

#896 - Skyrocket

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.

Plug in line cord:

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

GENERAL GAME OPERATION

Place ball 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. New 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 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 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 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, (normally closed) #8 score motor switch and front door (normally closed) anti-slam switch.

- 2B. Coin relay will energize the "lock relay" which stays energized thru its own hold-in switch and (normally closed) 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 score motor switch, energize the "score reset relay". The reset relay will continue to operate score motor, and 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) #4 score motor switch will advance the "total play meter", reset the "ball count unit" and energize the "2nd coin relay" latch coil thru reset relay switch. Coin relay will also reset the "credit unit" (1 step) if credit button was used. Ball count unit "zero switch" thru (normally open) #10 score motor switch will energize the "game over relay" latch coil as score motor game start cycle ends.
- 3A. Ball on out hole switch will energize the "out hole relay" thru (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. Out hole relay will operate the "score motor" and then energize the "out hole kicker" solenoid thru (normally open) #6 score motor switch. Ball is kicked thru ball trough to shooter alley and game is now conditioned for "1st player" to begin play.
- 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 energize the "2nd coin relay" trip coil thru (normally open) #4 score motor switch. Game is now conditioned for "2 players" to begin play.

REGULAR BALL TO BALL (5 or 3) 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. It stays energized thru its own hold-in switch and outhole relay switch, (normally closed) #6 score motor switch, or extra ball relay switch if extra ball relay is energized.
- 1B. When 1st ball played returns to outhole, ball on outhole switch will energize the "outhole relay" thru (normally closed) #1 score motor switch. It stays energized thru its own hold-in switch and (normally closed) #10 score motor switch. The outhole relay will operate "score motor" and then thru ball index relay switch, advance the "ball count unit", either 2 steps thru (normally open) #3 and #4 score motor switches during "1 player game", or only 1 step thru #4 score motor switch during "2 player game". Outhole relay will then energize the "outhole kicker assembly solenoid" thru (normally open) #6 score motor switch, 1st ball is returned to shooter alley and game is now conditioned for either "1st player - 2nd ball" or "2nd player - 1st ball".
- 1C. Sequence 1A & 1B are then repeated on each ball played, until "last ball" is played by the 1st player during "1 player game", or 2nd player during "2 player game". When last ball played returns to outhole, the "game over interlock relay" trip coil will be energized thru the "ball count unit disc" and game is completed.

NOTE:

"Regular" ball to ball operation (sequence 1B) is interrupted when ever a player scores an "extra ball".

Skyrocket Score Feature:

Skyrocket "score lites" (1000-3000-5000-extra ball & 1000) are flashed by the "skyrocket motor unit", which is operated when "skyrocket motor relay" is energized. Skyrocket motor relay is energized, when ball goes thru "top center lane", hits "top right rollover button", "center target", or "left alley target".

Motor relay stays energized thru its own hold-in switch, in series with Skyrocket score relay and ball index relay switches.

Skyrocket scores and extra ball are "collected" when "skyrocket score relay" is energized, by ball in left or right "eject hole", or thru left or right "out rollover lane". Score relay stays energized thru its own hold-in switch and (normally closed) #10 score motor switch. It de-energizes skyrocket motor relay, which stops skyrocket motor, then runs "score motor unit" to register lit "score" and "extra ball", thru skyrocket motor unit disc.

Top Gate Feature:

When top gate is open, ball hitting "open bottom gate target" scores "3000" and opens "bottom gate". The top gate is opened, when "open top gate relay" is energized, by ball hitting "left alley rollover button", "left center target", or "right center target". Open top gate relay stays energized thru its own hold-in switch, in series with top gate assembly relay switch, and energizes the "top gate assembly relay", which opens gate. Top gate assembly relay then stays energized thru its own hold-in switch, in series with shooter alley rollover switch, until ball in play returns to shooter alley, game is tilted while ball in play, or game ends.

Bottom Gate Feature:

When bottom gate is open, ball thru "right out rollover lane" returns to shooter alley to be "played again". The bottom gate is opened, when "open bottom gate relay" is energized, by ball thru open top gate hitting "open bottom gate target". Open bottom gate relay stays energized thru its own hold-in switch, in series with a bottom gate solenoid end of stroke switch, and energizes the "bottom gate assembly solenoid", which opens gate. Bottom gate assembly solenoid then stays energized thru another end of stroke switch, in series with shooter alley rollover switch, until ball in play returns to shooter alley, game is tilted while ball in play, or game ends.

Playmore Post Feature:

"Post goes up and lites", when "post relay" is de-energized, by ball hitting top right, left alley, or center, "up post rollover button" which then de-energizes the "post solenoid", releasing post.

Post goes down and lite goes off, when post relay is energized, by ball hitting left or right, "down post side rebound", or when ball in play returns to outhole, game is tilted while ball in play, new game is started.

Thumper-Bumper Lites Feature:

When lit, (2) "red thumper-bumpers" and (1) "blue thumper-bumper" score "100" instead of 10. Red thumper-bumpers are lit, when "red thumper-bumper lite relay" is energized, by ball thru "top left rollover lane". Blue thumper-bumper is lit, when "blue thumper-bumper lite relay" is energized, by ball thru "top right rollover lane". Both relays then stay energized thru their own hold-in switches, in series with ball index relay switch, until ball in play returns to outhole, or game is tilted while ball in play.

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GAME ADJUSTMENTSPLAYFIELD PANEL POST ADJUSTMENTS:

Posts that control left and right outlane opening on panel (see panel sketch FO-317) 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" or "extra balls" can be scored. (See "Score adjustment card" in back box for plug positions).

BALLS PER GAME ADJUSTMENT PLUG:

Located on back box lite insert. This plug provides positions to operate game on "5 ball" or "3 ball" play.

MATCH FEATURE ADJUSTMENT PLUG:

Located on back box lite insert. This plug provides positions to turn 00-90 match 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, orange-white (male plug) wire.

HI-SCORE FEATURE ADJUSTMENT PLUG:

Located on front cabinet mounting board. This plug provides positions to award "credits" or "extra balls" for preset hi-scores.

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Parts ListMISCELLANEOUS

	<u>PART NO.</u>
Transformer	E-122-95
Score Motor (Domestic)	E-119-354
Score Motor (Export)	E-119-372
Skyrocket Motor	E-119-410
Meter (Total Play)	E-130-10

RELAY COILS

Open top gate	G-30-1500
3000 point	G-31-1800
Skyrocket target	G-30-1500
Skyrocket motor	G-31-1800
Skyrocket score	G-31-1800
Left eject hole	G-31-1800
Right eject hole	G-31-1800
Ball index	G-32-2500
Extra ball	G-32-2500
Outhole	G-31-1800
Tilt	G-32-2500
Reset	G-31-1800
Credit	G-31-1800
3rd coin chute	G-31-1800
2nd coin chute	G-31-1800
coin	G-31-1800
Lock	G-33-2800
Left red T.B.	G-31-1800
Blue T.B.	G-31-1800
Right red T.B.	G-31-1800
Red T.B. lite	G-32-2500
Blue T.B. lite	G-32-2500
Post	G-32-2500
Player	G-32-2500
Score reset	G-30-1500
1000 point	G-30-1500
100 point	G-30-1500
10 point	G-30-1500
Open bottom gate	G-30-1500
Top gate	G-32-2500
Game over (trip)	G-31-1800
Game over (latch)	G-31-1800
2nd coin (trip)	G-31-1800
2nd coin (latch)	G-31-1800

ASSEMBLY COILS

	<u>PART NO.</u>
Outhole kicker	A-26-1100
Eject hole (2)	A-26-1100
Bottom gate	AF-27-1000/32-1300
Thumper bumper (3)	A-25-1000
Slingshot kicker (2)	A-26-1200
Post (playmore)	AP-31-3000
Flipper (2)	AF-26-750/31-900
Knocker	C-27-1000
Bell	CB-31-2000
Coin lockout	FC-33-2600

UNIT COILS

Credit (step-up)	B-26-1100
Credit (Reset)	C-28-1100
Ball count (step-up)	B-26-1100
Ball count (reset)	C-28-1100
00-90 (step-up)	B-26-1100
Score (step-up)	CD-29-1600
2 coin (step-up)	CD-29-1600
Skyrocket (release)	FC-32-2100

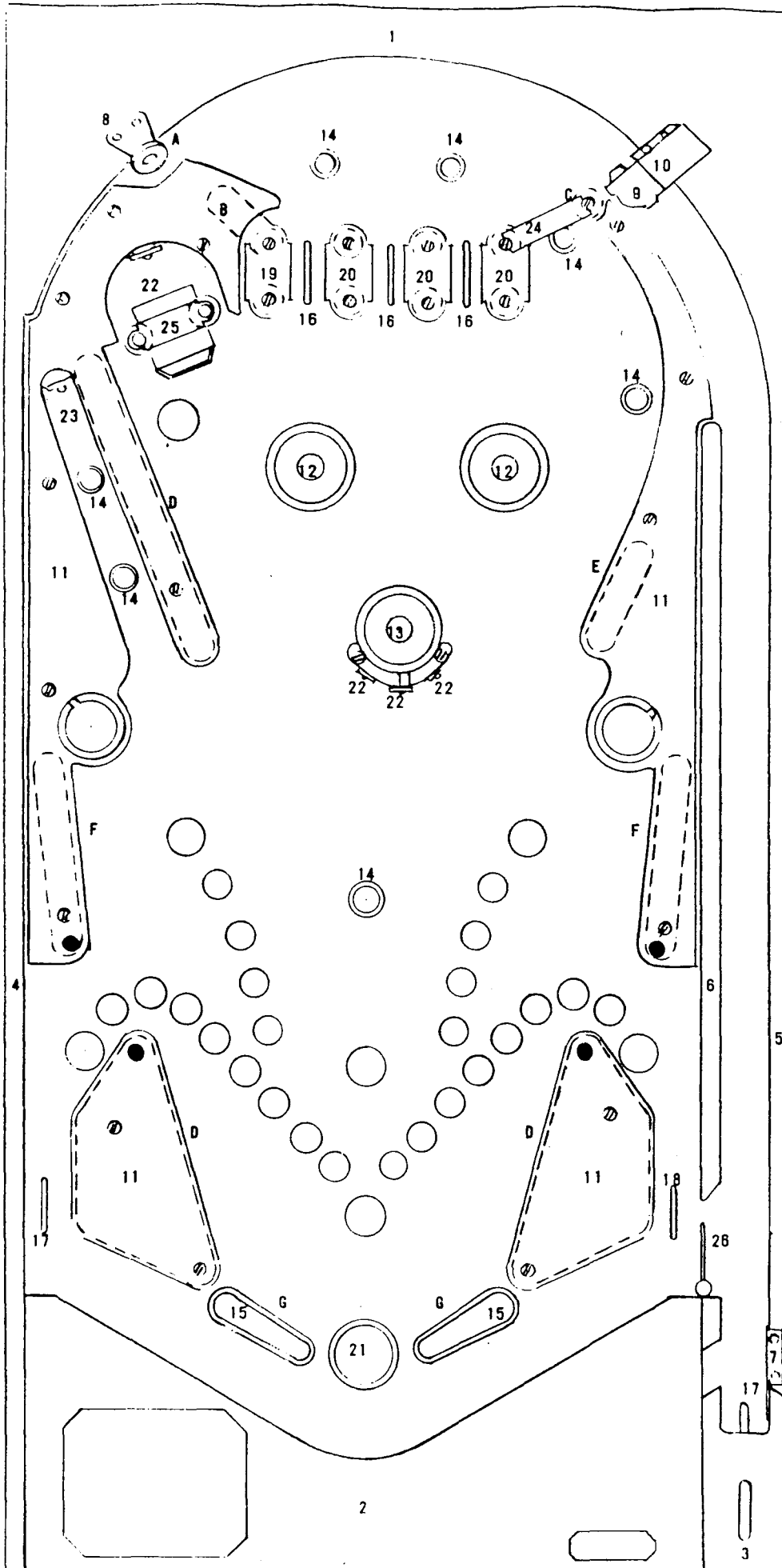
UNIT CONTACT DISC'S

Ball count	W-1043-13
00-90	W-1034-11
Score	A-2212-7
Skyrocket	W-1072-18

UNIT WIPER ASSY'S

Ball count	AS-1046-618
00-90	AS-1046-627
Score	A-1618-3
Skyrocket	AS-1046-642

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RUBBER PARTS

- A. R-115-4 REBOUND (1)
- B. R-521-2a 1-1/2" (1)
- C. R-243a 5/16" (11)
- D. R-521-8a 3-1/2" (3)
- E. R-521-3a 2" (1)
- F. R-521-4a 2-1/2" (2)
- G. R-406-3a (FLIPPER) (2)

PANEL TOP PARTS

- 1. TOP ARCH P-5839-58
- 2. BOTTOM ARCH P-5871-38
- 3. SHOOTER GABE P-8359-10
- 4. SIDE RAIL (L) CA-1208-2
- 5. SIDE RAIL (R) CA-1208-1
- 6. INNER RAIL CA-1208-9
- 7. PROTECTIVE ANGLE P-7839
- 8. BALL REBOUND AS-483-3
- 9. BALL GATE A-1475-1
- 10. BALL GATE COVER P-2986-5
- 11. LITE SHIELDS A-2890-89
- 12. BUMPER CAP (RED) C-719-12
- 13. BUMPER CAP (BLUE) C-719-18
- 14. ROLLOVER BUTTON C-387-5
- 15. FLIPPERS (WHITE) C-611-5
- 16. ROLLOVER WIRE M-1336-10
- 17. ROLLOVER WIRE M-1336-3
- 18. ROLLOVER WIRE M-1336-2
- 19. PLASTIC GUIDE (RED) C-694-1
- 20. PLASTIC GUIDE (RED) C-693-1
- 21. BUMPER C-810
- 22. TARGET ASSY. (RED) AS-982-723
- 23. TARGET ASSY. (RED) AS-982-752
- 24. BALL GATE & WIRE AS-2250-12
- 25. BALL GATE & WIRE AS-2250-26
- 26. BALL GATE WIRE M-1335-1

● MOVEABLE POSTS.

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: