

**MULTI-BALL**  
**FIREPOWER**  
**INSTRUCTION BOOKLET**

This booklet provides game operation, bookkeeping, game adjustment, and diagnostic procedures for FIREPOWER. For installation and special maintenance information refer to the blue-covered game manual. For detailed information refer to Williams Solid State Flipper Maintenance Manual.

**SPECIAL CONSIDERATIONS WHEN REPLACING CIRCUIT BOARDS**

**CPU Board**

1. Revision level 6 CPU Boards (batteries located on lower right corner of board) or later boards must be used.
2. Must be equipped with green-labeled FIREPOWER PROMs, green-labeled game ROM and green-labeled flipper ROMs.
3. Jumper J4 must be connected and J3 removed.

**Sound Board**

1. Model D 8224 required for speech.
2. Must be jumpered for white-labeled sound ROM operation and be equipped with Sound ROM 3. (Jumpers W2, W5, W7, W9, W10, and W15 connected; W3, W4, W6, W8, W11, W12, and W13 removed)

**Power Supply Board**

1. Fuse F4 (10A SB) for flipper solenoids must be installed.

**Optional Speech Module**

1. Requires 5T4971 (IC7), 5T4972 (IC5), and 5T4973 (IC6) speech ROMs.

**GAME OPERATION**

\*Indicates adjustable features

**Game Over Mode** - Turn game ON; player scores show zero, high score to date\* alternates with player 1 score, player 1 up lamp flashes, game over lamp lights, all playfield lamps except for credit lamp cycle in attract mode.

**Credit Posting** - Insert coin; knocker sounds, number of credits displayed. If maximum credits\* exceeded by coin or high score to date\*, credits are posted correctly, coin lockout deenergized until remaining credits are below maximum. No credits may be won and coins are rejected while lockout is deenergized.

**Game Start** - Push credit button; start-up tune played, ball served, credit display reduced by one, player 1 up lamp flashes until first scoring switch is made, ball in play shows 1. Pushing credit button before ball 2 displayed allows additional players.

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**Bonus Advance** - "F-I-R-E" rollovers when not lit, flashing "1-6" drop targets, left and right inside rollovers (3 advances when lit), and left and right outside rollovers. Bonus multiplier advanced and FIRE insert lit by spotting "F-I-R-E". "F-I-R-E" lamps rotate by actuating right flipper (*LANE CHANGE™* feature).

**FIREPOWER** - Making three power targets scores 10,000 and lites POWER insert, left and right inside rollovers, and \*ball saver kicker ON. Liting FIRE and POWER inserts scores and advances FIREPOWER bonus (5,000 or lit values of 10, 30, and 50,000). Outlane Special lit when \*30, or 50,000 bonus collected.

**"1-6" Lamps** - Spotting "1-6" lights ball saver kicker lamp, flashes two eject holes, lights spinner, and alternately lights two jet bumpers; adjustable to flash eject holes one at a time (always one at a time once *MULTI-BALL* play is achieved). Spotting "1-6" twice on the same ball lights all jet bumpers.

**Eject Holes** - Making eject hole when flashing locks up ball and new ball released per following order: from ball ramp, flashing eject hole, unlit eject hole. Locking up all balls in eject holes initiates *MULTI-BALL* play. To minimize multiple player interaction lit and flashing eject holes are reallocated from ball to ball as required: flashing lamp to empty eject hole if possible; lit lamp to occupied eject hole if possible.

**Extra Ball** - Maximum of two Extra Balls per ball. Lighting \*5x or making "F-I-R-E" with 5x lit lights center POWER target for Extra Ball. Making target when lit awards Extra Ball.

**Tilts** - Ball in play tilted on first closure of Playfield and Ball Roll tilts and third\* closure of Plumb Bob. Slam Tilt returns game to game over.

**Memory** - "F-I-R-E" lanes, FIRE insert, POWER Target lamps, POWER insert, \*FIREPOWER bonus lamps, \*lit drop target arrows, eject hole lamps.

**End of Game** - Match Digits\* appears in ball in play display, \*credit awarded for match. Exceeding high score to date awards \*three credits. Match, High Score to Date, and Game Over sounds made as appropriate. Balls released from eject holes and are placed on ball ramp before new game can be started.

With optional Speech Module, the following phrases are produced during game play:

#### ACHIEVEMENT

Game start, collecting FIREPOWER bonus  
Making "F-I-R-E"  
Lighting POWER  
Making "1-6" drop targets  
*MULTI-BALL* play  
Winning Extra Ball  
Making Special  
Tilt  
High Score to Date

#### PHRASE

FIREPOWER.  
FIRE.  
POWER.  
Enemy destroyed.  
Fire 1, 2, 3.  
You won one mission.  
Mission accomplished.  
You are destroyed.  
FIREPOWER mission accomplished.

#### Game Over

#### Random phrase

You destroyed FIREPOWER.  
Enemy destroyed you.  
Mission 213 accomplished.  
You are enemy.  
Enemy fire destroyed you.  
Fire destroyed you.

Mission destroyed you.  
Enemy power won.  
You destroyed enemy mission.  
Enemy mission.  
You won, FIREPOWER destroyed.  
FIREPOWER destroyed.

#### BOOKKEEPING AND EVALUATION TOTALS

(Functions 01-12)

1. In game over mode, set alternate-action switch to AUTO-UP (out) and depress ADVANCE pushbutton. Test 04 is indicated in number of credits display, Function 00 in ball in play display, and game identification in Player 1 display.

2. Operate the ADVANCE pushbutton to display each function on the ball in play display (see Table 1) and record each total from Player 1 display. (To review a total that has been advanced past, set alternate-action switch to MANUAL-DOWN (in) and operate the ADVANCE pushbutton.)
3. Calculate the following if desired:  

$$\% \text{ Paid Credits} = \text{Function 04} \div \text{Function 08}$$
4. Turn the game OFF and back ON to return to game over mode.
5. To change current High Score to Date to value of Function 13, momentarily depress HIGH SCORE RESET pushbutton.
6. To zero Functions 01-11, see page 7

## GAME ADJUSTMENT PROCEDURE

(Functions 13-35)

*Coin door must be open to change settings.*

1. In game over mode, set alternate-action switch to AUTO-UP (out) and depress ADVANCE pushbutton. Test 04 is indicated in number of credits display, Function 00 in ball in play display, and game identification in Player 1 display.
2. **To raise** Function number in ball in play display, operate ADVANCE pushbutton with switch set to AUTO-UP (in). **To lower** Function number operate ADVANCE with it set to MANUAL-DOWN (out).
3. With desired Function indicated in ball in play display, **raise** value in player 1 display by operating credit button with switch set to AUTO-UP (out); **lower** value by operating credit button with it set to MANUAL-DOWN (in). Value left of Player 1 display is new setting. For values see Table 1 and (for pricing) Table 2.
4. Repeat steps 2 and 3 until all required adjustments have been made.
5. Turn game OFF and back ON to return to game over mode.
6. To restore factory settings **and** zero audit totals, see page 7.

## DIAGNOSTIC PROCEDURES

(Display Digits, Lamp, Solenoid, and Switch Tests)

1. In game over mode, set alternate-action switch to MANUAL-DOWN (in) and depress ADVANCE. All displays should go blank.
2. Momentarily depress ADVANCE and set switch to AUTO-UP (out). Display Digits test is performed.
3. Momentarily depress ADVANCE. Test 01 is indicated on number of credits display and Lamp Test is performed.
4. Set switch to MANUAL-DOWN (in) and momentarily depress ADVANCE. Test 02 is indicated on number of credits display and solenoid 01 on the ball in play display; solenoid 01 is pulsed by driver board.
5. Operate ADVANCE to pulse each solenoid (see Figure 3). Pulse solenoid 08 three times to remove balls from ramp before proceeding to switch test.
6. Set switch to AUTO-UP (out) and momentarily depress ADVANCE. Test 03 is indicated on number of credits display and stuck switches on ball in play display.
7. See Figure 4. Operate switches; switch number is indicated on ball in play display.
8. Turn game OFF and back ON to return to game over mode.
9. To set up Auto-Cycle Mode (Display Digits, Lamp, and Solenoid Tests) see page 7.



400 480 500 700

Table 1. Game Adjustments

| FUNCTION | DESCRIPTION                                                                | NOTES                                                                        | FACTORY SETTING |
|----------|----------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------|
| 00       | Game Identification                                                        | 1                                                                            | 1497 1          |
| 01       | Coins, Left Chute (Closest to coin door hinge)                             | 1                                                                            | —               |
| 02       | Coins, Center Chute                                                        | 1                                                                            | —               |
| 03       | Coins, Right Chute                                                         | 1                                                                            | —               |
| 04       | Total Paid Credits                                                         | 1                                                                            | —               |
| 05       | Total Specials                                                             | 1                                                                            | —               |
| 06       | Total Replay (Extra Ball) Scores                                           | 1                                                                            | —               |
| 07       | Match and High Score to Date Credits                                       | 1                                                                            | —               |
| 08       | Total Credits                                                              | 1.2                                                                          | —               |
| 09       | Total Extra Balls                                                          | 1.3                                                                          | —               |
| 10       | Total Ball Time in Minutes                                                 | 1                                                                            | —               |
| 11       | Total Number of Balls Played                                               | 1                                                                            | —               |
| 12       | Current High Score to Date                                                 | 4                                                                            | 550,000         |
| 13       | Backup High Score to Date                                                  | 5                                                                            | 550,000         |
| 14       | Replay 1 Score                                                             | 6                                                                            | 410,000         |
| 15       | Replay 2 Score                                                             | 6                                                                            | 610,000         |
| 16       | Replay 3 Score                                                             | 6                                                                            | 0               |
| 17       | Replay 4 Score                                                             | 6                                                                            | 0               |
| 18       | Maximum Credits                                                            | 7                                                                            | 20              |
| 19       | Standard and Custom Pricing Control (00-07)                                | 8                                                                            | 02              |
| 20       | Left Coin Slot Multiplier                                                  | 8                                                                            | 01              |
| 21       | Center Coin Slot Multiplier                                                | 8                                                                            | 04              |
| 22       | Right Coin Slot Multiplier                                                 | 8                                                                            | 01              |
| 23       | Coin Units Required for Credit                                             | 8                                                                            | 01              |
| 24       | Coin Units Bonus Point                                                     | 8                                                                            | 00              |
| 25       | High Score Credits                                                         | 5                                                                            | 03              |
| 26       | Match (00=ON, 01=OFF)                                                      | —                                                                            | 00              |
| 27       | Special                                                                    | —                                                                            | 00              |
|          | 00 = Awards Credit                                                         |                                                                              |                 |
|          | 01 = Awards-Extra Ball                                                     |                                                                              |                 |
|          | 02 = Awards Points                                                         |                                                                              |                 |
| 28       | Scoring Awards                                                             | —                                                                            | 00              |
|          | 00 = Credits at Replay Score                                               |                                                                              |                 |
|          | 01 = Extra Ball at Replay Score                                            |                                                                              |                 |
| 29       | Maximum Plumb Bob Tilts (1-9)                                              | —                                                                            | 03              |
| 30       | Number of Balls (03 or 05)                                                 | 9                                                                            | 03              |
| 31       | "1-6" Targets                                                              | 9                                                                            | 03              |
|          | 00 = Eject holes lit singly, no target memory                              |                                                                              |                 |
|          | 01 = Eject hole pair lit first time, no target memory                      |                                                                              |                 |
|          | 02 = Eject holes lit singly, targets on memory                             |                                                                              |                 |
|          | 03 = Eject hole pair lit first time, targets on memory                     |                                                                              |                 |
| 32       | Ball Saver Kicker on Lamp                                                  | —                                                                            | 01              |
|          | 00 = Lit from POWER Targets                                                |                                                                              |                 |
|          | 01 = Lit from "1-6" Targets                                                |                                                                              |                 |
|          | 03 = Lit from "1-6" Targets or POWER targets                               |                                                                              |                 |
| 33       | FIREPOWER Bonus Lamps                                                      | —                                                                            | 03              |
|          | 00 = No lamps lit initially, no lamp memory (extra conservative)           |                                                                              |                 |
|          | 01 = 10,000 lamp lit initially, no lamp memory (conservative)              |                                                                              |                 |
|          | 02 = No lamps lit initially, bonus lamps on memory (moderate)              |                                                                              |                 |
|          | 03 = 10,000 lamp lit initially, bonus lamps on memory (liberal)            |                                                                              |                 |
| 34       | Extra Ball Control                                                         | —                                                                            | 01              |
|          | 00 = No Extra Ball                                                         |                                                                              |                 |
|          | 01 = Extra Ball when Lit after 5X                                          |                                                                              |                 |
|          | 02 = Extra Ball when Lit with 5X                                           |                                                                              |                 |
| 35       | Special Control/Background Sound                                           | —                                                                            | 12              |
|          | 00/10 = Alternating Special lites when 50,000<br>FIREPOWER Bonus collected | 1st setting =<br>no background sound<br>2nd setting =<br>background sound on |                 |
|          | 01/11 = Alternating Special lites when 30,000<br>FIREPOWER Bonus collected |                                                                              |                 |
|          | 02/12 = Specials lite when 50,000<br>FIREPOWER Bonus collected             |                                                                              |                 |
|          | 03/13 = Specials lite when 30,000<br>FIREPOWER Bonus collected             |                                                                              |                 |



Notes:

1. Functions 00-11 cannot be changed from the coin door; however, Functions 01-11 can be set to zero as described on page 7.
2. Total Credits (Function 08) is the sum of Function 04 and as applicable, Functions 05, 06, and 07.
3. Total Extra Balls (Function 09) is the sum of the game extra ball feature and Functions 15 and 06, as applicable.
4. Current High Score to Date (Function 12) can be changed to the value of the Backup High Score to Date (Function 13) by operating the HIGH SCORE RESET switch while in the game over mode.
5. Function 13 may be set to any multiple of 10,000 points. Setting Function 25 to zero with Function 13 set to any score but zero permits the High Score to Date feature to operate but no credits are awarded.
6. Functions 14-17 (Replay Scores) may be set to any multiple of 10,000 points. Setting a function to zero disables the replay score point. **Always disable the Replay 4 level first, the Replay 3 level second, etc. The replay levels must be set with ascending values.**
7. Setting Maximum Credits (Function 18) to zero places the game in a **free play mode**.
8. With Function 19 set to 00, Functions 20-24 must be set manually. Refer to Table 2 for seven standard pricing schemes (selected by values of 01-07 for Function 19) and custom pricing values.
9. For 5-Ball play, it is recommended that Function 31 be set to 02.

### RECOMMENDED SCORE LEVELS

| Levels                       | Score Card |
|------------------------------|------------|
| CREDIT GAMES                 |            |
| 3-Ball:                      |            |
| *410,000; 610,000            | 497-36     |
| or 410,000; 620,000; 740,000 | 497-14     |
| 5-Ball:                      |            |
| (See Note 9)                 |            |
| 500,000; 720,000             | 497-45     |
| EXTRA BALL                   |            |
| 3-Ball:                      |            |
| 300,000                      | 497-74     |
| 5-Ball:                      |            |
| 400,000                      | 497-76     |

\*Factory setting

Table 2. Standard and Custom Price Settings

| COIN DOOR<br>MECHANISM                   | CREDITS                       | FUNCTION |    |    |    |    |    |
|------------------------------------------|-------------------------------|----------|----|----|----|----|----|
|                                          |                               | 19       | 20 | 21 | 22 | 23 | 24 |
| Twin-Quarter<br>Quarter, Dollar, Quarter | 1 25c, 3 50c, 7 \$1           | 00       | 03 | 12 | 03 | 02 | 12 |
|                                          | 1 25c, 3 50c, 7 \$1 coin only | 00       | 03 | 14 | 03 | 02 | 00 |
|                                          | 1 25c, 7 \$1 coin only        | 00       | 01 | 07 | 01 | 01 | 00 |
|                                          | •1/25c, 3/50c, 6/\$1          | 01       | 01 | 04 | 01 | 01 | 02 |
|                                          | 1 25c, 6 \$1 coin only        | 00       | 01 | 06 | 01 | 01 | 00 |
|                                          | •1/25c, 5/\$1                 | 05       | 01 | 04 | 01 | 01 | 04 |
|                                          | 1 25c, 5 \$1 coin only        | 00       | 01 | 05 | 01 | 01 | 00 |
|                                          | •1/25c, 4/\$1                 | 02       | 01 | 04 | 01 | 01 | 00 |
|                                          | 1 50c, 3 \$1                  | 00       | 01 | 04 | 01 | 02 | 04 |
|                                          | 1 50c                         | 00       | 01 | 04 | 01 | 02 | 00 |
| 1DM, 5DM, 2DM                            | •2/1DM, 5/2DM, 14/5DM         | 03       | 09 | 45 | 18 | 05 | 45 |
|                                          | 1 1DM, 3 2DM, 10 5DM          | 00       | 09 | 45 | 18 | 05 | 45 |
| 20-Cent, 50-Cent                         | 1 20c, 3 50c                  | 00       | 06 | 00 | 15 | 05 | 00 |
| 1 Franc, 5 Frank                         | •1/1F, 6/5F                   | 04       | 01 | 00 | 05 | 01 | 05 |
|                                          | 1 1F, 7 5F                    | 00       | 06 | 00 | 30 | 05 | 30 |
| 25 Cent,                                 | •1/25c, 4/1G                  | 06       | 01 | 00 | 04 | 01 | 00 |
| 1 Guilder,                               | 1 25c, 5 1G                   | 00       | 01 | 00 | 04 | 01 | 04 |
| 50 Yen, 100 Yen                          | •1/50Y, 2/100Y                | 07       | 01 | 00 | 02 | 01 | 00 |
| 1 Franc or                               | 1 1F, 3 2F                    | 00       | 01 | 01 | 01 | 01 | 02 |
| Twin-1 Franc                             | 1 1F                          | 00       | 01 | 01 | 01 | 01 | 00 |
| 5 Franc,                                 | •1/5F, 2/10F                  | 07       | 01 | 00 | 02 | 01 | 00 |
| 10 Franc                                 | 1 10F                         | 00       | 01 | 00 | 02 | 02 | 00 |
| Twin-2 Franc                             | •1/2F                         | 02       | 01 | 04 | 01 | 01 | 00 |
| 10, 20 Franc                             | •1/10F, 2/20F                 | 07       | 01 | 00 | 02 | 01 | 00 |
| Twin-1 Sucre                             | 1 3S, 2 5S                    | 00       | 02 | 00 | 02 | 05 | 00 |

•Indicates standard price settings by adjusting only Function 19. For other price settings, set Function 19 to 00 and set Functions 20 through 24 to the values indicated in the chart.



## RESETTING AUDIT TOTALS AND ADJUSTMENTS; INITIATING AUTO-CYCLE MODE \*

1. In game over mode, set the alternate-action switch to MANUAL-DOWN (in) and momentarily depress the ADVANCE pushbutton. All displays should go blank.
2. Remove the backglass and unlatch and open the insert door.
3. Set all switches on the MASTER COMMAND slide switch to OFF (move to the right).
4. Set switch on MASTER COMMAND switch to ON (move to left):
  - a. To zero audit totals (Functions 01-11) set switch 8 to ON.
  - b. To restore factory settings **and** zero audit totals, set switch 7 to ON. *Coin Door must remain open to restore factory settings.*
  - c. For Auto-Cycle Mode set switch 6 to ON.
5. Momentarily depress MASTER COMMAND ENTER pushbutton. The LEDs should blink once.
6.
  - a. After zeroing audit totals turn game OFF and ON to return to game over mode.
  - b. After restoring factory settings, turn game OFF and ON **twice** to return to game over mode.
  - c. To initiate Auto-Cycle Mode, set alternate-action switch to AUTO-UP (out) and momentarily depress the ADVANCE pushbutton. Each cycle of this mode sequences through display digits test, flashes all multiplexed lamps 64 times and pulses each solenoid. To terminate the Auto-Cycle mode and go to game over, turn the game OFF and ON.

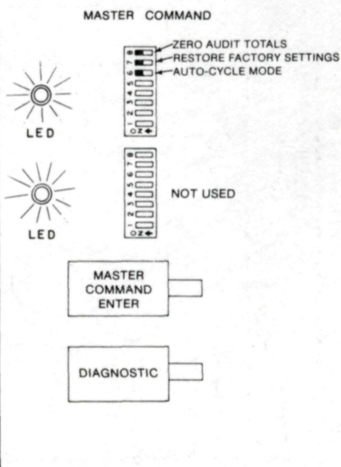
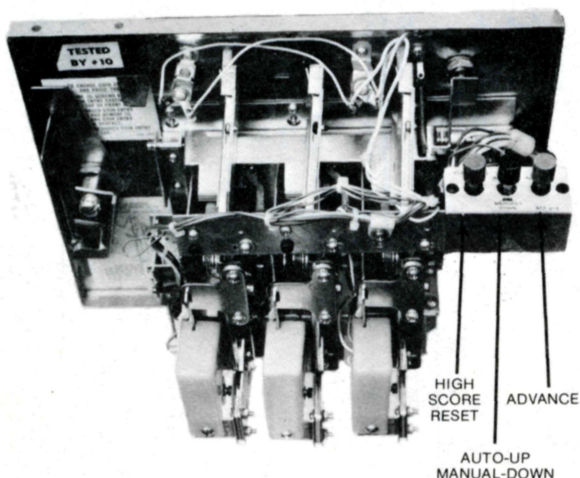
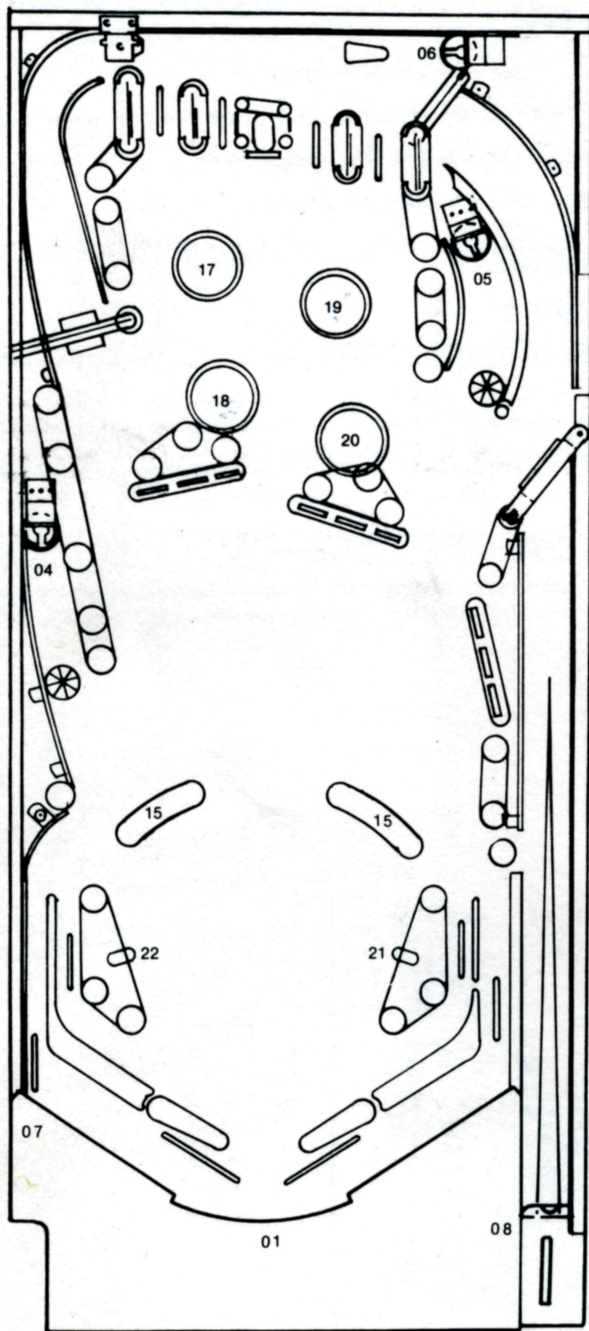


Figure 2.  
Master Command  
Settings Switch

Figure 1. Coin Door Diagnostic Switches



**SOL.  
NO.**

**DESCRIPTION**

- |    |                        |
|----|------------------------|
| 01 | Ball Release           |
| 02 | Not Used               |
| 03 | Not Used               |
| 04 | Left Eject Hole        |
| 05 | Right Eject Hole       |
| 06 | Upper Right Eject Hole |
| 07 | Left Ball Saver Kicker |
| 08 | Ball Ramp Thrower      |
| 09 | Sound                  |
| 10 | Sound                  |
| 11 | Sound                  |
| 12 | Sound                  |
| 13 | Sound                  |
| 14 | Credit Knocker         |
| 15 | Flash Lamps            |
| 16 | Coin Lockout           |
| 17 | Top Left Jet Bumper    |
| 18 | Bottom Left Jet Bumper |
| 19 | Top Right Jet Bumper   |
| 20 | Bottom Left Jet Bumper |
| 21 | Right Kicker           |
| 22 | Left Kicker            |

*Figure 3. Playfield Solenoid Locations and Solenoid Chart*



Table 3. Solenoid Connections

| SOL. NO. | FUNCTION               | WIRE COLOR | CONNECTIONS          | DRIVER TRANS. | SOLENOID PART NO.        |
|----------|------------------------|------------|----------------------|---------------|--------------------------|
| 01       | Ball Release           | GRY-BRN    | 2P11-4, 8P3-17       | Q15           | SA-23-850-DC             |
| 02       | Not Used               | GRY-RED    | 2P11-5, 8P3-18       | Q17           | --                       |
| 03       | Not Used               | GRY-ORN    | 2P11-7, 8P3-19       | Q19           | --                       |
| 04       | Left Eject Hole        | GRY-YEL    | 2P11-8, 8P3-20       | Q21           | SG-23-850-DC             |
| 05       | Right Eject Hole       | GRY-GRN    | 2P11-9, 8P3-21       | Q23           | SG-23-850-DC             |
| 06       | Upper Right Eject Hole | GRY-BLU    | 2P11-3, 8P3-22       | Q25           | SG-23-850-DC             |
| 07       | Left Ball Saver Kicker | GRY-VIO    | 2P11-2, 8P3-23       | Q27           | SG-23-850-DC             |
| 08       | Ball Ramp Thrower      | GRY-BLK    | 2P11-1, 8P3-24       | Q29           | SA-23-850-DC             |
| 09       | Sound                  | BRN-BLK    | 2P9-9, 10P3-3        | Q31           | --                       |
| 10       | Sound                  | BRN-RED    | 2P9-7, 10P3-2        | Q33           | --                       |
| 11       | Sound                  | BRN-ORN    | 2P9-1, 10P3-5        | Q35           | --                       |
| 12       | Sound                  | BRN-YEL    | 2P9-2, 10P3-4        | Q37           | --                       |
| 13       | Sound                  | BRN-GRN    | 2P9-3, 10P3-7        | Q39           | --                       |
| 14       | Credit Knocker         | BRN-BLU    | 2P9-4, 7P1-16        | Q41           | SA2-23-850-DC            |
| 15       | Flash Lamps            | BRN-VIO    | 2P9-5, 6P2           | Q43           | Type 89 Bulbs            |
| 16       | Coin Lockout           | BRN-GRY    | 2P9-6, 7P1-18, 7P2-4 | Q45           | SM-35-4000-DC            |
| *17      | Top Left Jet Bumper    | BLU-BRN    | 2P12-7, 8P3-11       | Q2            | SG-23-850-DC             |
| *18      | Bottom Left Jet Bumper | BLU-RED    | 2P12-4, 8P3-12       | Q4            | SG-23-850-DC             |
| *19      | Top Right Jet Bumper   | BLU-ORN    | 2P12-3, 8P3-13       | Q6            | SG-23-850-DC             |
| *20      | Bottom Left Jet Bumper | BLU-YEL    | 2P12-6, 8P3-14       | Q8            | SG-23-850-DC             |
| *21      | Right Kicker           | BLU-GRN    | 2P12-8, 8P3-15       | Q10           | SG-23-850-DC             |
| *22      | Left Kicker            | BLU-BLK    | 2P12-9, 8P3-16       | Q12           | SG-23-800-DC             |
| *        | Right Flipper          | BLU-VIO    | 7P1-8, 8P3-3         | --            | SFL-19-400/<br>30-750-DC |
| *        | Left Flipper           | BLU-GRY    | 7P1-10, 8P3-4        | --            | SFL-19-400/<br>30-750-DC |

•NOTES:

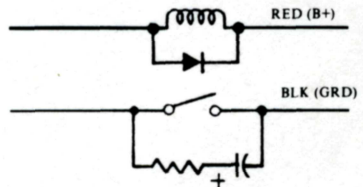
1. Special switch connections for solenoids 17 through 22 are as follows:

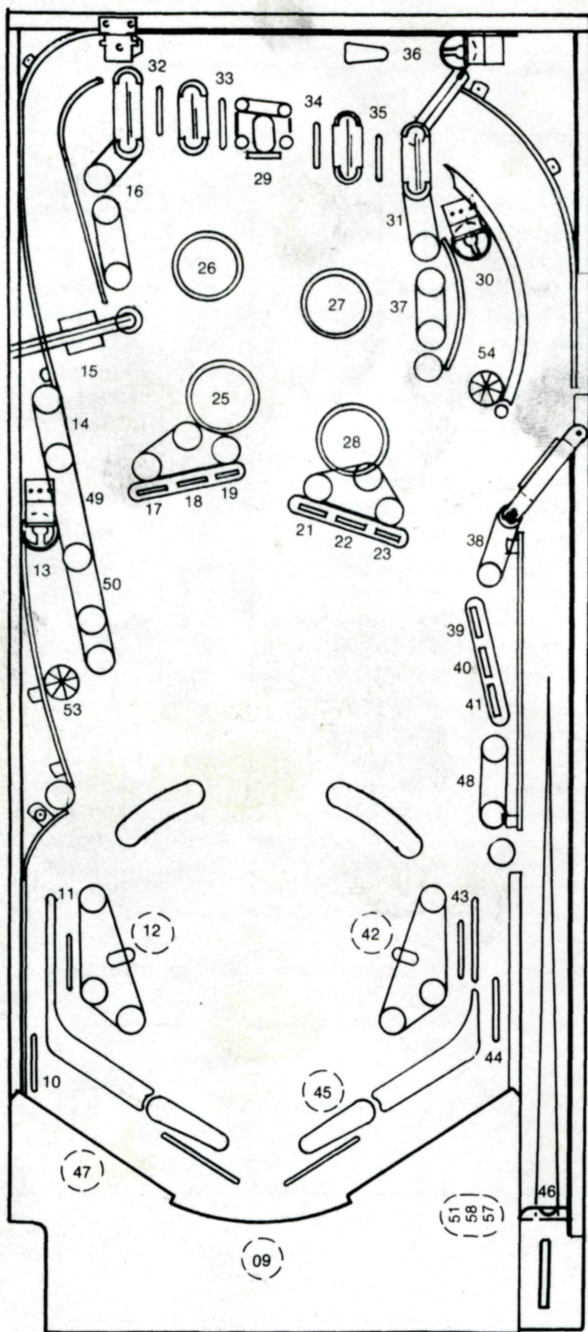
17 -- ORN-BRN -- 2P13-5, 8P3-5  
18 -- ORN-RED -- 2P13-3, 8P3-6  
19 -- ORN-BLK -- 2P13-2, 8P3-7  
20 -- ORN-YEL -- 2P13-4, 8P3-8  
21 -- ORN-GRN -- 2P13-8, 8P3-9  
22 -- ORN-BLU -- 2P13-9, 8P3-10

2. Flipper button connections are as follows:

Right -- ORN-VIO -- 2P12-1, 7P1-7  
Left -- ORN-GRY -- 2P12-2, 7P1-9

3. Typical wiring for solenoids and special switches:





# SWITCH

| NO. | FUNCTION (SCORE)                     |
|-----|--------------------------------------|
| 01  | Plumb Bob Tilt                       |
| 02  | Ball Roll Tilt                       |
| 03  | Credit Button                        |
| 04  | Right Coin Switch                    |
| 05  | Center Coin Switch                   |
| 06  | Left Coin Switch                     |
| 07  | Slam Tilt                            |
| 08  | High Score Reset                     |
| 09  | Outhole                              |
| 10  | Left Outside Rollover (1000)         |
| 11  | Left Inside Rollover (1000/3000)     |
| 12  | Left Kicker (10)                     |
| 13  | Left Eject Hole (1000/10,000)        |
| 14  | Upper Middle Left Standup (50)       |
| 15  | Spinner (100/1000)                   |
| 16  | Top Left Standup (50)                |
| 17  | "1" Target (1000)                    |
| 18  | "2" Target (1000)                    |
| 19  | "3" Target (1000)                    |
| 20  | Not Used                             |
| 21  | "4" Target (1000)                    |
| 22  | "5" Target (1000)                    |
| 23  | "6" Target (1000)                    |
| 24  | Not Used                             |
| 25  | Bottom Left Jet Bumper (100/1000)    |
| 26  | Top Left Jet Bumper (100/1000)       |
| 27  | Top Right Jet Cumper (100/1000)      |
| 28  | Bottom Right Jet Bumper (100/1000)   |
| 29  | Top Center Target (1000)             |
| 30  | Right Eject Hole (1000/10,000)       |
| 31  | Upper Top Right Standup (50)         |
| 32  | "F" Rollover (1000)                  |
| 33  | "I" Rollover (1000)                  |
| 34  | "R" Rollover (1000)                  |
| 35  | "E" Rollover (1000)                  |
| 36  | Upper Right Eject Hole (1000/10,000) |
| 37  | Lower Top Right Standup (50)         |
| 38  | Middle Right Standup (50)            |
| 39  | Top "POWER" Target (1000)            |
| 40  | Middle "POWER" Target (1000)         |
| 41  | Bottom "POWER" Target (1000)         |
| 42  | Right Kicker (10)                    |
| 43  | Right Inside Rollover (1000/3000)    |
| 44  | Right Outside Rollover (1000)        |
| 45  | Right Flipper <i>LANE CHANGE</i>     |
| 46  | Ball Shooter                         |
| 47  | Playfield Tilt                       |
| 48  | Lower Right Standup (50)             |
| 49  | Center Middle Left Standup (50)      |
| 50  | Lower Middle Left Standup (50)       |
| 51  | Left Ball Ramp                       |
| 52  | Not Used                             |
| 53  | Left Eject Rollover (1000)           |
| 54  | Right Eject Rollover (1000)          |
| 55  | Not Used                             |
| 56  | Not Used                             |
| 57  | Right Ball Ramp                      |
| 58  | Center Ball Ramp                     |

Note: Second score is lit or flashing value.

Figure 4. Playfield Switch Locations and Switch Chart



| COLUMN<br>ROW | 1<br>GRN-BRN            | 2<br>GRN-RED                    | 3<br>GRN-ORN     | 4<br>GRN-YEL                  | 5<br>GRN-BLK                  | 6<br>GRN-BLU                           | 7<br>GRN-VIO                     | 8<br>GRN-GRY           |
|---------------|-------------------------|---------------------------------|------------------|-------------------------------|-------------------------------|----------------------------------------|----------------------------------|------------------------|
| 1 WHT-BRN     | PLUMB BOB TILT<br>1     | OUTHOLE<br>9                    | "1" TARGET<br>17 | BOTTOM LEFT JET BUMPER<br>25  | "I" ROLLOVER<br>33            | BOTTOM "POWER" TARGET<br>41            | CENTER MIDDLE LEFT STANDUP<br>49 | RIGHT BALL RAMP<br>57  |
| 2 WHT-RED     | BALL ROLL TILT<br>2     | LEFT OUTSIDE ROLLOVER<br>10     | "2" TARGET<br>18 | TOP LEFT JET BUMPER<br>26     | "R" ROLLOVER<br>34            | RIGHT KICKER<br>42                     | LOWER MIDDLE LEFT STANDUP<br>50  | CENTER BALL RAMP<br>58 |
| 3 WHT-ORN     | CREDIT BUTTON<br>3      | LEFT INSIDE ROLLOVER<br>11      | "3" TARGET<br>19 | TOP RIGHT JET BUMPER<br>27    | "E" ROLLOVER<br>35            | RIGHT INSIDE ROLLOVER<br>43            | LEFT BALL RAMP<br>51             | NOT USED<br>59         |
| 4 WHT-YEL     | RIGHT COIN SWITCH<br>4  | LEFT KICKER<br>12               | NOT USED<br>20   | BOTTOM RIGHT JET BUMPER<br>28 | UPPER RIGHT EJECT HOLE<br>36  | RIGHT OUTSIDE ROLLOVER<br>44           | NOT USED<br>52                   | NOT USED<br>60         |
| 5 WHT-GRN     | CENTER COIN SWITCH<br>5 | LEFT EJECT HOLE<br>13           | "4" TARGET<br>21 | TOP CENTER TARGET<br>29       | LOWER TOP RIGHT STANDUP<br>37 | RIGHT FLIPPER LANE CHANGE SWITCH<br>45 | LEFT EJECT ROLLOVER<br>53        | NOT USED<br>61         |
| 6 WHT-BLU     | LEFT COIN SWITCH<br>6   | UPPER MIDDLE LEFT STANDUP<br>14 | "5" TARGET<br>22 | RIGHT EJECT HOLE<br>30        | MIDDLE RIGHT STANDUP<br>38    | BALL SHOOTER<br>46                     | RIGHT EJECT ROLLOVER<br>54       | NOT USED<br>62         |
| 7 WHT-VIO     | SLAM TILT<br>7          | SPINNER<br>15                   | "6" TARGET<br>23 | UPPER TOP RIGHT STANDUP<br>31 | TOP "POWER" TARGET<br>39      | PLAYFIELD TILT<br>47                   | NOT USED<br>55                   | NOT USED<br>63         |
| 8 WHT-GRY     | HIGH SCORE RESET<br>8   | TOP LEFT STANDUP<br>16          | NOT USED<br>24   | "F" ROLLOVER<br>32            | MIDDLE "POWER" TARGET<br>40   | LOWER RIGHT STANDUP<br>48              | NOT USED<br>56                   | NOT USED<br>64         |

Figure 5. Switch Matrix

| COLUMNS<br>ROW | 1                                   | 2                     | 3            | 4                      | 5                            | 6                       | 7                   | 8                                 |
|----------------|-------------------------------------|-----------------------|--------------|------------------------|------------------------------|-------------------------|---------------------|-----------------------------------|
|                | YEL-BRN                             | YEL-RED               | YEL-ORN      | YEL-BLK                | YEL-GRN                      | YEL-BLU                 | YEL-VIO             | YEL-GRY                           |
| 1 RED-BRN      | SAME PLAYER SHOOT AGAIN (PLAYFIELD) | TOP POWER TARGET      | 4,000 BONUS  | 20,000 BONUS           | LEFT EJECT HOLE ARROW        | 10,000 FIREPOWER BONUS  | RIGHT SPECIAL       | #1 PLAYER UP                      |
| 2 RED-BLK      | BALL SAVER KICKER ON                | CENTER POWER TARGET   | 5,000 BONUS  | "1" TARGET ARROW       | RIGHT EJECT HOLE ARROW       | 30,000 FIREPOWER BONUS  | 1 CAN PLAY          | #2 PLAYER UP                      |
| 3 RED-ORN      | FIRE (x2)                           | BOTTOM POWER TARGET   | 6,000 BONUS  | "2" TARGET ARROW       | UPPER RIGHT EJECT HOLE ARROW | 50,000 FIREPOWER BONUS  | 2 CAN PLAY          | #3 PLAYER UP                      |
| 4 RED-YEL      | POWER (x2)                          | RIGHT INSIDE ROLLOVER | 7,000 BONUS  | "3" TARGET ARROW       | 2X                           | TOP LEFT JET BUMPER     | 3 CAN PLAY          | #4 PLAYER UP                      |
| 5 RED-GRN      | "F"                                 | LEFT INSIDE ROLLOVER  | 8,000 BONUS  | "4" TARGET ARROW       | 3X                           | TOP RIGHT JET BUMPER    | 4 CAN PLAY          | TILT                              |
| 6 RED-BLU      | "I"                                 | 1,000 BONUS           | 9,000 BONUS  | "5" TARGET ARROW       | 4X                           | BOTTOM RIGHT JET BUMPER | MATCH               | GAME OVER                         |
| 7 RED-VIO      | "R"                                 | 2,000 BONUS           | NOT USED     | "6" TARGET ARROW       | 5X                           | BOTTOM LEFT JET BUMPER  | BALL IN PLAY        | SAME PLAYER SHOOT AGAIN (BACKBOX) |
| 8 RED-GRY      | "E"                                 | 3,000 BONUS           | 10,000 BONUS | SPINNER 1,000 WHEN LIT | EXTRA BALL WHEN LIT          | LEFT SPECIAL            | CREDITS (PLAYFIELD) | HIGH SCORE TO DATE                |

Figure 6. Lamp Matrix