

WILLIAMS

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PENNANT FEVER

SERVICE MANUAL

For service...

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WILLIAMS
Electronics, Inc.
3401 N. California Ave.
Chicago, IL 60618

ROM Summary

<u>IC</u>	<u>DESCRIPTION</u>	<u>TYPE</u>	<u>NUMBER</u>	<u>BOARD</u>	<u>PART NO.</u>
Game ROM 1	ROM 4Kx8	2732	IC19	CPU	A-5343-10698
Game ROM 2	ROM 4Kx8	2764	IC20	CPU	A-5343-10699
Sound/Speech ROM	ROM 16Kx8	27128	IC49	CPU	A-5343-10700

Control Locations

THE ON-OFF SWITCH is on the bottom of the cabinet near the right-front leg as you face the game.

THE VOLUME CONTROL is accessible through the coin door on the left cabinet-wall.

DIAGNOSTIC SWITCHES. ADVANCE, AUTO-UP/MANUAL-DOWN, and HIGH-SCORE RESET switches are located on the back of the coin door. Refer to Game-Adjustment Procedure and Diagnostic Procedures for operation.

THE MEMORY-PROTECT SWITCH must be open to clear bookkeeping totals and to make game adjustments. This switch is on the inside of the coin-door frame. It automatically opens when the coin door opens.

THE CPU DIAGNOSTIC-SWITCH operates the Memory-Chip Test explained in Diagnostic Procedures. This switch is on one edge of the CPU Board near a microprocessor (large socketed) chip.

THE SOUND DIAGNOSTIC-SWITCH is on the CPU Board near the batteries. This switch is used to initiate the Sound Self-Test. Refer to Diagnostic Procedures.

Game Operation

GAME-OVER MODE. Turn the game ON. The INNINGS and OUTS windows show 00 0, the VISITORS and HOME windows flash the High-Score-To-Date and the GAME-OVER lamp lights. Playfield-lamps cycle in Attract Mode.

CREDIT POSTING. Insert coins. A sound is produced and the number of credits is displayed. If maximum credits* are exceeded by coin or High-Score-To-Date, credits are posted correctly. But the coin lockout de-energizes until the remaining credits are below the maximum. No credits may be won (and coins are rejected) while the coin lockout is de-energized.

GAME START. Push the CREDIT button. A start-up tune is played. The scoreboard reads as follows: VISITORS-0; HOME-blank for 1-player games and 0 for 2-player games; INNINGS-1; STRIKES-0; OUTS-0. The 0 in the VISITORS window flashes until the first scoring-switch is made. Additional players may enter the game by pushing the CREDIT button before the second inning.

END OF GAME. Match digits* appear in the OUTS window. Credit is awarded for a match. Match, High-Score-To-Date, and Game-Over sounds are made as appropriate. One replay is awarded for each score you beat on the scoreboard.

*indicates adjustable feature

GAME PLAY

Upper deck awards home run.
Double score on home run with arrow lit.
One pennant awarded with grand-slam home run when lit.
Consecutive home runs increase home-run multiplier.
2nd player selects pitch.
Extra inning after 20 runs.*
Ten pennants award replay.*

Power Turn-On And Game Setup

WARNING

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, and DO NOT cut off the ground pin.

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 are certified. 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.

WARNING

PLAYFIELD GLASS. The playfield glass used on PENNANT FEVER baseball has unique dimensions: 22-7/8 x 40-1/8 x 3/16". This is tempered glass. For safety's sake, NEVER use window glass.

ENTERING GAME-OVER MODE. With the coin door closed, plug the game in and turn it ON. The game should come on in Game-Over Mode.

1. If the game comes on in the Bookkeeping Mode (Bottom display showing 04 and 00, top display showing the game-identification number) turn the game OFF and ON again.
 - A. If the game now comes on in Game-Over Mode, bookkeeping totals have been reset to zero.
 - B. If the game still comes on in Bookkeeping Mode, open the coin door and turn the game OFF and ON twice. (This is an indication of batteries being removed with the power OFF or of batteries coming loose during shipment. A game without battery power will revert to factory settings.) Any changes from factory settings must be re-entered using procedures from this booklet.
2. If the game still comes on in Bookkeeping Mode, troubleshoot the game.

*indicates adjustable feature

Bookkeeping Mode
(Functions 01-17)

1. Set the AUTO-UP/MANUAL-DOWN switch to AUTO-UP and press ADVANCE. Test 04 and function 00 are indicated in the bottom CREDITS and INNINGS display, with the game-identification number in the top VISITORS and HOME display.
2. Press ADVANCE to display desired functions on the bottom display (See the Bookkeeping Table below). Now record the corresponding totals (number of coins and total paid-credits) from the top display. (To review a total that has been advanced past, use MANUAL-DOWN and press ADVANCE).
3. Use MANUAL-DOWN and press ADVANCE to display function 50 in the bottom display.
4. Returning to Game-Over Mode:
 - A. Use AUTO-UP and press ADVANCE.
 - B. OR: To zero bookkeeping totals and return to Game-Over Mode, (1) use AUTO-UP, (2) press the credit button to display 35 in the bottom display and (3) press ADVANCE.

BOOKKEEPING TABLE

FUNCTION IN BOTTOM DISPLAY	FUNCTION DESCRIPTION	VALUE OF FUNCTION IN TOP DISPLAY*
00 4	GAME I.D.	526 1
01 4	COINS, LEFT CHUTE (closest to coin door hinge)	47
02 4	COINS, CENTER CHUTE	26
03 4	COINS, RIGHT CHUTE	100
04 4	TOTAL PAID-CREDITS	173
05 4	PENNANT CREDITS	9
06 4	REPLAY-SCORE CREDITS	4
07 4	MATCH CREDITS	2
08 4*	(1) TOTAL CREDITS; (2) FREE CREDITS; (3) % FREE CREDITS	1 151; 2 15; 3 10
09 4	TOTAL EXTRA INNINGS	0
10 4	INNING TIME IN MINUTES	03 86
11 4	TOTAL INNINGS PLAYED	0453
12 4	CURRENT HIGH-SCORE-TO-DATE	50
13 4*	BACKUP HIGH-SCORE-TO-DATE (CREDITS AWARDED)	50 0006
14 4*	REPLAY 1 SCORE (TIMES EXCEEDED)	0004

*NOTES

1. Values shown for functions 1 through 14 are merely examples.
2. FUNCTION 8: Three values alternate in the top display.
3. FUNCTIONS 13 & 14: The value in parentheses alternates in the bottom display.

Game-Adjustment Procedure
(Functions 13-41)

Coin door must be open to change settings

1. Use AUTO-UP and press ADVANCE. Test 04 and function 00 are indicated in the bottom CREDITS and INNINGS display, with the game-identification number in the top VISITORS and HOME display.
2. To raise the function number in the bottom display, use AUTO-UP and push ADVANCE. To lower the function number, use MANUAL-DOWN and push ADVANCE.
3. With the desired function indicated in the bottom display, raise the value in the top display by using AUTO-UP and pressing the credit button. Reduce the value by using MANUAL-DOWN and pressing the credit button. The value left in the top display is the new setting. Refer to the Game-Adjustment Table and the Pricing Table.
4. ADVANCE to the next function and then repeat the previous step until all adjustments have been made.
5. Press ADVANCE until function 50 is indicated in the bottom display. From function 50 you can return to Game-Over Mode or restore factory settings. Perform either of the following steps as desired.
6. To return to Game-Over Mode use AUTO-UP and press ADVANCE.
7. To restore factory settings and zero bookkeeping totals:
 - A. Using AUTO-UP press the CREDIT button until 45 is indicated in the top display.
 - B. Press ADVANCE. The game returns to Test 04, function 00.
 - C. Use MANUAL-DOWN and press ADVANCE to indicate function 50.
 - D. Use AUTO-UP and press ADVANCE.

Resetting High-Score-To-Date

1. Using the GAME-ADJUSTMENT PROCEDURE above, set function 13 to the desired reset-value.
2. In Game-Over Mode, press HIGH-SCORE RESET until scores come up on the display.

Factory Bookkeeping-Totals
(Functions 42-49)

The factory bookkeeping-functions are not assigned.

Game-Adjustment Table

<u>FUNCTION</u>	<u>DESCRIPTION</u>	<u>FACTORY SETTING</u>
13	BACKUP HIGH-SCORE-TO-DATE	50
14	FIRST REPLAY-SCORE (AWARD 1 CREDIT)	30
15	SECOND REPLAY-SCORE (NONE)	00
16	THIRD REPLAY-SCORE (NONE)	00
17	FOURTH REPLAY-SCORE (NONE)	00
18	MAXIMUM CREDITS	30
19	STANDARD AND CUSTOM PRICING-CONTROL (STANDARD)	00
20	LEFT COIN-SLOT MULTIPLIER	01
21	CENTER COIN-SLOT MULTIPLIER	01
22	RIGHT COIN-SLOT MULTIPLIER	01
23	COIN UNITS REQUIRED FOR CREDIT	00
24	COIN-UNITS BONUS-POINT	00
25	MINIMUM COIN UNITS	00
26	MATCH : (MATCH ON = 00), MATCH OFF = 01)	00
27	10 PENNANTS : (AWARD CREDIT = 00)	00
	AWARD EXTRA INNING = 01	
28	REPLAY : (AWARDS CREDIT = 00)	
	AWARDS EXTRA INNING = 01	
29	MAXIMUM PLUMB-TILTS (INCLUDING WARNINGS)	03
30	NUMBER OF INNINGS	03
31	GAME-ADJUST #1	01
	NUMBER OF TIE-SCORE EXTRA INNINGS	
	00 NO EXTRA INNINGS	
	01 THROUGH 99 = 01 THROUGH 99 EXTRA INNINGS	
32	GAME-ADJUST #2	01
	BELL: DURING FULFILLED PENNANTS	
	00 : BELL OFF	
	01 : BELL ON	
33	GAME-ADJUST #3	03
	FOR 10th-PENNANT CREDITS	
	0-3	(1 FOR N.Y.)
34	GAME-ADJUST #4 FOR ATTRACT-MODE MUSIC	01
	00 : OFF	
	01 : ON	
35-49	NOT USED	

NOTES

1. Function 13 may be set to any multiple of 10 points.
2. Setting functions 14 through 17 (replay scores) to zero disables the replay-score point.

Pricing Table

o indicates standard settings by adjusting ONLY function 19

Coin-Door Mechanism	Games/Price	FUNCTION						
		19	20	21	22	23	24	25
Twin-Quarter	o1/25¢, 4/\$1	1	1	4	1	1	0	0
or	o1/50¢, 3/\$1, 6/\$2	3	1	4	1	2	4	0
Quarter,	o1/50¢, 2/75¢, 3/4x25¢, 4/\$1	5	3	15	3	4	15	0
Dollar,	2/25¢, 8/\$1	0	2	8	2	1	0	0
Quarter	1/25¢, 3/50¢, 6/\$1	0	1	4	1	1	2	0
	1/25¢, 5/\$1	0	1	4	1	1	4	0
	1/25¢	0	1	4	1	1	0	0
	1/25¢, 3/50¢, 6/4x25¢, 7/\$1	0	3	14	3	2	0	0
	1/50¢	0	1	4	1	2	0	0
1DM, 5DM, 2DM	o1/1DM, 3/2DM, 10/5DM	2	9	45	18	5	45	0
	2/1DM, 5/2DM, 14/5DM	0	13	65	26	5	65	0
20¢, 50¢	1/20¢, 3/50¢	0	6	0	15	5	0	0
1F, 10F, 5F	o1/2F, 3/5F only, 8/10F only	4	1	16	6	2	0	0
25-Cent,	o1/25¢, 4/1G	6	1	0	4	1	0	0
1-Guilder	1/25¢, 5/1G	0	1	0	4	1	4	0
5-Franc,	o1/5F, 2/10F	7	1	0	2	1	0	0
10-Franc	o1/10F	8	1	0	2	2	0	0
1-Franc or	1/1F, 3/2F	0	1	1	1	1	2	0
Twin 1-Franc	1/1F	0	1	1	1	1	0	0
Twin 2-Franc	o1/2F	3	1	4	1	1	0	0
10F, 20F	o1/10F, 2/20F	7	1	0	2	1	0	0
Twin 100-Yen	2/100Y	0	2	0	2	1	0	0
100L, 200L	o1/200 Lire	8	1	0	2	2	0	0
Twin 1-Sucre	1/3S, 2/5S	0	2	0	2	5	0	0
Any	Free Play	set function 18 to 0 for free play						

Game Pricing

PRICING MADE EASY. Function 19 allows a shorthand method of setting the pricing functions. If a number from one to eight is entered into function 19, a corresponding standard setting (shown in the pricing table above) will be entered into the game. The rest of the pricing functions are automatically set for that standard.

FOR CUSTOM SETTINGS first set function 19 to zero. Then set the remaining values according to the pricing table.

THE GAMES : PRICE RATIO is equivalent to the ratio X : VS, where:

X = COIN-SLOT MULTIPLIER (the number at function 20, 21 or 22)

V = COIN VALUE

S = COIN UNITS REQUIRED FOR CREDIT (the number at function 23)

For example at factory settings with quarter chutes the variables produce 1 : 25x1 or one starting-game for 25¢.

Diagnostic Procedures

DISPLAY TEST

1. Remove the backglass.
2. Use MANUAL-DOWN and press ADVANCE. The displays should indicate all 0's.
3. Use AUTO-UP. The displays should sequence from all 0's through all 9's. Four comma segments should come on when the odd digits are displayed.
4. To stop cycling, use MANUAL-DOWN. Press ADVANCE to step through the tests one number at a time. Use AUTO-UP to resume cycling.

SOUND/SPEECH TEST

1. (From Display Test) Use AUTO-UP and press ADVANCE. Test 00 should be indicated on the left side of the bottom display, and the right side of the same display should sequence from 00 through 07. A different sound should be produced for each number.
2. To continuously pulse a single sound, use MANUAL-DOWN. Press ADVANCE to sequence through sounds one at a time. Use AUTO-UP to resume sequencing.
3. Test Sounds/Speech:
 - 0 organ: Charge theme
 - 1 "Charge" (speech)
 - 2 organ music (William Tell Overture or Lone Ranger theme)
 - 3 "You're out" (speech)
 - 4 booing (speech)
 - 5 "Strike one" (speech)
 - 6 "Strike two" (speech)
 - 7 "All right!" (speech)

LAMP TEST

1. Refer to the Lamp-Matrix Table for lamp numbers and wiring. CPU-Board connections at jacks 1J6 (columns) and 1J7 (rows) are also shown there.
2. (From Sound Test) Use AUTO-UP and press ADVANCE. Test 01 should be indicated in the bottom display and all feature-lamps should flash.

SOLENOID TEST

1. Refer to the Solenoid Table for solenoid numbers and wiring. CPU-Board connections at plugs 1P11 and 1P12 are also shown there.
2. (From Lamp Test) Use AUTO-UP and press ADVANCE. Test 02 should be indicated on the left side of the bottom display. The right side of the same display sequences from 01 through 8. Corresponding solenoids 01 through 08 are pulsed.
3. To continuously pulse a single solenoid use MANUAL-DOWN. Press ADVANCE to sequence through the solenoids one at a time. Use AUTO-UP to resume sequencing.

SWITCH TEST

1. Refer to the Switch-Matrix Table for switch numbers and wiring. CPU-Board connections at jacks 1J8 (columns) and 1J9 (rows) are also shown there.
2. (From Solenoid Test) Use AUTO-UP and press ADVANCE. Test 03 should be indicated on the left side of the bottom display with the switch numbers sequencing on the right side of the same display. As a switch number is displayed a sound is produced. As a switch is opened, its number is removed from the sequence. When all switches are open, the right side of the bottom display is blank and the sounds stop.
3. HOLD DOWN EACH SWITCH so its number is shown at least twice. A sound is produced and a switch number is momentarily indicated on the bottom display. If two switches in a row are indicated with only one switch closed, check for a short between column wires. For multiple indications check the column wire for a short to ground. If two switches in a column are indicated with only one switch closed, check for a short between row wires.
4. To determine whether the problem is in the playfield or the CPU Board, remove connectors 1P8 and 1P9 from the CPU Board. Now enter the Switch Test. Use a jumper wire to simulate switch operation: For example, on the Switch-Matrix Table notice that placing a jumper between 1J9-pin 1 and 1J8-pin 2 should produce an indication of switch 09 being closed.

Auto-Cycle Mode

1. The Auto-Cycle Mode permits you to check intermittent problems in the playfield, backbox, cabinet and CPU Board.
2. Set function 50 of Test 04 (Bookkeeping Mode) to 15.
3. Press ADVANCE to start the Auto-Cycle Mode. This mode repeatedly sequences through the Display Test, Sound Test (00), Lamp Test (01), and Solenoid test (02).
4. This sequence is repeated until the game is turned off and on.

Memory-Chip Test

Press the DIAGNOSTIC button on the CPU Board. The following indications are provided.

- 0-test passed (game returns to Game-Over Mode)
- 1-IC18 CMOS RAM, memory-protect circuit faulty or CPU-Board lockup
- 2-IC20 Game ROM 2 faulty
- 3-IC20 Game ROM 2 faulty
- 4-IC19 Game ROM 1 faulty
- 5-Coin-door closed, memory-protect circuit faulty, or IC18 CMOS RAM faulty
- No indication-IC 20 Game ROM 2 faulty

Note that "0" remaining after power turn-on indicates CPU-Board lockup.

Sound-Board Self-Test

1. PRESS THE DIAGNOSTIC BUTTON SW3 on the CPU Board. Several electronic sounds should be produced. This sequence of sounds is repeated until the game is turned OFF and back ON.
2. NO SOUND IN DIAGNOSTIC TEST (but sounds are present in the Self Test): Check the sound-select inputs (pins 2 through 9 of IC 13) to see if they pulse during Test 00.
3. NO SOUND: Check the -12V-supply voltage on the CPU Board. If this voltage is low (or AC ripple seems too high)...
 - (A) check the gray and gray-green transformer secondary wires for 18.7VAC;
 - (B) check the -12V filter-capacitor C7 on the CPU Board;
 - (C) check for excessive AC (over 0.1 VAC) across C7 on the CPU Board.
4. STILL NO SOUND: Turn the volume control all the way up. With the game turned on, momentarily place a powered-up AC soldering-pencil on the center tap of the volume control. DO NOT use a soldering iron of over 40 watts. Cordless models will NOT work here.
 - (A) If you hear a low hum, the power-amplifier chip (TDA2002), volume control and speaker are okay.
 - (B) If you don't hear a hum, try the test again with the volume control turned halfway up.

Solenoid Table

SOL. NO.	FUNCTION	WIRE COLOR	CONNECTIONS		DRIVER TRANS.	SOLENOID PART NO.
			CPU BOARD	PLAYFIELD		
01	Fast/Slow Coil	GRY-BRN	1P12-1	8P3-1	Q47	B-26-800
02	Bell	GRY-RED	1P12-3	8P3-2	Q48	SM-29-1000-DC
03	General Illumination	GRY-ORN	1P12-4	8P3-3	Q49	5580-09555
04	Coin-Lockout Coil	GRY-YEL	1P12-5	8P3-4	Q50	SM-35-4000-DC
05	Magnet Relay	BRN-RED	1P11-1	8P3-5	Q39	SZ-31-2000-DC
06	Pitch Relay	BRN-BLK	1P11-3	8P3-6	Q40	826-800
07	Bat Relay	BRN-ORN	1P11-5	8P3-7	Q41	SZ-31-2000-DC
08	Not Used	BRN-YEL	1P11-8	8P3-8	Q42	-
	Bat Coil*				-	H23-870
	Magnet Coil				-	A208702

*NOTES

1. BAT COIL. This game requires a 110-volt bat coil. For proper operation, the replacement part shown MUST be used.
2. Typical wiring for solenoids follows.
2. Solenoid 03 has a Coinco part-number.

Lamp-Matrix Table

ROW	COLUMN	1 YEL-BRN 1J6-1	2 YEL-RED 1J6-2	3 YEL-ORN 1J6-3	4 YEL-BLK 1J6-5	5 YEL-GRN 1J6-6	6 YEL-BLU 1J6-7	7 YEL-VIO 1J6-8	8 YEL-GRY 1J6-9
1J7-1	RED-BRN GAME-OVER	1	TO 1ST 1	TO 2ND 1	TO 3RD 1	HOME 1	PENNANT 1	9	NOT USED
1J7-2	RED-BLK MATCH	2	2	2	2	2	2	10	NOT USED
1J7-3	RED-ORN TILT	3	3	3	3	3	3	LF ARROW 51	NOT USED
1J7-4	RED-YEL HIGH-SCORE-TO-DATE	4	4	4	4	4	4	CF ARROW 52	NOT USED
1J7-6	RED-GRN 2X	5	5	5	5	5	5	RF ARROW 53	NOT USED
1J7-7	RED-BLU 3X	6	6	6	6	6	6	NOT USED 54	NOT USED
1J7-8	RED-VIO 4X	7	7	7	7	7	7	NOT USED 55	NOT USED
1J7-9	RED-GRY 5X	8	FIRST BASE 16	SECOND BASE 24	THIRD BASE 32	HOME PLATE 40	8	NOT USED 56	NOT USED 64

Switch-Matrix Table

ROW	COLUMN	1 GRN-BRN 1J8-1	2 GRN-RED 1J8-2	3 GRN-ORN 1J8-3	4 GRN-YEL 1J8-4	5 GRN-BLK 1J8-5	6 GRN-BLU 1J8-7	7 GRN-VIO 1J8-8	8 GRN-GRY 1J8-9
1J9-1	WHT-BRN PLUMB-BOB	1	STRIKE DRAIN 9	LEFT SINGLE 17	CENTER H.R. 25	NOT USED 33	NOT USED 41	NOT USED 49	NOT USED 57
1J9-3	WHT-RED BALL-ROLL	2	BAT SWING 10	LEFT OUT 18	RIGHT HOME RUN 26	NOT USED 34	NOT USED 42	NOT USED 50	NOT USED 58
1J9-4	WHT-ORN CREDIT BUTTON	3	PITCH FAST 11	LEFT DOUBLE 19	NOT USED 27	NOT USED 35	NOT USED 43	NOT USED 51	NOT USED 59
1J9-5	WHT-YEL LEFT COIN	4	PITCH CURVE 12	LEFT TRIPLE 20	NOT USED 28	NOT USED 36	NOT USED 44	NOT USED 52	NOT USED 60
1J9-6	WHT-GRN NOT USED	5	PITCH CHANGE UP 13	RIGHT DOUBLE 21	OUTSIDE CAM 29	NOT USED 37	NOT USED 45	NOT USED 53	NOT USED 61
1J9-7	WHT-BLU RIGHT COIN	6	NOT USED 14	RIGHT OUT 22	NOT USED 30	NOT USED 38	NOT USED 46	NOT USED 54	NOT USED 62
1J9-8	WHT-VIO SLAM TILT	7	OUT/FLD DRAIN 15	RIGHT SINGLE 23	NOT USED 31	NOT USED 39	NOT USED 47	NOT USED 55	NOT USED 63
1J9-9	WHT-GRY HIGH-SCORE-RESET	8	NOT USED 16	LEFT HOME RUN 24	NOT USED 32	NOT USED 40	NOT USED 48	NOT USED 56	NOT USED 64

Special Considerations When Replacing Circuitboards

CPU BOARD. A revision-level 8, D-9970 CPU Board must be used. Only jumpers W1, W3 through W7, W8, W11, W13 and W16 should be connected. Substitute W2 for W1 when a 6802 microprocessor is used instead of a 6808 microprocessor.

POWER-SUPPLY BOARD. Use the D-8345 board (equipped with relay).

DISPLAY BOARDS. Use the C-8363 board and 7-digit slave displays.

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.

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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 certified 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.

RF-INTERFERENCE NOTICE

CABLE PLACEMENT 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.

NOTICE

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