

Bally®

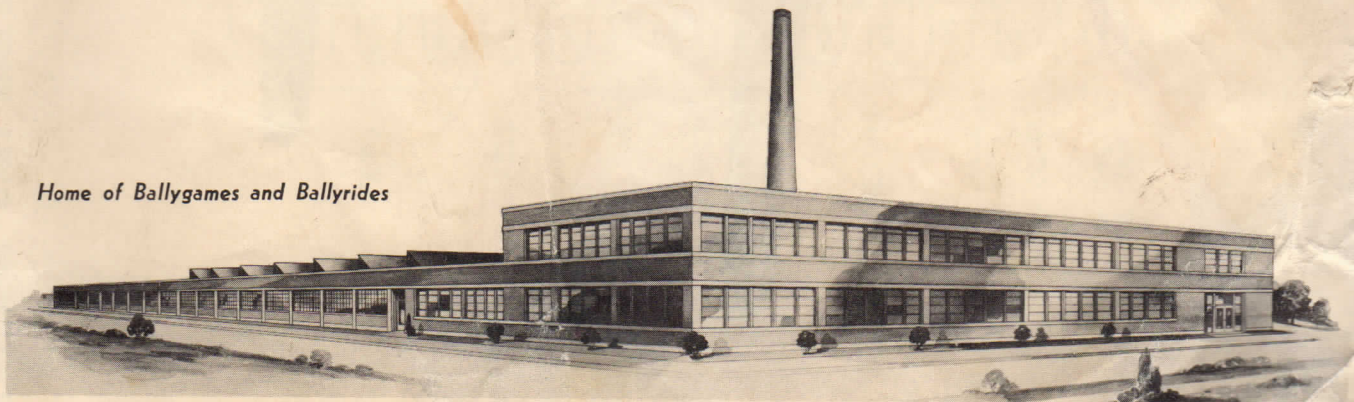
BALLS-A-POPPIN'

OPERATING INSTRUCTIONS AND PARTS CATALOG

Part Numbers are marked on illustrations
and a list of miscellaneous parts appears
on back cover.

**FOR QUICKEST SERVICE
STATE CORRECT PART NUMBER
WHEN ORDERING PARTS**

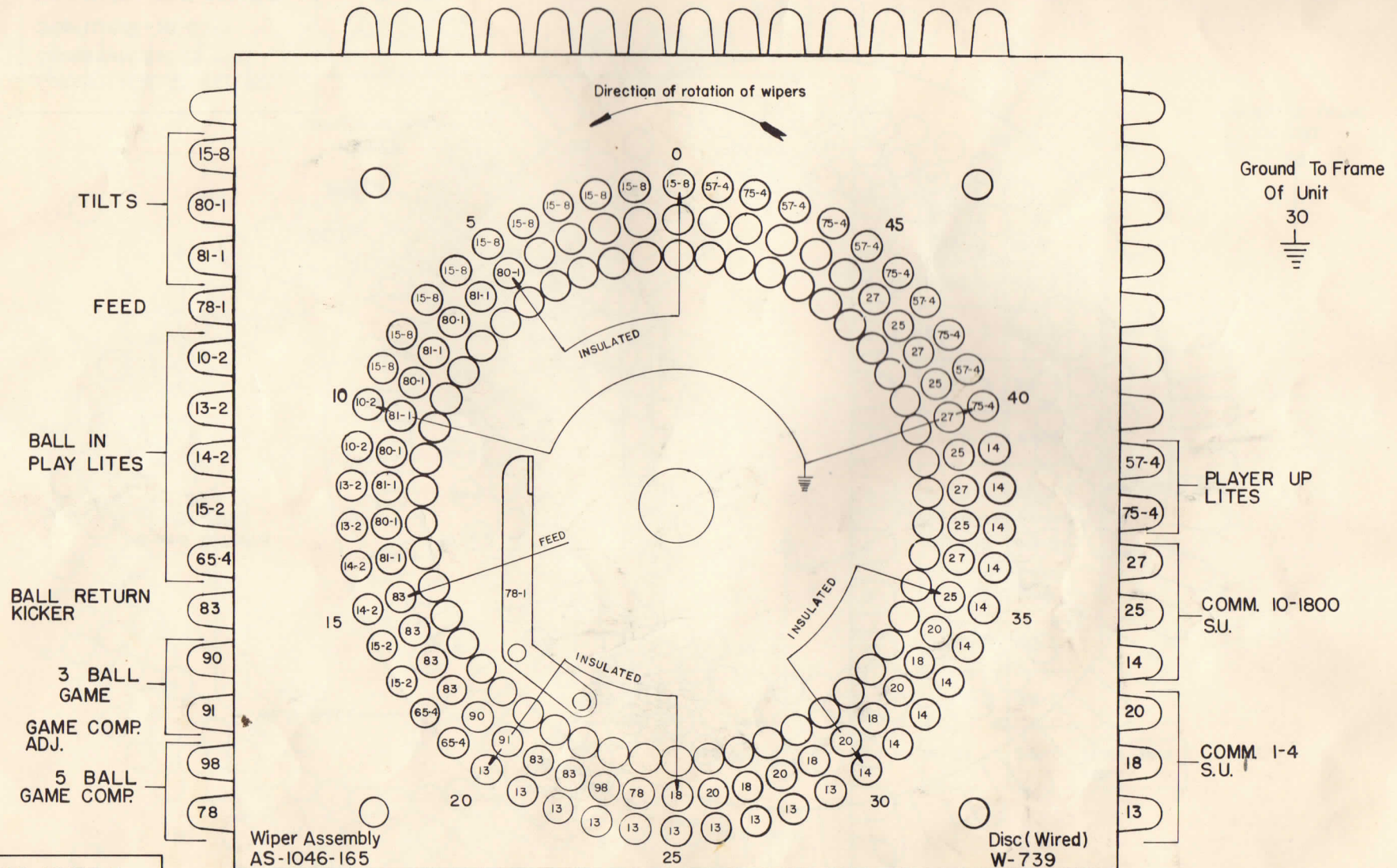
Home of Ballygames and Ballyrides





PLAYER-UP UNIT viewed from **BUTTON** or **WIPER** side

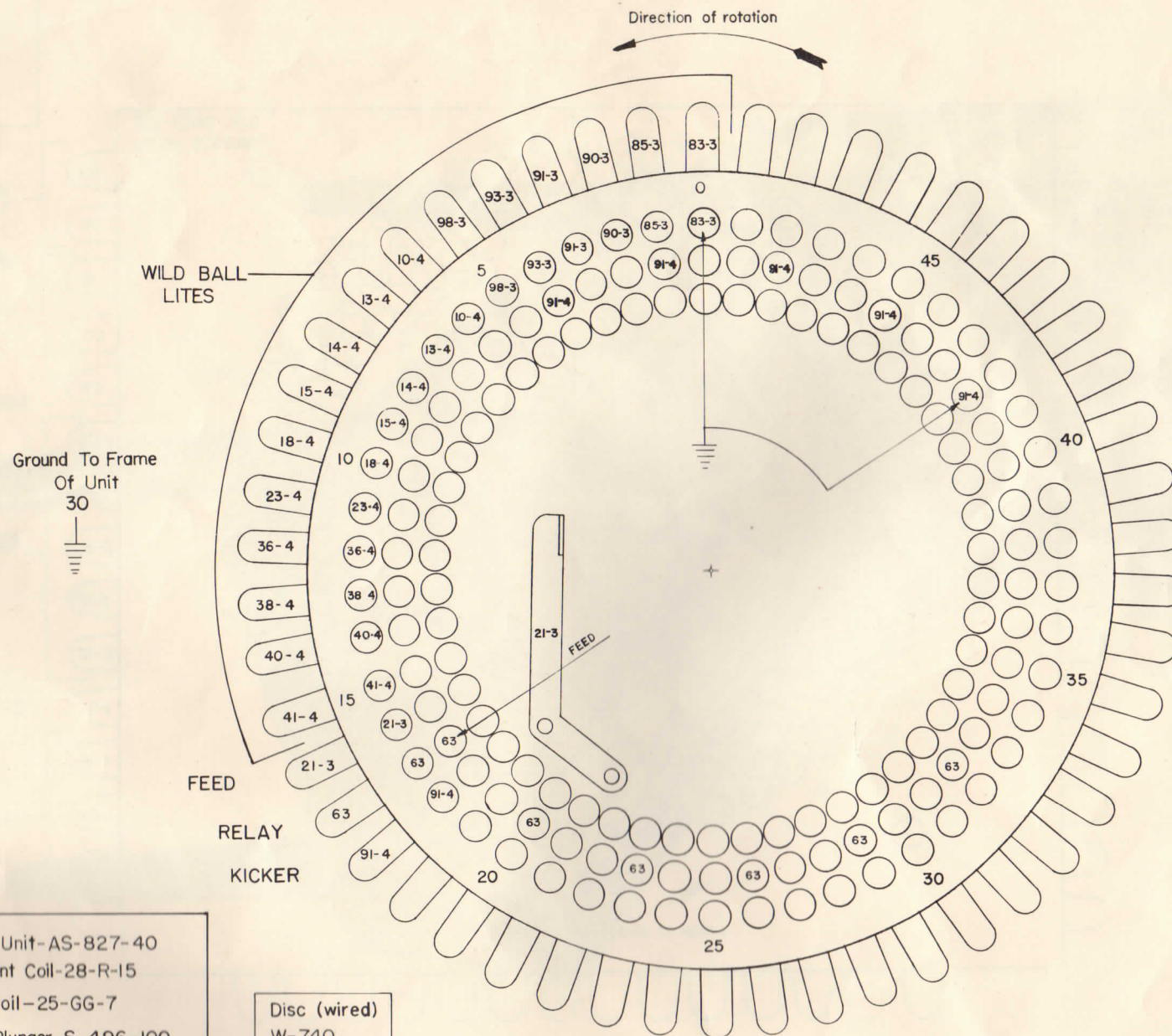
9 step unit. Wipers shown in zero or reset position



Complete Unit-AS-1351-5
 Reset Coil-28-R-15
 Step-up Coil-25-GG-7
 Step-up Plunger-S-496-100
 Step-up Arm-A-1765-1
 Ratchet & Shaft-C-1050-9

WILD BALL UNIT viewed from BUTTON or WIPER side

15 step unit. Wipers shown in zero or reset position

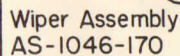


UNITS COUNTER

viewed from **BUTTON** or **WIPER** side

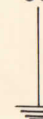
2 USED — SEE CODE-BOX AT RIGHT

Continuous step unit. Wipers shown in zero or reset position



Disc (Wired)
W-741

30



—“UNITS” LITES

COMPLETE UNIT -827-39

STEP-UP COIL - 26-GG-10

STEP-UP PLUNGER-S-496-100

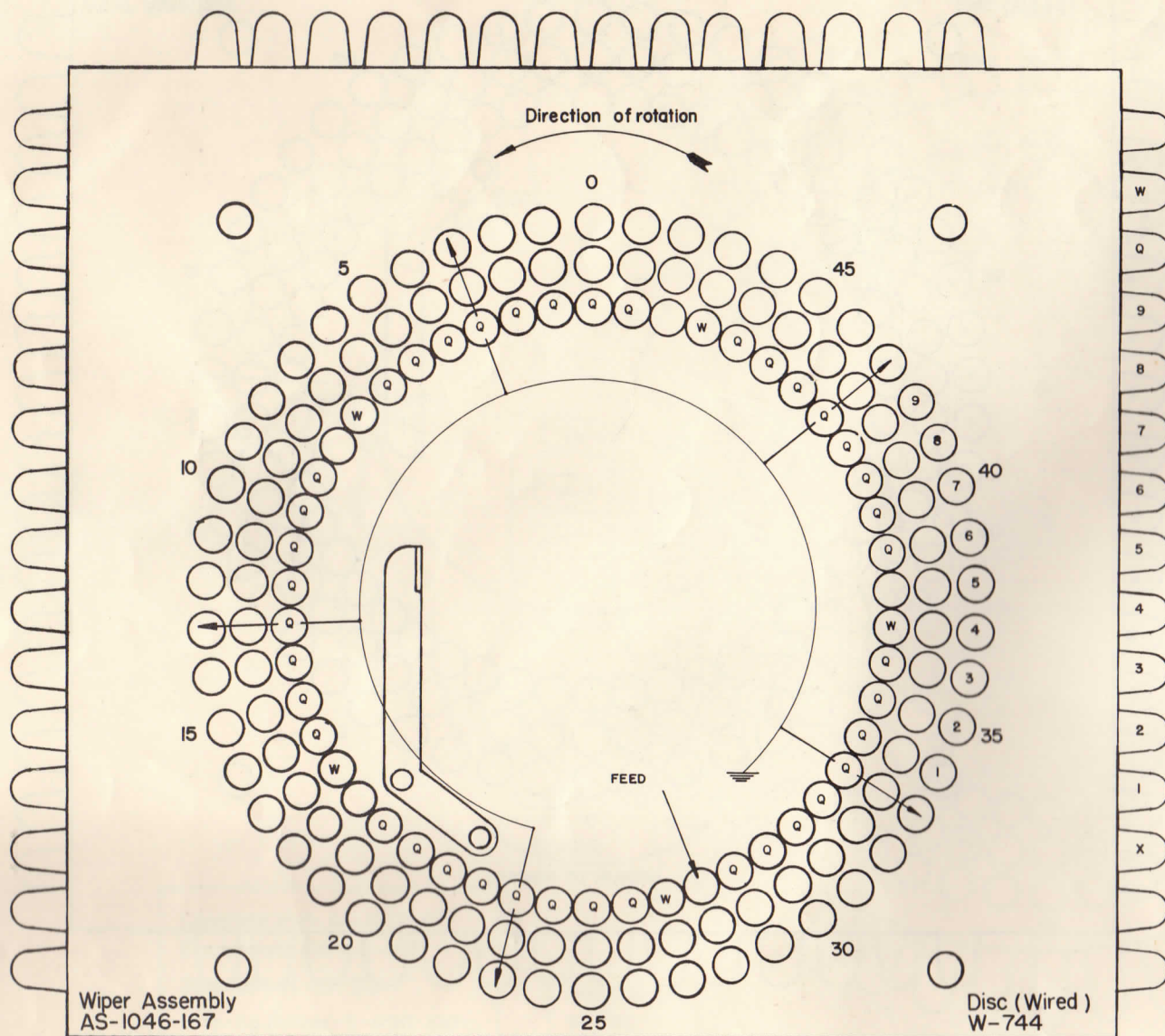
STEP-UP ARM-A-1765-5

RATCHET & SHAFT- C-1050

TENS COUNTER

viewed from **BUTTON** or **WIPER** side
2 USED — SEE CODE-BOX AT RIGHT

Continuous step unit. Wipers shown in zero or reset position



	1st Player	2nd Player	Lug No.
STEPS 100	27-6	41-6	W
HOMES TO 90	51-5	31-5	Q
	41-2	78-2	9
	40-2	75-2	8
	38-2	74-2	7
	36-2	71-2	6
	31-2	65-2	5
	27-2	63-2	4
	25-2	61-2	3
	23-2	60-2	2
	21-2	57-2	1
FEED	25	27	X

Ground to frame
of unit

30



"Tens" Lites

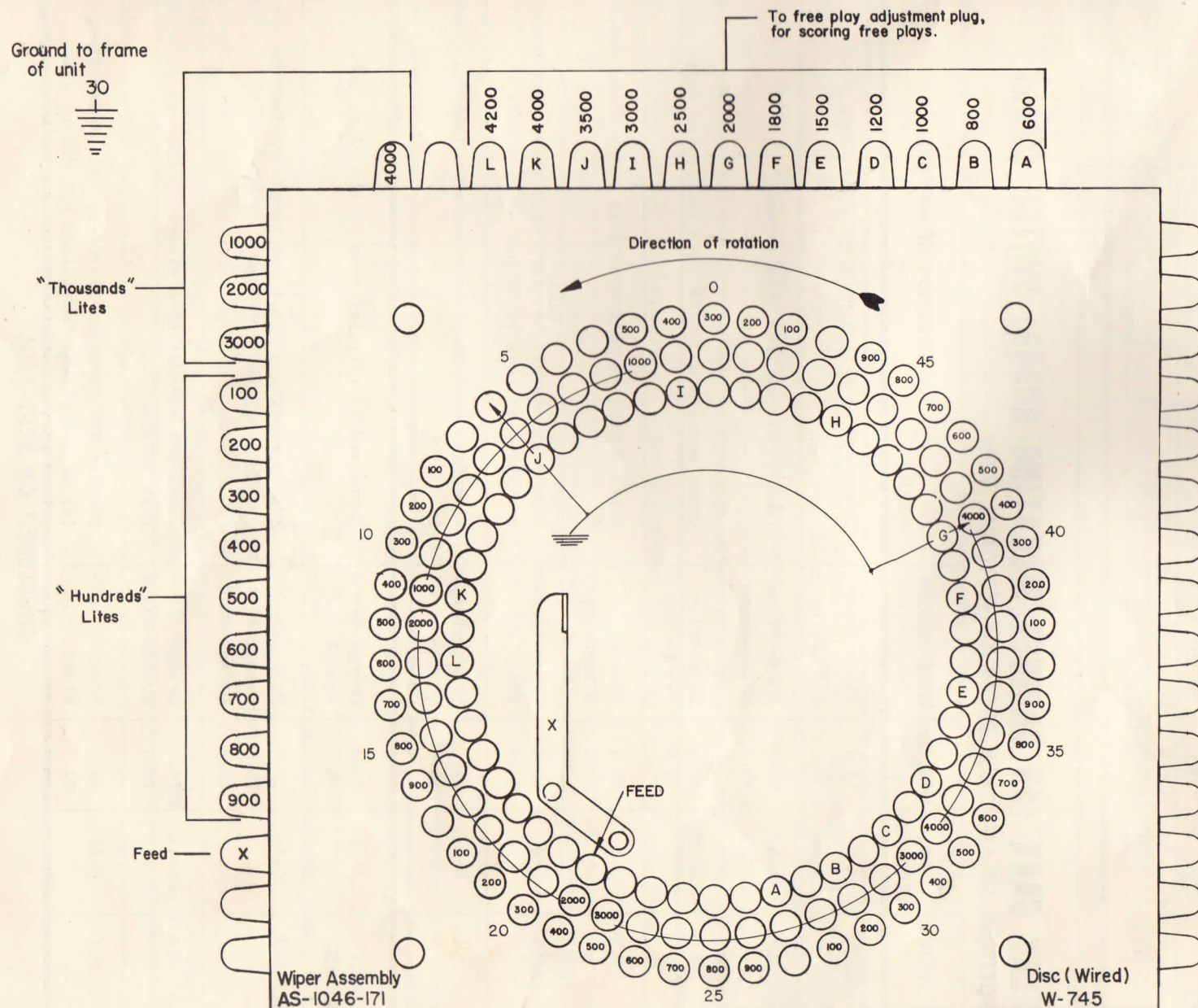
Complete Unit - AS-827-41
Step-Up Coil - 26-GG-10
Step-Up Plunger - S-496-100
Step-Up Arm - A-1765-4
Ratchet & Shaft - C-1050

HUNDREDS COUNTER

viewed from **BUTTON** or **WIPER** side

2 USED — SEE CODE-BOX AT RIGHT

45 step unit. Wipers shown in minus one position

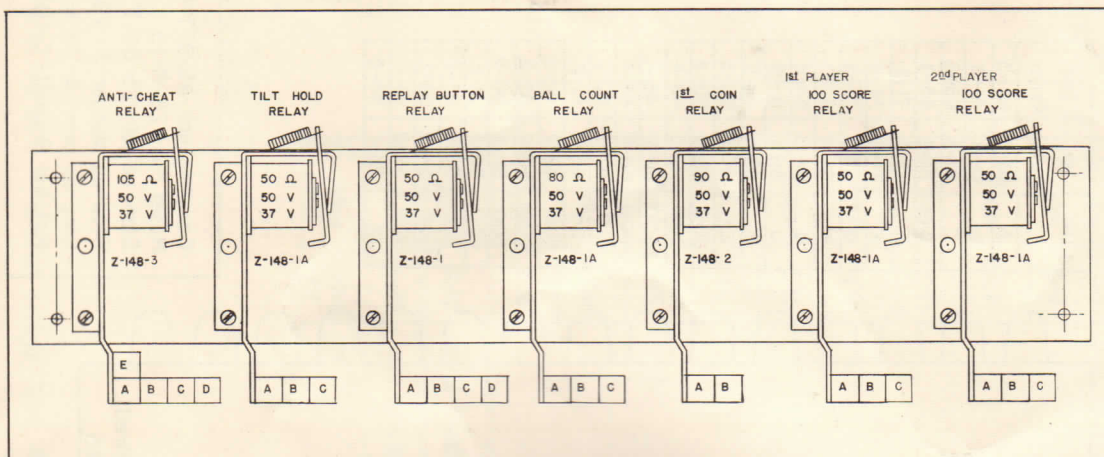


LUG	1st Player	2nd Player
A	60-3	60-3
B	61-3	61-3
C	63-3	63-3
D	65-3	65-3
E	71-3	71-3
F	74-3	74-3
G	75-3	75-3
H	80-3	80-3
I	54-3	54-3
J	81-5	81-5
K	83-5	83-5
L	90-5	90-5
4000	65-5	50-4
1000	60-5	43-4
2000	61-5	45-4
3000	63-5	48-4
100	43-2	80-2
200	45-2	81-2
300	48-2	83-2
400	50-2	85-2
500	51-2	90-2
600	52-2	91-2
700	53-2	93-2
800	54-2	98-2
900	56-2	10-3
X	23-1	93-5

Complete unit-AS-827-42
 Reset coil-28-R-15
 Step-up coil-25-GG-7
 Step-up plunger-S-496-100
 Step-up arm-A-1765-5
 Ratchet & shaft-C-1050-45

7 RELAY BANK (ON CABINET MOUNTING BOARD) SWITCH CHART

NUMBERS CORRESPOND TO SWITCH CHART



COIL PART NUMBERS

50 Ω	50 V---	C-2794-9
80 Ω	50 V---	C-2794-7
90 Ω	50 V---	C-2794-1
105 Ω	50 V---	C-2794-23

Code

N.C.	-----	Normally Closed
N.O.	-----	Normally Open
M.B.B.	-----	Make Before Break
S.P.D.T.	---	Single Pole Double Throw

7 RELAY BANK (ON CABINET MOUNTING BOARD) SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
ANTI-CHEAT RELAY COIL	A-8	54-1 70	White-Green Orange	Energized by switch on start trip relay #1.
A N.O.	A-8	54-1 56-1	White-Green White-Brown	Lock-in circuit for this relay.
B N.O.	G-16	25-4 71-8	Blue-White Orange-Red	Opens scoring circuits when this relay drops out.
C N.O.	I-1	20-4 27-4	Blue Blue-Orange	Opens 6 volt circuit when this relay drops out.
D N.C.	C-3	43-1 50-1	Green-Yellow White	Completes circuit to start trip relays for starting new game, if this relay has dropped out.
E N.C.	G-8	78 30	Orange-Black Yellow	Energizes game complete relay when this relay drops out.
TILT HOLD RELAY COIL	A-18	74-1 70	Orange-Green Orange	Energized by tilt switches or the plumb bob.
A S.P.D.T.	G-18	21-3 71-8 75-1	Blue-Red Orange-Red Orange-White	Breaks scoring circuit and completes lock-in circuit for this relay.
B N.O.	A-11	70 78-8	Orange Orange-Black	Completes circuit thru player-up disc to #1 or #2 tilt trip relays.
C N.C.	E-10	43 80	Green-Yellow Black	Circuit for stepping player-up unit a 2nd time, after 1st or 2nd player has tilted out during game.

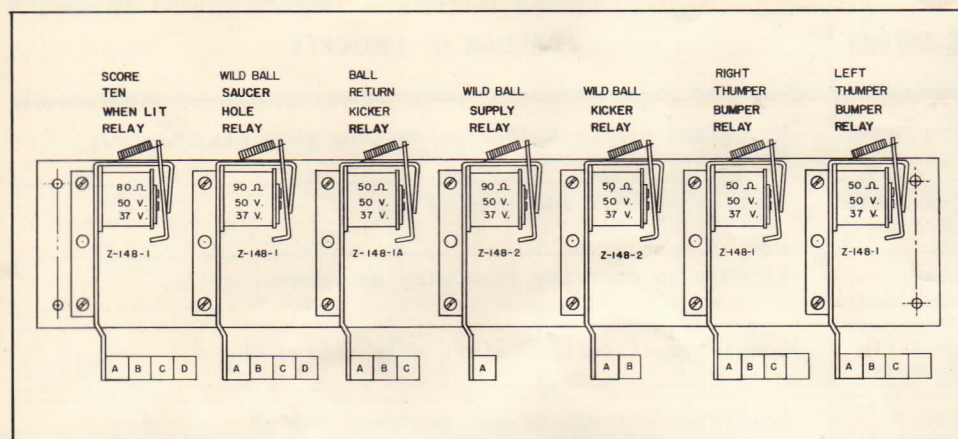
CONCLUDED ON NEXT PAGE

7 RELAY BANK (ON CABINET MOUNTING BOARD) SWITCH CHART — CONCLUDED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
REPLAY BUTTON RELAY COIL	A-4	36 70	Yellow-Brown Orange	Energized by replay button switch, when playing free plays.
A N.O.	C-4	36 52-6	Yellow-Brown White-Blue	Lock-in circuit for this relay.
B N.O.	E-9	30 41-1	Yellow Green-Red	Circuit to energize free play escapement coil.
C N.O.	D-3	43-1 45-1	Green-Yellow Green-White	Completes circuit to start trip relays.
D N.O.	B-23	30 71	Yellow Orange-Red	Completes circuit to run sequence motor.
BALL COUNT RELAY COIL	A-4	61-1 70	Brown-Red Orange	Energized by ball count rollover switch.
A N.O.	D-4	52-6 61-1	White-Blue Brown-Red	Lock-in circuit for this relay.
B N.O.	G-11	23 30	Blue-Yellow Yellow	Completes circuit to player-up step-up coil.
C N.O.	D-24	60 30	Brown Yellow	Completes circuit to run sequence motor.
1st COIN RELAY COIL	A-24	57-1 70	White-Orange Orange	Energized by switch on start relay #1 on 1st coin (or free play) played when starting new game.
A N.O.	D-21	57-1 60	White-Orange Brown	Lock-in circuit for this relay.
B N.C.	F-10	23 80	Blue-Yellow Black	Opens player-up step-up circuit when starting new game.
1st PLAYER 100 SCORE RELAY COIL	A-29	27-6 30	Blue-Orange Yellow	Energized thru 1st player "tens" counter disc.
A N.O.	B-32	31-6 30	Yellow-Red Yellow	Completes circuit to 1st player "hundreds" counter step-up coil.
B N.O.	B-27	25-6 27-6	Blue-White Blue-Orange	Lock-in circuit for this relay.
C N.O.	F-14	23-1 30	Blue-Yellow Yellow	Completes circuit thru 1st player "hundreds" counter disc to free play unit step-up coil for scoring free plays.
2nd PLAYER 100 SCORE RELAY COIL	A-31	43 70	Green-Yellow Orange	Energized thru 2nd player "tens" counter disc.
A N.O.	B-33	43-6 30	Green-Yellow Yellow	Completes circuit to 2nd player "hundreds" counter step-up coil.
B N.O.	A-30	38-6 41-6	Yellow-Black Green-Red	Lock-in circuit for this relay.
C N.O.	F-15	93-5 30	Gray-Yellow Yellow	Completes circuit thru 2nd player "hundreds" counter disc to free play unit step-up coil, for scoring free plays.

7 RELAY BANK (UNDER PLAYFIELD) PICTORIAL VIEW

NUMBERS CORRESPOND
TO SWITCH CHART



COIL PART NUMBERS

50 Ω 50 V. --- C-2794-9
80 Ω 50 V. --- C-2794-7
90 Ω 50 V. --- C-2794-1

CODE

N.C. --- NORMALLY CLOSED
N.O. --- NORMALLY OPEN
M.B.B. --- MAKE BEFORE BREAK
S.P.D.T. --- SINGLE POLE DOUBLE THROW

7 RELAY BANK (UNDER PLAYFIELD) SWITCH CHART

FOR POSITION OF SWITCHES
REFER TO PICTORIAL VIEW

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SCORE TEN WHEN LIT RELAY COIL	A-33	98-1 70	Gray-Black Orange	Energized by top bumper switch on rollover button switch.
A S.P.D.T.	H-24	56-4 30 61-4	White-Brown Yellow Brown-Red	Directs circuit from score ten when lit sling shot lites, to score ten when lit bumper lites.
B S.P.D.T.	E-28	14 25-5 13	Red-Green Blue-White Red-Yellow	Directs circuit thru player-up disc to the "tens" counter or the "units" counter step-up coil for scoring, when thumper bumpers are hit.
C S.P.D.T.	E-28	14 57-3 13	White-Orange Red-Yellow Red-Green	Directs circuit thru player-up disc to the "tens" counter or "units" counter step-up coil for scoring, when sling shot bumpers are hit.
D N.O.	E-33	31-7 98-1	Yellow-Red Gray-Black	Lock-in circuit for this relay.
WILD BALL SAUCER HOLE RELAY COIL	A-13	57 70	White-Orange Orange	Energized by saucer hole switch.
A S.P.D.T.	F-11	91-4 30 60	Gray-Red Yellow Brown	Directs circuit from wild ball kicker relay to sequence motor.
B N.O.	B-26	61 63	Brown-Red Brown-Yellow	Completes circuit to energize wild ball supply relay.
C N.O.	C-12	50 52	White White-Blue	Thru sequence motor cam switch #4A, completes circuit to wild ball unit escapement coil.
D N.C.	E-25	45 85-4	Green-White Black-White	Breaks circuit to wild ball unit step-up coil.

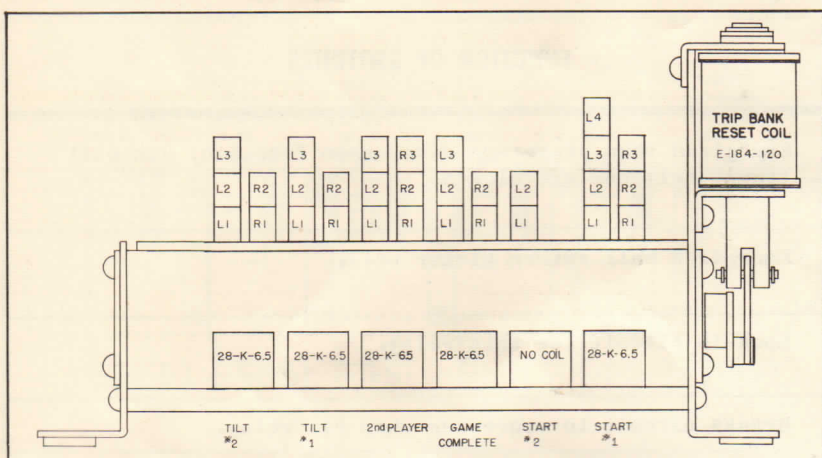
CONCLUDED ON NEXT PAGE

7 RELAY BANK (UNDER PLAYFIELD) SWITCH CHART — CONCLUDED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
BALL RETURN KICKER RELAY COIL	A-5	81-7 70	Black-Red Orange	Energized thru player-up disc, when 7th, 8th, 9th ball trough switches are closed.
A N.O.	C-19	71-8 74	Orange-Red Orange-Green	Energizes ball return kicker coil.
B N.O.	D-7	41 81-7	Green-Red Black-Red	Lock-in circuit for this relay.
C N.C.	C-33	31-7 93-1	Yellow-Red Gray-Yellow	Breaks circuit to score ten when hit relay.
WILD BALL SUPPLY RELAY COIL	A-26	61 70	Brown-Red Orange	Energized thru wild ball disc by saucer hole relay switch.
A N.O.	B-12	50 53	White White-Yellow	Thru sequence motor cam switch #5A, completes circuit to wild ball supply kicker solenoid coil.
WILD BALL KICKER RELAY COIL	A-13	54 70	White-Green Orange	Energized by ball switch, (wild ball kicker), thru wild ball disc.
A N.O.	E-12	56 30	White-Brown Yellow	Lock-in circuit for this relay.
B N.O.	F-1	40-P 60-P	Green(Plastic) Brown(Plastic)	Completes circuit to wild ball kicker solenoid coil.
RIGHT THUMPER BUMPER RELAY COIL	A-19	13-1 70	Red-Yellow Orange	Energized by right thumper bumper skirt switch.
A N.O.	E-19	10-1 13-1	Red Red-Yellow	Lock-in circuit for this relay.
B N.O.	G-27	21-3 25-5	Blue-Red Blue-White	Completes 1st or 2nd player scoring circuit, when right thumper bumpers are hit.
C N.O.	D-21	21-3 18-1	Blue-Red Red-Black	Energizes right thumper bumper solenoid coils (2).
LEFT THUMPER BUMPER RELAY COIL	A-19	74-5 70	Orange-Green Orange	Energized by left thumper bumper skirt switch.
A N.O.	E-19	71-5 74-5	Orange-Red Orange-Green	Lock-in circuit for this relay.
B N.O.	G-27	21-3 25-5	Blue-Red Blue-White	Completes 1st or 2nd player scoring circuit, when left thumper bumpers are hit.
C N.O.	D-20	75-5 21-3	Orange-White Blue-Red	Energizes left thumper bumper solenoid coils (2).

TRIP RELAY BANK PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH-CHART



CODE

N.C.-----NORMALLY CLOSED
 N.O.-----NORMALLY OPEN
 M.B.B.-----MAKE BEFORE BREAK
 S.P.D.T.-----SINGLE POLE DOUBLE THROW

TRIP RELAY BANK CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
TILT #2 TRIP COIL	A-11	J 70	Jumper Orange	Energized thru player-up disc by switch on tilt hold relay, when 2nd player tilts game.
L1 N.O.	F-7	71-4 80-4	Orange-Red Black	Series circuit to energize game complete relay if both players tilt out during 2 player game.
L2 S.P.D.T.	B-6	93 98 78	Gray-Yellow Gray-Black Orange-Black	Directs circuit to either the ball return kicker relay, or the game complete relay.
L3 S.P.D.T.	A-11	81-1 81-1 74-4	Black-Red Black-Red Orange-Green	Breaks circuit to coil, and completes safety circuit for energizing tilt hold relay.
R1 N.O.	C-10	15 31-4	Red-White Yellow-Red	Completes circuit to step player-up unit a 2nd time, when 2nd player has tilted out, during 2 player game.
R2 N.O.	H-2	91-1 30	Gray-Red Yellow	Lites 2nd player tilt lite.
TILT #1 TRIP COIL	A-10	J 70	Jumper Orange	Energized thru player-up disc by switch on tilt hold relay, when 1st player tilts game.
L1 S.P.D.T.	A-10	80-1 80-1 74-1	Black Black Orange-Green	Breaks circuit to coil, and completes safety circuit for energizing tilt hold relay.
L2 N.O.	B-3	43-1 50-1	Green-Yellow White	Safety circuit for starting new game.
L3 N.O.	D-10	15 31-4	Red-White Yellow-Red	Completes circuit to step player up unit a 2nd time, when 1st player has tilted out, during 2 player game.
R1 N.O.	G-7	71-4 30	Orange-Red Yellow	Series circuit to energize game complete relay if both players tilt out, during 2 player game. Also energizes game complete relay if player tilts out during 1 player game.
R2 N.O.	H-2	90-1 30	Gray Yellow	Lites 2nd player tilt lite.

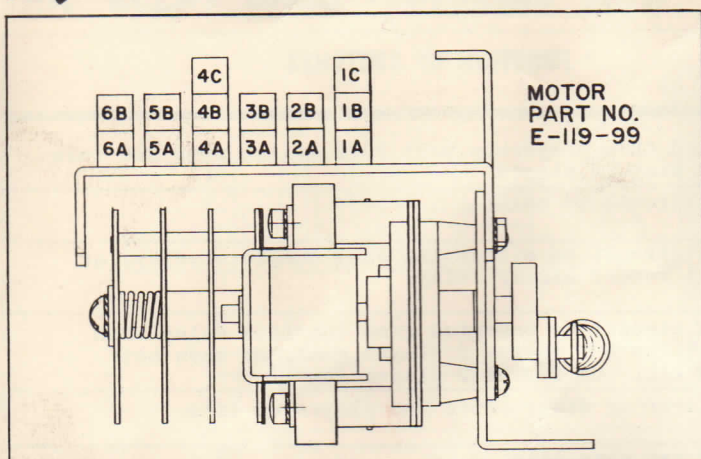
CONCLUDED ON NEXT PAGE

TRIP RELAY BANK CHART — CONCLUDED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
2nd PLAYER TRIP COIL	A-3	J 70	Jumper Orange	Energized thru player-up unit zero switch when 2nd coin or free play is played.
L1 N.C.	A-3	51-1 J	White-Red Jumper to coil	Breaks circuit to coil.
L2 S.P.D.T.	B-6	78 93 83	Orange-Black Gray-Yellow Black-Yellow	Directs circuit to either the game complete relay, or the ball return kicker relay.
L3 S.P.D.T.	F-7	71-4 78 80-4	Orange-Red Orange-Black Black	Directs circuit to energize game complete relay when player tilts out during 1 player game, or when both players tilt out during 2 player game.
R1 N.O.	H-4	60-4 75-4	Brown Orange-White	Thru player-up disc, lites 2nd player-up lite.
R2 N.O.	H-7	53-3 30	White-Yellow Yellow	Lites 2 can play lite.
R3 N.C.	D-10	15 31-4	Red-White Yellow-Red	Circuit to step player-up unit a 2nd time, during single player game.
GAME COMPLETE TRIP COIL	A-6	J 70	Jumper Orange	Energized thru player-up disc at end of game, also when anti-cheat relay drops out, or thru #1 & #2 tilt trip relay switches.
L1 S.P.D.T.	I-3	40 20-4 31	Green Blue Yellow-Red	Directs circuit from player-up, ball in play, 1 & 2 can play lites, to game complete lite.
L2 N.C.	G-15	25-4 30	Blue-White Yellow	Breaks scoring circuits.
L3 N.C.	C-5	83 81-7	Black-Yellow Black-Red	Breaks circuit to ball return kicker relay.
R1 N.C.	A-6	78 J	Orange-Black Jumper to coil	Breaks circuit to coil.
R2 N.C.	D-3	48 61-1	Green-Black Brown-Red	Break circuit to ball count relay.
START #2 TRIP COIL				Note: Both start trip relays work off 1 coil.
L1 N.O.	E-24	60 30	Brown Yellow	Completes circuit to run sequence motor, when starting new game.
L2 N.O.	D-25	65 30	Brown-White Yellow	Completes circuit to wild ball unit step-up coil, when starting new game.
START #1 TRIP COIL	A-3	J 70	Jumper Orange	Energized by coin switch or replay button relay switch, when starting new game.
L1 N.O.	B-8	54-1 30	White-Green Yellow	Completes circuit to energize anti-cheat relay.
L2 N.C.	B-18	75-1 81-6	Orange-White Black-Red	Breaks circuit to tilt hold relay.
L3 N.O.	D-8	30 41-1	Yellow Green-Red	(Safety circuit) free play escapement coil.
I4 N.O.	B-12	52 30	White-Blue Yellow	Completes circuit to wild ball unit escapement coil, when starting new game.
R1 N.O.	C-24	57-1 30	White-Orange Yellow	Complete circuit to 1st coin relay.
R2 N.O.	D-14	65-1 30	Brown-White Yellow	Completes circuit to reset player-up unit, also 1st & 2nd player "hundreds" counters.
R3 N.C.	A-3	50-1 J	White Jumper to coil	Breaks circuit to coil.

SEQUENCE MOTOR PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART



CODE

N.C. _____ NORMALLY CLOSED
 N.O. _____ NORMALLY OPEN
 M.B.B. _____ MAKE BEFORE BREAK
 S.P.D.T. _____ SINGLE POLE DOUBLE THROW

SEQUENCE MOTOR CAM SWITCH CHART FOR POSITION OF SWITCHES SEE PICTORIAL VIEW

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A N.C.	F-11	15-8 30	Red-White Yellow	Circuit to tilt trip relay #1 or #2, thru player-up unit disc.
1B N.O.	E-24	60 30	Brown Yellow	Carry thru circuit for sequence motor.
1C N.C.	F-3	40-1 45-1	Green Green-White	Circuit to start trip relays, when starting new game.
2A S.P.D.T.	G-26	10 30 14-6	Red Yellow Red-Green	Directs circuit to either the 1st or 2nd player "units" counter step-up coil.
2B S.P.D.T.	C-29	36-6 30 15-6	Yellow-Brown Yellow Red-White	Directs circuit to 1st or 2nd player 100 score relay for scoring.
3A N.O.	E-11	50 30	White Yellow	Completes circuit to wild ball saucer hole kicker solenoid coil.
3B N.O.	C-9	41-1 52-1	Green-Red White-Blue	Pulses free play unit escapement coil, when starting new game (using free plays).
4A N.O.	D-12	50 30	White Yellow	Pulses wild ball unit escapement coil, when wild ball saucer hole is hit.
4B N.O.	C-14	65-1 71-1	Brown-White Orange-Red	Reset circuit to player-up unit, and 1st & 2nd player "hundreds" counters, when starting new game.
4C N.O.	E-10	31-4 43	Yellow-Red Green-Yellow	Circuit to step player-up unit a 2nd time, when 1st or 2nd player has tilted out during 2 player game.
5A N.O.	E-12	50 30	White Yellow	Completes circuit to wild ball supply kicker solenoid coil.
5B N.O.	E-10	15 80	Red-White Black	Pulses player-up unit step-up coil.
6A N.C.	E-4	52-6 30	White-Blue Yellow	Drops out replay button relay.
6B N.O.	F-1	40-P 70-P	Green(Plastic) Orange(Plastic)	Resets trip relay bank, when starting new game.

NOTES

MISCELLANEOUS PARTS

FRONT CABINET ASSEMBLY:

Part No.

AS-187-15 Ball Shooter Assembly — Complete:

A-100-7 Knob and shooter rod
A-1540-1 Shooter housing
SP-200-24 Shooter spring—long
SP-237 Shooter spring—short
R-108-3 Shooter tip

AS-731-7 Sounder Assembly:

27-R-11 Coil
A-613 Core plug
A-316-25 Plunger

MISC. PARTS — FRONT CABINET:

P-2768 Cup for A-1729-4 Push button—Flipper
CA-810-2 Front moulding
A-1729-4 Push button
SW-100-150 Switch—Push button

AS-1591 Front Door Assembly:

E-271-15 Coin Chute
P-2768-5 Cup—Red—for A-1729-4 Push button
CA-567-32 Front door only
A-254-33 Hinge
M-281-6 Lock and Keys
A-1729-4 Push button

MOUNTING BOARD ASSEMBLY:

AS-232-43 Sequence Motor Unit Assembly — Complete:

A-800-23 Cam Assembly
E-130-10 Counter
A-1596-1 Motor bracket
E-119-121 Motor

PANEL ASSEMBLY:

Part No.

A-1475-4 Ball gate assembly—Left—large
A-1475-6 Ball gate assembly—Left—small
A-1475-5 Ball gate assembly—Right
E-386-2 Bumper assembly—lights kickers
E-386-3 Bumper assembly—lights red bumpers
A-1873 Flange and stud assembly—Thumper bumper
C-369-3 Flipper—Right
C-370-3 Flipper—Left
M-781 Light shield plastic—Right—slingshot kicker
M-781-1 Light shield plastic—Left slingshot kicker
M-782 Light shield plastic—Center—saucer hole
S-496-118 Plunger—thumper bumper
R-135 Rubber ring—ball return—1" I.D.
R-141 Rubber ring—saucer—1½" I.D.
R-243 Rubber ring—standard ⅜" I.D.
R-284-5 Rubber ring—Bonus switch 2½" I.D.
R-296-5 Rubber ring—slingshot kicker 3½" I.D.
R-299-5 Rubber ring—Flipper—¾" I.D.
R-196 Rubber ring—Score 20—2" I.D.
SP-200-105 Spring—Thumper Bumper
E-385-1 Thumper Bumper assembly

MISCELLANEOUS PARTS:

G-265 Back glass
M-168-26 Ball
P-1900-27 Cash box
CA-461-6 Leg—Left front and right rear
CA-461-7 Leg—Right front and left rear
M-163-4 Leg adjuster
M-281-9 Lock and keys—Back cabinet
E-122-51 Transformer

Bally pin game lubricant now available in one half-pint (8 Oz.) containers with plastic spout and screw cap.