

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

Check Adjustment of the Kick-Off and Slam Switches:

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 the front door.

GENERAL GAME OPERATION

Place ball onto playfield by out hole.

Plug in the line cord.

Coin Game:

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

- 1A. If the coin is inserted in the 1st (nickel) coin chute and the game is set for 1 play-5¢, it will energize the "coin relay". If game is set for 1 play-10¢, the first coin inserted will advance the "2 coin unit", then the second coin inserted will energize the "coin relay" thru the 2 coin unit switch. (See 1st coin chute adjustment plug positions on game adjustments sheet).
- 1B. If the coin is inserted in the 2nd (dime) coin chute and the game is set for 1 play-10¢, it will energize the "coin relay". If game is set for 2 plays-10¢, it will energize the "2nd coin chute relay" and the 2nd coin chute relay will advance the "credit unit" (2 steps) thru the coin credit circuit. (See 2nd coin chute adjustment plug positions on game adjustments).
- 1C. If the coin is inserted in the 3rd (quarter) coin chute and the game is set for 2-3-4-5-or 6 plays-25¢, it will energize the "3rd coin chute relay" and the 3rd coin chute relay will advance the "credit unit" (2-3-4-5-6 steps) thru the coin credit circuit. (See 3rd coin chute adjustment plug positions on game adjustments sheet).
- 1D. When the "credit unit" has been advanced from the 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 the credit relay will energize "coin relay".

- 2A. The 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. The coin relay will energize the "lock relay" which stays energized thru its own hold-in switch and cabinet kick-off switch.
- 2C. The coin relay will energize the "reset relay" thru game over relay switch, operate the "score motor" and then thru the (normally open) #2 score motor switch, energize the "score reset relay". The reset and the score reset relay will stay energized thru a normally closed #8 score motor switch, or until all "score counter units" are reset to "zero position". The coin relay will latch the game over relay thru the (normally open) #4 score motor switch.
- 2D. The coin relay, thru the normally open #3 score motor switch will advance the "total play meter", and thru the reset relay when energized will reset, "ball count unit" and latch the 2nd coin relay. The coin relay will also reset the "credit unit" (1 step) when energized by credit button. The coin relay will trip the 2nd coin relay when the reset relay is not energized.
- 3A. A ball on the out hole switch will energize the "out hole relay" thru a normally closed #1 score motor switch, and it will stay energized thru its own hold-in switch and normally closed #10 score motor switch.
- 3B. The out hole relay will operate the "score motor" and then energize the "out hole kicker" solenoid thru a normally open #7 score motor switch. The 1st ball is kicked thru the ball trough to the shooter alley and the game is now ready for the "1st player" to begin play.
- 3C. To condition the game for "2nd player", inserting coin (s) or use of the credit button (before 1st ball is played) will energize the "coin relay" again. This time, the coin relay will not energize the "reset relay". It will operate the "score motor", advance the "total play meter", subtract a credit from the "credit unit", (if credit button was used) and trip the 2nd coin relay thru a normally open #3 score motor switch. The game is now set for "2 players".

Sequence of operation

- 1A. When the "1st ball" is played, the "ball index relay" will be energized by the "10 point relay", "100 point relay" or "1000 point relay", and it will stay energized thru its own hold-in switch, outhole relay switch and a normally closed #6 score motor switch.
- 1B. When the 1st ball played returns to the outhole, it will energize the "outhole relay" thru a normally closed #1 score motor switch and it stays energized thru its own hold-in switch and a normally closed #10 score motor switch.
- 1C. The outhole relay operates the "score motor" and thru a ball index relay switch will advance the "ball count unit" either two steps thru normally open #3 and #4 score motor switches during a one player game or will advance one step thru a normally open #4 score motor switch during a two player game. The outhole relay then completes the circuit to the "outhole kicker solenoid" thru a normally open #7 score motor switch. The 1st ball is returned to the shooter and the game is now set for either 1st player - 2nd ball or 2nd player - 1st ball.
- 1D. Sequence 1A, 1B, and 1C are then repeated for each ball played until the last ball is played by the 1st player during a one player game, or 2nd player during a two player game. When the last ball played returns to the outhole, the game over relay trip coil will be energized thru the ball count unit disc. The game over relay when tripped will turn off the ball in play lite, turn on 00-90 match lite and open the game play and scoring circuits.

NOTE: Regular ball to ball operation (sequence 1C) is interrupted whenever a player scores an extra ball with the exception that the "outhole kicker solenoid" will operate as indicated.

Spinner Feature:

The spinner value lites on the lower section of the playfield flash when the ball goes into the spinner value hole or when the ball goes into the top hole when lit. The top hole is lit when the ball goes over the qualify hole roll-over button. When the ball goes into the top hole, it lites the green and yellow thumper-bumpers and scores 500, or when lit, flashes spinner value lites and scores lit spinner value.

The ball in the spinner value hole will flash spinner value lites and score lighted value.

The spinner value score will be doubled, when the double spinner value lite is lit. This lite is lit when double spinner value target is hit. It will remain lit until spinner value is scored or until ball goes into the outhole.

Top Bumper Feature:

The top bumper scores 100 or 1000 when lit.

The top bumper is lit when the ball goes over the "lites bumper roll-over button".

Thumper-Bumper lite feature:

The yellow and green thumper-bumpers score 10 or 100 when lit.

The blue thumper-bumper scores 10 points only.

A ball in the top hole will lite both yellow and green thumper-bumpers.

A ball going thru the top left lane will lite the green thumper-bumper.

A ball going thru the top right lane will lite the yellow thumper-bumper.

The bumper lites remain lit until the ball goes into the outhole, or until the game is tilted, or game over.

Extra Ball Feature:

The game will award one extra ball per ball-in-play when the extra ball mushroom-bumper is hit when lit, also thru hi-score feature in place of added credit.

The "shoot again" lite will lite when an extra ball is scored.

The "extra ball mushroom-bumper" is lit by the 00-90 unit disc.

Free Ball Gate Feature:

The free ball gate is located on the lower right-hand corner of the playfield.

The gate open lite will indicate when the gate is open.

The free ball gate is opened when the ball goes over the "open free ball gate" roll-over button (above spinner lites).

The gate closes when the ball goes over either "close free ball gate" roll-over buttons (lower left and right sides) or when the ball goes into the outhole, or the ball goes thru the gate

or when the game is tilted.

Playmore Post (up post) Feature:

The post is located between the flippers and when raised, it blocks the ball from going into the outhole between the flippers.

Each play starts with the post in the down position. The post is raised when the "up post" mushroom-bumper is hit, and lowered when either "down post" mushroom-bumper is hit, or game is tilted.

#923 Round Up

GAME ADJUSTMENTS

PLAYFIELD PANEL POST ADJUSTMENTS:

The game has (2) posts that can be moved to make game playing time and scoring more conservative. Spotting holes are provided for the movement of the posts, and "liberal" and "conservative" positions are shown on panel sketch FO-

BELL ADJUSTMENT PLUG:

The plug is located on the back box lite insert. This plug provides positions to ring the bell for 100 point scores, 1000 point scores, or both 100 and 1000 point scores.

HI-SCORE ADJUSTMENT PLUG:

The plug is located on the back box lite insert. This plug provides a full range of coverage at which hi-score credits or extra balls can be scored. (See score adjustment card in back box for plug positions).

BALLS PER GAME ADJUSTMENT PLUG:

The plug is located on the back box lite insert. This plug provides positions to operate game on "5 ball" or "3 ball" play.

MATCH FEATURE ADJUSTMENT PLUG:

The plug is located on the back box lite insert. This plug provides positions to turn the match feature on or off.

1ST COIN CHUTE ADJUSTMENT PLUG:

The plug is located on the 2 coin unit, on the front part of the 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:

The plug is located on the front of the 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:

The plug is located on the front of the cabinet mounting board. This plug provides positions to give 2 to 6 plays for 1 coin, thru the 3rd (quarter) coin chute, orange-white (male plug) wire. See 2nd coin chute not above for use of brown-white (male plug) wire.

HI-SCORE FEATURE ADJUSTMENT PLUG:

The plug is located on the front of the cabinet mounting board. This plug provides positions to award credits or extra balls for preset hi-scores.

#923 Round Up

PARTS LISTMISCELLANEOUS

Transformer
Score Motor (Domestic)
Score Motor (Export)
Meter (Total Play)

INTERLOCK RELAYS

Game Over (trip)
Game Over (latch)
2nd coin (trip)
2nd coin (latch)

"G" RELAYS

Coin
2nd Coin Chute
3rd Coin Chute
Credit
Lock
Top Hole
Spin Hole
Reset
Score Reset
Outhole
Ball Index
Tilt
Extra Ball
Gate
Up Post M-B
Down Post M-B
Left Alley
Lite Green T-B
Lite Yellow T-B
Target
Extra Ball M-B
1000 Point
100 Point
10 Point
Yellow T-B
Green T-B
Blue T-B
Eject
Delay
1st player
2nd player
Double score
Spin pulse
500 point
Lite Bumper
Lite Top Hole

PART NO.

E-122-95
E-119-354
E-119-411
E-32-1700

G-31-1800
G-31-1800
G-31-1800
G-31-1800

G-31-1800
G-31-1800
G-31-1800
G-31-1800
G-33-2800
G-31-1800
G-31-1800
G-31-1800
G-31-1800
G-32-2500
G-32-2500
G-32-2500
G-32-2500
G-30-1500
G-30-1500
G-31-1800
G-32-2500
G-32-2500
G-30-1500
G-30-1500
G-30-1500
G-30-1500
G-30-1500
G-31-1800
G-31-1800
G-31-1800
G-31-1800
G-35-5200
G-32-2500
G-32-2500
G-32-2500
G-31-1800
G-31-1800
G-32-2500
G-32-2500

ASSEMBLY COILS

Coin Lockout
Yellow T-B
Green T-B
Blue T-B
Down Post
Post Latch
Top Hole Eject
Knocker
Bell
Outhole Kicker
Gate
Left Slingshot
Right Slingshot
Left Flipper
Right Flipper
Spin Hole Eject

UNIT COILS

2 Coin (Step Up)
Credit (Step Up)
Credit (Reset)
Ball Count (Step Up)
Ball Count (Reset)
00-90 (Step Up)
Score Drums (8)
(Step Up)
Spin (Step Up)
Spin (Reset)
Spin Score (Step Up)

UNITS CONTACT DISCS

Ball Count
00-90

UNITS WIPER ASS'YS

Ball Count
00-90

PART NO.

FC-33-2600
A-25-1000
A-25-1000
A-25-1000
A-26-1200
G-31-1800
A-26-1100
C-27-1000
CB-31-2000
A-25-950
AF-27-1000/32-1300
AP-26-1200
AP-26-1200
AF-26-650/30-1200
AF-26-650/30-1200
A-27-1300

CD-29-1600
B-26-1100
C-28-1100
B-26-1100
C-28-1100
B-26-1100
CD-29-1600
B-26-1100
C-28-1100
B-26-1100

W-1043-17
W-1123-12

AS-1046-648
AS-1046-654

Jan. 6, 1971

NEW COIL NUMBERS

FO-319a

OLD COIL NUMBERNEW BALLY COIL NUMBER

CO-25A-7	A-25-1050
CO-25GG-7	B-25-925
CO-25H-7	BC-25-925
CO-26A-9	A-26-1100
CO-26GG-9	B-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
E-184-155	D-27-425
E-184-156	D-28-500
E-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-28-1100
E-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	BF-28-1500
E-184-250	D-30-700
E-184-252	BB-26-655/32-1245
E-184-254	FC-30-1400
E-184-257	AP-25-1050
E-184-260	B-28-1600
E-184-261	AP-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
E-184-268	AF-26-750/31-900
E-184-269	FC-33-2600
E-184-270	AB-31-3000
E-184-271	AK-24-750
E-184-272	A-25-1000
E-184-274	FC-32-2100

NOTE:

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