



## SPEED-BOWLER

### INSTALLATION AND OPERATING INSTRUCTIONS

Fasten four legs to cabinet with bolts furnished. Place back-box in position, fasten to cabinet with bolts and screws furnished and plug in connection cable. Plug power line into A.C. ONLY, 60 cycles, 110-115 volts. Turn on power by turning Toggle Switch under front of cabinet (right side). Toggle Switch also operates Game Complete Relay.

### PLACE 2 PUCKS IN GAME

For proper operation of game place 2 pucks in game. Pucks should be placed in game BEFORE POWER LINE IS PLUGGED IN TO A.C. OUTLET or while Game Complete Relay is tripped.

In operation of game player receives only one puck at a time. Player can obtain two pucks at the same time by depositing coin before game is completed. However, if player tries to throw the second puck too fast, he will receive no count, because pins are dead while motor is cycling.

### IMPORTANT

Be sure that all pins have been tripped (IN UP POSITION) before removing light box -- to prevent damage to pins.

### RAILROADS

The common 7, 10 Railroad should never occur on SPEED-BOWLER. Instead, player may score a 4-7, 6-10 Railroad -- WHICH CAN BE PICKED UP BY SKILL. Puck must be thrown at just the right spot to pick up Railroad. Combination of switches is the 9 and 9-a or the 12 and 12a (see switch chart). Other combinations are made exactly as on SHUFFLE-BOWLER.

### ACCESS TO MECHANISM

Practically all mechanism is in back-box. For access to pin-trip relays, remove 3 screws in pin-hood. See SKILL ADJUSTMENT for access to pin switches.

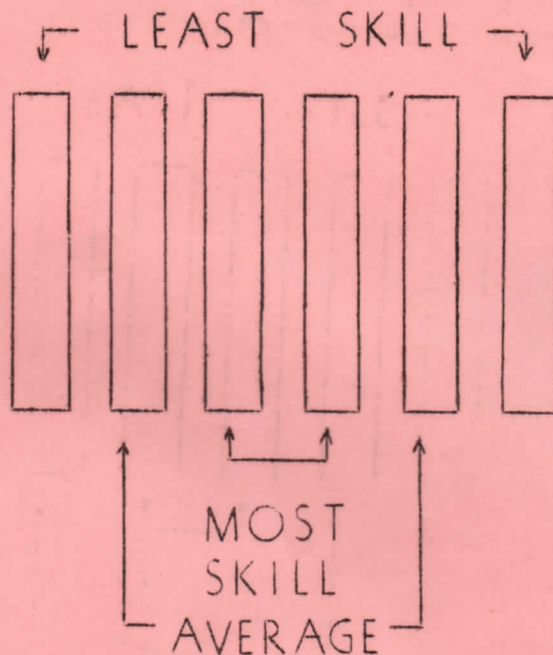
### KEEP PLAYFIELD CLEAN

Encourage liberal use of Shuffleboard Powder (wax) and Simonize playfield as required to keep a hard, smooth finish on board.

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SKILL ADJUSTMENT

Note 6 switch-slots between 8 and 9 pins on pin-panel. Switches may be moved from one pair of slots to another to increase or decrease degree of skill required to score strikes, as explained in diagram below.



Simply remove 2 screws in glass-frame, remove bar and glass. Remove 5 screws holding pin-panel and lift panel out of cabinet. Move switches to desired position. BE SURE TO MOVE SWITCHES IN PAIRS.

## SPEED-BOWLER

### CHECK LIST OF CIRCUIT TESTS (SEQUENCE OF OPERATIONS)

This check-list provides a simple procedure for checking play-features and related circuits in SPEED-BOWLER. Whenever operator or service-man desires, he may make the following tests to be sure that game is operating properly.

NOTE: Switch references in parentheses indicate particular switch that causes each particular operation.

#### SECTION 1: A BLOW OR A MISS

1. Knock down several pins by hand (not all ten).
2. Throw puck through puck gate at rear of game.
3. Puck relay will pull in and timer motor will begin cycle.
4. 5-pin-switches relay will pull in if No. 1 pin has been tripped (timer switch 5A).
5. Puck lockout coil will energize and puck relay will drop out (timer switch 4A).
6. Master unit reset coil operates (timer switch No. 8).
7. Master unit step up coil will operate four times (timer switches No. 9 and No. 11).
8. Follower index coil operates (timer switch No. 7).
9. Motor completes cycle and stops.
10. Throw puck through puck gate again.
11. Puck relay will pull in and motor will begin to cycle.
12. Frame unit step-up coil operates (timer switch No. 4B).  
Pin reset relay pulls in (timer switch No. 4C).  
Puck lock-out coil operates (timer switch No. 4A).  
Puck relay drops out (timer switch No. 4A).
13. Master unit reset coil operates (timer switch No. 8).
14. Follower index coil operates (timer switch No. 7).
15. Pins reset (timer switch No. 6A).
16. Timer motor completes cycle and stops, pin reset relay dropping out (timer switch No. 1D).

Score counts after motor begins cycle for second time in above operation. Circuit is completed from pin relays, through 1 to 10 relay through 4th position on master unit, thru start relay to the 1 to 9 relay.

## SECTION 2: A SPARE

Follow above procedure up to and including 9.

1. Knock out balance of the ten pins.
2. Throw puck through puck gate.
3. Puck relay pulls in and timer motor begins to cycle.
4. Puck lock-out coil energizes (timer switch No. 4A).  
Puck relay drops out (timer switch No. 4A).  
Frame unit step-up coil operates (timer switch No. 4B).  
Pin reset relay pulls in (timer switch No. 4C).
5. Master unit reset coil operates (timer switch No. 8).
6. Master unit step-up coil operates one time (timer switch No. 11).
7. Follower index coil operates (timer switch No. 7).
8. Pins reset (timer switch No. 6A).
9. Timer motor completes cycle and stops, pin reset relay dropping out on (timer switch No. 1D).

## SECTION 3: A STRIKE

1. Knock out all ten pins.
2. Throw puck through puck gate.
3. Puck relay pulls in, timer motor begins to cycle.
4. Puck lock-out coil energizes, and puck relay drops out (timer switch No. 4A).  
Frame unit step-up coil operates (timer switch No. 4B).  
Pin reset relay pulls in (timer switch No. 4C).
5. Master unit reset coil operates (timer switch No. 8).
6. Master unit step-up coil operates two times (timer switches No. 9 and No. 11).
7. Follower index coil operates (timer switch No. 7).
8. Pins reset (timer switch No. 6A).
9. Motor completes cycle and stops, pin reset relay dropping out on (timer switch No. 1D).

SECTION 4: A DOUBLE STRIKE

Follow above procedure to get one strike. Then proceed as follows.

1. Knock out all ten pins.
2. Throw puck through puck gate.
3. Puck relay pulls in, timer motor begins to cycle.
4. Puck lock-out coil energizes, and puck relay drops out (timer switch No. 4A).  
Frame unit step-up coil operates (timer switch No. 4B).  
Pin reset relay pulls in (timer switch No. 4C).
5. Master unit reset coil operates (timer switch No. 8).
6. Master unit step-up coil operates, three times (timer switch No. 9  
and No. 11).
7. Follower index coil operates (timer switch No. 7).
8. Pins reset (timer switch No. 6A).
9. Motor completes cycle and stops, pin reset relay dropping out on  
(timer switch No. 1D).

SECTION 5: A TRIPLE STRIKE OR TURKEY

Follow previous procedure to set up game for a double strike. Then proceed as follows.

1. Knock out all ten pins.
2. Throw puck through puck gate.
3. Puck relay pulls in and timer motor begins to cycle.
4. Puck lock-out coil energizes and puck relay drops out (timer switch No. 4A).  
Frame unit step-up coil operates (timer switch No. 4B).  
Pin reset relay pulls in (timer switch No. 4C).
5. Score counts 10-20-30 (timer switch No. 3).
6. Master unit reset coil operates (timer switch No. 8).
7. Master unit step-up coil operates three times (timer switches No. 9  
and No. 11).
8. Follower index coil operates (timer switch No. 7).
9. Pins reset (timer switch No. 6A).
10. Timer motor completes cycle and stops, pin reset relay dropping out  
on (timer switch No. 1D).

SECTION 6: A SPARE AFTER A STRIKE

Set up game as described in SECTION 3. Then proceed as follows.

1. Knock out several pins.
2. Throw puck through puck gate.
3. Puck relay pulls in, timer motor begins to cycle.
4. Puck lock-out coil energizes and puck relay drops out on timer switch No. 4A.
5. Master unit reset coil operates (timer switch No. 8).
6. Master unit step-up coil operates 5 times (timer switches No. 9 and No. 11).
7. Follower index coil operates (timer switch No. 7).
8. Timer completes cycle and stops.
9. Knock out the balance of the ten pins.
10. Throw puck through puck gate.
11. Puck relay pulls in and timer motor begins to cycle.
12. Puck lock-out coil energizes and puck relay drops out (timer switch No. 4A).  
Frame unit step-up coil operates (timer switch No. 4B).  
Pin reset relay pulls in (timer switch No. 4C).
13. Score counts 10-20 (timer switch No. 2).
14. Master unit reset coil operates (timer switch No. 8).
15. Master unit step-up coil operates one time (timer switch No. 11).
16. Follower index coil operates (timer switch No. 7).
17. Pins reset (timer switch No. 6A).
18. Timer motor completes cycle and stops, pin reset relay dropping out on (timer switch No. 10).

SECTION 7: A STRIKE AFTER A SPARE

Set up game as described in SECTION 2. Then proceed as follows.

1. Knock out all ten pins.
2. Throw puck through puck gate.
3. Puck relay pulls in (timer motor begins to cycle).
4. Puck lock-out coil will energize, and puck relay will drop out (timer switch No. 4A).  
Frame unit step-up coil operates (timer switch No. 4B).  
Pin reset relay pulls in (timer switch No. 4C).
5. Score counts 10-20 (timer switch No. 2).
6. Master unit reset coil operates (timer switch No. 8).
7. Master unit step-up coil operates two times (timer switch No. 9 and No. 11).
8. Follower index coil operates (timer switch No. 7).
9. Pins reset (timer switch No. 6A).
10. Timer motor completes cycle and stops, pin reset relay dropping out on (timer switch No. 1D).



SECTION 8: A BLOW OR A MISS AFTER A STRIKE

Set up game as described in SECTION 3. Then proceed as follows.

1. Knock out several pins (not all ten).
2. Throw puck through puck gate.
3. Puck relay pulls in and timer motor begins to cycle.
4. Puck lock-out coil energizes and puck relay drops out on (timer switch No. 4A).
5. Master unit reset coil operates (timer switch No. 8).
6. Master unit step-up coil operates five times (timer switches No. 9 and No. 11).
7. Follower index coil operates (timer switch No. 7).
8. Timer motor completes cycle and stops. Double count relay pulls in (timer switch No. 1B).
9. Throw puck through puck gate.
10. Puck relay pulls in, timer motor begins to cycle.
11. Puck lock-out coil energizes, and puck relay drops out on (timer switch No. 4A).  
Frame unit step-up coil operates (timer switch No. 4B).  
Pin reset relay pulls in (timer switch No. 4C).
12. Count 10 (timer switch No. 10).
13. Master unit reset coil operates (timer switch No. 8).
14. Follower index coil operates (timer switch No. 7).
15. Pins reset (timer switch No. 6A).  
Double count relay drops out (timer switch No. 6 b).
16. Timer motor completes cycle and stops, pin reset relay dropping out on (timer switch No. 1D).

The individual counts in the above sequence are attained by the two wipers on the timer unit disc. The first half is counted by the wiper that is grounded, and the second count is achieved by the wiper that is fed through the double count relay.

SECTION 8: A BLOW OR A MISS AFTER A STRIKE

Set up game as described in SECTION 3. Then proceed as follows.

1. Knock out several pins (not all ten).
2. Throw puck through puck gate.
3. Puck relay pulls in and timer motor begins to cycle.
4. Puck lock-out coil energizes and puck relay drops out on (timer switch No. 4A).
5. Master unit reset coil operates (timer switch No. 8).
6. Master unit step-up coil operates five times (timer switches No. 9 and No. 11).
7. Follower index coil operates (timer switch No. 7).
8. Timer motor completes cycle and stops. Double count relay pulls in (timer switch No. 1B).
9. Throw puck through puck gate.
10. Puck relay pulls in, timer motor begins to cycle.
11. Puck lock-out coil energizes, and puck relay drops out on (timer switch No. 4A).  
Frame unit step-up coil operates (timer switch No. 4B).  
Pin reset relay pulls in (timer switch No. 4C).
12. Count 10 (timer switch No. 10).
13. Master unit reset coil operates (timer switch No. 8).
14. Follower index coil operates (timer switch No. 7).
15. Pins reset (timer switch No. 6A).  
Double count relay drops out (timer switch No. 6 b).
16. Timer motor completes cycle and stops, pin reset relay dropping out on (timer switch No. 1D).

The individual counts in the above sequence are attained by the two wipers on the timer unit disc. The first half is counted by the wiper that is grounded, and the second count is achieved by the wiper that is fed through the double count relay.

# SPEED-BOWLER

## PIN TRIP RELAY SWITCH CHART

CODE	
N.C.	..... NORMALLY CLOSED
N.O.	..... NORMALLY OPEN
M.B.B.	..... MAKE BEFORE BREAK
S.P.D.T.	..... SINGLE POLE DOUBLE THROW

REFERENCES TO TOP, BOTTOM, LEFT, RIGHT, ETC. ARE IN RELATION TO FRONT END OF SWITCH PLATE

RELAY AND SWITCH	SWITCH CODE	WIRE COLORS	FUNCTION OF SWITCHES
<b>#1 PIN RELAY</b>			
Top Left	N.O.	Red Brown-Yellow	Completes series circuit to #4-6 relay.
Center Left	N.O.	Blue-Yellow Blue-White	Completes series circuit to #4-7-8 relay.
Bottom Left	N.O.	Blue Yellow-Red	Completes series circuit to #6-9-10 relay.
Top Right	N.O.	Yellow-Black Red-Green	Completes circuit for scoring #1 pin.
Center Right	N.O.	Orange-Red White	Completes series circuit to #10 pin relay.
Bottom Right	N.O.	Green-Black White	Completes series circuit to #7 pin relay.
Left Pin Sw.	N.C.	White-Orange White	Breaks circuit to #1 pin relay.
Right Pin Sw.	N.O.	Gray-Yellow Gray	Completes series circuit to "1-10 relay".
<b>#2 PIN RELAY</b>			
Left Pin Sw.	N.C.	Brown White	Breaks circuit to #2 pin relay.
Top Left	N.O.	Yellow-Black Red-Black	Completes circuit for scoring #2 pin.
Bottom Left	N.O.	Gray Yellow-Red	Completes series circuit to "1-10 relay".
Right	N.O.	White Red-Yellow	Completes series circuit to #8 relay.
<b>#3 PIN RELAY</b>			
Left	N.O.	White Red-Green	Completes series circuit to #9 relay.
Top Right	N.O.	Blue Yellow-Black	Completes circuit for scoring #3 pin.
Bottom Right	N.O.	Yellow-Red Yellow-Brown	Completes series circuit to "1-10 relay".
Right Pin Sw.	N.C.	White Orange-Red	Breaks circuit to #3 relay.
<b>#4 PIN RELAY</b>			
Left	N.O.	Yellow-Black Green-Red	Completes circuit for scoring #4 pin.
Top Right	N.O.	Orange-White Blue-Orange	Breaks series circuit to #4-7-8 relay.
Bottom Right	N.O.	Blue-White Yellow-Brown	Completes series circuit to "1-10 relay".
Right Pin Sw.	N.C.	White Red-White	Breaks circuit to #4 relay.
<b>#5 PIN RELAY</b>			
Left Pin Sw.	N.C.	White Gray-Red	Breaks circuit to #5 relay.
Top Right	N.O.	Yellow-Black Blue-Red	Completes circuit for scoring #5 pin.
Bottom Right	N.O.	Blue-White Blue-Orange	Completes series circuit to "1-10 relay".
<b>#6 PIN RELAY</b>			
Top Left	N.O.	Green-Yellow Black-Red	Breaks circuit to #6-9-10 relay.
Bottom Left	N.O.	Blue-Yellow Yellow-Black	Completes circuit for scoring #6 pin.
Right	N.O.	Blue-Red Blue-Orange	Completes series circuit to "1-10 relay".
Left Pin Sw.	N.C.	White Yellow-Red	Breaks circuit to #6 pin relay.
<b>#7 PIN RELAY</b>			
Top Left	N.O.	Blue-Red Blue-Yellow	Completes series circuit to "1-10 relay".
Bottom Left	N.O.	White Red-Yellow	Completes series circuit to #4 & #6 pin relays.
Right	N.O.	Yellow-Black Blue-White	Completes circuit for scoring #7 pin.
Left Pin Sw.	N.C.	White Orange-Green	Breaks circuit to #7 pin relay.
<b>#8 PIN RELAY</b>			
Top Right	N.O.	Yellow-Black Blue-Orange	Completes circuit for scoring #8 pin.
Bottom Right	N.O.	Blue Blue-Yellow	Completes series circuit to "1-10 relay".
Left Pin Sw.	N.C.	White Red-Yellow	Breaks circuit to #8 pin relay.
<b>#9 PIN RELAY</b>			
Top Left	N.O.	Yellow-Red Yellow-Black	Completes circuit for scoring #9 pin.
Bottom Left	N.O.	Blue Red-Black	Completes series circuit to "1-10 relay".
Right Pin Sw.	N.C.	White Red-Green	Breaks circuit to #9 pin relay.
<b>#10 PIN RELAY</b>			
Left	N.O.	Yellow-Black Green-White	Completes circuit for scoring #10 pin.
Top Right	N.O.	Yellow-Brown Red-Black	Completes series circuit to "1-10 relay".
Bottom Right	N.O.	White Red-Yellow	Completes series circuit to #4 & #6 pin relays.
Right Pin Sw.	N.C.	White Orange-Black	Breaks circuit to #10 pin relay.
<b>#11 RELAY (4-7-8 RELAY)</b>			
Top Left	N.O.	Green-Yellow Blue	Completes series circuit to #6-9-10 relay.
Bottom Left	N.O.	Red-Yellow White	Completes circuit to #4 pin relay.
Top Right	N.O.	White Red-White	Completes circuit to #4 pin relay.
Bottom Right	N.O.	White Orange-Green	Completes series circuit to #7 pin relay.
Right Pin Sw.	N.C.	White Blue-Orange	Breaks circuit to #4-7-8 relay.
<b>#12 RELAY (5-8-9 RELAY)</b>			
Top Left	N.O.	White Red-Green	Completes series circuit to #9 pin relay.
Bottom Left	N.O.	White Red-Yellow	Completes series circuit to #8 pin relay.
Right	N.O.	White Gray-Red	Completes series circuit to #5 pin relay.
Left Pin Sw.	N.C.	White Brown-Red	Breaks circuit to #5-8-9 relay.
<b>#13 RELAY (6-9-10 RELAY)</b>			
Top Left	N.O.	White Yellow-Red	Completes circuit to #6 pin relay.
Bottom Left	N.O.	White Red-Green	Completes series circuit to #9 pin relay.
Top Right	N.C.	Blue-White Blue-Orange	Breaks series circuit to #4-7-8 relay.
Bottom Right	N.O.	White Orange-Black	Completes series circuit to #10 pin relay.
Left Pin Sw.	N.C.	White Green-Yellow	Breaks circuit to #6-9-10 relay.
<b>#14 RELAY (GAME COMPLETE)</b>			
Top Left	N.C.	Orange-Green Red-Green	Breaks feed to pin reset relay when game is complete.
Bottom Left	S.P.D.T.	White-Red Green Orange-White	Opens circuit to rollover switches, and lites game complete lite.
Top Right	N.C.	Orange-Green Gray	Breaks 115 V. circuit to game, when toggle switch is off.
Bottom Right	N.C.	Brown-White Brown-Yellow	Turns spare and strike lites off when game is complete.
<b>#15 RELAY (1-10 RELAY)</b>			
Top Left	N.C.	Red Yellow-Black	Breaks circuit for pin count.
Center Left	S.P.D.T.	White-Blue Red-White White-Yellow	Normally completes circuit for 20 count, completes circuit for 30 count.
Bottom Left	S.P.D.T.	Black-Yellow Black-White White-Green	Normally completes circuit to miss section wiper on master unit. When tripped completes circuit to hit section wiper on master unit.
Top Right	N.C.	Green-White Brown	Breaks feed to game complete relay when spare is made in 10th frame.
Center Right	S.P.D.T.	White-Red Green-Yellow White-Blue	Normally completes circuit for 10 count, completes circuit for 20 count.
Bottom Right	S.P.D.T.	Green-Red Green Orange-Green	Normally completes circuit to double count relay, frame unit step-up coil and pin reset relay, when a blow is achieved. When tripped, feed the frame unit step-up coil and pin reset relay.
Left Pin Sw.	N.O.	Blue-Red Blue-Orange	Completes circuit to 3rd strike lite.
Right Pin Sw.	N.C.	Yellow-Brown Gray-Black	Breaks circuit to #1-10 relay.