

# OPERATING INSTRUCTIONS

CONFIDENTIAL: DO NOT LEAVE INSTRUCTIONS IN GAME

*Bally*®

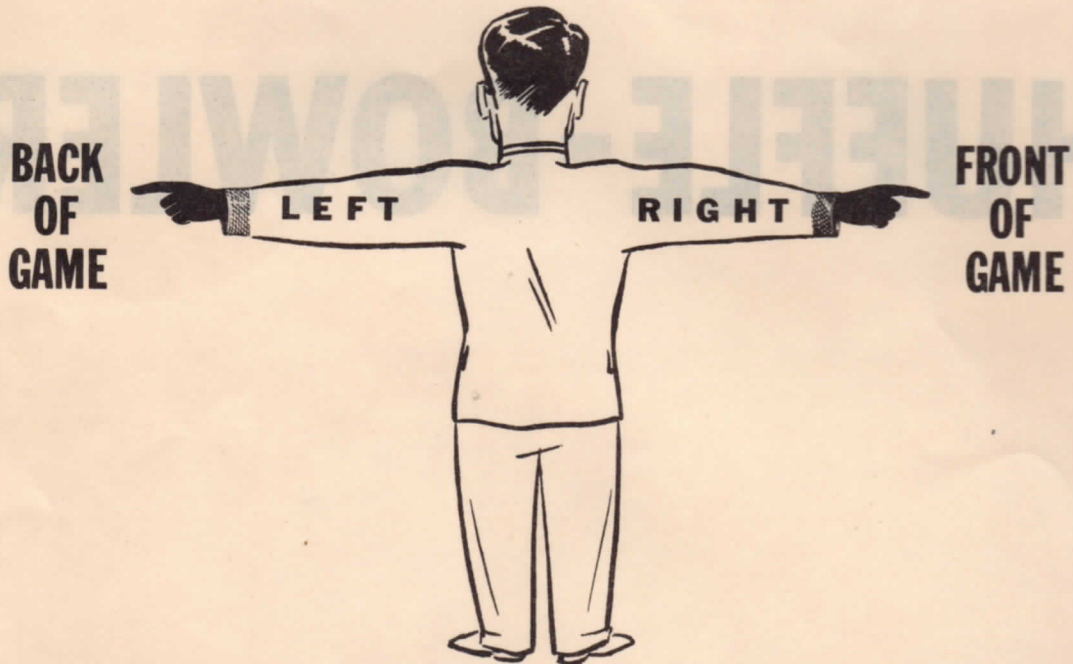
# SHUFFLE-BOWLER



AS OPERATOR LOOKS INTO SIDE DOOR  
INDIVIDUAL SWITCHES IN EACH RELAY  
AND TRIP RELAY SWITCH CHART IDENTIFY  
LETTERS IN A.C. RELAY SWITCH CHART

|               |   |
|---------------|---|
| TRIP<br>RELAY |   |
| D             | A |
| E             | B |
| F             | C |

|             |   |   |   |   |
|-------------|---|---|---|---|
| A. C. RELAY |   |   |   |   |
| A           | B | C | D | E |



**LETTERS IN A. C. RELAY SWITCH CHART  
AND TRIP RELAY SWITCH CHART IDENTIFY  
INDIVIDUAL SWITCHES IN EACH RELAY  
AS OPERATOR LOOKS INTO SIDE DOOR**

## SHUFFLE-BOWLER

### INSTALLATION AND OPERATING INSTRUCTIONS

Fasten four legs to cabinet with bolts furnished. Place back-box in position, fasten to cabinet with bolts 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.

### IMPORTANT

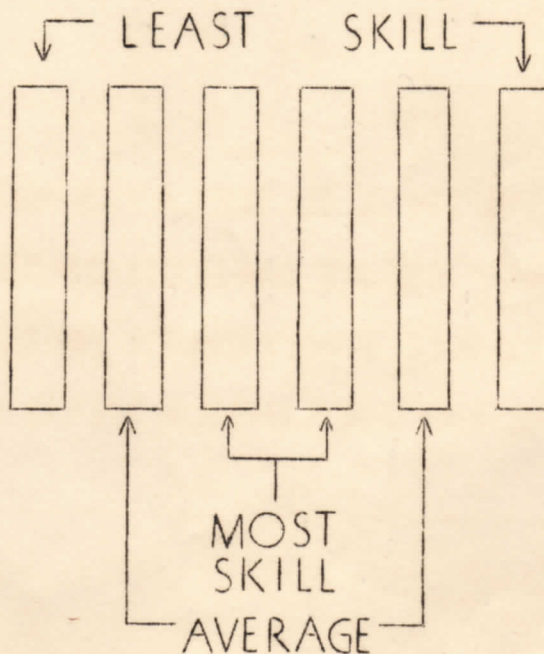
For proper operation of game place only ONE puck in game. Encourage liberal use of Shuffleboard Powder (wax) and Simonize playfield as required to keep a hard, smooth finish on board.

### ACCESS TO MECHANISM

Access to mechanism is through convenient side-door in cabinet. Key to side-door and back-box door may be kept on key-hook inside front door of cabinet.

### 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.

## SHUFFLE-BOWLER

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

This check-list provides a simple procedure for checking play-features and related circuits in SHUFFLE-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 parantheses indicate particular switch that causes each particular operation.

#### SECTION A: TO GET A SPARE

1. Knock all ten pins out by hand.
2. 1 TO 10 Relay pulls in.
3. Puck Switch in puck-return trough makes.
4. Relay Timer cycles.
5. Strike-Spare Unit Step-Up Coil operates, if Unit is at zero (Relay Timer Switch No. 7).
6. Strike Relay pulls in (Relay Timer Switch No. 5).
7. Strike-Spare Unit Step-Up Coil operates (Relay Timer Switch No. 2).
8. Frame-Counter Step-Up Coil operates (Strike-Spare Unit Step-Up Arm Switch).
9. Relay Bank resets (Frame-Counter Step-Up Arm Switch).
10. Strike-light lights on backglass.

#### SECTION B: TO GET A SPARE

1. Knock out several pins (not all ten) by hand.
2. Operate Puck-Switch in puck-return trough.
3. Relay Timer cycles.
4. 1st-Shot Relay pulls in (Relay Timer Switch No. 6).
5. Relay Timer stops.
6. Knock out balance of pins by hand.
7. 1 TO 10 Relay pulls in.
8. Operate Puck Switch in puck-return trough.
9. Relay Timer cycles. (Continued on next page)

10. Strike-Spare Unit Step-Up Coil operates, if Unit is at zero (Relay Timer Switch No. 7).
11. Spare Relay pulls in (Relay Timer Switch No. 5).
12. Spare-light lights on backglass.
13. Strike-Spare Unit Step-Up Coil operates (Relay Timer Switch No. 2).
14. Frame-Counter Step-Up Coil operates (Strike-Spare Unit Step-Up Arm Switch).
15. 1st-Shot Relay falls out (Frame-Counter Plunger Switch).
16. Relay Bank resets (Frame Counter Step-Up Arm Switch).

SECTION C: TO GET A BLOW OR MISS

1. Knock-out several pins (not all ten) by hand.
2. Puck Switch in puck return trough makes.
3. Relay Timer cycles.
4. 1st-Shot Relay pulls in (Relay Timer switch No. 6).
5. Relay Timer stops.
6. Drop puck in puck return trough.
7. Puck Switch in puck return trough makes.
8. Relay Timer cycles.
9. 2nd-Shot Relay pulls in (Relay Timer Switch No. 8).
10. Score-Timer cycles (Switch on 2nd-Shot Relay).
11. Score starts counting.
12. Strike-Spare Unit resets (Score timer switch No. 4).
13. Frame-Counter Step-Up Coil operates (Score-Timer Switch No. 7).
14. 1st-Shot Relay drops out (Frame-Counter Plunger Switch).
15. Relay Bank resets (Frame-Counter Step-Up Arm Switch).
16. 2nd-Shot Relay drops out (Score Timer Switch No. 8).

(Continued on next page)

SECTION D: TO GET A SPARE AFTER A STRIKE

1. Set up a strike as outlined in SECTION A
2. Knock out several pins (not all ten) by hand.
3. Make puck switch in puck return trough.
4. Relay Timer cycles.
5. 1st-Shot Relay pulls in (Relay Timer Switch No. 6).
6. Relay Timer stops.
7. Knock out balance of pins by hand.
8. 1 TO 10 Relay pulls in.
9. Make puck switch in puck return trough.
10. Relay Timer cycles.
11. Spare-After-Strike Relay pulls in (Relay Timer Switch No. 5).
12. Score Timer begins cycle (Relay Timer Switches No. 3 and No. 10).

NOTE: Operations 13 to 18 inclusive happen almost at the same time. Therefore, when trouble-shooting, disconnect Motor Carry-Over Switches (Relay Timer Switch No. 1 and Score Timer Switch No. 1). Then move units by hand to watch proper sequences. Connect switches again after locating trouble.

13. Spare Relay pulls in (Relay Timer Switch No. 9). Spare light lights on backglass.
14. Strike-Spare Unit Step-Up Coil operates (Relay Timer Switch No. 2).
15. Frame-Counter Unit Step-Up Coil operates (Switch on Strike-Spare Unit Step-Up Arm).
16. Relay Bank resets (Switch on Frame-Counter Step-Up Arm).
17. 1st-Shot Relay drops out (Switch on Frame-Counter Plunger).
18. Score steps up 20 points.
19. Strike Relay drops out (Score Timer Switch No. 9).
20. Spare Relay drops out (Score Timer Switch No. 3).
21. Strike-Spare Unit Reset Coil operates (Score Timer Switch No. 4).
22. Spare Relay pulls in (Score Timer Switch No. 5).
23. Spare-After-Strike Relay drops out (Score Timer Switch No. 6).

(Continued on next page)

SECTION E: TO GET A STRIKE AFTER A SPARE

1. Set up a spare as outlined in SECTION B
2. Knock out all ten pins.
3. 1 TO 10 Relay pulls in.
4. Make puck switch.
5. Relay Timer cycles.
6. Strike relay pulls in (Relay timer switch No. 5).

NOTE: Operations 7 to 11 inclusive happen almost at the same time. Instructions in NOTE in SECTION D may be followed.

7. Score Timer begins cycle (Relay Timer Switches No. 10 and No. 3).
8. Strike-Spare Unit Step-Up Coil operates (Relay Timer Switch No. 2).
9. Frame-Counter Unit steps up (Switch on Strike-Spare Unit Step-Up Arm).
10. Relay Bank resets (Switch on Frame-Counter Step-Up Arm).
11. Score steps up 20 points.
12. Spare Relay drops out (Score Timer Switch No. 3).
13. Strike-Spare Unit Reset Coil operates (Score Timer Switch No. 4).
14. Score-Timer completes cycle and stops.

SECTION F: TO GET A SPARE AND A COUNT

1. Set up a spare as outlined in SECTION B
2. Knock out No. 1 pin by hand.
3. Make puck switch in puck return trough.
4. Relay Timer cycles.
5. 1st-Shot Relay Pulls in (Relay Timer Switch No. 6).
6. Score Timer begins cycle (Relay Timer Switches No. 10 and No. 3).
7. Score steps up 10 points, then 1 point.
8. Spare Relay drops out (Score Timer Switch No. 3).
9. Strike-Spare Unit Reset Coil operates (Score Timer Switch No. 4).
10. Score Timer completes cycle and stops.

# SHUFFLE-BOWLER

## A.C. 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 |

SEE DIAGRAM ON INSIDE COVER OF MANUAL FOR EXPLANATION OF A, B, C, D, E.

| RELAY AND SWITCH             | SWITCH CODE | WIRE COLORS                                     | FUNCTION OF SWITCH   |
|------------------------------|-------------|---|--|
| 1 TO 9 RELAY                 | N.O.        | Gray<br>Green                                   | Completes circuit to 1 to 9 unit step-up coil.   |
| 10 TO 300 RELAY              | N.O.        | Black-Red<br>Green                              | Completes circuit to 1 to 10 unit step-up coil or to strike spare reset coil during reset.   |
| SPARE RELAY                  |             |   |  |
| A                            | S.P.D.T.    | White-Green<br>Yellow<br>White-Brown            | Completes circuit to Strike or Spare Light.  |
| B                            | N.O.        | Green<br>Red-White                              | Lock-in circuit for Spare Relay.   |
| C                            | N.O.        | Green-White<br>Brown-Red                        | Completes circuit to Game Complete Relay through Frame unit Disc.  |
| D                            | N.O.        | Orange-Green<br>Black-Red<br>White-Blue         | Completes series circuit to Score Timer Motor.   |
| SPARE - AFTER - STRIKE RELAY |             |   |  |
| A                            | N.C.        | Green<br>Red-yellow                             | Lock-in circuit for Spare-After-Strike Relay   |
| B                            | N.O.        | Green<br>Blue                                   | Completes circuit, through Score Timer Switch No. 5 to Spare Relay Coil.   |
| C                            | N.O.        | Orange-Green<br>Orange-Black                    | Completes series circuit to Score Timer Motor.   |
| D                            | N.O.        | Green-White<br>Brown-Red                        | Completes circuit to Game Complete Relay Coil through Frame Unit Disc.   |
| E                            | N.C.        | Brown-Yellow<br>Blue-White                      | Breaks circuit to Strike Relay Coil.   |
| MISS - AFTER - STRIKE RELAY  |             |   |  |
| A                            | N.C.        | Green-Black<br>Orange-White                     | Breaks circuit to Frame Step-up Coil.  |
| B                            | N.O.        | Blue-White<br>Orange                            | Breaks circuit to Strike, First-Shot and Second-Shot Relays.   |
| STRIKE RELAY                 |             |   |  |
| A                            | S.P.D.T.    | Red-Yellow<br>White-Orange<br>Red-White         | Completes circuit to Spare or Strike-Spare Relay Coil.   |
| B                            | N.O.        | Blue-Yellow<br>Brown                            | Lock-in circuit for Strike Relay.  |
| C                            | N.C.        | White-Red<br>Orange-Black (Jumper)<br>Black-Red | Completes series circuit to Score Timer Motor through Switch No. 10 or No. 3 Relay Timer, 1 to 10 Relay Switch and Spare-After-Strike Relay. |
| D                            | N.O.        | White-Brown<br>White-Brown                      | Completes circuit to Strike Lights through Spare Relay and Strike-Spare Disc.  |
| SECOND - SHOT RELAY          |             |   |  |
| A                            | N.O.        | Green<br>Green-Red                              | Lock-in circuit for Second-Shot Relay.   |
| B                            | N.O.        | Green<br>Orange-Green<br>Orange-White           | Completes circuit to Frame unit Step-up Coil and Score Timer Motor.  |
| C                            | N.O.        | Brown-Red<br>Brown<br>Green-White               | Completes circuit to Game Complete Relay through Frame unit Disc.  |
| FIRST SHOT RELAY             |             |   |  |
| A                            | S.P.D.T.    | White-Orange<br>Blue-Red<br>Brown               | Completes circuit to Strike, Spare or Spare-After-Strike Relays.   |
| B                            | N.O.        | Green<br>Blue-Orange                            | Lock-in circuit for First-Shot Relay.  |
| C                            | N.O.        | Green-Red<br>Yellow-Brown                       | Completes circuit to Second-Shot Relay Coil.   |
| D                            | N.O.        | Green-White<br>Brown-Yellow                     | Completes circuit to Game Complete Relay through 11th position on Frame unit Disc.   |
| E                            | N.O.        | Orange-Green<br>Red-Yellow                      | Completes circuit to Score Timer Motor through Strike-Spare unit Disc.   |



# SHUFFLE-BOWLER 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 |

SEE DIAGRAM ON INSIDE COVER OF MANUAL FOR EXPLANATION OF A, B, C, D, E, F.

| RELAY AND SWITCH            | SWITCH CODE | WIRE COLORS                              | FUNCTION OF SWITCHES   |
|-----------------------------|-------------|--|--|
| <b>1 RELAY</b>              |             |  |  |
| A                           | N.C.        | Red-white<br>Yellow                      | 6 volt Feed, No. 1 Lights.   |
| B                           | N.O.        | Orange-Black<br>Orange-White             | Completes circuit to 5 Pin Switches Relay from Relay Timer Switches No. 7 and No. 2.   |
| C                           | N.O.        | Red-Green<br>Red-Yellow                  | Completes circuit from Score Timer Disc to 1 to 9 Relay.   |
| D                           | N.C.        | White-Orange<br>Jumper                   | Breaks feed to No. 1 Relay Coil.   |
| E                           | N.O.        | Black<br>Brown-Yellow                    | Completes circuit to 4 Relay or 6 Relay.   |
| F                           | N.O.        | Green<br>Black-Yellow                    | Completes series parallel circuit to 1 To 10 Relay.  |
| <b>2-8 RELAY</b>            |             |  |  |
| A                           | N.C.        | Brown<br>Jumper                          | Breaks feed to 2-8 Relay Coil.   |
| B                           | N.C.        | Blue-Yellow<br>Yellow                    | 6 volt Feed to No. 2 Lights.   |
| C                           | N.O.        | Black-Yellow<br>Red-Black                | Completes series parallel circuit to 1 To 10 Relay Coil.   |
| D                           | N.C.        | Yellow-Black<br>Green-Red                | Completes 6 Volt feed to No. 8 Lights.   |
| E                           | S.P.D.T.    | Brown-White<br>Black<br>Red-White        | Normally completes circuit to 6 Relay; when tripped, completes circuit to 4 Relay.   |
| F                           | N.O.        | Red-Black<br>Red-Yellow                  | Completes circuit from Score Timer Disc to 1 To 9 Relay.   |
| <b>3-9 RELAY</b>            |             |  |  |
| A                           | N.C.        | Gray<br>Red-White                        | Opens circuit to 4 Relay.  |
| B                           | N.C.        | Blue-Orange<br>Yellow                    | 6 volt feed to No. 3 Lights.   |
| C                           | N.O.        | Red-Yellow<br>Blue                       | Completes circuit from Score Timer Disc to 1 To 9 Relay.   |
| D                           | N.C.        | White<br>White-Red                       | 6 Volt feed to No. 9 Lights.   |
| E                           | N.C.        | Orange-Red<br>Jumper                     | Breaks feed to 3-9 Relay Coil.   |
| F                           | N.O.        | Gray-Black<br>Red-Black                  | Completes series parallel circuit to 1 To 10 Relay Coil.   |
| <b>4 RELAY</b>              |             |  |  |
| A                           | N.C.        | Orange-White<br>Orange-Black             | Breaks feed to 4-7-8 Relay Coil.   |
| B                           | N.C.        | Yellow-Red<br>Blue                       | 6 Volt Feed to No. 4 Lights.   |
| C                           | N.O.        | Red-Yellow<br>Green-Red                  | Completes circuit from Score Timer Disc to 1 To 9 Relay.   |
| E                           | N.C.        | Gray<br>Jumper                           | Breaks feed to 4 Relay Coil.   |
| F                           | N.O.        | Gray-Black<br>Blue-Red                   | Completes series circuit to 1 To 10 Relay Coil.  |
| <b>5 RELAY</b>              |             |  |  |
| B                           | N.C.        | Green-Black<br>Green-Yellow              | 6 volt feed to No. 5 Lights.   |
| C                           | N.O.        | Red-Yellow<br>Blue-Yellow                | Completes circuit from Score Timer Disc to 1 To 9 Relay.   |
| E                           | N.C.        | Gray-Red<br>Jumper                       | Breaks feed to 5 Relay Coil.   |
| F                           | N.O.        | Red<br>Blue-Yellow                       | Completes series parallel circuit to 1 To 10 Relay Coil.   |
| <b>6 RELAY</b>              |             |  |  |
| A                           | N.C.        | Black-Red<br>Black-Yellow                | Breaks feed to 6-9-10 Relay Coil.  |
| B                           | N.C.        | White-Blue<br>White                      | 6 volt feed to No. 6 Lights.   |
| C                           | N.O.        | Blue-White<br>Red                        | Completes series parallel circuit to 1 To 10 Relay Coil.   |
| E                           | N.C.        | Brown-White<br>Jumper                    | Breaks feed to 6 Relay Coil.   |
| F                           | N.O.        | Red-Yellow<br>Blue-Orange                | Completes circuit from Score Timer Disc to 1 To 9 Relay coil.  |
| <b>7 RELAY</b>              |             |  |  |
| A                           | N.C.        | Orange-Green<br>Jumper                   | Breaks feed to 7 Relay Coil.   |
| B                           | N.O.        | Brown-White<br>Gray                      | Completes circuit to 6 Relay Coil.   |
| C                           | N.O.        | Blue-Red<br>Blue-Yellow                  | Completes series parallel circuit to 1 To 10 Relay Coil.   |
| E                           | N.C.        | Yellow-Brown<br>Blue                     | 6 Volt Feed to No. 7 Lights.   |
| F                           | N.O.        | Red-Yellow<br>Green-White                | Completes circuit from Score Timer Disc to 1 To 9 Relay coil.  |
| <b>10 RELAY</b>             |             |  |  |
| A                           | N.C.        | Orange-Black<br>Jumper                   | Breaks feed to 10 Relay Coil.  |
| B                           | N.O.        | Brown-White<br>Gray                      | Completes circuit to 6 Relay Coil.   |
| C                           | N.O.        | Blue-White<br>Blue-Orange                | Completes series parallel circuit to 1 To 10 Relay Coil.   |
| E                           | N.C.        | White<br>White-Yellow                    | 6 volt feed to No. 10 Lights.  |
| F                           | N.O.        | Green-Black<br>Red-Yellow                | Completes circuit from Score Timer Disc to 1 To 9 Relay coil.  |
| <b>4-7-8 RELAY</b>          |             |  |  |
| B                           | N.C.        | Yellow<br>Blue                           | 6 volt feed to No. 4, No. 7, No. 8 Lights.   |
| C                           | N.O.        | Blue-Yellow<br>Gray-Black                | Completes series parallel circuit to 1 To 10 Relay Coil.   |
| E                           | N.C.        | Orange-Black<br>Jumper                   | Breaks feed to 4-7-8 Relay coil.   |
| F                           | N.O.        | Red-Yellow<br>Blue-Red                   | Completes circuit from Score Timer Disc to 1 To 9 Relay coil.  |
| <b>5-8-9 RELAY</b>          |             |  |  |
| A                           | N.C.        | Brown-Red<br>Jumper                      | Breaks feed to 5-8-9 Relay coil.   |
| B                           | N.C.        | Blue<br>Yellow-Black                     | 6 volt feed to No. 8 Lights.   |
| C                           | N.O.        | Red<br>Blue-Yellow                       | Completes series parallel circuit to 1 To 10 Relay Coil.   |
| E                           | N.C.        | Yellow<br>Green-Yellow                   | 6 volt feed to No. 5 and No. 9 Lights.   |
| F                           | N.O.        | Red-Yellow<br>Blue-White                 | Completes circuit from Score Timer Disc to 1 To 9 Relay coil.  |
| <b>6-9-10 RELAY</b>         |             |  |  |
| A                           | N.C.        | Yellow<br>White (Jumper)                 | 6 volt feed to No. 6 and No. 10 Lights.  |
| B                           | N.C.        | Green-Yellow<br>White                    | 6 volt feed to No. 9 Light.  |
| C                           | N.O.        | Blue-Orange<br>Red                       | Completes series parallel circuit to 1 To 10 Relay Coil.   |
| E                           | N.C.        | Black-Yellow<br>Jumper                   | Breaks feed to 6-9-10 Relay Coil.  |
| F                           | N.O.        | Red-Yellow<br>Yellow-Red                 | Completes circuit from Score Timer Disc to 1 To 9 Relay coil.  |
| <b>5 PIN SWITCHES RELAY</b> |             |  |  |
| B                           | N.C.        | Black-White<br>Black-White (Jumper)      | Breaks feed to Panel Switches 13, 14, 15, 16, 18 and 19.   |
| C                           | N.C.        | Orange-Black<br>Jumper                   | Breaks feed to 5 Pin Switches Relay Coil.  |
| <b>1 TO 10 RELAY</b>        |             |  |  |
| B                           | S.P.D.T.    | Yellow-Red<br>Green<br>Blue-Yellow       | When latched, completes circuit to First or Second Shot Relay; when tripped, completes circuit to Strike or Spare Relay.   |
| C                           | N.O.        | White<br>Orange-White                    | Completes circuit to Strike-Spare unit Step-up Coil.   |
| E                           | N.C.        | Blue-Orange<br>Gray-Black                | Breaks feed to 1 To 10 Relay Coil.   |
| F                           | S.P.D.T.    | White-Blue<br>White-Yellow<br>White-Red  | When latched, completes circuit to Score Timer Motor, through Spare Relay Switch and Strike Relay Switch; when tripped, through Strike-Spare Relay Switch.   |
| <b>GAME COMPLETE RELAY</b>  |             |  |  |
| A                           | N.C.        | Red-Black<br>Blue-White                  | Completes circuit to Relay Bank Reset Coil.  |
| B                           | N.C.        | Red-Green<br>Blue                        | Completes 117 volt circuit until Game Complete Relay pulls in when cabinet toggle switch is turned off.  |
| C                           | S.P.D.T.    | White-Brown<br>Green<br>Orange-White     | When latched, completes circuit to Relay Timer Motor, Strike-Spare unit Step-up Coil and 5 Pin Switches Relay; when tripped, Lights Game Complete Light.   |
| E                           | N.C.        | Orange<br>Jumper                         | Completes circuit to all pin relays and Puck-Lockout Coil; when tripped, Panel Switches will not operate.  |
| F                           | S.P.D.T.    | Green-Red<br>Green-Yellow<br>White       | When latched, completes circuit to Second-Shot Relay through 1 To 10 Relay, Relay Timer, First-Shot Relay Switches; when tripped, completes circuit to Second-Shot Relay through 9th step on Frame Disc. |
| <b>START RELAY</b>          |             |  |  |
| A                           | N.C.        | Red-Yellow<br>Jumper                     | Breaks feed to Start Relay Coil.   |
| B                           | S.P.D.T.    | Black-White<br>Black-Red<br>Black-Yellow | When latched, completes circuit to 10 To 300 Step-up Coil; when tripped, completes circuit to Strike-Spare Reset Coil.   |
| C                           | N.C.        | Brown-White<br>Black                     | Completes circuit to Frame and 10 To 300 Reset Coils.  |
| E                           | N.C.        | Blue-Yellow<br>Green                     | Breaks feed to Strike Relay Coil.  |