Williams® W
ELECTRONICS, INC.

GAME ADJUSTMENT
AND DIAGNOSTIC PROCEDURES
FOR
FLASH

BOOKKEEPING AND EVALUATION TOTALS
   (Functions 01-12)

1. In game over mode, set toggle switch to AUTO-UP and depress ADVANCE pushbutton. Test 04 is indicated in number of credits display, Function 00 in ball in play display, and PROM ID in Player 1 display.

2. Operate the ADVANCE pushbutton to display each function on the ball in play display (see Table 1) and record each total from player 1 display. (To review a total that has been advanced past, set toggle switch to MANUAL-DOWN and operate ADVANCE pushbutton.)

3. Calculate the following as desired:
   % Paid Credits = Function 08 ÷ Function 04
   Average Ball Time (Seconds) = 60 x Function 10 ÷ Function 11

4. Turn game OFF and back ON to return to game over mode.

5. To change current High Score to Date to value of Function 13, momentarily depress HIGH SCORE RESET pushbutton.

6. To zero Functions 01-11, see instructions adjacent to CPU Board in backbox.

GAME ADJUSTMENT PROCEDURE
   (Functions 13-35)

1. In game over mode, set toggle switch to AUTO-UP and depress ADVANCE pushbutton. Test 04 is indicated in number of credits display, Function 00 in ball in play display and PROM ID in player 1 display.

2. **To raise** Function number in ball in play display operate ADVANCE pushbutton with switch set to AUTO-UP.
   To lower Function number operate ADVANCE with it set to MANUAL-DOWN.

3. With desired Function indicated in ball in play display, **raise** value in player 1 display by operating credit button with switch set to AUTO-UP; **lower** value by operating credit button with it set to MANUAL-DOWN. Value left on player 1 display is new setting. For values see Table 1 and (for pricing) Table 2.

4. Repeat steps 2 and 3 until all required adjustments have been made.

5. Turn game OFF and back ON to return to the game over mode.

6. To restore factory settings, see instructions adjacent to CPU Board in backbox; game must be turned OFF and ON twice to return to game over.

Table 1. Game Adjustments

Function	Description	Notes	Factory Setting
00	PROM Identification	1	0486 2
01	Coins, Left Chute (Closest to coin door hinge)	1	—
02	Coins, Center Chute	1	—
03	Coins, Right Chute	1	—
04	Total Paid Credits	1	—
05	Total Specials	1	—
06	Total Replay (extra ball) scores	1	—
07	Match and High Score to Date credits	1	—
08	Total Credits	1,2	—
09	Total Extra Balls	1,3	—
10	Total ball time in minutes	1	—
11	Total number of balls played	1	—
12	Current High Score to Date	4	550,000
13	Backup High Score to Date	5	550,000
14	Replay 1 Score	5	270,000
15	Replay 2 Score	5	370,000
16	Replay 3 Score	5	470,000
17	Replay 4 Score (Disabled)	5	0
18	Maximum Credits	6	20
19	Standard and Custom Pricing Control (00-07)	7	01
20	Left Coin Slot Multiplier	7	01
21	Center Coin Slot Multiplier	7	01
22	Right Coin Slot Multiplier	7	01
23	Coin units required for credit	7	01
24	Coin units bonus point	7	02
25	Credits in game	—	00
26	High Score Credits	8	03
27	Play	—	11
	01-Liberal, Eject Hole Lamps Restored, 5,000 Lamp Lit Initially		
	02-Moderate, Eject Hole Lamps Restored 5,000 Lamp not Lit Initially		
	11-Factory Setting, Eject Hole Lamps not Restored, 5,000 Lamp Lit Initially		
	12-Conservative, Eject Hole Lamps not Restored, 5,000 Lamp not Lit Initially		
	14-No Extra Ball, Eject Hole Lamps not Restored, 5,000 Lamp not Lit Initially		
28	Match (00=ON, 01=OFF	—	00
29	Special	—	00
	00 = Awards Credit		
	01 = Awards Extra Ball		
	02 = Awards 50,000 Points		
30	Scoring Awards	—	
	00 = Credits at Replay Score		
	01 = Extra Ball at Replay Score		
31	Number of balls (03 or 05)	—	03
32	Maximum Plumb Bob Tilts (1-9)	—	03
33	Sound Option	—	00
	00 = Background Sound OFF		
	01 = Background Sound ON		
34	SUPER FLASH Scoring	—	00
	00 = Awards 50,000 Points		
	01 = Awards Extra Ball		
35	SUPER FLASH Restore	—	00
	00 = Restores		
	01 = Does not Restore		

Notes:

1. Functions 00-11 cannot be changed from the coin door; however, Functions 01-11 can be set to zero as described on label adjacent to CPU Board in backbox.

2. Total credits (Function 08) is the sum of Function 04 and, as applicable, Functions 05, 06, and 07.

3. Total extra balls (Function 09) is the sum of the game extra ball feature and Functions 05 and 06, as applicable.

4. Current High Score to Date (Function 12) can be changed to the value of the backup High Score to Date (Function 13) by operating the HIGH SCORE RESET switch while in the game over mode.

5. Functions 13-17 may be set to any multiple of 10,000 points. Setting a function to zero disables the High Score to Date (Function 13) or the replay score (Functions 14-17).

6. Setting Maximum Credits (Function 18) to zero places the game in a **free play** mode.

7. With Function 19 set to 00, Functions 20-24 can be set manually. Refer to Table 2 for seven standard pricing schemes (selected by values of 01-07 for Function 19) and custom pricing values.

8. Setting Function 26 to zero with Function 13 set to any score but zero, permits the High Score to Date feature to operate but no credits are awarded.

Table 2. Standard and Custom Pricing Settings

COIN DOOR MECHANISM	CREDITS	FUNCTION					
		19*	20	21	22	23	24
Quarter, Twin-Quarter, or 3-Quarter	1/25¢, 3/50¢	01	01	01	01	01	02
	1/25¢	02	01	01	01	01	00
	2/25¢, 5/50¢	00	02	02	02	01	04
	2/25¢	00	02	02	02	01	00
	1/50¢	00	01	01	01	02	00
	1/50¢, 3/$1	00	01	01	01	02	04
	1/75¢	00	01	01	01	03	00
Nickel-Dime-Quarter	1/25¢, 3/50¢	00	01	02	05	05	10
	1/25¢	00	01	02	05	05	00
	2/25¢	00	01	02	05	05	05
	1/15¢, 2/25¢	00	02	04	10	05	00
	1/10¢, 3/25¢	00	03	06	15	05	00
1DM, 5DM, 2DM	2/1DM, 5/2DM, 14/5DM	03	13	65	26	05	65
20-Cent, 50-Cent	1/20¢, 3/50¢	00	06	00	15	05	00
1 Franc, 5 Franc	1/1F, 6/5F	04	01	00	05	01	05
	1/1F, 7/5F	05	06	00	30	05	30
25 Cent, 1 Guilder	1/25¢	06	01	00	04	01	00
	1/25¢, 5/1G	00	01	00	04	01	04
50 Yen, 100 Yen	1/50Y, 2/100Y	07	01	00	02	01	00
1 Franc or	1/1F, 3/2F	01	01	01	01	01	02
1 Franc, 1 Franc	1/1F	02	01	01	01	01	00
5 Franc, 10 Franc	1/5F, 2/10F	07	01	00	02	01	00
	1/10F	00	01	00	02	02	00
2 Franc, 2 Franc	1/2F	02	01	01	01	01	00
10 Franc, 20 Franc	1/10F, 2/20F	07	01	00	02	01	00
1 Sucre, 1 Sucre	1/3S, 2/5S	00	02	00	02	05	00

*Function 19 set to values 01-07 automatically selects corresponding values of Functions 20-24. With Function 19 set to 00, Functions 20-24 must be set manually.

DIAGNOSTIC PROCEDURES
(Display Digits, Lamp, Solenoid, and Switch Tests)

1. In game over mode, set toggle switch to MANUAL-DOWN and depress ADVANCE. All displays should go blank.

2. Momentarily depress ADVANCE and set toggle switch to AUTO-UP. Display Digits test is performed.

3. Momentarily depress ADVANCE. Test 01 is indicated on number of credits display and Lamp Test is performed.

4. Set toggle switch to MANUAL-DOWN and momentarily depress ADVANCE. Test 02 is indicated on number of credits display and solenoid 01 on ball in play display; solenoid 01 is pulsed by Driver Board.

5. Operate ADVANCE to pulse each solenoid (see Table 3).

6. Set toggle switch to AUTO-UP and momentarily depress ADVANCE. Test 03 is indicated on number of credits display and stuck switches on ball in play display.

7. See Table 4 and Figure A. Operate switches; switch number is indicated on ball in play display.

8. Turn game OFF and back ON to return to game over mode.

9. To set up Auto-Cycle Mode (Display Digits, Lamp, and Solenoid Tests) see instructions adjacent to CPU Board in backbox.

Table 3. Solenoids

SOLENOID
NO.

1. Ball Release
2. 5 - Bank (1-3) (Top) Drop Targets
3. 5 - Bank (4-5) (Bottom) Drop Targets Reset
4. 3 - Bank Drop Targets Reset
5. Eject Hole
6. "Flash" Lamps*
7. Not Used
8. Not Used
9. Sound
10. Sound
11. Sound
12. Sound
13. Sound
14. Credit Knocker
15. Not Used
16. Coin Lockout
17. Right Jet Bumper
18. Left Jet Bumper
19. Lower Jet Bumper
20. Right Kicker
21. Left Kicker
22. Not Used.
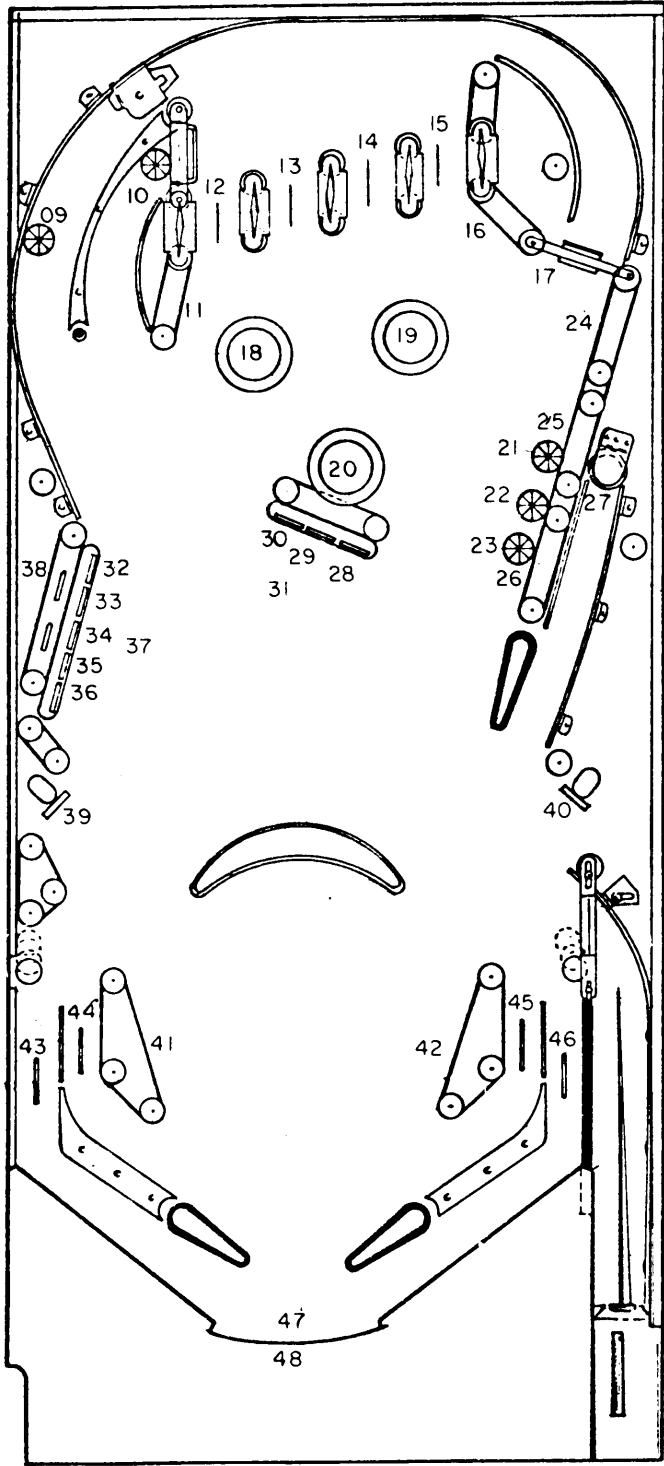
*"Flash" lamps glow dimly as part of normal operation

Figure A. Playfield Switch Locations

Table 4. Switches

**SWITCH
NO.**

No.	Description
01	Plumb Bob Tilt
02	Ball Roll Tilt
03	Credit Button
04	Right Coin Switch
05	Center Coin Switch
06	Left Coin Switch
07	Slam Tilt
08	High Score to Date Reset
09	Outside Upper Left Star Rollover
10	Inside Upper Left Star Rollover
11	Upper Left Standup
12	"1" Rollover
13	"2" Rollover
14	"3" Rollover
15	"4" Rollover
16	Top Right Standup
17	Spinner
18	Left Jet Bumper
19	Right Jet Bumper
20	Lower Jet Bumper
21	Upper Right Star Rollover
22	Center Right Star Rollover
23	Lower Right Star Rollover
24	Right Side Standup, Upper
25	Right Side Standup, Center
26	Right Side Standup, Lower
27	Eject Hole
28	3 - Bank, Right Drop Target
29	3 - Bank, Center Drop Target
30	3 - Bank, Left Drop Target
31	3 - Bank, Series
32	5 - Bank, 1 Drop Target (Top)
33	5 - Bank, 2 Drop Target
34	5 - Bank, 3 Drop Target
35	5 - Bank, 4 Drop Target
36	5 - Bank, 5 Drop Target (Bottom)
37	5 - Bank, Series
38	5 - Bank Standup
39	Left Target
40	Right Target
41	Left Kicker
42	Right Kicker
43	Left Special Rollover
44	Left Flipper Return Rollover
45	Right Flipper Return Rollover
46	Right Special Rollover
47	Playfield Tilt
48	Outhole

Game Adjustment Settings for this Game

Function	Setting
13	_____
14	_____
15	_____
16	_____
17	_____
18	_____
19	_____
20	_____
21	_____
22	_____
23	_____
24	_____
25	_____
26	_____
27	_____
28	_____
29	_____
30	_____
31	_____
32	_____
33	_____
34	_____
35	_____