

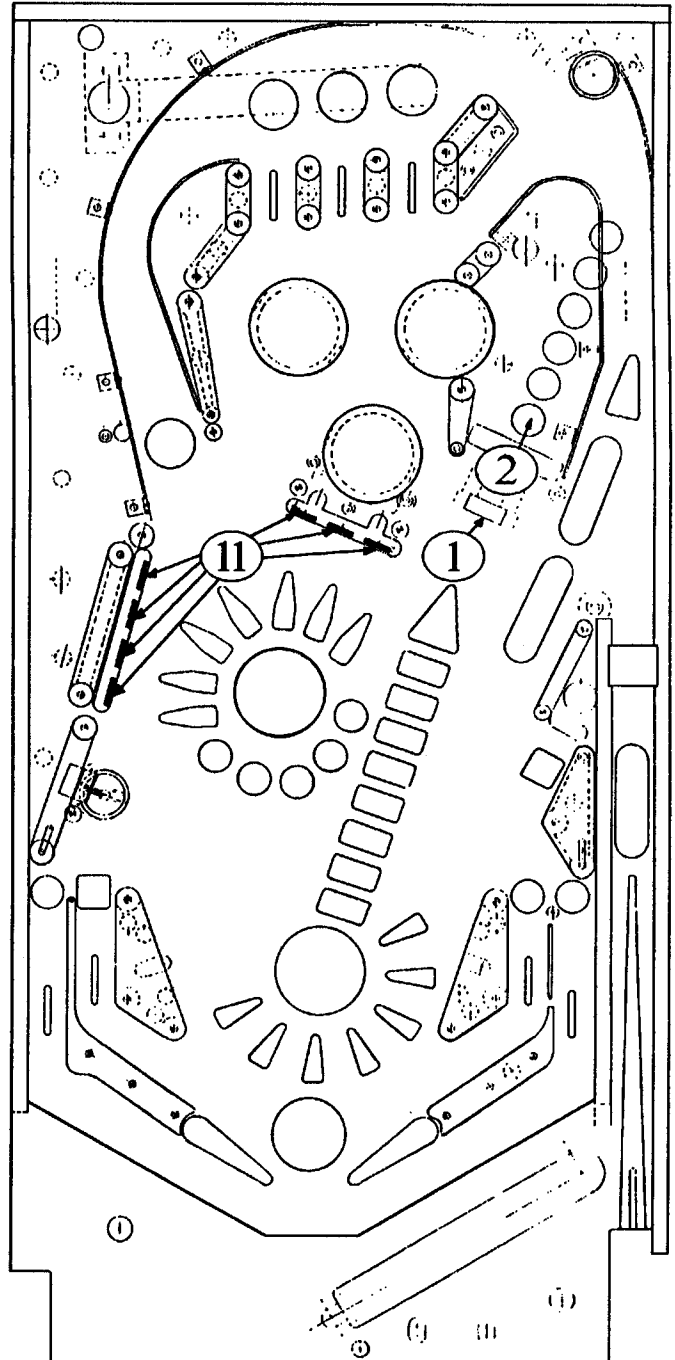
GAME SPECIFIC FEATURES

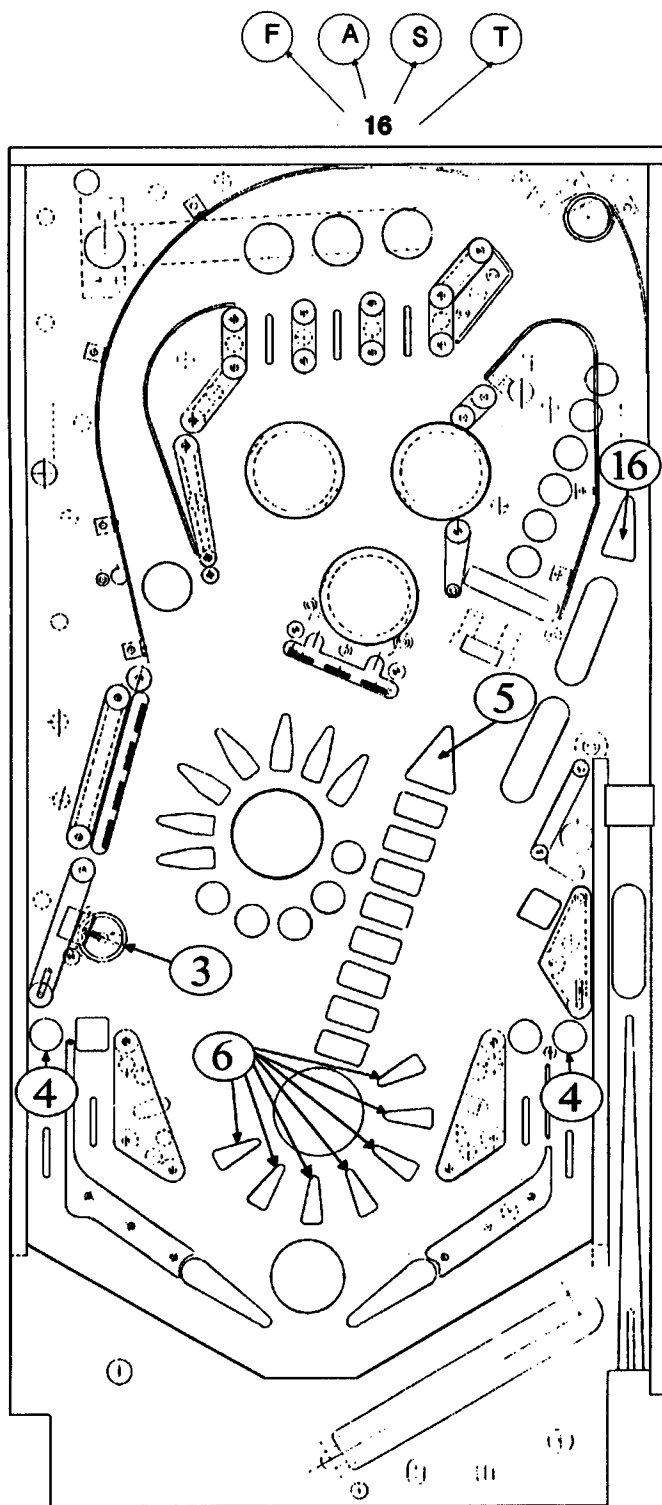
Jackpot

The Jackpot can be obtained in 2 or 3 Ball play only after 3 Ball play has been achieved.

When the Jackpot mode starts, the large Drop Target (1) will raise. Shoot the Drop Target down and shoot the ramp (2) before the Timer resets the Target. Advance the Jackpot by shooting Carrera (11). Light the Double Jackpot by shooting Checkpoint when the Single Drop Target (1) is down and shoot the ramp for Jackpot. Values below are displayed on the speaker panel.

2 Million	3 Million	4 Million	Double Jackpot Grand Prix
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Pit Stop

When the ball enters the Pit Stop Hole(3) the player is awarded one of the following:

(4) Lite Outlane Special

(5) Lite Extra Ball

Mystery Point Value

(6) Advance Tach 1,000 RPM

(16) Advance FAST

Miles Hold

In 2-Ball Multiball
The Pit Stop Hole will start Automatic 3-Ball
when Green lamp is lit.

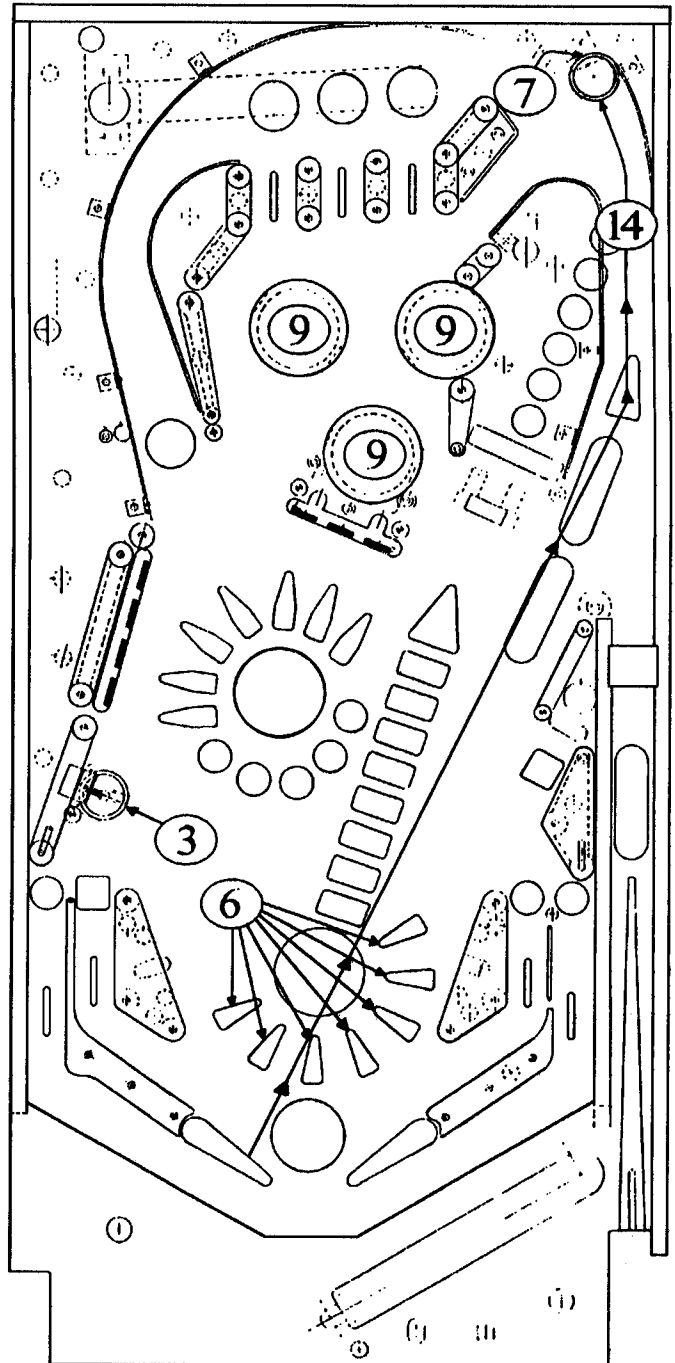
Multiball

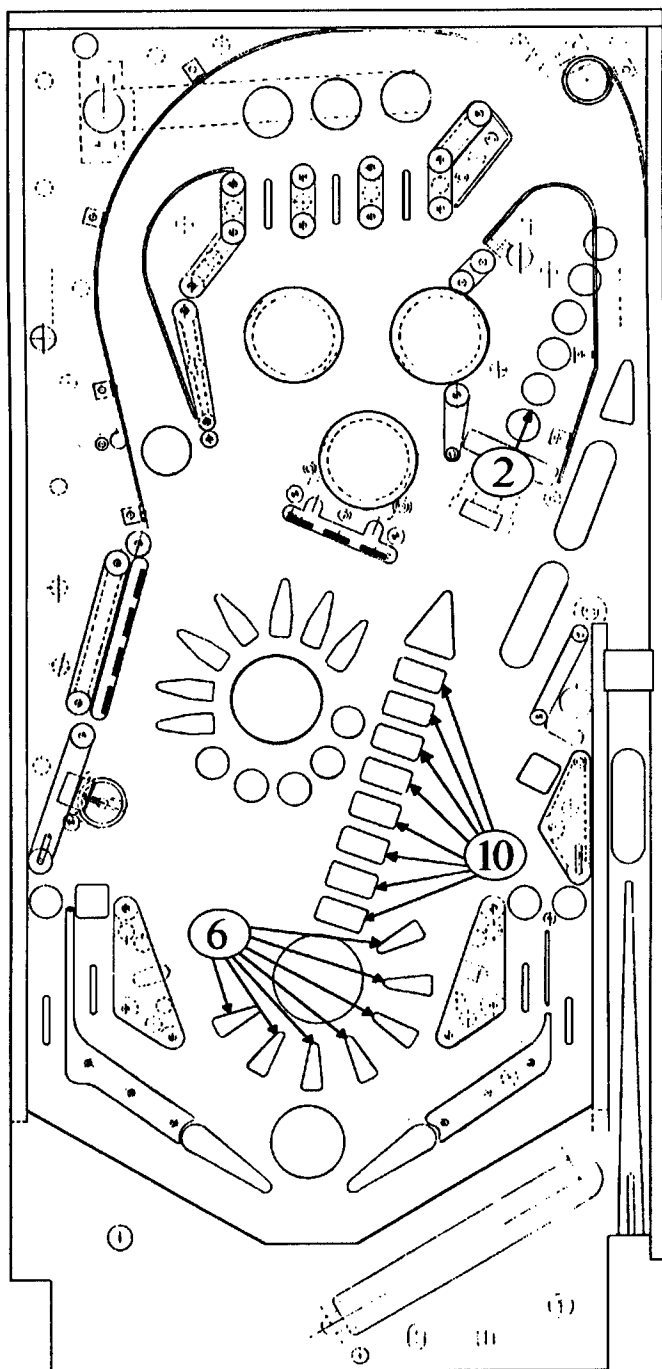
Multiball is achieved by advancing the Tach. The Tach is advanced in increments of 1,000 RPM by shooting the Ramp and achieving speeds of (see Instant Info. on the Display) or above, Pop Bumpers (9) Pit Stop Mystery (3) & completing Carrera Targets

Tach (6) Reads as follows:

2,000 RPM
3,000 RPM
4,000 RPM
5,000 RPM
6,000 RPM & Light CHECKPOINT (14)
7,000 RPM & Light Pit Stop (3)
Redline & Instant 3-Ball

In 2-Ball Multiball a Shot into the Pit Stop Hole(3) will start Automatic 3-Ball.
During 2-Ball Play a Shot into Hole (7) will start Auto 3-Ball.





Lazermatic Speed Ramp

Shoot Ramp (2) for High Speed Record.
After each completion the Palyers Lazermatic
Speed will be read and placed on the Dot
Matrix Display.

Speeds of (See Instant Info. in Player Display)
will advance players Tach (6) from 2,000 to
Redline. (See Multiball)

Each Ramp shot lights a Flag (10).
After completeing the 8th Flag the Ramp is lit
for 1 Million points on a 10 second timer.

8 consecutive Ramp shots lights the Ramp for
10 Million points on a 10 second timer.

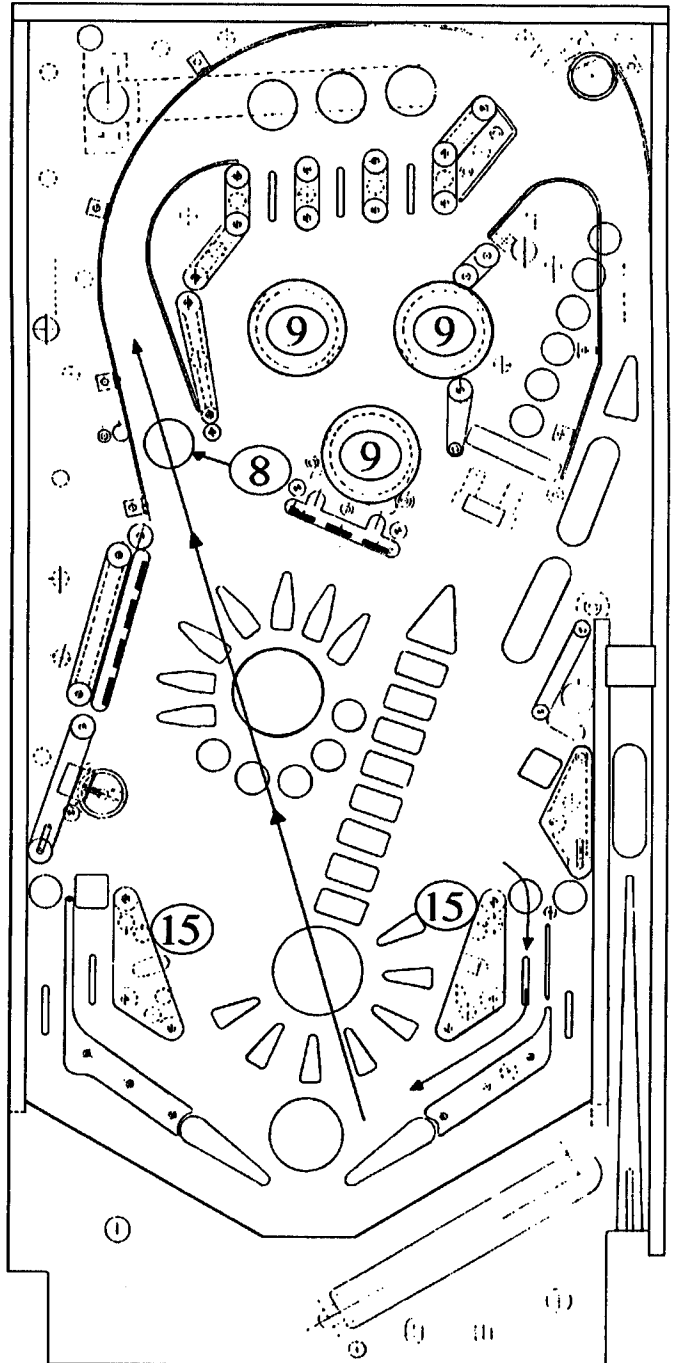
Spin & Win

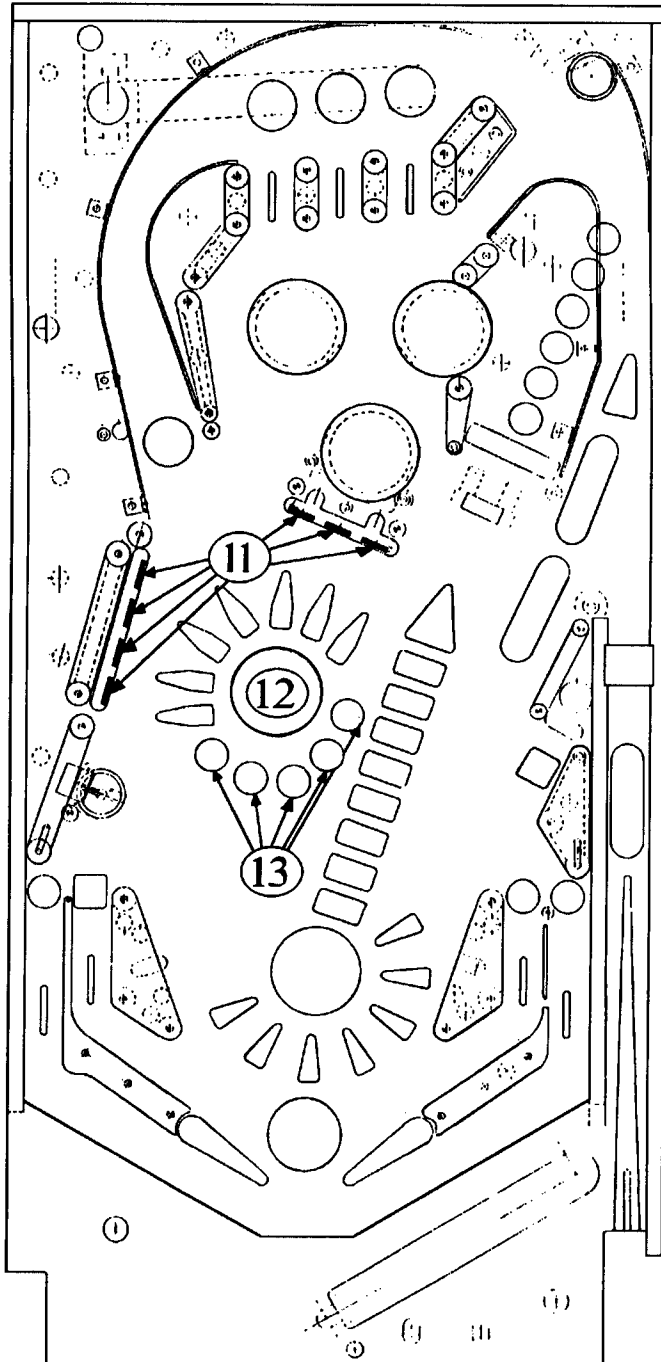
The Spin & Win Feature is always active.

Values (below) toggle each time a Pop Bumper (9) or Slingshot (15) is activated.

Spin & Win values are collected by shooting through the Spinner (8).

1 Million
Hot Nitro
Mystery Points
Light Extraball
Advance RPM





Blue Light Special

When the Random Blue Light Special (12) comes on, completing the remaining targets will award one of the five values(13):

- 1 Million
- Redline
- Extra Ball
- Take High Score
- Double Score

Carrera

Completing Carrera Targets (11) will advance Tach 1,000 RPM & advance Jackpot Value.

Skill Shot

1st shot into ramp (2) from plunger scores
250K times Ball in play.

Nitro Value

Left Return Lane lights target (17). Completing
Target (17) collects the value built up by the
Pop Bumpers

Hot Nitro

The Hot Nitro Round is 1 of 5 features
collected at Spin & Win.
When Hot Nitro Is Active a Yellow light will
flash at the car above the Target.
At this time the Target is worth 200K per hit
and each hit advances the (2) Lazermatic
Ramp Speeds by 20MPH.

Combo Shot

Step 1

Shoot the ball through the Spinner (8) and
into the Hole (7).

Step 2

When the ball returns to the left Flipper Shoot
the Ramp (2).

Step 3

Next Shoot the ball into the Hole (7) via the
Lane (16).

Step 4

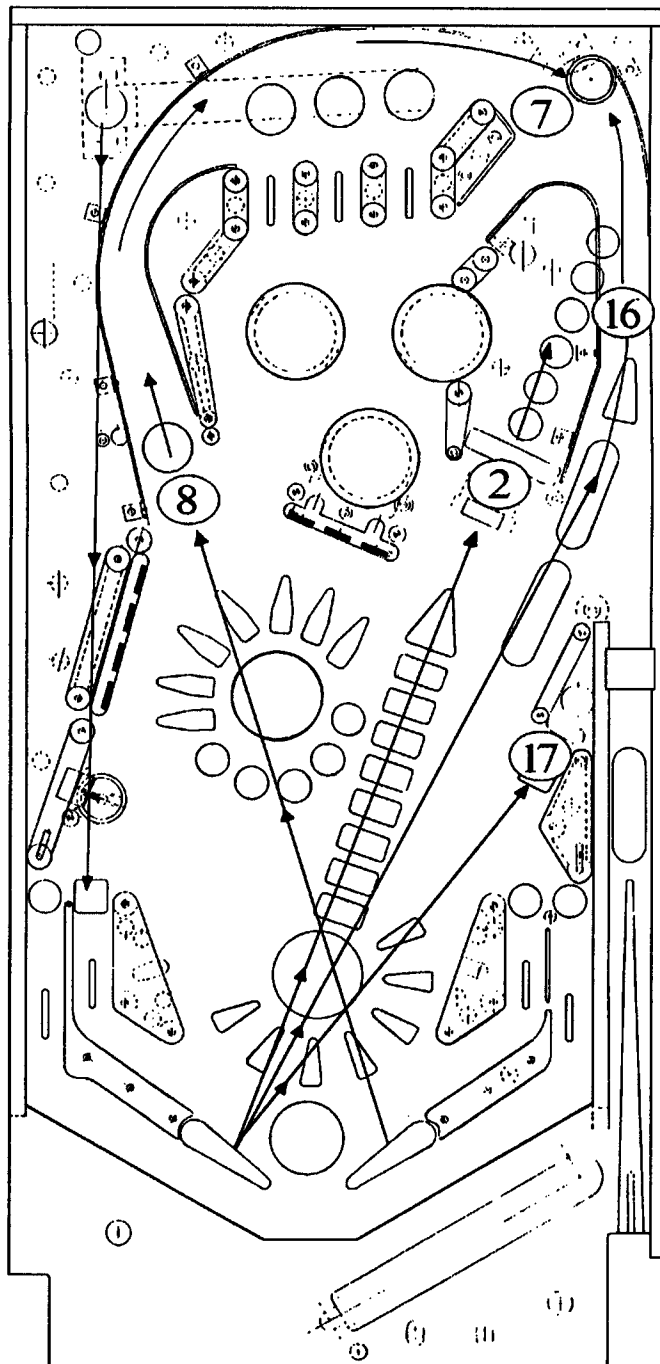
Shoot the ball returned to the left Flipper into
the Car target.

Scoring occurs in the following order:

Steps 1 & 2 = 50K

Steps 1, 2 & 3 = 100K

Steps 1, 2, 3, & 4 = 150K



Switches

Switches are configured in an 8 x 8 matrix of columns (switch drives) and rows (switch returns) with up to 64 switches possible. The switch tests include three parts; switch test, active switches, and bad switches. Row and column wire colors are indicated in each test using corresponding resistor color code numbers.

Switch Test

From the Display Manual test, operate STEP push-button switch. Player 1 and 2 displays indicate SWITCH TEST. Close each switch and observe the displays. The Player 1 and 2 displays will indicate the switch name, the Player 3 display indicates the row and column wire colors, and the Player 4 display indicates the switch number. When a switch is released, the name and number disappear until another switch is closed or the test is exited.

Active Switches

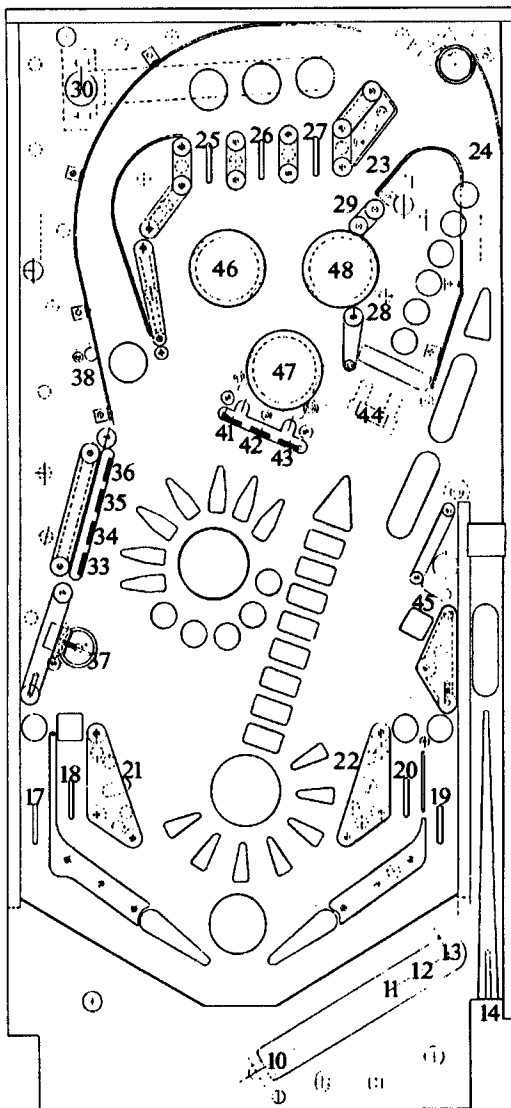
Operate the STEP push-button switch from the Switch Test. Player 1 and 2 Displays indicate ACTIVE SWITCHES. If any switches are stuck closed (or made from the presence of a ball), the Player 1 and 2 displays sequence through switch names, the Player 3 display indicates the row and column wire colors, and the switch numbers are indicated in the Player 4 display. This cycle continues until all switches are cleared or until the STEP push-button switch is depressed.

SWITCH MATRIX CHART

COLUMN ROW	1 Q55 GRN-BRN CN8-1	2 Q54 GRN-RED CN8-2	3 Q53 GRN-ORN CN8-3	4 Q52 GRN-YEL CN8-4	5 Q51 GRN-BLK CN8-5	6 Q50 GRN-BLU CN8-7	7 Q49 GRN-VIO CN8-8	8 Q48 GRN-GRY CN8-9
1 WHT-BRN CN10-9	Plumb Tilt 1	Not Used 9	Left Outlane 17	Top Lane L 25	Drop Target "C" 33	Drop Target "E" 41	Not Used 49	Not Used 57
2 WHT-RED CN10-8	Not Used 2	Outhole 10	Left Return 18	Top Lane A 26	Drop Target "A" 34	Drop Target "R" 42	Not Used 50	Not Used 58
3 WHT-ORN CN10-7	Credit Button 3	Trough #1 Left 11	Right Outlane 19	Top Lane P 27	Drop Target "R" 35	Drop Target "A" 43	Not Used 51	Not Used 59
4 WHT-YEL CN10-6	Right Coin 4	Trough #2 Center 12	Right Return 20	Ramp Entrance 28	Drop Target "R" 36	Checker Drop Target 44	Not Used 52	Not Used 60
5 WHT-GRN CN10-5	Center Coin 5	Trough #3 Right 13	Left Slingshot 21	Ramp Exit 29	Pitstop Eject 37	Nitro Target 45	Not Used 53	Not Used 61
6 WHT-BLU CN10-3	Left Coin 6	Shooter Lane 14	Right Slingshot 22	VUK Eject 30	Spinner 38	Left Turbo Bumper 46	Not Used 54	Not Used 62
7 WHT-VIO CN10-2	Slam Tilt 7	Left EOS 15	Flat Tire 23	Not Used 31	Not Used 39	Center Turbo Bumper 47	Not Used 55	Not Used 63
8 WHT-GRY CN10-1	Not Used 8	Right EOS 16	VUK Entrance 24	Not Used 32	Not Used 40	Right Turbo Bumper 48	Not Used 56	Not Used 64

Checkpoint Switch Part Numbers

Number	Description	Part No.	Number	Description	Part No.
01*	Plumb Tilt	See Cabinet	10	Out Hole	180-5011-00
02	Not Used	-	11	Trough #1 (Left)	180-5009-00
03*	Credit Button	500-5097-02	12	Trough #2 (Center)	180-5009-00
04*	Right Coin	180-5024-00	13	Trough #3 (Right)	180-5009-00
05*	Center Coin	180-5024-00	14	Shooter Lane	500-5143-00
06*	Left Coin	180-5024-00	15	Left Flip. Cab. Switch	180-5067-00
07*	Slam Tilt	180-5022-00	16	Right Flip. Cab. Switch	180-5067-00
08	Not Used	-	17	Left Outlane	515-5138-00
09	Not Used	-	18	Left Return Lane	515-5138-00
			19	Right Outlane	515-5138-00
			20	Right Return Lane	515-5138-00
			21	Left Slingshot Sw. (2)	180-5054-00
			22	Right Slingshot Sw. (2)	180-5054-00
			23	Flat Tire Target	500-5035-00
			24	VUK Entrance	515-5138-00
			25	Top Lane "L"	515-5138-00
			26	Top Lane "A"	515-5138-00
			27	Top Lane "P"	515-5138-00
			28	Ramp Entrance	500-5354-00
			29	Ramp Exit	500-5292-00
			30	VUK Eject	180-5064-00
			31	Not Used	-
			32	Not Used	-
			33	Drop Target CARRERA	180-0030-00
			34	Drop Target CARRERA	180-0030-00
			35	Drop Target CARRERA	180-0030-00
			36	Drop Target CARRERA	180-0030-00
			37	Pltstop Eject	180-5027-00
			38	Spinner	500-5193-00
			39	Not Used	-
			40	Not Used	-
			41	Drop Target CARRERA	180-0030-00
			42	Drop Target CARRERA	180-0030-00
			43	Drop Target CARRERA	180-0030-00
			44	Single Drop Target	180-0030-00
			45	Collect Energy	515-5293-00
			46	Bumper Left	180-5015-00
			47	Bumper Center	180-5015-00
			48	Bumper Right	180-5015-00
			49	Not Used Thru 64	



* Indicates Cabinet Switches

Switch Locations

LAMP TESTS

Controlled lamps are configured in an 8 x 8 matrix of columns (lamp drives) and rows (lamp returns) with up to 64 lamps possible. The lamp tests include four parts, all lamps, lamp return (row), lamp drive (column), and discrete (individual) lamps. Row and column wire colors are indicated in the discrete lamp test using corresponding resistor color code numbers.

All Lamps

From the Active Switch test, operate the STEP push-button switch. Player 1 and 2 displays indicate ALL LAMPS and all controlled lamps will light.

Lamp Returns

From the ALL LAMPS test, depress the STEP push-button switch. The top display indicates LAMP RETURNS and the Bottom display indicates wire color and the LAMP RETURN driver transistor. All controlled lamps in row 1 should be lit. Operating the Game Start push-button switch cycles through each of the rows separately.

Lamp Drives

From the LAMP RETURNS test, depress the STEP push-button switch. The Top display indicates LAMP COLUMNS and the bottom display indicates wire color and the LAMP DRIVES driver transistor. All controlled lamps in column 1 should be lit. Operating the Game Start push-button switch, cycles through each of the columns separately.

Single Lamp

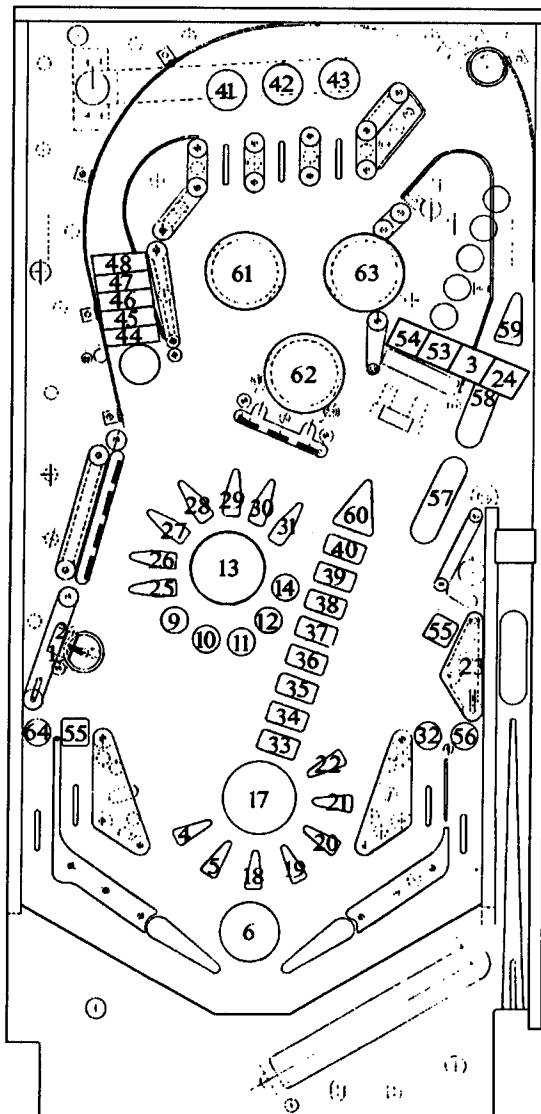
From the LAMP DRIVES test, depress the STEP push-button switch. The top display indicates lamp name. The bottom display indicates the row and column wire colors and the lamp matrix number. Lamp 01 should light. With the FORWARD/REVERSE push-button switch in the FORWARD (up) position, operating the Game Start push-button switch selects higher-numbered lamps; with it in the REVERSE (down) position, Game Start selects lower-numbered lamps.

LAMP MATRIX CHART

COLUMN ROW	1 Q71 YEL-BRN CN7-1	2 Q70 YEL-RED CN7-2	3 Q69 YEL-ORN CN7-3	4 Q68 YEL-BLK CN7-4	5 Q67 YEL-GRN CN7-6	6 Q66 YEL-BLU CN7-7	7 Q65 YEL-VIO CN7-8	8 Q64 YEL-GRY CN7-9
1 Q72 RED-BRN CN6-1	Pitstop Red 1	BLUELITE Million Lit 9	MILLION 17	Drop Target "C" 25	Flag USA 33	Top Lane "L" 41	FAST "F" 49	Release 57
2 Q73 RED-BLK CN6-2	Pitstop Green 2	BLUELITE Redline 10	4000 RPM 18	Drop Target "A" 26	Flag Germany 34	Top Lane "A" 42	FAST "A" 50	Instant Re-Race 58
3 Q74 RED-ORN CN6-3	CHECK POINT Red 3	BLUELITE Extra Ball 11	5000 RPM 19	Drop Target "R" 27	Flag France 35	Top Lane "P" 43	FAST "S" 51	Activate "Fast" Scores 59
4 Q75 RED-YEL CN6-5	2000 RPM 4	BLUELITE Catch Up 12	6000 RPM 20	Drop Target "R" 28	Flag Japan 36	Spinner Mystery RPM 44	FAST "T" 52	Ramp Extra Ball 60
5 Q76 RED-GRN CN6-6	3000 RPM 5	BLUELITE Special 13	7000 RPM 21	Drop Target "E" 29	Flag Belgium 37	Spinner Lite Extra Ball 45	Ramp Jackpot 53	Bumper Left 61
6 Q77 RED-BLU CN6-7	Race Again 6	BLUELITE Double Scores 14	8000 RPM 22	Drop Target "R" 30	Flag Swiss 38	Spinner Mystery Scores 46	Ramp Skill Shot 54	Bumper Center 62
7 Q78 RED-VIO CN6-8	Jackpot 2 Million 7	Jackpot 4 Million 15	Hot Nitro Active 23	Drop Target "A" 31	Flag Italy 39	Spinner Hot Nitro 47	Left Return 55	Bumper Right 63
8 Q79 RED-GRY CN6-9	Jackpot 3 Million 8	Double Jackpot Grand Prix 16	CHECK POINT Green 24	Return Right 32	Flag England 40	Spinner 1 Million 48	Outlane Right 56	Outlane Left 64

Lamp Number	Description
01.	Pitstop Red
02.	Pitstop Green
03.	Checkpoint Red
04.	2000 RPM
05.	3000 RPM
06.	Race Again
07.*	Jackpot 2 Million
08.*	Jackpot 3 Million
09.	Bluelite Million Lit

7	8	15	16
49	50	51	52



Lamp Locations

10. Bluelite Redline
11. Bluelite Ex.Ball
12. Bluelite Catchup
13. Bluelite Special
14. Bluelite Double Scores
- 15.* Jackpot 4 Million
- 16.* Double Jackpot Grand Prix
17. Million
18. 4000 RPM
19. 5000 RPM
20. 6000 RPM
21. 7000 RPM
22. 8000 RPM
23. Hot Nitro Active
24. Check Point Green
25. Drop Target "C"
26. Drop Target "A"
27. Drop Target "R"
28. Drop Target "R"
29. Drop Target "E"
30. Drop Target "R"
31. Drop Target "A"
32. Return Right
33. Flag U.S.A.
34. Flag Germany
35. Flag France
36. Flag Japan
37. Flag Belgium
38. Flag Swiss
39. Flag Italy
40. Flag England
41. Top Lane "L"
42. Top Lane "A"
43. Top Lane "P"
44. Spinner Mystery RPM
45. Spinner Lite Extra Ball
46. Spinner Mystery Scores
47. Spinner Hot Nitro
48. Spinner 1 Million
- 49.* Fast "F"
- 50.* Fast "A"
- 51.* Fast "S"
- 52.* Fast "T"
53. Ramp Jackpot
54. Ramp Skill Shot
55. Return Left
56. Outlane Left
57. Release
58. Instant Rerace
59. Activate "Fast" Scores
60. Ramp Extra Ball
61. Bumper Left
62. Bumper Center
63. Bumper Right
64. Outlane Left

* Indicates Speaker or Backpanel Lamps

FLASH LAMP COIL TESTS

Twenty-Two regular (pulsed under microprocessor control) coil drivers are provided to switch ground to coils. The Left/Right relay is used in conjunction with drives 1 through 8 to switch +32 volts between coils or flash lamps; these sets are termed "left" and "right". This relay is located on the PPB board which provides isolation diodes and current limiting resistors. This effectively provides 29 regular coils.

Flash Lamp

From the Single Lamp test, depress the STEP push-button switch. All Flash lamps will fire randomly. This allows the Technician to easily spot any burned out bulbs and replace them without stepping through the tests below.

Automatic Test

From the Flash Lamps test, depress the STEP push-button switch. Player 1 and 2 displays indicate ALL COILS. The test pulses each regular solenoid or flash lamp sequentially with the coil/flash lamp name indicated in the Player 1 and 2 displays and the wire colors in the Player 3 and 4 displays.

Select Coil

From the Coil Test, depress the STEP push-button switch. Player 1 and 2 displays indicate SELECT COIL and then the name of 1st drive, the wire colors are indicated in the Player 3 and 4 displays. Operate either Flipper push-button switch to select the coil or flash lamp to be tested. With the desired drive number indicated in the Player 4 display, depress the START push-button switch to cause it to be pulsed repeatedly.

RETURN TO GAME OVER

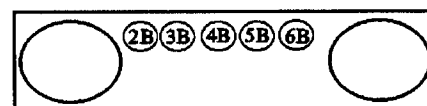
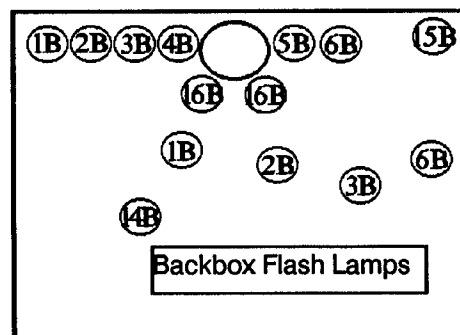
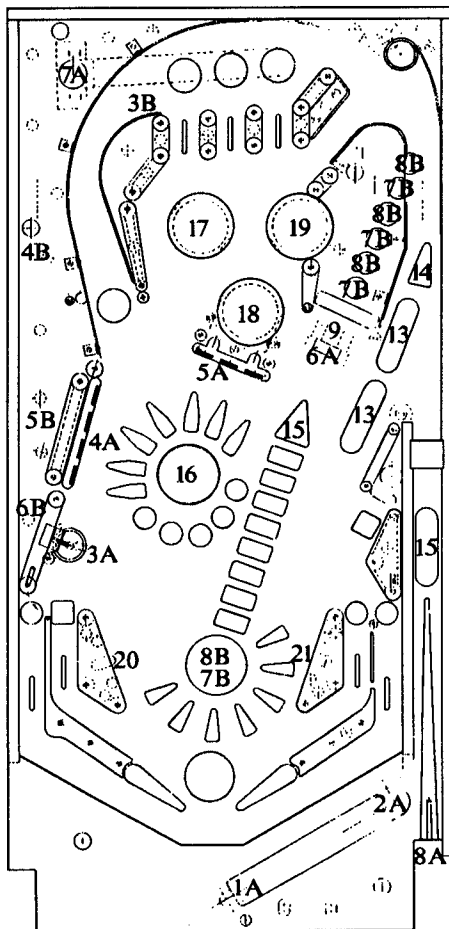
From the Select Coil test, depress the STEP push-button switch once. The game returns to the game-over mode.

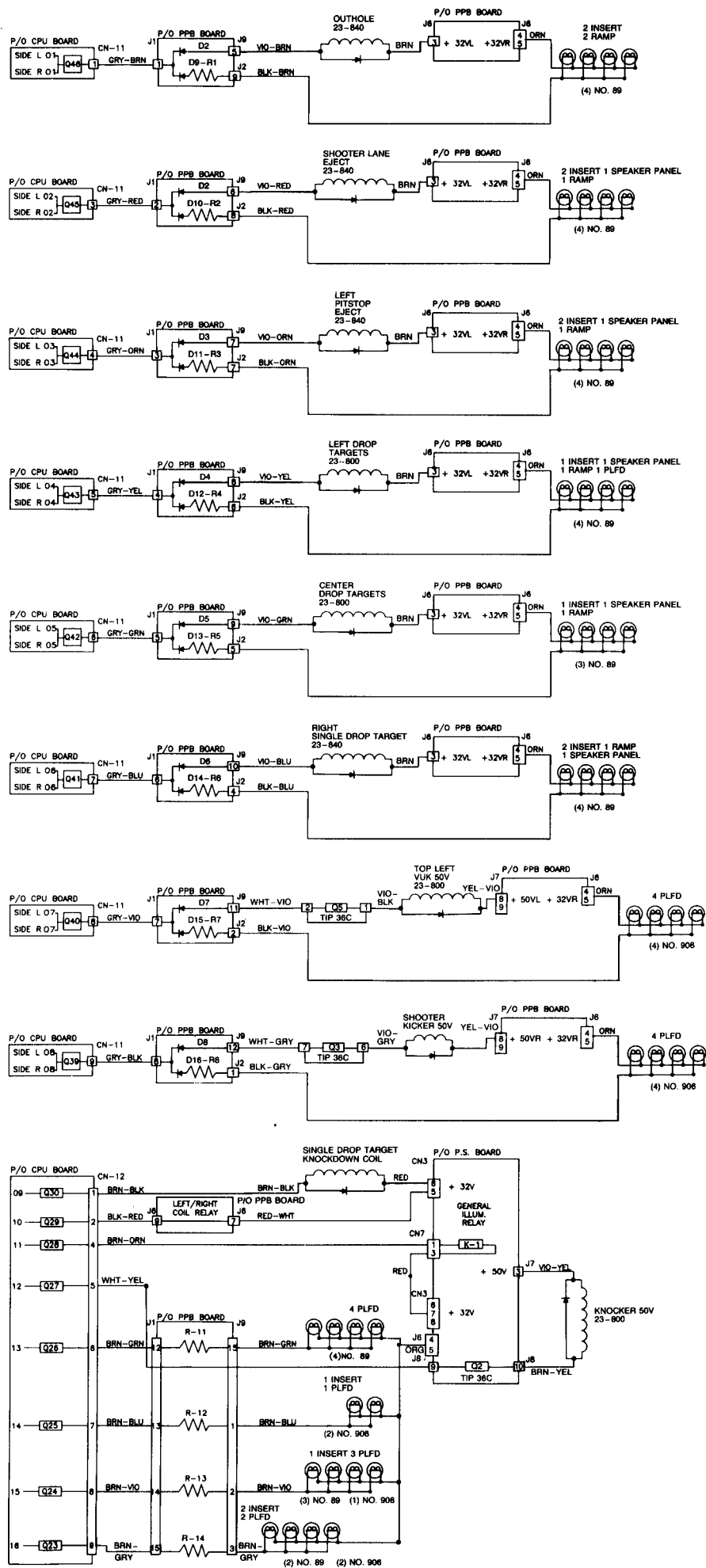
CPU Controlled Auxillary Solenoids

Coil Number	Coil Description	Control Line (CPU to Coil)	Power Line (PS to Coil)	Drive Transistor	Coil Type
17	Left Turbo Bumper	BLU-ORN CPU CN19-3	RED PS CN3-6	Q8	23-800
18	Center Turbo Bumper	BLU-RED CPU CN19-4	RED PS CN3-6	Q9	23-800
19	Right Turbo Bumper	BLU-YEL CPU CN19-6	RED PS CN3-6	Q10	23-800
20	Left Slingshot	BLU-BRN CPU CN19-7	RED PS CN3-6	Q11	23-800
21	Right Slingshot	BLU-GRN CPU CN19-8	RED PS CN3-6	Q12	23-800
22	Motor Circuit (See Schematic)	CPU CN19-9	PS CN3-6	Q13	-

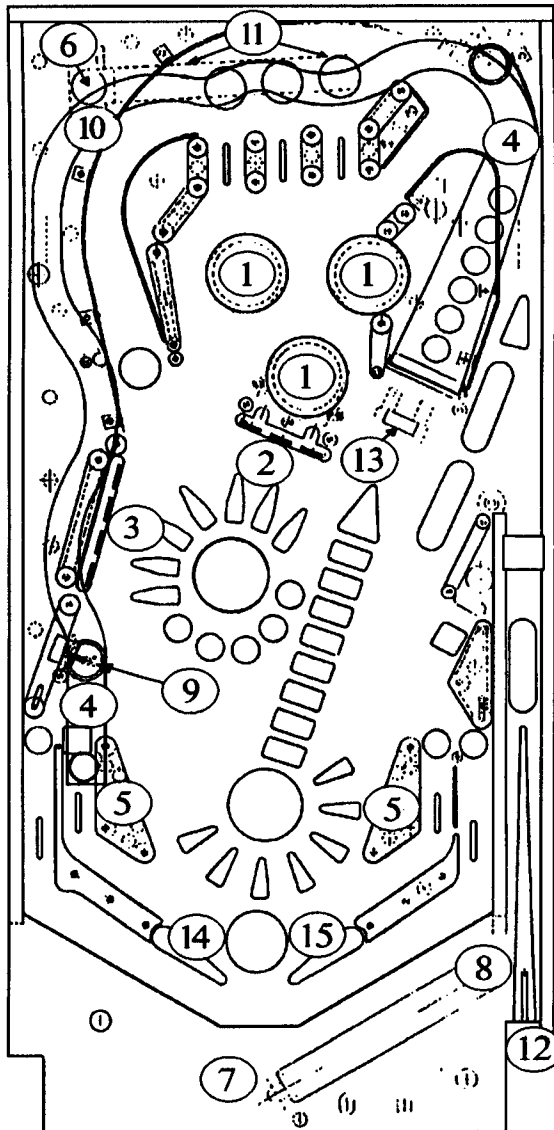
Flipper Solenoids

Coil Description	Flipper GND CPU to Coil	Sw. to Flip. PCB	Power Lines Flip PCB to Coil	Coil Type	Power Input To Flip PCB
Left Flipper	ORN-GRY CPU CN19-2	BLU-GRY CN1-9	GRY-YEL CN2-1,2	23-900	BLK-WHT 50VDC
Right Flipper	ORN-VIO CPU CN19-1	BLU-VIO CN1-1	BLK-WHT CN1-1	23-900	GRY, GRY-GRN 8VAC



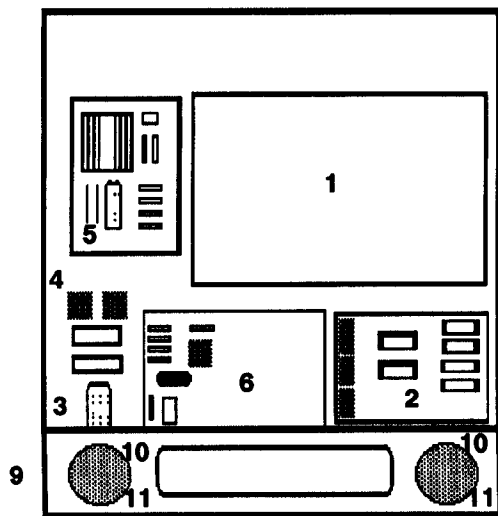


Playfield - Major Assemblies



Item	Description	Part Number
1	Turbo Bumpers	500-5275-00
2	3 Bank Drop Targets	500-5196-31
3	4 Bank Drop Targets	5005239-00
4	Plastic Ramp	500-5245-00
5	Slingshots	500-5226-00
6	Super Vertical Up Kicker	500-5307-00
7	Outhole	500-5082-00
8	Trough Eject	500-5012-01
9	Saucer Eject	500-5051-06
10	Ball Eject Chute	500-5229-00
11	Ball Return Chute (Subway)	535-5825-01
12	Turboboost Kicker	500-5304-00
13	Single Drop Target Assy.	500-5240-00
14	Left Flipper Assembly	500-5177-32
15	Right Flipper Assembly	500-5177-31

BACKBOX PARTS ILLUSTRATION



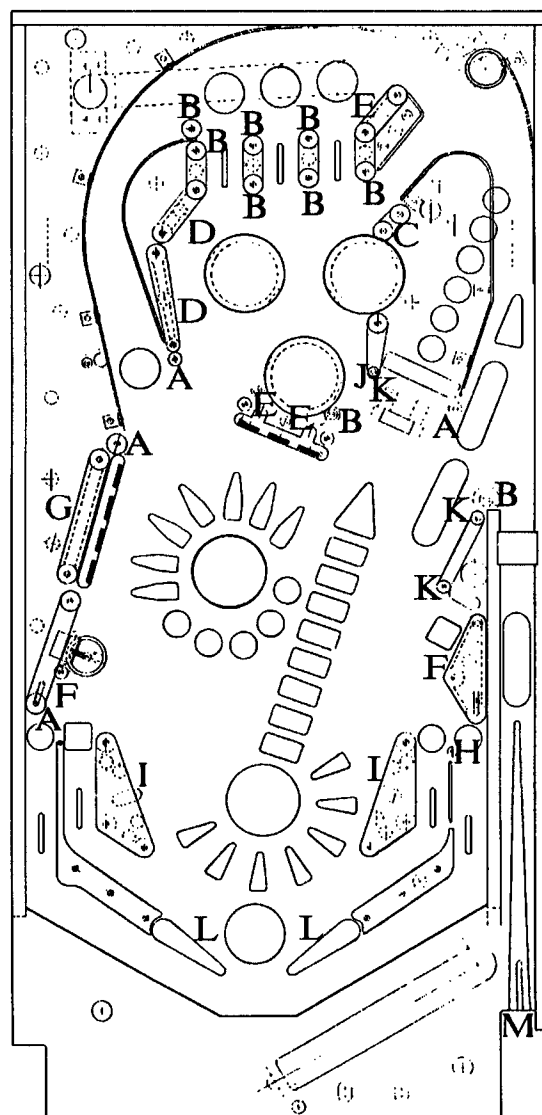
Item	Description	Part No.
1	CPU Board Assy.(Non-Reflex)	520-5003-03 †
2	Sound Board Assy	520-5002-03 †
3	Capacitor 2C1	125-5000-00
4	Bridge Rectifiers	112-5000-00
5	Power Supply Bd. Assy	520-5047-00
6	PPB Board	520-5021-04
7	Dot Matrix Display Bd*	520-5042-00 †
8	Display Ribbon Cable*	036-5000-24-10
9	Speaker Housing	500-5231-00-10
10	Speakers (2)	031-5004-00
11	Speaker Grill (2)	830-5606-00
12	Back Box Glass*	830-5210-00
13	Roto-Lock Top*	355-5006-02

* Not Shown

† When ordering PC Boards with ROMs
please specify game name

RUBBER PARTS ILLUSTRATION

Item	Description	Part #
A.	Rubber Post-Long (4)	545-5009-00
B.	$\frac{5}{16}$ " (9)	545-5025-02
C.	$\frac{3}{4}$ " (1)	545-5025-04
D.	$1\frac{1}{4}$ " (2)	545-5025-06
E.	$1\frac{1}{2}$ " (3)	545-5025-07
F.	2" (2)	545-5025-08
G.	$2\frac{1}{2}$ " (1)	545-5025-09
H.	$\frac{7}{16}$ " Outer Diameter (1)	545-5025-17
I.	$2\frac{3}{4}$ " (2)	545-5025-20
J.	Rubber Post -Short (1)	545-5190-00
K.	Rubber Post -Short (3)	545-5191-00
L.	Red Flipper (2)	545-5024-02
M.	Shooter Tip (1)	545-5027-00



Playfield Parts

No. Description

Part Number

1. 1/2" Hex Spacer 254-5001-01
2. Plastic Spacer (3) 254-5000-02
3. Plastic Spacer (2) 254-5000-00
4. Plastic Spacer (5) 254-5006-00
5. 5/8" Hex Spacer 254-5008-02
6. Spinner Target 500-5060-00-10
7. Flat Rail 500-5217-00
8. Flat Rail 500-5218-00
9. Flat Rail 500-5244-00
10. Porsche Car 500-5236-00
11. Comp. Playfield Ass. 505-6004-10-10
12. Flipper Bat & Shaft (2) 515-5133-01
13. Spinner assembly 515-5236-00

14. Ball Deflector 515-5288-00-10
15. Standup Target for Porche 515-5293-00
16. Butryte Assembly 515-5347-00-10
17. Mini Post Wood Threaded (2) 530-5004-00
18. Bumper Post 530-5007-00
19. Metal Standoff 530-5035-01
20. Metal Standoff 530-5035-02
21. Ball Guide 535-5208-00
22. Ball Guide Brkt 535-5208-02
23. Spinner Brkt. 535-5249-00
24. Mounting Brkt. (Wire Gate) 535-5269-01
25. Hat Bracket for Wire Gate 535-5269-02
26. Ballstop Brkt. 535-5273-00
27. Wire form 535-5300-02
28. Ball Guide Brk. 535-5208-00
29. 1" Wire form 535-5300-05
30. Wire Gate 535-5307-01
31. Wire Gate 535-5307-08
32. Wire Gate 535-5354-01
33. Ball Guide Wire 535-5364-00
34. Snubber Wire 535-5373-01
35. Ball Deflector 535-5380-00
36. Actuator Wire 535-5387-00
37. Ball Guide 535-5396-00
38. Ball Guide 535-5407-01
39. Ball Catch Spring Wire 535-5611-00
40. Ball Shooter Rail Guard 535-5795-00
41. Ball Deflector 535-5973-00
42. Mini Mars (Fluorescent) (2) 545-5004-00
43. Mini Mars (Clear) (2) 545-5004-01
44. Mini Mars (Red) (2) 545-5004-02
45. Mini Mars (Yellow)(1) 545-5004-06
46. Mini Post Flour Orange (25) 545-5013-00
47. Red #44 Lamp Cover (2) 545-5014-02
48. Green #44 Lamp Cover (2) 545-5014-04
49. Spinner Washer (2) 545-5037-00
50. Jump Bumper Cap (3) 545-5199-10
51. Flour Orange Double Rubber Post 545-5209-10
52. Light Hood Flour Orange (4) 550-5036-10
53. Return Lane Guide (Right) 550-5037-10
54. Return Lane Guide (Left) 550-5038-10
55. Pressure Sensitive Tape 626-5015-00
56. P/F Glass 660-5001-00
57. Mini Decal (7) 820-5051-00
58. Pop Bumper Decal (3) 820-5312-00
59. Pop Bumper Decal (3) 820-5312-01
60. P/F Mylar 820-5811-00
61. Screened Playfield 830-5110-00

