

#906 - "FOUR MILLION B.C."

INSTALLATION AND GENERAL GAME OPERATION INSTRUCTIONS

INSTALLATION

On all games there are certain items that should be checked after shipment. These are visual inspections which may avoid time consuming service work later. Minor troubles caused by abusive handling in shipment are unavoidable. Cable plugs and sockets may be loosened, switches (especially tilt switches) may go out of adjustment. Plumb bob tilt switch should always be adjusted after game is set on location and leg levelers are adjusted.

Visual inspections before plugging in line cord: -

1. Check that all cable plugs are firmly seated in proper sockets.
2. Check that cables are clear of all moving parts and relays.
3. Check for any wires that may have become disconnected.
4. Check switches for loose solder or other foreign material that may have come loose in shipment and could cause shorting of contacts.
5. Check wires on relay coils for proper soldering, especially the bare (common) wire connecting a row of relay coils. Cold solder connections may not show up in factory inspection, but vibration in shipment may break contact.
6. Check that fuses are firmly seated and making good contact.
7. Check (manually) the stepping and resetting of all step-up units. The wiper action should not be sluggish.
8. Check transformer for any foreign material shorting across wiring lugs.
9. Check wiring of transformer to correspond to location voltage. (Transformer wiring card in front cabinet.)

Before line cord is plugged in: -

Check all plugs and sockets and dress cables:

- (A) Plugs in correct sockets.
- (B) Plugs securely seated in sockets.
- (C) Dress cables away from relays.

Check adjustment of the three (normally open) tilt switches:

- (A) Panel tilt on bottom of playfield panel.
- (B) Plumb-bob tilt on left side of cabinet near front door.
- (C) Ball tilt above plumb-bob tilt.

Insert one of the four balls into ball tilt assembly and adjust bracket so ball will roll over switch blade if front of cabinet is raised.

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Plug in line cord:

Check adjustment of the (normally closed) kick-off switch at rear of cabinet mounting board, near cable plugs. Check adjustment of the (normally closed) anti-slam switch, on front door.

GENERAL GAME OPERATION

Place 3 balls into playfield by out hole.

Coin Game:

If coin should be rejected, move on-off master switch at bottom right front corner of cabinet to "on" position, then coin game. Coin lock-out device rejects all coins when power (master switch) is off.

- 1A. If coin is inserted in 1st (nickel) coin chute and game is conditioned for 1 play-5¢, it will energize the "coin relay". If game is conditioned for 1 play-10¢, the first coin inserted will advance the "2 coin unit", then second coin inserted will energize the "coin relay" thru 2 coin unit switch.

(See 1st coin chute adjustment plug positions on game adjustments sheet).

- 1B. If coin is inserted in 2nd (dime) coin chute and game is conditioned for 1 play-10¢, it will energize the "coin relay". If game is conditioned for 2 plays-10¢, it will energize the "2nd coin chute relay" and 2nd coin chute relay will advance "credit unit" (2 steps) thru coin credit circuit.

(See 2nd coin chute adjustment plug positions on game adjustments sheet).

- 1C. If coin is inserted in 3rd (quarter) coin chute and game is conditioned for 2-3-4-5-or 6 plays-25¢, it will energize the "3rd coin chute relay" and 3rd coin chute relay will advance "credit unit" (2-3-4-5-6 steps) thru coin credit circuit.

(See 3rd coin chute adjustment plug positions on game adjustments sheet).

- 1D. When "credit unit" has been advanced from 2nd or 3rd coin chute, (as described in section 1B and 1C) the front door "credit button" switch will energize the "credit relay" and then credit relay will energize "coin relay".

- 2A. Coin relay, when energized by any of the ways described, (in sections 1A thru 1D) will stay energized thru its own hold-in switch and (normally closed) #8 score motor switch.
- 2B. Coin relay will energize the "lock relay" which stays energized thru its own hold-in switch and cabinet kick-off switch.
- 2C. Coin relay will energize the "reset relay" thru game over relay switch or ball count unit switch, operate the "score motor" and then thru (normally open) #2 and #11 score motor switches, energize the "#1 and #2 score reset relays". The reset relay will continue to operate score motor and energize the "open flippers coil", if flippers were closed. Both the reset and score reset relays will stay energized thru (normally closed) #8 score motor switch, or until all "score counter units" are reset to "zero position".
- 2D. Coin relay, thru (normally open) #3 score motor switch will advance the "total play meter", and thru reset relay will reset the "coin unit", "ball count unit" and "player up unit". Coin relay will also reset the "credit unit" (1 step) when energized by credit button. Ball count unit "zero switch", thru (normally open) #10 score motor switch will energize the "game over relay latch coil" as score motor start cycle ends.
- 3A. Ball on out hole switch will energize the "out hole relay" thru (normally closed side) #1 score motor switch and it will stay energized thru its own hold-in switch and (normally closed) #10 score motor switch.
- 3B. Out hole relay will operate the "score motor" and then energize the "out hole kicker" solenoid thru (normally open) #4 score motor switch. All three balls will be kicked into ball trough, one at a time. When all three balls have been kicked into ball trough, one ball will be released to shooter alley and game is conditioned for 1st player to begin play. Note: If 2 balls are released, operate exit tar pit roll-over, (tar pit relay should latch) check adjustment of volcano hole switch and adjustment of ball trough switches. There should be only three balls (total) on playfield, shooter alley and ball trough.
- 3C. To condition game for "2nd player", inserting coin (s) or use of credit button now (before 1st ball is played) will energize the "coin relay" again. This time, coin relay will not energize the "reset relay". It will operate the "score motor", advance "total play meter", subtract a credit from "credit unit", (if credit button was used) and advance the "coin unit" thru (normally open) #3 score motor switch. Game is now conditioned for "2 players". Repeating this sequence will condition game for "3rd player" and "4th player".

REGULAR BALL TO BALL SEQUENCE OF OPERATION:

- 1A. When "1st ball" is played, the "ball index relay" will be energized by the "10 point", "100 point" or "1000 point" score relay and it stays energized thru its own hold in switch, (normally closed) "player reset relay" switch and (normally closed) "player up unit" end of stroke switch.
- 1B. If ball in play goes into "volcano hole" or "tar pit alley", another ball is released to shooter alley and the "same" player continues playing. (Note: 2nd captive ball will release final ball to shooter alley). If ball in play goes into outhole, it will energize the "outhole relay" thru (normally closed) #1 score motor switch, and it stays energized thru its own hold-in switch and (normally closed) #10 score motor switch.
- 1C. The outhole relay operates score motor and thru (normally open) #4 score motor switch will energize the "outhole kicker solenoid" and it will kick the ball from outhole into ball trough.
- 1D. When more than one ball is active on playfield, the last ball in motion becomes the "ball in play". If it goes into the "volcano hole" or "tar pit alley", another ball is released to shooter alley and "same player" continues playing. If it goes into outhole, the outhole relay is energized, which in series with "ball trough switches" and/or "tar pit relay switches" and/or "volcano hole relay switches", will energize the "3rd ball relay" and it stays energized thru its own hold-in switch and (normally closed) #6 score motor switch. When the outhole relay is de-energized, the "ball release relay" will be energized thru the same series of ball trough switches, tar pit relay switches, volcano hole relay switches that energized the 3rd ball relay, and it stays energized thru its own hold-in switch and (normally closed) #6 score motor switch. In normal ball to ball play (depending on "single or "multiple" players) the combination of 3rd ball relay and ball release relay switches will either advance the "ball count unit" and reset the "player up unit" or advance the "player up unit", thru (normally open) #3 and/or #4 score motor switches and "player reset relay".
- 1E. When the last eligible player's final ball returns to outhole, the final advance of ball count unit will in turn energize the "game over interlock relay trip coil" and the game is completed.
- Note: Normal ball to ball sequence of operation is interrupted when a "tilt" occurs. A "tilt relay switch" will bypass the 3rd ball relay and ball index relay switches to advance the ball count unit and reset the player up unit or advance the player up unit. When tilt occurs, any captive ball in tar pit or volcano hole remains captive.

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Feature Operation and Scoring

Cross-Over Ramp Skill Shot Feature:

This new feature provides maximum scoring for "ball shooter skill". When ball is shot at just the right speed to hit the "ramp bird rollover" at top of ramp, "ramp bird relay" is energized and lites "3000 ramp feature score lites". Then when ball rolls back down ramp, the "ramp red-green-blue rollovers" energize the corresponding color "ramp relays" to score "1000 points" each, instead of 100 points each. When ball goes over the ramp and hits the "ramp exit rollover", it de-energizes the ramp bird relay, by energizing the 10 point relay, and ramp feature is negated. When ramp feature is lit, it remains lit only until any 10 point scoring component is hit. The ramp red-green-blue rollovers also lite the corresponding color thumper-bumpers. (see thumper-bumper feature).

Tar Pit Alley Captive Ball Feature:

When ball goes into the tar pit alley, "alley rollover" will energize the "tar pit interlock relay trip coil", which de-energizes the "gate solenoid" and gate closes. Ball then advances thru tar pit alley each time the "tar pit mushroom-bumper" is hit, and energizes the "ball advance relay". Each advance of ball scores "1000 points" for a total of "3000". When last (3rd) advance of ball is made, the "exit tar pit rollover" energizes the "tar pit interlock relay latch coil", as ball leaves alley, and the tar pit gate solenoid is energized to open gate and allow another ball to enter.

Volcano Hole Captive Ball Feature:

When ball goes into the volcano hole it will energize the "volcano hole relay". Volcano hole relay will operate "volcano unit motor" to flash the (1000 to 5000) "volcano score lites". When the "erupt volcano mushroom-bumper" is hit it will energize the "erupt volcano relay", which in series with volcano hole relay energizes the "volcano eject relay". Eject relay stops volcano motor, runs score motor to register "lit score" thru volcano unit disc, and then energizes volcano eject solenoid to eject ball from hole.

Shooter Alley Gate - On Kicker Features:

These are alternating features, when one is operative, the other is in-operative. When ball hits left or right "open gate rollover button", "open gate relay" is energized. Open gate relay will energize the "shooter alley gate relay", which opens gate and lites feature. When ball hits center "close gate rollover button", shooter alley gate is de-energized, gate closes, lite goes off, and "on kicker feature lites".

Flipper-Zipper Feature:

The flippers are closed when either the "close flippers target relay" or "erupt volcano relay" is energized. Close flippers target relay is energized when ball hits the "close flippers target" or "exit tar pit rollover". Erupt volcano relay is energized when ball hits the erupt volcano mushroom-bumper. Flippers are opened when either the "open flippers target relay" or "advance ball relay" is energized. Open flippers target relay is energized when ball hits "open flippers target". Advance ball relay is energized when ball hits "advance ball mushroom-bumper". Flippers are also opened when ball-in-play returns to outhole, ("outhole relay") game is tilted, ("tilt relay") or new game is started. ("reset relay")

Thumper-Bumper Lites Feature:

When lit, the "blue", "green" and "red" thumper-bumpers score "100 points" instead of 10 points. They are "lit" when blue, green and red thumper-bumper lite relays are energized by corresponding "color ramp relays", which in turn are energized by corresponding "color ramp rollovers". When lit, they remain lit until ball-in-play returns to outhole, ("3rd ball relay") game is tilted, ("tilt relay") or game ends ("game over relay").

Volcano Hole Coactive Ball Feature:

When ball goes into the volcano hole it will energize the "volcano hole relay". Volcano hole relay will operate "volcano score lites", which will light the (1000 to 2000) "volcano score lites". When the "erupt volcano mushroom-bumper" is hit it will energize the "erupt volcano relay", which in series with volcano hole relay energizes the "volcano eject relay". Eject relay stops volcano motor, runs score rack to register "lit score" this volcano unit fires, and then energizes volcano eject solenoid to eject ball from hole.

Shooter Alley Gate - On Kicker Feature:

These are interesting features, when one is operative, the other is in-operative. When ball hits left or right "open gate roll-over button", "open gate relay" is energized. Open gate relay will energize the "shooter alley gate relay", which opens gate and lites feature. When ball hits center "close gate rollover button", shooter alley gate is de-energized, gate closes, lites goes off, and "on kicker feature lites".

PLAYFIELD PANEL POST ADJUSTMENTS:

Posts that control left and right outlane opening on panel (see panel sketch FO-320) can be moved to make access to outlanes easier or harder for ball to enter.

Easier entry will "decrease" playing time and scoring.

Harder entry will "increase" playing time and scoring.

BELL ADJUSTMENT PLUG:

Located on back box lite insert. This plug provides positions to ring bell for "100" point scores, "1000" point scores, or both "100 & 1000" point scores.

HI-SCORE ADJUSTMENT PLUG:

Located on back box lite insert. This plug provides a wide range of coverage at which hi-score "credits" can be scored. (see "Score adjustment card" in back box for plug positions).

MATCH FEATURE ADJUSTMENT PLUG:

Located on front cabinet mounting board. This plug provides positions to turn 00-90 match feature "on" or "off".

BALLS PER GAME ADJUSTMENT PLUG:

Located on front cabinet mounting board. This plug provides positions to operate game on "5 ball" or "3 ball" play.

HI-SCORE FEATURE ADJUSTMENT PLUG:

Located on front cabinet mounting board. This plug provides positions to turn hi-score "credit" feature "on" or "off".

1ST COIN CHUTE ADJUSTMENT PLUG:

Located on the 2 coin unit, on front cabinet mounting board. This plug provides positions to give "1 play for 1 coin" or "1 play for 2 coins" thru the 1st (nickel) coin chute.

2ND COIN CHUTE ADJUSTMENT PLUG:

Located on front cabinet mounting board. This plug provides positions to give "1 play for 1 coin" or "2 plays for 1 coin" thru the 2nd (dime) coin chute. Note: When this plug is set for "2 plays - 1 coin", brown-white (male plug) wire on 3rd coin chute adjustment must be in "position 2".

3RD COIN CHUTE ADJUSTMENT PLUG:

Located on front cabinet mounting board. This plug provides positions to give "2 to 6 plays for 1 coin" thru the 3rd (quarter) coin chute. Use orange-white (male plug) wire.

PARTS LIST

<u>MISCELLANEOUS</u>	<u>PART NO.</u>	<u>ASSEMBLY COILS</u>	<u>PART NO.</u>
Transformer	E-122-95	Volcano Eject Hole	A-26-1100
Score Motor (Domestic)	E-119-354	Outhole Kicker	A-25-1050
Score Motor (Export)	E-119-411	Tar Pit Gate	AF-27-1000/32-1300
Volcano Motor	E-119-410	Thumper bumper (3)	A-25-1000
Meter (Total Play)	E-130-10	Slingshot kicker (2)	A-26-1200
		Flipper (2)	AF-25-600/31-1000
<u>RELAY COILS</u>		Close Flippers	E-184-239
Volcano Eject	G-31-1800	Open Flippers	FC-30-1300
Volcano Hole	G-32-2500	On Kicker	AK-25-1050
Close Flippers	G-32-2500	Ball Release	A-27-1300
Ball Release	G-31-1800	Advance Ball	B-27-1300
Ball Index	G-32-2500	Knocker	C-27-1000
Out Hole	G-31-1800	Bell	CB-31-2000
3rd Ball	G-31-1800	Coin lockout	FC-33-2600
Tilt	G-32-2500		
Reset	G-31-1800	<u>UNIT COILS</u>	
Player Reset	G-31-1800	Coin (Step-up)	B-26-1100
Credit	G-31-1800	Coin (Reset)	C-28-1100
3rd Coin Chute	G-31-1800	Player up (Step-up)	B-26-1100
2nd Coin Chute	G-31-1800	Player up (Reset)	C-28-1100
Coin	G-31-1800	Ball Count (Step-up)	B-26-1100
Lock	G-33-2500	Ball Count (Reset)	C-28-1100
Erupt Volcano	G-30-1500	00-90 (Step-up)	B-26-1100
Advance Ball	G-30-1500	Credit (Step-up)	B-26-1100
Open Flippers Target	G-30-1500	Credit (Reset)	C-28-1100
Close Flippers Target	G-30-1500	2 coin (Step-up)	CD-29-1600
Tar Pit (Trip)	G-31-1800	Score (Step-up)	CD-29-1600
Tar Pit (Latch)	G-31-1800	Volcano (Release)	FC-32-2100
Red T.B. Lite	G-32-2500		
Green T.B. Lite	G-32-2500	<u>UNIT CONTACT DISC'S</u>	
Blue T.B. Lite	G-32-2500	Coin	W-923-208
Red T.B.	G-31-1800	Player Up	W-923-207
Green T.B.	G-31-1800	Ball Count	W-1043-17
Blue T.B.	G-31-1800	00-90	W-1043-9
Ramp Bird	G-31-1800	Score	A-2212-7
Ramp Red	G-30-1500	Volcano	W-1072-19
Ramp Green	G-30-1500		
Ramp Blue	G-30-1500	<u>UNIT WIPER ASSY'S</u>	
10 Point	G-30-1500	Coin	AS-1024-108
100 Point	G-30-1500	Player Up	AS-1046-620
1000 Point	G-30-1500	Ball Count	AS-1046-648
#1 Score Reset	G-30-1500	00-90	AS-1046-501
#2 Score Reset	G-30-1500	Score	A-1618-3
Game Over (Trip)	G-31-1800	Volcano	AS-1046-642
Game Over (Latch)	G-31-1800		
Shooter Alley Gate	G-32-2500		
Open Gate	G-30-1500		

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RUBBER PARTS

- A R-521-5 3" (1)
- B R-521-3 2" (4)
- C R-521-2 1-1/2" (4)
- D R-521-4 2-1/2" (2)
- E R-521-8 3-1/2" (2)
- F R-521-1 1" (4)
- G R-243 5/16" (3)

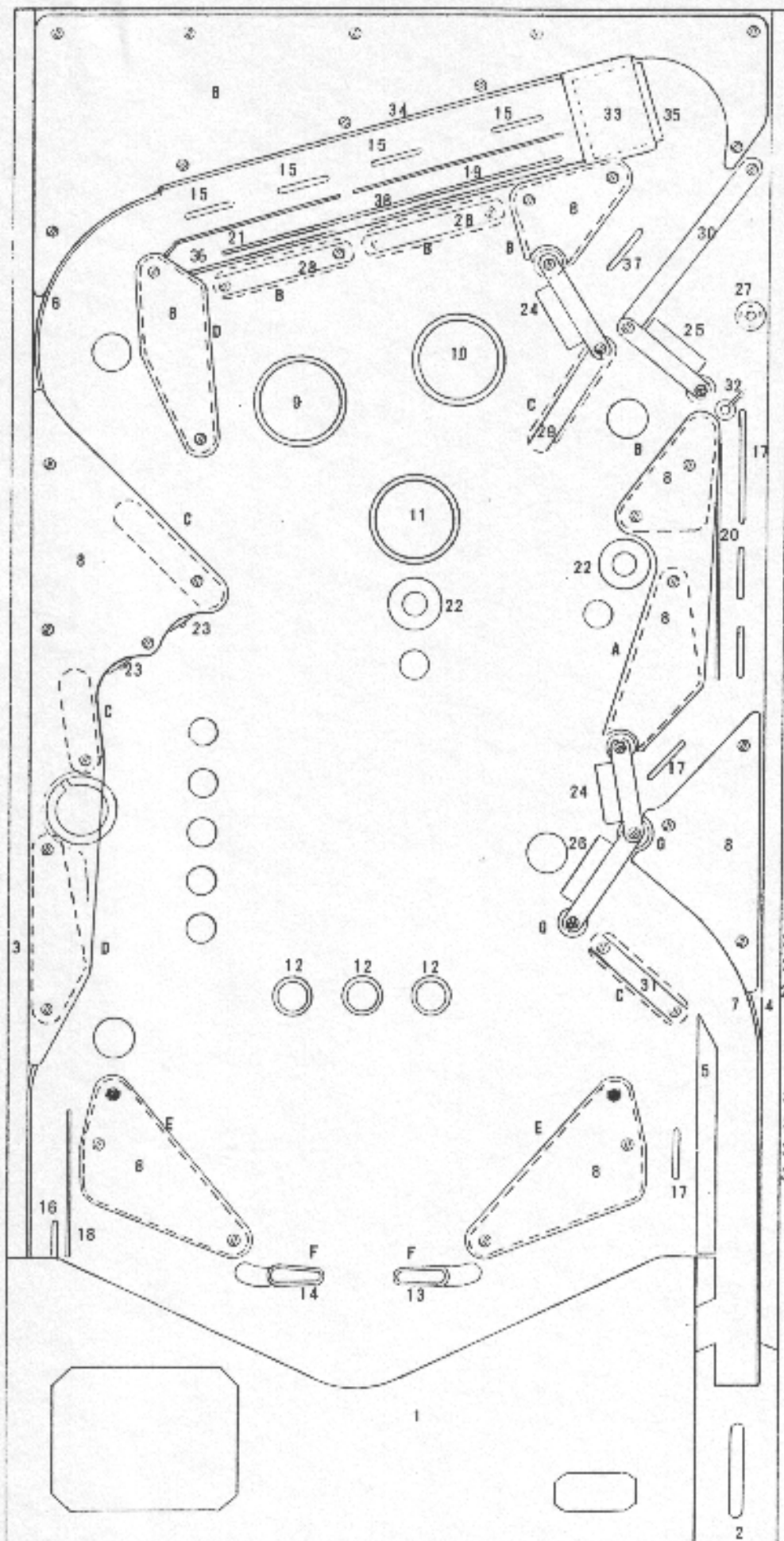
PANEL TOP PARTS

- 1 BOTTOM ARCH P-5871-38
- 2 SHOOTER GAGE P-8359-10
- 3 SIDE RAIL (L) CA-1208-11 *
- 4 SIDE RAIL (R) CA-1208-12 *
- 5 INNER RAIL CA-1208-10 *
- 6 GUIDE RAIL A-2900-27 *
- 7 GUIDE RAIL A-2900-26 *
- 8 LIGHT SHIELDS (SET) A-2900-74 *
- 9 BUMPER CAP (BLUE) C-719-16
- 10 BUMPER CAP (GREEN) C-719-13
- 11 BUMPER CAP (RED) C-719-12
- 12 ROLLOVER BUTTON C-387-5
- 13 FLIPPER & SHAFT (R) AS-2214-8
- 14 FLIPPER & SHAFT (L) AS-2214-7
- 15 ROLLOVER WIRE N-1336-15 *
- 16 ROLLOVER WIRE N-1336-11
- 17 ROLLOVER WIRE N-1336-2
- 18 BALL GUIDE WIRE N-121-29
- 19 BALL GUIDE WIRE N-121-33 *
- 20 BALL GUIDE WIRE N-121-34 *
- 21 BALL GUIDE WIRE N-121-35 *
- 22 MUSHROOM BUMPER AS-2281
- 23 TARGET ASSEMBLY (RED) AS-982-723
- 24 BALL GATE & WIRE AS-2250-27 *
- 25 BALL GATE & WIRE AS-2250-25
- 26 BALL GATE & WIRE AS-2290-5
- 27 BALL STOP A-2698-31
- 28 CHROME PLATE P-5899-13
- 29 CHROME PLATE P-5899-28 *
- 30 CHROME PLATE P-5899-31 *
- 31 CHROME PLATE P-5899-11
- 32 BALL SEPARATOR A-3111-10 *
- 33 RAMP HOOD P-6829-62 *
- 34 RAMP SUPPORT (REAR) P-7715 *
- 35 RAMP CHANNEL P-6829-61 *
- 36 RAMP SUPPORT (FRONT) A-3523 *

* INDICATES NEW PARTS (THIS GAME)

- 37. ROLLOVER WIRE N-1336-10
- 38. BALL GUIDE WIRE N-121-36a *

● MOVEABLE POSTS



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NEW COIL NUMBERS

PC-319a

<u>OLD COIL NUMBER</u>	<u>NEW BALLY COIL NUMBER</u>
CO-25A-7	A-25-1050
CO-25G-7	B-25-925
CO-25H-7	DC-25-925
CO-26A-9	A-26-1100
CO-26G-9	E-26-1100
CO-27R-11	C-27-1000
CO-28R-15	C-28-1100
E-184-41	BF-27-1250
E-184-46	EA-30-1150
E-184-47	EA-32-1550
E-184-55	B-29-1200
E-184-56	A-27-1100
E-184-74	CF-28-1025
E-184-75	E-32-1700
E-184-112	EA-29-950
E-184-135	BA-25-925
K-184-155	D-27-425
E-184-156	D-28-500
K-184-160	B-25-750
E-184-175	AP-27-1300
E-184-180	CE-33-4800
E-184-190	AF-25-600/31-1000
E-184-204	AF-27-1000/32-1300
E-184-205	B-27-1300
E-184-206	CD-29-1600
E-184-207	A-27-1400
E-184-213	A-27-1300
E-184-218	F-31-1500
E-184-224	F-31-2100
E-184-231	CA-29-800/31-900
E-184-235	AK-25-1050
E-184-236	J-26-1100
K-184-237	BA-26-1040
E-184-241	AF-25-600/31-1000
E-184-243	A-26-1200
E-184-248	FC-30-1300
E-184-249	BP-28-1500
E-184-250	D-30-700
K-184-252	BE-26-655/32-1245
E-184-254	FG-30-1400
E-184-257	AP-25-1050
E-184-260	D-28-1600
E-184-261	AF-31-3000
E-184-262	A-26-1200
E-184-263	AF-27-775/31-861
E-184-264	A-28-1900
E-184-265	AF-25-600/31-1000
E-184-266	D-29-675
K-184-268	AF-26-750/31-900
E-184-269	FC-33-2600
K-184-270	AB-31-3000
E-184-271	AK-24-750
E-184-272	A-25-1000
E-184-274	FC-32-2100

NOTE:

NEWER COILS MAY BE ORDERED BY THE OLD COIL NUMBER OR BY THE NEW COIL NUMBER OR BY BOTH.