

GAME ASSIGNMENTS

The Operator will select between Table (and its related character) for the game and Lower Left Switch (SW), and SW, respectively, using the game test-
over and identifies the switch(es) associated with each feature. The switch
testing column shows the setting to check the desired feature.

It should be noted, however, that the Factory Setting, with the exception of
the Game Selection, is always the SW (0) switch position for each feature.
(The factory position of the switch identifies its setting. For instance,
when the factory position is between two sides of the SW, the
SW, this is the SW (0) setting. When the factory position of the switch
is between the two sides of the SW, this is the SW (0) setting.
In most cases, this is the SW (0) setting.

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INSTRUCTION MANUAL

Baseball - Poker - Football - Soccer

Willy At The Bat™

Poker

Pigskin 2010

Willy's Cup™

WILLIAMS ELECTRONICS GAMES, INC.

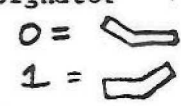
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GAME ADJUSTMENTS

The Operator DIP Switch Settings Table (and its related charts) for the Upper and Lower DIP Switch Units (SW1, and SW2, respectively) lists the game features and identifies the switch(es) associated with each feature. The Switch Setting columns show the setting to obtain the desired feature.

It should be noted, however, that the Factory Setting, with the exception of the Game Selection, is always the ZERO (0) switch position for each feature. (The lowered position of the switch identifies its setting. For instance, when the lowered position of the switch is nearest the side of the DIP marked OPEN, this is the ZERO (0) setting. When the lowered position of the switch is nearest the side of the DIP marked with the individual switch designator (1 - 8), this is the ONE (1) setting.)



OPERATOR DIP SWITCH SETTINGS TABLE

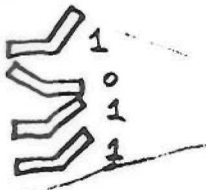
UPPER DIP Switch (SW1)

FEATURE	SW #	Switch Setting
		 1 0 
Setting for BEAT THIS SCORE Value	8 7 6 5	See Chart 1
Number of Turns per Game	4 3	
Game Selection	2 1	

LOWER DIP Switch (SW2)

FEATURE	SW #	Switch Setting
		 0 1 
REWARD for Exceeding (or Tying) BEAT THIS SCORE Value	8	Credit Token
MATCH	7	ON OFF (Enable) (Disable)
EXTRA TURN (Play)	6	ON OFF (Enable) (Disable)
	5	See Chart 4 <i>Swap these</i>
	4	
Game/Coin Settings	3	
	2 1	

Chart 1 - Upper DIP (SW1) BEAT THIS SCORE Setting



DIP Switch 8765 Setting	POKER Score to Beat	BASEBALL Score to Beat	SOCCER Score to Beat	FOOTBALL Score* to Beat	Degree of Difficulty
1011	30	8	3	10	Easiest
1100	40	10	4	13	
1101	50	12	5	16	
1110	60	14	6	19	
1111	70	16	7	22	Factory
0000	80	18	8	25	
0001	90	20	9	28	
0010	100	22	10	31	
0011	110	24	11	34	
0100	120	26	12	37	
0101	130	28	13	40	
0110	140	30	14	43	
0111	150	32	15	46	Hardest
1000	160	34	16	49	
1001	170	36	17	52	
1010	Disable	Disable	Disable	Disable	

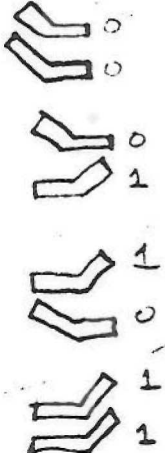
* For the 'buy-in', 6-possession football game, the value displayed increases by approximately 50% of the listed value for each DIP Switch 8765 Setting.

Chart 2 - Upper DIP (SW1) Number of Turns Setting



DIP Switch 43 Setting	POKER No. of Turns	BASEBALL No. of Turns	SOCCER No. of Turns	FOOTBALL No. of Turns	Degree of Difficulty
10	5	5	12	5	Easiest
01	4	4	10	4	Easy
00	3	3	8	3	Factory
11	2	2	6	2	Hard

Chart 3 - Upper DIP (SW1) Game Selection



DIP Switch 21 Setting	Game
00	Poker
01	Baseball
10	Soccer
11	Football

Chart 4 - Lower DIP (SW2) Games/Coins Settings



DIP Switch 54321 Setting	# of Games	# of Coins	DIP Switch 54321 Setting	# of Games	# of Coins
00001	Free Play		10001	3	8
00010	1	1	10010	4	1
00011	1	2	10011	4	3
00100	1	3	10100	4	5
00101	1	4	10101	5	1
00110	1	5	10110	5	2
00111	1	6	10111	5	3
01000	1	7	00000*	5	4
01001	1	8	11000	5	6
01010	2	1	11001	5	8
01011	2	3	11010	6	1
01100	2	5	11011	6	5
01101	3	1	11100	7	6
01110	3	2	11101	8	1
01111	3	4	11110	8	3
10000	3	5	11111	8	5

* Factory Setting

Chart 4 - Lower DIP (SW2) Games/Coins Settings

DIP Switch 54321 Setting	# of Games	# of Coins	DIP Switch 54321 Setting	# of Games	# of Coins
00001	Free Play		10001	3	3
00010	1	1	10010	4	1
00011	1	2	10011	4	3
00100	1	3	10100	4	5
00101	1	4	10101	5	1
00110	1	5	10110	5	2
00111	1	6	10111	5	3
01000	1	7	00000*	5	4
01001	1	8	11000	5	6
01010	2	1	11001	5	8
01011	2	3	11010	6	1
01100	2	5	11011	6	5
01101	3	1	11100	7	6
01110	3	2	11101	8	1
01111	3	4	11110	8	3
10000	3	5	11111	8	5
* Factory Setting					

GAME PLAY

Baseball - "Willy At The Bat"

A game consists of three innings per Credit per player. For one player, pressing the START button decreases the value of the CREDIT Display by one; for two players, the second pressing of the START button decreases the CREDIT display by another one, or a total of two.

Game play is similar to baseball:

- A. A SINGLE (Lower rollover switches) advances each runner one base;
- B. A DOUBLE (Left playfield hole) advances each runner two bases;
- C. A TRIPLE (Right playfield hole) advances each runner three bases;
- D. A HOME RUN (Top playfield hole) scores the number of runners on base and the batter;
- E. GRAND SLAM HOME RUN (3 runners plus the batter) lights the EXTRA INNING* lamp.
- F. DOUBLE PLAY (Rollover switch) scores an out for the batter and one runner at either first, second, or third base, in that order. Any other runners advance one base, including home (scoring a run), unless this play ends the inning. If no runners are on base, then only one out occurs.
- G. SACRIFICE (Rollover switch) scores an out for the batter, and advances the runner(s) one base, including home (scoring a run), unless this play ends the inning.
- H. STRIKEOUT (Rollover switches) does not advance any runner, and scores an out for the batter.
- I. WALK (Rollover switches) advances the batter to 1st Base, which may force other runner(s) to advance one base.

Scoring occurs as soon as each runner crosses home plate; each Player's Display maintains a running total of the team's score.

Beating or tying the value shown in the BEAT THIS SCORE Display lights the WINNER lamp*.

*Operator-Selected Setting:

Lighting the EXTRA INNING lamp provides, depending on the Lower DIP switch (SW2) unit setting of switch 6, either:

Setting: 0 Another inning for scoring.

Setting: 1 The feature is disabled.

Lighting the WINNER lamp provides, depending on the Lower DIP switch unit (SW2) setting of switch 8, either:

Setting: 0 An increase in the value of the CREDIT Display of 1 (+1).

Setting: 1 Issuance of a Token, by games equipped with a Token Dispenser. For a game without a Token Dispenser, a reward is left to the discretion of the game location.

Poker

A game consists of three hands per Credit per player; that is, the value of the CREDIT Display decreases by one for each pressing of the START button.

Each player "draws" five cards during each hand.

Game play is similar to the card game, Poker, as played using a 'wild' card. (The 'wild' card selection occurs when the START button is pressed, from a blinking series of cards (2 - 4 - 6 - 8 - 10, in the lower area of the playfield). The blinking ceases, and the selected 'wild' card's lamp glows steadily.) 'Wild' card play requires "drawing" the identical card using its rollover switch at the bottom of the playfield. When "drawn", the 'wild' card then blinks in the displayed hand (BEAT THIS SCORE Display), until the end of hand evaluation. (Up to five 'wild' cards may be "drawn".)

- A. Trash Hand. This hand contains no pair or higher scoring combination. Its value is 2 .
- B. One Pair. Two cards of identical value. Its score is 5 .
- C. Two Pair. Two different sets of pairs. Its score is 10 .
- D. "Small" (4-card) Straight. Four cards in sequence. Its score is 15 .
- E. Three of a Kind. Three cards of identical value. Its score is 20 .
- F. Straight. Five cards in sequence (except Ace-High Straight, described below). Its score is 30 .
- G. Full House. Three of a kind and one pair of a different value. Its score is 35.
- H. Four of a Kind. Four cards of identical value. Its score is 40 .
- I. Five of a Kind. Five cards of identical rank. Its score is 80 .
- J. Ace-High Straight. Ace - King - Queen - Jack - Ten. Its score is 100.

A Jack is "drawn" by Left hole entry. An Ace is "drawn" by Right hole entry. A Queen is "drawn" by Top hole entry, when that card is lighted on the playfield. A King is "drawn" by Top hole entry, when that card is lighted on the playfield.

A hole entry, while at least one (of three) lamps of the ADV. X group adjacent to that hole is lighted, advances the scoring multiplier to the next higher value (2X - 3X - 5X), as indicated by the lighted lamp. During hand evaluation at the end of the hand, this multiplier increases the score of the hand by the amount of the multiplier.

Scoring.

Hand evaluation and scoring occur after the fifth card is "drawn". Processing of 'wild' cards enables them to attain their maximum scoring value. The value of the player's hand is then multiplied by any applicable (lighted) scoring multiplier lamp value, and that score is added to the previous total shown in the Player Display.

A hand ranking as a Straight (or higher) lights the EXTRA HAND* lamp.

Beating or tying the value shown in the BEAT THIS SCORE Display lights the WINNER lamp*.

Poker (Continued)

*Operator-Selected Setting:

Lighting the EXTRA HAND lamp provides, depending on the Lower DIP switch (SW2) unit setting of switch 6, either:

Setting: 0 Another hand for scoring.

Setting: 1 The feature is disabled.

Lighting the WINNER lamp provides, depending on the Lower DIP switch unit (SW2) setting of switch 8, either:

Setting: 0 An increase in the value of the CREDIT Display of 1 (+1).

Setting: 1 Issuance of a Token, by games equipped with a Token Dispenser. For a game without a Token Dispenser, a reward is left to the discretion of the game location.

Soccer - "Willy's Cup"

A game consists of eight possessions per Credit per player. For one player, pressing the START button decreases the value of the CREDIT Display by one; for two players, the second pressing of the START button decreases the CREDIT display by another one, or a total of two.

Game Play.

The goalie is represented by the group of three lighted lamps moving across the goal cage mouth.

Hole entry (Top, Left, or Right) scores a 1-point goal, EXCEPT when the entry occurs while at least two (of three) lamps adjacent to that hole are lighted; that is, the goalie "blocks" the goal shot.

Top hole entry scores a goal and lights the EXTRA POSSESSION lamp*, UNLESS the goalie "blocks" the goal shot.

Other plays (via Rollover switches) and their games results:

- A. An OUT OF BOUNDS shot ends a possession.
- B. Shooting a PASS shot lights the SCORE W/L (when lighted) lamp on the opposite side of the playfield, changing its two related bottom lanes to goal-scoring lanes.
- C. Shooting a lighted SCORE W/L lane scores one goal.
- D. Shooting a FREEZE THE GOALIE shot stops the goalie (moving 3-lamp group at goal mouth) movement at the current location when the shot is made, for the next shot ONLY.
- E. Shooting a DRIBBLE THE GOALIE shot eliminates the goalie, for the next shot ONLY.

Scoring occurs with each scoring play; each Player's Display maintains a running total of the points.

Beating or tying the value shown in the BEAT THIS SCORE Display lights the WINNER lamp*.

Soccer "Willy's Cup" (Continued)

*Operator-Selected Setting:

Lighting the EXTRA POSSESSION lamp provides, depending on the Lower DIP switch (SW2) unit setting of switch 6, either:

Setting: 0 Another possession for scoring.

Setting: 1 The feature is disabled.

Lighting the WINNER lamp provides, depending on the Lower DIP switch unit (SW2) setting of switch 3, either:

Setting: 0 An increase in the value of the CREDIT Display of 1 (+1).

Setting: 1 Issuance of a Token, by games equipped with a Token Dispenser. For a game without a Token Dispenser, the reward is left to the discretion of the game location.

Football - "Pigskin 2010"

A 1-Credit game consists of three possessions apiece for two players. A 2-Credit game consists of six possessions apiece for two players, and a 50% increase in the BEAT THIS SCORE amount over the 1-Credit game.

Game play is similar to football: Each Player (team) has four downs (ball shots) per possession to reach the goal line, scoring either a touchdown or field goal; otherwise, the BALL DIRECTION lamps reverse their lighted direction and the opposing Player (team) has a similar play-for-a-score in four downs. The first possession begins on the 20-yard line. A lighted lamp on the green gridiron indicates the team position, after completion of each down.

A Hole Entry play is good for long yardage gain (60 yards - Top hole; 30 yards - Left hole; 40 yards - Right hole).

Other yardage-gaining or scoring plays (via lower Rollover switches) are:

- A. Two 20-yard Run lanes or one 20-yard Pass lane;
- B. Two 10-yard Run lanes;
- C. One 30-yard Pass lane;
- D. One 40-yard Pass lane;
- E. On 4th Down, four Field Goal (3 points) scoring lanes.

After a Touchdown, shooting the ball through the Top Hole scores a 2-point conversion; shooting the ball through the goal posts at the bottom of the playfield (five center lanes) scores a 1-point conversion.

Yardage-losing and penalty plays (via Rollover switches) include:

- A. A SACK, which loses 20 yards. A SACK, which produces a SAFETY (yardage loss into that Player's own end zone) scores 2 points for the opposing team, and requires the player to kick to the opposing team.
- B. An INTERCEPT, which ends one team's possession, and changes lighting of the BALL DIRECTION lamps, allowing the opposing team to begin play at the point of the interception.

Football "Pigskin 2010" (Continued)

After conversion or 4th down Field Goal, the scoring player must kick the ball to the opposing player.

During Kickoff after score, Top Hole entry scores touchdown for kicking team. A Leftmost bottom lane shot runs the ball back to midfield (50-yard line) for the kicking team. A kickoff through any other bottom lane results in opposing team's possession on the 20-yard line. A kickoff through either the Left or Right Hole results in opposing team's possession on the 10-yard line.

Scoring occurs with each scoring play; each Player's Display maintains a running total of the points.

Beating or tying the value shown in the BEAT THIS SCORE Display lights the WINNER lamp*.

*Operator-Selected Setting:

Lighting the WINNER lamp provides, depending on the Lower DIP switch unit (SW2) setting of switch 8, either:

- Setting: 0 An increase in the value of the CREDIT Display of 1 (+1).
- Setting: 1 Issuance of a Token, by games equipped with a token dispenser, For a games without a Token Dispense, the reward is left to the discretion of the game location.

MAINTENANCE AND TROUBLESHOOTING

Maintaining the 4-IN-1 Game

The following are recommendations to keep your 4-IN-1 Game earning:

1. KEEP THE GAME CLEAN! Wipe the lower ball return ramp to remove accumulated dirt, then clean the ball. Wipe each playfield with a clean, damp rag before installing it in the game. Clean the playfield glass regularly to keep the game attractive.
2. Replace burned-out bulbs promptly. An unlighted lamp can affect game play, either by causing the playfield to be too dim or by not showing a scoring play. A player does not want to lose a scoring opportunity because its lamp was burned out. Use #44 or #555 bulbs, as applicable, for replacements.
3. When closing the playfield and front panel doors, carefully ensure that none of the game's wiring cables interferes with the closure, or becomes entangled in the game mechanism.
4. Verify that the ball gate/plunger extends sufficiently through the playfield to block the ball from the ball shooter hole during the Game Over or Attract mode.
5. Check the lane rollover switches regularly to ensure that they operate freely, and are not rubbing on the playfield or the playfield plastic overlay.

TROUBLESHOOTING

System-10 CPU and Other Major Electronic Components.

Evidence of a problem with the System-10 CPU or other major components is provided by an LED (Light Emitting Diode) indicator on the System-10 Circuit Board. The LED indicator glows steadily, when no problems are affecting the major components (CPU, Sound Chip, ROM or RAM Memory) of the System-10 circuitry.

When a problem does exist involving one of these integrated circuits (ICs), the LED indicator begins to blink a certain number of times, darkens for a pause, and then displays another series of blinks. Accompanying the LED indicator's blinking display are a series of "beeps" for most problems. The LED Problem Code Table lists the problem code display and the IC related to that problem display.

LED Problem Code Table

Display		Related IC
Blinks	Beeps*	
2	2	RAM Chip, U9
3	3	EPROM Chip, U10
4	4	Sound Chip, U13
5	5	PIA Chip, U12
* - A Sound Chip problem may result in loss of all sounds.		

Testing of Game Displays, Sounds, Playfield Lights, and Switches.

A major feature of the 4-IN-1 Game is the ability to test all its circuitry and components. This testing greatly simplifies troubleshooting and problem diagnosis. Two modes of testing are available--automatic and manual.

To test operation of the 4-IN-1 Game requires use of the Auto-Up/Manual-Down switch (SW 5) and the Advance switch (SW4). These switches are near the center on the upper edge of the System-10 Circuit Board. Opening the front panel (door) provides access to these switches.

AUTOMATIC TESTING.

To activate the automatic testing mode, turn on the game. (With the door open, the operator must pull the Interlock switch forward.) Press the plunger of the Advance switch (SW4) on the System-10 Circuit Board once. The test cycle includes:

1. Display Test. All numerical displays show all 0s, followed by all 1s, 2s, etc., through 9s, with the decimal point showing on all odd digits. Upon completion of this portion of display testing, the test changes to a 'walking 8.' (digit 8 and decimal point), beginning at the leftmost numerical display and proceeding toward the rightmost display. The 'walking 8.' test checks all segments of each display element, enabling the operator to detect visually any faulty display elements.

TROUBLESHOOTING (Continued)

2. Sound Test. Following the display test, a 0 appears in the CREDIT Display, then a blank, and the characters 01, accompanied by a game sound. The 01 changes to 02, with another sound being heard. This sequence proceeds through 08; each numerical change accompanies a different game sound.
3. Playfield Lamps Test. Next, a 1 appears in the CREDIT Display, and all playfield lamps begin blinking in unison. After approximately a minute and a half, this test ends. (The number of blinks is 123.)
4. Solenoid Test. A 2 now appears in the CREDIT Display, and a thump indicates pulsing of the ball gate/plunger solenoid. The identifying number for this test is 01. (Test steps 02, 03, and 04 also appear, but no other solenoids require testing, so these steps can be disregarded.)

Switch testing cannot occur during the automatic test cycle. The switches for the holes and lower lanes all require manual actuation.

MANUAL TESTING.

To activate the Manual Testing mode, turn on the game, as before. Press the Auto-Up/Manual-Down switch (SW5) to lock it in the Manual-Down setting, and press the Advance switch (SW4) once to start the Display test.

Display Test.

1. Each display should indicate all 0s.
2. Press and release the Auto-Up/Manual-Down switch to Auto-Up setting. Each display should sequence from all 0s through all 9s. Decimal point segments should come on when the odd digits are displayed.
3. Next, the 'walking 8.' character should proceed from left to right across all the displays.
4. To stop the Display Test cycle, use Manual-Down. Press Advance to step through the test one number at a time. Use Auto-Up to resume cycling.

Sound Test.

1. (From Display Test) Use Auto-Up, and press Advance once. The Sound Test indicator 0 appears in the CREDIT Display, and the test step display begins sequencing from 01 through 03. A different sound should be heard for each number.
2. To continuously pulse a single sound, use Manual-Down. Press Advance to step through the sounds one at a time. Use Auto-Up to resume cycling.

Lamp Test.

1. (From Sound Test) Use Auto-Up, and press Advance to begin the Lamp Test. The Lamp Test indicator 1 appears in the CREDIT Display, and all playfield lamps begin blinking.
2. Use Manual-Down, and press Advance once. The blinking of all lamps stops, and one lamp lights alone. A test step display of 01 also appears, to identify the individual lamp.

TROUBLESHOOTING (Continued)

MANUAL TESTING. (Continued)

Lamp Test. (Continued)

3. Press Advance again, and another lamp lights, with its identifier (02) also displayed. Pressing and holding Advance down allows lighting of the lamps to proceed in rapid order.
4. Verify for each lamp identifier (00 - 32) that a playfield lamp lights. Press Advance singly, or press and hold it to cycle through all lamps.

Solenoid Test.

1. (From Lamp Test) Use Auto-Up, and press Advance to begin the Solenoid Test. The Solenoid Test indicator 2 appears in the CREDIT Display, with the numbers 01 through 04 identifying the test steps. Only step 01 can test a solenoid (the ball gate/plunger).
2. Use Manual-Down to stop the test step cycling, as necessary.

Switch Test.

1. (From Solenoid Test) Use Auto-Up, and press Advance to begin the Switch Test. The Switch Test indicator of 3 appears in the CREDIT Display. Each switch requires manual actuation for this test, at which time its identifier (00 - 15) appears on a display. The following table shows the switch identifier and its location.

Switch Identifier	Switch Location	Switch Identifier	Switch Location
00	Coin Slot	08	4th (from left) Lane
01	START	09	5th (from left) Lane
02	Top Hole	10	6th (from left) Lane
03	Left Hole	11	7th (from left) Lane
04	Right Hole	12	8th (from left) Lane
05	Leftmost Lane	13	9th (from left) Lane
06	2nd (from left) Lane	14	Slam Tilt
07	3rd (from left) Lane	15	Plumb Bob Tilt

2. Upon completion of the testing, return to Game Mode operation by pressing Advance once. The game briefly turns all displays and lamps off and then reactivates itself in the Attract Mode.

Warnings & Notices

WARNING

FOR SAFETY AND RELIABILITY, WILLIAMS does not recommend or authorize any substitute parts or modifications of WILLIAMS equipment.

USE OF NON-WILLIAMS PARTS and modifications of game circuitry may adversely affect game play, or may cause injuries.

SUBSTITUTE PARTS OR EQUIPMENT MODIFICATIONS may void FCC-type acceptance.

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

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

WARNING

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

WARNING

FCC STICKER. Check the back of your game to see that an FCC-certification sticker was attached to your game at the factory.

All games that leave WILLIAMS' plants have been tested and found to comply with FCC Rules. As the sticker is proof of this fact, legal repercussions to the owner and distributor of the game may result if the sticker is missing.

If you receive any WILLIAMS game (manufactured after December 1982) that has no FCC sticker, call WILLIAMS for advice or write us a note on your game registration card. Be sure the card bears your game's serial number.

RF INTERFERENCE NOTICE

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

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

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For service...

Call your authorized WILLIAMS distributor

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