5%	4%	2%	2%
42	Marilyn Timer	25 sec	20 sec	10 sec	8 sec	5 sec
43	Pin•Bot Timer	30 sec	25 sec	15 sec	10 sec	8 sec
46	SPINOUT "X"	Yes	Yes	Yes	No	No
47	MILLION Timer	Off	Off	Off	20 sec	15 sec
48	Airport Setting	1 (ramp)	1 (ramp)	1 (ramp)	1 (ramp)	1 (ramp)

GAME ADJUSTMENT PROCEDURE

Adjustment Items 01 through 70
The coin door must be open to access the Game Adjustment/Diagnostic switches. All readings and setting changes require operation of these coin door switches. Some setting changes utilize the Credit button; some also use the flipper button(s). *Additional text describing the game adjustment items follows this procedure; the value of the Factory Setting for each Game Adjustment item is in the preceding* **TAXI Game Adjustment Table**.

1. Use AUTO-UP and press ADVANCE. The Id 00 display initially appears. Press ADVANCE until the Player 3 display indicates **Ad 01.** If the factory setting has not changed, the Player 1 and 2 Score displays indicate AUTO REPLAY, and the Player 4 display shows 10%, indicating a 10% replay percentage. (The game program adjusts itself automatically, as discussed in the following text concerning the 'details' about Adjustment Item 01.)

2. To reach a higher item number (in the Player 3 display), use AUTO-UP and press ADVANCE. To return to a previous item number, use MANUAL-DOWN and press ADVANCE.

3. With the desired Game Adjustment Item number showing in the Player 3 display, increase the setting value (or select another option) shown in the Player 4 display by using AUTO-UP and pressing the Credit button. Repeat this step for each item, until all changes to the factory settings for the Game Adjustment Items have been made. The preceding Game Adjustment Table consolidates the Factory Settings into one grouping.

   (The same procedure can be used for Audit Items. To zero **Au 01 - 04** (concerning the coin chutes and the total coins), the operator can proceed to item 68, Clear Coins, and press the Credit button to obtain the YES option. The operator then presses the ADVANCE button and notes the "DONE" display, which verifies that the entry values for items 01 through 04 of the Audit Items are now reset to zero.)

   For example, the operator may desire to change the degree of game play difficulty from the Factory Setting (equivalent to the Install Medium [Ad 64] difficulty, along with a number of other automatically installed settings, as shown in the right column of the Game Adjustment Table) to another difficulty more suitable for the players at a particular game site. Four other 'automatic' play difficulty settings (Ad 62 - Ad 66) are available, each of which, if selected, installs all the adjustments listed for that difficulty in the Game Adjustment Setting Comparison Table, which precedes the 'details' text.

4. To proceed rapidly through the entire adjustments series, press *and hold* ADVANCE, until **Ad 70** shows in the Player 3 display. From item 70, you can: (A) return to the Game-Over Mode; or (B) restore factory settings and zero audit (bookkeeping) totals. Perform either of the following, as desired:

   A. To reach Game-Over Mode, use AUTO-UP and press ADVANCE once. **TAXI** now goes to the Game-Over Mode.

   B. To restore the Factory Settings for Game Adjustment Items (as listed in the Game Adjustments Table), zero all audit (bookkeeping) totals, *and* return to Game-Over Mode, use AUTO-UP or MANUAL-DOWN to display Ad 70 in the Player 3 display. Press the Credit button to display the YES option in the Player 4 display. Using AUTO-UP, press ADVANCE once. **TAXI** now zeroes ALL Audit Item totals and changes ALL Game Adjustment Items back to those originally selected as Factory Settings. It then shows the operator a message ("FACTORY SETTING") that this has occurred. (A problem in the Memory Protection circuit or closing the coin door will cause the message "ADJUST FAILURE" to appear.) Press ADVANCE once more to return to the Game-Over Mode.

GAME ADJUSTMENT PROCEDURE (Continued)

Details of Adjustment Items 01 through 70

01 Auto Replay (or Fixed Replay)

Of the two options, AUTO REPLAY is the percentage of replays automatically awarded per game. The game program aids a pinball's initial installation by causing a comparison of the value of the Replay Level to the value of all players' scores every 50 games for the first 1,000 games. At each comparison, the program increases (or decreases) the Replay Level by an amount necessary to achieve the replay percentage specified either via the factory setting or later operator selection. (After the first 1,000 games, the comparison occurs after every 500 games. The adjustment value is 100K, for this (and each subsequent) comparison.) Use the Credit button to change the percentage within the range of *5* to *25* (%), with the value increasing using AUTO-UP (or decreasing using MANUAL-DOWN). The next Credit button change below 5%, selects the FIXED REPLAY option.

For AUTO REPLAY, Ad 02 provides the Starting Replay Level (Player 1 and 2 displays show REPLAY START). Ad 03 provides the number of replay levels (01, 02, 03, or 04). **TAXI** then proceeds to Ad 06 automatically.

For FIXED REPLAY, Ad 02 is the first replay level (REPLAY LEVEL 1). Ad 03, 04, and 05 are the other replay levels.

02 Starting Replay Level (or Replay Level 1)

For AUTO REPLAY (refer to Ad 01), the initial Factory Setting is listed in the Game Adjustment Table. The range of settings is *800,000* through *4,000,000* (by increments of 100,000 with AUTO-UP or decrements of 100,000 with MANUAL- DOWN).

For FIXED REPLAY, the operator can enter the value to be used for the first fixed replay score level via the Credit button. The range of settings is: *OFF; 100,000* through *9,900,000* (by increments of 100,000 with AUTO-UP, or decrements of 100,000 with MANUAL-DOWN).

03 Replay Levels (or Replay Level 2)

For AUTO REPLAY (refer to Ad 01), this is the number of replay levels in a game. The option range is *one, two, three, or four* replay level(s). When the operator chooses two replay levels, **TAXI** automatically adjusts the second replay level to be twice the value selected for Ad 02, the starting replay level. Choosing three or four replay levels automatically adjusts their replay levels to three times or four times the Ad 02 value.

For FIXED REPLAY, the technique of value entry and the range of settings are identical to those of Ad 02.

04 (Replay Level 3)

For AUTO REPLAY, this Adjustment Item is not applicable. **TAXI** automatically bypasses this adjustment.

For FIXED REPLAY, the technique of value entry and the range of settings are identical to those of Ad 02.

05 (Replay Level 4)

For AUTO REPLAY, this Adjustment Item is not applicable. **TAXI** automatically bypasses this adjustment.

For FIXED REPLAY, the technique of value entry and the range of settings are identical to those of Ad 02.

0 6 Replay Award

For either AUTO REPLAY or FIXED REPLAY (Ad 01), the operator can select the form of the award automatically provided when the player exceeds any Replay Level (Automatic or Fixed). The choices are:

Credit - Reaching each replay level obtains a credit (free game).
Ball - Reaching each replay level obtains an extra ball.
Audit - Reaching each replay level obtains nothing to the player; it does increase the entry value of the Audit Item(s) maintaining a tally of these awards (Au 08, and Au 20 through 23, as applicable).

0 7 Special Award

The operator can select the form of the award automatically provided when the player scores a Special. The choices are:

Credit - Scoring each Special, when lit, obtains a credit (free game).
Ball - Scoring each Special, when lit, obtains an extra ball.
Score - Scoring each Special, when lit, obtains a score advance of 100,000 points to the player.

0 8 Match Award

The operator can select (via the Credit button) the desired percentage for the Match action occurring at the completion of each game. The choices are:

1%-50%- 1% is 'hard'; 50% is 'extremely easy'. During Match action, the game selects a random two-digit number at end of game and compares each player's score for an identical two digits in the rightmost two positions. A matching of the two digits results in the award of a credit.
Off - The MATCH display does not operate at completion of the game; no award is given.

0 9 Balls / Game

The operator can define a "game" by specifying the number of balls to be played. The range of this setting is *1* through *9*.

1 0 Tilt Warning

The operator can specify the number of total actuations of the plumb bob and playfield tilt mechanisms that can occur before the game is "tilted". The range of this setting is *1* through *5*.

1 1 Extra Ball/Ball In Play

The operator can choose (via the Credit button) the number of Extra Balls to be awarded to a player. The range of this setting is:

00 - NO extra ball play; displays a message, NO EX. BALL. A score is awarded in lieu of the Extra Ball.
1 -9 E. B./Ball - 1 through 9 Extra Balls per ball (i.e., all balls including Extra Balls) are awarded.
1-9 E. B./B.I. P. - 1 through 9 Extra Balls per Ball In Play (B. I. P.) (i.e., all balls NOT including Extra Balls) are awarded.
1-9 E. B./Game - 1 through 9 Extra Balls per game.

GAME ADJUSTMENT PROCEDURE (Continued)

12 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 settings is *5* through *10.* Reaching the specified setting prevents the award of additional credits by game play. Coin purchases do continue to accumulate and are displayed.

NOTE

Whenever the number of credits is less than the specified maximum credits, any credits obtained by coin purchase or game awards (High Score, Match, Replay Levels, etc.) will be accumulated even though they exceed the maximum value. Thereafter, no additional credits can be accumulated, until the credit total is reduced below the specified maximum setting.

13 Highest Scores

The operator can specify (via the Credit button) whether the game is to maintain a record of the four highest scores achieved to date. The choices are:

Off - NO high scores are recorded.
On - The four highest scores are stored in memory for use by Game Adjustment 22.
Auto - The four highest scores are stored in memory for use in a game program subroutine associated with Game Adjustment 22.

14 Backup High Score 1

The operator can set the Backup High Score value in the Player 1 Score display, using the Credit button. The game automatically restores this value, when the operator presses, and holds, the HIGH SCORE RESET switch, or when an automatic High Score Reset event (Ad 22) occurs.

15 Backup High Score 2

This adjustment is similar to Ad 14, except that this applies to the Player 2 Score display. The adjustment technique is identical to Ad 14. It is also restored as described for Ad 14.

16 Backup High Score 3

This adjustment is similar to Ad 14, except that this applies to the Player 3 Score display. The adjustment technique is identical to Ad 14. It is also restored as described for Ad 14.

17 Backup High Score 4

This adjustment is similar to Ad 14, except that this applies to the Player 4 Score display. The adjustment technique is identical to Ad 14. It is also restored as described for Ad 14.

18 Credits for Highest Score 1

The operator can select the number of credits to be awarded, by using the Credit button, whenever a player exceeds the previous Highest Score. The range of this setting is *00* through *10.* A variation to this award occurs, when the setting of Ad 06 is Coil. (This permits a ticket or token dispenser to provide the award, when applicable.)

19 Credits for Highest Score 2

This adjustment is similar to Ad 18, except that this applies to the player's exceeding the second highest score. The Credit button adjustment technique is the same as for Ad 18. The range of this setting is *00* through *03.*

20 Credits for Highest Score 3

This adjustment is similar to Ad 18, except that this applies to the player's exceeding the third highest score. The Credit button adjustment technique is the same as for Ad 18. The range of this setting is *00* through *03.*

21 Credits for Highest Score 4
This adjustment is similar to Ad 18, except that this applies to the player's exceeding the fourth highest score. The Credit button adjustment technique is the same as for Ad 18. The range of this setting is *00* through *03*.

22 Automatic High Score Reset
The operator can specify (via Credit button) that the game will provide an automatic reset of the displayed "Highest Scores", and the number of games to be played before the reset occurs. (Audit item 39 displays the games remaining before the reset.) The values provided upon reset are those selected by the operator in Ad 14 through 17, the Backup High Scores. The range of this setting is *Off* (to disable this adjustment), and *1,000* to *24,750* games (in increments of 250).

23 Free Play
The operator can select (via the Credit button) 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 is required.

24 Coinage Selections
The operator can specify (via the Credit button) any of the 16 Standard Settings for game pricing, each of which exhibits a message identifying the country and the number of coins required and the number of games that the coin requirement purchases. Choosing a Standard Setting permits the game to omit items Ad 25 through 30, which are adjustments allowing for a special custom coinage setting.

Following the last Standard Setting is a Custom Coinage Setting, which allows the operator to utilize Ad 25 through 30 in establishing a special coinage setting. A message, CUSTOM COINAGE, indicates that the operator can enter the appropriate values into the Ad 25 through 30 adjustment items.

The values for Ad 25 through 30 of each Standard Setting, as well as other possible values for the Custom Coinage Setting are shown in the **Pricing Table.**

25 Left Chute Coin Units
The operator can specify (via the Credit button) the number of coin units purchased by a coin passing through the left coin chute.

26 Center Chute Coin Units
The operator can specify (via the Credit button) the number of coin units purchased by a coin passing through the center coin chute.

27 Right Chute Coin Units
The operator can specify (via the Credit button) the number of coin units purchased by a coin passing through the right coin chute.

28 Units Required for Credit
The operator can define (via the Credit button) the number of coin units required to obtain 1 Credit. A coin unit counter in the game program totals the number of coin units purchased through all coin chutes prior to each game. If the total number of coin units purchased exceeds the 1 Credit factor by a multiple (or more, coin units) of the specified Units per Credit value, the Credits display shows the proper number of Credits. The coin unit counter retains any remaining coin units, until the start of a game; then, the coin unit counter is cleared (its contents are zeroed).

29 Units Required for Bonus
The operator can specify (via the Credit button) that 1 additional Credit is to be indicated in the Credits display, when a certain number of coin units are accumulated.

30 Minimum Units Required for any Credits Posted
The operator can specify that NO Credits are to be posted (indicated in the Credits display), until the credit units counter reaches a particular value.

The System 11B game program defines the following 18 Adjustment Items as "game-specific"; that is, they are unique for each game. The Game Designer/Engineer/Programmer team members work together to use these as controlling factors for game play. By varying the setting of these Adjustment Items, it is possible to "fine-tune" a game to suit a particular location, enabling the owner/operator to reap maximum earnings, while still providing the players with sufficient challenge to keep them playing.

GAME ADJUSTMENT PROCEDURE (Continued)

31 CABS EXTRA BALL
The operator can choose (via the Credit button) the number of times the player must complete the C - A - B lanes to light the Extra Ball lamp. The range of this setting is *2* (Liberal) through *8* (Conservative).

32 RAISE JACKPOT TIME
The operator can choose (via the Credit button) the time period that the Raise Jackpot lamp stays lit, after the completion of the C-A-B lanes. The range of this setting is *03 seconds* (Liberal) through *30 seconds* (Conservative).

33 JACKPOT ADVANCE
The operator can choose (via the Credit button) the number of points awarded per switch actuation, while the Raise Jackpot lamp is lit. The range of this setting is *1,000* through *20,000.*

34 JACKPOT DIFFICULTY
The operator can choose (via the Credit button) the degree of difficulty of obtaining the JACKPOT award. The range of this setting is *1* through *6.*

35 MILLION DIFFICULTY
The operator can choose (via the Credit button) the degree of difficulty of obtaining the MILLION award. The range of this setting is *1* through *5.*

36 EXPRESS LANE DIFFICULTY
The operator can choose (via the Credit button) the degree of difficulty of obtaining the Express Lane play. The range of this setting is *01* through *03.*

37 JACKPOT MINIMUM
The operator can choose (via the Credit button) the minimum value of the Jackpot award. This is the starting value of the Jackpot after the game program resets it upon collection or by installing the 'Factory Setting'. The range of this setting is *500,000* through *1,000,000.*

38 JACKPOT MAXIMUM
The operator can choose (via the Credit button) the maximum value of the Jackpot award. This is the largest value that the Jackpot can attain, until a player collects this award. The range of this setting is *1,500,000* through *4,000,000.*

39 JACKPOT Timer
The operator can choose (via the Credit button) the time limit for flashing the JACKPOT lamp (allowing the player to pick up the Jackpot award via the next Gorbie shot). At the end of this time limit, the JACKPOT lamp stops flashing, and the Marilyn lamp begins flashing. To earn the chance to score the Jackpot award now, the player must make the shots to pick up Marilyn. The range of this setting is *0 (Off), 1 second* through *40 seconds.*

40 EXTRA BALL Auto Adjustment
The operator can choose (via the Credit button) the percentage value for Extra Balls per game. The range of this automatic adjustment setting is *Enabled 1%* (Hard) through *50%* (Extremely easy); it can also be turned off (disabled), via a setting of *0 (Off).* When the automatic adjustment is turned on (enabled), the game program adjusts the setting at the end of a game, after each 50 games, unless the current value is within 2% of the setting; then, no auto adjustment occurs. The Factory Setting is 5%, for all levels of difficulty.

41 SPECIAL Auto Adjustment

The operator can choose (via the Credit button) the percentage value for all Specials per game. The range of this automatic adjustment setting is *Enabled 1%* (Hard) through *50%* (Extremely easy); it can also be turned off (disabled), via a setting of *0 (Off).* When the automatic adjustment is turned on (enabled), the game program adjusts the setting at the end of a game, after each 50 games, unless the current value is within 2% of the setting; then, no auto adjustment occurs. The Factory Setting is 5%, for all levels of difficulty.

42 MARILYN Timer

The operator can choose (via the Credit button) the time limit for flashing the Marilyn lamp. Making the Marilyn shot during this period lights the Carry Passenger target, which, if achieved, allows the spotted passengers to be retained for next-ball play. The range of this setting is *0 (Off), 1 second* through *30 seconds.*

43 PIN•BOT Timer

The operator can choose (via the Credit button) the time limit for flashing the Pin•Bot lamp. Making the Pin•Bot shot during this period lights the Carry Passenger target, which, if achieved, allows the spotted passengers to be retained for next-ball play. The range of this setting is *0 (Off), 1 second* through *30 seconds.*

44 Attract Mode Sounds

The operator can select (via the Credit button) the amount of sounds occurring during the Attract Mode. The choices are:

ALOT - Sounds occur for approximately 8 minutes during the Attract Mode sequence.
LESS - Sounds occur for approximately 2 mintues during only the Attract Mode.
NONE - No sounds occur during the Attract Mode.

45 BELL USE

The operator can choose (via the Credit button)whether the Bell is On or Off during the game. The choices are:

On - When the game program needs to ring the bell during the game, the bell sounds.
Off - The bell is turned Off.

46 Spinout "X" (Multiplier)

The operator can choose (via the Credit button)whether the Spinout Multiplier is operating. At each ball start, the player's Spinout score is multiplied by the ball number. That is, 1X for ball 1; 2X for ball 2; etc. The maximum multiplier is 5X, which accounts for the 3 game balls and 2 Extra Balls. The choices are:

Yes - The Spinout Multiplier is in effect.
No - The Spinout Multiplier is turned Off.

47 MILLION Timer

The operator can choose (via the Credit button) the time limit for the MILLION lamp to remain lighted. The range of this setting is *0 (Off), 1 second* through *40 seconds.* In the *OFF* setting, the lamp remains lit, until the shot is achieved.

48 Airport Setting

The operator can choose (via the Credit button) the number of Airport Ramp shots necessary to "advance" the Airport scores. The choices are:

1 (ramp) - One Airport ramp shot (either left or right ramp) is required.
2 (ramps) - Two Airport ramp shots (both right and left) are required.

49 Custom Message

The operator can choose (via the Credit button) whether to display a message during the Attract Mode. (When display of a message is selected, the operator can either utilize the message provided or change the message.) Three choices are available:

1 - Display a message during the Attract Mode. The Player 4 display shows this choice as ON. The 3-line message provided is:

GO FOR THE DRIVE ... OF YOUR LIFE ... PLAY TAXI.

2 - Do NOT display a message during the Attract Mode. (Player 4 shows OFF.)

3 - The Player 4 display shows this choice as CHANGE. The operator can enter a special ("custom") message, as follows:

A. Press ADVANCE once. The operator can now enter as many as three 14-character lines for display during the Attract Mode.

B. Use the flipper button(s) to select each message character (alphabet, numbers, and special symbols are available). In case of error, enter a "back arrow" (just before "space") to correct, followed by correct character. For a period after any letter, use letters with periods (following the special symbols). The entire character set is the following:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9 < > ? - / * '
A. B. C. D. E. F. G. H. I. J. K. L. M. N. O. P. Q. R. S. T. U. V. W. X. Y. Z. _

C. Move to the next character via the Credit button. The game program does not allow entirely blank lines to be displayed.

50 SW. ALARM KNOCKER

The operator can choose (via the Credit button) whether the knocker operates, sounding an alarm to signal a switch problem, at the time of game Turn-On and at the beginning of the Test/Diagnostic Procedures. Two choices are available:

YES - The knocker sounds, signalling a switch problem, at game Turn-On and at the beginning of the Test/Diagnostic Procedures.

NO - The knocker does NOT sound. (Player 4 shows NO.)

51 1 COIN BUY-IN

The operator can choose (via the Credit button) whether to allow "1 Coin Buy-In" when Game Adjustment Ad 24 is set for USA 3 (2 coins-1 play, 50¢ per game player) pricing. This option enables each player, during a timed period at the end of each game, to get another game for only 1 coin (25¢), after having purchased the first game for 50¢. That is, after purchasing the first game for 50¢, subsequent games cost 25¢, if purchased within the time limit.

52 - 55 Not Used in USA Games (Refer to Game Adjustments for German Games)

SPECIAL PRESET ADJUSTMENTS CAUTION

Adjustments 53 through 66 are Special Preset Adjustments to enable the operator to perform the setting of multiple adjustments at once. They permit the operator to: (1) either modify a game for a specific area (for example, USA coinage settings, Ad 56 through 58, or special German coinage settings, Ad 53 through 58) (2) change a group of adjustments to conform with laws of certain localities (Ad 59 through 61); and (3) to change the degree of difficulty of game play (Ad 62 through 66). A list of the preceding individual Adjustments affected accompanies each of these Special Preset Adjustments. Whenever the operator chooses to use any Special Preset Adjustment, the operator can later access any or all of the individual Adjustments affected by that Special Adjustment for subsequent changes.

A similar technique is recommended in the event of error or uncertainty concerning any Special Preset Adjustment, after the operator selects it: The operator can restore the factory setting of each individual Adjustment, then select the desired Special Preset Adjustment, and then return to any of the preceding individual adjustments to determine whether use of the Special Adjustment has had the desired effect.

SPECIAL PRESET ADJUSTMENTS CAUTION (Continued)

The Backbox displays for each Special Preset Adjustment indicate whether the operator has selected it, by identifying the Adjustment in the Player 1 and 2 displays by name and the selection choice of NO, meaning Not Selected (this is the Factory Setting), or YES, meaning Selected, in the Player 4 display. Operator installation of the 'selected' Preset Adjustment occurs by using the Credit button to choose YES and then pressing the ADVANCE switch. The displays then show the name of the Adjustment again, with DONE to show that the installation is now in effect.

Note that, when an operator installs any of the Special Preset Adjustments, Adjustment Items using the automatic adjust feature of the game program reset to the auto adjust value listed for that Adjustment Item.

NOTE

Games in which the CPU has ROMs installed for German (Deutsch) language and play adjustments automatically have certain Adjustment Items preset. The following table shows these Preset Adjustment Items for each of the special German Coinage Adjustments.

TAXI Preset Game Adjustments Table for German Games

Adj #	Adj Description	German Ad 1 53	German Ad 2 54	German Ad 3 55	German Ad 4 56	German Ad 5 57	German Ad 6 58
01	Auto Replay	10 (%)	10 (%)	10 (%)	10 (%)	10 (%)	10 (%)
02	Replay Start	1.800.000	1.800.000	1.800.000	1.800.000	1.800.000	1.800.000
03	Replay Level 2	03	03	03	03	03	03
06	Replay Award	Credit	Coil	Audit	Credit	Coil	Audit
07	Special Award	Credit	Ball	Score	Credit	Ball	Score
08	Match Feature	10 %	10 %	10 %	10 %	10 %	10 %
12	Max. Credits	30	30	30	30	30	30
14	Backup High Score 1	5.000.000	5.000.000	00	5.000.000	5.000.000	00
15	Backup High Score 2	4.500.000	4.500.000	00	4.500.000	4.500.000	00
16	Backup High Score 3	4.000.000	4.000.000	00	4.000.000	4.000.000	00
17	Backup High Score 4	3.500.000	3.500.000	00	3.500.000	3.500.000	00
18	High Score 1 Credits	03	03	00	03	03	00
19	High Score 2 Credits	00	00	00	00	00	00
20	High Score 3 Credits	00	00	00	00	00	00
21	High Score 4 Credits	00	00	00	00	00	00
22	High Score Reset	750 spiele	750 spiele	750 spiele	750 spiele	750 spiele	750 spiele
24	Coinage Setting	6 spiele/5 DM	6 spiele/5 DM	6 spiele/5 DM	7 spiele/5 DM	7 spiele/5 DM	7 spiele/5 DM

53 through 58 ***FOR GERMAN GAMES ONLY:*** **Install German 1, 2, 3, 4, 5, or 6**

The operator can use these Adjustment Items to modify the game pricing selection of Standard Setting named "German 2 or German 1" in the **Pricing Table** to permit the style of play for the particular price shown in the **TAXI Preset Game Adjustments Table for German Games**.

FOR USA GAMES:

56 Install 1 COIN

The operator can use this Adjustment Item to modify the current game pricing selection to enable game play to begin when the specified number of coins are deposited. In this instance, the player now obtains 1 play when 1 coin of the proper denomination (USA: 25¢) passes through a coin chute.

57 Install 3/$1.00

The operator can use this Adjustment Item to modify the current game pricing selection to enable game play to begin after acceptance of the specified number of coins. In this instance, the player now obtains 3 plays when 25¢ coins totalling $1.00 pass through a coin chute.

58 Install 2 COINS

The operator can use this Adjustment Item to modify the current game pricing selection to enable game play to begin after acceptance of the specified number of coins. In this instance, the player now obtains 1 play when 2 coins of the proper denomination (USA: 25¢) pass through a coin chute.

59 Install Add-A-Ball

The operator can utilize this option to delete all Free Play awards and replace them with Extra Ball awards. Individual Adjustments are affected, as follows:

Ad	Name	New Setting	Ad	Name	New Setting
06	Replay Award	Ball	18	Hi Scr 1 Credits	00
07	Special Award	Ball	19	Hi Scr 2 Credits	00
08	Match Feature	Off	20	Hi Scr 3 Credits	00
			21	Hi Scr 4 Credits	00

60 Install 5 Ball

The operator can change the game to 5-Ball play, including the changing of certain features to the recommended 5-Ball play difficulty level. Individual Adjustments are affected, as follows:

Ad	Name	New Setting	Ad	Name	New Setting
02	Replay Start	3,000,000	09	Balls / Game	05

61 Install Novelty

The operator can remove all Free Play and Extra Ball awards. Individual Adjustments are affected, as follows:

Ad	Name	New Setting	Ad	Name	New Setting
01	Fixed Replay	SCORES	07	Special Award	Score
02	Replay Level 1	Off	08	Match Feature	Off
03	Replay Level 2	Off	11	No Extra Ball	00
04	Replay Level 3	Off	18	Hi Scr 1 Credits	00
05	Replay Level 4	Off	19	Hi Scr 2 Credits	00
06	Replay Award	Audit	20	Hi Scr 3 Credits	00
			21	Hi Scr 4 Credits	00

62 Install Extra Easy

The operator can change the game play difficulty adjustments to a combination that is extremely easy (sometimes called "liberal"). The Game Adjustment Setting Comparison Table, which precedes these 70 individual Adjustments descriptions, lists the Adjustments and the settings that comprise the 'Extra Easy' group.

63 Install Easy

The operator can change the game play difficulty adjustments to a combination that is slightly easier than the Factory Settings. The Game Adjustment Setting Comparison Table, which precedes these 70 individual Adjustments descriptions, lists the Adjustments and the settings that comprise the 'Easy' group.

64 Install Medium

The operator can change the game play difficulty adjustments to a combination that matches the Factory Settings. The Game Adjustment Setting Comparison Table, which precedes these 70 individual Adjustments descriptions, lists the Adjustments and the settings that comprise the 'Medium' group.

65 Install Hard

The operator can change the game play difficulty adjustments to a combination that is more difficult than the Factory Settings. The Game Adjustment Setting Comparison Table, which precedes these 70 individual Adjustments descriptions, lists the Adjustments and the settings that comprise the 'Hard' group.

66 Install Extra Hard

The operator can change the game play difficulty adjustments to a combination that is much more difficult than the Factory Settings. The Game Adjustment Setting Comparison Table, which precedes these 70 individual Adjustments descriptions, lists the Adjustments and the settings that comprise the 'Extra Hard' group.

67 Auto Burn-in

The operator can choose the YES option for this Special Preset Adjustment to perform certain automatic testing of the game, as used in the factory. It does not affect the game operation, but merely provides for a cyclic testing of most of the game's mechanisms.

68 Clear Coins

The operator can request the clearing of the coinage audits (Au 01 through 04) by selecting (via the Credit button) the YES option, as shown in the player 4 display. This adjustment zeroes the counters tallying the number of coins through each slot, the Paid Credits counter, and the Credits display.

After the YES option is displayed, the operator must press the ADVANCE button. The game then displays DONE to show that the coinage audits have been reset to zero.

69 Clear Audits

The operator can request the clearing of the non-coinage audits (Au 05 through 38) by selecting (via the Credit button) the YES option, as shown in the player 4 display. This Adjustment zeroes the counters tallying the remaining Audit factors. Please note that this does NOT affect the Automatic Replay Percentaging data nor the automatic High Score Reset counter.

After the YES option is displayed, the operator must press the ADVANCE button. The game then displays DONE to show that the non-coinage audits have been reset to zero.

70 Install Factory

The operator can request the game (via the Credit button) to provide the normal Factory Settings, essentially restoring the game to its 'factory condition'. The operator must select the 'YES' option for this adjustment. This Adjustment clears all Audits, resets all Game Adjustments to the respective Factory Settings, and provides a restart of the Auto Replay (Ad 01). After selecting the YES option, the operator must press the ADVANCE button. The game then displays FACTORY SETTING.

Closing of the coin door before appearance of the FACTORY SETTING message or a problem in the Memory Protect circuit will cause the game to display ADJUST FAILURE.

A loss of battery power or improper treatment of the Game Adjustments will cause the game to attempt to restore Factory Settings. The game announces the results of this reset process with the appropriate message, FACTORY SETTING or ADJUST FAILURE.

GAME ADJUSTMENT PROCEDURE (Continued)

RESETTING THE HIGH SCORES

The challenge of exceeding the High Score (either the factory setting or a higher score by another player) is the goal of many pinball game players. To keep a pinball game challenging requires a method of resetting the High Score value for those occasions when a skilled player registers a truly excellent score. Other players note this score and may decide not to play simply because their skill is not adequate to exceed an extremely high score.

For **TAXI**, in fact, three methods of resetting the High Score values are available. The simplest method involves allowing Game Adjustment Item Ad 22 to reset the High Score values automatically after the specified number of plays designated by the operator. The second method requires pressing the High Score Reset switch on the inside of the coin door in the Attract Mode. This action simply erases the previous high score values and replaces them with the Backup High Score values. The third method establishes new values replacing the factory setting values or previous operator setting values; it requires performing the following steps:

1. Using AUTO-UP or MANUAL-DOWN, reach item Ad 14 (and items Ad 15, 16, and 17, if desired). The High Score value of the factory setting (or previous operator-adjusted setting) appears in the Player 1 display. If this value is satisfactory, go to step 4 below.

2. If you wish to increase the High Score value from that displayed in the Player 1 display, use AUTO-UP, and press the Credit button, until the desired value shows in the Player 1 display.

3. If you wish to decrease the High Score value, use MANUAL-DOWN, and press the Credit button, until the desired value shows in the Player 1 display.

4. Using AUTO-UP, press and hold down ADVANCE, until the Player 3 display shows **Ad 70** Press ADVANCE once, to return to Game- Over Mode.

5. Press the High Score Reset switch (on coin door), and listen for the sound signifying that the score reset action is complete. Observe player score displays (Player 1, Player 2, etc.) to verify that the new High Score values are displayed.

GAME PRICING

PRICING MADE EASY. Game Adjustment Item Ad 24 allows the operator an easy method of setting the pricing functions. Pressing the Credit button allows the operator a choice of one of the 16 "Standard" Settings, with associated automatic pricing (Player 1 and 2 displays show the Country identifier, with a number for a country having more than one "Standard" Setting; player 3 and 4 displays show the games per coin(s) information). In the ***Pricing Table***, each "Standard" Setting is denoted by a Country Identifier. Automatic Pricing causes each of the other pricing items (columns 25 through 30) to change to the value shown in the table for that selected "Standard" Setting. In the table where the word "CUSTOM" appears, the owner/operator must enter the values shown (columns 25 through 30) to obtain the games per coin factor shown in the Games/Coin column of the table. To make these setting adjustments, the owner/operator must press the Credit button until the words "CUSTOM COINAGE" appear in the player score displays.

CUSTOM PRICING. Adjustment Item 24 must be set to the Custom Coinage Setting (player 1 and 2 displaying CUSTOM COINAGE) to enable the operator to enter desired custom pricing selections for Items 25 through 30, based on the ***Pricing Table.*** Item 25 is the left coin chute multiplier. Item 26 is the center coin chute multiplier. Item 27 is the right coin chute multiplier. Item 28 is the number of coin units equal to one Credit. (A Credit is usually equal to one game.)

The calculation of the ratio of Games : Price uses the ratio equation of X : VC , where:

X = Coin Chute Multiplier (Item 25, 26, or 27 in ***Pricing Table***);
V = Value of coin;
C = Coin units eqivalent to one Credit (Item 28).

For example, for 25¢ chutes at the factory setting, substituting values in the Games : Price ratio calculation gives 1 : 25 x 1, or one game for 25¢.

UNITS REQUIRED FOR BONUS CREDIT. Item 29 is the number of coin units that must pass through the coin chute(s) before an additional Credit (game) is posted (displayed). At the factory setting, the number in this item is 00. (This 00 means that NO bonus credit (free game) is awarded, although purchase of more than one game at a time occurs.)

MINIMUM COIN UNITS. Item 30 determines the number of coin units that must pass through the coin chute(s) before play may begin. The factory setting for this item is 00. (This 00 means that the Minimum Coin Units feature (Item 30) is disabled, by the factory setting.)

GAME PRICING (Continued)

TAXI Pricing Table

Country	Coin Chute Left	Center	Right	Games/Coin	Ad 24 Display	Pricing Functions 25	26	27	28	29	30
USA and Canada	25¢	-	25¢	1/25¢, 4/$1 [1,2]	U.S.A. 1	01	04	01	01	00	00
				1/50¢, 2/75¢, 3/$1 [2]	U.S.A. 2	01	04	01	02	04	00
				1/50¢, 2/$1 [2]	U.S.A. 3	01	04	01	02	00	00
				1/25¢, 3/50¢, 6/$1	CUSTOM	01	04	01	01	02	00
				1/25¢, 5/$1	CUSTOM	01	00	01	01	04	00
West Germany	1 DM	2 DM	5 DM	1/1 DM, 2/2 DM, 7/5 DMark [2,3]	GERMAN1	06	12	30	05	30	00
				1/1 DM, 2/2 DM, 6/5 DM [1,2]	GERMAN2	06	12	30	05	00	00
				1/1 DM, 3/2 DM, 9/5 DM	CUSTOM	09	18	45	05	00	00
				1/2x1 DM, 1/2 DM, 3/5 DM	CUSTOM	03	06	15	05	00	00
				2/1 DM, 5/2 DM, 14/5 DM	CUSTOM	13	26	65	05	65	00
				Ticket/Token Mode [3]	CUSTOM						
				Keyset Mode [3]	CUSTOM						
France	1 F	5 F	10 F	1/3x1 F, 2/5 F, 5/10 Franc [1,2]	FRANCE	02	10	20	05	20	00
Antilles (Netherlands)	25¢	-	1 G	1/25¢, 4/1 Guilder	CUSTOM	01	01	04	01	00	00
Netherlands	1 HFl	2.5 HFl	2.5 HFl	1/1 HFl, 3/2.5 HFl [2]	NETHERL.	06	15	15	05	00	00
	25¢	-	1 G	1/25¢, 5/1 Guilder	CUSTOM	01	00	05	01	00	00
Belgium	20 F	20 F	20 F	3/20 F [2]	BELGIUM	12	12	12	04	00	00
	5 F	-	20 F	1/2x5 F, 2/20 Franc	CUSTOM	01	01	04	02	00	00
	5 F	20 F	20 F	1/2x5 F, 2/20 F, 2/20 F	CUSTOM	01	04	04	02	00	00
	5 F	5 F	20 F	1/2X5 F, 1/2X5 F, 2/20 F	CUSTOM	01	01	04	02	00	00
Spain	25 P	-	100P	1/25 P, 5/100 Peseta [2]	SPAIN	01	00	05	01	00	00
Switzerland	1 F	2 F	5 F	1/1 F, 3/2 F, 7/5 Franc [2]	SWISS	02	06	14	02	00	00
	1 F	-	2 F	1/1 F, 3/2 F	CUSTOM	06	00	12	04	00	00
Japan	-	100 ¥	-	2/100 ¥ [2]	JAPAN	01	04	01	02	00	00
	100 ¥	-	100 ¥	2/100 Yen	CUSTOM	04	00	04	02	00	00
Italy	500 L	500L	500 L	1/500 Lire [2]	ITALY	01	01	01	01	00	00
Australia	20¢	-	$1	1/3x20¢, 2/$1 [2]	AUSTRAL.	01	00	06	03	00	00
United Kingdom	10 P	50 P	10 P	1/10 P, 5/50 P [2]	U.K.	01	05	01	01	00	00
	10 P	50 P	20 P	1/10 P, 5/50 P, 2/20 Pence	CUSTOM	01	05	02	01	00	00
Argentina	10¢	10¢	10¢	1/1 Token	CUSTOM	01	01	01	01	00	00
Austria	5 Sch	10 Sch	10 Sch	1/2x5 Sch, 3/2x10 Sch [2]	AUSTRIA	01	02	02	02	04	00
	5 Sch	-	10 Sch	2/5 Sch, 5/10 Schilling	CUSTOM	02	00	05	01	00	00
	1 Sch	5 Sch	10 Sch	2/5x1 Sch, 2/5 Sch, 5/10 Sch	CUSTOM	02	10	25	05	00	00
Chile	Token	-	Token	1/1 Token [1,2]	U.S.A. 1	01	04	01	01	00	00
Denmark	1 Kr	5 Kr	10 Kr	1/2x1 Kr, 3/5 Kr, 7/10 Krone	CUSTOM	01	06	14	02	00	00
Finland	1 Mka	-	5 Mka	1/2x1 Mka, 3/5 Markka [2]	CUSTOM	01	00	06	02	00	00
New Zealand	20¢	-	20¢	1/2x20¢ [2]	U.S.A. 3	01	04	01	02	00	00
Norway	1 Kr	-	1 Kr	1/2x1 Kr, 3/5x1 Krone	CUSTOM	01	00	01	02	05	00
Sweden	1 Kr	5 Kr	5 Kr	1/3x1 Kr, 2/5 Krona [2]	SWEDEN	02	10	10	05	00	00
	1 Kr	-	1 Kr	1/2x1 Krona [1,2]	U.S.A. 1	01	04	01	02	00	00

Notes: 1. Factory Default. 2. Standard Setting - Change by pressing Credit button. 3. Other functions are also affected; see the explanations for Adjustment Items 53 through 58.

TEST/DIAGNOSTIC PROCEDURES

WILLIAMS ELECTRONICS GAMES provides a series of diagnostic tests to aid the operator in determining game condition (that is, whether the game's features and highlights are operating satisfactorily). These tests activate virtually all the electronic and electromechanical devices comprising the game, so that the operator can readily locate a malfunctioning device or simply verify that all devices are working properly. In order, these tests deal with the music, the displays, the game sounds, the lamps, the solenoids, and the switches.

In addition to the diagnostic testing, a feature called the Auto Burn-in Mode is available. Activating this mode enables the operator to observe the game while all of the diagnostic tests, *except the switch test,* occur. This can be very helpful in locating 'intermittent' problems.

Activating either the entire test series or one of the individual tests requires use of the Game Adjustment/ Diagnostic switches. Open the coin door for access to these switches. To proceed to the Diagnostic Tests, the operator must simply switch the game On, set the AUTO-UP/MANUAL-DOWN switch to MANUAL-DOWN, and press the ADVANCE button.

CAUTION

The System-11B game program greatly aids the operator and service personnel: At the beginning of the Test/Diagnostic Procedures (and also at game Turn-On), the player score displays now signal, with a message ("Press ADVANCE for Report") that at least one switch has *NOT* been actuated during ball play for a lengthy period of time (90 balls, or ≈30 games). Moreover, the Problem Reporting activity at the beginning of the Test/ Diagnostic Procedures, the display of problem switches now includes *ALL* switches exhibiting problems. Refer to the text on Switch Tests for additional information. To proceed with the Test/Diagnostic Procedures, use AUTO-UP, and press ADVANCE.

MUSIC TEST.

1. In the Music Test, observe that the player 1 and 2 displays show the message, MUSIC TEST. Switching to AUTO-UP, observe that the message now reads MUSIC OFF, and that the player 3 score display shows 00 00. Press the Credit button to select the desired music selection: 01 - 'Main Theme' through 06 - 'Hi. Score Theme' (the selections repeat). Adjust the volume control for proper sound level for the game location.

2. Use the AUTO-UP position.

DISPLAY TEST.

1. To initiate the Display Test, press ADVANCE. Observe that player 1 and 2 displays briefly show the message, DISPLAY TEST, and that the player 3 score display shows 01 (the Display Test identifier).

2. Use AUTO-UP. Observe that all displays begin a display cycle of all 0s through all 9s, one digit at a time. Verify that the proper comma segments light during display of the odd-numbered digits. Next, a special "all segments" character 'walks' from left to right across each player score display.

3. To halt the display cycle, use MANUAL-DOWN. Then, press ADVANCE to step through the sequential digit display, digit by digit, and the subsequent "all segments" characters display test. Use AUTO-UP to resume cycling, and to proceed to the next test.

SOUND TEST.

1. (From Display Test) To initiate the Sound Test, press ADVANCE. Observe that the player 1 and 2 displays show the message, SOUND TEST, and that the player 3 display shows 02 (the Sound Test identifier). The player 3 display shows a series of test steps from 00 through 07. Verify that a different sound is heard each time the number in the display changes.

2. To repeatedly pulse a single sound, use MANUAL-DOWN. Verify that one particular sound repeats. Press ADVANCE to step to the next sound, which repeats until ADVANCE is pressed again. Use AUTO-UP to resume cycling the sounds, and to proceed to the next test.

TEST/DIAGNOSTIC PROCEDURES (Continued)

LAMP TESTS.

1. **All Lamps.**
   (From Sound Test) To initiate the first Lamps Test, press ADVANCE. Observe that the Player 1 and 2 displays show the message, ALL LAMPS, and that the Player 3 display shows 03 (All LampsTest identifier) and that all feature lamps (playfield and backbox) blink on and off. (Note, however, that the General Illumination lamps remain lighted steadily.) To locate the wiring associated with a particular feature lamp, refer to the **Lamp-Matrix Table.** CPU Board connections at jacks 1J6 (columns) and 1J7 (rows) are also listed in the table.

2. **Single Lamps.**
   From the All Lamps test, using AUTO-UP, press ADVANCE to initiate the Single Lamps Test. The Player 1 and 2 displays initially show the message, SINGLE LAMPS, and the Player 3 display shows 04. Then, the Player 3 display shows 04 01, and the Player 1 and 2 displays change to show JOYRIDE 10,000, the name of the lamp currently blinking. Press the Credit button to proceed through an ascending series of designator numbers (01 through 64), with the Player 1 and 2 displays showing the individual lamp's name. Press and hold the Credit button to proceed rapidly to the desired lamp.

TAXI Lamp-Matrix Table

COLUMN / ROW	1 Q66 YEL-BRN 1J7-1	2 Q64 YEL-RED 1J7-2	3 Q62 YEL-ORN 1J7-3	4 Q60 YEL-BLK 1J7-4	5 Q58 YEL-GRN 1J7-6	6 Q56 YEL-BLU 1J7-7	7 Q54 YEL-VIO 1J7-8	8 Q52 YEL-GRY 1J7-9
Q80 1 RED-BRN 1J6-1	JOYRIDE 10,000 1	AIRPORT 20K 9	PIN•BOT (Center) 17	PIN•BOT 25	2X cab 33	AIRPORT RIDE (Right) 41	JACKPOT (left above Meter) 49	SPINOUT 1,000 57
Q81 2 RED-BLK 1J6-2	JOYRIDE Spot Pasngr 2	AIRPORT 40K 10	DRACULA (Center) 18	DRACULA 26	4X cab 34	AIRPORT RIDE (Left) 42	JACKPOT (right above Meter) 50	SPINOUT 5,000 58
Q82 3 RED-ORN 1J6-3	JOYRIDE Mystery 3	AIRPORT 60K 11	MARILYN (Center) 19	MARILYN 27	3X cab 35	JOYRIDE 43	METER (left below Meter) 51	SPINOUT 10,000 59
Q83 4 RED-YEL 1J6-5	JOYRIDE EXTRA BALL 4	AIRPORT 80K 12	SANTA (Center) 20	SANTA 28	5X cab 36	JACKPOT When Lit 44	METER (right below Meter) 52	SPINOUT 25,000 60
Q84 5 RED-GRN 1J6-6	JOYRIDE SPECIAL 5	AIRPORT 100K 13	GORBIE (Center) 21	GORBIE 29	SPECIAL W/L (L Outlane) 37	1 MILLION When Lit 45	RED Traffic Light 53	SPINOUT 50,000 61
Q85 6 RED-BLU 1J6-7	Williams Pinball Palace (upr l) 6	C (Top Lane) 14	1 Express Lane (left) 22	RIDE AGAIN 30	BONUS W/L (L Return Lane) 38	EXTRA BALL W/L 46	YELLOW Traffic Light 54	SPINOUT 75,000 62
Q86 7 RED-VIO 1J6-8	Williams Pinball Palace (mid l) 7	A (Top Lane) 15	2 Express Lane (right) 23	Passengers Carried 31	SPECIAL W/L (R Outlane) 39	CARRY PASSENGERS W/L 47	GREEN Traffic Light 55	SPINOUT 100,000 63
Q87 8 RED-GRY 1J6-9	Williams Pinball Palace (lwr l) 8	B (Top Lane) 16	RAISE JACKPOT 24	LOCK 32	BONUS W/L (R Return Lane) 40	RELEASE 48	Williams Pinball Palace (upr r) 56	Williams Pinball Palace (lwr r) 64

TEST/DIAGNOSTIC PROCEDURES (Continued)

SOLENOID TEST.

1. (From Lamp Test) Using AUTO-UP, press ADVANCE. Observe that the Player 1 and 2 displays show the message, COIL TEST, the Player 3 display shows 05 (Solenoid Test identifier). Next, the Player 3 display shows a series of test steps from 01 through 22, while the Player 1 and 2 displays show the solenoid/circuit name. During each of these steps, pulsing of the respective solenoid/circuit occurs. The test cycles repeatedly, unless halted via the MANUAL-DOWN switch. Refer to the **Solenoid Table** for solenoid numbers and wiring information. CPU Board connections at 1P11, 1P12, and 1P19 are also listed in the table.

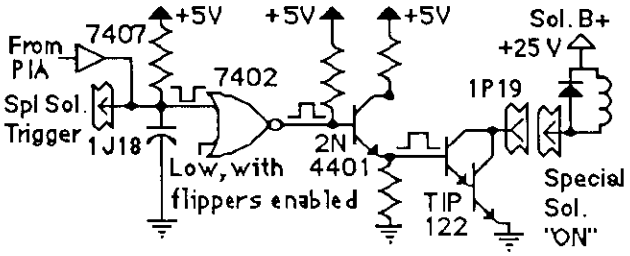
   To continuously pulse a single solenoid/circuit, use MANUAL-DOWN. Press ADVANCE to sequence through the switched, controlled, and special solenoids. Use AUTO-UP to resume test cycling, and to proceed to the next test.

TAXI Solenoid Table

Sol. No.	Function	Solenoid Type	Wire [1] Color	Connections: CPU Bd	Connections: Playfield/ Cabinet	Driver Trnstr	Solenoid Part Number / Flashlamp Type (i=Insert Bd; p=Playfield; d=Dome)
01A [3]	Outhole Kicker	Switched	{Vio-Brn	1P11-1	5J1-9: 5J4-9 (A)	Q33	AE-23-800
01C [3]	Pin•Bot Flasher	Switched	Blk-Brn}	(Gry-Brn)	5J5-9 (C)	Q33	#89 flashlamps 1p,1i
02A [3]	Ball Release (Shtr Lane Feeder)	Switched	{Vio-Red	1P11-3	5J1-7: 5J4-8 (A)	Q25	AE-23-800
02C [3]	Dracula Flasher	Switched	Blk-Red}	(Gry-Red)	5J5-8 (C)	Q25	#89 flashlamps 1p,1i
03A [3]	Catapult	Switched	{Vio-Orn	1P11-4	5J1-6: 5J4-7 (A)	Q32	AL-23-800
03C [3]	Marilyn Flasher	Switched	Blk-Orn}	(Gry-Orn)	5J5-7(C)	Q32	#89 flashlamps 1p,1i
04A [3]	Middle 3-bank Dr Tgt	Switched	{Vio- Yel	1P11-5	5J1-5: 5J4-6 (A)	Q24	AE-26-1200
04C [3]	Santa Flasher	Switched	Blk-Yel}	(Gry-Yel)	5J5-5 (C)	Q24	#89 flashlamps 1p,1i
05A [3]	Top Eject Hole	Switched	{Vio-Grn	1P11-6	5J1-4: 5J4-5 (A)	Q31	AE-23-800
05C [3]	Gorbie Flasher	Switched	Blk-Grn}	(Gry-Grn)	5J5-4 (C)	Q31	#89 flashlamps 1p,1i
06A [3]	Right 3-bank Dr Tgt	Switched	{Vio-Blu	1P11-7	5J1-3: 5J4-4 (A)	Q23	AE-26-1200
06C [3]	Left Ramp Flasher	Switched	Blk-Blu}	(Gry-Blu)	5J5-3 (C)	Q23	#89, #906 flashlamps 1p,1d
07A [3]	Spinout Kickbig	Switched	{Vio-Blk	1P11-8	5J1-2: 5J4-2 (A)	Q30	AE-26-1500
07C [3]	Right Ramp Flasher	Switched	Blk-Vio}	(Gry-Vio)	5J5-2 (C)	Q30	#89 , #906 flashlamps 1p,1d
08A [3]	Right Lock (Eject Hole)	Switched	{Vio-Gry	1P11-9	5J1-1: 5J4-1 (A)	Q22	AE-26-1500
08C [3]	Spinout Flasher	Switched	Blk-Gry}	(Gry-Blk)	5J5-1 (C)	Q22	#89 flashlamps 2p
09	Top Ball Gate	Controlled	Brn-Blk	1P12-1	5J2-9: 5J6-9: 2J4-3	Q17	SM1-35-4000-DC
10	Insert Gen Illumin Relay	Controlled	Brn-Red	1P12-2	5J2-8: 5J6-8: 2J4-5	Q9	5580-12145-01 [4]
11	Playfield Gen Illum	Controlled	Brn-Orn	1P12-4	5J2-6: 5J6-7: 2J4-6	Q16	5580-12145-01 [4]
12	A/C Select Relay	Controlled	Brn-Yel	1P12-5	5J2-5	Q8	5580-09555-01 [5]
13	Bell	Controlled	Brn-Grn	1P12-6	5J2-4: 5J6-5	Q15	SM-26-600-DC
14	Knocker	Controlled	Brn-Blu	1P12-7	5J2-4: 5J6-3	Q7	AE-26-1200
15	JACKPOT Flasher	Controlled	Brn-Vio	1P12-8	5J2-2: 5J6-2	Q14	#89 flashlamp 1p,2i
16	JOYRIDE Flasher	Controlled	Brn-Gry	1P12-9	5J2-1: 5J6-1	Q6	#89 flashlamp 1p
17	Left Jet Bumper	Special #1	Blu-Brn	1P19-7	5J3-7: 5J7-7	Q75	AE-23-800
18	Left Kicker ("sling")	Special #2	Blu-Red	1P19-4	5J3-6: 5J7-6	Q71	AE-26-1500
19	Right Jet Bumper	Special #3	Blu-Orn	1P19-3	5J3-3: 5J7-3	Q73	AE-23-800
20	Right Kicker ("sling")	Special #4	Blu-Yel	1P19-6	5J3-4: 5J7-5	Q69	AE-26-1500
21	Lower Jet Bumper	Special #5	Blu-Grn	1P19-8	5J3-2:5J7-2	Q77	AE-23-800
22	Not Used	Special #6	Blu-Blk	1P19-9	5J3-1: 5J7-1	Q79	
-	Right Flipper	-	Orn-Vio	1P19-1	2J3-1: 2J18-10: 7P1-15	-	
	Lower Right Flipper		[Blu-Vio] [2]		[7P1-16: 2J18-6: 2J17-4]		FL11630/50VDC
-	Left Flipper	-	Orn-Gry	1P19-2	2J3-2: 2J18-9: 7P1-18	-	
	Lower Left Flipper		[Blu-Gry] [2]		[7P1-19,2J18-5:2J17-3]		FL11630/50VDC

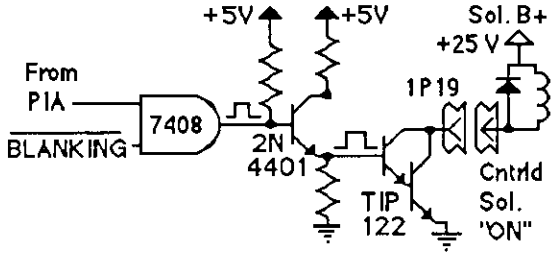
Notes: 1. Wire colors, except flipper Orn-Vio and Orn-Gry, are ground connections (to coil terminal with unbanded end of diode). Flipper Orn-Vio and Orn-Gry wires connect from CPU Board to flipper switch. 2. Flipper connections shown in braces are from flipper switch to flipper coil. 3. "A" circuits are pulsed, when Sol. 12 is de-energized; "C" circuits are pulsed, with Sol. 12 energized. Wire colors in brackets are those from respective A and C terminals corresponding to the J1-terminal connection listed for the Aux Power Driver Bd, which controls the device pulsing by Sol. 12.
4. Relay is mounted on Relay Bd, p/n C-11998-1. 5. Relay is mounted on Aux Power Driver Bd, D-12247 in the backbox.

"On" State Logic - Special Solenoid Solenoid



"Off" State - Special Solenoid:
The Special Switch Trigger Input goes low. Meanwhile, the PIA line remains high. The remaining signals reverse their states.

"On" State Logic - Controlled Solenoid



"Off" State - Controlled Solenoid:
The Enable Input (from the PIA) goes low. Meanthe BLANKING signal remains high. The rest of the signals reverse their states.

NOTE

As directed by the game program, the Solenoid A/C Select Relay (solenoid 12) switches the solenoid B+ power between two power busses to permit actuating two groups of solenoids at the proper times. In its de-energized state, the Relay connects the 'circuit A power' to 16 "controlled" and "switched" solenoids (identified in the table with no suffix letter or the letter A, after the solenoid number). Individual solenoid operation then depends on the game program enabling the ground path for solenoid actuation via the driver transistor associated with each solenoid circuit. For example, the game program can actuate the Outhole Kicker solenoid (sol. 01A), via the driver transistor Q33.

When the game program determines that the Solenoid A/C Select Relay (sol. 12) must be energized, the relay connects 'circuit C power' to eight group C solenoids (01C through 08C). Now, driver transistor Q33 can actuate the Pin•Bot Flashers circuit (sol. 01C), which has two lamp circuits, one to the Insert Board and one to the playfield. Using this "multiplexing" technique, the same driver transistor can control actuation of two separate solenoid circuits.

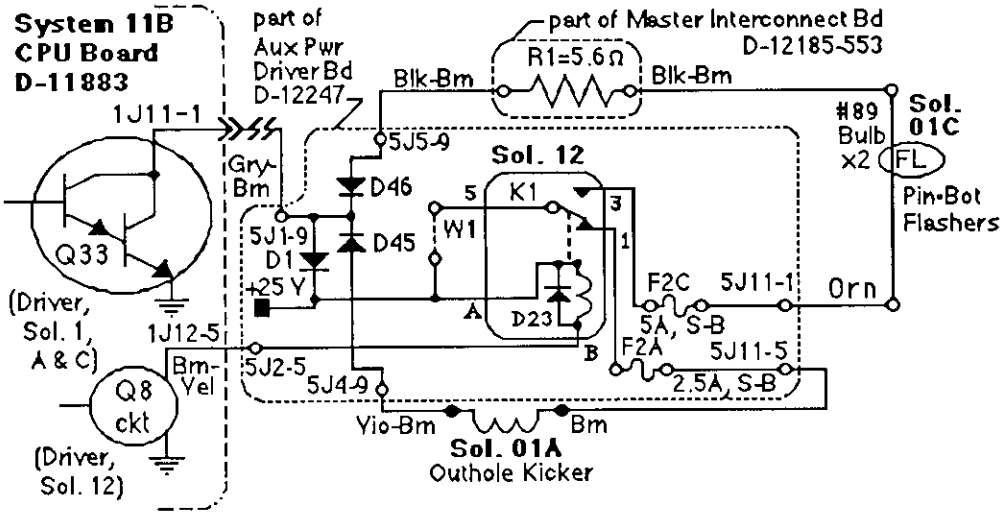


Figure 4. Typical Solenoid A/C Select Relay Circuit, showing the function of Solenoid 12, the Solenoid A/C Select Relay.

SWITCH TESTS.

1. Switch Levels.

(From Solenoid Test) To initiate the Switch Levels Test, press ADVANCE. Observe that the Player 1 and 2 displays show the message, SWITCH LEVELS, and the Player 3 display shows 06 (Switch Levels Test identifier). Normally, the right portion of the Player 3 display remains blank, indicating that no switch is actuated.

If, however, a switch *is* actuated (possibly stuck closed), the Player 3 display shows that switch's number, while the Player 1 and 2 displays indicate the switch's name. A sound also accompanies the displays. (This is another facet of the **TAXI** System-11B's switch testing capability.) If more than one switch is closed, a series of displays show each actuated switch's name and number.

(In addition, either of these problems could result in the reporting of a switch problem (or problems) at game Turn-On or at the beginning of Diagnostic Tests.)

As soon as the operator opens a closed switch, its name and number are eliminated from the Switch Levels display series. For **TAXI**, switch numbers can range from 01 through 64. Refer to the **Switch-Matrix Table** for switch numbers and wiring information. CPU Board connections at jacks 1J8 (columns) and 1J10 (rows) are also listed in the table.

TAXI Switch-Matrix Table

COLUMN / ROW	1 Q45 GRN-BRN 1J8-1	2 Q49 GRN-RED 1J8-2	3 Q44 GRN-ORN 1J8-3	4 Q48 GRN-YEL 1J8-4	5 Q43 GRN-BLK 1J8-5	6 Q47 GRN-BLU 1J8-7	7 Q42 GRN-VIO 1J8-8	8 Q46 GRN-GRY 1J8-9
1 WHT-BRN 1J10-9	Plumb Bob Tilt 1	Playfield Tilt 9	Left Jet Bumper 17	Left Ramp Entry 25	Right Ramp 33	41	49	Lane Change Right 57
2 WHT-RED 1J10-8	2	Outhole 10	Left Kicker ("sling") 18	Right Ramp Entry 26	Left Ramp 34	42	50	Lane Change Left 58
3 WHT-ORN 1J10-7	Credit Button 3	Ball Trough #1 11	Right Jet Bumper 19	Mdl 3-Bank DT (left) 27	Catapult 35	Top Kicker 43	51	59
4 WHT-YEL 1J10-6	Left Coin Chute 4	Ball Trough #2 12	Right Kicker ("sling") 20	Mdl 3-Bank DT (mid) 28	Right Eject 36	SPINOUT 44	52	60
5 WHT-GRN 1J10-5	Center Coin Chute 5	Top Eject Hole 13	Lower Jet Bumper 21	Mdl 3-Bank DT (right) 29	Left Outlane 37	45	53	61
6 WHT-BLU 1J10-3	Right Coin Chute 6	C Top Lane 14	Ball Shooter 22	R 3-Bank DT (top) 30	Left Return Lane 38	46	54	62
7 WHT-VIO 1J10-2	Slam Tilt 7	A Top Lane 15	Top Lane Entry 23	R 3-Bank DT (mid) 31	Right Outlane 39	47	55	63
8 WHT-GRY 1J10-1	High Score Reset 8	B Top Lane 16	Tips Carried 24	R 3-Bank DT (bottom) 32	Right Return Lane 40	48	56	64

Row Problems. If a display of two (or more) switch numbers of a row occurs, although only one switch is closed, check for a short circuit between the column wires.

Multiple Switch Number Indications. Check the associated column wire for a short circuit to ground.

Column Problems. If display of two (or more) switch numbers in a column occurs (while only one switch is actuated), check for a short circuit between the row wires.

Use AUTO-UP to proceed to the next test.

TEST/DIAGNOSTIC PROCEDURES (Continued)

SWITCH TESTS (Continued).

2. **Switch Edges.**
From the Switch Levels Test, press ADVANCE. Observe that the Player 1 and 2 displays show the message, SWITCH EDGES; the Player 3 display shows 07 (Switch Edges Test identifier). The right portion of the Player 3 display is blank, indicating that no switch is actuated.

This test permits the operator to test whether actuating a switch provides the proper signal to the System-11B switch testing program. When actuating a switch, the operator should see the switch's name and number (in the Player 1, 2, and 3 displays, respectively). If no indication appears at the time the switch is actuated, the operator then knows that there is a malfunction associated with that switch.

Using this technique, the operator can test each switch appearing in the **TAXI** switch problem reporting displays (either at game Turn-On or at the beginning of the Diagnostic Tests) to determine whether the switch can be actuated. If the switch's name and number are displayed while the operator checks its operation, the operator then knows that the reported problem with that switch is NOT currently caused by a switch malfunction. The operator can then seek other causes for the reported problem, being almost certain now that the switch did not fail. *This test is also useful when the operator is adjusting the sensitivity of a particular switch's actuation mechanism.*

Among the possibilities is the fact that the players have not actuated that switch because of some other problem; the operator should try to analyze what could cause the switch to be missed during game play, and remedy that problem cause. With these new tests, switch problems are, therefore, more easily isolated.

3. *Playfield or CPU Board?* To determine whether a switch problem is in the playfield or the CPU Board, remove connectors 1P8 and 1P10 from the CPU Board. Begin the Switch Test. Use a jumper wire to simulate switch actuation. For example, placing a jumper between 1J10-9 and 1J8-2 should (based on the **Switch-Matrix Table**) should produce an indication of switch 09 being actuated.

ENDING THE DIAGNOSTIC TESTS.

To end the Diagnostic Tests, reach the Switch Edges Test (07 in the Player 3 display), use AUTO-UP and press ADVANCE. The backbox displays should show the **TAXI** game's Identification Information. Use MANUAL-DOWN, and press ADVANCE to reach Adjustment Item 70 (INSTALL FACTORY). Use AUTO-UP, and press ADVANCE to go to the Attract Mode.

AUTO BURN-IN MODE.

The Auto Burn-in Mode permits the operator to check intermittent (or nonrecurring) problems associated with most portions of the game's circuitry. Repeatedly cycling through a group of tests can sometimes bring a problem, which occurs only randomly or occasionally, to exhibit itself more frequently, thereby aiding in the isolation of the problem. To activate the Auto Burn-in Mode:

1. While in the Game Adjustments, reach Ad 67 and change the Factory Setting of NO to YES, via the Credit button. Set the AUTO-UP/MANUAL-DOWN switch to AUTO-UP.

2. Press ADVANCE to start the Auto Burn-in Mode. This mode repeatedly sequences through the Music Test, the Display Test, the Sound Test, the All Lamps portion of the Lamp Test, and the Solenoid Test.

3. To halt the Auto Burn-in Mode, switch the game Off and then On. **TAXI** now starts in the Attract Mode. (If a switch problem is now reported by the displays, perform the Switch Tests again to determine the nature of the problem; then, perform necessary repairs.)

SYSTEM-11B MEMORY CHIP TEST.

A new feature is now included in the Memory Chip Test for System 11B. During power-up, the CPU performs a self-testing routine. When all tests are satisfactory, the game proceeds to the Attract Mode, allowing players to use the game. Whenever a portion of the testing does not produce satisfactory results, the game displays a message, before proceeding to the next portion of the testing. ONLY after all tests are satisfactory does the game allow play to begin.

In addition to the displayed message, when a test fails, LED2 ('DIAGNOSTIC') mounted on the CPU Board can be observed to determine the probable cause of the problem. This LED blinks, or flashes, a certain number of times to identify the probable cause, as described in the **CPU LED Indicator Codes Table**. The operator can also start the self-testing routine by pressing the CPU Diagnostic Switch (SW 2) on the edge of the CPU Board.

CPU LED Indicator Codes Table

Diagnostic LED		
Blinks/ Flashes	**Display Message**	**Explanation**
1	U25 RAM FAILURE	U25 RAM could not be used properly (NO other tests are performed; the game is locked here, until the game is turned off).
2	MEM. PROT. FAILURE	This message means that (A) the Coin Door may be shut; (B) the Memory Protect Switch may be stuck in the ON position; (C) the memory protect logic is protecting the memory; or (D) a U25 RAM failure is occurring. (See Note 1)
3	U51 PIA FAILURE	U51 has a malfunction. (See Note 2)
4	U38 PIA FAILURE	U38 has a malfunction. (See Note 2)
5	U41 PIA FAILURE	U41 has a malfunction. (See Note 2)
6	U42 PIA FAILURE	U42 has a malfunction. (See Note 2)
7	U54 PIA FAILURE	U54 has a malfunction. (See Note 2)
8	U10 PIA FAILURE	U10 has a malfunction. (See Note 2)
9	IRQ FAILURE	IRQ has a malfunction. It may be missing or too fast or too slow.
10	U27 ROM FAILURE	U27's internal checksums do not match. It may be a ROM failure, or its associated connections and connectingdevices are causing it to appear to have a problem. (The following U26 test is skipped.)
11	U26 ROM FAILURE	U26's internal checksums do not match.

Notes: 1. This test assumes that the Coin Door is OPEN; it is initiated ONLY by pressing the CPU Diagnostic Switch (SW2).

2. Alternatively, its associated connections or connecting devices are causing the IC to appear to have problems.

SYSTEM-11B SOUND CIRCUITRY TESTS.

Tests of the System-11B Sound circuitry, including the Audio Board, are possible only after successful completion of the System-11B Memory Chip Test.

1. **Audio Board Test.** A brief check of the Audio Board (D-11581) circuitry occurs at game Turn-on; the game reports the test results by brief sounds, as follows: No sound = Audio Board is not operating, or a failure is affecting the sound circuitry (broken cable; dead amplifier; etc.); 1 sound = system OK; 2 sounds = RAM problem; 3 sounds = U4 problem; 4 sounds = U19 problem.

2. **General System-11B Sound Test.** Press the Sound Diagnostic Switch (SW 1) on left edge of the CPU Board. Listen for the two test sounds, showing that both the CVSD (Continuously Variable Slope Delta) Modulator, which provides the voices for **TAXI**, and the DAC (Digital-to-Analog Converter) sound circuits are functioning properly.

   If no sound is heard, refer to the text entitled "NO SOUND ...". If one "ring" is heard, this indicates a malfunction of the U23 RAM Chip. If either two or four "rings" is heard, this indicates a problem associated with the U21 ROM Chip. If either three or five "rings" is heard, this indicates a problem with the U22 ROM Chip.

TEST/DIAGNOSTIC PROCEDURES (Continued)

NO SOUND DURING THIS TEST (but sound can be heard during the Diagnostic Tests).
Check the sound-select inputs (pins 2 through 9 of U9) to see if they pulse during Sound Test 01. Also, check the -12 V supply voltage on the CPU Board. If this voltage is low (or AC ripple seems too high), perform the following checks:

1. The gray and gray-green transformer secondary wires for 19.4 VAC.
2. The CPU Board filter capacitor C26 for -12 VDC.
3. The filter capacitor C26 for excessive AC ripple (over 0.75VAC).

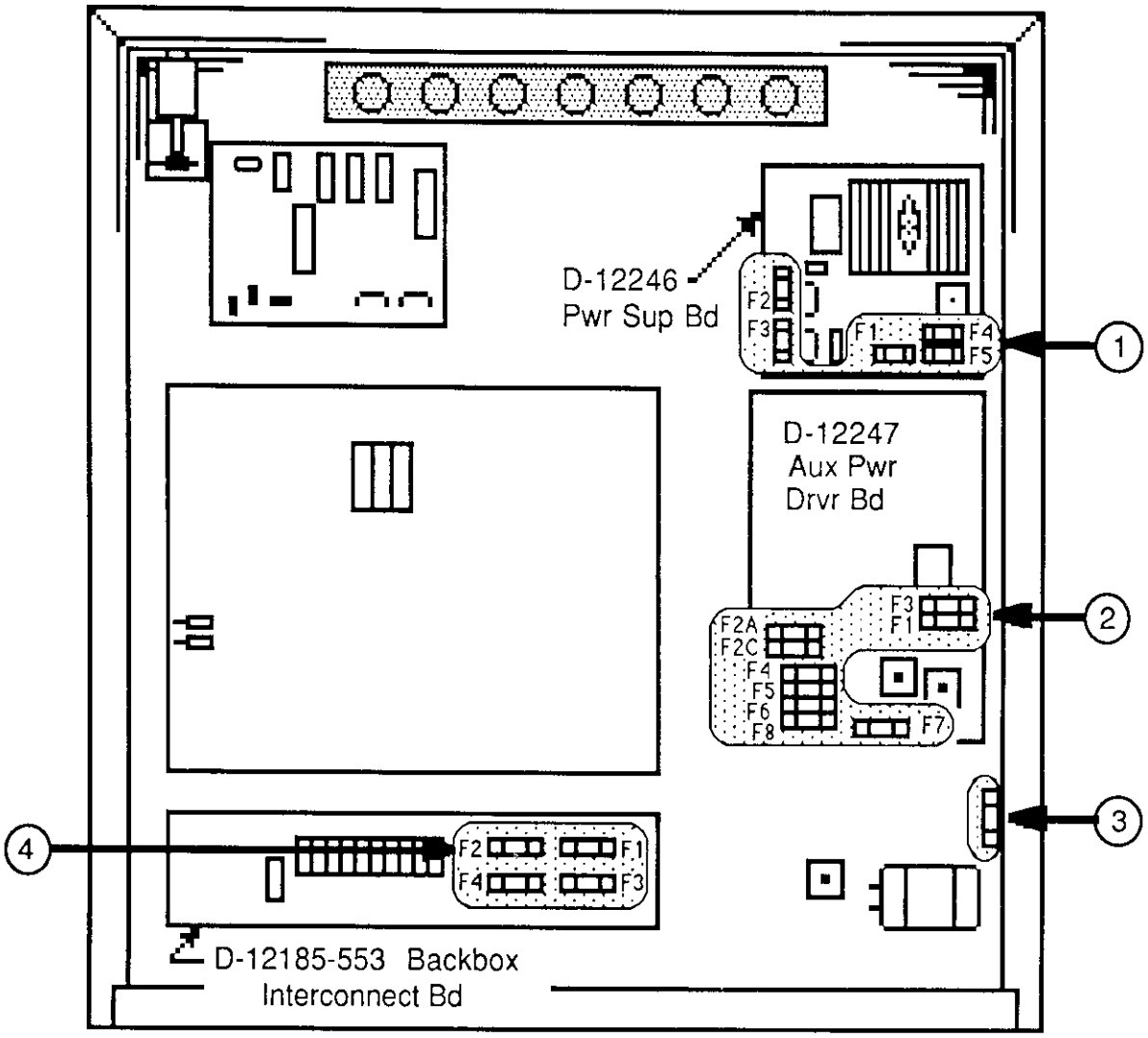
If the previous checks did not isolate the problem, turn the Volume Control for maximum output. Momentarily touch a powered-up AC soldering pencil on the center tap of the Volume Control.

CAUTION

DO NOT use a soldering iron over 40 watts. Note also that cordless soldering irons will NOT work for this test.

Hearing a low hum or a 'click' indicates that the power amplifier (U1, TDA2002), the Volume Control, and the speaker are operating satisfactorily, as is the sound circuit cabling. Not hearing a sound requires repeating the test with the Volume Control turned part way down, to determine whether the Volume Control is faulty. Also, check the cable connectors for proper mating, and that no broken wires affect this circuit .

Fuse Locations Diagram & Listing



Item	Part Number	Description	Circuit/Location
1	5731-12328-00	Fuse, 3/8A., S-B, 250V	F1; D-12246 Power Supply Board
1	5731-12327-00	Fuse, 1/8A., S-B, 250V	F2, F3; D-12246 Power Supply Board
1	5731-09432-00	Fuse, 7A S-B, 250v	F4, F5; D-12246 Power Supply Board
2	5731-09128-00	Fuse, 2-1/2A., S-B, 250v	F1, F2A, F3; D-12247 Aux Pwr Driver Board
2	5731-09651-00	Fuse, 5A., S-B, 250v	F2C; D-12247 Aux Pwr Driver Board
2	5731-08665-00	Fuse, 2A., S-B, 250v	F4 - F6; D-12247 Aux Pwr Driver Board
2	5731-06314-00	Fuse, 4A., S-B, 250v	F7; D-12247 Aux Pwr Driver Board
2	5731-09432-00	Fuse, 7A., S-B, 250v	F8; D-12247 Aux Pwr Driver Board
3	5730-09071-00	Fuse, 8A., S-B, 32v	+18 Vdc Lamp Ckt/ Lwr Rt Backbox fuseholder (1)
4	5731-09651-00	Fuse, 5A., S-B, 250v	F1 - F4: Gen. Illumination/B'box Interconnect Board
-	5730-09252-00	Fuse, 8A.,Slow-Blow (S-B), 125v	Input ("high voltage") Power Line/Cabinet Box*

* One 4A., S-B, 250v fuse (5731-06314-00) is provided for an overseas (220v) game installation.

MAINTENANCE INFORMATION

Figure 3 shows the two main lubrication points of the Shooter Lane Feeder. The shaded arrows show the directions in which the Shooter Lane Feeder and other parts of its related assemblies can be adjusted for proper operation. Note that the mechanisms of the Top Eject Hole Arm Assembly and the Right Lock (Eject Hole) are quite similar to the Shooter Lane Feeder; they have the same lubrication requirements and adjustment capabilities as the Shooter Lane Feeder.

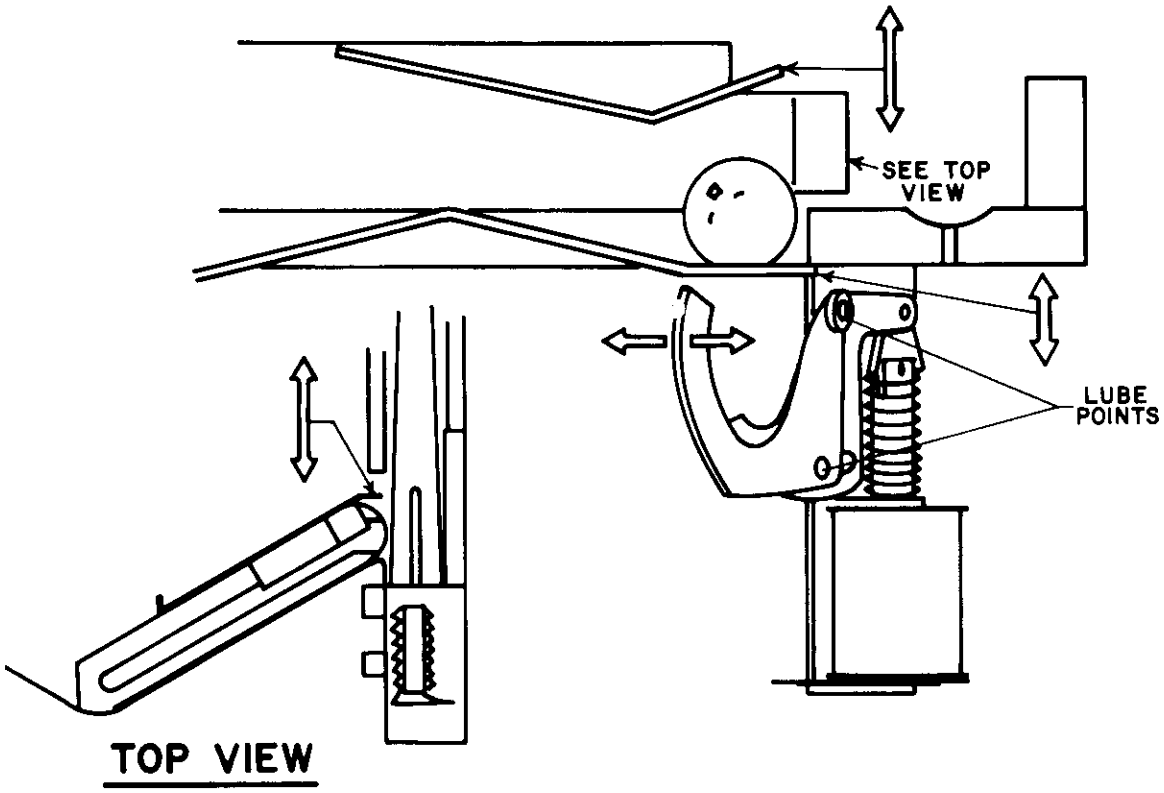


Figure 3. Adjustments and Lubrication Points, Shooter Lane Feeder.

Because of the functional design (arm-actuated via solenoid plunger operation), the pivot points of the Left and Right Kickers ("Slingshots") and the Spinout Kickbig all require lubrication as a regular servicing procedure. Mechanical adjustments are simple and somewhat similar to the Shooter Lane Feeder. These mechanisms should also be checked for proper fit (snugly tight) where they attach to the playfield.

Lubrication to ensure proper operation also applies to the target blades of the two 3-Bank Drop Targets. Regular maintenance is essential to a game's continuing contribution to the operator's earnings.

Section 2

Game Parts Information

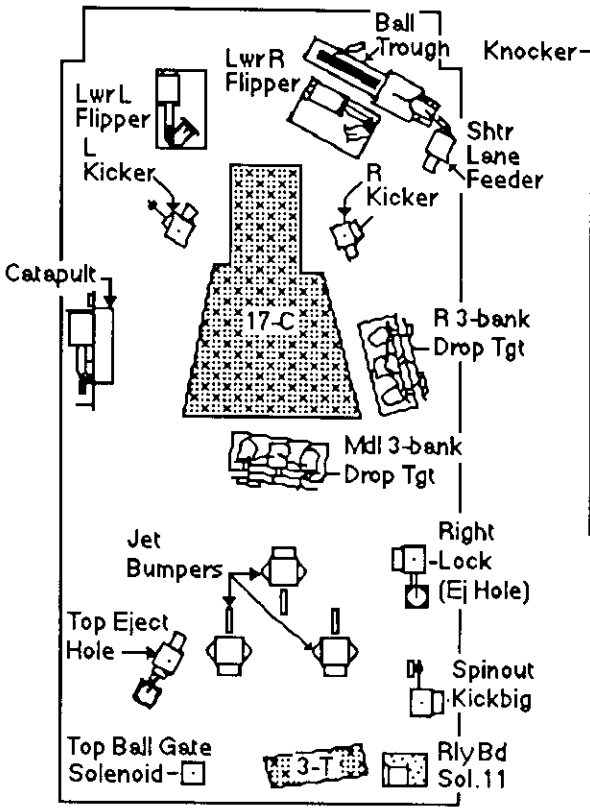
- ***Parts Lists & Diagrams***

  Locations:
  Game Circuit Boards and Major Mechanisms

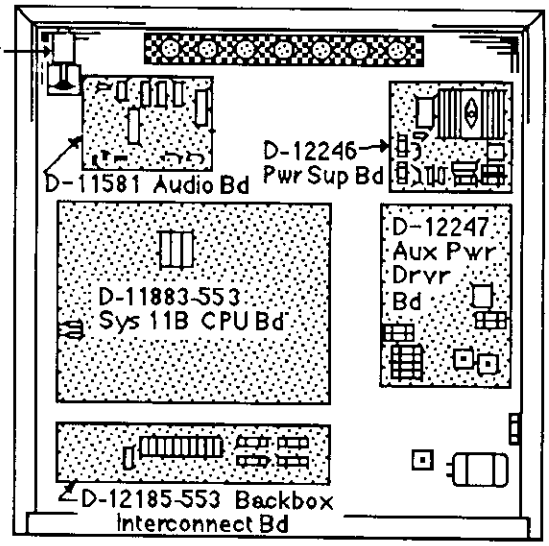
  Power Supply Board (D-12246)
  Aux Power Driver Board (D-12247-566)
  Backbox Interconnect Board (D-12195-553)
  Audio Board (D-11581-553)
  System 11-B CPU Board (D-11883-553)
  Master Display Board (D-12232-2)
  Lamp Boards

  All Major Mechanism Assemblies of *TAXI*

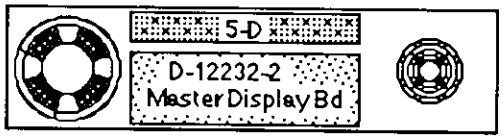
  Solenoids/Flashers & Rubber Parts
  Switches
  Lamps
  Playfield Parts



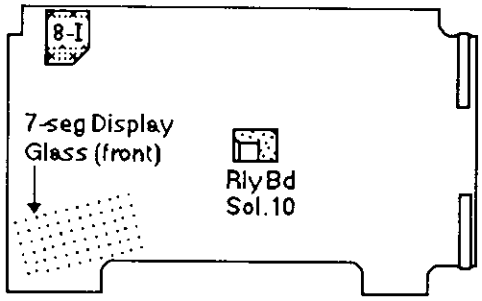
Underside of Playfield
Viewed in Raised Position



Backbox



Display/Speaker Panel



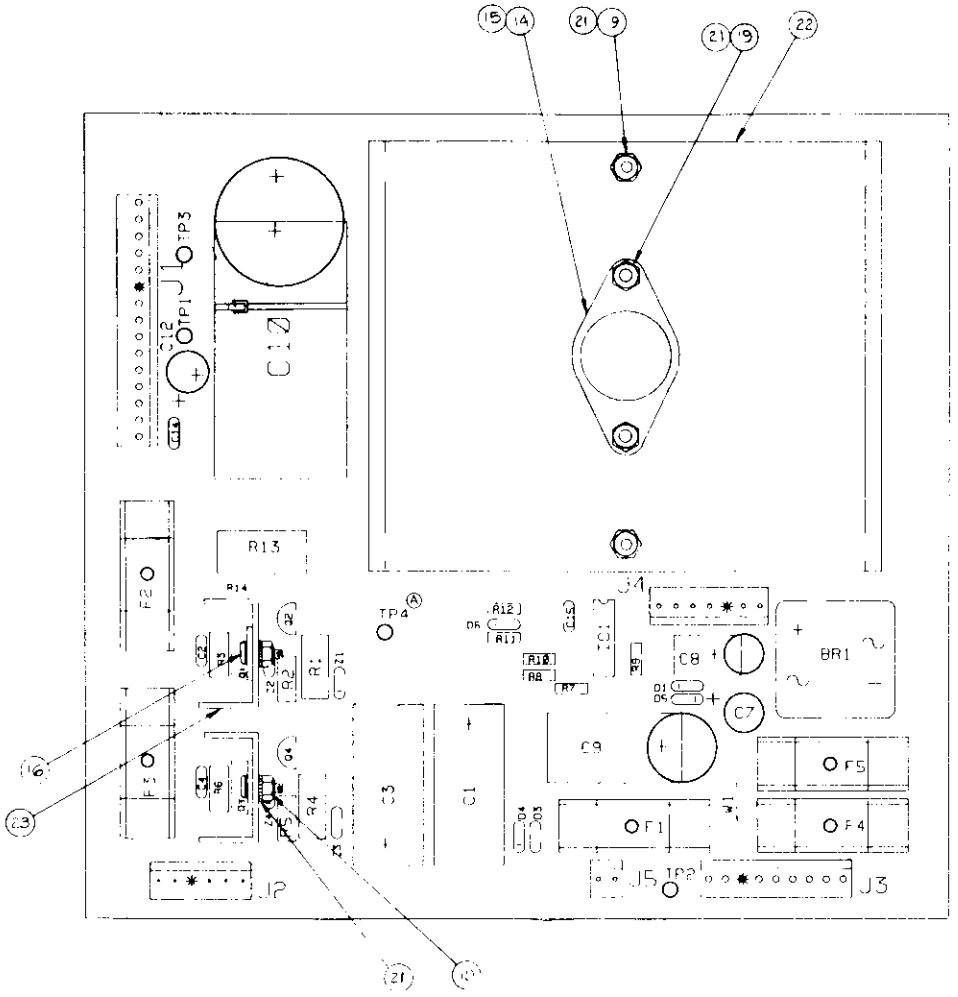
Inside of Insert Board
Viewed in Open Position

LOCATIONS

- Circuit Boards
- Lamp Boards
- Major Mechanisms

Locations Diagram - Game Circuit Boards and Major Mechanisms

C-11626-L-3	Lower Left Flipper	B-10686-2	Knocker Assembly
C-11626-R-3	Lower Right Flipper	D-11581-553	Audio Board
C-9638-3	Ball Shooter Lane Feeder	D-12246	Power Supply Board
B-9362-R-1	Coil & Bracket Assembly	D-11883-553	System 11B CPU Board
B-12283	Left & Right Kicker Arm Assembly	D-12247-566	Aux Power Driver Board
B-11203-R-1	Coil & Bracket Assembly (Left)	D-12185-553	Backbox Interconnect Board
B-11203-R-1	Coil & Bracket Assembly (Right)		
D-12220	Lamp Board ("17-C")		
C-11641-1	Catapult Assembly		
C-11223-1	Rt & Mdl 3-Bank Drop Targets	D-12295	Lamp Board ("5-D")
C-11318-1	3-Bank Opto Board	D-12232-2	Master Display Board
B-9414-1	Jet Bumper (Lwr, R, L)		
B-9415-1	Bumper Coil & Bracket Assy		
B-9361-R-5	Right Lock - Eject Hole Arm Assy		
B-11203-R-1	Coil & Bracket Assembly	C-12330	Lamp Board ("8-I")
B-9361-R-1	Top Eject Hole Arm Assembly	C-11998-1	Relay Board (Sol. 10 Gen. Illum)
B-9362-L-1	Coil & Bracket Assembly	C-8364-1	JACKPOT/Meter Display Assy
B-11395-1	Spinout Kickbig	5670-09439-00	7-segment Display Glass
B-11203-R-1	Coil & Bracket Assembly		
C-12000	Lamp Board ("3-T")		
C-11998-1	Relay Board (Sol. 11 Gen. Illum)	C-12272	Dome Light Board (Backbox top)

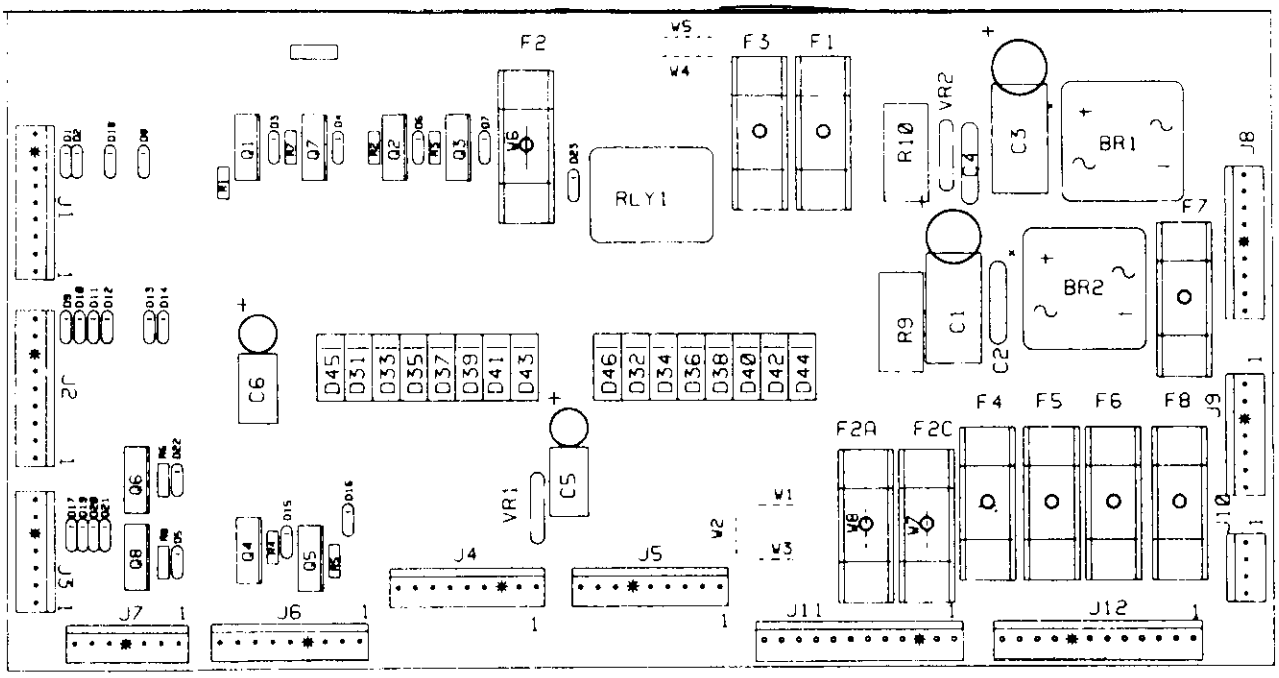


Power Supply

p/n D-12246

Item	Part No.	Ckt Designator	Description
1	5765-12317-00		Power Supply PCB
2	5733-12060-01	F1-F5	Fuse Holder
3	5731-09432-00	F6, F5	Fuse, 7A, 250V, S-B
4	5731-12328-00	F1	Fuse, 3/8A., 250V, S-B
5	5730-12327-00	F2, F3	Fuse 1/8 A., 250V
6	5791-10862-15	J1	15H STR SQ. PIN .156
7	5791-10862-06	J2	6H STR SQ. PIN .156
8	5791-10862-09	J3	9H STR SQ. PIN .156
9	5100-09690-00	BR1	Bridge Rectifier, 35A., 200V
10	5164-12154-00	Q1	Transistor, MJE15030, NPN
11	5194-12155-00	Q3	Transistor, MJE15031, PNP
12	5194-09055-00	Q2	Transistor, MPSD52, PNP
13	5164-09056-00	Q4	Transistor, MPSD02, NPN
14	5162-09425-00	Q5	Transistor, 2N6057, NPN
15	5701-09652-00		Mica Insulator
16	4006-01003-06		Mach. Screw, 6-32 x 3/8
17	4006-01003-08		Mach. Screw, 6-32 x 1/2
18	20-9229		Thermal Compound
19	4406-01117-00		Nut, 6-32 Hex.
20	5010-09534-00	W1	Resistor,0Ω
21	4703-00007-00		Lockwasher, #6 Ext.
22	5705-12330-00		Heatsink 4"
23	5705-09199-00		Heatsink 6030B
24	5070-09054-00	D1, D3 - D6	Diode, 1N4004
25	5075-09059-00	ZR1, ZR3	Zener, 1N5990, 3.9v, 5%
26	5075-09060-00	ZR2, ZR4	Zener, 1N4764, 100v, 5%
27	5460-09424-00	IC1	IC, Volt. Reg., MC1723C5
28	5010-09069-00	R3, R6	Resistor, 330K, 5%, 1/2w, C.F.
29	5010-09061-00	R2, R5	Resistor, 680Ω, 2w
30	5010-09536-00	R1, R4	Resistor, 39K, 5%,1w
31	5013-09426-00	R7	Resistor, 2.15K, 1%, 1/4w, C. F.
32	5013-09427-00	R8	Resistor, 4.99K, 1%, 1/4w, C. F.
33	5010-09541-00	R9	Resistor, 2.7K, 2%,1/4w, C. F.
34	5010-09085-00	R10	Resistor, 1.5K, 5%,1/4w, C. F.
35	5010-09428-00	R11	Resistor, 1.5K, 2%, 1/4w, C. F.
36	5010-09508-00	R12	Resistor, 270Ω, 2%, 1/4w, C. F
37	5012-09429-00	R13	Resistor, 0.12Ω, 5%,5w
38	5040-12324-00	C1, C3	Capacitor, 150 mfd, 160v, radial
39	5043-09072-00	C2, C4	Capacitor, 0.1 mfd, 500v, disc
40	5040-09421-00	C7	Capacitor, 100 mfd, 25v, radial
41	5040-09422-00	C8	Capacitor, 47 mfd, 50v, radial
42	5040-09420-00 5040-08893-00	C9	Capacitor, 1000 mfd, electr, 25v, axial or radial
43	5040-09419-00	C10	Capacitor, 18,000 mfd, electr, 20v, axial
44	5040-09423-00	C12	Capacitor, 330 mfd, electr, 10v,radial
45	5043-09446-00	C14	Capacitor, 0.1 mfd, 50v, disc
46	5043-09065-00	C15	Capacitor, 470 pfd
47	5824-09428-00	TP1, TP3, TP4	Terminal, #1502-1 (Test Post)

NOTES:
1. Heat sink compound must be applied between transistor and heat sink.
2. Observe index mark on integrated circuit, polarity of capacitors and diodes, and position of transistors.

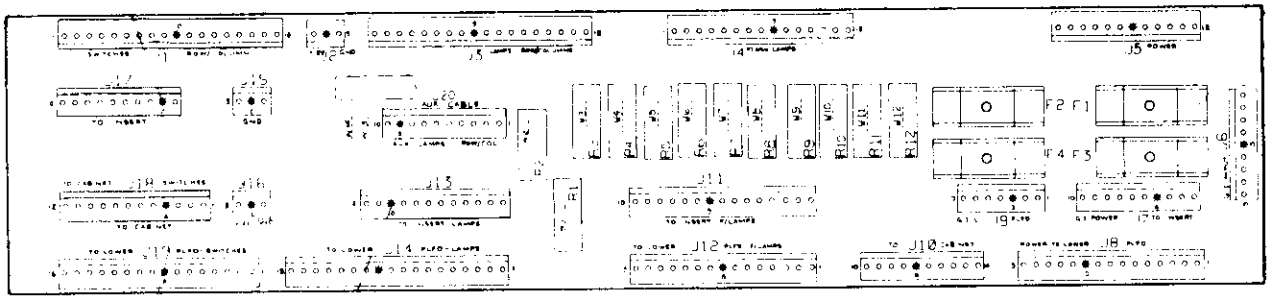


Aux Power Driver Unit Board

p/n D-12247-566

Part No.	Ckt Designator	Description
5763-12184-00		Bare P. C. Board
5040-09537-00	C1, C3	Capacitor, 100 µfd., 100v, Radial
5040-12181-00	C5, C6	Capacitor, 10 µfd., 100v, Radial
5043-09072-00	C2, C4	Capacitor, 0.1 µfd., 500v
5010-09160-00	R1 - R8	Resistor, 220Ω, 1/4w C.F., 5%
5012-12238-00	R9	Resistor, 8.2K, 5w, 5%
5010-09534-00	W1, W3, W4, W6	Resistor, 0Ω, 1/4w
5017-12180-00	VR1, VR2	Varistor, 100v
5017-09064-00	VR2	Varistor, 47v
5100-09690-00	BR1, BR2	Bridge Rectifier, 35A, 200v
5070-08785-00	D1 - D23	Diode, 1N4003
5070-09045-00	D31 - D46	Diode, MR501

Part No.	Ckt Designator	Description
5191-12179-00	Q1 - Q8	Transistor, TIP36C
5580-09555-01	K1	Relay, DPDT, 13A
5733-12060-01		Fuseholder
5731-08665-00	F4, F5, F6	Fuse, 2, S-B, 250v
5731-09128-00	F1, F2A, F3	Fuse, 2-1/2A, S-B, 250v
5731-09651-00	F2C	Fuse, 5A, S-B, 250v
5731-06314-00	F7	Fuse, 4A, S-B, 250v
5731-09432-00	F8	Fuse, 7A, S-B, 250v
5791-10862-09	J1, J2, J4 - J6, J8	Connector, 9-pin Hdr, Sq Pin
5791-10862-07	J3, J7, J9	Connector, 7-pin Hdr, Sq Pin
5791-10862-12	J11, J12	Connector, 12-pin Hdr, Sq Pin
5791-10862-04	J10	Connector, 4-pin Hdr, Sq Pin

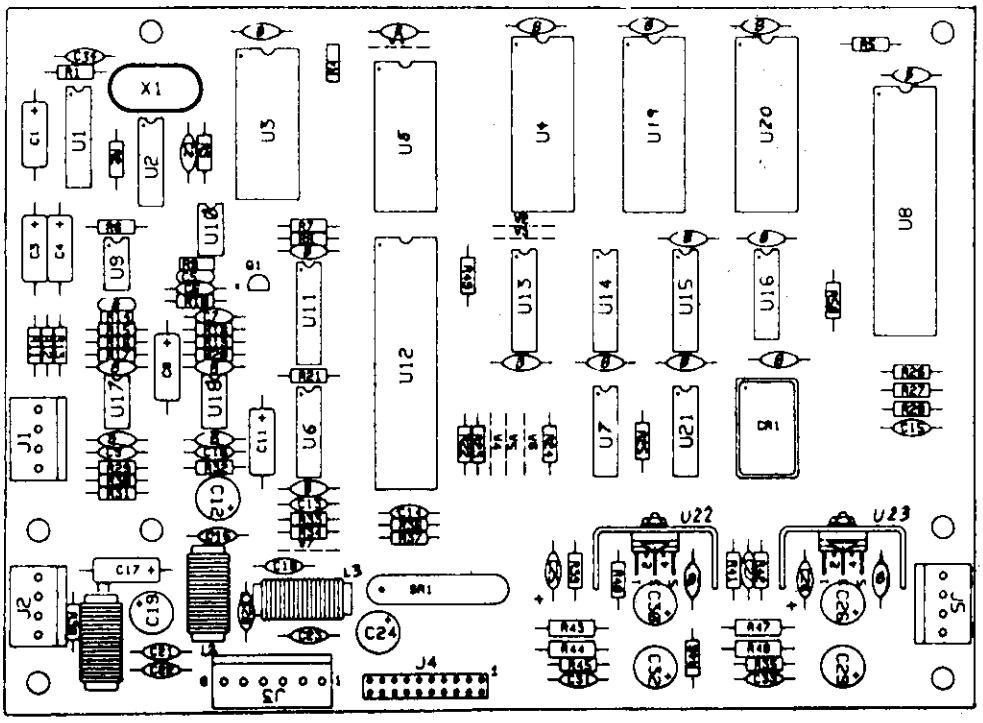


Backbox Interconnect Board

p/n D-12185-553

Part No.	Ckt Designator	Description
5791-10862-03	J2, J16	3H STR SQ. PIN .156
5791-10862-07	J9	7H STR SQ. PIN .156
5791-10862-09	J6	9H STR SQ. PIN .156
5791-10862-10	J7, J10	10H STR SQ. PIN .156
5791-10862-12	J5, J13, J18	12H STR SQ. PIN .156
5791-10862-15	J8, J11, J12	15H STR SQ. PIN .156
5791-10862-16	J19	16H STR SQ. PIN .156
5791-10862-18	J1, J3, J14	18H STR SQ. PIN .156

Part No.	Ckt Designator	Description
5768-12304-00		Master Interconnect Board
5010-09534-00	W11 - W13	Resistor, 0Ω
5012-10023-00	R6, R7, R9	Resistor, 4Ω 5W 10%
5012-10024-00	R1 - R5, R8, R10	Resistor, 5.6Ω 5W 10%
Not used		
Not used		
5731-09651-00	F1, F2, F3, F4	Fuse, 5A.S.B., 250V
5733-12062-01	F1, F2, F3, F4	Fuse Holder



Audio Board Assembly

p/n D-11581-553

Part No.	Ckt Designator	Description
5766-12130-00		Bare P. C. Board
5371-11087-00	U1	IC, D/A Conv, YM3012
a) 5700-09006-00		Socket, IC, 16-pin (U1)
5370-11086-00	U3	IC, Sound Processor, YM2151
a) 5700-09004-00		Socket, IC, 24-pin (U3)
5400-10320-00	U8	IC, µProcessor, MC68B09E
a) 5700-08985-00		Socket, IC, 40-pin (U8)
A-5343-553-5	U4	IC, Audio ROM 1
A-5343-553-6	U19	IC, Audio ROM 2
a) 5700-10176-00		Socket, IC, 28-pin (U4, U19, U20)
5371-09152-00	U11	IC, D/A Convtr, MC1408
5430-10322-00	U12	IC, PIA, MC68B21
5340-09878-00	U5	IC, RAM, 2016
5281-09487-00	U16	IC, Dual D Flipflop, 74LS74
5281-10043-00	U13	IC, 74LS175
5281-09235-00	U21	IC,Triple NAND, 74LS10
5370-09321-00	U9, U10, U17	IC, Op Amp, MC1458
5281-09215-00	U2	IC, Hex Inv, 74LS04
5281-09246-00	U14	IC, 2-4 Dec, 74LS139
5281-09745-00	U15	IC, Dual Mux, 74LS138
5370-09156-00	U22, U23	IC, Audio Amp, TDA2002
a) 5705-09199-00		Heatsink, #6030B
b) 4006-01003-06		Mach. Screw, 6-32 x 3/8
c) 4406-01117-00		Nut, 6-32 Hex.
d) 4703-00007-00		Lockwasher, #6 Ext.
5160-10269-00	Q1	Transistor, 2N3904, NPN
5060-10396-00	SR1	SIP 4.7K & 470pfd, 8R8C
5010-09181-00	R44, R48	Resistor, 1.0Ω, 1/2w, 5%
5010-09161-00	R35, R45	Resistor, 2.2Ω, 1/4w, 5%
5010-09361-00	R43, R46, R47	Resistor, 220Ω, 1/2w, 5%
5010-09358-00	R41, R42	Resistor, 1K, 1/4w, 5%
5010-08998-00	R2, R3, R12	Resistor, 2.2K, 1/4w, 5%
5010-08983-00	R7 - R9	Resistor, 3.3K, 1/4w, 5%

Part No.	Ckt Designator	Description
5010-08991-00	R1, R4, R5, R11, R25 - R28, R33, R36, R37, R49, R50	Resistor, 4.7K, 1/4w, 5%
5010-09034-00	R14 - R17	Resistor, 10K, 1/4w, 5%
5010-09324-00	R6, R38	Resistor, 27K, 1/4w, 5%
5010-09162-00	R39	Resistor, 100K, 1/4w, 5%
5010-10258-00	R40	Resistor, 1M, 1/4w, 5%
5010-09179-00	R10	Resistor, 3.3M, 1/4w, 5%
5010-09534-00	W9	Resistor, 0Ω, 1/4w, 5%
5040-09343-00	C1, C3, C4, C8	Capacitor, 10µfd, 20v, ±20%
5040-10974-00	C12, C19, C24	Capacitor, 100µfd, 35v
5040-09776-00	C26, C30	Capacitor, 470µfd, 16v; +50, -10%
5040-12006-00	C29, C32	Capacitor, 1000µfd, 16v, 20%
5041-09243-00	C25, C28	Capacitor, 10µfd, 10v,±10%
5043-08980-00	C5, B (17)*	Capacitor, 0.01µfd, 50v,+80, -20%
5043-08996-00	C31, C33	Capacitor, 0.1µfd, 50v, ±20%
5043-09065-00	C13 - C15	Capacitor, 470 pfd, 50v, ±20%
5043-09492-00	C2, C34	Capacitor, 100 pfd, 50v, ±10%
5043-09844-00	C6	Capacitor, 47 pfd, 50v, ±20%
5043-09845-00	C16, C18, C20 - C23, C27	Capacitor, 1000 pfd, 50v, ±20%
5520-09020-00	X1	Crystal, 3.58 MHz
5521-10931-00	CR1	Oscillator, 8 MHz
5551-09822-00	L1 - L3	Inductor, 4.7 µH, 3A
5791-09437-00	J4	Connector, 20 pin, (Hdr), Rib. Cbl
5791-10862-04	J1, J2, J5	Connector, 4 pin (Hdr)
5791-10862-06	J3	Connector, 6 pin (Hdr)

Notes:

* 17 capacitors (shown on diagram with "B" symbol) provide +5VDC filtering for ICs.

All capacitors are ceramic, 50v, axial, unless otherwise noted.

All resistors are 5%, 1/4w, Carbon Film, unless otherwise noted.

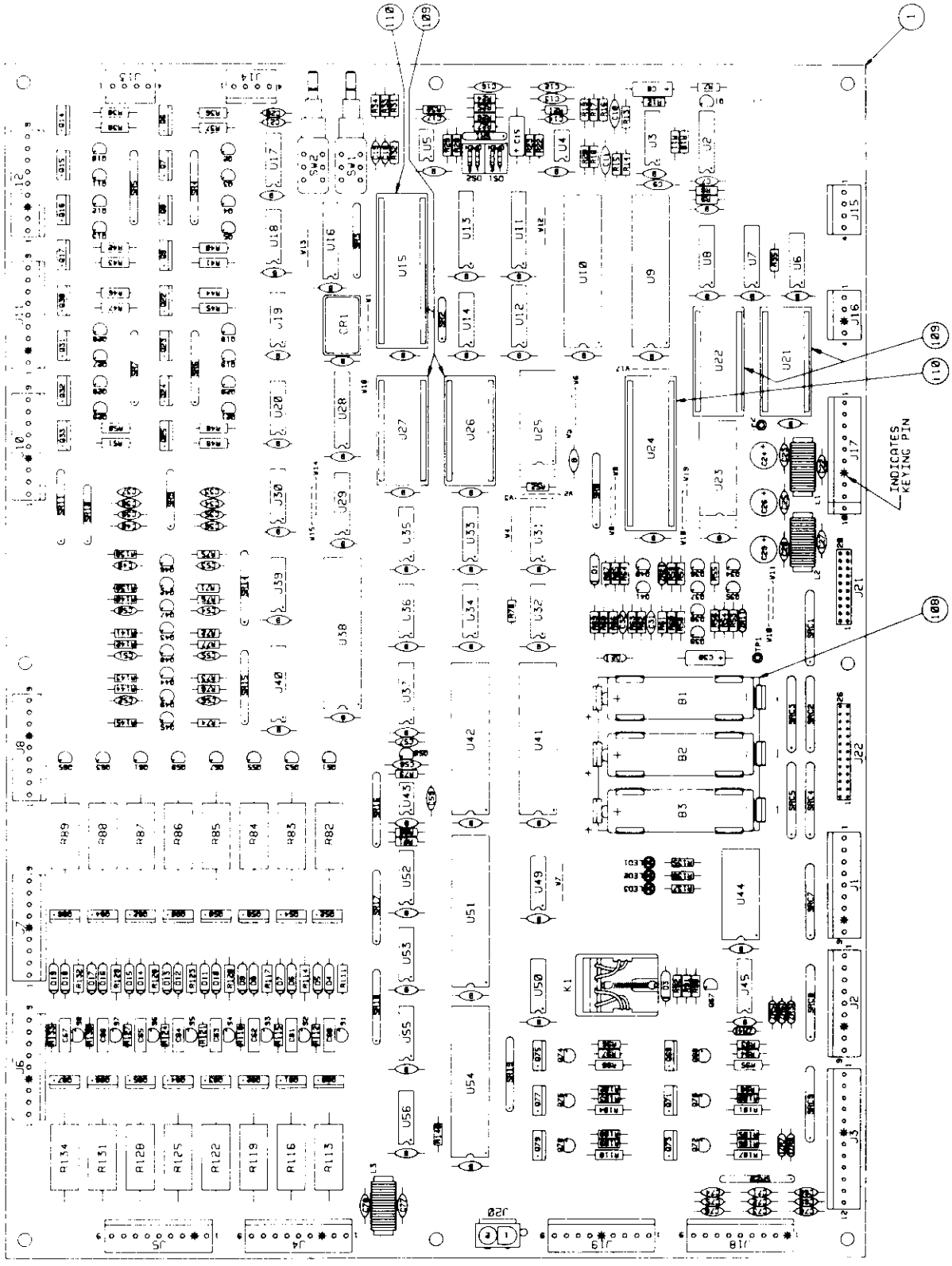
System 11B CPU Board

p/n D-11883-553

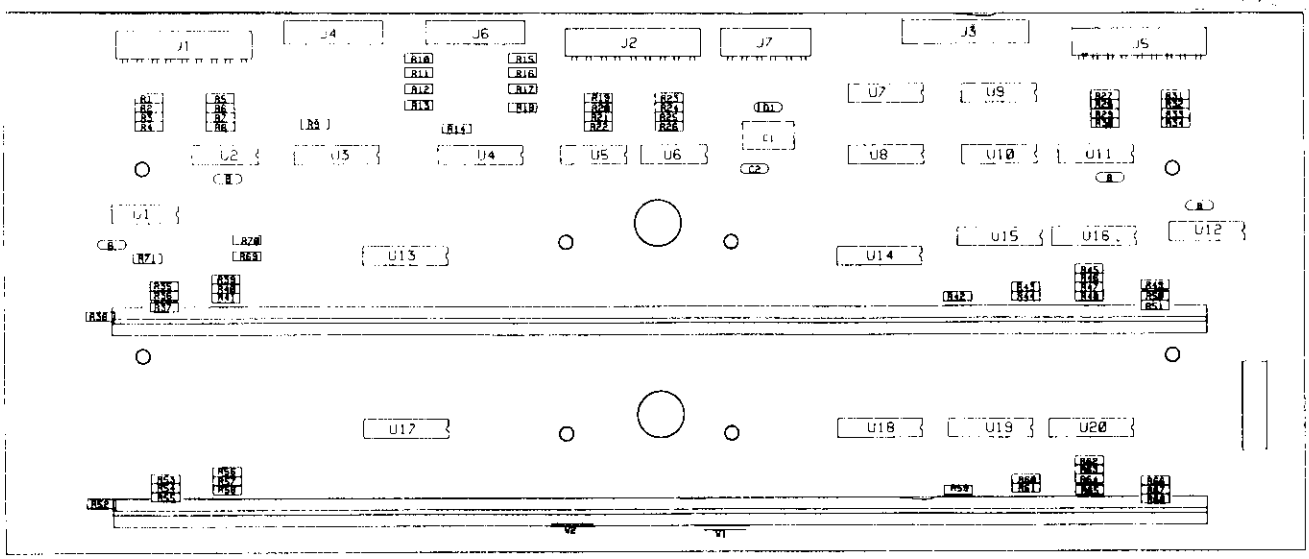
Item	Part No.	Ckt Designator	Description
1	5764-12206-00		Bare P. C. Board
2	5370-09691-00	U3	IC, CVSD Mod., 55536
3	5370-09321-00	U4, U5	IC, Dual Op Amp, 1458
4	5281-09308-00	U16	IC, Octal Bus Xcvr, 74LS245
5	5430-09972-00	U9, U10, U36, U41, U42, U51, U54	IC, PIA, MC6820/6821
6	5340-10139-00	U25	IC, 2K x 8 CMOS Static RAM
7	5280-09010-00	U44	IC, 4-16 Decoder, 74154
8	5281-09246-00	U7, U8, U12	IC, 2-4 Decoder, 74LS139
9	5075-09406-00	ZR3 - ZR8	Diode, Zener, 6.2v, 0.5w
10	5164-10998-00	Q42 - Q49	Transistor, NPN, 2N5550, TO-92
11	5281-09487-00	U6	IC, Dual D Flip-flop,74LS74
12	5431-09449-00	U43	IC, Timer, MC1455
13	5310-09236-00	U29	IC, 14-b Counter, 4020
14	5281-09743-00	U32	IC, Quad 2-Input AND, 74LS08
15	5281-09247-00	U14	IC, Quad 2-Input NOR, 74LS02
16	5281-09235-00	U35	IC, Triple 3-Input NAND, 74LS10
17	5280-09013-00	U36	IC, Hex Inverter, 7404
18	5281-09499-00	U31, U34	IC, Quad 2-Input NAND, 74LS00
19	5281-10014-00	U33	IC, Dual 4-Input NAND, 74LS20
20	5281-09486-00	U28	IC, Octal D Flip-flop, 74LS374
21	5371-09152-00	U2	IC, D/A Converter, MC1408
22	5281-09745-00	U37	IC, 3-8 Decoder, 74LS138
23	5340-09878-00	U23	IC, 2K x 8 Static RAM, 2016
24	Not Used		
25	5281-09867-00	U11, U13, U40	IC, Octal Buffer, 74LS244
26	5280-09973-00	U17-U20, U52, U53	IC, Quad 2-Input AND, 7408
27	5280-09974-00	U55, U56	IC, Hex Inverter, 7406
28	5310-09155-00	U30, U39	IC, Quad 2-Input NAND, MC14011
29	5280-09948-00	U45, U50	IC, Quad 2-Input NOR, 7402
30	5280-09309-00	U49	IC, Hex Buffer, 7407
31	5671-09019-00	LED1-LED3	LED, Red, Display
32	5521-10506-00	CR1	Oscillator, 4 MHz
33	5162-09976-00	Q51, Q53, Q55, Q57, Q59, Q61, Q63, Q65	Transistor, NPN Darl. 2N6427, TO-92
34	5191-09978-00	Q52, Q54, Q56, Q58, Q60, Q62, Q64, Q66	Transistor, PNP, TIP42, TO-220
35	5162-09410-00	Q6-Q9, Q14-Q17, Q22-Q25, Q30-Q33, Q69, Q71, Q73, Q75, Q77, Q79, Q80-Q87	Transistor, NPN, TIP122, TO-220
36	5160-09938-00	Q2-Q5, Q10-Q13, Q18-Q21, Q26-Q29, Q34-Q38, Q41, Q67, Q68, Q70, Q72, Q74, Q76, Q78	Transistor, NPN, 2N4401, TO-92
37	5160-10269-00	Q1, Q40	Transistor, NPN, 2N3904, TO-92
38	5190-09016-00	Q39, Q50	Transistor, PNP, 2N4403, TO-92
39	5130-09014-00	S1-S8	SCR, 30v, 0.8A, 2N5060
40	5070-09258-00	D3-D19	Diode, 1N4001
41	5070-09919-00	D2	Diode, 1N4148, 150mA
42	5070-09266-00	D1	Diode, 1N5817, 1.0A
43	5075-09018-00	ZR1	Diode, Zener, 1N5996A, 6.8v, 0.5w
44	5075-09059-00	ZR2	Diode, Zener, 1N5990, 3.9v, 0.5w
45	5010-09992-00	R94, R97, R100, R103, R106, R109	Resistor, 560Ω, 5%, 1/4w, C. F.
46	5010-09039-00	R56	Resistor, 10Ω, 5%, 1/4w, C. F.
47	5010-09534-00	W1, W2, W4, W5, W7, W8, W11, W14, W16, W17, W19	Resistor, 0Ω, 5%, 1/4w, C. F.
48	5010-09991-00	R31, R32, R35, R52 R55, R68, R92, R146	Resistor, 4.7KΩ, 5%, 1/4w, C. F.
49	5010-09358-00	R54, R57, R58, R64, R66,R138-R145	Resistor, 1.0KΩ, 5%, 1/4w, C. F.
50	5010-09113-00	R79	Resistor, 33KΩ, 5%, 1/4w, C. F.
51	5010-08983-00	R7, R8, R10, R70, R80	Resistor, 3.3KΩ, 5%, 1/4w, C. F.
52	5010-09034-00	R11-R14, R25, R26, R53, R60, R65, R90	Resistor, 10KΩ, 5%, 1/4w, C. F.
53	5010-09086-00	R61	Resistor, 6.8KΩ, 5%, 1/4w, C. F.
54	5010-09363-00	R3	Resistor, 5.6KΩ, 5%, 1/4w, C. F.
55	5010-08997-00	R23, R24, R91, R93, R96, R99, R102, R105, R108, R112, R115, R118, R121, R124, R127, R130, R133	Resistor, 2.7KΩ, 5%, 1/4w, C. F.
562	5012-09037-00	R113, R116, R119, R122, R125, R128, R131, R134	Resistor, 0.4Ω, 5%, 3w, Wire-Wnd.
57	5010-08993-00	R36-R51, R95, R98, R101, R104, R107, R110	Resistor, 68Ω, 5%, 1/2w, C. F.
582	5012-10860-00	R82-R89	Resistor, 27Ω, 5%, 2w, C. F.
59	Not Used		
60	Not Used		
61	5010-10987-00	R19	Resistor, 56KΩ, 5%, 1/4w, C. F.
62	5010-10003-00	R62, R63	Resistor, 390Ω, 5%, 1/4w, C. F.
63	5010-10171-00	R67	Resistor, 56Ω, 5%, 1/4w, C.F.
64	5010-10170-00	R69	Resistor, 47Ω, 5%, 1/4w, C. F.
65	5010-09160-00	R59, R61, W12, W13	Resistor, 220Ω, 5%, 1/4w, C. F.
66	5010-09416-00	R33, R34, R71-R78, R135-R137	Resistor, 470Ω, 5%, 1/4w, C. F.
67	5010-09179-00	R9	Resistor, 3.3MΩ, 5%, 1/4w, C. F.
68	Not Used		
69	5010-10361-00	R111, R114, R117, R120, R123, R126, R129, R132	Resistor, 1.2KΩ, 5%, 1/2w, C. F.
70	Not Used		
71	Not Used		
72	5010-09120-00	R17	Resistor, 270KΩ, 5%, 1/4w, C. F.
73	5010-09333-00	R15, R16, R18	Resistor, 180KΩ, 5%, 1/4w, C. F.
74	5010-09324-00	R29, R30	Resistor, 27KΩ, 5%, 1/4w, C. F.
75	5010-09269-00	R20, R21	Resistor, 12KΩ, 5%, 1/4w, C. F.
76	5010-09356-00	R27, R28	Resistor, 820Ω, 5%, 1/4w, C. F.
77	5019-09783-00	SR18	SIP, 9R, 10-pin, 6.8KΩ, .125w/R, 5%
78	5019-09362-00	SR3, SR15, SR17, SR19, SR20	SIP, 9R, 10-pin, 4.7KΩ, .125w/R, 5%
79	5019-09808-00	SR4, SR6, SR11	SIP, 9R, 10-pin, 560Ω, .125w/R, 5%
80	5019-09785-00	SR16	SIP, 9R, 10-pin, 2.2KΩ, .125w/R, 5%
81	5019-10472-00	SR14	SIP, 9R, 10-pin, 3.3KΩ, .125w/R, 5%
82	5019-09669-00	SR8	SIP, 9R, 10-pin, 1.0KΩ, .125w/R, 5%
83	5019-09780-00	SR9, SR10	SIP, 4R, 8-pin, 1KΩ, 5%
84	5019-09786-00	SR1, SR2	SIP, 5R, 6-pin, 4.7KΩ, .125w/R, 5%
85	5019-09792-00	SR5, SR7	SIP, 9R, 10-pin, 2.7KΩ, .125w/R, 5%
86	5060-10396-00	SRC1 - SRC5, SRC7 - SRC9	SIP, 8R, 8C,10-pin, 4.7KΩ & 470pfd
87	5010-08774-00	R22	Resistor, 22KΩ, 5%, 1/4w, C. F.
88	5043-08980-00	C14, C17-C21, C31, C32, C49-C56, C59, + 54 Bypass, marked B	Capacitor, 0.01 µfd, 50v(+80,-20%), Axial
89	5043-09845-00	C22, C23, C25, C27, C28	Capacitor, 1K pfd, 50v(±20%), Axial
90	5043-08996-00	C9, C70-75, C77, C78	Capacitor, 0.1 µld, 50v(±20%), Axial
91	5040-09343-00	C8, C15	Capacitor, 10 µld, Electr., 20v(±20%), Axial
92	5043-09844-00	C7	Capacitor, 47 pfd, 50v(±20%), Axial
93	5040-10974-00	C24, C26, C29	Capacitor, 100 µfd, Electr., 25v(+50,-10%), Axial
94	Not Used		
95	5045-09796-00	C60-C67	Capacitor, 0.1 µfd, Polycarbonate Rad., 100v(±10%)
96	5043-09065-00	C33-C40, C68, C69, C76, C10, C12	Capacitor, 470 pfd, 50v(±20%), Axial
97	5040-09545-00	C30	Capacitor, 22 µfd, Electr., 10v(+50,-10%), Axial
98	5041-09031-00	C58	Capacitor, 1 µfd, Tant., 25v(±20%), Axial
99	5043-09030-00	C16, C57	Capacitor, 0.047 µfd, 50v(±20%), Axial
100	Not Used		
101	5043-09492-00	C11	Capacitor, 100 pfd, ceramic,100v(±20%)
102	Not Used		
103	5048-10992-00	C13	Capacitor, 4700 pfd, ceramic,50v(±10%)
104	5551-09822-00	L1-L3	Inductor, 4.7 µH, 3A
105	5641-09312-00} 5641-09853-00}	SW1, SW2	Switch, Pushbutton, DPDT, 100v, 5A
106	5880-09022-00	B1-B3	Battery, Alkaline, 1.5v, AA
107	20-9491	W18, W19	Bus Wire, Jumper
108	5881-09021-00		Battery Holder, #171
109	5700-10176-00		IC Socket, 28 pin
a)	A-5343-553-1	U26	IC, Game ROM 2, 27128
b)	A-5343-553-2	U27	IC, Game ROM 1, 27256
c)	A-5343-553-4	U21	IC, Sound ROM 1, 27256
d)	A-5343-553-3	U22	IC, Sound ROM 2, 27256
110	5700-08985-00		IC Socket, 40 pin
a)	5400-09150-00	U15	IC, µProcessor, 6802
b)	5400-09150-00	U24	IC, µProcessor, 6802
111	5824-09248-00	TP1, TP2	Test Point
112 - 115	Not Used		
116	20-9229		Thermal Compound
117	5580-08994-01	K1	Relay, 4-pole, 40Ω, 6v
118	5791-10862-09	1J1, 1J2, 1J4-1J8, 1J10-1J12, 1J17-1J19	Connector, 9 pin (Hdr)
119	5791-10862-04	1J13, 1J14,1J16	Connector, 4 pin (Hdr)
120	5791-10862-12	1J3	Connector, 12 pin (Hdr)
121	Not Used		
122	5791-10850-00	1J22	Connector, 26 pin Ribbon (Hdr)
123	5791-09437-00	1J21	Connector, 20 pin Ribbon (Hdr)

NOTES:

1. For Schematic, refer to drawing #16-9019.
2. Items 56 and 58 (resistors) must be mounted 1/8" above PCB surface.
3. Standard Jumper: W1, W2, W4, W5, W7, W8, W11, W14, W16, W17, W19.



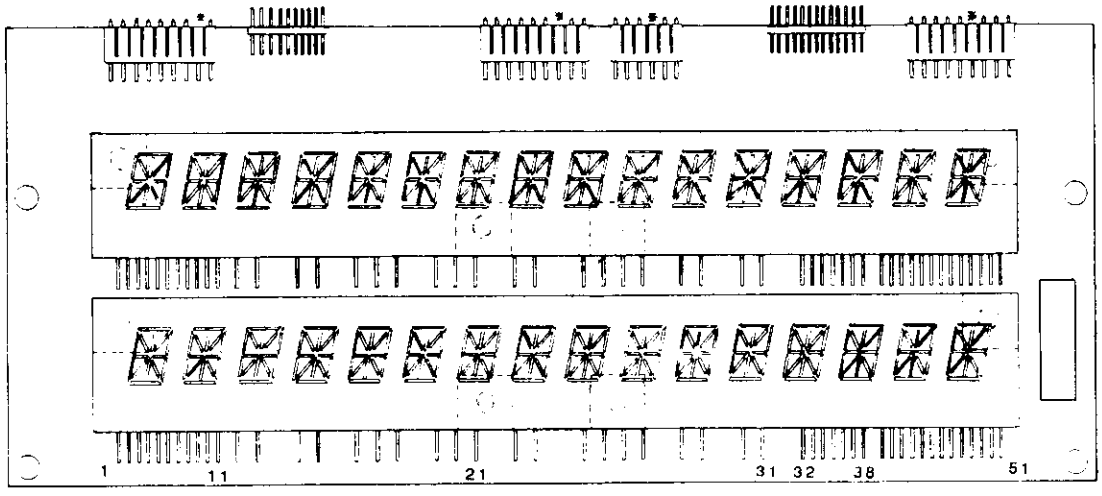
System 11B CPU Board (D-11883) Parts Information



Master Display Board

p/n D-12232-2

Part No.	Ckt Designator	Description
5760-12306-00		Bare P.C. Board
5670-12308-00	DSPL1, DSPL2	Display, 16-Character, A/N
5310-09882-00	U1, U2, U5, U6	I.C.4001
5310-08975-00	U7 - U12	I.C. 4049
5680-08968-00	U3, U13, U14, U17, U18	Anode Driver, UDN 6113
5680-08969-00	U15, U16, U19, U20	Cathode Driver, UDN 7180
5040-09343-00	C1	Axial Cap, 10 µF, 25v
5043-08980-00	Bypass	Axial Cap, 0.01µF, 50v
5075-09135-00	D1, D2	Zener, 1N4740A, 10v, 1w
5791-10869-09	J1, J2, J59	Pin Header, Rt. Angle
5791-10869-06	J7	6Pin Header, Rt. Angle
5791-10851-00	J3	26 Pin Header, Rt. Angle
5791-09438-00	J4	20 Pin Header Rt. Angle
5010-08773-00	R1-R8, R19-R35, R41, R43, R45, R53, R58, R71	Resistor, 18KΩ, 1/4w
5010-10258-00	R9, R38, R52, R69	Resistor, 1MΩ, 1/4w
5010-10927-00	R36, R39, R40, R42, R47, R48, R50, R51, R59, R68	Resistor, 8.2KΩ, 1/2w
5010-08981-00	R10-R13, R15-R18, R55, R61, R63, R66	Resistor, 10KΩ, 1/2w
5010-09534-00	W1, W2	Resistor, 0Ω
03-8088-1	Support	Support, Display



16-Character Display Glass

p/n 5670-12308-00

Lamp Board ("17-C")
p/n D-12295
Replacement Parts

Part No.	Description
24-8767	Socket, Twist Lamp (#555)
24-8768	Bulb, #555 6.3V, 0.25A.
5010-09534-00	Resistor, 0 Ω

Lamp Board ("5-D")
p/n D-12220
Replacement Parts

Part No.	Description
24-8767	Socket, Twist Lamp (#555)
24-8768	Bulb #555 6.3V, 0.25 A.

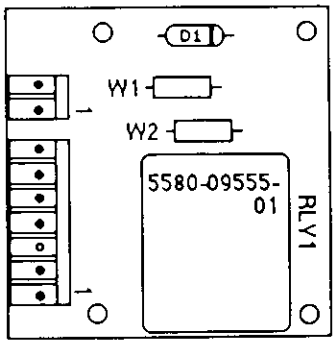
Lamp Board ("3-T")
p/n C-12000
Replacement Parts

Part No.	Description
24-8767	Lamp Socket, PCB Twist
24-8768	Bulb #555 6.3V, .25A.

Lamp Board ("8-I")
p/n C-12330
Replacement Parts

Part No.	Description
24-8804	V-Wedge PCB Socket
24-8768	Bulb #555, 6.3V, 0.25A.

Relay Board
(Sol. 11 Gen. Illum)
p/n C-11998-1

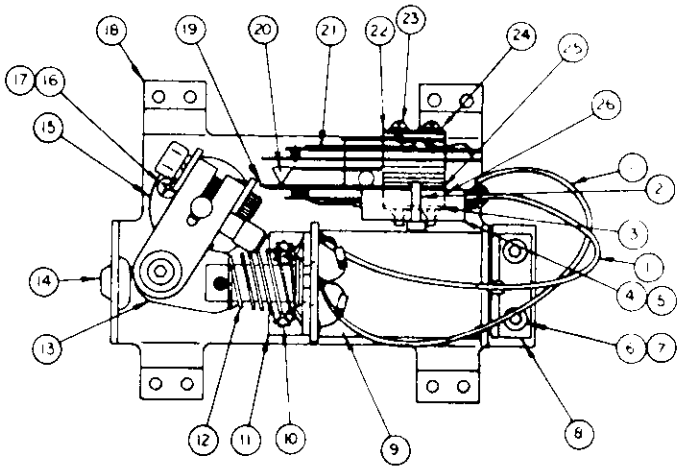


Lower Right Flipper

p/n C-11626-R-3

Item	Part No.	Description
1	HW-30018-6	Wire, 18 AWG, Blue
2	03-7520-2	Ty-Wrap, Nylon
3	20-6516	Speednut, Tinnerman
4	5045-12098-00	Capacitor, 2.2 µFd, 250V, 20%
5	RM-21-06	Sleeve, Vinyl (Cap. leads)
6	4010-01066-06	Cap Screw, 10-32 x 3/8, SH
7	4701-00004-00	Lockwasher, #10 split
8	A-12111	Flipper Stop Assembly
9	FL-11630	Flipper Coil (* - Refer to Note 3)
10	4006-01017-04	Mach. Screw, 6-32 x 1/4, P-RH-S
11	01-7695	Solenoid Bracket
12	10-376	Coil Plunger Spring
13	B-10655-R	Crank Link Assembly
a)	02-4179	Link Spacer Bushing
b)	4010-01086-14	Cap Screw, 10-32 x 7/8, SH
c)	4700-00023-00	Washer, 5/8 o.d. x 13/64 i. d. x 16 ga.
d)	4701-00004-00	Lockwasher, #10 split
e)	4410-01132-00	Nut, 10-32 ESNA
f)	A-10656**	Flipper Link Assembly
1.)	02-4219	Coil Plunger
2.)	20-9370-1	Spring Pin, 5/32 dia. x 7/16
3.)	03-8050-1	Flipper Link
g)	B-10657-R	Flipper Crank Assembly, Right
1.)	01-8073-R	Flipper Crank, Right
2.)	17-1037	Crank Washer
3.)	4010-01066-18	Cap Screw, 10-32 x 1-1/8, HCS
4.)	4410-01127-00	Nut, 10-32 Hex Hd.
5.)	4700-00107-00	Washer, 5/8 o.d. x 13/64 i. d. x 12 ga
6.)	4701-00004-00	Lockwasher, #10 split
7.)	RM-23-06	Tubing, H. S. 1/4 DWP
14	23-6577	Bumper Plug
15	03-7568	Flipper Bushing
16	4006-01005-06	Mach. Screw, 6-32 x 3/8, P-PH
17	4406-01117-00	Nut, 6-32 Hex
18	C-11627-R	Flipper Base Assembly, R.
19	06-14G	Insulating Blade
20	Not Used	
21	Not Used	
22	Not Used	
23	4105-01019-10	Sh. Metal Screw, #5 x 5/8, P-PH-A
24	4701-00002-00	Lockwasher, #6 split
25	23-6622	Tape, Double-sided
26	03-7811	End of Stroke (EOS) Switch

** - also see separate diagram



Flipper Assembly Notes:

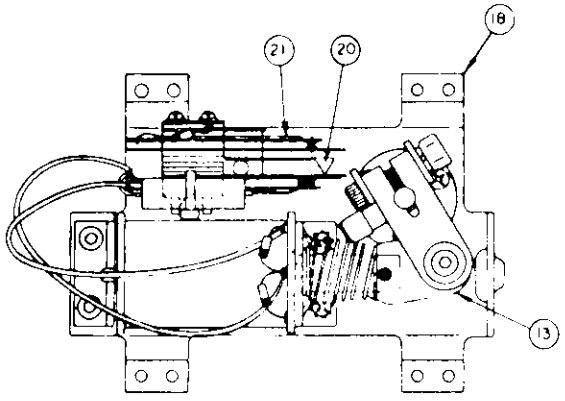
1. Each Flipper Assembly on the Lower Playfield (and the two Lower Flipper Assemblies on the Upper Playfield) is mounted beneath the playfield, in conjunction with the plastic Flipper Paddle and Shaft (20-9250-5) and flipper Rubber (23-6519-4) on the upper side of the playfield. The Upper Flipper Assembly on the Upper Playfield uses a plastic Flipper Paddle and Shaft (C-11927-5) and flipper Rubber (23-6553-4).
2. The tip of the EOS Switch must travel 0.0150 (+ .010, - .000) inch, before the contacts fully open, with the flipper in the actuated position. The EOS Switch contacts must have a gap of 0.062 (± .015) inch. Adjustment of the EOS Switch must be made at a minimum distance of 0.25 inch from the switch body.
3. Flipper Assembly C-11626-R-8 (upper right flipper on Mini-Playfield) and C-11626-L-8 (upper left flipper on Main Playfield) use a Flipper Coil, FL-11753/50V.
4. All moving elements of the assembly must operate freely, with no evidence of binding.
5. The large end of the Coil Plunger Spring (item 12) must fit within the four lugs of the Solenoid Bracket.
6. For coil replacement, remove the Solenoid Bracket (item 11) to prevent screw damage.
7. Use Loctite™ 242 when reattaching screws to the Flipper Stop Assembly, the Solenoid Bracket, and the Flipper Bushing.
8. When replacing the Bumper Plug (item 14) to restore proper flipper operation, readjust the flipper paddle and shaft position.
9. Solid color blue wire connects to the banded end of each diode, mounted on the connector end of the Flipper Coil (item 9). Trace color wire connects to the unbanded end of the diode.

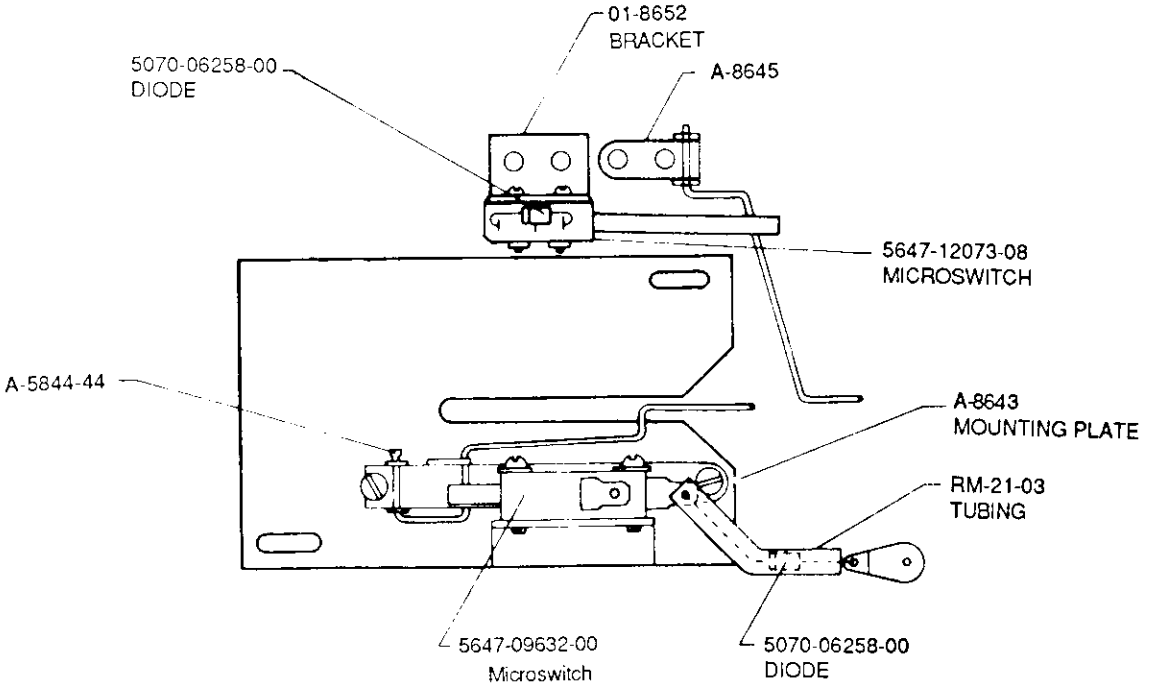
Lower Left Flipper

p/n C-11626-L-3

(Parts listed replace same Items of **C-11626-R-3)**

Item	Part No.	Description
13	B-10655-L	Crank Link Assembly
g)	B-10657-L	Flipper Crank Assembly, Left
1.)	01-8073-L	Flipper Crank, Left
18	C-11627-L	Flipper Base Assy, L.
20	Not Used	
21	Not Used	





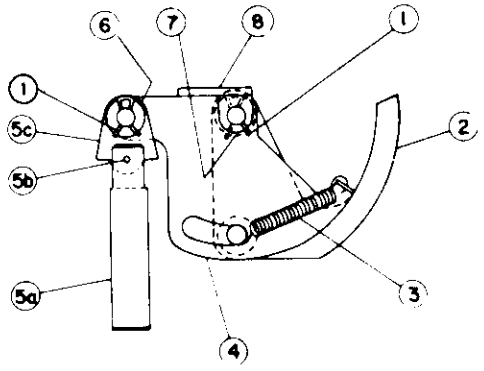
Ball Trough Switches

(viewed from underside of playfield to show locations)

Part No.	Description
B-8644	Ball Trough Switch Plate Assy
A-5844-44	Switch Wire & Bracket Assy
A-8643	Bracket & Mounting Plate Assy
5647-09957-00	µswitch; Cntr & L Ball Trough
4004-01060-08	Mach. Screw, 4-40 x 1/2
4005-01005-02	Mach. Screw, 5-40 x 1/8
5070-06258-00	Diode, 1N4001
5825-09372-00	Solder Lug
RM-21-03	Insulating Tubing, #10 x 1.75
A-11680	Ball Trough Switch, Right
5647-12073-08	Submin. Switch
5070-06258-00	Diode, 1N4001
A-8645	Switch Wire & Bracket Assy

Rt. Lock - Eject Hole Arm Assembly

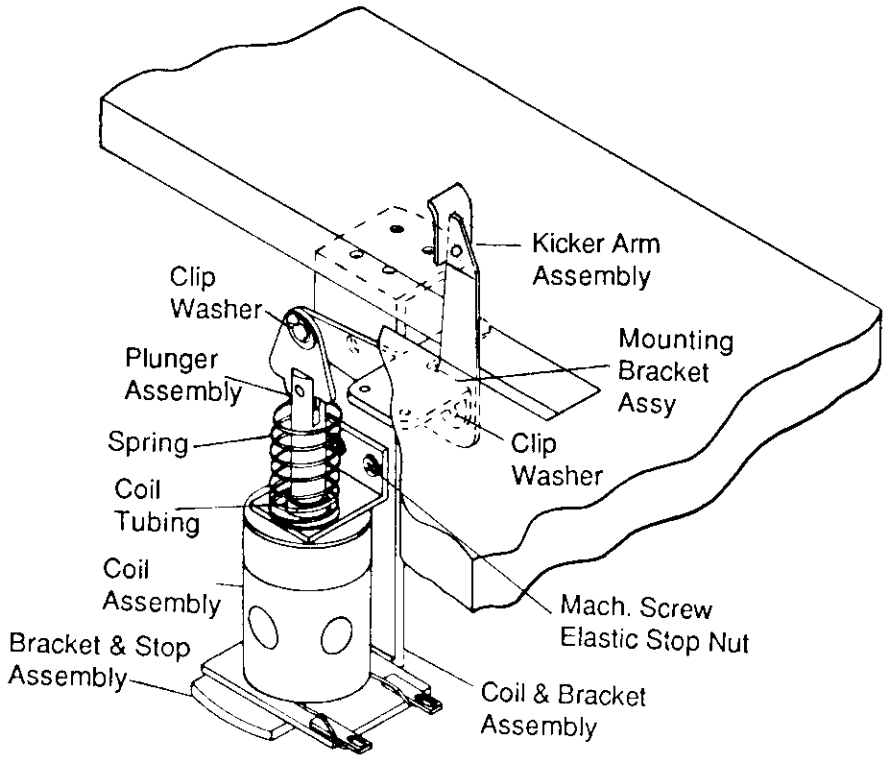
p/n B-9361-R-5



Item	Part No.	Description
1	12-6227	Hairpin Clip
2	A-7471-R	Eject Cam Assy
3	10-320	Eject Spring (Red)
4	A-6949-R	Spring Plate Assy
5	A-8050-1	Coil Plunger Assy
	a) 02-3407-2	Plunger
	b) 20-8716-5	Roll Pin
	c) 03-8085	Plastic Link
6	4700-00030-00	Flat Washer, 17/64 x 1/2 x 15 ga.
7	4700-00103-00	Flat Washer, 17/64 x 1/2 x 28 ga.
8	A-8268	Mounting Bracket Assy

Associated Parts for Rt. Lock - Eject

B-11203-R-1	Coil & Bracket Assembly
B-7572-1	Bracket & Stop Assy
01-8-508-S	Coil Retaining Bracket
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-26-1500	Coil Assy
03-7066	Coil Tubing



Left & Right Kicker Arm Assembly

p/n B-12283 (Left & Right Kickers)

Part No.	Description
12-6227	Clip, Hairpin
A-7986	Kicker Arm Assembly
A-8050-1	Plunger Assembly
02-3407-2	Coil Plunger
20-8716-5	Roll Pin
03-8085	Armature Link
4700-00073-00	Flat Washer, 1/2 o.d. x 9/32 i.d. x 21 ga.
A-5653	Mounting Bracket Assy

Associated Parts for Left Kicker

B-11203-R-1	Coil & Bracket Assembly
B-7572-1	Bracket & Stop Assembly
01-8-508-S	Coil Retaining Bracket
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-26-1500	Coil Assembly
03-7066	Coil Tubing

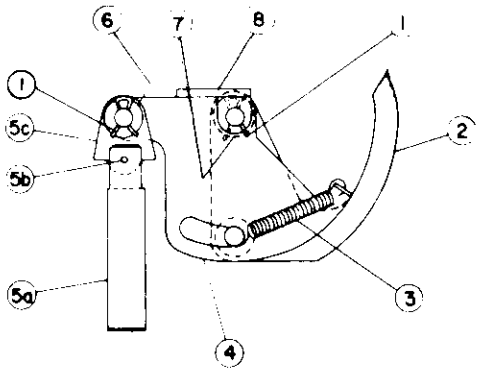
Associated Parts for Right Kicker

B-11203-R-1	Coil & Bracket Assembly
B-7572-1	Bracket & Stop Assembly
01-8-508-S	Coil Retaining Bracket
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-26-1500	Coil Assembly
03-7066	Coil Tubing

Ball Shooter Lane Feeder

C-9638-3 & Associated Parts

Item	Part No.	Description
1	12-6227	Clip, Hairpin
2	A-8247	Eject Cam Assy
3	10-362	Eject Spring (Plain)
4	A-6949-L	Spring Plate Assy
5	A-8050-1	Coil Plunger Assy
a)	02-3407-2	Coil Plunger
b)	20-8716-5	Roll Pin, 1/8 x 7/16
c)	03-8085	Armature Link
6	4700-00030-00	Flat Washer, 17/64 x 1/2 x 16 ga.
7	4700-00103-00	Flat Washer, 17/64 x 1/2 x 28 ga.
8	A-8268-2	Eject Cam Brkt Assy



Associated Parts

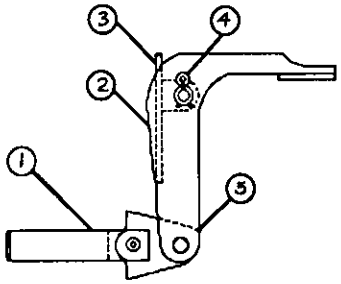
B-9362-R-1	Coil & Bracket Assy
B-7572-1	Bracket & Stop Assy
01-8-508-S	Coil Retaining Bracket
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-23-800	Coil Assembly
03-7066	Coil Tubing

Spinout Kickbig

p/n B-11395-1

Item	Part No.	Description
1	A-5103	Coil Plunger Assy
a)	02-2364	Coil Plunger
b)	03-8085	Armature Link
c)	20-8716-5	Roll Pin 1/8 x 7/16
2	A-5652-1	Kicker Crank Assy
3	A-11396	Kicker Mounting Assy
4	12-6227	Hairpin Clip
5 *	4700-00030-00	Flat Washer, 9-32 x 1/2 x 1/32

* Not Shown



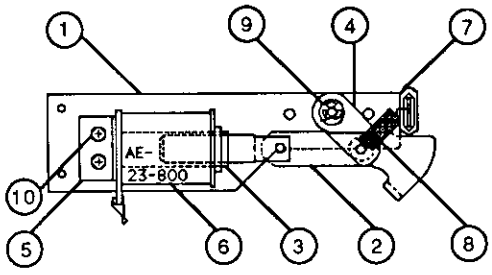
Associated Parts

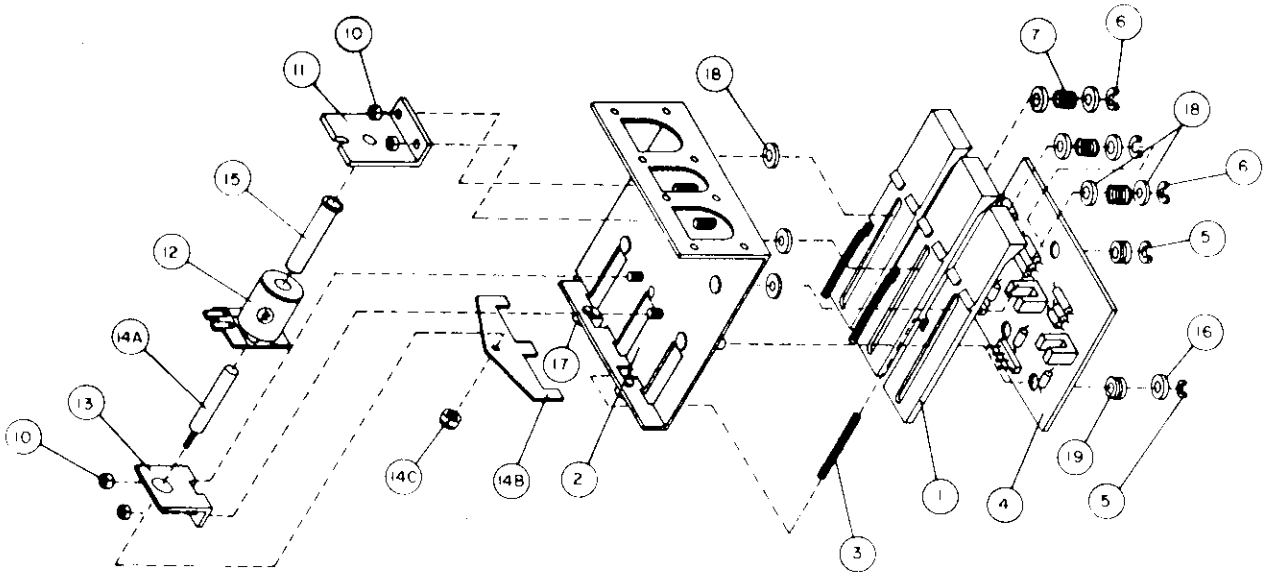
B-11203-R-1	Coil & Bracket Assy
B-7572-1	Brkt & Stop Assy
01-8-508-S	Coil Retaining Brkt
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-26-1500	Coil Assy
03-7066	Coil Tubing

Outhole Kicker Assembly

p/n B-8039-2

Item	Part No.	Description
1	A-6378	Mounting Plate Assy
2	A-8335	Coil Plunger Assy
a)	02-2364	Coil Plunger
b)	20-8716-5	Roll Pin, 1/8 x 7/16
c)	01-4251	Ball Return Link
3	03-7066	Coil Tubing
4	A-6889	Kicker Lever Assy
5	A-8038	Coil Stop Assy
6	AE-23-800	Coil Assy
7	03-7176-1	Striker Ring
8	10-101-4	Spring-Reset
9	20-8712-25	"E" Ring, 1/4" Shaft
10	4006-01003-03	Mach. Screw, 6-32 x 3/16





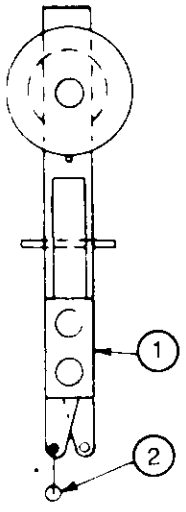
Rt & Mdl 3-Bank Drop Targets

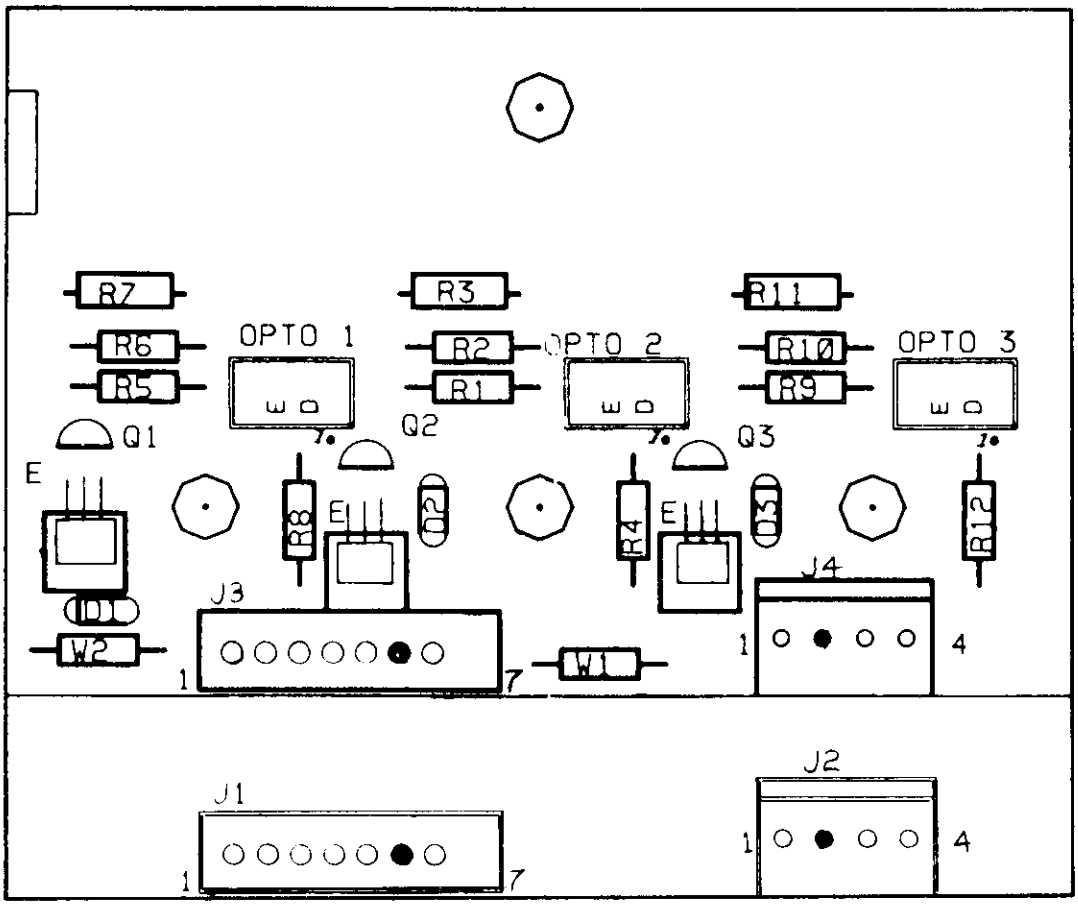
p/n C-11223-1

Item	Part No.	Description	Item	Part No.	Description
1	03-8036	Target, Plain	11	A-11397	Stop Brkt Assy
2	B-11224	3-Bank Tgt Sub-Assy	12	AE-26-1200	Coil Assy
3	10-364	Spring - Extension	13	01-8413	Bracket Coil Mtg
4	C-11318-1	3-Drop Target Opto Assy	14	A-11389	Plunger & Reset Plt Assy
5	20-8712-18	"E" Ring, 3/16 Shft	15	03-7066-4	Coil Tubing
6	20-8712-25	"E" Ring, 1/4 Shft	16	4700-00016-00	Flat Washer, 3/16 x 7/16 x 17 ga.
7	10-392	Spring-Compression	17	4008-01016-10	Mach. Screw, 8-32 x 5/8
8	Not Used		18	4700-00072-00	Flat Washer, 17/64 x 1/2 x 21 ga.
9	Not Used		19	23-6626	Rubber Grommet
10	4408-01119-00	Nut, 8-32 ESN			

Standup Target Assembly

Item	Part No.	Description
1	B-11696-6	Standup Target (Yellow)
2	5070-06258-00	Diode, 1N4001 1.0 A.





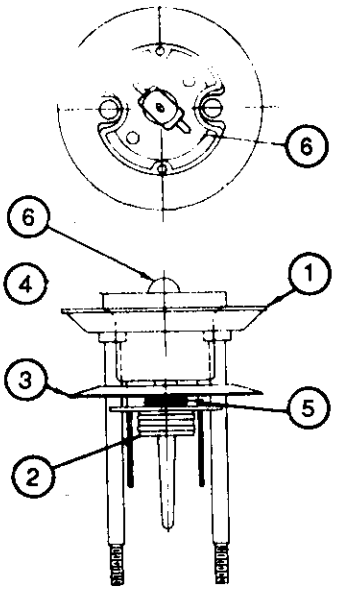
3-Bank Opto Board

p/n C-11318-1

Item	Part No.	Ckt Designation	Description
1	5768-12069-00		Bare PCB Board
2	5490-10159-00	Opto 1- Opto3	Opto Interruptor, MDL, S/G
3	16-8850-202		PCB ID Label
4	5010-08930-00	R3, R7, R11	Resistor, C.F., 470 Ω 5% 1/2w
5	5010-09534-00	W1, W2	Resistor, 0Ω 1/4 w
6	5010-09356-00	R4, R8, R12	Resistor, C.F., 820Ω 5% 1/4w
7	5010-09162-00	R1, R5, R9	Resistor, C.F., 100KΩ 5% 1/4w
8	5010-09324-00	R2, R6, R10	Resistor, C.F., 27KΩ 5% 1/4w
9	5070-08919-00	D1 - D3	Diode, IN4148 150 MA
10	5190-10270-00	Q1 - Q3	Transistor, TO-92, 2N3906, PNP
12	5791-10871-04	J2 (J4 Not Used)	Header 4H SPL SQ. PIN .156
13	5791-10871-07	J1 (J3 Not Used)	Header 7H SPL SQ. PIN .156

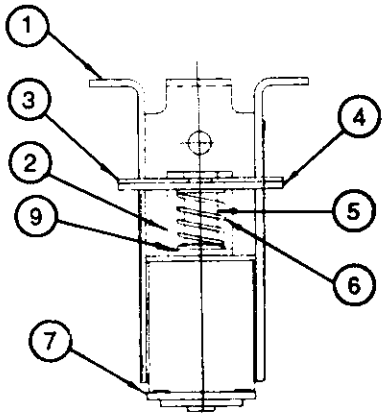
Jet Bumper (Lwr, R, L)
p/n B-9414-1

Item	Part No.	Description
1	A-4754	Bumper Ring Assy
2	03-6009-A5	Bumper Base-Wht
3	03-6035-1	Bumper Wafer-Blu
4	03-7443-5	Bumper Body-Wht
5	10-7	Spring-Jet Bumper
6	A-11199	Socket & Bulb Assy



Jet Bumper Coil Assembly
p/n B-9415-1

Item	Part No.	Description
1	B-7417	Bracket & Stop Assy
2	01-1747	Coil Retaining Bracket
3	01-5492	Armature Link, Steel
4	01-5493	Armature Link, Bakelite
5	02-3406-1	Coil Plunger
6	10-326	Armature Spring
7	AE-23-800	Coil Assy
8	4006-01017-04	Mach. Screw, 6-32 x 1/4
9	03-7066	Coil Tubing

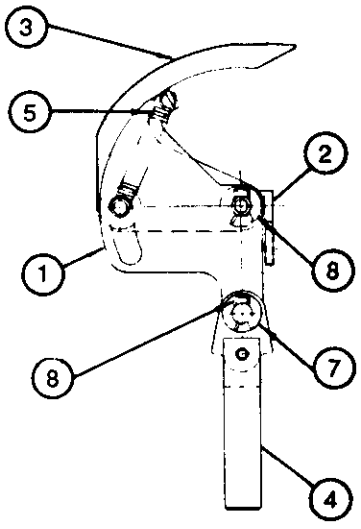


Top Eject Hole Arm Assembly
p/n B-9361-R-1

Item	Part No.	Description
1	A-6949-R	Spring Plate
2	A-6930-R	Mounting Bracket Assy
3	A-7471-R	Eject Cam Assy
4	A-8050-1	Coil Plunger
5	10-362	Spring-Eject (Red)
6	12-6227	Hairpin Clip
7	4700-00030-00	Flat Washer,17/64 x 1/2 x 15 ga.
8	4700-00103-00	Flat Washer,17/64 x 1/2 x 28 ga.

Associated Parts for Top Eject

B-9362-L-1	Coil & Bracket Assembly
B-7572-1	Bracket & Stop Assembly
01-8-508-S	Coil Retaining Bracket
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-23-800	Coil Assembly
03-7066	Coil Tubing



Left Ramp Assembly
p/n D-12263

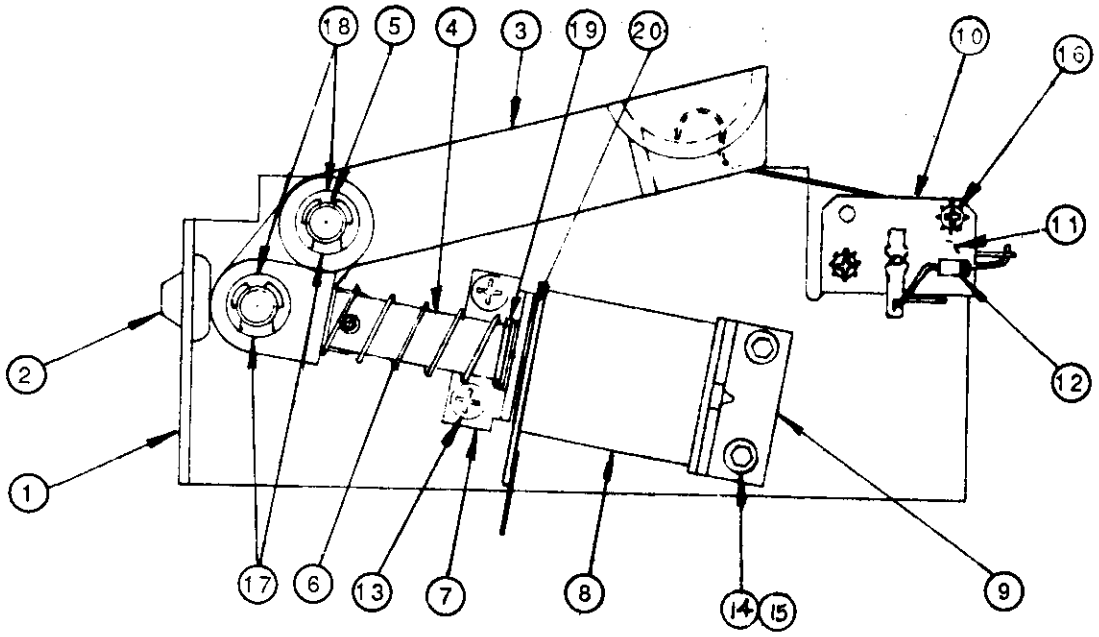
Part No.	Description
A-7438-1	Terminal Strip Assy
H-12300	Left Ramp Cable
01-8641	Micro Switch Mtg. Brkt.
01-8795	Ramp Flap
01-8947	Wire Ramp Holding Brkt.
03-8185	Ramp, Left
07-6688-16N	Rivet 1/8 x 1/8, Nickel
07-6688-17N	Rivet 1/8 x 5/32, Nickel
07-6688-18N	Rivet 1/8 x 3/16
4004-01003-10	Mach. Screw 4-40 x 5/8
4700-00003-00	Flat Washer 1/8 x 9/32 x 21 ga.
5070-06258-00	Diode, 1N4001
5647-12133-04	Miniature Switch
31-1467-1	Decal Sheet-Ramps
31-1468-2	553-Plfd. Decal
31-1468-1	553-Plfd. Decal
31-1006-553-21	Plfd. Plastic
4106-01033-08	SMS #6 x 1/2

Right Ramp Assembly
p/n D-12264

Part No.	Description
A-7438-1	Terminal Strip Assy
H-12301	Right Ramp Cable
01-8641	Micro Switch Mtg. Brkt.
01-8795	Ramp Flap
01-8947	Wire Ramp Holding Brkt.
03-8186	Ramp, Right
07-6688-16N	Rivet 1/8 x 1/8, Nickel
07-6688-17N	Rivet 1/8 x 5/32, Nickel
07-6688-18N	Rivet 1/8 x 3/16
4004-01003-10	Mach. Screw 4-40 x 5/8
4700-00003-00	Flat Washer 1/8 x 9/32 x 21 ga.
5070-06258-00	Diode, 1N4001
5647-12133-04	Miniature Switch
31-1468-3	Decal Sheet
31-1467-2	Decal Sheet-Ramps
01-8961	Pl/Plastic Mtg. Clip
01-8979	Ramp Cover Clip
03-8221	Side Ramp Cover

Spinout Ramp
p/n R-12262

Part No.	Description
03-8191	Ball Shooter Ramp assy
5647-12073-17	Sub-Mini Switch
4102-01087-10	SMS #2 x 5/8
C-12309	Lamp & Cable Assy
4106-01033-08	SMS #6 x 1/2
B-12267	Ball GateAssy
31-1006-553-16	Plfd. Plastic
03-8207	Spinout Ball Return
H-12303	Skill Shot Cable
5070-06258-00	Diode, 1N4001

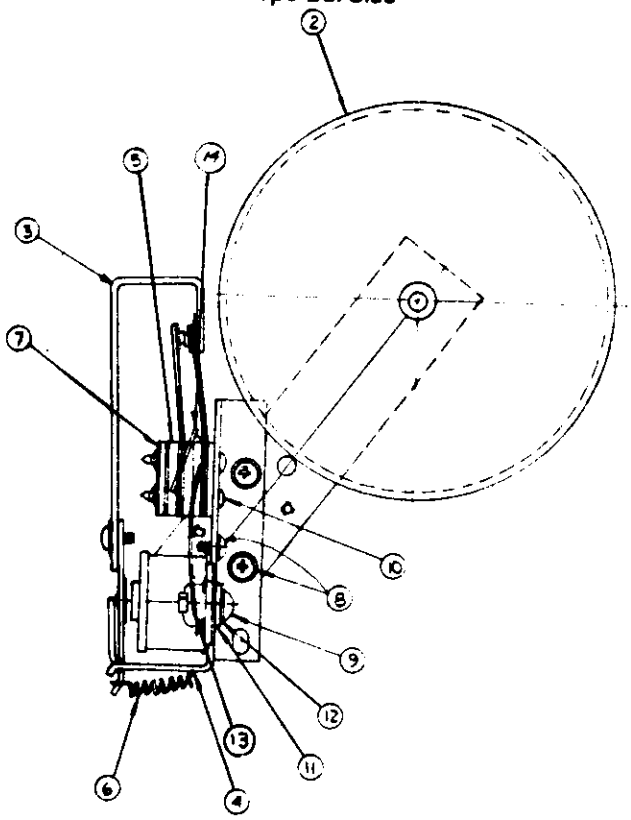


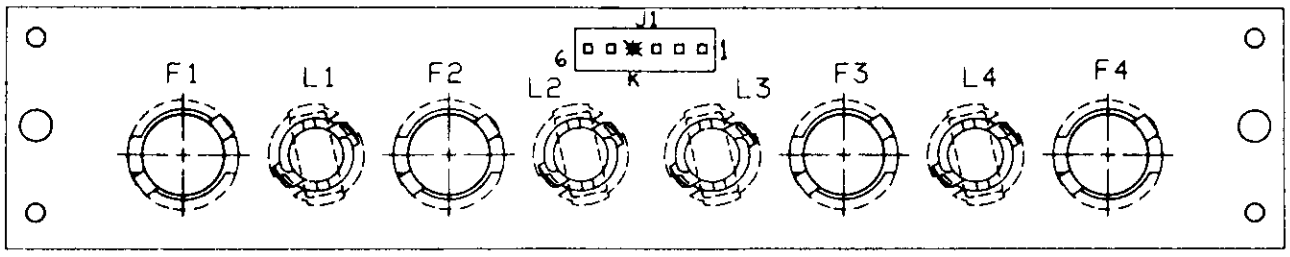
Catapult Assembly
p/n C-11641-1

Item	Part No.	Description	Item	Part No.	Description
1	B-11640	Catapult Assy	11	A-7438-1	Terminal Strip Assy
2	23-6577	Plug Bumper, 5/8	12	5070-06258-00	Diode, 1N4001, 1A.
3	03-8089	Catapult Arm	13	4008-01017-04	Mach. Screw, 8-32 x 1/4
4	A-12293	Cat Plunger Assy	14	4010-01066-06	Cap Screw, 10-32 x 3/8
5	02-4301	Catapult Arm Pin	15	4701-00004-00	Lockwasher, #10 split
6	10-135	Spring-Coil Plngr	16	4004-01003-10	Mach. Screw, 4-40 x 5/8
7	01-8413	Bracket-Coil Mtg.	17	4700-00104-00	Flat Washer, 23/64 x 1/2 x 16 ga.
8	AL-23-800	Coil Assy	18	20-8712-31	"E" Ring, 5/16 Shaft
9	A-10821	Flipper Stop Brkt Assy	19	03-7066	Coil Tubing
10	5647-12133-12	Micro-Switch	20	23-6622	Foam Tape-Dbl Side

Bell Assembly
p/n C-8461-1

Item	Part No.	Description
1	B-8459	Relay Frame Assy
2	B-8460	Bell & Mtg. Plate Assy
3	B-8462	Armature Assy
4	SM-26-600-DC	Coil Assy
5	SW-10A-52	Switch-Bell
6	10-363	Extension Spring
7	20-6516	Tinnerman, Speed Nut
8	4006-01003-04	Mach. Screw, 6-32 x 1/4
9	4008-01021-07	Mach. Screw, 8-32 x 7/16
10	4105-01001-14	SMS #5 x 7/8
11	4700-00089-00	Flat Washer, 11/64 x 7/16 x 16 ga.
12	4701-00003-00	Lockwasher, #8 Split
13	HW-30122-4	Wire, 22AWG (Yellow)
14	5043-09072-00	Capacitor, 0.1 µfd., 500v





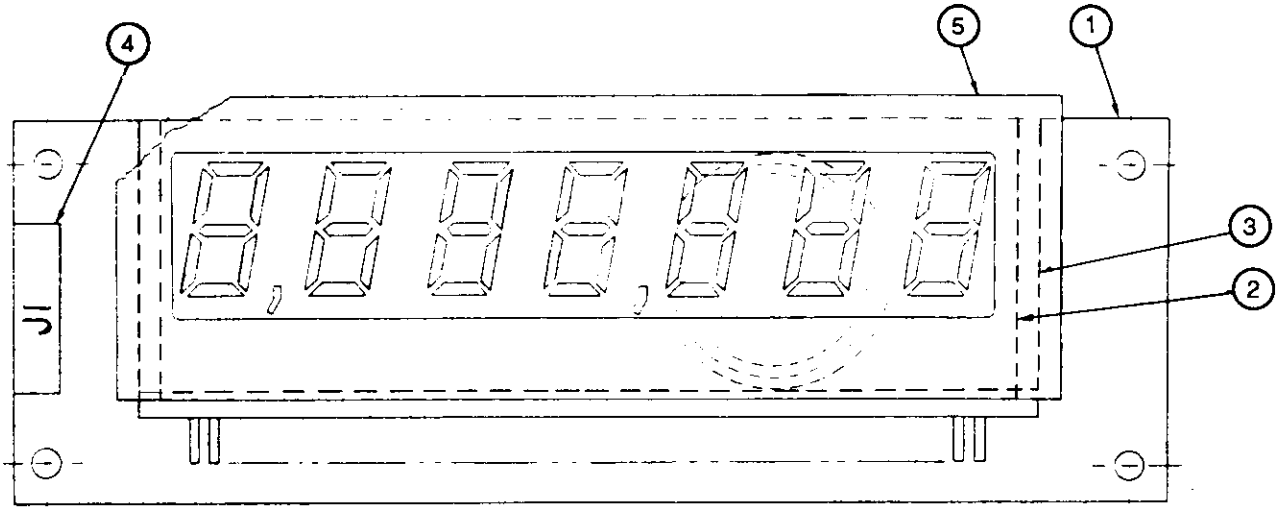
Dome Light PCB Assembly

(Backbox Top)
p/n C-12272

Part No.	Ckt Designator	Description
5768-12329-00		Dome Lights PCB
24-8767	L1 - L4	Lamp Socket PCB Twist
24-8768	L1 - L4	Bulb #555, 6.3V, 25A.
Not Used		
5791-10871-06	J1	6H SPL SQ. PIN .156
24-8803	F1 - F4	Skt-L/PCB Twist
24-8802	F1 - F4	Bulb #906 13V, 0.69A.

Associated Parts for Dome Light

03-8184	Back Box-Top Sign
31-1469	Decal-Dome Lite



JACKPOT/Meter Display Assembly

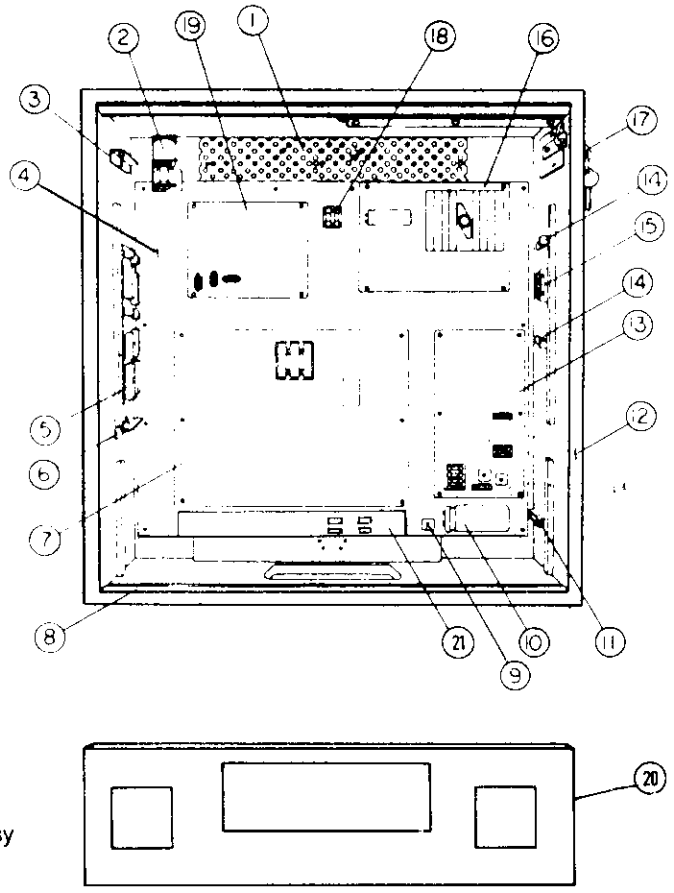
p/n C-8364-1

Item	Part No.	Ckt Designator	Description
1	5762-10933-00		PCB Slave Display
2	23-6545		Foam Display-Back
3	5670-09439-00		Display 7-Digit Glass
4	5791-09438-00	J1	20 HCN 2 x 10 Rt. Ang.
5	23-6546		Foam Display-Front

Backbox Parts List

Item	Part No.	Description
1	01-6645	Venting Screen
2	B-10686-2*	Knocker Assy
3	A-7984	Upr Insert Bd Hinge Assy
4	D-12184-1	PCB Plate Assy
5	Not Used	
6	A-10815	Lwr Insert Bd Hinge Assy
7	D-11883-553*	System 11B CPU Board
8	01-8569	Lwr Spkr Panel Bracket
9	5100-09418-00	Bridge Rectifier, 100v,35 A
10	5040-09051-00	Capacitor, 30,000 µFd, 25V
11	Not Used	
12	11-858-559	Backbox
13	D-12247-566*	Aux. Pwr Driver Board
14	01-8084	Insert Stop Bracket
15	Not Used	
16	D-12246*	Power Supply Assy
17	20-9549	Cam Lock
18	Not Used	
19	D-11581-553*	Audio Board Assy
20	D-12282	Display/Speaker Panel Assy
a)	31-1420-553	Cover, Displ/Spkr Pnl Assy
b)	31-1422-554	Speaker Grill
c)	D-12232-2*	Master Display PC Board Assy
d)	D-12295*	Display Lamp Board ("5-D")
21	D-12185-553*	Backbox Interconnect Board

* Refer to individual unit's parts list

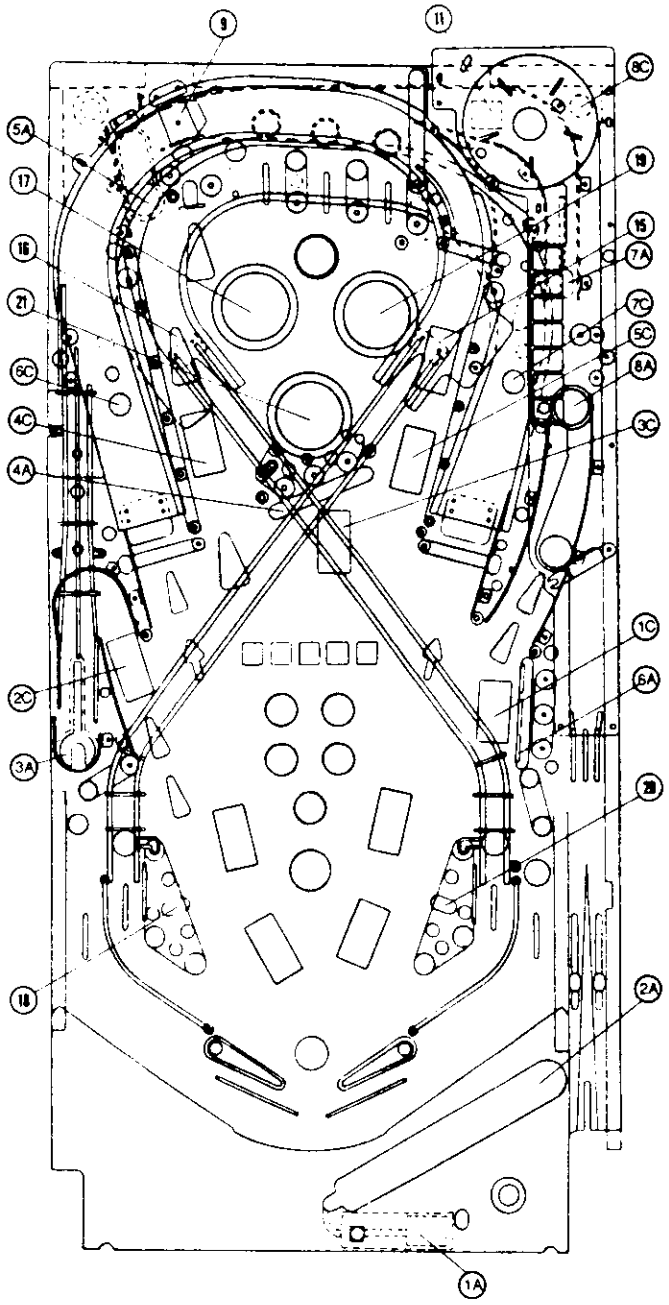


Miscellaneous *TAXI* Parts

A-8552-553	Backglass Assy	553-IN	*TAXI* Insert
31-1357-553	Backglass, *TAXI*	31-1006-553	Plastics Set, *TAXI*
B-12333	Back Mirror Assy	31-1008-553	Bottom Arch (Screened)
20-9583	Back Mirror	31-1009-553	Shooter Plate (Screened)
B-12322	Domestic Cash Box Assy	31-1467	Ramp Decal Set, *TAXI*
03-7960-553	Playfield Mylar	31-1468	Playfield Decal Set
03-8184	Backbox, Top Sign	31-1469	Decal-Dome Lite
08-7028-T	Glass-Playfield	5795-10703-36	Ribbon Cable, 20-Conductor, 36"
20-9347	Toggle Latch	5795-10937-09	Ribbon Cable, 20-Conductor, 9"
20-9518	Backbox Hinge	5795-10938-27	Ribbon Cable, 26-Conductor, 27"

Solenoids/Flashers

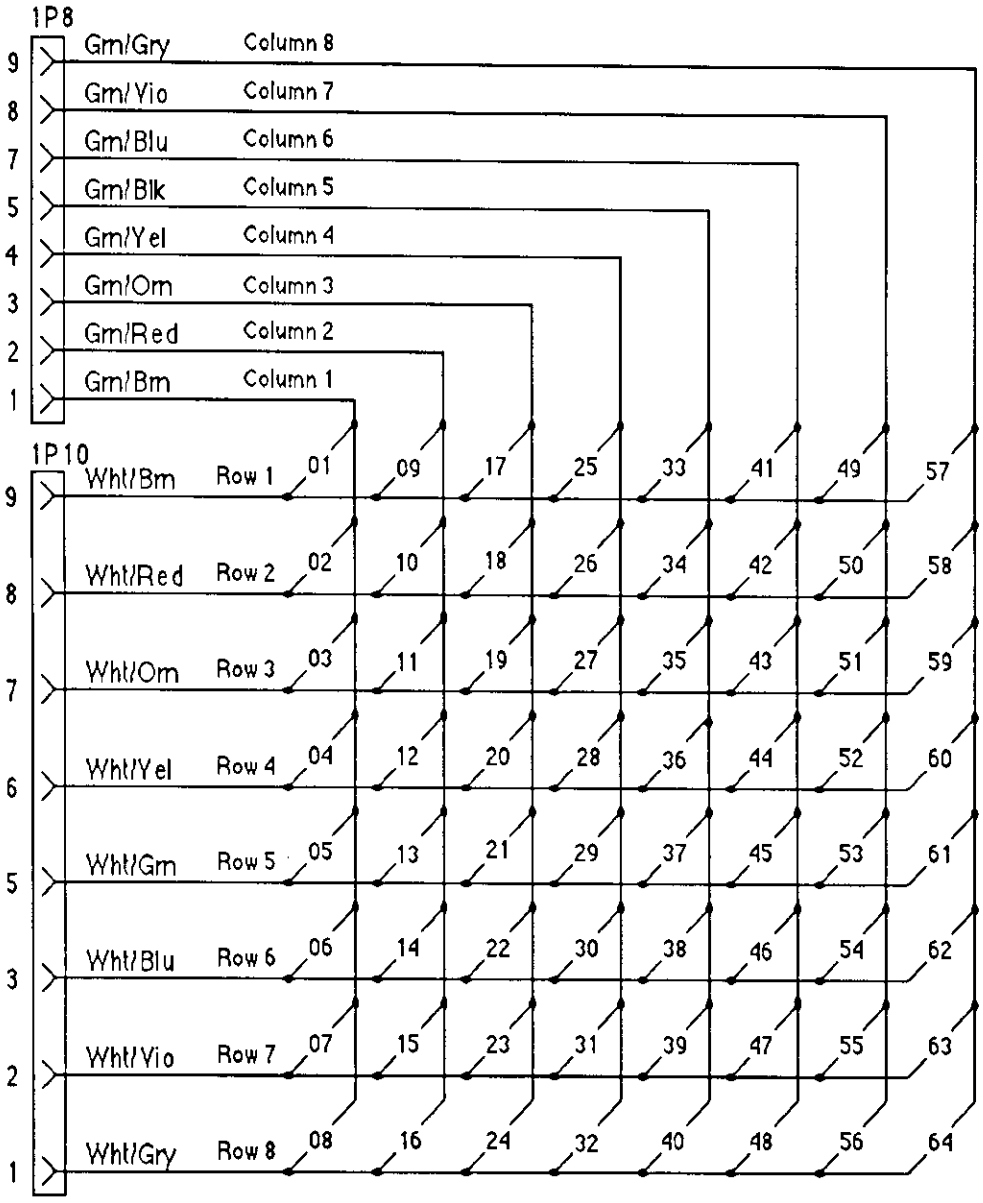
Item	Part No.	Description
01A	AE-23-800	Outhole Kicker
01C	#89 Flashlamps	PIN•BOT (p,i) Flashers
02A	AE-23-800	Ball Shooter Lane Feeder
02C	#89 Flashlamps	Dracula (p,i) Flashers
03A	AL-23-800	Catapult
03C	#89 Flashlamps	Marilyn (p,i) Flashers
04A	AE-26-1200	Middle 3-Bank Drop Target
04C	#89 Flashlamps	Santa (p,i) Flashers
05A	AE-23-800	Top Eject Hole
05C	#89 Flashlamps	Gorbie (p,i) Flashers
06A	AE-26-1200	Right 3-Bank Drop Target
06C	#89/906 Flashlamps	Left Ramp (p,d) Flasher
07A	AE-26-1500	Spinout Kickbig
07C	#89/906 Flashlamps	Right Ramp (p,d) Flasher
08A	AE-26-1500	Right Lock (Eject Hole)
08C	#89 Flashlamps	Spinout (p) Flasher
09	SM-1-35-4000-DC	Top Ball Gate
10	5580-12145-01	Insert Bd Gen Illumin Relay *
11	5580-12145-01	Playfield Gen Illumin Relay *
12	5580-09555-01	Solenoid A/C Select Relay**
13	SM-26-600-DC	Bell
14	AE-26-1200	Knocker/Ticket Dispenser (b)
15	#89 Flashlamps	JACKPOT (p,i) Flashers
16	#89 Flashlamp	JOYRIDE (p) Flasher
17	AE-23-800	Left Jet Bumper
18	AE-26-1500	Left Kicker ("Sling")
19	AE-23-800	Right Jet Bumper
20	AE-26-1500	Right Kicker ("Sling")
21	AE-23-800	Lower Jet Bumper
22	Not Used	
-	FL 11630/50VDC	Lower Left and Right Flipper

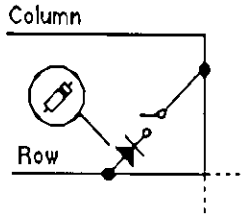


* - On Relay Board, C-11998-1, on Playfield and Insert Board
** - In backbox on Aux Power Driver Bd, D-12247

Rubber Parts

Part No.	Description	Qty	Part No.	Description	Qty
23-6300	5/16" Ring	11	23-6313-1	Grommet	1
23-6301	3/4" Ring	1	23-6327	Ball Shooter Tip	1
23-6302	1" Ring	2	23-6519-4	Lg Red Flipper Ring	2
23-6303	1-1/4" Ring	1	23-6535	Bumper	7
23-6304	1-1/2" Ring	1	23-6552	Sleeving, Black	7
23-6305	2" Ring	1	23-6556	Sleeving, Black	1
23-6306	2-1/2" Ring	3	23-6626	Grommet	6
23-6310	5" Ring	1			





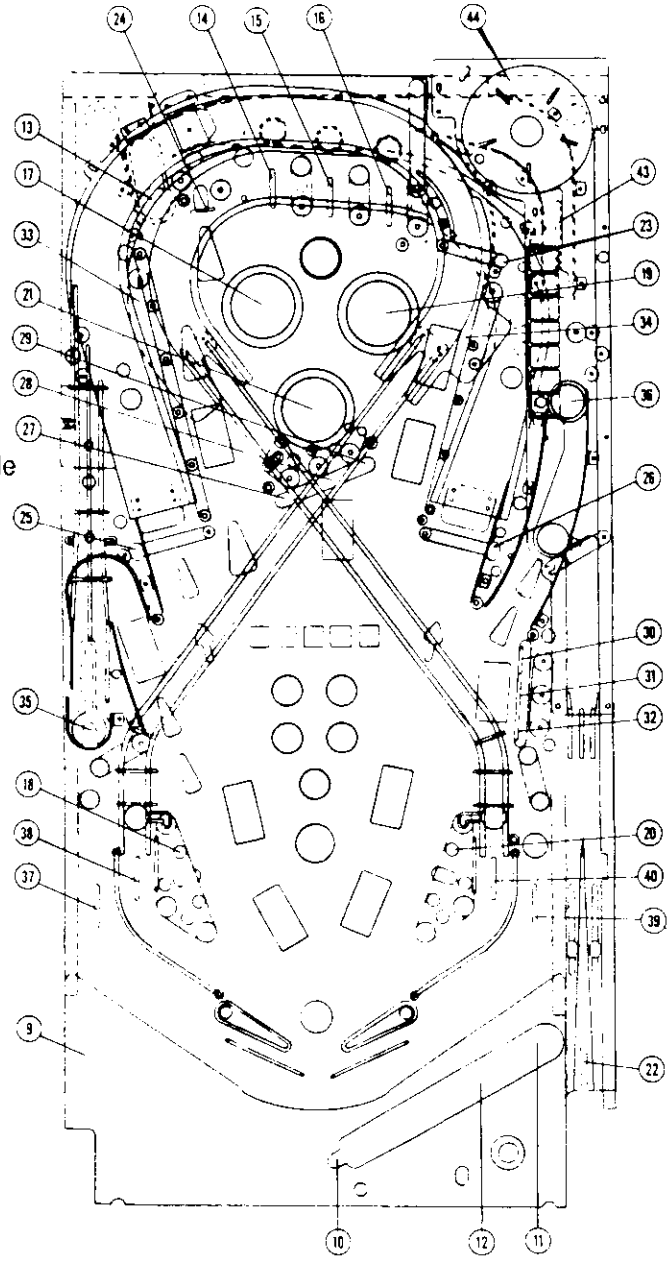
Typical Switch Circuit

TAXI Switch-Matrix Table

ROW \ COLUMN	1 Q45 GRN-BRN 1J8-1	2 Q49 GRN-RED 1J8-2	3 Q44 GRN-ORN 1J8-3	4 Q48 GRN-YEL 1J8-4	5 Q43 GRN-BLK 1J8-5	6 Q47 GRN-BLU 1J8-7	7 Q42 GRN-VIO 1J8-8	8 Q46 GRN-GRY 1J8-9
1 WHT-BRN 1J10-9	Plumb Bob Tilt 1	Playfield Tilt 9	Left Jet Bumper 17	Left Ramp Entry 25	Right Ramp Exit 33	41	49	Lane Change Right 57
2 WHT-RED 1J10-8	2	Outhole 10	Left Kicker ("sling") 18	Right Ramp Entry 26	Left Ramp Exit 34	42	50	Lane Change Left 58
3 WHT-ORN 1J10-7	Credit Button 3	Ball Trough #1 11	Right Jet Bumper 19	Mdl 3-Bank DT (left) 27	Catapult 35	SPINOUT Kickbig 43	51	59
4 WHT-YEL 1J10-6	Left Coin Chute 4	Ball Trough #2 12	Right Kicker ("sling") 20	Mdl 3-Bank DT (mid) 28	Right Eject 36	"Spins" Counter 44	52	60
5 WHT-GRN 1J10-5	Center Coin Chute 5	Top Eject Hole 13	Lower Jet Bumper 21	Mdl 3-Bank DT (right) 29	Left Outlane 37	45	53	61
6 WHT-BLU 1J10-3	Right Coin Chute 6	C Top Lane 14	Ball Shooter 22	R 3-Bank DT (top) 30	Left Return Lane 38	46	54	62
7 WHT-VIO 1J10-2	Slam Tilt 7	A Top Lane 15	Top Lane Entry 23	R 3-Bank DT (mid) 31	Right Outlane 39	47	55	63
8 WHT-GRY 1J10-1	High Score Reset 8	B Top Lane 16	Carry Pasengers 24	R 3-Bank DT (bottom) 32	Right Return Lane 40	48	56	64

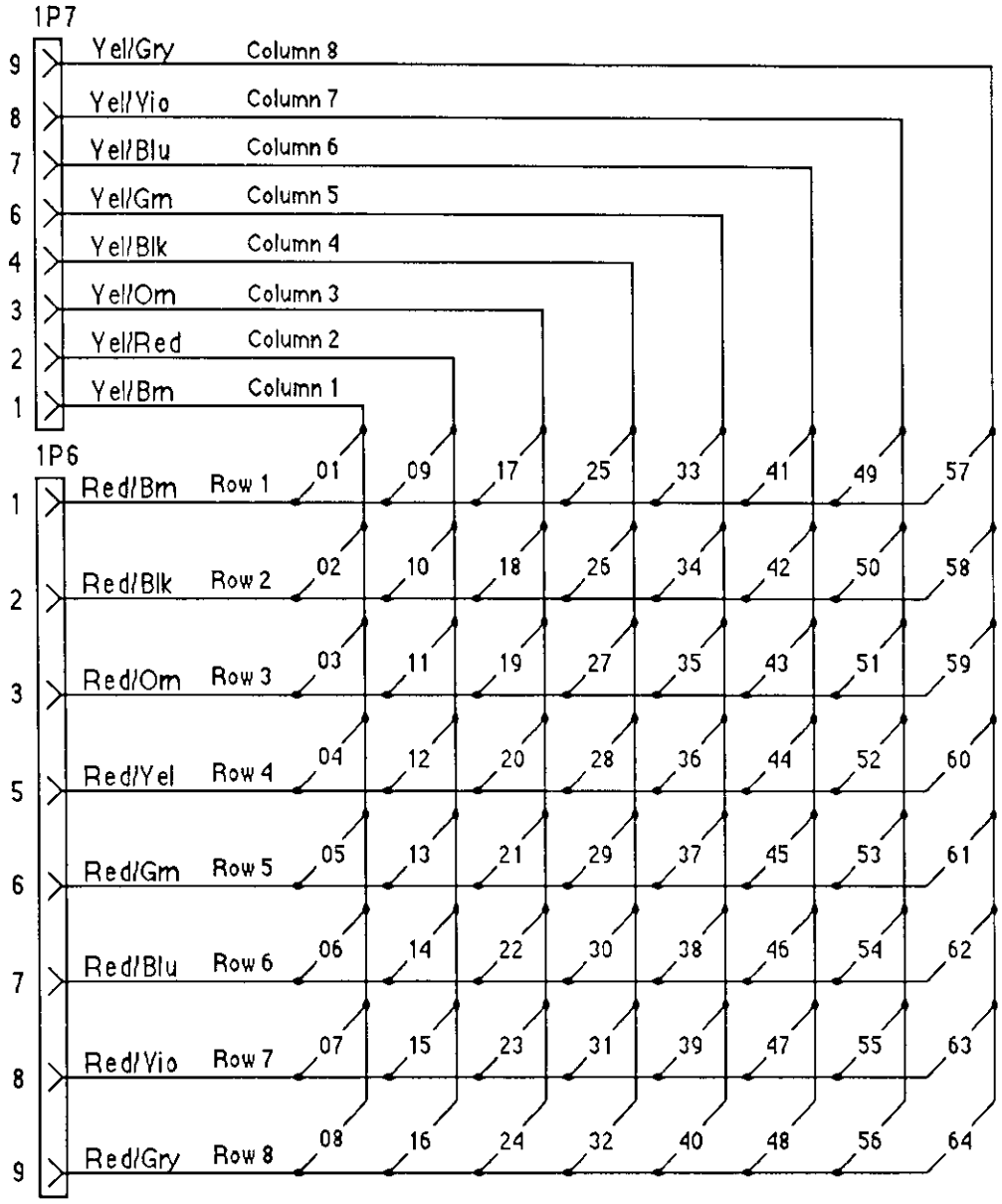
Switches

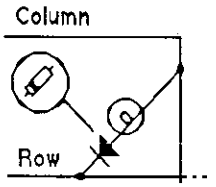
Item	Part No.	Description
1		Plumb Bob Tilt
2	Not Used	
3	SW-1A-126	Credit Button
4	27-1092	R Coin Chute (USA)
5	Not Used (USA)	Center Coin Chute
6	27-1092	L Coin Chute (USA)
7	27-1066	Slam Tilt
8	27-1008	High Score Reset*
9	B-8306-1	Playfield Tilt
10	5647-12133-12	Outhole
11	5647-12073-08	Ball Trough 1 (right)
12	5647-09957-00	Ball Trough 2 (left)
13	17-1012	JOYRIDE (upr l) Eject Hole
14	5647-12073-10	C Lane
15	5647-12073-10	A Lane
16	5647-12073-10	B Lane
17	B-8928	Left Jet Bumper
18		Left Kicker***
19	B-8928	Right Jet Bumper
20		Right Kicker***
21	B-8928	Lower Jet Bumper
22	5647-12073-04	Ball Shooter Lane
23	5647-12133-08	Top Lane Entry
24	B-11696-6	Carry Passengers (tgt)
25	5647-12133-08	Left Ramp Entry
26	5647-12133-08	Right Ramp Entry
27	p/o C-11318-1	Mdl 3-Bank Dr Tgt (left)
28	p/o C-11318-1	Mdl 3-Bank Dr Tgt (mid)
29	p/o C-11318-1	Mdl 3-Bank Dr Tgt (right)
30	p/o C-11318-1	R 3-Bank Dr Tgt (top)
31	p/o C-11318-1	R 3-Bank Dr Tgt (mdl)
32	p/o C-11318-1	R 3-Bank Dr Tgt (lwr)
33	5647-12133-04	Right Ramp
34	5647-12133-04	Left Ramp
35	5647-12133-12	Catapult
36	17-1012	Right Lock (Eject Hole)
37	5647-12073-10	Left Outlane (drain)
38	5647-12073-10	Left Return Lane
39	5647-12073-10	Right Outlane (drain)
40	5647-12073-10	Right Return Lane
41	Not Used	
42	Not Used	
43	5647-12073-12	Spinout Kickbig
44	5647-12073-17	"Spins" Counter
45	Not Used	
46	Not Used	
47	Not Used	
48	Not Used	
49	Not Used	
50	Not Used	
51	Not Used	
52	Not Used	
53	Not Used	



Item	Part No.	Description
54	Not Used	
55	Not Used	
56	Not Used	
57	5647-12073-14	R Flipper Lane Change**
58	5647-12073-14	L Flipper Lane Change**
59	Not Used	
60	Not Used	
61	Not Used	
62	Not Used	
63	Not Used	
64	Not Used	
-	SW-10A-48	Flipper Button (Cabinet sides)

Notes: * Part Number is for entire Diagnostic Switch Assembly, including H S Reset Switch;
** with Flipper Button switch on cabinet side; *** [Paired Kicker Actuating Sw: A-4834-H; B-8734-1]



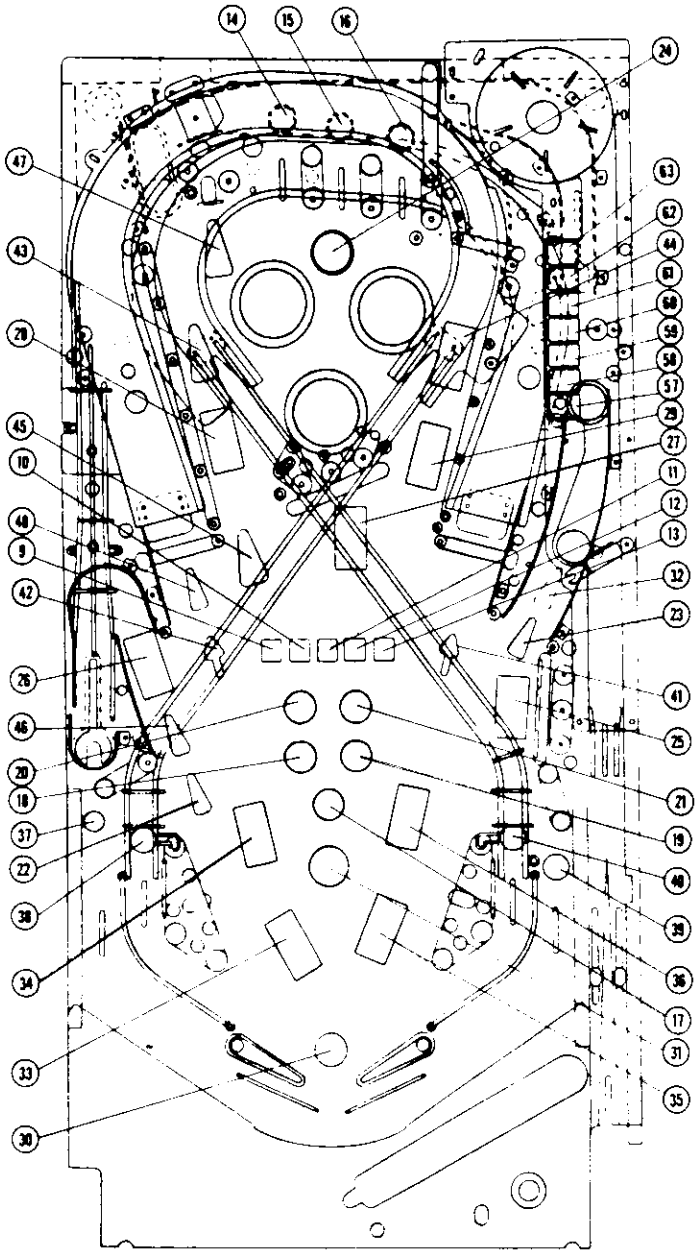


Typical Lamp Circuit

TAXI Lamp-Matrix Table

COLUMN / ROW	1 Q66 YEL-BRN 1J7-1	2 Q64 YEL-RED 1J7-2	3 Q62 YEL-ORN 1J7-3	4 Q60 YEL-BLK 1J7-4	5 Q58 YEL-GRN 1J7-6	6 Q56 YEL-BLU 1J7-7	7 Q54 YEL-VIO 1J7-8	8 Q52 YEL-GRY 1J7-9
Q80 1 RED-BRN 1J6-1	JOYRIDE 10,000 1	AIRPORT 20K 9	PIN•BOT (Center) 17	PIN•BOT 25	2X cab 33	AIRPORT RIDE (Right) 41	JACKPOT (left above Meter) 49	SPINOUT 1,000 57
Q81 2 RED-BLK 1J6-2	JOYRIDE Spot Pasngr 2	AIRPORT 40K 10	DRACULA (Center) 18	DRACULA 26	4X cab 34	AIRPORT RIDE (Left) 42	JACKPOT (right above Meter) 50	SPINOUT 5,000 58
Q82 3 RED-ORN 1J6-3	JOYRIDE Mystery 3	AIRPORT 60K 11	MARILYN (Center) 19	MARILYN 27	3X cab 35	JOYRIDE 43	METER (left below Meter) 51	SPINOUT 10,000 59
Q83 4 RED-YEL 1J6-5	JOYRIDE EXTRA BALL 4	AIRPORT 80K 12	SANTA (Center) 20	SANTA 28	5X cab 36	JACKPOT When Lit 44	METER (right below Meter) 52	SPINOUT 25,000 60
Q84 5 RED-GRN 1J6-6	JOYRIDE SPECIAL 5	AIRPORT 100K 13	GORBIE (Center) 21	GORBIE 29	SPECIAL W/L (L Outlane) 37	1 MILLION When Lit 45	RED Traffic Light 53	SPINOUT 50,000 61
Q85 6 RED-BLU 1J6-7	Williams Pinball Palace (upr l) 6	C (Top Lane) 14	1 Express Lane (left) 22	RIDE AGAIN 30	BONUS W/L (L Return Lane) 38	EXTRA BALL W/L 46	YELLOW Traffic Light 54	SPINOUT 75,000 62
Q86 7 RED-VIO 1J6-8	Williams Pinball Palace (mid l) 7	A (Top Lane) 15	2 Express Lane (right) 23	Passengers Carried 31	SPECIAL W/L (R Outlane) 39	CARRY PASSENGERS W/L 47	GREEN Traffic Light 55	SPINOUT 100,000 63
Q87 8 RED-GRY 1J6-9	Williams Pinball Palace (lwr l) 8	B (Top Lane) 16	RAISE JACKPOT 24	LOCK 32	BONUS W/L (R Return Lane) 40	RELEASE 48	Williams Pinball Palace (upr r) 56	Williams Pinball Palace (lwr r) 64

Lamps

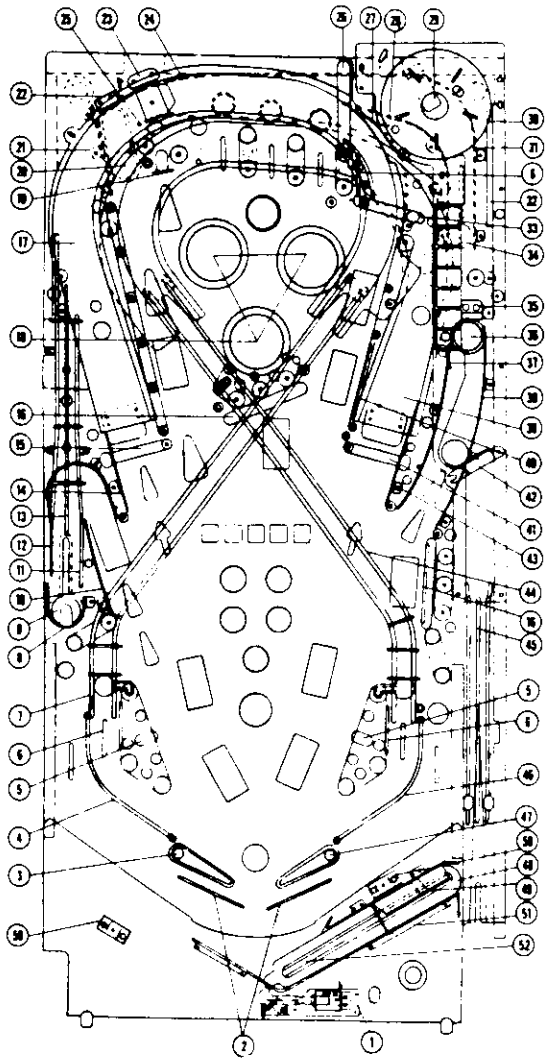


Lamp	Location/Description
1	JOYRIDE 10,000
2	JOYRIDE Spot Psngr
3	JOYRIDE Mystery
4	JOYRIDE EXTRA BALL
5	JOYRIDE SPECIAL
6	Williams Pinball Palace (upr l)
7	Williams Pinball Palace (mid l)
8	Williams Pinball Palace (lwrpr l)
9	AIRPORT 20K
10	AIRPORT 40K
11	AIRPORT 60K
12	AIRPORT 80K
13	AIRPORT 100K
14	C Lane
15	A Lane
16	B Lane
17	PIN•BOT (center)
18	Dracula (center)
19	Marilyn (center)
20	Santa (center)
21	Gorbie (center)
22	1 EXPRESS LANE (left)
23	2 EXPRESS LANE (right)
24	Raise JACKPOT
25	PIN•BOT
26	Dracula
27	Marilyn
28	Santa
29	Gorbie
30	Ride Again
31	Passengers Carried
32	LOCK
33	2X cab
34	4X cab
35	3X cab
36	5X cab
37	SPECIAL W/L (L Outlane)
38	BONUS W/L (L Return Lane)
39	SPECIAL W/L (R Outlane)
40	BONUS W/L (R Return Lane)
41	AIRPORT RIDE (right)
42	AIRPORT RIDE (left)
43	JOYRIDE (left)
44	JACKPOT (right)
45	1 MILLION W/L
46	EXTRA BALL W/L
47	Carry Passengers W/L
48	RELEASE
49	Jackpot (#1 above Meter)
50	Jackpot (#2 above Meter)
51	Meter (#1 below Meter)
52	Meter (#2 below Meter)
53	Red Traffic Light (insert)
54	Yellow Traffic Light (insert)

Lamp	Location/Description
55	Green Traffic Light (insert)
56	Williams Pinball Palace (upr r)
57	SPINOUT 1,000
58	SPINOUT 5,000
59	SPINOUT 10,000
60	SPINOUT 25,000 & Spot Psngr
61	SPINOUT 50,000
62	SPINOUT 75,000
63	SPINOUT 100,000
64	Williams Pinball Palace (lwr r)

Playfield Parts

Item	Part No.	Description
1	B-8039-2	Outhole Kicker Assy
2	12-6468	Anti-Rebound Wireform
3	C-11626-L-3	Lwr Left Flipper Assy
a)	20-9250-6	Lg Flipper Paddle & Shaft
4	12-6803-L	Left Flipper Return Frame
5	B-12283	Kicker Arm ("Sling") Assy
a)	B-11203-R-1	Coil & Bracket Assy
6	12-6466-8	Wireform, 2"
7	12-6794	Left Ramp Exit Wireform*
8	A-12291	Ball Guide Assembly
9	C-11641-1	Catapult
10	B-12305	Ball Guide Assembly
11	12-6466-12	Wireform, 3"
12	B-12289	Ball Guide Assembly
13	12-6795	Catapult Wireform
14	B-12290	Ball Guide Assembly
15	A-12171	Ball Gate Assembly
a)	12-6800	Gate Wire
b)	12-6785	Switch Wire
16	C-11223-1	3-Bank Drop Target
17	D-12263	Left Ramp Assembly
18	B-9414-1	Jet Bumper Assy (3)
a)	B-9415-1	Bmpr Coil/Bracket Assy
19	B-11696-6	Standup Target, Yellow
20	B-9361-R-1	JOYRIDE Eject Hole
a)	B-9362-L-1	Coil & Bracket Assy
b)	03-7351-1	Tr Red Plastic Ball Seat
21	A-12285	Ball Guide Assembly
22	01-8626	Eject Hole Deflector
23	B-10732-L	1-way Ball Gate Assy
24	B-12294	Ball Guide Assembly
25	12-6548	Curved Wireform
26	B-12274	Ball Gate Assembly
a)	12-6648	Gate Wire
27	B-12306	Ball Guide Assembly
28	C-12286	Ball Guide Assembly
29	A-12323	SPINOUT Baffle Assy
30	R-12262	SPINOUT Ramp Assy
31	C-12284	Ball Guide Assembly
32	C-12391	Lamp PC Board
33	A-12319	Ball Gate Assembly
a)	12-6800	Gate Wire
b)	12-6785	Switch Wire
34	B-11395-1	SPINOUT Kickbig
a)	B-11203-R-1	Coil & Bracket Assy
35	01-6933	R Eject Hole Deflector
36	B-9361-R-5	Right Lock Eject Hole
a)	B-11203-R-1	Coil & Bracket Assy
37	C-12288	Ball Guide Assembly
38	C-12287	Ball Guide Assembly
39	D-12264	Right Ramp Assembly
40	B-12320	Ball Guide Assembly



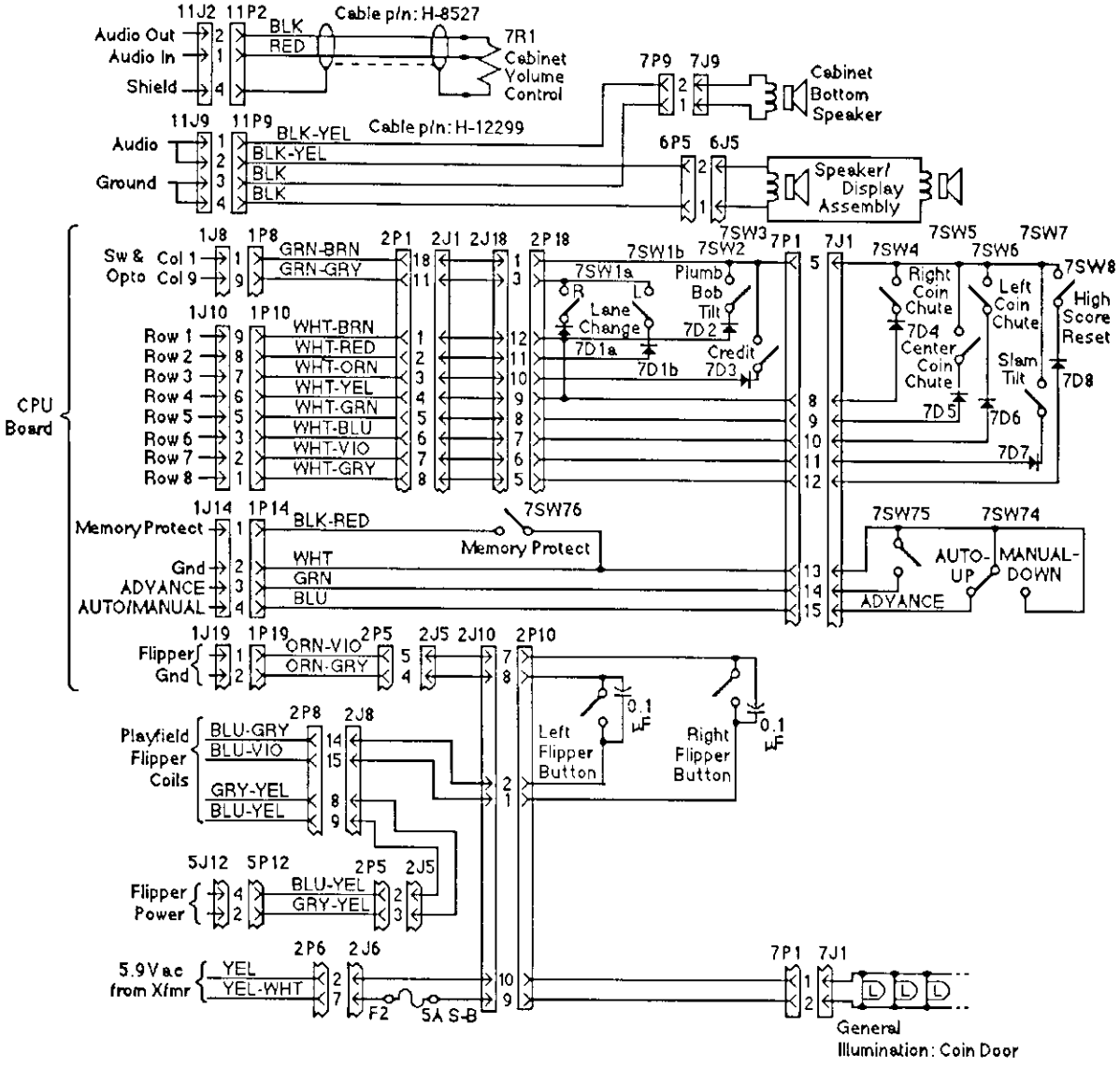
Item	Part No.	Description
41	A-12321	Ball Gate Assembly
a)	12-6800	Gate Wire
b)	12-6785	Switch Wire
42	B-12267	Ball Gate Assembly
a)	12-6802	Gate Wire
43	B-12292	Ball Guide Assembly
44	12-6793	Right Ramp Exit Wireform
45	12-6772-1	Shooter Lane Wireform
46	12-6803-R	Right Flipper Return Frame
47	C-11626-R-3	Lwr Right Flipper Assy
a)	20-9250-6	Flipper Arm on Shaft
48	C-9638-3	Ball Shooter Lane Feeder
a)	B-9362-R-1	Coil & Bracket Assembly
49	B-8623	Upr Trough Baffle Assy
50	01-5575	Bottom Arch Mtg Bracket
51	C-8235	Lwr Trough Baffle Assy
a)	12-6542	Baffle Wire form
52	01-3569-1	Ball Trough

Section 3
Reference Diagrams & Schematics

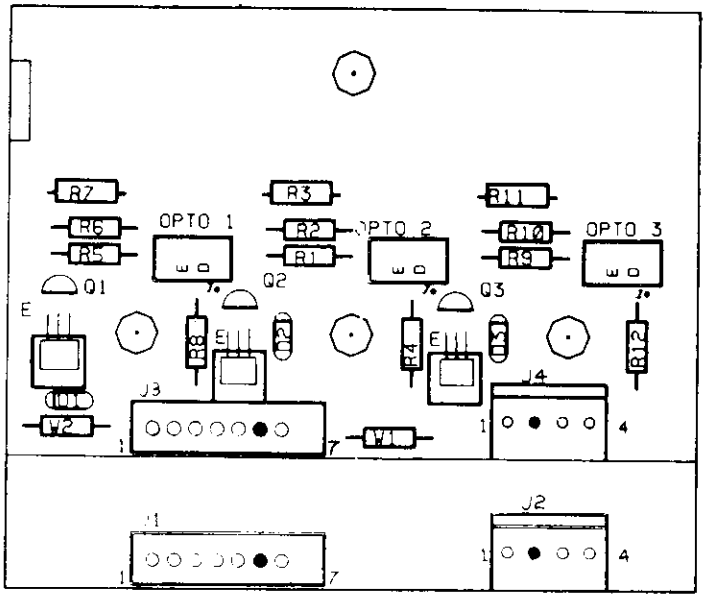
- Diagrams and Schematics:

  Cabinet Wiring
  3-Bank Opto Board
  Power Supply Board
  System 11B CPU Board
  Master Display Board
  Audio Board
  Aux Power Driver Board
  Backbox Interconnect Board
  Controlled, Special, & Switched Solenoids
  Power Wiring
  Game Circuit Boards Interboards Signals

- Diagnostic Test Flowchart

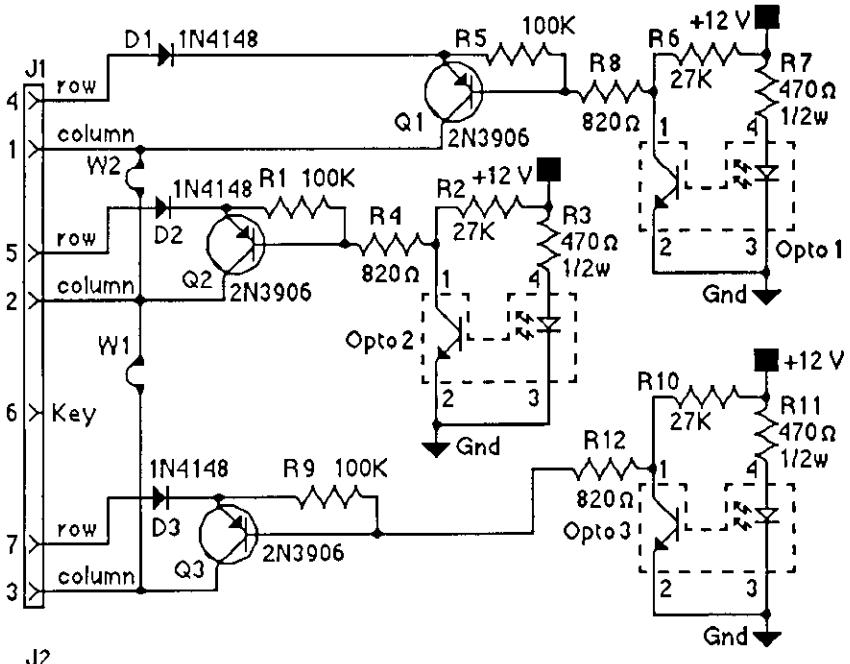


TAXI Cabinet Wiring

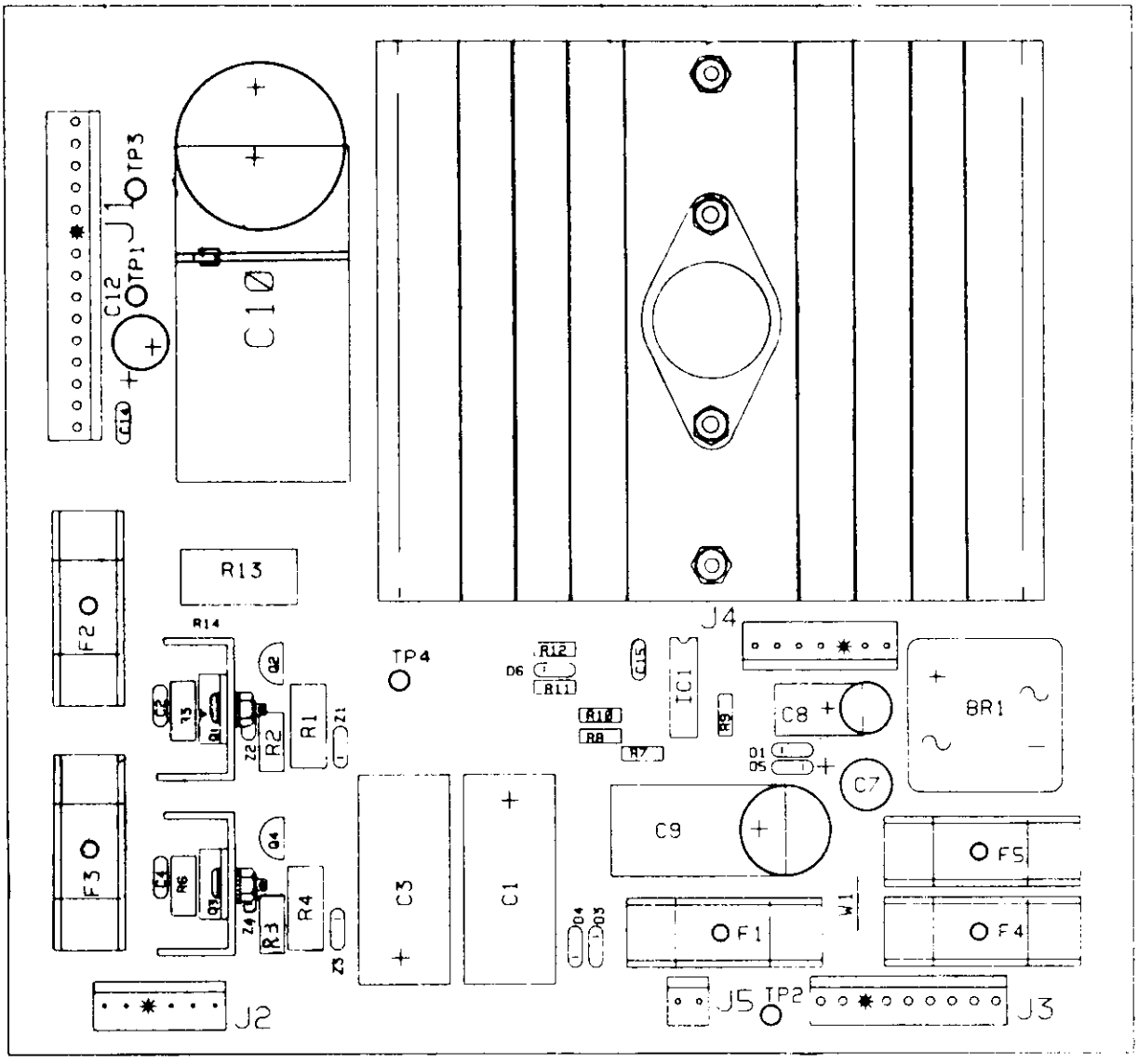


3-Bank Drop Target Opto Board

p/n C-11318-1

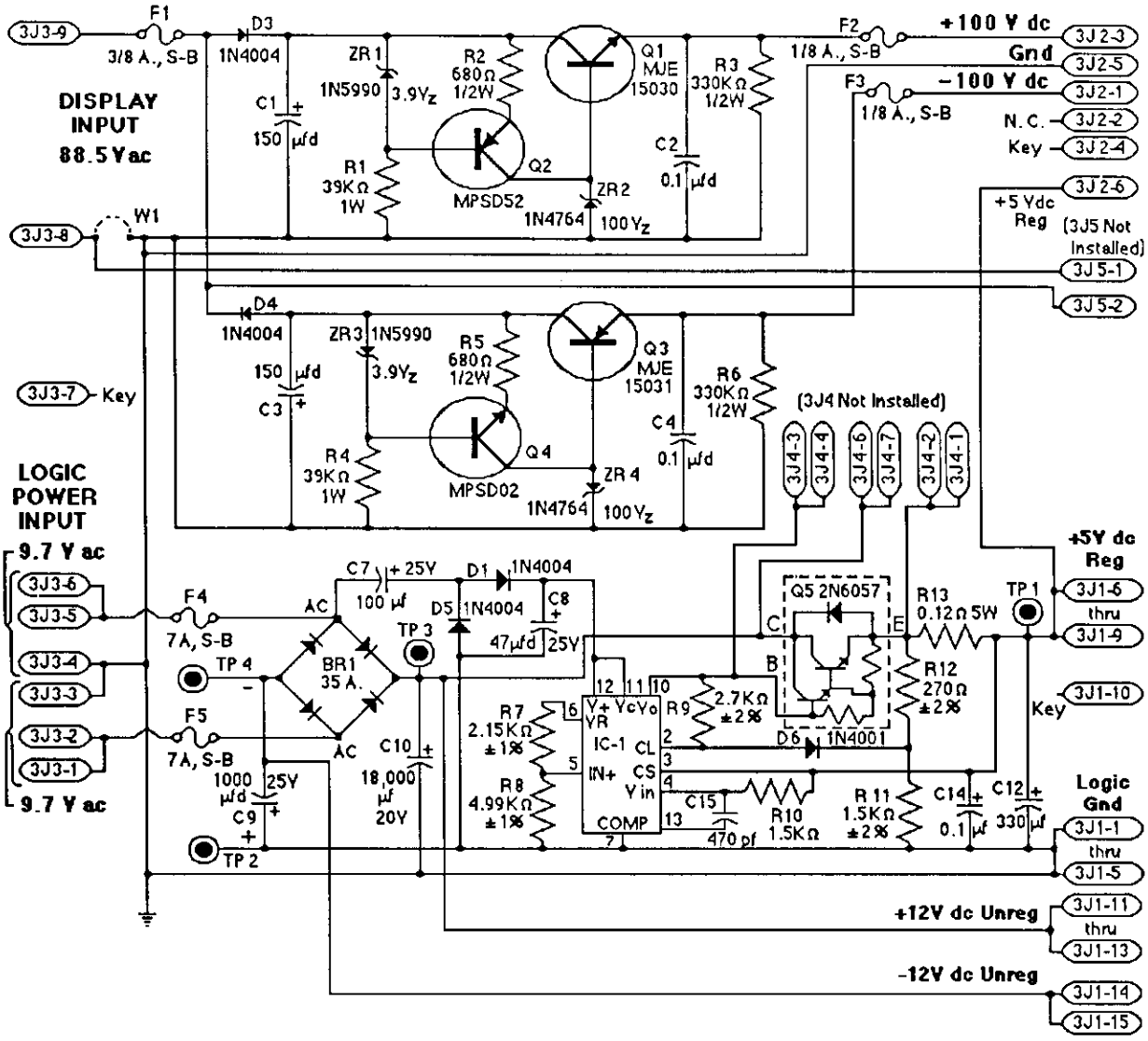


3-Bank Drop Target Opto Board Schematic

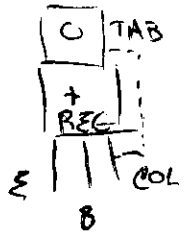


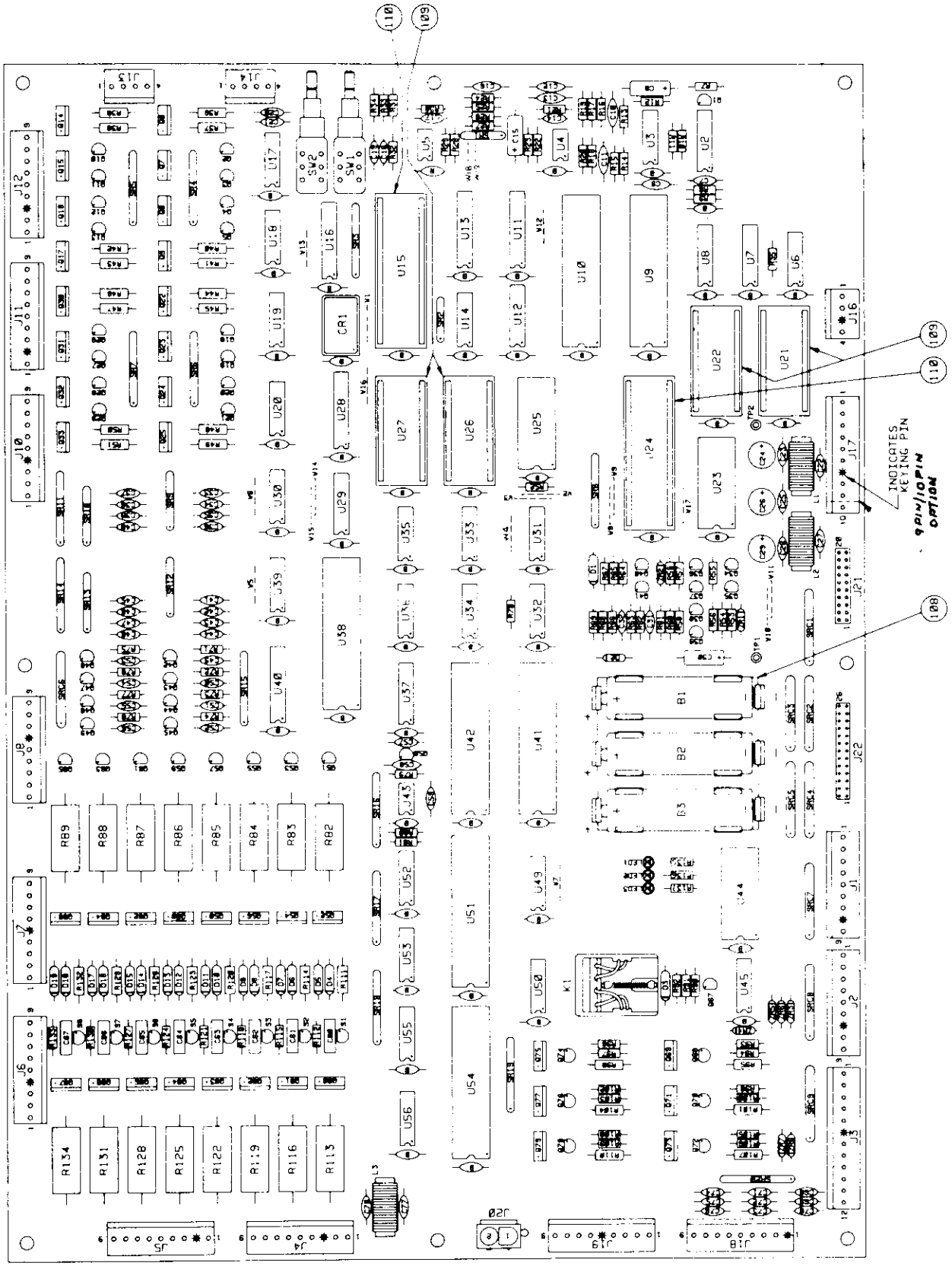
Power Supply Board

p/n D-12246



Power Supply Board Schematic





System 11B CPU Board (D-11883)

TAXI ROM and Jumper Table

Game	System 11B CPU Rev.	P/N - U15 Game µP	P/N - U27 G. ROM 1	P/N - U26 G. ROM 2	P/N - U21 S. ROM 1	P/N - U22 S. ROM 2	P/N - U24 Sound µP	Jumpers
BIG GUNS	-	5400-09150-00	A-5343-557-2	A-5343-557-1	A-5343-557-4	A-5343-557-3	5400-09150-00	W1, 2, 4, 5, 7, 8, 11, 14, 16, 17, and 19
SPACE STATION	-		A-5343-552-2	A-5343-552-1	A-5343-552-4	A-5343-552-3		W1, 2, 4, 5, 7, 8, 11, 14, 16, 17, and 19
CYCLONE	-		A-5343-564-2	A-5343-564-1	A-5343-564-4	A-5343-564-3		W1, 2, 4, 5, 7, 8, 11, 14, 16, 17, and 19
BANZAI RUN	-		A-5343-566-2	A-5343-566-1	A-5343-566-4	A-5343-566-3		W1, 2, 4, 5, 7, 8, 11, 14, 16, 17, and 19
SWORDS OF FURY	-		A-5343-559-2	A-5343-559-1	A-5343-559-4	A-5343-559-3		W1, 2, 4, 5, 7, 8, 11, 14, 16, 17, and 19
TAXI	-		A-5343-553-2	A-5343-553-1	A-5343-553-4	A-5343-553-3		W1, 2, 4, 5, 7, 8, 11, 14, 16, 17, and 19

TAXI Solenoid Table

Sol. No.	Function	Solenoid Type	Wire Color [1]	Connections: CPU Bd	Connections: Playfield/ Cabinet	Driver Trnstr	Solenoid Part Number / Flashlamp Type (i=Insert Bd; p=Playfield; d=Dome)
01A [3]	Outhole Kicker	Switched	{Vio-Brn	1P11-1	5J1-9: 5J4-9 (A)	Q33	AE-23-800
01C [3]	Pin•Bot Flasher	Switched	Blk-Brn}	(Gry-Brn)	5J5-9 (C)	Q33	#89 flashlamps 1p,1i
02A [3]	Ball Release (Shtr Lane Feeder)	Switched	{Vio-Red}	1P11-3	5J1-7: 5J4-8 (A)	Q25	AE-23-800
02C [3]	Dracula Flasher	Switched	Blk-Red}	(Gry-Red)	5J5-8 (C)	Q25	#89 flashlamps 1p,1i
03A [3]	Catapult	Switched	{Vio-Orn	1P11-4	5J1-6: 5J4-7 (A)	Q32	AL-23-800
03C [3]	Marilyn Flasher	Switched	Blk-Orn}	(Gry-Orn)	5J5-7(C)	Q32	#89 flashlamps 1p,1i
04A [3]	Middle 3-bank Dr Tgt	Switched	{Vio- Yel	1P11-5	5J1-5: 5J4-6 (A)	Q24	AE-26-1200
04C [3]	Santa Flasher	Switched	Blk-Yel}	(Gry-Yel)	5J5-5 (C)	Q24	#89 flashlamps 1p,1i
05A [3]	Top Eject Hole	Switched	{Vio-Grn	1P11-6	5J1-4: 5J4-5 (A)	Q31	AE-23-800
05C [3]	Gorbie Flasher	Switched	Blk-Grn}	(Gry-Grn)	5J5-4 (C)	Q31	#89 flashlamps 1p,1i
06A [3]	Right 3-bank Dr Tgt	Switched	{Vio-Blu	1P11-7	5J1-3: 5J4-4 (A)	Q23	AE-26-1200
06C [3]	Left Ramp Flasher	Switched	Blk-Blu}	(Gry-Blu)	5J5-3 (C)	Q23	#89, #906 flashlamps 1p,1d
07A [3]	Spinout Kickbig	Switched	{Vio-Blk	1P11-8	5J1-2: 5J4-2 (A)	Q30	AE-26-1500
07C [3]	Right Ramp Flasher	Switched	Blk-Vio}	(Gry-Vio)	5J5-2 (C)	Q30	#89 , #906 flashlamps 1p,1d
08A [3]	Right Lock (Eject Hole)	Switched	{Vio-Gry	1P11-9	5J1-1: 5J4-1 (A)	Q22	AE-26-1500
08C [3]	Spinout Flasher	Switched	Blk-Gry}	(Gry-Blk)	5J5-1 (C)	Q22	#89 flashlamps 2p
09	Top Ball Gate	Controlled	Brn-Blk	1P12-1	5J2-9: 5J6-9: 2J4-3	Q17	SM1-35-4000-DC
10	Insert Gen Illumin Relay	Controlled	Brn-Red	1P12-2	5J2-8: 5J6-8: 2J4-5	Q9	5580-12145-01 [4]
11	Playfield Gen Illum	Controlled	Brn-Orn	1P12-4	5J2-6: 5J6-7: 2J4-6	Q16	5580-12145-01 [4]
12	A/C Select Relay	Controlled	Brn-Yel	1P12-5	5J2-5	Q8	5580-09555-01 [5]
13	Bell	Controlled	Brn-Grn	1P12-6	5J2-4: 5J6-5	Q15	SM-26-600-DC
14	Knocker	Controlled	Brn-Blu	1P12-7	5J2-4: 5J6-3	Q7	AE-26-1200
15	JACKPOT Flasher	Controlled	Brn-Vio	1P12-8	5J2-2: 5J6-2	Q14	#89 flashlamp 1p,2i
16	JOYRIDE Flasher	Controlled	Brn-Gry	1P12-9	5J2-1: 5J6-1	Q6	#89 flashlamp 1p
17	Left Jet Bumper	Special #1	Blu-Brn	1P19-7	5J3-7: 5J7-7	Q75	AE-23-800
18	Left Kicker ("sling")	Special #2	Blu-Red	1P19-4	5J3-6: 5J7-6	Q71	AE-26-1500
19	Right Jet Bumper	Special #3	Blu-Orn	1P19-3	5J3-3: 5J7-3	Q73	AE-23-800
20	Right Kicker ("sling")	Special #4	Blu-Yel	1P19-6	5J3-4: 5J7-5	Q69	AE-26-1500
21	Lower Jet Bumper	Special #5	Blu-Grn	1P19-8	5J3-2:5J7-2	Q77	AE-23-800
22	Not Used	Special #6	Blu-Blk	1P19-9	5J3-1: 5J7-1	Q79	
-	Right Flipper	-	Orn-Vio	1P19-1	2J3-1: 2J18-10: 7P1-15	-	
	Lower Right Flipper		[Blu-Vio] [2]		[7P1-16: 2J18-6: 2J17-4]		FL11630/50VDC
-	Left Flipper	-	Orn-Gry	1P19-2	2J3-2: 2J18-9: 7P1-18	-	
	Lower Left Flipper		[Blu-Gry] [2]		[7P1-19,2J18-5:2J17-3]		FL11630/50VDC

Notes: 1. Wire colors, except flipper Orn-Vio and Orn-Gry, are ground connections (to coil terminal with unbanded end of diode). Flipper Orn-Vio and Orn-Gry wires connect from CPU Board to flipper switch. 2. Flipper connections shown in braces are from flipper switch to flipper coil. 3. "A" circuits are pulsed, when Sol. 12 is de-energized; "C" circuits are pulsed, with Sol. 12 energized. Wire colors in brackets are those from respective A and C terminals corresponding to the J1-terminal connection listed for the Aux Power Driver Bd, which controls the device pulsing by Sol. 12.
4. Relay is mounted on Relay Bd, p/n C-11998-1. 5. Relay is mounted on Aux Power Driver Bd, D-12247 in the backbox.

TAXI Lamp-Matrix Table

COLUMN / ROW	1 Q66 YEL-BRN 1J7-1	2 Q64 YEL-RED 1J7-2	3 Q62 YEL-ORN 1J7-3	4 Q60 YEL-BLK 1J7-4	5 Q58 YEL-GRN 1J7-6	6 Q56 YEL-BLU 1J7-7	7 Q54 YEL-VIO 1J7-8	8 Q52 YEL-GRY 1J7-9
Q80 1 RED-BRN 1J6-1	JOYRIDE 10,000 1	AIRPORT 20K 9	PIN•BOT (Center) 17	PIN•BOT 25	2X cab 33	AIRPORT RIDE (Right) 41	JACKPOT (left above Meter) 49	SPINOUT 1,000 57
Q81 2 RED-BLK 1J6-2	JOYRIDE Spot Pasngr 2	AIRPORT 40K 10	DRACULA (Center) 18	DRACULA 26	4X cab 34	AIRPORT RIDE (Left) 42	JACKPOT (right above Meter) 50	SPINOUT 5,000 58
Q82 3 RED-ORN 1J6-3	JOYRIDE Mystery 3	AIRPORT 60K 11	MARILYN (Center) 19	MARILYN 27	3X cab 35	JOYRIDE 43	METER (left below Meter) 51	SPINOUT 10,000 59
Q83 4 RED-YEL 1J6-5	JOYRIDE EXTRA BALL 4	AIRPORT 80K 12	SANTA (Center) 20	SANTA 28	5X cab 36	JACKPOT When Lit 44	METER (right below Meter) 52	SPINOUT 25,000 60
Q84 5 RED-GRN 1J6-6	JOYRIDE SPECIAL 5	AIRPORT 100K 13	GORBIE (Center) 21	GORBIE 29	SPECIAL W/L (L Outlane) 37	1 MILLION When Lit 45	RED Traffic Light 53	SPINOUT 50,000 61
Q85 6 RED-BLU 1J6-7	Williams Pinball Palace (upr l) 6	C (Top Lane) 14	1 Express Lane (left) 22	RIDE AGAIN 30	BONUS W/L (L Return Lane) 38	EXTRA BALL W/L 46	YELLOW Traffic Light 54	SPINOUT 75,000 62
Q86 7 RED-VIO 1J6-8	Williams Pinball Palace (mid l) 7	A (Top Lane) 15	2 Express Lane (right) 23	Passengers Carried 31	SPECIAL W/L (R Outlane) 39	CARRY PASSENGERS W/L 47	GREEN Traffic Light 55	SPINOUT 100,000 63
Q87 8 RED-GRY 1J6-9	Williams Pinball Palace (lwr l) 8	B (Top Lane) 16	RAISE JACKPOT 24	LOCK 32	BONUS W/L (R Return Lane) 40	RELEASE 48	Williams Pinball Palace (upr r) 56	Williams Pinball Palace (lwr r) 64

TAXI Switch-Matrix Table

COLUMN / ROW	1 Q45 GRN-BRN 1J8-1	2 Q49 GRN-RED 1J8-2	3 Q44 GRN-ORN 1J8-3	4 Q48 GRN-YEL 1J8-4	5 Q43 GRN-BLK 1J8-5	6 Q47 GRN-BLU 1J8-7	7 Q42 GRN-VIO 1J8-8	8 Q46 GRN-GRY 1J8-9
1 WHT-BRN 1J10-9	Plumb Bob Tilt 1	Playfield Tilt 9	Left Jet Bumper 17	Left Ramp Entry 25	Right Ramp Exit 33	41	49	Lane Change Right 57
2 WHT-RED 1J10-8	2	Outhole 10	Left Kicker ("sling") 18	Right Ramp Entry 26	Left Ramp Exit 34	42	50	Lane Change Left 58
3 WHT-ORN 1J10-7	Credit Button 3	Ball Trough #1 11	Right Jet Bumper 19	Mdl 3-Bank DT (left) 27	Catapult 35	SPINOUT Kickbig 43	51	59
4 WHT-YEL 1J10-6	Left Coin Chute 4	Ball Trough #2 12	Right Kicker ("sling") 20	Mdl 3-Bank DT (mid) 28	Right Eject 36	"Spins" Counter 44	52	60
5 WHT-GRN 1J10-5	Center Coin Chute 5	Top Eject Hole 13	Lower Jet Bumper 21	Mdl 3-Bank DT (right) 29	Left Outlane 37	45	53	61
6 WHT-BLU 1J10-3	Right Coin Chute 6	C Top Lane 14	Ball Shooter 22	R 3-Bank DT (top) 30	Left Return Lane 38	46	54	62
7 WHT-VIO 1J10-2	Slam Tilt 7	A Top Lane 15	Top Lane Entry 23	R 3-Bank DT (mid) 31	Right Outlane 39	47	55	63
8 WHT-GRY 1J10-1	High Score Reset 8	B Top Lane 16	Carry Pasengers 24	R 3-Bank DT (bottom) 32	Right Return Lane 40	48	56	64

WARNINGS & NOTICES

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