

16-549-101 P
18 March 1987



INSTRUCTION MANUAL

Williams 
ELECTRONICS GAMES, INC.

3401 N. California Avenue
Chicago, Illinois 60618



FLIPPERSPILL.COM

F-14 TOMCAT ROM and Jumper Table

Game	System 11A 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
PIN-BOT	-. A	5400-09150-00	A-5343-549-2	A-5343-549-1	A-5343-549-4	A-5343-549-3	5400-09150-00	W1, 2, 4, 5, 7, 8, 11, 12, 13, 14, 16, 17, and 18
TIC TAC STRIKE	-. A		Not Used	A-5343-1919-1	A-5343-1919-3	A-5343-1919-2		W1, 2, 4, 5, 7, 8, 11, 12, 13, 14, 16, 17, and 18
MILLIONAIRE	-. A		A-5343-555-2	A-5343-555-1	A-5343-555-4	A-5343-555-3		W1, 2, 4, 5, 7, 8, 11, 12, 13, 14, 16, 17, and 18
F-14 TOMCAT	-. A		A-5343-554-2	A-5343-554-1	A-5343-555-4	A-5343-554-3		W1, 2, 4, 5, 7, 8, 11, 12, 13, 14, 16, 17, and 18

F-14 TOMCAT Solenoid Table

Sol. No.	Function	Solenoid Type	Wire Color	Connections		Driver Trans.	Solenoid Part Number Flashlamp Type	
				CPU Bd.	Playfield/Cabinet		b - Backbox	p - Playfield
01A ³	Outhole	Switched	{Vio-Brn}	1P11-1	8P3-1 (to B1 on Diode Sw. Bd.)	Q33	AE-23-800-01	
01C ³	Flasher 1	Switched	{Blk-Brn}	(Gry-Brn)	8P3-2 (to B2 on Diode Sw. Bd.)	Q33	#89 flashlamps	2p
02A ³	Ball Trough Feeder	Switched	{Vio-Red}	1P11-3	8P3-2 (to B2 on Diode Sw. Bd.)	Q25	AE-23-800-03	
02C ³	Flasher 2	Switched	{Blk-Red}	(Gry-Red)	8P3-3 (to B3 on Diode Sw. Bd.)	Q25	#89 flashlamps	2p
03A ³	Ball Popper (Launch)	Switched	{Vio-Orn}	1P11-4	8P3-3 (to B3 on Diode Sw. Bd.)	Q32	AE-23-800-12 ⁴	
03C ³	Flasher 3	Switched	{Blk-Orn}	(Gry-Orn)	8P3-4 (to B4 on Diode Sw. Bd.)	Q32	#89 flashlamps	2p
04A ³	Spare (Not Used)	Switched	{Vio-Yel}	1P11-5	8P3-4 (to B4 on Diode Sw. Bd.)	Q24	#89 flashlamps	2p
04C ³	Flasher 4	Switched	{Blk-Yel}	(Gry-Yel)	8P3-5 (to B5 on Diode Sw. Bd.)	Q24	#89 flashlamps	2p
05A ³	Center Right Eject	Switched	{Vio-Grn}	1P11-6	8P3-5 (to B5 on Diode Sw. Bd.)	Q31	AE-23-800-11 ⁴	
05C ³	Flasher 5	Switched	{Blk-Grn}	(Gry-Grn)	8P3-6 (to B6 on Diode Sw. Bd.)	Q31	#89 flashlamps	2p
06A ³	Knocker	Switched	{Vio-Blu}	1P11-7	8P3-6 (to B6 on Diode Sw. Bd.)	Q23	AE-23-800-02	
06C ³	Flasher 6	Switched	{Blk-Blu}	(Gry-Blu)	8P3-7 (to B7 on Diode Sw. Bd.)	Q23	#89 flashlamps	2p
07A ³	Right Eject	Switched	{Vio-Blk}	1P11-8	8P3-7 (to B7 on Diode Sw. Bd.)	Q30	AE-23-800-11 ⁴	
07C ³	Flasher 7	Switched	{Blk-Vio}	(Gry-Vio)	8P3-8 (to B8 on Diode Sw. Bd.)	Q30	#89 flashlamps	2p
08A ³	Spare (Not Used)	Switched	{Vio-Gry}	1P11-9	8P3-8 (to B8 on Diode Sw. Bd.)	Q22	#89 flashlamps	2p
08C ³	Flasher 8	Switched	{Blk-Gry}	(Gry-Blk)	8P3-9	Q22	#89 flashlamps	3p
09	Flasher 9	Controlled	Brn-Blk	1P12-1	8P3-9	Q17	#89 flashlamps	2b, 1p
10	Center Left Eject	Controlled	Brn-Red	1P12-2	8P3-10	Q9	AE-23-800-11 ⁴	
11	General Illumination Relay	Controlled	Brn-Orn	1P12-4	3P7-1	Q16	5580-09555-01 ⁵	
12	Line Of Death Kickback	Controlled	Brn-Yel	1P12-5	8P3-12	Q8	AE-23-800-11 ⁴	
13	Rescue Kickback (left outlane)	Controlled	Brn-Grn	1P12-6	8P3-13	Q15	AE-23-800-11 ⁴	
14	Solenoid A/C Select Relay	Controlled	Brn-Blu	1P12-7	8P3-14	Q7	5580-09555-01 ⁴	
15	Flasher 10	Controlled	Brn-Vio	1P12-8	8P3-15	Q14	#89 flashlamps	2b, 1p
16	Rotating Beacons (backbox)	Controlled	Brn-Gry	1P12-9	8P3-16	Q6	#1683 & mtr14-7946 ⁴	
17	Left Kicker	Special #1	Blu-Brn	1P19-7	8P3-17	Q75	AE-23-800-03	
18	Right Kicker	Special #2	Blu-Red	1P19-4	8P3-18	Q71	AE-23-800-03	
19	Spare (Not Used)	Special #3	Blu-Orn	1P19-3	8P3-19	Q73		
20	Jet Bumper	Special #4	Blu-Yel	1P19-6	8P3-20	Q69	AE-23-800-03	
21	Upper Diverter - Launch Ramp	Special #5	Blu-Grn	1P19-8	8P3-21	Q77	AE-26-1500-02	
22	Lower Diverter - Launch Ramp	Special #6	Blu-Blk	1P19-9	8P3-22	Q79	AE-26-1500-02	
-	Upper Right Flipper	-	{Blk-Yel}	1P19-1	[7P1-14, 8P3-33]	-	FL11630-50VDC	
-	Right Flipper	-	{Orn-Vio}	1P19-1	7P1-15	-	FL11630-50VDC	
-	Upper Left Flipper	-	{Blk-Blu}	1P19-2	[7P1-16, 8P3-34] ²	-	FL11630-50VDC	
-	Left Flipper	-	{Orn-Gry}	1P19-2	[7P1-17, 8P3-31]	-	FL11630-50VDC	
-		-	{Blu-Gry}	1P19-2	7P1-18	-	FL11630-50VDC	
-		-		1P19-2	[7P1-19, 8P3-32] ²	-		

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" coils are pulsed, when Sol. 12 is de-energized; "C" coils are pulsed, with Sol. 12 energized. Wire colors in brackets are those from respective A and C terminals corresponding to the B terminal connection listed for the Diode Switching Board, which controls the device pulsing by Sol. 12. 4. Relay (p/n 5580-09555-01) is mounted on Relay Snubber Bd. p/n C-11232 or C-11232-2, or Relay Bd. p/n C-11232-1. 5. Relay is mounted on Power Supply Bd. D-8345 in the backbox.

F-14 TOMCAT 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	MULTI BALL (# of M. Ball Plays Achieved)	
30	BONUS X	
31	LANDING (# of Landings)	
32	KILLS (# of Kills)	
33	KILL LT XBALL (# of Ex. Balls lit by Kills)	
34	MULT LT XBALL (Ex. Balls lit by Multi-Balls)	
35	FLIGHT INS COL (# of times Flight Insurance was 'collected')	
36	LEFT DRAINS (# of times thru Left Drain lane)	
37	RIGHT DRAINS (# of times thru Right Drain lane)	
38	LINE OF DEATH	
39	H.S.RESET COUNTER	
40	AUT. PCT. DATA 1	
41	AUT. PCT. DATA 2	
42	AUT. PCT. DATA 3	
43	AUT. PCT. DATA 4	
44	AUT. PCT. DATA 5	

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.

F-14 TOMCAT Game Adjustment Table

Adjustment Item (Player 3)	Descriptive Phrases (Player 1 and 2 Displays)	Factory Setting (Player 4)
Ad 01	AUTO REPLAY (%) (or FIXED REPLAY SCORES) ¹	10 (%)
02	REPLAY START (or REPLAY LEVEL 1) ¹	1,400,000
03	REPLAY LEVELS (or REPLAY LEVEL 2) ¹	01
04	(REPLAY LEVEL 3) ¹	OFF
05	(REPLAY LEVEL 4) ¹	OFF
06	REPLAY AWARD	Credit
07	SPECIAL AWARD	Credit
08	MATCH FEATURE	7%
09	BALLS / GAME	03
10	TILT WARNING	03
11	MAXIMUM EX. BALL	04
12	MAXIMUM CREDITS	
13	HIGHEST SCORES	On
14	BACKUP HI. SCR1	4,000,000
15	BACKUP HI. SCR 2	3,800,000
16	BACKUP HI. SCR 3	3,600,000
17	BACKUP HI. SCR 4	3,400,000
18	HI. SCR1 CREDITS	03
19	HI. SCR2 CREDITS	01
20	HI. SCR3 CREDITS	01
21	HI. SCR4 CREDITS	01
22	H. S. RESET EVERY (6,000 PLAYS) ²	
23	FREE PLAY	NO
24	U.S.A. 1 COINAGE (1 COIN 1 PLAY) ^{2,3}	
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	TOMCAT MEMORY [YES = retained; NO = not retained]	YES
32	RESCUE TIMER [0 - 5; duration of Rescue period]	02
33	MLTIBAL MODE [0 - 3; lighting TOMCATs for Mul. Ball]	01
34	KILL MEMORY [YES = retained; NO = not retained]	YES
35	RESCUE INIT [ON = initially ON; OFF = initially OFF]	ON
36	SPECIAL TERNATE [YES = alternating SPL; NO = const. SPL]	YES
37	SPECIAL MEMORY	
38	EX. BALL MEMORY [YES = retained; NO = not retained]	YES
39	KILL SPOTS [0 = 0 lamps ON; 1 = 1 lamp ON; 2 = 2 ON]	00
40	INSUR THRESH [1 - 99 sec; or None]	30 sec

F-14 TOMCAT Game Adjustment Table (Continued)

Adjustment Item (Player 3)	Descriptive Phrases (Player 1 and 2 Displays)	Factory Setting (Player 4)
41	INSUR MINTIME [1 - 30 sec., or Untimed]	12 sec
42	LITE FL LANES [1 - 5; Bonus X value which lites flipper lanes]	02
43	BONMULT XTRABAL [10 = Off; 9=Lit at >8X; 8=Lit at 8X; 7=Lit at 7X]	08
44	KILL XTRABAL [0 at >7 kills; 1 at 7 kills]	01
45	CTR KIL SPOT TC [YES=Center Kill target spots TOMCAT, w/l; NO]	NO
46	ADJUST 16	00
47	ATTRACT SOUNDS [OFF - ON]	ON
48	ATTRACT BEACON [OFF - ON]	ON
49	CUSTOM MESSAGE ⁴	ON
50	SW. ALARM KNOCKER	NO
51	ENGLISH TEXT	
52	UNUSED ADJUST	00
53 ⁵	INSTALL GERMAN 1 ⁶	
54 ⁵	INSTALL GERMAN 2 ⁶	
55 ⁵	INSTALL GERMAN 3 ⁶	
56 ⁵	INSTALL GERMAN 4 ⁶	
57 ⁵	INSTALL GERMAN 5 ⁶	
58 ⁵	INSTALL GERMAN 6 ⁶	
59 ⁵	INSTALL ADDABAL	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	INSTALL FACTORY ⁷	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 to install their replay level scores. Turn off any replay score level by setting 00 as its value.
2. Phrase in parentheses is Factory Setting. Phrase appears in (player) 3 and 4 displays. Press Credit button to change setting of item 22, or 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 Game Adjustment text describing these items.
7. Approximates Ad 64, yet includes all factors listed in Factory Setting column, not just Ad 31 through 44 provided by Ad 64.

2 Two Lamps

F-14 TOMCAT Lamp-Matrix Table

Lamps - #44 Bulb, p/n 24-6549

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 RED-BRN 1J6-1	LITES LOCK ON 1	ALPHA KILL 9	1000 17	2X 25	T (lower left) 33	3 Target 41	T (upper left) 49	LOCK Top Ramp (red) 57
Q81 RED-BLK 1J6-2	LITES RELEASE 2	BRAVO KILL 10	2000 18	3X 26	O (lower left) 34	2 Target 42	O (upper left) 50	LOCK Middle Ramp (red) 58
Q82 RED-ORN 1J6-3	BLUE LITE SPECIAL 3	CHARLIE KILL 11	4000 19	4X 27	M (lower left) 35	1 Target 43	M (upper left) 51	LOCK Low Ramp (red) 59
Q83 RED-YEL 1J6-5	FLY AGAIN 4	DELTA KILL 12	8000 20	5X 28	T (lower right) 36	4 Target 44	T (upper right) 52	LANDING Top Ramp (blue) 60
Q84 RED-GRN 1J6-6	RESCUE (left center) 5	ECHO KILL 13	16000 21	6X 29	A (lower right) 37	5 Target 45	A (upper right) 53	LANDING Mid. Ramp (blue) 61
Q85 RED-BLU 1J6-7	KILL (center) 6	FOX KILL 14	32000 22	7X 30	C (lower right) 38	6 Target 46	C (upper right) 54	LANDING Low Ramp (blue) 62
Q86 RED-VIO 1J6-8	RESCUE (right center) 7	GOLF KILL 15	64000 23	8X 31	Flipper Lanes 2 39	RELEASE (Ball Popper) 47	BONUS X (Right Loop) 55	RIPOFF (Line of Death) 63
Q87 RED-GRY 1J6-9	RESCUE (left outlane) 8	FLIGHT INSURANCE 16	SPECIAL (left & right drain lanes) 24	BONUS X (Left Loop) 32	LANDING (Ball Popper) 40	LOCK ON (Ball Popper) 48	Spinner 2000 56	EX. BALL (Line of Death) 64

F-14 TOMCAT 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	Not Used 17	Left Center Target 25	Lower Left T Target 33	3 Target 41	Upper Left T Target 49	Left Kicker ("sling") 57
2 WHT-RED 1J10-8	Ball Roll Tilt 2	Outhole 10	Not Used 18	Right Center Target 26	Lower Left O Target 34	2 Target 42	Upper Left O Target 50	Right Kicker ("sling") 58
3 WHT-ORN 1J10-7	Credit Button 3	Right Ball Trough 11	Not Used 19	Not Used 27	Lower Left M Target 35	1 Target 43	Upper Left M Target 51	Left Flipper Return 59
4 WHT-YEL 1J10-6	Right Coin Chute 4	Right Center Ball Trough 12	Ramp Entry 20	Jet ("pop") Bumper 28	Lower Right T Target 36	4 Target 44	Upper Right T Target 52	Right Flipper Return 60
5 WHT-GRN 1J10-5	Center Coin Chute 5	Left Center Ball Trough 13	Right Eject 21	Not Used 29	Lower Right A Target 37	5 Target 45	Upper Right A Target 53	Left Drain 61
6 WHT-BLU 1J10-3	Left Coin Chute 6	Left Ball Trough 14	Left Center Eject 22	Lower Ramp 30	Lower Right C Target 38	6 Target 46	Upper Right C Target 54	Right Drain 62
7 WHT-VIO 1J10-2	Slam Tilt 7	Right Flipper E. O. S. 15	Right Center Eject 23	Middle Ramp 31	Not Used 39	Top Right Loop 47	Line of Death 55	Left Flipper E. O. S. 63
8 WHT-GRY 1J10-1	High-Score Reset 8	Ball Shooter Lane 16	Ball Popper 24	Upper Ramp 32	Not Used 40	Spinner 48	Top Left Loop 56	Not Used 64