

July, 1982

Williams

THUNDERBALL

ATTENTION: OPERATOR

Pre-publication material from the THUNDERBALL instruction manual is attached. Also enclosed in this envelope are COSMIC GUNFIGHT schematic diagrams. These drawings should be used as reference material ONLY for THUNDERBALL circuit boards, as the same circuit boards are used in both games. THUNDERBALL lamp, switch, and solenoid matrices as well as THUNDERBALL general game features and game adjustments are unique. Please refer to the pre-publication information for details.

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Credit Posting – Insert coins. A sound is produced and the number of credits is displayed. If the maximum credits are posted correctly, the coin lockout relay de-energizes until the remaining credits are below maximum. No credit may be won and coins are rejected while the lockout is de-energized.

Game Start – Two balls must be resting on the ball ramp or ball shooter switches (maximum of one ball in the ball shooter trough) before the game will start. Push the credit button. A start-up tune is played, the ball is served, the credit display is reduced by 1, the player 1 score flashes 00 until the first scoring switch is made, and BALL IN PLAY shows 1. Pushing the credit button again before ball 2 is displayed allows additional players.

Scoring Multiplier – Advance the Scoring Multiplier (2X-3X-4X-5X) in a regular wave by bumper action or by scoring all six banks. Lighting the multiplier adds 10 seconds to Superwave time.

Targets – Score all 6 target banks for Superwave time. Any target in a flashing bank scores the complete bank. Hitting the roving flashing target scores a bank lamp for another bank.

Reload Holes – Lit Reload holes return the ball. Flashing Reload holes score a bank lamp and return the ball.

Superwave Time - Score all six banks for Superwave time. In Superwave time, unlimited balls are automatically fed onto the playfield. Lighting all six bank lamps advances the Superwave scoring multiplier (2X-3X-4X-5X).

Tilt - The ball in play is tilted on the first closure of the ball roll tilt and third* closure of the plumb bob and playfield tilts. The slam tilt returns the game to Game Over mode.

End of Game – Match digits* appear in the ball-in-play display and credit* is awarded for a match. Exceeding the high score to date awards three* credits. Match, High Score to Date and Game Over sounds are made as appropriate. A new game cannot be started with more than one ball in the ball shooter trough. Excess balls must be returned to the playfield and must drain to rest on the ball ramp switches.

THUNDERBALL SPEECH MODULE

<u>PHASE</u>	<u>WHERE IT OCCURS</u>
Play Thunderball	Attract mode and during Superwave time.
Player One	During 2-player games.
Player Two Up	During 2-player games.
5-4-3-2-1	(1) beginning of each wave (e.g. "five ball"). (2) when ball is fed (e.g. "last ball")
<u>Superwave</u>	Beginning of <u>Superwave</u> time.
Fire Away	Beginning of <u>Superwave</u> time.
40-30-20-10 seconds	End of Superwave time.
5-4-3-2-1	End of Superwave time.
Reload	Every time ball is added

* Indicates adjustable features.

Function	Description	Notes	Factory Settings
13	Backup High Score to Date	1	1,000,000
14-17	Replay (1-4) Scores	2	00
18	Maximum Credits	3	30
19	Standard and Custom Price Control: (00-08)	4	01/02
20	Left Coin Slot Multiplier	4	01/09
21	Center Coin Slot Multiplier	4	04/45
22	Right Coin Slot Multiplier	4	01/18
23	Coin Units Required for Credit	4	01/05
24	Coin Units Bonus Point	4	00
25	Minimum Coin Units	4	00
26	Match: 00 = Match ON; 01 = Match Off	2	01
27	Not Used	-	00
28	Replay Scores: 00 = Awards Credit	-	00
29	Maximum Plumb Bob Tilts	-	03
30	Not Used	-	99
31	<u>Initial Number of Balls</u>	-	05
32	Number Reload Lamps Lit Initially	-	03
33	Superwave Time (Seconds) 1-99 and 100 (Settings 1-99 and 0)	-	30
34	Flashing Reload Lamps: 00 = Conservative; 01 = Moderate	5	01
35	Flashing Reload Lamps: in Wave 1: 00 = Yes 01 = No	-	01
36	Reload Lamp Difficulty - Increase, Wave No: (00 - 09)	6	30
37	Forced Ball Feed Interval (Seconds): 00-99 (00=No Forced Feed)	7	08
38	Reload Lamp Score Level: (Settings X 10,000)	8	20
39	Background Sound: 00 = Off; 01 = ON	-	04
40	High Score to Date Credits	2	03
41	Not Used	-	04

*Second Factory Setting value is with jumper W25 on CPU Board connected.

Notes:

- Function 13 may be set to any multiple of 100,000 points.
- Although credits may be awarded for Replay scores (Functions 14-1), Match (Function 26), and High Score to Date (Function 40), it is not recommended.
- Setting Maximum Credits (Function 18) to zero places the game in the free play mode.
- With Function 19 set to 00, Functions 20-25 must be set manually. Refer to Table 3 for 8 standard pricing schemes (selected values of 01-08 for Function 19) and custom pricing values.
- With recommended setting of Function 34, flashing Reload lamps may occur without scoring a bank. With it set to 00, a bank must be scored before a Reload lamp will flash.
- With Reload lamps lit at the top of the playfield horseshoe first, the game is easier. At Wave No. selected by Function 36, Reload lamps at the left and right side of the playfield will be lit first and the game is more difficult. With Function 36 set to 00, lamps will always be at the sides first. If the playtime on a game runs too long, decrease the setting of function. Conversely, if the playtime runs too short, increase the setting.
- Forced ball feed interval (Function 37) may be used to play out an abandoned game. There is no forced feed in regular waves with the factory setting. For locations where abandoned games are a problem, a setting of 15 seconds is recommended. Superwave time always involves forced feed.
- Although levels where additional Reload lamps are lit is adjustable in 10,000 increments, it is recommended that only increments of 50,000 be used.

LAMP NO.	FUNCTION
01	Timer.
02	Wave No.
03	Tilt
04	Game Over
05	Match
06	Maximum Score to Date
07	Credits
08	Right Ball Shooter Arrow
09	Left Ball Shooter Arrow
10	#3 5-Bank "1" (Bottom) Target
11	#3 5-Bank "2" Target
12	#3 5-Bank "3" Target
13	#3 5-Bank "4" Target
14	#3 5-Bank "5" Target
15	Superwave
16	#5 2-Bank, Right Target
17	#5 2-Bank, Left Target
18	Backbox Lamp #1
19	#6 5-Bank "1" (Bottom) Target
20	#6 5-Bank "2" Target
21	#6 5-Bank "3" Target
22	#6 5-Bank "4" Target
23	#6 5-Bank "5" Target
24	Right Jet Bumper
25	Left Jet Bumper
26	Backbox Lamp #2
27	Backbox Lamp #3
28	#1 3-Bank, Bottom Target
29	#1 3-Bank, Middle Target
30	#1 3-Bank, Top Target
31	Lower Left Reload Hole
32	Lower Right Reload Hole
33	Middle Top Reload Hole
34	Left Top Reload Hole
35	Right Top Reload Hole
36	Left Spinner Reload Hole
37	Right Spinner Reload Hole
38	Backbox Lamp #4
39	#2 2-Bank, Left Target
40	#2 2-Bank, Right Target
41	#4 3-Bank, Bottom Target
42	#4 3-Bank, Middle Target
43	#4 3-Bank, Top Target
44	Left Spinner
45	Right Spinner
46	Left "4X" Jet Lamp
47	Left "3X" Jet Lamp
48	Left "2X" Jet Lamp
49	Right "4X" Jet Lamp
50	Right "3X" Jet Lamp
51	Right "2X" Jet Lamp
52	Center Bank #3 Lamp
53	Center Bank #2 Lamp
54	Center Bank #1 Lamp
55	Center Bank #6 Lamp
56	Center Bank #5 Lamp
57	Center Bank #4 Lamp
58	Sector 3 Lamp (Right Playfield)
59	Sector 2 Lamp (Ramp)
60	Sector 1 Lamp (Left Playfield)
61	Superwave 2X
62	Superwave 3X
63	Superwave 4X
64	Superwave 5X

SWITCH

NO.	FUNCTION (Score)
01	Plumb Bob Tilt
02	Ball Roll Tilt
03	Credit Button
04	Right Coin Chute
05	Center Coin Chute
06	Left Coin Chute
07	Slam Tilt
08	High Score Reset
09	Trough Drain
10	#3 5-Bank "1" (Bottom) Target (1,000)
11	#3 5-Bank "2" Target (1,000)
12	#3 5-Bank "3" Target (1,000)
13	#3 5-Bank "4" Target (1,000)
14	#3 5-Bank "5" Target (1,000)
15	Lower Ball Release
16	#5 2-Bank, Right Target (1,000)
17	#5 2-Bank, Left Target (1,000)
18	Upper Ball Release
19	#6 5-Bank "1" (Bottom) Target (1,000)
20	#6 5-Bank "2" Target (1,000)
21	#6 5-Bank "3" Target (1,000)
22	#6 5-Bank "4" Target (1,000)
23	#6 5-Bank "5" Target (1,000)
24	Right Jet Bumper
25	Left Jet Bumper
26	Right Ball Shooter Rollover
27	Left Ball Shooter Rollover
28	#1 3-Bank, Bottom Target (1,000)
29	#1 3-Bank, Middle Target (1,000)
30	#1 3-Bank, Top Target (1,000)
31	Lower Left Reload Hole
32	Lower Right Reload Hole
33	Middle Top Reload Hole
34	Left Top Reload Hole
35	Right Top Reload Hole
36	Left Spinner Reload Hole
37	Right Spinner Reload Hole
38	Playfield Tilt
39	#2 2-Bank, Left Target (1,000)
40	#2 2-Bank, Right Target (1,000)
41	#4 3-Bank, Bottom Target (1,000)
42	#4 3-Bank, Middle Target (1,000)
43	#4 3-Bank, Top Target (1,000)
44	Left Spinner
45	Right Spinner
46	Left "4X" Jet Lamp
47	Left "3X" Jet Lamp
48	Left "2X" Jet Lamp
49	Right "4X" Jet Lamp
50	Right "3X" Jet Lamp
51	Right "2X" Jet Lamp
52	Ball Shooter
53	Bottom Drain (Between Flippers)
54	Left Ball Feed Button
55	Right Ball Feed Button

SOLENOID

NO.	FUNCTION
01	General Illumination
02	Left 5-Bank Drop Target #1 (Bottom) Reset
03	Left 5-Bank Drop Target #2 Reset
04	Left 5-Bank Drop Target #3 Reset
05	Left 5-Bank Drop Target #4 Reset
06	Left 5-Bank Drop Target #5 (Top) Reset
07	Left Flasher Lamps
08	Right 5-Bank Target Release
09	Left 5-Bank Target Release
10	Right Flasher Lamps
11	Right 5-Bank Drop Target #1 (Bottom) Reset
12	Right 5-Bank Drop Target #2 Reset
13	Right 5-Bank Drop Target #3 Reset
14	Right 5-Bank Drop Target #4 Reset
15	Right 5-Bank Drop Target #5 (Top) Reset
16	Coin Lockout
17	Right Jet Bumper
18	Left Jet Bumper
19	Lower Ball Release
20	Upper Ball Release
21	Right Ball Feed
22	Left Ball Feed